

Balsam Lake Coalition (BLC) INTERROGATORY #1

Issue 7.1 Are the rate classes and their definitions proposed by Hydro One appropriate?

Interrogatory

Notwithstanding the current status whereby Seasonal rate class customers are by definition not density-based, but acknowledging that Seasonal rate class customers are actually located in all three density zones; please break-down the number of Seasonal rate class customers and the number of year-round residential rate customers in each of the density zones i.e. UR, R1 and R2.

Response

The requested information is available for the customer data set used for completing the rate class review. The results for the UR, R1 and R2 rate classes shown below are the number of customers that would be in the different density zones after implementation of the rate class review results.

Rate Class	Density Zone (# of customers)			Total (# of customers)
	HD	MD	LD	
UR	204,965			204,965
R1		414,931		414,931
R2			321,451	321,451
SEASONAL	286	69,897	81,042	151,225

Balsam Lake Coalition (BLC) INTERROGATORY #2

Issue 7.1 Are the rate classes and their definitions proposed by Hydro One appropriate?

Interrogatory

Please provide the actual (year-end) figures for 2012 and 2013, in the above requested breakdown of the number of Seasonal rate class customers and the number of year-round residential customers, in each of the above density zones.

Response

The requested information is available for the customer data set used for completing the rate class review, which looked at the customers as of the end of March, 2013. The table below shows the current rate classification of customers located in the different density zones. This data is not available for 2013 year end, but will be refreshed as part of the implementation of the rate class review results for January 1, 2015.

Rate Class	Density Zone (# of customers)			Total (# of customers)
	HD	MD	LD	
UR	163,127	5,707	439	169,273
R1	40,023	345,213	16,070	401,306
R2	1,815	64,011	304,942	370,768
SEASONAL	286	69,897	81,042	151,225

Balsam Lake Coalition (BLC) INTERROGATORY #3

Issue 7.1 Are the rate classes and their definitions proposed by Hydro One appropriate?

Interrogatory

Reference: Ex. G1, Tab 4, Schedule 1, Attachment 1 – 2015 Rate Design

To evaluate the impact of the potential elimination of the Seasonal class customer, please prepare a pro forma statement in which all 143,666 Seasonal customers are eliminated as a separate class and are moved into their appropriate residential UR, R1 or R2 density zones, using the same accounting methodology as was used to prepare the above proposed 2015 Rate Design statement. Please also prepare a pro forma Total Bill Impact statement for the above potential elimination of the Seasonal class customer.

Response

Please see the response to Exhibit I, Tab 7.1, Schedule 1 Staff 94.

Balsam Lake Coalition (BLC) INTERROGATORY #4

Issue 7.1 Are the rate classes and their definitions proposed by Hydro One appropriate?

Interrogatory

Reference: Ex. G1, Tab 4, Schedule 1, Attachment 1 – 2015 Rate Design

Please provide the actual (year-end) figures for 2012 and 2013 of the impact of eliminating all the Seasonal class customer in those particular years, using the same accounting methodology as in above (No.3) interrogatory.

Response

The impact of eliminating the Seasonal class cannot be provided for 2012 and 2013 as the analysis requires the output of a cost allocation model run and rate design model which is not available for historical years.

Balsam Lake Coalition (BLC) INTERROGATORY #5

Issue 7.1 Are the rate classes and their definitions proposed by Hydro One appropriate?

Interrogatory

Reference: Ex. G1, Tab 4, Schedule 1, Attachment 1 – 2015 Rate Design

Please advise the accounting methodology and the amounts of the allocated cost PER CUSTOMER and the revenue from rates PER CUSTOMER, as was used to prepare the 2015 Rate Design statement for each of the residential rate class customers i.e. UR, R1, R2 & Seasonal.

Response

The cost per customer and revenue per customer for the residential rate classes determined as per the methodology used in the OEB's Cost Allocation Model, and used as the basis for establishing 2015 rates is provided below.

The information below, except for the "per customer" calculations, is from the 2015 Rate Design sheet (which includes the 2015 Cost Allocation Model outputs) provided at Exhibit G1, Tab 4, Schedule 2, Attachment 1.

Rate Class	No. of Customer	Allocated Cost	Allocated Cost per Customer	Revenue from Rates (prior to R/C Ratio Adjustment)	Revenue from Rates (prior to R/C Ratio Adjustment) per Customer	Revenue from Rates (after R/C Ratio Adjustment)	Revenue from Rates (after R/C Ratio Adjustment) per Customer
UR	209,540	\$79,113,630	378	\$98,099,848	468	\$86,749,139	414
R1	438,279	\$276,037,347	630	\$327,075,366	746	\$305,468,655	697
R2	335,043	\$548,009,481	1,636	\$489,976,761	1,462	\$498,703,219	1,488
Seasonal	143,666	\$97,736,968	680	\$85,979,063	598	\$88,722,941	618

Balsam Lake Coalition (BLC) INTERROGATORY #6

Issue 7.1 Are the rate classes and their definitions proposed by Hydro One appropriate?

Interrogatory

Reference: Ex. G1, Tab 4, Schedule 1, Attachment 1 – 2015 Rate Design

Please advise the accounting methodology and the actual (year-end) figures for 2012 and 2013 of the allocated cost PER CUSTOMER and the revenue from rates PER CUSTOMER prepared in previous years for the (2012 and 2013) projected Rate Design, using the same accounting methodology as in above (No. 5) interrogatory; for each of the residential rate class customers i.e. UR, R1, R2 & Seasonal.

Response

The 2012 and 2013 cost per customer and revenue per customer determined as per the methodology used in Exhibit I, Tab 7.1, Schedule 7 BLC 5 cannot be provided as the analysis requires the output of a cost allocation model and rate design model which are not available for historical years.

Federation of Ontario Cottagers' Association (FOCA) INTERROGATORY #3

Issue 7.1 Are the rate classes and their definitions proposed by Hydro One appropriate?

Interrogatory

Please provide a listing or bar chart of the number of customers in the UR, R1, R2 and Seasonal classes by average monthly consumption broken down roughly as follows;

< 50 kwh
50-100 kwh
100-250 kwh
250-500 kwh
500-1000 kwh
1000-2000 kwh
>2000 kwh

This should be based on the existing approved Seasonal Class definition but should include those to be moved as a result of the Density Study and can be based on the latest year for which reasonably accurate statistics are available.

Response

The information requested is provided in the table below using 2012 data for customers with 12 months of data.

Average Monthly Consumption	R1	R2	UR	Seasonal
<50 kwh	780	969	273	17,891
50-100 kwh	1,206	1,219	553	23,805
100-250 kwh	10,325	5,507	6,342	44,343
250-500 kwh	57,432	25,921	39,882	25,508
500-1000 kwh	162,242	106,329	93,966	19,028
1000-2000kwh	114,110	115,674	41,079	9,280
>2000kwh	20,623	35,935	4,107	2,563

1 **Federation of Ontario Cottagers' Association (FOCA) INTERROGATORY #4**

2
3 **Issue 7.1 Are the rate classes and their definitions proposed by Hydro One**
4 **appropriate?**

5
6 **Interrogatory**

7
8 Does the latest calculation of RRRP for R2 customers include the seasonal customers H1
9 is proposing to move to R2?

10
11 **Response**

12
13 Yes.

1 **Federation of Ontario Cottagers' Association (FOCA) INTERROGATORY #5**

2
3 **Issue 7.1 Are the rate classes and their definitions proposed by Hydro One**
4 **appropriate?**

5
6 **Interrogatory**

7
8 Does H1 yet have a definitive government or OEB opinion on the interpretation of O/Reg
9 442/01 dealing with RRRP and whether seasonal residency qualifies?

10
11 **Response**

12
13 Hydro One is of the view that Seasonal customers in general do not qualify for RRRP,
14 but that the specific Seasonal customers Hydro One proposes to move would get RRRP
15 because their consumption pattern is such that they are using their property to a similar
16 extent as a year-round residential customer. Hydro One does not have a government
17 interpretation of this view and will follow the direction of the Board in its Decision on
18 this matter.

Federation of Ontario Cottagers' Association (FOCA) INTERROGATORY #6

Issue 7.1 Are the rate classes and their definitions proposed by Hydro One appropriate?

Interrogatory

Please advise the 2015 revenue requirement and resulting fixed and variable dx rates for the UR, R1 & R2 and Seasonal classes based on leaving the 11,000 high use customers in the seasonal class.

Response

The requested information is provided below.

Rate Class	2015 Rates Revenue Requirement	Fixed Distribution Rate (\$/month)	Variable Distribution Rate (\$/kWh)
UR	\$86,965,324	\$20.42	0.0178
R1	\$302,434,596	\$28.09	0.0314
R2	\$491,609,072	\$67.58	0.0466
Seasonal	\$97,472,481	\$27.08	0.0705

School Energy Coalition (SEC) INTERROGATORY #54

Issue 7.1 Are the rate classes and their definitions proposed by Hydro One appropriate?

Interrogatory

Reference: Exhibit G1/Tab 4/Schedule 2/Attachment 1

Please confirm that the costs allocated to the UGd class in 2013 were \$11,052,620 after adjustment to take account of the density study [from M-1-1 in EB-2012-0136, applying the 1.20 revenue to cost ratio]. Please confirm that this works out to average allocated costs per UGd customer of \$9,781.08. Please confirm that the costs allocated to the UGd class in 2015 are \$28,084,764, and that works out to an average allocated costs per UGd customer of \$14,773.68, an increase of 51.0% from 2013. Please provide a detailed breakdown of the drivers of this increase in allocated costs, including at least:

- (a) Increased revenue requirement for the Applicant overall.
- (b) The composition of the revenue requirement increase, e.g. a greater proportion of increased costs allocated to the larger general service classes. Please provide details.
- (c) The change to the treatment of density from a below-the-line adjustment to inclusion of density within each line item. Please provide details.
- (d) Other changes to the cost allocation model, if any. Please provide details.
- (e) Any other drivers.

Response

The costs allocated to the UGd class in 2013 were \$10,929,823 as per Exhibit D-1-1, Attachment 2 in EB-2012-0136. This works out to an average allocated cost per UGd customer of \$9672.41. The 2015 costs shown are confirmed.

The factors contributing to the increase in 2015 costs for the UGd class are due to load forecast and non-load forecast related items. The non-load forecast related items contributing to an increase in costs include:

- an increase of 19.8% in revenue requirement
- changes to the PLCC calculation which results in an increase in the costs allocated to the general service classes
- the allocation of 2015 fixed assets and OM&A costs by USofA
- an update to the costs being directly allocated to interval-metered customers, which includes some UGd customers

1 The impacts described above are partially offset by a decrease in allocated costs due to
2 the use of updated density factors for the GSd class, and updates to the proposed loss
3 factors for all classes.

4
5 The non-load forecast items described above result in an increase to the 2013 unit cost for
6 the UGd class to \$14,700.94, as determined using the 2015 CAM with 2010 load forecast
7 inputs.

8
9 The balance of the increase to \$14,773.68 is due to the impact of load forecast related
10 items including new demand allocators based on the new 2015 load forecast and updated
11 load profile for all rate classes, as well as changes related to the rate class review.

School Energy Coalition (SEC) INTERROGATORY #55

Issue 7.1 Are the rate classes and their definitions proposed by Hydro One appropriate?

Interrogatory

Reference: Exhibit G1/Tab 4/Schedule 2/Attachment 5

Please confirm that the costs allocated to the UGd class in 2019 are \$35,337,954, and that works out to an average allocated costs per UGd customer of \$18,338.33, an increase of 87.5% from 2013. Please provide a detailed breakdown of the drivers of this increase in allocated costs, including at least:

- (a) Increased revenue requirement for the Applicant overall.
- (b) The composition of the revenue requirement increase, e.g. a greater proportion of increased costs allocated to the larger general service classes. Please provide details.
- (c) The change to the treatment of density from a below-the-line adjustment to inclusion of density within each line item. Please provide details.
- (d) Other changes to the cost allocation model, if any. Please provide details.
- (e) Any other drivers. Any other drivers.

Response

The values shown for 2019 are confirmed.

The increase in costs allocated to the UGd class in 2019 are driven by the changes from 2013 to 2015, as discussed in the interrogatory response at Exhibit I, Tab 7.01, Schedule 9 SEC 54 plus primarily two additional factors. The first is the 17% increase in revenue requirement from 2015 to 2019. The second is the impact of new demand allocators based on an updated 2019 load forecast. From 2015 to 2019 there were also slight adjustments to the directly allocated costs and the costs by USofA, but no changes were made to any of the other cost allocation model inputs.

Consumers Council of Canada (CCC) INTERROGATORY #28b

Issue 7.1 Are the rate classes and their definitions proposed by HON appropriate?

Interrogatory

Reference: Ex. G1/T2/S1

The evidence states that as a result of implementing the rate class review findings, customers will experience about a 3.4% increase on average across all rate classes to make up for the revenue deficiency resulting from the large number of customers moving to rate classes with lower rates. Please explain how, through the cost allocation process, HON has ensured that this deficiency was recovered from the appropriate customers. Does HON intend to explain this increase to customers?

Response

One of the inputs to the cost allocation model is the revenue collected at current rates, as shown in Input Sheet 6.1 provided at Exhibit G2, Tab 1, Schedule 2. Hydro One's revenue at current rates is based on the forecast number of customers and consumption for each rate class assuming implementation of the rate class review results. The cost allocation model methodology increases the revenue collected at current rates on a uniform basis across all rate classes to match the revenue requirement. As such, all rate classes uniformly experience the 3.4% increase associated with the rate class review.

Hydro One will be communicating to customers the bill impacts resulting from the Board's approvals in this application. Customer communications typically include a discussion of the key items contributing to changes the customers will see on their bill.

Ontario Energy Board (Board Staff) INTERROGATORY #94

Issue 7.2 **Is the proposed definition of “seasonal” customer class appropriate? Particularly, is residency an appropriate criterion in defining a class? Has this criterion been applied consistently?**

Interrogatory

Reference: **Exhibit G1/Tab2/Schedule1 & Technical Conference No. 3 TR p. 37**

In the third technical conference on April 30, 2014, Hydro One, in response to a question from the BLC, indicated that it could provide an analysis of the impacts of eliminating the Seasonal Class. Please provide such an analysis with a description of such a scenario, with pros and cons, and the relevant bill impacts for the affected customers.

Response

Hydro One evaluated a scenario where all Seasonal customers were amalgamated to either the low density (R2) or medium density (R1) residential rate classes based on where they are located as determined by the rate class review. A very small number of Seasonal customers would move to the high density (UR) rate class, but this was ignored for cost allocation purposes as the impact would be immaterial.

Cost Allocation Model output sheet O1 for this scenario is provided as Attachment 1 to this response. The rate design results for this scenario are provided as Attachment 2. A summary of the Distribution and Total Bill impacts for the rate classes under this scenario is provided in Table 1.

The impacts on Seasonal customers migrating from existing 2014 Seasonal rates to the new 2015 R1 and R2 rate classes under this scenario are provided in Table 2 below for a range of customer consumptions.

The impacts in Table 1, as compared to the impacts in Table 2 of Exhibit G1, Tab 4, Schedule1, show that customers at typical consumption levels would, for most classes, see a total bill decrease. The exception being customers in the R1, UGe, GSd and UGd rate classes which would see a total bill increase.

Table 1
Distribution and Total Bill Impacts if All Seasonal Customers Migrate to R1 and R2
Rate Classes

Rate Class	Monthly Consumption (kWh)	Monthly Peak (kW)	Change in DX Bill (\$)	Change in DX Bill (%)	Change in Total Bill (\$)	Change in Total Bill (%)
UR	800		(\$4.45)	-11.9%	(\$6.81)	-4.8%
R1	800		(\$0.08)	-0.1%	(\$1.48)	-0.9%
R2	800		\$2.04	3.2%	\$2.50	1.5%
GSe	2,000		\$8.78	7.2%	\$10.76	2.9%
UGe	2,000		\$22.23	47.0%	\$19.07	6.3%
GSd	35,000	120	\$328.54	22.8%	\$326.44	5.3%
UGd	35,000	120	\$188.16	22.0%	\$191.10	3.5%
St Lgt	500		\$8.98	23.3%	\$8.91	9.1%
Sen Lgt	50		\$1.19	17.9%	\$1.19	9.3%
USL	500		\$1.96	3.9%	\$1.29	1.2%
DGen	2,000	20	\$59.53	36.2%	\$73.09	16.8%
ST	500,000	1,000	\$597.74	33.9%	\$1,236.60	1.9%

As shown in Table 2, the biggest impact of this scenario is on the Seasonal customers that would move to the new amalgamated residential rate classes. Low volume (50 kWh) Seasonal customers moving to the residential rate classes would see an increase in their total bill. The increase is particularly significant for those low volume customers moving to the R2 rate class (+111% on total bill). Seasonal customers consuming an average amount of 400 kWh per month would see a total bill decrease if moving to the R1 rate class, but would experience an increase if moving to the R2 rate class (+21% on total bill).

Table 2
Distribution and Total Bill Impacts for Seasonal Customers Moving to R1 and R2
Residential Rate Classes

Rate Class	Consumption Level	Monthly Consumption (kWh)	Change in Distribution Bill		Change in Total Bill	
			\$	%	\$	%
Seasonal to R1	Low	50	\$0.79	2.8%	\$0.72	2.0%
	Typical	400	(\$18.50)	-31.9%	(\$19.40)	-17.4%
	High	1,000	(\$51.55)	-47.0%	(\$53.91)	-22.4%
Seasonal to R2 (no RRRP)	Low	50	\$39.25	140.5%	\$39.97	111.4%
	Typical	400	\$23.04	39.7%	\$23.87	21.4%
	High	1,000	(\$4.73)	-4.3%	(\$3.74)	-1.5%



2015 Cost Allocation Model

EB-2013-0416

Sheet 01 Revenue to Cost Summary Worksheet -

Filed: 2014-07-04

EB-2013-0416

Exhibit I-7.2-1 Staff 94

Attachment 1

Page 1 of 1

Instructions:

Please see the first tab in this workbook for detailed instructions

Class Revenue, Cost Analysis, and Return on Rate Base

Rate Base		Total	1	2	3	4	5	6	7	8	9	10	11	12	13
Assets			UR	R1	R2	Seasonal	GSe	GSd	UGe	UGd	St Lgt	Sen Lgt	USL	Dgen	ST
crev	Distribution Revenue at Existing Rates	\$1,172,326,082	\$83,156,908	\$300,623,062	\$478,321,635	\$0	\$128,646,955	\$100,839,490	\$12,347,186	\$21,864,089	\$9,087,319	\$2,716,654	\$2,978,264	\$1,748,119	\$29,996,402
mi	Miscellaneous Revenue (mi)	\$47,833,750	\$4,188,345	\$13,181,375	\$17,626,700	\$0	\$4,331,949	\$2,418,720	\$607,508	\$393,331	\$308,467	\$3,638,827	\$89,467	\$85,037	\$964,025
Miscellaneous Revenue Input equals Output															
Total Revenue at Existing Rates		\$1,220,159,832	\$87,345,253	\$313,804,437	\$495,948,335	\$0	\$132,978,903	\$103,258,210	\$12,954,693	\$22,257,420	\$9,395,785	\$6,355,481	\$3,067,731	\$1,833,157	\$30,960,427
Factor required to recover deficiency (1 + D)		1.1661													
Distribution Revenue at Status Quo Rates		\$1,367,101,526	\$96,972,964	\$350,569,908	\$557,792,109	\$0	\$150,020,929	\$117,593,409	\$14,398,602	\$25,496,686	\$10,597,126	\$3,168,011	\$3,473,086	\$2,038,560	\$34,980,137
Miscellaneous Revenue (mi)		\$47,833,750	\$4,188,345	\$13,181,375	\$17,626,700	\$0	\$4,331,949	\$2,418,720	\$607,508	\$393,331	\$308,467	\$3,638,827	\$89,467	\$85,037	\$964,025
Total Revenue at Status Quo Rates		\$1,414,935,276	\$101,161,310	\$363,751,283	\$575,418,809	\$0	\$154,352,878	\$120,012,129	\$15,006,109	\$25,890,017	\$10,905,593	\$6,806,837	\$3,562,553	\$2,123,597	\$35,944,162
Expenses															
di	Distribution Costs (di)	\$299,743,275	\$12,713,671	\$62,077,886	\$144,868,168	\$0	\$31,133,048	\$24,715,356	\$3,534,849	\$4,990,214	\$3,333,571	\$1,704,865	\$670,303	\$85,173	\$9,916,173
cu	Customer Related Costs (cu)	\$115,547,644	\$15,529,117	\$39,182,612	\$35,797,005	\$0	\$12,411,353	\$3,595,355	\$2,377,581	\$846,865	\$774,671	\$472,501	\$492,329	\$625,039	\$3,443,216
ad	General and Administration (ad)	\$138,263,922	\$9,098,491	\$32,912,368	\$59,352,113	\$0	\$14,447,344	\$10,185,527	\$1,974,575	\$2,146,092	\$1,339,147	\$706,144	\$372,526	\$794,796	\$4,934,799
dep	Depreciation and Amortization (dep)	\$355,415,643	\$18,280,893	\$73,209,762	\$149,228,745	\$0	\$40,535,350	\$41,554,150	\$6,122,845	\$8,824,110	\$2,821,034	\$1,693,880	\$525,870	\$414,427	\$12,204,576
INPUT	PILs (INPUT)	\$52,512,828	\$2,419,586	\$10,478,463	\$22,638,290	\$0	\$5,950,655	\$6,238,640	\$840,965	\$1,297,236	\$449,988	\$215,133	\$86,664	\$36,240	\$1,860,969
INT	Interest	\$188,170,223	\$8,670,149	\$37,547,678	\$81,120,219	\$0	\$21,323,094	\$22,355,038	\$3,013,445	\$4,648,411	\$1,612,451	\$770,890	\$310,544	\$129,860	\$6,668,444
Total Expenses		\$1,149,653,535	\$66,711,908	\$255,408,770	\$493,004,539	\$0	\$125,800,844	\$108,644,066	\$17,864,260	\$22,752,928	\$10,330,861	\$5,563,413	\$2,458,236	\$2,085,535	\$39,028,177
Direct Allocation		\$10,749,789	\$0	\$0	\$0	\$0	\$374,744	\$2,439,673	\$93,973	\$738,683	\$0	\$1,095,658	\$0	\$3,245,326	\$2,761,732
NI	Allocated Net Income (NI)	\$254,531,952	\$11,727,839	\$50,789,565	\$109,728,773	\$0	\$28,843,080	\$30,238,957	\$4,076,192	\$6,287,760	\$2,181,112	\$1,042,759	\$420,063	\$175,657	\$9,020,195
Revenue Requirement (includes NI)		\$1,414,935,276	\$78,439,746	\$306,198,334	\$602,733,312	\$0	\$155,018,668	\$141,322,697	\$22,034,425	\$29,779,371	\$12,511,972	\$7,701,831	\$2,878,299	\$5,506,518	\$50,810,104
Revenue Requirement Input equals Output															
Rate Base Calculation															
Net Assets															
dp	Distribution Plant - Gross	\$9,609,222,443	\$447,751,529	\$1,942,249,970	\$4,190,461,745	\$0	\$1,060,598,996	\$1,104,189,782	\$148,144,000	\$229,509,444	\$81,466,308	\$38,801,731	\$15,641,845	\$6,851,426	\$343,555,665
gp	General Plant - Gross	\$891,331,231	\$40,381,178	\$175,745,174	\$380,010,862	\$0	\$98,148,585	\$103,886,967	\$13,774,097	\$21,607,233	\$7,520,159	\$17,586,401	\$1,456,766	\$648,568	\$30,565,242
accum dep	Accumulated Depreciation	(\$3,633,101,010)	(\$172,417,506)	(\$743,953,436)	(\$1,599,405,106)	\$0	(\$391,385,119)	(\$395,849,464)	(\$54,227,035)	(\$82,183,223)	(\$30,191,040)	(\$20,200,384)	(\$5,709,070)	(\$2,429,249)	(\$135,150,379)
co	Capital Contribution	(\$748,839,901)	(\$34,156,850)	(\$154,304,912)	(\$335,729,529)	\$0	(\$75,438,781)	(\$86,365,543)	(\$9,950,448)	(\$17,998,383)	(\$6,427,315)	(\$3,692,591)	(\$1,300,036)	(\$833,612)	(\$22,641,901)
Total Net Plant		\$6,118,612,764	\$281,558,352	\$1,219,736,797	\$2,635,337,972	\$0	\$691,923,680	\$725,861,743	\$97,740,614	\$150,935,071	\$52,368,114	\$32,495,157	\$10,089,504	\$4,237,132	\$216,328,627
Directly Allocated Net Fixed Assets		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
COP															
Cost of Power (COP)		\$2,816,196,330	\$236,076,255	\$621,338,926	\$612,542,491	\$0	\$258,905,624	\$283,584,558	\$71,256,480	\$125,942,453	\$14,569,217	\$2,571,038	\$2,837,785	\$2,489,360	\$584,082,144
OM&A Expenses		\$553,554,841	\$37,341,280	\$134,172,866	\$240,017,285	\$0	\$57,991,745	\$38,496,238	\$7,887,005	\$7,983,170	\$5,447,388	\$2,883,510	\$1,535,158	\$1,505,008	\$18,294,188
Directly Allocated Expenses		\$10,749,789	\$0	\$0	\$0	\$0	\$374,744	\$2,439,673	\$93,973	\$738,683	\$0	\$1,095,658	\$0	\$3,245,326	\$2,761,732
Subtotal		\$3,380,500,961	\$273,417,534	\$755,511,792	\$852,559,776	\$0	\$317,272,113	\$324,520,469	\$79,237,458	\$134,664,307	\$20,016,605	\$6,550,207	\$4,372,943	\$7,239,693	\$605,138,064
Working Capital		\$256,359,569	\$20,734,560	\$57,294,076	\$64,653,689	\$0	\$24,060,263	\$24,609,941	\$6,008,956	\$10,212,239	\$1,517,955	\$496,734	\$331,621	\$549,021	\$45,890,516
Total Rate Base		\$6,374,972,333	\$302,292,912	\$1,277,030,872	\$2,699,991,661	\$0	\$715,983,943	\$750,471,683	\$103,749,570	\$161,147,310	\$53,886,069	\$32,991,891	\$10,421,126	\$4,786,153	\$262,219,143
Rate Base Input Does Not Equal Output															
Equity Component of Rate Base		\$2,549,988,933	\$120,917,165	\$510,812,349	\$1,079,996,664	\$0	\$286,393,577	\$300,188,673	\$41,499,828	\$64,458,924	\$21,554,427	\$13,196,756	\$4,168,450	\$1,914,461	\$104,887,657
Net Income on Allocated Assets		\$254,531,952	\$34,449,402	\$108,342,513	\$82,414,270	\$0	\$28,177,290	\$8,928,390	(\$2,952,123)	\$2,398,406	\$574,732	\$147,766	\$1,104,317	(\$3,207,264)	(\$5,845,747)
Net Income on Direct Allocation Assets		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Net Income		\$254,531,952	\$34,449,402	\$108,342,513	\$82,414,270	\$0	\$28,177,290	\$8,928,390	(\$2,952,123)	\$2,398,406	\$574,732	\$147,766	\$1,104,317	(\$3,207,264)	(\$5,845,747)
RATIOS ANALYSIS															
REVENUE TO EXPENSES STATUS QUO%		100.00%	1.29	1.19	0.95	0.00%	1.00	0.85	0.68	0.87	0.87	0.88	1.24	0.39	0.71
EXISTING REVENUE MINUS ALLOCATED COSTS		(\$194,775,444)	\$8,905,506	\$7,606,102	(\$106,784,976)	\$0	(\$22,039,764)	(\$38,064,487)	(\$9,079,731)	(\$7,521,950)	(\$3,116,187)	(\$1,346,350)	\$189,432	(\$3,673,362)	(\$19,849,677)
Deficiency Input equals Output															
STATUS QUO REVENUE MINUS ALLOCATED COSTS		(\$0)	\$22,721,563	\$57,552,948	(\$27,314,503)	\$0	(\$665,790)	(\$21,310,567)	(\$7,028,315)	(\$3,889,354)	(\$1,606,380)	(\$894,993)	\$684,254	(\$3,382,921)	(\$14,865,942)
RETURN ON EQUITY COMPONENT OF RATE BASE		9.98%	28.49%	21.21%	7.63%	0.00%	9.84%	2.97%	-7.11%	3.72%	2.67%	1.12%	26.49%	-167.53%	-5.57%

Total Gross Plant including USoAs 1600s, 1700s and 2040	\$10,848,794,412
Total Accumulated Depreciation including USoAs 1600s, 1700s and 2040	(\$3,802,881,030)
Total Capital Contributions	(\$748,926,957)
Total Net Plant	\$6,296,986,424
Working Capital	\$256,359,569
Total Rate Base	\$6,553,345,993
Rate Base from I3 TB Data Sheet	\$6,553,345,993
	Rate Base Input Equals Output

2015 Rate Design (Seasonal Customers Migrated to R1 and R2 Rate Classes)

	A			B		C	D=A-C	E	F=A/B	G	H=B*G	I=H-A	J=I/D	K		L=J-K-C			
Rate Class	Number of Customers	GWh	kW	Revenue	Allocated Costs	Misc Revenue	Revenue from Rates	2013 R/C Ratio	R/C Ratio from 2015 CAM	Target 2015 R/C Ratio	Total Revenue to be Collected	Shift in Revenue	% Change in Revenue from Rates	Fixed Charge (\$/month)	Revenue from Fixed Charge	Revenue from Volumetric Charge	Volumetric Charge (¢/kWh)	Volumetric Charge (\$/kW)	Fixed Revenue %
UR	209,540	2,001	-	\$ 101,161,310	\$ 78,439,746	\$ 4,188,345	\$ 96,972,964	1.15	1.29	1.15	\$90,205,708	(\$10,955,601)	-11%	\$ 20.21	\$ 50,808,019	\$ 35,209,344	1.759		59%
R1	504,811	5,267	-	\$ 363,751,283	\$ 306,198,334	\$ 13,181,375	\$ 350,569,908	1.06	1.19	1.15	\$352,128,084	(\$11,623,198)	-3%	\$ 27.94	\$ 169,260,507	\$ 169,686,202	3.222		50%
R2	412,177	5,193	-	\$ 575,418,809	\$ 602,733,312	\$ 17,626,700	\$ 557,792,109	0.93	0.95	0.94	\$564,723,118	(\$10,695,691)	-2%	\$ 67.18	\$ 332,288,439	\$ 214,807,979	4.137		61%
GSe	93,508	2,195	-	\$ 154,352,878	\$ 155,018,668	\$ 4,331,949	\$ 150,020,929	1.05	1.00	1.00	\$154,352,878	\$0	0%	\$ 26.55	\$ 29,790,087	\$ 120,230,843	5.478		20%
GSd	6,113	2,404	8,484,670	\$ 120,012,129	\$ 141,322,697	\$ 2,418,720	\$ 117,593,409	0.93	0.85	0.94	\$132,410,458	\$12,398,329	11%	\$ 74.54	\$ 5,467,570	\$ 124,524,168	5.180	14.676	4%
UGe	17,768	604	-	\$ 15,006,109	\$ 22,034,425	\$ 607,508	\$ 14,398,602	1.20	0.68	0.94	\$20,644,867	\$5,638,758	39%	\$ 20.25	\$ 4,317,742	\$ 15,719,617	2.602		22%
UGd	1,901	1,068	3,058,267	\$ 25,890,017	\$ 29,779,371	\$ 393,331	\$ 25,496,686	1.20	0.87	0.94	\$27,901,393	\$2,011,376	8%	\$ 79.14	\$ 1,805,537	\$ 25,702,525	2.407	8.404	7%
St Lgt	4,883	124	-	\$ 10,905,593	\$ 12,511,972	\$ 308,467	\$ 10,597,126	0.93	0.87	0.94	\$11,722,929	\$817,337	8%	\$ 3.91	\$ 229,044	\$ 11,185,419	9.057		2%
Sen Lgt	30,009	22	-	\$ 6,806,837	\$ 7,701,831	\$ 3,638,827	\$ 3,168,011	0.93	0.88	0.91	\$6,985,836	\$178,999	6%	\$ 2.41	\$ 868,750	\$ 2,478,260	11.371		26%
USL	5,642	24	-	\$ 3,562,553	\$ 2,878,299	\$ 89,467	\$ 3,473,086	NA	1.24	1.20	\$3,453,959	(\$108,594)	-3%	\$ 38.94	\$ 2,635,970	\$ 728,521	3.028		78%
DGen	1,010	21	216,099	\$ 2,123,597	\$ 5,506,518	\$ 85,037	\$ 2,038,560	1.00	0.39	0.51	\$2,800,181	\$676,584	33%	\$ 164.74	\$ 1,996,611	\$ 718,533	3.405	3.325	74%
ST	810	16,560	30,696,855	\$ 35,944,162	\$ 50,810,104	\$ 964,025	\$ 34,980,137	1.01	0.71	0.94	\$47,605,864	\$11,661,703	33%	\$ 860.57	\$ 8,362,531	\$ 38,279,309	0.231	1.247	18%

Total 1,288,172 35,483 42,455,891 \$ 1,414,935,276 \$ 1,414,935,276 \$ 47,833,750 \$ 1,367,101,526

\$1,414,935,276

\$0

\$ 607,830,807 \$ 759,270,720

Total Revenue from Rates \$ 1,367,101,526
Misc Revenue \$ 47,833,750
Total Revenue Requirement \$ 1,414,935,276

Target R/C ratio: 1 (Phase in over 5 years)

Sen Lgt 0.91

DGen 0.51

2015 Revenue at 2014 rates \$ 1,172,326,082

% Change in Revenue from Rates 16.6144%

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #93

Issue 7.2 Is the proposed definition of “seasonal” customer class appropriate? Particularly, is residency an appropriate criterion in defining a class? Has this criterion been applied consistently?

Interrogatory

**Reference: G1/T2/S1, pg. 5-6
Technical Conference, April 30, 2013, pg. 26, lines 6-7; pg. 31, lines 2-6; pg. 35, lines 24-27 and pg. 64, lines 14-23**

a) Please explain more fully the basis for the choice of i) 9,600 kWh per year and ii) at least 600 kWh monthly for a minimum of 10 months as the criteria for treating currently defined Seasonal customers as Residential customers. In particular, for the second criterion why were 600 kWh and 10 months chosen?

b) Please provide a schedule that sets out the average use per customer for 2013 for each of the following customer classes:

- UR
- R1
- R2
- Seasonal

If possible please provide both the actual and weather normalized average use per customer.

c) What is the forecast total and average per customer 2015 total kWh usage for the roughly 11,000 Seasonal customers reclassified as Residential? If the 2015 forecast values are not available please indicate their current usage.

d) Please provide a schedule that indicates how many of the roughly 11,000 were reclassified to the R1 versus R2 classes and the 2015 forecast usage (or current usage if forecast is not available) in each case.

e) Based on the most recent 12 months of data available, please provide a frequency distribution for each of the UR, R1, R2 and Seasonal classes that indicates the number of customers that fall into each of the following usage categories:

- 0 to 100 kWh per month
- >100 to 250 kWh per month
- >250 to 500 kWh per month
- >500 to 800 kWh per month
- >800 to 1,000 kWh per month

- >1,000 to 1,500 kWh per month
 - >1,500 to 2,000 kWh per month
 - >2,000 kWh per month.
- f) Based on the most recent 12 months of data available, please provide a frequency distribution for each of the UR, R1, R2 and Seasonal classes that indicates the number of customers that fall into each of the following usage categories for the ten months with the highest usage:
- 0 to 250 kWh per month for those ten months
 - >250 to 450 kWh per month for those 10 month
 - >450 to 600 kWh per month for those 10 months
 - >600 to 1,000 kWh per month for those 10 months
 - >1,000 to 1,500 kWh per month for those 10 months
 - >1,500 to 2,000 kWh per month for those 10 months
 - >2,000 kWh per month for those 10 months

Response

- a) Hydro One has examined the year-round residential (R1, R2, UR) customer data by number of occupancy month, average monthly consumption and annual consumption. The majority (about 80%) of the year-round residential customers have annual consumption over 9,600 kWh, monthly consumption over 600 kWh and reside in the premise for at least 10 months. Based on this analysis, seasonal customers with these energy consumption characteristics should be classified as year-round customers.
- b) The 2013 data is not available. The average actual and weather corrected use per customer using 2012 data by rate class is provided below.

Class	Average actual kwh per customer	Average WC kwh per customer
UR	9,322	9,536
R1	10,900	11,145
R2	14,865	15,202
Seasonal	4,334	4,432

c) The forecast of total annual energy consumption in 2015 for these 11,000 seasonal customers is 147 GWh and 13,000 kWh per customer on average.

d) The requested information is provided below.

Customers Reclassified	# of customers	2015 consumption in GWh
Seasonal to R1	4,734	55
Seasonal to R2	6,265	92

e) The requested information is provided below using 2012 data.

Average kWh per month	R1	R2	UR	Seasonal
0 to 100 kWh	1,890	2,412	698	41,706
>100 to 250 kWh	10,777	6,227	5,170	44,332
>250 to 500 kWh	61,256	30,335	31,644	25,508
>500 to 800 kWh	107,151	72,377	50,920	13,651
>800 to 1,000 kWh	56,867	51,374	23,848	5,377
>1,000 to 1,500 kWh	76,670	89,876	25,762	6,655
>1,500 to 2,000 kWh	28,721	42,904	6,931	2,625
>2,000	17,017	40,699	2,949	2,563

- 1 f) The requested information is provided below using 2012 data with 10 months of
 2 highest usage.
 3

Average kWh per month	R1	R2	UR	Seasonal
0 to 100 kWh	1,612	2,152	615	33,852
>100 to 250 kWh	9,090	5,426	4,379	44,036
>250 to 500 kWh	54,472	26,379	28,176	27,641
>500 to 800 kWh	101,720	66,193	49,178	14,698
>800 to 1,000 kWh	57,292	49,304	24,531	5,999
>1,000 to 1,500 kWh	80,648	90,507	28,594	8,521
>1,500 to 2,000 kWh	32,583	46,965	8,294	3,654
>2,000	22,932	49,278	4,155	4,016

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #94

Issue 7.2 Is the proposed definition of “seasonal” customer class appropriate? Particularly, is residency an appropriate criterion in defining a class? Has this criterion been applied consistently?

Interrogatory

**Reference: G1/T2/S1, pg. 5-6
G1/T3/S1, pg. 15 (line 11)
Technical Conference, April 30, 2013, pg. 31, lines 11-12**

- a) Using the actual 2012 smart meter data, please provide graphs that for each of the UR, R1, R2 and Seasonal classes (as currently defined) plots the average monthly use for each customer versus the customer’s “NCP load factor” as defined by the ratio of the customer’s average hourly use to the customer’s average 4NCP value (i.e. the customer’s 4 NCP value divided by 4).
- b) Using the actual 2012 smart meter data, please provide graphs that for the UR, R1, R2 and Seasonal classes (as currently defined) plots the average monthly use for each customer versus the customer’s “CP load factor” as defined by the ratio of the customer’s average hourly use to the customer’s average 12CP value (i.e. the customer’s 12CP value divided by 12).
- c) If the data is available, please re-do parts (a) and (b) using 2012 weather normalized data for each customer.
- d) Using the 2012 actual smart meter data, please provide schedules that set out for each of the UR, R1, R2 and Seasonal classes (as currently defined) the i) total kWh, ii) 4 NCP value and iii) 12 CP value for each of the following categories of the following usage categories
 - 0 to 100 kWh per month
 - >100 to 250 kWh per month
 - >250 to 500 kWh per month
 - >500 to 800 kWh per month
 - >800 to 1,000 kWh per month
 - >1,000 to 1,500 kWh per month
 - >1,500 to 2,000 kWh per month
 - >2,000 kWh per month.
- e) Using the 2012 actual smart meter data, please provide schedules that for each of the UR, R1, R2 and Seasonal classes (as currently defined) the i) total kWh, ii) 4

1 NCP value and iii) 12 CP value for each of the following usage categories for the
2 ten months with the highest usage:

- 3 • 0 to 250 kWh per month for those ten months
- 4 • >250 to 450 kWh per month for those 10 month
- 5 • >450 to 600 kWh per month for those 10 months
- 6 • >600 to 1,000 kWh per month for those 10 months
- 7 • >1,000 to 1,500 kWh per month for those 10 months
- 8 • >1,500 to 2,000 kWh per month for those 10 months
- 9 • >2,000 kWh per month for those 10 months

10 f) If the data is available, please redo parts (d) and (e) using 2012 weather
11 normalized data for each customer.

12
13 **Response**

- 14
- 15 a) Hydro One spoke with VECC and it was agreed that the response to (d) and (e) would
 - 16 meet their needs in this question.
 - 17 b) Hydro One spoke with VECC and it was agreed that the response to (d) and (e) would
 - 18 meet their needs in this question.
 - 19 c) Hydro One spoke with VECC and it was agreed that the response to (d) and (e) would
 - 20 meet their needs in this question.
- 21

d) The requested information using 2012 actual hourly smart meter data is provided below:

Rate class	usage per month	Customer Count	Total KWh	4NCP	12CP
R1	0 to 100 kwh per month	2,423	1,645,251	1,023	3,223
R1	>100 to 250 kWh per month	9,942	22,602,372	16,737	47,965
R1	>250 to 500 kWh per month	52,649	248,138,553	202,109	573,005
R1	>500 to 800 kWh per month	92,580	721,181,845	593,804	1,668,926
R1	>800 to 1,000 kWh per month	49,283	529,196,378	431,148	1,191,986
R1	>1,000 to 1,500 kWh per month	66,613	966,850,107	772,900	2,087,284
R1	>1,500 to 2,000 kWh per month	24,763	507,979,220	399,621	1,037,494
R1	>2,000 kWh per month	13,773	427,512,048	323,619	837,622
R2	0 to 100 kwh per month	2,705	1,715,610	1,189	3,181
R2	>100 to 250 kWh per month	5,518	12,065,270	8,502	23,293
R2	>250 to 500 kWh per month	25,527	121,511,651	92,572	259,846
R2	>500 to 800 kWh per month	60,421	477,285,236	370,556	1,051,756
R2	>800 to 1,000 kWh per month	42,236	455,095,738	355,482	993,247
R2	>1,000 to 1,500 kWh per month	72,360	1,060,979,441	845,766	2,249,157
R2	>1,500 to 2,000 kWh per month	33,537	689,893,017	574,322	1,412,528
R2	>2,000 kWh per month	29,577	1,147,445,177	908,105	2,271,905
UR	0 to 100 kwh per month	678	482,343	290	939
UR	>100 to 250 kWh per month	3,959	9,160,774	7,089	19,911
UR	>250 to 500 kWh per month	23,179	109,299,407	108,322	260,453
UR	>500 to 800 kWh per month	37,376	289,439,397	292,523	689,926
UR	>800 to 1,000 kWh per month	17,544	187,801,454	181,110	434,076
UR	>1,000 to 1,500 kWh per month	18,628	267,050,539	234,331	588,409
UR	>1,500 to 2,000 kWh per month	4,885	99,377,317	70,850	203,576
UR	>2,000 kWh per month	2,074	63,207,201	36,527	120,145
Seasonal	0 to 100 kwh per month	25,225	17,912,850	1,754	35,902
Seasonal	>100 to 250 kWh per month	29,581	57,581,057	14,954	105,879
Seasonal	>250 to 500 kWh per month	17,419	74,521,725	48,896	139,627
Seasonal	>500 to 800 kWh per month	9,828	74,927,860	71,813	145,099
Seasonal	>800 to 1,000 kWh per month	4,026	43,119,926	45,620	84,281
Seasonal	>1,000 to 1,500 kWh per month	5,003	72,695,386	78,677	139,450
Seasonal	>1,500 to 2,000 kWh per month	1,952	40,136,606	43,434	76,245
Seasonal	>2,000 kWh per month	1,817	65,321,906	64,203	120,056

e) The requested information using 2012 actual hourly smart meter data is provided below:

Rate class	usage per month (ten months with the highest usage)	Customer Count	Total KWh	4NCP	12CP
R1	0 to 250 kWh per month	10,462	18,802,307	13,701	39,422
R1	>250 to 450 kWh per month	33,824	138,857,944	112,033	317,747
R1	>450 to 600 kWh per month	40,944	244,781,147	201,711	571,055
R1	>600 to 1,000 kWh per month	109,110	975,279,705	799,334	2,237,568
R1	>1,000 to 1,500 kWh per month	70,315	959,625,815	769,306	2,091,589
R1	>1,500 to 2,000 kWh per month	28,383	541,079,970	426,425	1,115,953
R1	>2,000 kWh per month	18,988	546,678,885	418,451	1,074,170
R2	0 to 250 kWh per month	7,241	10,990,735	7,702	20,948
R2	>250 to 450 kWh per month	15,825	65,091,257	49,099	136,931
R2	>450 to 600 kWh per month	22,339	134,380,009	102,641	293,582
R2	>600 to 1,000 kWh per month	80,070	730,493,865	565,925	1,607,559
R2	>1,000 to 1,500 kWh per month	73,256	1,014,083,147	800,577	2,164,694
R2	>1,500 to 2,000 kWh per month	36,994	712,546,185	586,733	1,465,557
R2	>2,000 kWh per month	36,156	1,298,405,943	1,043,817	2,575,642
UR	0 to 250 kWh per month	3,935	7,621,715	5,700	16,294
UR	>250 to 450 kWh per month	14,942	61,757,582	59,981	146,204
UR	>450 to 600 kWh per month	17,739	106,130,918	108,645	255,904
UR	>600 to 1,000 kWh per month	42,071	373,776,516	371,859	880,555
UR	>1,000 to 1,500 kWh per month	20,756	280,763,380	252,955	625,230
UR	>1,500 to 2,000 kWh per month	5,945	112,850,185	84,173	234,830
UR	>2,000 kWh per month	2,935	82,918,137	47,727	158,419
Seasonal	0 to 250 kWh per month	50,195	62,777,790	12,494	118,974
Seasonal	>250 to 450 kWh per month	16,504	57,859,803	30,613	106,983
Seasonal	>450 to 600 kWh per month	6,931	38,210,348	30,401	73,234
Seasonal	>600 to 1,000 kWh per month	10,498	87,301,358	85,272	168,994
Seasonal	>1,000 to 1,500 kWh per month	5,846	75,928,034	81,115	146,310
Seasonal	>1,500 to 2,000 kWh per month	2,441	44,839,273	49,344	85,475
Seasonal	>2,000 kWh per month	2,436	79,300,709	80,112	146,570

f) Hydro One spoke with VECC and it was agreed that the response to (d) and (e) would meet their needs in this question.

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #95

Issue 7.2 Is the proposed definition of “seasonal” customer class appropriate? Particularly, is residency an appropriate criterion in defining a class? Has this criterion been applied consistently?

Interrogatory

**Reference: G1/T2/S1, pg. 5-6
G2/T2/S1, pg. 2
Technical Conference, April 30, 2014, pg. 35, lines 20-28**

- a) Please provide the eligibility requirements for Rural or Remote Electricity Rate Protection (RRRP) applicable to Hydro One Networks’ customers per O. Reg. 442/01.
- b) Please confirm that it is Hydro One Networks’ proposal to provide RRRP to all R2 customers, including those customers that were formerly Seasonal customers.
- c) Please explain how the definition of the year round residential customer (per G2/2/1) as used for purposes of the R2 class conforms to the definition of an eligible “residential premises” as set out in O. Reg. 442/01.
- d) Please explain how the inclusion of Seasonal customers as being eligible for RRRP conforms to the definition of an eligible “residential premises” as set out in O. Reg. 442/01.
- e) Please explain how the amount of RRRP each R2 customer receives is determined (i.e. is it based on divvying up a defined amount of dollars amongst the eligible customers?). Does changing the number of eligible customers change the amount of RRRP each customer receives monthly?

1 **Response**

- 2
- 3 a) The key eligibility requirements for Rural or Remote Electricity Rate Protection
- 4 (RRRP) applicable to Hydro One Networks' customers per O. Reg. 442/01 are
- 5 provided below:

6 ***Eligibility for rate protection***

7 *2. In addition to the persons described in*

8 *subsection 79 (2) of the Act, the following classes of*

9 *consumers in Ontario are eligible for rate protection:*

10 *2. Consumers who occupy residential premises*

11 *in a rural area and who, if section 108 of the Power*

12 *Corporation Act had not been repealed by section 28 of*

13 *Schedule E to the Energy Competition Act, 1998 and*

14 *electricity had continued to be distributed by Ontario*

15 *Hydro, would have been entitled, pursuant to section 108 of*

16 *the Power Corporation Act as it read on March 31, 1999,*

17 *to pay Ontario Hydro a discounted rate for the electricity*

18 *they consumed.*

19

20 Where,

21 *"residential premises" means a dwelling occupied as a*

22 *residence continuously for at least eight months of the year*

23 *and, where the residential premises is located on a farm,*

24 *includes other farm premises associated with the*

25 *residential electricity meter;*

26 *"rural area" means those parts of Ontario connected to*

27 *the IESO-controlled grid that, before March 31, 1999,*

28 *received electricity from Ontario Hydro and, at the time*

29 *subsection 26 (1) of the Electricity Act, 1998 comes into*

30 *force, are receiving electricity from Hydro One Networks*

31 *Inc.;*

32

- 33 b) Yes, that is Hydro One's proposal with respect to the portion of the 11,000 Seasonal
- 34 customers that would move to the R2 rate class.
- 35
- 36 c) The definition of the R2 class customers conform to the definition of an eligible
- 37 residential premise in that those customers reside in a rural area in a dwelling
- 38 occupied as a residence on a year-round basis.
- 39
- 40 d) Hydro One proposes that the high consumption Seasonal customers to be moved to
- 41 the R2 class be considered eligible for RRRP on the basis that their consumption is
- 42 equivalent to the consumption of a residential customer that occupies their residence
- 43 for at least eight months of the year.
- 44
- 45 e) Please see the response at Exhibit I, Tab 7.7, Schedule 6 VECC 110.

Balsam Lake Coalition (BLC) INTERROGATORY #7

**Issue 7.2 Is the proposed definition of "seasonal" customer class appropriate?
Particularly, is residency an appropriate criterion in defining a class?
Has this criterion been applied consistently?**

Interrogatory

Please provide the number of year-round residential customers that consume on average, less than 500 KWH per month, in each of the UR, R1 and R2 density zones. Why are these low-volume, year-round residential customers not charged a premium volumetric charge similar to Seasonal customers?

Response

The information on year-round residential customers in the UR, R1 and R2 rate classes that consume on average less than 500 kWh per month is included as part of the response at Exhibit I, Tab 7.8, Schedule 8 FOCA 1.

The total cost to be recovered from each rate class is recovered via fixed and volumetric components. The size of the fixed charge will determine the rate for the volumetric charge. All customers in a given rate class pay the same fixed and volumetric charges which fully recover the cost of serving all customers within the class. No classes, including Seasonal, pay a "premium" volumetric charge.

Balsam Lake Coalition (BLC) INTERROGATORY #8

**Issue 7.2 Is the proposed definition of "seasonal" customer class appropriate?
Particularly, is residency an appropriate criterion in defining a class?
Has this criterion been applied consistently?**

Interrogatory

How does Hydro One justify a proposed (2015) Seasonal fixed monthly Distribution charge of \$28.45 +a monthly volumetric charge of 9.05 cents/KWH, whereas a similar electric utility such as Veridian Connections has a (2014) Seasonal fixed monthly rate of \$29.15 +a monthly volumetric of 3.4 cents/KWH?

The monthly Distribution cost for a Hydro One Seasonal customer (@ 500 KWH/mo.) is \$73.70 whereas the monthly cost for a Veridian Seasonal customer (@500 KWH/mo.) is \$46.15. The difference of \$27.55 for the Hydro One customer amounts to a 59.7% increased monthly amount for the same amount of power.

Response

Each utility recovers the costs associated with its specific rate classes as determined by their cost allocation model results and rate design approach. Hydro One cannot comment on the basis for Veridian Connection's charges to its Seasonal customer class. The following are among the factors that will contribute to differences between utilities' costs, by rate class:

- Total revenue requirement
- Cost allocation model inputs
- Load forecast and load profile assumptions by rate class
- Revenue-to-cost ratios by rate class
- Fixed / variable revenue split

Balsam Lake Coalition (BLC) INTERROGATORY #9

**Issue 7.2 Is the proposed definition of "seasonal" customer class appropriate?
Particularly, is residency an appropriate criterion in defining a class?
Has this criterion been applied consistently?**

Interrogatory

Please provide the number of year-round residential customers in each UR, R1 or R2 density zone that own a second home elsewhere, other than their principle residence. If Hydro One's response is that it does not have said information because it is not required- why does Hydro One's criteria, applicable to Seasonal customers, require information from Seasonal customers about the ownership of a second home? Why has Hydro One not applied this residency criterion consistently to all residential customers?

Response

Hydro One does not have information on additional properties that may be owned by its customers.

Hydro One's residency criterion is applicable to all residential rate classes. The purpose of the residency criterion, as described in its rate schedules and discussed in Exhibit I, Tab 7.02, Schedule 10 CCC 34 is to establish if the property being served should be classified as a year-round residence or a seasonal residence. Seasonal customers have consistently been recognized as a separate class by Hydro One, and prior to that Ontario Hydro, since as far back as the 1960's.

Federation of Ontario Cottagers' Association (FOCA) INTERROGATORY #1

**Issue 7.2 Is the proposed definition of “seasonal” customer class appropriate?
Particularly, is residency an appropriate criterion in defining a class?
Has this criterion been applied consistently?**

Interrogatory

Has Hydro One considered that the seasonal class definition is far more deeply rooted than your proposed definition that would remove 11,000 high use seasonal customers to the R1 & R2 classes? There are definitions as to who can vote in provincial and federal elections.

Response

Hydro One's definition of the Seasonal class is strictly for the purpose of allocating distribution service costs and setting rates for its customers. It is not tied to the definition of “seasonal” used for any other purposes, such as voting in elections.

1 **Federation of Ontario Cottagers' Association (FOCA) INTERROGATORY #2**

2
3 **Issue 7.2 Is the proposed definition of “seasonal” customer class appropriate?**
4 **Particularly, is residency an appropriate criterion in defining a class?**
5 **Has this criterion been applied consistently?**

6
7 **Interrogatory**

8
9 Is H1 proposing that your definition would attempt to over ride very strong and long
10 standing legislation that prevents the 11,000 reclassified customers from acquiring voting
11 rights at seasonal residences?

12
13 **Response**

14
15 Please see response to Exhibit I, Tab 7.2, Schedule 7 FOCA 1.

Consumers Council of Canada (CCC) INTERROGATORY #29

Issue 7.2 **Is the proposed definition of “seasonal” customer class appropriate? Particularly, is residency an appropriate criterion in defining a class? Has this criterion been applied consistently?**

Interrogatory

Reference: **Ex. G1/T2/S1/p. 5**

HON has concluded that its proposal to move approximately 11,000 seasonal customers to the medium density (R1) and low density residential (R2) rate classes was preferred by the focus group participants. Did HON seek to expand its customer research on this topic beyond the focus group process? If not, why was no further customer engagement undertaken?

Response

In addition to the 7 focus group sessions involving 38 participants from across various regions in Ontario, Hydro One also consulted with stakeholders about Seasonal rates on three occasions as part of the broader stakeholdering for the current application. As described in the meeting notes for the June 26, 2013 stakeholder session (Exhibit A, Tab 20, Schedule 1, Attachment C) Hydro One also leveraged information gathered from Seasonal customers that participated in its semi-annual Corporate Customer Satisfaction Survey, as well as information gathered from a review of escalated complaints handled by the Customer Call Centre.

Consumers Council of Canada (CCC) INTERROGATORY #30

Issue 7.2 **Is the proposed definition of “seasonal” customer class appropriate? Particularly, is residency an appropriate criterion in defining a class? Has this criterion been applied consistently?**

Interrogatory

Reference: **Ex. G1/T2/S1/p. 5**

Please provide a detailed explanation as to how Rural Rate Protection is funded allocated, and implemented. If Seasonal customers were moved to the other residential classes would they qualify for RRP?

Response

Details of the Rural or Remote Rate Protection (RRRP) are provided in Ontario Regulation 442/01 which fixes the rural rate protection amount available to Hydro One at \$127M. This amount is used to fund the current \$28.50 monthly RRRP credit that is applied to reduce the fixed charge of all customers in the low density (R2) residential rate class. Customers in the high density (UR) and medium density (R1) residential classes do not qualify for RRRP. This credit is included as part of the Delivery line on customers' electricity bill.

If all Seasonal customers were to move to the other residential classes they would not qualify for RRRP based on not meeting the eight month occupancy requirement per O.Reg 442/01.

Consumers Council of Canada (CCC) INTERROGATORY #31

Issue 7.2 **Is the proposed definition of “seasonal” customer class appropriate? Particularly, is residency an appropriate criterion in defining a class? Has this criterion been applied consistently?**

Interrogatory

Reference: **Ex. G1/T2/S1/p. 5**

Is HON aware of any other examples of “seasonal” rate classes similar to the current HON Seasonal class in place in other jurisdictions? If so, please provide the details as to what qualifications exist for those classes and how the rates are derived relative to the other residential rates in that area.

Response

In Ontario, Veridian Connections, Algoma Power and Cornwall Electric are the other utilities Hydro One is aware of that also identify seasonal customers. The customer qualifications for these utilities are similar to Hydro One’s residential seasonal class. Similar to Hydro One, Veridian Connections and Algoma Power develop specific seasonal fixed and variable rates based on the costs allocated to that class. Cornwall Electric does not appear to separately allocate costs to the seasonal class.

Hydro One is also aware of some utilities in other jurisdictions outside Ontario that recognize seasonal customers (e.g. Maritime Electric Company Limited, Nova Scotia, New Brunswick, Manitoba Hydro, Wisconsin Public Services). The annual costs for seasonal customers for these utilities are the same as the year-round classes, but the qualifications and billing practices are different between year-round and seasonal residential classes. For example: Maritime Electric’s terms and conditions of service vary for seasonal customers depending on the number of months the services are used; Manitoba Hydro’s seasonal criteria include consumption/demand thresholds; bills are typically rendered less frequently, and only during the ‘on-season’ months.

Consumers Council of Canada (CCC) INTERROGATORY #32

Issue 7.2 **Is the proposed definition of “seasonal” customer class appropriate? Particularly, is residency an appropriate criterion in defining a class? Has this criterion been applied consistently?**

Interrogatory

Reference: **Ex. G1/T2/S1/p. 5**

If the Board were to order HON to eliminate its Seasonal rate classification as it now stands, what would HON consider to be the most appropriate alternative rate proposal? How would HON propose that Seasonal customers be treated?

Response

If the Board were to order HON to eliminate its Seasonal rate classification, Hydro One would propose that Seasonal customers be amalgamated within the appropriate density-based year round residential rate classes, as per the scenario described in the response to the interrogatory at Exhibit I, Tab 7.2, Schedule 1 Staff 94.

Consumers Council of Canada (CCC) INTERROGATORY #33

Issue 7.2 Is the proposed definition of “seasonal” customer class appropriate? Particularly, is residency an appropriate criterion in defining a class? Has this criterion been applied consistently?

Interrogatory

Reference: Ex. G1/T2/S1/p. 5

Assuming the Seasonal customers were moved, on the basis of density to the other residential rate classes, what would be the annual bill impacts of customers in each of those classes consuming 50 KWhs, 100 kWhs, 500 kWhs, 800 kWhs and 2000 kWhs per month under existing rates and the proposed 2015 rates? Assume Seasonal customers would be billed on the same basis as all other residential consumers.

Response

The requested information is provided below.

Rate Class	Monthly Consumption (kWh)	Change in Annual DX Bill (\$)	Change in Annual DX Bill (%)	Change in Annual Total Bill (\$)	Change in Annual Total Bill (%)
Seasonal to R1	50	\$9.43	2.8%	\$8.70	2.0%
	100	(\$23.63)	-6.1%	(\$25.81)	-4.6%
	500	(\$288.06)	-36.0%	(\$301.85)	-18.9%
	800	(\$486.38)	-43.8%	(\$508.89)	-21.4%
	2,000	(\$1,279.68)	-54.5%	(\$1,337.02)	-24.4%
Seasonal to R2 (no RRRP)	50	\$470.95	140.5%	\$479.60	111.4%
	100	\$443.17	114.6%	\$451.99	80.7%
	500	\$220.98	27.6%	\$231.18	14.5%
	800	\$54.34	4.9%	\$65.57	2.8%
	2,000	(\$612.24)	-26.1%	(\$596.87)	-10.9%

Consumers Council of Canada (CCC) INTERROGATORY #34

**Issue 7.2 Is the proposed definition of “seasonal” customer class appropriate?
Particularly, is residency an appropriate criterion in defining a class?
Has this criterion been applied consistently?**

Interrogatory

Please explain, in detail, the administrative process HON undertakes in designating a customer “Seasonal”.

Response

Seasonal Residential includes any residential service not meeting the Residential Year-round criteria. Per Section 3.A. of Hydro One’s Conditions of Service, a customer is designated as Seasonal when it does not meet the requirements of year-round customer. It includes dwellings such as cottages, chalets and camps. To qualify as Residential Year-round, a customer must complete, sign and return the 'Declaration to Apply for Year Round Rate Status' form and meet all of the following criteria:

- Must live in this residence for at least four days of the week for eight months of the year and must not reside anywhere else for more than three days a week during eight months of the year
- The address of this residence must appear on the BP's property tax bill, driver's license or credit card invoices
- Customers who are eligible to vote in provincial or federal elections must be enumerated for voting purposes at the address of this residence
- They must declare that for as long as they have year-round residential rate status for this residence they will not designate another property that they own as a year-round residence for the purpose of Hydro One rate classification

Consumers Council of Canada (CCC) INTERROGATORY #35

Issue 7.2 **Is the proposed definition of “seasonal” customer class appropriate? Particularly, is residency an appropriate criterion in defining a class? Has this criterion been applied consistently?**

Interrogatory

Reference: **Ex. G1/T2/S2/p. 5**

In the Seasonal Focus Group Report HON proposed 3 alternatives to the status quo. Did HON consider other alternatives? If so, please describe those alternatives. Why were only three alternatives presented?

Response

No other alternatives were considered, although in response to feedback from the technical conference on April 30, 2014 Hydro One has evaluated a scenario where the Seasonal class is eliminated and all seasonal customers are amalgamated to the year-round residential rate classes as detailed in the response to interrogatory at Exhibit I, Tab 7.2, Schedule 1 Staff 94. The three alternatives presented at the focus groups provided a broad range of the approaches that could be taken to modify the current Seasonal rate class, and gave participants an informed basis for suggesting alternative approaches.

Energy Probe Research Foundation (EP) INTERROGATORY #53

Issue 7.2 **Is the proposed definition of “seasonal” customer class appropriate? Particularly, is residency an appropriate criterion in defining a class? Has this criterion been applied consistently?**

Interrogatory

Reference: **Exhibit G, Tab 2, Schedule 2, Slide 7**

Preamble:

According to Exhibit G, Hydro One currently has a 40/60 split in its distribution charge (fixed/variable) for residential customers, including seasonal customers.

Will this ratio be altered over the five-year plan considering the decoupling proposal put forth by the Board?

Response

Hydro One is proposing a change to the fixed/variable split of its 2015 distribution charges across all rate classes from 40/60 to 42/58. This split is proposed to be maintained over the 5 year application period.

Hydro One will follow the Board’s direction on any changes required to rate design as a result of the revenue decoupling proposal. Hydro One’s application for setting 2015 to 2019 rates includes a number of adjustment mechanisms, as described in Exhibit A, Tab 4, Schedule 1, which would accommodate industry changes such as the rate design changes proposed by the Board. A change in the design of rates to an all fixed charge approach could be accommodated as part of the annual process for setting rates to reflect any adjustments for the subsequent year.

Ontario Energy Board (Board Staff) INTERROGATORY #95

Issue 7.3 Is the reclassification of customers to reflect findings of the company's review of existing customer rate classifications appropriate?

Interrogatory

Ref: Exhibit G1/Tab2/Schedule 1

On page 2 of this exhibit, Hydro one states that: "In a few situations, a (-10%) deadband was applied to the density zone definition where a majority of customers within a proposed density zone boundary would be negatively impacted as a result of moving to a lower-density rate class."

Please explain this statement in more detail. Why did Hydro One feel this was necessary? How Hydro One apply this methodology? Was it solely bill size (or change) considerations? How was this deadband determined and justified?

Response

The -10% deadband was applied in situations where the majority of customers in a proposed density zone boundary were currently classified in a particular rate class, but strict application of the density zone criteria would result in those customers being moved to a lower density rate class with higher rates. As an example, the town of Owen Sound has about 11,000 customers of which 8,600 are residential customers currently classified as high density (UR). However, the proposed density zone boundary results in only 57 customers per circuit km of line, which is less than the 60 customers per circuit km used to define the UR rate class. A strict application of the definition would result in those 8,600 customers having to be reclassified to R1, which would have significant rate impacts to a large number of customers.

In addition, aligning density zone boundaries to major roads or physical features to allow for growth in the community and facilitate customer communications tends to increase the km of line and reduce the customers/km value for a particular density zone, the impact of which is offset by the -10% deadband.

The -10% deadband is a nominal amount that helps to mitigate customer bill impacts resulting from implementation of the rate class review and provides rate stability for customers.

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #96

Issue 7.3 Is the reclassification of customers to reflect findings of the company's review of existing customer rate classifications appropriate?

Interrogatory

Reference: G1/T2/S1, pg. 1-2

- a) How current was the GIS data used in the analysis (i.e., to what date had the GIS system data been updated to?).
- b) Please explain more fully step 1 of the methodology and, in doing so, also explain what is meant by "core clusters of contiguous customers".
- c) Please confirm whether it was after Step 1, Step 2 or Step 4 that the density classification for each defined zone was established, subject to the 10% deadband rule.
- d) Per page 2 (lines 15-18), for how many "zones" and "customers" did the density zone value fall below the 10% deadband? In responding please indicate the number of customers that would be transferred from: i) UR to R1, ii) R1 to R2, iii) UR to R2, iv) UGe to GSe and v) UGd to GSd if the 10% criterion was strictly applied.
- e) In these circumstances why was it not possible to redefine the boundaries (per Step 2) in order to stay within the 10% deadband?

Response

- a) The GIS data used in the analysis was as of March 2013.
- b) Step 1 consisted of reviewing a GIS map of the whole province that included the location of all Hydro One distribution lines and the location of all its customers based on either their meter location or upstream transformer location, if a smart meter location was not available for a particular customer. This GIS map was then used to identify the location of a concentrated group of customers located in close proximity to each other (i.e. a core cluster of contiguous customers or local community) that may potentially meet the required density zone definition.

c) Checks on the number of customers and per km density for potential boundaries was done at various stages but the final check against the approved density zone definition was done only after Step 4.

d) There are 2 density zone boundaries that fall below the 10% deadband. The number of customers that would potentially have to be transferred between rate classes if the 10% criteria was strictly applied is shown below.

Rate Class Change	# of Customers
UR to R1	9,892
R1 to R2	0
UR to R2	0
UGe to GSe	515
UGd to GSd	60

e) In one case this would have been possible, but it would have resulted in the density zone boundary splitting a contiguous community. In the second case this would not have been possible, and because this is a high growth community where over 93% of the more than 4,000 customers in the community are currently classified as urban, Hydro One gave priority to providing rate stability and mitigating the impacts to these customers.

Balsam Lake Coalition (BLC) INTERROGATORY #10

Issue 7.3 Is the reclassification of customers to reflect findings of the company's review of existing customer rate classification appropriate?

Interrogatory

How does Hydro One justify its proposed reclassification of 11,000 Seasonal class customers into the R1 & R2 residential classes because of inequitable rates, while ignoring the inequitable rate treatment applied to the remainder Seasonal customers?

Response

Hydro One's proposal to reclassify about 11,000 Seasonal customers into the R1 and R2 rates classes is intended to balance the feedback received during its extensive consultations on this issue as described in the pre-filed evidence at Exhibit A, Tab 20, Schedule 1 and Exhibit G1, Tab 2, Schedule 2. Hydro One believes its proposal results in all Seasonal customers paying a fairer share of the costs to serve them.

The customers remaining in the Seasonal class continue to be fairly allocated the cost of serving them as determined by the cost allocation model. As with all rate classes, there is a range of consumption levels within the class that results in some customers paying a bigger share of the rate class costs than other customers, but this is a natural outcome of grouping customers within a rate class and is not considered to be inequitable rate treatment.

School Energy Coalition (SEC) INTERROGATORY #56

Issue 7.3 Is the reclassification of customers to reflect findings of the company's review of existing customer rate classifications appropriate?

Interrogatory

Reference: Exhibit G1/Tab 2/Schedule 1/p.2 and Tech.Tr.3:54-55

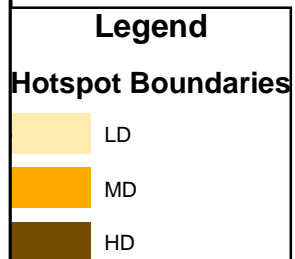
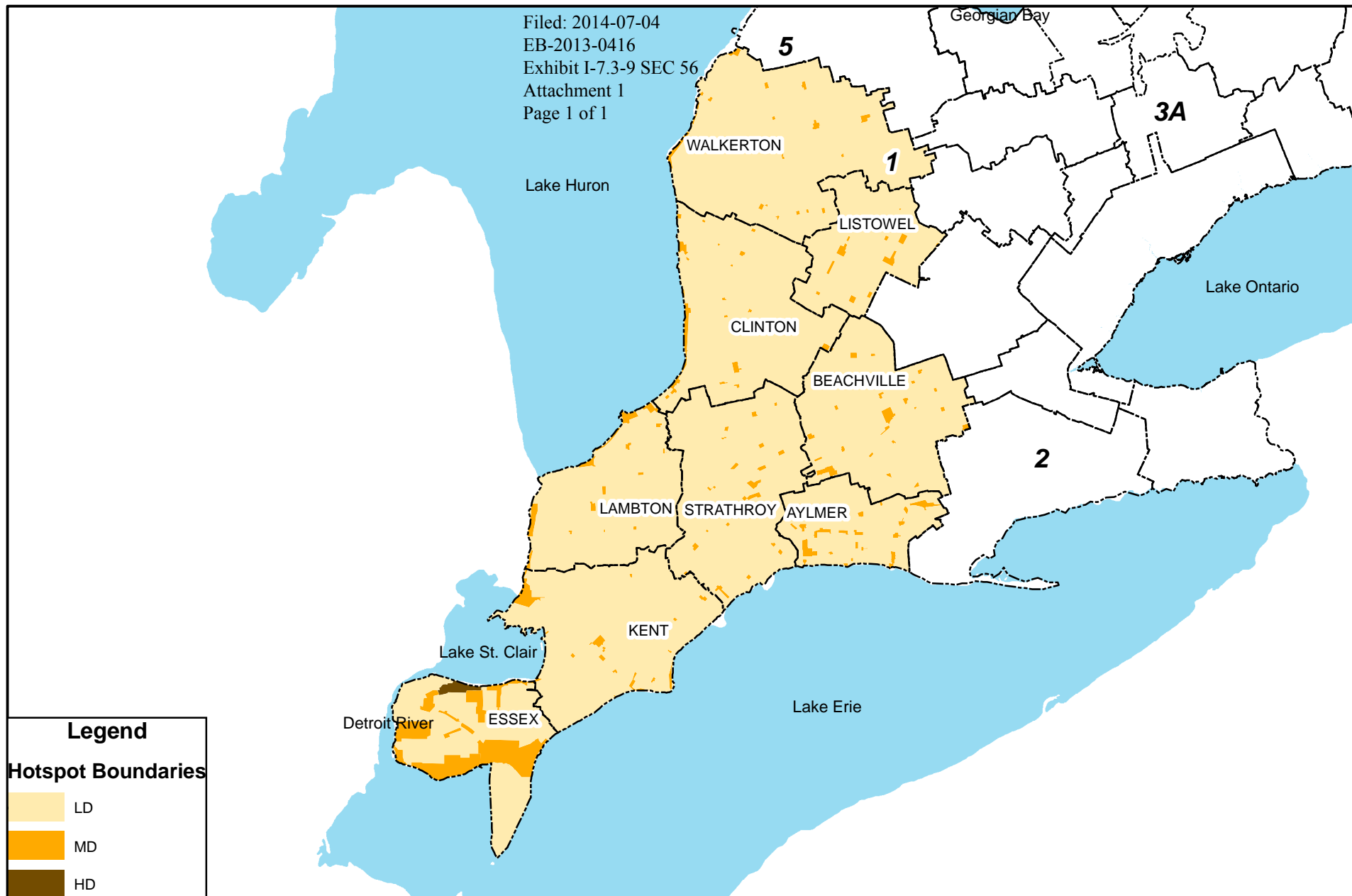
Please provide two full sets of maps showing the areas of the Applicant's franchise area in each of the density zones:

- (a) Before the changes to the boundaries of the density zones as detailed in the Application; and
- (b) After those changes, as now proposed by the Applicant.

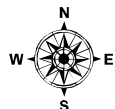
Response

- a) Individual customers have been classified into their density-based rate classes, but before the rate class review process there did not exist a defined a set of density zone boundaries for Hydro One's service territory.
- b) Maps of the proposed density zone boundaries broken out by the 8 zones and operating areas used by Hydro One are provided as Attachments to this response.

Filed: 2014-07-04
EB-2013-0416
Exhibit I-7.3-9 SEC 56
Attachment 1
Page 1 of 1



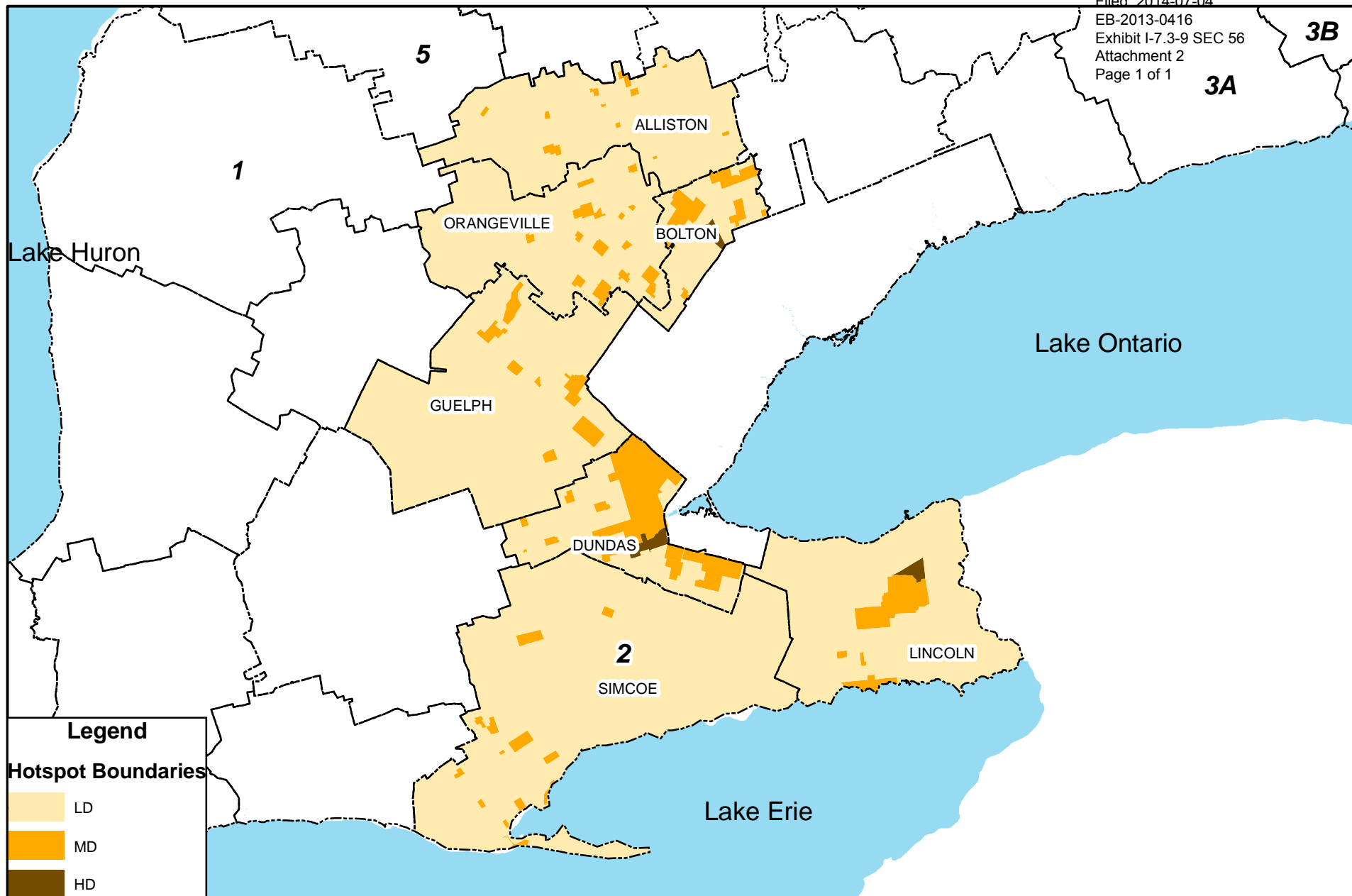
Zone 1 - Density Overview



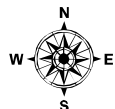
60,000 30,000 0 60,000 Meters

Map Projection: Hydro One Lambert Conformal Conic





Zone 2 - Density Overview

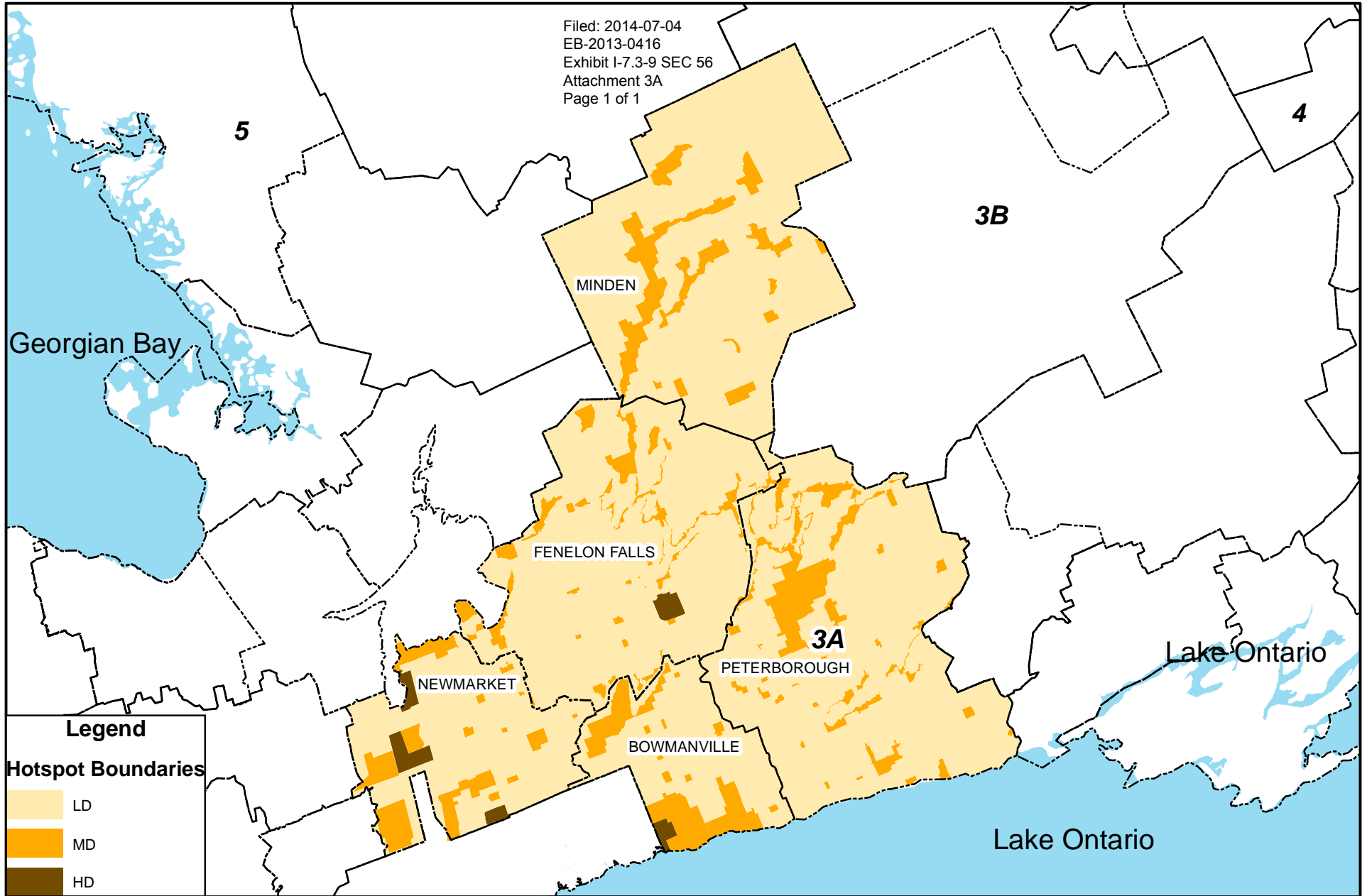


38,000 19,000 0 38,000 Meters

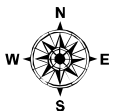


Map Projection: Hydro One Lambert Conformal Conic





Zone 3A - Density Overview

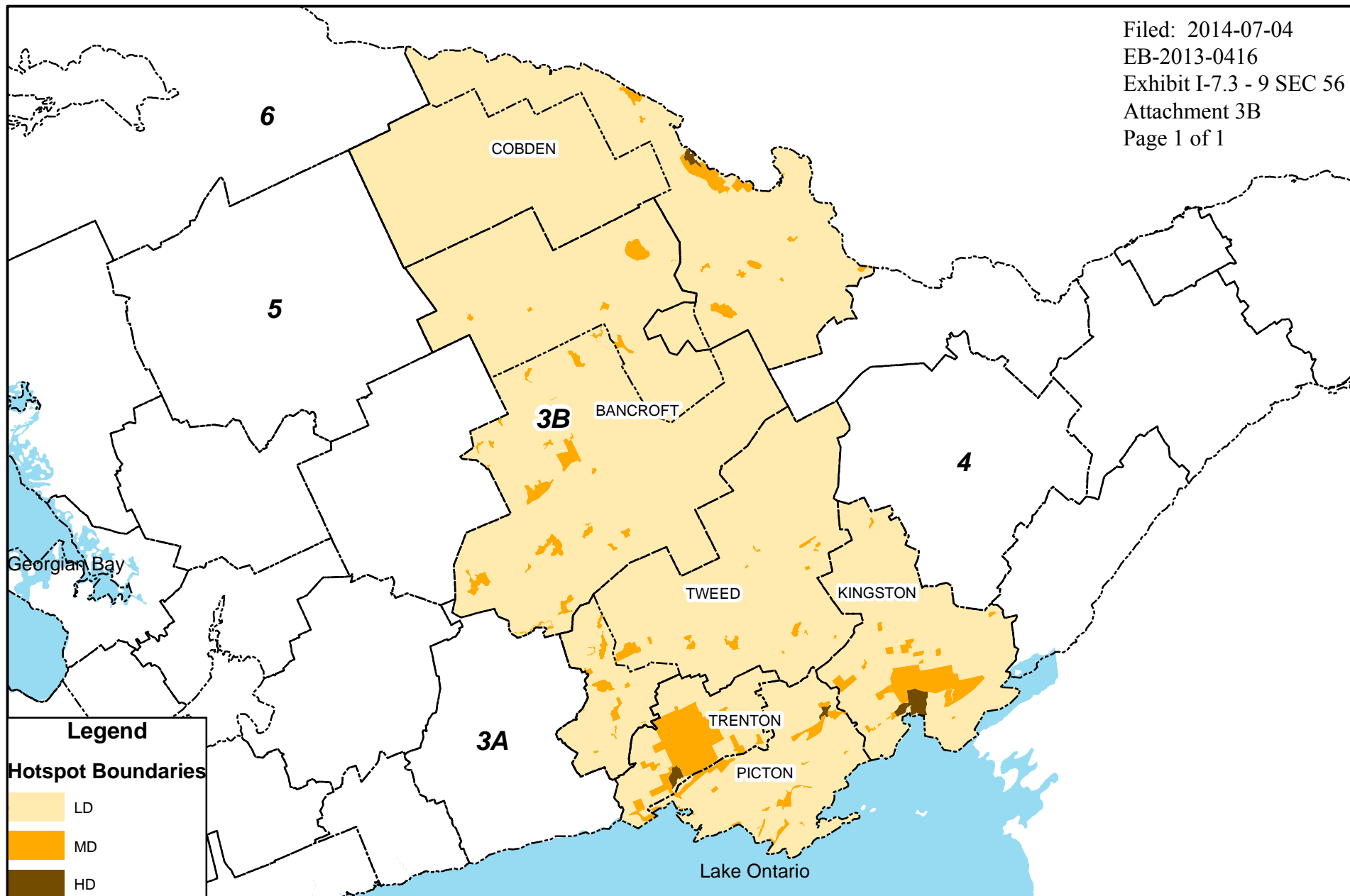


35,000 17,500 0 35,000 Meters

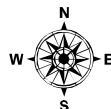


Map Projection: Hydro One Lambert Conformal Conic





Zone 3B - Density Overview

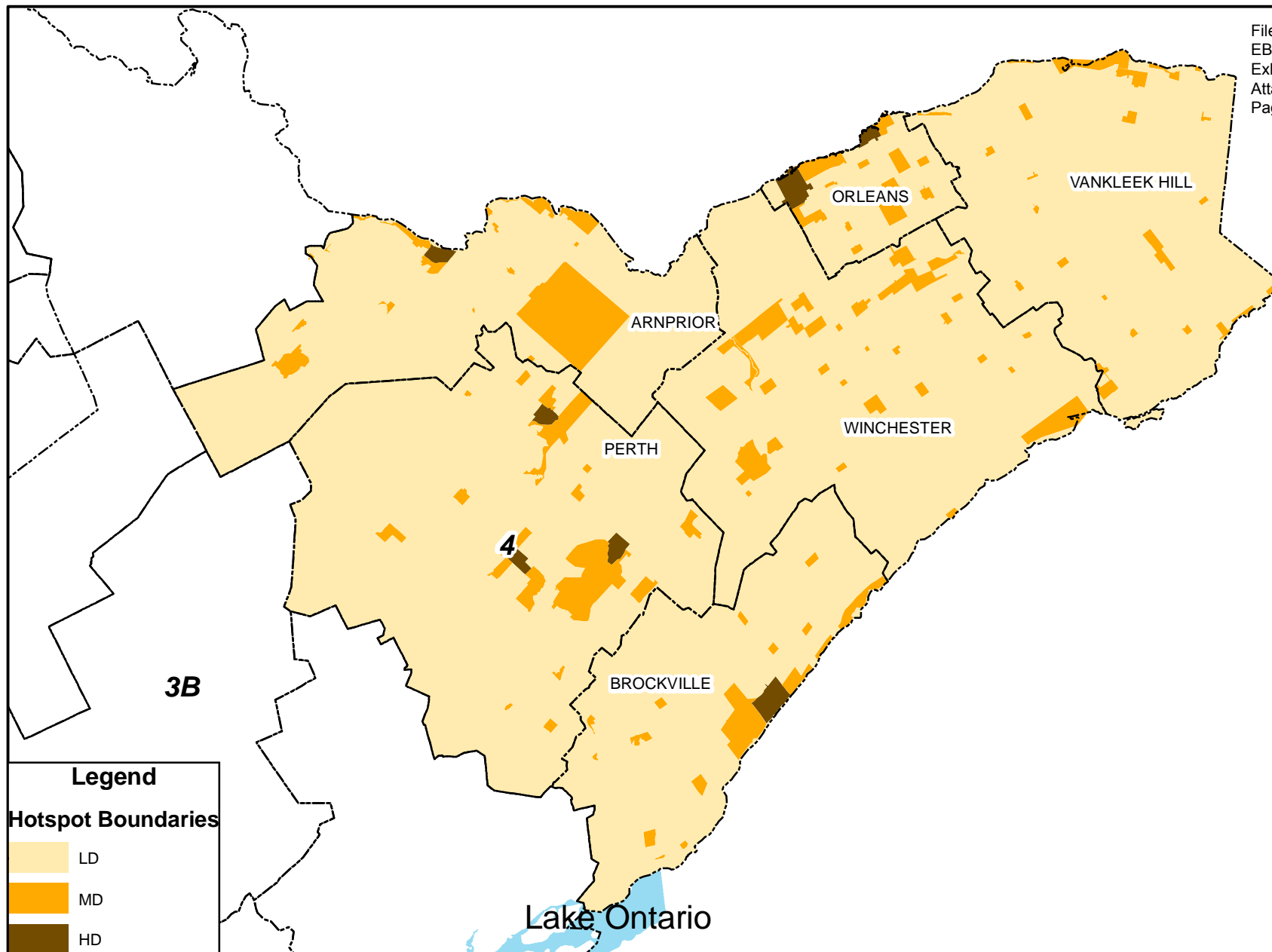


51,000 25,500 0 51,000 Meters

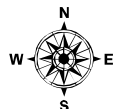


Map Projection: Hydro One Lambert Conformal Conic





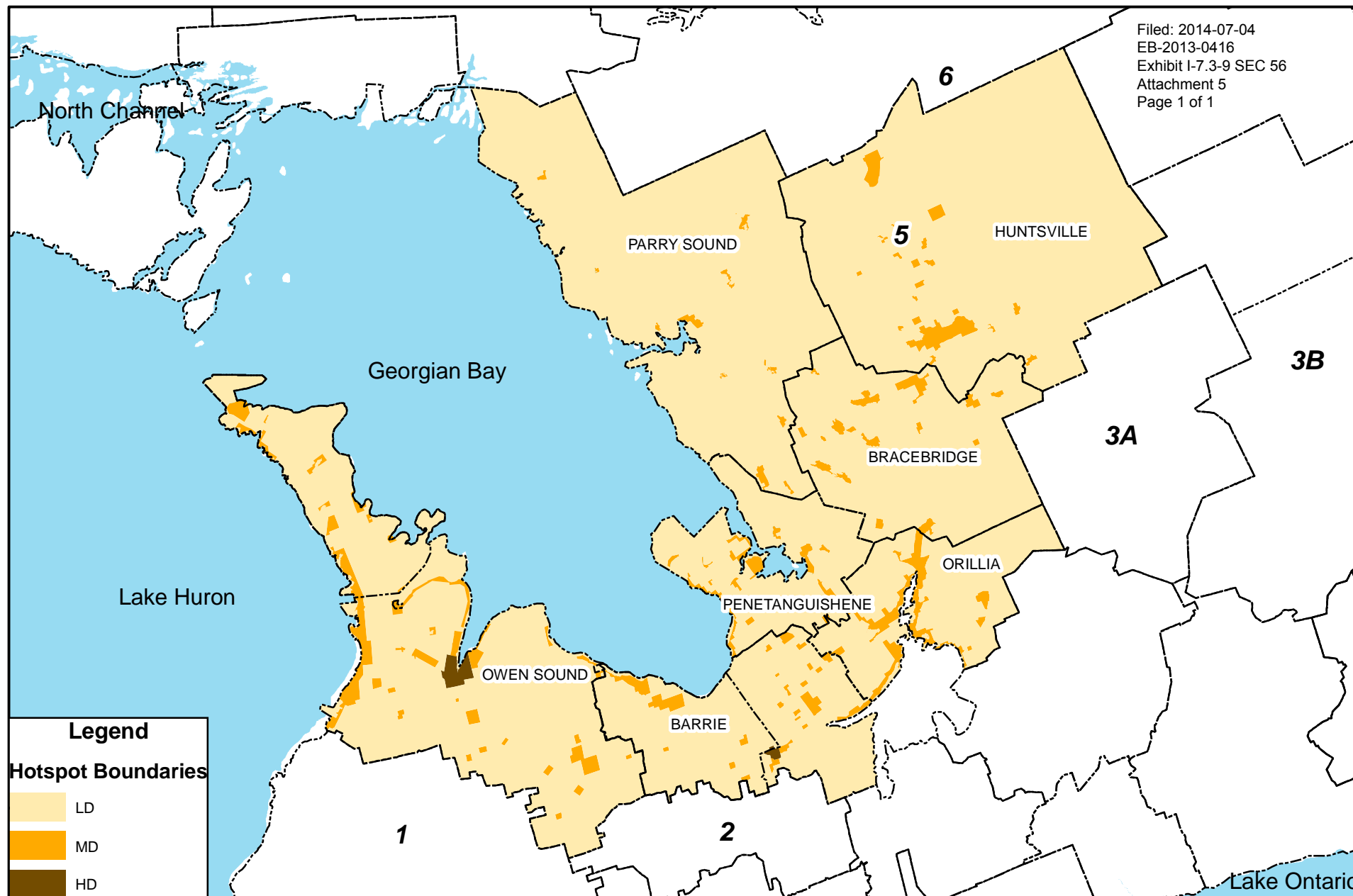
Zone 4 - Density Overview



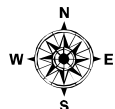
32,000 16,000 0 32,000 Meters

Map Projection: Hydro One Lambert Conformal Conic





Zone 5 - Density Overview

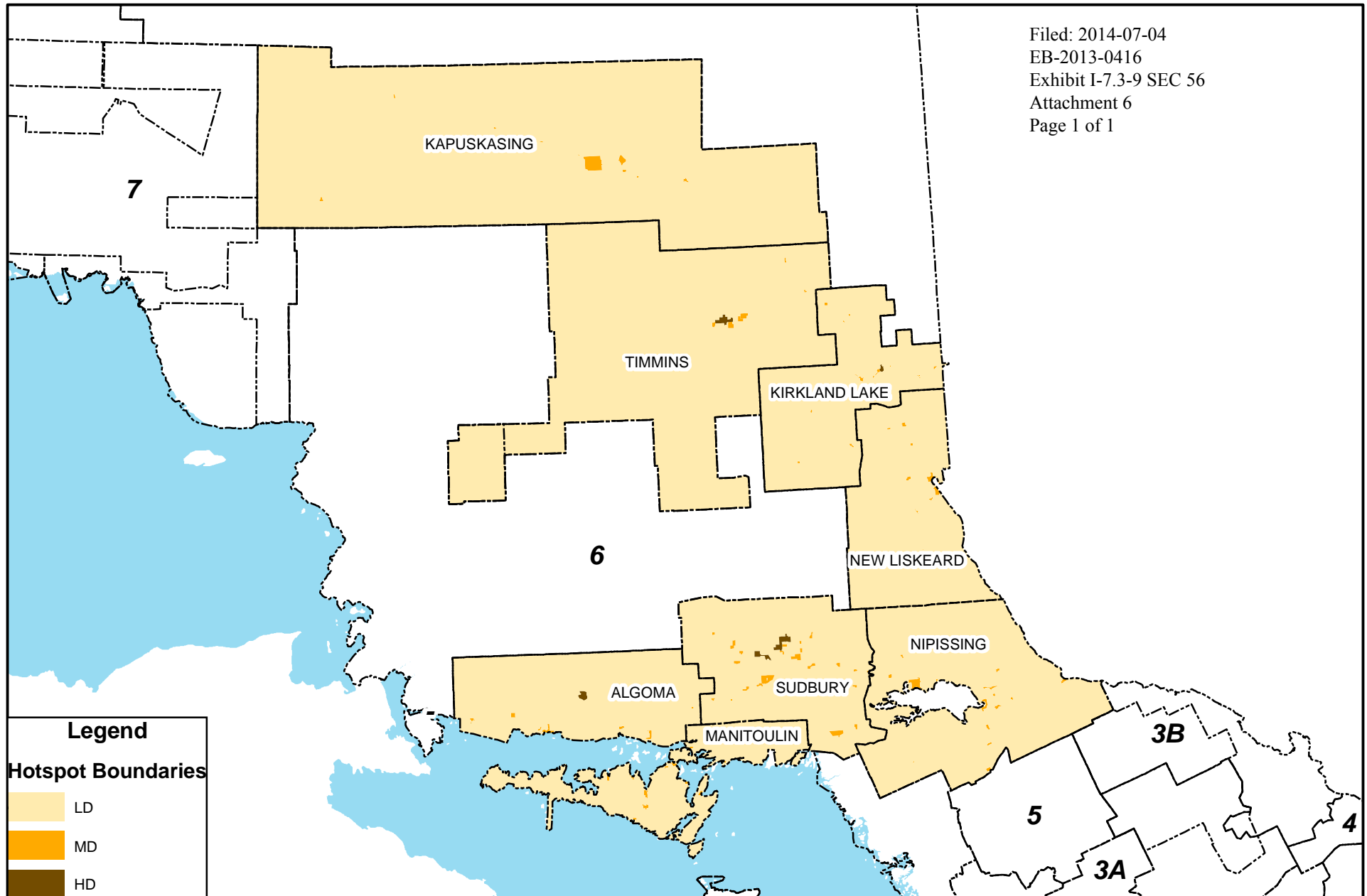


43,000 21,500 0 43,000 Meters

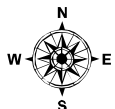


Map Projection: Hydro One Lambert Conformal Conic





Zone 6 - Density Overview

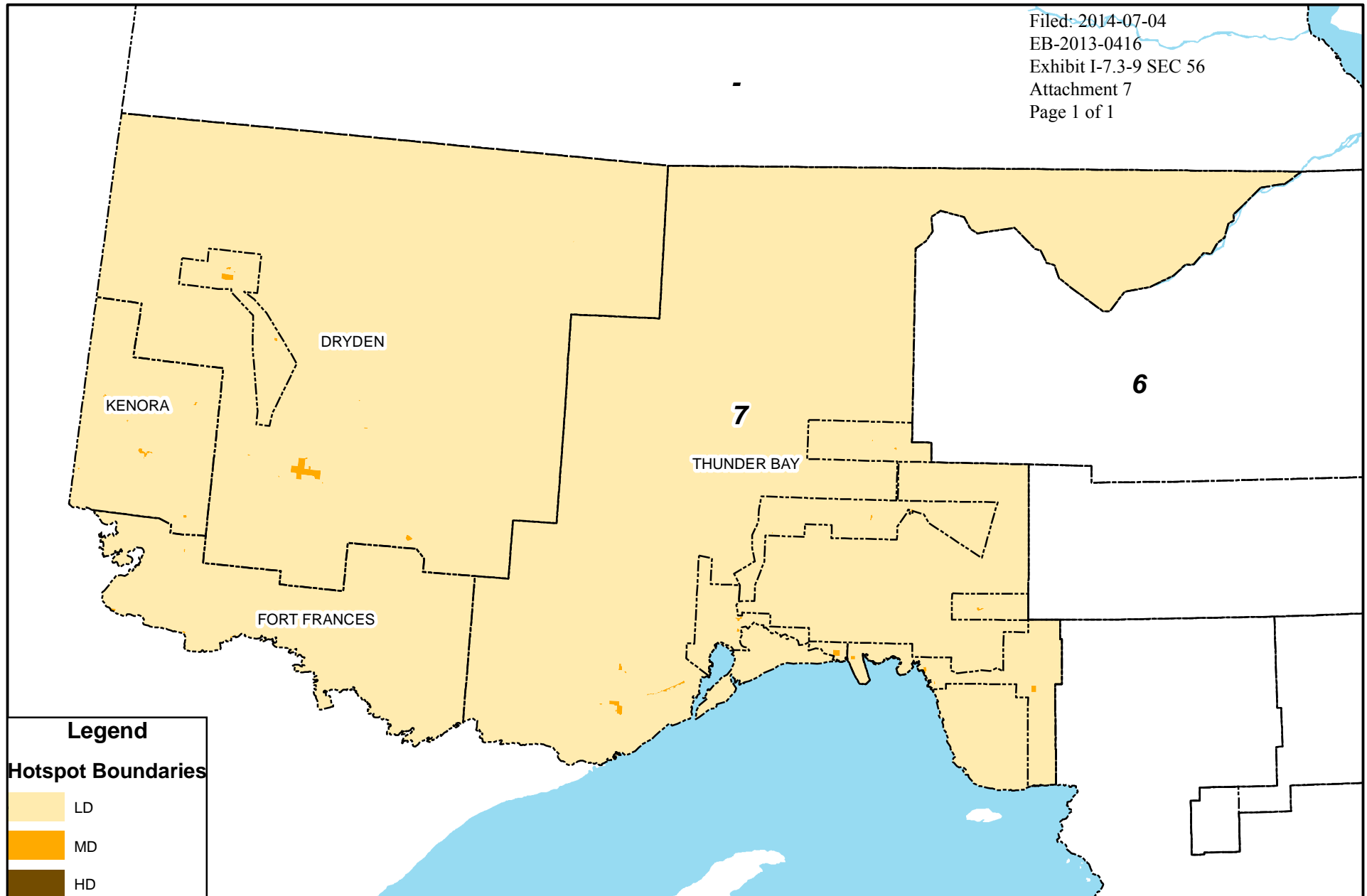


100,000 50,000 0 100,000 Meters



Map Projection: Hydro One Lambert Conformal Conic





Zone 7 - Density Overview



120,000 60,000 0 120,000 Meters



Map Projection: Hydro One Lambert Conformal Conic



School Energy Coalition (SEC) INTERROGATORY #57

Issue 7.3 Is the reclassification of customers to reflect findings of the company's review of existing customer rate classifications appropriate?

Interrogatory

Reference: Exhibit G1/Tab 2/Schedule 1/p.3 & Exhibit G1/Tab 7/Schedule 1/p.3

Please identify the number of schools in each of the following categories:

- (a) 5,733 customers moved from GSe to UGe.
- (b) 778 customers moved from GSd to UGd.
- (c) 311 customers moved from UGe to GSe.
- (d) 67 customers moved from UGd to GSd.

Response

Schools are not readily or specifically identified in the customer data system. However, as an estimate, the number of schools in each of the categories is as follows:

- (a) GSe to UGe: 32
- (b) GSd to UGd: 35
- (c) UGe to GSe: 0
- (d) UGd to GSd: 1

School Energy Coalition (SEC) INTERROGATORY #58

Issue 7.3 **Is the reclassification of customers to reflect findings of the company's review of existing customer rate classifications appropriate?**

Interrogatory

Reference: Exhibit G1/Tab 4/Schedule 2/Attachment 5

Please confirm that the Applicant assumed average kW per UGd customer in 2013 of 1,679.8, or 140.0 per month. Please confirm that the Applicant is assuming average kW per UGd customer in 2019 of 1,548.8, or 129.1 per month. Please confirm that this 7.8% decrease in average volume results in an increase in the UGd volumetric rate of 7.8%, over and above all other factors causing increases in the UGd rates. Please provide details of the extent, if any, to which this impact is caused by the transfer of 778 customers from the GSd class to the UGd class.

Response

It is confirmed that average kW per UGd customer in 2013 is assumed to be 1,679.8, or 140.0 per month.

It is confirmed that the average kW per UGd customer in 2019 is forecasted to be 1,548.8, or 129.1 per month.

It is confirmed that a decrease in the average volume results in a roughly equivalent increase in the volumetric rate, all other factors being equal.

Hydro One can provide the requested information for 2015, the year in which the rate class review results are implemented. The forecast average kW per UGd customer in 2015, as proposed in the current application, is 1,608.8, or 134.1 per month. If the 778 customers remained in the GSd class, the average kW per UGd customer would have been 1,569.3, or 130.8 per month.

School Energy Coalition (SEC) INTERROGATORY #59

Issue 7.3 **Is the reclassification of customers to reflect findings of the company's review of existing customer rate classifications appropriate?**

Interrogatory

Reference: Exhibit G1/Tab 4/Schedule 2/Attachment 5

Please confirm that the Applicant assumed average kW per GSd customer in 2013 of 1,411.4, or 117.6 per month. Please confirm that the Applicant is assuming average kW per GSd customer in 2019 of 1,307.4, or 108.9 per month. Please confirm that this 7.4% decrease in average volume results in an increase in the GSd volumetric rate of 7.4%, over and above all other factors causing increases in the GSd rates. Please provide details of the extent, if any, to which this impact is caused by the transfer of 778 customers from the GSd class to the UGd class.

Response

It is confirmed that average kW per GSd customer in 2013 is assumed to be 1,411.4, or 117.6 per month.

It is confirmed that the average kW per GSd customer in 2019 is forecasted to be 1,307.4, or 108.9 per month.

It is confirmed that a decrease in the average volume results in a roughly equivalent increase in the volumetric rate, all other factors being equal.

Hydro One can provide the requested information for 2015, the year in which the rate class review results are implemented. The forecast average kW per GSd customer in 2015, as proposed in the current application, is 1,388.0, or 115.7 per month. If those 778 customers remained in the GSd class, the average kW per GSd customer would have been 1,458.2, or 121.5 per month.

Energy Probe Research Foundation (EP) INTERROGATORY #54

Issue 7.3 Is the reclassification of customers to reflect findings of the company's review of existing customer rate classifications appropriate?

Interrogatory

Reference: Exhibit G1, Tab 2, Schedule 1, Page 6 - Seasonal Customers

Preamble:

Hydro One proposes to treat as year-round residential customers those Seasonal customers that i) consume at least 9,600 kWh annually and ii) consume at least 600 kWh monthly for a minimum of 10 months of the year. The definition of Seasonal rate class included in the proposed rate schedules provided at Exhibit G2, Tab 2, Schedule 1 have been revised to reflect the proposed change.

Hydro One's proposal will result in moving approximately 11,000 Hydro One Seasonal Customers, or 7%, of the total number of Seasonal customers to the medium density residential (R1) and low density residential (R2) rate classes. This change has been incorporated into the customer load forecast included with this application for the 2015-2019 Custom COS period.

- a) Please provide a schedule that shows for the 11,000 affected seasonal customers what the bill impacts will be from the reclassification.
- b) Please explain why HO cannot transition the 11,000 seasonal customers over the 5 year plan period by using a variable rate rider(s).
- c) Please provide a bill impact schedule assuming a 5 year transition.
- d) Please provide the associated impacts on rates and revenue requirements 2015-2019.
- e)

Response

- a) The requested information is provided at Exhibit G1, Tab 7, Schedule 1, pg.3.
- b) A transition approach is typically used when it is necessary to mitigate total bill impacts. In this case, the 11,000 seasonal customers moving to the R1 and R2 rate classes will see a total bill decrease, as per the reference in a), and therefore no transition is required.
- c) See response to b). It is unclear to Hydro One what transition is required.
- d) See response to c).

Energy Probe Research Foundation (EP) INTERROGATORY #55

Issue 7.3 Is the reclassification of customers to reflect findings of the company's review of existing customer rate classifications appropriate?

Interrogatory

Reference: Exhibit G1, Tab 3, Schedule 1- Revenue to Cost Ratios

- a) Given the changes proposed for lower R/C ratios for UR and R1, why are the Service charges increasing dramatically from 2014 in 2015 and more in 2016-2017 then reducing in 2018-2019?
- b) Why are the Volumetric charges following a similar pattern? Please discuss.

Response

- a) The changes proposed to R/C ratios do not impact the fixed service charge proposal. As described in Exhibit G1, Tab 4, Schedule 1 (pg.4), the fixed service charges are changing in 2015 to reflect Hydro One's proposal to set these charges based on the results of the cost allocation model. The changes in fixed service charges for 2016 to 2019 correspond to the changes in revenue to be collected by rate class for those years.
- b) Volumetric charges recover the balance of revenues not collected by the fixed service charges and are therefore impacted by the changes to fixed service charges described in the response to part a).

Ontario Energy Board (Board Staff) INTERROGATORY #96

Issue 7.4 Is moving revenue-to-cost ratios for all rate classes to within 98% to 102% over the 2015-2019 period appropriate?

Interrogatory

Ref: Exhibit G1/Tab3/Schedule 1/p. 4

At this reference, Hydro One indicates that it,

“...believes there is merit to VECC’s argument for including directly allocated O&M costs when developing the O&M allocator, but does not believe it appropriate to include directly allocated A&G costs for the purpose of allocating other A&G costs. In the current application, Hydro One has modified the O&M allocator to include both non-directly and directly allocated O&M costs, which will then be used to allocate the balance of A&G costs that are not directly allocated.”

Why does Hydro One not believe it appropriate to include directly allocated A&G (Administration & General) costs for the purpose of allocating other A&G costs?

Response

The Board’s latest Cost Allocation Model (Version 3.1) distributes the A&G costs using the O&M allocator, which is based on distribution and customer O&M costs only.

Including directly allocated A&G costs in the O&M allocator would be inconsistent with the Board’s approach of using only O&M costs to allocate A&G costs.

Ontario Energy Board (Board Staff) INTERROGATORY #97

Issue 7.4 Is moving revenue-to-cost ratios for all rate classes to within 98% to 102% over the 2015-2019 period appropriate?

Interrogatory

Ref: Exhibit G1/Tab3/Schedule 1/ p. 12

Under Billing and Collecting, Hydro One indicates that
“Customer density is assumed to have no impact on the billing and collection cost to which these factors apply.”

What is the rationale for this statement? Why would Hydro One assume that customer density has no impact on the billing and collection costs?

Response

Billing and Collecting weighting factors are used to allocate customer costs related to Billing, Collections and Miscellaneous customer account expenses. As described in Exhibit C1, Tab 2, Schedule 5 (pg. 6-8), the vast majority of these costs are related to back-office work that is not impacted by customer density.

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #97

Issue 7.4 **Is moving revenue-to-cost ratios for all rate classes to within 98% to 102% over the 2015-2019 period appropriate?**

Interrogatory

Reference: **G2/T3/S1**
 Hydro One Networks' 2015 CAM, Tab 16.1

- a) Please explain why the existing monthly fixed charge for GSe used in the 2015 CAM (\$35.92) is not the same as the approved 2014 fixed charge for the class (\$36.36).
- b) Please explain why the existing volumetric charge for UGd used in the 2015 CAM (\$6.935) is not the same as the approved 2014 volumetric charge (\$6.99).
- c) Please explain why the existing volumetric charge for GSd used in the 2015 CAM (\$11.433) is not the same as the approved 2014 volumetric charge (\$11.495).
- d) Please explain why kW value for the demand billed classes used in Tab I6.1 do not match the forecast values set out at A/T16/S2, pg. 47, Table E.8 a).

Response

- a) Consistent with the inputs required by the CAM, the existing monthly fixed charge for GSe class used in the 2015 CAM (\$35.92) excludes the USL metering credit rate adder collected from these customers.
- b) Consistent with the inputs required by the CAM, the existing volumetric charge for UGd class used in the 2015 CAM (\$6.935) excludes the CSTA rate adder.
- c) Consistent with the inputs required by the CAM, the existing volumetric charge for GSd class used in the 2015 CAM (\$11.433) excludes the CSTA rate adder and a rate adder for Hopper Foundry (as described Exhibit G1, Tab 4, Schedule 1 pg.16).
- d) Peak demand (kW) values for the demand billed classes used in Tab I6.1 of the CAM are correct. For the ST class, the kW's shown in this table are the total actual/forecast demand for the entire class. The demand value used in the cost allocation model is the forecast charge determinant for the ST common line charge, where aggregated demand is used for customers supplied from multiple feeders connected to the same transmission station or HVDS.
Please see response to Exhibit I, Tab 6.6, Schedule 6, VECC 84, part (c) for an update to actual and forecast kW values set out at Exhibit A, Tab 16, Schedule 2, pg. 47 and 48.

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #98

Issue 7.4 Is moving revenue-to-cost ratios for all rate classes to within 98% to 102% over the 2015-2019 period appropriate?

Interrogatory

Reference: G1/T3/S1, pg. 14, lines 17-22

- a) Are all classes except for Residential and Seasonal also responsible for the maintenance and replacement of their service connection assets?
- b) Are these requirements set out in Hydro One Networks' Conditions of Service and, if so, where?

Response

- a) Hydro One maintains and replaces assets owned by Hydro One. All classes are responsible for the maintenance and replacement of Customer-owned assets, including service connection assets, which typically applies to all classes except residential and seasonal.
- b) Customer Rights and Obligations for Customer Equipment are set out in Section 1.6.C of Hydro One's Conditions of Service.

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #99

Issue 7.4 Is moving revenue-to-cost ratios for all rate classes to within 98% to 102% over the 2015-2019 period appropriate?

Interrogatory

**Reference: G1/T3/S1, pg. 12-14
G2/T1/S1, pg. 7
Hydro One Networks' 2015 CAM**

- a) With respect to Tab I7.1 (Meter Capital), please explain why the per meter capital costs are higher for the R2 and Seasonal classes than for R1 and UR.
- b) With respect to Tab I7.2 (Meter Reading), were the previously approved meter reading weighting factors developed based on the assumption that all residential and general service meters required manual on-site reading or based on meter reading for roughly 40,000 customers as is currently the case.
- c) Please provide a schedule that sets out the allocated/directly assigned 2015 cost per meter read for each customer class, including ST and DG.

Response

- a) Per meter capital costs are higher for R2 and Seasonal classes due to relatively higher installation costs.
- b) Meter reading weighting factors approved in Hydro One's last cost of service rate application (EB-2009-0096) were developed based on the assumption that all residential and general service meters, excluding interval meters, required manual on-site reading.
- c) Table below provides the requested information:

Rate Class	Allocated cost per meter read	Directly assigned cost per interval meter read*
UR	\$29	\$0
R1	\$36	\$0
R2	\$57	\$0
Seasonal	\$72	\$0
GSe	\$36	\$34
GSd	\$36	\$34
UGe	\$29	\$34
UGd	\$29	\$34
St Lgt	\$0	\$0
Sen Lgt	\$0	\$0

USL	\$0	\$0
DGen	\$0	\$34
ST	\$0	\$34

* Please note that directly assigned costs are for processing the interval meter reads to create bills, and not for actual site visits to read meters.

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #100

Issue 7.4 **Is moving revenue-to-cost ratios for all rate classes to within 98% to 102% over the 2015-2019 period appropriate?**

Interrogatory

Reference: **G1/T3/S1, pg. 15, lines 3-16**
 G2/T1/S1, pg. 7
 Hydro One Networks' 2015 CAM

- a) For which classes was the 2012 smart meter data used to update the load profiles?
- b) Was the 2012 smart meter data used the actual 2012 meter readings or were the results weather normalized?
- c) What was the basis for establishing the load profiles for the other customer classes and, in particular, what changes were made from the previously filed CAM in Hydro One Networks' last cost of service based rate case?

Response

- a) 2012 smart meter data was used to update the load profiles for UR, R1, R2, Seasonal, GSe, and UGe rate classes.
- b) Actual meter readings were used to develop the load profiles for each of the above rate classes. The load profiles were then weather normalized.
- c) For the load profiles of the GSd, UGd, DGen, ST, Street Lights, and Sentinel Lights rate classes, Hydro One used the same methodology as approved in its last cost of service application. For the USL class, the methodology described in Exhibit G1, Tab 2, Schedule 1 (pg. 4) was used to develop the load profile.

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #101

Issue 7.4 **Is moving revenue-to-cost ratios for all rate classes to within 98% to 102% over the 2015-2019 period appropriate?**

Interrogatory

Reference: **G1/T3/S1, pg. 15, lines 3-16**
 G2/T1/S1

- a) Please identify those changes to the CAM for 2015 (per G2/T1/S1) that Hydro One Networks considers to be “improvements” (per G1/T3/S1, pg. 15, line 9) as opposed to changes that would normally be undertaken to update the model for new forecast data. In doing so, please specifically note those changes in the assignment of OM&A costs by USofA and breakout of fixed assets by USofA that Hydro One Networks considers to be improvements.
- b) With respect to the improvements identified in part (a), please indicate which of these are in response to compliance with the Board’s EB-2010-0219 Review of Electricity Distribution Cost Allocation Report.

Response

- a) Please see the interrogatory response at Exhibit I, Tab 7.4, Schedule 9 SEC 60.
- b) The items that are in response to compliance with the Board’s EB-2010-0219 Report are the creation of the USL class, the updating of the billing, collection and services weighting factors and the allocation of Miscellaneous revenues.

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #102

Issue 7.4 Is moving revenue-to-cost ratios for all rate classes to within 98% to 102% over the 2015-2019 period appropriate?

Interrogatory

Reference: G1/T3/S1, pg. 15-17

- a) Please re-calculate the CAM ratios in Table 6 for the years 2016-2019 using the current 2014 rates in Tab I6.1 as the basis for determining revenues at “existing rates” for this Tab and for Tab O1.

Response

- a) Table below provides the R/C ratios from CAM for the years 2016-2019 using current 2014 rates in Tab I6.1:

Rate Class	2016	2017	2018	2019
UR	132	134	135	136
R1	124	125	125	125
R2	92	93	93	94
Seasonal	91	92	93	94
GSe	103	102	101	101
GSd	89	86	84	82
UGe	72	71	70	70
UGd	91	88	86	84
St Lgt	87	87	87	87
Sen Lgt	87	87	88	89
USL	125	126	127	128
DGen	39	38	38	38
ST	71	71	71	71

School Energy Coalition (SEC) INTERROGATORY #60

Issue 7.4 Is moving revenue-to-cost ratios for all rate classes to within 98% to 102% over the 2015-2019 period appropriate?

Interrogatory

Reference: Exhibit G1/Tab 3/Schedule 1/p.15

Please provide details of the “improved cost allocations” that justify and support the Applicant seeking to move customers closer to unity over the test period, consistent with the Board’s policy from the *Report of the Board: Review of Electricity Distribution Cost Allocation Policy* (EB-2010-0219) at p.36:

As indicated in its September 2, 2010 letter, the Board expects that with the installation of smart meters and the availability of sufficient smart meter data, better cost allocators for the CA Model will become available and a more comprehensive review of the Board’s cost allocation policies will become feasible. The Board anticipates that such a comprehensive review may provide an opportunity to further refine its target ranges. In the meantime, the Board’s policy remains that distributors should endeavour to move their revenue-to-cost ratios closer to one if this is supported by improved cost allocations.

1 **Response**

2
3 Hydro One has made a number of changes to the inputs used by the cost allocation model
4 that it believes result in an improvement to the allocation of costs by rate class. These
5 include:

- 6 • 2012 smart meter data has been used to develop updated load profiles for all
7 residential and general service energy rate classes, and the load profile for demand
8 billed classes were updated based on currently available hourly data. Both of which
9 result in an improvement to the 12CP and 4NCP allocators used in the model.
- 10 • The density factors used to allocate costs within the residential rate classes, the
11 general service energy classes, and the general service demand classes have been
12 incorporated into the model on a USofA basis and have been established based on the
13 results of an independent Density Study that was approved by the Board as part of
14 Hydro One's 2013 IRM application EB-2012-0136.
- 15 • The costs by USofA reflect an improvement in the allocation of project and program
16 costs to USofA accounts, and the breakout of fixed asset costs between bulk, primary
17 and secondary have been updated to reflect information available from the fixed asset
18 and GIS systems, and to better delineate secondary assets.
- 19 • The creation of a USL rate class, whose customers were previously included as part
20 of the General Service energy class for cost allocation purposes, and establishing a
21 load profile for this class based on actual collected data, allows for an improved
22 allocation of the costs required to serve both the USL and GSe classes.
- 23 • Hydro One has updated the PLCC calculations to provide a better alignment to the
24 minimum system split used in the cost allocation model.
- 25 • The billing, collection and services weighting factors have been updated to reflect
26 Hydro One's circumstances.
- 27 • Hydro One is using the updated cost allocation model issued by the Board which
28 includes improvements to the allocation of Miscellaneous expenses and the allocation
29 of Administrative costs.

School Energy Coalition (SEC) INTERROGATORY #61

Issue 7.4 Is moving revenue-to-cost ratios for all rate classes to within 98% to 102% over the 2015-2019 period appropriate?

Interrogatory

Reference: Exhibit G1

Please confirm that the following table correctly calculates the current and proposed distribution charges for a school in the UGd Class with a 100 kW monthly demand, and the dollar and percentage increases being proposed. If not confirmed, please provide corrected calculations. Please confirm that the same school is being asked to pay an additional \$18,744.60 over the five year test period, subject to any adjustments in the Applicant's annual filings.

Sample School Distribution Rate Calculations 2014-2019						
UGd Class	2014	2015	2016	2017	2018	2019
<i>Monthly Fixed Charge</i>	\$28.71	\$85.01	\$92.91	\$100.56	\$106.14	\$111.64
<i>Smoothing Rider</i>		-\$3.25	-\$4.33	-\$1.47	\$2.79	\$7.08
<i>Net Monthly Fixed</i>	\$28.71	\$81.76	\$88.58	\$99.09	\$108.93	\$118.72
<i>Volumetric Rate</i>	\$6.9350	\$7.8590	\$8.6490	\$9.3830	\$10.0450	\$10.7210
<i>Smoothing Rider</i>		-\$0.3004	-\$0.4030	-\$0.1373	\$0.2637	\$0.6802
<i>Net Volumetric Rate</i>	\$6.9350	\$7.5586	\$8.2460	\$9.2457	\$10.3087	\$11.4012
<i>Result at 100 KW</i>	\$693.50	\$755.86	\$824.60	\$924.57	\$1,030.87	\$1,140.12
<i>Total Monthly Bill</i>	\$722.21	\$837.62	\$913.18	\$1,023.66	\$1,139.80	\$1,258.84
<i>Annual Bill</i>	\$8,666.52	\$10,051.44	\$10,958.16	\$12,283.92	\$13,677.60	\$15,106.08
<i>Increase over Prior Year</i>		\$1,384.92	\$906.72	\$1,325.76	\$1,393.68	\$1,428.48
<i>Percentage</i>		15.98%	9.02%	12.10%	11.35%	10.44%
<i>Five Year Increase</i>						\$6,439.56
<i>Percentage</i>						74.30%
<i>Revenue at Current Rates</i>	\$43,332.60					
<i>Proposed Revenue</i>	\$62,077.20					
<i>Increased Charge</i>	\$18,744.60					

1 **Response**

2
3 The proposed distribution volumetric charge in the above table is rounded to three
4 decimals, while Hydro One uses four decimals for all volumetric charges. Since this
5 change results in only a minor impact to the final results, Hydro One has not updated the
6 table.

7
8 The line labeled “Total Monthly Bill” should appropriately be labeled “Total Distribution
9 Charges”. The charges shown are only for base distribution service and exclude costs the
10 sample school would pay for deferral/variance account riders, commodity and other Total
11 Bill components. For a typical UGd class customer, distribution represents about 17% of
12 the total bill, and therefore the 74.30% figure shown in the table corresponds to about a
13 12.6% impact on Total Bill or roughly a 2.5% annual increase over the 5 years.

14
15 It is confirmed that the same school will pay about \$18,744.60 in additional base
16 distribution charges over the five year test period, subject to any adjustments in the
17 Applicant’s annual filings.

School Energy Coalition (SEC) INTERROGATORY #62

Issue 7.4 Is moving revenue-to-cost ratios for all rate classes to within 98% to 102% over the 2015-2019 period appropriate?

Interrogatory

Reference: Exhibit G1

Please provide a breakdown of the drivers of the increases set out in the previous question, including at least the following categories:

- (a) Increases in revenue requirement.
- (b) Changes in the relative costs allocated to the class between 2013 and 2015.
- (c) Greater increases in the monthly fixed charge relative to the volumetric charge.
- (d) Adjustments to the revenue to cost ratios to bring other classes within the Board's range.
- (e) Adjustments to the revenue to cost ratios to bring all classes closer to unity over the test period.
- (f) Other drivers.

Response

The drivers of the increases set out in Exhibit I, Tab 7.4, 9 SEC 61 include:

- The increase in revenues to be collected from all rate classes, including the UGd rate class, as a result of increases in the total revenue requirement of 18%, 7%, 3%, 2% and 3% for the years 2015 to 2019, respectively, as shown in the rate design sheets provided at Exhibit G1, Tab 4, Schedule 2, Attachments 1 to 5.
- A 1% increase in revenues to be collected due to increasing the revenue to cost ratio from 0.93 to 0.94 in 2015 as a result of bringing the revenue to cost ratio for all rate classes within the Board approved ranges.
- Increases of 3%, 5%, 5% and 4% in revenues to be collected for the years 2016 to 2019, respectively, due to increasing the revenue to cost ratio from 0.94 to 0.99 as a result of bringing the revenue to cost ratio for all classes closer to 1.0.
- The impact of the smoothing rider which reduces charges in the years 2015 to 2017, and increases the charges in 2018 to 2019.
- Increasing the fixed charge has no impact on the average customer in a rate class, but will result in a small increase on the sample school shown as its consumption is slightly below average. The impact of the fixed charge proposal on schools with greater than average consumption would be a reduction in their charges.

School Energy Coalition (SEC) INTERROGATORY #64

Issue 7.4 Is moving revenue-to-cost ratios for all rate classes to within 98% to 102% over the 2015-2019 period appropriate?

Interrogatory

Reference: Exhibit G1

Please confirm that the following table correctly calculates the current and proposed distribution charges for a school in the GSd Class with a 100 kW monthly demand, and the dollar and percentage increases being proposed. If not confirmed, please provide corrected calculations. Please confirm that the same school is being asked to pay an additional \$32,412.72 over the five year test period, subject to any adjustments in the Applicant's annual filings.

Sample School Distribution Rate Calculations 2014-2019						
GSd Class	2014	2015	2016	2017	2018	2019
Monthly Fixed Charge	\$52.27	\$83.96	\$91.53	\$98.56	\$103.54	\$108.41
Smoothing Rider		-\$3.21	-\$4.26	-\$1.44	\$2.72	\$6.88
Net Monthly Fixed	\$52.27	\$80.75	\$87.27	\$97.12	\$106.26	\$115.29
Volumetric Rate	\$11.4330	\$13.7210	\$15.1460	\$16.4420	\$17.6170	\$18.8110
Smoothing Rider		-\$0.5244	-\$0.7057	-\$0.2405	\$0.4624	\$1.1934
Net Volumetric Rate	\$11.4330	\$13.1966	\$14.4403	\$16.2015	\$18.0794	\$20.0044
Result at 100 KW	\$1,143.30	\$1,319.66	\$1,444.03	\$1,620.15	\$1,807.94	\$2,000.44
Total Monthly Bill	\$1,195.57	\$1,400.41	\$1,531.30	\$1,717.27	\$1,914.20	\$2,115.73
Annual Bill	\$14,346.84	\$16,804.92	\$18,375.60	\$20,607.24	\$22,970.40	\$25,388.76
Increase over Prior Year		\$2,458.08	\$1,570.68	\$2,231.64	\$2,363.16	\$2,418.36
Percentage		17.13%	9.35%	12.14%	11.47%	10.53%
Five Year Increase						\$11,041.92
Percentage						76.96%
Revenue at Current Rates	\$71,734.20					
Proposed Revenue	\$104,146.92					
Increased Charge	\$32,412.72					

1 **Response**

2
3 The proposed distribution volumetric charge in the above table is rounded to three
4 decimals, while Hydro One uses four decimals for all volumetric charges. Since this
5 change results in only a minor impact to the final results, Hydro One has not updated the
6 table.

7
8 The line labeled “Total Monthly Bill” should appropriately be labeled “Total Distribution
9 Charges”. The charges shown are only for base distribution service and exclude costs the
10 sample school would pay for deferral/variance account riders, commodity and other Total
11 Bill components. For a typical GSd class customer, distribution represents about 26% of
12 the total bill, and therefore the 76.96% figure shown in the table corresponds to about a
13 20.0% impact on total bill or roughly a 4.0% annual increase over the 5 years.

14
15 It is confirmed that the same school will pay about \$32,412.72 in additional base
16 distribution charges over the five year test period, subject to any adjustments in the
17 Applicant’s annual filings.

School Energy Coalition (SEC) INTERROGATORY #65

Issue 7.4 Is moving revenue-to-cost ratios for all rate classes to within 98% to 102% over the 2015-2019 period appropriate?

Interrogatory

Reference: Exhibit G1

Please provide a breakdown of the drivers of the increases set out in the previous question, including at least the following categories:

- (a) Increases in revenue requirement.
- (b) Changes in the relative costs allocated to the class between 2013 and 2015.
- (c) Greater increases in the monthly fixed charge relative to the volumetric charge.
- (d) Adjustments to the revenue to cost ratios to bring other classes within the Board's range.
- (e) Adjustments to the revenue to cost ratios to bring all classes closer to unity over the test period.
- (f) Other drivers.

Response

The drivers of the increases set out in SEC interrogatory 64 include:

- The increase in revenues to be collected from all rate classes, including the GSd rate class, as a result of increases in the total revenue requirement of 18%, 7%, 3%, 2% and 3% for the years 2015 to 2019, respectively, as shown in the rate design sheets provided at Exhibit G1, Tab 4, Schedule 2, Attachments 1 to 5.
- A 3% increase in revenues to be collected due to increasing the revenue to cost ratio from 0.91 to 0.94 in 2015 as a result of bringing the revenue to cost ratio for all rate classes within the Board approved ranges.
- Increases of 3%, 5%, 5% and 4% in revenues to be collected for the years 2016 to 2019, respectively, due to increasing the revenue to cost ratio from 0.94 to 0.99 as a result of bringing the revenue to cost ratio for all classes closer to 1.0.
- The impact of the smoothing rider which reduces charges in the years 2015 to 2017, and increases the charges in 2018 to 2019.
- Increasing the fixed charge has no impact on the average customer in a rate class, but will result in a small increase on the sample school shown as its consumption is slightly below average. The impact of the fixed charge proposal on schools with greater than average consumption would be a reduction in their charges.

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #103

Issue 7.5 Is the addition of a new “Unmetered Scattered Load” rate class appropriate?

Interrogatory

Reference: G1/T2/S1, pg. 4-5

- a) For what other types of USL customers were load profiles established (per pg. 4, lines 14-16) for purposes of determining the overall load profile of the USL class.
- b) Please provide a schedule that breaks down the 5,647 USL customers forecast for 2015 (per G1/T4/S2, Attachment 1) by type and that indicates both the forecast 2015 MWh and the basis of the load profile for each type

Response

- a) Other types of USL rate class, for which load profile were established, include photo sensitive and non-photo sensitive load.
- b) Table below shows the breakdown of USL customers by type of load and the basis of the load profile.

Type	Number of Customers	Sales (MWh)
Photo Sensitive (1)	285	1,163
Non-Photo Sensitive (2)	1,105	4,505
Cable (3)	4,252	18,389
Total	5,642	24,057

(1) This excludes street lighting and sentinel lighting but has a similar load shape by definition.

(2) This has a nearly uniform load shape by definition.

(3) This has a nearly uniform load shape plus some jumps during very cold periods based on sample.

City of Hamilton (COFH) INTERROGATORY #1

Issue 7.6 Are Hydro One's proposed charges for street lighting appropriate?

Interrogatory

Reference: Exhibit G1, Tab 2, Schedule 1

What findings, in HONI's "rate class review", led to the conclusion that the rates for the street lighting class had to be increased in the amount proposed?

Response

The rate class review resulted in a large number of residential and general service customers moving to rate classes with lower rates, which results in a decrease in the total revenue collected at current rates. Per the methodology used in the cost allocation model, the total revenue collected at current rates is increased to equal the forecast rates revenue requirement by uniformly increasing the revenue to be collected from all rate classes, including the street lighting class.

City of Hamilton (COFH) INTERROGATORY #2

Issue 7.6 Are Hydro One's proposed charges for street lighting appropriate?

Interrogatory

Reference: Exhibit G1, Tab 3, Schedule 1

Preamble:

The prefiled evidence states that HONI used a cost allocation model consistent with the Board's Revised Cost Allocation model modified to accommodate HONI's specific circumstances.

- (a) In what way, if at all, was the Board's cost allocation model modified with respect to the street lighting class?
- (b) What specific circumstances, if any, of HONI require a modification of the Board's cost allocation model for the street lighting class?

Response

- (a) The Board's cost allocation model has not been modified in any way for the street lighting class.
- (b) Please see response to part (a) above.

City of Hamilton (COFH) INTERROGATORY #3

Issue 7.6 Are Hydro One's proposed charges for street lighting appropriate?

Interrogatory

Reference: Exhibit G1, Tab 3, Schedule 1, pp. 13 ff

- (a) What is the additional effort for the street lighting class associated with maintaining and updating the forecast kWh to be used for billing purposes?
- (b) What is the effect of the weighting factors assigned to the street lighting class on the proposed rates for that class?

Response

- (a) The additional effort for street lighting is associated with the required communications with streetlight customers to annually update and validate any changes to the billing data, and the efforts associated with updating the billing systems to reflect any changes to the billing data.
- (b) The billing and collections weighting factor of 2.0 for streetlight customers has a relatively small impact on streetlight customers. As a basis for comparison, using a weighting factor of 1.0 would result in about \$200k, or 1.8% reduction, in the costs assigned to this rate class.

City of Hamilton (COFH) INTERROGATORY #4

Issue 7.6 Are Hydro One's proposed charges for street lighting appropriate?

Interrogatory

Reference: Exhibit G1, Tab 4, Schedule 1, p. 6

Preamble:

HONI is proposing a material increase (in the order of 173%) in their Service or Fixed Charge for the street lighting class.

What is the basis for this material increase?

Response

The fixed charge for the streetlight class is increasing to better align with the fixed charges calculated by the cost allocation model. The proposed values are still well below the fixed charges that would be required to fully recover the minimum system costs associated with serving the streetlight class. The proposed fixed charges represent only 2% of the revenue to be collected from the streetlight rate class.

City of Hamilton (COFH) INTERROGATORY #5

Issue 7.6 Are Hydro One's proposed charges for street lighting appropriate?

Interrogatory

Reference: Exhibit G1, Tab 4, Schedule 1, p. 6

Why is HONI's revenue requirement (specific to street lights) increasing considerably more rapidly than the benchmark established by the Board in EB-2010-0379?

Response

The revenue requirement to be collected from the streetlight class as determined in EB-2010-0379 is not a "benchmark", but rather reflects Hydro One's overall revenue requirement for 2010 and the results of the cost allocation model and rate design process at that point in time.

The proposed revenue requirement for the streetlight rate class in the current application reflects Hydro One's overall revenue requirement requested for 2015 to 2019, as well as the output of the current cost allocation models and proposed revenue-to-cost ratio changes.

City of Hamilton (COFH) INTERROGATORY #6

Issue 7.6 Are Hydro One's proposed charges for street lighting appropriate?

Interrogatory

Reference: Exhibit G1, Tab 4, Schedule 1, p. 6

What is the basis for the material increase in street light connections, from 5,832 in HONI's 2010 cost of service application to 20,324 in the present application?

Response

Based on discussion with superintendents in the field, Hydro One has updated its assumption for number of devices (street lights) per connection from 20, as used in Hydro One's last Cost of Service filing, to 8.

City of Hamilton (COFH) INTERROGATORY #7

Issue 7.6 Are Hydro One's proposed charges for street lighting appropriate?

Interrogatory

Reference: Exhibit G1, Tab 4, Schedule 1, p. 6

To what extent, if at all, does the increase in the number of street light connections contribute to the material increase in the Service or Fixed charge for the street lighting clients?

Response

As described in Exhibit G1, Tab 4, Schedule 1 (pg. 7), the 2015 fixed charge for the street light class has been set at the amount derived by the cost allocation model for Scenario 2 – Directly Related Customer Costs. The increase in the number of connections reduces the fixed charge amount from \$6.38 per month to \$4.02 per month.

City of Hamilton (COFH) INTERROGATORY #8

Issue 7.6 Are Hydro One's proposed charges for street lighting appropriate?

Interrogatory

Reference: Exhibit G1, Tab 3, Schedule 1

Preamble:

In its Report in EB-2012-0383, dated December 19, 2013, the Board states:

“The Board’s policy remains that distributors should endeavour to move their revenue to cost ratios closer to one or 100% if this is supported by new data. That being said, the Board does not believe that there is sufficient evidence at this time to narrow the revenue to cost ratio range for the street lighting class. The Board has therefore concluded that the revenue to cost ratio range for the street lighting rate class should not be narrowed at this time.” (page 6)

What is the “sufficient evidence” that HONI is relying on to change the revenue to cost ratio for the street lighting class.

Response

Hydro One is proposing to narrow the revenue-to-cost ratio for all its rate classes, including the streetlight class, for the reasons outlined in the response at Exhibit I, Tab 7.4, Schedule 9 SEC 60. Hydro One previously received approval, as part of its 2013 IRM application EB-2012-0136, to increase the revenue-to-cost ratio for the streetlight class to 0.93.

City of Hamilton (COFH) INTERROGATORY #9

Issue 7.6 Are Hydro One's proposed charges for street lighting appropriate?

Interrogatory

Reference: Exhibit G1, Tab 3, Schedule 1

In its Report in EB-2012-0383, the Board states:

"A critical assumption with respect to the inputs for the street lighting class is the number of devices per connection. This assumption has the most significant impact on the revenue requirement for the street lighting customer class." (page 9)

- (a) What definitions of "connections" and "devices" is HONI using?
- (b) What is the number of devices per connection for the street lighting class that underlies the proposed street lighting rates for the period 2015-2019?
- (c) What is the impact of the number of "devices per connection" on the revenue requirement for the street lighting class?

Response

(a) Devices are the actual street lights. Connections are defined as the physical link where a customer's load is connected to the utility's distribution system. For streetlights, a single connection may have one device attached to it or it may have multiple devices attached in what is sometimes called a "daisy chain" arrangement.

(b) Hydro One has used 8 devices per connection in developing the proposed 2015-2019 rates for the street light class.

(c) As the number of devices per connection decreases, the number of connections (which is the input to the cost allocation model) increases. An increased number of connections attract more customer-related costs. However, with an increase in the number of connections, more of the class demand can be met by the minimum system. This results in decrease in some of the demand-related costs. Depending on the share of customer-related and demand-related costs, the total allocated costs may increase or decrease. In the current application, the costs allocated to the street light class increase by approximately 7% as a result of reducing the number of devices per connection from 20 to 8.

City of Hamilton (COFH) INTERROGATORY #10

Issue 7.6 Are Hydro One's proposed charges for street lighting appropriate?

Interrogatory

Reference: Exhibit G1, Tab 3, Schedule 1

In its Report in EB-2012-0383, the Board states:

“The actual configuration used in connecting unmetered loads should be clearly reflected in the distributor's cost allocation.” (page 14)

Can HONI please provide an explanation for the “actual configuration” used in connecting unmetered street lighting loads?

Response

The actual configuration for connecting streetlights varies across Hydro One's service territory, from 1 light per connection to more than 12 lights per connection in a daisy chain arrangement. The value of 8 lights per connection used in the cost allocation model reflects the feedback received from discussions with field superintendents from operating areas across Hydro One's service territory.

City of Hamilton (COFH) INTERROGATORY #11

Issue 7.6 Are Hydro One's proposed charges for street lighting appropriate?

Interrogatory

Reference: Exhibit G1, Tab 3, Schedule 1

Preamble:

In its Report in EB-2012-0383, the Board states:

(i) "The Board believes that there should be ongoing communication between distributors and unmetered load customers. Unmetered load customers should be able to determine, and distributors validate, what the appropriate consumption levels and load profiles are for particular devices that will reflect the technology used in street lights or other unmetered loads." (page 5)

(ii) "It appeared that municipal customers were unaware of the phasing-in of higher revenue to cost ratios that had taken place over the past three to five years. They were also unaware that the repeated rate increases attributable to the large changes in the revenue to cost ratios were unlikely to occur again." (page 9)

(iii) "In general, communication between unmetered load customers and their distributors was not optimum and it may be possible to improve those communications." (page 9)

Please list, and describe, the communications HONI had with the City of Hamilton with respect to the proposed changes in street lighting rates, including the proposed change in the revenue to cost ratio.

Response

The referenced Report was issued by the Board on Dec.19, 2013. The Distribution System Code amendments to implement the findings of the report were issued May 15, 2014. As such, Hydro One has not yet implemented the Report findings.

Hydro One is not aware of any communications specifically with the City of Hamilton regarding this Application. Hydro One did carry out four stakeholder sessions where its Application proposals were presented and discussed. Information presented at the stakeholder sessions, and meeting notes of the sessions, were made available to all customers via Hydro One's Regulatory Affairs web page.

City of Hamilton (COFH) INTERROGATORY #12

Issue 7.6 Are Hydro One's proposed charges for street lighting appropriate?

Interrogatory

Reference: Exhibit G1, Tab 3, Schedule 1

- (a) Has HONI compared its revenue per street light connection with those of other electricity distribution utilities in Ontario?
- (b) If not, why not?
- (c) If so, what are the results of the comparison.

Response

- (a) No.
- (b) Each utility has its own specific revenue requirement associated with providing distribution service to all its customers. Further, the revenue collected from a particular rate class is a function of each utility's inputs to the cost allocation model that divides the revenue requirement among its rate classes, as well as the utility's approach to rate design (e.g. revenue-to-cost ratios). This limits the value of comparing revenues collected by rate class for different utilities.
- (c) Please refer to answers (a) and (b).

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #104

Issue 7.6 Are Hydro One's proposed charges for street lighting appropriate?

Interrogatory

Reference: G1/T4/S1, pg. 7

a) As the proposal to limit the increase in the Sentinel and Streetlight class fixed charges for 2015 is based on bill impact concerns, please explain why the proposed fixed percentage of the rate design for these classes isn't increased further in 2016-2019 in order to approach their CAM Scenario 3 values.

Response

a) Hydro One's proposal for all rate classes, including the Sentinel and Streetlight classes, is to maintain the 2015 fixed/variable split across all years of the application. This approach recognizes that the increase proposed in the 2015 fixed charge for many rate classes already represents a significant percentage increase. In addition, the fixed charge for the Streetlight class is applied on a per account basis and there are many low volume streetlight accounts for which further increases in the fixed charge would represent a significant impact on their bill. Similarly, there are large numbers of Sentinel lights customers with little to no consumption for which further increases in the fixed charge would represent a significant impact on their bill.

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #105

Issue 7.7 Is an increase to the fixed charges revenue appropriate?

Interrogatory

Reference: G1/T4/S1, pg. 4

- a) Based on the load profile for each customer class and the PLCC values what are the annual kWh/customer for each customer class that are implicitly captured by the minimum system costs reflected in Hydro One Network's proposed fixed charges.
- b) Please provide a schedule that for each customer class sets out the fixed charge and volumetric charge for distribution service (exclusive of any rate riders) for the years 2008-2013. Note: For those classes receiving RRRP, please show the fixed charge both before and after the RRRP discount.
- c) Please provide a schedule that sets out the actual distribution revenues by customer class for the years 2008-2013 and, for each year, show the percentage of total revenues recover via fixed versus volumetric charges. For those classes that receive RRRP please report the RRRP-related revenues received by Hydro One Networks separately.

Response

- a) Table 1 below shows the calculation of load factors, based on 4NCP values for 2015, for each rate class. Using the load factors from Table 1, annual kWh/customer were then calculated as shown in Table 2.

Table 1: Load Factor Calculations						
Rate Class	Months for 4NCPs	Number of Hours	Monthly kWh	kW (NCP)	Load Factor by Month	Average Load Factor
UR	1	744	211,383,806	419,187	68%	63%
	2	672	181,125,616	410,450	66%	
	7	744	175,343,092	427,661	55%	
	12	744	196,464,496	410,294	64%	
R1	1	744	578,743,063	1,109,768	70%	66%
	2	672	492,377,098	1,060,454	69%	
	11	720	425,521,104	996,782	59%	
	12	744	530,125,790	1,067,462	67%	
R2	1	744	570,214,631	1,111,371	69%	66%
	2	672	483,879,730	1,065,269	68%	
	3	744	462,995,070	1,010,294	62%	
	12	744	518,119,168	1,058,068	66%	
Seasonal	1	744	72,103,585	149,994	65%	61%
	2	672	57,951,202	136,082	63%	
	3	744	51,112,544	135,040	51%	
	12	744	59,560,493	126,268	63%	
GSe	1	744	218,464,274	402,749	73%	70%
	6	720	180,331,033	376,964	66%	
	7	744	188,242,311	382,301	66%	
	12	744	207,615,829	380,027	73%	
GSd	2	672	193,240,765	407,166	71%	70%
	3	744	207,276,227	400,981	69%	
	6	720	200,634,801	400,129	70%	
	7	744	208,004,666	406,472	69%	
UGe	1	744	58,085,681	110,779	70%	66%
	2	672	51,399,468	107,887	71%	
	6	720	50,651,931	115,003	61%	
	7	744	52,905,864	117,648	60%	
UGd	6	720	92,582,535	180,738	71%	70%
	7	744	96,240,119	192,482	67%	
	8	744	92,688,915	173,464	72%	
	9	720	89,268,611	176,967	70%	
St Lgt	5	744	9,764,111	45,120	29%	33%
	6	720	10,605,659	45,869	32%	
	7	744	10,895,408	44,833	33%	
	8	744	10,960,165	39,704	37%	
Sen Lgt	5	744	1,723,078	7,962	29%	33%
	6	720	1,871,587	8,094	32%	
	7	744	1,922,719	7,912	33%	
	8	744	1,934,147	7,007	37%	
USL	1	744	2,054,175	2,783	99%	99%
	2	672	1,846,764	2,772	99%	
	11	720	1,984,365	2,772	99%	
	12	744	2,059,811	2,793	99%	
DGen	1	744	2,052,864	3,478	79%	77%
	2	672	1,844,926	3,480	79%	
	9	720	1,899,177	3,620	73%	
	12	744	2,037,616	3,500	78%	
ST	1	744	1,499,632,509	2,484,596	81%	76%
	2	672	1,342,803,930	2,653,657	75%	
	6	720	1,407,677,740	2,597,150	75%	
	7	744	1,470,075,132	2,694,667	73%	

Table 2: Annual kWh/Cust Calculations						
Rate Class	Average Load Factor	NCP Type	Minimum System kW (4NCP)	Minimum System kWh (4NCP)	Number of Customers	Annual kWh/Cust
UR	63%	Line Transformer NCP	1,688,513	775,092,985	209,540	11,097
		Primary NCP	967,237	443,999,334	209,540	6,357
		Secondary NCP	967,237	443,999,334	209,540	6,357
R1	66%	Line Transformer NCP	4,328,620	2,066,533,990	438,279	14,145
		Primary NCP	2,023,097	965,850,221	438,279	6,611
		Secondary NCP	2,023,097	965,850,221	438,279	6,611
R2	66%	Line Transformer NCP	3,852,989	1,845,987,275	335,043	16,529
		Primary NCP	1,546,556	740,963,240	335,043	6,635
		Secondary NCP	1,546,556	740,963,240	335,043	6,635
Seasonal	61%	Line Transformer NCP	567,864	249,687,407	143,666	5,214
		Primary NCP	567,864	249,687,407	143,666	5,214
		Secondary NCP	547,384	240,682,560	143,666	5,026
GSe	70%	Line Transformer NCP	1,075,347	553,461,999	93,508	17,757
		Primary NCP	431,635	222,154,834	93,508	7,127
		Secondary NCP	431,635	222,154,834	93,508	7,127
GSd	70%	Line Transformer NCP	70,298	35,244,094	6,113	17,297
		Primary NCP	28,217	14,146,673	6,113	6,943
		Secondary NCP	0	0	0	
UGe	66%	Line Transformer NCP	204,334	96,726,755	17,768	16,331
		Primary NCP	82,018	38,825,278	17,768	6,555
		Secondary NCP	82,018	38,825,278	17,768	6,555
UGd	70%	Line Transformer NCP	21,864	11,212,240	1,901	17,692
		Primary NCP	8,776	4,500,496	1,901	7,102
		Secondary NCP	0	0	0	
St Lgt	33%	Line Transformer NCP	180,967	43,727,935	20,324	6,455
		Primary NCP	93,817	22,669,463	20,324	3,346
		Secondary NCP	93,817	22,669,463	20,324	3,346
Sen Lgt	33%	Line Transformer NCP	31,935	7,716,694	15,005	1,543
		Primary NCP	31,935	7,716,694	15,005	1,543
		Secondary NCP	30,975	7,484,670	15,005	1,496
USL	99%	Line Transformer NCP	11,465	8,190,608	5,642	4,355
		Primary NCP	11,465	8,190,608	5,642	4,355
		Secondary NCP	11,120	7,944,334	5,642	4,225
DGen	77%	Line Transformer NCP	223	124,030	460	809
		Primary NCP	1,408	783,879	460	5,110
		Secondary NCP	0	0	0	
ST	76%	Line Transformer NCP	0	0	0	
		Primary NCP	343	188,196	74	7,603
		Secondary NCP	0	0	0	

b) Table below provides the requested information:

Rate Class	2008			2009			2010			2011			2012			2013		
	Fixed Charge (\$/month)	Volumetric Charge (\$/kWh)	Volumetric Charge (\$/kW)	Fixed Charge (\$/month)	Volumetric Charge (\$/kWh)	Volumetric Charge (\$/kW)	Fixed Charge (\$/month)	Volumetric Charge (\$/kWh)	Volumetric Charge (\$/kW)	Fixed Charge (\$/month)	Volumetric Charge (\$/kWh)	Volumetric Charge (\$/kW)	Fixed Charge (\$/month)	Volumetric Charge (\$/kWh)	Volumetric Charge (\$/kW)	Fixed Charge (\$/month)	Volumetric Charge (\$/kWh)	Volumetric Charge (\$/kW)
UR*	14.79	0.02320		13.89	0.02250		12.91	0.02866		14.52	0.02918		14.52	0.02918		12.58	0.02529	
R1*	19.75	0.02710		18.86	0.02610		17.88	0.03253		19.72	0.03317		19.72	0.03317		19.93	0.03353	
R2-Excluding RRRP*	56.00	0.02440		53.26	0.02650		52.33	0.03415		55.69	0.03600		55.69	0.03600		56.98	0.03683	
R2-Including RRRP*	27.50			24.76			23.83			27.19			27.19			28.48		
Seasonal*	19.74	0.04100		18.85	0.05160		17.88	0.07130		19.71	0.08205		19.71	0.08205		19.50	0.08117	
GSe*	35.71	0.03160		33.62	0.03190		35.60	0.03769		35.49	0.03938		35.49	0.03938		35.87	0.03981	
GSd*	46.49		9.100	45.64		8.970	44.71		9.922	47.72		10.499	47.72		10.499	51.70		11.370
UGe*	15.09	0.01910		13.47	0.01970		12.91	0.02205		14.08	0.02325		14.08	0.02325		10.09	0.01666	
UGd*	19.14		7.180	21.67		7.150	26.04		7.760	33.62		8.173	33.62		8.173	28.40		6.914
St Lgt	0.96	0.04390		0.97	0.04440		0.99	0.04928		1.05	0.05219		1.05	0.05219		1.45	0.07209	
Sen Lgt	0.96	0.05090		0.97	0.05150		0.99	0.06584		1.05	0.06972		1.05	0.06972		1.48	0.09877	
USL	22.60	0.04960		24.78	0.04300		25.16	0.04541		29.06	0.03938		29.06	0.03938		29.37	0.03981	
DGen	36.20		6.870	35.69		6.950	35.24		5.550	37.32		5.876	37.32		5.876	37.72		5.939
ST**	Not Applicable			Not Applicable			271.8		0.630	288.64		0.668	288.64		0.668	291.76		0.675

* Rates shown for harmonization years (2008, 2009 and 2010) are the target rates for a particular rate class.

** For ST class, only monthly service charge and common-ST line charge is shown (the ST class did not exist in 2008 and 2009).

Filed: 2014-07-04
EB-2013-0416
Exhibit I
Tab 7.07
Schedule 6 VECC 105
Page 5 of 6

- c) The tables below provide the requested information. The requested information for 2008 is not readily available by current rate class and is provided in a separate table for the rate classes that existed before harmonization.

Rate Class	2009			2010			2011			2012			2013		
	Fixed Charge Revenue (\$M)	Volumetric Charge Revenue (\$M)	RRRP Amount Paid by Hydro One (\$M)	Fixed Charge Revenue (\$M)	Volumetric Charge Revenue (\$M)	RRRP Amount Paid by Hydro One (\$M)	Fixed Charge Revenue (\$M)	Volumetric Charge Revenue (\$M)	RRRP Amount Paid by Hydro One (\$M)	Fixed Charge Revenue (\$M)	Volumetric Charge Revenue (\$M)	RRRP Amount Paid by Hydro One (\$M)	Fixed Charge Revenue (\$M)	Volumetric Charge Revenue (\$M)	RRRP Amount Paid by Hydro One (\$M)
UR	16.0	32.6		16.3	21.2		27.3	42.4		27.9	44.7		25.2	40.3	
R1	70.2	95.2		68.4	109.7		96.0	146.9		97.1	143.8		98.5	151.7	
R2	233.3	109.6	(126.4)	227.7	162.4	(124.4)	246.8	194.5	(126.3)	248.4	191.8	(127.1)	255.6	203.7	(127.9)
Seasonal	46.0	32.3		40.3	46.9		37.1	59.8		37.1	59.2		36.2	59.6	
Acquired Residential	26.6	35.4		28.2	48.7										
GSe	36.2	62.1		34.3	63.7		42.7	92.0		41.8	88.6		42.4	93.2	
GSd	3.5	90.5		3.4	83.1		4.3	111.8		4.2	102.7		4.3	115.9	
UGe	1.0	3.2		1.0	3.9		1.6	7.3		2.0	9.0		1.5	6.7	
UGd	0.2	6.4		0.2	7.8		0.4	14.8		0.5	18.4		0.4	16.1	
Acquired General Service	5.5	42.5		6.7	53.7										
Street & Sentinel Lights*	0.5	6.3		0.5	7.0		0.5	7.7		0.5	7.7		0.8	10.6	
DGen	0.0	0.4		0.0	0.4		0.0	0.5		0.0	0.7		0.1	0.8	
ST	3.7	25.4		5.1	26.0		5.7	28.0		6.0	28.1		6.1	28.0	
Total	442.8	541.9	(126.4)	432.1	634.5	(124.4)	462.3	705.6	(126.3)	465.6	694.7	(127.1)	471.1	726.6	(127.9)
Fixed/Volumetric Split	45%	55%		41%	59%		40%	60%		40%	60%		39%	61%	

* Street and Sentinel Lights revenue are combined for revenue tracking purposes.

1

Rate Class	2008		
	Fixed Charge Revenue (\$M)	Volumetric Charge Revenue (\$M)	RRRP Amount Paid by Hydro One (\$M)
Farm - 1 Phase	63.0	42.0	
Farm - 3 Phase	0.8	6.8	
GS - 1 Phase	24.8	41.1	
GS - 3 Phase	8.5	86.5	
Street Lights	0.5	5.6	
Res - High Density	68.4	89.4	
Res - Normal Density	190.5	76.0	
Res - Seasonal High Density	15.8	9.1	
Res - Seasonal Normal Density	35.8	7.1	
Transmission	1.2	23.6	
Urban General Service	1.1	16.7	
Urban Residential	13.9	15.0	
MEU - Res	22.9	14.0	
MEU - GS	4.9	23.4	
MEU - GS Low Use	0.3	2.3	
ST/LV		27.1	
RRRP Amount Paid by Hydro One			(126.2)
Total	452.3	485.6	(126.2)
Fixed/Volumetric Split	48%	52%	

2

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #106

Issue 7.7 Is an increase to the fixed charges revenue appropriate?

Interrogatory

Reference: G1/T4/S1, pg. 6

- a) Please confirm that Hydro One Networks' CAM does not include revenues received by the Company to cover the RRRP discount.
- b) For Table 4, what is the proposed 2015 fixed charge for R2 prior to netting out the RRRP credit?
- c) Please explain why the proposed R2 fixed charge (prior to the RRRP credit) was not set at the CAM Scenario 3 value as is the case for most other customer classes.
- d) As the proposal to limit the increase in the Seasonal fixed charge for 2015 is based on bill impact concerns, please explain why the proposed fixed percentage of the Seasonal rate design isn't increased further in 2016-2019 in order to approach the CAM Scenario 3 value.

Response

- a) Confirmed.
- b) The proposed 2015 fixed charge net of the RRRP credit is \$67.96
- c) The proposed fixed charge for the R2 class was set to maintain the current approved fixed/variable split of 56/44. The R2 class collects about 36% of Hydro One's total revenue, and a reduction in the fixed charge split for the R2 class from the current value would deteriorate the current overall fixed/variable split for Hydro One from 40/60 to 37/63. Maintaining the currently approved split for this class aligns with the split previously approved by the Board for this class and is consistent with the Board's direction with respect to revenue decoupling.
- d) Hydro One's proposal for all rate classes, including the Seasonal class, is to maintain the 2015 fixed/variable split across all years of the application. As an increase in the fixed charge represents a significant impact on the many low volume Seasonal customers, Hydro One is proposing to not make any further changes to the fixed/variable split over the period of the current application.

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #107

Issue 7.7 Is an increase to the fixed charges revenue appropriate?

Interrogatory

Reference: G1/T4/S1, pg. 6 (Table 4) and pg. 10-11 (Table 5)

a) Page 11 outlines how the ST fixed charge is based on the Minimum System with the PLCC Adjustment value from Sheet O2 of the CAM adjusted to exclude low voltage meter costs which are recovered through a separate Meter Rate. However, the proposed fixed service charges and meter rates for the ST class (per Table 5) total more than the unit cost per CAM Scenario 3 (per Table 4). Please reconcile.

Response

Consistent with the principle of cost causality, the ST fixed service charge is set equal to the Minimum System with the PLCC Adjustment value, recalculated to exclude low voltage meter-related costs allocated to the ST rate class. An ST meter charge is then set to recover the meter-related costs. Since metering facilities for ST customers can either be owned by the customer or Hydro One, having a separate ST meter charge ensures that these costs are appropriately recovered from those customers with Hydro One-owned metering facilities.

The ST fixed service charge and the ST meter charge are applied on a different basis. The ST fixed service charge applies per account, whereas the ST meter charge applies per Hydro One-owned metering facility. All of the ST customers attract an ST fixed service charge, whereas the ST meter charge determinant will vary, depending on the number of Hydro One-owned metering facilities that are associated with the ST customer. As a result, the two rates cannot be simply added together to reconcile with the unit cost per CAM Scenario 3 (per Table 4).

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #108

Issue 7.7 Is an increase to the fixed charges revenue appropriate?

Interrogatory

**Reference: G1/T4/S1, pg. 15, lines 1-8
G2/T2/S1
G2/T1/S8, pg. 1**

- a) Which energy billed customer classes include customers that provide their own transformation?
- b) Based on the 0.14 cents/kWh credit, what is the forecast total dollar credit applicable to each of these classes for 2015?
- c) From which customer classes is the “cost” of this credit recovered and what is the impact on the proposed rates for each of these classes for 2015?
- d) For these classes where is the recovery of the cost of the credit reflected in the proposed 2015 rate schedules per G2/T2/S1?
- e) If the recovery is included proposed volumetric charges for these classes, please explain why the rates set out in G2/T2/S1 are the same as those used in the 2015 Revenue Reconciliation (G2/T1/S8, pg. 2) for all energy billed

Response

- a) GSe and UGe classes include customers that may provide their own transformation.
- b) Based on the 0.14 cents/kWh credit, the forecast 2015 total dollar credit applicable to GSe and UGe classes is \$20,426 and \$9,534, respectively.
- c) Since the total dollar credit applicable to GSe and UGe classes is very small, the “cost” of this credit is not recovered from any customer class.
- d) Please see response to part c).
- e) Please see response to part c).

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #109

Issue 7.7 Is an increase to the fixed charges revenue appropriate?

Interrogatory

**Reference: G1/T4/S1, pg. 15, lines 1-3 and 10-16 (including Table 6)
G2/T2/S1
G2/T1/S8, pg. 1**

- a) Which demand billed customer classes include customers that provide their own transformation?
- b) Based on the \$0.60 / kW credit, what is the forecast total dollar credit applicable to each of these classes for 2015?
- c) From which customer classes is the “cost” of this credit recovered and what is the impact on the proposed rates for each of these classes for 2015?
- d) For these classes where is the recovery of the cost of the credit reflected in the proposed 2015 rate schedules per G2/T2S/1?
- e) What would be rate adders for each class if the cost of providing the transformer allowance to each class’ customers was recovered from the same class as opposed to being uniformly recovered from all three classes using the same rider? Please show the calculations.

Response

- a) GSd, UGd and DGen customer classes include customers that may provide their own transformation.
- b) Based on the \$0.60 / kW credit, below are the forecast dollar credit applicable to each of the above classes for 2015:

Rate Class	Total Credit Amount (\$)
GSd	\$764,191
UGd	\$276,254
DGen	\$109,144

- c) As mentioned in Exhibit G1, Tab 4, Schedule 1 (pg.15), the “cost” of the Customer Supplied Transformer Allowance (CSTA) is recovered from GSd, UGd and DGen classes. Table below shows the impact of CSTA rate adder on distribution rates:

Rate Class	2015 Volumetric Charge Excluding Rate Adder for CSTA (\$/kW)	2015 CSTA Rate Adder (\$/kW)	2015 Volumetric Charge Including CSTA Rate Adder (\$/kW)	% Impact of CSTA Rate Adder on Distribution Volumetric Charge
GSd	13.7208	0.0978	13.8186	0.7%
UGd	7.8589	0.0978	7.9567	1.2%
DGen	3.2651	0.0978	3.3629	3.0%

d) As mentioned in part (c) above, recovery of the “cost” of the CSTA credit is embedded in the volumetric charges, shown in the proposed 2015 rate schedules, for GSd, UGd, and DGen classes.

e) Table below provides the calculations of rate adders for each class if the cost of providing the CSTA to each class’ customers was recovered from the same class:

Rate Class	Total kW for the Class	Total CSTA Credit Amount (\$)	CSTA Rate Adder (\$/kW)
GSd	8,484,670	\$764,191	0.0901
UGd	3,058,267	\$276,254	0.0903
DGen	216,099	\$109,144	0.5051

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #110

Issue 7.7 Is an increase to the fixed charges revenue appropriate?

Interrogatory

Reference: G1/T7/S1, pg. 4

- a) Please explain why the RRRP credit is constant for the 2015-2019 period when the number of R2 customers is increasing each year.
- b) Please provide the derivation of the proposed \$30.50 per month RRRP credit.

Response

- a) Consistent with past practice, the RRRP credit is established at a set amount and only changed as a result of a significant change in the makeup of the class such as the harmonization of rate classes in 2008 and the rate class review as part of this application.
- b) The amount was calculated based on the available funding of \$125.4M (i.e. \$127M less \$1.6M paid to three First Nations communities per O.Reg 442/01) divided by the average number of R2 customers over the period of the application $(335,043 + 346,199) / 2 = 340,621$, divided by 12 months and rounded to the nearest 50 cents.

$$125.4M / 340,621 / 12 = 30.68 \text{ rounded to } \$30.50 \text{ per month}$$

Energy Probe Research Foundation (EP) INTERROGATORY #56

Issue 7.7 Is an increase to the fixed charges revenue appropriate?

Interrogatory

- a) Will the Board's recent proposal (Rate Design for Electricity Distributors) to move distribution charges to a complete fixed rate rather than a combination of fixed and volumetric charges be considered an off-ramp? If not, has Hydro One done any studies on the impact on its revenue forecast if such a policy were put in place?
- b) Does Hydro One have any forecasts on the impact on customer bills if it were to move to a fixed rate for distribution charges?

Response

- a) Hydro One's application for setting 2015 to 2019 rates includes a number of adjustment mechanisms, as described in Exhibit A, Tab 4, Schedule 1. The proposed adjustment mechanisms would accommodate industry changes such as the Board's proposal to move to a complete fixed rate.
- b) An estimate of the impacts on Hydro One customers as a result of adopting the Board's proposal were provided in Hydro One's response to the Board report submitted on June 6, 2014 under proceeding EB-2012-0410.

Energy Probe Research Foundation (EP) INTERROGATORY #57

Issue 7.7 Is an increase to the fixed charges revenue appropriate?

Interrogatory

Reference: Exhibit G1, Tab 4, Schedule 1 Table

In Exhibit G1, Tab 4, Schedule 1 Table 1, does Hydro One have an estimate to what the service charge for the different rate classes would be if the Board implements its proposal for decoupling?

Response

Ontario Energy Board has presented three proposals for revenue decoupling.

- i) **Proposal 1 – Single monthly charge for the rate class:** Table below shows the service charges for Hydro One's residential and energy-billed general service customers if proposal 1 is implemented:

Rate Class	Fixed Monthly Charge
Urban residential [UR]	\$32.60
Residential Medium-Density [R1]	\$50.27
Residential Low-Density [R2]	\$103.05
Seasonal Residential	\$51.02
General Service Energy-Billed [GSe]	\$110.48
Urban General Service Energy-Billed [UGe]	\$58.43

- ii) **Proposal 2 - Fixed monthly charge based on the size of the electrical connection:** Hydro One does not have information on the size of customer's electrical connections required to calculate service charges under this proposal.

- iii) **Proposal 3 – Fixed monthly charge based on use during peak hours:** There are many variables associated with defining how this proposal would work, all of which would influence the calculation of fixed service charges under this proposal.

Energy Probe Research Foundation (EP) INTERROGATORY #58

Issue 7.7 Is an increase to the fixed charges revenue appropriate?

Interrogatory

Reference: Exhibit G1, Tab 4, Schedule 1 Table 2

In Exhibit G1, Tab 4, Schedule 1 Table 2, why does Hydro One not smooth the rate increases over the five-year plan?

Response

The rate increases have been smoothed for the total impact across all rate classes over the five-year plan. The annual smoothing revenues required to smooth the total impact across all classes have been allocated among rate classes based on the fixed and volumetric revenues for each class, as shown in Exhibit G1, Tab 5, Schedule 3, Attachments 1 to 5. The rate increases by rate class shown in Exhibit G1, Tab 4, Schedule 1 Table 2 will vary from the overall average as a result of the output of the cost allocation model, the approach to rate design (e.g. setting of R/C ratios), and the calculation of riders.

Energy Probe Research Foundation (EP) INTERROGATORY #59

Issue 7.7 Is an increase to the fixed charges revenue appropriate?

Interrogatory

Reference: Exhibit G1, Tab 4, Schedule 1 Table 3

In Exhibit G1, Tab 4, Schedule 1, Table 3, can Hydro One explain why it does not offer the same fixed/volumetric split for all rate classes?

Response

Hydro One is proposing to use the fixed charges derived by the cost allocation model, as described in Exhibit G1, Tab 4, Schedule 1. The size of the fixed charge will vary by rate class depending on the allocation of directly related customer costs, administration and general costs, and the minimum system customer costs to each rate class as determined by the cost allocation model. Since the size of the fixed charge drives the fixed/volumetric split, the split will not be the same for each rate class.

Energy Probe Research Foundation (EP) INTERROGATORY #60

Issue 7.7 Is an increase to the fixed charges revenue appropriate?

Interrogatory

Reference: Exhibit G1, Tab 4, Schedule 1 Table 3

Preamble:

In Exhibit G1, Tab 4, Schedule 1 Table 3, the application says “Hydro One does not propose adopting the minimum system fixed charge for the Seasonal customer class as this would represent a 2.5 times increase in the current fixed charge and would result in large rate impacts to the many low consumption customers within the Seasonal rate class.”

- a) Can Hydro One explain how this is not a cross subsidy from other rate classes to the seasonal rate class?
- b) Does Hydro One plan on eventually moving the seasonal rate class to a minimum system fixed charge?

Response

- a) There is no cross subsidization between rate classes as a result of establishing the fixed charge for a particular class. Setting a higher/lower fixed charge will result in correspondingly lower/higher volumetric charge for customers within that rate class, but has no impact on the revenues collected from any other class.
- b) For this application Hydro One is proposing to maintain the same fixed/variable split for all rate classes over the 5 year application period. A move to the minimum system fixed charge for the Seasonal class would better align with the approach being used for all the other residential rate classes, and as such, Hydro One believes it would be appropriate to move to a minimum system based charge for the Seasonal class eventually.

Energy Probe Research Foundation (EP) INTERROGATORY #61

Issue 7.7 Is an increase to the fixed charges revenue appropriate?

Interrogatory

Reference: Exhibit G1, Tab 4, Schedule 2, Attachment 1

- a) In the tables in Exhibit G1-4-2 Attachment 1, can Hydro One explain why the revenue collected from the Urban Residential class is still higher than the Allocated Cost?
- b) Does Hydro One plan on eventually collecting the necessary revenue from each rate class to cover its Allocated Costs?

Response

- (a) As shown in Exhibit G2, Tab 1, Schedule 2 (pg.5) the 2015 revenue to cost ratio for the Urban Residential rate class is 1.29 based on the output of the cost allocation model. This means that the revenue being collected is higher than the allocated costs. Hydro One is proposing to lower the 1.29 R/C ratio to 1.15 in 2015, which brings the R/C ratio within the Board approved range for residential rate classes. As noted in the response to part (b), Hydro One proposes further adjustments to more closely align the revenues and allocated costs for all rate classes.
- (b) As described in Exhibit G1, Tab 3, Schedule 1 (pg.15), Hydro One is proposing to move the revenue to cost ratios for all rate classes within a range of 98% to 102% over the five year period. This will bring the revenue collected from each rate class close to their respective allocated costs.

Green Energy Coalition (GEC) INTERROGATORY #1

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Reference: Cost Allocation Model Tab E2 (Allocators)

- a) Please provide the class peak loads used by HONI to calculate distribution demand costs as forecast in each of the upcoming years. Also provide coincident peak (CP) load and class non-coincident peak (NCP) and distribution peak loads as used by HONI load in each month of the five previous years and as forecast over the next five year period.
- b) Provide the date and time of the monthly CP, NCP, and HONI peak load for distribution cost allocation (by class if different) in the five previous years and identify any peak loads that occurred on Saturdays, Sundays, or holidays. Provide the load by rate class, including wholesale for both generation and transmission. Regarding Issue 7.7

Response

- a) The class peak loads used by HONI to calculate distribution demand costs are provided below for each of the forecast years. Each table includes the highest, sum of the first 4 highest, and sum of 12 monthly coincident peak values (denoted by CP1 CP4, and CP12) and for non-coincident peak (NCP1, NCP4, and NCP12). The tables are followed by class monthly coincident and non-coincident peak (NCP) and distribution peak loads in each month of the forecast years and for the year 2012, which was used as the base year to produce the load shapes for the forecast years. Hydro One did not retrieve information for other historical years as smart meter data were not adequate to do so.

Coincident Peak Measures (kW) for the Year 2015													
Peak	Total	Dgen	GSd	GSe	R1	R2	Seasonal	ST	UGd	UGe	UR	STL	USL
1 CP	6,182,773	3,141	351,783	298,769	1,060,454	1,065,269	125,874	2,621,076	133,726	93,428	390,929	35,557	2,766
4 CP	23,716,077	11,109	1,312,357	1,309,807	4,099,976	4,010,667	407,710	9,914,158	544,035	372,008	1,627,232	95,958	11,059
12 CP	64,120,663	31,026	3,721,006	3,596,834	10,475,274	10,286,613	946,536	27,919,542	1,621,358	1,009,766	4,266,118	213,580	33,011
Non-coincident Peak Measures (kW) for the Year 2015													
1 NCP	6,673,881	3,620	407,166	402,749	1,109,768	1,111,371	149,994	2,694,667	192,482	117,648	427,661	53,963	2,793
4 NCP	25,687,970	14,079	1,614,747	1,542,041	4,234,466	4,245,001	547,384	10,430,071	723,652	451,317	1,667,592	206,501	11,120
12 NCP	68,806,059	39,919	4,595,045	4,263,992	10,912,255	10,554,829	1,211,675	28,892,646	2,018,999	1,245,879	4,549,409	488,263	33,149

Filed: 2014-07-04
EB-2013-0416
Exhibit I
Tab 7.07
Schedule 13 GEC 1
Page 2 of 7

1

Coincident Peak Measures (kW) for the Year 2016													
Peak	Total	Dgen	Gsd	GSe	R1	R2	Seasonal	ST	UGd	UGe	UR	STL	USL
1 CP	6,196,932	3,409	355,799	299,578	1,068,840	1,059,591	124,631	2,625,380	134,529	93,929	392,541	35,893	2,812
4 CP	23,728,396	11,887	1,308,891	1,272,396	4,154,442	4,007,885	410,717	9,920,560	537,124	359,781	1,636,555	96,862	11,295
12 CP	64,295,133	33,777	3,732,374	3,544,064	10,650,356	10,316,825	932,471	27,916,967	1,612,371	990,641	4,317,819	213,735	33,732

2

Non-coincident Peak Measures (kW) for the Year 2016													
1 NCP	6,689,887	3,929	411,814	403,824	1,118,544	1,105,447	148,512	2,699,154	193,638	118,279	429,424	54,472	2,850
4 NCP	25,738,651	15,361	1,633,182	1,544,103	4,263,774	4,217,877	541,977	10,447,453	727,996	452,656	1,674,468	208,448	11,356
12 NCP	68,946,957	43,457	4,655,950	4,271,819	10,989,928	10,494,074	1,194,017	28,923,327	2,031,120	1,250,480	4,566,427	492,491	33,867

3

Coincident Peak Measures (kW) for the Year 2017													
Peak	Total	Dgen	GSD	GSe	R1	R2	Seasonal	ST	UGd	UGe	UR	STL	USL
1 CP	6,259,311	3,557	361,433	301,524	1,086,845	1,064,661	125,644	2,647,943	136,119	94,804	397,862	36,023	2,899
4 CP	23,487,629	12,222	1,307,744	1,261,203	4,086,512	3,888,133	407,013	9,931,504	539,154	356,571	1,588,751	97,213	11,610
12 CP	64,495,479	33,319	3,821,527	3,649,787	10,654,120	10,106,315	955,736	28,076,974	1,648,427	1,024,651	4,294,920	195,065	34,638

4

Non-coincident Peak Measures (kW) for the Year 2017													
1 NCP	6,757,237	4,099	418,335	406,480	1,137,385	1,110,737	149,719	2,722,334	195,926	119,381	435,245	54,669	2,927
4 NCP	25,819,207	16,066	1,659,041	1,550,669	4,275,872	4,141,140	538,667	10,537,172	736,377	456,897	1,686,437	209,203	11,665
12 NCP	69,649,238	45,408	4,713,660	4,287,401	11,213,776	10,480,653	1,201,740	29,192,692	2,046,787	1,258,221	4,679,481	494,652	34,766

5

Coincident Peak Measures (kW) for the Year 2018													
Peak	Total	Dgen	GSD	GSe	R1	R2	Seasonal	ST	UGd	UGe	UR	STL	USL
1 CP	6,262,931	3,705	361,994	299,343	1,096,142	1,059,856	125,341	2,647,375	135,658	94,468	399,939	36,176	2,932
4 CP	23,590,884	13,183	1,333,487	1,266,833	4,094,262	3,829,976	378,589	10,048,385	549,725	362,682	1,601,348	100,699	11,716
12 CP	64,618,308	34,793	3,801,626	3,604,400	10,874,819	10,120,589	914,690	27,995,284	1,631,936	1,017,272	4,389,357	198,534	35,008

6

Non-coincident Peak Measures (kW) for the Year 2018													
1 NCP	6,760,439	4,270	418,985	403,577	1,147,115	1,105,724	149,358	2,721,810	195,263	118,958	437,517	54,903	2,960
4 NCP	25,818,321	16,736	1,661,619	1,536,428	4,303,070	4,122,452	537,371	10,535,158	733,886	454,475	1,695,241	210,096	11,790
12 NCP	69,577,786	47,300	4,730,339	4,258,286	11,296,907	10,433,356	1,203,749	29,098,646	2,039,862	1,252,591	4,684,822	496,763	35,164

7

Coincident Peak Measures (kW) for the Year 2019													
Peak	Total	Dgen	GSD	GSe	R1	R2	Seasonal	ST	UGd	UGe	UR	STL	USL
1 CP	6,242,972	3,837	360,762	295,741	1,102,528	1,051,760	124,509	2,635,356	134,510	93,649	400,903	36,481	2,937
4 CP	23,512,886	13,166	1,308,093	1,219,301	4,174,162	3,866,005	390,393	9,923,169	536,522	347,805	1,624,049	98,449	11,770
12 CP	64,404,172	35,545	3,767,828	3,528,624	10,994,222	10,108,562	922,935	27,789,063	1,609,573	996,715	4,418,778	197,108	35,220

Non-coincident Peak Measures (kW) for the Year 2019													
1 NCP	6,738,112	4,422	417,558	398,722	1,153,798	1,097,277	148,367	2,709,518	193,610	117,926	438,572	55,364	2,978
4 NCP	25,739,821	17,332	1,655,960	1,517,934	4,328,139	4,090,960	533,804	10,487,597	727,674	450,532	1,706,154	211,863	11,873
12 NCP	69,508,372	48,804	4,704,907	4,204,138	11,397,564	10,374,189	1,192,324	29,044,393	2,027,173	1,242,364	4,736,177	500,940	35,399

Coincident Peak (kW) for The Year 2015													
Month	Dgen	GSD	GSe	R1	R2	Seasonal	ST	UGd	UGe	UR	STL	USL	Total
1	2,622	307,135	332,334	1,096,696	1,111,371	134,621	2,306,129	121,715	87,885	407,687	32,436	2,765	5,943,396
2	3,141	351,783	298,769	1,060,454	1,065,269	125,874	2,621,076	133,726	93,428	390,929	35,557	2,766	6,182,773
3	2,286	285,647	302,485	975,297	960,157	123,158	2,149,800	111,274	78,395	375,167	37,143	2,738	5,403,548
4	3,183	361,173	285,139	828,471	865,350	113,893	2,233,823	147,568	70,325	298,538	0	2,718	5,210,180
5	2,055	290,208	241,061	669,568	679,165	46,229	2,086,881	124,538	73,025	262,670	0	2,723	4,478,123
6	2,375	316,817	316,296	816,433	733,352	40,609	2,513,187	151,052	91,289	389,764	0	2,744	5,373,917
7	2,348	324,937	332,059	891,187	781,293	40,579	2,608,310	155,707	95,748	423,491	0	2,753	5,658,412
8	2,258	286,011	326,549	791,665	713,861	50,770	2,238,188	134,811	91,390	375,552	0	2,761	5,013,817
9	2,852	291,181	259,481	668,909	673,525	29,973	2,296,434	138,172	75,308	305,498	20,684	2,748	4,764,765
10	2,515	285,016	261,891	779,835	801,009	48,442	2,202,433	134,511	74,809	302,979	29,958	2,761	4,926,159
11	2,394	292,595	294,125	845,119	849,527	85,751	2,284,639	135,396	83,217	328,718	29,837	2,758	5,234,076
12	2,998	328,502	346,645	1,051,640	1,052,735	106,636	2,378,643	132,886	94,947	405,125	27,964	2,775	5,931,496

Non-coincident Peak (kW) for the Year 2015													
Month	Dgen	GSD	GSe	R1	R2	Seasonal	ST	UGd	UGe	UR	STL	USL	Total
1	3,478	374,973	402,749	1,109,768	1,111,371	149,994	2,484,596	153,505	110,779	419,187	36,177	2,783	5,943,396
2	3,480	407,166	374,896	1,060,454	1,065,269	136,082	2,653,657	158,008	107,887	410,450	38,474	2,772	6,182,773
3	3,398	400,981	361,967	995,967	1,010,294	135,040	2,402,617	162,970	104,697	385,937	37,501	2,744	5,403,548
4	3,251	374,536	351,635	847,880	865,350	113,893	2,339,842	172,300	99,289	353,376	43,205	2,731	5,210,180
5	2,741	365,634	294,496	685,973	679,165	68,492	2,089,609	165,721	91,069	280,508	53,082	2,737	4,478,123
6	3,020	400,129	376,964	848,137	754,236	73,351	2,597,150	180,738	115,003	406,410	53,963	2,752	5,373,917
7	3,197	406,472	382,301	917,201	804,510	76,041	2,694,667	192,482	117,648	427,661	52,745	2,762	5,658,412
8	3,439	382,655	346,000	828,216	739,821	75,157	2,410,324	173,464	104,028	395,722	46,710	2,769	5,013,817
9	3,620	383,263	330,095	707,095	697,947	77,021	2,296,434	176,967	98,920	323,075	37,495	2,764	4,764,765
10	3,376	369,683	315,378	847,320	818,267	79,872	2,223,201	169,229	93,131	341,883	31,079	2,770	4,926,159
11	3,417	361,635	347,484	996,782	950,532	100,463	2,304,820	161,957	99,136	394,906	29,837	2,772	5,234,076
12	3,500	367,918	380,027	1,067,462	1,058,068	126,268	2,395,728	151,658	104,291	410,294	27,996	2,793	5,931,496

1

Coincident Peak (kW) for The Year 2016													
Month	Dgen	GSd	GSe	R1	R2	Seasonal	ST	UGd	UGe	UR	STL	USL	Total
1	2,845	310,642	333,223	1,105,369	1,105,447	133,291	2,310,056	122,446	88,356	409,368	32,742	2,825	5,956,610
2	3,409	355,799	299,578	1,068,840	1,059,591	124,631	2,625,380	134,529	93,929	392,541	35,893	2,812	6,196,932
3	2,481	288,908	303,291	983,010	955,040	121,942	2,153,624	111,942	78,816	376,714	37,494	2,797	5,416,058
4	3,454	365,296	285,894	835,023	860,738	112,768	2,237,338	148,454	70,702	299,769	0	2,778	5,222,214
5	2,230	293,521	241,694	674,863	675,545	45,772	2,090,081	125,286	73,417	263,753	0	2,782	4,488,943
6	2,577	320,434	317,141	822,890	729,443	40,207	2,517,303	151,959	91,778	391,372	0	2,804	5,387,907
7	2,379	313,963	295,361	924,455	800,222	47,567	2,620,904	148,158	82,957	429,424	0	2,814	5,668,204
8	2,007	258,959	286,345	834,766	735,878	56,857	2,152,293	124,126	75,573	397,353	0	2,816	4,926,974
9	3,096	294,505	260,165	674,199	669,935	29,677	2,300,012	139,002	75,712	306,758	20,879	2,808	4,776,746
10	2,730	288,270	262,578	786,002	796,740	47,963	2,205,865	135,319	75,211	304,228	30,240	2,824	4,937,970
11	3,315	313,589	314,561	885,162	885,623	66,568	2,339,892	139,161	89,652	341,318	28,260	2,828	5,409,926
12	3,254	328,487	344,234	1,055,778	1,042,625	105,227	2,364,220	131,991	94,539	405,223	28,228	2,844	5,906,650

2

Non-coincident Peak (kW) for the Year 2016													
Month	Dgen	GSd	GSe	R1	R2	Seasonal	ST	UGd	UGe	UR	STL	USL	Total
1	3,775	379,254	403,824	1,118,544	1,105,447	148,512	2,488,756	154,427	111,373	420,916	36,518	2,840	5,956,610
2	3,777	411,814	375,903	1,068,840	1,059,591	134,738	2,658,062	158,957	108,466	412,142	38,836	2,833	6,196,932
3	3,688	405,559	362,941	1,003,844	1,004,909	133,706	2,386,685	163,948	105,258	387,528	37,854	2,804	5,416,058
4	3,528	378,812	352,578	850,140	860,738	112,768	2,323,562	173,334	99,822	353,092	43,612	2,792	5,222,214
5	3,056	369,809	295,280	691,398	675,545	67,816	2,092,593	166,716	91,558	281,665	53,583	2,796	4,488,943
6	3,278	404,697	374,375	854,844	750,216	72,627	2,601,482	181,823	114,538	408,086	54,472	2,812	5,387,907
7	3,469	411,112	383,332	924,455	800,222	75,290	2,699,154	193,638	118,279	429,424	53,242	2,825	5,668,204
8	3,837	387,024	346,929	834,766	735,878	68,726	2,379,919	174,506	104,586	397,353	47,151	2,829	4,926,974
9	3,929	387,638	330,978	712,687	694,227	76,261	2,300,012	178,030	98,451	324,408	37,848	2,824	4,776,746
10	3,523	373,904	316,219	854,021	813,905	79,083	2,226,715	170,245	93,631	343,293	31,028	2,829	4,937,970
11	3,797	374,209	348,416	1,004,665	945,465	99,471	2,366,616	162,929	99,668	396,534	30,118	2,833	5,409,926
12	3,798	372,119	381,043	1,071,725	1,047,931	125,021	2,399,773	152,569	104,850	411,986	28,228	2,850	5,906,650

3

Coincident Peak (kW) for The Year 2017													
Month	Dgen	GSd	GSe	R1	R2	Seasonal	ST	UGd	UGe	UR	STL	USL	Total
1	2,981	315,560	335,389	1,123,989	1,110,737	134,374	2,329,872	123,893	89,179	414,917	32,861	2,918	6,016,670
2	3,557	361,433	301,524	1,086,845	1,064,661	125,644	2,647,943	136,119	94,804	397,862	36,023	2,899	6,259,311
3	1,967	293,483	305,271	999,568	959,610	122,933	2,172,055	113,265	79,550	381,820	37,629	2,874	5,470,026
4	2,911	371,080	287,766	849,089	864,857	113,684	2,256,605	150,208	71,360	303,832	0	2,847	5,274,239
5	2,313	298,169	243,256	686,231	678,777	46,144	2,108,102	126,766	74,100	267,328	0	2,863	4,534,051
6	3,312	407,424	376,827	689,833	599,550	36,476	2,623,822	183,971	114,823	323,584	0	2,879	5,362,501
7	2,564	318,935	297,291	940,027	804,051	47,954	2,643,407	149,909	83,729	435,245	0	2,888	5,726,000
8	2,557	296,391	331,981	843,797	744,369	54,083	2,328,596	138,358	93,395	396,900	0	2,896	5,233,323
9	2,460	253,779	282,355	833,697	721,424	41,455	2,123,467	121,969	74,499	389,805	0	2,885	4,847,795
10	2,829	292,835	264,295	799,242	800,553	48,353	2,224,871	136,918	75,911	308,352	29,996	2,891	4,987,044
11	2,748	300,622	296,834	866,151	849,042	85,594	2,307,952	137,819	84,442	334,548	30,227	2,892	5,298,871
12	3,119	311,817	326,999	935,652	908,684	99,041	2,310,282	129,234	88,859	340,727	28,330	2,905	5,485,648

4

Non-coincident Peak (kW) for the Year 2017													
Month	Dgen	GSd	GSe	R1	R2	Seasonal	ST	UGd	UGe	UR	STL	USL	Total
1	3,939	385,259	406,480	1,137,385	1,110,737	149,719	2,510,123	156,251	112,410	426,622	36,650	2,922	6,016,670
2	3,941	418,335	381,509	1,096,144	1,064,661	135,832	2,680,893	160,835	109,476	417,729	38,977	2,908	6,259,311
3	3,848	411,980	365,325	1,020,753	1,009,718	134,792	2,408,152	165,885	106,239	392,781	37,991	2,878	5,470,026
4	3,681	379,286	354,898	865,152	864,857	113,684	2,344,536	160,573	100,751	358,104	43,770	2,864	5,274,239
5	3,218	384,810	304,434	703,044	678,777	68,367	2,221,557	175,382	91,957	305,160	53,777	2,870	4,534,051
6	3,420	411,105	376,827	842,843	733,018	73,217	2,623,822	183,971	115,630	394,523	54,669	2,883	5,362,501
7	3,620	417,622	385,853	940,027	804,051	75,902	2,722,334	195,926	119,381	435,245	53,435	2,900	5,726,000
8	4,043	390,268	356,433	866,582	751,729	75,020	2,434,989	176,347	108,292	406,841	47,322	2,904	5,233,323
9	4,099	393,776	333,149	833,697	739,291	76,880	2,319,829	180,134	99,392	389,805	37,985	2,899	4,847,795
10	3,676	379,824	318,288	868,406	817,800	79,725	2,245,887	172,257	94,503	347,946	31,485	2,904	4,987,044
11	3,962	371,555	350,704	1,021,588	949,989	100,279	2,328,395	164,854	100,596	401,910	30,227	2,908	5,298,871
12	3,963	369,840	353,501	1,018,152	956,025	118,323	2,352,174	154,371	99,595	402,815	28,362	2,927	5,485,648

1

Coincident Peak (kW) for The Year 2018													
Month	Dgen	GSd	GSe	R1	R2	Seasonal	ST	UGd	UGe	UR	STL	USL	Total
1	3,558	339,761	347,708	1,106,396	1,065,113	106,606	2,448,279	135,869	96,237	421,386	36,071	2,928	6,109,912
2	3,705	361,994	299,343	1,096,142	1,059,856	125,341	2,647,375	135,658	94,468	399,939	36,176	2,932	6,262,931
3	2,049	293,939	303,067	1,008,119	955,280	122,637	2,171,873	112,881	79,268	383,814	37,790	2,905	5,473,622
4	3,032	371,657	285,684	856,352	860,954	113,411	2,255,973	149,699	71,108	305,418	0	2,879	5,276,167
5	2,409	298,632	241,488	692,102	675,714	46,033	2,107,430	126,337	73,838	268,724	0	2,895	4,535,603
6	3,450	408,057	374,115	695,734	596,845	36,388	2,623,324	183,349	114,416	325,273	0	2,913	5,363,863
7	2,671	319,430	295,140	948,068	800,423	47,838	2,642,919	149,401	83,433	437,517	0	2,922	5,729,763
8	2,663	296,851	329,585	851,015	741,010	53,953	2,328,393	137,890	93,065	398,972	0	2,930	5,236,327
9	2,562	254,173	280,308	840,829	718,168	41,356	2,123,203	121,556	74,235	391,839	0	2,920	4,851,150
10	2,946	293,290	262,376	806,079	796,940	48,237	2,224,215	136,454	75,642	309,962	29,690	2,925	4,988,757
11	2,497	251,541	260,945	1,030,328	945,702	74,086	2,112,487	114,044	73,017	404,008	30,356	2,925	5,301,936
12	3,249	312,301	324,642	943,656	904,583	98,803	2,309,812	128,796	88,544	342,506	28,451	2,934	5,488,278

2

Non-coincident Peak (kW) for the Year 2018													
Month	Dgen	GSd	GSe	R1	R2	Seasonal	ST	UGd	UGe	UR	STL	USL	Total
1	4,103	385,858	403,577	1,147,115	1,105,724	149,358	2,509,662	155,723	112,012	428,849	36,807	2,953	6,109,912
2	4,105	418,985	375,659	1,096,142	1,059,856	135,506	2,680,363	160,291	109,088	419,910	39,144	2,938	6,262,931
3	4,008	412,620	362,695	1,029,485	1,005,161	134,468	2,391,655	165,324	105,862	394,831	38,154	2,912	5,473,622
4	3,834	379,983	352,342	869,136	860,954	113,411	2,285,988	160,030	100,395	340,886	43,957	2,897	5,276,167
5	3,352	385,408	302,232	709,058	675,714	68,202	2,220,692	174,789	91,436	306,753	54,007	2,903	4,535,603
6	3,562	411,743	374,115	850,053	729,710	73,040	2,623,324	183,349	114,416	396,583	54,903	2,920	5,363,863
7	3,771	418,270	383,077	948,068	800,423	80,618	2,721,810	195,263	118,958	437,517	53,663	2,933	5,729,763
8	4,211	400,123	353,865	873,996	748,336	74,839	2,434,251	175,751	107,908	408,965	47,524	2,938	5,236,327
9	4,270	394,388	330,744	840,829	735,955	76,695	2,319,145	179,524	98,864	391,839	38,147	2,934	4,851,150
10	3,829	380,414	320,847	875,835	814,110	79,534	2,245,272	171,674	94,168	349,763	31,620	2,938	4,988,757
11	4,127	372,132	348,175	1,030,328	945,702	100,038	2,327,832	164,297	100,240	404,008	30,356	2,938	5,301,936
12	4,128	370,415	350,957	1,026,861	951,710	118,039	2,338,654	153,849	99,242	404,918	28,483	2,960	5,488,278

3

Coincident Peak (kW) for The Year 2019													
Month	Dgen	GSd	GSe	R1	R2	Seasonal	ST	UGd	UGe	UR	STL	USL	Total
1	3,216	314,974	328,973	1,140,208	1,097,277	133,161	2,319,079	122,428	88,092	418,088	33,279	2,951	6,001,727
2	3,837	360,762	295,741	1,102,528	1,051,760	124,509	2,635,356	134,510	93,649	400,903	36,481	2,937	6,242,972
3	2,122	292,938	299,405	1,013,992	947,982	121,823	2,162,322	111,926	78,581	384,739	38,108	2,927	5,456,864
4	3,140	370,391	282,233	861,341	854,377	112,658	2,245,569	148,432	70,491	306,154	0	2,897	5,257,683
5	2,495	297,615	238,560	696,134	670,552	45,727	2,097,623	125,268	73,197	269,371	0	2,916	4,519,459
6	3,573	406,667	369,609	699,787	592,285	36,147	2,611,484	181,797	113,423	326,057	0	2,932	5,343,762
7	2,766	318,342	291,574	953,592	794,308	47,521	2,631,007	148,137	82,709	438,572	0	2,941	5,711,469
8	2,758	295,841	325,609	855,973	735,349	53,595	2,318,145	136,723	92,257	399,933	0	2,949	5,219,133
9	2,654	253,307	276,919	845,728	712,682	41,081	2,113,773	120,527	73,591	392,784	0	2,940	4,835,985
10	3,051	292,291	259,202	810,775	790,852	47,916	2,213,923	135,299	74,986	310,709	29,939	2,944	4,971,887
11	2,586	250,685	257,786	1,036,330	938,478	73,594	2,103,055	113,078	72,384	404,981	30,611	2,945	5,286,513
12	3,346	314,015	303,013	977,835	922,660	85,202	2,337,728	131,447	83,355	366,487	28,690	2,941	5,556,718

4

Non-coincident Peak (kW) for the Year 2019													
Month	Dgen	GSd	GSe	R1	R2	Seasonal	ST	UGd	UGe	UR	STL	USL	Total
1	4,249	384,544	398,722	1,153,798	1,097,277	148,367	2,498,351	154,405	111,040	429,882	37,116	2,971	6,001,727
2	4,251	417,558	371,138	1,102,528	1,051,760	134,606	2,668,244	158,934	108,142	420,922	39,473	2,961	6,242,972
3	3,971	411,215	358,327	1,035,483	997,482	133,576	2,390,087	163,925	104,944	395,783	38,474	2,930	5,456,864
4	3,971	378,581	348,098	882,262	854,377	112,658	2,325,377	163,253	99,524	362,532	44,327	2,915	5,257,683
5	3,472	384,095	298,581	713,189	670,552	67,749	2,210,185	173,309	91,284	307,492	54,461	2,923	4,519,459
6	3,689	410,341	369,609	881,787	744,672	72,556	2,611,484	181,797	113,423	416,779	55,364	2,939	5,343,762
7	3,905	416,846	378,465	953,592	794,308	76,648	2,709,518	193,610	117,926	438,572	54,115	2,953	5,711,469
8	4,361	389,544	349,600	879,087	742,620	74,342	2,422,965	174,263	106,972	409,950	47,923	2,957	5,219,133
9	4,422	393,045	326,755	845,728	730,333	76,186	2,308,413	178,004	98,006	392,784	38,468	2,952	4,835,985
10	3,965	379,119	312,176	880,937	807,890	79,006	2,234,935	170,221	93,351	350,606	31,886	2,957	4,971,887
11	4,274	370,865	343,978	1,036,330	938,478	99,374	2,317,193	162,906	99,370	404,981	30,611	2,962	5,286,513
12	4,275	369,154	348,690	1,032,844	944,440	117,255	2,347,643	152,547	98,381	405,894	28,723	2,978	5,556,718

Coincident Peak (kW) for The Year 2012													
Month	Dgen	GSd	GSe	R1	R2	Seasonal	ST	UGd	UGe	UR	STL	USL	Total
1	1,392	330,153	361,139	996,851	1,043,662	175,819	2,434,347	151,249	105,196	388,345	33,282	2,685	6,024,119
2	1,668	287,668	338,903	920,880	969,708	173,407	2,277,765	131,547	94,553	364,042	36,484	2,686	5,599,309
3	1,214	315,036	326,184	860,087	907,819	138,503	2,361,242	144,941	96,245	338,505	38,111	2,659	5,530,545
4	1,690	275,082	244,784	682,527	711,341	77,174	2,117,645	143,115	76,222	285,968	0	2,640	4,618,187
5	1,091	336,837	306,459	670,558	629,639	50,650	2,502,812	173,115	101,154	355,081	0	2,644	5,130,041
6	1,261	351,485	349,530	865,804	783,596	64,575	2,806,960	189,955	117,489	462,057	0	2,665	5,995,376
7	1,247	353,016	364,208	902,668	820,328	91,191	2,833,148	183,967	118,480	490,588	0	2,673	6,161,515
8	1,199	298,179	345,237	898,289	816,059	137,409	2,469,517	158,833	104,032	483,521	0	2,682	5,714,956
9	1,514	322,661	351,108	789,816	754,905	64,499	2,484,195	169,684	110,750	394,875	21,223	2,669	5,467,901
10	1,335	280,803	266,130	715,928	756,473	78,149	2,260,458	146,339	81,424	299,980	30,738	2,681	4,920,439
11	1,271	312,600	367,552	889,639	948,793	104,644	2,444,646	158,402	109,081	349,766	30,614	2,678	5,719,685
12	1,592	306,908	246,808	858,814	884,055	55,825	2,480,678	155,446	81,501	349,737	28,693	2,695	5,452,753
Non-coincident Peak (kW) for the Year 2012													
Month	Dgen	GSd	GSe	R1	R2	Seasonal	ST	UGd	UGe	UR	STL	USL	Total
1	1,847	373,425	407,901	999,792	1,043,662	190,135	2,462,503	178,433	120,110	408,573	37,119	2,703	6,028,412
2	1,848	362,354	376,064	927,465	969,708	175,527	2,430,149	177,962	125,453	380,586	39,476	2,692	5,602,482
3	1,804	358,444	385,922	893,394	927,228	162,572	2,371,470	181,214	114,475	364,244	38,478	2,665	5,531,502
4	1,726	349,664	325,403	724,200	727,928	108,598	2,126,383	173,510	101,310	313,919	44,331	2,652	4,662,554
5	1,455	397,376	356,405	693,268	665,669	112,632	2,505,209	201,264	121,299	355,081	54,466	2,657	5,184,872
6	1,604	411,741	406,195	890,037	816,728	131,597	2,839,540	214,794	136,078	470,750	55,369	2,672	6,051,088
7	1,697	413,254	424,871	902,668	828,494	129,751	2,877,096	211,915	139,624	490,588	54,119	2,682	6,216,085
8	1,826	382,058	389,671	898,289	820,360	157,748	2,619,528	195,034	125,761	483,521	47,927	2,689	5,763,510
9	1,922	388,669	406,848	790,861	786,959	128,304	2,501,363	201,087	129,549	394,875	38,472	2,684	5,485,557
10	1,792	362,353	326,786	747,643	774,297	139,559	2,260,458	180,352	104,473	326,212	31,889	2,690	4,922,046
11	1,814	354,327	394,983	903,335	969,624	137,259	2,444,646	175,987	116,410	377,244	30,614	2,692	5,720,228
12	1,858	356,546	295,695	932,596	959,230	93,118	2,496,594	176,874	94,129	396,990	28,725	2,712	5,453,051

1

2

3

4

- b) The dates and times of the monthly CP, NCP and HONI peak load for distribution cost allocation for the year 2012 are provided below and peak loads that occurred on Saturdays, Sundays or holidays are identified. Peak figures for Dgen, STL and USL rate classes are estimates because actual hourly figures are not available. Consequently, the date and time of peak for these rate classes are not available. The tables are followed by the load by rate class, including wholesale for both generation and transmission.

Coincident Peak Time in 2012; If Occurred on Saturday, Sunday or Holiday is Yellow-Shaded		
Month	Day	Hour (EST)
1	3	19
2	11	19
3	5	20
4	23	20
5	28	17
6	20	17
7	17	17
8	4	17
9	6	17
10	29	18
11	28	18
12	11	19

Non-coincident Peak Day in the Year 2012; If Occurred on Saturday, Sunday or a Holiday is Yellow-Shaded										
Month	GSd	GSe	R1	R2	Seasonal	ST	UGd	UGe	UR	Total
1	19	20	15	3	15	30	31	20	15	3
2	8	8	12	11	11	7	28	28	12	11
3	5	5	4	4	5	6	22	5	4	5
4	16	27	1	1	7	10	16	24	1	23
5	28	29	28	28	20	28	29	29	28	28
6	20	21	20	20	30	20	20	21	20	20
7	17	17	17	17	1	17	17	17	17	17
8	30	3	4	4	4	3	1	3	4	4
9	5	6	6	6	2	6	5	6	6	6
10	4	19	28	28	7	29	4	19	28	29
11	15	28	28	28	30	28	30	28	25	28
12	11	13	31	26	31	11	11	13	9	11

Non-coincident Peak Hour for the Year 2012; If Occurred on Saturday, Sunday or a Holiday is Yellow-Shaded													
Month	GSd	GSe	R1	R2	Seasonal	ST	UGd	UGe	UR	Total			
1	10	11	19	19	14	19	10	12	18	19			
2	9	10	19	19	14	19	10	11	19	19			
3	11	10	20	20	7	20	13	11	20	20			
4	14	10	17	17	8	20	15	11	17	20			
5	14	13	20	20	21	16	13	13	17	17			
6	13	13	19	19	19	16	14	13	19	17			
7	13	13	17	18	19	13	13	13	17	17			
8	14	13	17	18	21	16	13	13	17	17			
9	13	15	20	20	20	16	13	15	17	17			
10	10	11	18	18	10	18	14	11	17	18			
11	10	11	20	20	21	18	10	12	18	18			
12	10	11	18	19	19	18	10	12	18	19			
Load (GWh) at Wholesale Transmission Level for the Year 2012													
Month	Dgen	GSd	GSe	R1	R2	Seasonal	ST	UGd	UGe	UR	STL	USL	Total
1	1.181	230.353	247.875	542.947	574.744	102.202	1,573.179	108.193	71.085	205.914	14.803	2.109	3,674.585
2	1.061	212.655	222.292	471.586	498.404	87.427	1,462.088	100.393	64.320	179.972	13.209	1.896	3,315.304
3	1.029	220.002	206.576	417.632	441.402	68.330	1,436.095	103.417	61.925	165.982	13.558	2.086	3,138.034
4	0.895	199.490	184.255	377.904	397.316	54.855	1,337.914	96.867	55.649	152.693	11.217	2.009	2,871.061
5	0.835	215.716	188.253	342.105	353.534	43.106	1,413.637	110.874	58.190	154.762	12.451	2.082	2,895.545
6	0.887	214.539	196.442	377.955	376.492	43.962	1,488.815	111.273	60.775	185.517	13.524	2.022	3,072.202
7	0.959	227.981	224.773	447.877	433.273	60.879	1,634.761	118.874	68.381	229.707	13.894	2.100	3,463.459
8	0.952	223.396	212.734	401.558	398.944	58.659	1,573.933	112.004	64.934	201.061	13.977	2.107	3,264.259
9	1.092	202.170	187.541	346.455	359.266	43.920	1,391.286	105.828	56.645	159.861	12.505	2.033	2,868.604
10	1.047	210.753	189.489	368.913	391.520	50.511	1,416.351	107.740	56.518	154.433	12.498	2.106	2,961.880
11	1.026	212.128	209.849	436.807	462.308	66.423	1,443.864	107.713	61.455	172.957	12.781	2.038	3,189.349
12	1.172	208.359	173.314	513.142	534.339	41.465	1,490.686	101.437	54.464	200.374	13.081	2.115	3,333.949
Load (GWh) at Wholesale Generation Level for the Year 2012													
Month	Dgen	GSd	GSe	R1	R2	Seasonal	ST	UGd	UGe	UR	STL	USL	Total
1	1.210	236.112	254.072	556.520	589.113	104.757	1,612.508	110.897	72.863	211.062	15.173	2.162	3,766.449
2	1.088	217.972	227.850	483.375	510.864	89.613	1,498.640	102.903	65.928	184.471	13.539	1.944	3,398.187
3	1.055	225.502	211.741	428.073	452.437	70.038	1,471.997	106.002	63.473	170.132	13.897	2.138	3,216.484
4	0.917	204.477	188.862	387.351	407.249	56.226	1,371.361	99.288	57.040	156.510	11.497	2.059	2,942.838
5	0.856	221.109	192.959	350.657	362.373	44.184	1,448.978	113.645	59.645	158.632	12.763	2.134	2,967.933
6	0.909	219.902	201.353	387.404	385.905	45.061	1,526.035	114.055	62.294	190.155	13.863	2.072	3,149.007
7	0.983	233.680	230.393	459.074	444.105	62.401	1,675.630	121.846	70.090	235.450	14.241	2.153	3,550.045
8	0.976	228.981	218.053	411.597	408.917	60.125	1,613.282	114.804	66.557	206.088	14.326	2.159	3,345.865
9	1.120	207.225	192.230	355.116	368.248	45.018	1,426.068	108.474	58.062	163.857	12.818	2.084	2,940.319
10	1.073	216.022	194.227	378.136	401.308	51.774	1,451.760	110.434	57.931	158.294	12.811	2.158	3,035.927
11	1.051	217.432	215.095	447.727	473.866	68.084	1,479.961	110.406	62.992	177.281	13.100	2.089	3,269.083
12	1.201	213.568	177.647	525.971	547.698	42.502	1,527.953	103.973	55.826	205.384	13.408	2.168	3,417.298

1

2

3

4

5

Green Energy Coalition (GEC) INTERROGATORY #2

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Reference: Minimum System Discussion, Exhibit G1, Tab 3 generally and Schedule 2.

- a) What is the definition of a secondary line (by voltage)
- b) Please provide workpapers showing the number of miles and cost of primary and secondary lines. Divide each into overhead and underground.
- c) Please provide workpapers showing the number of miles and cost of single-phase and three-phase primary lines. Divide each into overhead and underground.
- d) Please identify the number of miles of primary and secondary lines strung on the same poles.
- e) Please provide an estimate of the number of poles in HONI's service area serving (i) primary distribution lines only; (ii) secondary distribution lines only; (iii) primary distribution lines and secondary distribution lines simultaneously; (iv) serving only streetlights.
- f) How are power poles used exclusively by streetlights assigned in the cost of service study?

Response

- a) As per Section 4 (Glossary of Terms) of Hydro One's Conditions of Service:
"Secondary Service" means a Connection to the low voltage side of Hydro One's transformer located on the Distribution System [i.e. less than 750V]. Hydro One may own the conductor and the Customer always owns all supports and civil works on the Customer's property;

- b) Primary and Secondary line lengths and total costs:

	Length (kms)		Costs**	
	Primary Lines	Secondary Lines *	Primary Lines	Secondary Lines
Overhead	85,674	49,000	\$ 2,962,006,102	\$ 108,534,211
Underground	5,827		\$ 371,193,445	\$ -
Total	91,502	49,000	\$ 3,333,199,547	\$ 108,534,211

*Secondary line lengths are not tracked in the GIS database. 49,000kms is used as an estimate for cost allocation purposes

**Primary and Secondary Lines costs are 2015 forecast values, as per Tab I4 BO Assets of the Cost Allocation Model

c) The following table breaks out Primary and Secondary line lengths by phase type.

Primary and Secondary lines costs are not available by phase type.

Type	Primary Line Length (kms)			Total
	Single Phase	Two Phase	Three Phase	
Overhead	58,769	1,908	24,998	85,674
Underground	4,959	193	675	5,827
Total	63,728	2,101	25,673	91,502

d) The length of these lines is not tracked.

e) Number of Hydro One owned poles:

- (i) primary distribution lines only: 991,000 poles
- (ii) secondary distribution lines only: 133,000 poles
- (iii) primary distribution lines and secondary distribution lines simultaneously: 379,000 poles
- (iv) power poles used exclusively by streetlights are not specifically identified

f) The cost of power poles are included in USofA 1830 (Poles, Towers, and Fixtures), which gets allocated to all rate classes, including street lights, using allocators based on non-coincident peaks and number of customers.

Green Energy Coalition (GEC) INTERROGATORY #3

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Reference: Exhibit G1, Tab 3, Schedule 2

Please provide a copy of the Black and Veatch “Minimum System Report” of August 20, 2007.

Response

Please refer to Attachment 1 to this Interrogatory for a copy of the Black and Veatch “Minimum System Report” dated August 20, 2007.



Report to

Hydro One Networks Inc.

Regarding

Distribution Business Minimum System Study

August 20, 2007



Distribution Business Minimum System Study

TABLE OF CONTENTS

I. Summary.....	1
A. Background and Purpose	1
B. Hydro One Distribution System.....	1
C. Minimum System Study.....	1
D. Results.....	2
Table 1. Summary of Results.....	2
E. About BV; Scope of Assignment	3
II. Minimum System Study Approach.....	4
A. Purpose and Uses	4
B. Approach	5
C. Components in Minimum System Study	5
III. Line Transformers.....	6
A. Types of Transformers.....	6
Table 2- Numbers of Transformers.....	6
B. Current Replacement Cost for Existing System.....	7
Table 3- Unit Transformer Costs	7
C. Minimum Component and Minimum System.....	8
D. Minimum System Ratio	8
Table 4- Transformers Minimum System Ratio	8
E. Peak Load Carrying Capability	8
IV. Conductors.....	9
A. Types of Conductors	9
Table 5- Conductor Types and Lengths.....	9
B. Current Replacement Cost for Existing System.....	9
Table 6- Conductor System Replacement Costs.....	10
C. Minimum Component and Minimum System.....	10
D. Minimum System Ratio	11
Table 7- Conductors Minimum System Ratio	11
E. Poles, Towers and Fixtures Minimum System Ratio	12
Table 8- Poles, Towers and Fixtures Minimum System Ratio	12
F. Peak Load Carrying Capability	12



Distribution Business Minimum System Study

I. SUMMARY

A. Background and Purpose

R. J. Rudden Associates, a unit of the Enterprise Management Solutions Division of Black & Veatch Corporation (“B&V” or “we”) is pleased to submit this Report on Hydro One Networks Inc. Distribution Business Minimum System Study (“Study”) to Hydro One Networks Inc. (“Hydro One”).

BV was engaged by Hydro One to perform this Study for the purpose of computing the minimum system components for the conductors (sometimes called feeders) and line transformers used in Hydro One’s distribution system. The Study included reviewing Line Transformers (account 1850) and Distribution Feeders, which includes poles and conductors (accounts 1830 -1845), and included computation of the Peak Load Carrying Capability of the minimum system.

Hydro One intends to use the results of the Study in its class cost allocation study. The Minimum System approach was recommended by the OEB in its Cost Allocation Review report issued September 29, 2006.

In this Report we present and support our methodology for performing the Study and present the results.

B. Hydro One Distribution System

Hydro One Networks is an integrated transmission and distribution utility, regulated by the OEB. The distribution business spans roughly 75% of the area of Ontario and serves 71 Local Distribution Companies, over one million customers and 43 directly connected large users. There are over \$3 billion in fixed assets consisting of over 119,600 circuit kilometers of distribution lines, operating at voltages below 50 kV, and over 1,000 distributing and regulating substations. Most of the distribution system serves areas with low customer densities. The system is mainly radial in design, with very little redundancy in supply to customers, which is consistent with other rural systems.

C. Minimum System Study

The purpose of a Minimum System Study is to determine the smallest components (i.e., transformers, overhead conductors, underground conductors, services) that is generally installed by the utility. The cost of each minimum system component is compared to the actual average cost for each component, to determine the minimum system ratio, or the portion of total costs represented by the minimum system.



Distribution Business Minimum System Study

The results of the Minimum System Study are used to classify Hydro One's transformers, conductors, conduits and services plant, as either demand-related or customer-related. The minimum system study identifies the hypothetical minimum system that the utility could install and uses the ratio of the hypothetical minimum system to the cost of the existing system as the basis for the customer –related classification of costs. The hypothetical minimum system created by the study has some peak load-carrying capacity ("PLCC"), and our Study also determined the PLCC for each component.

D. Results

Table 1 below summarizes the results of the Study.

TABLE 1. SUMMARY OF RESULTS			
Component	Minimum Component	Minimum System Ratio	PLCC Watts Per Customer
Line transformers	10 kVA 1-phase	61.90%	3,099 W
Conductors	#2 ASCR two-wire system (one conductor, one neutral)	54.78%	544 W
Poles, Towers and Fixtures		47.80%	

The Company's prior Minimum System Study, completed in 1985 ("1985 Study"), showed a 62% minimum system ratio for transformers, based on a 3 kVA minimum component. The 1985 Study also showed a 61% minimum system ratio for Conductors, based on a minimum components of #6 Cu for the primary portion of distribution system, 1 X #4 Al plus 2 X #6 Al for the secondary portion and 2X #6 Al for services.

The Minimum System Ratios that resulted from our Study, as presented in Table 1, are reasonable based on our experience and knowledge of minimum system studies for electric distributors, and are reasonably consistent with the results of the 1985 Study.

The 1985 Study showed a transformer minimum system PLCC of 300 Watts per customer. Some of the difference is due to the higher minimum component specified for



Distribution Business Minimum System Study

the present Study (10kVA) and the 1985 Study (3 kVA). The 1985 Study also showed a conductor minimum system PLCC of 180 Watts per customer.

E. About BV; Scope of Assignment

The Enterprise Management Solutions Division of Black & Veatch Corporation provides strategic, economic and management consulting firm specializing in energy matters. We provide assistance in areas such as economic analysis, strategy development, operational assessment, industry restructuring support, litigation and regulatory support and technical analysis. BV has assisted many electric, gas, water and telecommunications clients in hundreds of proceedings, including recent work in the area of shared services cost allocations.

Consistent with standard practice for consulting assignments, we relied on the genuineness and completeness of all documents presented to us by Hydro One and we accepted factual statements made to us by Hydro One, subject only to overall reasonableness and actual contrary knowledge, but without independent confirmation.

All amounts in this Report are in Canadian dollars.



Distribution Business Minimum System Study

II. MINIMUM SYSTEM STUDY APPROACH

A. Purpose and Uses

The purpose of a Minimum System Study is to determine the smallest components that is generally installed by the utility. Two separate analyses are performed; one for transformers, another for overhead conductors and underground conductors and services.

The cost of the minimum system for each component is compared to the actual cost of the existing system for each component. The ratio of the minimum system costs to the existing system cost is the minimum system ratio for each component.

The results of the Minimum System Study are used to classify Hydro One's transformers, conductors, conduits and services plant, as either demand-related or customer-related. The classification affects how the utility's costs (or revenue requirement) are allocated among the customer classes. The minimum system for each component includes some peak load-carrying capacity ("PLCC"), and our Study determined the PLCC for each component. The PLCC is used to adjust the allocators used for the demand-related component of costs.

The following definitions may be helpful:

Minimum Component- The least-cost/smallest size component that is generally installed by the utility. For example, the minimum component for line transformers was determined to be a 10 kVA transformer.

Minimum System- The system that would be installed if all existing components were replaced with the Minimum Component. For example, the minimum system for line transformers would be a system comprising all 10 kVA transformers instead of the existing mix of transformers capacities.

Minimum System Ratio- The ratio of the X) the cost of the Minimum System to Y) the cost of the existing system.

Peak load-carrying capability- The load carrying capability of each component at the time of the system peak.

In this Study we performed two analyses- One for line transformers, and one for all Conductors including overhead, underground and services.



Distribution Business Minimum System Study

B. Approach

Our approach for preparing a Minimum System Study is presented below. This approach is applied to each distribution system component in the study. For each component:

1. Obtain a listing of all types of the component installed on the system. 'Types' includes differentiation as to capacities, materials, sizes and other pertinent qualities. For example each transformer type is identified as to capacity (kVA), design (line or pad mount) and number of phases.
2. Compute the current replacement cost for the existing system, either by indexing historical costs or by using current replacement costs for each component type.
3. Determine the Minimum Component; i.e., the least-cost component that is generally installed by the utility, as well as the current cost of the Minimum Component.
4. Compute the current cost for the Minimum System; i.e., the system that would be installed if all existing components were replaced with the Minimum Component.
5. Compute the Minimum System Ratio; i.e., ratio of the X) current cost of Minimum System to Y) current replacement cost of existing system.
6. Compute the PLCC based on the capacity of the minimum system and the number of customers supplied

C. Components in Minimum System Study

In this Study we performed separate analyses for line transformers and for Conductors. Line Transformers included assets in Hydro One's account 1850. Conductors, or Distribution Feeders included overhead conductors (account 1835), underground conduits (account 1840) and underground conductors and devices (account 1845).

Poles, towers and fixtures (account 1830) are classified proportionately to Overhead conductors because these assets support the overhead conductors.

The amounts in the accounts included the costs of material and installation and a charge for corporate overheads.



Distribution Business Minimum System Study

III. LINE TRANSFORMERS

A. Types of Transformers

Table 2 below summarizes Hydro One's distribution line transformers.

TABLE 2- NUMBERS OF TRANSFORMERS					
Capacity kVA	Overhead Transformers		Pad Mount Transformers		
	1-Phase Supply	3-Phase Supply from 1-Phase (a)	1-Phase Supply	3-Phase Supply	3-Phase Supply from 1-Phase (a)
3	4,735	104	64		1
5	26,332	165	461		3
10	73,134	1,300	920		4
15	21,939	364	348		
25	198,244	5,862	6,981		206
37	7,697	370	92		22
50	53,049	3,601	6,847		368
70			20		
75	14,421	1,037	3,520		109
100	7,728	1,839	5,603		525
112	28				
150	178	38	32		3
167	634	482	116		
225			32		
250			41		
300			96		
500/501			52	190	
750			7	174	
900				14	
999/1000			8	251	
1500			2	934	
1998				31	
2250-5000			11	58	
7500-15000				13	
Total	<u>408,119</u>	<u>15,162</u>	<u>25,253</u>	<u>1,665</u>	<u>1,241</u>
Total All	<u>451,440</u>				

(a) Number of 1-phase units that would replace existing units.

**Distribution Business Minimum System Study*****B. Current Replacement Cost for Existing System***

To determine the current replacement cost for Hydro One's existing transformers, we first obtained from Hydro One the current replacement costs for the transformer types for which the costs were available. These transformer types are shown in **bold** in Table 2.

The unit transformer costs provided by Hydro One are shown in Table 3, which also shows the percentage of units and dollars represented by the costs provided by Hydro One. For the other transformer types listed in Table 2, we determined the replacement costs by extrapolation or interpolation.

A range costs were provided for each transformer type. For example, for 10 kVA 1-phase overhead transformers, Hydro One provided costs for units with high side voltages from 2.4 kV to 7.2/16 kV. Costs ranged from \$1,828 to \$2,354 per unit. In this Study we used the average of all costs to represent 10 kVA 1-phase overhead transformers.

TABLE 3- UNIT TRANSFORMER COSTS					
Capacity kVA	Overhead Transformers		Pad Mount Transformers		
	1-Phase Supply	3-Phase Supply from 1-Phase	1-Phase Supply	3-Phase Supply	3-Phase Supply from 1-Phase
10	\$1,982	\$6,466			
25	2,414	7,236	\$5,134		\$15,402
50	3,056	8,961	5,624		16,872
75	3,825	11,336	6,318		18,955
100	4,002	12,297	6,378		19,133
150				\$16,324	
167	5,624	18,982	8,134		
300				17,508	
500/501				20,112	
750				19,992	
999/1000				30,722	
Costs Provided by Hydro One					
% of Units	85%	93%	91%	37%	97%
% of Dollars	89%	94%	93%	33%	98%
Total % of Units	86%				
Total % of Dollars	88%				

The total current replacement cost for existing transformers was \$1,333,357,659.

**Distribution Business Minimum System Study****C. Minimum Component and Minimum System**

The least-cost Transformer Minimum Component was determined to be a 10 kVA 1-phase overhead transformer, with high-side voltage of 7.2 kV.

The current replacement cost of the Minimum Component is \$1,828.29, as provided by Hydro One. This cost is lower than the cost in Table 3; the cost in Table 3 represents the average of costs for 10 kVA 1-phase overhead transformers with high-side voltages from 2.4 kV to 7.2/16 kV.

The current cost for the Transformer Minimum System, the system that would be installed if all existing components were replaced with the Minimum Component, is \$825,363,000, equal to 451,440 transformers times \$1,828.29 per transformer.

D. Minimum System Ratio

The Minimum System Ratio is the ratio of X) current cost of Minimum System to Y) current replacement cost of existing system. The Transformer Minimum System Ratio is computed in Table 4:

TABLE 4- TRANSFORMERS MINIMUM SYSTEM RATIO	
	Total (\$000s)
Current replacement cost:	
Existing transformers at existing capacities	\$1,333,358
Minimum System Cost	\$ 825,363
Transformers Minimum System Ratio	<u>61.90%</u>

E. Peak Load Carrying Capability

The Transformers Peak Load-Carrying Capability ("PLCC") is based on all existing transformers being replaced with the minimum component, 10 kVA 1-phase transformers. The Transformers PLCC was calculated as follows:

Number of existing transformers	451,440
Capacity (kVA) of Minimum Component	10
Assumed power factor	80%
Distribution system Transformers PLCC	3,611,520
Number of customers	1,165,092
Transformers PLCC (Watts Per Customer)	3,099



Distribution Business Minimum System Study

IV. CONDUCTORS

A. Types of Conductors

Hydro One's distribution system includes conductors operating at voltages 12.5 kV and under. The primary distribution system comprises voltages 12.5 kV to 4.16 kV, and the secondary distribution system, which is primarily service drops, comprises conductors operating at voltages under 750 V. Table 5 below shows the types and lengths of conductors in Hydro One's distribution system, as provided by Hydro One.

TABLE 5- CONDUCTOR TYPES AND LENGTHS				
Description	Voltages	Conductors (km)	Neutrals (km)	Total (km)
Subtransmission	44 kV-13.8 kV	75,600	8,200	83,800
Primary	12.5 kV-4.16 kV	155,100	83,800	238,900
Secondary / Services	<750 V	47,800		47,800
Total		278,500	92,000	370,500

The Subtransmission portion of the distribution system was determined by Hydro One to be 100% capacity-related, which is consistent with generally accepted practice. The Study included the Primary and Secondary / Services portions of the distribution system.

B. Current Replacement Cost for Existing System

To compute the current replacement cost for the existing Primary Distribution system and for Secondary / Services system, we obtained the vintaged historical costs for Overhead conductors, Underground conductors and devices and Underground conduits, from Hydro One's PeopleSoft Asset Management ("PS_AM") system.

The PS_AM system provided vintaged historical costs for each of Overhead conductors, Underground conductors and devices and Underground conduits. To compute the historical cost in 2006 dollars, we indexed each year's costs for each asset category using the appropriate Handy-Whitman index, for the North Central region, which is the region used by Hydro One for planning purposes.

The PS_AM report includes the entire distribution system. To obtain the Primary distribution portion we multiplied the total by 65%, which is Hydro One's estimate of the Primary portion of the Historical costs. To obtain the Secondary / Services portion we multiplied the total by 15%, Hydro One's estimate of that portion of Historical costs.

**Distribution Business Minimum System Study**

The results are presented in Table 6 below. The Lengths and Historical Costs for Overhead conductors, Underground conductors and devices and Underground conduits are from the PS_AM Report. The Indexed Costs were computed by applying the appropriate Handy-Whitman index. The Primary and Secondary / Services portions were computed by multiplying the totals by the 65% and 15% portions respectively.

TABLE 6- CONDUCTOR SYSTEM REPLACEMENT COSTS			
Description	Length (km)	Historical Cost (\$000s)	Indexed Cost (a) (\$000s)
Overhead conductors	363,517	\$964,228	\$2,377,566
Underground conductors / devices	6,183	98,321	158,871
Underground conduits		22,895	44,735
Total	<u>369,700</u>	<u>\$1,085,444</u>	<u>\$2,581,172</u>
Primary portion	65%	65%	65%
Primary	<u>238,900</u>	<u>\$705,539</u>	<u>\$1,677,762</u>
Secondary / Services portion	15%	15%	15%
Secondary / Services	<u>47,800</u>	<u>\$162,817</u>	<u>\$387,176</u>
(a) Indexed to 2006 dollars.			

C. Minimum Component and Minimum System**1. Primary Distribution System**

The Primary distribution system comprises conductors operating at voltages from 12.5 kV to 4.16 kV.

The Minimum Component was determined to be a #2 ASCR two-wire system (one conductor and one neutral). The length of the minimum system was determined to be the length of the existing neutrals, 83,800 km. All existing conductors were deemed to be replaced with Overhead conductors in the Minimum System, because Overhead conductors are less costly than Underground conductors and there are no regions with engineering restrictions on Overhead conductors. There may be some restrictions on Overhead conductors due to local by-laws but these were deemed to be not relevant and not material for the Study.

Hydro One provided the standard current cost for a 1km installation of the Minimum Component, including a corporate overhead charge to be comparable to the values in the PS_AM Report. The current cost for the Minimum System was calculated by scaling the



Distribution Business Minimum System Study

1 km standard cost for a 720 meter installation, which was the average installation length reported in 2006. The current replacement cost was thus computed to be \$9,109 per km.

The current cost for the Primary Minimum System, the system that would be installed if all existing Primary components were replaced with the Minimum Component, is \$763,334,000 equal to 83,800 circuit km times \$9,109 per km.

2. Secondary Distribution System / Services

The Secondary distribution system / Services comprises conductors operating at voltages under 750 V. The material and length, and therefore cost, for these conductors vary based on the customers' requirements, however the service installed for each customer must be selected to meet that customer's needs without the benefit of diversity. No Minimum Component was specified for the Secondary distribution system / Services.

Based on our experience and generally accepted practice, B&V determined that the Secondary distribution system / Services Minimum System Ratio was 95%. Multiplying 95% times the current replacement cost of Secondary / Services, \$387,176,000 as shown in Table 6, produces a current replacement cost for Secondary / Services Minimum System of \$367,817,000.

D. Minimum System Ratio

The Minimum System Ratio is the ratio of X) current cost of Minimum System to Y) current replacement cost of existing system. The Conductors Minimum System Ratio is computed as shown in Table 7:

TABLE 7- CONDUCTORS MINIMUM SYSTEM RATIO			
Description	Primary (\$000s)	Secondary / Services (\$000s)	Total (\$000s)
Current replacement cost:			
Existing conductors	\$1,677,762	\$387,176	\$2,064,938
Minimum System Cost	763,334	367,817	1,131,151
Conductors Minimum System Ratio			<u>54.78%</u>

**Distribution Business Minimum System Study*****E. Poles, Towers and Fixtures Minimum System Ratio***

Poles, towers and fixtures (account 1830) are classified proportionately to Overhead conductors because these assets support the overhead conductors. The Minimum System Ratio for Poles, towers and fixtures was computed as shown in Table 8.

TABLE 8- POLES, TOWERS AND FIXTURES MINIMUM SYSTEM RATIO	
Description	Amount (\$000s except per km)
Overhead conductors, Index costs	\$2,377,566
Primary portion	65%
Primary	1,545,418
Replacement circuit km	81,099
Replacement cost per circuit km	\$9,109
	738,726
Poles, Towers and Fixtures Minimum System Ratio	<u>47.80%</u>

F. Peak Load Carrying Capability

The Conductors Peak Load-Carrying Capability ("PLCC") is based on is based on a rating of 184 amps per feeder of #2 ASCR wire. Hydro One's system contains 1,035 distribution substations and it is assumed that (in the Minimum System) each distribution substation would supply a single feeder.

The existing system has a combination of feeders at capacities of 12.5 kV and 4.16 kV. The Transformer Minimum Component has a high-side capacity of 7.2 kV; therefore the Minimum System would operate at 4.16 kV, because 12.5 kV would exceed the capacity of the Transformer Minimum Component.



Distribution Business Minimum System Study

The Conductors PLCC was calculated as follows:

Rating for each distribution feeder circuit, amps (a)	184
Line-to-Neutral Voltage, kV	<u>4.16</u>
Circuit capacity per distribution feeder, kVA	765
Assumed power factor	<u>80%</u>
Circuit capacity per distribution feeder, kW	612
Number of distribution substations (b)	<u>1,035</u>
Distribution system Conductors PLCC, kW	633,420
Number of customers	1,165,092
Conductors PLCC (Watts Per Customer)	544

(a) Continuous Current Rating Under Summer 60C/40C, Sun/No Wind Condition (Amp)

(b) Assumed equal to number of distribution feeders

Green Energy Coalition (GEC) INTERROGATORY #4

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Reference: Exhibit G1, Tab 3, Schedule 2, page 2

Please explain why poles, unlike wires, are assumed to carry no demand in the minimum system study, given that a pole is necessary to string the minimum-sized conductor.

Response

Poles are assumed to carry demand in the minimum system study. As per Section IV of the study, 47.80% of the cost of poles, towers and fixture costs are customer-related, and the remaining 52.2% of the costs are demand-related. For the purpose of the PLCC adjustments in the cost allocation model, poles are assumed to carry the same minimum system demand as wires.

Green Energy Coalition (GEC) INTERROGATORY #5

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Reference: Exhibit G1, Tab 3, Schedule 2, page 3.

Please explain the basis for an 80% power factor assumption.

Response

The 80% power factor assumption was adopted by Black & Veatch Corporation, the expert consultant engaged to conduct the Minimum System Study, based on their experience and generally accepted practice.

Green Energy Coalition (GEC) INTERROGATORY #6

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Reference: Exhibit G1, Tab 3, Schedule 2, page 3.

Please provide or identify where in the cost of service study the calculations are made that either subtract the 1.341 kW per customer from all customers' demand or where demand costs of this amount are subtracted from the customer-related cost.

Response

The PLCC-conductor value referenced above (1.341 kW) was derived using information from 2010. As shown in Exhibit G1, Tab 3, Schedule 1 (pg. 6), Hydro One has since updated this calculation and the PLCC-conductor value used in the current application is 1.154 kW.

Tab "E3-PLCC" of the Board's cost allocation model shows the PLCC adjustments to customers' non-coincident peak demand used to allocate demand costs. Tab "O2 Fixed Charge" of the Board's cost allocation model shows the derivation of Scenario 3 fixed charges based on minimum system customer costs adjusted for PLCC.

Green Energy Coalition (GEC) INTERROGATORY #7

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

This Question was left blank.

Response

Green Energy Coalition (GEC) INTERROGATORY #8

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Please explain how the minimum system calculations for overhead wires are used for underground conduit and conductor.

Response

The Conductor Minimum System Cost is based on the total indexed cost of all conductors, including overhead and underground conductors and conduits. Please refer to Section IV of the Black and Veatch Study. The same minimum system values are used for both overhead and underground lines.

Green Energy Coalition (GEC) INTERROGATORY #9

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Reference: Exhibit G1, Tab 3, Schedule 2, page 2.

- a. What is the assumption as to the number of customers per transformer on the minimum system?
- b. Provide calculations supporting the basis for the amount of demand per customer carried by a minimum transformer.

Response

- a. As per Section III, subsection E, of the Black and Veatch Study, it is assumed there are approximately 3 customers per transformer (i.e. $1,165,092 \text{ customers} / 451,440 \text{ transformers} = 2.58 \text{ customers per transformer}$)
- b. Please refer to the transformer PLCC calculation included in Section III, subsection E, of the Black and Veatch Study.

Green Energy Coalition (GEC) INTERROGATORY #10

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Please identify each type of conductor used by HONI at secondary voltage; the number of kilometers of that conductor, its current cost per foot and the amount of ampacity for that conductor. Provide separate information for overhead and underground conductor.

Response

Based on the information available, the following tables identify the secondary conductors (overhead and underground) used by Hydro One.

Overhead Secondary Conductors

<u>Conductor Type</u>	<u># of Kilometers</u>	<u>Cost per kilometer</u>
#2 Aluminum	770	\$1.5K to \$4.5K
#1/0 Aluminum	664	\$2.5K to \$4.5K
#3/0 Aluminum	948	\$3.0K to \$6.0K
266.8 Aluminum	457	Approx. \$6.4K
Other Various Sizes	474	Unknown

Underground Secondary Conductors

<u>Conductor Type</u>	<u># of Kilometers</u>	<u>Cost per kilometer</u>
#3/0 Aluminum	9106	Approx. \$4.4K
250 kcm Aluminum	830	Approx. \$7.0K
500 kcm Aluminum	86	Approx. \$13.3K
Other Various Sizes	453	Unknown

Note: For both overhead and underground secondary conductors, ampacities vary based on length of service, kVA demand, voltage and configuration.

Green Energy Coalition (GEC) INTERROGATORY #11

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Please identify each type of conductor used by HONI at primary voltage; the number of kilometers of that conductor, its current cost per foot and the amount of ampacity for that conductor. Provide separate information for overhead and underground conductor and for single-phase and three-phase applications.

Response

Based on the information available, the following tables identify the primary conductors (overhead and underground) used by Hydro One.

Overhead Primary Conductors

<u>Conductor Type</u>	<u># of Kilometers</u>	<u>Cost per kilometer</u>
#2 ACSR	35,288	Approx. \$0.5K
#1/0 ACSR	16,271	Approx. \$0.7K
#3/0 ACSR	34,147	Approx. \$1.0K
336.4 ASC	8,025	Approx. \$1.7K
556.5 ASC	5,519	Approx. \$2.7K
Other Various Sizes	3,189	Unknown

Underground Primary Conductors

<u>Conductor Type</u>	<u># of Kilometers</u>	<u>Cost per kilometer</u>
1/0 Aluminum	2081	Approx. \$25.6K
2/0 Aluminum	4832	Approx. \$7.3K
350 kcm Copper	139	\$25.6K to \$29.0K
500 kcm Copper	8	\$35.0K to \$37.7K
750 kcm Copper	10	\$49.7K to \$54.2K
1000 kcm Copper	7	\$61.6K to \$66.6K
Other Various Sizes	1402	Unknown

Note: The ampacity of overhead and underground primary conductor is dependent upon the configuration and application (primary voltage, length and single or three phase). Additionally, for underground primary conductor, the ampacity is also dependent on the type of installation (direct buried cable; direct buried conduit, concrete encased duct bank).

Green Energy Coalition (GEC) INTERROGATORY #12

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Please provide the number of poles by height and Class and the current cost of a pole of each height and Class.

Response

Based on the information available, the following table summarizes the Hydro One Distribution owned wood poles by height and class.

Heights	Class					
	1	2	3	4	5	Other
30' – 39'	109	781	91,214	8,093	409,003	243,310
40' – 49'	303	6,188	376,192	128,653	109,566	5,055
50' – 59'	821	22,241	14,442	68,962	906	280
60' – 69'	2,419	20,409	687	11,038	84	56
70' – 100'	2,422	4,837	42	308	15	221
Other	2	15	263	133	1,005	8,322

The following table summarizes the approximate 2014 unit price ranges for wood poles by height and class.

Heights	Class				
	1	2	3	4	5
30' – 49'	N/A	\$0.3K to \$0.5K	\$0.2K to \$0.4K	\$0.2K to \$0.4K	\$0.1K to \$0.2K
50' – 59'	\$0.6K to \$0.9K	\$0.6K to \$0.9K	\$0.5K to \$0.7K	\$0.4K to \$0.5K	N/A
60' – 69'	\$1.3K to \$1.6K	\$1.1K to \$1.4K	\$0.7K to \$0.8K	N/A	N/A
70' – 100'	\$2.1K to \$4.7K	\$1.9K to \$4.5K	N/A	N/A	N/A

Green Energy Coalition (GEC) INTERROGATORY #13

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Please identify the heaviest type of overhead conductor and largest size of pole-mounted transformer that can be installed on (a) the minimum sized pole and (b) the smallest size pole in common use for primary distribution if different from the minimum sized pole.

Response

Hydro One Distribution adheres to all applicable Canadian Standards Association (CSA) Standards in design of its distribution system and installations are subject to inspection by the Electrical Safety Authority (ESA) to ensure compliance with these standards.

The minimum size pole used by Hydro One is a 25 foot, Class 5 pole – it is used primarily for guying purposes or for secondary services. It would not be used for primary conductors or polemount transformers. The most common pole used is in the 35 to 40 foot range, however, the list below provides the many variables that are involved in line design when selecting pole class including:

- Pole location / terrain – setting depth, soil type, changes in elevations
- Single phase or three phase configurations
- Framing – Armless or Crossarm
- Span Lengths
- Configuration – Tangent(Straight Line), Corner poles, Line angles
- Forestry considerations
- Guying
- Clearances – for road crossings, ditches
- Joint use considerations – Communication tenants, LDC Circuits etc.
- Number of customers dictates service conductor – Triplex, Quadruplex, Lashed Secondary Bus
- Customer loading
- Future needs of area

Due to these many variables, every installation may be different and consideration for all of these is given as part of the design.

Green Energy Coalition (GEC) INTERROGATORY #14

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Reference: Cost Allocation Model, Sheet 15.2,

Please explain why services are not part of the costs for all non-residential customers. Identify any tariffs or rules requiring all non-residential customers to own or contribute 100% of the cost of their services.

Regarding the service weighting factors, please include available information on service length and type of conductor and differences in cost between single-phase and three-phase service.

Response

As noted in Section 2.1.1.(v) of Hydro One's Conditions of Service, Hydro One's basic connection includes secondary services for year-round residential and seasonal residential classes only.

Based on discussion with the experts in the field, average connection length for a residential service is assumed to be 20 meters. As mentioned in Exhibit G1, Tab 3, Schedule 1 (pg. 14), estimated service connection length for UR, R1, R2, and Seasonal rate classes are 10, 15, 30 and 20 meters. Based on this information, services weighting factors are calculated to be 0.50 (10/20) for UR, 0.75 for R1 (15/20), 1.5 for R2 (30/20), and 1 for Seasonal (20/20) customers.

Green Energy Coalition (GEC) INTERROGATORY #15

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Reference: Cost Allocation Model, Sheet 17.1,

For each of the meter costs identified on this sheet, please provide meter size, whether the meter is single-phase or three-phase, the customer's voltage of interconnection, the percentage of customers assumed to use Current Transformers (CTs) and Potential Transformers (PTs) included in each rate class and the cost of CTs and PTs.

If CTs and PTs are not included in the cost of meters in the cost allocation study, please identify the number of customers actually having CTs and PTs installed by rate class

Response

The meter costs provided in Sheet I7.1 of CAM are a blended average for the class, based on the different types of meters installed within the class. The table below provides the requested information based on best available data.

The cost of CTs and PTs are included with the cost of meters.

Rate Class	Meter Size	1 Phase/3 Phase	Voltage of interconnection	Use of CTs	Cost of CTs	Use of PTs	Cost of PTs
UR (Urban Residential)	The rate class includes a range of meter sizes, majority of which are 2-200 Amps.	Majority of the meters are 1 phase	Connection voltage for majority of the meters is 240 V.	No use of CTs in this class.	Not Applicable	No use of PTs in this class.	Not Applicable
R1 (Residential-Medium Density)	The rate class includes a range of meter sizes, majority of which are 2-200 Amps.	Majority of the meters are 1 phase	Connection voltage for majority of the meters is 240 V.	Approx. 0-5% of the customers in this class have CTs.	Approx. cost per installation is less than \$100	No use of PTs in this class.	Not Applicable
R2 (Residential-Low Density)	The rate class includes a range of meter sizes, majority of which are 2-200 Amps.	The rate class include both 1 phase and 3 phase meters, majority of which are 1 phase	Connection voltage for majority of the meters is 240 V.	Approx. 10-15% of the customers in this class have CTs.	Approx. cost per installation is less than \$100	No use of PTs in this class.	Not Applicable
Seasonal Residential	The rate class includes a range of meter sizes, majority of which are 2-200 Amps.	Majority of the meters are 1 phase	Connection voltage for majority of the meters is 240 V.	Approx. 0-5% of the customers in this class have CTs.	Approx. cost per installation is less than \$100	No use of PTs in this class.	Not Applicable
GSe (General Service Energy-Billed)	The rate class includes a range of meter sizes, majority of which are 0.5-200 Amps or 2-200 Amps.	The rate class include both 1 phase and 3 phase meters, majority of which are 1 phase	Connection voltage ranges from 120V to 480 V.	Approx. 10-20% of the customers in this class have CTs	Approx. cost per installation ranges from \$90 to \$700	Approx. 0-5% of the customers in this class have PTs	Approx. cost per installation for majority of these customers is less than \$100
GSd (General Service Demand-Billed)	The rate class includes a range of meter sizes, majority of which are 0.2-20 Amps.	The rate class include both 1 phase and 3 phase meters, majority of which are 3 phase	Connection voltage ranges from 120V to 480 V.	Approx. 50-60% of the customers in this class have CTs	Approx. cost per installation is \$100	Approx. 45-55% of the customers in this class have PTs	Approx. cost per installation for majority of these customers is \$130
UGe (Urban General Service Energy-Billed)	The rate class includes a range of meter sizes, majority of which are 0.5-200 Amps or 2-200 Amps.	The rate class include both 1 phase and 3 phase meters, majority of which are 1 phase	Connection voltage ranges from 120V to 480 V.	Approx. 10-20% of the customers in this class have CTs	Approx. cost per installation ranges from \$90 to \$700	Approx. 0-5% of the customers in this class have PTs	Approx. cost per installation for majority of these customers is less than \$100
UGd (Urban General Service Demand-Billed)	The rate class includes a range of meter sizes, majority of which are 0.2-20 Amps.	The rate class include both 1 phase and 3 phase meters, majority of which are 3 phase	Connection voltage ranges from 120V to 480 V.	Approx. 50-60% of the customers in this class have CTs	Approx. cost per installation is \$100	Approx. 45-55% of the customers in this class have PTs	Approx. cost per installation for majority of these customers is \$130
Distributed Generation	The rate class includes a range of meter sizes, majority of which are 0.2-20 Amps.	The rate class include both 1 phase and 3 phase meters, majority of which are 3 phase	Connection voltage ranges from 120V to 480 V.	Approx. 80-90% of the customers in this class have CTs	Approx. cost per installation is \$900	Approx. 30-40% of the customers in this class have PTs	Approx. cost per installation for majority of these customers is \$780
Sub-Transmission	The rate class includes a range of meter sizes, majority of which are 0.2-20 Amps.	All meters in this rate class are 3 phase	Connection voltage ranges from 120V to 480 V.	Approx. 40-50% of the customers in this class have CTs	Approx. cost per installation is \$700	Approx. 40-50% of the customers in this class have PTs	Approx. cost per installation for majority of these customers is \$130

Green Energy Coalition (GEC) INTERROGATORY #16

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Related to number of customers per transformer and transformer sizing in calculation of fixed charges:

- a. Please provide excerpts from HONI's design manuals or other engineering specifications regarding the calculation of loads and the diversity among loads assumed for installation and sizing of transformers.
- b. What is the average number of residential and small commercial customers per transformer? Divide by density zones and into single-family and multi-family and into basic and electric heating if available for residential. Divide by density zones and into single-phase and three-phase for small commercial customers.
- c. Please provide the total number of line transformers by kVA size; divide into polemount, padmount, and other underground if available. Provide the current cost (new) for each type of transformer.
- d. Please provide the number of transformers serving 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, and 20 customers, and 21 or more customers. Divide by density and into residential and non-residential if available.
- e. Please provide all studies which HONI has conducted regarding the diversity of customer loads at the line transformer for (a) single-family residential; (b) multi-family residential; and (c) small commercial customers.

Response

- a. The following is an excerpt from the procedure Hydro One follows in the sizing of transformers, which takes into account the diversified peak demands of various types of customers.

“Step 1: For each customer to be served by the transformer, determine the following: type of house, size (i.e. floor area), type of heating (If the heating is non-electric, is there a large electrical load such as: central air or heat pump).

Step 2: With the information from Step 1 on house size and type of heating, a unit value is determined for each customer.

Step 3: For the type of house, multiply the unit value determined in Step 2 by the appropriate factor:

- detached use 1.0
- semi-detached use 0.9
- town or row house use 0.8

Step 4: Add the unit values of each customer to get the total unit value for the transformer.

Step 5: Determine the correct transformer size for the total unit value of the customers to be served, using the diversity table.”

Total Unit Value	Transformer Size (kVA)
1 - 3	10
4 - 9	25
10 - 24	50
25 - 36	75
37 - 50	100
51 - 88	167

- b. The average number of residential and small commercial customers per transformer is:

Customer type	Average number per transformer
Residential	2.49
GS<50	1.31

For the residential customers, the average number of customers per transformer by density zone and house type (single-family / multi-family) is:

Rate class	Single-Family	Multi-family
R1	4.16	4.21
R2	1.44	1.65
Seasonal	2.27	3.40
UR	8.73	6.02

For the GS<50 customers, the average number of customers per transformer by density zone and phase type (single/three) is:

Rate Class	Single Phase	Three Phase
GSE	1.15	1.53
UGE	1.85	3.01

- c. Based on the information available, the following tables identify the line transformers (polemount and padmount) used by Hydro One.

Polemount Transformers

<u>kVA</u>	<u>QUANTITY</u>	<u>COST</u>
Up to 5	16,695	Approx. \$0.7K
10	72,991	\$0.7K to \$0.9K
25	245,461	\$0.9K to \$1.2K
50	68,948	\$1.5K to \$1.8K
75	17,847	\$2.1K to \$2.5K
100 and over	13,139	\$2.6K to \$4.8K

Padmount Transformers

<u>kVA</u>	<u>QUANTITY</u>	<u>COST</u>
Single Phase		
Up to 25	13,879	\$1.7K to \$2.5K
50	14,000	\$2.6K to \$2.9K
75	7,951	\$3.2K to \$3.6K
100 and over	9,123	\$3.7K to \$4.0K
3 Phase		
150	992	\$8.6K to \$9.8
333	1,244	\$10.9K to \$12.5K
500	1,136	\$13.2K to \$15.9K
750	41	Approx. \$20.4K
1000	444	\$23.6K to \$25.1K

- d. The number of transformers serving 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19, 20, and 21 or more customers by customer type (Residential and Non-Residential) is as follows:

# customer served by the transformer	# of transformer	# of Residential customers	# non Residential customers
1	262,518	221,131	41,387
2	67,855	112,516	23,194
3	25,711	67,338	9,795
4	16,687	60,766	5,982
5	12,700	58,680	4,820
6	11,072	62,118	4,314
7	9,277	61,418	3,521
8	8,485	64,607	3,273

9	6,618	56,291	3,271
10	5,676	54,134	2,626
11	4,536	47,378	2,518
12	3,893	44,589	2,127
13	2,802	34,523	1,903
14	2,035	27,036	1,454
15	1,501	21,331	1,184
16	1,149	17,250	1,134
17	873	13,854	987
18	721	12,117	861
19	562	9,958	720
20	431	7,879	741
21 or more	2,007	51,082	4,715

e. After Hydro One began the smart meter program, smart meter data from roughly 17,000 residential customer meters was obtained in order to review Hydro One's historical diversity curves. The data showed that the curve shape has essentially remained unchanged, however it had shifted slightly more conservative. Although this data was intended mainly for service conductor sizing, it also confirmed Hydro One's current transformer sizing process.

Hydro One Distribution has not performed any such analysis on "multi-family residential" or small commercial customers. For multi-family residential, Hydro One typically applies the same transformer selection processes as with single family (since the nature of the load is similar). For a commercial customer, Hydro One requires that the customer complete a form, indicating the ultimate size and type of all of their electrical loads. This is used to determine their total demand, and the transformer size. In the absence of a completed form, Hydro One uses the size of the service entrance panel to determine the required transformer size. There is not really any diversity applied in this scenario. Also it is not cost effective to design, approve, manufacture, and stock an unlimited range of transformer sizes. So Hydro One only stocks a handful of sizes of polemount and padmount transformers, as noted in the response to part b.

Green Energy Coalition (GEC) INTERROGATORY #17

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Related to transformer and capacitor cost allocation and fixed charges:

- a. Please provide excerpts from design manuals, other engineering specifications, purchasing manuals, or other documentation explaining how HONI trades off capital costs and no-load and load-varying losses when purchasing transformers.
- b. Please state the value of energy and capacity used when making economic comparisons among bidders when purchasing transformers; provide the source of those figures; and provide the date when the figures were developed.
- c. Please estimate the average price premium that HONI currently pays over the transformer with the lowest capital costs in each size range in order to avoid losses.
- d. Please identify gross and net plant for capacitors and indicate in which account costs are included.

Response

- a. Please see Exhibit I, Tab 7.7, Schedule 13-GEC-17, Attachment 1 for the RFP for Transformers. The RFP contains the specifications.
- b. Please see Exhibit I, Tab 7.7, Schedule 13-GEC-17, Attachment 1 for the RFP for Transformers.
- c. Hydro One follows the Management Board of Cabinet (MBC) Procurement Directive from the Government of Ontario.

Please see Exhibit I, Tab 7.7, Schedule 13-GEC-17, Attachment 1 for the RFP for Transformers.

- d. The requested information is provided below:

2012 Year End Fixed Asset Values		
USofA Account	Gross	Net
1815	\$ 132,226,306	\$ 82,294,539
1820	\$ 299,665,445	\$ 165,611,745
1835	\$ 1,539,949,513	\$ 894,953,026



Hydro One Networks Inc.
Request for Proposal Number 1000044715
Design, Manufacture and Supply Power Transformers

Part 1A: Instructions to Proponents

Part 1B: Purchaser's Insurance Requirements

Part 1C: Standard Commercial Terms and Conditions for Power
Transformers

Part 2: Technical Specifications

Part 3: Format of Submission

Part 4: Attachments

PART 1A - INSTRUCTIONS TO PROPONENTS

Introduction:

This Part 1A provides instructions to the Proponents as related to this request for proposal ("RFP") and defines the terms governing the RFP process.

This RFP contains the following documents:

- (1) Letter of Invitation to submit Proposals
- (2) Part 1:
 - (a) Part 1A - Instructions to Proponents
 - (b) Part 1B - Insurance Requirements
 - (c) Part 1C - Standard Commercial Conditions for Power Transformers
- (3) Part 2:
 - (a) Technical Specifications for Power Transformers - C-5201-ES08 (Separate Word Document), including the following appendices of drawings and other technical documentation, all of which are separate documents:
 - (i) Drawing No. SPS-D5S-54410-0001-03
 - (ii) Drawing No. SPS-D1S-54310-0005-05
 - (iii) Drawing No. SPS-D1S-54310-0006-03
 - (iv) Drawing No. SPS-D1S-54310-0009-02
 - (v) Drawing No. SPS-D1S-54310-0010-01
 - (vi) Drawing No. SPS-D1S-54310-0011
 - (vii) Drawing No. SPS-D1S-54310-0012
 - (viii) Transformer Overload Profile "J1"
 - (ix) Excitation Curve for CT's (Sample copy)
 - (x) Fire Detection for Transformer Drawing No. SIU-DCS-78710-010-03
 - (xi) Safety Arrest Technical Directive HO 378
 - (xii) ETM Requirements
 - (xiii) Requirement- Unique Concepts Limited (UCL) Fall Protection System.
 - (b) Technical Specifications for Autotransformers - C-5202-ES08 (Separate Word Document), including the following appendices of drawings and other technical documentation, all of which are separate documents:
 - (i) Over Load Profile H-90
 - (ii) Over Load Profile G-89
 - (iii) CT Excitation Curves - Sample Copy
 - (iv) DWG# SPS-DFS-54310-0002 Limiting Dimensions for 250 MVA 230/115 kV autotransformer
 - (v) Fire Detection for Transformer Drawings No. SIU-DCS-78710-101-03
 - (vi) Safety Arrest Technical Directive HO 378
 - (vii) ETM Requirements
 - (viii) Requirement- Unique Concepts Limited (UCL) Fall Protection System.
 - (c) Purchaser's Standard Specification M-125-89 (Separate Document PDF)
 - (i) M-125 Attachments (Separate PDF document)
- (4) Part 3:
 - (a) Format of Submission:
 - (b) Price Schedule Section 9 (Separate Excel file)

- (5) Part 4: Attachments
- (a) Intent to Submit Proposal Form
 - (b) Standard Insurance Certificate Form
 - (c) Equipment Data Sheet and Design Basis Sheet (Separate Excel File)
 - (d) Factory Test Failure Rate Form
 - (e) Field Failure Rate Form
 - (f) Customer Reference List

All of the above documents are collectively referred to as "request for proposal", "RFP", "RFP documents" or "tendering documents" hence forward.

The Purchaser's Instructions to the Proponents and the Standard Commercial Conditions contained in this RFP are significantly different from previous requests for tenders and requests for proposals.

The terms defined in Part 1C Standard Commercial Conditions, are used in all the RFP documents and Contract Documents and shall have the same meaning that is ascribed to them in the aforesaid documents. The following additional terms may be used in the RFP documents:

- (1) "Proponent" - the company making a submission in response to the Purchaser's RFP documents. The Proponent may also be referred to in the Contract Documents as the Company, tenderer, or vendor; and
- (2) "Proposal" - offers, quotes and submissions made by Proponents in response to the Purchaser's RFP. Proposal is also referred to as "tender" or "Tender" in the Contract Documents.

1.0 Proposal Submissions:

Proponents must submit **FIVE** paper copies (four priced, one of which must be a signed original; and one unpriced) and two electronic copies of your Proposals. The electronic copies must be on two separate CD-ROM (disks), in a sealed package properly identified and addressed as follows:

Inergi LP, Agent for the Purchaser

Reference number:	<u>RFP Number 1000044715</u>
Proposal due date and time:	4.00 p.m. Eastern Time Canada on Monday, March 2, 2009
Primary Contact Person:	Peter Wang; Email: <u>peter.wang@inergi.ca</u>; Phone: 416-345-5883
Alternate Contact Person:	(In absence of the Primary Contact) Rajesh Mehta; Email: <u>rajesh.mehta@inergi.ca</u>; Phone: 416-345-6070
Submit Proposals at:	20 Dundas Street West, 8th Floor Reception, Toronto, ON M5G 2C2, Canada

All Proposals must be clearly marked on the outside, on the mailing envelope, with the above information, together with your company name and address and the correct return address of the Purchaser.

Proponents' submission of the electronic copies of their Proposals on CD-ROM (disks) must include unprotected copies of the entire Part 3 and the attachments in Part 4, including all Price Schedules and Equipment Data Sheets in the original Microsoft (PC) program applications as issued with the RFP. In

addition, the Proponents' priced Proposal submissions in paper form must include printed copies of these Price Schedules and Equipment Data Sheets.

The date referenced above, or any subsequent revision thereto by the Purchaser, is to be indicated on the Proposal.

Proposals, and revisions to Proposals, received orally, by telephone or facsimile, or after the specified closing time, will not be considered. Proposals are to be submitted on the Purchaser's Format of Submission if such form is supplied with the RFP documents.

1.01 Submissions:

Proposals must be mailed or hand-delivered. Please note that Proposals and revisions to Proposals that are delivered orally, by telephone or by fax will not be considered. Proposals must be received at the address given, and by the **date and time (Closing Time)** stated in the Letter of Invitation, if the Proponent wants to be certain that the Proposal will be considered by the Purchaser. Proposals may not be considered by the Purchaser if they are received at any time after the Closing Time. The Purchaser accepts no responsibility for the timely delivery or receipt of Proposals, or of Proposals submitted at any location(s) other than the one mentioned above, in this Clause.

The included Part 3 - Format of Submission, including all attachments in Part 4, of the Purchaser's RFP is to be used by the Proponent when submitting its Proposal. It must be complete in every respect when submitted, including a properly signed signature page. All questions asked in the RFP are to be addressed and answers are to be clear, concise, legible, typed or written in ink. Your Proposal must be signed, in ink, by a person or persons authorized to do so. Erasures, overwriting or strikeouts must be initialled by the person signing on behalf of the Proponent submitting the Proposal. Failure to comply with any of the foregoing requirements in this paragraph may, at the sole discretion of the Purchaser, cause rejection of the Proposal or an evaluation penalty.

1.02 Agent or Sales Representative:

If the Proponent is acting as an agent or sales representative, a detailed statement shall be included in the Proposal, details of the activities to be performed by the agent or sales representative and those to be performed by the principal company or companies, including the actual manufacturers. The Proposal shall also include a letter from the principal declaring its knowledge of the Purchaser's commercial conditions and technical specifications and committing the principal to fulfilling the terms of the offer and Contract so as to enable the agent or sales representative to supply the Equipment in accordance with the Contract requirements and by the specified delivery date; and, in the event of any act of insolvency or other default by the agent or sales representative, to assume directly all obligations of the agent or sales representative for performance of the Contract.

1.03 Performance Security

The Proponent shall include, in its Proposal, the name of its proposed surety who will provide the performance security under the Contract, if applicable.

Please refer to Clause 25.0 in Part 1C, Standard Commercial Conditions for Power Transformers, for requirements of performance security under the Contract.

2.0 The Opportunity:

The Purchaser has regular, ongoing requirements of power transformers rated between 41.7 MVA and 125 MVA and autotransformers rated 250 MVA, 115 kV and 230 kV voltage class, all in accordance with the

specifications contained in Part 2 of this RFP (the "Transformers"). A forecast has been included in Part 3, Section 9.0 (the "Forecast"):

- (1) As noted in the Forecast, the Purchaser has a firm requirement of a total quantity of 65 units, of Transformers of different MVA sizes and delivery requirement, all as stated in the Forecast. The 65 Transformers are required to be delivered at different times between the years 2011 and 2013.
- (2) An additional forecasted future requirement of Transformers totalling up to 3400 MVA, to be delivered between the years 2012 and 2015.

Unless otherwise noted, all stated MVA ratings in the RFP are top ratings.

Utilizing the RFP process, and in accordance with the evaluation criteria specified herein, the Purchaser expects to:

- (a) Award contracts to supply the firm requirement of 65 Transformers; and
- (b) Pre-qualify Proponents who will receive future requests for quotes, proposals or tenders ("RFX") for the supply of the future requirement of Transformers.

The pre-qualification shall be valid for a period of five (5) years, during which period the Purchaser expects to issue RFXs to obtain prices and release order(s) on one or more of the pre-qualified Proponents for power transformers as described above. The Purchaser may, in its sole discretion, extend the pre-qualification period by up to two (2) years to a total of up to seven (7) years.

The future requirement of Transformers is not firm and can increase or decrease or become zero.

The Purchaser's intention is to establish healthy business relationships with the most qualified manufacturers. As stated elsewhere in the RFP, the Purchaser does not commit to award business to the lowest price Proponents. The Purchaser, utilizing the evaluation criteria mentioned in the RFP, will award business and pre-qualify those Proponents who have a proven track record of being competitive in a wide range of attributes, including, but not limited to, excellent and consistent product and service quality, ability to successfully reach all milestones of power transformer orders consistently on time, professional business conduct and consistently competitive total cost of ownership. These attributes contribute to long-term, mutually beneficial, healthy relationships.

The Purchaser's target schedule for the RFP process is as below:

S. #	Event	Target Schedule Date
1.	Issue RFP	December 11, 2008
2.	Mandatory All Proponents' Meeting	January 20, 2009
2.	Closing Date of RFP	March 2, 2009
3.	Release award for firm requirement of Transformers	June 15, 2009
4.	Announce pre-qualified Proponents	July 15, 2009

Proponents who confirm their intent to submit a Proposal, will be invited to the mandatory all Proponents' meeting. The agenda for the mandatory Proponents' meeting will be related to commercial, delivery requirements and RFP process issues. Any questions or clarifications to the technical specification of the RFP shall be addressed through issuing Addenda to the RFP.

Proponents should note that the Purchaser intends to make efforts to follow the above schedule. However, the target schedule above does not constitute a commitment by the Purchaser to release business and/or announce the outcome of pre-qualification on the given dates.

2.01 Award and Pre-qualification Strategy

The Purchaser is seeking strategic partnership(s) with manufacturers to cover its immediate, firm requirement of Transformers. The selected manufacturer(s) will also be automatically considered as pre-qualified to receive future RFX.

While the Purchaser reserves the right to pre-qualify additional manufacturers to receive RFX for the supply of Transformers during the pre-qualification period, which commences from the date of announcement of the pre-qualified Proponents of the RFP, it does not guarantee that manufacturers not responding to the RFP will be included for future RFX for Transformers.

2.02 Pricing Requirements

(1) Prices for the firm requirement of Transformers:

Proponents are requested to submit pricing for the firm requirement of Transformers in the following manner:

- (a) a unit price (for each rating in the Forecast) on the basis of a blanket contract for a period of five years, with no firm commitment to release any business; and
- (b) a unit price (for each rating in the Forecast), based on a firm commitment of award of the Transformer unit totals included in the Forecast, to be delivered at site at various times in the years 2011, 2012 and 2013, as more detailed in the Forecast.

For this option 2.02(1) (b), Proponents should quote a unit price based on quantity of one unit and include a discount schedule for firm orders of multiple units up to the quantities detailed in the Forecast. A discount table has been included in Part 3 for this purpose.

The Purchaser expects Proponents to capture in its price offer all opportunities of economies of scale and consolidation, associated with orders for multiple quantities of Transformers including, but not limited to, identical Transformer designs; Transformers of similar ratings with differences in either voltage or MVA that use common materials and labour; time range of delivery (i.e. delivery around the same time; or within a defined range) and transportation savings.

Proponents are encouraged to incorporate any innovative methods that provide demonstrable benefits of savings and market-competitive price levels to the Purchaser. Each Proponent is asked to detail how and in what manner the formation of a strategic partnership with that Proponent would benefit the Purchaser. Details should include but not be limited to price considerations, technical information exchange, contract administration improvements and any relevant aspect of the Proposal that improves the overall lead-times.

While it is not mandatory that Proponents must offer a price and design for all Transformer sizes and ratings in the RFP, the Purchaser expects that those Proponents who have established and proven technical and engineering capability and experience in manufacturing the Transformer sizes and ratings in the RFP, include an offer for such Transformer sizes and ratings in their Proposals.

Proponents are notified that the Purchaser shall make a comparison and take into consideration, as part of the evaluated information, the following: (i) the extent to which each Proponent's capability exists to provide the entire immediate, firm requirements in the Forecast; and (ii) the number of Transformer sizes and ratings from the Forecast for which an offer is included in that Proponent's Proposal.

(2) Price Adjustments:

For pricing options in Clause 2.02(1) (a) and (b) above, Proponents can submit a base price for each rating in the Forecast, which could be subject to adjustments due to changes in the cost of raw materials, labor and if applicable, foreign currency exchange rate fluctuations.

Such price adjustments shall be based on the following:

- (a) Adjustment can result in an increase or decrease of the base price;
- (b) Such price adjustments shall be based on: (i) Company's actual changes in the cost of labour and materials used in the manufacture of Transformers and corresponding weightings, all of which shall be in accordance with the Company's disclosure in the Source of Supply Section of its Proposal; (ii) Such changes must be evidenced by published and publicly accessible price indices of materials, such as Statistics Canada or Industry Canada, or any recognized International institute such as COMEX or LME for copper; and (iii) Foreign exchange fluctuations, wherever applicable, in accordance with the terms of Section 14.0, Part 1D of the RFP; (iii) For materials such as core-steel, insulation material and other such materials, which do not have published price indices, the price change shall be Company's actual change in cost as evidenced by copies of invoices from the Company's sub-suppliers or copies of Company's contracts and/ or purchase orders placed on its sub-suppliers.
- (c) The base price for all adjustments in 2.02(2)(b) above shall be the Company's offered price in its Proposal;
- (d) Only the price ex-works shall be subject to any adjustment.
- (e) Proponents should provide a separate mechanism for freight cost adjustments, if any.

Proponents must submit a formula for price adjustments and include, without limitation, the following information in their Proposal:

- (a) The name of the published price index and source to obtain the information (for e.g., the website link), for each material.
- (b) The base period used to determine the cost of the materials and labour, on which the Transformer prices offered in the Proposal are based;
- (c) Weighting of each material and labor, as a percentage of the proposed price ex-works of the Transformer. If required, Proponents can submit material and labour weightings for each Transformer size separately.
- (d) The time at which the price adjustment is to be made, for e.g. whether at the time of the award of the contract or at the time of shipping or invoicing.
- (e) At the agreed time of price adjustment, the time period over which the new raw material price indices would be measured to calculate the price adjustment. For e.g. for copper, LME price index for copper averaged over a period three-months immediately prior to the date of shipping.
- (f) A positive confirmation that the Proponents' would provide copies of its sub-suppliers invoices or contracts or Proponents' purchase orders on its sub-suppliers as evidence to support the price adjustment.

A mutually agreed price adjustment formula based on the above shall also be used for determining prices of the firm requirement detailed in the Forecast, in the event that some of the firm requirement is deferred for delivery beyond 2013, up to the year 2015.

Proponents are also encouraged to submit a proposal to establish a mechanism by which the Purchaser is periodically ensured that the contract prices are market competitive, during the term of the Contract.

(3) Spare Part Pricing:

The Proponent shall include, in its Proposal, unit prices together with delivery times for recommended spare parts for the Equipment. Such prices shall remain valid for acceptance by the Purchaser for a period of 12 months from the date of Proposal. Spare parts shall be identical to corresponding parts in the Equipment. The successful Proponent shall provide, upon request by the Purchaser, a complete list of spare parts which the Company would normally purchase from outside sources, showing the Company's part number and the manufacturer's name and part number for each item.

2.03 Progress Payments

The terms of payment shall be in accordance with Clause 8.04, Terms of Payment, in Part 1C of the RFP.

At the Purchaser's sole discretion, it may consider Proposals submitted on the basis of progress payments with the following terms:

- (a) 60% of the Contract Price may be invoiced in the installments defined below:
 - (i) First installment of 10% may be invoiced upon approval (or "approved as marked") by the Purchaser of all contractual drawings.
 - (ii) Second installment of 20% may be invoiced upon receipt of major raw material and components of the Equipment by the Company at its manufacturing plant or factory. The Purchaser reserves the right to ask the Company to submit support documents demonstrating such receipt.
 - (iii) Third installment of 30% may be invoiced after the Equipment successfully passes all factory tests as per the Contract Documents.
- (b) The balance 40% of the Contract Price may be invoiced in accordance with the following:
 - (i) Fourth installment of 30% plus/minus any outstanding adjustment may be invoiced upon delivery of the complete Equipment at project site.
 - (ii) Final payment of 10% may be invoiced after successful completion of installation of the Equipment at site, or final incoming Equipment inspection by the Purchaser, not exceeding 90 days from date of delivery of the Equipment at project site.

In the event that the Purchaser accepts progress payment terms, all other provisions of Clause 8.04, Terms of Payment, in Part 1C shall apply.

3.0 Evaluation of Proposals:

3.01 General:

All Proposals will be evaluated to bring the time effect of all financial terms and conditions to present worth values. In addition to the proposed price, administrative costs, the projected effect of escalation (if applicable), lifecycle maintenance costs (if applicable), the financial impacts, if any, of the terms of payment offered and of technical parameters, will be considered in the evaluation of Proposals.

Departures from the Purchaser's specified commercial conditions may, at the Purchaser's sole discretion, result in an evaluation penalty or be grounds for rejection of the offer in which they appear.

3.02 Evaluation Criteria:

It is very important that the Proponents submit their Proposal in the Format of Submission, Part 3 of

the RFP and provide all of the requested information. Where provided, the Proponents should use the space, tables, fields and forms included in Part 3 of the RFP to submit the information required in the RFP documents. This will help the Purchaser to properly evaluate the Proposals received. After the Proposal closes, while the Purchaser reserves the right to do so, the Purchaser makes no commitments that it will seek clarification on any aspect of the Proponents' Proposal submission or seek any missing information that was already requested in the RFP.

The criteria to evaluate and select Proponent(s) responding to this RFP, both for award and pre-qualification, include, however are not limited to the following:

(1) Proof / Evidence of Proponents' Corporate Values:

Hydro One takes its commitments seriously to social, environmental, and health and safety responsibilities, and adherence to ethical business practices ensuring that the decisions we make today also represent the right decisions for our future. These commitments reflect how we do business. Hydro One expects our suppliers of goods and services to adhere to these fundamental values and apply them to how they do business with Hydro One and other clients around the world. Proponents are requested to provide sufficient information to assess the supplier's values relevant to each of the following areas of corporate responsibility:

(a) Corporate Safety Responsibility:

Safety is always our first consideration at Hydro One and is not optional. Consistent with our values, suppliers must apply safe work-practices to all activities and exercise good judgment in work decisions.

Proponent should provide sufficient information to demonstrate that they conduct business and, if awarded the Contract, will perform the work in a safe responsible manner. Such information should include, without limitation, the following:

- Information that demonstrates a good record of safety responsibility and compliance with applicable safety regulations.
- Any data or information showing how Proponent intends to comply with applicable safety requirements that may be imposed by law or the Request for Proposals Documents.
- A signed letter of authorization and direction to the appropriate Workers' Compensation Board or other appropriate provider of workers' compensation coverage for the workers of the Proponent sufficient to allow Hydro One to access the Proponent's appropriate Workers' Compensation Board, or equivalent, incident history.
- The Proponent's occupational health and safety program which meets all the requirements of the law respecting the safe performance of the work.

(b) Corporate Environmental Responsibility:

The Purchaser is committed to meet or surpass all applicable regulatory requirements and adopt ways to enhance the communities we serve. Consistent with our values, suppliers to the Purchaser must comply with all applicable environmental laws and regulations and conduct their operations in an environmentally responsible manner.

Proponent should provide sufficient information to demonstrate that the Proponent has conducted its business and, if awarded the Contract, will perform the work, in an environmentally responsible manner and in compliance with environmental good practice and regulations. Such information should include, without limitation, the following:

- A statement certifying compliance with environmental laws in force at the proposed place of manufacture

- Any data or information showing how the Proponent intends to comply with applicable environmental protection requirements that may be imposed by law or the Request for Proposals Documents. Proponents should provide details of the systems or processes they will use for management of environmental issues.
- Details of the Proponent's business practices that demonstrate a commitment to environmental stewardship including: product design elements, material selection, energy efficiency, resource conservation, product life cycle management, waste management processes, packing and shipping methods and any other information that would indicate the extent of the Proponent's commitment to environmental stewardship.
- Information showing how the Proponent ensures and will, if awarded the Contract, ensure that its contractors and suppliers conduct their business in an environmentally responsible manner and in compliance with environmental good practice and regulations.

(c) Corporate Social Responsibility:

The Purchaser takes its social and community responsibilities seriously and is always concerned about the impact we have on our customers, our employees, and their overall quality of life. Consistent with these values, the Purchaser's suppliers are expected to conduct their operations in a socially responsible manner.

Proponent should also provide sufficient information to demonstrate that they conduct business and, if awarded the Contract, will perform the work in a socially responsible manner. Such information should include, without limitation, the following:

- Details of the Proponent's current social responsibility policy and practices regarding issues such as community relations and involvement, protection of human rights, employment equity, ethical practices (i.e. child labour, fair compensation, working hours, working conditions, timely payment of bills, etc.)
- Information outlining how the Proponent takes into consideration the interests of society by taking responsibility for the impact of their activities on customers, employees, communities, as well as the environment insofar as how the Proponent voluntarily takes further steps beyond mandatory compliance with obligatory legislation.
- Information showing how the Proponent ensures and will, if awarded the Contract, ensure that its contractors and suppliers conduct their business in a socially responsible manner.

Proponents are specifically requested to respond to questions and provide information requested, related to this subject, in Part 3 of the RFP.

(2) **Proof of Ability**

The Proposal shall be complete in every respect and contain sufficient engineering and other pertinent information about the work, including all information requested in the RFP documents, to permit a detailed comparison of Proposals. This shall include evidence of the Proponent's financial, managerial and technical ability, experience, and facilities, as well as those of any proposed subcontractors, to perform the work by the dates specified. Such capabilities shall be subject to verification by the Purchaser.

(3) **Cost**

The Purchaser will consider total evaluated cost impact of the Proposal, as indicated in Clause 3.01 above, and overall value to the Purchaser.

(4) **Source of Supply**

The Proponent should include, in its Proposal in Part 3, the following information:

- (a) the percentage of the price ex-works attributable to work in (1) Canada, by province and (2) in other countries (to be specified) expressed in each case in terms of engineering, materials (with breakdown as requested in Part 3), and manufacturing labour;
- (b) the name and address of, together with a list of the items to be supplied or work to be performed by, each proposed major supplier or subcontractor; and
- (c) the location(s) where the Equipment indicated in the Proposal will be manufactured.

(5) Compliance

The level of compliance to technical specification in Part 2 and the commercial terms and conditions in Parts 1B, 1C and 1D shall be evaluated.

A condition of pre-qualification to receive future RFX is that a Proponent is able to arrive at an agreement with the Purchaser on the commercial terms and conditions of the contract substantially based on those contained in this RFP.

The Purchaser will neither evaluate nor accept any general or standard commercial terms and conditions of the Proponents in place of the terms contained in this RFP.

(6) Proponents' capability:

The Proponent should have a proven capability to design, manufacture and build equipment similar to the Equipment of this RFP (for the purpose of this RFP "similar" means similarity in principal electrical ratings; i.e.; voltage class, BIL, continuous current, short-circuit current, MVA rating and/or number of windings as applicable). To enable Purchaser to evaluate such capability, the Proponent should provide a detailed list of customers of the Proponent's source manufacturing plant as disclosed in its Proposal in Part 3, (hereinafter, the "Plant"), for whom it has designed, manufactured and delivered such similar equipment. The information on the list should include, but not be limited to, the detailed rating of the equipment, date of in-service, location of installation and complete contact details (name, title or position, email address, telephone and fax number) of the concerned person, for each listed customer. When provided, please use the forms in Part 4 - Attachments.

Please note that the above information should be specific for the Plant and for similar equipment. If general information on Proponent's plants in other locations is provided in the Proposal, such information will be discarded and the Proposal may be deemed incomplete.

The Purchaser also reserves the right, in its sole discretion and as a part of its evaluation of Proponent's Proposal submission, to perform a comprehensive quality due-diligence, which shall include, but not be limited to, a quality and manufacturing audit, of the Proponents' Plant.

(7) Equipment Reliability and Maintainability:

The Proponent should provide the following information in the forms provided in Part 4, Attachments:

- (a) Factory test failure rate in the form provided, by each year, for the last ten (10) years, of similar equipment designed and manufactured at the Plant. The Proponent should provide the nature and reason for the failure and remedial action taken by the Proponent. The information should include details of the failed component/part/sub-assembly.
- (b) Field failure rate in the form provided, by each year, for the last ten (10) years, of similar equipment designed and manufactured at the Plant. The Proponent should provide the nature and reason for the failure and action taken by the Proponent. The

information should include details of the failed component/part/sub-assembly. The Proponent should also provide the location of the failed similar equipment, corresponding date of in-service and full contact details of the person involved at the Proponent's customer where the equipment failed.

The Proponents must provide failure data only specific to the Plant and to equipment that is similar or higher in size and rating to the Equipment, as described above, and not provide failure data for different plants and different size of equipment.

The Proponent is also encouraged to provide any additional information on reliability and maintainability of its equipment in Part 3, Format of Submission.

(8) Equipment Data Sheet and Additional Technical Information:

The Proponents must complete the Design Basis and Equipment Data Sheets.

(9) Financial viability:

Proponents must provide the information requested in Part 4. If the Proponents have provided the requested information in response to Purchaser's previous requests for tenders or requests for proposals issued in the six months previous to the Closing Time, then they need not provide it again. The Proponents must identify Purchaser's RFT number and their submission reference.

(10) Representation in Canada / USA:

For Proponents whose Plants are located outside Canada, the following criteria will be evaluated:

- (a) Such Proponents must have adequate technical and commercial support resources located preferably in Canada, or in the USA.
- (b) Such Proponents' local technical support resources shall include, but not be limited to, erection or installation consultants or supervisors and be well versed with the Proponent's equipment and products.
- (c) Such Proponents' local commercial support resources shall include but not be limited to logistics support for rail and road transportation issues when the Equipment is being moved in Canada.
- (d) A preference for such Proponents to have an arrangement with a company or firm with a factory or facility located in Canada or the US, for providing repair and other services for the Company's transformers. At the minimum, such company's or firm's facility/ factory must have the following capabilities:
 - (i) The facility is ISO 9000 certified.
 - (ii) Employs adequately qualified engineers, technicians and shop-floor labor, who are knowledgeable of design and manufacturing aspects of power transformers.
 - (iii) The facility has in-house expertise to assess, diagnose and repair transformer defects, cause of electrical failures, etc.
 - (iv) The facility has capability to dismantle, repair and re-assemble power transformers rated up to 300 MVA top rating, including its windings ; and manufacture new replacement windings for power transformers;
 - (v) The facility has capability to perform all routine production tests in accordance with the RFP specification

Purchaser's intent is to evaluate the above information for its impact on total evaluated cost of ownership, accessibility to quick service, including warranty-related service when needed, and delivery and total turn-around times for failed transformers.

(11) Delivery schedule/lead time:

- (a) Proponents should include in their Proposals a manufacturing critical path schedule, including, but not necessarily being limited thereto, dates for material procurement and award of subcontracts, dates for receipt of raw materials or sub-assemblies, the scheduled commencement times of production, and times and duration of manufacturing stages of the major components, (including shop testing of major subcontract items).
- (b) The Plant's historical on-time-delivery performance on supply of similar equipment, including supply to the Purchaser on previous contracts.

(12) Other information:

Proponents should provide all other information as requested in the RFP documents, including Part 3.

(13) Completeness of Part 3 - Format of Submission

Proposals contains answers to all questions and includes all documentation requested in the RFP.

(14) Additional Information not requested in the RFP:

Purchaser reserves the right to request additional information from the Proponent on any aspect that it determines to be a potential risk to the Proponent's ability to meet delivery schedules, meet performance thresholds or any additional factors found to be critical to the selection and pre-qualification process.

(15) Proposal submission:

Submit the required number of electronic and paper copies of Proposals.

(16) Exceptions to the RFP:

Please note the following:

- (a) Purchaser will not consider and/or accept any standard or general (printed) conditions of sale from any Proponent.
- (b) If a Proponent has any exceptions to the commercial terms and conditions and technical specifications of this RFP, that Proponent must unequivocally state all such exceptions, in sufficient detail and with reference to the corresponding RFP Part, Clause and paragraph number, in the Format for Submission, notwithstanding the appearance of such exceptions in any other part of the Proposal.

If a Proponent has no exceptions to the terms and conditions and technical specifications of this RFP, then it shall state the following in the Format of Submission: "We accept all of the terms and conditions and the technical specification of this RFP, without any exception."

A Proponent shall be deemed to have accepted all the terms and conditions of this RFP, including the technical specifications, unless it explicitly states its exceptions as required in this Clause.

All exceptions are subject to evaluation by the Purchaser, who may render any exception(s), and as a result all or part of the Proposal, to be unacceptable after evaluation.

4.0 Clarification of RFP Documents

Any Proponent who wants clarification of this RFP package or who finds discrepancies or omissions from this RFP package may contact the designated contact person only prior to the due date for submission of Proposals, and only in writing, (via email) as soon as possible, however no later than five (5) business days

before the due date of submission of Proposals, so that a written instruction or an addendum may be issued to all Proponents, if the Purchaser determines to issue such written instruction or addendum.

Prior to award of the Contract, any correspondence that may be required shall carry the Purchaser's RFP number and requisition number/request for bid number.

No officer, agent, or employee of the Purchaser is authorized to alter orally, any portion of these documents, and all such oral alterations shall be void. Any alterations required will be issued to all Proponents as written addenda. Proponents shall list in their Proposals all addenda that were considered when their Proposal was prepared.

During the entire Proposal period prior to award, all communication (verbal or written) by the Proponents must be forwarded through designated contact person(s). You are cautioned that failure to comply with this requirement may result in assessing a penalty to your Proposal or outright rejection of your Proposal.

Any clarification of the RFP documents required by, or communication from, the Proponent prior to submission of its Proposal shall be requested and communicated through the representative identified in the invitation to submit Proposals.

During the period prior to the due date for submission of Proposals, any addenda will be issued only to those Proponents who, within the prescribed time-period, confirm their intent to submit a Proposal.

5.0 The RFP process:

- (a) Purchaser reserves the right, in its sole discretion, to :
 - (i) award to more than one Proponent;
 - (ii) make a partial award;
 - (iii) modify, cancel or withdraw this RFP at any time and for any reason whatsoever without any obligation or reimbursement to the Proponents, whether or not the Proponents' Proposals contain all required information and whether or not the Proposals are properly completed and submitted; and
 - (iv) waive procedural/technical defects, irregularities, exceptions, and omissions in the Proposal if, in so doing the best interests of the Purchaser will be served.

No liability shall accrue to the Purchaser for any decision in this regard.

- (b) Purchaser does not make any claims or promises whatsoever with respect to whether or not it will actually issue a contract.
- (c) Furthermore, Purchaser does not guarantee that any eventual contract will include the identical scope of work description as those defined in this Request for Proposal.

All requirements and conditions imposed by the RFP documents are for the benefit of the Purchaser. They are not to be construed as undertakings or obligations on the part of the Purchaser with respect to their enforcement.

- (d) Purchaser does not represent that it will accept any Proposal, accept the lowest Proposal, or be precluded from accepting any Proposal or other offer.
- (e) Purchaser reserves the right to negotiate any Proposal with the Proponent without references to other Proponents or Proposals.

- (f) Purchaser shall in no way be committed to accept any Proposal and shall not be required to give any reason for its decision. Proponents agree that the exercise of any right or privilege described in this RFP shall be without liability on the part of Purchaser for any damage or claim brought by a Proponent because of same, nor shall any Proponent seek any recourse of any kind against Purchaser because of same.
- (g) The costs and expenses for the preparation and submission of a Proposal and all other cost and expenses relating to this RFP incurred by any Proponent shall be borne by that Proponent. Purchaser shall not be liable to pay for such costs and expenses or to reimburse or compensate a Proponent in any manner whatsoever or under any circumstances including, without limitation, in the event of rejection of any or all Proposals.
- (h) All requirements and conditions imposed by the RFP documents are for the benefit of the Purchaser. They are not to be construed as undertakings or obligations on the part of the Purchaser with respect to their enforcement. The Purchaser will not be liable for any verbal information or advice or any errors or omissions which may be contained in this RFP. The Purchaser makes no representations or warranties either express or implied, with respect to the accuracy or completeness of this RFP and the Purchaser shall not be responsible for any action, cost, loss or liability arising from the Proponent's reliance or use of this RFP.
- (i) The Proposals solicited are solely for the benefit of the Purchaser, and the Purchaser does not make any claims or promises whatsoever that the final award will be based on any perceived, assumed or stated criteria.
- (j) The Purchaser will notify Proponents of the final result or outcome after evaluation of their Proposal submission. Further information will be presented only at the Purchaser's discretion.
- (k) All requirements, documentation and information obtained by the Proponents in connection with the RFP are the Purchaser's property and must be maintained in confidence and shall not be used for any purpose other than for replying to the RFP, and for fulfilment of any subsequent contract(s) if awarded.
- (l) No assurances are given that a Proposal submission will remain confidential. The Purchaser reserves the right, in its sole discretion, to release the details of or make available, copies of any or all Proposal submissions to the general public. All Proposal submissions submitted to the Purchaser in response to the RFP shall become the Purchaser's property.
- (m) Without limiting the generality of the provisions of all Clauses of this Part 1, the Purchaser reserves the right to disqualify from bidding: (i) an individual or partnership who has, or (ii) an individual or partnership who was a shareholder or officer of a corporation that has, or (iii) a corporation that has, or (iv) a corporation with a shareholder or officer who has, or (v) a corporation that is, or was, a shareholder of a corporation that has, or (vi) a corporation that has a shareholder or officer who is also a shareholder or officer of another corporation that has: had a bid bond retained, or had all or part of a performance bond retained, or breached a contract with the Purchaser or one of its affiliates or failed to complete its obligations under any prior contract with the Purchaser or one of its affiliates, or has an unresolved dispute with the Purchaser or any one of its affiliates, or has been charged or convicted of an offence in respect of one of a contract of the Purchaser or one of its affiliates. The definition of "affiliate" or "affiliates" is as stated under the Ontario *Business Corporations Act*.
- (n) The Purchaser may, in its sole discretion, choose to meet with some or all of the Proponents to discuss aspects of their Proposal. The Purchaser may require one or more Proponents to submit supplementary documentation to clarify any matters contained in their Proposal, and the

supplementary documentation accepted by the Purchaser shall form part of the Proposals of such Proponents.

- (o) By submitting a Proposal to the Purchaser, the Proponent acknowledges, agrees with and accepts the terms and conditions of all Clauses in this Part 1A of the RFP, and agrees to the adequacy of the RFP and the process described herein for the intended purpose. The acknowledgement, agreement and acceptance of the terms and conditions within this Part 1A is mandatory and no revision to any of the Clauses found within this Part 1A will be accepted, nor will any alternate terms and conditions submitted by the Proponent be accepted.
- (p) This document is the sole property of the Purchaser and shall not be reproduced or distributed in whole or in part for any other purpose other than that for which it is intended, i.e. submission of Proposals and performance of work. All other use of this document or portion thereof shall require the prior written approval of the Purchaser.
- (q) The Proponents submitting Proposals agrees that all rights, title and interests, including copyright ownership, to all information and material that may be provided to the Proponent by the Purchaser or otherwise obtained by the Proponent relating to the RFP or in the Proponent's performance of the service if it is the successful Proponent, shall remain the property of the Purchaser. All such information and material and any copies thereof shall be returned to the Purchaser upon request. The Proponent further agrees to maintain all information and material that may be provided to the Proponent by the Purchaser or otherwise obtained by the Proponent in relation to the RFP or in the course of performing the service if the Proponent is the successful Proponent, in strict confidence and to disclose the said information and material only to those of its employees having a need to know same and who have undertaken a like obligation to maintain its confidentiality. The Proponent agrees neither to reproduce or disclose or distribute the said information and material to any other third party nor to use the said information and material for any purpose other than as specifically contemplated herein without the Purchaser's prior written consent.



Hydro One Networks Inc.

Request for Proposal Number 1000044715

Design, Manufacture and Supply Power Transformers

Part 1A: Instructions to Proponents

Part 1B: Purchaser's Insurance Requirements

Part 1C: Standard Commercial Terms and Conditions for Power
Transformers

Part 2: Technical Specifications

Part 3: Format of Submission

Part 4: Attachments

PART 1B - INSURANCE REQUIREMENTS

Terms not defined under the Insurance Requirements shall have the same meaning ascribed to them under Part 1C - Standard Commercial Conditions, unless otherwise expressly stipulated.

The following Insurance Requirements shall apply:

The work shall remain at the sole risk of the Company up to and including takeover day. In the event of loss or damage to the work during such period, the Company shall make good the same at its expense or pay all costs incurred by others in making good such loss or damage.

1.0 Required Insurance(s)

The Company agrees to provide and/or cause its subcontractors to provide and maintain in full force and effect with financially responsible insurance carriers, the following insurance which shall take effect as of the date of this agreement and shall remain in effect during the term hereof or any extension thereof or as otherwise specified herein:

- 1.1 **Commercial General Liability Insurance**, with limits of **\$5,000,000** inclusive for bodily injury, including death, personal injury and damage to property, including loss of use thereof, for each occurrence. To achieve the desired limits, Excess or Umbrella coverage's may be used. Coverage shall specifically include but not be limited to the following:
- (a) Blanket Contractual Liability;
 - (b) Damage to property of the Purchaser including loss of use thereof;
 - (c) Liability arising out of unlicensed equipment;
 - (d) Pollution Liability coverage on at least a Sudden and Accidental basis;
 - (e) Products & Completed Operations to be continuously maintained through the operational liability insurance;
 - (f) transit, including both inland and marine cargo insurance in the amount of the Contract Price of the Equipment;
 - (g) Employer's Liability;
 - (h) Non-Owned Automobile Liability (not applicable for U.S. based companies);
 - (i) Broad Form Property Damage;
 - (j) XCU endorsement (if applicable to the services being provided under the Contract Price); and
 - (k) Blasting (if applicable to the services being provided under the Contract Price).

The following applicable to On Site Erection Consulting Services, when purchased by the Purchaser (if required):

- 1.3 **Automobile Liability Insurance**, covering all licensed vehicles owned, **(non-owned auto for U.S. based companies)**, rented or leased and used in connection with the work to be performed under this agreement. Coverage shall include Bodily Injury and Property Damage Liability, mandatory Accident Benefits and if applicable attached machinery, to a combined inclusive minimum limit of **\$5,000,000**.
- 1.4 **Workers' Compensation: The Contractor and its subcontractors shall qualify under and shall satisfy all the workers' compensation laws of all jurisdictions in which the work and any portion of the work is to be performed and any other applicable provisions of said laws. (Note: For U.S. employees, appropriate State Workers Compensation must be carded including Employees Liability for a minimum limit of \$1,000,000 U.S., with a Foreign Coverage Endorsement and, to the extent applicable, Jones Act and U.S. Longshoreman's and Harbor Workers coverage and FELA).** The Contractor, upon commencement of any work at the site, shall submit a list of all employees who will be employed at the site.

2.0 Certificates of Insurance

- 2.1 Before starting work, the Company will supply and cause its subcontractors to supply to the Purchaser a certificate of insurance completed by a duly authorized representative of their respective insurers certifying that at least the minimum coverage's required here are in effect and that the coverage's will not be cancelled, non-renewed, restricted or reduced without 30 days' advance written notice by registered mail, receipt required, to:

Hydro One Networks Inc.
C/o Inergi LP, Attn: Rajesh Mehta
20 Dundas Street West, 8th Floor,
Toronto, Ontario M5C 2C2

(With copy to Hydro One Networks Inc., Risk & Insurance Department, 483 Bay Street, South Tower, 8th Floor, Toronto, Ontario M5G 2P5)

- 2.1(a) Failure of the Purchaser to demand such certificate or other evidence of full compliance with these insurance requirements or failure of the Purchaser to identify a deficiency from evidence provided will not be construed as a waiver of the Company's obligation to maintain such insurance.
- (b) The acceptance of delivery by the Purchaser of any certificate of insurance evidencing the required coverage's and limits does not constitute approval or agreement by the Purchaser that the insurance requirements have been met or that the insurance policies shown in the certificates of insurance are in compliance with the requirements.
- (c) If the Company fails to maintain the insurance as set forth here, the Purchaser will have the right, but not the obligation, to purchase said insurance at the Company's expense. Alternatively, the Company's failure to maintain the required insurance may result in termination of this Contract Price at the Purchaser's option.
- (d) If any of the coverage's are required to remain in force after final payment, an additional certificate evidencing continuation of such coverage will be submitted with the Company's final invoice.
- (e) Certificates of insurance will be provided within 14 days after award of the Contract Price.
- 2.2 All deductibles shall be to the account of the Company and/or its subcontractors.
- 2.3 With the exception of clause 1.3 (Automobile Liability), all insurance noted below shall specify that it is primary coverage and not contributory with or in excess of any other insurance that may be maintained by the Purchaser.
- 2.4 All limits and deductibles are expressed in Canadian dollars.
- 2.5 The Purchaser shall be included as an Additional Insured under coverage's noted in Commercial General Liability and Excess/Umbrella Liability but only with respect to their rights and interest in the operations of the Companies and shall be added a Loss Payee as the Purchaser's interest may appear, under-coverage All Risks Installation Floater.
- 2.6 Coverage's noted in Commercial General Liability and Excess/Umbrella Liability shall contain a Cross Liability clause and a Severability of Interests clause.
- 2.7 Coverage provided for the Purchaser shall not be invalidated or vitiated by actions or inactions of others.

3.0 Other Conditions

The above-mentioned insurance requirements of Clause 1.0 shall be in force prior to the commencement of services under the Contract and shall remain in force during the entire term of the Contract. Notwithstanding anything else in the Contract, (a) the Company shall not commence providing the said services prior to the Purchaser's receipt of a valid Standard Insurance Certificate evidencing compliance with all terms of this clause; and (b) if the required insurance coverage expires during the term of the Contract, the Company shall not continue providing the said services prior to the Purchaser's receipt of a valid Standard Insurance Certificate evidencing continued compliance with all terms of this clause.

- 3.1 In addition to any other remedy that the Purchaser may have against the Company as a result of the Company's failure to comply with all the terms of this clause, the Company shall, to the extent that delay in providing the said services occurs as a result of the non-delivery of Standard Insurance Certificates as required by Clause 2.1, be liable to the Purchaser for all damages arising out of the said delay.



Hydro One Networks Inc.

Request for Proposal Number 1000044715

Design, Manufacture and Supply Power Transformers

Part 1A: Instructions to Proponents

Part 1B: Purchaser's Insurance Requirements

Part 1C: Standard Commercial Terms and Conditions for Power
Transformers

Part 2: Technical Specifications

Part 3: Format of Submission

Part 4: Attachments

PART 1C - STANDARD COMMERCIAL CONDITIONS FOR POWER TRANSFORMERS

1.0 Definition of Terms

The following terms, wherever used in any Contract Document, shall mean:

- (1) "Company" or "Contractor" - the person, firm or corporation to whom the Purchaser has awarded the Contract, also sometimes referred to as the "vendor" or "successful tenderer" or "successful Proponent" in the Contract Documents;
- (2) "Contract Price" - the total, without duplication, of: any stipulated sum(s) for the work (or any portion(s) thereof) set forth in the purchase order, as amended by any instruction notice;
- (3) "Engineer" - the person designated from time to time by the Purchaser to exercise such power, authority, or discretion as is required of him/her under the Contract;
- (4) "Equipment" - the materials, machinery, assemblies, instruments, devices or articles, as the case may be, or components thereof, which form part of the work;
- (5) "erection consultant" - an employee of the Company or of subcontractor who furnishes technical direction for installation when required under the Contract;
- (6) "in-service date" - the day on which the Equipment purchased is declared in service by the Purchaser;
- (7) "Inspector" - the representative of the Purchaser authorized to monitor the application of the quality program, examine the Equipment, and expedite delivery of the work;
- (8) "project site" - the land or actual place designated by the Purchaser for the performance of the work;
- (9) "subcontractor" - a person, firm or corporation having a contract with the Company for the supply and/or performance of any part of the work;
- (10) "tendering document(s)" - the documents issued by the Purchaser in response to which tenders are invited for the supply and/or performance of the work and may also be sometimes referred to as "Request for Tender" or "RFT";
- (11) "work" - all labour, material, Equipment, structures, services, supplies and acts required to be done, furnished or performed by the Company under the Contract;
- (12) "Purchaser" - unless specified otherwise in the Contract Documents, the Purchaser is Hydro One Networks Inc., also sometimes referred to as "Hydro One" in the Contract Documents.

Words in the singular include the plural and vice versa.

2.0 Contract Documents and Order of Precedence

The contract (the "Contract") shall consist of the following documents (the "Contract Documents") listed in the order of priority from highest to lowest in case of any inconsistency or conflict:

- Change orders or revisions to the purchase order;
- the purchase order (the "PO");
- the following documents, including those contained in the tendering documents, listed in the order of priority from highest to lowest in case of any inconsistency or conflict:
 - Special Commercial Conditions (if any),

- Standard Commercial Conditions for Power Transformers,
- Purchaser's Technical Specifications, Drawings and Data,
- Purchaser's Invitation, Instructions to Proponents, and Format of Submission.
- the Company's response to the RFP, including Company's drawings and data (the "Proposal").

These documents take precedence in the order in which they are named above. Appendices and addenda to any Contract Document shall be considered part of such document.

Subsequent amendments to the Contract shall be in the form of change orders or revisions to the purchase order, which shall take precedence over the documents amended thereby.

No agent, employee or other representative of the Purchaser has authority to make any promise, agreement or representation not incorporated by writing into the Contract Documents, and no promise, agreement or representation shall bind the Purchaser unless so incorporated.

The Contract and the work required thereby shall be interpreted to include all work reasonably required to provide a project result that is fit for the Purchaser's purposes in accordance with the Contract Documents. Where the Company's tender sets forth design or performance descriptions or criteria, such descriptions and criteria shall be considered part of the Purchaser's specifications to the extent that they enhance the requirements of such specifications.

3.0 Communications

After award of the Contract, all communications shall reference the Purchaser's purchase order number, requisition number, project name and equipment description.

In addition to telephone communication, the Company must have a dedicated fax line number and e-mail address for communication with the Purchaser.

4.0 Language and Measurement

All communication between the Company or subcontractors and the Purchaser, including all documents, notes on drawings, and submissions required under the Contract, shall be in the English language. Unless specified in the tendering document, either the Imperial system of weights and measures or the International System of Units (SI) may be used for quantity measurement. When the Imperial system is used, either Imperial or US Gallons may be quoted, provided that the unit is clearly defined, and any weight expressed in tons shall be the short ton of 2 000 pounds. Technical abbreviations for the Imperial system shall be in accordance with CSA Standard Z85 - Abbreviations for Scientific and Engineering Terms. Preferred units in SI are those shown in the Purchaser's Standard MCD-1 - Preferred Units of Measurement (SI). All instrumentation shall be calibrated in SI.

5.0 Public Relations/Code of Conduct

The Company and its employees shall conduct themselves in a manner conducive to the maintenance of good public relations for the Purchaser.

The Company, although not an employee of the Purchaser, is, by virtue of its work on the Purchaser's tasks and on the Purchaser's premises, in a position to affect the Purchaser's image and, in some cases, the Purchaser's legal position. The Company will, therefore, while it is on the Purchaser's premises or while its actions may reflect upon the Purchaser's status or reputation, conduct themselves in such a manner as not to cause embarrassment, legal problems or the threat of legal problems to the Purchaser. This includes, without limiting the generality of the principle:

- Refraining from any illegal or improper activity that will be attributed to or reflect upon the Purchaser;
- Conducting itself in a proper manner when on the Purchaser's premises and complying with all rules established for those premises; and
- Respecting the property of the Purchaser and of others situate on the premises.
- Conducting itself in a manner consistent with the Purchaser's Code of Business Conduct, available at http://www.hydroone.com/en/about/code_of_business/buscode.pdf.

It is expected and required that the Company will recognize and support the Purchaser's effort in conducting its affairs in the best interest of the electricity consumers of Ontario and with the highest standards of business ethics.

If during the performance of the work, the Company receives a complaint or enquiry to which the Company is not qualified to respond, then the Company shall record the name of the complainant or the person making the enquiry, along with his or her address and telephone number. The Company shall make a written report of the incident to the Purchaser.

6.0 Proprietary Rights, Confidentiality

During and after the term under the Contract, the Company must treat as confidential, and ensure that its employees and agents treat as confidential and secure, all confidential information that may arise or in any way is a part of the Contract, to which they may become privy. The Company agrees that it shall not directly or indirectly disclose, use, either during or following the term of the Contract, any material or information belonging to or relating to the business operations of the Purchaser. The Company is responsible for all information disseminated to subcontractors; therefore, viewing of any drawings or specifications will be arranged through the Company submitting the proposal. If requested, the Company agrees that it shall sign a Confidentiality Agreement and shall obtain for the Purchaser the written agreement of the Company's employees, subcontractors and agents to keep confidential all such information.

7.0 Representations and Warranties of the Company

The Company represents and warrants that:

- (1) it shall perform the work in a diligent and professional manner and otherwise in accordance with the Contract;
- (2) the work provided shall be of good quality, fit for the Purchaser's purpose as defined in the Purchaser's specification;
- (3) all personnel employed in the performance of the work shall have the requisite qualifications, expertise and experience to perform the work;
- (4) it has the necessary corporate power, authority and capacity and good and sufficient right to enter into the Contract on the terms and conditions herein set forth, and has the financial and other ability and authority to fulfill its obligations hereunder and to carry out the terms of the Contract; and
- (5) if the Company is not a non-resident of Canada, the Company is a "GST Registrant" in good standing and its GST registration number is as specified in its Tender.

8.0 Pricing, Terms of Payment and delays in delivery

8.01 Pricing Requirements:

Prices shall be in Canadian funds payable at Toronto unless otherwise specified by the Purchaser.

Price terms shall be Delivered Duty Paid (in accordance with INCOTERMS 2000) to Purchaser's project site or the nearest rail-siding to Purchaser's project site, if applicable, and shall include

applicable customs duties, excise taxes, freight (if applicable), insurance, workers' compensation and all other charges of every kind attributable to the work. Ontario Retail Sales Tax or Provincial Sales Tax (ORST or PST) and Goods and Services Tax (GST) shall be shown as extra.

The applicable amounts included in the prices tendered for freight and sales taxes shall be stated separately.

The successful tenderer shall, upon request, furnish the Purchaser with a breakdown of the prices tendered for purposes of accounting and payment in a form and manner acceptable to the Purchaser.

Except as provided for in the tendering documents, the price tendered shall be considered not subject to adjustment for any changes in the cost of the work to the Company.

8.02 Ship-to locations:

Purchaser has a total of 247 transformer stations ("TS") in the province of Ontario, Canada. All Transformers specified in the RFP shall be shipped to one of the 247 TS or to the Purchaser's Central Maintenance Shop ("CMS") located in Pickering (Greater Toronto Area, east of Toronto) in Ontario.

As requested in the Price Schedule in Part 3, Proponents must include DDP site or nearest rail-siding to site for two ship-to locations as detailed below:

- (i) Southern Ontario, including CMS and other TS located in Southern Ontario. Nearly 84% of the total number of TS are located in Southern Ontario:
 - (a) 92 TS in South-western Ontario (West of Toronto)
 - (b) 69 TS in GTA-central Ontario
 - (c) 46 TS in South-eastern (East of Toronto)
- (ii) Northern Ontario, i.e. the area North of Barrie. There are 40 TS in Northern Ontario.

The Forecast included in Section 9.1 of Part 3, Format of Submission, provides an projected, estimated distribution of the forecasted quantities of Transformers across the various ship-to locations in Southern and Northern Ontario. However, the Purchaser reserves the right to specify the final ship-to location anywhere within Northern and Southern Ontario under the Contract.

8.03 Terms of payment:

Unless progress payments are specified in the Contract, the Contract Price may be invoiced upon delivery of the Equipment to the stipulated destination. The Purchaser shall not be obligated to accept deliveries made more than one month ahead of the Contract delivery dates.

Unless the Purchaser and Company agree otherwise, where the Contract Price exceeds \$1,000,000 and delivery extends beyond 18 months from the date of award of the Contract, the Purchaser will make payments on the basis of progress of work, under the following terms:

- (i) 60 percent of the price will be invoiced in equal instalments at equal intervals (not less than three months), with the first invoice at the start of manufacture and the last invoice on completion of manufacture and factory tests (if any); and
- (ii) 40 percent of the price will be invoiced upon delivery of the Equipment to the stipulated destination.

The Company shall submit separate invoices for all payments and such invoices will be paid 30 days after receipt thereof. Payment of all other invoices, including adjustments whenever applicable, will be made 60 days after receipt of said invoices and, in the case of adjustment invoices, receipt of data substantiating the amounts invoiced. Goods and Services Tax (GST) and Ontario Retail Sales Tax (ORST), if applicable, shall each be shown separately on all invoices.

Progress payments are conditional upon the Company carrying out its obligations and making satisfactory progress in the performance of the work. The Purchaser shall have the right to determine whether or not progress is satisfactory. The withholding of any progress payment under this clause shall not be cause for delay in delivery of in lieu or diminution of any other right of the Purchaser under the Contract. The Purchaser shall have a lien or first charge upon the work in the amount of all payments made in respect thereof to the Company. As a condition precedent to becoming entitled to progress payments, the Company may be required to execute security documentation and obtain postponements of other securities as may be reasonably necessary to effect such lien or first charge in the Purchaser's favour.

The Purchaser shall have the right to withhold from any sum otherwise payable to the Company such amount as may be sufficient in the Engineer's opinion to remedy any defect or deficiency in delivered Equipment pending correction of the same.

8.04 Liquidated Damages

If the Company fails to deliver the work on the agreed contracted delivery date mentioned in the purchase order, then the Company acknowledges and agrees that the Purchaser shall suffer damages. For each week or part thereof, beyond the contracted delivery date that the work has not been delivered to the project site, the Company shall pay, as liquidated damages and not as a penalty, to the Purchaser 0.5% of the Contract Price of the delayed work. The parties agree that the liquidated damages are a genuine pre-estimate of the loss and/or damage which will be suffered on account of any such delay and the said amount will be payable on demand without there being any proof of the actual loss or damages caused by such delay. The Company's total cumulative liability for delayed delivery under this Contract shall be limited to an amount equal to 10% of the Contract Price of the delayed work.

9.0 Spare Parts

The Company shall make available spare parts for the Equipment supplied under the Contract throughout the Equipment's normal life expectancy, which shall be no less than the life expectancy contemplated in the specifications. The Purchaser requires a very quick turn-around time for all major parts, and the Company agrees to provide the parts so as to satisfy that requirement.

In the event that the Company makes a decision to:

- discontinue or otherwise take out of production the Equipment and/or replacement spare parts thereof;
or
- sell or completely and permanently shut down its plant or take any other action of divestment,

then the Purchaser shall be advised in writing at least three (3) months in advance of such event as described above.

Further, the Company shall make available spare parts of such discontinued Equipment for the expected remaining life of the Equipment.

As well, the Company, at the time of notifying the Purchaser, subject to third part rights, shall make available to the Purchaser all design, testing, manufacturing and shop drawing information relating to the Product, and shall further assign or license all relevant manufacturing rights for the Purchaser's own operations.

10.0 Taxes

The price of any deliverable item and taxes applicable thereto shall be subject to adjustment for any new Canadian federal or provincial sales, use, or excise taxes, or for any changes in the rates of such taxes, applicable to the sale of the Equipment, which becomes effective subsequent to the date of tender and prior to the earlier of the scheduled delivery date or actual delivery date for that item.

11.0 Duty

The Contract Price shall be subject to adjustment for any new Canadian customs duties or for any changes in the rate of any applicable Canadian customs duty. Adjustments shall be based upon the difference between the rate of the customs duties at the date of tender and the rate in effect at the date of importation. The Purchaser shall have the right to effect an adjustment to the Contract Price for any decrease in any applicable customs duties based on its estimate of the value of foreign content if factual data is not provided by the Company on request. Any additional duties or sales taxes imposed by Canada which are attributable to either dumping duties or change in the value for duty shall in all events be to the Company's account.

The Company shall co-operate with the Purchaser in applying for and obtaining remission and/or refund of any duties or taxes paid by the Company or subcontractors on any portion of the work. The Company shall require similar co-operation from subcontractors. All amounts received by the Company or subcontractors by way of such remission or refund shall constitute trust monies to which the Purchaser is exclusively entitled and shall be forwarded to the Purchaser forthwith. Upon request by the Purchaser, the Company shall execute all required documentation so as to allow the Purchaser to act in the name of the Company to apply for and receive any such remission or refund.

12.0 Importer of Record

For Equipment purchased F.O.B. vendor's plant outside Canada, the Purchaser shall be the Importer of Record for customs purposes. In this regard, the Company shall provide all information that the Purchaser may reasonably request or require for importation of the Equipment into Canada.

13.0 North American Free Trade Agreement (NAFTA)

Where the origin of the goods is United States or Mexico, the company's offer will be evaluated base on the company's statement of source of supply.

A valid certificate of origin must be provided with each shipment where the goods offered qualify under NAFTA.

Any additional duties or taxes resulting from an invalid certificate of origin or changes in the source or supply shall be to the company's account.

14.0 Foreign Exchange

If the tenderer desires that the Contract Price be subject to adjustment for variation in foreign exchange rates, it must include the following information in its tender:

- (1) a positive statement that the price is subject to adjustment and identifying the portion of the price to be adjusted, expressed in Canadian dollars;
- (2) the currency against which the price is subject to adjustment, and, if more than one, the portion of the dollar amount identified above pertaining to each;
- (3) the base rate(s) to be applied (if none specified, the noon spot rate(s) quoted by the Bank of Canada on the date of tender shall apply);
- (4) the date(s) on which the amount of the adjustment is to be calculated. This can be a single specified date or proportional adjustments on the dates of progress payment invoices.

The base rates quoted for each currency and the rates used to calculate the adjustment shall be the Bank of Canada noon spot rate on the appropriate dates. The amount of adjustment for each currency shall be determined by applying the percentage difference between the base rate and the rate on the appropriate adjustment date to the Canadian dollar amount that is subject to adjustment for that currency.

Where an adjustment is based on a date of delivery, the date used in calculating the adjustment shall be the actual date of delivery or the scheduled date of delivery, whichever is earlier. Where the date of an invoice is to be used in calculating the adjustment, the date used shall be the actual date of invoice or seven days after the milestone on which the invoice is based, whichever is earlier. The amount of any foreign exchange adjustment shall not be increased by virtue of delays not caused by the Purchaser, but may be decreased by such delays.

The above conditions, including the need for a specific statement, shall apply to the prices for changes to the Contract. Decreases in price due to changes shall have the same base rate for the work removed as was originally quoted. If the Contract Price is to be adjusted for the effect of variation in the rates of foreign exchange on customs duties, a specific statement to that effect plus a statement that duties have not been included in the Canadian dollar amount subject to foreign exchange adjustment, must be included in the tender, along with the amount of duty subject to adjustment, the currencies involved, and the proportions pertaining to each.

15.0 SECTION INTENTIONALLY DELETED

16.0 Assignment

The Company shall not assign the Contract or any portion thereof without prior written consent from the Purchaser, which consent may not be unreasonably withheld. The Purchaser may assign the Contract or any portion thereof upon obtaining the Company's consent, which consent may not be unreasonably withheld or delayed. Upon such assignment, the Company shall be deemed to have released the Purchaser from all liability under the Contract. Notwithstanding the foregoing, the Purchaser may, without the Company's consent, assign the Contract or any portion thereof to an affiliate.

17.0 Right to Review

The Purchaser or its authorized representative shall have the right to review, at any time, the Company's total plant schedule to verify how the Equipment's manufacturing schedule fits into the overall plant schedule.

18.0 Schedules

The Company shall submit the following to the Purchaser for approval within the times shown, or as otherwise stated in the Contract Documents:

- (1) Within 30 calendar days after notification of award of the Contract - a schedule showing dates for commencement and completion of drawing production, material procurement, manufacturing activities, assembly, testing, shipment, and date of submission of its Inspection Plan/Quality Plan, including related procedures.
- (2) Within 30 calendar days after notification of award of the Contract - a schedule for the preparation and completion of: the Company's design drawings, shop drawings or drawings of pre-designed Equipment showing a list of all such drawings with titles and drawing number; manufacturing and test procedures (including those from major subcontractors), and the operating instructions, parts and service manuals (if applicable), and the dates each relevant document will be submitted to the Engineer for comment.

- (3) Not later than 90 calendar days prior to commencement of manufacturing - a detailed manufacturing critical path network schedule for the Equipment. The schedule shall include, as a minimum, dates for material procurement and award of subcontracts, dates for receipt of raw materials or subassemblies, the scheduled commencement dates of production, and dates and duration of manufacturing stages of the major components, including shop testing (including the scheduled commencement dates of production, dates and duration of manufacturing stages of the major components, including shop testing of major subcontract items). The Company, when requested by the Inspector, shall also furnish Company-approved copies of subcontractors' detailed production schedules containing at least the same information as set out above.

The schedules shall be monitored by the Company. Unless otherwise agreed, the Company shall submit to the Inspector by the tenth day of each month a work progress report, in writing. The report shall record the progress of the work up to the end of the preceding month, and confirm that the rate of progress satisfies the Contract requirements. For items which are behind schedule, the Company shall, in its work progress report, indicate the reasons for the delay and the corrective action proposed to recover the lost time.

It should be noted that the award of the Contract is based on the understanding that delivery of the Company's drawings and data will be as required by this Clause or as needed in order to meet Contract delivery dates, whichever is earlier.

19.0 Drawings and Data

Unless otherwise authorized in writing by the Engineer, any part of the work to be performed in accordance with any drawings and data, whether prepared by the Company or the Purchaser, shall not be commenced until the Engineer has approved the use of such drawings and data (including schedules, procedures and other pertinent information). Approval or acceptance by the Engineer of the Company's drawings and data shall in no way construe or imply relief of the Company from its responsibility for any error or omission therein or from any obligation under the Contract or implied by law.

The Purchaser's drawings and specifications shall be deemed to be complementary so that if anything is shown on the drawing but not mentioned in the specifications, or vice versa, it shall be furnished and built as though specifically set forth in both. In case of conflict between the specifications and the drawings, the specifications shall govern.

All of the drawings and data prepared by the Company under the Contract shall be prepared in accordance with the Purchaser's drawing standards, copies of which are available upon request.

Within such time as stated elsewhere in the tendering document, the Company shall supply all drawings and data necessary for a thorough understanding of the Equipment, including the following:

- (1) Design Drawings - all shop detail and general arrangement drawings.
- (2) Additional Drawings - where Equipment is supplied to a performance specification, detail and general arrangement drawings shall be provided by the Company. If catalogue pages or data sheets are available in printed form giving the required information, such may be submitted in lieu of the foregoing drawings, subject to the prior approval or acceptance of the Engineer.
- (3) Installation Details - drawings showing overall dimensions, support requirements, details of terminal points, and other data pertinent to installation.

A space of 200 mm vertically by 110 mm horizontally, in the lower right hand corner above the Company's title block, shall be reserved for the Purchaser's title block and revisions.

All drawings produced for the Purchaser shall be in electronic format and be compatible with AUTO-CADD latest version.

For the purposes of ready identification, each drawing and item of data shall show the name of the project, Units involved over-all title of the work, requisition number, and the title of the drawing or item.

One copy of each drawing and data item will be returned to the Company with the Engineer's comments and/or approval for use. When requested, drawings and data requiring revision shall be promptly dealt with by the Company and the specified copies resubmitted.

The Company shall allow a reasonable period of time for the review process in its schedule for the work. The onus shall be on the Company to recover any time lost in the review process by reason of errors or deficiencies in the Company's drawings or data and, in any event, to maintain the Contract delivery dates.

The Company grants to the Purchaser a perpetual, non-transferable, irrevocable license to use, modify, or amend the said drawings and data, including plans, sketches, drawings, graphic representations, specifications, and computer generated designs, in relation to its operational, or maintenance, or refurbishment purposes. They may not be copied nor reproduced nor communicated to third party in any way whatever (unless such third party has entered into an undertaking protecting the confidentiality thereof). For the avoidance of doubt, any refurbishment shall be at Purchaser's risk.

20.0 Quality Program

The Company shall maintain a quality program that will assure the Purchaser that the design, material and workmanship used in the work fully meet the Contract requirements. The program shall conform to the ISO or CSA Quality Program Standard specified in the tendering documents. Any proposed alternative to the ISO or CSA Quality Program shall be subject to evaluation by the Purchaser for its equivalency to specified requirements.

Notwithstanding the provisions of any standard or code applicable to the work, the Company shall be responsible for and shall perform all inspection, testing and surveillance of subcontractors necessary to ensure that the work meets the requirements of the Contract. The Purchaser may perform surveillance at any time(s) for compliance with the quality program and examine the work for conformance to product quality requirements.

21.0 Inspection

The Purchaser or its authorized representative shall have the right to inspect the work at all times.

The Company shall make the necessary arrangements to facilitate surveillance and examination at the Company's premises as well as at the premises of subcontractors. At least 48 hours notice shall be given to enable the Inspector to be present at any Inspection Plan/Quality Plan hold points. The Inspector shall have free access, at all reasonable times, to the premises of both the Company and subcontractors. To facilitate surveillance at subcontractors' premises, subcontracts (1) specific to the work; (2) requiring a Quality Program; or (3) having "hold" points, shall reference the Purchaser's purchase order number. When requested, the Company shall provide the Inspector with a copy (unpriced) of all subcontract documents.

The Inspection and Test Plan required by the quality program may be permitted to follow a format to suit the Company's system. This plan shall be submitted to the Purchaser prior to the placement of any orders for material by the Company, and this plan shall be subject to the Purchaser's approval. Inspection and test procedures referenced in such plan shall also be subject to approval by the Purchaser.

The Company shall promptly correct all instances of non-conformance (as the term is defined in ISO/CSA Standard Z299) and report its corrective action to the Inspector in writing.

The Inspector may reject the work or any and may reject any part thereof, which is found not conforming to the Contract. Any of the work so rejected shall forthwith be re-executed or corrected by the Company, at its sole expense.

Any nonconforming item which the Company proposes a disposition to "repair" or "use as is" shall be brought to the attention of the Inspector, in writing, highlighting any affects on safety, interchangeability, performance, reliability, maintainability, or shelf life. The Engineer's approval of such dispositions is required before proceeding.

Any work for which a unique specification does not appear in the Contract shall be of a quality which meets the requirement as agreed by the Engineer.

Notwithstanding the schedules provided for in the Contract, shipment must not take place until the item is released by the Inspector. Surveillance, release or approval by the Inspector, the Engineer or any other the Purchaser representative shall not relieve the Company of any of its obligations.

The Company shall retain the records required in the relevant quality program standard for a minimum period of three years after delivery of the Equipment.

22.0 Operating Instructions, Parts and Service Manuals

The Company shall supply, for all Equipment, Operating Instructions and Parts and Service Manuals in loose-leaf and/or electronic form, of manuals containing complete operating instructions, maintenance and service instructions (including the names of recommended lubricants and routine lubrication procedures), and parts catalogue(s), together with any drawings in reduced size which are necessary to aid in the understanding of the instructions. The number of copies will be stipulated in the tendering document.

Two copies, in draft form, of the manual(s) in the format stipulated, shall be submitted to the Engineer for approval for use not later than 6 months (or such lesser period as may be approved by the Engineer in writing) prior to the scheduled date of first delivery of the Equipment. The required number of copies of the manual(s), as approved for use, shall be delivered with the first delivery of the Equipment.

Manuals for work containing instrumentation and controls (I&C) shall have documentation pertaining to the I&C bound separately for ease of removal.

The Company shall provide, within four weeks of take-over day or in-service date, as applicable, updates to the manuals previously provided incorporating information transmitted to the Company by the Purchaser regarding operating experience through said take-over day or in-service date.

All documents required under this clause shall be furnished by the Company at no additional cost to the Purchaser. Failure to deliver or update the manuals as required shall entitle the Purchaser to withhold payments.

23.0 Shipping and Packaging Instructions

Insofar as transportation conditions will allow, the Equipment shall be shipped complete and ready for installation or erection. Should the size of the Equipment prevent it from being shipped fully assembled, the Company shall segregate the Equipment into components to allow safe and convenient transportation.

The receipt or taking delivery by the Engineer of any Equipment or component parts and materials shall not be deemed a waiver of any right, claim, or remedy of the Purchaser under the Contract or otherwise.

Welding rods shall be shipped in sealed metal containers.

All Equipment shall be packed, braced and loaded in such a manner as to prevent physical damage and damage from marine and climatic conditions. Equipment requiring special precautions during shipping and storage shall be clearly marked on the outside of the shipping container with specific instructions included in a durable envelope attached to the container and suitably labelled. All openings in Equipment such as vessels, valves and pumps shall be sealed. Where necessary, skids, hauling eyes, jacking plates and sling-hooks, shall be provided for unloading and field assembly.

All high voltage Equipment shall be shipped under a positive pressure of dry air, nitrogen or SF₆. All control cabinets are to be adequately packed to prevent the ingress of water and shall be shipped with a drying agent.

When specified, impact recorders, with an escapement appropriate to the duration of the journey, shall be used on all Equipment shipped by rail or sea. A calibration and clear instructions on how to read the impact recorder chart shall be provided with each shipment. The Company shall attach a label stating: "This impact recorder is to be opened and examined by Hydro One Networks Inc.'s General Site Foreman, in the presence of a representative of the Company or Carrier." The chart must be identified with the purchase order number, freight car number and signed by the Company or Carrier representative.

The chart, together with the calibration and instructions for reading the chart, must be forwarded to:

Hydro One Networks Inc.,
Manager, Line & Stations Engineering,
483 Bay Street, 13th Floor North Tower, Toronto, Ontario M5G 2P5,
Tel #: 416 345 6763 Fax #: 416 345 6322,
Email: donna.jablonsky@HydroOne.com

All packages, boxes, crates, bundles, material, unpackaged components and bills of lading shall be clearly and indelibly marked to show necessary shipping information. Markings shall be applied by a method suitable to the type of product and packaging involved, and shall also provide the following information:

- (1) project site address together with the title of the tendering document, the Purchaser's requisition number and purchase order number, and the name of the Company (if the Company is installing the Equipment, the name of its field supervisor shall also be identified);
- (2) material code numbers and other identifications specified in the purchase order;
- (3) the Company's shipment identification number, numbering of packages, boxes, crates, components, or assemblies of the shipment;
- (4) the mass and sizes of each major component or assembly (if the lifting points are critical, they shall be clearly marked and identified).

A detailed packing slip, listing each separate item, shall be enclosed in a waterproof envelope and firmly attached to each shipping container. When conformance to an ISO or CSA Z299 Quality Program Standard (or equivalent accepted by the Purchaser) is required, each packing slip shall include the following certification: "The Equipment listed herein has been inspected by the Company and is in conformance with the requirements of the Contract and approved for shipment." Such certification shall be endorsed with the signature, and include the title, of an authorized representative of the Company's Quality Authority. For instruments, a list showing the Purchaser's mark numbers shall also be enclosed.

As soon as a shipment is ready for dispatch, a duplicate copy of the packing slip shall be mailed to the Packing Slip Mailing Address specified elsewhere in the Contract Documents.

Where applicable, the Company shall be responsible for obtaining any permits required for transportation to the project site.

24.0 Hazardous Materials

The Company, and each subcontractor, when shipping to, or planning to use at, any the Purchaser site, any product which is categorized as a hazardous material (i.e., compressed gas, flammable or combustible material, oxidizing material, poisonous and infectious material, corrosive material or dangerously reactive material), shall conform with relevant federal and provincial legislation and regulations pertaining to such materials. The Workplace Hazardous Material Information System (WHMIS) shall apply and all such materials shall be properly identified with WHMIS type warning labels. All shipments of such material to the Purchaser sites shall include a Material Safety Data Sheet (MSDS). The Company shall provide to the Purchaser with updated MSDS for products supplied, whenever MSDS data changes.

25.0 Performance Security

(1) **Performance Bond:**

The Company may be required to furnish a performance bond in the form supplied by the Purchaser in amount up to 100 per cent of the Contract Price. The proposed surety shall be acceptable to the Purchaser and licensed to issue such bonds in the Province of Ontario. Following the issuance of the bond, the Company will be reimbursed for the cost thereof at prevailing industry rates 30 days following receipt of invoice accompanied by evidence of payment to the surety. After payment of the initial premium, the Company shall maintain the performance bond in good standing until the fulfilment of the Contract.

If work has commenced under an interim Contract award and the Company is subsequently unsuccessful in obtaining a performance bond through no fault or neglect of the Company or its principals, the award shall be subject to withdrawal by the Purchaser. If the award is cancelled the Company will be reimbursed at cost for all efforts and expenses incurred in commencing work under the authority of an interim Contract award, subject to audit by the Purchaser and to any time and monetary limitations set forth in the notice of award.

(2) **Other:**

The successful tenderer may be required to furnish other security for Contract performance, in form and amount satisfactory to the Purchaser, such as a guarantee by a parent company (if applicable), a bank letter of credit, a monetary deposit, or personal property security documentation.

(3) Failure to provide performance security within the period stated in the notice of award of Contract shall make any award of Contract subject to withdrawal.

26.0 Work at Purchaser's Project Site

26.01 Escorted Access

If any of the work or services provided pursuant to the Contract necessitate entry to one or more of the Purchaser's transmission stations, switching stations, distribution stations or control centres by the Company or subcontractors or any person providing services to, or acting on behalf of, the Company or subcontractors (collectively, the "Entrants"), no Entrant shall be permitted entry to any of the said premises unless accompanied at all times by an employee of the Purchaser or another person appointed by the Purchaser to provide such accompaniment. It shall be the responsibility of the Company to arrange such accompaniment, and the Company shall ensure that no Entrant shall enter or attempt to enter the said premises without such accompaniment.

26.02 Erection Consultant

Upon request by the Purchaser, the Company shall provide the services of an erection consultant at the Purchaser's expense. The erection consultant shall be responsible for furnishing technical direction to the Purchaser's supervisor for the purposes of ensuring that the work is correctly assembled and properly installed to permit commencement of service.

The erection consultant must be fully instructed in the assembly operation at the manufacturing plant prior to his or her arrival at site.

When the Purchaser requires the services of an erection consultant to assist the Purchaser during field tests, the Company shall make such consultant available, at the Company's expense, to assist in the resolution of any corrective actions required pursuant to the correction of defects provision.

The erection consultant shall furnish technical direction under the general supervision of the Purchaser, but such supervision shall not relieve the Company of any of its obligations under the Contract.

The erection consultant shall at all times continue to be employed solely by the Company and not by The Purchaser. The Company shall arrange, at its expense, for workplace safety and insurance coverage for its erection consultant.

The regular working hours of the erection consultant shall be those established for the project by the Engineer, but the erection consultant shall be prepared to work additional hours, including weekends and statutory holidays, when required by the Engineer.

During the performance of the work at site, the erection consultant shall comply with relevant federal, provincial and municipal statutes, regulations, bylaws and codes, as well as the Purchaser's safety requirements pertaining to the work, and without limiting the generality of the foregoing, shall comply with all regulations made under Ontario's Occupational Health and Safety Act. The erection consultant shall cooperate with safety associations operating under the authority of Ontario's Workplace Safety and Insurance Act and ensure that he or she is equipped with all safeguards and personal protective equipment necessary for the performance of the work.

27.0 Changes in the Work

- (1) Should the Company wish to change the agreed-to design, then the change, together with the reasons for wishing to make the change, must be promptly communicated in writing to the Purchaser's Engineer. Any such change will be subject to approval by the Purchaser.
- (2) Where the Company wishes to change the previously identified supplier, or type of major or critical materials or components, this similarly shall be communicated in writing to the Purchaser's Engineer and will be subject to approval by the Purchaser.
- (3) The Purchaser may, without invalidating the Contract, direct the Company to make changes in the work. Changes in the work shall not be initiated without prior written authorization by the Engineer.

Particulars of any changes will be embodied in an Instruction Notice prepared by the Purchaser and forwarded to the Company whereupon the Contract shall be deemed to be so amended.

When a change causes an increase or decrease in the work, the Contract Price shall be increased or decreased by the application of unit prices to the quantum of such increase or decrease or, in the absence of applicable unit prices, by an amount to be agreed upon between the Company and the Engineer.

Failure to agree upon changes to be made in the price or changes to schedules arising from the directed change, shall not be grounds for delay or interruption in the work.

28.0 Unavoidable Loss, Damage or Delay; Time

Time shall be material and of the essence of the Contract.

Neither the Company nor the Purchaser shall be liable to the other for loss, damage, delay in the work or non-performance of any contractual obligation caused by war, riot, the act or order of any competent civil or military authority, fire, flood, strike, lockout, or other labour dispute or by any other cause which is unavoidable and beyond the party's reasonable control. Both parties shall be prompt in restoring normal conditions, re-establishing schedules, and resuming operations as soon as the interruptions have ceased.

29.0 Correction of Defects

If, at any time prior to twenty-four (24) months after the in-service date or sixty (60) months after delivery of the work at the Purchaser's project site, whichever is earlier, provided however, the Purchaser follows maintenance procedures that are mutually agreed upon between the Company and the Purchaser, any part of the work becomes defective or fails due to defects in design, material, or workmanship, installation or erection (if required), or otherwise fails to meet the requirements of the Contract, then the Company, upon receipt of notification from the Engineer, shall make good every such defect or failure within the period of time specified by the Engineer and without cost to the Purchaser. The Company shall pay all transportation charges both ways between the Company's factory or repair depot and the project site.

The decision on whether these defects or deficiencies are to be corrected on site or elsewhere shall be subject to mutual agreement between the Purchaser and the Company.

(1) Repairs at Company's factory or repair-depot:

When the defective Equipment (main assembly) is returned to the Company's factory, or repair-depot, the Company shall be responsible for expenses to disconnect, dismantle, disassemble and remove the Equipment, prepare it for shipment and re-install it upon return. The Company shall also provide technical direction at no charge to the Purchaser.

(2) Repairs on project site:

When the defects or deficiencies are corrected on site, the Purchaser will use its labour unless the Company can prove, to the satisfaction of the Purchaser, that specialized skills not available with the Purchaser, are needed to perform the work.

The Company shall supply all the material needed for correcting the defect/deficiencies at no cost to the Purchaser.

All labour, materials and equipment provided by the Purchaser, including any required oil or gas handling or processing materials and equipment used by the Purchaser for the purposes of correcting defects on site and for dismantling and reinstallation of the Equipment (e.g.: CTs, bushings, etc.) shall be to the Company's account. Such cost will not include costs to remove equipment or installations not supplied by the Company under the Contract, such as walls and overhead structures, etc.; delays brought about by inclement weather or the Purchaser, but will include applicable overheads.

Notwithstanding the above, the Company shall only be responsible for the costs to dismantle, and re-install Equipment at project site up to a maximum cost equal to thirty percent (30%) of the work's unit purchase price DDP project site, in the aggregate.

For its cost incurred to perform work under (1) and (2) above, the Purchaser will upon request, provide a written estimate and establish an agreed program. The Company will be invoiced for the agreed upon charges plus appropriate overheads.

The Purchaser reserves the right to proceed with the site work when necessary before an agreement on the charges has been reached.

If the Company, after notification of a defect or deficiency should delay or default in proceeding, then the Engineer may arrange to remedy the defect or deficiency and the Company shall be liable for all costs, charges and expenses incurred in connection therewith.

Any part of the work made good under this clause shall be subject to the provisions hereof for a period of one year from the date when the same has been made good, or until the end of the period set forth in the first paragraph of this clause, whichever is the longer.

Any certificate, acceptance, approval, payment or any other act, matter, or thing done or omitted by the Purchaser shall not bar or prejudice the rights of the Purchaser under the Contract or otherwise.

In the event repair work is performed on the project site in accordance with arrangements reached between the Engineer and the Company, the Company shall comply with labour and working conditions prevailing on the project site.

In addition to all the provisions of this Clause 29.0 , the Company shall promptly notify the Purchaser in writing if, during the 15-year period commencing on the in-service date or the date that is six (6) months after the date of delivery of the work at project site, whichever is earlier, the Company: (a) discovers any latent defect in the work that could reasonably lead to a failure of the work; or (b) makes any change in the design or manufacture, including upgrades of any software used in the work that if made to the work, could reasonably prevent a failure of the work. If the circumstances described in (a) or (b) occur during the said 15-year period, then, notwithstanding any other covenant or warranty in the Contract, the Company shall modify the work at its own cost to repair the latent defect or change the design or manufacture, as the case may be, with the goal of avoiding a failure of the work.

The express warranties set forth in the Contract Documents are exclusive and no other warranties of any kind, whether statutory, oral, written, express or implied, including any implied warranty of merchantability or fitness for a particular purpose, shall apply.

30.0 Title

The Company shall indemnify and save harmless the Purchaser from any defects in the title to the work, from any liens or encumbrances thereon and from all claims in respect thereto.

31.0 Patents

The Company shall pay all royalties and patent license fees required for the work.

The Company shall, at its expense, defend all claims, actions or proceedings against the Purchaser based on any allegation that the work or any part of the work constitutes an infringement of any patent, and shall pay to the Purchaser all costs, damages, charges and expenses occasioned to the Purchaser by reason thereof. The Purchaser will give the Company written notice of any such claim, action or proceeding and, at the request and expense of the Company, the Purchaser will provide the Company with available information, assistance and authority for the defense.

If the work or any part thereof is in any action or proceeding held to constitute an infringement, the Company shall forthwith either secure for the Purchaser the right to continue using the work or shall, at the Company's expense, replace the infringing items with non-infringing work or modify them so that the work no longer infringes.

32.0 Laws, Regulations, Permits

The Company shall comply with relevant federal, provincial and municipal statutes, regulations, codes, and bylaws pertaining to the work and its performance and shall obtain and pay for all work permits and consents that may be required. The Company shall be responsible for ensuring similar compliance by its suppliers and subcontractors.

33.0 Claims by the Company; Arbitration

Notwithstanding any arbitration provision in any Contract Document, the party's attorn to the exclusive jurisdiction of the courts of Ontario to determine all disputes arising out of the Contract or the interpretation thereof, and any court action(s) commenced shall be commenced and heard at Toronto.

34.0 Rights and Remedies

All rights and remedies of the Purchaser under the Contract are in addition to those available at law. No act, or failure to act, of the Purchaser or the Engineer shall prejudice such rights and remedies.

35.0 Interpretation of Contract

The Contract shall be governed by and interpreted in accordance with the laws of the Province of Ontario and the federal laws of Canada applicable therein.

36.0 Default by Company

Without limitation, the following actions by or circumstances relating to the Company shall constitute default on the part of the Company:

- (1) committing any act of insolvency or bankruptcy, voluntary or otherwise;
- (2) having a receiver appointed on account of insolvency or in respect of any property;
- (3) making a general assignment for the benefit of creditors;
- (4) failing to comply with or persistently disregarding statutes, regulations, bylaws or directives of competent authorities relating to the work;
- (5) failing to prosecute the work with skill and diligence;
- (6) assigning or subletting the Contract or any portion thereof without the required consent;
- (7) failing or refusing to correct defective or deficient work;
- (8) being otherwise in default in carrying out any of its obligations under the Contract, whether such default is similar or dissimilar in nature to the causes listed previously.

Notice that the Company is in default shall not be required if the default relates to the bankruptcy, insolvency or financial instability of the Company. The Company shall be given ten days' written notice to undertake to cure the default and to continue to diligently pursue a remedy for the default, in the event of other defaults.

If, in the Purchaser's opinion, the Company fails to undertake to cure the default as aforesaid, then the Purchaser shall be entitled to:

- (1) eject and exclude from the installation site all personnel of the Company and any of subcontractor;
- (2) terminate the Purchaser's utilization of the Company to perform the work;
- (3) cancel the Contract, however, the rights of the Purchaser accrued up to the date of the cancellation remain unaffected;
- (4) disqualify the Company from performing future work;
- (5) finish the work by whatever means it may deem appropriate under the circumstances;
- (6) withhold any further payments to the Company until its liability to the Purchaser is ascertained.

The Company shall be liable to the Purchaser for:

- (1) the extra expense of finishing the work; including compensation to the Purchaser for additional engineering, managerial and administrative services;
- (2) the cost of correcting defects (if any) in that portion of the work performed by the Company; and
- (3) all other loss, damage and expense occasioned to the Purchaser by reason of the Company's default.

Any action by the Purchaser under this clause shall be without prejudice to the Purchaser's other rights or remedies under any security held by the Purchaser for performance of the Contract by the Company.

37.0 Cancellation of Uncompleted or Unperformed Work

- (1) The Purchaser shall have the right, which may be exercised from time to time, to cancel any uncompleted or unperformed portion of the work or part thereof, however, the rights of the Purchaser accrued up to the date of the cancellation remain unaffected.. In the event of such cancellation, the Purchaser's liability under this Contract shall be limited to the payment of only the following amounts to the Company, supported by audit if required by the Purchaser, carried out by auditors acceptable to the Purchaser,
- (2) reimbursement at the Contract rate for all items completed and delivered;
- (3) reimbursement for the costs to the Company for work in progress and expenses incurred in the course of the work (there shall be no charge for items which are not custom-manufactured for this Contract); and
- (4) reimbursement for costs and expenses for orders of materials that are directly caused by the cancellation and such costs and expenses cannot be avoided (there shall be no charge for costs and expenses for orders of materials that are not custom-manufactured for this Contract).

The total of the amounts in paragraphs (2), and (3) in this Clause 37.0 shall not exceed the price attributable to the uncompleted or unperformed work.

Title to all work for which reimbursement is made shall vest in the Purchaser. The above payment procedure shall not apply to situations in which the Purchaser is entitled to terminate the Contract by reason of default by the Company.

The Purchaser shall not be liable to the Company for loss of anticipated profit on the cancelled portion or portions of the work. In the event of failure to agree on a settlement, the Purchaser shall pay to the Company the amount agreed to by both parties and the liability for the balance shall be treated as a claim under Clause 33, the Claims by the Company; Arbitration.

37.1 Cancellation of Contract

The Purchaser may cancel the Contract at any time upon at least ten (10) days prior written notice and, in doing so, the Purchaser will not incur any liability. Such cancellation will not automatically cancel or terminate any uncompleted or unperformed portion of the work or part thereof under any purchase orders in effect at the time of such cancellation; such purchase orders will remain bound by the terms of the Contract. Where, at Purchaser's sole discretion, the Purchaser also wishes to cancel any uncompleted or unperformed portion of the work or part thereof under any purchase orders in effect at the time of the cancellation, then Section 37.0 shall also apply.

38.0 Indemnification

The Company shall indemnify and hold harmless the Purchaser and its agents, employees, directors, officers, shareholders, partners and affiliates, from and against all claims, demands, losses, costs, expenses (including, but not limited to court costs, legal fees and disbursements) damages, actions, suits, proceedings or fines by third parties, including, without limitation, the provincial or federal governments or the courts thereof or any governmental agencies, that arise out of or result from or are attributable to the Company's performance (or lack of performance) of the Contract (hereinafter called "claims") or relating to environmental, health or safety hazard(s) or condition(s) to the extent that such claims are caused by breach of Contract or negligent or wilful acts or omissions of the Company, any subcontractor and anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

39.0 Liability

- (1) In no event shall the Purchaser or the Company be responsible for any losses or damages for economic loss, loss of use, loss of goodwill, loss of revenues, loss of profits, or for any indirect, consequential, incidental, or punitive damages or losses, whether such damages are in Contract or in tort.
- (2) Save for the Purchaser's obligations to pay the Contract Price in accordance with the terms of the Contract, notwithstanding anything else in the Contract Documents, but subject to all other exclusions, limitations, or other restrictions in the Contract that limit the Purchaser's liability, the Purchaser's maximum aggregate liability to the Company in connection with this Contract shall not exceed an amount equal to one hundred thousand dollars (\$100,000.00); subject to the foregoing, Purchaser shall only be liable to the extent that it has caused a loss or damage as a result of its breach of Contract or negligent or wilful acts or omissions.
- (3) Save and except for any of Company's obligations under Clause 31.0 - Patents and Clause 29.0 - Correction of Defects, or for any claims for personal injury (including death), notwithstanding anything else in the Contract Documents, but subject to all other exclusions, limitations, or other restrictions in the Contract that limit the Company's liability, the Company's maximum aggregate liability to the Purchaser shall not exceed an amount equal to the Contract Price, unless the Company is required to maintain insurance for such liability pursuant to the Contract Documents ("Insured Liabilities"). In respect of Insured Liabilities, the Company's limit of liability for any occurrence shall be the greater of (a) the minimum dollar limits prescribed by the insurance requirements under the Contract Documents, or (b) an amount equal to the Contract Price. Company shall only be liable to the extent that it has caused a loss or damage as a result of its breach of Contract or negligent or wilful acts or omissions.

The Company's liability for personal injury (including death) and property damage shall survive acceptance, approval or use of the work, or any part thereof, by the Purchaser.

40.0 Publicity

The Company and subcontractors shall not erect or permit the erection of any sign or advertising on the property of the Purchaser without the approval of the Engineer.

The Company or subcontractors shall not release for publication any information in connection with the Contract without the prior written permission of the Purchaser.

41.0 Notices

Notices to the Purchaser shall be addressed to the General Counsel, Hydro One Networks Inc., 483 Bay Street, 15th Floor, North Tower, Toronto, Ontario M5G 2P5, Canada. Such notices shall be effective upon receipt.

Notices to the Company shall be effective upon delivery to the Company or the sending of same by registered post to the Company's last address recorded with the Purchaser.

43.0 Re-employment of Former Employees

The Purchaser has a policy restricting the involvement, in the Purchaser's contracts, of former employees of Ontario Hydro or Hydro One Inc. or its subsidiaries who left any of those corporations under various staff reduction programs from 1992 onward. These restrictions apply when (a) such former employee(s) own 10% or more of the shares of a company, or (b) such former employee(s) perform the contracted service, regardless of the manner of contracting (whether as an employee, consultant, contractor or otherwise).

Accordingly, where 10% or more of the Company is owned by such former employee(s), or where it is anticipated that such former employee(s) will be utilized in the performance of the Contract, the Company shall identify the individual(s) involved and the details of their ownership or employment with the Company. This disclosure shall be made in the Company's offer.

44.0 Company's subcontractors:

It is the responsibility of the Company to keep all its major suppliers and/or subcontractors fully informed of all relevant contractual and technical requirements.



Hydro One Networks Inc.

Request for Proposal Number 1000044715

Design, Manufacture and Supply Power Transformers

Part 1A: Instructions to Proponents

Part 1B: Purchaser's Insurance Requirements

Part 1C: Standard Commercial Terms and Conditions for Power
Transformers

Part 2: Technical Specifications

Part 3: Format of Submission

Part 4: Attachments

PART 2
Technical Specifications
RFP NUMBER 1000044715

The following documents are referenced drawings/specifications to the Technical Specifications part of this RFP, and should be treated as part of the RFP documentation.

If you are receiving these "Attachments" electronically, then please double click on the icons below to open them.



C-5201-ES08_F1.doc



C-5202-ES08_F1.doc

Green Energy Coalition (GEC) INTERROGATORY #18

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Reference: Trial Balance Tab I13

Please identify the number of customers and total number of dollars of uncollectible accounts (a) between \$10,000 and \$99,999 and (b) \$100,000 or more in the test year and the five calendar years from 2009-2013 by rate class and the total amount of those uncollectible accounts in each year.

Response

The table below provides the requested information. This information is not yet available for the test year.

Rate Class	Total amount in uncollectible accounts	2009		2010		2011		2012		2013	
		Number of Customers	Total \$	Number of Customers	Total \$	Number of Customers	Total \$	Number of Customers	Total \$	Number of Customers	Total \$
UR	\$10,000-\$99,999	1	43,212			2	47,349	7	216,462	5	82,301
	\$100,000 or more							1	294,793		
R1	\$10,000-\$99,999	3	66,156	7	130,996	2	32,319	27	660,093	11	182,595
	\$100,000 or more							2	202,539		
R2	\$10,000-\$99,999	11	140,548	13	202,867	7	111,476	81	2,070,549	30	582,197
	\$100,000 or more							4	496,896		
Seasonal	\$10,000-\$99,999			3	38,712	3	52,076	7	164,904	4	104,914
GSe	\$10,000-\$99,999	18	286,778	17	408,570	16	254,148	21	422,308	34	780,995
	\$100,000 or more							1	125,133		
GSd	\$10,000-\$99,999	49	1,371,625	31	872,073	16	335,374	26	788,157	9	198,822
	\$100,000 or more	8	2,356,551	2	326,265	2	802,472	1	388,214	6	2,541,942
UGe	\$10,000-\$99,999	2	23,454	3	46,710	2	28,449	5	96,857	6	87,499
UGd	\$10,000-\$99,999	3	44,065	2	30,281	1	20,916	2	48,142	3	117,446
ST	\$10,000-\$99,999			5	284,941			2	148,810	3	194,868
	\$100,000 or more	1	263,796	2	349,233	4	878,800			1	164,439
Total		96	4,596,187	85	2,690,648	55	2,563,378	187	6,123,858	112	5,038,017

Green Energy Coalition (GEC) INTERROGATORY #19

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Reference: Trial Balance Tab I13

- a. Please identify all costs of “Major Account Representatives” (defined as company employees assigned specifically to serve large customers) in 2012 and 2013 by Account. Include non-labor expenses of these staffers. Identify forecast costs by account in 2015-2019.
- b. Please identify the customer classes that are served by “Major Account Representatives” and estimate the approximate percentage of time spent on each class.
- c. Please identify all costs of “Economic Development” or similar programs in the test year by Account.
- d. Please identify all advertising expenses by account charged to ratepayers in 2012 and 2013 and forecast in each year from 2015-2019. Identify and provide the cost and a brief description of any individual advertising programs costing in excess of \$25,000. For any individual programs in excess of \$100,000, please provide samples of print advertisements and/or transcripts of radio or TV advertisements.
- e. Are the energy efficiency costs shown on Tab I13 included as customer-related costs in HONI’s cost of service study.

Response

- a. Hydro One assigns employees to specifically serve the embedded Local Distribution Companies, Distribution Connected Large Accounts (>2MW) and large Distributed Generators (>10 kW generating capacity). These costs for embedded Local Distribution Companies and Large Distribution Accounts are provided in the row for Customer Business Relations in Table 2 in Exhibit C1, Tab 2, Schedule 5. The costs for large Distributed Generators are approximately 90% of the row for Customer Care Management in Table 3 of Exhibit C1, Tab 2, Schedule 5. The costs noted in Table 3 reflect customer services required to facilitate the connection process and reporting required for these generators as well as contract development and administration for both pre and post-connection timeframes. The costs in both Table 2 and Table 3 include non-labour expenses however they are not recorded by account.

- 1 b. Embedded Local Distribution Companies and Distribution Connected Large
2 Accounts are a subset of the ST rate class. The costs noted in Table 2 referenced in
3 part a. are the result of a time allocation study and thus it is not possible to factually
4 estimate the percentage of time spent on each of these classes. Distributed Generators
5 greater than 10 kW generating capacity comprise the DGen rate class. The costs
6 referenced in part a. for large Distributed Generators are all associated with the Dgen
7 rate class.
- 8 c. Hydro One has no costs of “Economic Development” or similar programs in the test
9 years.
- 10 d. Hydro One does not do any brand advertising, only functional and operational
11 advertising such as commodity and service tendering (i.e. RFPs, RFQs, etc.), project-
12 related notices (i.e. service interruption, Notice of Project, etc.), safety-related (i.e.
13 EDA Safety program support) and to satisfy Regulatory requirements. No program
14 costs exceed \$25,000.
- 15 e. See responses to Exhibit I, Tab 3.1, Schedule 2-SIA-25, Exhibit I, Tab 3.1, Schedule
16 2-SIA-26 and Exhibit I, Tab 3.1, Schedule 2-SIA-27.

Green Energy Coalition (GEC) INTERROGATORY #20

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Please provide the number of dollars of customer deposits held by HONI (by customer class if available) and identify and explain the current ratemaking treatment for customer deposits.

Response

As of May 31, 2014:

- Number of Cash Deposits held: 24,563
- Dollar value of Cash Deposits held: \$32,776,019

Rate Class	Number of Accounts	Cash on Hand
Distribution Generator	2	\$4,250
General Service - Demand	835	\$10,238,148
General Service – Energy	12,013	\$12,813,663
General Service - Unmetered	51	\$16,848
General Service – Urban Demand	173	\$1,984,290
General Service – Urban Energy	2,146	\$1,818,866
Residential – Low Density	3,909	\$1,906,924
Residential – Medium Density	3,311	\$1,254,179
Residential – Seasonal	543	\$151,213
Residential – Urban High Density	988	\$314,798
Sentinel Lights	485	\$62,142
Street Lights	82	\$101,517
Sub Transmission	25	\$2,109,181
Grand Total	24,563	\$32,776,019

Customer deposits do not have a direct impact on the current ratemaking process.

Green Energy Coalition (GEC) INTERROGATORY #21

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Please identify the number of HONI residential customers served in single-family and multi-family dwellings (providing the definition used by the Company).

Response

a) The requested information is provided below:

Type	# of customers
Single family	1,070,076
Multi-family dwellings	25,548

To qualify as Multi-Unit, pursuant to the Ontario Energy Board O.Reg. 41/04, filed under s. 79.4 (1)(a) of the Ontario Energy Board Act, 1998, a customer will qualify if they own or operate a:

- Property as defined in the *Condominium Act, 1998*
- Residential complex as defined in the *Tenant Protection Act, 1997*, or
- Property that is owned or leased by a cooperative as defined in the *Cooperative Corporation Act*.
- These acts can be viewed at the following web site: www.e-laws.gov.on.ca

Green Energy Coalition (GEC) INTERROGATORY #22

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Please estimate the total number of HONI residential customers (divided into single-family and multi-family if available) who have residential electric space heating.

Response

- a) Based on equipment surveys conducted during 2006-2013, the requested information is provided below. It should be noted that this information is not available for multi-family residential customers.

Type	# customers	Electric Space Heating Saturation Rate	Estimated # Electric space heating customers
Single family	1,070,076	21%	226,935
Multi-family dwellings	25,548	NA	NA

Green Energy Coalition (GEC) INTERROGATORY #23

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Please provide any studies that the Company has conducted in the past 10 years regarding the average and incremental saturation and unit energy consumption of electric appliances (e.g., space heating, water heating, air conditioning, refrigeration, stoves, washers, dryers, other) in its service area.

Response

Please see the following attachments.

- Attachment 1: 2005 Residential Appliance Survey Results
- Attachment 2: 2005 Seasonal Residential Appliance Survey Results
- Attachment 3: 2005 Farm Customer Appliance Survey Results
- Attachment 4: 2007 Residential Appliance Survey Results
- Attachment 5: 2008 Hydro One Time-of-Use Pilot Project Results
- Attachment 6: 2008 Power Cost Monitor Survey Results
- Attachment 7: 2009 Nipissing TOU Pilot Project Household Profile Survey Results
- Attachment 8: 2010 Nipissing TOU Pilot Project Electricity Usage Profile Survey Results
- Attachment 9: 2009 General Service Customer Survey Results
- Attachment 10: 2010 Customer Equipment and Conservation Survey Results
- Attachment 11: 2011 Customer Equipment and Conservation Survey Results
- Attachment 12: 2012 Customer Equipment and Conservation Survey Results (Long Version)
- Attachment 13: 2012 Customer Equipment and Conservation Survey Results (Follow-Up Version)
- Attachment 14: 2013 Hydro One Energy Conservation Survey Results

Attachment 1:
2005 Residential Appliance Survey Result

TABLE OF CONTENT

SECTION 1 – YOUR HOME	4
Q1.....	4
In what type of building do you live?	4
Q2.....	5
When was your home built?	5
Q3.....	6
What is the square footage of your home (exclude garage, attic or basement)	6
Q4.....	7
Is natural gas available on your street/road?.....	7
Q5.....	8
What type(s) of space heating system(s) do you have?	8
Q6.....	9
What type(s) of water heating system(s) do you have?	9
Q7.....	10
What type of air conditioning do you have and how old is it?	10
Q8(a)	11
What is the setting of your furnace fan (on the thermostat)?	11
Q8(b1).....	12
Do you adjust your thermostat for nighttime?	12
Q8(b2).....	13
Do you adjust your thermostat when you are not home?.....	13
Q9.....	14
Please provide information about your electrical equipment?	14
Q10.....	16
How many of the listed light bulbs do you have INSIDE your home?.....	16
Q11.....	17
How many dimmer switches do you use?	17
Q12.....	18
How many of each of the listed light bulbs do you use OUTSIDE your home?	18
Q13.....	19
Which of the following devices control your outdoor lights?	19
Q14.....	20
What type of holiday lights do you use to decorate your home?.....	20

SECTION 2-ENERGY CONSERVATION.....21

Q15.....	21
Which of the following renovations have your completed in the last ten years?.....	21

Q16.....	22
Which of the following conservation measures have you taken on in the last 5 years or plan to take on in the next 2 years?	22

Q17.....	23
What type of internet connection do you have at home?.....	23

Q18.....	24
Would you be interested in a program which pays participants to allow Hydro One to shut off their electric water heaters, central air conditioners and pool pumps for short intervals (during high use periods)?	24

Q19.....	25
Would you be interested in an in-house device which tracks and displays your ongoing electricity use?	25

Q20.....	26
Rate the following energy efficiency programs based on your likelihood to participate.....	26

Q21 (a).....	27
What type of conservation information would you like to receive from Hydro One?.....	27

Q21 (b).....	27
How would you like to receive this information?.....	27

SECTION 3 – HOUSEHOLD DEMOGRAPHICS.....28

Q22.....	28
How many people currently live in your home?.....	28

Q23.....	29
Do you own or rent your home?	29

Q24.....	30
Please indicate the highest level of education for your household	30

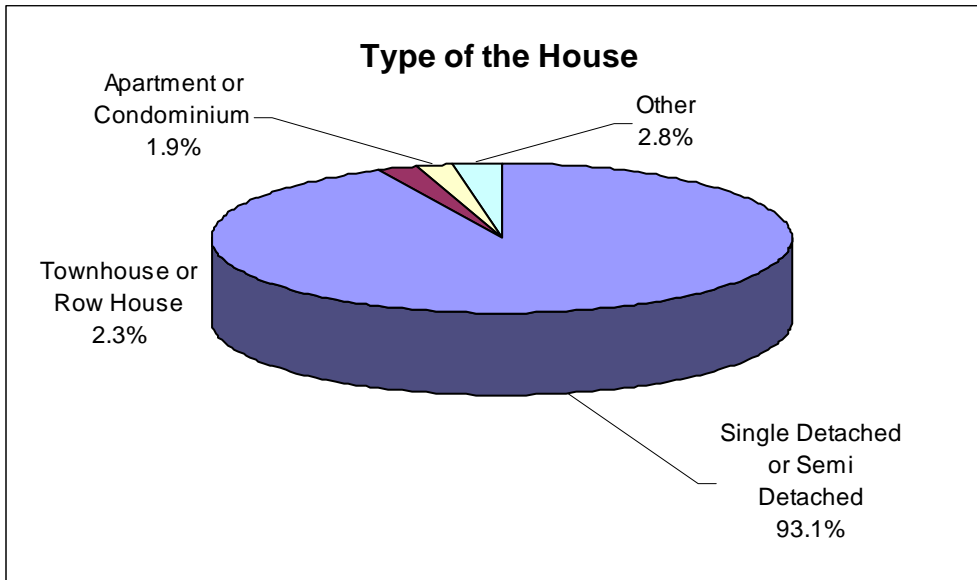
Q25.....	31
What is your TOTAL household income before tax for 2004?	31

SECTION 1 – YOUR HOME

Q1

In what type of building do you live?

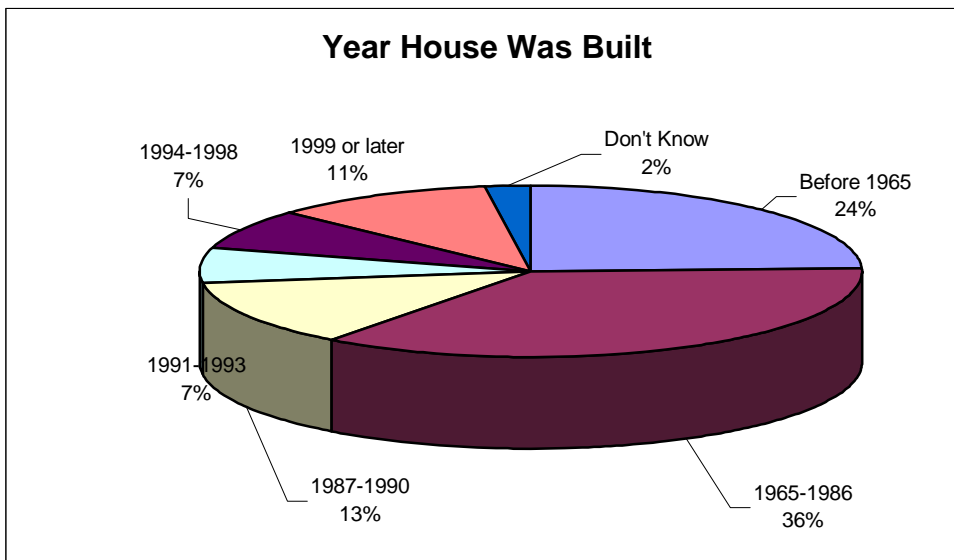
Answer	Description	Count	Percentage
1	Single Detached or Semi Detached	13217	93.1%
2	Townhouse or Row House	324	2.3%
3	Apartment or Condominium	271	1.9%
4	Other	392	2.8%
	Total	14204	100%



Q2

When was your home built?

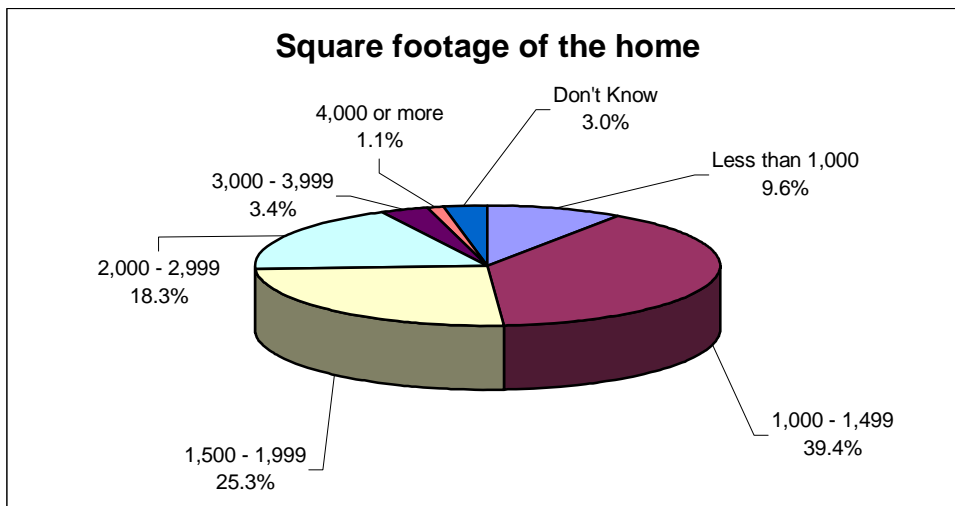
Answer	Description	Count	Percentage
1	Before 1965	3480	24.5%
2	1965-1986	5075	35.7%
3	1987-1990	1793	12.6%
4	1991-1993	945	6.7%
5	1994-1998	1062	7.5%
6	1999 or later	1542	10.9%
7	Don't Know	309	2.2%
	Total	14206	100%



Q3

What is the square footage of your home (exclude garage, attic or basement)

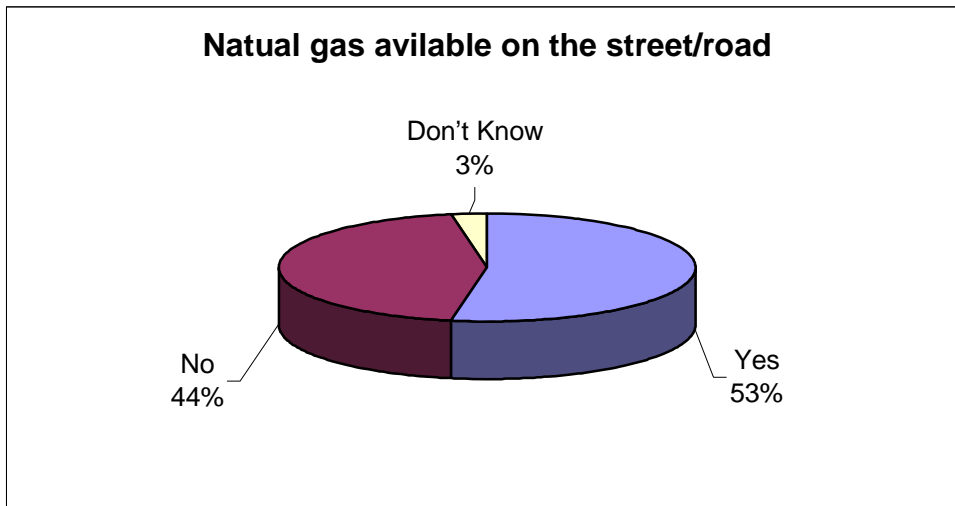
Answer	Description	Count	Percentage
1	Less than 1,000	1358	9.6%
2	1,000 - 1,499	5588	39%
3	1,500 - 1,999	3581	25.3%
4	2,000 - 2,999	2588	18.3%
5	3,000 - 3,999	481	3.4%
6	4,000 or more	155	1.1%
7	Don't Know	428	3.0%
	Total	14179	100%



Q4

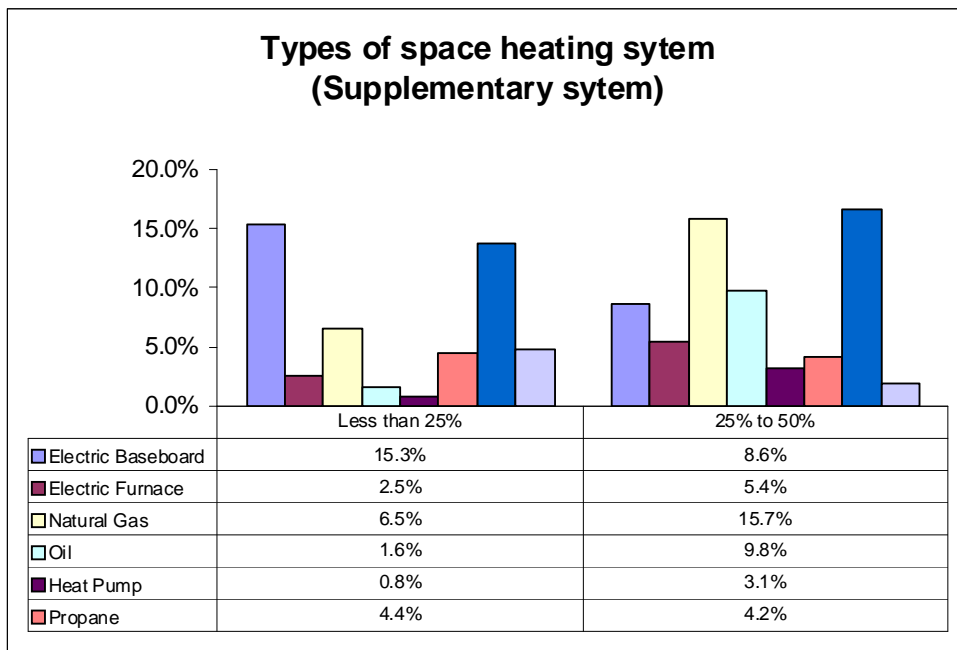
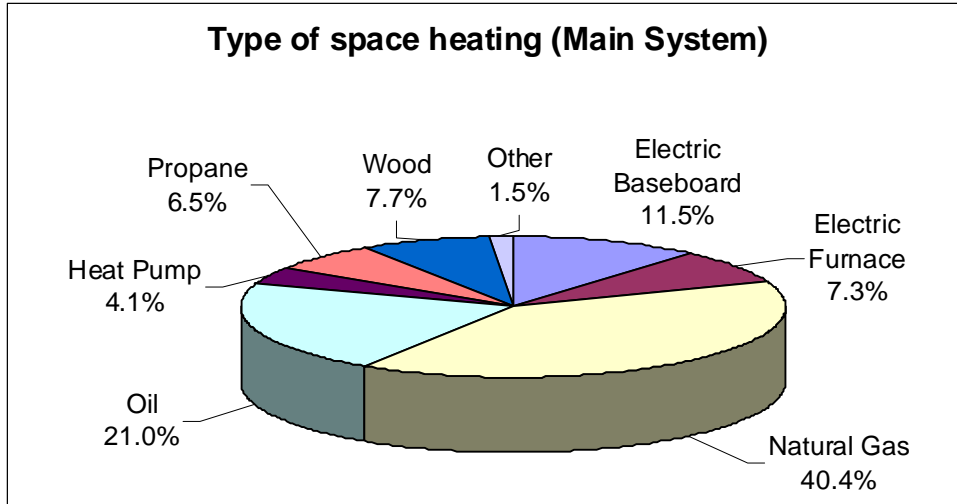
Is natural gas available on your street/road?

Answer	Description	Count	Percentage
1	Yes	7509	52.9%
2	No	6302	44.4%
3	Don't Know	386	2.7%
	Total	14197	100%



Q5

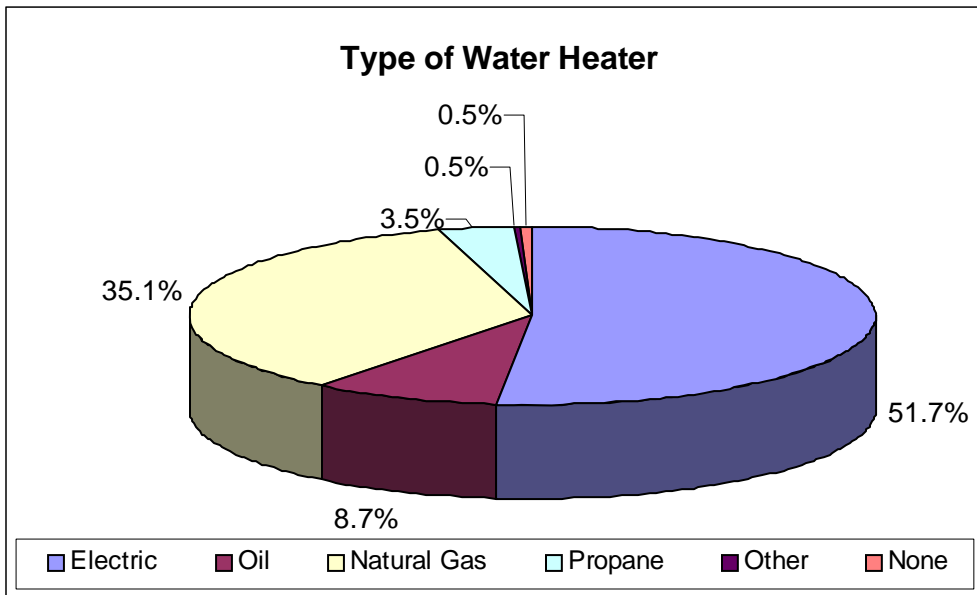
What type(s) of space heating system(s) do you have?



Q6

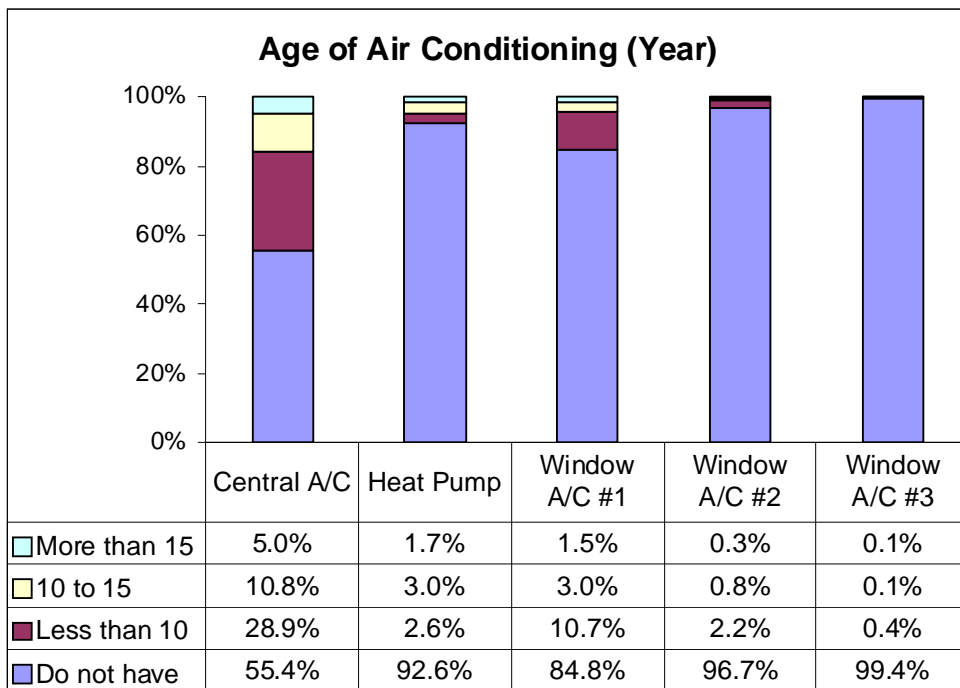
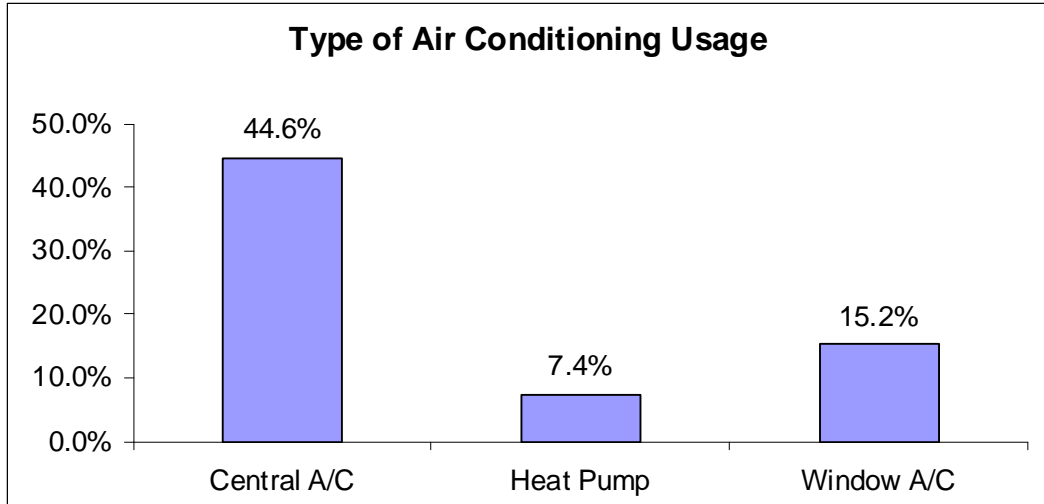
What type of water heater do you have?

Answer	Description	Count	Percentage
1	Electric	7347	51.7%
2	Oil	1234	8.7%
3	Natural Gas	4983	35.1%
4	Propane	501	3.5%
5	Other	71	0.5%
6	None	65	0.5%
	Total	14201	100%



Q7

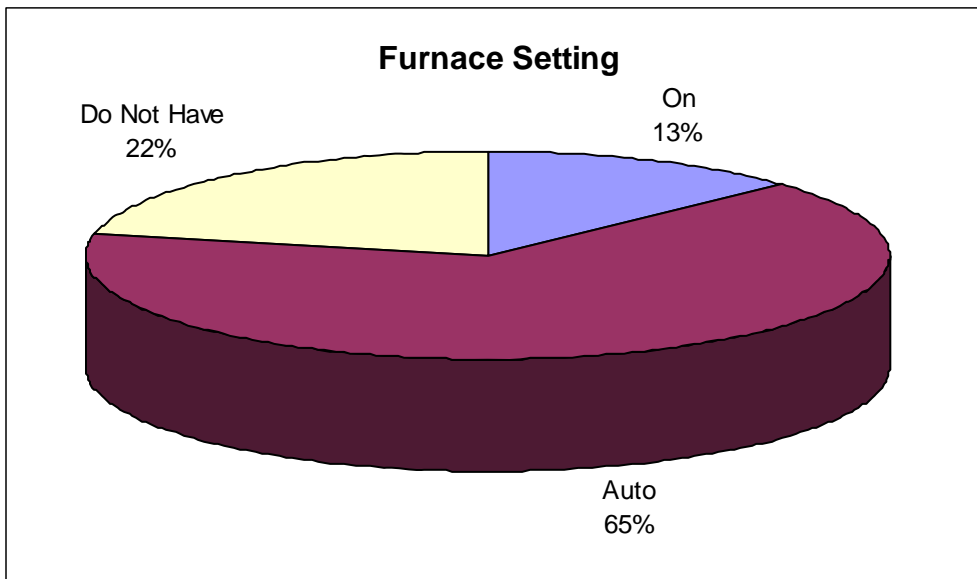
What type of air conditioning do you have and how old is it?



Q8(a)

What is the setting of your furnace fan (on the thermostat)?

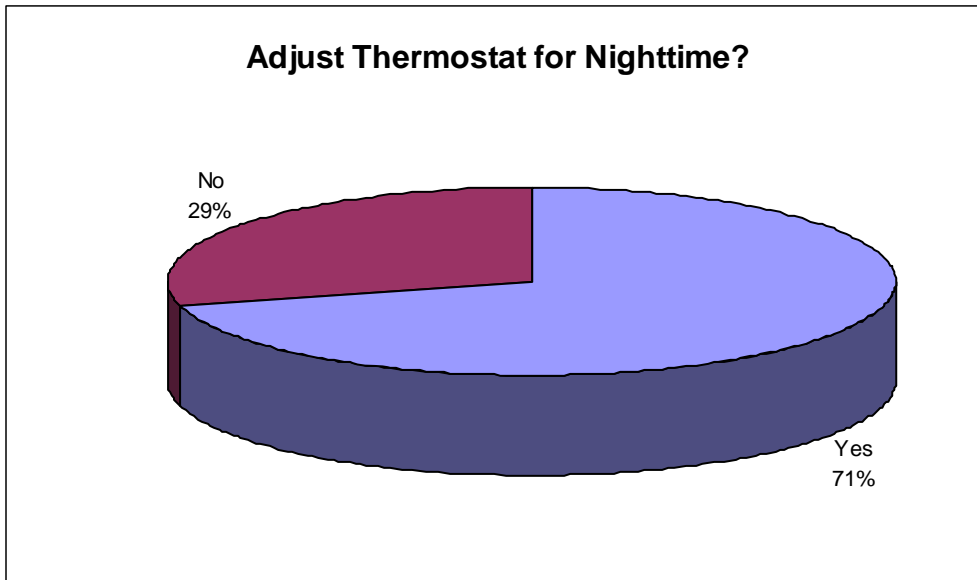
Answer	Description	Count	Percentage
1	On	1863	13.2%
2	Auto	9210	65.1%
3	Do Not Have	3072	21.7%
	Total	14145	100%



Q8(b1)

Do you adjust your thermostat for nighttime?

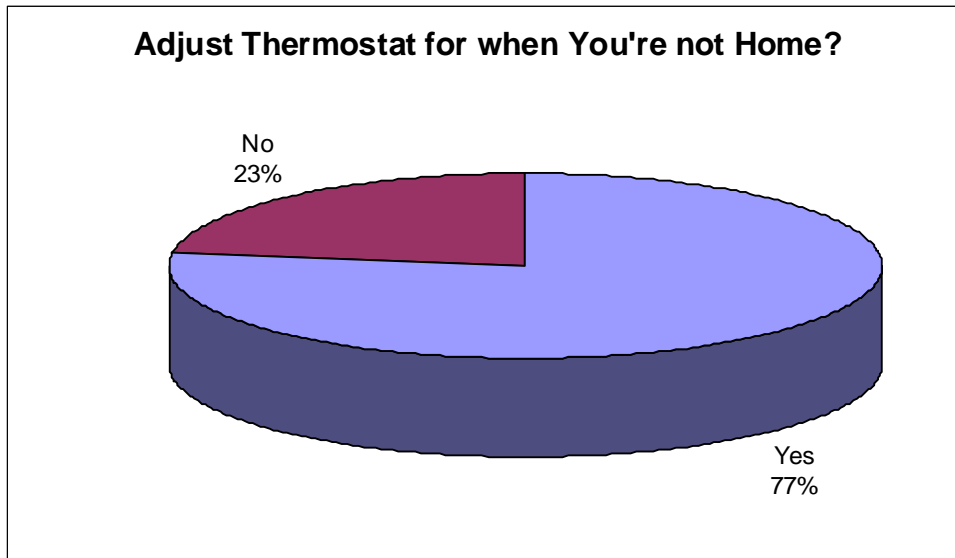
Answer	Description	Count	Percentage
1	Yes	9989	70.8%
2	No	4111	29.2%
	Total	14100	100%



Q8(b2)

Do you adjust your thermostat when you are not home?

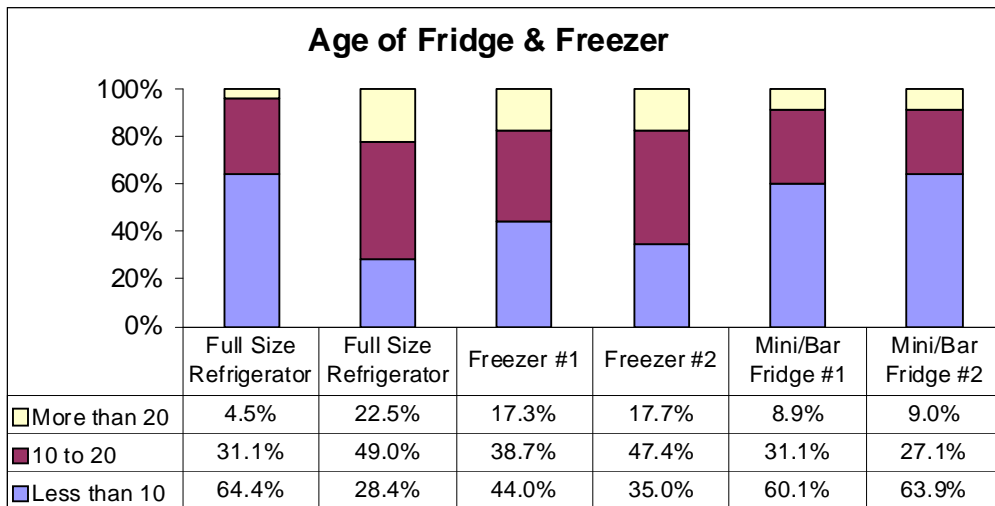
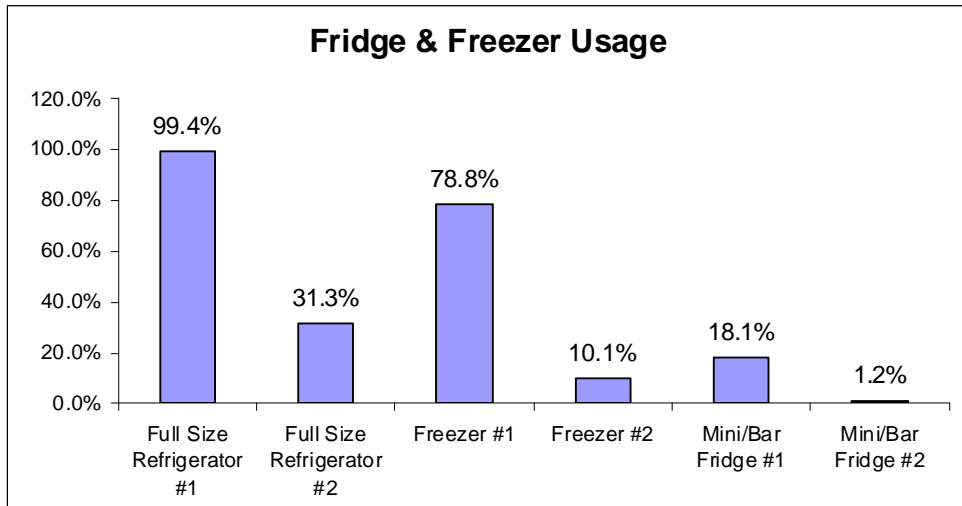
Answer	Description	Count	Percentage
1	Yes	10856	77.1%
2	No	3224	22.9%
	Total	14080	100%



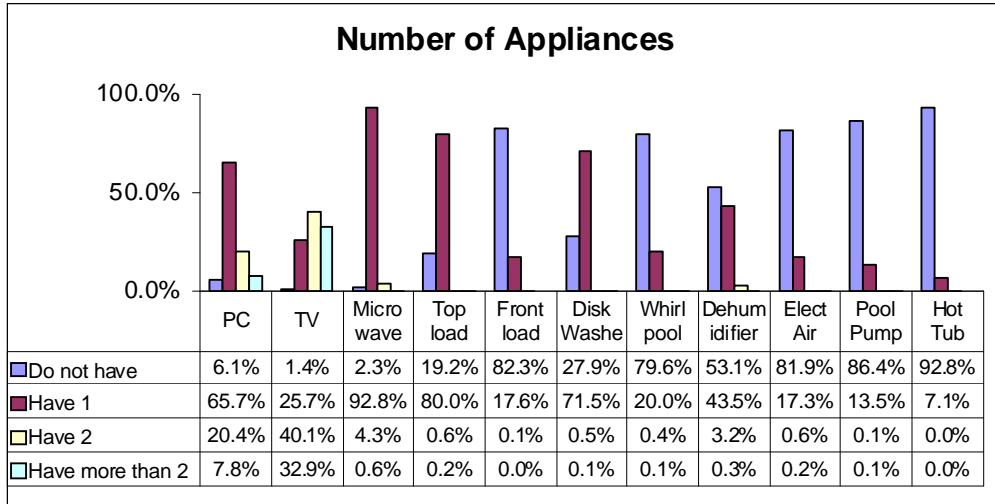
Q9

Please provide information about your electrical equipment.

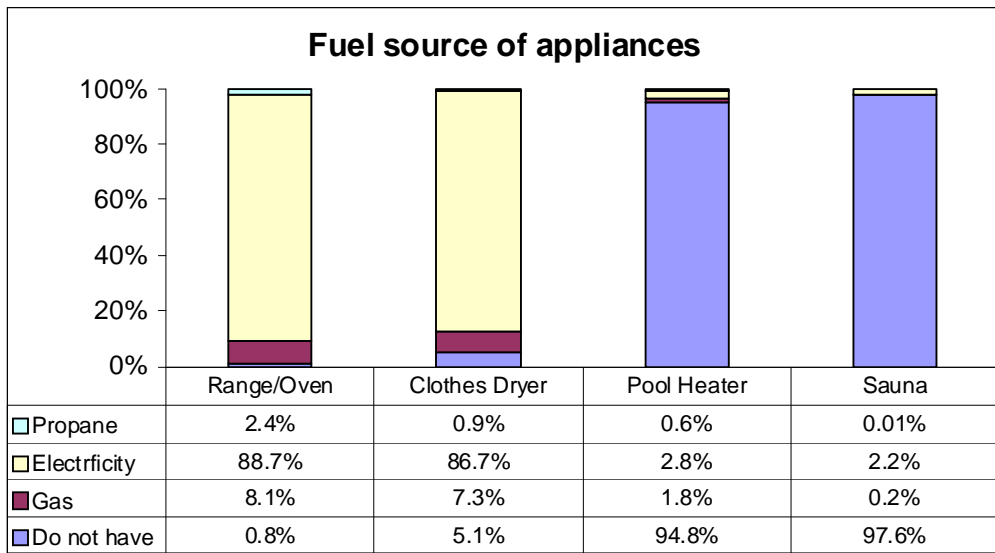
9-1



9-2

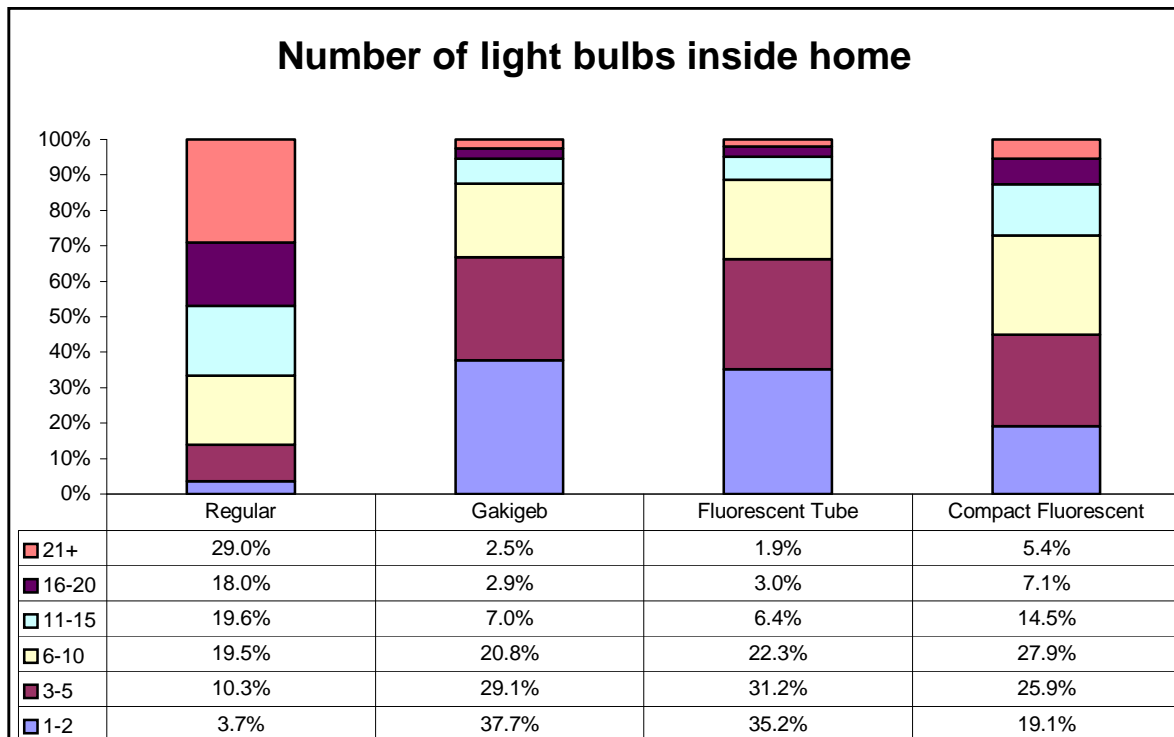
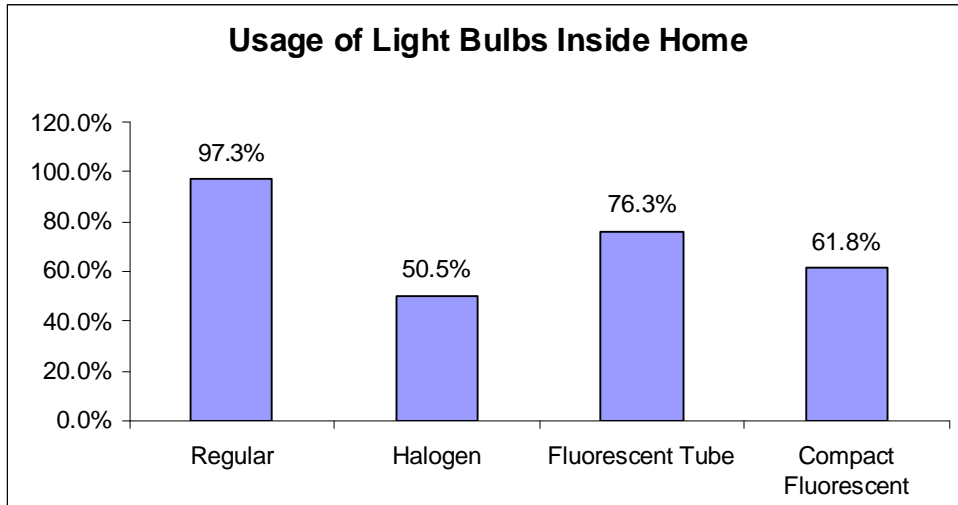


9-3



Q10

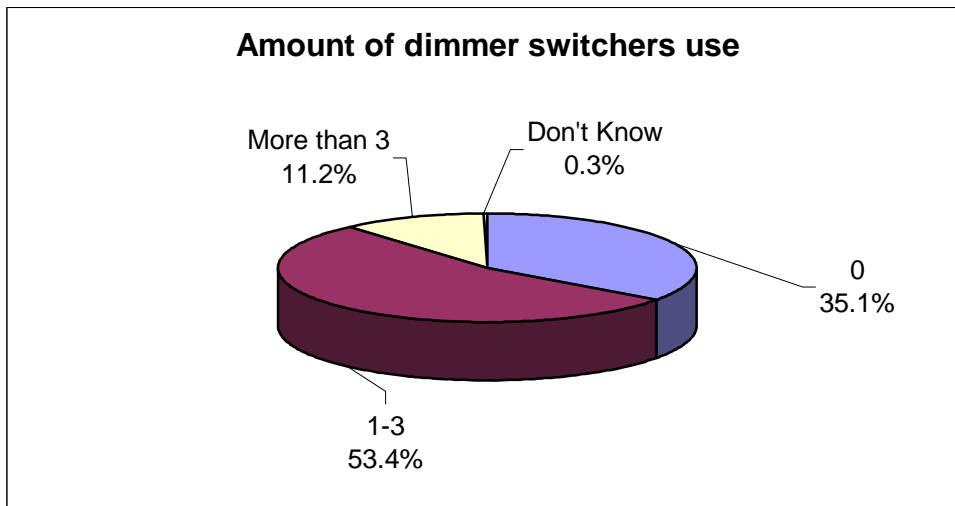
How many of the listed light bulbs do you have INSIDE your home?



Q11

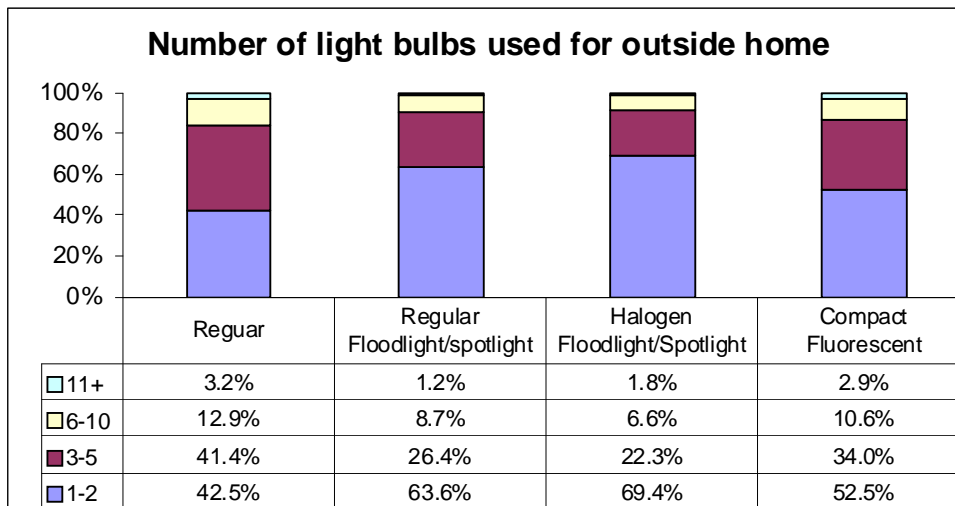
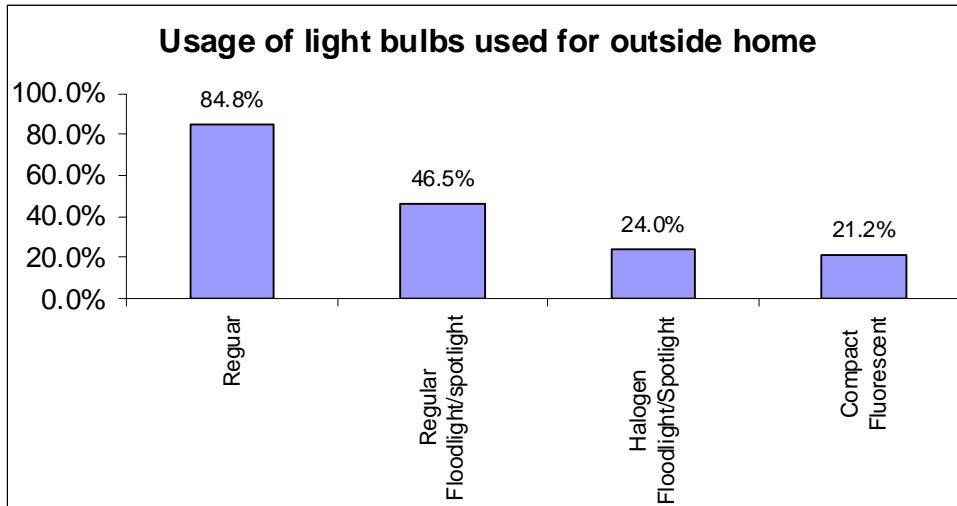
How many dimmer switches do you use?

Answer	Description	Count	Percentage
1	0	4979	35.1%
2	1-3	7573	53.4%
3	More than 3	1585	11.2%
4	Don't Know	44	0.3%
	Total	14181	100%



Q12

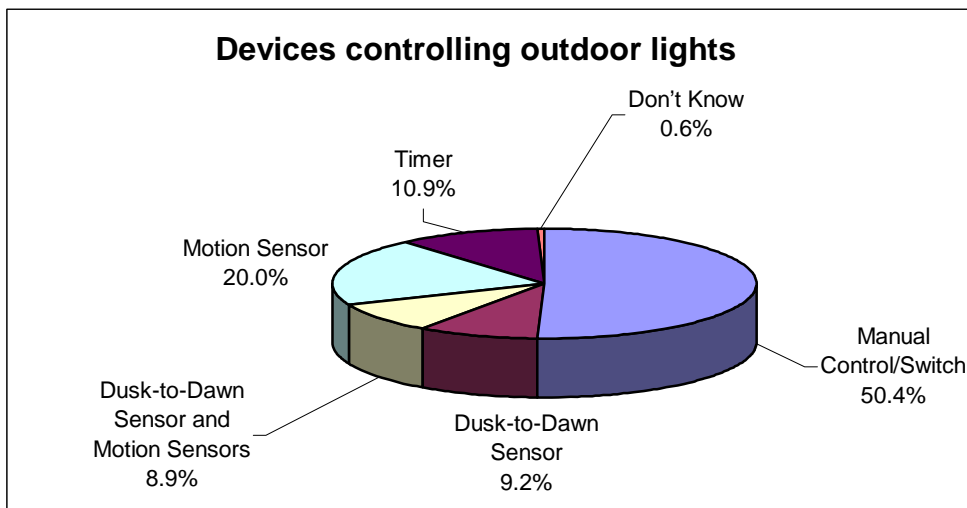
**How many of each of the listed light bulbs do you use
OUTSIDE your home?**



Q13

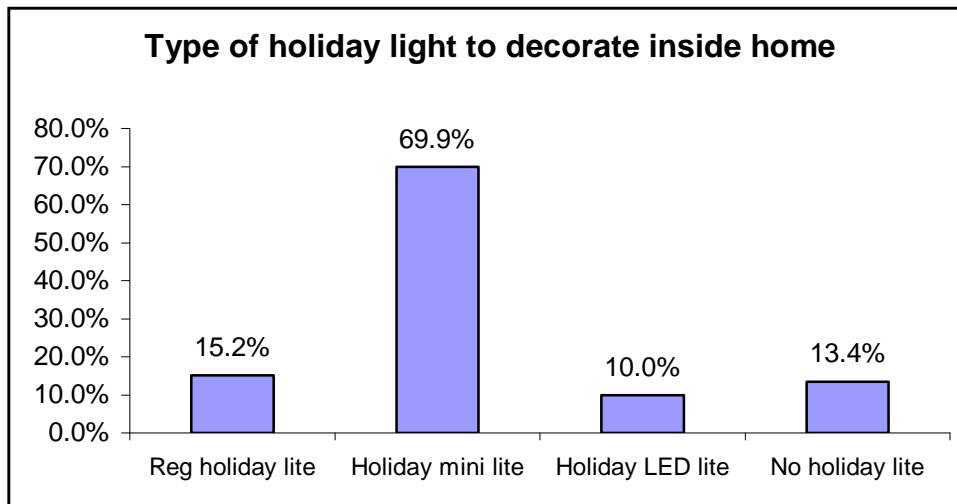
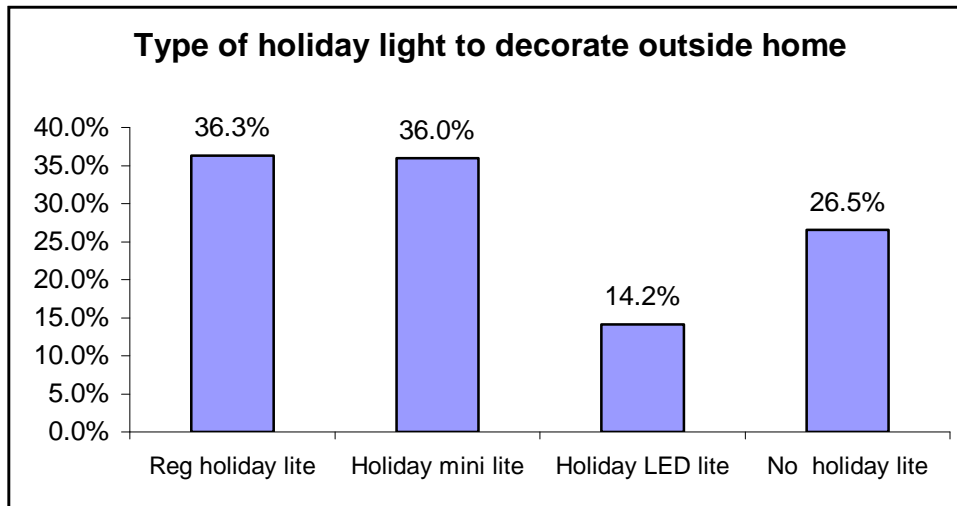
Which of the following devices control your outdoor lights?

Answer	Description	Count	Percentage
1	Manual Control/Switch	10563	50.5%
2	Dusk-to-Dawn Sensor	1917	9.2%
3	Dusk-to-Dawn Sensor and Motion Sensors	1856	8.9%
4	Motion Sensor	4181	20.0%
5	Timer	2290	10.9%
6	Don't Know	130	0.6%
	Total	20937	100%



Q14

What type of holiday lights do you use to decorate your home?

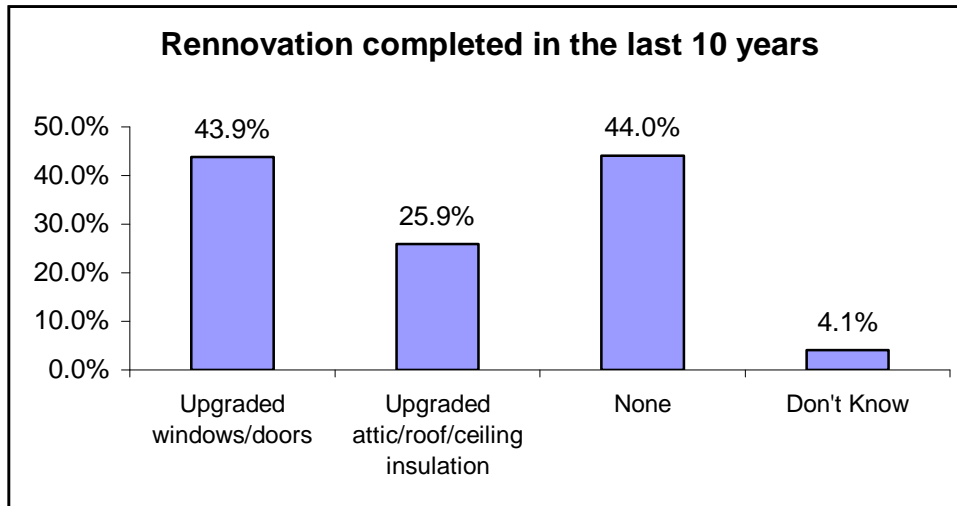


SECTION 2-ENERGY CONSERVATION

Q15

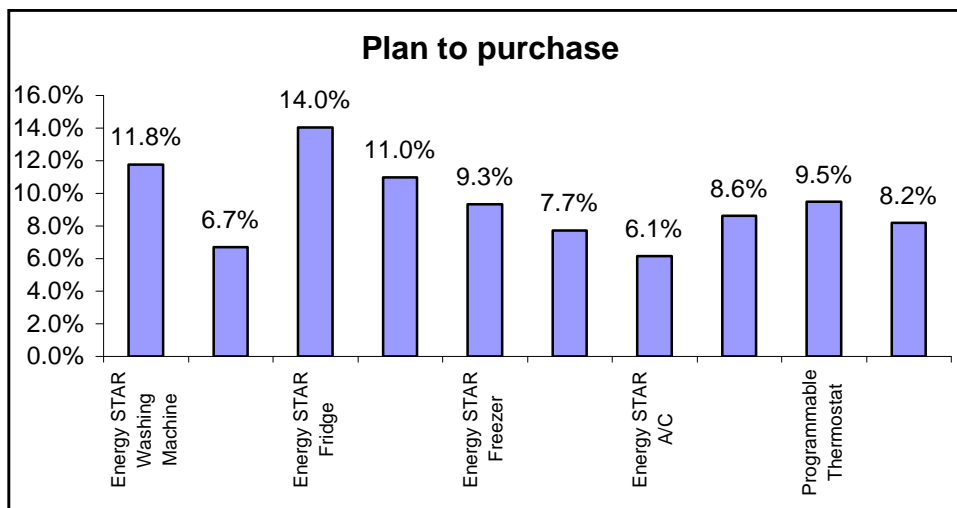
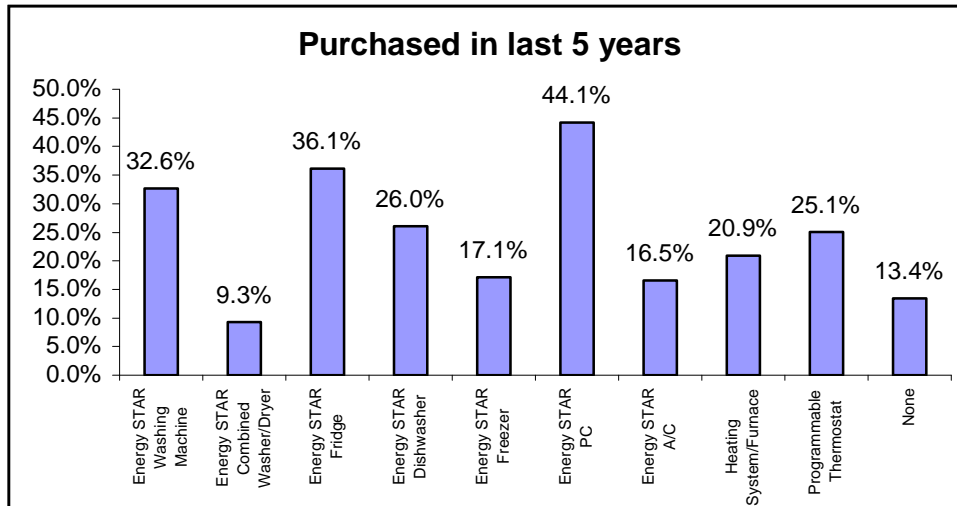
Which of the following renovations have you completed in the last ten years?

	Count	Percentage
Upgraded windows/doors	6232	43.9%
Upgraded attic/roof/ceiling insulation	3680	25.9%
None	6252	44.0%
Don't Know	587	4.1%



Q16

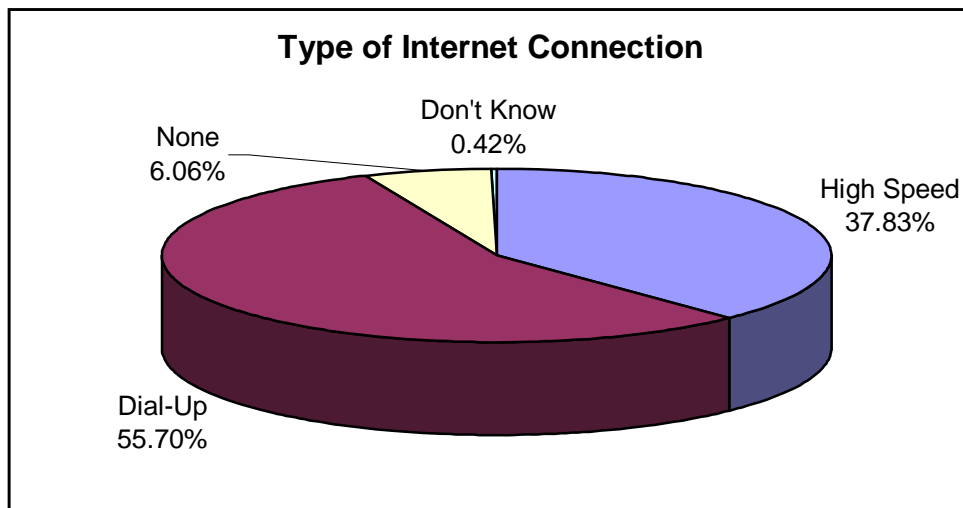
Which of the following conservation measures have you taken on in the last 5 years or plan to take on in the next 2 years?



Q17

What type of Internet connection do you have at home?

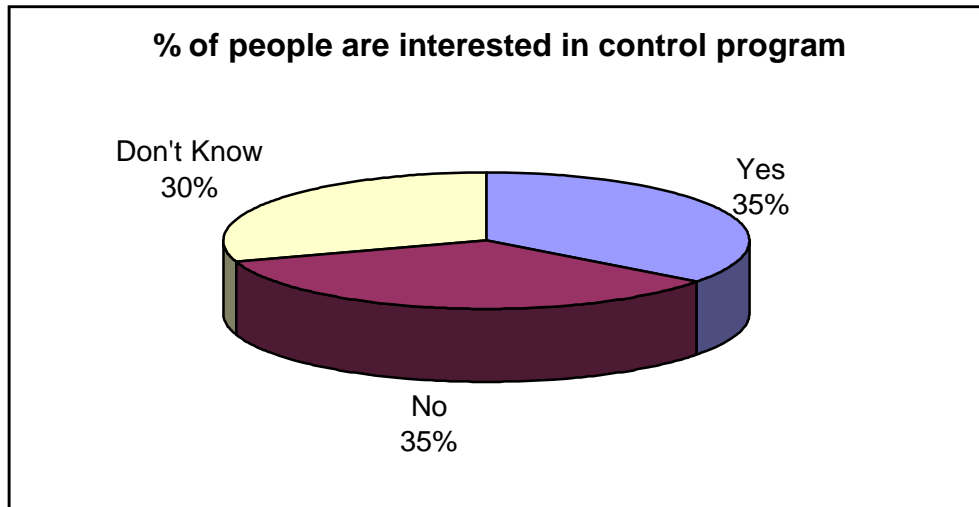
	Count	Percentage
High Speed	5364	37.8%
Dial-Up	7899	55.7%
None	859	6.1%
Don't Know	59	0.4%



Q18

Would you be interested in a program which pays participants to allow HydroOne to shut off their electric water heaters, central air conditioners and pool pumps for short intervals (during high use periods)?

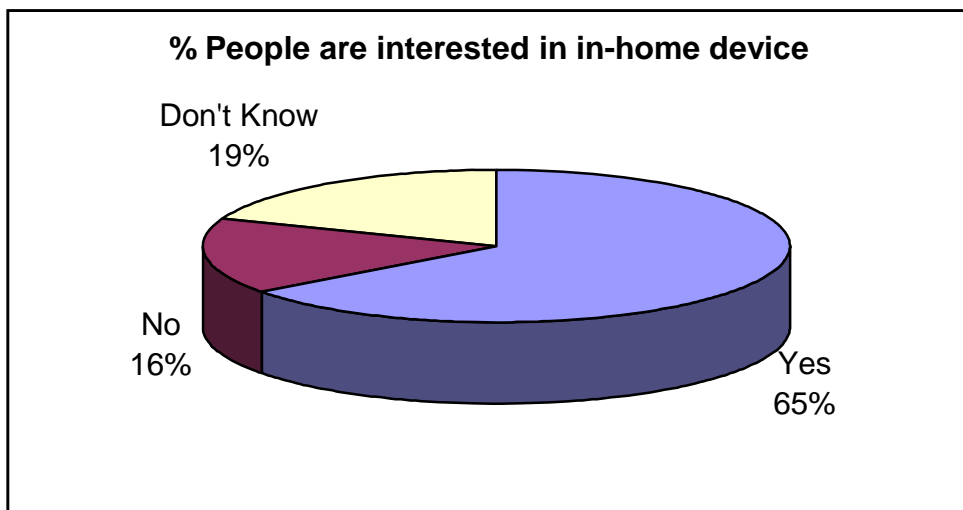
	Count	Percentage
Yes	5024	35.4%
No	4917	34.7%
Don't Know	4248	29.9%



Q19

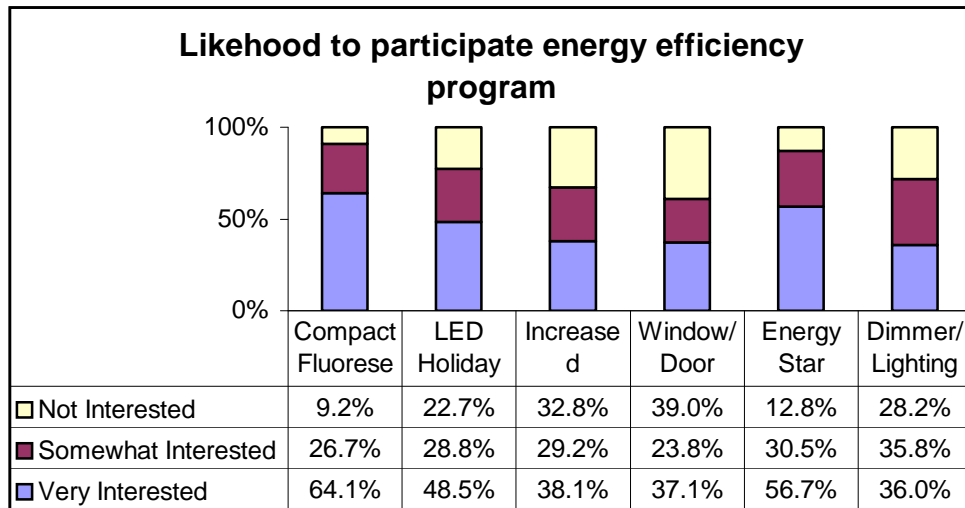
Would you be interested in an in-house device which tracks and displays your ongoing electricity use?

	Count	Percentage
Yes	9193	64.8%
No	2290	16.1%
Don't Know	2701	19.0%



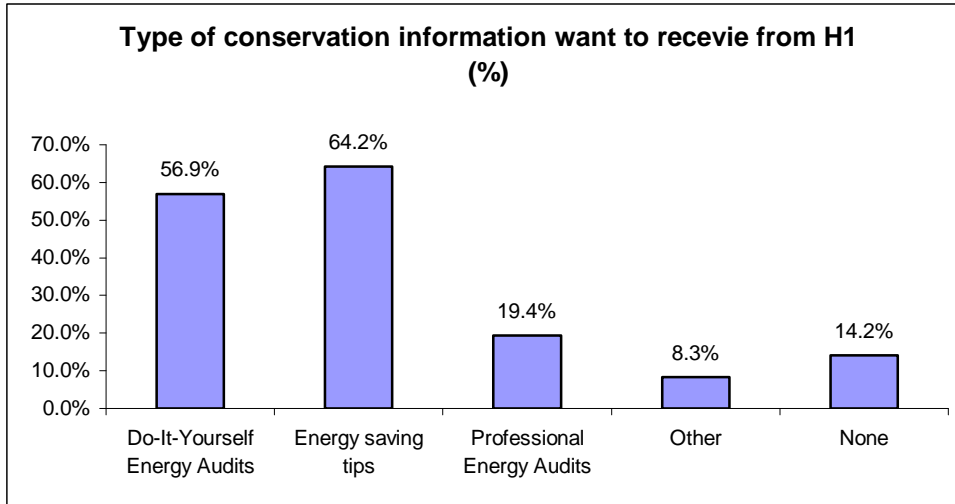
Rate the following energy efficiency programs based on your likelihood to participate

	Very Interested	Somewhat Interested	Not Interested
Compact Fluorescent Light Bulbs	64.13%	26.66%	9.22%
LED Holiday Lights	48.53%	28.82%	22.66%
Increased Insulation	38.07%	29.16%	32.78%
Window/Door Replacement	37.13%	23.83%	39.04%
Energy Star Appliance	56.66%	30.53%	12.81%
Dimmer/Lighting Control	36.00%	35.77%	28.23%



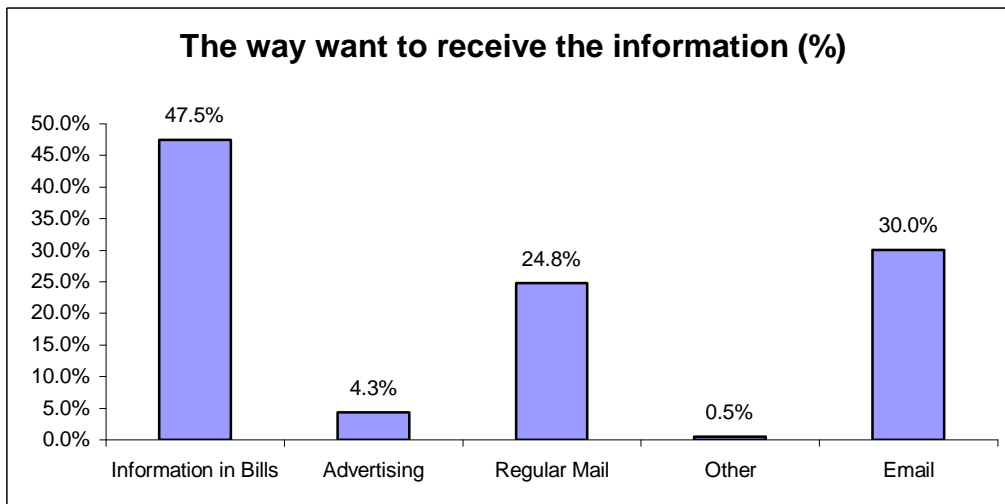
Q21 (a)

What type of conservation information would you like to receive from Hydro One?



Q21 (b)

How would you like to receive this information?

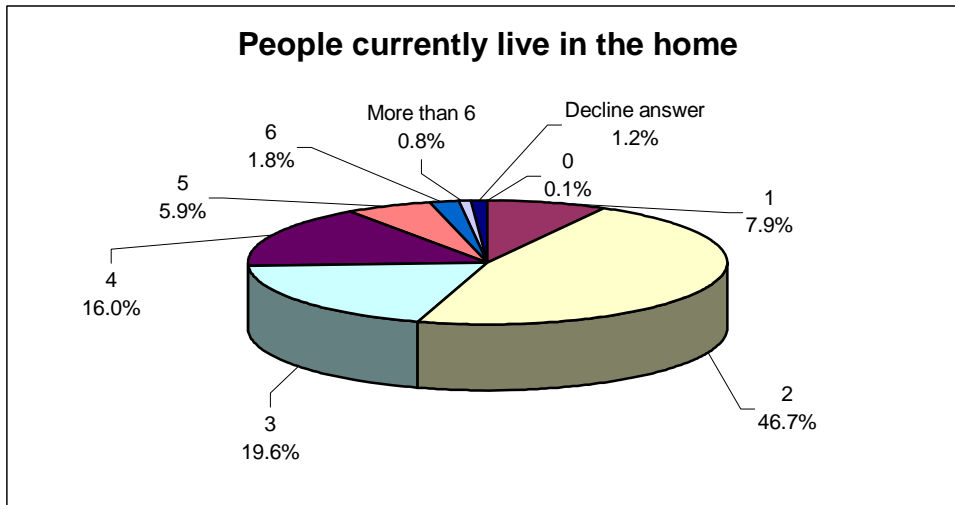


SECTION 3 – HOUSEHOLD DEMOGRAPHICS

Q22

How many people currently live in your home?

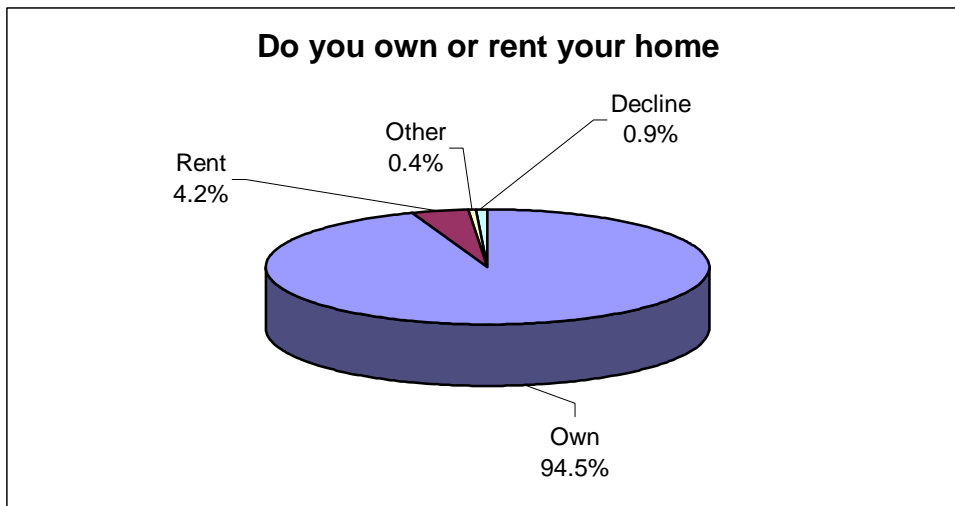
Answer	Description	Count	Percentage
0	0	19	0.13%
1	1	1115	7.85%
2	2	6629	46.67%
3	3	2779	19.56%
4	4	2278	16.04%
5	5	844	5.94%
6	6	262	1.84%
7	More than 6	114	0.80%
8	Decline	165	1.16%
	Total	14205	100%



Q23

Do you own or rent your home?

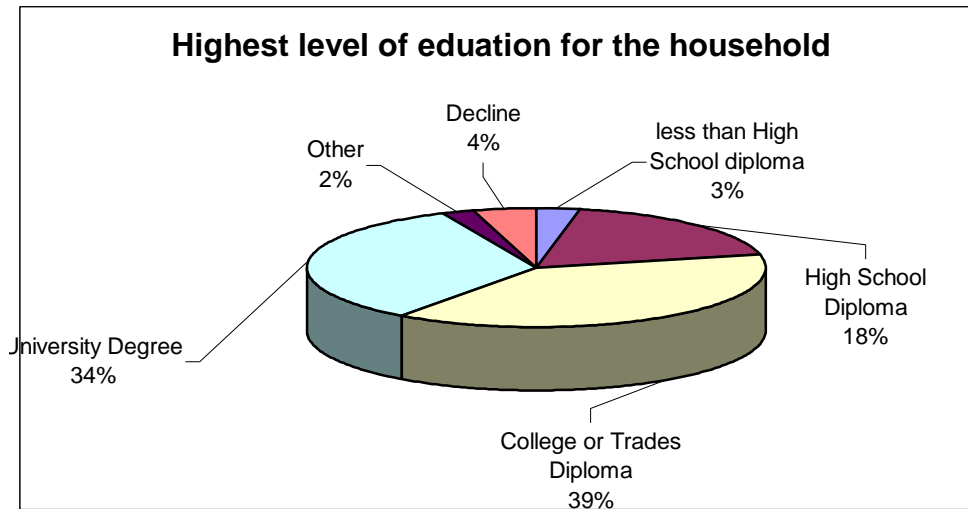
Answer	Description	Count	Percentage
1	Own	13423	94.50%
2	Rent	601	4.23%
3	Other	58	0.41%
4	Decline	122	0.86%
	Total	14204	100%



Q24

Please indicate the highest level of education for your household

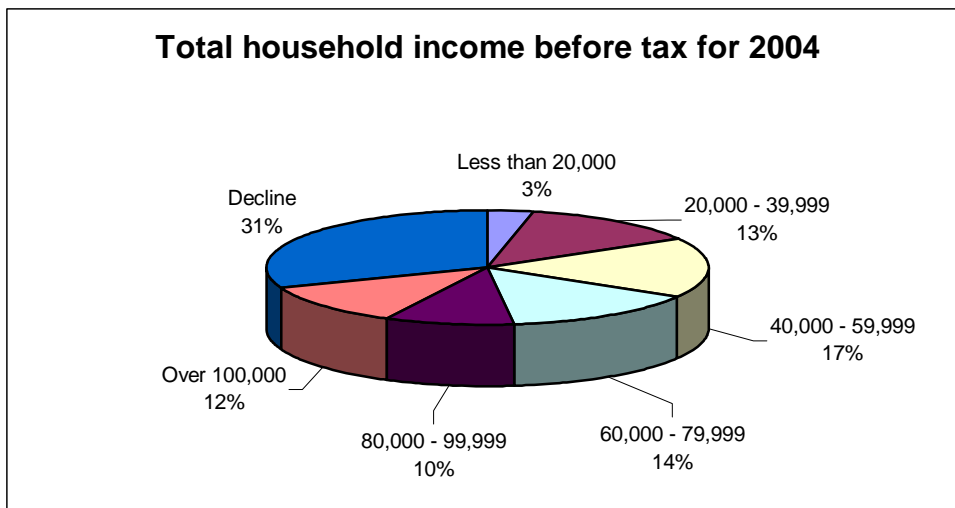
Answer	Description	Count	Percentage
1	less than High School diploma	444	3.13%
2	High School Diploma	2603	18.33%
3	College or Trades Diploma	5454	38.41%
4	University Degree	4771	33.60%
5	Other	305	2.15%
6	Decline	622	4.38%
	Total	14199	100%



Q25

What is your TOTAL household income before tax for 2004?

Answer	Description	Count	Percentage
1	Less than 20,000	458	3.23%
2	20,000 - 39,999	1911	13.48%
3	40,000 - 59,999	2415	17.03%
4	60,000 - 79,999	2038	14.37%
5	80,000 - 99,999	1350	9.52%
6	Over 100,000	1646	11.61%
7	Decline	4362	30.76%
	Total	14180	100%



Attachment 4:
2005 Seasonal Customer Appliance Survey Result

TABLE OF CONTENTS

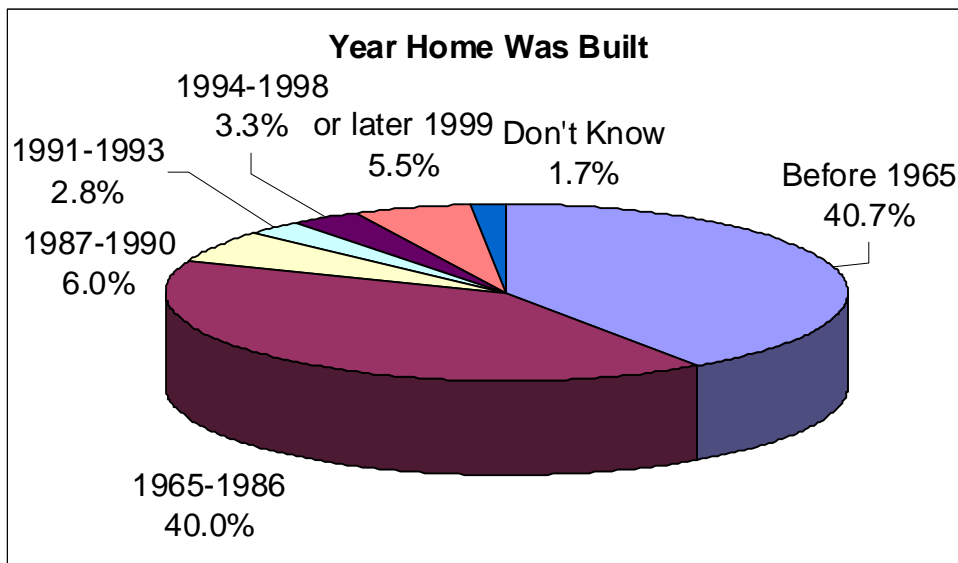
SECTION 1 – YOUR SEASONAL HOME	3
Q1	3
When was your home built?	3
Q2	4
What is the square footage of your seasonal home? Exclude garage, attic, or basement.	4
Q3	5
Approximately how much time is your seasonal home occupied?	5
Q4	6
How many people live in your seasonal home during these months?	6
Q5	7
Is Natural Gas available on your street/road?	7
Q6	8
What types of space heating system do you have?	8
Q7	9
What type of water heater do you have?	9
Q8	10
What type of Air Conditioning do you have and how old is it?	10
Q9	11
Is your seasonal home winterized?	11
Q10(a)	12
Number of Appliances?	12
Q10(b)	13
Fuel Source of Appliances?	13
Q11	14
How many of the listed light bulbs do you have inside your seasonal home?	14
Q12	15
How many of the listed light bulbs do you have outside your seasonal home?	15
Q13	16
Which of the following devices control your outdoor lights?	16
SECTION 2 – ENERGY CONSERVATION	17
Q14(a)	17
What type of conservation information would you like to receive from Hydro One?	17
Q14(b)	18
How would you like to receive this information?	18
Q15	19
Please indicate the highest level of education for your household.	19
Q16	20
What is your TOTAL household income before tax for 2004?	20

SECTION 1 – YOUR SEASONAL HOME

Q1

When was your home built?

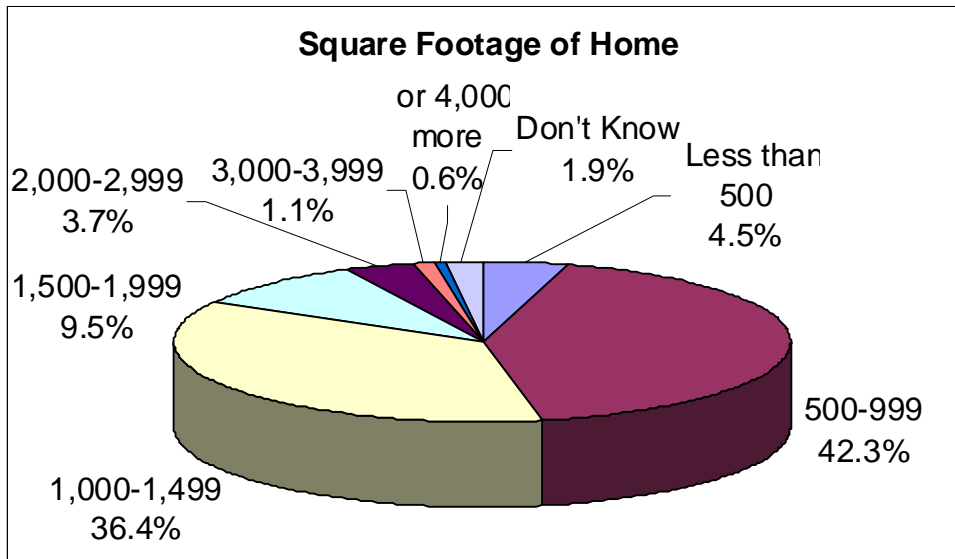
Answer	Description	Count	Percentage
1	Before 1965	571	40.67%
2	1965-1986	562	40.03%
3	1987-1990	84	5.98%
4	1991-1993	39	2.78%
5	1994-1998	47	3.35%
6	1999 or later	77	5.48%
7	Don't Know	24	1.71%
	Total:	1404	100%



Q2

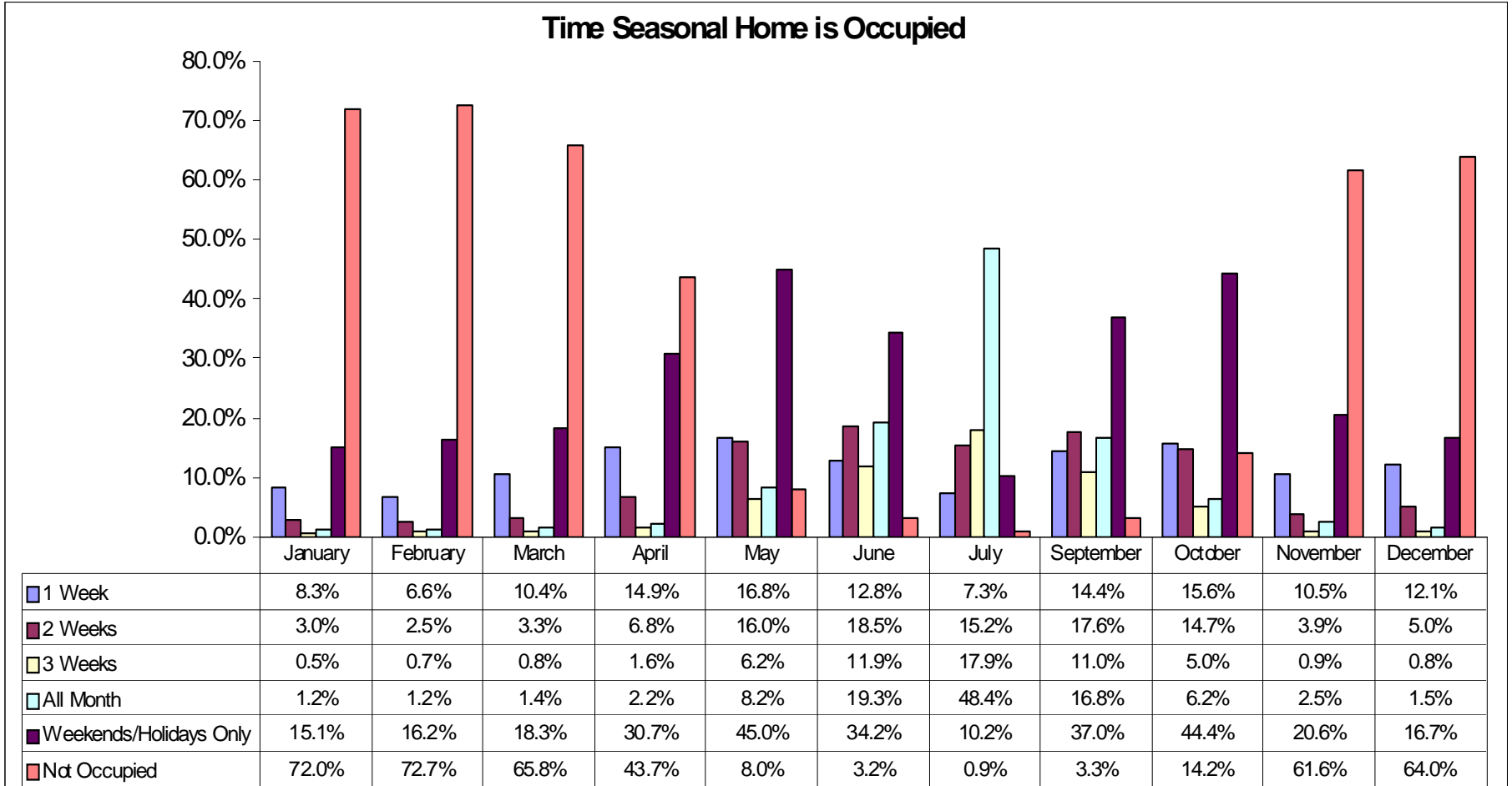
What is the square footage of your seasonal home? Exclude garage, attic, or basement.

Answer	Description	Count	Percentage
1	Less than 500	63	4.48%
2	500-999	595	42.35%
3	1,000-1,499	512	36.44%
4	1,500-1,999	133	9.47%
5	2,000-2,999	52	3.70%
6	3,000-3,999	15	1.07%
7	4,000 or more	8	0.57%
8	Don't Know	27	1.92%
	Total:	1405	



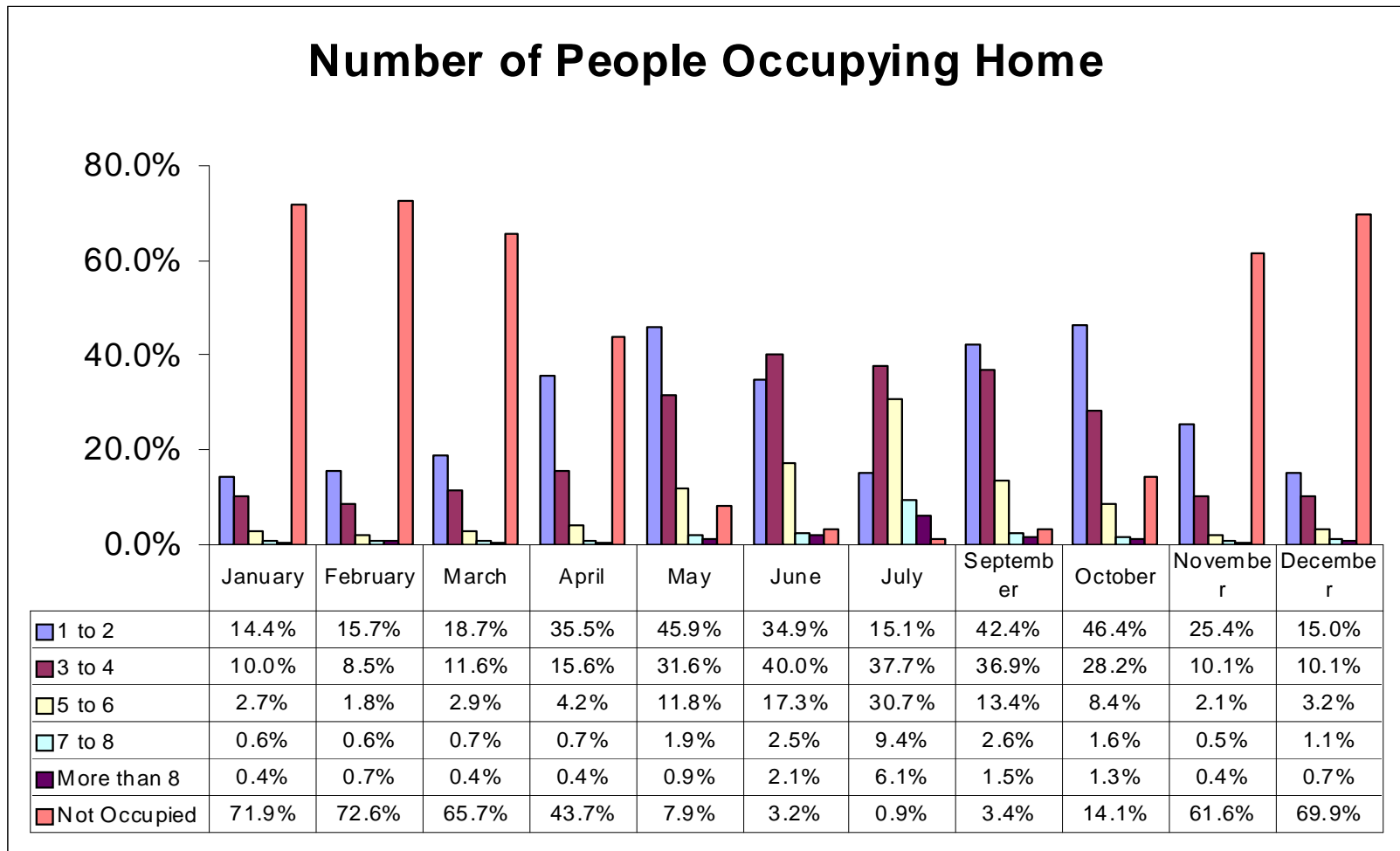
Q3

Approximately how much time is your seasonal home occupied?



Q4

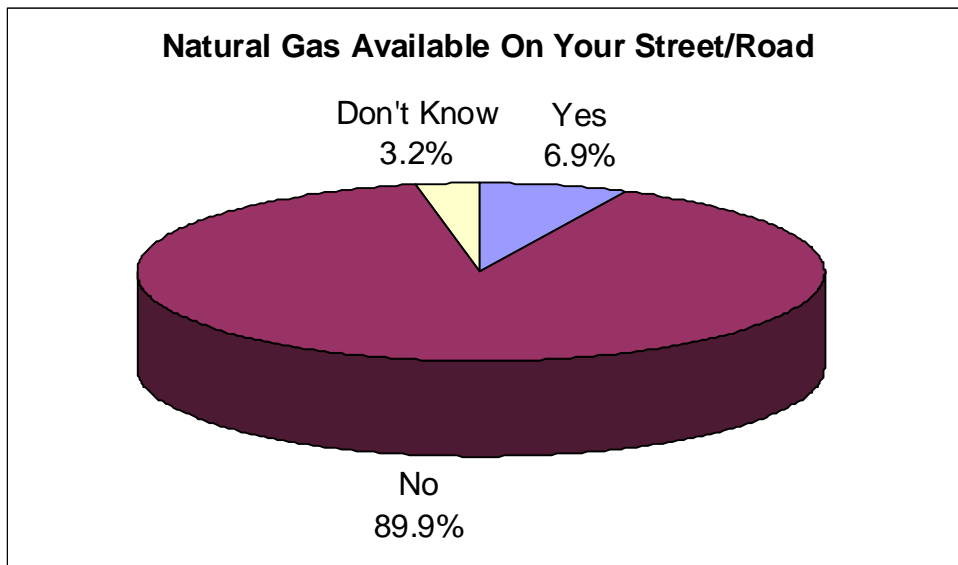
How many people live in your seasonal home during these months?



Q5

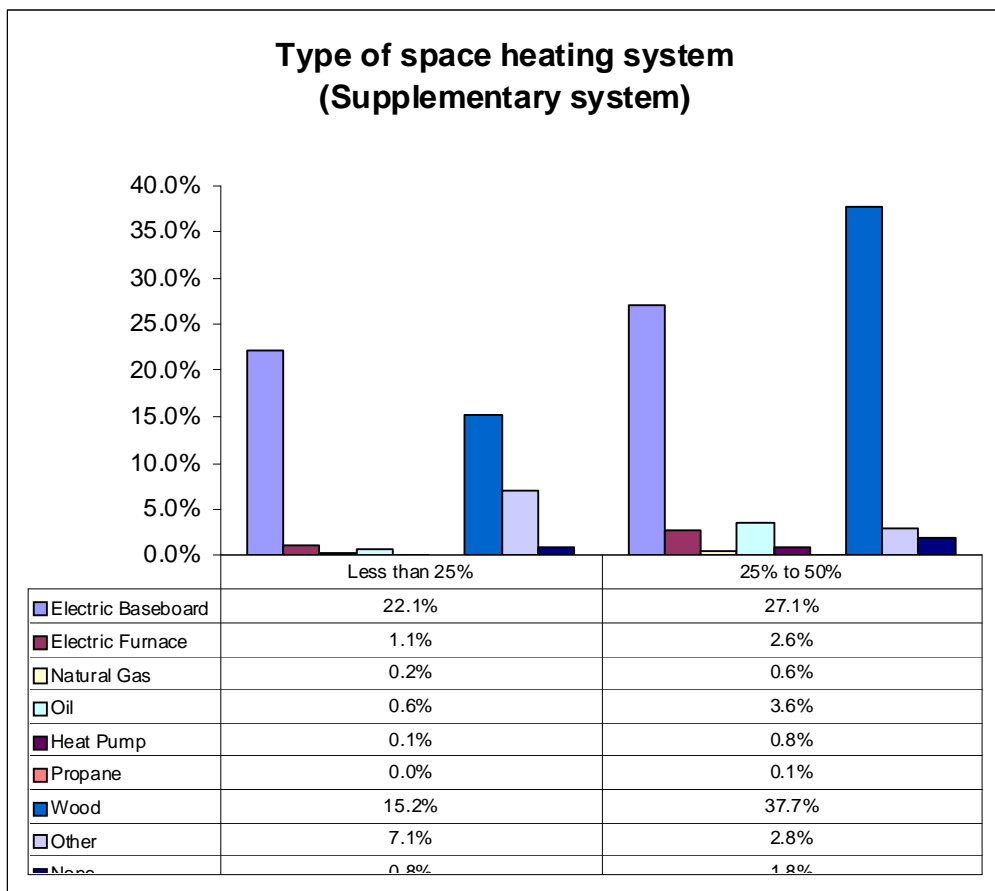
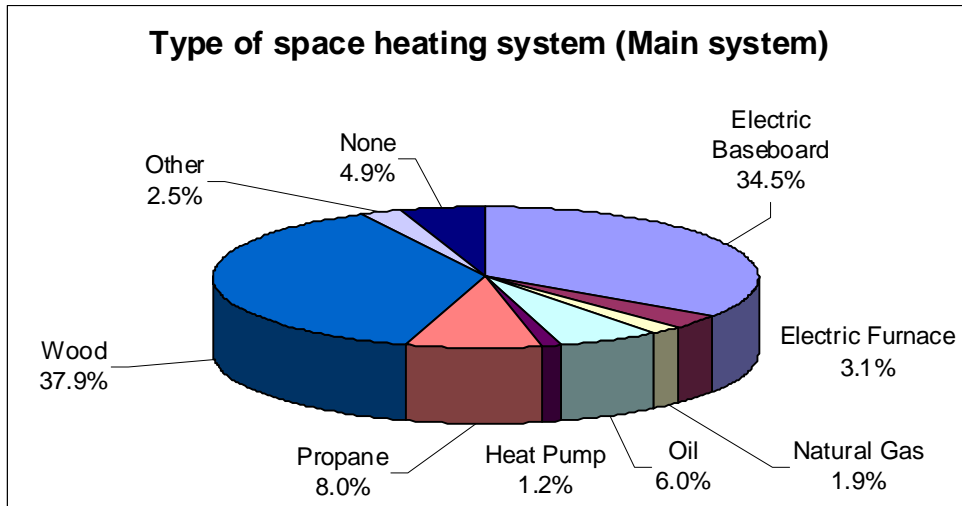
Is Natural Gas available on your street/road?

Answer	Description	Count	Percentage
1	Yes	97	6.95%
2	No	1255	89.90%
3	Don't Know	44	3.15%
	Total:	1396	



Q6

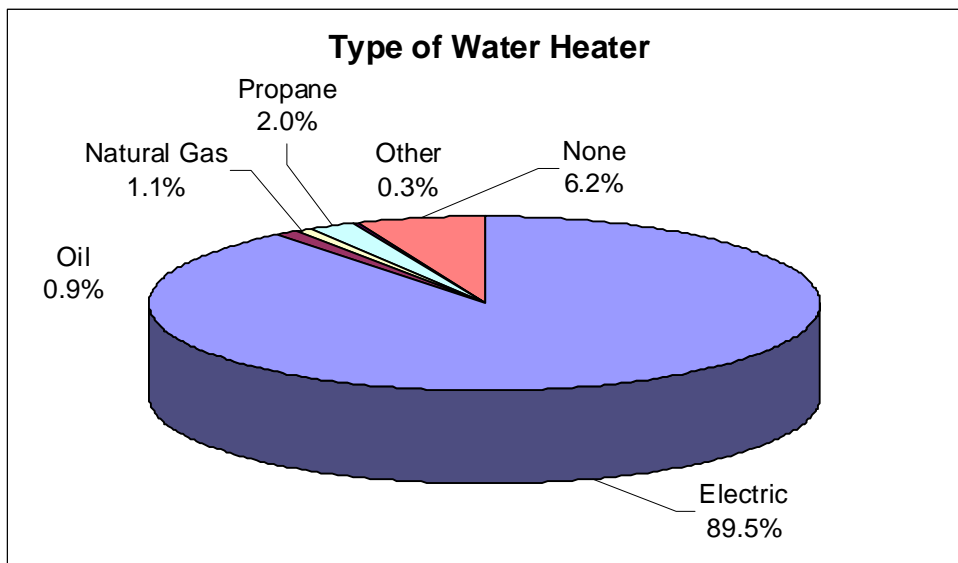
What types of space heating system do you have?



Q7

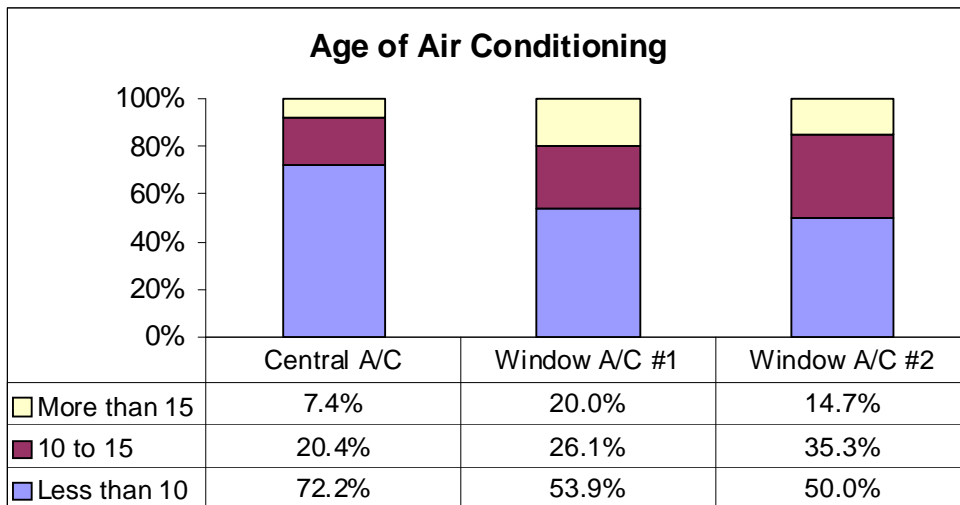
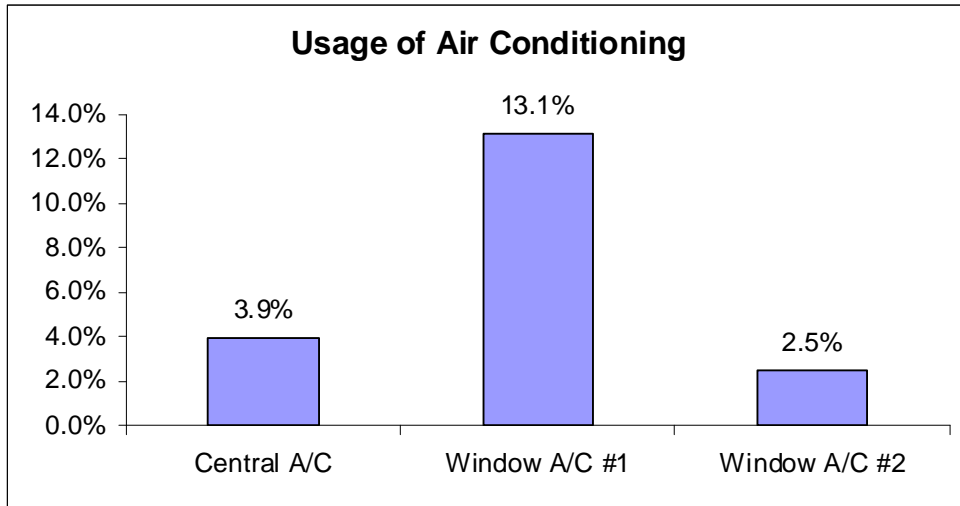
What type of water heater do you have?

Answer	Description	Count	Percentage
1	Electric	1257	89.53%
2	Oil	13	0.93%
3	Natural Gas	15	1.07%
4	Propane	28	1.99%
5	Other	4	0.28%
6	None	87	6.20%
	Total:	1404	



Q8

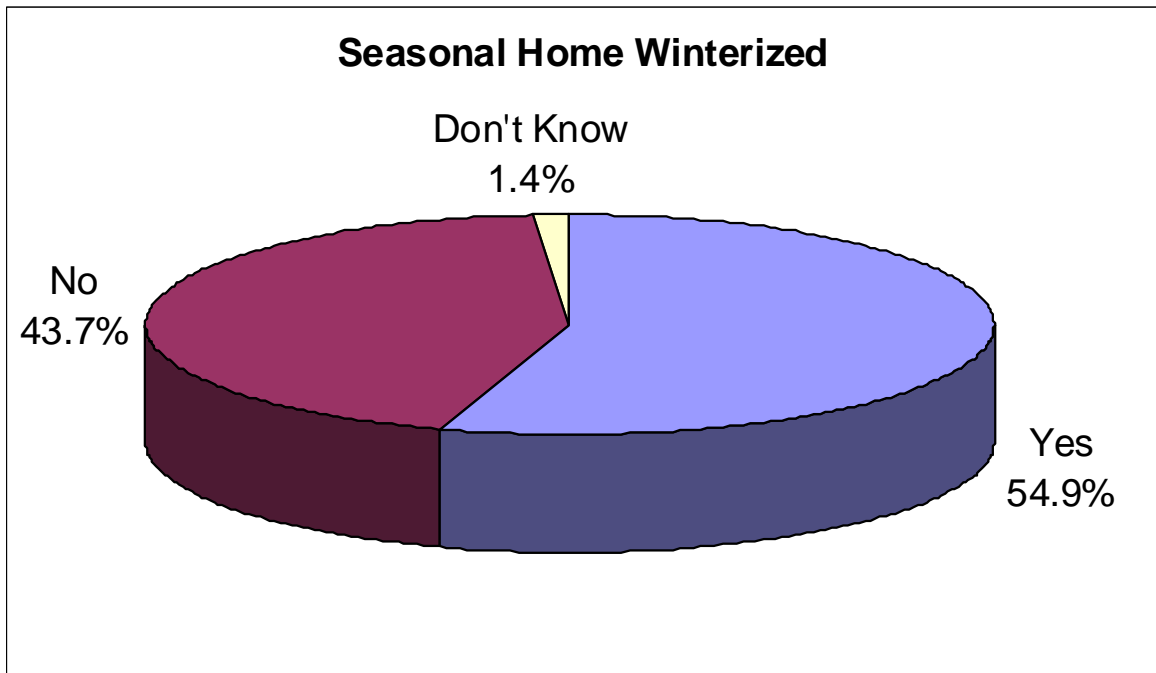
What type of Air Conditioning do you have and how old is it?



Q9

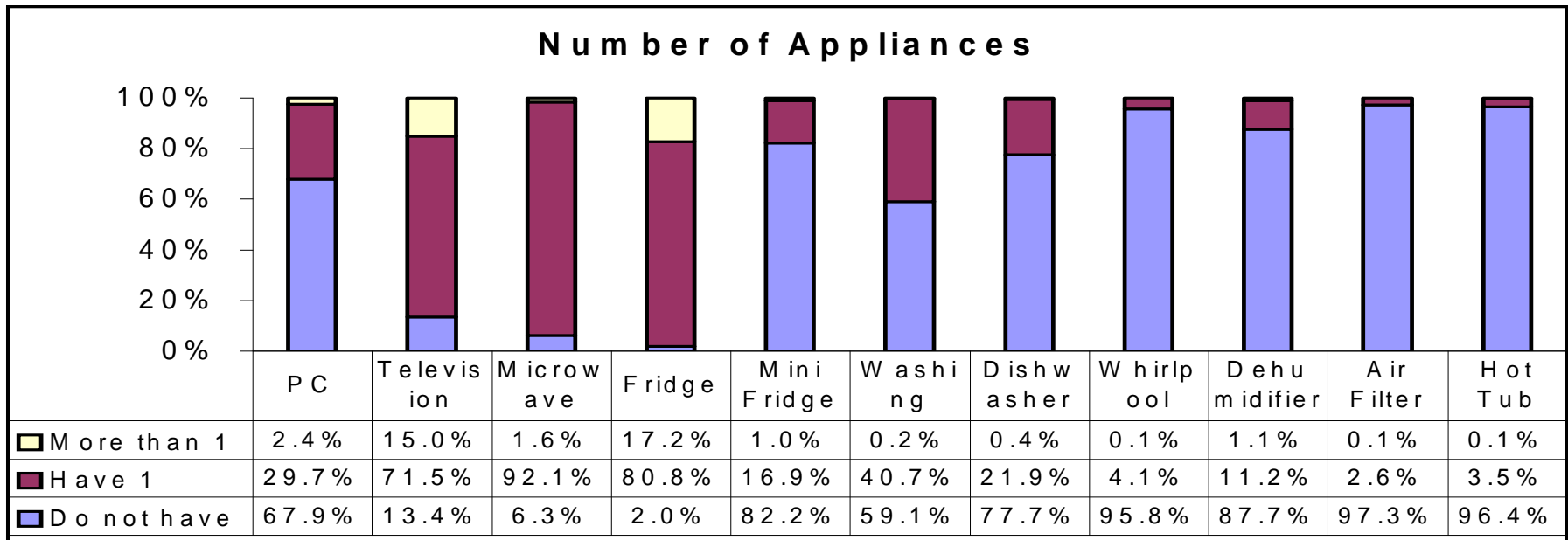
Is your seasonal home winterized?

Answer	Description	Count	Percentage
1	Yes	770	54.88%
2	No	613	43.69%
3	Don't Know	20	1.43%
	Total:	1403	



Q10(a)

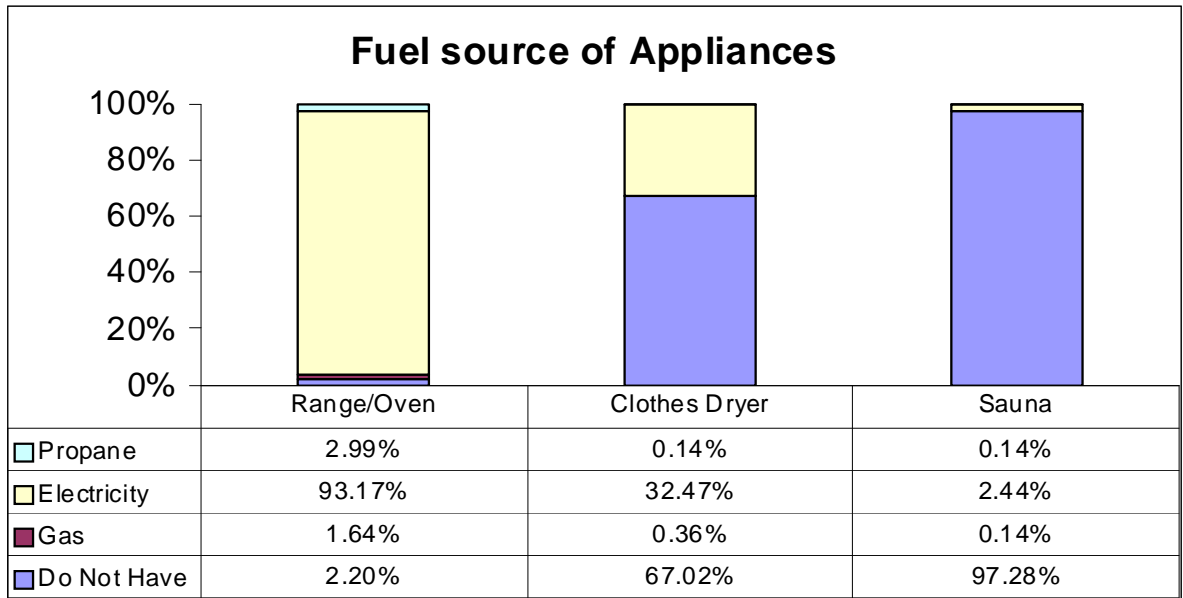
Number of Appliances?



Q10(b)

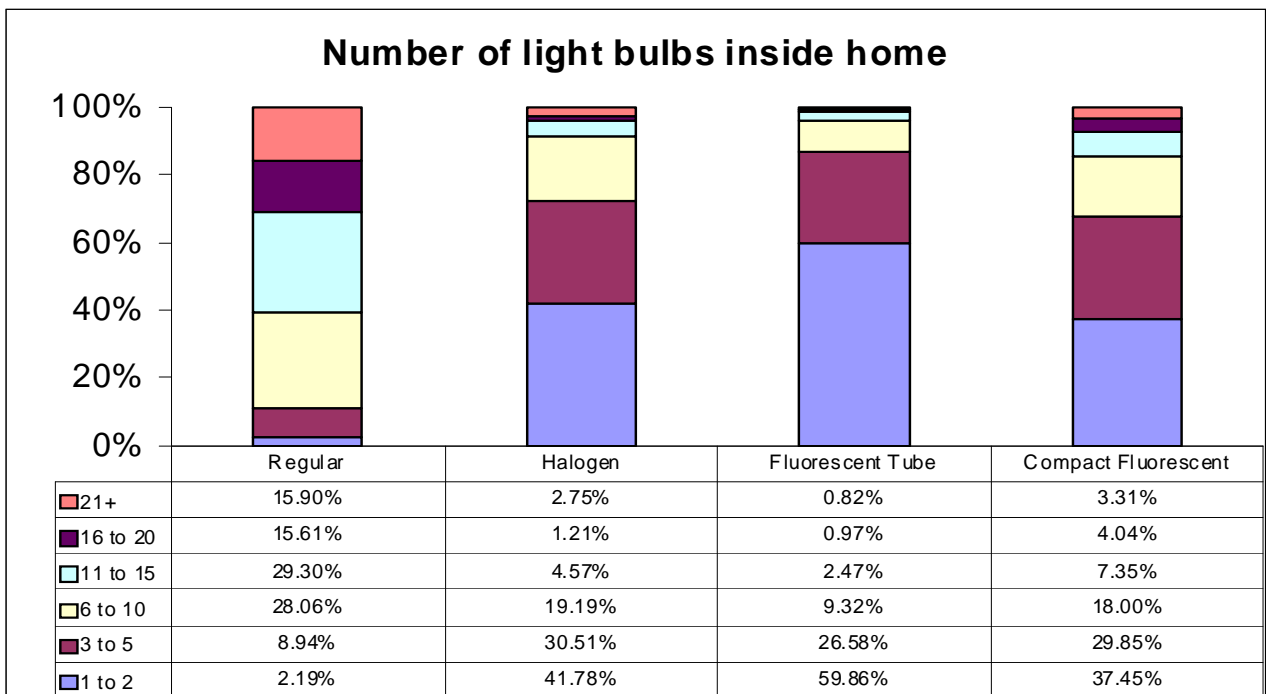
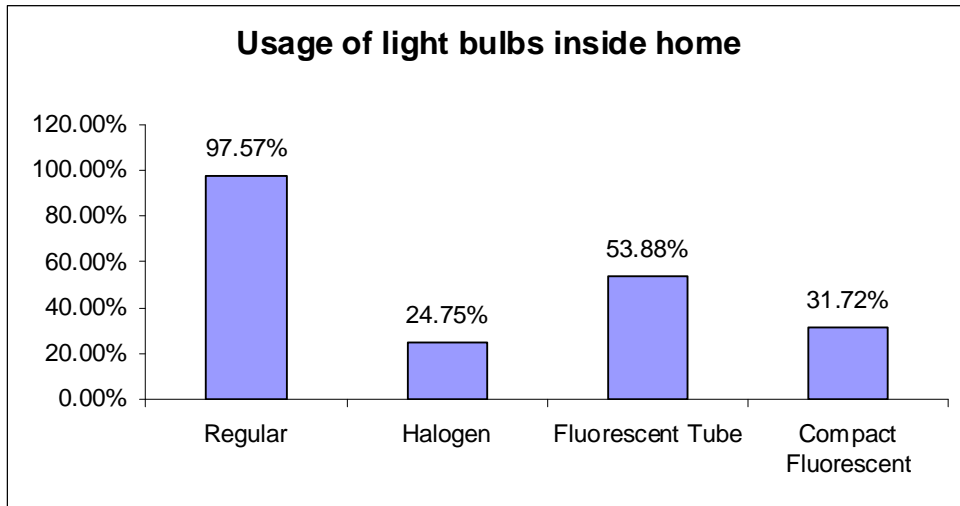
Fuel Source of Appliances?

	Range/Oven	Clothes Dryer	Sauna
Do Not Have	2.20%	67.02%	97.28%
Gas	1.64%	0.36%	0.14%
Electricity	93.17%	32.47%	2.44%
Propane	2.99%	0.14%	0.14%



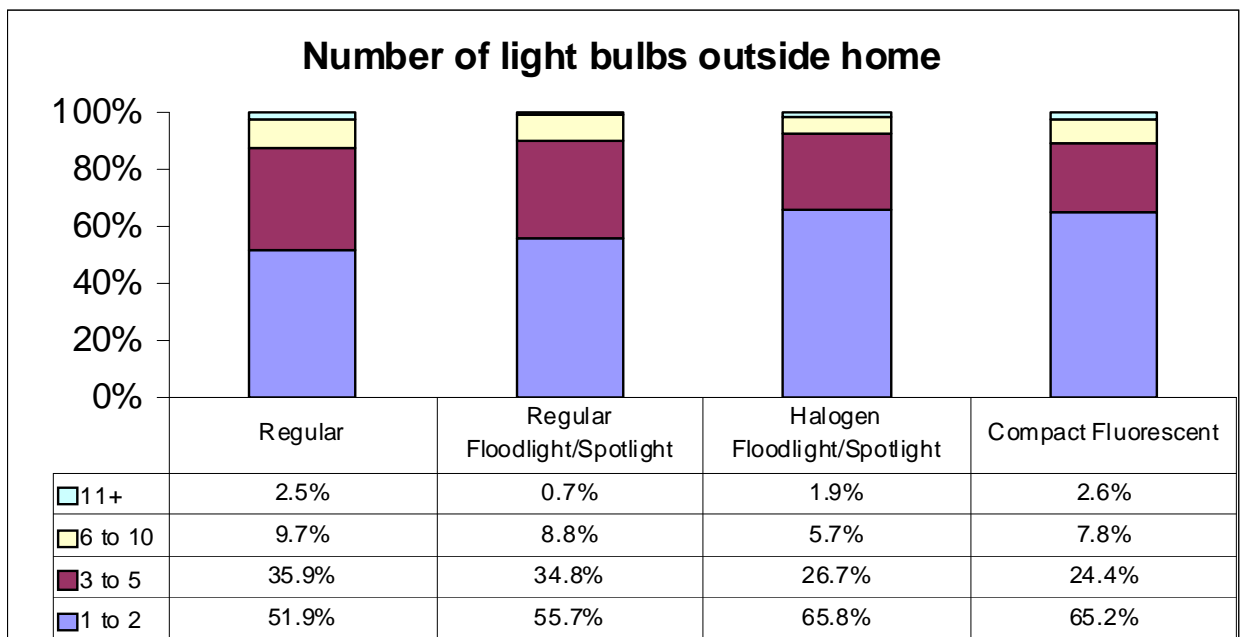
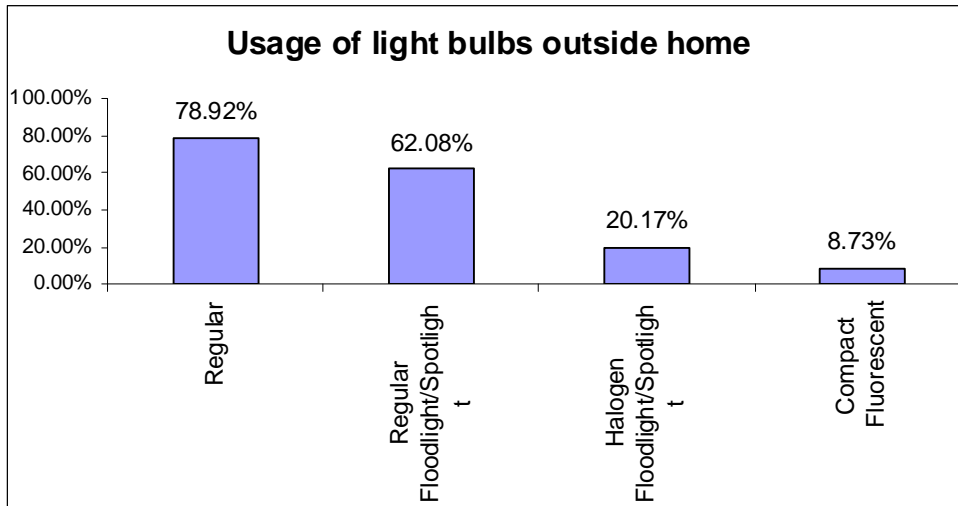
Q11

How many of the listed light bulbs do you have inside your seasonal home?



Q12

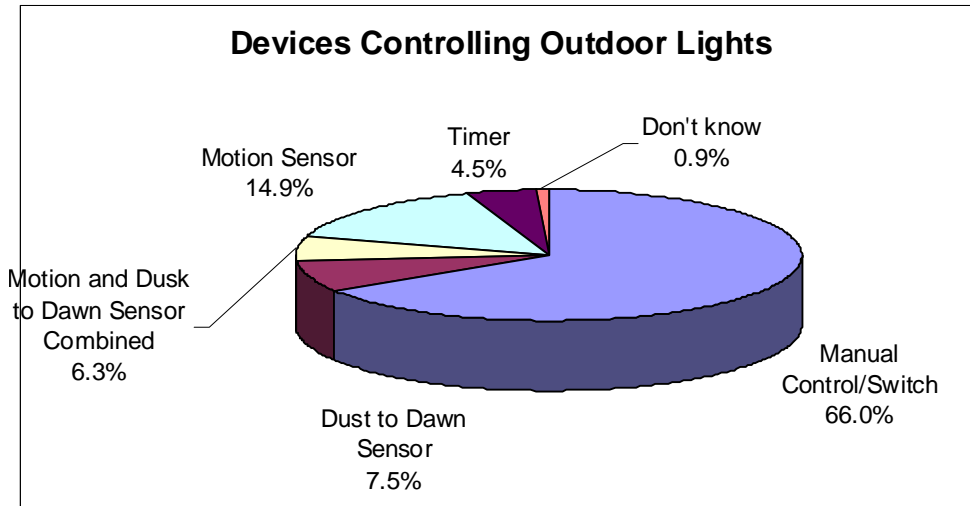
How many of the listed light bulbs do you have outside your seasonal home?



Q13

Which of the following devices control your outdoor lights?

Description	Count	Percentage
Manual Control/Switch	1224	66.0%
Dust to Dawn Sensor	139	7.5%
Motion and Dusk to Dawn Sensor Combined	116	6.3%
Motion Sensor	277	14.9%
Timer	83	4.5%
Don't know	16	0.9%
Total	1855	

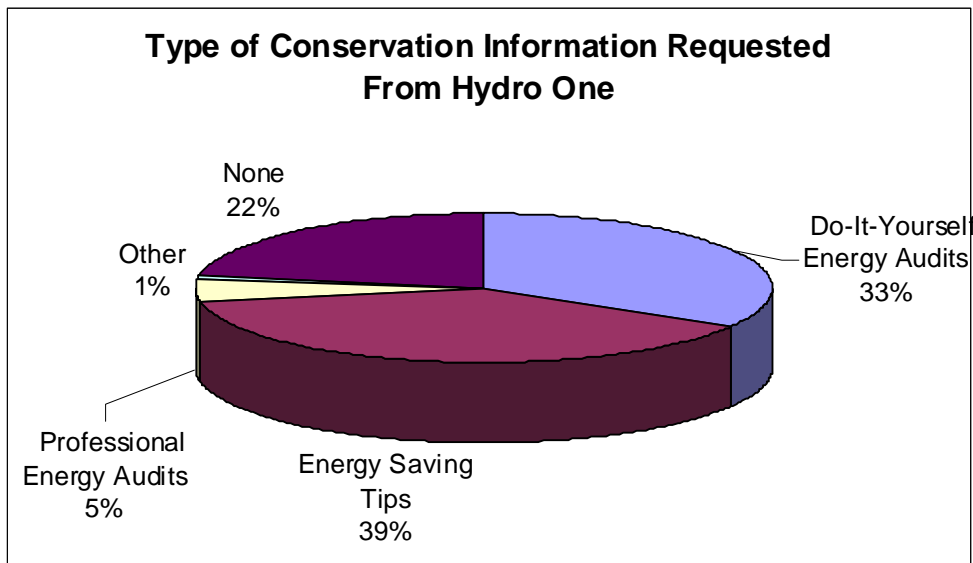


SECTION 2 – ENERGY CONSERVATION

Q14(a)

What type of conservation information would you like to receive from Hydro One?

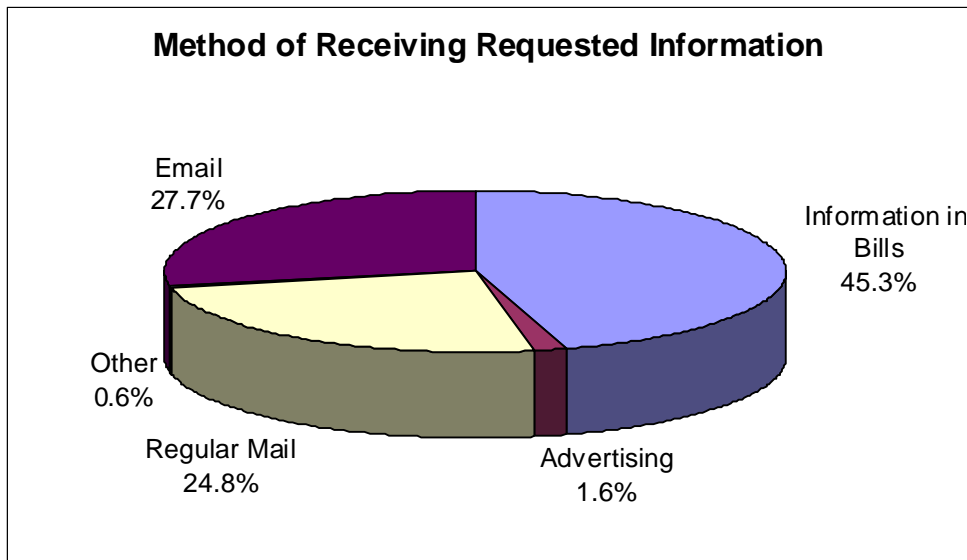
Description	Count	Percentage
Do-It-Yourself Energy Audits	644	33.49%
Energy Saving Tips	738	38.38%
Professional Energy Audits	97	5.04%
Other	12	0.62%
None	432	22.46%
Total	1923	



Q14(b)

How would you like to receive this information?

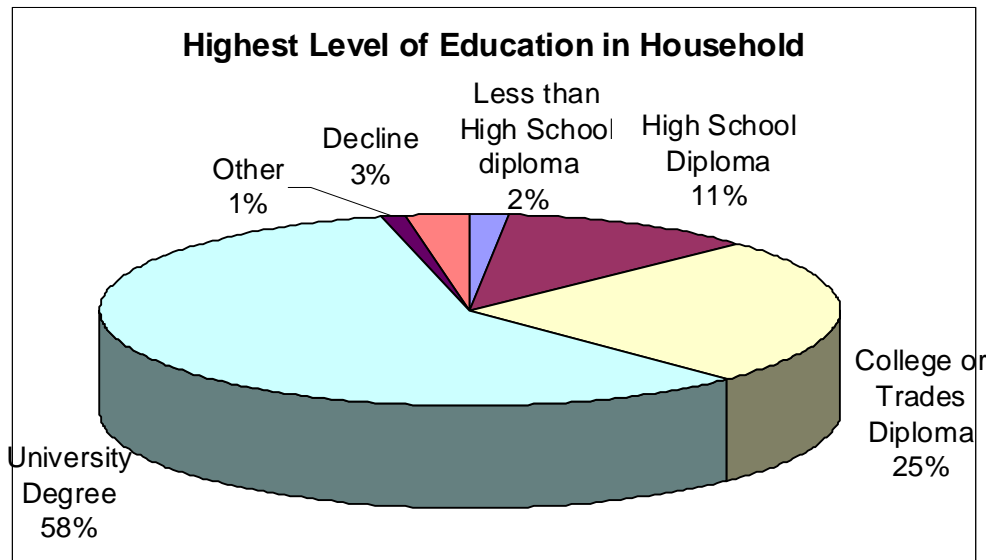
Description	Count	Percentage
Information in Bills	521	45.26%
Advertising	18	1.56%
Regular Mail	286	24.85%
Other	7	0.61%
Email	319	27.72%
Total	1151	



Q15

Please indicate the highest level of education for your household.

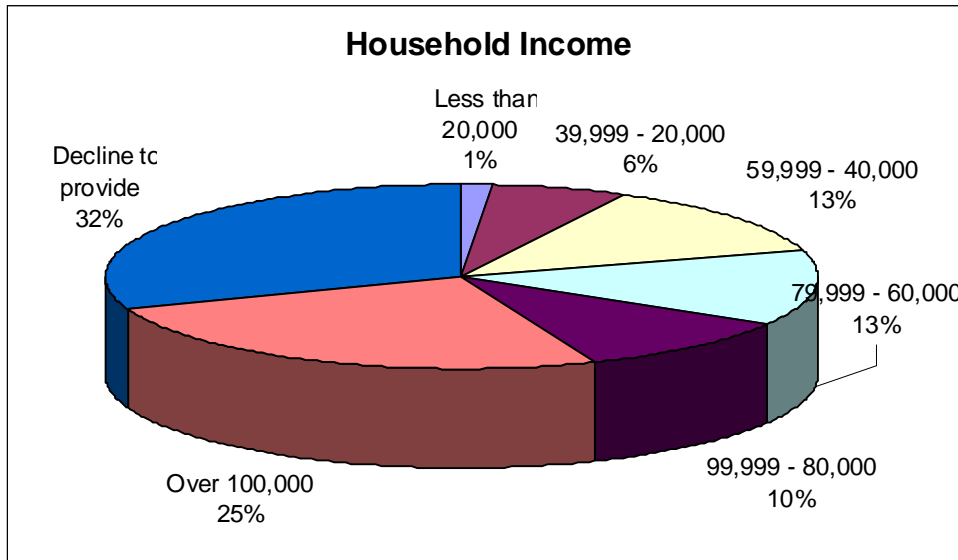
Answer	Description	Count	Percentage
1	Less than High School diploma	22	1.57%
2	High School Diploma	156	11.10%
3	College or Trades Diploma	351	24.98%
4	University Degree	820	58.36%
5	Other	17	1.21%
6	Decline	39	2.78%
	Total:	1405	



Q16

What is your TOTAL household income before tax for 2004?

Answer	Description	Count	Percentage
1	Less than 20,000	19	1.36%
2	20,000 - 39,999	85	6.06%
3	40,000 - 59,999	182	12.98%
4	60,000 - 79,999	184	13.12%
5	80,000 - 99,999	146	10.41%
6	Over 100,000	352	25.11%
7	Decline	434	30.96%
	Total:	1402	



Attachment 5:

2005 Farm Customer Appliance Survey Result

TABLE OF CONTENTS

Section 1-Your Farm	4
Q1	4
What Does Your Electricity Bill Reflect?	4
Q2	5
What Type of Farm Do You Have?	5
Q3	6
What percentage of your electricity bill reflects your farm building(s) electricity consumption?	6
Q4	7
What type of electric equipment do you use in your farm building(s)?	7
Q5	8
What type of light bulbs do you use inside AND outside your farm building(s)?	8
Q6	9
What type of ventilation do you use inside AND outside your farm building(s)?	9
Section 2 – Energy Conservation & Your Farm.....	11
Q7	11
What type of Internet connection do you have in your farm building(s)?	11
Q8	12
Would you be interested in an indoor device that tracks and displays your ongoing daily, average and total farm electricity consumption?	12
What type of conservation information would you like to receive from Hydro One?	13
Q9(b)	14
How would you like to receive this information?	14
Section 3 – Your Home	15
Q10	15
When was your home built?	15
Q11	16
What is the square footage of your home?	16
Q12	17
Is natural gas available on your street/road?	17
Q13	18
What type(s) of space heating do you have?	18
Q14	19
What type of water heater do you have?	19
Q15	20
What type of air conditioning do you have and how old is it?	20
Q16(a)	21
What is the setting of your furnace fan (on the thermostat)?	21
Q16(b)	22
Do you adjust your thermostat during the night or periods you are not home?	22
Q17	23
How many of the listed light bulbs do you have inside your home?	23
Q18	24
How many dimmer switches do you use?	24
Q19	25
How many of the listed light bulbs do you use outside your home?	25
Q20	26
Which of the following devices control your outdoor lights?	26
Q21	27
What type of holiday lights do you use to decorate your home?	27
Age of Appliances?	28
Section 4 – Energy Conservation & Your Home	30

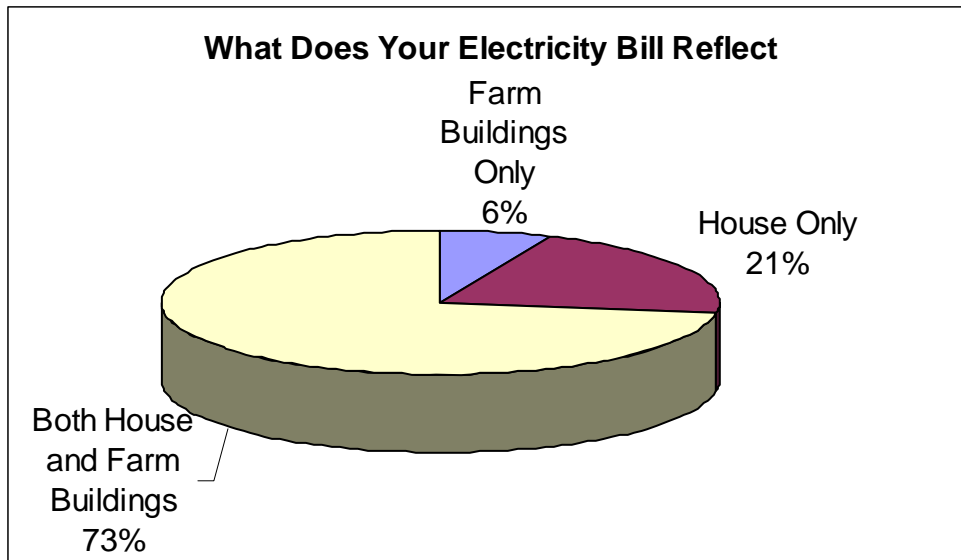
Q23.....	30
What renovations have you completed in the last ten years?	30
Q24(a).....	31
What conservation measures have you undertaken within the last 5 years?.....	31
Q24(b)	32
What conservation measures do you plan to undertake within the next 2 years?	32
Q25.....	33
What type of internet connection do you have at home?.....	33
Q26.....	34
Would you be interested in a program which pays participants to allow Hydro One to shut off their electric water heaters, central air conditioners and pool pumps for short intervals (during high use periods)?	34
Q27.....	35
Would you be interested in an in-home device which tracks and displays your on going electricity use?	35
Q28.....	36
Rate the following energy efficiency programs based on your likelihood to participate.....	36
Q29(a).....	37
What type of conservation information would you like to receive from Hydro One?.....	37
Q29(b)	38
How would you like to receive the conservation information?	38
Section 5 – Household Demographics	39
Q30.....	39
How many people currently live in your home?.....	39
Q31	40
Do you own or rent your home?	40
Q32.....	41
Highest level of education for your household	41
Q33.....	42
Total household income before tax for 2004	42

SECTION 1 – YOUR FARM

Q1

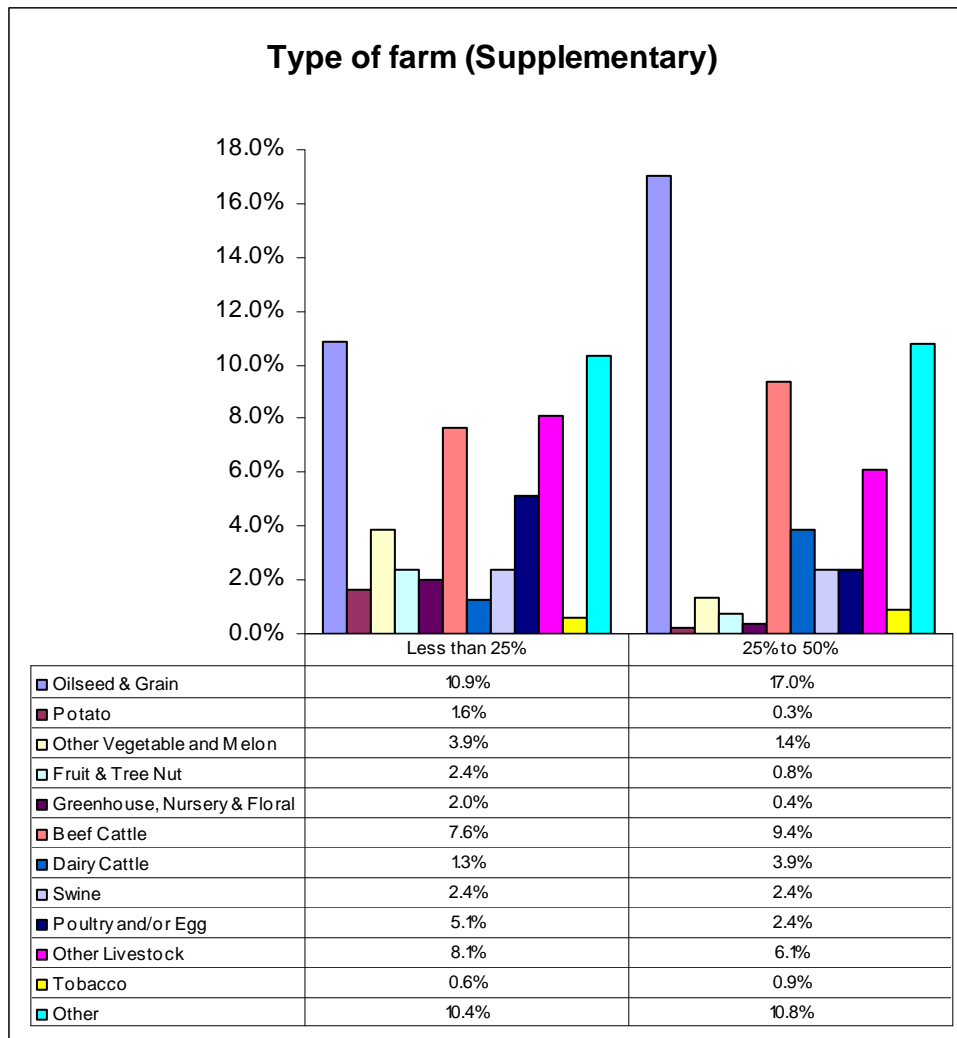
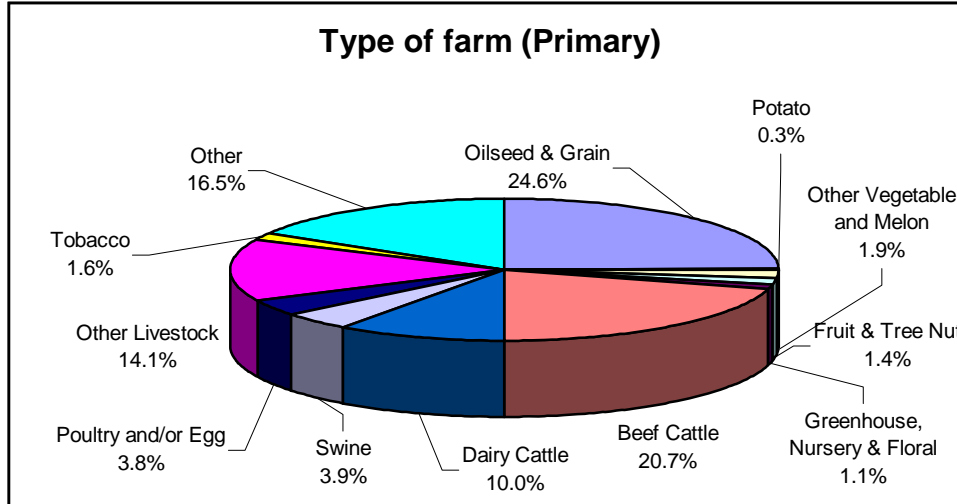
What Does Your Electricity Bill Reflect?

Answer	Description	Count	Percentage
1	Farm Buildings Only	52	6.4%
2	House Only	170	21.0%
3	Both House and Farm Buildings	589	72.6%
	Total:	811	



Q2

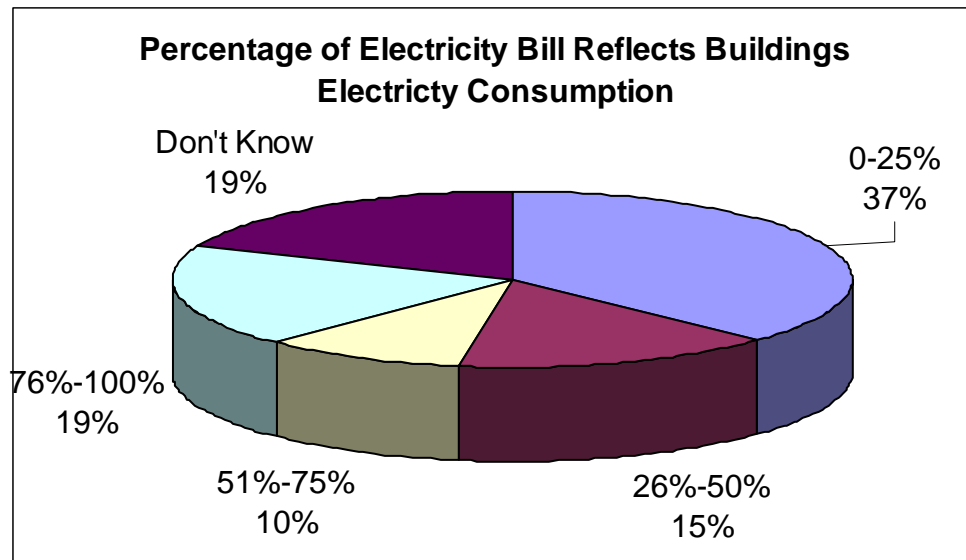
What Type of Farm Do You Have?



Q3

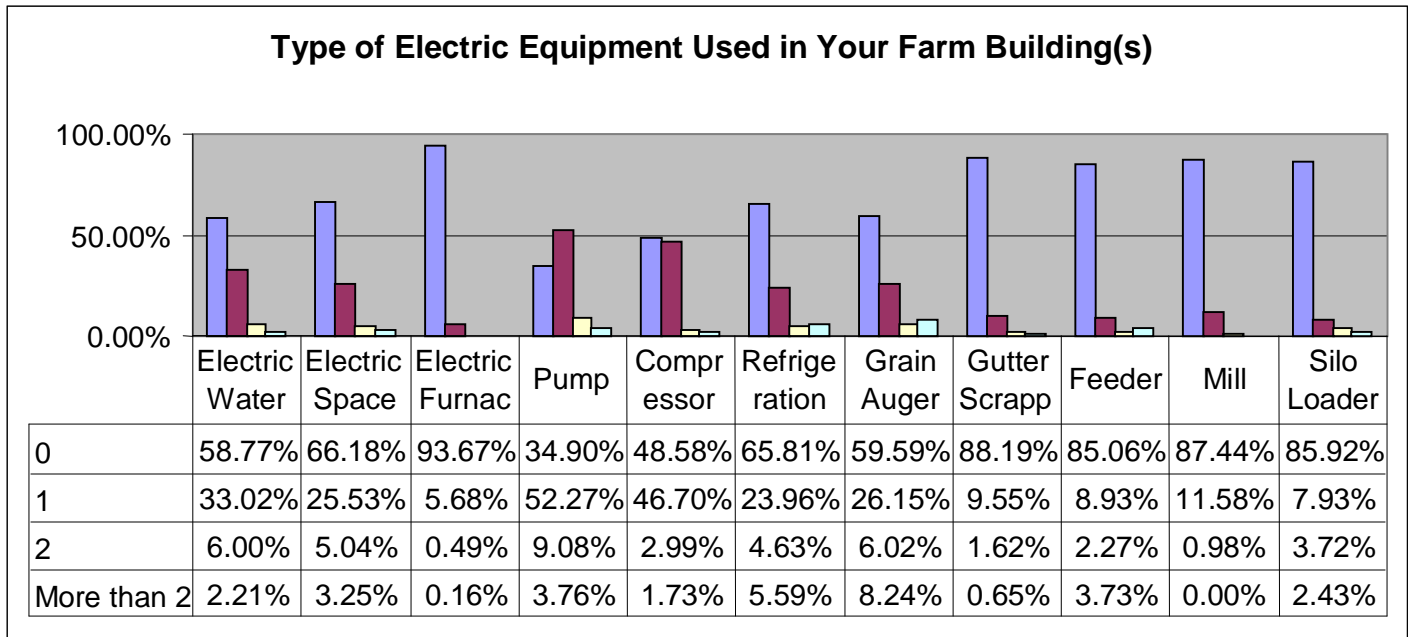
What percentage of your electricity bill reflects your farm building(s) electricity consumption?

Answer	Description	Count	Percentage
1	0-25%	242	37.1%
2	26%-50%	101	15.5%
3	51%-75%	62	9.5%
4	76%-100%	124	19.0%
5	Don't Know	128	18.9%
	Total:	657	



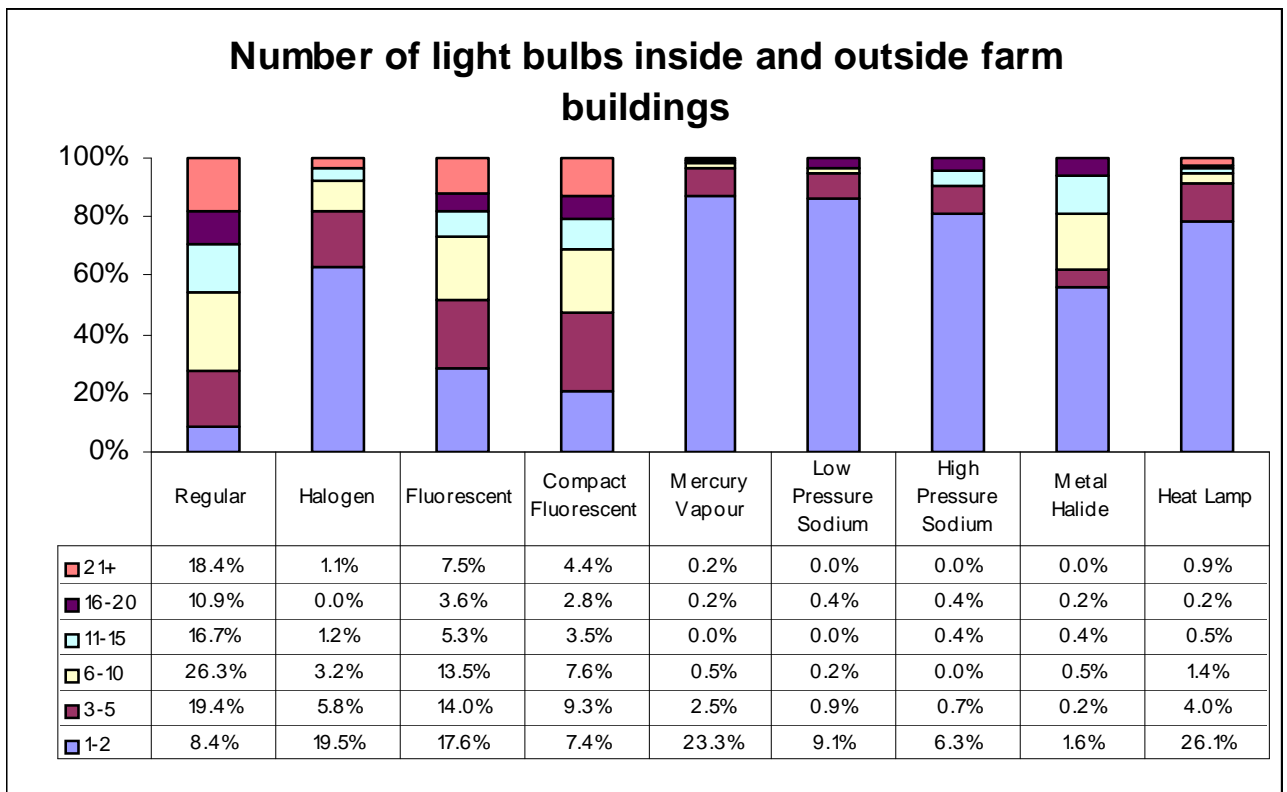
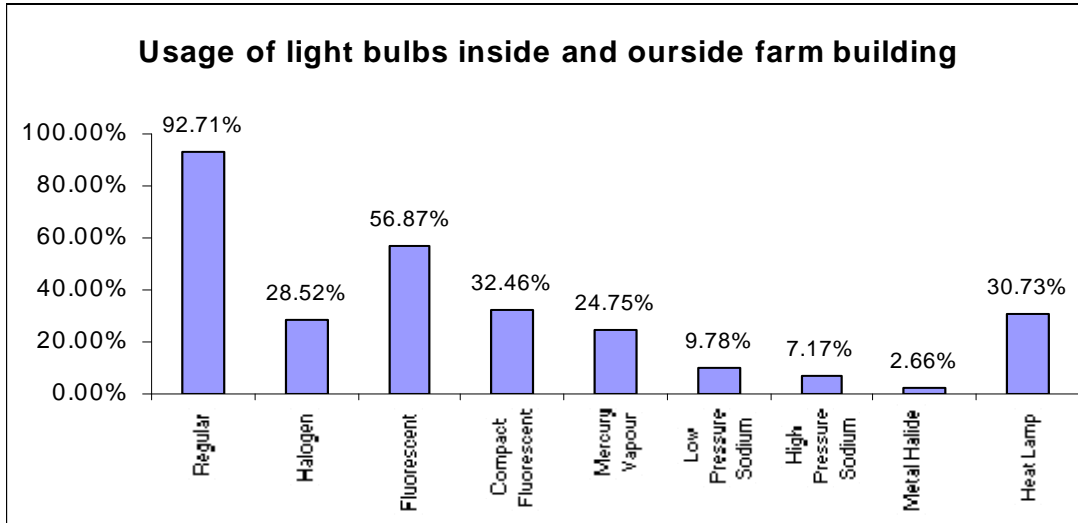
Q4

What type of electric equipment do you use in your farm building(s)?



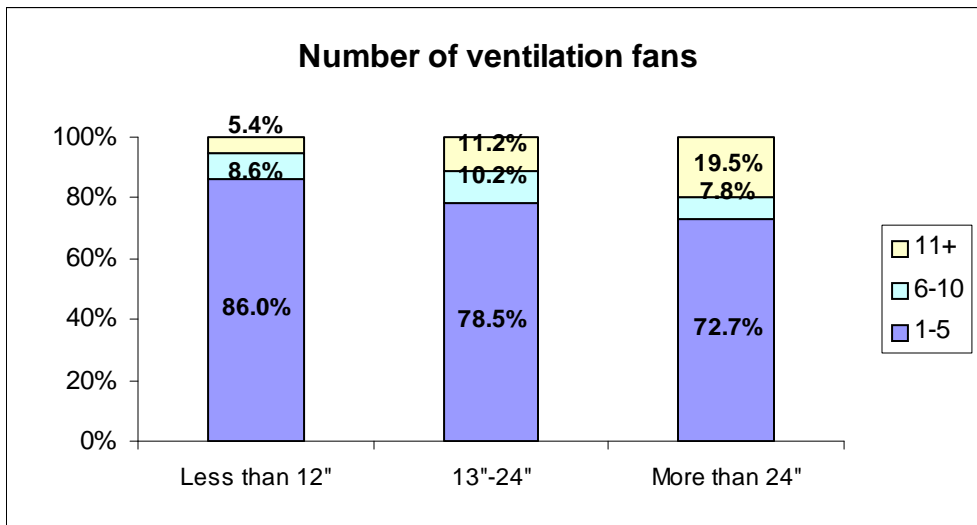
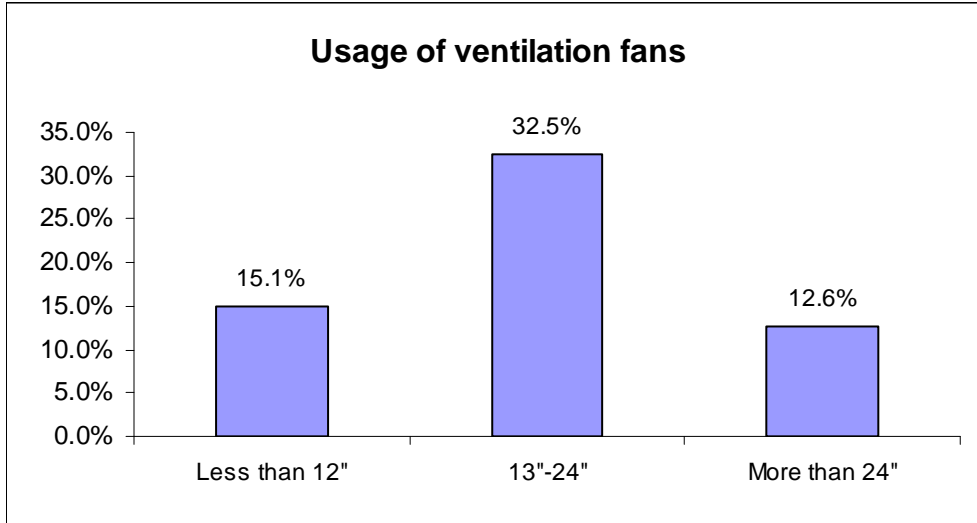
Q5

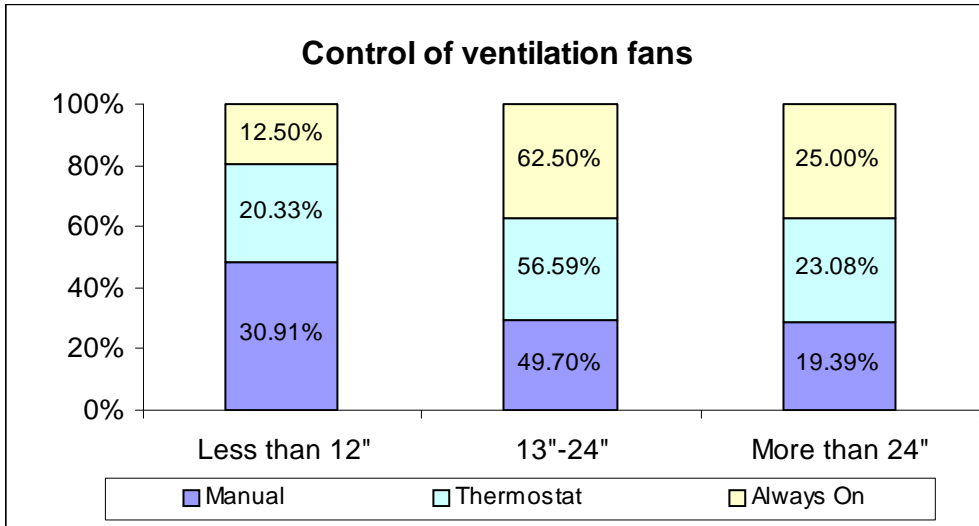
What type of light bulbs do you use inside AND outside your farm building(s)?



Q6

What type of ventilation do you use inside AND outside your farm building(s)?



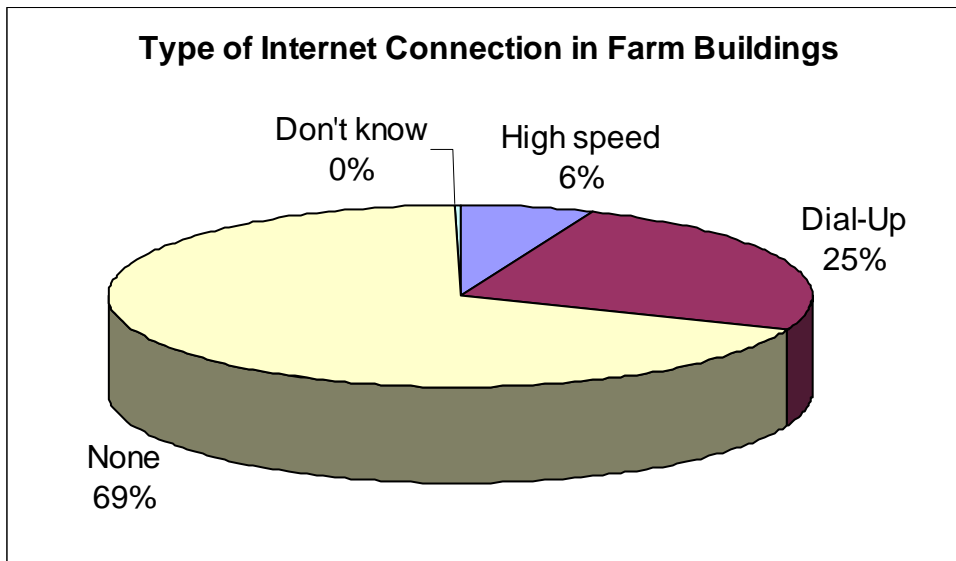


SECTION 2 – ENERGY CONSERVATION & YOUR FARM

Q7

What type of Internet connection do you have in your farm building(s)?

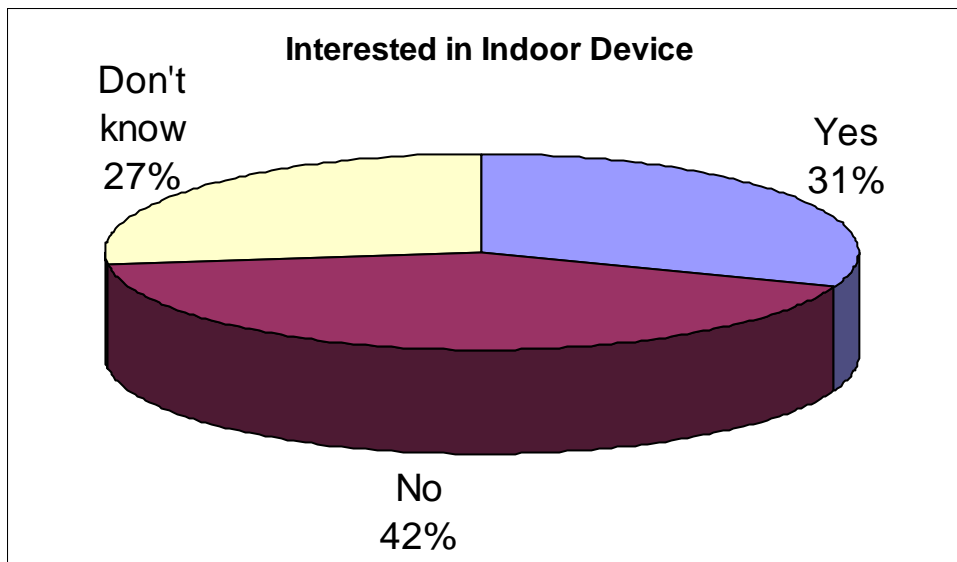
Answer	Description	Count	Percentage
1	High speed	40	6.1%
2	Dial-Up	162	24.9%
3	None	447	68.7%
4	Don't know	2	0.3%
	Total:	651	



Q8

Would you be interested in an indoor device that tracks and displays your ongoing daily, average and total farm electricity consumption?

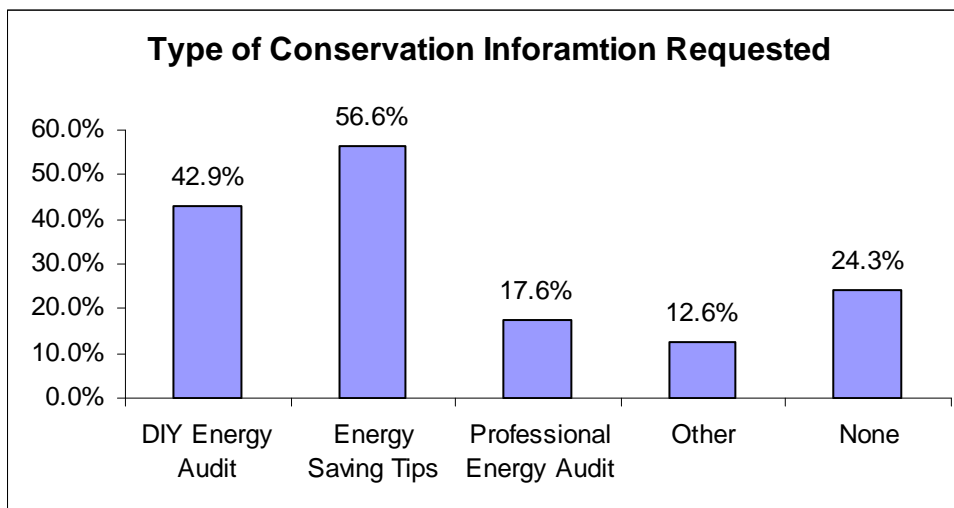
Answer	Description	Count	Percentage
1	Yes	201	30.9%
2	No	275	42.2%
3	Don't know	175	26.9%
	Total:	651	



Q9(a)

What type of conservation information would you like to receive from Hydro One?

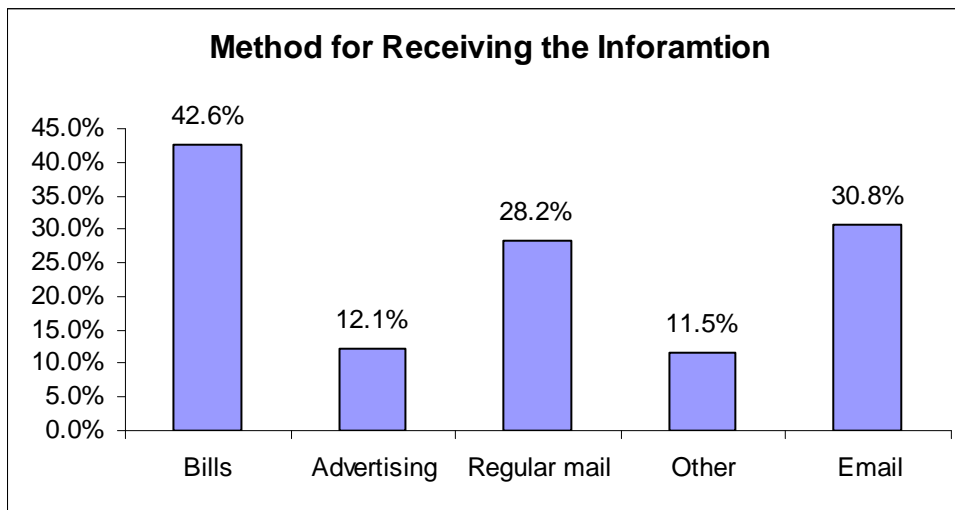
Description	Count	Percentage
DIY Energy Audit	350	42.9%
Energy Saving Tips	462	56.6%
Professional Energy Audit	144	17.6%
Other	103	12.6%
None	198	24.3%



Q9(b)

How would you like to receive this information?

Description	Count	Percentage
Bills	348	42.6%
Advertising	99	12.1%
Regular mail	230	28.2%
Other	94	11.5%
Email	251	30.8%
Total:	1022	

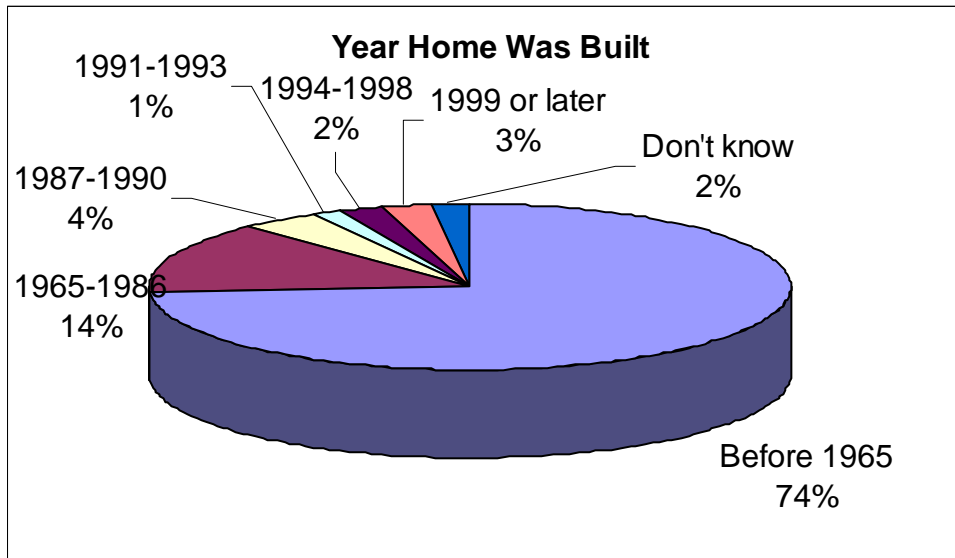


SECTION 3 – YOUR HOME

Q10

When was your home built?

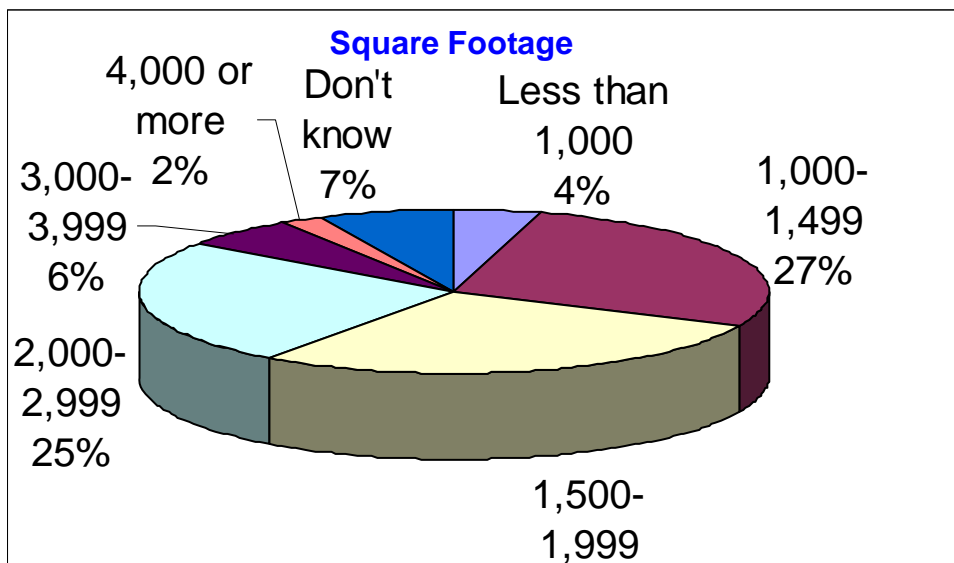
Answer	Description	Count	Percentage
1	Before 1965	565	73.9%
2	1965-1986	107	14.0%
3	1987-1990	32	4.2%
4	1991-1993	9	1.2%
5	1994-1998	17	2.2%
6	1999 or later	21	2.8%
7	Don't know	14	1.8%
	Total:	765	



Q11

What is the square footage of your home?

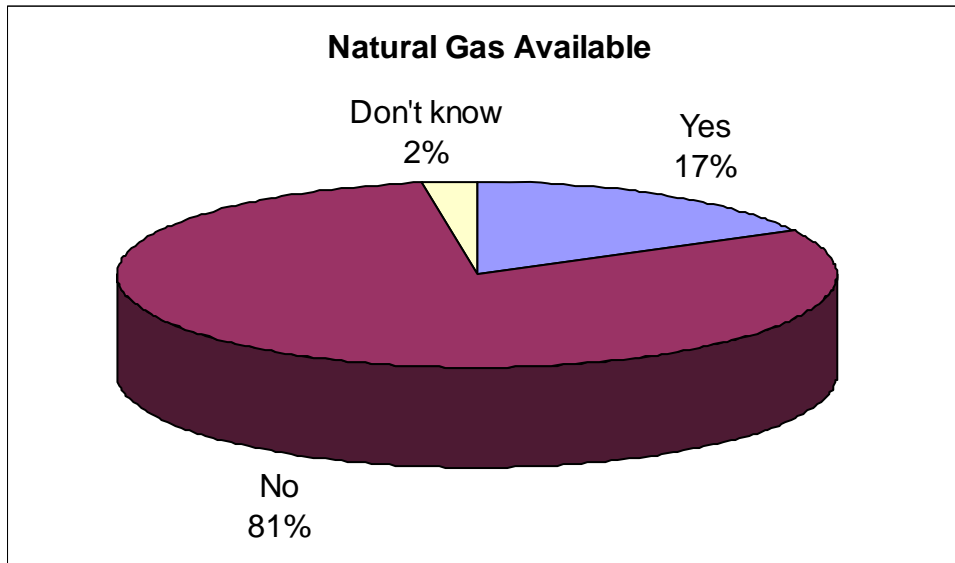
Answer	Description	Count	Percentage
1	Less than 1,000	34	4.5%
2	1,000-1,499	209	27.4%
3	1,500-1,999	215	28.2%
4	2,000-2,999	190	24.9%
5	3,000-3,999	44	5.8%
6	4,000 or more	17	2.2%
7	Don't know	54	7.1%
Total:		763	



Q12

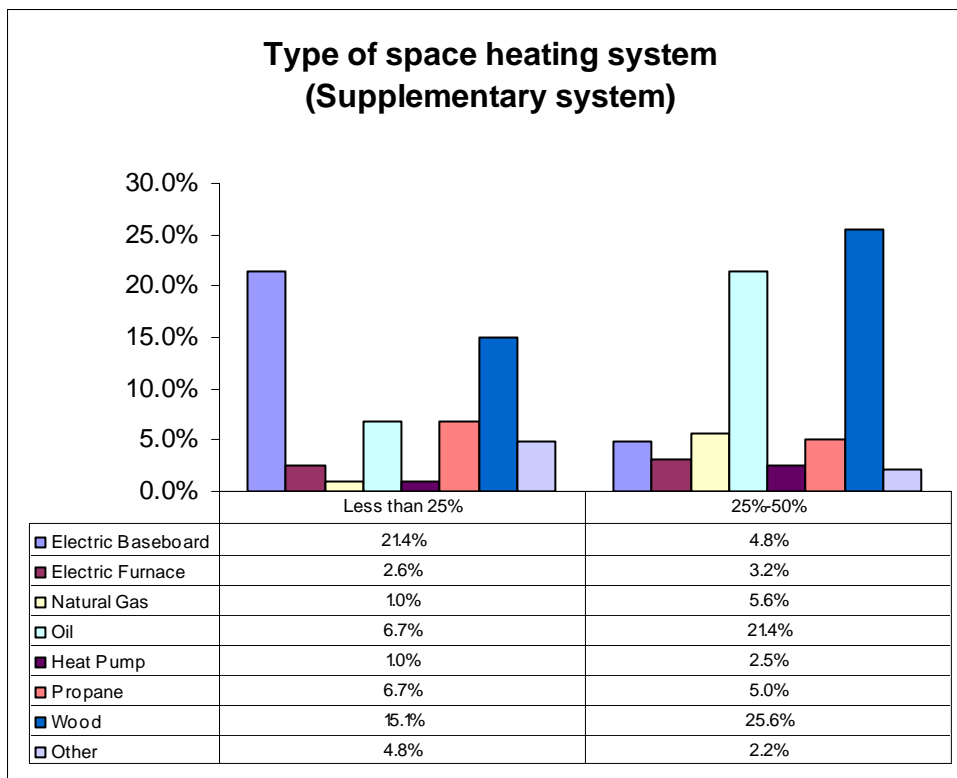
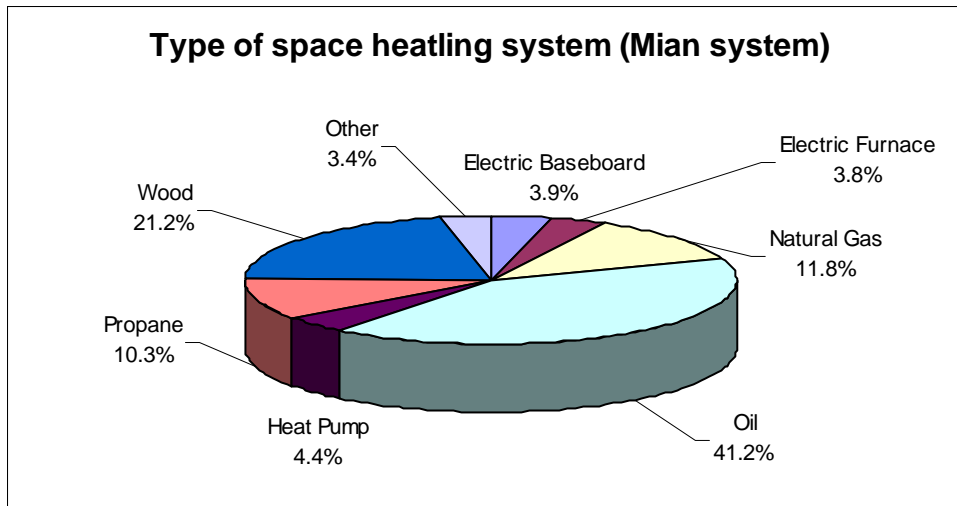
Is natural gas available on your street/road?

Answer	Description	Count	Percentage
1	Yes	131	17.1%
2	No	615	80.4%
3	Don't know	19	2.5%
	Total:	765	



Q13

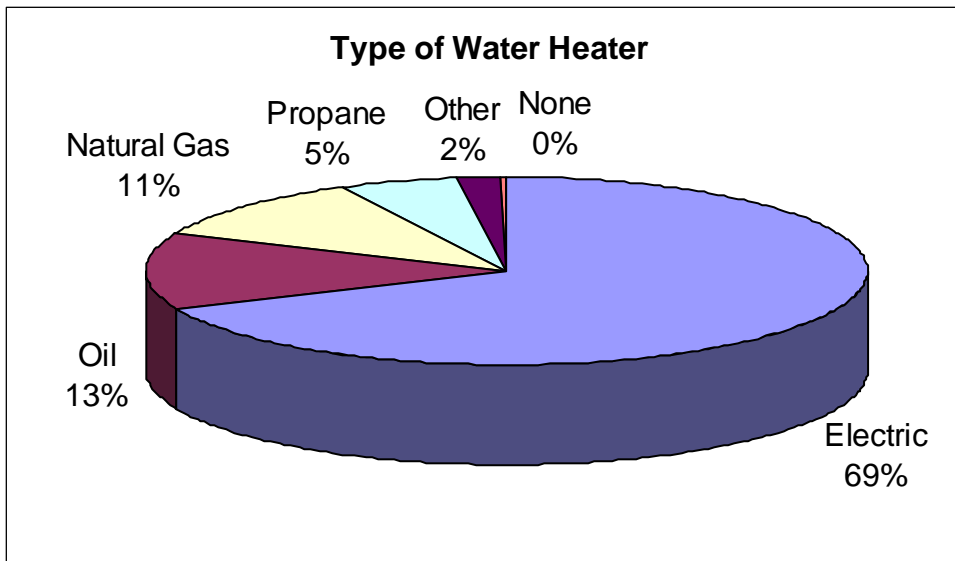
What type(s) of space heating do you have?



Q14

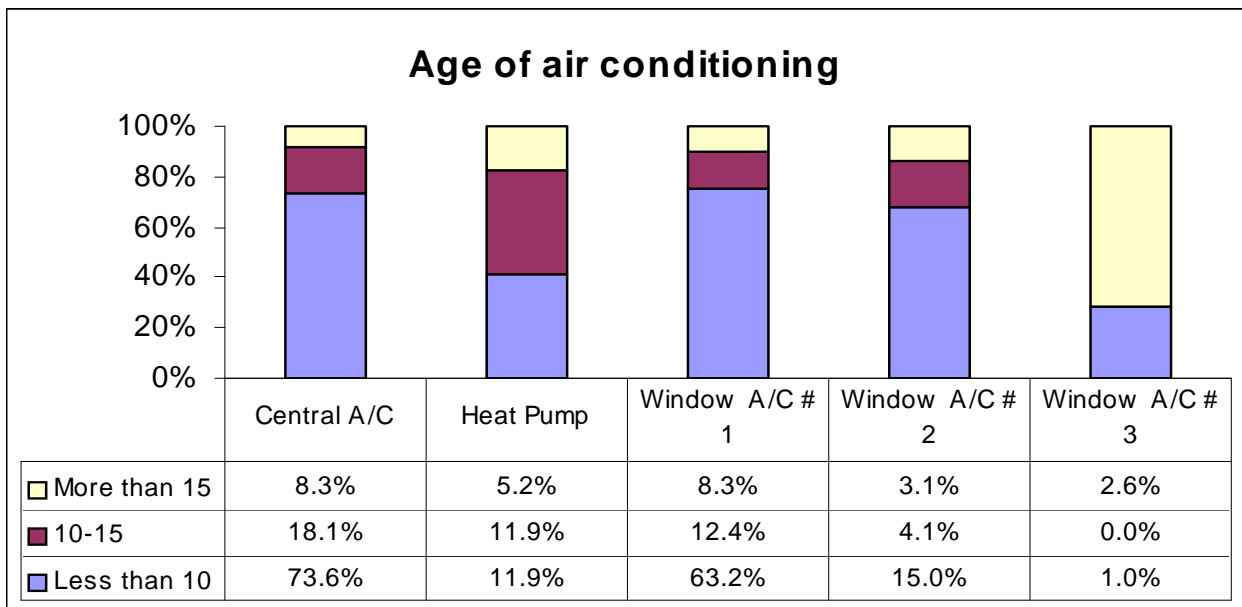
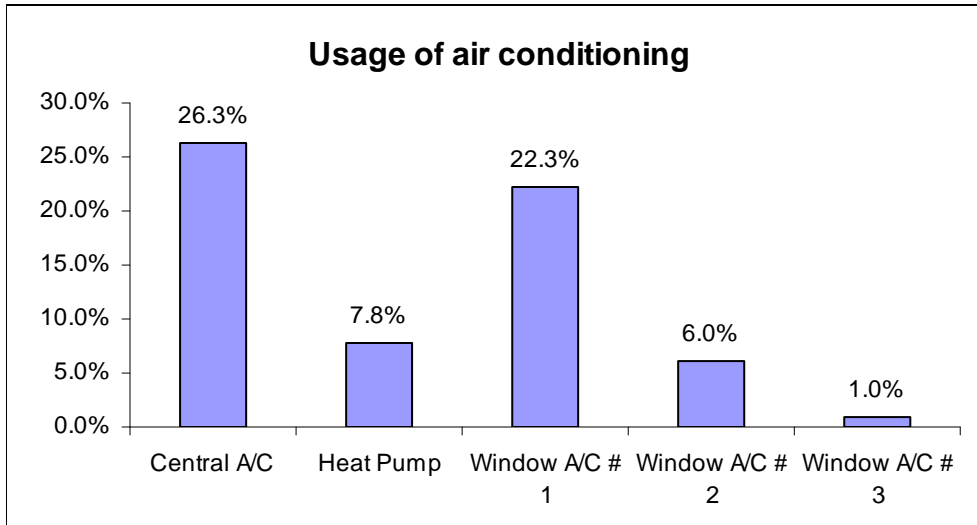
What type of water heater do you have?

Answer	Description	Count	Percentage
1	Electric	524	68.4%
2	Oil	100	13.1%
3	Natural Gas	84	11.0%
4	Propane	41	5.4%
5	Other	14	1.8%
6	None	3	0.4%
	Total:	766	



Q15

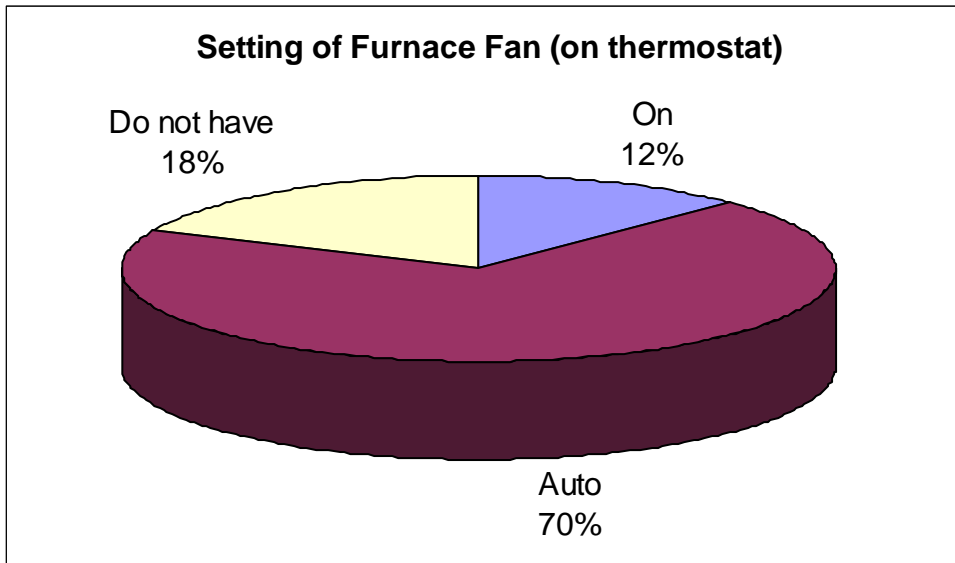
What type of air conditioning do you have and how old is it?



Q16(a)

What is the setting of your furnace fan (on the thermostat)?

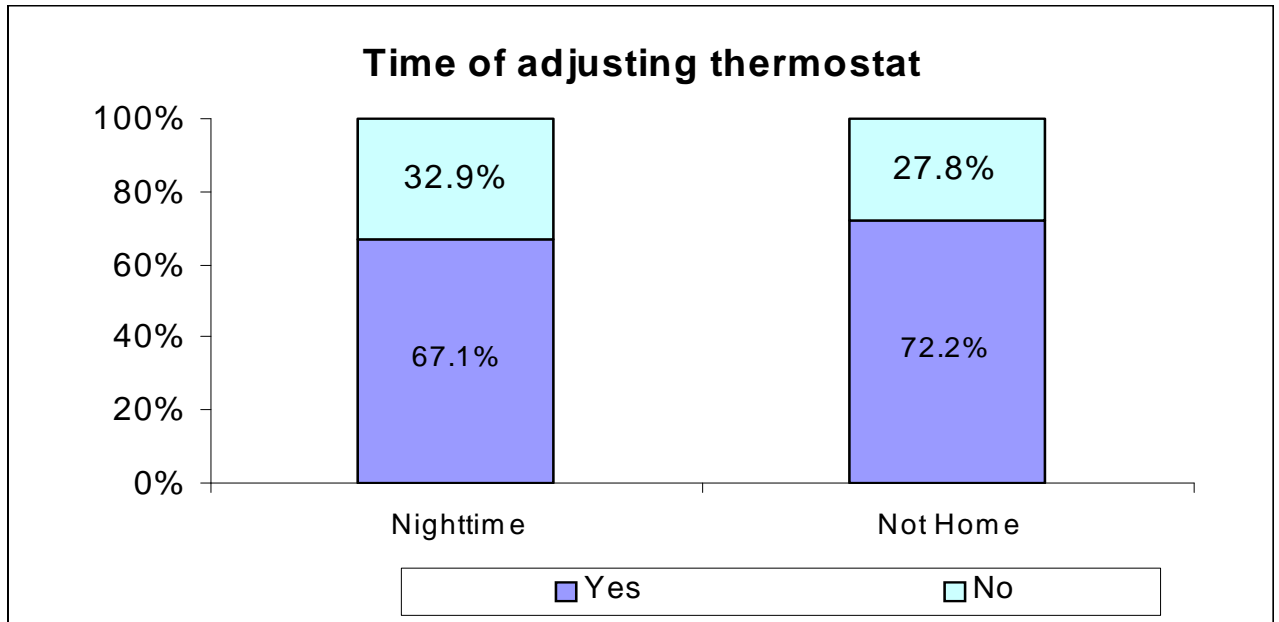
Description	Count	Percentage
On	94	12.4%
Auto	524	69.1%
Do not have	140	18.5%
Total:	758	



Q16(b)

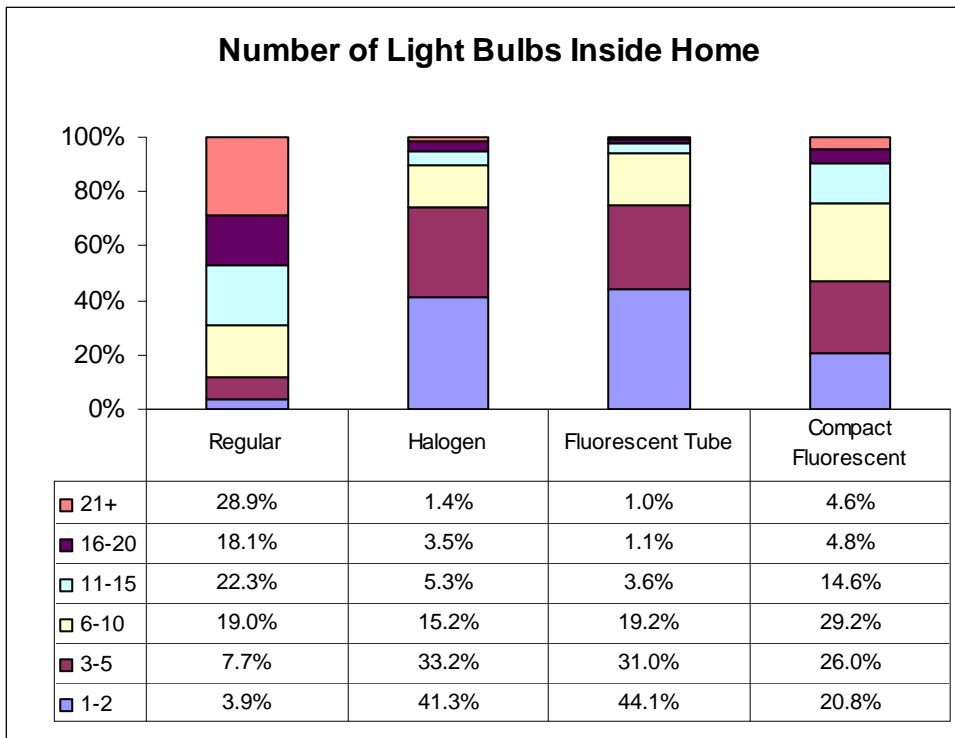
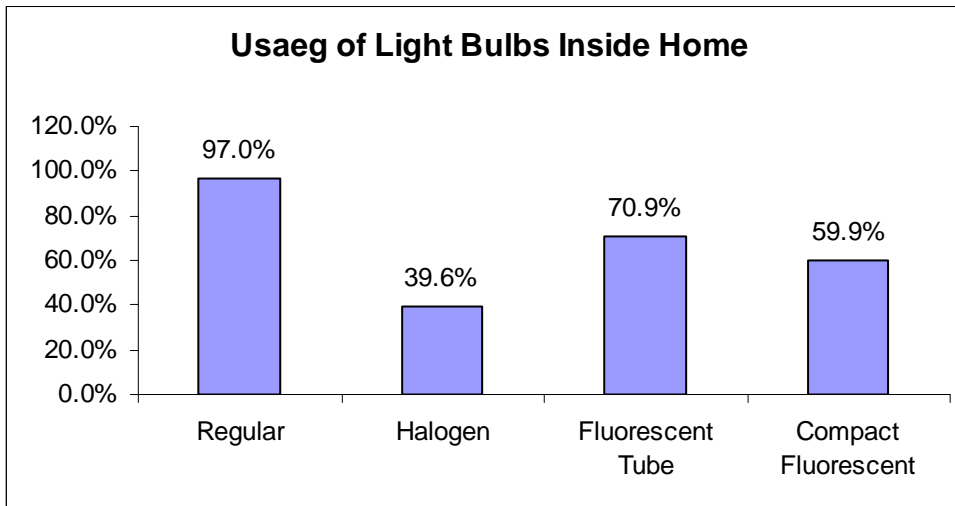
Do you adjust your thermostat during the night or periods you are not home?

	Yes	No
Nighttime	67.11%	32.89%
Not Home	72.24%	27.76%



Q17

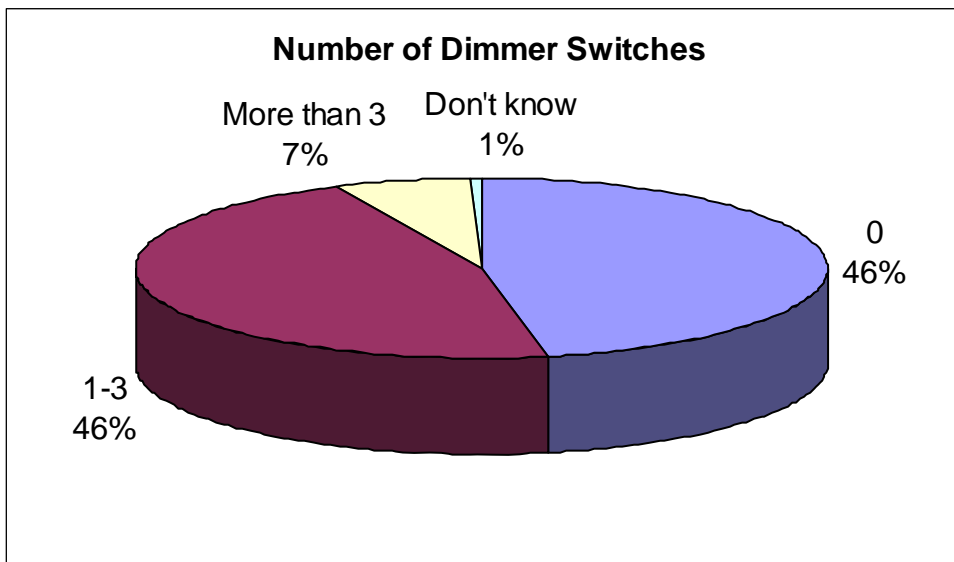
How many of the listed light bulbs do you have inside your home?



Q18

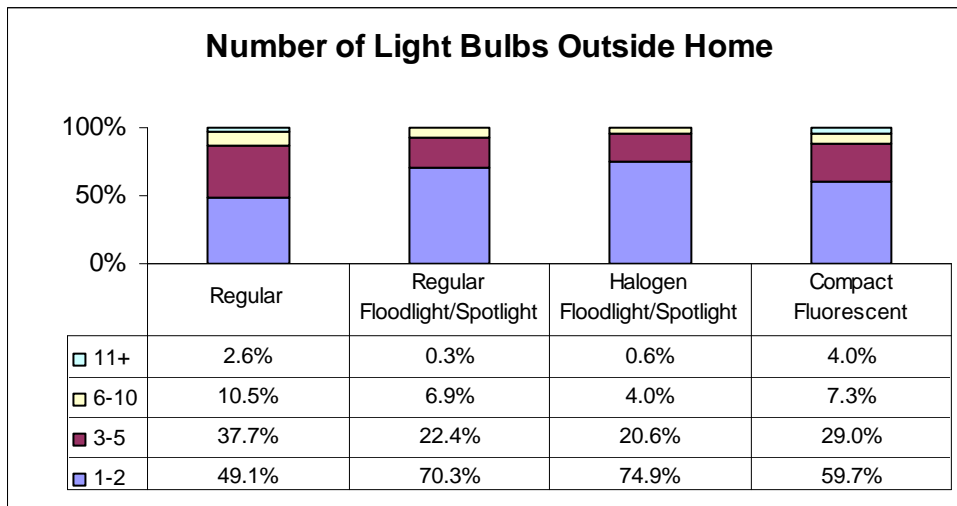
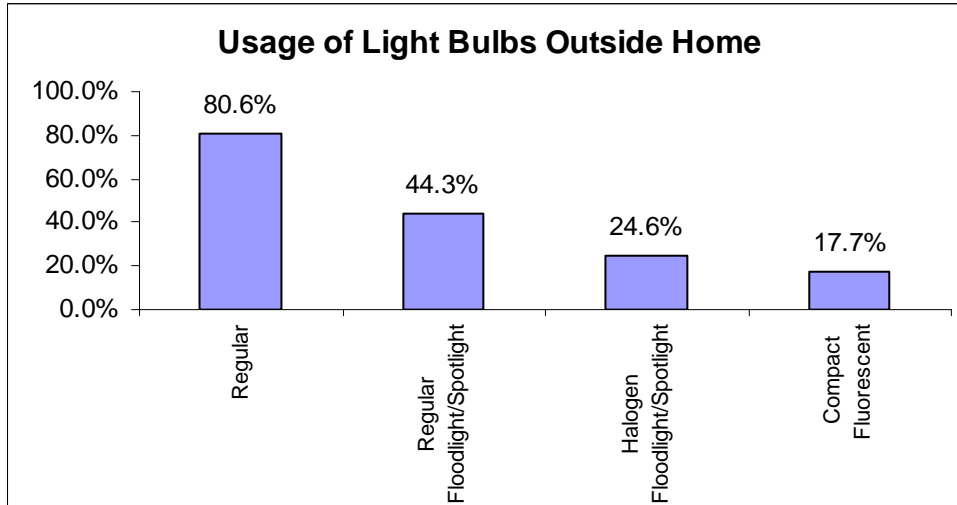
How many dimmer switches do you use?

Answer	Description	Count	Percentage
1	0	360	47.00%
2	1-3	352	45.95%
3	More than 3	50	6.53%
4	Don't know	4	0.52%
	Total:	766	



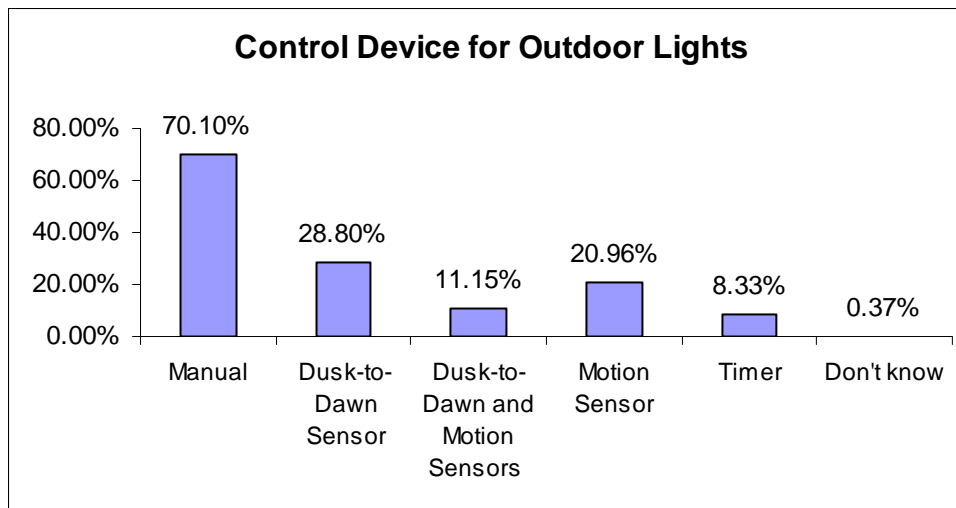
Q19

How many of the listed light bulbs do you use outside your home?



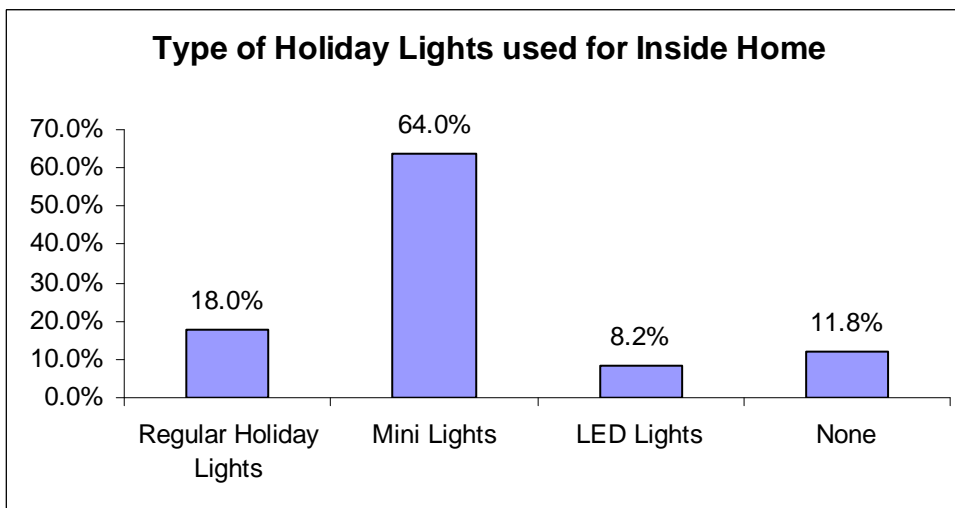
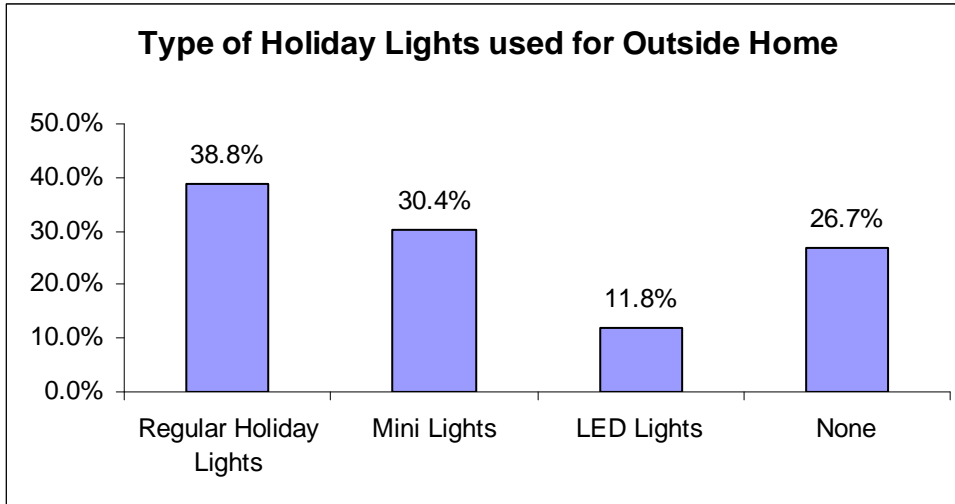
Q20

Which of the following devices control your outdoor lights?



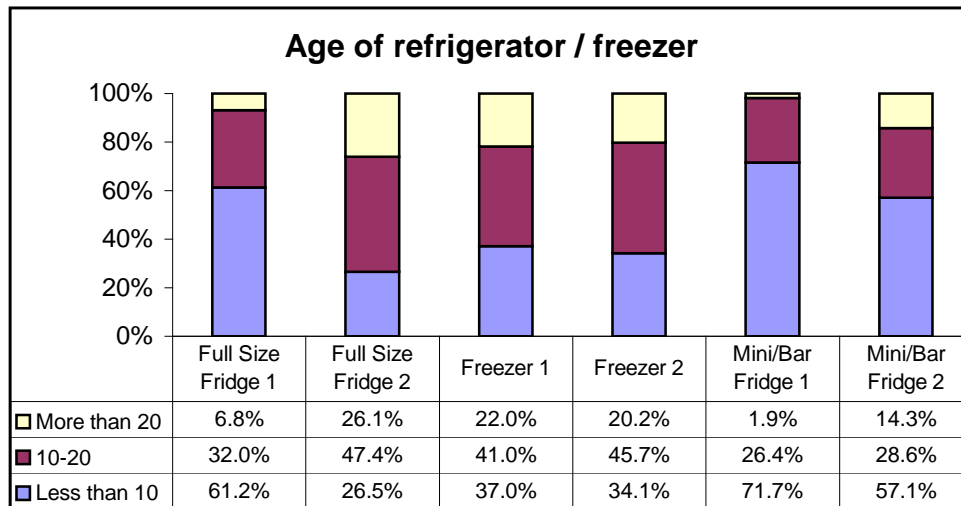
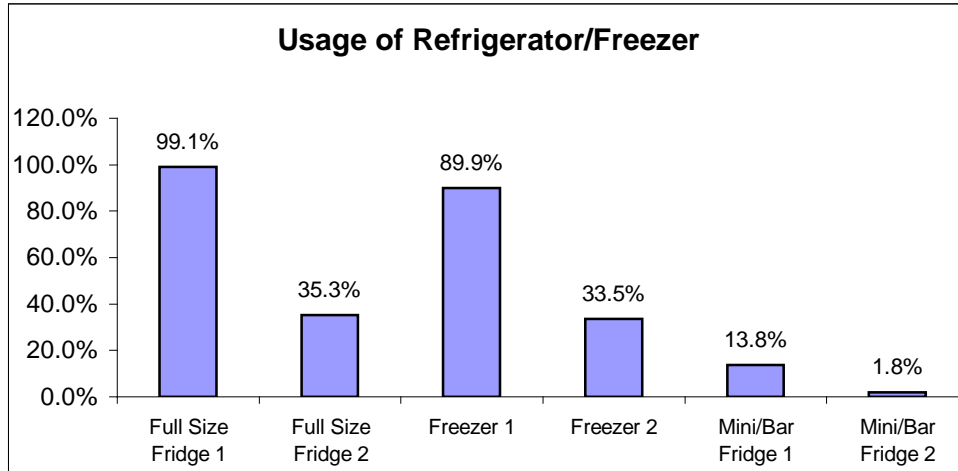
Q21

What type of holiday lights do you use to decorate your home?

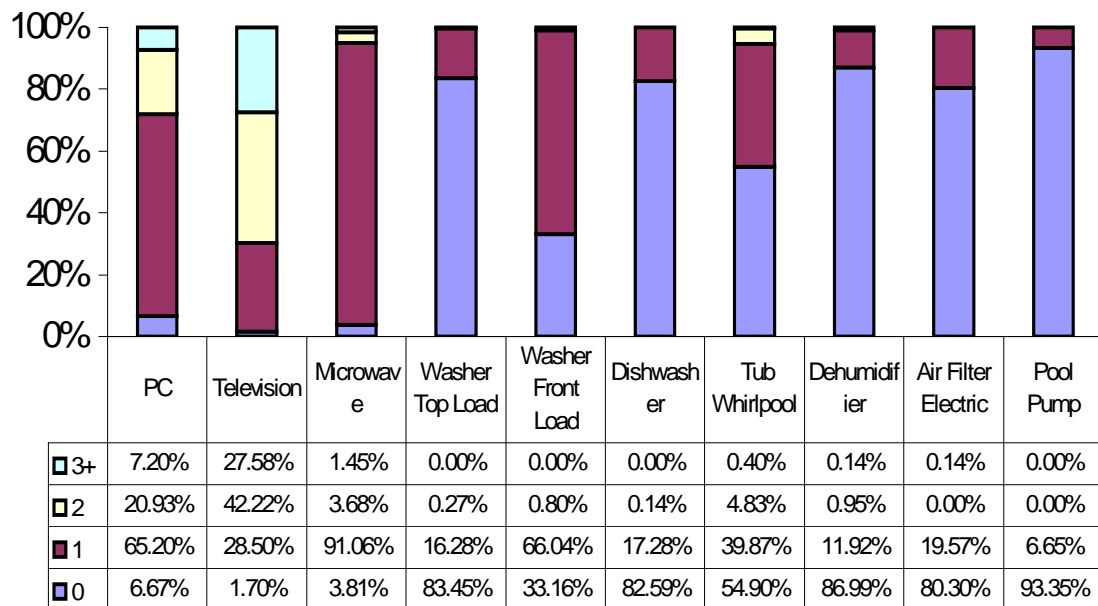


Q22

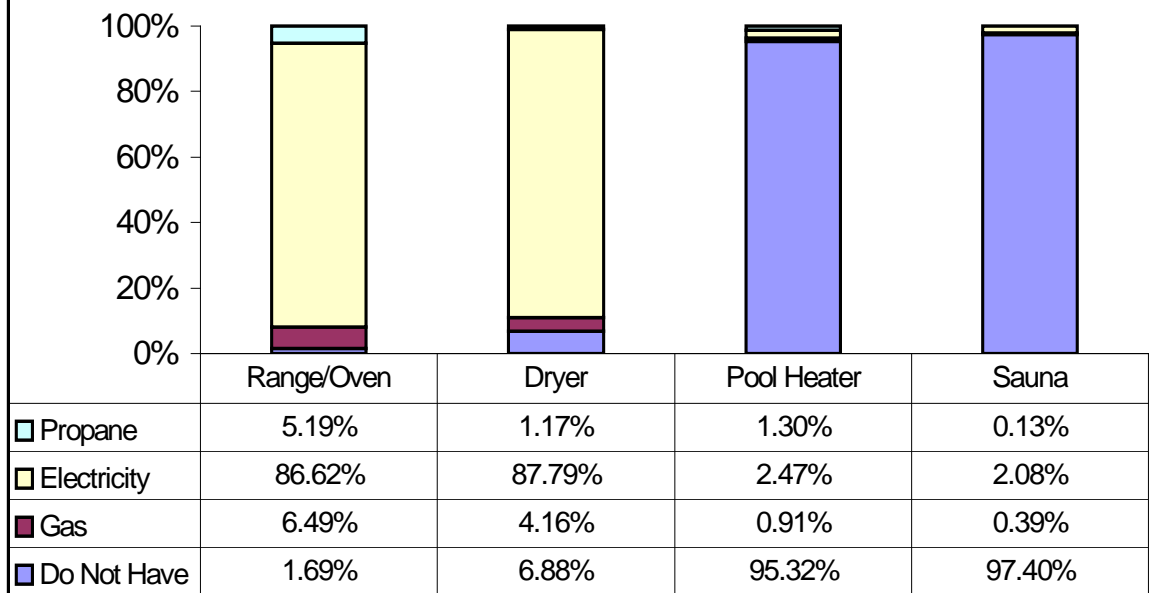
Age of Appliances?



Number of Appliances



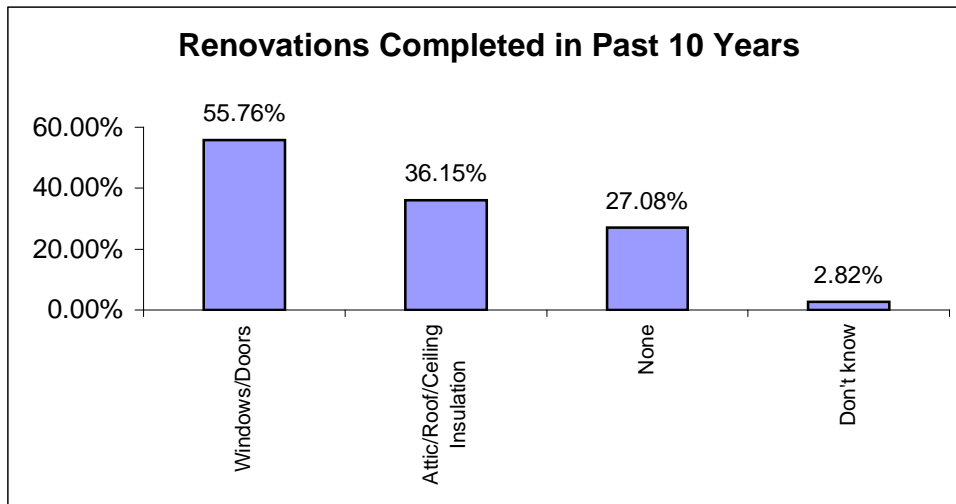
Fuel source of appliance



SECTION 4 – ENERGY CONSERVATION & YOUR HOME

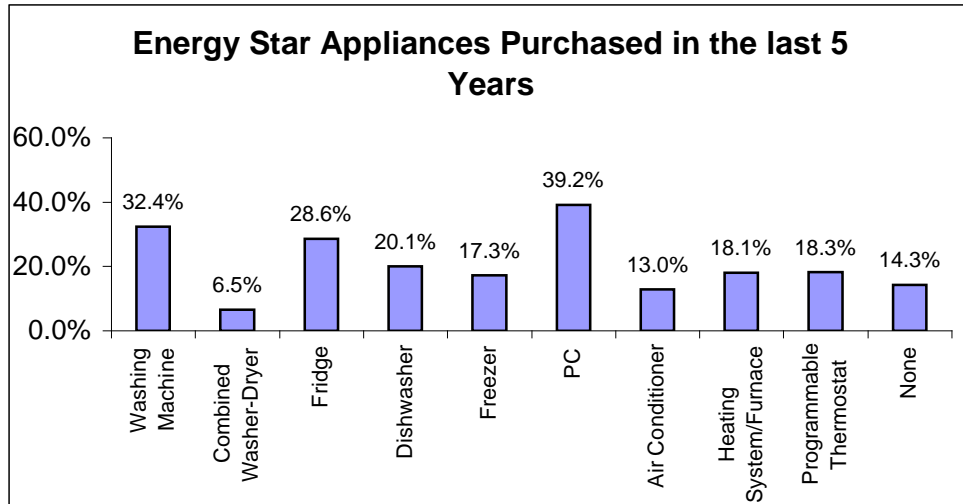
Q23

What renovations have you completed in the last ten years?



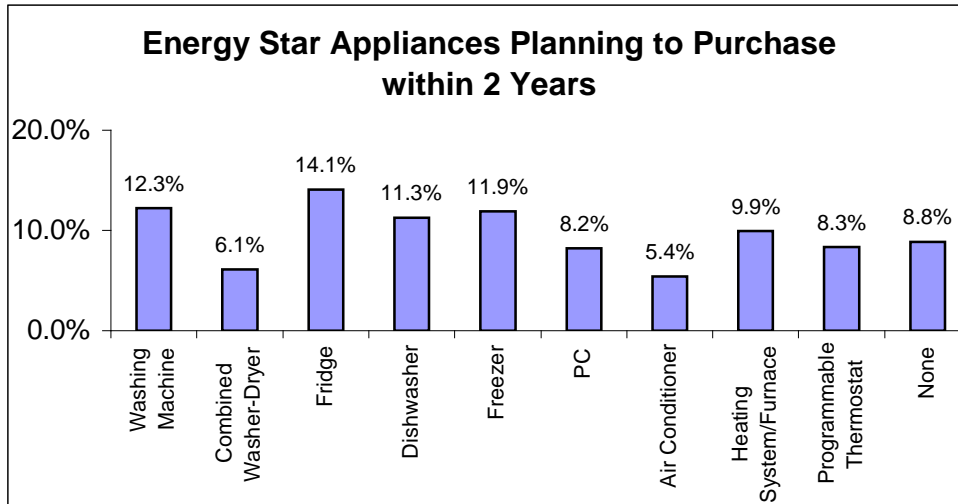
Q24(a)

What conservation measures have you undertaken within the last 5 years?



Q24(b)

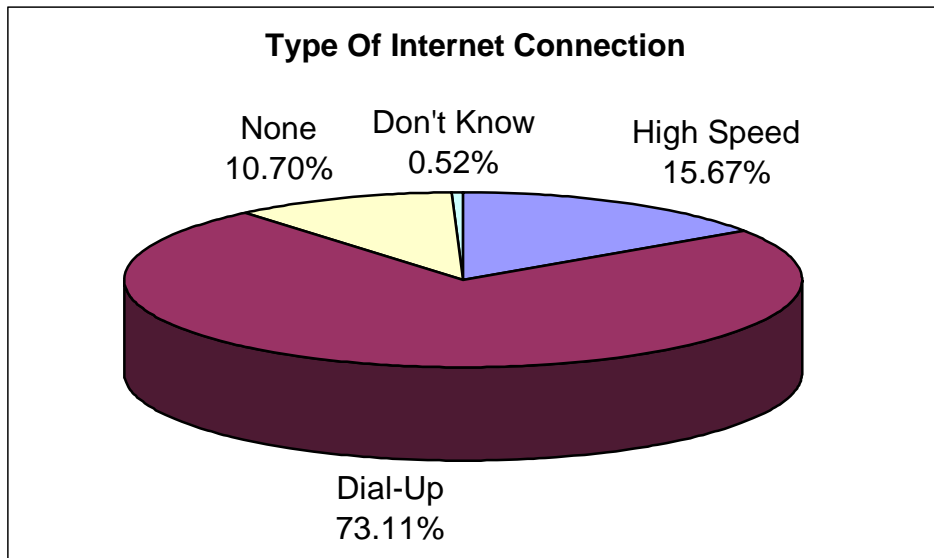
What conservation measures do you plan to undertake within the next 2 years?



Q25

What type of internet connection do you have at home?

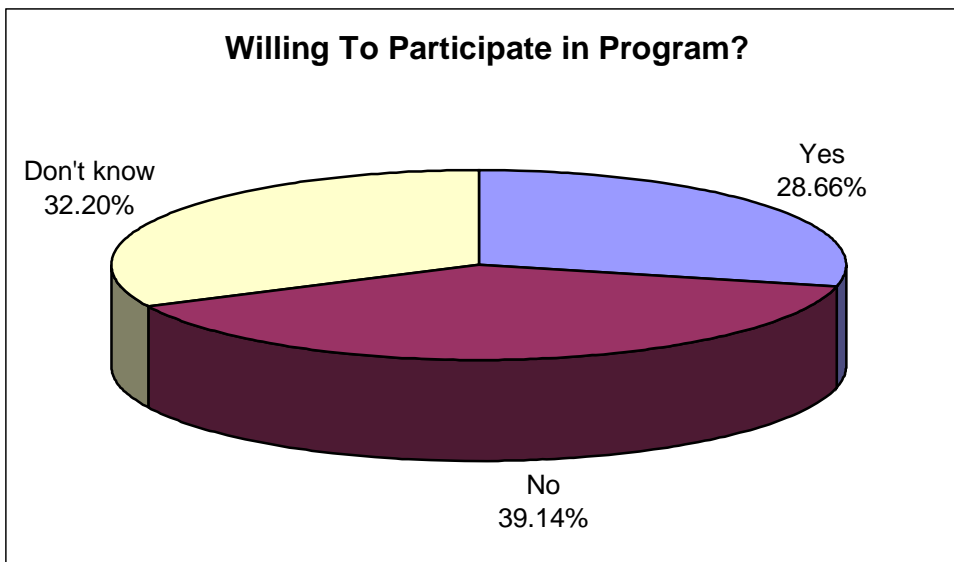
Answer	Description	Count	Percentage
1	High Speed	120	15.67%
2	Dial-Up	560	73.11%
3	None	82	10.70%
4	Don't Know	4	0.52%
	Total	766	100.00%



Q26

Would you be interested in a program which pays participants to allow Hydro One to shut off their electric water heaters, central air conditioners and pool pumps for short intervals (during high use periods)?

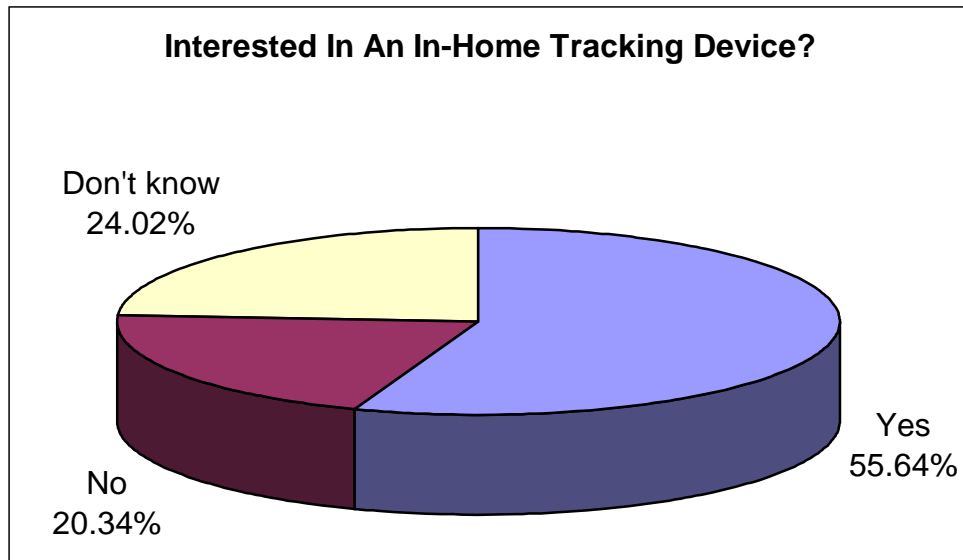
Answer	Description	Count	Percentage
1	Yes	219	28.66%
2	No	299	39.14%
3	Don't know	246	32.20%
	Total	764	100.00%



Q27

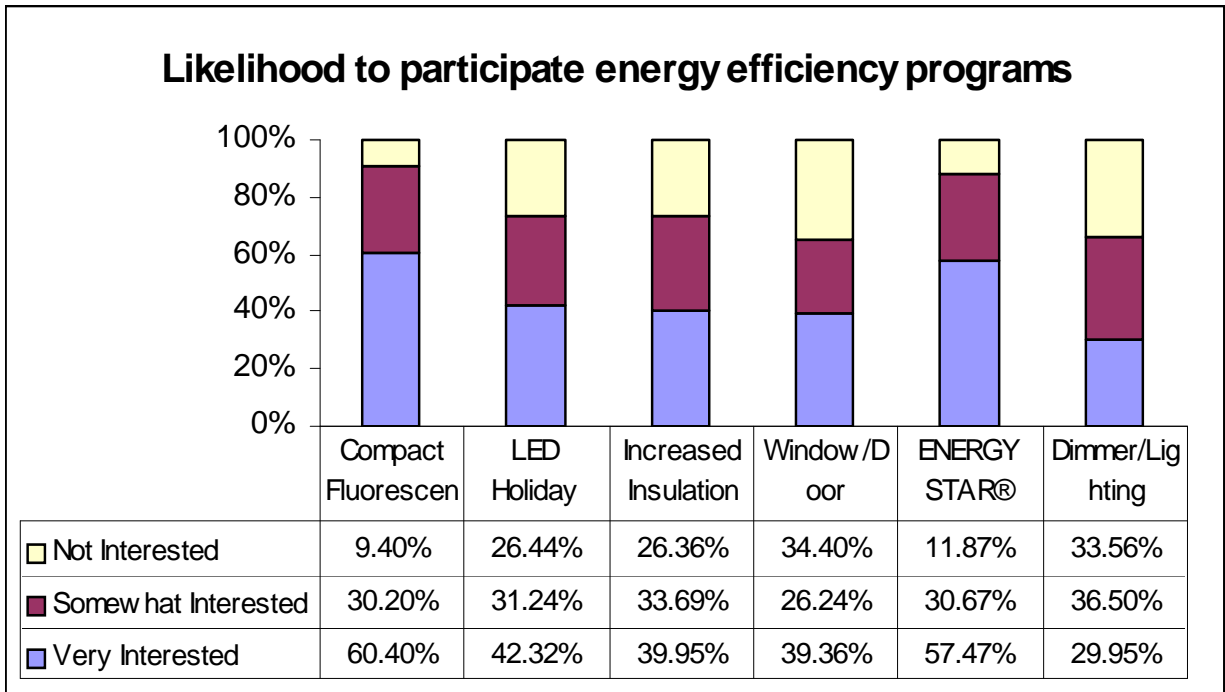
Would you be interested in an in-home device which tracks and displays your ongoing electricity use?

Answer	Description	Count	Percentage
1	Yes	424	55.64%
2	No	155	20.34%
3	Don't know	183	24.02%
	Total	762	100.00%



Q28

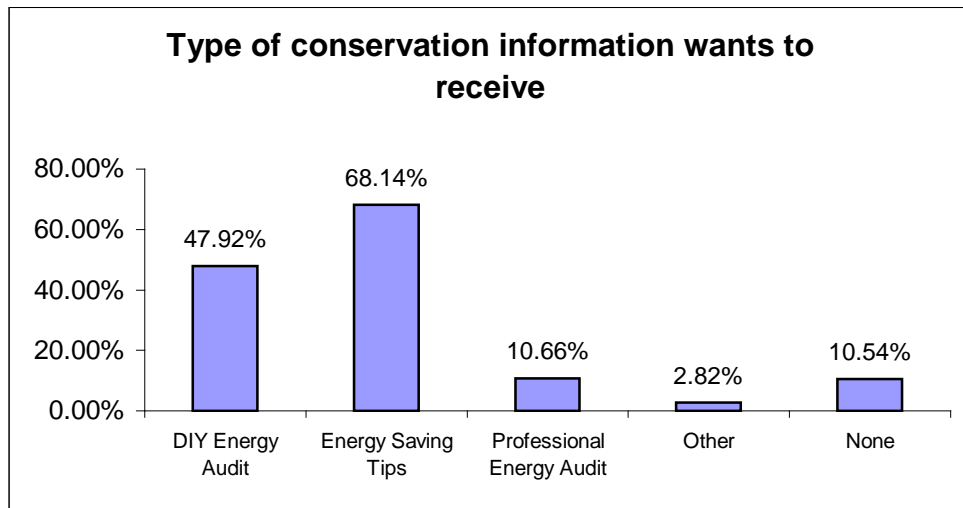
Rate the following energy efficiency programs based on your likelihood to participate



Q29(a)

What type of conservation information would you like to receive from Hydro One?

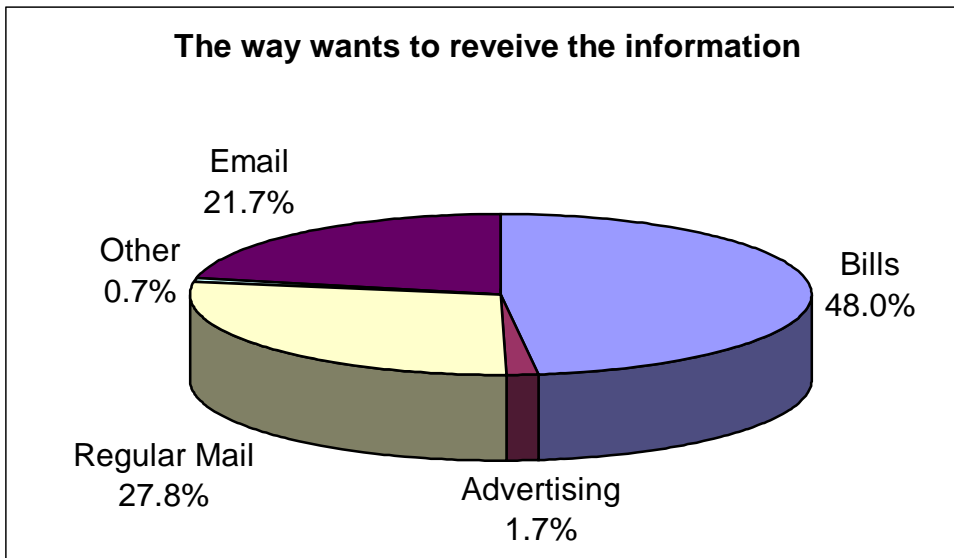
Description	Count	Percentage
DIY Energy Audit	391	47.92%
Energy Saving Tips	556	68.14%
Professional Energy Audit	87	10.66%
Other	23	2.82%
None	86	10.54%



Q29(b)

How would you like to receive the conservation information?

Answer	Description	Count	Percentage
1	Bills	392	48.04%
1	Advertising	14	1.72%
1	Regular Mail	227	27.82%
1	Other	6	0.74%
1	Email	177	21.69%

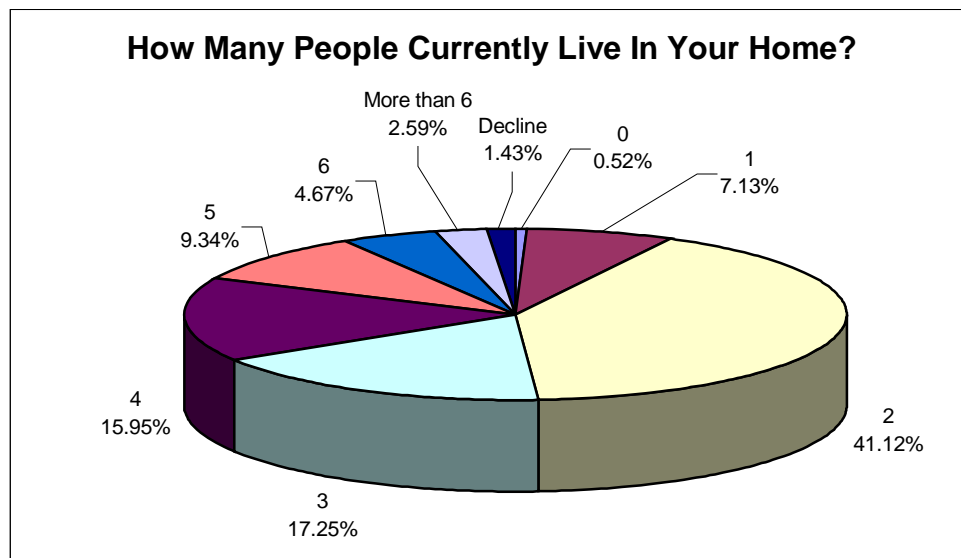


SECTION 5 – HOUSEHOLD DEMOGRAPHICS

Q30

How many people currently live in your home?

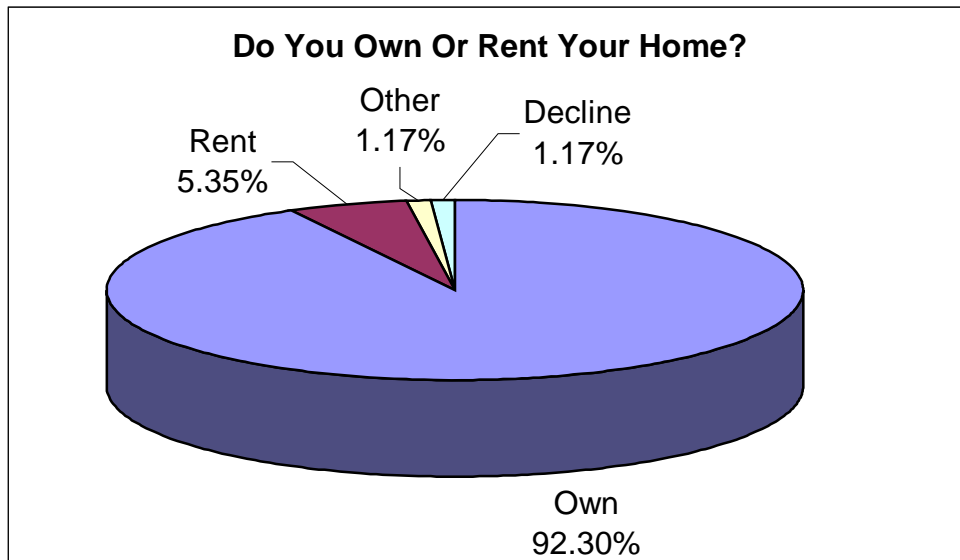
Answer	Description	Count	Percentage
0	0	4	0.52%
1	1	55	7.13%
2	2	317	41.12%
3	3	133	17.25%
4	4	123	15.95%
5	5	72	9.34%
6	6	36	4.67%
7	More than 6	20	2.59%
8	Decline	11	1.43%
	Total	771	100.00%



Q31

Do you own or rent your home?

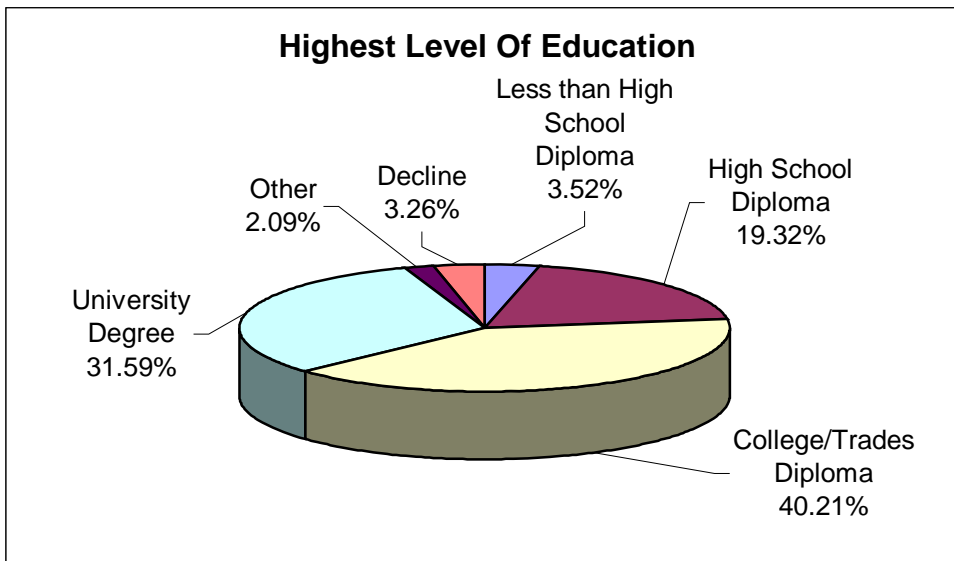
Answer	Description	Count	Percentage
1	Own	707	92.30%
2	Rent	41	5.35%
3	Other	9	1.17%
4	Decline	9	1.17%
	Total	766	100.00%



Q32

Highest level of education for your household

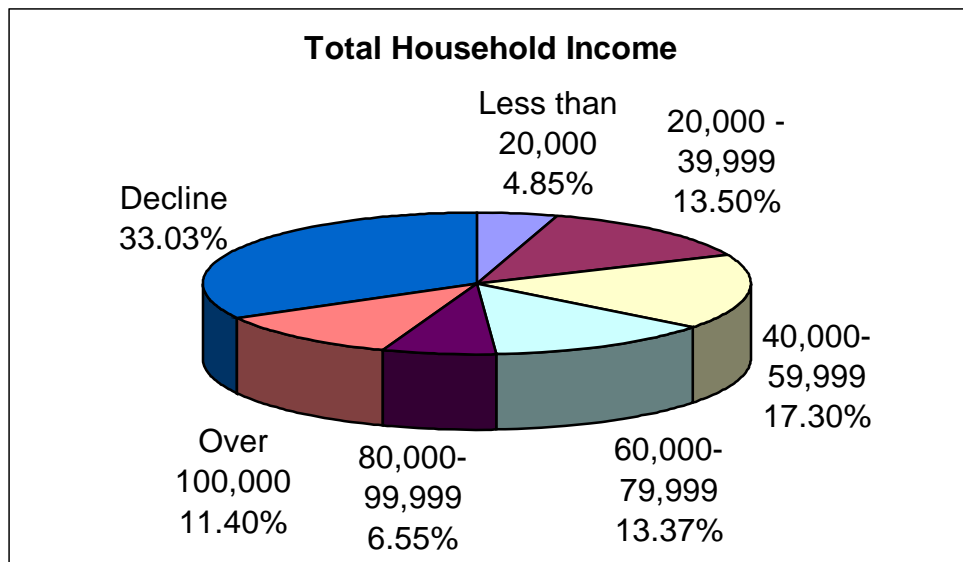
Answer	Description	Count	Percentage
1	Less than High School Diploma	27	3.52%
2	High School Diploma	148	19.32%
3	College/Trades Diploma	308	40.21%
4	University Degree	242	31.59%
5	Other	16	2.09%
6	Decline	25	3.26%
	Total	766	100.00%



Q33

Total household income before tax for 2004

Answer	Description	Count	Percentage
1	Less than 20,000	37	4.85%
2	20,000 -39,999	103	13.50%
3	40,000-59,999	132	17.30%
4	60,000-79,999	102	13.37%
5	80,000-99,999	50	6.55%
6	Over 100,000	87	11.40%
7	Decline	252	33.03%
	Total	763	100.00%



Attachment 6:
2007 Residential Appliance Survey Result

SECTION 1 - YOUR HOME

Q1 In what type of building do you live?

Answer	Description	Total	Percentage
1	Single detached	2670	90.2%
2	Semi-detached house	65	2.2%
3	Townhouse or Row house	75	2.5%
4	Apartment or Condominium	67	2.3%
5	Other	82	2.8%
	Total	2959	100%

Q2: When was your home built?

Answer	Description	Total	Percentage
1	Before 1956	554	18.72%
2	1957 - 1976	670	22.64%
3	1977 - 1986	497	16.80%
4	1987 - 1996	633	21.39%
5	1997 or later	511	17.27%
6	Don't Know	94	3.18%
	Total	2959	100%

Q3. What is the size of the living space of your home in square feet? Do NOT include your garage, attic or basement.

Answer	Description	Total	Percentage
1	Less than 1000	304	10.27%
2	1000 - 1499	1093	36.94%
3	1500 - 1999	742	25.08%
4	2000 - 2499	405	13.69%
5	2500 - 2999	199	6.73%
6	3000 - 3999	100	3.38%
7	4000 or more	23	0.78%
8	Don't Know	93	3.14%
	Total	2959	100%

Q4. Is natural gas available on your street?

Answer	Description	Total	Percentage
1	Yes	1625	54.92%
2	No	1237	41.80%
3	Don't Know	97	3.28%
	Total	2959	100%

Q5. What type of primary space heating system do you have?

Answer	Description	Total	Percentage
1	Electric baseboard	317	10.71%
2	Electric furnace	206	6.96%
3	Natural gas	1244	42.04%
4	Oil	596	20.14%
5	Heat pump	123	4.16%
6	Propane	204	6.89%
7	Wood	211	7.13%
8	Other	58	1.96%
	Total	2959	100%

Q6. What type of supplementary space heating system(s) do you have, if any? ONLY ONE ANSWER

Answer	Description	Total	Percentage
1	Electric baseboard	346	11.69%
2	Electric furnace	92	3.11%
3	Natural gas	72	2.43%
4	Oil	69	2.33%
5	Heat pump	34	1.15%
6	Propane	130	4.39%
7	Wood	607	20.51%
8	Other	158	5.34%
9	None	1451	49.04%
	Total	2959	100%

Q7. Please indicate how much of your home is heated by the supplementary system.

Answer	Main space heating system	Total	Percentage
1	Less than 20%	325	11.0%
2	21 to 35%	55	1.9%
3	36% to 50%	92	3.1%
m	None	2487	84.0%
	Total	2959	100%

Space Heating Systems	(square footage of house heated by the supplementary system)		
	Less than 20%	21% to 35%	36% to 50%
Electric baseboard	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Electric furnace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Heat pump	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q8. What type of water heater do you have? ONLY ONE ANSWER

Answer	Description	Total	Percentage
1	Electric	1489	50.32%
2	Natural gas	1113	37.61%
3	Propane	101	3.41%
4	Oil	211	7.13%
5	Other	25	0.84%
6	None	20	0.68%
	Total	2959	100%

Q9. What type of air - conditioning equipment do you have and how old is it?

	Do not have	less than 5	5 to 10	10 to 15	more than 15	No Answer
Central air-conditioner	1518	590	432	222	197	
Heat pump (ground source)	2834	46	21	31	26	1
Heat pump (air source)	2807	48	30	34	39	1
Window air-conditioner #1	2400	390	108	29	31	1
Window air-conditioner #2	2823	93	23	12	7	1
Window air-conditioner #3	2929	16	8	2	3	1

Q10. Do you have a programmable thermostat?

Answer	Description	Total	Percentage
1	Yes	1671	56.47%
2	No	1288	43.53%
	Total	2959	100%

Q11. In the winter, do you lower the temperature?

Answer	Description	At Night	When you are not at home
1	Yes	2086	2096
2	No	873	863
	Total	2959	2959

Q12. In an average week during the 2006 cooling season, what were your normal temperature settings?

Answer	Description	Afternoon (1pm-4pm)	Evening (4pm-11pm)
1	Less than 64F (18C)	49	40
2	65F to 66F (19C)	19	29
3	67F to 68F (20C)	75	83
4	69F to 70F (21C)	116	142
5	71F to 72F (22C)	230	286
6	73F to 74F (23C)	367	389
7	More than 74F (23C)	775	657
No Answer		1328	1333
	Total	2959	2959

Q13. How many of the listed lighting products do you use INSIDE your home?

Answer	Description	Regular light bulbs	Halogen light bulbs	Fluorescent tubes	Compact fluorescent lights
1	0	286	1479	895	625
2	1-2	422	506	837	215
3	3-5	629	429	652	434
4	6-10	698	334	380	650
5	11-15	366	123	116	505
6	16-20	249	48	51	270
7	21+	309	39	28	260
No Answer			1		
	Total	2959	2959	2959	2959

Q14. How many of each of the listed lighting products do you use OUTSIDE your home?

Answer	Description	Regular light bulbs	Halogen light bulbs	Fluorescent tubes	Compact fluorescent lights
1	0	859	1814	2232	1737
2	1-2	1083	759	503	582
3	3-5	775	302	167	462
4	6-10	213	65	48	147
5	11+	28	19	8	31
m	No answer	1		1	
	Total	2959	2959	2959	2959

Q15. We would like to find out about the electrical appliances currently in your home.

Answer	Description	Full size refrigerator #1	Full size refrigerator #2	Freezer	Mini/bar fridge
1	Less than 5	26	2112	639	2318
2	5 to 10	2064	331	1222	448
3	10 to 15	768	387	813	146
4	more than 15	101	128	284	46
5	Do not have		1	1	1
	Total	2959	2959	2959	2959

Appliance	0	1	2	More than 2	No Answer
Personal Computer	104	1814	720	321	
Television	41	724	1148	1046	
Microwave oven	74	2743	133	9	
Top load washing machine	843	2098	11	6	1
Front loa washing machine	2181	771	6	1	
Dishwasher	803	2137	13	6	
Whirlpool Bathtub	2336	614	5	3	1
hottub	2711	246	1	1	
Electric air filter	2457	476	20	5	1
Pool pump	2525	430	1	3	
Dehumiditier	1447	1397	103	11	1

Fuel source	Range	Clothes Dryer	Poolheater	Sauna
Do not have	20	168	2818	2880
Gas	265	214	44	
Electricity	2611	2554	82	78
Propane	63	23	15	
No answer				1

SECTION 2 - ENERGY CONSERVATION

Q16. Would you be interested in a program that allows Hydro One to increase the central air conditioning setting by 2°C during peak periods?

Answer	Description	Total	Percentage
1	Yes	954	32.2%
2	No	1845	62.4%
3	Participated in the program	160	5.4%
	Total	2959	100%

Q17. Would you be interested in a program that allows Hydro One to shut off the electric water heater during peak periods?

Answer	Description	Total	Percentage
1	Yes	866	29.3%
2	No	2034	68.7%
3	Participated in the program	59	2.0%
	Total	2959	100%

Q18. Would you be interested in an in-home device that tracks and displays ongoing electricity consumption?

Answer	Description	Total	Percentage
1	Yes	2128	71.9%
2	No	617	20.9%
3	Participated in the program	214	7.2%
	Total	2959	100%

Q19. Would you be interested in a program that collects and recycles old appliances from your house?

	Fridge	Freezer	Room Air conditioner
Yes	1913	1658	786
No	536	574	556
Not Applicable	510	727	1617

Q20. Would you be interested in installing an energy-saving device on the water heater?

Description	Total	Percentage
Yes	2140	72.3%
No	601	20.3%
Already installed	218	7.4%
Total	2959	100%

Q21. If you were to participate in a conservation program, how do you plan to save energy?

	Already achieved as part of Hydro	Already achieved-personal	Interested for future	Not interested for the future
More efficient air cooling system	74	810	1434	641
More efficient space heating system	41	659	1531	728
More efficient water heating system	29	456	2127	347
Program mable thermostat	201	1279	1055	424
Purchase energy saving appliances	56	1024	1759	120
increase insultaion of doors, windows and roof	46	1072	1626	215
participate in a "Do-it-Yourself" online energy audit	32	162	2225	540
Participate in professional energy audit	31	144	1693	1091

Q22. Please indicate if you would be interested in using coupons/ rebates to purchase the following energy - saving products.

	Interested	Not Interested
Compact fluorescent light bulbs	2786	173
LED holiday lights	2364	595
ENERGY STAR appliance	2592	367
Heating system/furnace	1503	1456
Programmable thermostat	1500	1459
ENERGY STAR air conditioner	1415	1544

Q24. How would you like to receive energy conservation information from Hydro One?

Description	Total	Percentage
High speed	1277	43.2%
Dial-up	112	3.8%
None	1570	53.1%
	2959	100%

Q25. Would you be interested in receiving, viewing and paying Hydro One bills online?

Description	Total	Percentage
Yes	775	26.2%
No	1698	57.4%
Already registered	425	14.4%
Do not have facilities to do so	61	2.1%
Total	2959	100%

SECTION 3 – HOUSEHOLD DEMOGRAPHICS

Q27. How many people currently live in your home:

Description	Total	Percentage
0	5	0.2%
1	282	9.5%
2	1412	47.7%
3	503	17.0%
4	506	17.1%
5	189	6.4%
More than 6	62	2.1%
Total	2959	100%

Q28. Do you own or rent your home?

Description	Total	Percentage
Own	2776	93.8%
Rent	164	5.5%
Other	19	0.6%
Total	2959	100.0%

Q29. What is your TOTAL household income before tax for 2006?

Description	Total	Percentage
\$20,000 - \$39,999	359	12.6%
\$40,000 - \$59,999	504	17.7%
\$60,000 - \$79,999	464	16.3%
\$80,000 - \$99,999	326	11.5%
Over \$100,000	393	13.8%
Decline to provide	800	28.1%
Total	2846	100%

Attachment 7:

2008 Hydro One Time-of-Use Pilot Project Result

Hydro One Networks Inc.

8th Floor, South Tower
483 Bay Street
Toronto, Ontario M5G 2P5
www.HydroOne.com

Tel: (416) 345-5700
Fax: (416) 345-5870
Cell: (416) 258-9383
Susan.E.Frank@HydroOne.com

Susan Frank

Vice President and Chief Regulatory Officer
Regulatory Affairs



BY COURIER

May 13, 2008

Ms. Kirsten Walli
Secretary
Ontario Energy Board
Suite 2700, 2300 Yonge Street
P.O. Box 2319
Toronto, ON.
M4P 1E4

Dear Ms. Walli:

EB-2007-0086 – Hydro One Networks' Time-of-Use Pilot Project Results

In accordance with the Ontario Energy Board's approval, Hydro One Networks' Regulated Price Plan Time-of-Use Pilot Project, EB-2007-0086, I am pleased to submit the report for the Time-of-Use Pricing Pilot Project Results.

I trust that the report will satisfy the Board's requirements for information sharing and should you have any questions, please do not hesitate to contact Stan But at 416-345-5859 or myself.

Sincerely,

ORIGINAL SIGNED BY SUSAN FRANK

Susan Frank

Attach.

Hydro One Networks Inc.
Time-of-Use Pricing Pilot Project Results

EB-2007-0086

May 2008

Table of Contents

	Page
Acknowledgements	3
Executive Summary	4
1. Introduction	6
2. Pilot study Group Design	7
3. Pilot Participant Recruitment	7
4. Analysis of results	8
4.1 Load-Shifting Impact	9
4.2 Conservation Impact	10
4.3 Customer Bill Impact	10
4.4 Customer Feedback	12
4.5 Analysis of General Service Customers	13
5. Summary of Major Findings	15
6. Conclusions and Policy Implications	16
Appendices	
Appendix A: Hydro One TOU Pricing Pilot Proposal	
Appendix B: Sample Invitation Letter to Customer	
Appendix C: Sample of TOU Pilot Agreement	
Appendix D: Sample of Interim and Final Report	
Appendix E: Sample of Residential Appliance Survey and Feedback Survey	

Acknowledgments

The TOU Pilot Team would like to thank Dr. Dean Mountain of McMaster University who provided advice on sample design and Chris Cincar of the Ontario Energy Board (OEB) who provided guidance on the pilot project.

Pilot results were presented to Hydro One's Customer Advisory Board (CAB). Comments received from the CAB members were reflected in the report.

Executive Summary

In March 2007, Hydro One Networks Inc. (“Hydro One”) received approval from the Ontario Energy Board (“OEB”) to undertake a pilot project using funding from the 3rd tranche CDM budget involving 500 residential, farm and small general service (under 50 kW) Distribution customers for 5 months (May to September 2007) to assess their response to time-of-use (“TOU”) pricing. Instead of paying the Regulated Price Plan (“RPP”) commodity prices, pilot participants were asked to pay the OEB-approved RPP TOU rates during the pilot period.

This study was required because results from other TOU pilot projects undertaken by the OEB or other LDCs in the Province may not be directly applicable to Hydro One’s customers since most of our customers are rural-based and have higher electricity usage due to great reliance on electric equipment such as electric space and water heating. The main objectives of the pilot were:

- To assess the customer responses to the RPP TOU rates versus the two-tiered threshold RPP;
- To assess the effectiveness of the real-time in-home display monitors (“RTM”) in conjunction with RPP TOU rates;
- To assess the communication and settlement support required for implementing RPP TOU rates.

Major findings

- Pilot participants were responsive to the RPP TOU rates and were able to shift and conserve part of their load. For a typical customer on RPP TOU rates, the load-shifting impact averaged 3.7% in the summer months and the conservation impact averaged 3.3%.
- Providing RTMs to customers on RPP TOU rates helped them respond even more. On a normal summer day, the load-shifting impact averaged 5.5%, while the conservation impact averaged 7.6%. On a hot summer day (over 30°C), the load-shifting impact was even more pronounced at 8.5%.
- Extrapolating the load-shifting impact (8.5%) on a hot summer day to all Hydro One residential customers would yield a summer peak load-shifting impact of about 150 MW. Extrapolating the load-shifting impact to all residential customers in the Province would result in a much higher impact.
- 76% of pilot participants under the RPP TOU rates paid a lower electricity bill as a result of load-shifting, compared to the regular RPP rates. Savings attributable to conservation would be incremental. Customers who were better off gained on average about \$23 during the pilot (about \$6 per month), while customers who were worse off on average lost about \$7 (less than \$2 per month).
- 72% of participants indicated that they would like to remain on the RPP TOU rates, and 87% claimed they changed their behaviour during the pilot. Only 4% found the changes in their daily activities in response to the RPP TOU rates to be inconvenient.

- 63% of participants with an RTM found it useful to help them conserve electricity. On average, customers thought they would save 9% on electricity consumption by using the RTM.
- Of the 200 small general service (under 50 kW) customers contacted, only 2 agreed to participate in the pilot. Analysis of the hourly load profiles for the small general service customers who declined participation in the pilot revealed that these customers on average could be worse off by about \$10 per month in their electricity bill in the summer if they did not shift load and/or conserve. Further analysis using generic load profiles shows that small general service customers could be better or worse off under RPP TOU rates depending on the industry in which they operate, their specific hourly electricity consumption patterns and their ability to shift load and/or undertake conservation initiatives.

Conclusions and Program Implications

- The pilot study shows that the current RPP TOU rates are effective in encouraging load shifting and conservation in Ontario. Other creative TOU pricing options, such as the critical peak pricing, should be considered.
- The use of an in-home real-time display monitor is very useful as it empowers customers to shift and conserve. Other technology options that could help customers better manage their electricity usage should also be tested.
- Depending on individual usage patterns, selected customer groups under the RPP TOU rates could be better off or worse off. Customer groups that would likely be negatively affected by the RPP TOU rates include residential customers with low electricity consumption; customers who stay at home during peak hours; and business customers with one work shift and/or who close on weekends. These customers need to shift and/or conserve more in order to offset the RPP TOU rate impact. If it is envisioned that TOU rates become mandatory for all customers, these negatively affected customer groups may require some mitigation alternatives. A shortened on-peak period and/or other pricing measures, or voluntary TOU below a certain threshold, would help mitigate the negative impact.

1. Introduction

In March 2007, Hydro One Networks Inc. (“Hydro One”) received approval from the Ontario Energy Board (“OEB”) to undertake a pilot project using funding from the 3rd tranche CDM budget involving 500 residential, farm and small general service (under 50 kW) Distribution customers for 5 months (May to September 2007) to assess their response to time-of-use (“TOU”) pricing. Instead of paying the Regulated Price Plan (“RPP”) commodity prices as shown in Table 1, pilot participants were asked to pay the OEB-approved RPP TOU rates during the pilot period. TOU rates, consisting of different prices for various time periods, encourage pilot participants to shift electricity consumption from the more expensive on-peak period to the less expensive off-peak period. Appendix A provides more details regarding the pilot proposal submitted to the OEB.

This study was required because results from other TOU pilot projects undertaken by the OEB or other LDCs in the Province may not be directly applicable to Hydro One’s customers since most of our customers are rural-based and have higher electricity usage due to great reliance on electric equipment such as electric space and water heating. The main objectives of the pilot were:

- To assess the customer responses to the RPP TOU rates versus the two-tiered threshold RPP. Responsiveness is measured in the following categories:
 - shifting usage away from peak periods
 - conservation impact
 - bill impact
- To assess the effectiveness of the real-time in-home display monitors (“RTM”) in conjunction with the RPP TOU rates;
- To assess the communication and settlement support required for implementing the RPP TOU rates.

Table 1: RPP and RPP TOU Prices for Pilot Participants (May-September, 2007)

Type of Rate	Day of the Week	Time	Pricing	Rate (¢ per kWh)
RPP Rates*	Weekdays, Weekends & Holidays	All Day	Tier threshold per month in kWh*	5.50¢
			Additional kWh	6.40¢
RPP TOU Rates*	Weekends & Holidays	All Day	Off-Peak	3.4¢
	Weekdays	7:00am-11:00am	Mid-Peak	7.1¢
		11:00am-5:00pm	On-Peak	9.7¢
		5:00pm-10:00pm	Mid-Peak	7.1¢
		10:00pm-7:00am	Off-Peak	3.4¢

* The threshold for the summer months was set at 600 kWh for residential customers and 750 kWh for non-residential customers.

2. Pilot Study Group Design

Under the guidance of Professor Dean Mountain of McMaster University, the project was designed to reflect a stratified sample of Hydro One Distribution customers in four study groups, two TOU groups and two control groups.

TOU Groups

Two TOU study groups were selected for the pilot, and both groups were billed according to the TOU rates shown in Table 1 for the pilot period. Customers in the first TOU group were given a RTM to view their real-time consumption and cost information. Customers in the second TOU group were given a \$50 bonus at the end of the pilot instead of the RTM as an incentive to participate in the project. Customers in TOU groups had access to weekly tracking reports on the web specially designed for the pilot. They also received 2 status reports by mail that reflected their usage pattern and savings. Appendix D provides a sample of the interim and final reports sent to the customers.

Control Groups

Customers participating in the control groups paid the regular RPP prices. Those RPP prices were designed for conventional meters in two tiers, one price for monthly consumption under a tier threshold and a higher price for consumption over the threshold. The regular RPP tiered rates during the pilot (May to September) are summarized below:

Residential customers

- First 600 kWh per month at the commodity rate of 5.3 ¢/kWh
- Incremental load above 600 kWh per month at 6.2 ¢/kWh.

Small Business customers

- First 750 kWh per month at the commodity rate of 5.3 ¢/kWh
- Incremental load above 750 kWh per month at 6.2 ¢/kWh.

Similar to the TOU groups, customers in the first control group received an RTM to view their hourly consumption and usage. Customers in the second control group did not get an incentive or receive any further information. Customers in the latter group were not aware their load was used for analysis in the pilot, as it is very important customers in the control group behave normally in terms of their electricity usage.

3. Pilot Participant Recruitment

A stratified sample was randomly selected from about 23,000 customers who already had smart meters installed and data communication system set up. Customers were screened to remove those that were: (1) not suitable for the pilot project (such as seasonal customers, customers planning to move out, and customers with incomplete data due to weak communication) or (2) not suitable for the special manual billing process used during the pilot (such as retailer-enrolled customers and customers on a pre-arranged bill payment method).

About 3,100 invitation letters (see Appendix B for sample invitation letter) were sent out. During the telephone recruitment process, about 2,700 customers were contacted by telephone during the participant enrolment process. In total, 411 customers agreed to participate in the

pilot, reflecting an overall response rate of about 13%. Customers who were called did have the right to say no, or to opt out. Customers who agreed to participate in the RPP TOU were required to sign an agreement with Hydro One (see Appendix C for sample customer agreement). As guided by Dr. Dean Mountain, 75 customers were also included in the study as a special control group without an RTM or cash incentives. Therefore, the final sample of the pilot consisted of 486 customers with the following groupings:

- 153 customers on RPP TOU rates with RTM
- 177 customers on RPP TOU rates with a \$50 incentive at the end of the pilot
- 81 customers on regular RPP rates with RTM
- 75 customers on regular RPP rates as the control group without RTM or incentives.

Table 2 presents the pilot participants by rate class and study group. About 200 small general services (under 50 kW) customers were contacted, only 2 general service (under 50 kW) customers agreed to participate in the pilot project. The most common reason used by these customers to refuse participation was the fear of being worse off on the TOU rates. Additional hourly load profile analysis was prepared for the small general service (under 50 kW) customers, and the results are presented in Section 4.5 of this report.

Table 2: Number of Customers in the Pilot by Rate Class and Study Group

Number of Customers	TOU With RTM	TOU without RTM	RPP with RTM	RPP without RTM
Total	153	177	81	75
Residential – High density	88	80	48	48
Residential – Low density	44	66	14	17
Urban Residential	10	15	7	8
Farm – Phase 1	9	16	12	2
General service (under 50 kW)	2	0	0	0

4. Analysis of Results

To facilitate a comparison of the results with other TOU pricing pilot projects in Ontario, Hydro One followed the same analytical approach as guided by the OEB staff. Impacts on pilot participants were measured for the following categories:

- Load-shifting impact: the demand response of customers shifting some electricity load usage away from peak hours to the mid-peak and off-peak periods.
- Conservation effect: the reduction in total electricity consumption, regardless of time periods.

- Bill impact: comparison of what customers paid on the RPP TOU rates versus the conventional RPP (non-TOU) rates.

To correct for the differences in customer representation between the pilot sample and total utility, the study results for load-shifting and conservation impacts were extrapolated to the total utility level, using appropriate weights by rate class.

4.1 Load-Shifting Impact

A non-parametric econometric model was used to measure the load-shifting away from on-peak hours. Factors taken into account by the model include the different TOU pricing periods, treatment or control groups and type of day. Further details regarding the model can be found in “Ontario Energy Board Smart Price Pilot Final Report”, Appendix E, Load Impact and Conservation Effect Analytical Model, prepared for the OEB, July 2007. Additional econometric analysis was applied to each rate class considered in this pilot to test whether there was a statistically significant difference between energy consumption of the various study groups at different TOU intervals. The tests revealed the load-shifting impacts were statistically significant at 1% probability level (i.e. one chance in a hundred that the results could have happened by coincidence).

As presented in Table 3, the load-shifting impact (away from on-peak periods) averaged 3.7% for customers on the RPP TOU rates and 5.5% for customers on the RPP TOU rates with an RTM in the summer months. For very hot days (over 30 degree Celsius), the load-shifting impact was 8.5% for customers on the RPP TOU rates with an RTM. The higher load-shifting impact during very hot days was attributed to higher air conditioning load compared to normal summer days.

Extrapolating the load-shifting impact on a hot summer day (8.5%) to all Hydro One residential customers would yield a summer peak load-shifting of about 150 MW during the summer system peak period. Extrapolating the load-shifting impact to all residential customers in the Province would yield a much higher result.

Table 3: Load-shifting Away from On-Peak Periods under RPP TOU rates

Load-shifting Source	% of shifting
<i>All Days</i>	
TOU and RTM effect	-5.5%
TOU effect	-3.7%
Incremental RTM impact on load-shifting	-1.8%
<i>Very hot days (>30 degree C)</i>	
TOU and RTM effect	-8.5%
TOU effect	-2.9%
Incremental RTM impact on load-shifting	-5.6%

4.2 Conservation Impact

Conservation impact was estimated by comparing the electricity consumption of each pilot participant during the pilot period to the same period in 2006. The consumption figures were corrected to remove abnormal weather effects so that differences in weather conditions would not affect the estimate of conservation. The 2007 figures were calculated using hourly meter reads and the 2006 data were collected using Hydro One's customer billing system. As shown in Table 4, pilot participants on average reduced their energy consumption by 3.3% compared to the same period last year. Customers with an RTM conserved even more, averaging 7.6%. Due to data limitations, the results for very hot days could not be measured separately.

Table 4: Conservation Impact during the Pilot under RPP TOU rates

Conservation Source, All days	% of change
TOU and RTM effect	-7.6%
TOU effect	-3.3%
Incremental RTM impact on conservation	-4.3%

To measure the impact of customers having access to an RTM under conventional RPP (non-TOU) rates, additional analysis was undertaken to compare the electricity consumption of customers on the regular RPP (non-TOU) rates with and without an RTM. This comparison revealed that the average customer on the RPP (non-TOU) rates with access to an RTM conserved 6.7% during the pilot period.

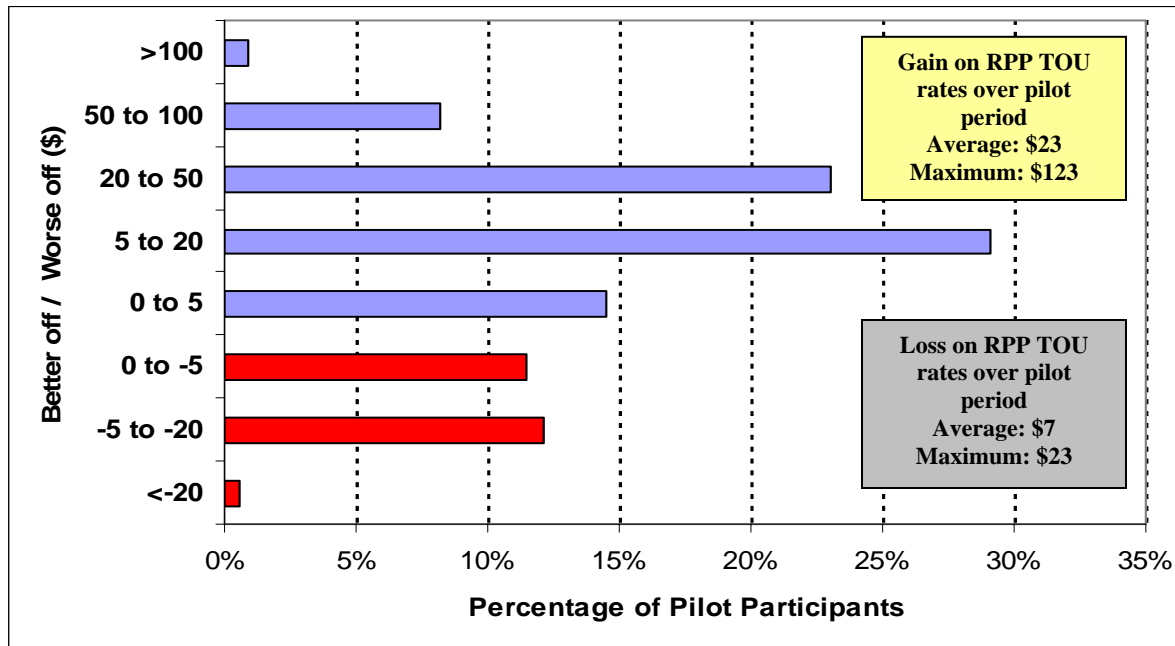
Table 5: Conservation Impact of RTM under RPP rates

Conservation Source, All days	% of change
RTM effect	-6.7%

4.3 Customer Bill Impact

To calculate the bill impact of the RPP TOU rates, customer bills were compared using the RPP TOU rates and the regular RPP rates. As the hourly data was available only for 2007, this comparison captured the load-shifting impact but not the conservation impact. As shown in Figure 1, most pilot participants (76%) were better off with the RPP TOU rates during the pilot period. Customers who were better off on average gained about \$23 during the pilot (about \$6 per month), while customers who were worse off on average lost about \$7 (less than \$2 per month).

Figure 1: Bill Impact of RPP TOU Rates



* Figure 1 presents the bill impact over the entire pilot period.

Further analysis revealed that whether customers benefit from the RPP TOU rates would depend on their consumption level and hourly load profile. It is noteworthy that 32% of pilot participants were better off on the RPP TOU rates without conservation. As illustrated in Figure 2, the consumption patterns for these customers are likely to be more evenly spread out during the day with a greater percentage of usage during the mid-peak and off-peak periods. As a result, these customers will likely benefit from the RPP TOU rates.

In the pilot, about 14% of customers were worse off under the RPP TOU rates, despite making an effort to reduce their electricity consumption relative to the previous year. As illustrated in Figure 3, the consumption patterns for these customers are likely to have a greater percentage during on-peak and mid-peak periods where the electricity rates are relatively higher than the off-peak period. Customers who stay at home will likely be negatively affected by the RPP TOU rates. These customers will need to shift and/or conserve more in order to offset the RPP TOU rate impact. Similarly, customers with low electricity usage are likely to be negatively impacted, as there is only a limited amount of load above the base load that they are able to shift or conserve.

Figure 2: Load Profiles for customers who will likely benefit from TOU rates

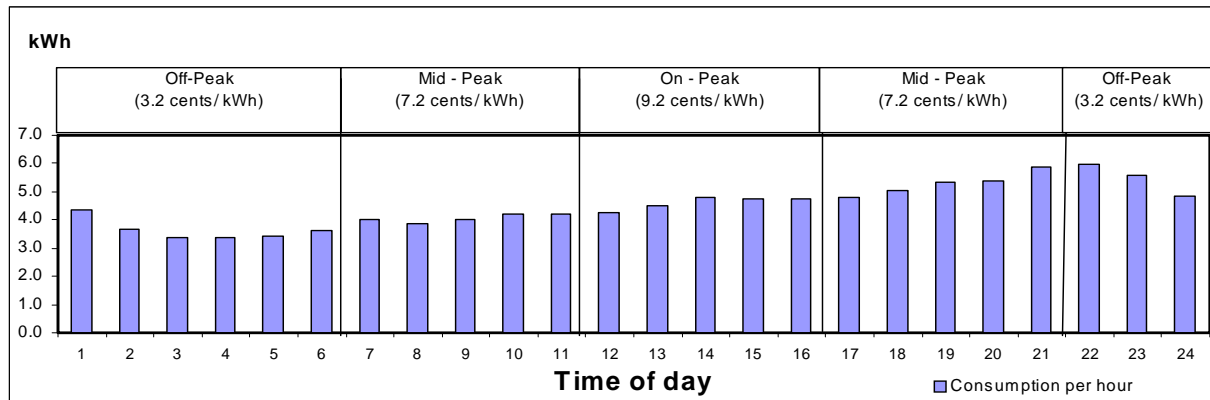
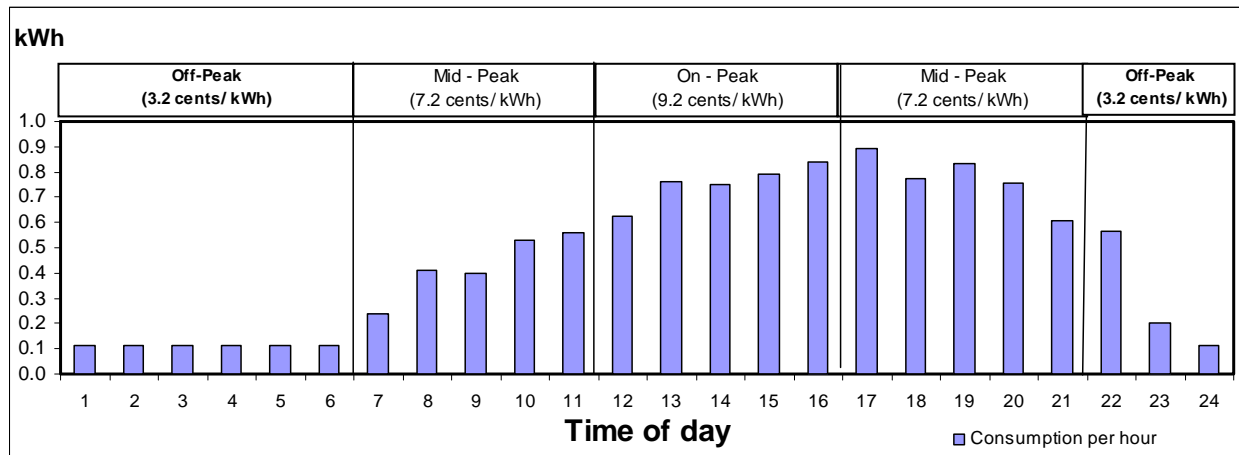


Figure 3: Load profiles for customers who will likely be worse off on TOU rates



4.4 Customer Feedback

Customer feedback was obtained from the recruitment process and from the two survey questionnaires completed by the pilot participants (see Appendix E for sample of survey questionnaires used). The following summarizes the feedback received from the customers during the pilot:

Feedback received during the recruitment process

The most frequently used reasons for refusal are provided below:

- “I do not like being told by Hydro One when and how to use electricity”
- “I am already conserving as much as I can”
- “I will deal with the new rates when necessary”
- “I am a stay-at-home mother/retired, and these rates will increase my expenses”.

Feedback on RPP TOU rates

- 72% would like to remain on the RPP TOU rates
- 87% claimed they changed their behaviour in response to the RPP TOU rates
- 68% felt the current RPP TOU rate differentials provided enough incentive for load-shifting
- 53% did not mind the RPP TOU rates affecting their daily activities
- Only 4% found the change to RPP TOU rates inconvenient.

Feedback on RTM

- 63% found the RTM useful to help conserve electricity
- 45% found it difficult to install the RTM. Pilot participants reported difficulty in fitting the RTM around the meter and in programming the TOU rates on the RTM. These comments are useful for future RTM program implementation.
- Customers thought on average they would save 9% on electricity consumption by using the RTM.

Feedback on communication

- 76% preferred to receive communications by mail; 16% preferred emails;
- 82% found the interim report very useful.

Feedback on TOU website:

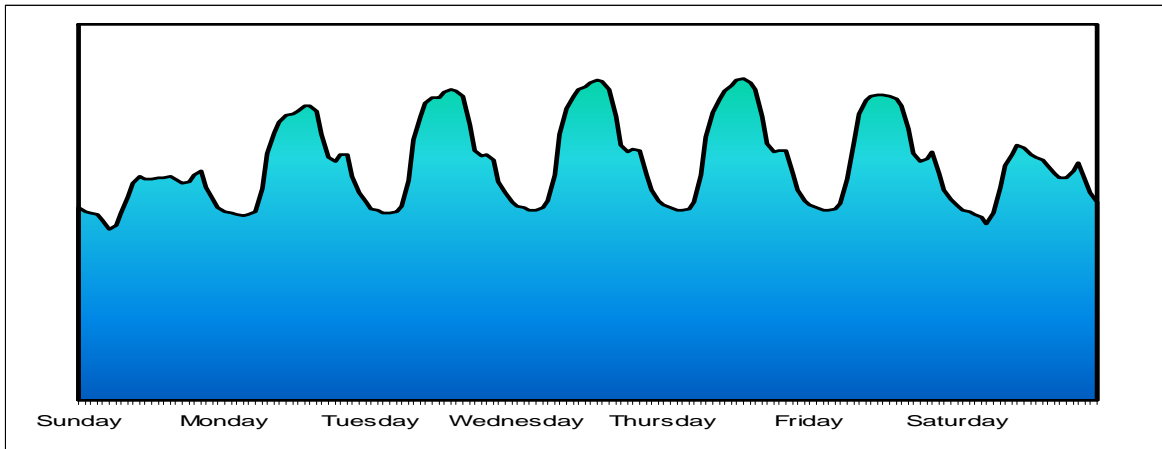
When TOU rates are offered, customers will be able to view their hourly usage by 9 A.M. the following day. To test customer response to this service, all pilot customers in the TOU group were given access to a special website set up to their usage by the RPP TOU periods. Customer feedback on this information is summarized below:

- 40% used the TOU pilot website to view their usage; 5% logged on every week
- 53% found the information on the website useful
- Extrapolating this to the provincial level, over 200,000 households would view their consumption on a weekly basis when RPP TOU rates are fully implemented.

4.5 Analysis of General Service Customers

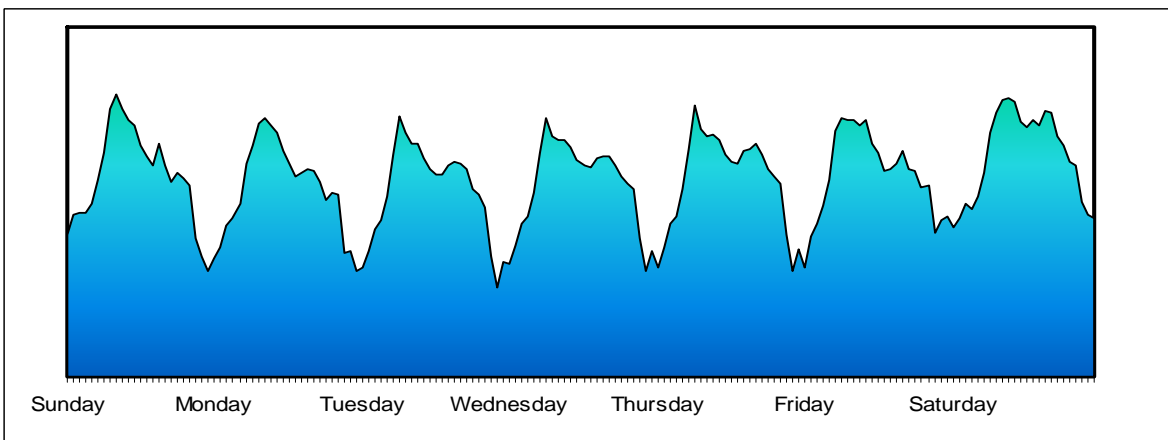
During the recruitment process, nearly 200 small general service (under 50 kW) customers were contacted to participate in the RPP TOU rates. Only 2 customers agreed to join the pilot. The most common reason used by customers for refusal was the fear of being worse off under the RPP TOU rates. Given that smart meters were installed, a data only analysis using 348 small general service (under 50 kW) customers with complete hourly data revealed that 55% of these customers would be worse off on the RPP TOU rates if they did not change their electricity consumption patterns. Assuming these customers would not shift and/or conserve in response to the RPP TOU pricing, these customers on average could be worse off by about 14% (about \$10 per month on average) in their electricity bill in the summer. As shown in Figure 4, this group of customers had a relatively low electricity usage during the off-peak period; consequently the savings in the off-peak period were not sufficient to offset the relatively higher rates during on-peak and mid-peak periods.

Figure 4: Weekly Load Shape of 348 General Service Customers



However, this impact should not be generalized, because the results of these 348 customers are not representative of the small general service (under 50kW) customers within Hydro One. Analysis using the generic load shapes for Hydro One's small general service (under 50kW) customers revealed that the impact of the RPP TOU rates on small business customers will depend on the industry they operate in and their specific usage profile. Businesses with one work shift and/or who are closed on weekends will likely need to shift and/or conserve more in order to offset the RPP TOU rate impact. However, the impact for businesses whose load is more evenly distributed between off-peak and other periods will likely be more neutral even without load-shifting and conservation (see Figure 5).

Figure 5: Weekly Load Shape of Retail General Service Customers



5. Summary of Major Findings

Major findings of this pilot are summarized below:

- Pilot participants were responsive to the RPP TOU rates and were able to shift and conserve part of their load. For a typical customer on RPP TOU rates, the load-shifting impact averaged 3.7% in the summer months, and the conservation impact averaged 3.3%.
- Providing RTMs to customers on RPP TOU rates helped them respond even more. On a normal summer day, the load-shifting impact averaged 5.5%, while the conservation impact averaged 7.6%. On a hot summer day (over 30°C), the load-shifting impact was even more pronounced at 8.5%.
- Extrapolating the load-shifting impact (8.5%) on a hot summer day to all Hydro One residential customers would yield a summer peak load-shifting impact of about 150 MW. Extrapolating the load-shifting impact to all residential customers in the Province would result in a much higher impact.
- 76% of pilot participants under the RPP TOU rates paid a lower electricity bill as a result of load-shifting compared to the regular RPP rates. Savings attributable to conservation would be incremental. Customers who were better off gained on average about \$23 during the pilot (about \$6 per month), while customers who were worse off on average lost about \$7 (less than \$2 per month).
- 72% of participants indicated that they would like to remain on the RPP TOU rates and 87% claimed they changed their behaviour during the pilot. Only 4% found the changes in their daily activities in response to the RPP TOU rates to be inconvenient.
- 63% of participants with an RTM found it useful to help them conserve electricity. On average, customers thought they would save 9% on electricity consumption using the RTM.
- Of the 200 small general service (under 50 kW) customers contacted, only 2 agreed to participate in the pilot. The most common reason used for refusal was the fear of being worse off on the RPP TOU rates.
- Analysis of the hourly load profiles for the small general service customers who declined participation in the pilot revealed that these customers on average could be worse off by about \$10 per month in their electricity bill in the summer if they did not shift load and/or conserve. However, this impact should not be generalized because these customers are not representative of all small general service customers within Hydro One.
- Further analysis using generic load profiles shows that small general service customers could be better or worse off under the RPP TOU rates depending on the industry in which they operate, their specific hourly electricity consumption patterns and their ability to shift load and/or undertake conservation initiatives.

Conclusions and Program Implications

- The pilot study shows that the current RPP TOU rates are effective in encouraging load shifting and conservation in Ontario. Other creative TOU pricing options, such as the critical peak pricing, should be considered.
- The use of an in-home real-time display monitor unit is very useful as it empowers customers to shift and conserve. Other technology options that could help customers better manage their electricity usage should also be tested.
- Depending on individual usage patterns, selected customer groups under the RPP TOU rates could be better off or worse off. Customers groups that would likely be negatively affected by the RPP TOU rates include residential customers with low electricity consumption; customers who stay at home during peak hours; and business customers with one work shift and/or who close on weekends. These customers need to shift and/or conserve more in order to offset the RPP TOU rate impact. If it is envisioned that TOU rates become mandatory, these negatively affected customer groups may require some migration alternatives. A shortened on-peak period and/or other pricing measures, or voluntary TOU below a certain threshold, would help mitigate the negative impact.

Appendix A:
Hydro One TOU Pricing Pilot Proposal

Hydro One Networks Inc.

8th Floor, South Tower
483 Bay Street
Toronto, Ontario M5G 2P5
www.HydroOne.com

Tel: (416) 345-5700
Fax: (416) 345-5870
Cell: (416) 258-9383
Susan.E.Frank@HydroOne.com



Susan Frank

Vice President and Chief Regulatory Officer
Regulatory Affairs

BY EMAIL AND COURIER

March 9, 2007

Ms. Kirsten Walli
Secretary
Ontario Energy Board
Suite 2700, 2300 Yonge Street
P.O. Box 2319
Toronto, ON M4P 1E4

Dear Ms. Walli:

Request for Approval for Hydro One Networks' Regulated Price Plan Time-of-Use Pilot Project

In accordance with the Board's Standard Supply Service Code, Hydro One Distribution Networks Inc. (Networks) applies for approval to proceed with a Regulated Price Plan (RPP) Time-of-Use (TOU) pilot project as described in the attached proposal.

Networks believes the pilot project will provide very useful information with respect to load research and program implementation information related to RPP TOU rates. In order for Networks to start the pilot project on time in May 2007, we respectfully request the Board process this request as expeditiously as possible.

Yours truly,

Susan Frank

Proposal for RPP TOU Pilot Project

Hydro One Distribution Networks Inc. (Networks) plans to undertake a pilot project involving 500 customers for 5 months (May to September 2007) to assess the response of its residential, farm and small general service customers to use of Regulated Price Plan (RPP) Time-of-Use (TOU) commodity rates. This study is required because results from TOU pilot projects currently undertaken by other LDCs in the province may not be directly applicable to Networks since most of our customers are primarily rural based and have higher usage of electric equipment such as electric space and water heating. In addition, Networks' proposed pilot offers the following special features:

- Farm and small general service customers are included in the study;
- Effectiveness of real time in-home display monitors and smart thermostats will be tested with RPP TOU rates;
- Pilot participants will be paying RPP TOU rates, getting a RPP TOU bill and seeing their consumption profiles through a special web site set up for the project.

The RPP TOU pilot will be fully funded by Networks' 3rd tranche CDM budget under Program Management and Research which was already approved by the Board in RP-2004-0203/EB-2005-0198. Networks has an approved budget allocation of \$2.6 million for Program Management and Research and as of Q4, 2006 has spent about \$1.6 million under this category. There will be sufficient funding in the allocated budget to cover the incremental cost for this pilot.

In order to minimize time delays as well as costs, pilot participants will be randomly selected from customers who already had smart meters installed as part of the provincial smart meter initiative. The primary purpose of this pilot is to examine the impact of RPP TOU rates and whether that affects conservation behaviour. In addition, Networks intends to use this opportunity to assess the extent to which real time in-home display monitors will help our customers on RPP TOU rates shift load and/or reduce energy consumption more effectively. Also, some selected customers with central air conditioning who are willing to participate in Networks' load control program will be offered a smart thermostat from which customers could remotely control their air conditioning setting. Professor Dean Mountain of McMaster University will be retained to provide general guidance for the pilot project, while detailed load shape analysis will be undertaken in-house by the Hydro One Load Research Team.

Networks intends to share the pilot project results with the Board. If deemed useful and assuming results from other LDC RPP TOU pilot projects are available, province-wide RPP TOU impact analysis can be performed using the LDC-specific load profiles prepared recently for 80 LDCs for cost allocation informational filings as required by EB-2005-0317.

Pilot Project Objectives

- Assess how RPP TOU commodity rates affect the hourly electricity consumption patterns of Networks' residential, farm and small general service customers. Since Networks' customers are mostly rural based, it will be useful to compare the Networks' pilot results with other LDC RPP TOU pilot projects undertaken for urban customers in the province.
- Assess the impact and effectiveness of real time in-home display monitors helping customers on RPP TOU rates shift and/or reduce load.
- Assess the impact and effectiveness of smart thermostats helping customers remotely manage their air conditioning load in the summer months.

- Assess the communication and settlement support required to implement the RPP TOU rates for all Networks' customers with smart meters in the future.

Study Approach

- Professor Dean Mountain of McMaster University, a recognized expert in load research in the province, will be retained to provide general guidance for the pilot study and particularly in the areas of sample design, customer selection and the methodology used by the Hydro One Load Research Team for assessing the load impacts. Based on preliminary analysis, a sample size of about 500 customers should be sufficient to construct a representative sample for the RPP TOU pilot study.
- In order to minimize time delays and costs, residential, farm and small general service customer that already had interval meters installed as part of the provincial smart meter initiative will be stratified and randomly selected to ensure a representative sample is chosen for the pilot project.
- After receiving approval from the Board for this pilot project, selected customers will be contacted in April 2007 to determine whether they are willing to participate in the pilot project and pay the RPP TOU rates for 5 months (May to September 2007). Participation in the pilot is entirely voluntary. Customers agreeing to participate in the pilot project will be asked to sign a contract agreeing to participate and pay the RPP TOU prices during the pilot study.
- For the study period, pilot participants will get a monthly bill clearly showing their electricity consumption differentiated by RPP TOU rates. In order to avoid making costly changes to the existing customer billing system that affect all Networks' customers, RPP TOU rate calculation and special billing for the 500 pilot participants will be processed separately and the information will be fed back to the normal billing engine for issuance of bills. After September 2007, pilot participants will return to the regular RPP (non-TOU) rates and get the usual billing arrangements.
- A special RPP TOU pilot project web site will be set up for pilot participants to sign in and view their own energy consumption profile by RPP TOU prices for the previous week. The energy profile information will be updated on a weekly basis. Information is not updated on a more frequent basis (such as daily) in order to keep the pilot project cost to a minimum. According to Professor Dean Mountain, providing weekly feed back to pilot participants is reasonable.
- About half of the pilot participants will get the real time in-home display monitors to help them manage their electricity consumption with RPP TOU rates. The in-home display monitors will be able to display the RPP TOU rates. Pilot participants will be allowed to keep the in-home display monitor after expiry of the pilot study. The real time in-home display monitors used in the pilot will be compatible with smart meters as well as RPP TOU rates.
- About half of the pilot participants will not get the in-home display monitors. To encourage customer participation for the pilot, a sign-up bonus will be considered for these customers.
- Selected pilot participants with central air conditioning will also be asked whether they are willing to participate in the Networks' SmartStat Program¹. Participants in the load control program will get a smart thermostat for which they can remotely manage their thermostat settings.
- A special 1-800 phone line will be set up for the pilot project. Networks' staff from the pilot project team will handle questions from pilot participants pertaining to their consumption profiles and RPP TOU bills.

¹ Networks introduced the SmartStat residential load control program in July 2006. This program is designed to achieve summer peak demand reduction by controlling central air-conditioning temperature set-points using web-enabled programmable thermostats.

- Pilot participants will be asked to fill out 2 questionnaires during the study period, one questionnaire at the beginning of the pilot and the other questionnaire at the end of the project to provide further information (such as appliance and equipment usage, actions taken to change the consumption patterns during the pilot) to help the project team better understand the reasons for potential changes in the hourly electricity consumption patterns.
- After the completion of the pilot study, detailed load shape analysis will be undertaken by the Hydro One Load Research Team applying similar methodology used to derive load profiles in the cost allocation informational filings for EB-2005-0317. Hourly interval data will be normalized using weather normalization methodology approved by the Board in RP-2205-0020/EB-2005-0378. Professor Dean Mountain of McMaster University will review the methodology used for the impact analysis and the results of the final report.

Benefits of the Pilot Project

- Results from this RPP TOU pilot study will be useful for load research, load forecasting, CDM program planning and for identifying any potential issues pertaining to future RPP TOU program implementation.
- Networks intends to share the pilot results with the Board. If deemed useful and assuming results from other LDC RPP TOU projects are available, province-wide RPP TOU impact analysis can be performed using LDC-specific load shapes recently prepared for 80 LDCs in their cost allocation informational filings for EB-2005-0317.

Budget for the Pilot

- The pilot project will be fully funded by Networks' 3rd tranche CDM budget which was already approved by the Board in its decisions for RP-2004-0203/EB-2005-0198. The incremental cost for the pilot project is estimated to be about \$120,000, which include spending for the following items:
 - Incremental cost of bill preparation for 500 customers for 5 months;
 - Remuneration for Professor Dean Mountain of McMaster University to provide general project guidance;
 - Setting up and maintaining a special RPP TOU web site for customers to review their electricity consumption profiles;
 - Handling charges for shipping real time in-home display monitors to selected customers;
 - Cost for undertaking 2 customer surveys;
 - 1-800 telephone line handling calls from pilot participants;
 - Project communication materials with customers;
 - Financial incentives for customer to participate in the pilot project
- Cost for the real time in-house display monitors and smart thermostats are already covered by existing Hydro One's CDM programs using the 3rd tranche funding.

Appendix B:
Sample Invitation Letter to Customers

Hydro One Networks Inc.

TOU Pilot Project Team
8th Floor, South Tower
483 Bay Street
Toronto, Ontario M5G 2P5

Tel: (1 866) 258 8333
Fax: (416) 345-5870
Email: LoadResearch@HydroOne.com



Customer Name

Address

Address

Town

Postcode

May 10, 2007

Subject: Time-of-Use Pilot Project

Dear _____ :

As electricity conservation becomes more vital to sustaining a reliable supply of electricity in Ontario, Hydro One Networks Inc. ("Hydro One") is committed to working with you to develop effective conservation and demand management programs. We applied to the Ontario Energy Board (OEB) and received their approval to undertake a time-of-use (TOU) pricing pilot for about 500 customers from May 1 to September 30, 2007, to study how TOU rates affect the way people use electricity.

As one of Hydro One's first customers to have a smart meter installed, we are pleased to invite you to participate in this pilot project. If you are eligible to participate in this project, you will have the opportunity to see how much energy you can shift and save under the TOU rates.

How does the pilot project work?

Pilot participants will pay the OEB-approved TOU energy rates for five months (May through September, 2007) instead of the current Regulated Price Plan (RPP) energy rates (see the table below for comparison). Please note that the TOU rates pertain only to the electricity commodity prices and will not affect other charges on your electricity bill. During the pilot period, participants will receive a monthly bill clearly showing their electricity consumption differentiated by the TOU rate calculation. After September 30, 2007, participants will return to the regular RPP rates that they are now paying and to their usual billing arrangements. TOU rates during the pilot period will encourage participants to shift electricity consumption from the more expensive on-peak period to the less expensive off-peak period, resulting in lower electricity payments for the same consumption.

Type of Rate	Day of the Week	Time	Pricing	Rate (¢ per kWh)
RPP Rates*	Weekdays, Weekends & Holidays	All Day	First 600 kWh per month	5.3¢
			Additional kWh	6.2¢
RPP TOU Rates*	Weekends & Holidays	All Day	Off-Peak	3.2¢
	Weekdays	7:00am-11:00am	Mid-Peak	7.2¢
		11:00am-5:00pm	On-Peak	9.2¢
		5:00pm-10:00pm	Mid-Peak	7.2¢
		10:00pm-7:00am	Off-Peak	3.2¢

* These rates have recently been changed by the OEB and will be effective on May 1, 2007

How will the TOU pilot benefit participants?

Participants in the pilot will be able to take advantage of the lower off-peak electricity rates by switching their use from peak hours to off-peak hours. For instance, they will be able to save money by running the dishwasher during off-peak hours and by doing laundry on the weekends. Some participants who do not shift enough of their usage to off-peak hours may actually see an increase in their energy bill during the pilot.

To help participants better manage their electricity consumption, we will be offering a number of the pilot participants a **free Power Cost monitor valued at \$150**. If you are selected to participate in the pilot and then become one of the participants selected to receive the monitor, you will be able to see your electricity consumption on a real-time basis. The monitor also makes it possible to track electricity consumption during the month. Since quantities are limited, the Power Cost monitors will be offered on a first-come-first-serve basis to customers who are selected to participate in the pilot.

Pilot participants will also receive an energy efficiency kit with two compact fluorescent lights, a timer and energy saving tips. To help pilot participants better understand their electricity consumption patterns during the pilot, they will have access to a website showing their daily consumption profiles, which will be updated on a weekly basis.

How can you apply to participate?

Over the next two weeks, you may be contacted by Hydro One staff to determine your eligibility to participate in the TOU pilot. Please note that participation in the pilot is completely voluntary. If you are interested in participating or have any questions regarding this pilot, please call us at 1-866-258-8333 during office hours. This is a toll-free phone number specifically set up for the pilot. Alternatively, you can send an email to LoadResearch@HydroOne.com.

If you are selected to participate in the pilot, you will need to sign an agreement with Hydro One Networks Inc., agreeing to participate and to pay the TOU rates during the pilot period. You will also be asked to fill out two questionnaires, one at the beginning and of the pilot and the other at the end of the pilot, to provide further information to help the project team better understand the reasons for potential changes in your consumption patterns.

Thanks in advance for your interest.

Hydro One TOU Pilot Team

Appendix C:
Sample of TOU Pilot Agreement

CUSTOMER AGREEMENT FOR TIME-OF-USE PILOT PROJECT

The undersigned customer (“the Customer”) and Hydro One Networks Inc. (“Hydro One”) agree as follows:

1. The Customer wishes to participate in Hydro One’s time-of-use pilot project (“the Project”) that will be in effect from May through September, 2007, and the Customer hereby enrolls in the Project in accordance with the terms and conditions in this Agreement. The Term of this Agreement shall commence on the Customer’s normal billing date in May, 2007, and shall end on the Customer’s normal billing date in September, 2007.

2. During the Term, the Customer will be charged and will pay for the electricity component of the monthly bill in accordance with the “Pilot Project TOU Rates” that appear in the chart below; and after the Term, the rates for the electricity component of the monthly bill will be the “RPP Rates” that appear in the chart below. The rates for the electricity component of the monthly bill will also be the said “RPP Rates” if and when the Customer ceases residing in the premises before the end of the Term. During the Term, all the other terms and conditions of the Customer’s existing electricity distribution contract with Hydro One will remain unchanged.

Type of Rate	Day of the Week	Time	Pricing	Rate (¢ per kWh)
RPP Rates Effective May 1, 2007	Weekdays, Weekends & Holidays	All Day	First 600 kWh per month	5.3¢
			Additional kWh	6.2¢
Pilot Project TOU Rates Effective May 1, 2007	Weekends & Holidays	All Day	Off-Peak	3.2¢
	Weekdays	7:00am-11:00am	Mid-Peak	7.2¢
		11:00am-5:00pm	On-Peak	9.2¢
		5:00pm-10:00pm	Mid-Peak	7.2¢
		10:00pm-7:00am	Off-Peak	3.2¢

3. Depending on the day and time of day that the Customer uses electricity during the Term, the Pilot Project TOU Rates may result in the Customer’s charges for the electricity component of the monthly bill being higher or lower than the amount that the Customer would have paid effective May 1, 2007, had the Customer not participated in the Project, even if the amount of electricity used remains the same as it was before the Term began.

4. After the Term begins, Hydro One will give the Customer an energy efficiency kit containing two compact fluorescent light bulbs, a timer, and energy saving tips. *[After the signed original of this Agreement is received by Hydro One from the Customer, Hydro One will send the Customer a thank-you bonus cheque of \$50, subject to the following: the thank-you bonus will not be paid unless the Customer continues to reside in the same premises for the entire Term and unless the Customer completes and returns to Hydro One the two questionnaires referred to below.] [After the signed original of this Agreement is received by Hydro One from the Customer, Hydro One may, in its discretion, provide the Customer with a Power Cost Monitor valued at \$150, which monitor will enable recipients to view electricity consumption on a real-time basis.]*

5. During the Term, the Customer will have access to a website showing the Customer's daily consumption profiles, which will be updated on a weekly basis.
6. As a condition of being permitted to participate in the Project, the Customer will complete and return to Hydro One two questionnaires provided by Hydro One, one at the beginning of the Project and one at the end, in order to provide further information concerning the reasons for any changes in the Customer's consumption patterns.
7. No benefit of this Agreement may be assigned by the Customer to any other person.
8. Notwithstanding anything else in this Agreement except clause 9 below, Hydro One may terminate this Agreement at any time during the Term or prior to the commencement of the Term by giving written notice to the Customer. If such notice is provided, the Customer shall begin paying the RPP Rates shown in the chart above, effective on the Customer's first billing date after receipt of the notice. Hydro One shall not have any liability to the other party arising out of the termination.
9. References in this Agreement to "RPP Rates" or "RPP Rates that appear in the chart below" shall be deemed to be the RPP rates in effect at the time of the Customer's return to RPP rates. The RPP rates in effect at the time of the Customer's return to RPP rates may be higher or lower than the RPP rates shown in the chart shown in clause 2 of this Agreement.

Signed by the Customer on April _____, 2007.

Signature of Customer

Printed Name of Customer

Customer's address and postal code (please print)

HYDRO ONE NETWORKS INC.

Name:

Title:

I have authority to bind the Corporation.

Appendix D:
Sample of Interim and Final Report

Time- of- Use Pilot Interim Report

Customer Name:

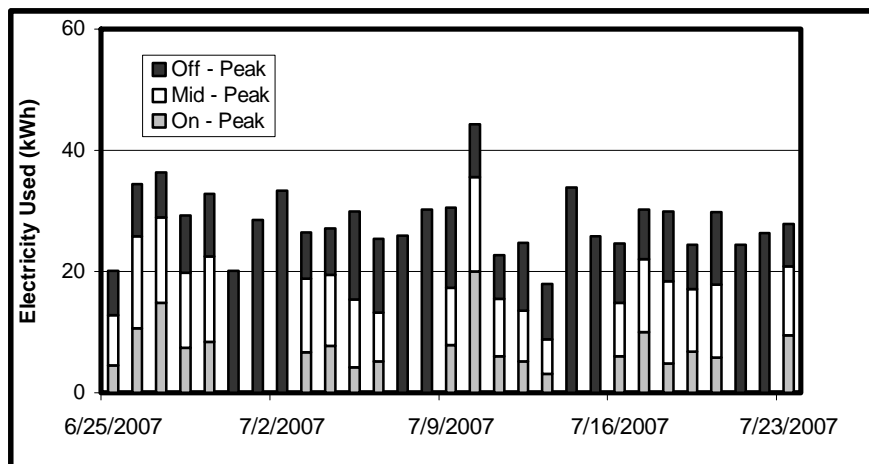
Account Number:

This interim report shows your electricity usage on the Time-of-Use (TOU) pilot from 6/25/2007 to 7/23/2007.

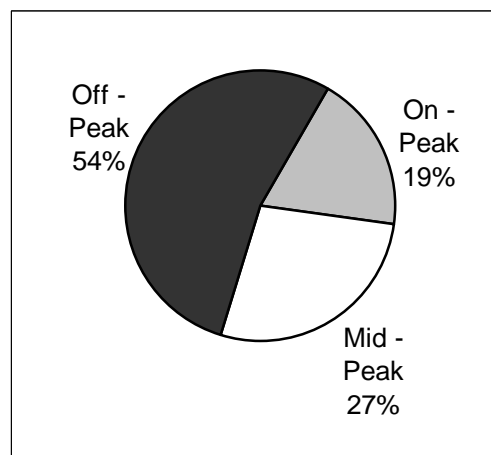
For easy reference, the current TOU rates set by the Ontario Energy Board are summarized below.

Type of Rate	Day of the Week	Time	Pricing	Rate (¢ per kWh)
TOU Rates	Weekends & Holidays		Off-Peak	3.2¢
	Weekdays	7:00am – 11:00am	Mid-Peak	7.2¢
		11:00am – 5:00pm	On-Peak	9.2¢
		5:00pm – 10:00pm	Mid-Peak	7.2¢
		10:00pm – 7:00am	Off-Peak	3.2¢

Your total electricity usage from 6/25/2007 to 7/23/2007



Usage by TOU periods



Comparison – TOU rates versus RPP rates

Your current bill on the TOU rates			
	kWh	Rates (¢ / kWh)	Total
On - Peak	169	9.2	\$ 15.55
Mid - Peak	244	7.2	\$ 17.57
Off - Peak	479	3.2	\$ 15.33
Total	892		\$ 48.44

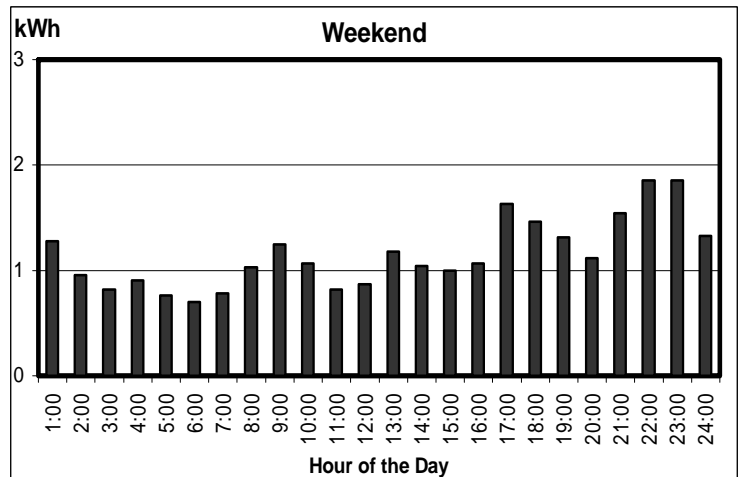
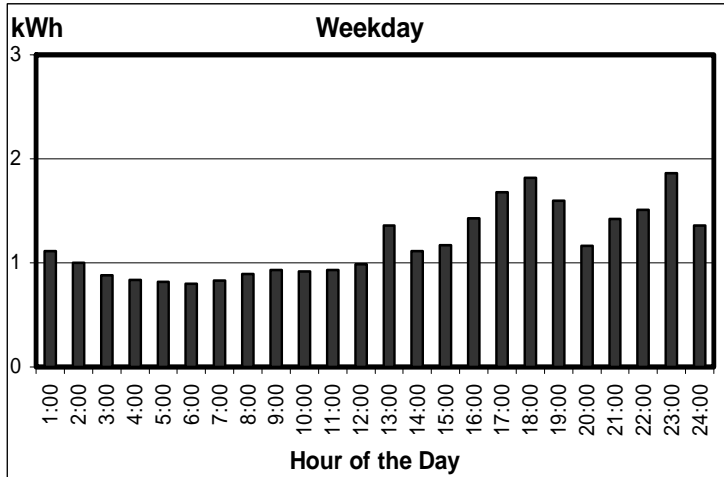
What you would pay if you were on RPP rates			
	kWh	Rates (¢ / kWh)	Total
First 600 kWh per month	600	5.3	\$ 31.80
Additional kWh	292	6.2	\$ 18.11
Total	892		\$ 49.91

For the month of June, 76% of the pilot participants were better off under the TOU rates.






To help you take advantage of the TOU rates, please see the energy tips provided at the back of this report.

You may also want to visit our website at www.HydroOneNetworks.com for further energy saving tips.

Average weekday and weekend profile



Tips for customers on TOU rates

- **Cooling Down the Heat...** 
 - Pre-cool your house early in the morning and increase the temperature setting during on-peak hours.
 - Use a fan to improve air circulation during on-peak hours.
- **Saving the Laundry Dollars ...** 
 - Do your laundry during the weekends to take advantage of the lower off-peak rates on Saturdays and Sundays.
 - Try to schedule ironing during off-peak hours.
- **Kitchen Savers ...** 
 - Use the oven during off-peak hours. Try the microwave oven or gas barbeque during on-peak hours.
 - Run your dishwasher during off-peak hours.
- **Cooling Down in Your Pool...** 
 - Use the timer on your pool pump and let it run during off-peak hours.
 - Use a solar blanket to keep the water warm overnight and reduce your heater use.
- **Around Your House...** 
 - Use other major appliances, such as vacuum or sauna, during off-peak hours.
 - Turn monitor off instead of using a screen saver while you are not using a computer.

Don't forget to logon at www.HydroOneNetworks.com\TOU to view your weekly consumption on the TOU pilot.

If you have any questions about the pilot or would like to provide any feedback, please contact the TOU pilot team at 1-866-285-8333 or by email at LoadResearch@HydroOne.com.

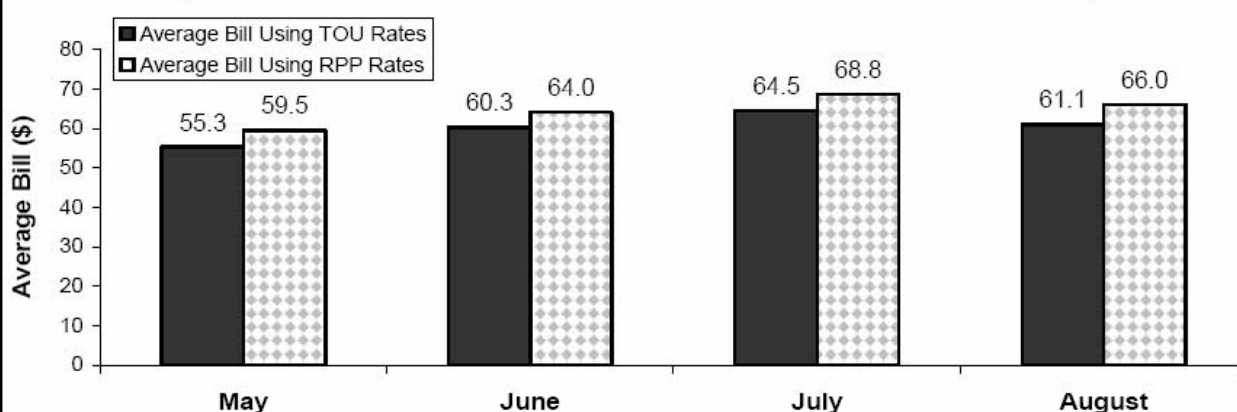
Time-of-Use Pilot Project Final Report

Customer Name:

Account Number:

This report shows the electricity usage information for all Time-of-Use (TOU) pilot participants and your usage profile from 25-May-07 to 25-Sep-07.

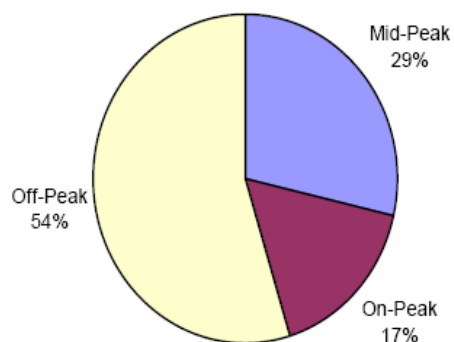
Average Bill Comparison for All TOU Pilot Participants



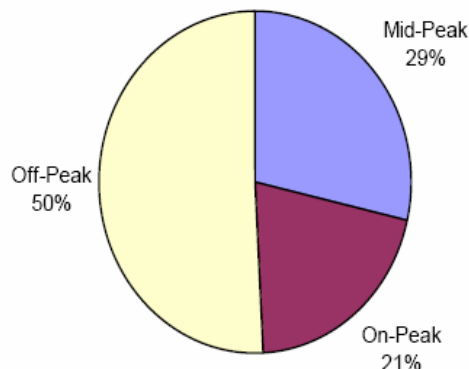
Your Bill Comparison-TOU Versus RPP Rates

Bill Period	kWh	Bill on TOU Rates	Bill on RPP Rates	Difference
May	1775	\$98.72	\$104.65	\$5.93
June	1667	\$94.78	\$97.95	\$3.17
July	1949	\$111.07	\$115.44	\$4.37
August	1398	\$74.26	\$81.28	\$7.02
Total	6789	\$378.83	\$399.32	\$20.49

Average usage profile of all participants during the TOU pilot



Your total usage profile during the TOU pilot

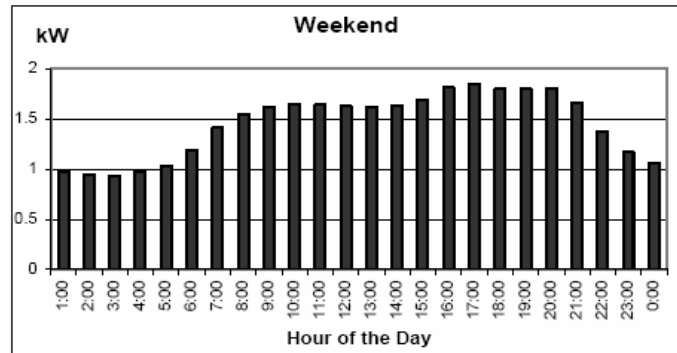
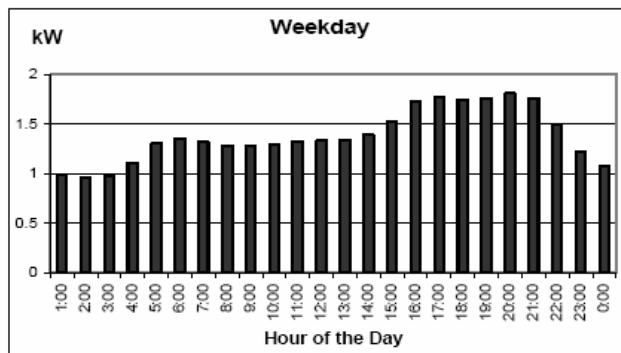


Thanks to your great effort, the TOU project is a success.

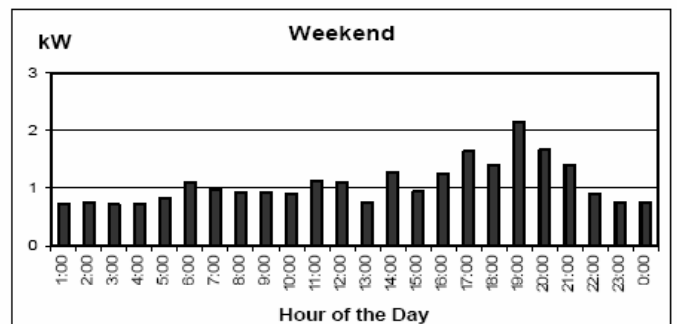
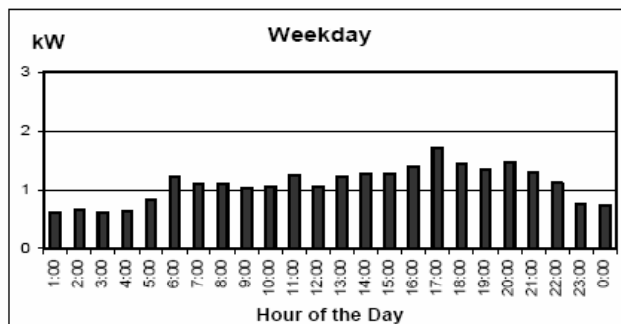
Key findings:

- 76% of all pilot participants save on their bills under TOU rates;
- On average, pilot participants shift 3.7% of their usage away from on-peak periods;
- Also, customers on the pilot reduce 3.3% of their usage compared to last year;
- 72% of all pilot participants would like to remain on the project;
- 87% said they have changed their behavior.

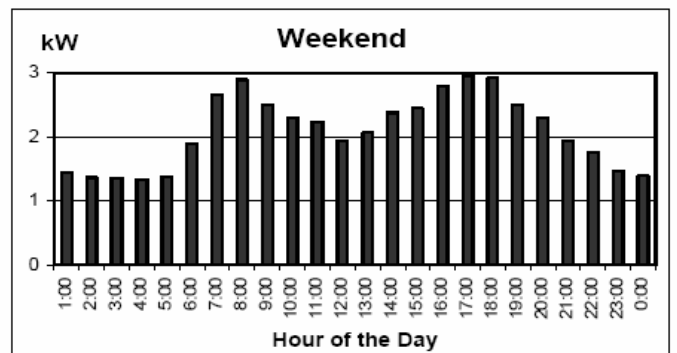
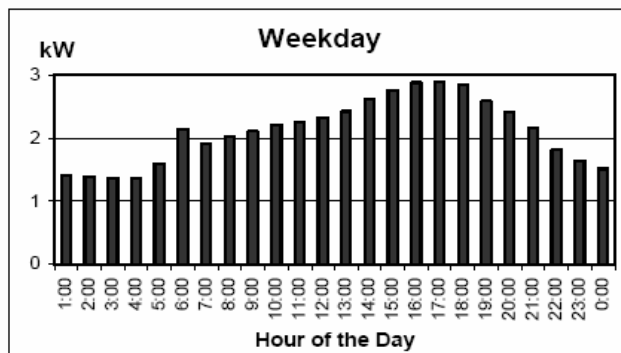
Average Usage Profile for All Participants during the TOU Pilot



Your Average Usage Profile One Month before the TOU Pilot



Your Average Usage Profile during the TOU Pilot



Try our new online energy audit tool for your home or business! PowerSaverPlus will give you tips to use less electricity and save on your bill. Visit www.hydroonenetworks.com/PowerSaverPlus today! It's easy. It's free. Plus, you could win one of 20 electricity usage monitors!

To get more information about energy conservation, visit our website at www.PowerSaver.ca

If you have any questions about this report or the new online energy audit, please contact us at 1-866-258-8333 or by email at LoadResearch@HydroOne.com.

Appendix E:
Sample of Residential Appliance Survey
and Feedback Survey

Customer Account #

--	--	--	--	--	--	--	--	--	--

Post Code

				-			
--	--	--	--	---	--	--	--



Residential Appliance Survey

Hydro One is working with the Ontario government to build a conservation culture. By completing this survey, you are helping us understand your electricity needs and how you use electricity. Your participation in this survey is voluntary and all information collected will be kept strictly confidential and used for research purposes only by Hydro One.

SECTION 1 - YOUR HOME

- In what type of building do you live?

<input type="radio"/> Single detached	<input type="radio"/> Semi-detached house
<input type="radio"/> Townhouse or Row house	<input type="radio"/> Apartment or Condominium
<input type="radio"/> Other	
- When was your home built?

<input type="radio"/> Before 1956	<input type="radio"/> 1987-1996
<input type="radio"/> 1957-1976	<input type="radio"/> 1997 or later
<input type="radio"/> 1977-1986	<input type="radio"/> Don't Know
- What is the size of the living space of your home in square feet?
Do NOT include your garage, attic or basement.

<input type="radio"/> Less than 1,000	<input type="radio"/> 2,500 – 2,999
<input type="radio"/> 1,000 – 1,499	<input type="radio"/> 3,000 – 3,999
<input type="radio"/> 1,500 – 1,999	<input type="radio"/> 4,000 or more
<input type="radio"/> 2,000 – 2,499	<input type="radio"/> Don't Know
- Is natural gas available on your street?

<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Don't Know
---------------------------	--------------------------	----------------------------------
- What type of primary space heating system do you have?
ONLY ONE ANSWER

<input type="radio"/> Electric baseboard
<input type="radio"/> Electric furnace
<input type="radio"/> Natural gas
<input type="radio"/> Oil
<input type="radio"/> Heat pump
<input type="radio"/> Propane
<input type="radio"/> Wood
<input type="radio"/> Other
- What type of supplementary space heating system(s) do you have, if any? ONLY ONE ANSWER

<input type="radio"/> Electric baseboard
<input type="radio"/> Electric furnace
<input type="radio"/> Natural gas
<input type="radio"/> Oil
<input type="radio"/> Heat pump
<input type="radio"/> Propane
<input type="radio"/> Wood
<input type="radio"/> Other
<input type="radio"/> None

- Please indicate how much of your home is heated by the supplementary system.

Space Heating Systems	(square footage of house heated by the supplementary system)		
	Less than 20%	21% to 35%	36% to 50%
Electric baseboard	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Electric furnace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Heat pump	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- What type of water heater do you have? ONLY ONE ANSWER

<input type="radio"/> Electric
<input type="radio"/> Natural gas
<input type="radio"/> Propane
<input type="radio"/> Oil
<input type="radio"/> Other
<input type="radio"/> None
- What type of air - conditioning equipment do you have and how old is it?

Air - conditioning equipment	Age (years)				
	Less Than 5	5 to 10	10 to 15	More than 15	Do Not Have
Central air - conditioner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Heat pump (Ground Source)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Heat pump (Air source)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Window air - conditioner # 1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Window air - conditioner # 2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Window air - conditioner # 3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- Do you have a programmable thermostat?

<input type="radio"/> Yes	<input type="radio"/> No
---------------------------	--------------------------
- In the winter, do you lower the temperature?

(i) At night	<input type="radio"/> Yes	<input type="radio"/> No
(ii) When you're not home	<input type="radio"/> Yes	<input type="radio"/> No

12. In an average week during the 2006 cooling season, what were your normal temperature settings?

	Less than 64°F (18°C)	65°F to 68°F (19°C)	69°F to 70°F (20°C)	71°F to 72°F (21°C)	73°F to 74°F (22°C)	75°F to 76°F (23°C)	More than 77°F (25°C)
Afternoon (1pm - 4pm)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Evening (4pm - 11pm)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. How many of the listed lighting products do you use INSIDE your home?

Lighting Products	Number						
	0	1-2	3-5	6-10	11-15	16-20	21+
Regular light bulbs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Halogen light bulbs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fluorescent tubes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Compact fluorescent lights	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. How many of each of the listed lighting products do you use OUTSIDE your home?

Lighting Products	Number				
	0	1-2	3-5	6-10	11+
Regular light bulbs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Regular floodlight/spotlights	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Halogen floodlight/spotlights	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Compact fluorescent lights	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15. We would like to find out about the electrical appliances currently in your home.

Appliance	Age (years)				
	Less than 5	5 to 10	10 to 15	More than 15	Do not have
Full size refrigerator #1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Full size refrigerator #2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Freezer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mini / bar fridge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appliance	Number of Appliances			
	0	1	2	More Than 2
Personal computer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Television	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Microwave oven	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Top load washing machine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Front load washing machine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dishwasher	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Whirlpool bathtub	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hot tub	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Electric air filter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pool pump	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dehumidifier	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appliance	Fuel Source		
	Gas	Electricity	Propane
Range / oven	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clothes dryer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pool heater	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sauna	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SECTION 2 - ENERGY CONSERVATION

16. Would you be interested in a program that allows Hydro One to increase the central air conditioning setting by 2°C during peak periods?

☐ Yes ☐ No ☐ Participated in the program

17. Would you be interested in a program that allows Hydro One to shut off the electric water heater during peak periods?

☐ Yes ☐ No ☐ Participated in the program

18. Would you be interested in an in-home device that tracks and displays ongoing electricity consumption?

☐ Yes ☐ No ☐ Participated in the program

19. Would you be interested in a program that collects and recycles old appliances from your house?

Fridge ☐ Yes ☐ No ☐ Not applicable

Freezer ☐ Yes ☐ No ☐ Not applicable

Room air - conditioner ☐ Yes ☐ No ☐ Not applicable

20. Would you be interested in installing an energy-saving device on the water heater?

☐ Yes ☐ No ☐ Already installed

21. If you were to participate in a conservation program, how do you plan to save energy?

Program	Already achieved as part of Hydro One /	Already achieved - personal	Interested for future	Not interested for the future
More efficient air cooling system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
More efficient space heating system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
More efficient water heating system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Programmable thermostat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Purchase energy saving appliances	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increase insulation of doors, windows and roof	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participate in a "Do-it-Yourself" online energy audit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participate in professional energy audit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22. Please indicate if you would be interested in using coupons/ rebates to purchase the following energy - saving products.

Program	Interested	Not Interested
Compact fluorescent light bulbs	<input type="radio"/>	<input type="radio"/>
LED holiday lights	<input type="radio"/>	<input type="radio"/>
ENERGY STAR appliance	<input type="radio"/>	<input type="radio"/>
Heating system / furnace	<input type="radio"/>	<input type="radio"/>
Programmable thermostat	<input type="radio"/>	<input type="radio"/>
ENERGY STAR air conditioner	<input type="radio"/>	<input type="radio"/>

23. How would you like to receive energy conservation information from Hydro One?
- ☐ Information in my bills
 - ☐ Regular mail
 - ☐ Media advertising
 - ☐ Hydro One website
 - ☐ Hydro One e-mail
 - (Please provide email address) _____
 - ☐ Not interested
24. What type of Internet connection do you have?
- ☐ High speed at home
 - ☐ High speed at work
 - ☐ Dial - up at home
 - ☐ Dial - up at work
 - ☐ None
25. Would you be interested in receiving, viewing and paying Hydro One bills online?
- ☐ Yes
 - ☐ No
 - ☐ Already registered
 - ☐ Do not have facilities to do so.
26. If you are interested in joining a Hydro One Customer Survey Panel to provide Hydro One with ongoing input about services, programs and communications, via short Internet surveys, please enter your email address below.
- _____

SECTION 3 – HOUSEHOLD DEMOGRAPHICS

Your answers to the following questions will help assist Hydro One in using your survey responses to represent other households with similar demographics. Please note that all responses will be kept **strictly confidential** and will be used for research purposes only.

27. How many people currently live in your home:
- | | | | |
|-------------------------|-------------------------|-------------------------|-----------------------------------|
| <input type="radio"/> 0 | <input type="radio"/> 2 | <input type="radio"/> 4 | <input type="radio"/> 6 |
| <input type="radio"/> 1 | <input type="radio"/> 3 | <input type="radio"/> 5 | <input type="radio"/> More than 6 |
28. Do you own or rent your home?
- | | | |
|---------------------------|----------------------------|-----------------------------|
| <input type="radio"/> Own | <input type="radio"/> Rent | <input type="radio"/> Other |
|---------------------------|----------------------------|-----------------------------|
29. What is your TOTAL household income before tax for 2006?
- | | |
|---|---|
| <input type="radio"/> Less than \$20,000 | <input type="radio"/> \$80,000 – \$99,999 |
| <input type="radio"/> \$20,000 – \$39,999 | <input type="radio"/> Over \$100,000 |
| <input type="radio"/> \$40,000 – \$59,999 | <input type="radio"/> Decline to provide |
| <input type="radio"/> \$60,000 – \$79,999 | |

THANK YOU FOR YOUR TIME AND COOPERATION.

To be eligible to win our contest, you must correctly answer this skill testing question...

50 multiplied by 5, divide by 10, add 15 & subtract 10.

Time-of-Use Pilot Project – 2nd Questionnaire

This is the second and final questionnaire for the Hydro One Time-of-Use (TOU) Pilot. Please respond by September 30th, 2007.

SECTION 1 – YOUR ACTIONS DURING THE TOU PILOT

- 1) (a) During the pilot, did you and your household members (hereafter referred to as “you”) change the way you use electricity to take advantage of the TOU rates?

☐ Yes ☐ No

- (b) If yes, in the table below, please indicate the time periods during which you made changes to your electricity usage and to what extent. *If no, please go to question 2.*

	Overall	Mid - peak (7am-11am)	On - peak (11am-5pm)	Mid - peak (5pm-10pm)	Off - peak (10pm-7am)	Off - peak (Weekends)
No changes made						
A few changes made						
Some changes made						
Significant changes made						

- 2) Please identify the actions that you took during the pilot to take advantage of the TOU rates. *Please select all that apply to you.*

(i) Cooling

- ☐ Set back your thermostat in the evening? If yes, by how many degrees? ____ °C or ____ °F
- ☐ Set back your thermostat during the day? If yes, by how many degrees? ____ °C or ____ °F
- ☐ Pre-cool the house during off-peak hours and increase the temperature setting during on-peak hours.
- ☐ Use a fan and turn off the air conditioner.
- ☐ Use a fan in addition to the air conditioner to improve air circulation.
- ☐ Other, please specify _____

(ii) Electric Water Heating *(Please answer this question only if you have electric water heating and select all that apply to you. If not, please go to the next question)*

- ☐ Schedule hot water use during off-peak hours (i.e. showers and washing)
- ☐ Install water heater blanket to reduce heat loss
- ☐ Other, please specify _____

(iii) **Pool**

- ☐ Use a timer on the pool pump and let it run during off-peak hours
- ☐ Use a timer on the pool heater and let it run during off-peak hours
- ☐ Use a solar blanket to keep the pool water warm overnight to reduce the heater use
- ☐ Other, please specify _____

(iv) **Laundry and dishwashing**

- ☐ Schedule the laundry during off-peak hours instead of mid-peak or on-peak hours
- ☐ Run the dishwasher during off-peak hours
- ☐ Hang clothes to dry outside
- ☐ Wash dishes by hand
- ☐ Other, please specify _____

(v) **Insulation and windows**

- ☐ Air sealing retrofit (e.g. apply caulking around window frame to prevent air leakage)
- ☐ Other, please specify _____

(vi) **Other appliances**

- ☐ Have you shifted your usage of other appliances to off-peak periods (after 10 p.m. or during weekends)?
If yes, please provide details _____
- ☐ Have you reduced your use of appliances? If yes, please provide details _____
- ☐ Control any of your household equipment and/or appliances with timers? If yes, please specify _____
- ☐ Switch to more energy efficient or low wattage light bulbs such as compact fluorescent light bulbs?
- ☐ Purchase an appliance that displays the ENERGY STAR® label? If yes, please check-off all that apply to you from the following list:
 - ☐ Washing Machine ☐ Dishwasher ☐ Hot Water Tank
 - ☐ Dryer ☐ Air Conditioner ☐ Heating System/Furnace
 - ☐ Fridge ☐ Freezer ☐ Other, please describe _____

(vi) **Other Actions**

- ☐ Other actions not listed? If yes, what are they? _____
- ☐ I have not undertaken any actions since **May 2007**.

- 3) (a) Please indicate **when** you use the following appliances during the TOU pilot.

	Weekdays				Weekends
	7 am - 11 am	11am - 5pm	5pm - 10pm	10pm - 7am	All day
Television					
Computer					
Printer, Scanner, Copier					
Dehumidifier					
Fan					
Spa / Hot Tub					
Pool Pump					
Washing Machine					
Clothes Dryer					
Oven					
Dishwasher					
Microwave					

- (b) Please indicate **how often** you use these appliances on weekdays between 11 am and 8 pm.

	Never	1 day a week	2-3 days a week	4 or more days a week
Television				
Computer				
Printer, Scanner, Copier				
Dehumidifier				
Fan				
Spa / Hot Tub				
Pool Pump				
Washing Machine				
Clothes Dryer				
Oven				
Dishwasher				
Microwave				

SECTION 2 – YOUR VIEWS ABOUT THE TOU PILOT

- 4) (a) Would you recommend the TOU rates to your friends if the pilot was expanded?

☐ Yes ☐ No

- (b) Why or why not?

- 5) Do you feel the current difference between “off-peak” and “on-peak” rates is large enough to provide you with the necessary incentive to shift your electricity consumption to “off-peak” periods?

☐ Yes ☐ No

6) (a) How do you feel about the TOU rates affecting your daily activities?

☐ Do not mind ☐ Slightly bothersome ☐ Bothersome ☐ Very bothersome

(b) Please indicate why _____

7) What **benefits** do you feel the TOU rates offer to consumers? *Please select all that apply to you.*

- ☐ Allows participants to become more aware of “when” they use electricity during the day or week
- ☐ Allows participants to become more aware of their “total electricity consumption” regardless of the time of day or week you use it
- ☐ Makes participants more conscious about what they can do to reduce their electricity bill (e.g., turning off lights or other devices when not in use, shifting usage to cheaper periods)
- ☐ Makes participants more conscious about “peak” usage
- ☐ Gives participants greater control over their electricity costs
- ☐ Benefits to the environment
- ☐ Other benefits, please specify _____
- ☐ No benefits (*Please go to question 8*)

8) What is the **main benefit** of the TOU rates to electricity consumers? *Please select one only.*

- ☐ Allows participants to become more aware of “when” they use electricity during the day or week
- ☐ Allows participants to become more aware of their “total electricity consumption” regardless of the time of day or week you use it
- ☐ Makes participants more conscious about what they can do to reduce their electricity bill (e.g., turning off lights or other devices when not in use, shifting usage to cheaper periods)
- ☐ Makes participants more conscious about “peak” usage
- ☐ Gives participants greater control over their electricity costs
- ☐ Benefits to the environment
- ☐ Other benefits, please specify _____

9) (a) If given the option, would you like to remain on the TOU rates?

☐ Yes ☐ No

(b) Please specify why or why not? _____

- 10) As a result of receiving your TOU bills, interim report and using the in-home display device (PowerCost Monitor), how likely are you to change your electricity usage in the **future** and during which time periods.

	Overall	Mid - peak (7am-11am)	On - peak (11am - 5pm)	Mid - peak (5pm-10pm)	Off - peak (10pm-7am)	Off - peak (Weekends)
Not at all likely						
Not very likely						
Likely						
Very Likely						

- 11) Please check off any of the following that apply to you regarding your monthly TOU electricity bills.

- ☐ Information was easy to understand
☐ Information was helpful in understanding how much electricity was used during different periods
☐ Information was helpful for shifting electricity usage to off-peak and mid-peak periods
☐ Information was helpful in understanding how to save on electricity bill
☐ Information was useful in reducing total electricity usage

- 12) (a) How often did you access information on your electricity usage on the website?

- ☐ Daily ☐ Weekly ☐ 2-3 times a month ☐ Monthly
☐ Often ☐ Once or twice during the pilot ☐ Never

- (b) Did you find the information on the website useful in helping you to understand the usage profiles and lower your electricity bills?

- ☐ Yes ☐ No

- (c) What other information would you like to see on the website?

- 13) (a) Did you find the information in the interim report useful in helping you to understand the usage profiles and lower your electricity bills?

- ☐ Yes ☐ No

- (b) What other information would you like to see on the report?

- 14) Thinking about the different communication you received as part of the TOU pilot program, please indicate your preferred method of receiving this information.

	Mail	Fax	E-mail	Telephone	Online
General communications about the Pilot					
TOU bills					
Interim reports					

- 15) Thinking about information that would help you to manage your electricity bill under TOU rates, please check off all the information that would be helpful:

- ☐ A booklet with tips to help you manage your electricity bill under TOU rates.
☐ A fridge magnet defining the TOU periods
☐ Bill messages providing tips on TOU rates appropriate for the season
☐ Bill inserts providing helpful tips on managing your bill under TOU rates appropriate for the season
☐ A portion of Hydro One's web site dedicated to managing your electricity use under TOU rates.
☐ A DVD providing you with tips on managing your electricity bill under TOU rates
☐ Other, please specify _____

- 16) Thinking about the different communication you received as part of the TOU pilot, is there any additional information you think would help you to benefit more from the TOU prices?

- (a) Please indicate whether the PowerCost Monitor, valued at \$150, influenced your decision to participate in the pilot.

☐ Yes ☐ No

- (b) Please indicate how you felt about the incentive offered to you to participate in the pilot.

☐ Not necessary ☐ Too little ☐ Adequate ☐ Too much

- 17) (a) Have you found the PowerCost Monitor to be useful in helping you conserve energy in your home?

☐ Yes ☐ No

- 18) (a) Was the PowerCost Monitor easy to install and program?

☐ Yes ☐ No

- (b) If no, please provide details of any difficulties that you encountered.

19) Which features have you found useful on the PowerCost Monitor?

- | | | |
|--|--|---|
| <input type="checkbox"/> \$Dollars/Hr | <input type="checkbox"/> KW | <input type="checkbox"/> External temperature |
| <input type="checkbox"/> \$Dollars | <input type="checkbox"/> KWHrs | |
| <input type="checkbox"/> Predicted \$Dollars | <input type="checkbox"/> Predicted KWHrs | |

20) In your opinion, what are the major benefits of the PowerCost Monitor? Please rank the listed benefits in order of importance to you, with one (1) being the most important benefit and eight (8) being the least important benefit. You may select a ranking more than once, if you feel the level of importance applies to more than one benefit.

- ☐ With more information available we can make more informed consumption choices
- ☐ The instantaneous feedback is ideal
- ☐ We can keep the monitor at the end of the pilot program
- ☐ We like the information features on the monitor
- ☐ Ability to reduce my electricity consumption to help minimize the cost of my electricity bill
- ☐ Ability to reduce my electricity consumption to assist with environmental conservation
- ☐ To help prevent future shortages/blackouts
- ☐ Other, please specify _____

21) (a) In your opinion, how could the PowerCost Monitor be improved?

- ☐ Eliminate the need to install the sensor unit on the meter
- ☐ Equip the monitor with the ability to display different colors (green/red) to alert you of different TOU periods
- ☐ Equip the monitor with more graphs and charts
- ☐ Equip the monitor with the ability to communicate two ways to inform you of periods of high provincial electricity demand or helpful tips for the time of day/day of week/season

(b) Given your experience with TOU rates, would you be interested in the ability to control electricity use (air conditioner, thermostat, pool/spa pumps, hot water heater) remotely through the internet or telephone?

- ☐ Yes ☐ No

(c) Given your experience with TOU rates, would you be interested in Hydro One programs to automatically control selected appliances (such as air conditioner and electric water heater) during high demand periods?

- ☐ Yes ☐ No

22) Based on your experience with the PowerCost Monitor to date, how much do you hope to save on your energy consumption each month?

- ☐ 0-5% ☐ 5-10% ☐ 10-15% ☐ 15-20% ☐ Greater than 20%

23) How much do you think customers would like to pay for the PowerCost Monitor by themselves?

\$ _____

SECTION 3 – YOUR HOME AND DEMOGRAPHICS

24) (a) How many people are currently living in your household? _____

(b) Please indicate the number of people that are home USUALLY (more than 50% of the time) during the week

Indicate Number of People at Home			
7 AM to 11 AM	11 AM to 5 PM	5 PM to 10 PM	Weekends

25) (a) Have you changed any appliances or heating and cooling devices since **May 2007**?

☐ Yes ☐ No

(b) If yes, please indicate the date the change was made and provide details of the change.

Month: _____ Year: _____

26) (a) Has your home undergone any renovations since **May 2007**?

☐ Yes ☐ No

(b) If yes, please indicate the date the change was made and provide details of the change.

Month: _____ Year: _____

27) (a) Has the square footage of your house changed since **May 2007**? (Please include basements, attics, etc. only if “finished”)

☐ Yes ☐ No

(b) If yes, please indicate the date the change was made and provide details of the change.

Month: _____ Year: _____

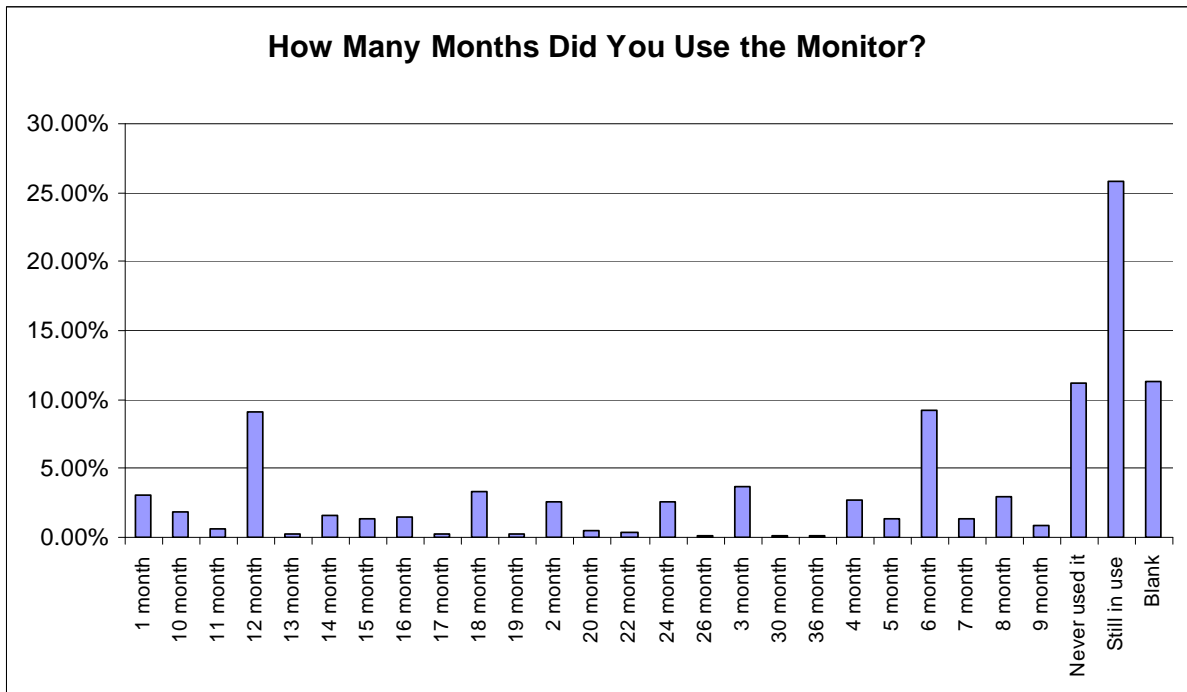
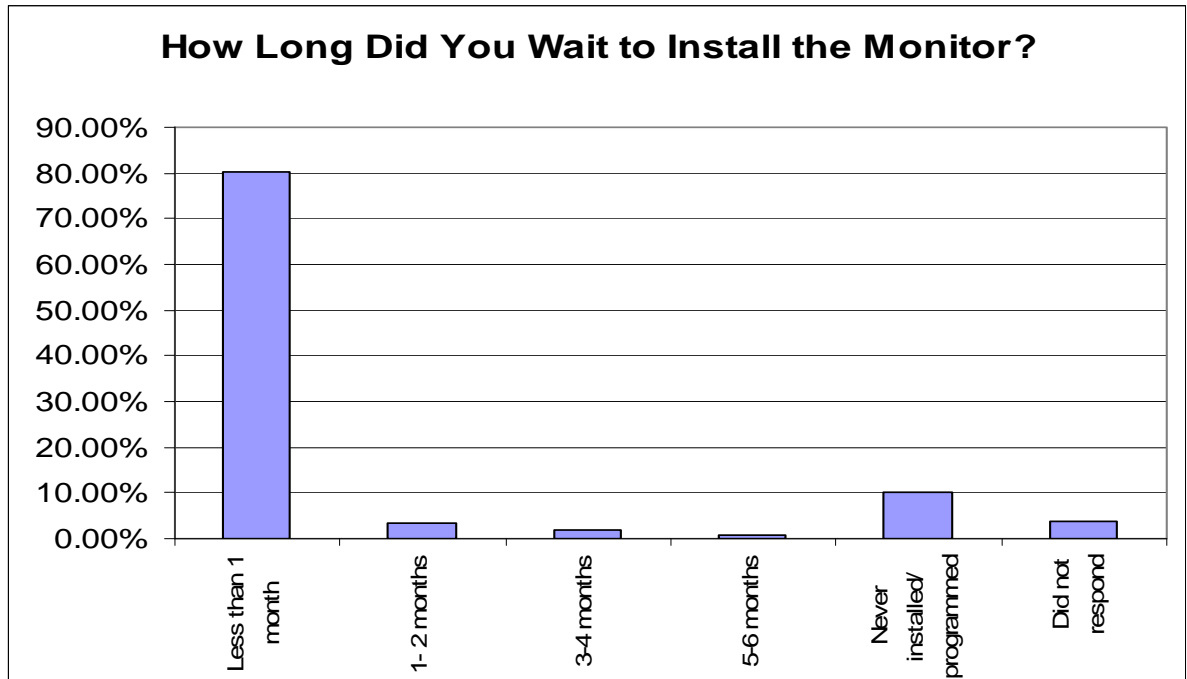
Thank you for taking the time to fill out this questionnaire

Attachment 8:

2008 Power Cost Monitor Survey Result

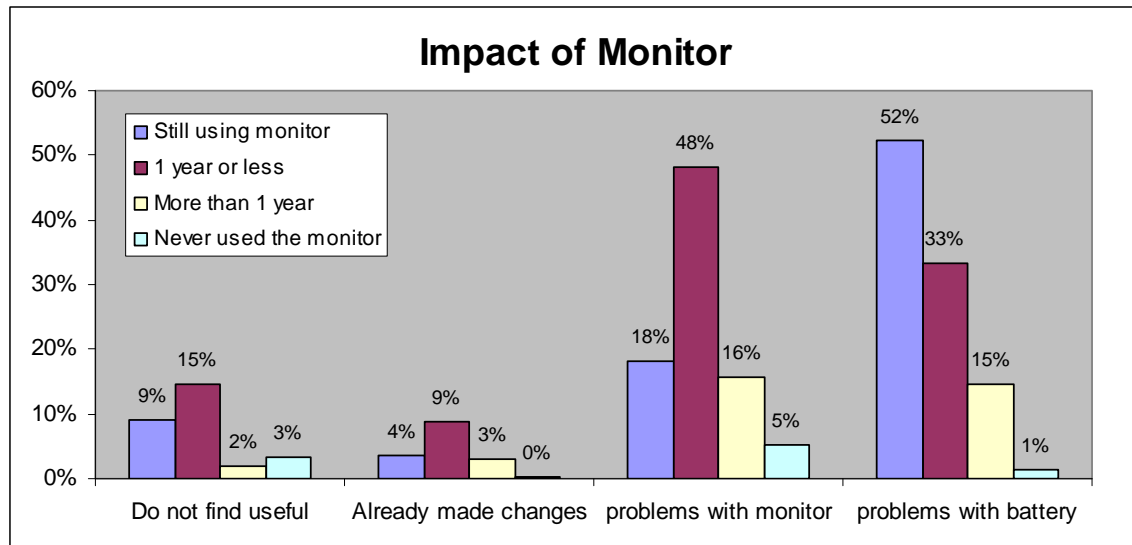
Installing and Using the PowerCost Monitor

- 80.4% installed their monitor within the first month
- 11-12% never installed or programmed their monitor
- 25.8% are still using their monitor



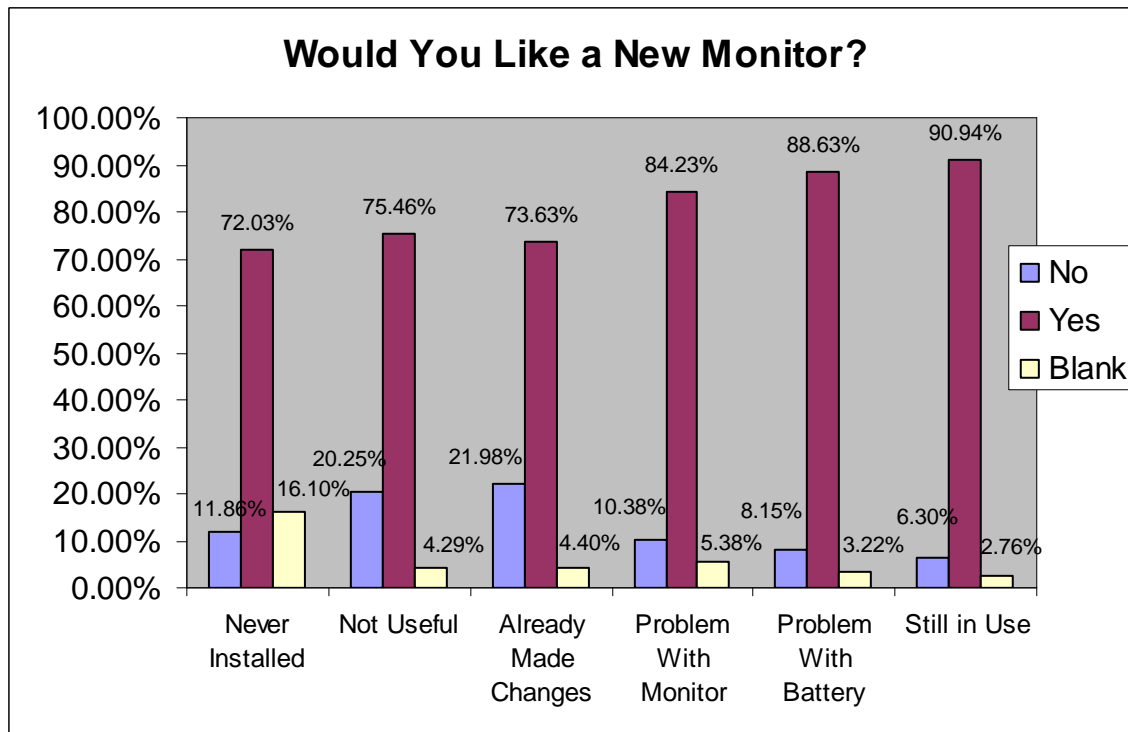
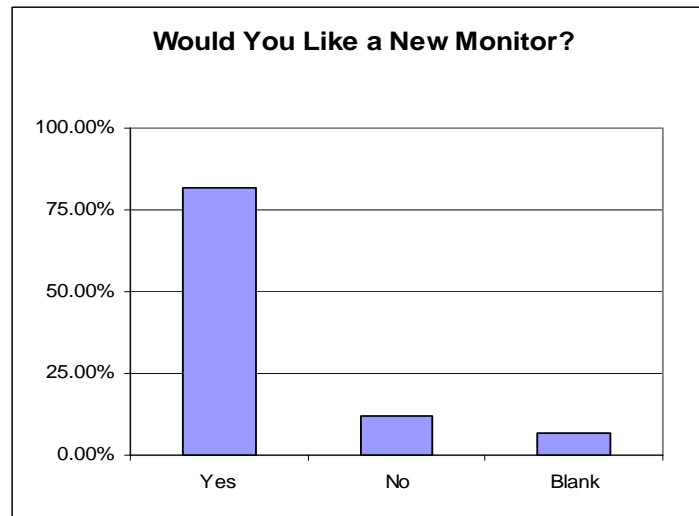
Impact of the Monitor

- 9% of people still using do not find it useful and 4% have already made changes
- Only 2% of people using more than 1 year do not find it useful
- 48% of people using more than 1 year had problems with monitor and 33% had problems with battery
- 18% of people still using had problems with monitor and 52% had problems with battery
- 3% of people who never used did not find it useful and 5% had problems with monitor



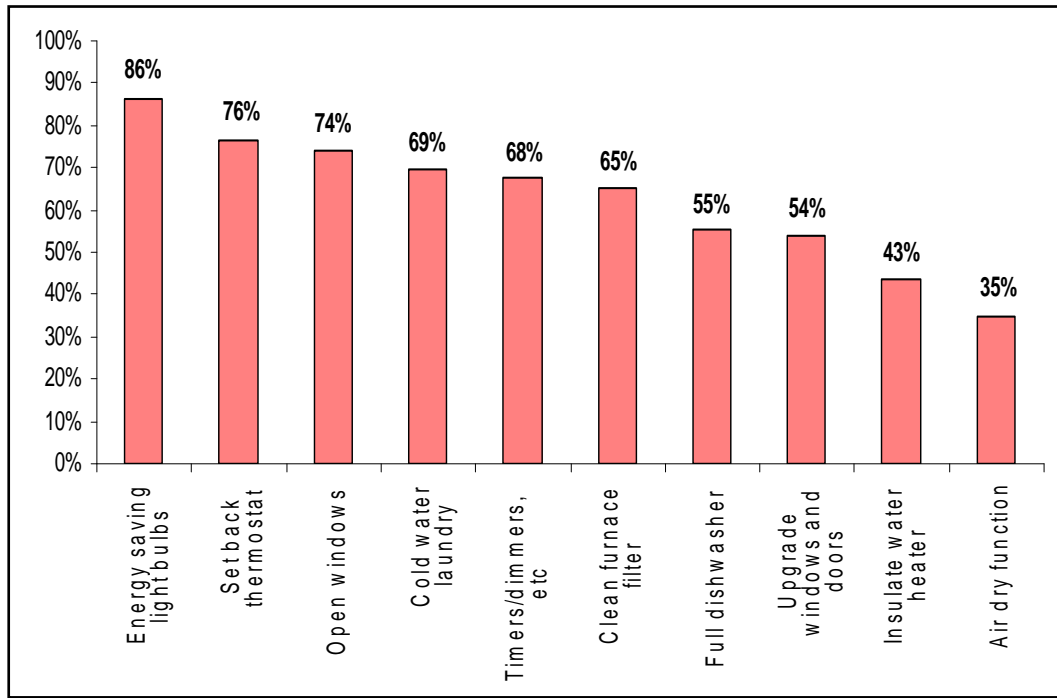
Would You Like to Receive a New Monitor?

- 81.5% of respondents would like a new monitor, including:
 - 72% of people who never installed the monitor
 - 75.5% of people who did not find it useful
 - 73.6% of people who already made changes
 - 84.23% of people who had a problem with the monitor
 - 88.6% of people who had a problem with the battery
 - 90.9% of people still using the monitor

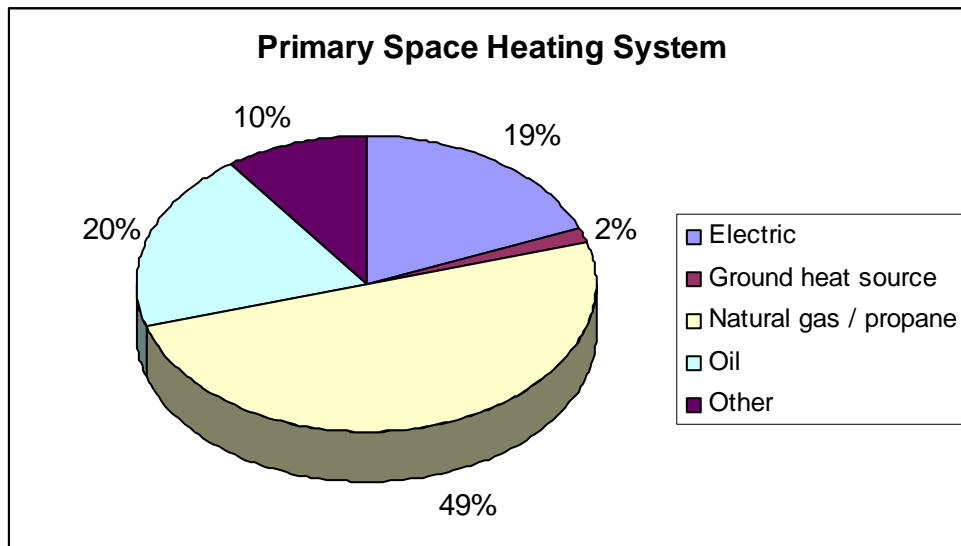


Please identify any conservation actions you have taken?

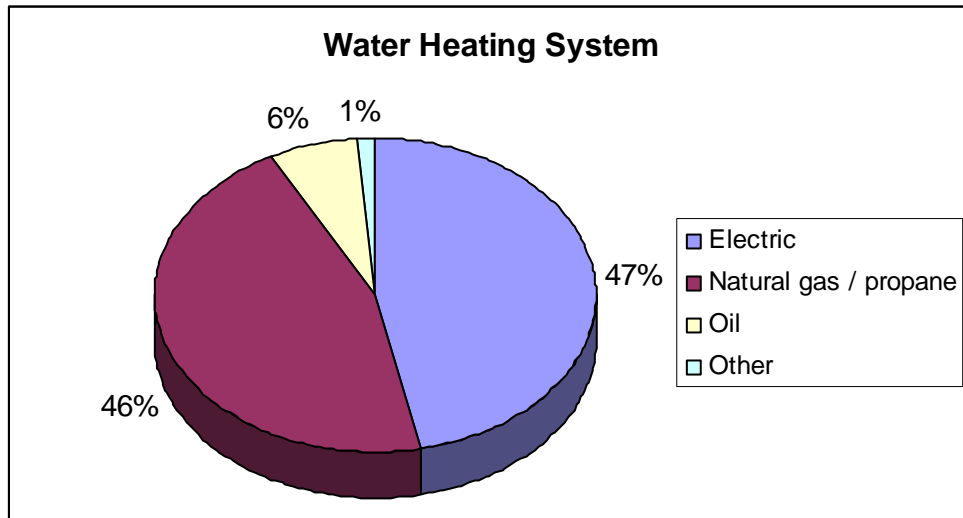
Percentage of Respondents Undertaking Action



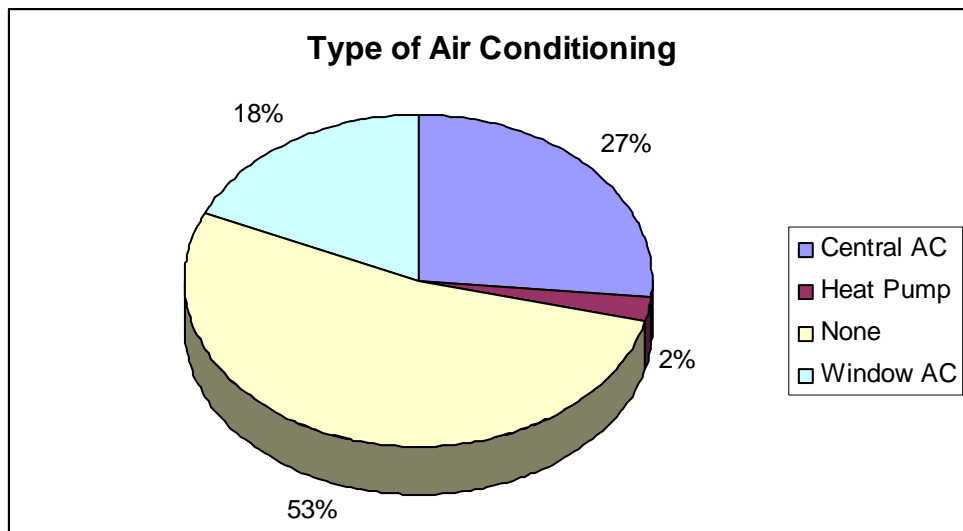
What type of primary heat system do you have?



What type of water heating system do you have?



What type of air-conditioning equipment do you have?

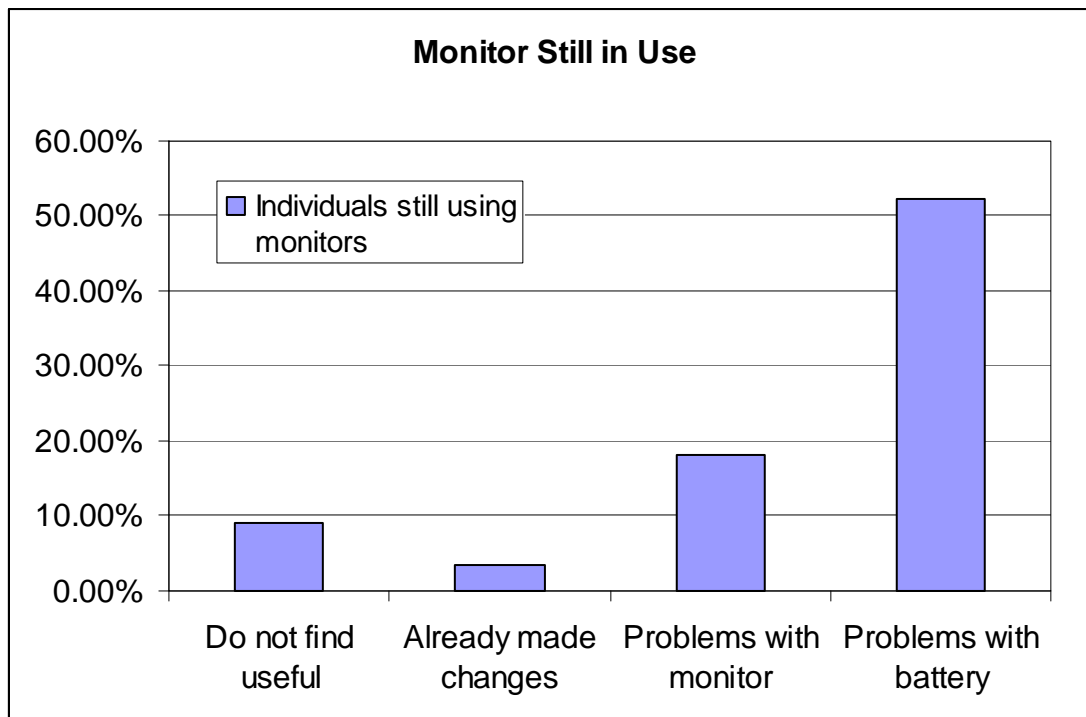


Appendix

1. Still Using the Monitors

Of the individuals still using the monitors:

- 9.1% do not find it useful
- 3.5% have already made changes
- 18.11% had problems with the monitor
- 52.4% had problems with the battery



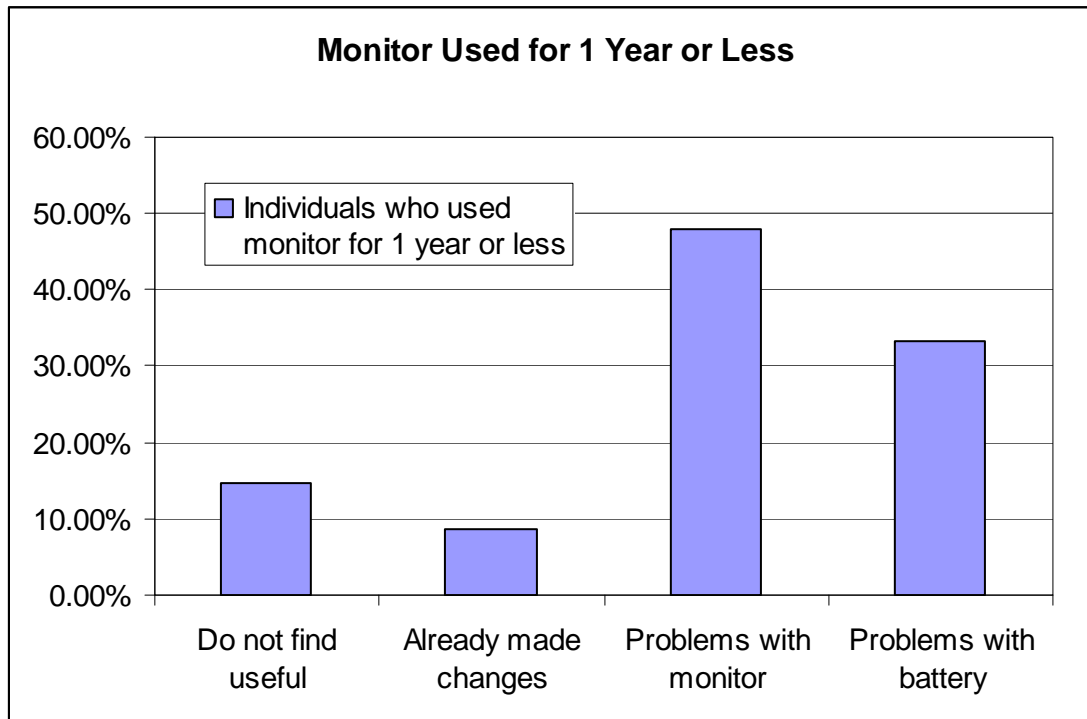
Common Complaints:

- Monitor does not always work or is unreliable
- Battery is expensive, hard to find replacements, and does not work in cold weather
- Readings are not accurate
- Problems reprogramming

2. Used the Monitor for 1 Year or Less

Of the individuals who used the monitor for one year or less:

- 14.7% did not find it useful
- 8.71% already made changes
- 48.1% had problems with the monitor
- 33.2% had problems with the battery



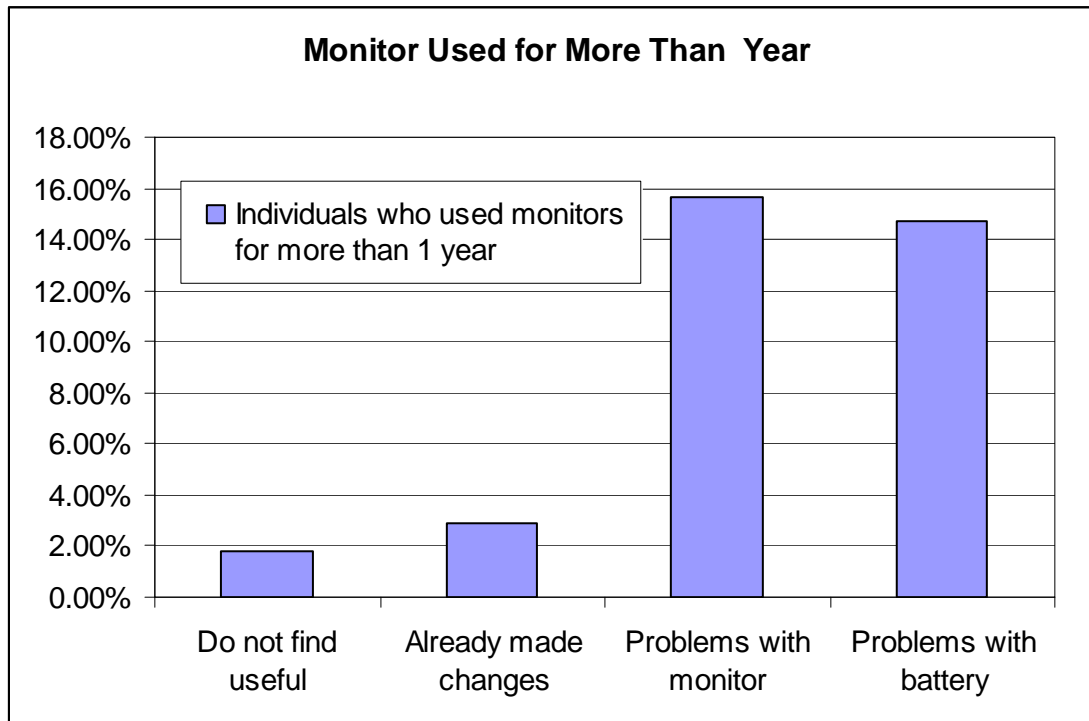
Common Complaints:

- Monitor did not work properly after a few months
- Battery is expensive, does not last long enough, is hard to find replacements for, and does not work in cold weather
- Monitor confusing
- Not receiving signal from outside unit
- Not compatible with new Smart Meter

3. Used the Monitor for More Than 1 Year

Of the individuals who used the monitor for more than 1 year:

- 1.8% did not find it useful
- 2.9% already made changes
- 15.7% had problems with the monitor
- 14.7% had problems with the battery



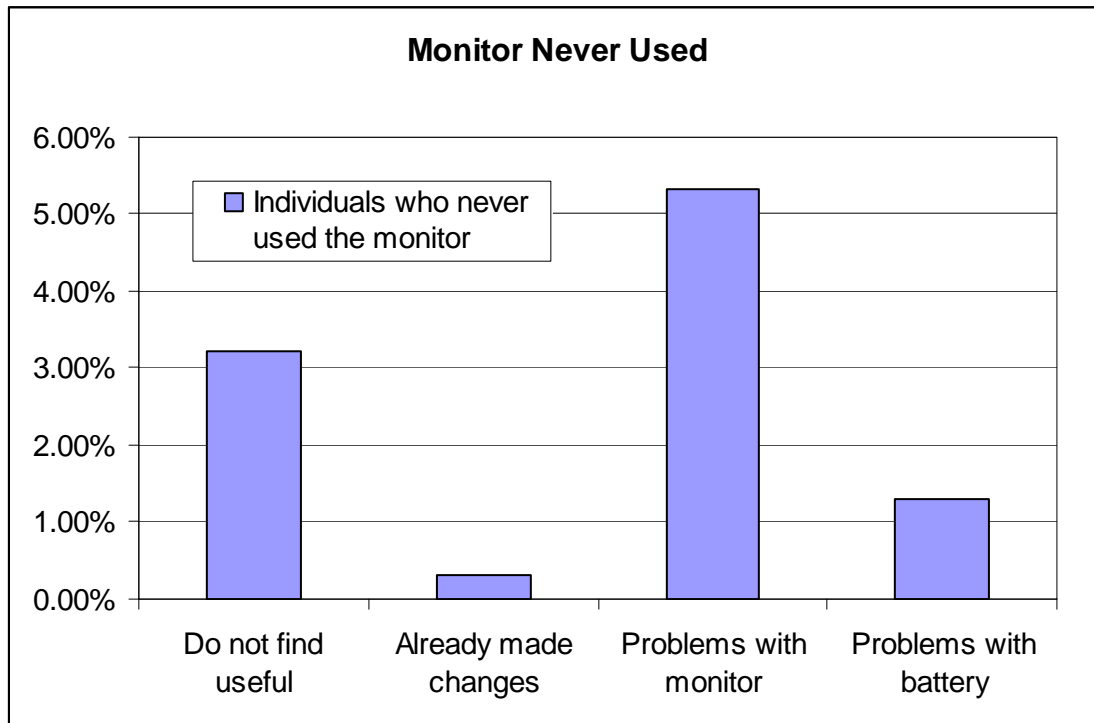
Common Complaints:

- Monitor stopped working
- Battery is expensive, does not last long enough, is hard to find replacements for, and does not work in cold weather
- Not receiving signal from outside unit
- Not compatible with new Smart Meter
- Battery died and did not replace

4. Never Used the Monitor

Of the individuals who never used the monitor:

- 3.2% did not find it useful
- 0.3% already made changes
- 5.3% had problems with the monitor
- 1.3% had problems with the battery



Common Complaints:

- Did not know how to install and/or use
- Forgot to install
- Meter too far away for monitor to work
- Monitor never worked
- Already conserve as much energy as possible

Attachment 9:

2009 Nipissing Time-of-Use Pilot Household Profile Survey Result

Nipissing Time-of-Use Pilot Project Household Profile Survey Summary

- Surveys were sent to pilot participants in August 2009
- 248 responses were received (16 were completed online)
- 227 surveys were matched to version 10 of the master list (571 customers) without duplication for a response rate of 40%
- Comparison with Northern Ontario results are taken from the Survey of Household Spending in 2004

Overview

- Most respondents live in single detached houses which were built fairly recently, the majority built after 1980
- The average number of people per household is slightly higher than that in Northern Ontario
- Annual household income is lower than the average in Northern Ontario with an estimated 70% of respondents below average
- More than half (58%) of households have at least one person home all day during weekdays
- There is a very high incidence of electric space heating (49%) and electric water heating (84%), versus 23% and 46% respectively in Northern Ontario
- The number of households with air conditioning is very low at 32% (though only slightly lower than Northern Ontario as a whole)
- The appliance profile is roughly similar to that of Northern Ontario except respondents are more likely to own a personal computer, washer machine and clothes dryer and are less likely to own a dishwasher
- Most appliances are fairly new, usually less than 10 years old
- In terms of conservation, most respondents have not taken many conservation actions and do not have future plans to do so
- Most respondents are still using incandescent bulbs; only 18% have none
- The majority of respondents are energy conscious in their day to day activities; most (always or sometimes) turn down their thermostat at night or when away from home, turn off lights, use cold water for laundry, run the dishwasher only when full, and use natural cooling
- Three quarters of respondents have internet access at home, mostly high-speed
- One quarter of respondents provided their email address for future communications from Hydro One

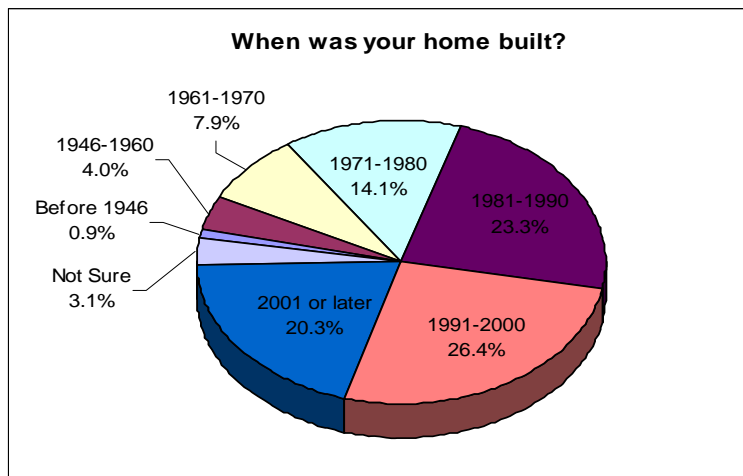
Results

Section 1- Household Information

- The majority of respondents (92%) live in a single detached house, a higher rate than in Northern Ontario as a whole (67.3%)
- 73% own their home
- 97% pay their own electricity bill

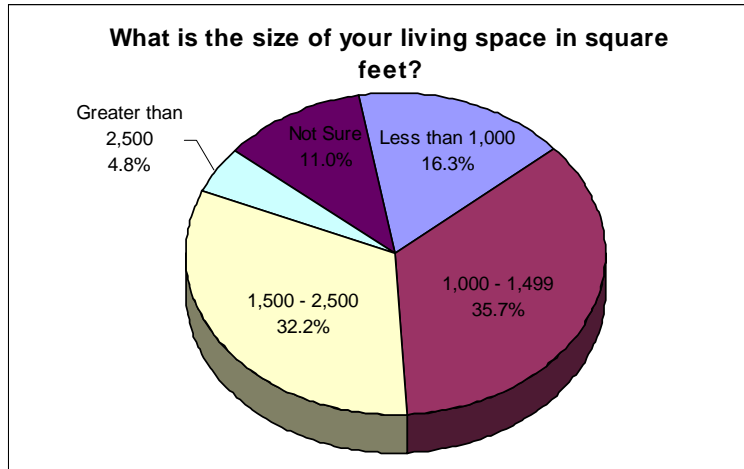
Age of Home

- The majority of homes (70%) were built after 1980
- At least 63% of homes in Northern Ontario were built before 1980



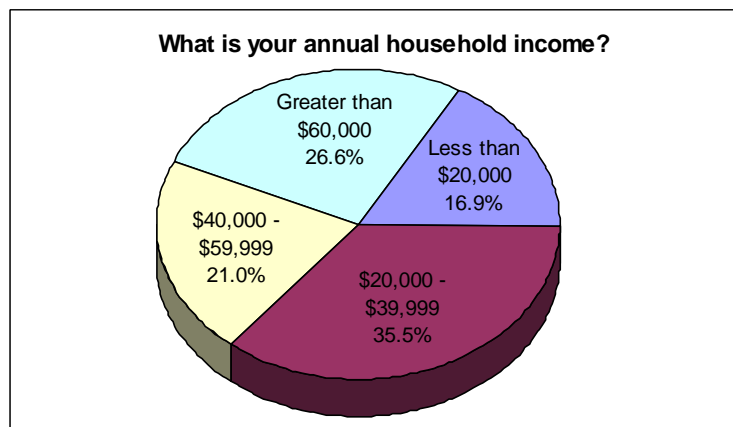
Size of Household

- The average number of people per household is 2.77, higher than the Northern Ontario average of 2.26
- 58% of households indicated that at least one person is home at all times during the weekdays
- Nearly 70% of the households in Nipissing are 1,000 to 2,500 square feet
- 15% are smaller than 1,000 square feet in size
- Less than 5% are greater than 2,500 square feet in size



Annual Income

- Just over half (55%) of respondents chose to disclose their income
- 16.9% said they have an annual income lower than \$20,000
- The average household income in Northern Ontario in 2004 was \$51,161 meaning that at least 26.6% (those with a salary greater than \$60,000) are above average
- In Northern Ontario, average household income divided by the average number of persons in the household is roughly \$22,600
- Looking at household income per person in Nipissing, approximately 15-30% are above the Northern Ontario average



Household Appliance Profile

Appliance Saturation	NFN	N. Ontario (2004)
Electric Space Heating	48.9%	22.5%
Electric Water Heating	83.5%	45.4%
Electric Cook Top/Stove	96.0%	96.6%
AC Window	21.3%	11.6%
AC Central	8.90%	15.3%
Personal Computer	81.5%	57.5%
Television #1	20.3%	37.6%
Television #2	39.6%	31.8%
Television #3	39.2%	30.6%
Microwave	94.7%	93.9%
Dishwasher	36.6%	44.0%
Washer Machine	96.0%	81.3%
Clothes Dryer	93.8%	76.5%

- A very large proportion of households in NFN (48.9%) have electric space heating, versus 22.5% in Northern Ontario
- 83.5% have electric water heating which is also very high compared to 45.4% in Northern Ontario
- The majority of respondents in Nipissing (67.6%) do not have air conditioning
 - 8.9% have central air conditioning which is smaller than the 15.3% with central air conditioning in Northern Ontario
 - 21.3% have window air conditioners which is more than the average in Northern Ontario (11.6%)
- The number of microwaves is the same in NFN as in the rest of Northern Ontario
- NFN residents have a slightly higher incidence of televisions per household, a much higher incidence of person computers and are much more likely to have a washer machine and dryer than the rest of Northern Ontario
- Very few NFN residents have dishwashers (36.6% compared to 44.0% in Northern Ontario)

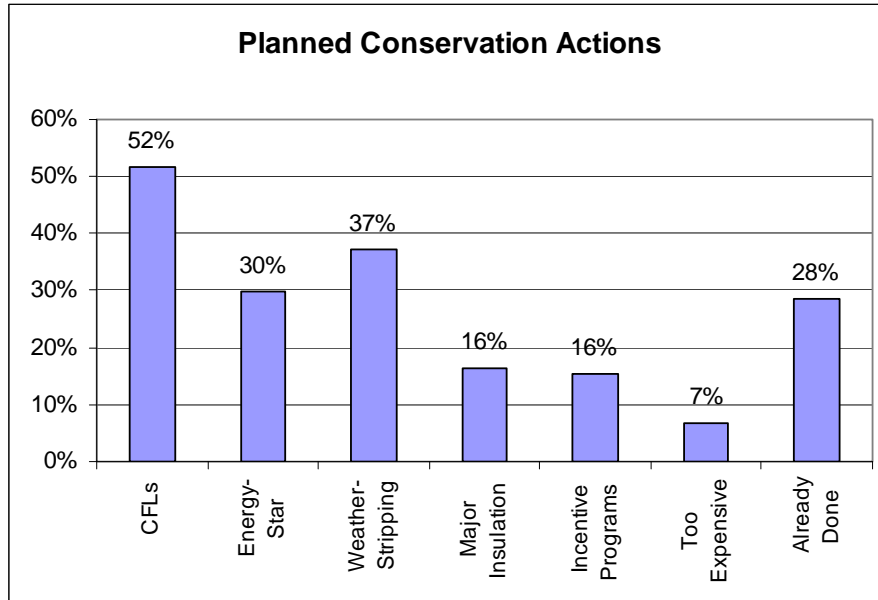
Age of Appliances

- 5% of primary refrigerators and 10% of secondary refrigerators are 15 years of age or older
- 13% of primary freezers and 18% of secondary freezers are 15 years or older
- 4 out of 22 central air conditioners and 9 out of 47 window air conditioners are 10 years of age or older

Section 2- Energy Conservation

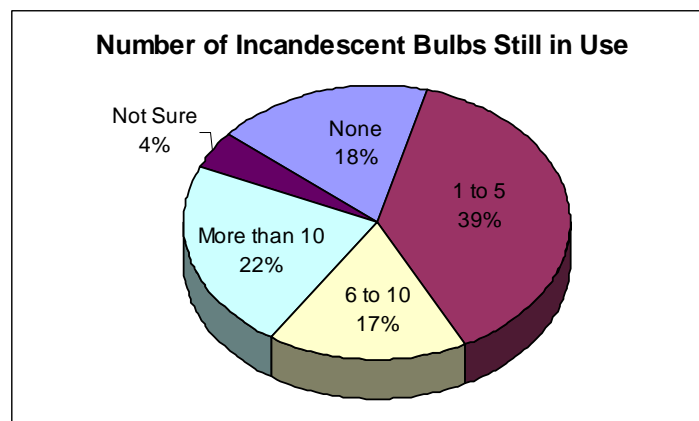
Planned Conservation Actions

- The most commonly planned conservation actions are replacing incandescent bulbs with CFLs (52%) followed by weather-stripping maintenance (37%)
- 28% said they are already conserving as much energy as they can
- 7% said future conservation actions would be too expensive

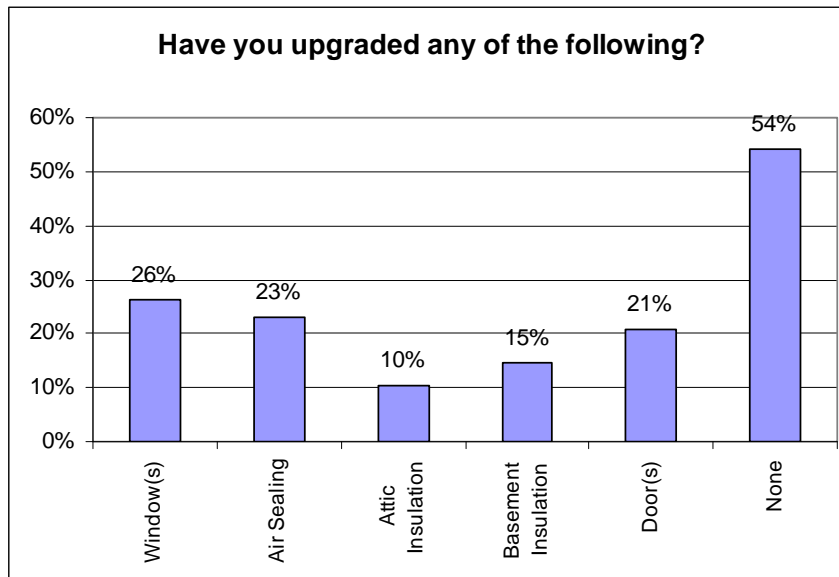


Conservation Actions Already Undertaken

- 14% of respondents used Every Kilowatt Counts coupons in 2008 or 2009, of which half said they also bought other energy-efficient products at the same time for which they did not have a coupon
- 18% have removed all incandescent bulbs from their home, however 22% have more than 10 still in use



- 54% of respondents said they have not made any major upgrades to be more energy efficient
- The most common upgrades are:
 - 26% have upgraded window(s)
 - 23% have upgraded air sealing or weather-stripping
 - 21% have upgraded door(s)



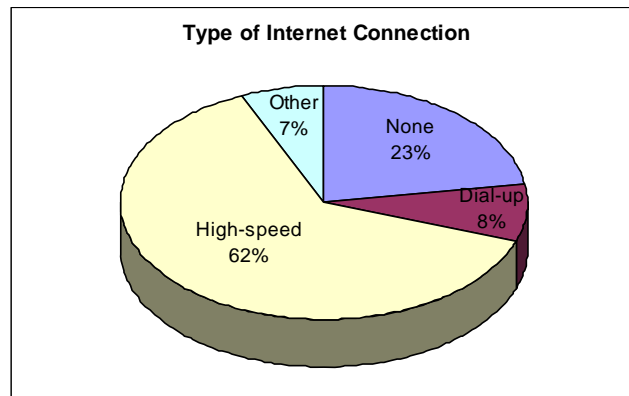
- Respondents from NFN are actively taking part in daily conservation actions:
 - 75% of respondents lower their thermostat at night either always or sometimes
 - 68% always use cold water for their laundry
 - 84% always turn off lights when not in use (and 16% sometimes do)
 - 71% of people use a fan or open a window instead of using A/C
 - 94% of people with a dishwasher only run it when full
- There is still room for improvement in a few areas:
 - 24% never turn their thermostat lower at night and 15% never turn it lower when they are not home
 - 37% never hang dry their laundry
 - Only 30% use timers or dimmers

Conservation Action	Always	Sometimes	Never
Temp lower at night	52%	23%	24%
Temp lower not home	60%	25%	15%
Cold water laundry	68%	24%	7%
Hang dry	19%	44%	37%
Timers	12%	18%	70%
Dimmers	10%	20%	70%
Turn off lights	84%	16%	0%
Fan or window	71%	25%	3%
Full dishwasher	94%	4%	3%

Section 3- Communications

Internet Access

- The majority of respondents (77%) have an internet connection which is high compared to 52% in Northern Ontario
- The most common type of internet connection is high-speed at 62%



Future Communications

- 27% of respondents said they would like to receive future communications from Hydro One via email
- 60 email addresses were received for future communications

Appendix: Detailed Survey Responses

Section 1: Your Home

1. In what type of building do you live?

- 91.6% live in a single detached house
- 3.1% live in an apartment
- 5.3% live in a semi-detached house, townhouse/row house, or other

2. Do you rent or own your home?

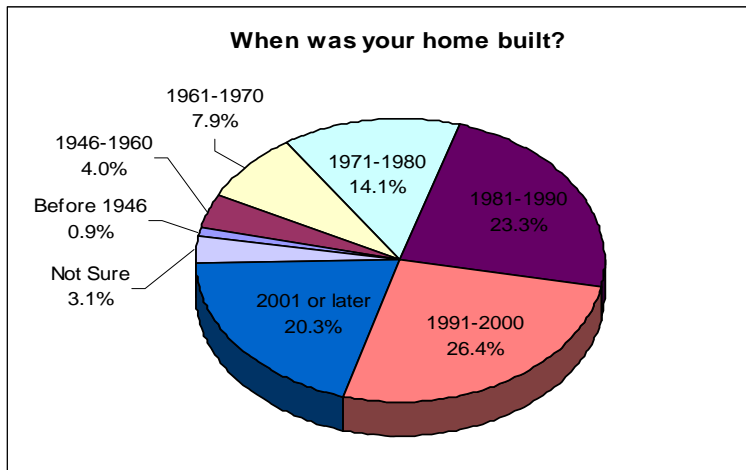
- 72.5% own their home

3. Do you pay for your own electricity bill?

- 97% say they pay their own bill
- The remaining 3% say it is included in their rent

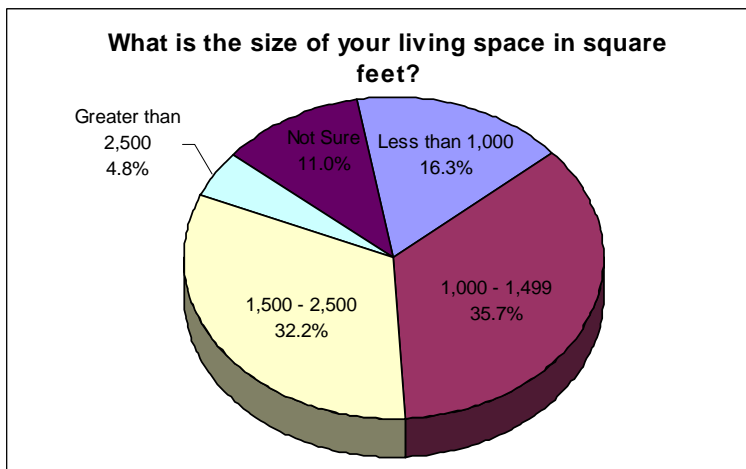
4. When was your home built?

Home Built	Total
Before 1946	2
1946-1960	9
1961-1970	18
1971-1980	32
1981-1990	53
1991-2000	60
2001 or later	46
Not Sure	7
Grand Total	227



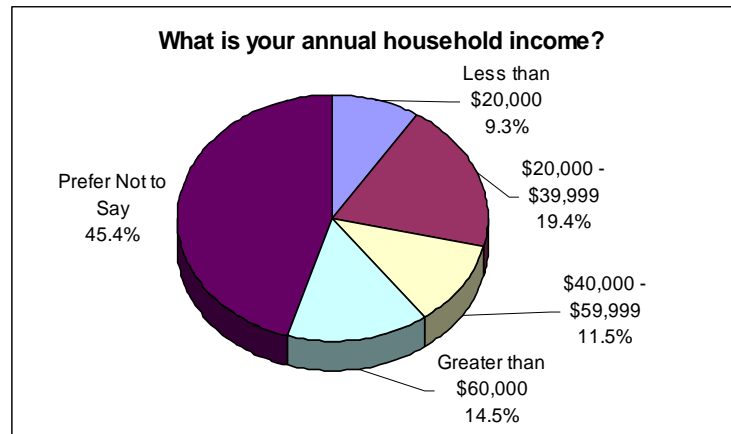
5. What is the size of the living space of your home in square feet (excluding garage, attic or unfinished basement)?

Size of home (sq. feet)	Total
Less than 1,000	37
1,000 - 1,499	81
1,500 - 2,500	73
Greater than 2,500	11
Not Sure	25
Grand Total	227



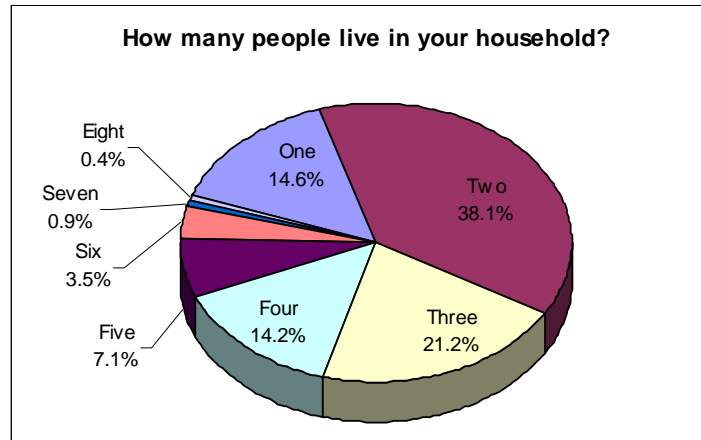
6. What was your annual household income before taxes in 2008?

Annual Income (2008)	Total
Less than \$20,000	21
\$20,000 - \$39,999	44
\$40,000 - \$59,999	26
Greater than \$60,000	33
Prefer Not to Say	103
Grand Total	227



7 a) How many people live in your household?

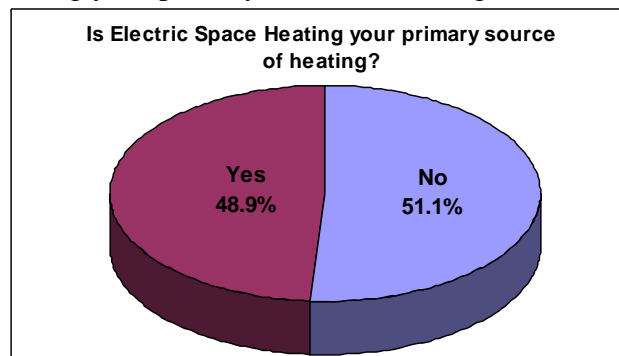
People in home	Total
One	33
Two	86
Three	48
Four	32
Five	16
Six	8
Seven	2
Eight	1
Unanswered	1
Grand Total	227



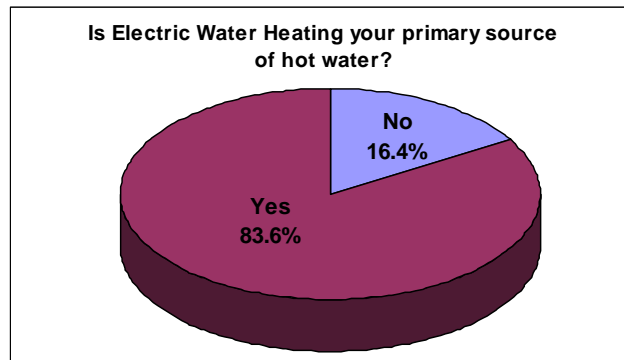
7 b) Please indicate the number of people that are usually home (more than 50% of the time) during the following times.

- 58% of households have at least one person home all day on weekdays

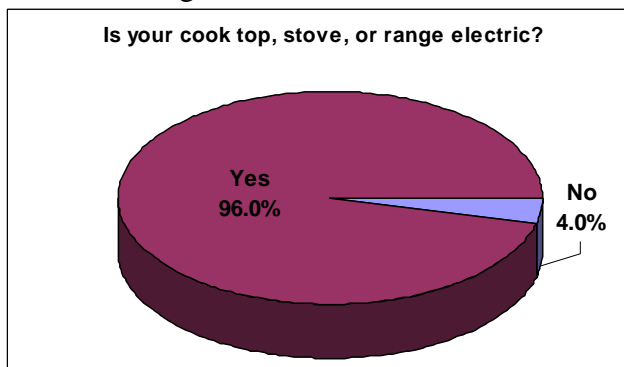
8. Is electric space heating your primary source of heating?



9. Is electric water heating your primary source of hot water?

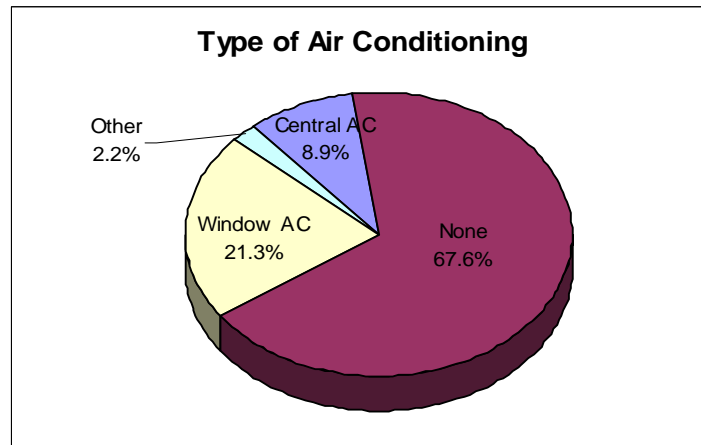


10. Is your cook top, stove, or range electric?



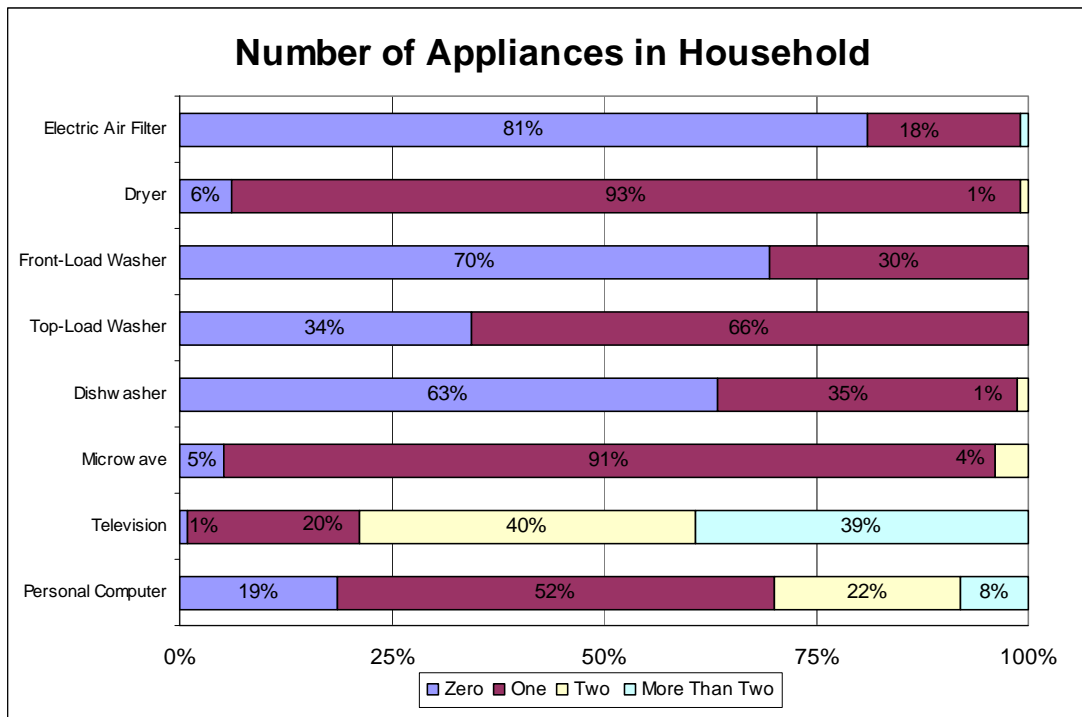
11. What type of air conditioning do you have?

Type of AC	Total
Central AC	20
None	152
Window AC	48
Other	5
Unanswered	2
Grand Total	227



12 a) How many of the following appliances do you have in your home?

Total Number	Zero	One	Two	More Than Two	Total
Personal Computer	42	117	50	18	227
Television	2	46	90	89	227
Microwave	12	206	9	0	227
Dishwasher	144	80	3	0	227
Top-Load washer	78	149	0	0	227
Front-Load washer	158	69	0	0	227
Dryer	14	211	2	0	227
Electric air filter	183	41	1	2	227



b) How old are your appliances?

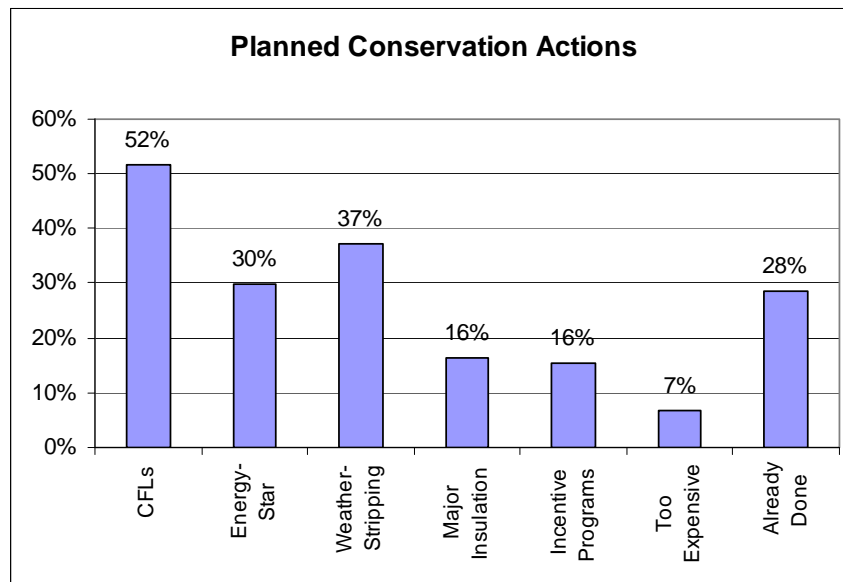
Total Number	Less than 10	10 to 15	15 to 20	More than 20	Unanswered	Total
Full size refrigerator #1	167	46	7	5	2	227
Full size refrigerator #2	21	17	4	0	185	227
Freezer #1	102	39	15	7	64	227
Freezer #2	10	13	5	0	199	227
Electric Water Heater	108	45	15	5	54	227
Central Air Conditioner	18	3	1	0	205	227
Window Air Conditioner	38	5	3	1	180	227

- 5% of primary refrigerators 10% of secondary refrigerators are over 15 years old
- 4 Central ACs and 9 Window ACs are over 10 years old

Section 2- Energy Conservation

13. In the next 2 years, which conservation actions do you plan to take?

Planned Actions	No	Yes	Total
Switch to CFLs	109	116	225
Energy-Star Appliances	158	67	225
Weather-Stripping	141	84	225
Major Insulation	188	37	225
Incentive Programs	190	35	225
None- Too Expensive	210	15	225
None- Already Done	161	64	225

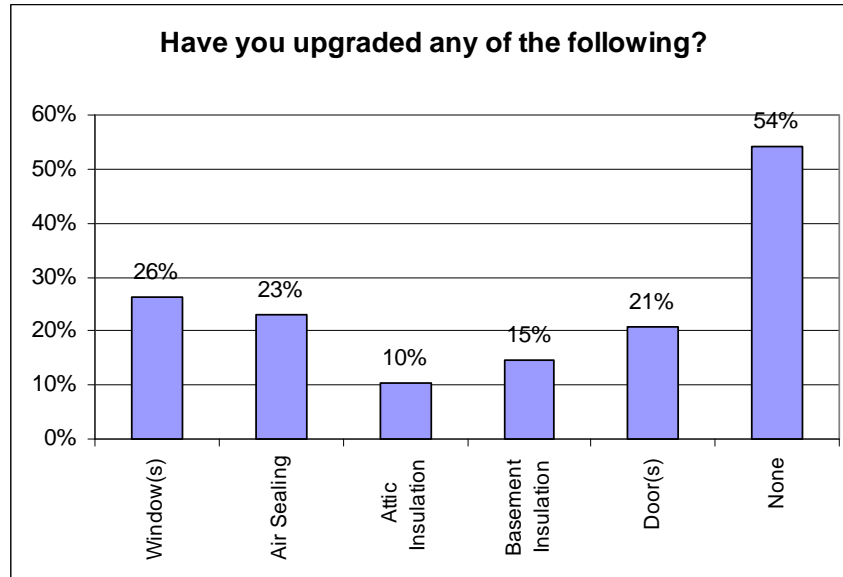


14. Have you used any Every Kilowatt Counts coupons toward energy-efficient products in 2008 or 2009? If yes, did you buy any other energy-efficient products at the same time without using a coupon?

- 29 said yes (14%)
- Of these, 15 said they bought other energy-efficient products at the same time without using a coupon

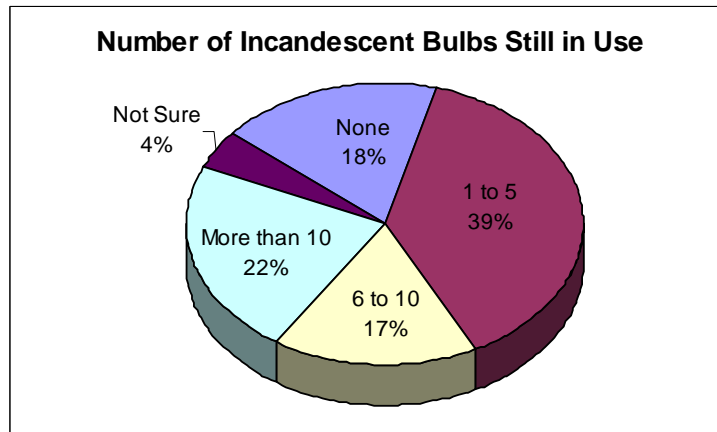
15. Have you upgraded any of the following to be more energy efficient?

Upgrades	No	Yes	Total
Window(s)	166	59	225
Air Sealing	173	52	225
Attic Insulation	202	23	225
Basement Insulation	192	33	225
Door(s)	178	47	225
None	103	122	225



16. How many incandescent light bulbs (i.e. not CFLs) are in regular use in your household?

# Incandescent bulbs	Total
None	41
1 to 5	87
6 to 10	38
More than 10	51
Not Sure	10
Grand Total	227



17. Please tell us whether you take any of the following conservation-related actions at home:

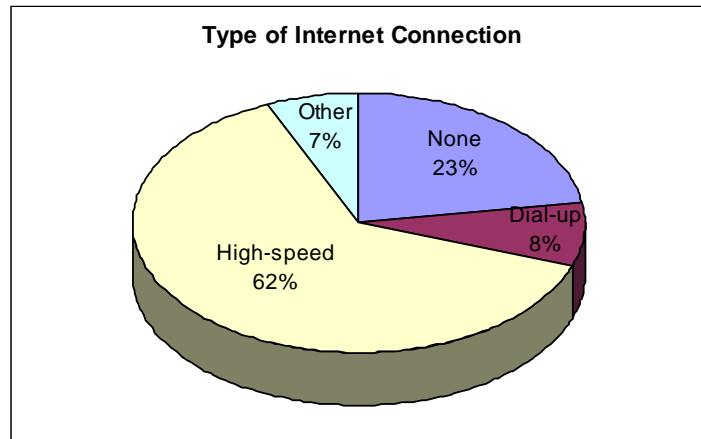
Conservation Action	Always	Sometimes	Never	Total Applicable*
Temp lower at night	52%	23%	24%	206
Temp lower if not home	60%	25%	15%	206
Cold water laundry	68%	24%	7%	219
Hang dry laundry	19%	44%	37%	217
Timers indoor/outdoor	12%	18%	70%	212
Dimmers indoor/outdoor	10%	20%	70%	211
Turn off lights not in use	84%	16%	0%	219
Fan or window	71%	25%	3%	189
Full dishwasher	94%	4%	3%	80

* Only applicable, non-missing responses used (i.e. responses referring to usage of a specific appliance were only used for those respondents who indicated they own that appliance)

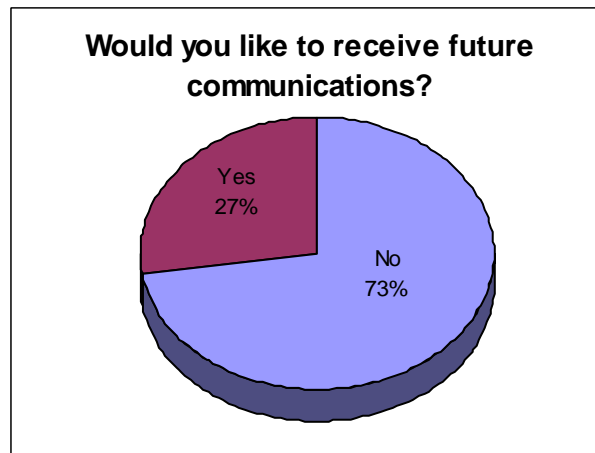
Section 3- Communications

18. What type of internet connection do you have?

Internet connection	Total
None	50
Dial-up	17
High-speed	140
Other	15
Not Sure	5
Grand Total	227



19. Would you like to receive future communications from Hydro One via email?



20. If yes, please provide your email address.

- 60 respondents provided their email address

Attachment ::

**2010 Nipissing Time-of-Use Pilot Electricity Usage
Profile Survey Result**

Nipissing Electricity Usage Survey Results

- Surveys were sent to pilot participants in May 2010
- 231 surveys were received for a response rate of 43%

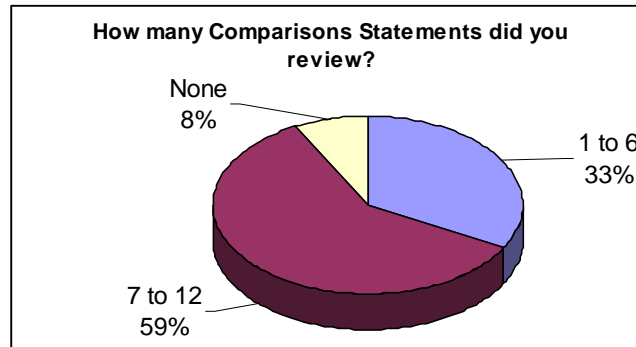
Appendix: Detailed Survey Responses

Section 1: Your Home

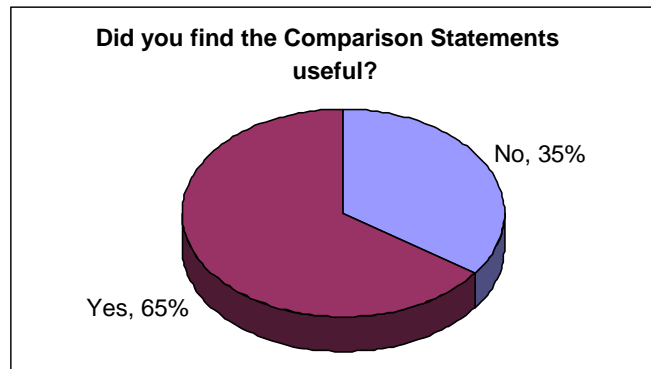
Please see results based on all both surveys

Section 2: Comparison Statements

4. How many monthly comparison statements did you review?

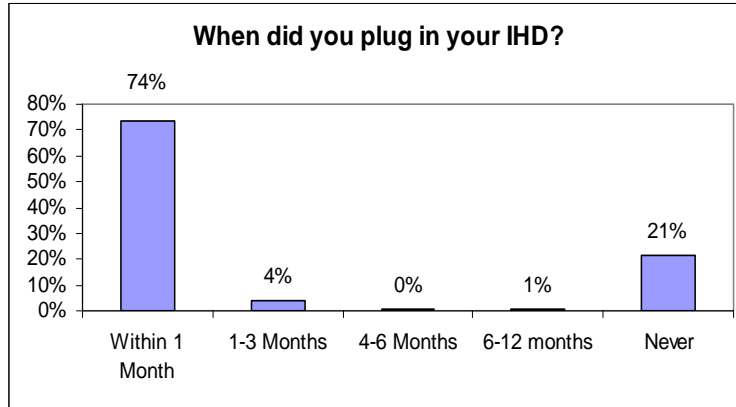


5. Did you find the information in the Comparison Statements useful in helping you manage your electricity usage?

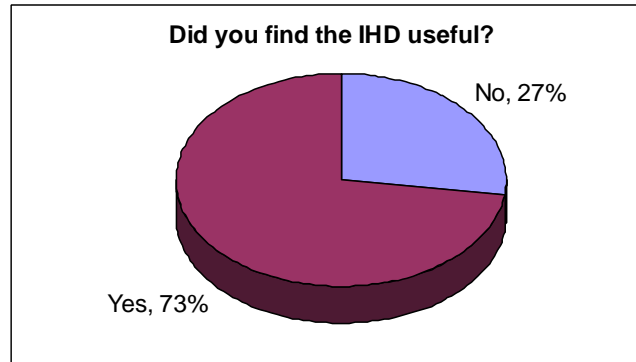


Section 3: In-Home Display (IHD)

6. When did you plug in the In-Home Display unit after receiving it?



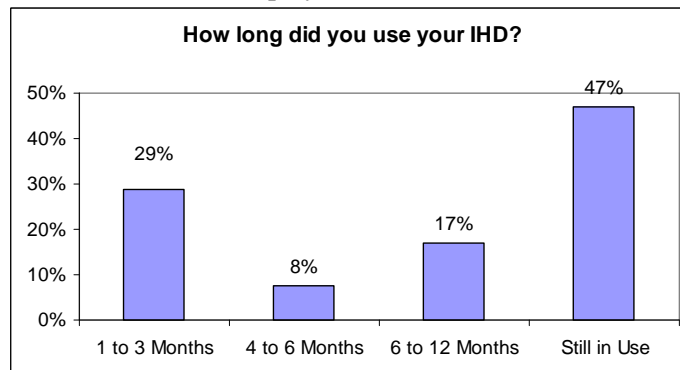
7. Did you find the information on the IHD useful in helping you manage your electricity usage?



8. Which features did you find useful on your display unit? (Please mark any feature you found useful)

The most popular features were:
Current usage and dollars per hour
Coloured TOU rate indicator bar
Total usage and estimated cost of next bill

9. How long did you use the In-Home Display?



10. If you are no longer using the IHD please indicate why you stopped using it.

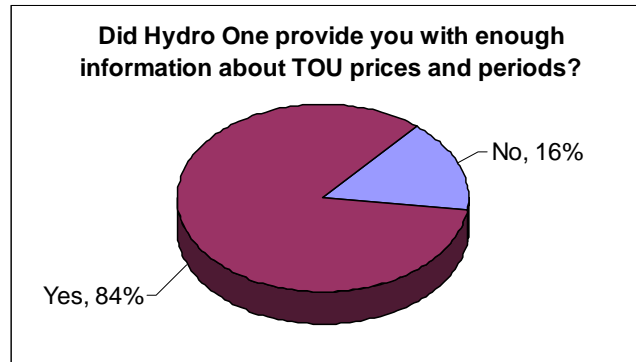
For those who used the IHD, the most common reasons for no longer using the IHD included: We have already made the changes to our electricity and no longer need it; in order to save electricity; and we did not have time. A smaller proportion said they did not find it useful.

Section 4: Overall Pilot Experience

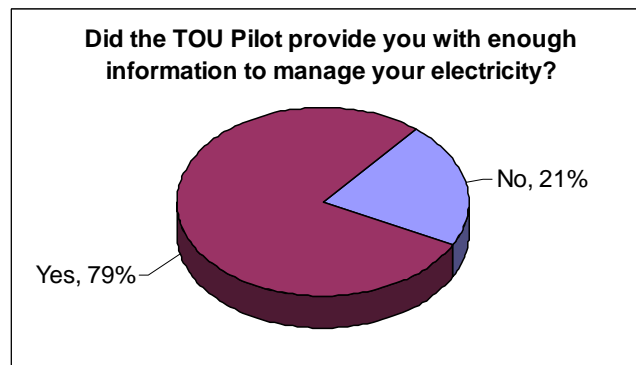
11. Did you visit the TOU pilot website to view your weekly electricity consumption?

Only a very small number of customers visited the website. Those who did not visit the website said the main reasons were because they forgot, were not aware of it, or did not have access to a computer and/or internet.

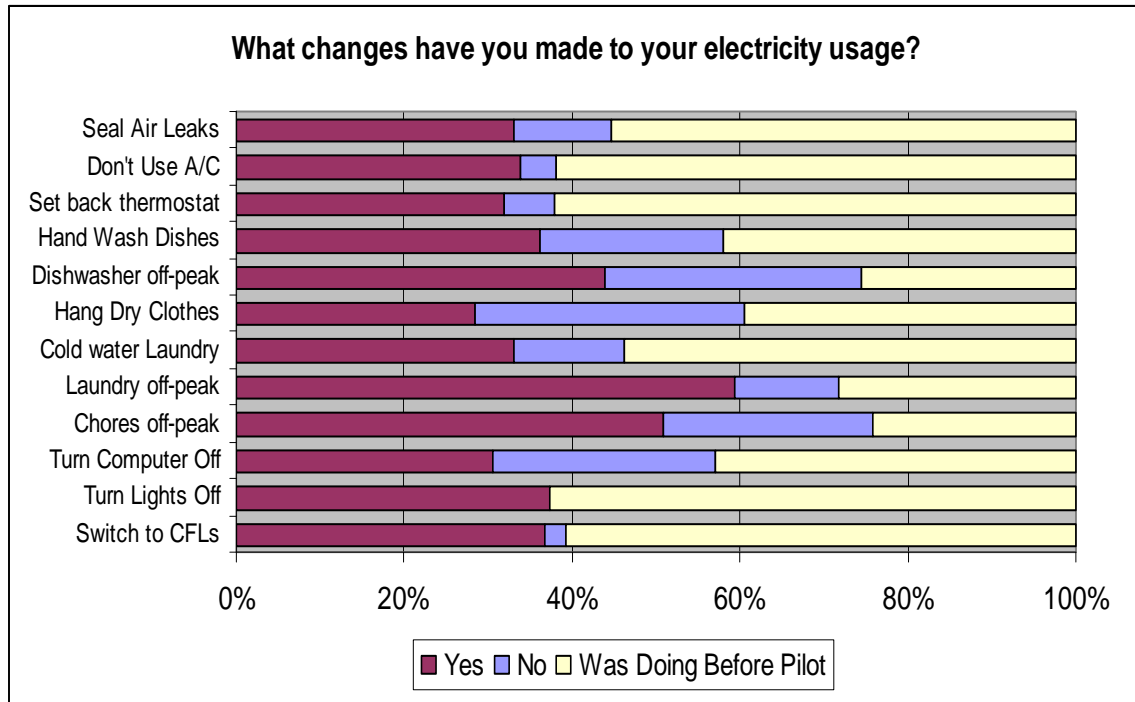
12. Did Hydro One provide you with enough information about TOU prices and periods?



13. Did the Nipissing Time-of-Use Pilot provide you with the necessary information to better manage your electricity bill under TOU rates?

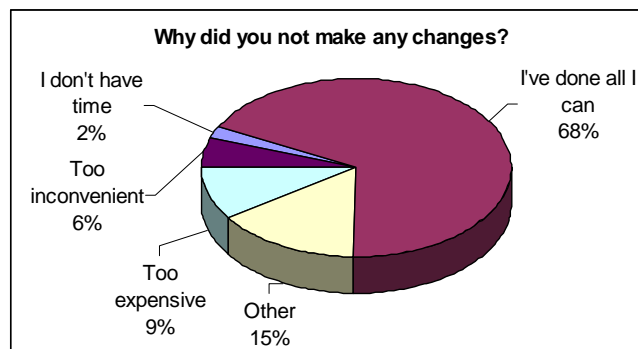


14. Please tell us any of the changes you have made to your electricity usage as a result of this Pilot.



Other changes reported included being generally more aware of electricity usage, unplugging appliances not in use, replacing insulation/windows/doors, buying energy efficient appliances, and reducing the temperature on water heaters.

15. If you have not made any changes to your electricity usage as a result of this pilot please tell us why not?



Attachment ; :

2009 General Service Customer Survey Result

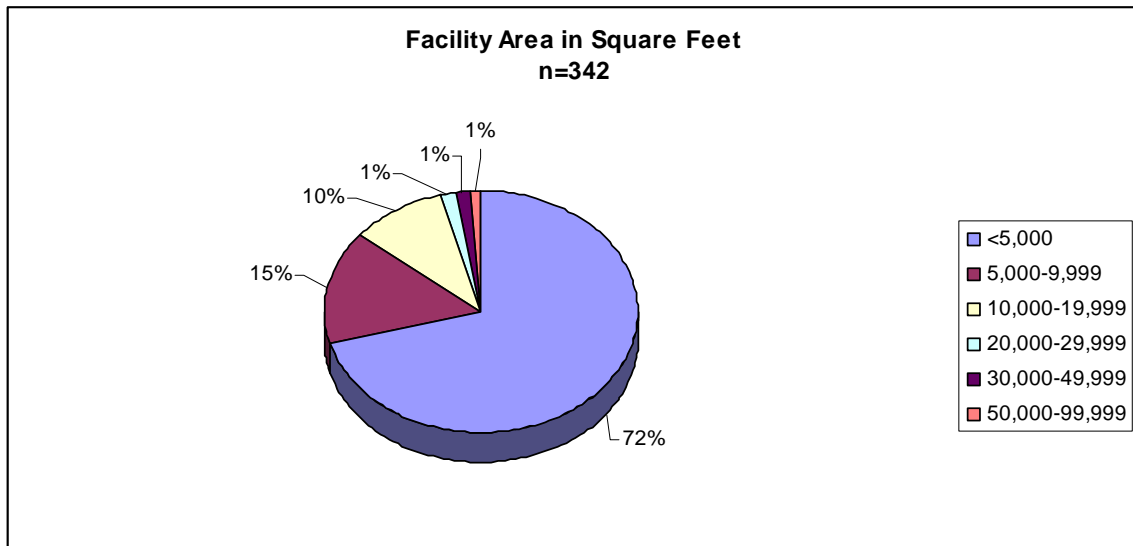
General Service Customer Survey 2009

Number of surveys sent out: ~90,000

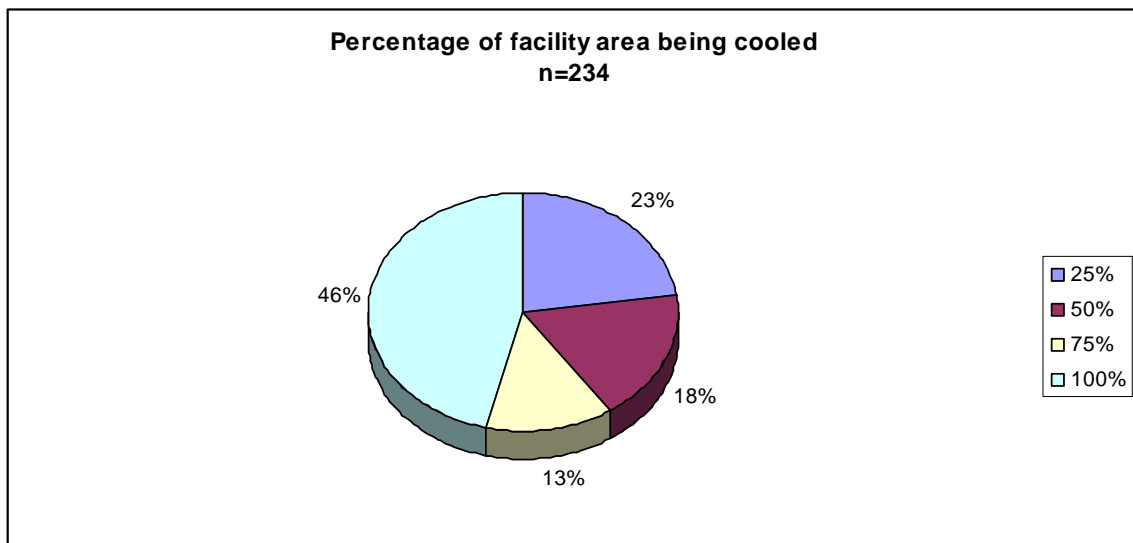
Number of responses received: 457

Response Rate: 0.5%

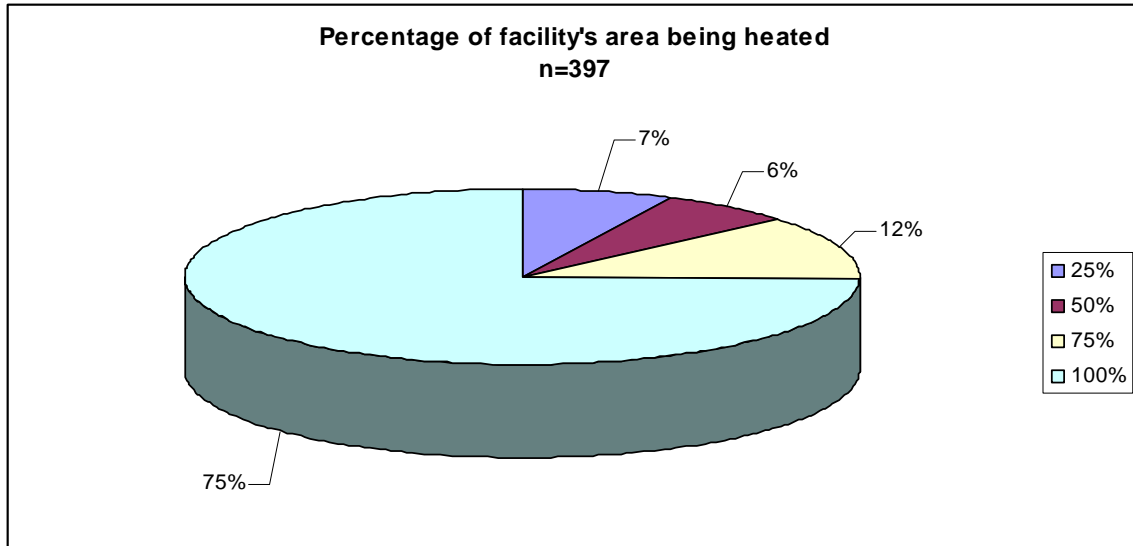
Facility Area (Square Feet)



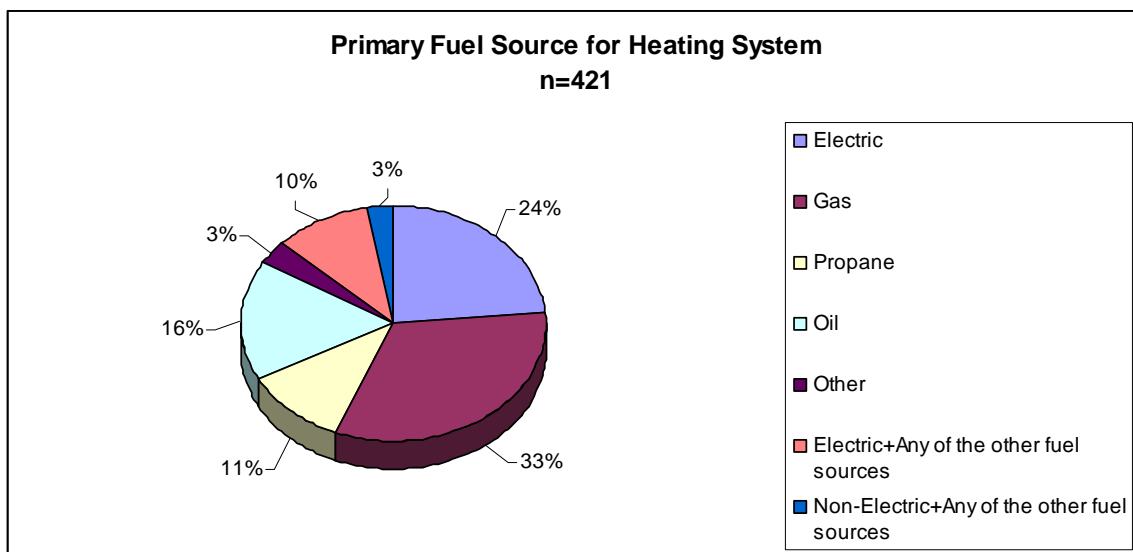
Percentage of facility area being cooled



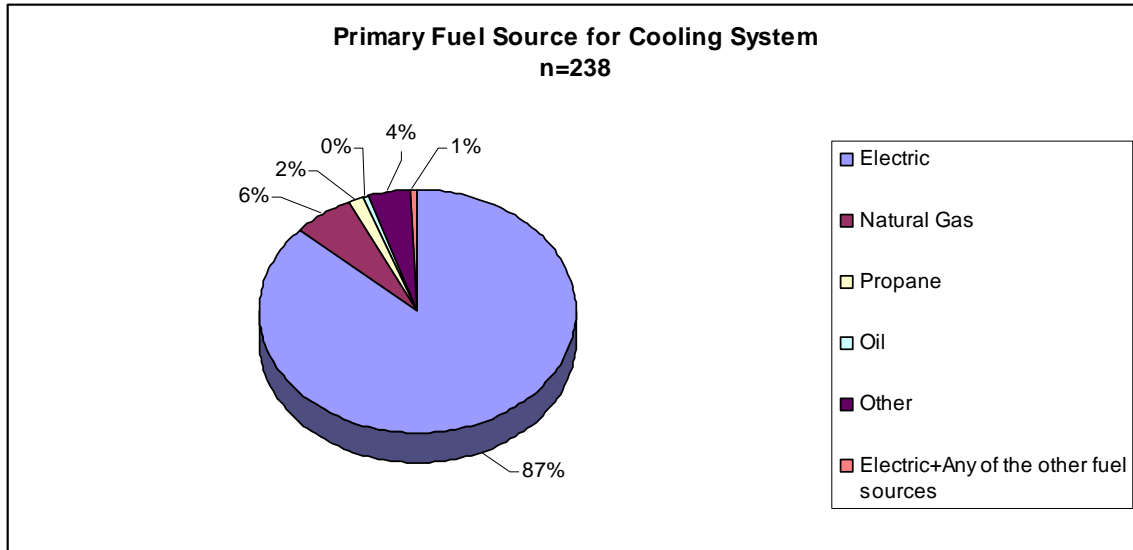
Percentage of facility area being heated



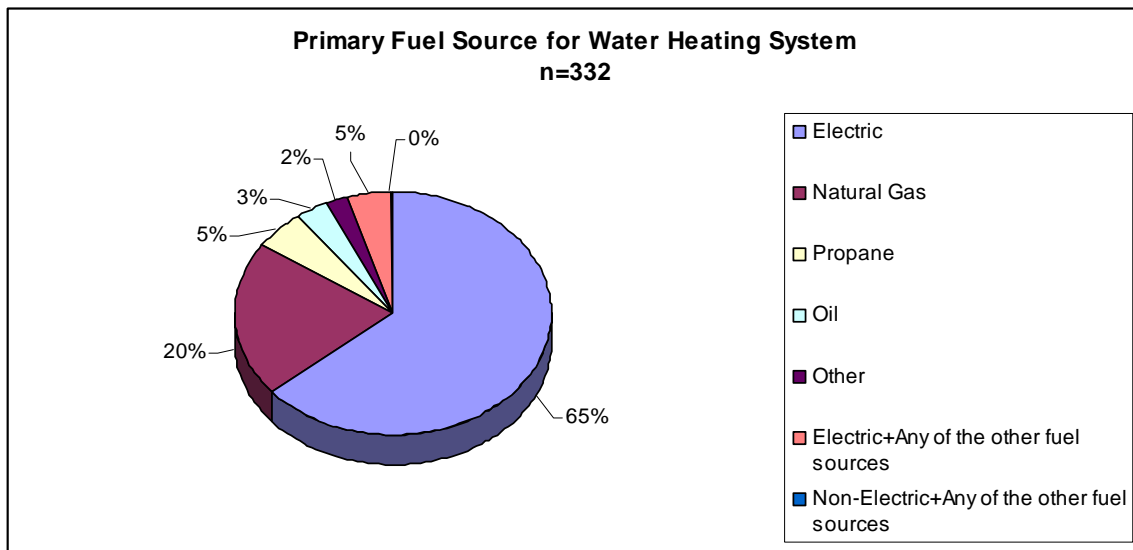
Primary Fuel Source for Heating System



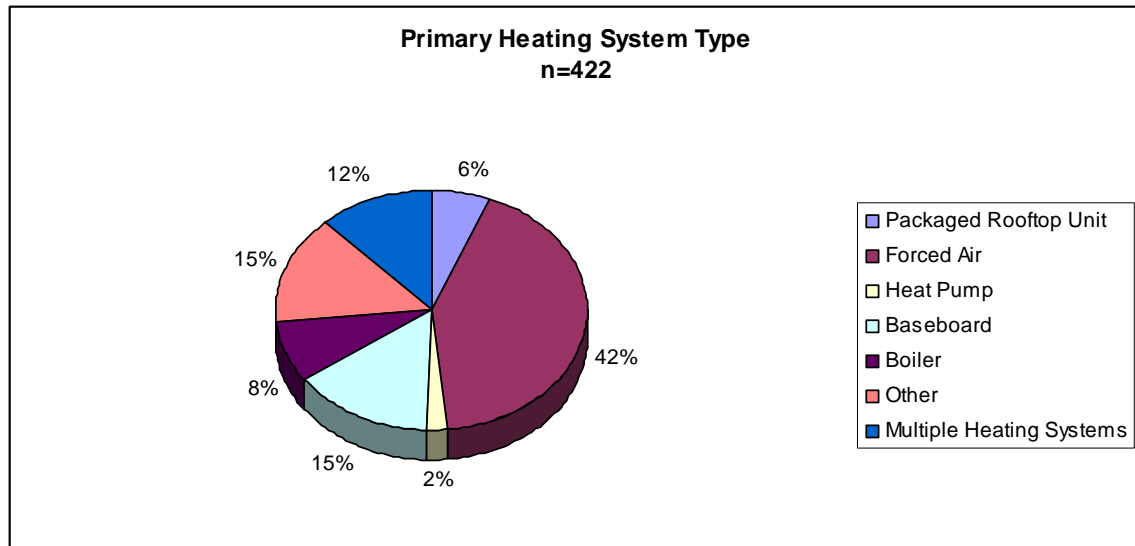
Primary Fuel Source for Cooling System



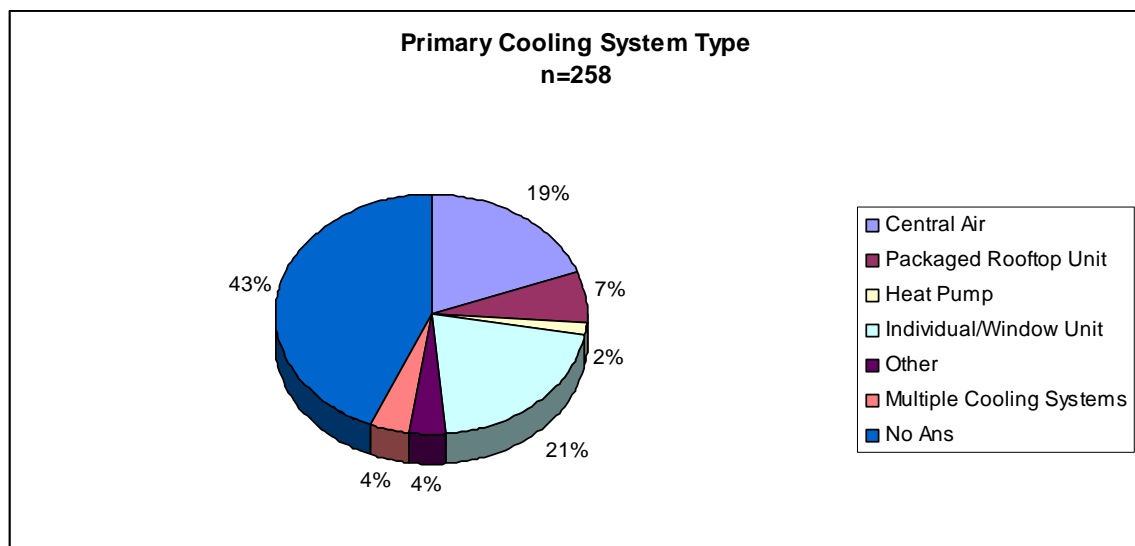
Primary Fuel Source for Water Heating System



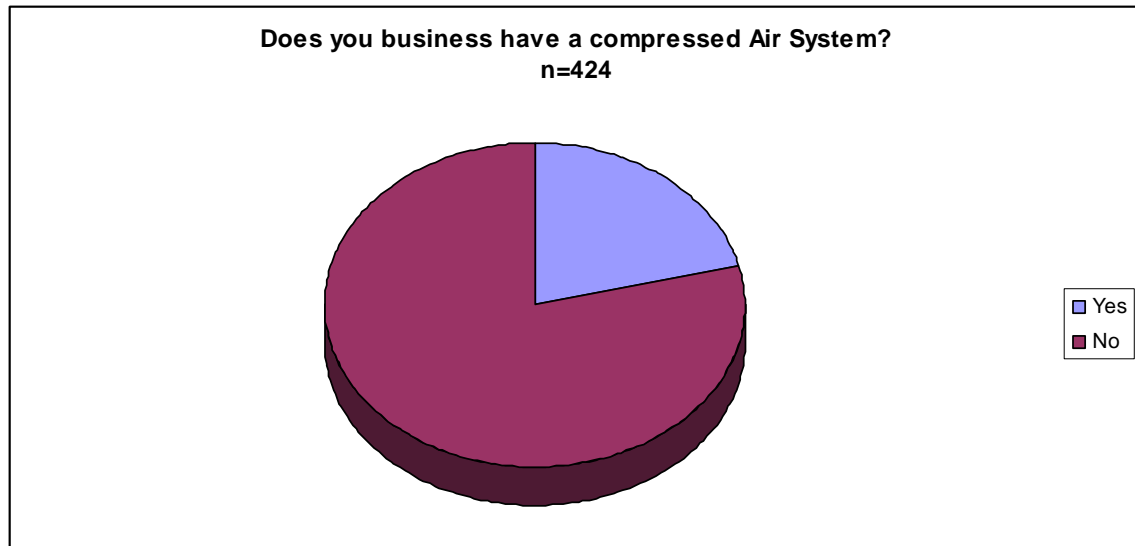
Type of Primary Heating System



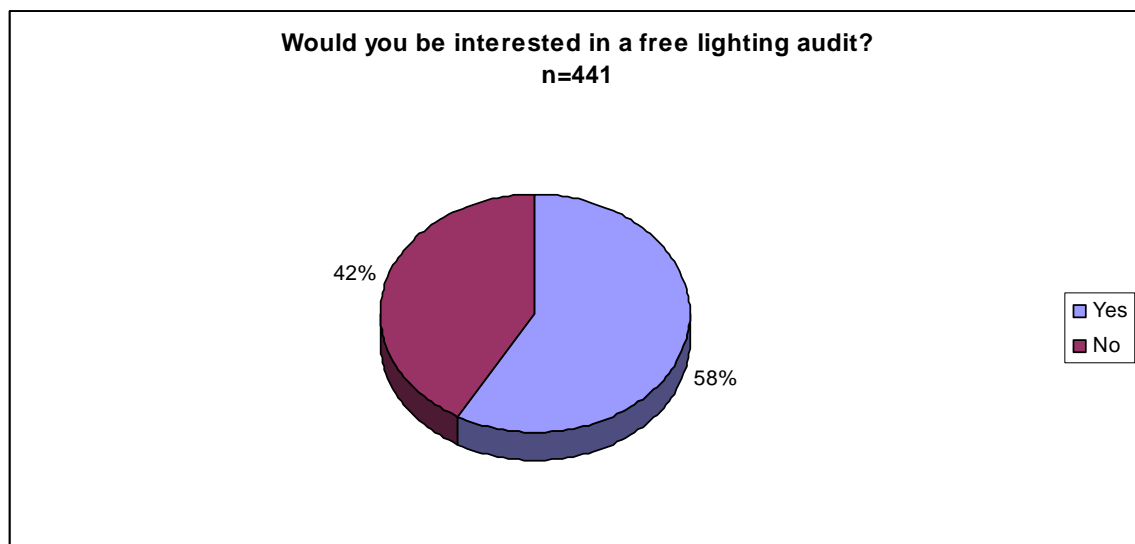
Type of Primary Cooling System



Compressed Air System

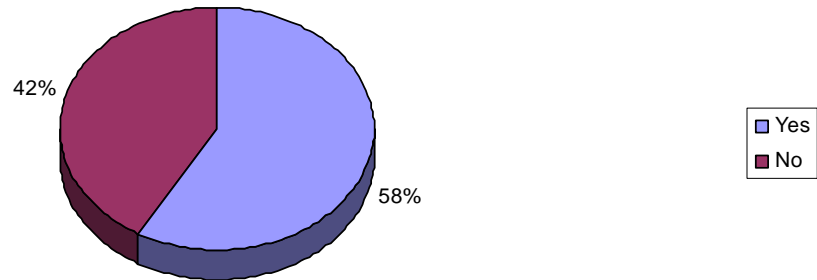


Interest in a free lighting audit



Interest in a free programmable thermostat

Would you like to receive a free programmable thermostat?
n=349



Attachment 32:
2010 Customer Equipment and Conservation Survey
Preliminary Result

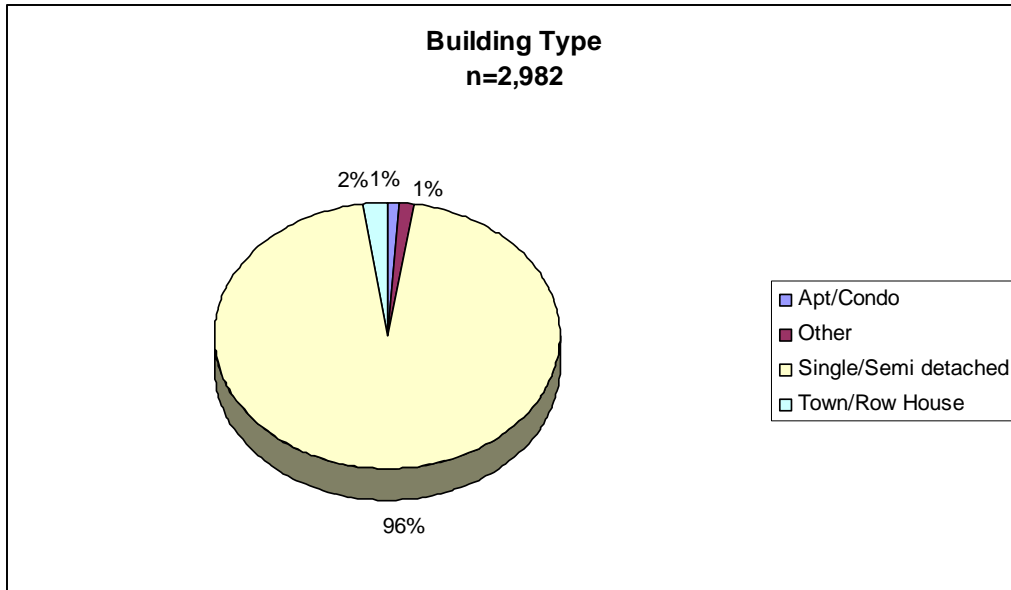
Hydro One Customer Equipment and Conservation Survey 2010 Preliminary Analysis

Total number of surveys sent out: ~8,000

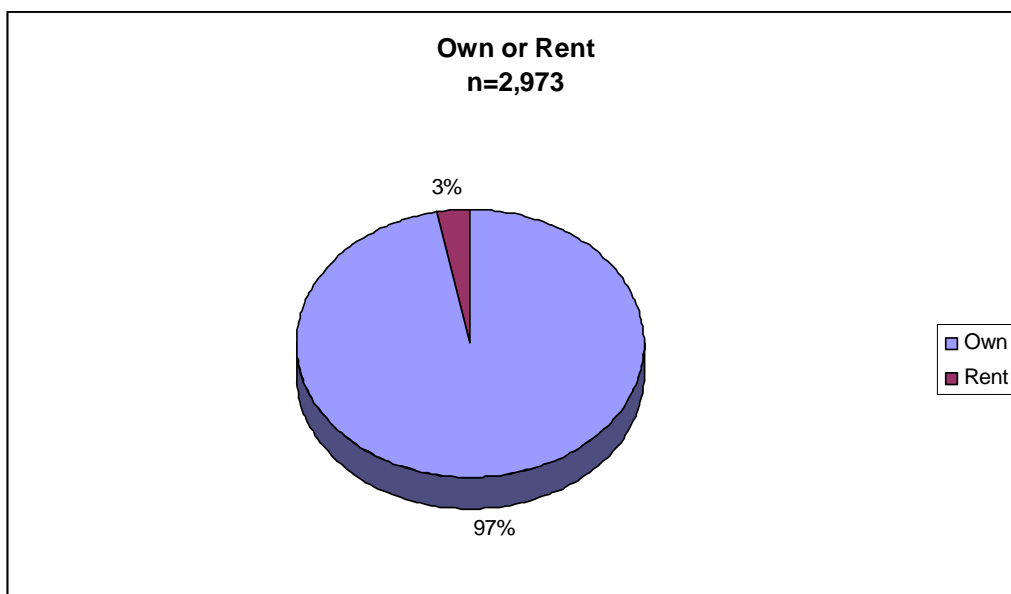
Total number of responses: ~3,000

Response rate: 37.5%

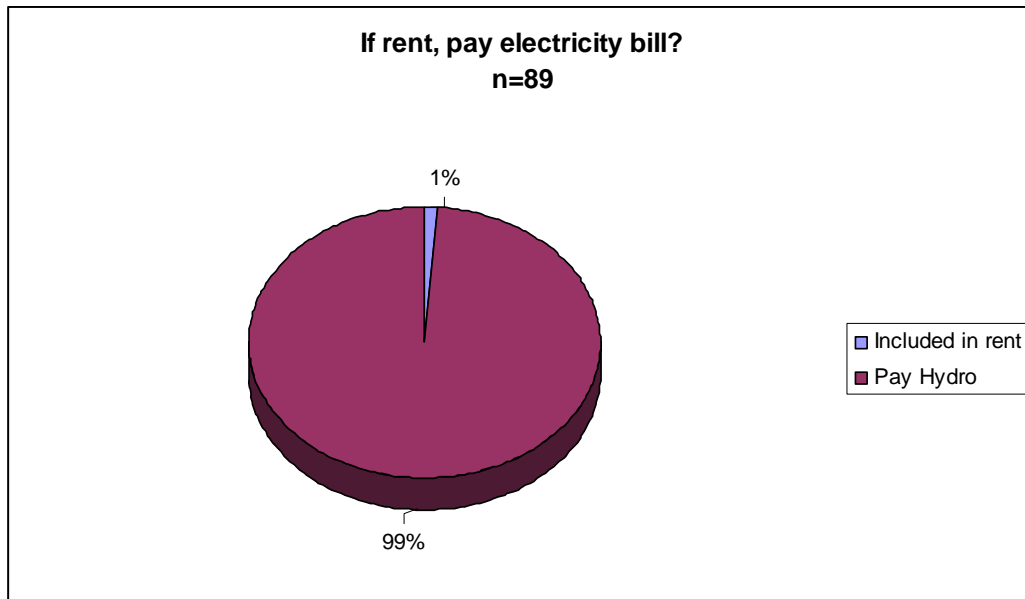
Question 1: In what type of building do you live?



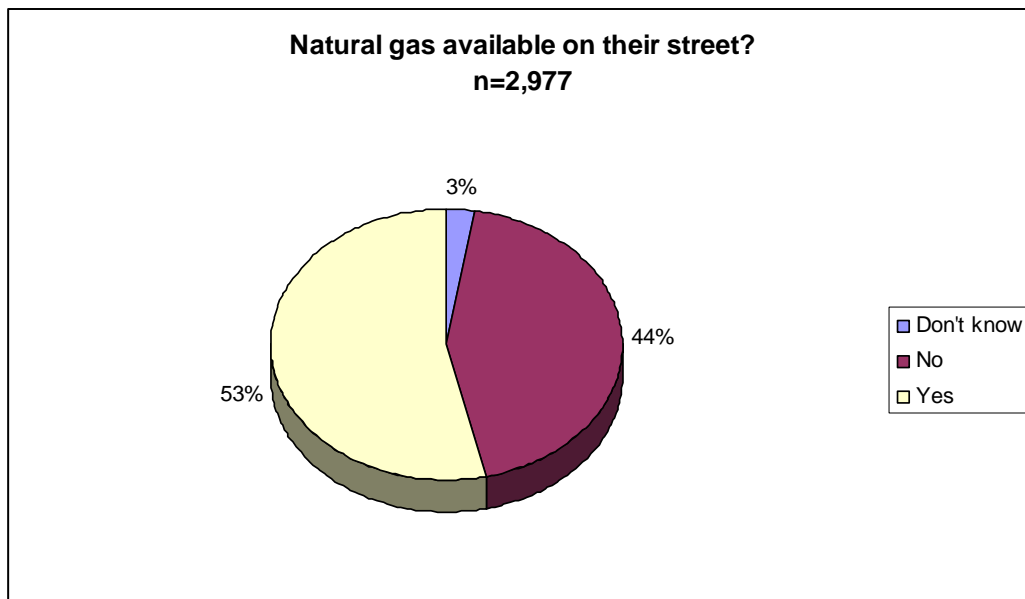
Question 2(a): Do you rent or own your home?



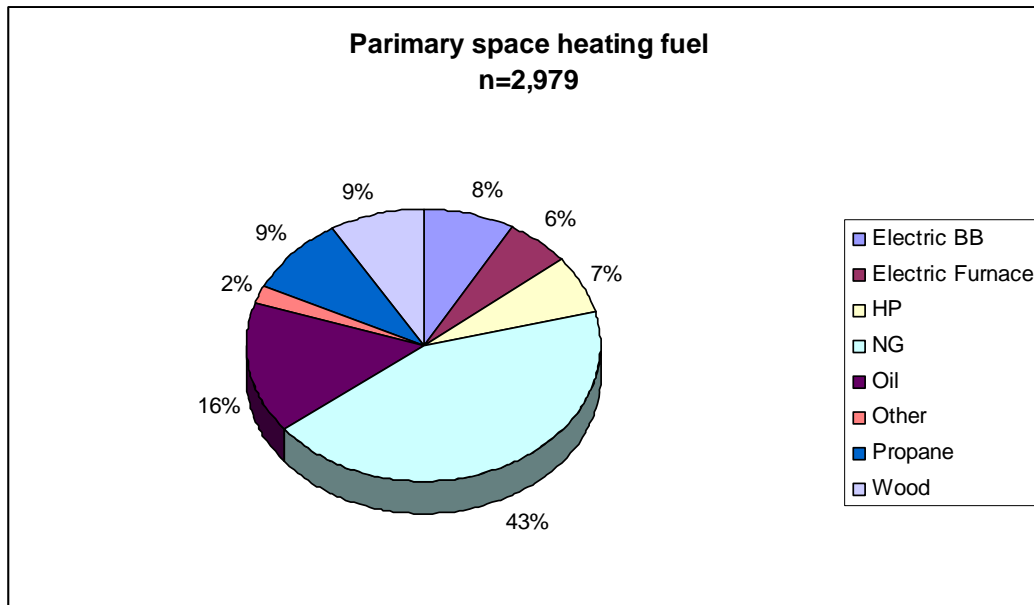
Question 2(b): If you rent, do you pay your own electricity bill?



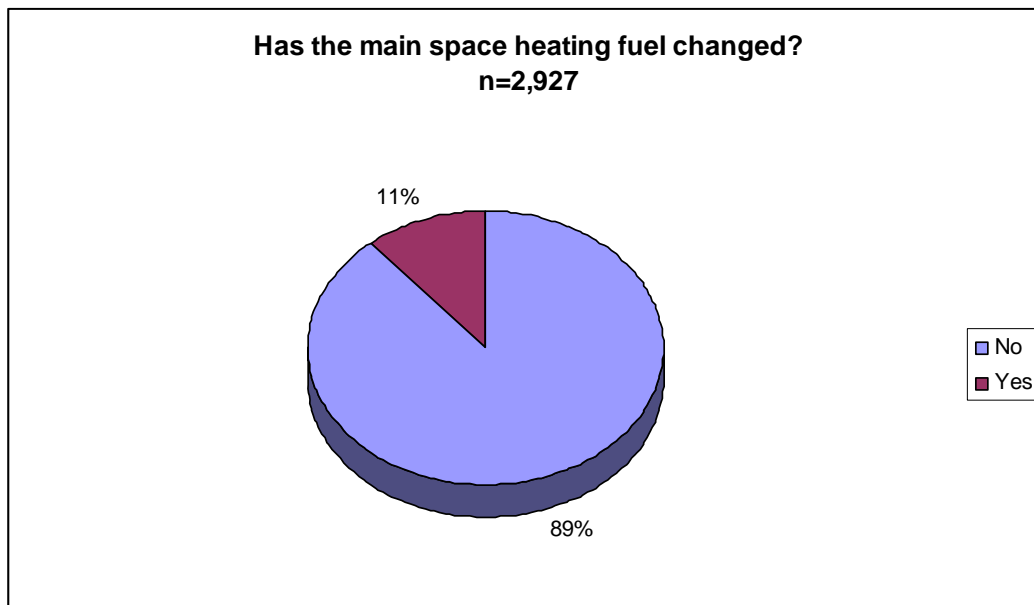
Question 3: Is natural gas available on your street?



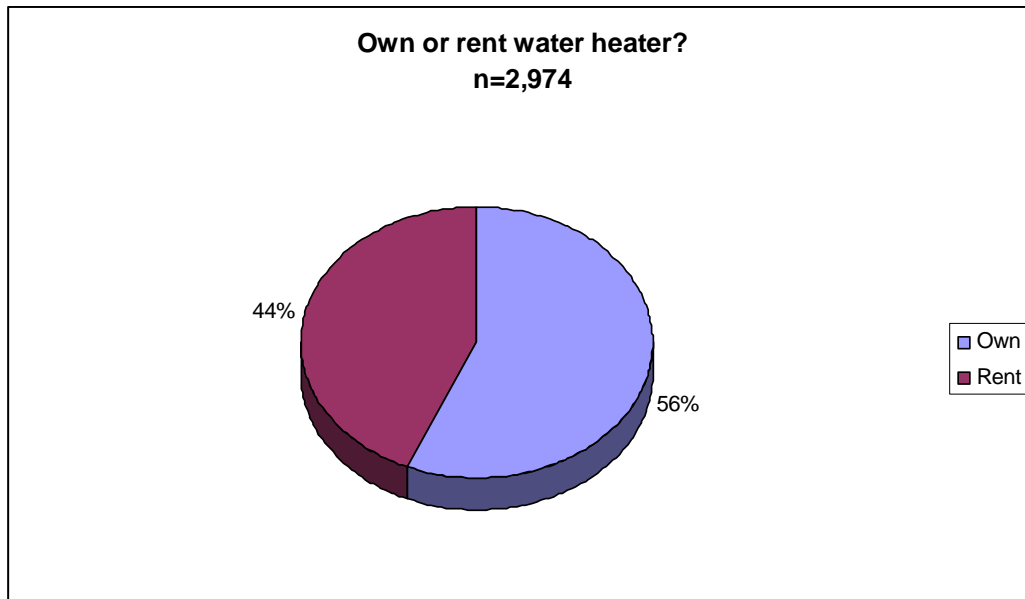
Question 4(a): What is your primary source for space heating?



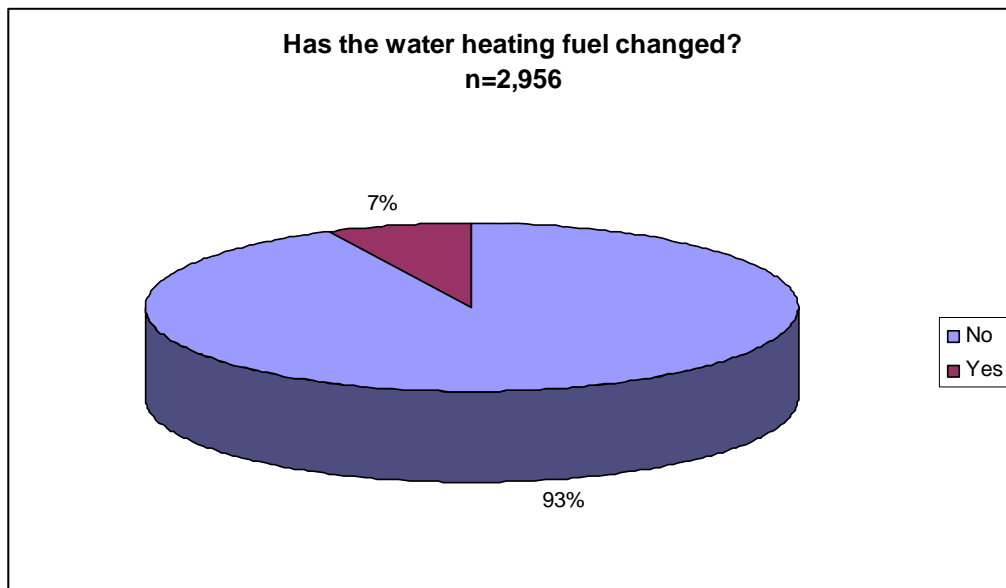
Question 4(b): In your current home, has your main space heating fuel source changed during the last five years?



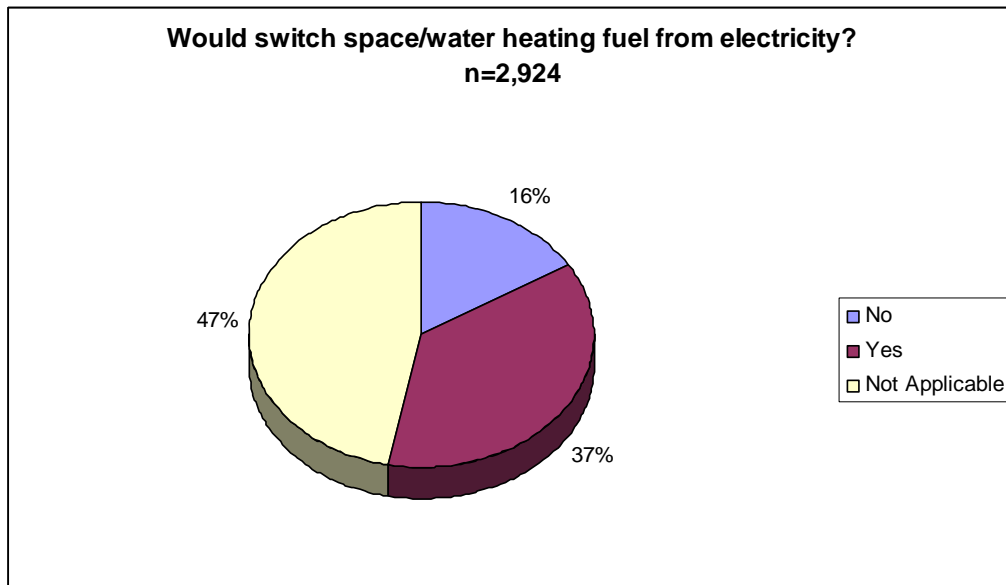
Question 5(a): Do you own or rent your water heater?



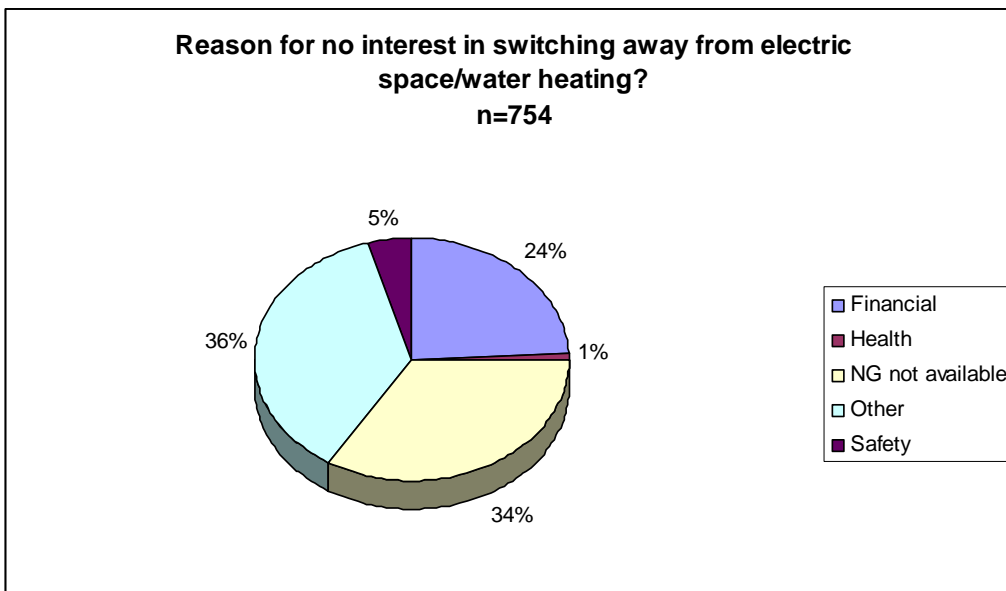
Question 5(c): In your current home, has your water heating fuel source changed during the last five years?



Question 6(a): If you are currently using electricity for space and/or water heating, would you consider switching to other energy sources in future?



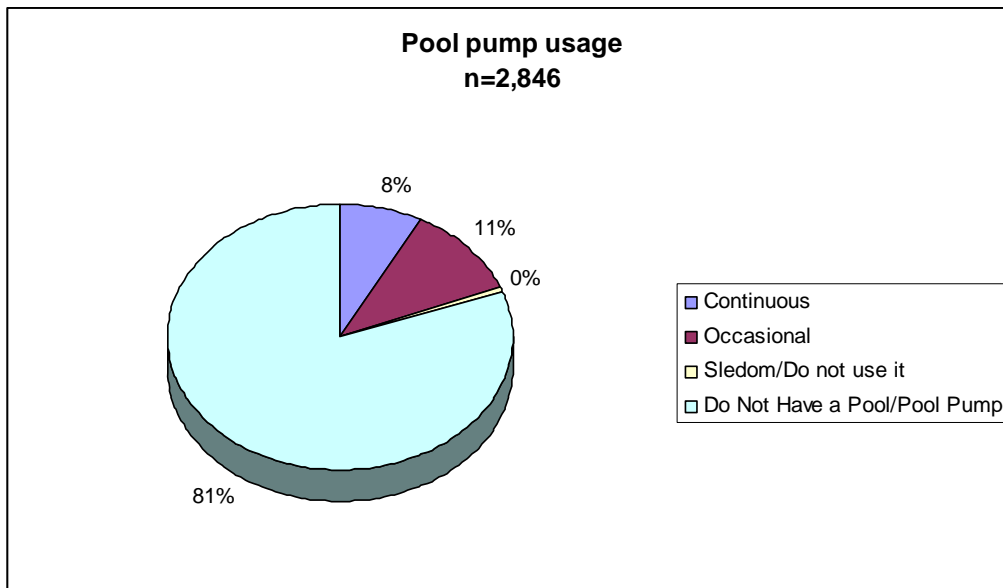
Question 6(b): If “No”, please specify the reason.



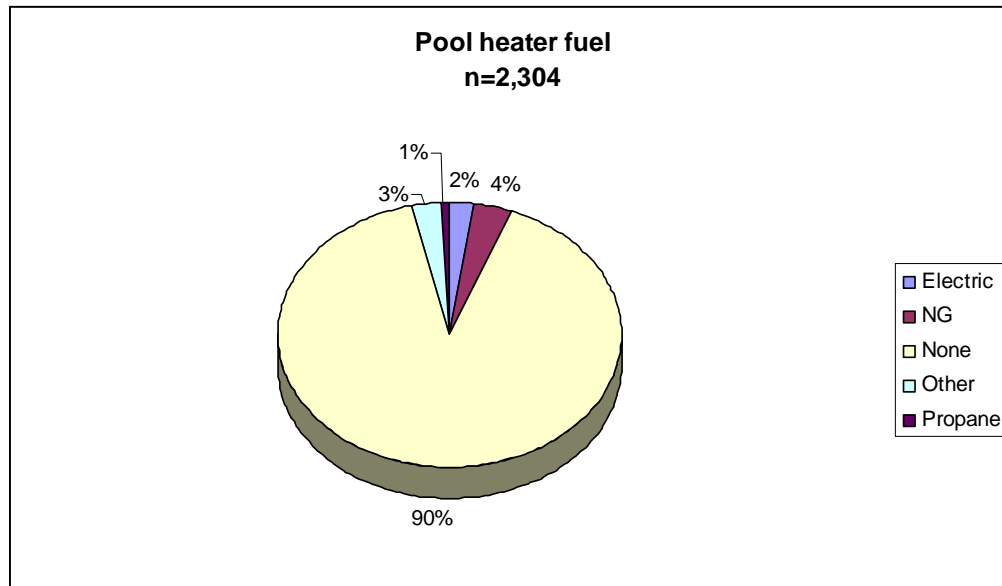
Question 7: What type of air conditioning equipment do you have and how old is it?

	CAC	Heat Pump	Window AC1	Window AC2
< 5 yrs old	533	152	290	86
5-10 yrs old	550	55	122	50
11-15 yrs old	291	38	39	10
>15 yrs old	203	68	22	8
Total	1577	313	473	154

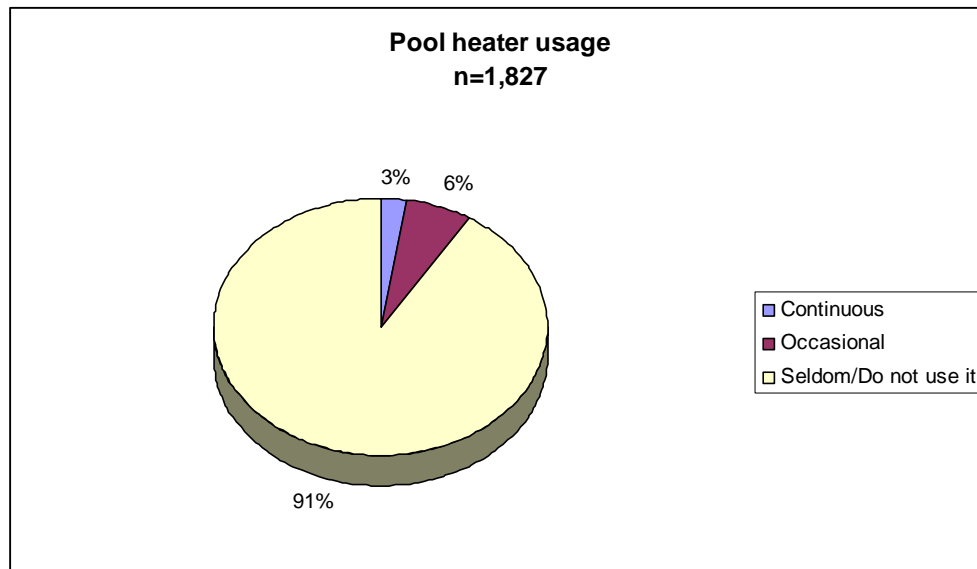
Question 8(a): If you have a swimming pool, how often do you use your pool pump?



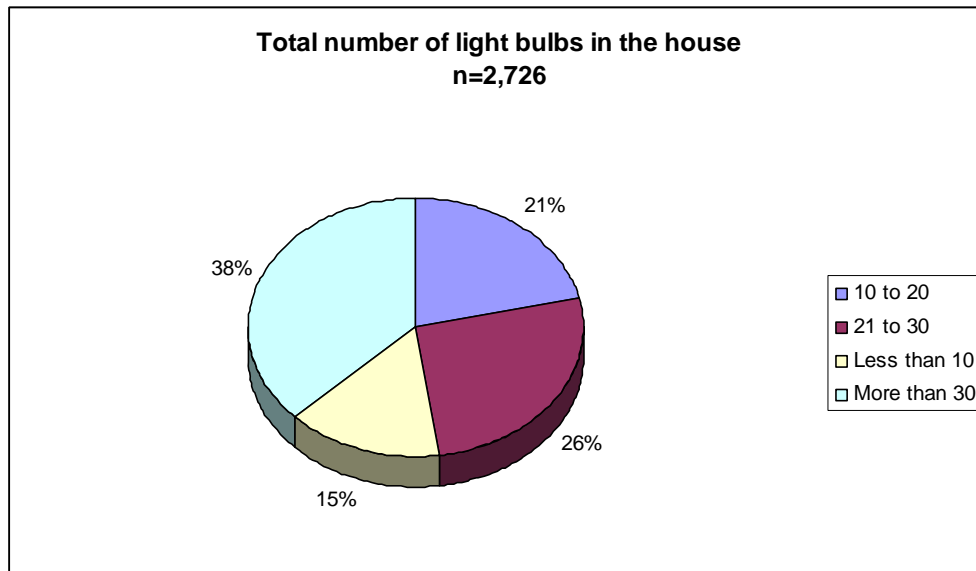
Question 8(b): What fuel source do you use for your pool heater?



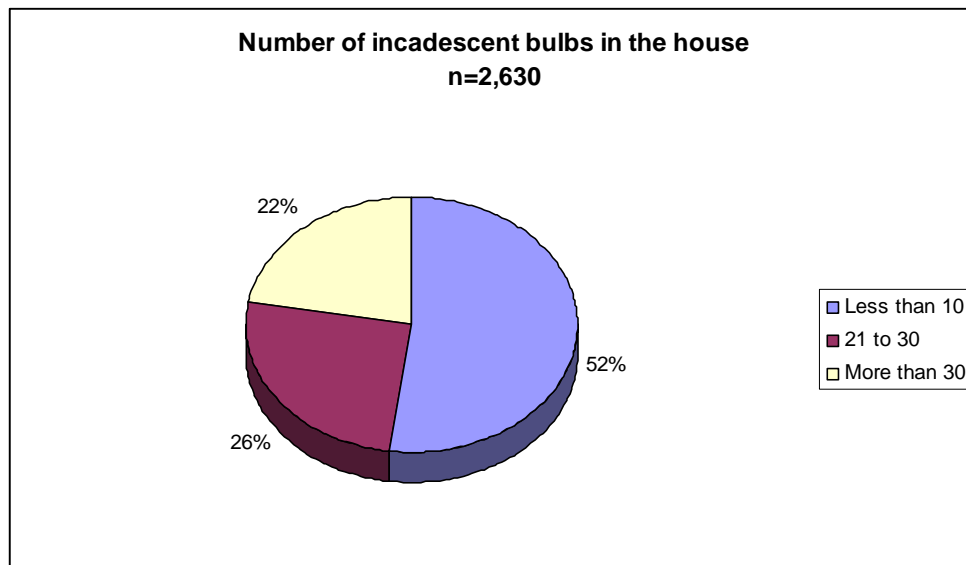
Question 8(c): How often do you use your pool heater?



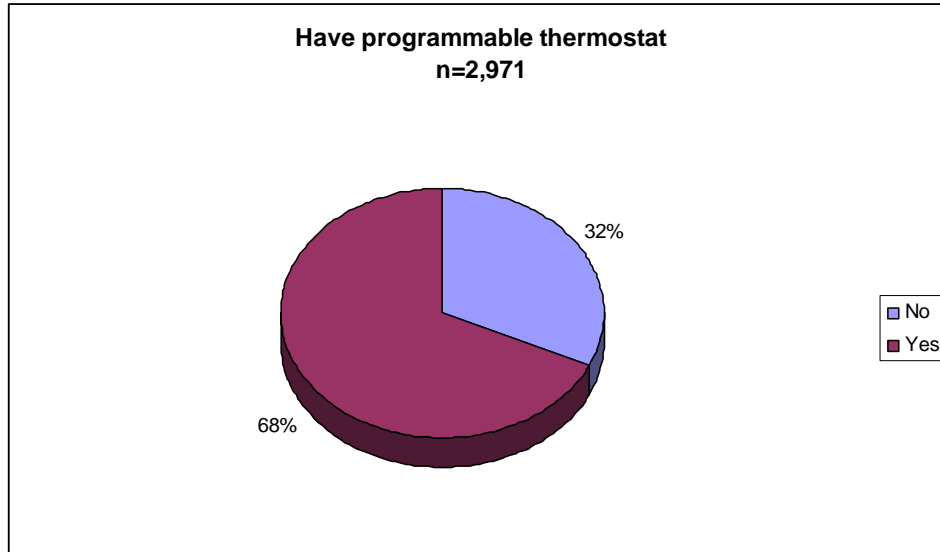
Question 9(a): How many indoor and outdoor light bulbs are currently being used in your home?



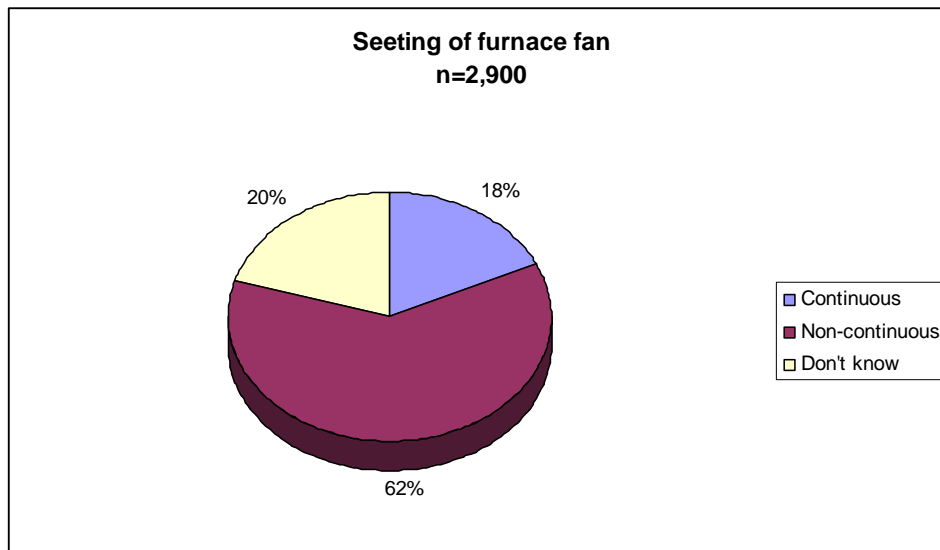
Question 9(b): How many regular (incandescent) light bulbs (indoor and outdoor) are currently in regular use in your home?



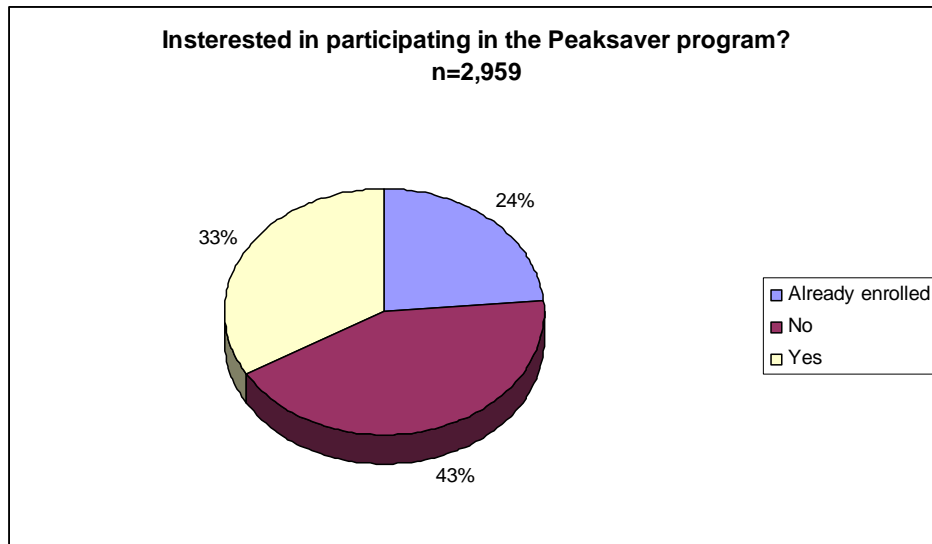
Question 10: Do you have a programmable thermostat?



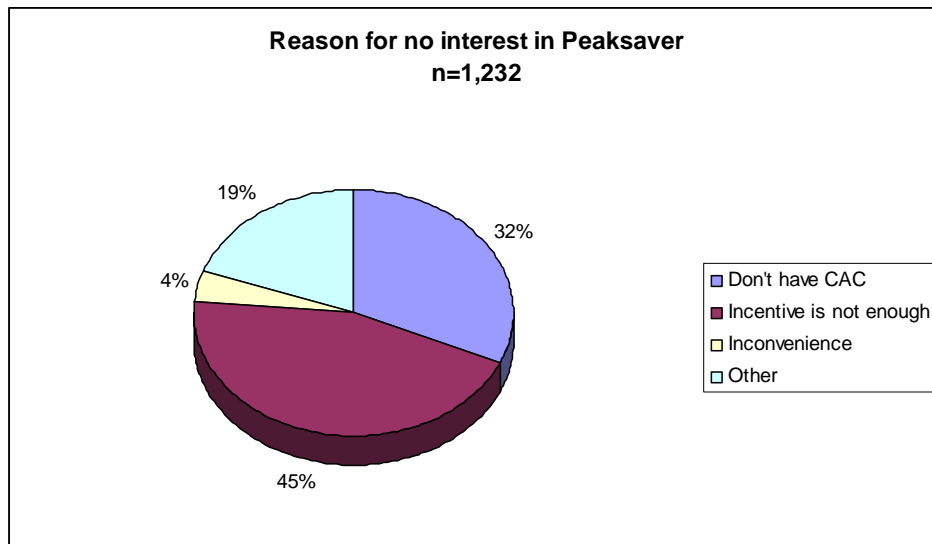
Question 11: What is the setting of your furnace fan?



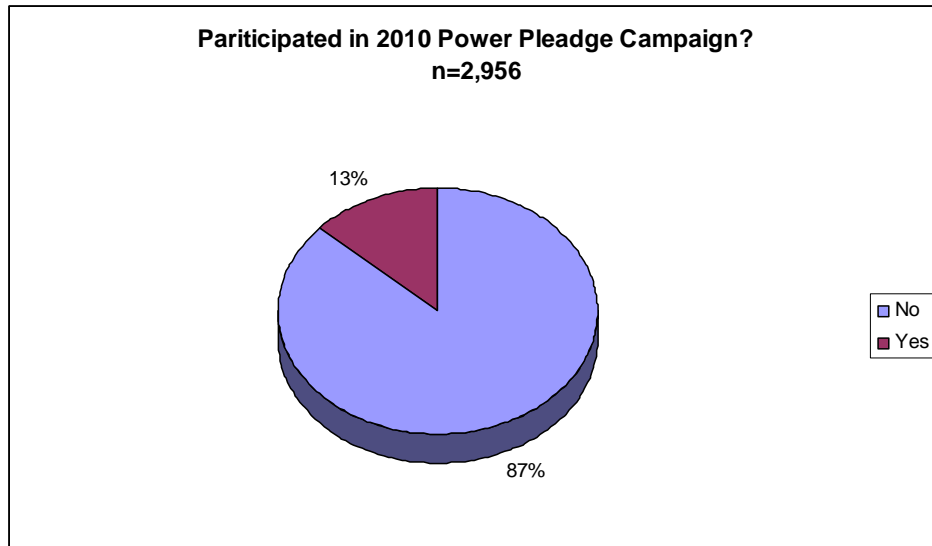
Question 12(a): If you are not currently enrolled in the PeakSaver program, would you be interested in participating?



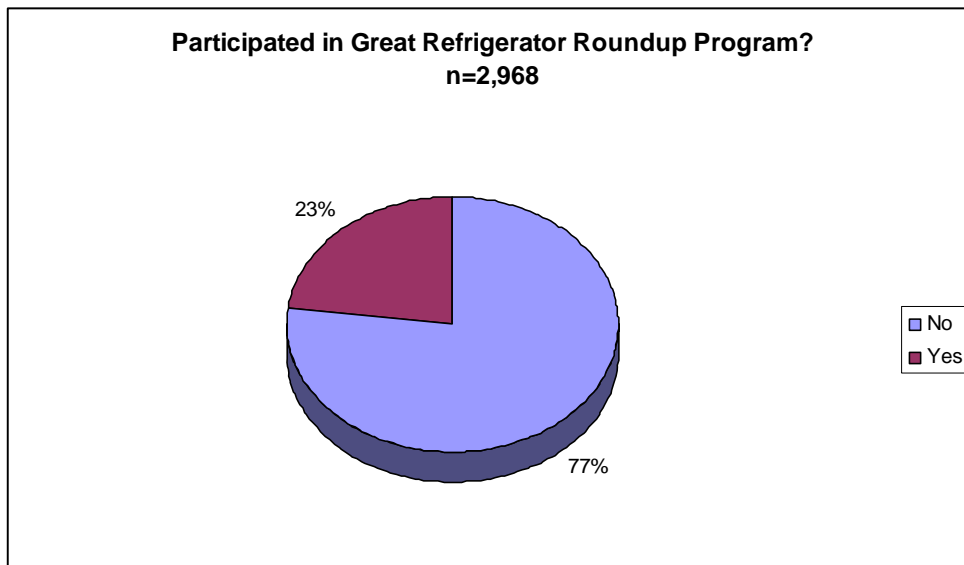
Question 12(b): If “No”, please specify the reason.



Question 13(a): Did you participate in the 2010 Power Pledge campaign?



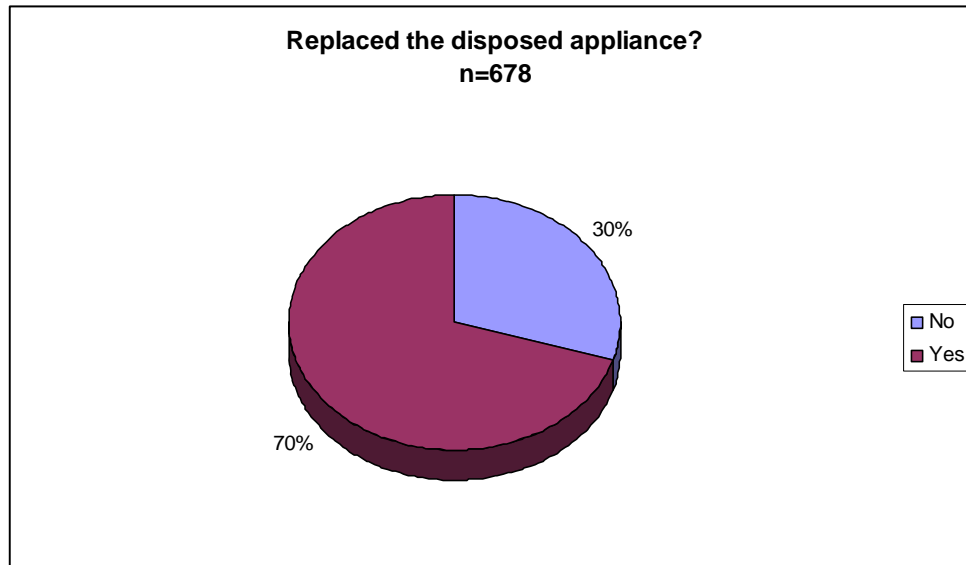
Question 14(a): Have you participated in the “Great Refrigerator Round-up” program?



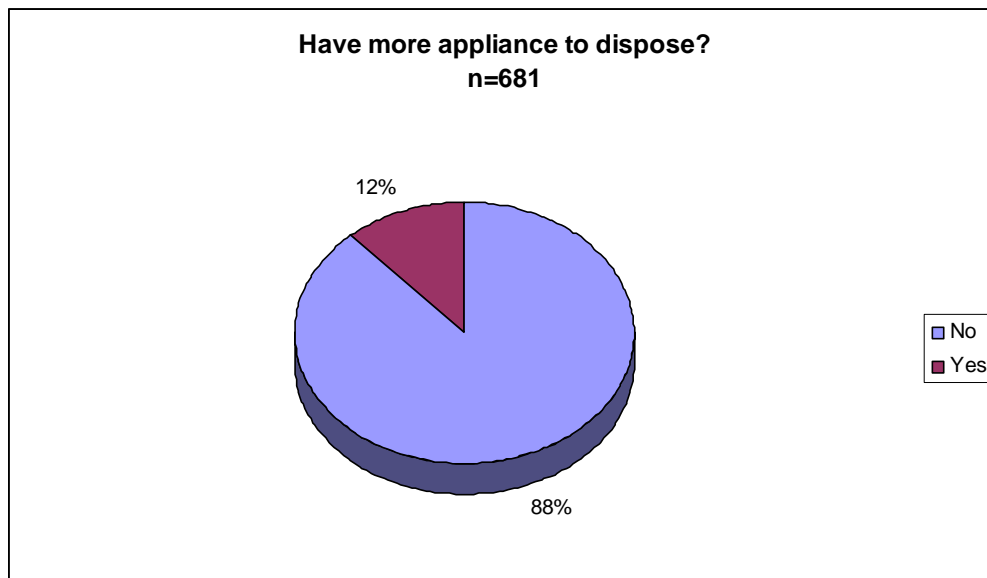
Question 14(b): If you participated in the “Great Refrigerator Round-up” program, which of the following old appliance(s) did you dispose of?

Refrigerator	564
Window AC	19
Freezer	195
Dehumidifier	25

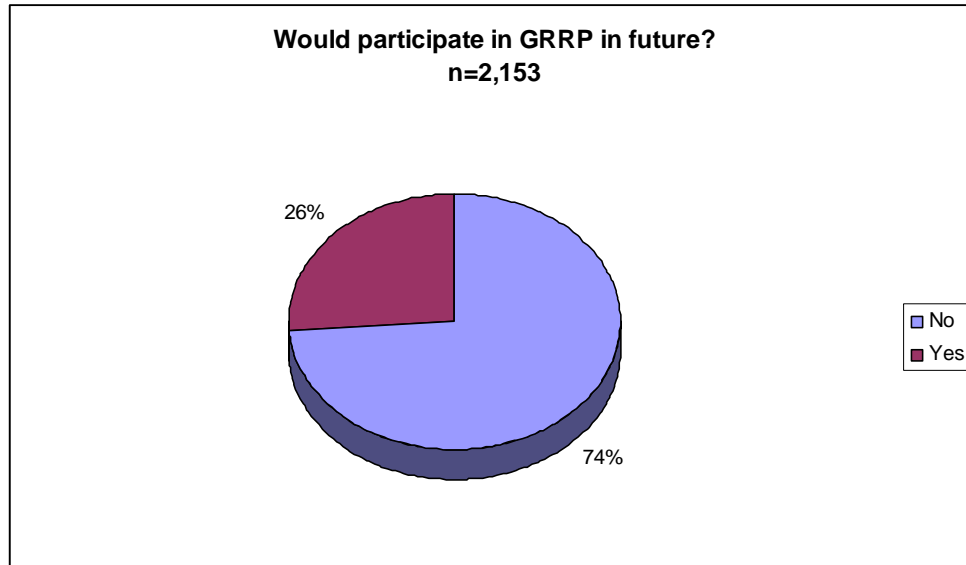
Question 14(c): Did you replace the appliance(s) you disposed of with a new one?



Question 14(d): Do you have additional appliance(s) that you would like to dispose of under the “Great Refrigerator Round-up” program?



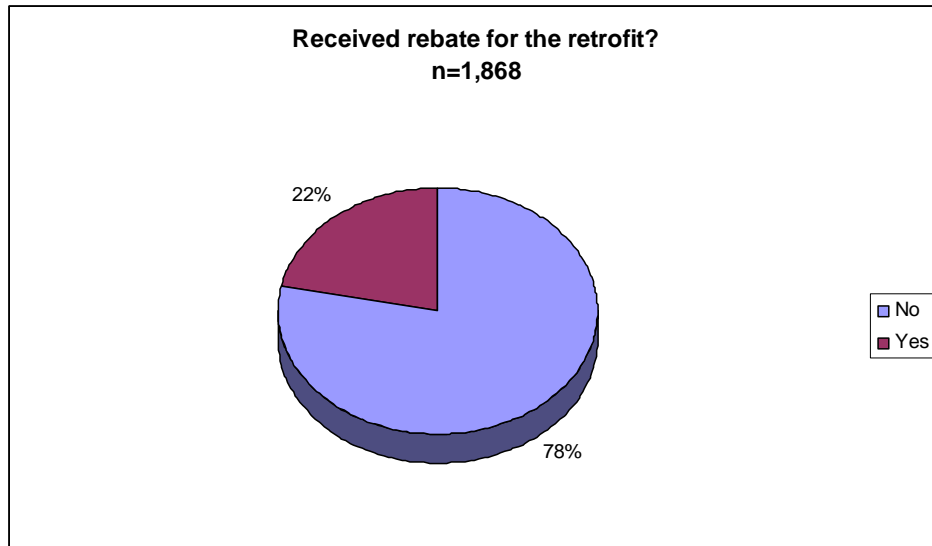
Question 14(e): If you have not yet participated in the “Great Refrigerator Round-up” (GRRP) program, would you be interested in participating?



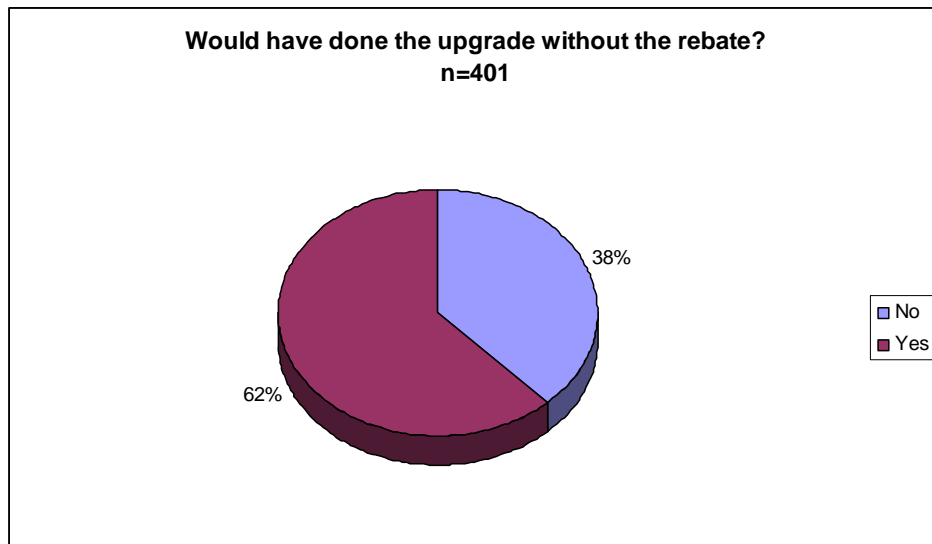
Question 15(a): Please let us know if you have upgraded any of the following to be more energy efficient or are planning to do it in future?

	Windows	Doors	Walls	Attic	Basement
Already done it	1454	1194	623	891	807
Will do in next 2 years	399	429	220	361	326
Not Applicable or Have no plans	1044	1223	1961	1582	1673

Question 15(b): Did you receive any financial rebate?



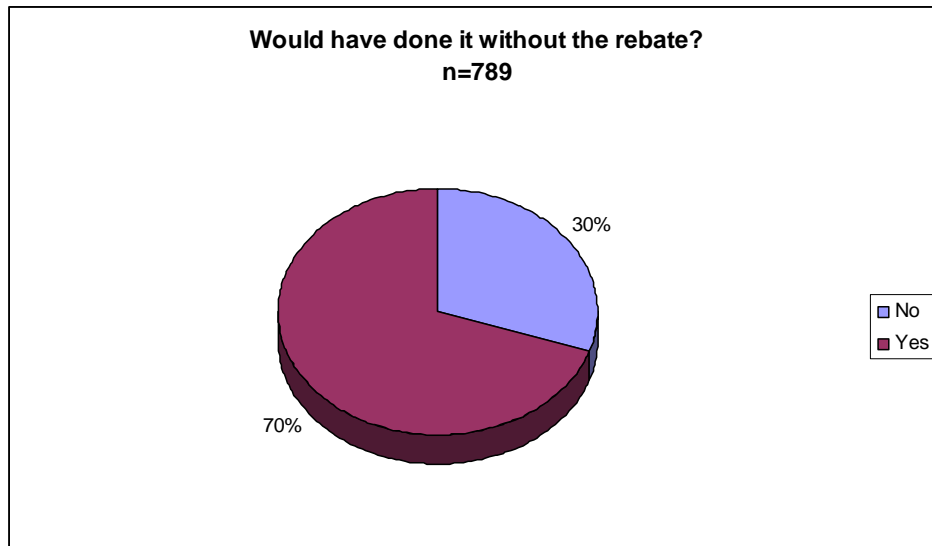
Question 15(c): If “Yes”, would you have done the upgrade in the absence of any financial rebate?



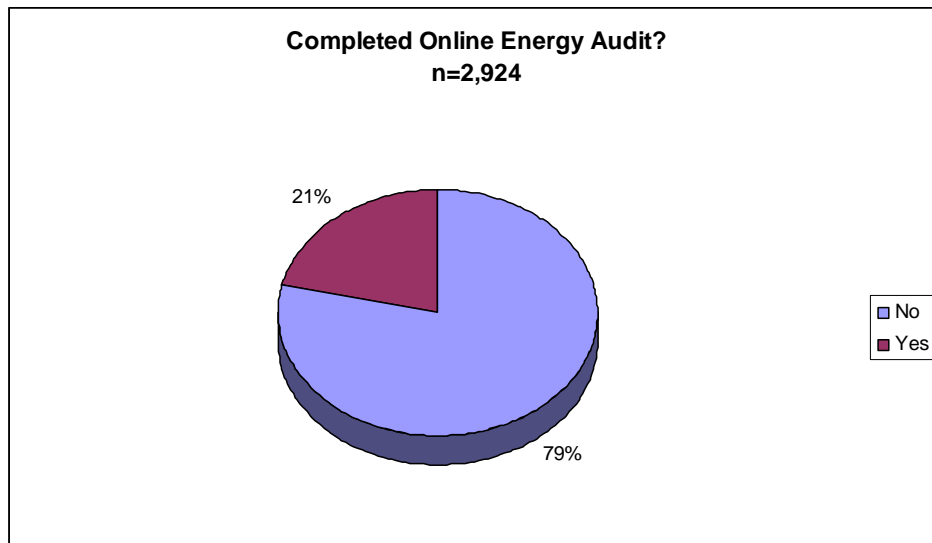
Question 16(a): Have you taken any of the following actions through participation in the “Cool Savings Rebate” program?

Replaced Thermostat	613
Furnace with ECM	355
E* HP or ductless split system	120
CEE Tier 2 CAC	99
No Action Taken	2008

Question 16(b): If “Yes”, would you have taken this action in the absence of financial rebate through the “Cool Savings Rebate” program?



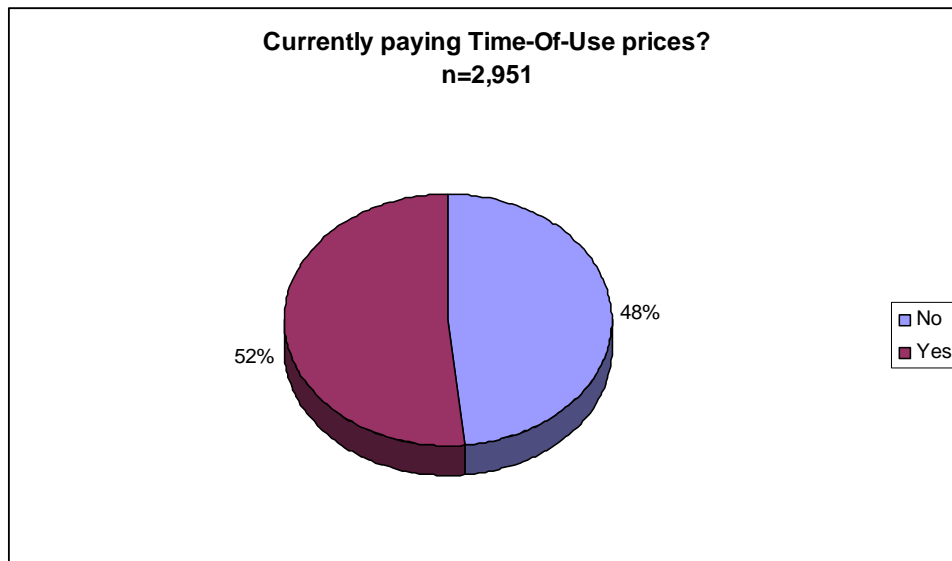
Question 17(a): Have you completed the PowerSaverPlus online energy audit?



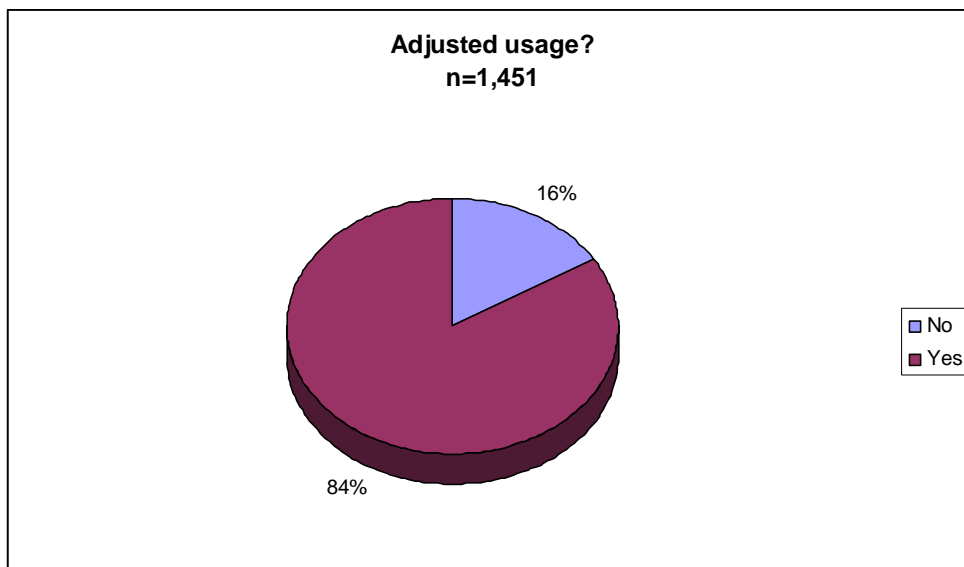
Question 19: What conservation tools can Hydro One provide that will be of value to you?

Conservation tips	1527
In-home audit	1147
Other	233
None	661

Question 20(a): Are you currently paying Time-of-Use electricity prices?



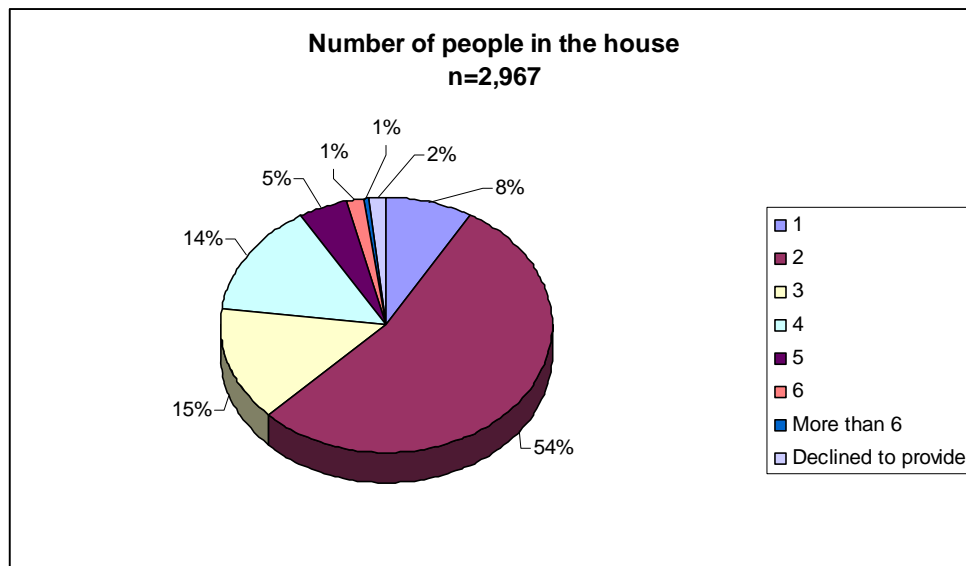
Question 20(b): Have you adjusted your electricity usage as a result of Time-of-Use prices?



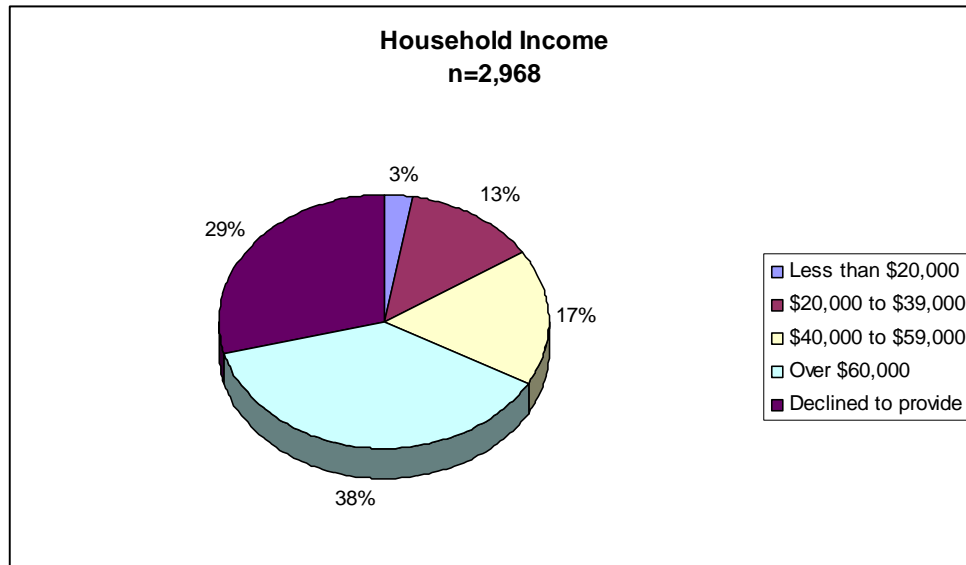
Question 21: What conservation actions have you undertaken that are NOT specifically related to any program/initiative identified in the previous questions?

	Always	Sometimes	Never	Not Applicable
Set thermostat low/high when not at home in winter/summer	2296	340	146	163
Set thermostat low/high at night in winter/summer	2237	379	111	211
Use cold water for laundry	1797	993	124	40
Hang laundry to dry	827	1481	545	90
Use timers on indoor/outdoor lights	969	804	791	347
Use dimmers on indoor/outdoor lights	590	1027	828	439
Turn off lights when not in use	2530	414	3	5
Use a fan or open windows instead of using air-conditioning	1467	1303	112	71
Run dishwasher only when full	2233	107	9	611
Use timer on pool pump	295	50	176	2384
Maintain CAC	1392	276	65	1193
Insulate water heater pipes	1401	515	670	342
Air sealing/weatherization	1204	873	412	426

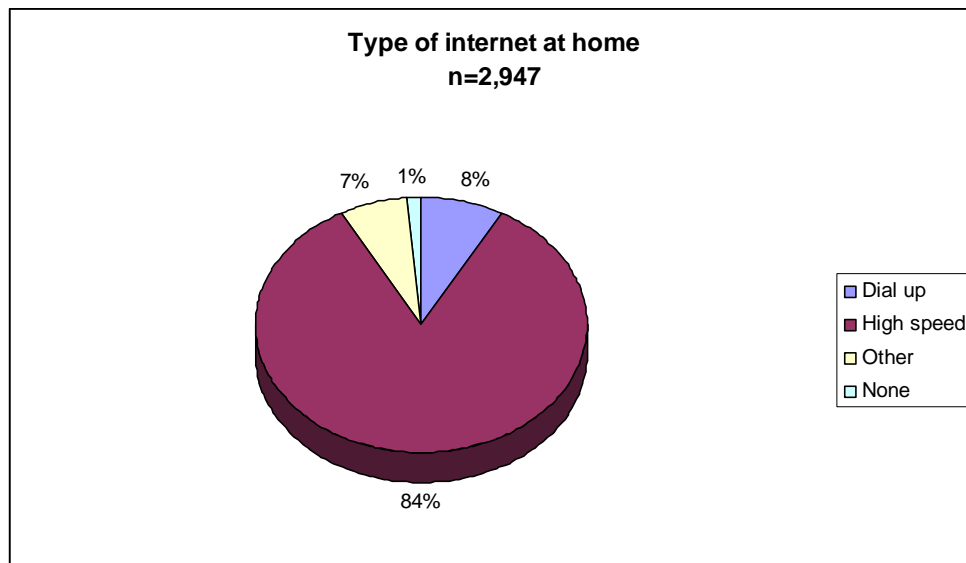
Question 22: How many people live in your household?



Question 23: What was your TOTAL household income before tax for 2009?



Question 24: What type of Internet connection do you have at home?¹

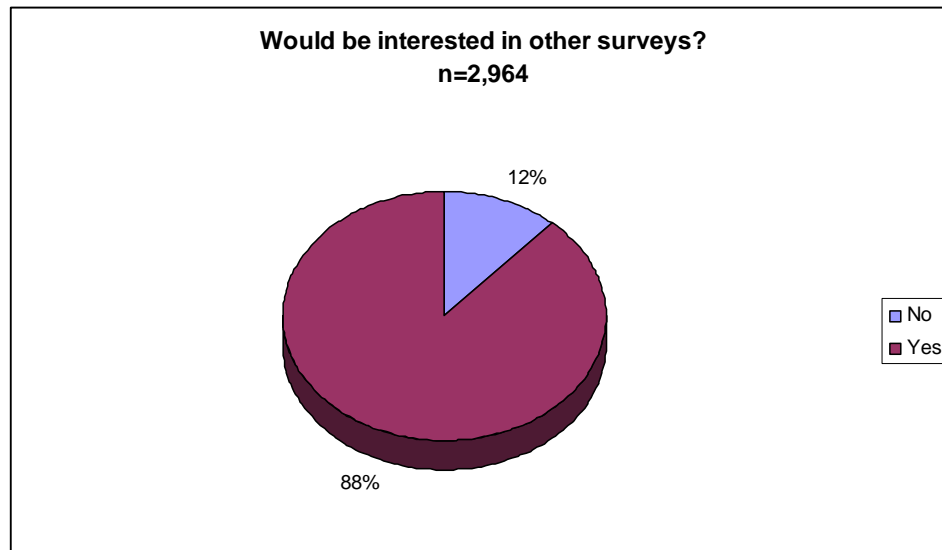


¹ Note that this was an online survey and customers were sent the survey link by an e-mail, therefore the respondents are more likely to have high-speed internet connection in this case.

Question 25(a): Which of the following social media tool(s) do you use?

Facebook	1267
Twitter	103
Linked-In	167
Other	153
None	1553

Question 26: Would you be interested in participating in other conservation surveys in future?



Question 27: How would you like to be contacted for conservation related information in future?

Phone	123
E-mail	2611
Facebook	50
Twitter	5
Linked-In	11
Do not contact	281

Attachment 11:
2011 Customer Equipment & Conservation Survey
Results

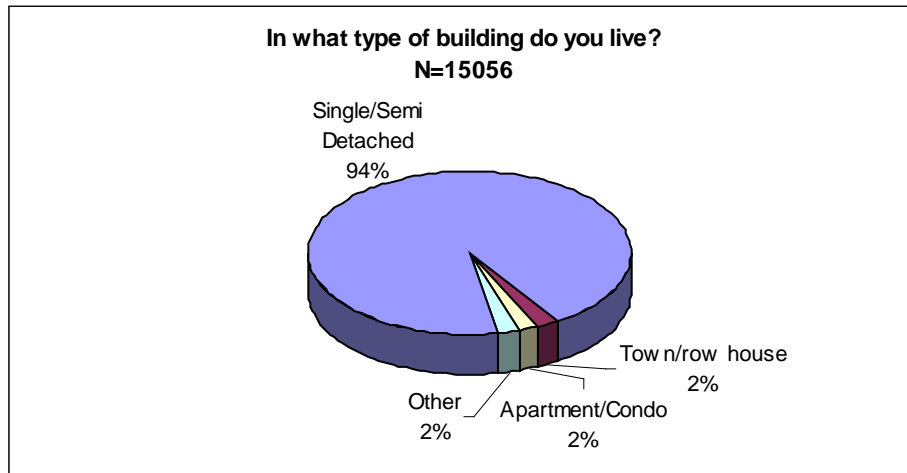
2011 Customer Equipment and Conservation Survey

Total number of surveys sent out: ~125,000

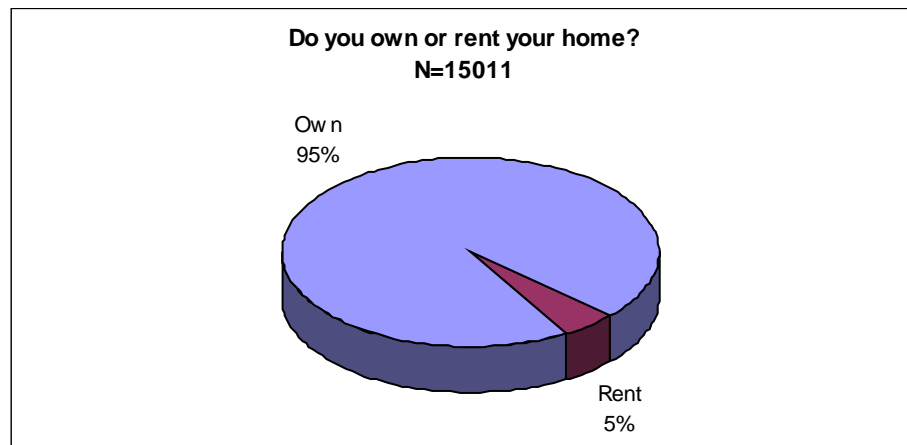
Total number of unique responses: 15,180

Response rate: ~12%

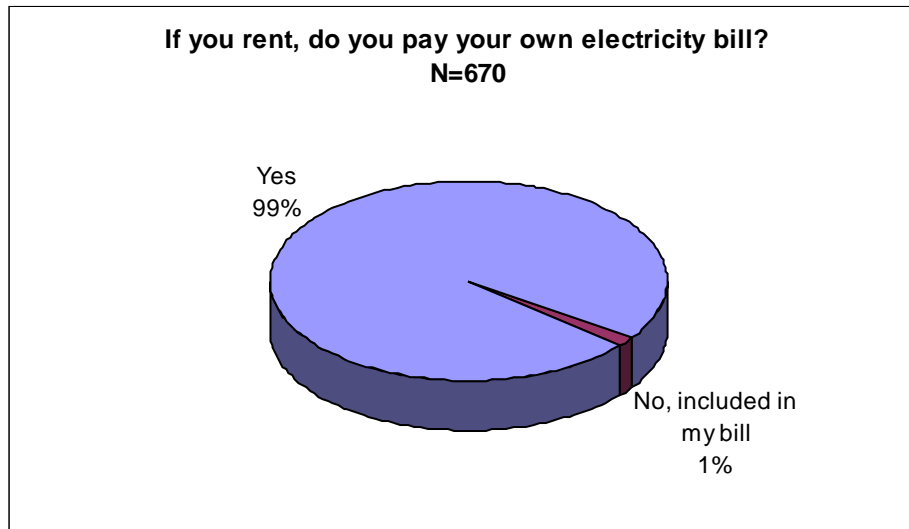
Question 1: In what type of building do you live?



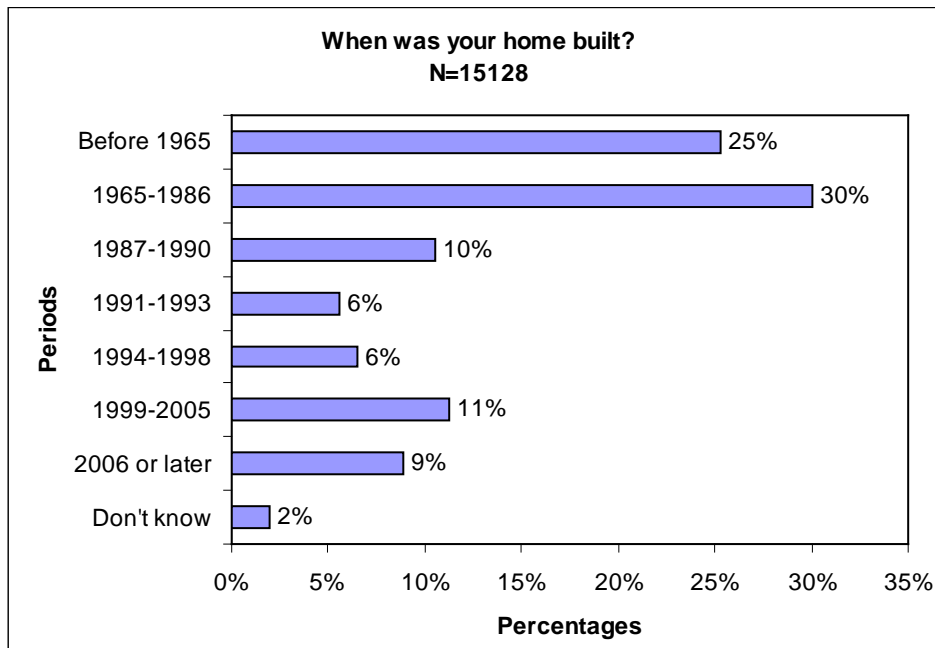
Question 2 (a): Do you own or rent your home?



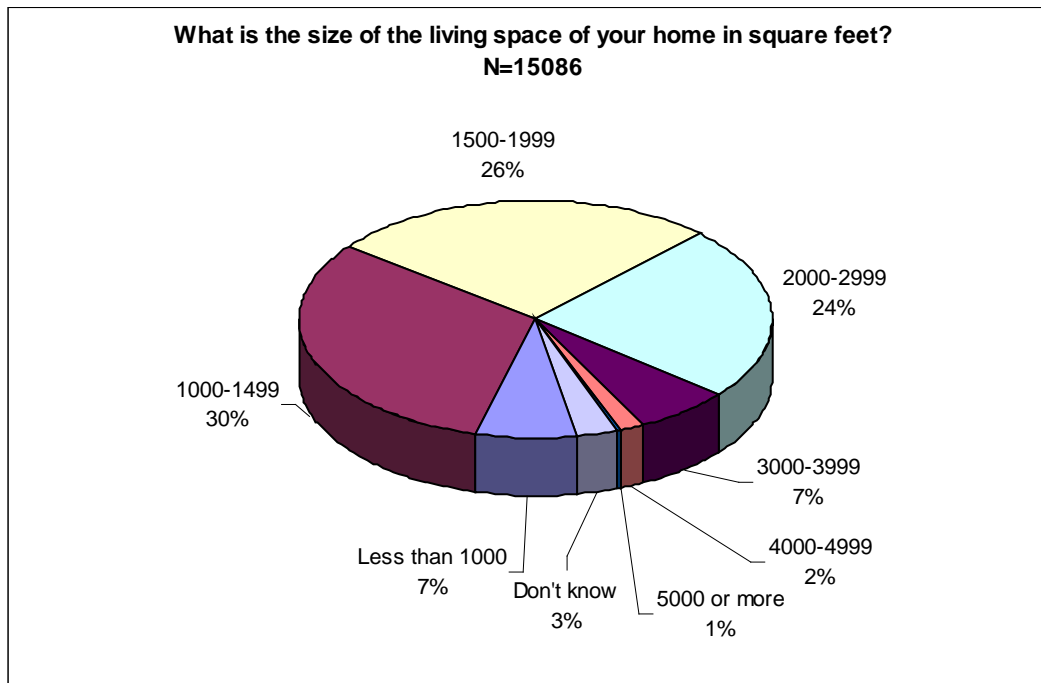
Question 2 (b): If you rent, do you pay your own electricity bill?



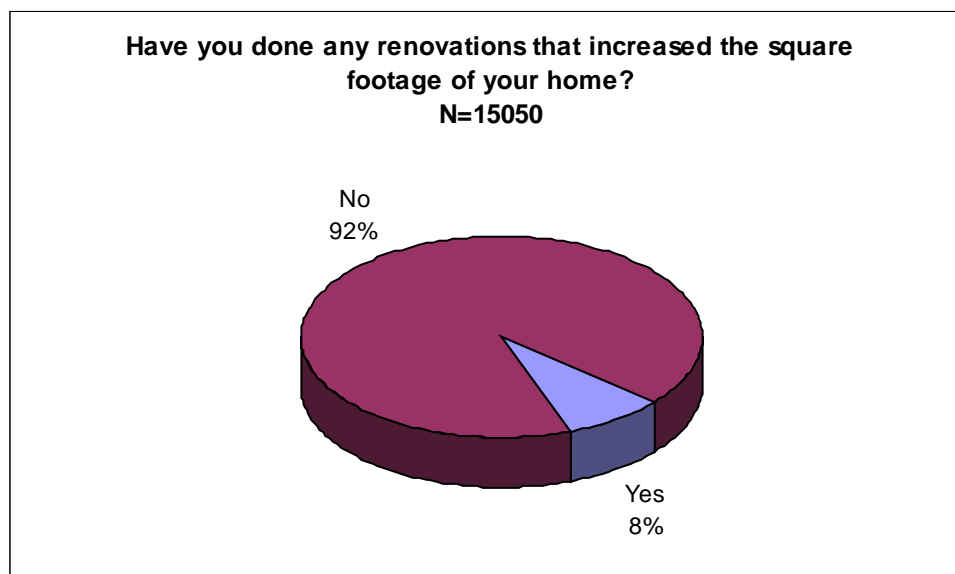
Question 3: When was your home built?



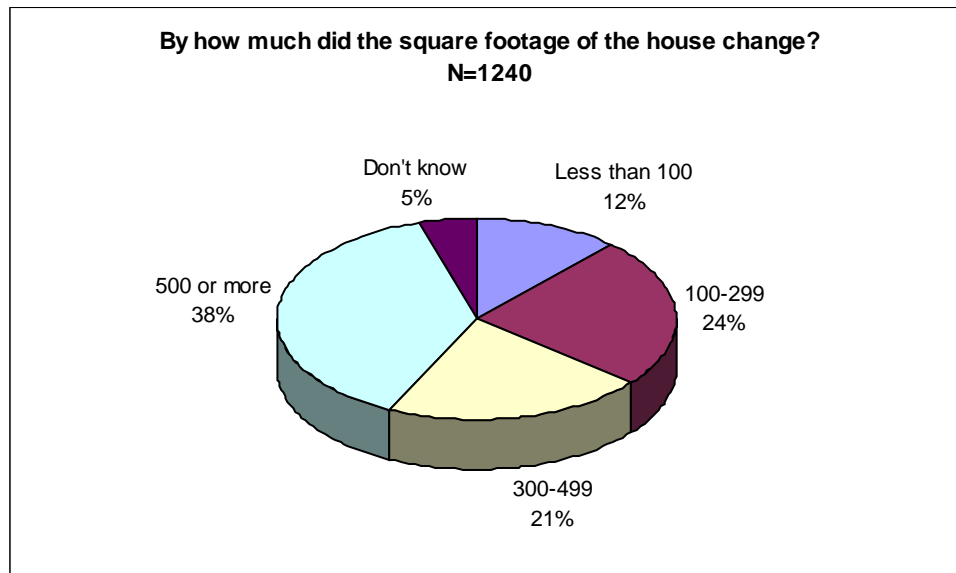
Question 4 (a): What is the size of the living space of your home in square feet? DO NOT include your garage, attic, or unfinished basement.



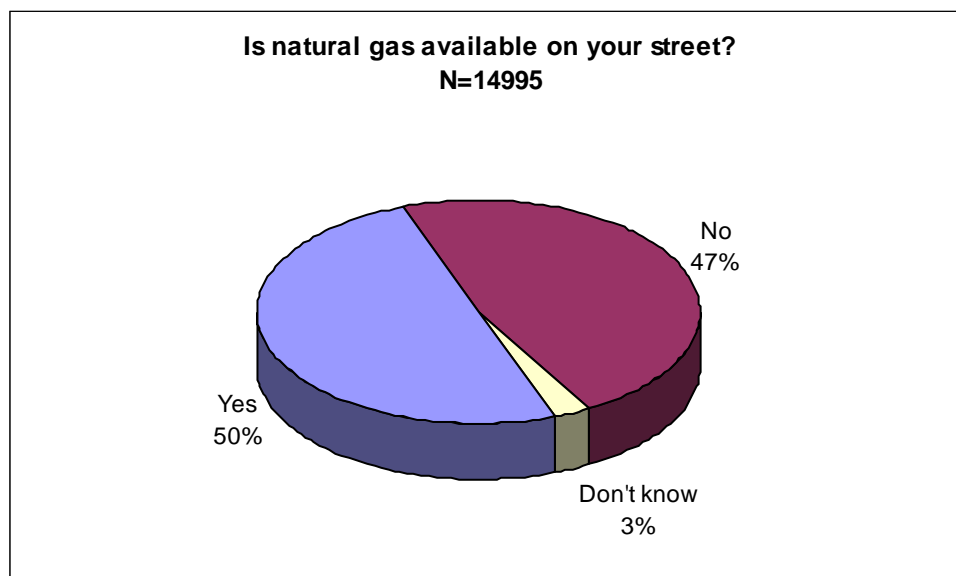
Question 4 (b): Within the last five years, have you completed any renovations that increased the square footage of your home?



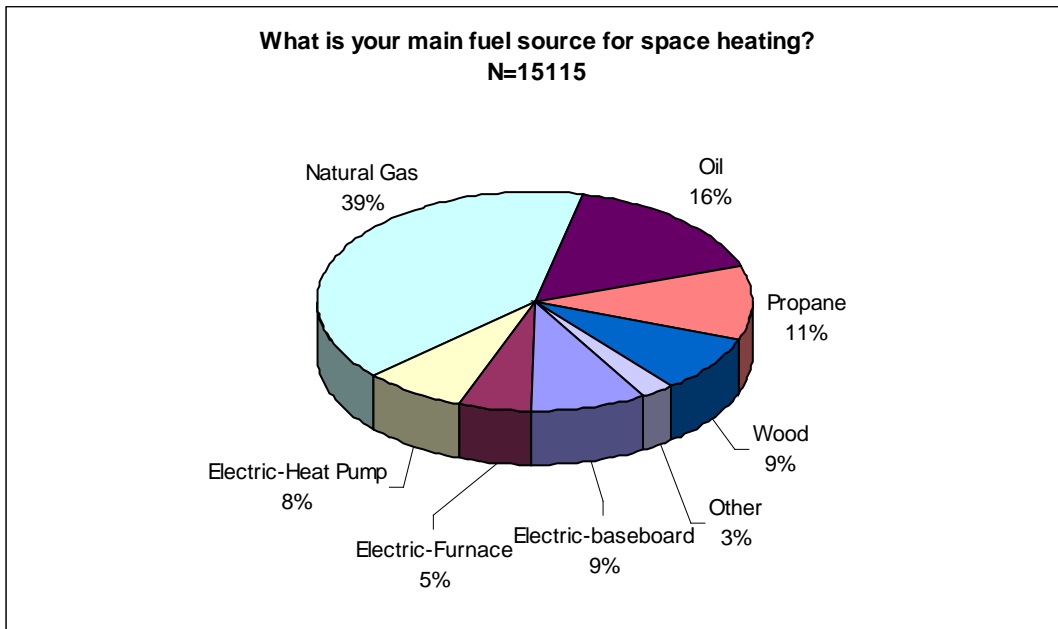
Question 4 (c): If yes, by how much did the square footage of the house change because of the renovation?



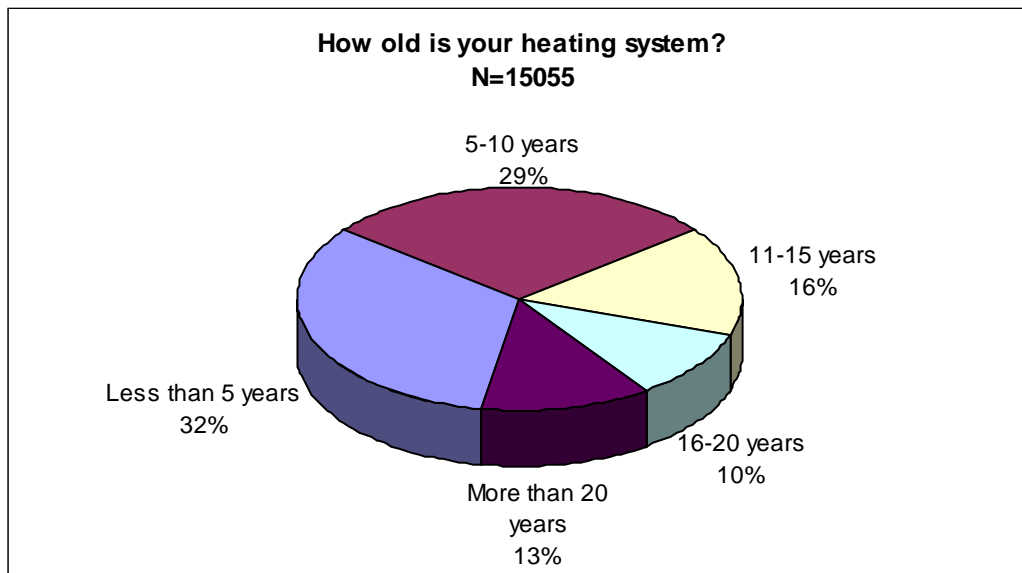
Question 5: Is natural gas available on your street?



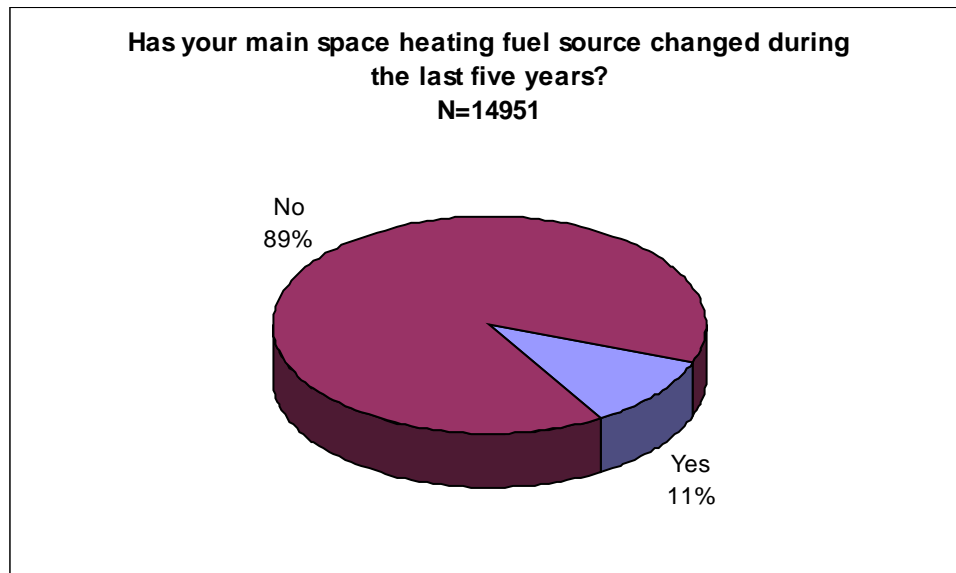
Question 6(a): What is your main fuel source for space heating?



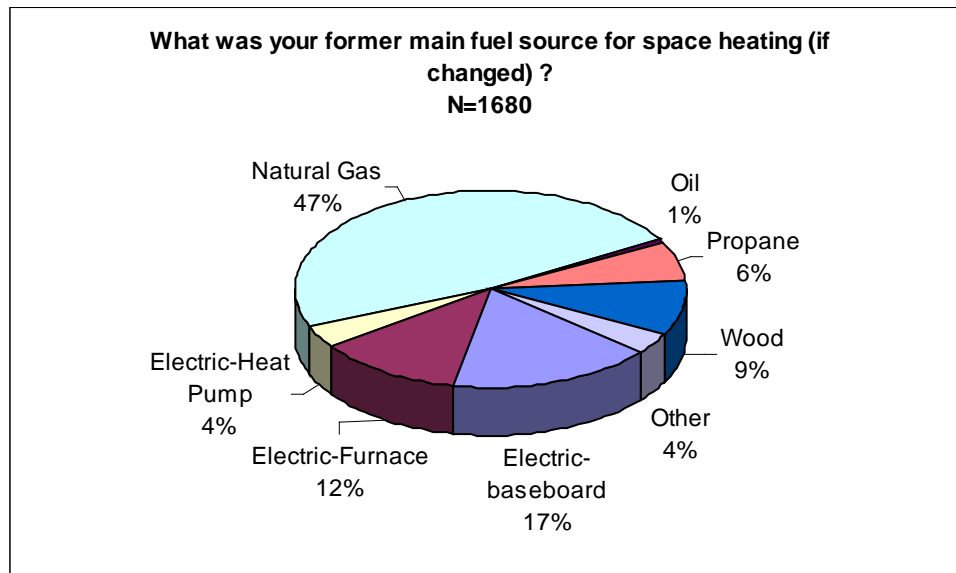
Question 6 (b): How old is your heating system?



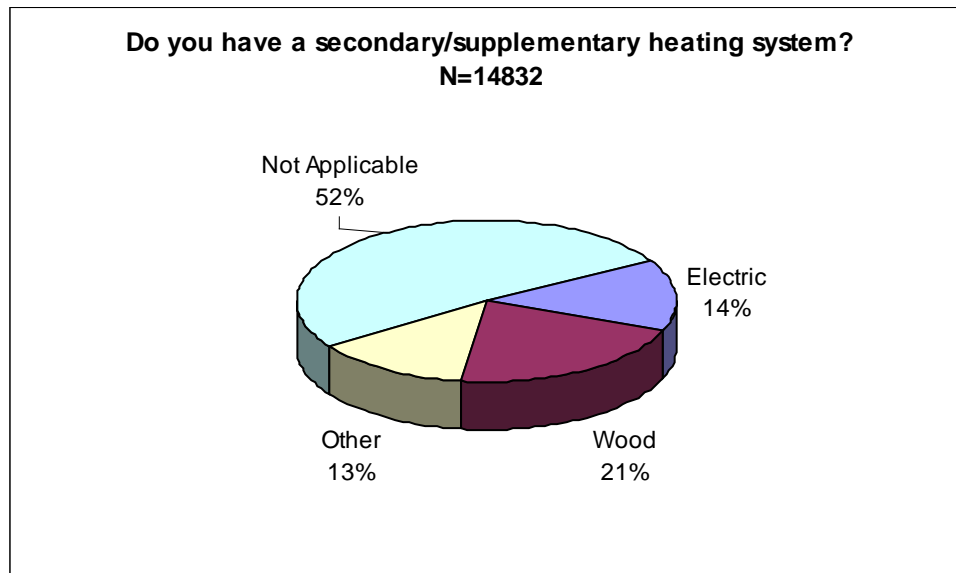
Question 6 (c): In your current home, has your main space heating fuel source changed during the last five years?



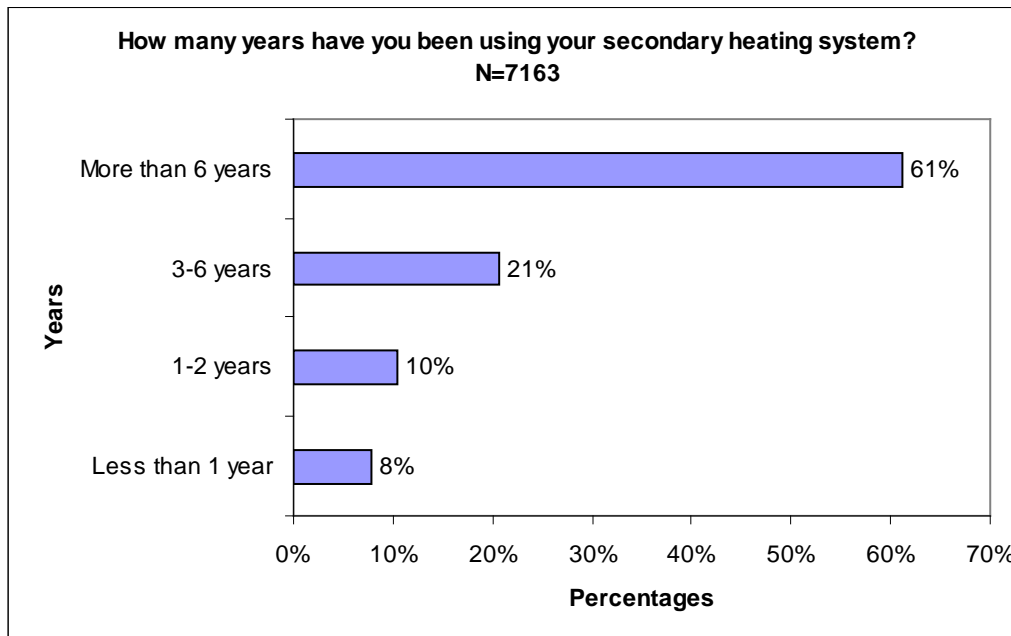
Question 6 (d-ii): If yes, what was your former main fuel source for space heating?



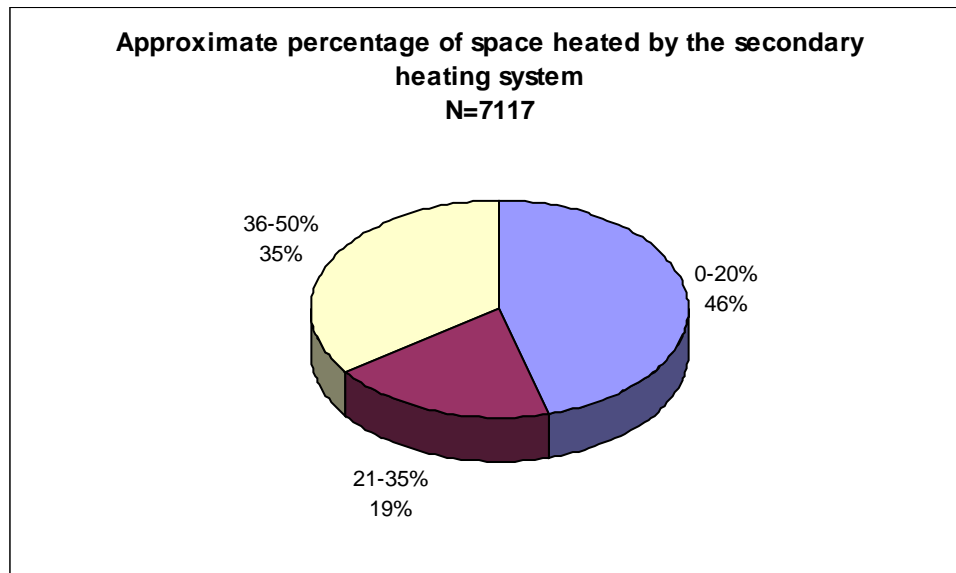
Question 7(a): In addition to you main source of space heating, do you have a secondary/supplementary heating system?



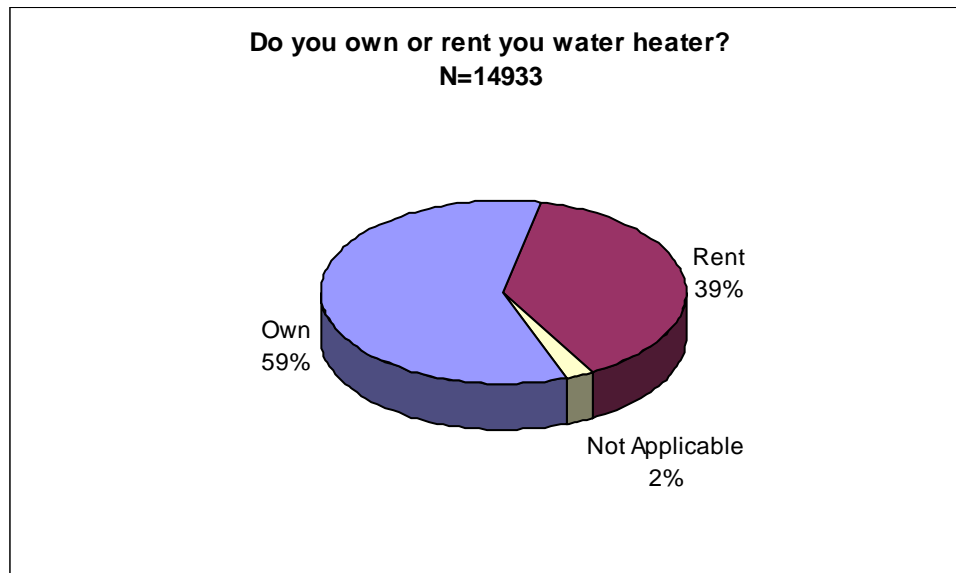
Question 7 (b-i): If yes, how many years have you been using your secondary heating system?



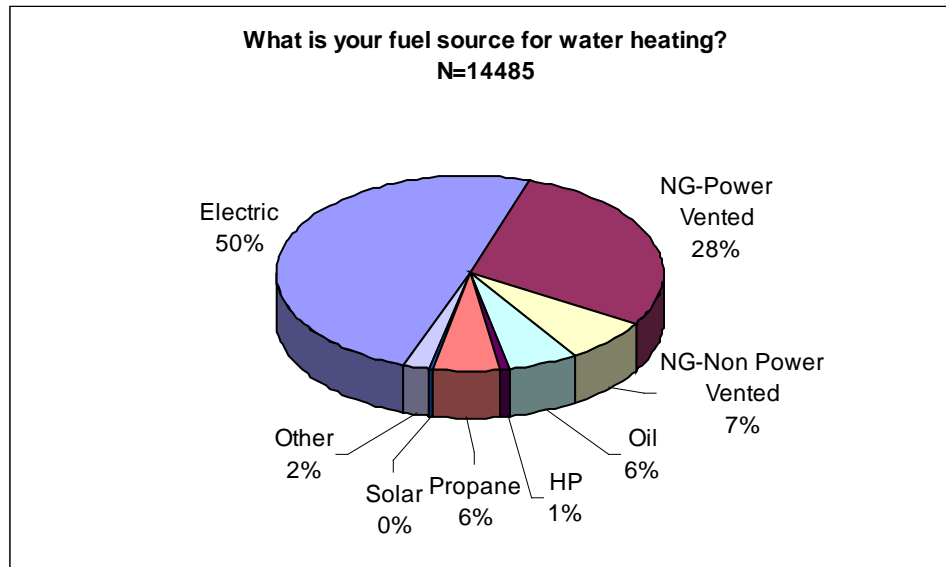
Question 7 (b-ii): Please indicate the approximate percentage of space that is heated by your secondary heating system?



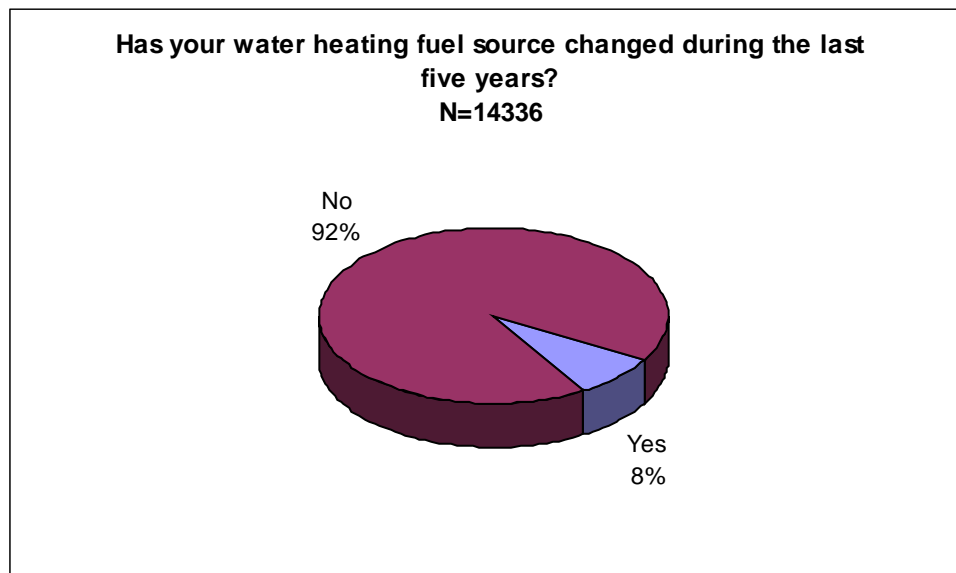
Question 8(a): Do you own or rent your water heater?



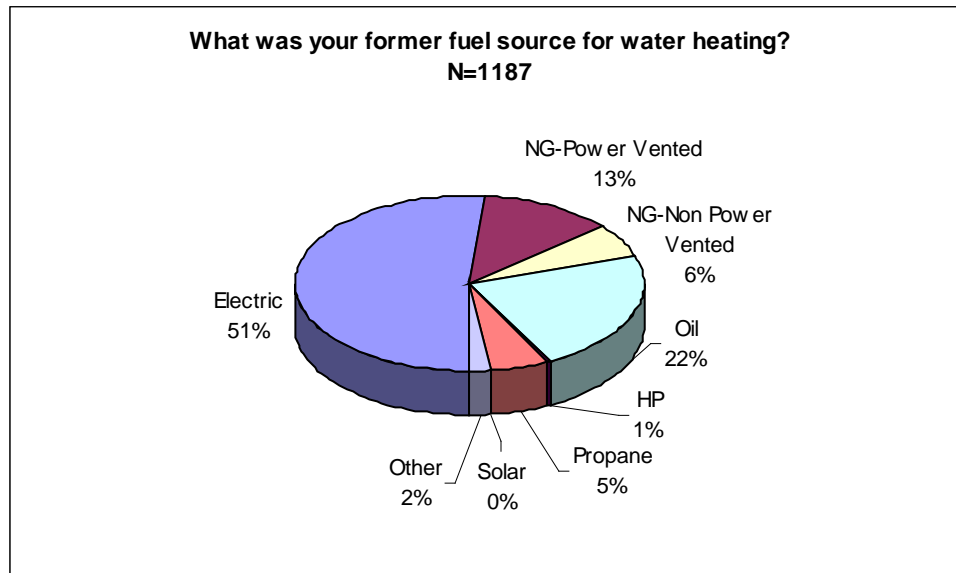
Question 8(b): What is your fuel source for water heating?



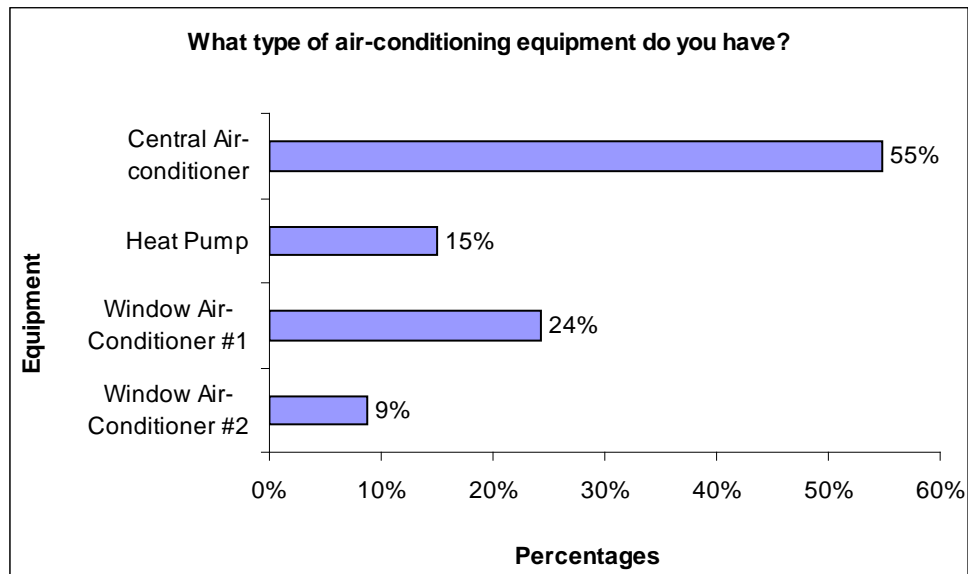
Question 8(c): In your current home, has your water heating fuel source changed during the last five years?



Question 8 (d-ii): If yes, what was your former fuel source for water heating?



Question 9: What type of air-conditioning equipment do you have and how old is it?
(Check all that apply)



Equipment	Age of Air-Conditioning Equipment (Years)					Total
	Less than 5	5 to 10	11 to 15	More than 15	Do not have	
Central Air-conditioner	2344	2575	1380	942	5953	13194
Heat Pump	802	315	140	276	8643	10176
Window Air-Conditioner #1	1551	715	158	109	7860	10393
Window Air-Conditioner #2	525	237	54	32	8854	9702

Question 10(a): Please provide information about the electrical equipment currently being used in your household.

Appliance	Age in Years					Total Sample
	6 or Less	7-14	15-19	20 or More	Do Not Have	
Full Size refrigerator #1	56%	34%	7%	3%	0%	15099
Full Size refrigerator #2	15%	15%	6%	4%	59%	12089
Freezer #1	35%	27%	11%	11%	16%	14222
Freezer #2	5%	5%	3%	2%	85%	10926
Mini/Bar Fridge #1	18%	9%	2%	1%	69%	11920
Mini/Bar Fridge #2	2%	1%	0%	0%	97%	10657
Top Load Washing Machine	19%	23%	7%	3%	47%	14996
Front Load Washing Machine	38%	10%	1%	0%	51%	14996
Dishwasher	45%	29%	6%	2%	18%	14515

Question 10(b): How many do you have for each of the equipment given below?

Equipment	1	2	More than 2	None	Total Sample
Laptop Computer	45%	22%	12%	20%	14445
Desktop Computer	60%	14%	5%	21%	14478
CRT computer monitor	17%	2%	1%	81%	12775
Flat Screen Computer Monitor	55%	12%	5%	28%	14103
Printer	49%	10%	3%	37%	14777
Fax machine	11%	0%	0%	89%	12906
Copier Machine	9%	1%	0%	90%	12491
Printer/Fax/Copier Combo	60%	5%	1%	35%	13678
CRT Television	39%	16%	7%	38%	13316
LED/LCD television	44%	20%	9%	27%	14155
Plasma Television	22%	3%	1%	74%	12644
Stereo or Home Entertainment System	62%	11%	2%	24%	14116
Game Console	31%	9%	4%	55%	13195
DVD player/Recorder	64%	21%	7%	9%	14472
Digital Cable box	34%	12%	8%	46%	13530
Microwave Oven	92%	5%	1%	2%	14948
Whirlpool Bathtub	24%	1%	0%	75%	13197
Dehumidifier	54%	5%	1%	40%	13834
Electric Air Filter	17%	1%	0%	82%	12973
Pool Pump	17%	0%	0%	83%	12978
Hot tub	13%	0%	0%	87%	12888

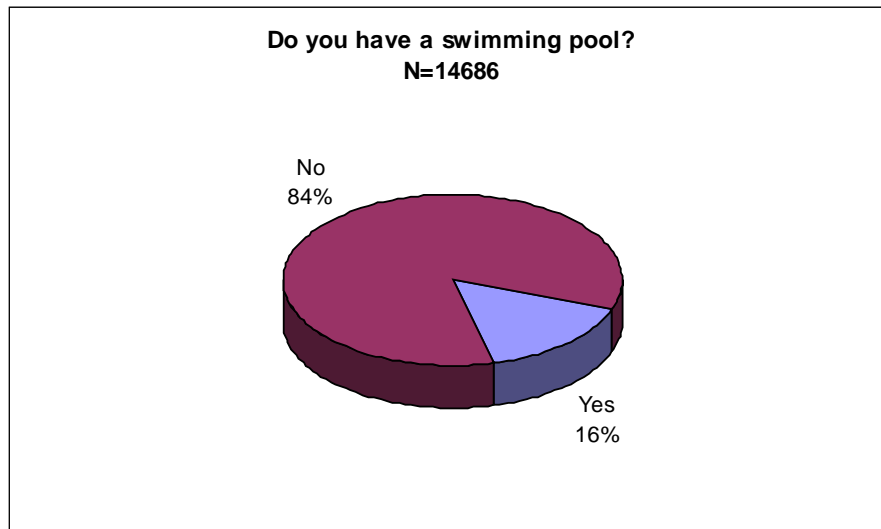
Question 10 (c): What is your fuel source for each of the appliances given below?

Appliance	Natural Gas	Electric	Propane	Other	Not Applicable	Total Sample
Stove	11%	84%	5%	0%	0%	15024
Clothes Dryer	8%	87%	1%	0%	3%	14931
Pool Heater	2%	4%	1%	1%	91%	13078
Sauna	0%	3%	0%	1%	96%	12969

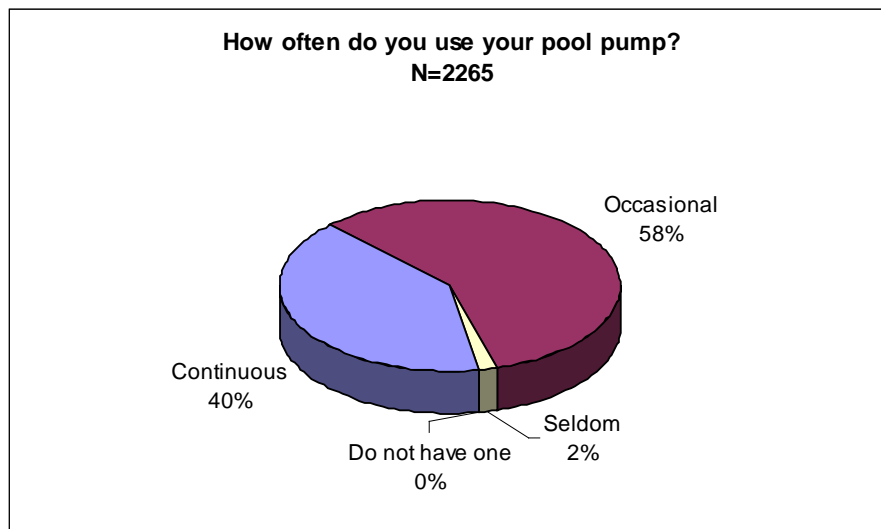
Question 10(d): How many light bulbs do you have inside and outside your home?

Lighting Product	Number of Light Bulbs					Total Sample
	1-5	6-10	11-20	More than 20	None	
Regular Light Bulbs	34%	23%	18%	13%	12%	14033
Compact Fluorescent Light Bulbs	15%	24%	29%	19%	13%	14146
Halogen Light Bulbs	31%	15%	7%	4%	43%	12873
Fluorescent Tubes	49%	13%	8%	2%	27%	12597
LED Light Bulbs	17%	7%	4%	3%	69%	12741

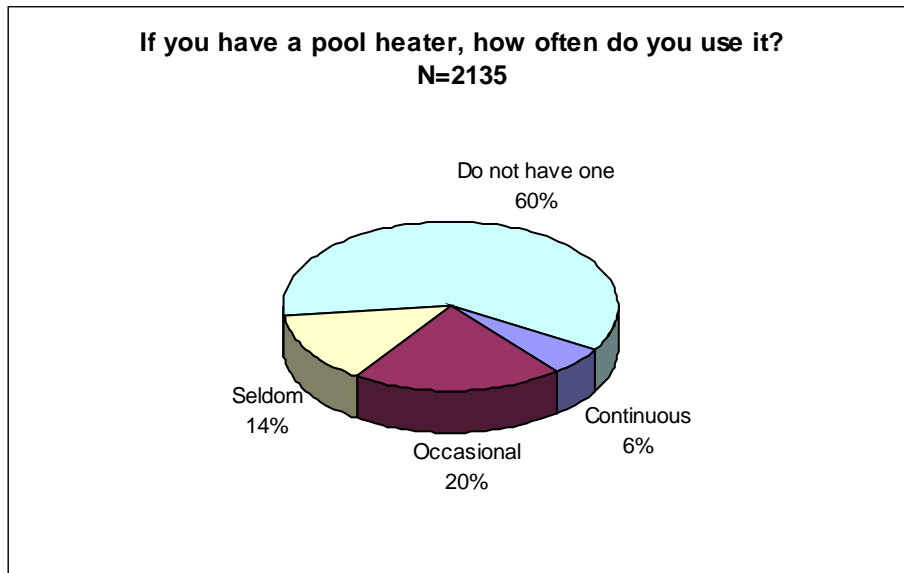
Question 11(a): Do you have a swimming pool?



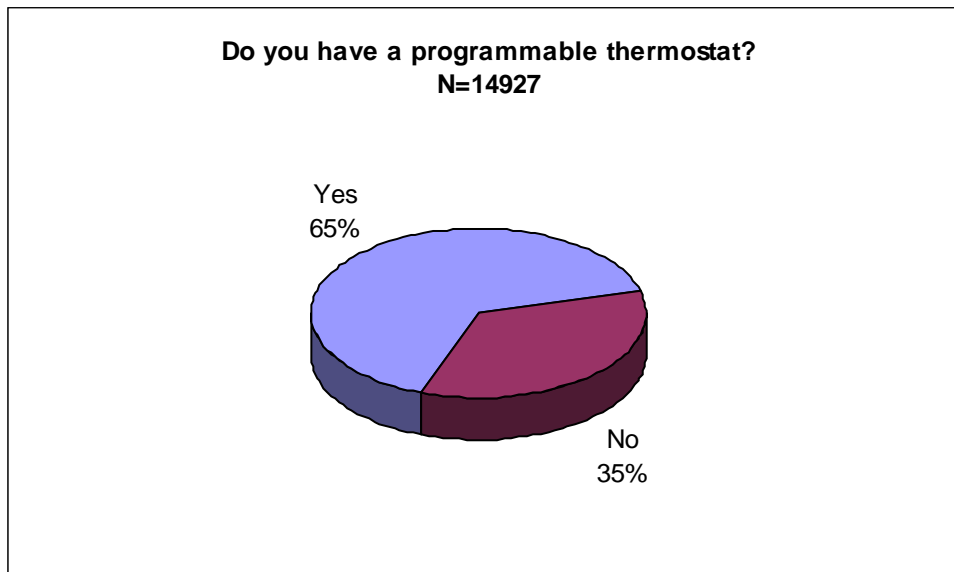
Question 11(b): How often do you use your pool pump?



Question 11(c): If you have a pool heater, how often do you use it?



Question 12: Do you have a programmable thermostat?



Question 13: How is the circulating fan in your current heating and cooling system normally set to operate?

Season	Automatic	Continuous	Don't Know	Not Applicable	Total
Winter	65%	13%	4%	18%	100%
Summer	48%	15%	4%	32%	100%

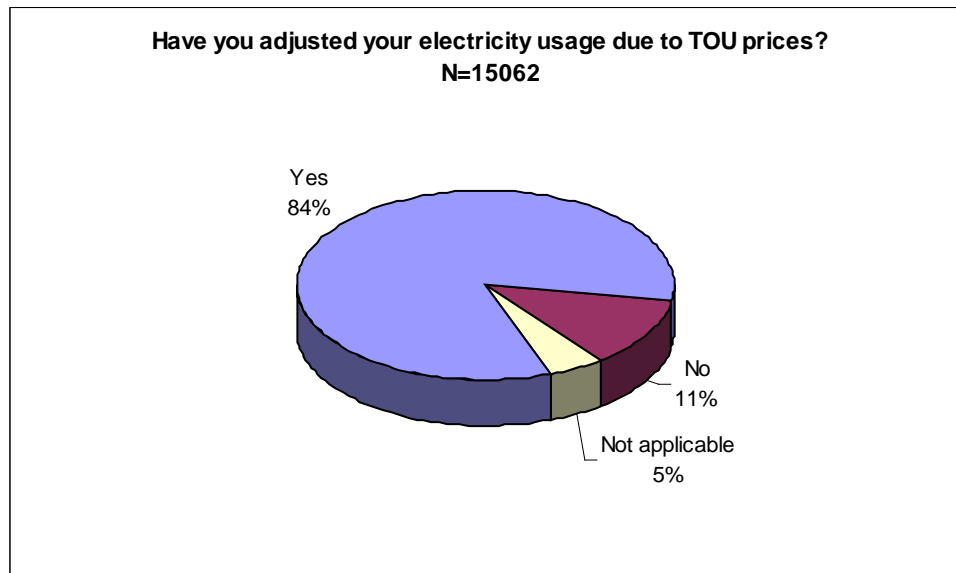
Question 14: To what temperature do you set your thermostat during a typical winter and summer day?

	Winter		
Temperature Setting	When Away from Home	At Night	When at Home (During the Day)
Less than 16°C (61°F)	32%	16%	3%
16-18°C (61-65°F)	38%	42%	13%
19-20°C (66-68°F)	20%	28%	40%
21-22°C (69-72°F)	9%	13%	40%
23-24°C (73-76°F)	1%	1%	4%
25-26°C (77-79°F)	0%	0%	0%
More than 26°C (79°F)	0%	0%	0%
Total Sample Size	13779	14113	14264
	Summer		
Temperature Setting	When Away from Home	At Night	When at Home (During the Day)
Less than 16°C (61°F)	26%	23%	21%
16-18°C (61-65°F)	6%	7%	5%
19-20°C (66-68°F)	7%	11%	10%
21-22°C (69-72°F)	11%	20%	21%
23-24°C (73-76°F)	18%	23%	27%
25-26°C (77-79°F)	17%	11%	12%
More than 26°C (79°F)	15%	5%	4%
Total Sample Size	11099	11373	11639

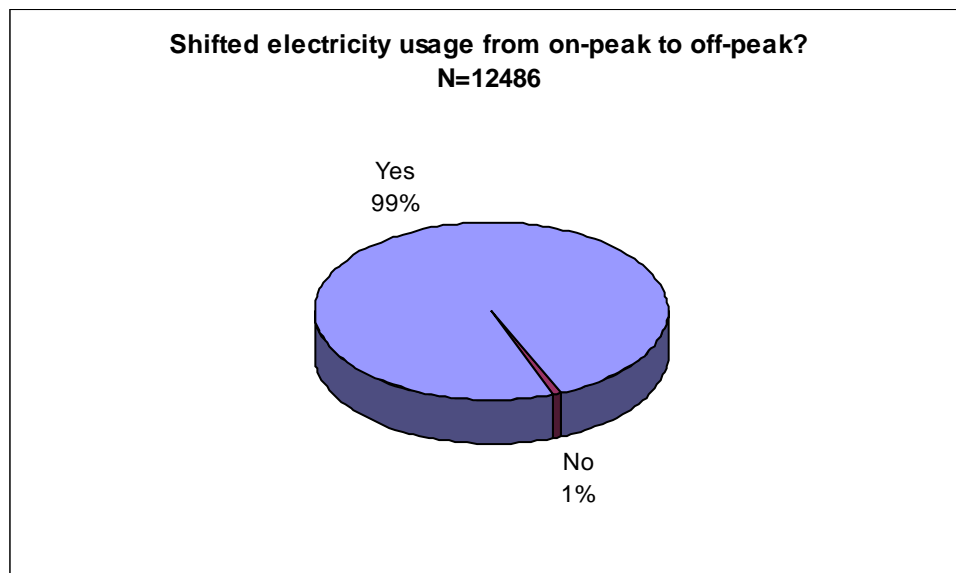
Question 15(a): Please indicate whether someone is usually at home (more than 50% of the time) during the following time periods. N=15180 (Total participants):

	Weekdays				Weekends
Season	7 am to 11 am	11 am to 5 pm	5 pm to 7 pm	7 pm to 7 am	Any time
Winter	66%	61%	80%	85%	89%
Summer	67%	62%	80%	85%	88%

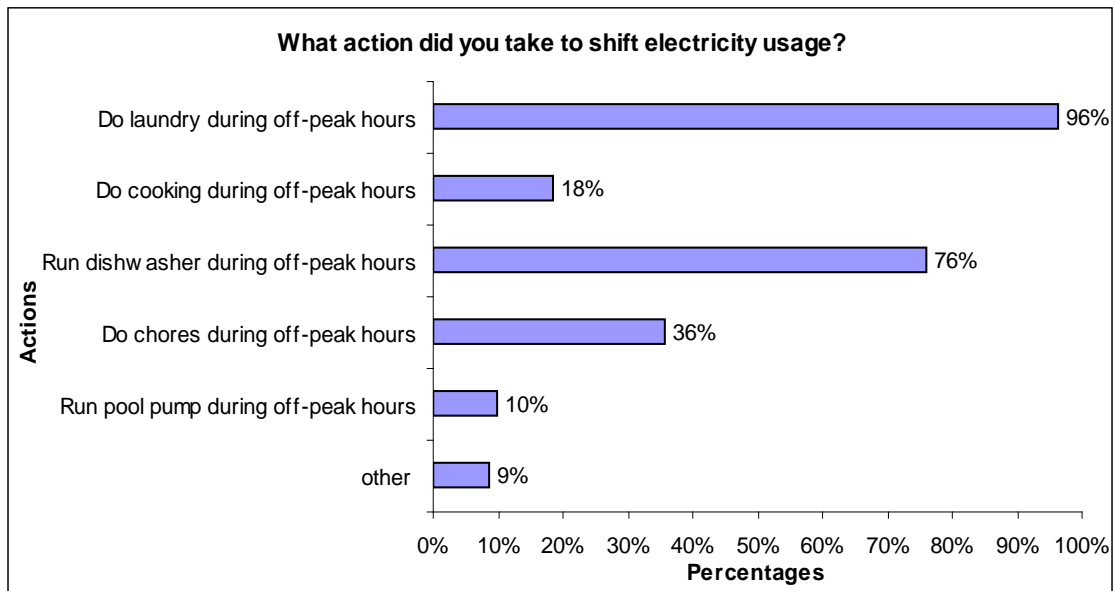
Question 16(a): Have you adjusted your electricity usage as a result of Time-of-Use prices?



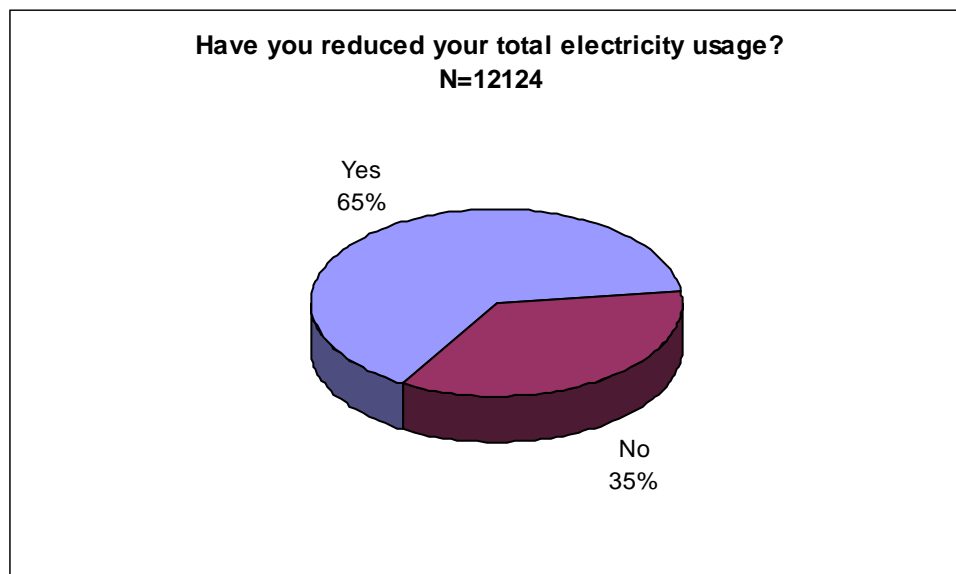
Question 16 (b-i-i): Have you shifted electricity usage from on-peak to off-peak periods?



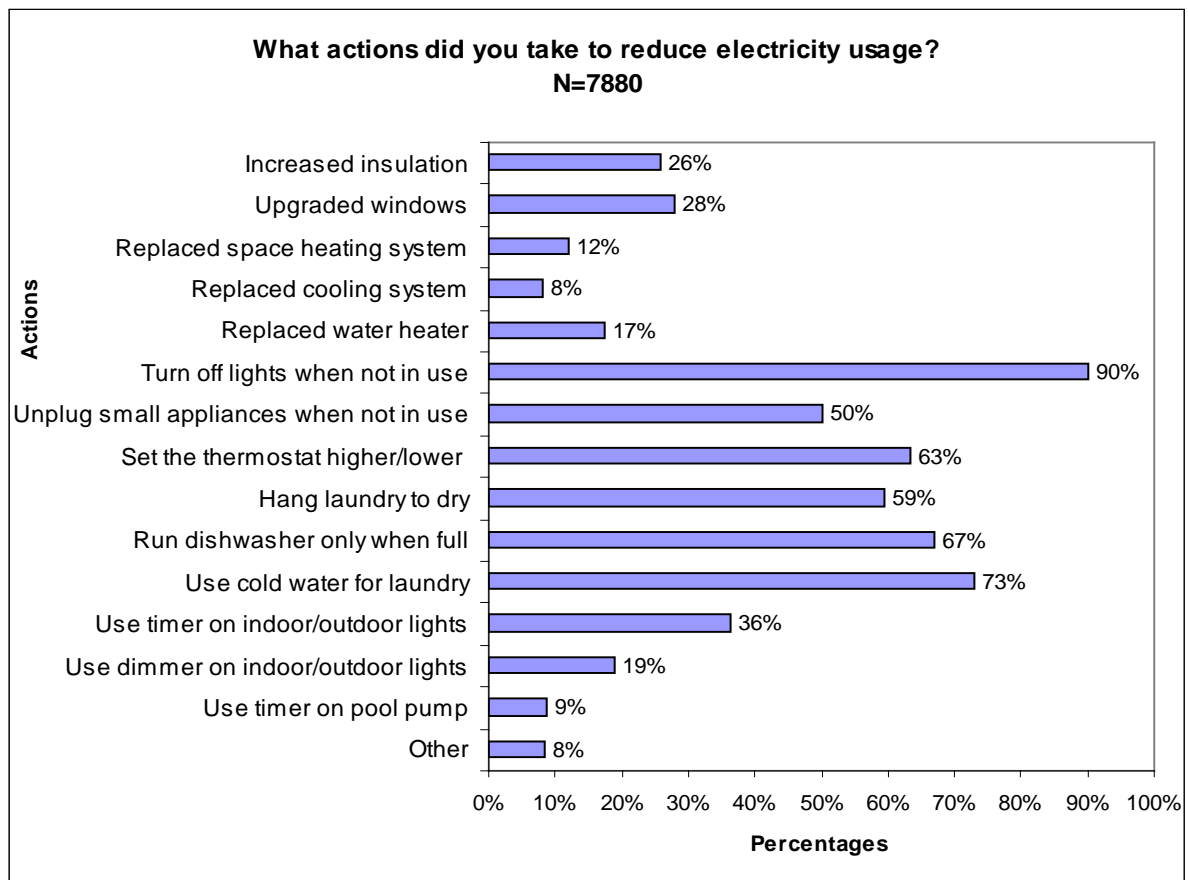
Question 16 (b-i-ii): If yes, what actions did you take to shift electricity usage?
(Check all that apply)



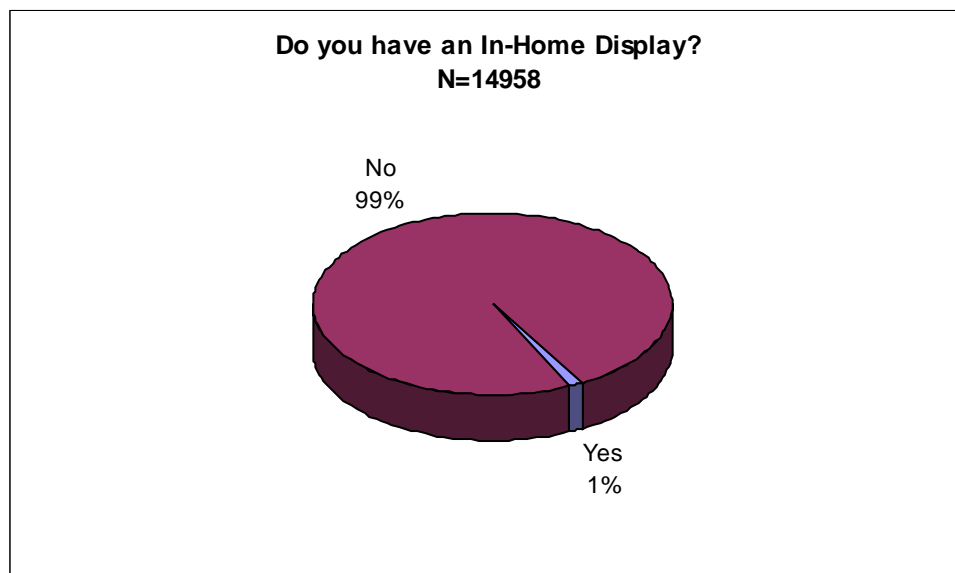
Question 16 (b-ii-i). Have you reduced your total electricity usage?



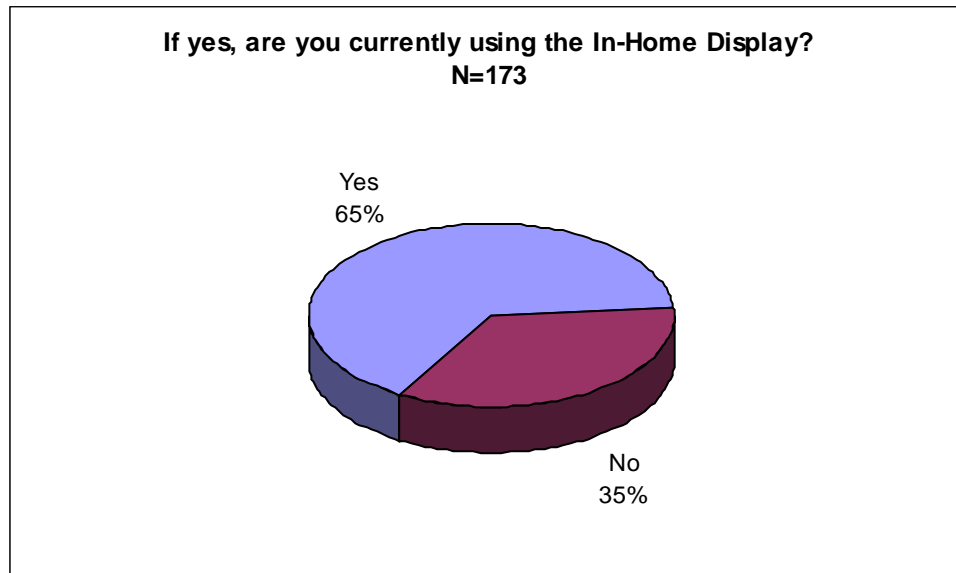
**Question 16 (b-ii-ii): If yes, what actions did you take to reduce electricity usage?
(Check all that apply).**



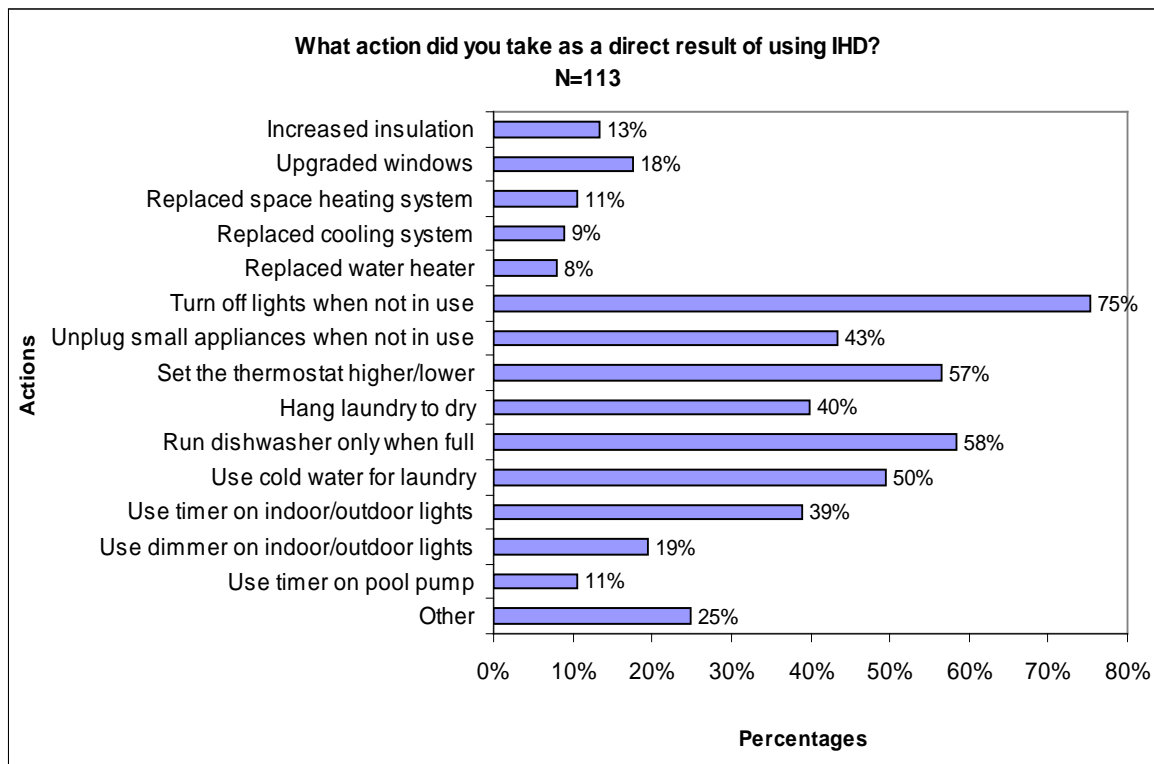
Question 17(a): Do you have an In-Home Display (PowerCost Monitor)?



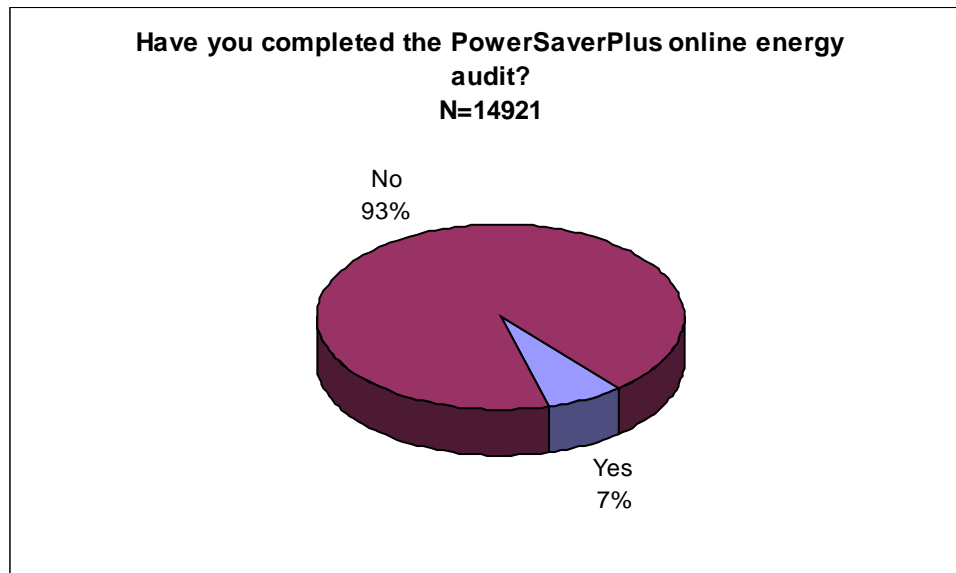
Question 17 (b-ii): If yes, are you currently using the In-Home Display?



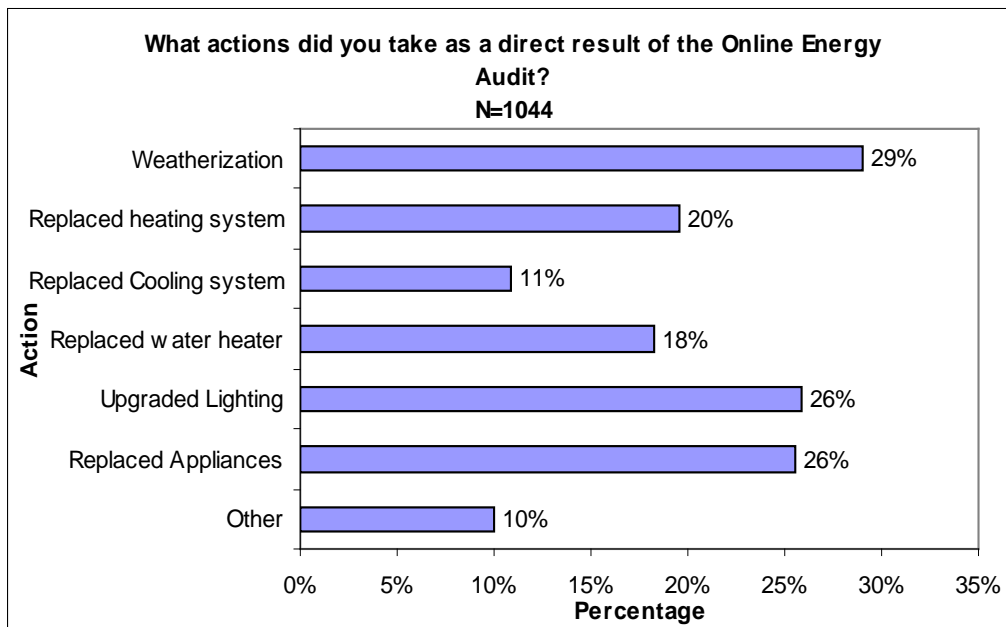
Question 17 (b-iii): Please list any actions you have taken as a direct result of using the In-Home Display. (Check all that apply).



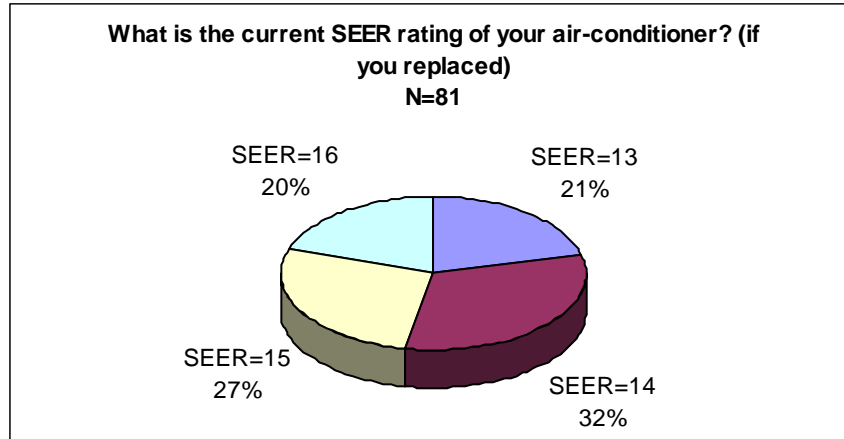
Question 18 (a): Have you completed the PowerSaverPlus online energy audit?



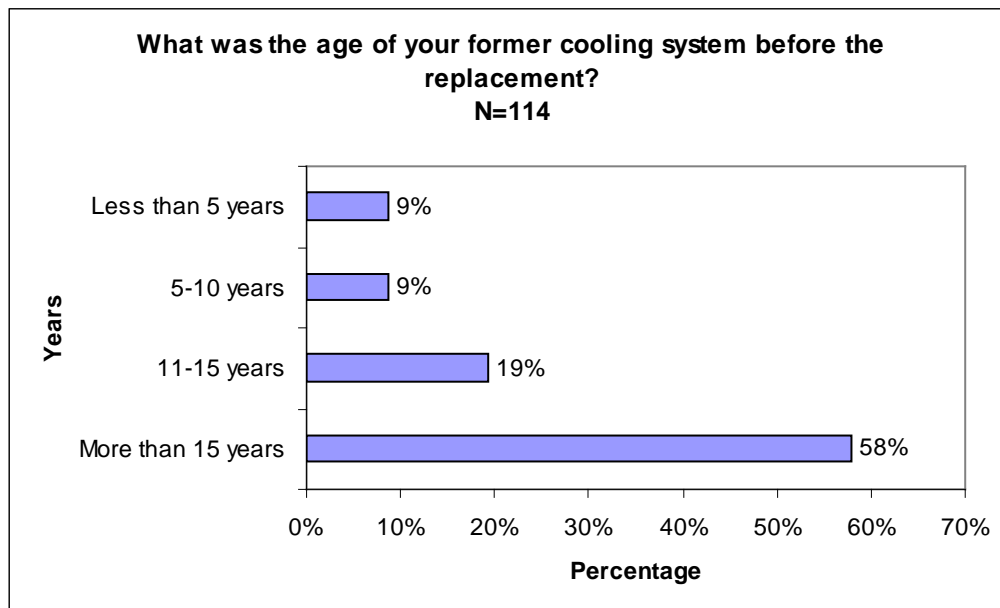
Question 18(b-i): If yes, please indicate what actions you took as a direct result of the Online Energy Audit.



Question 18 (b-ii). If you replaced your cooling system as a result of the Online Energy Audit, what is the current Seasonal Energy Efficiency (SEER) rating?



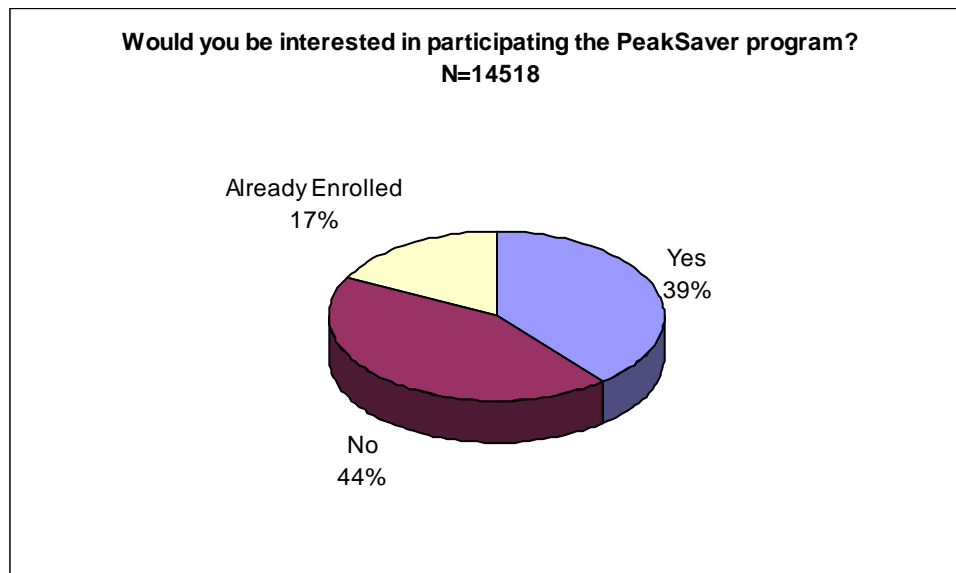
What is the age (in years) of your former cooling system before the replacement?



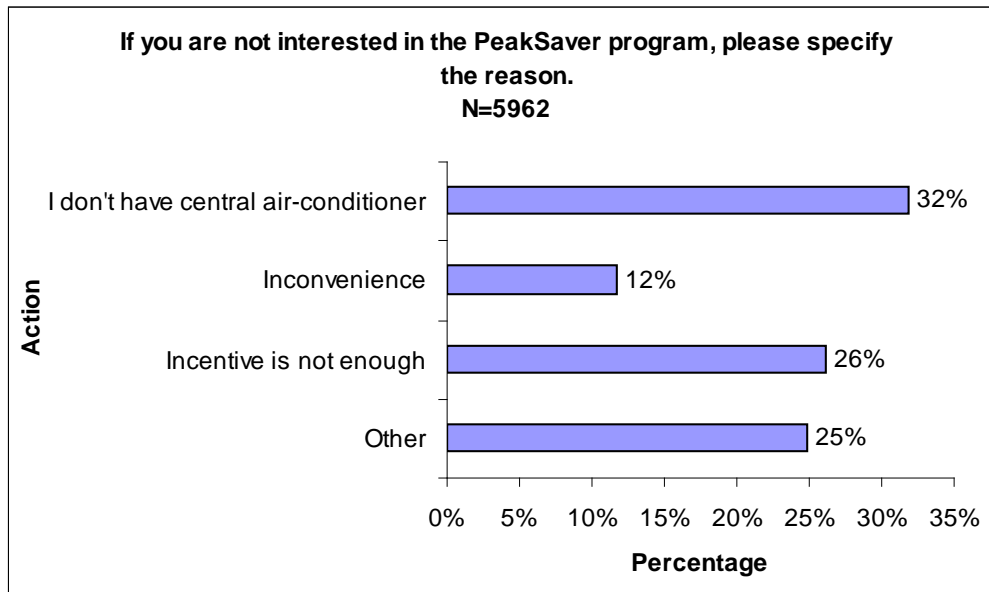
Question 18 (b-iii): Please indicate any appliances you replaced as a result of the Online Energy Audit (Check all that apply).

Appliance	Total Number Replaced
Refrigerator	181
Freezer	91
Clothes Washer	130
Clothes Dryer	122
Dishwasher	86
Range/Oven	120
Other	38

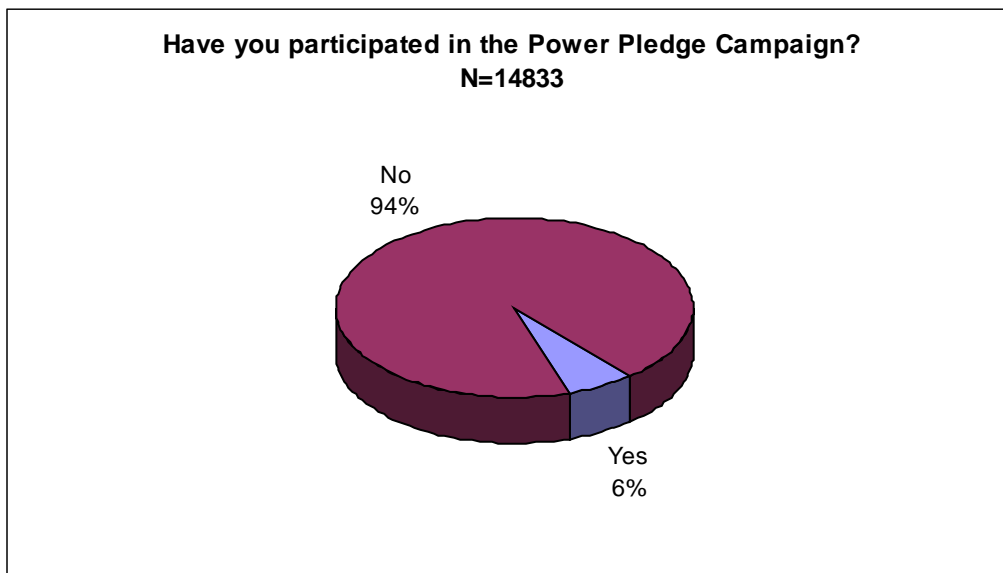
Question 19(a): If you are not currently enrolled in the PeakSaver program, would you be interested in participating?



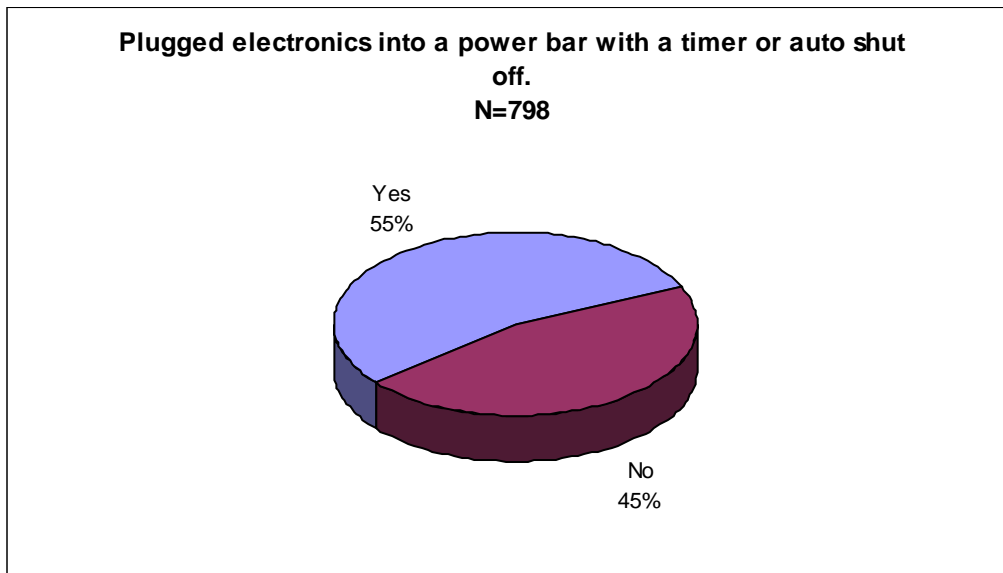
Question 19(b): If you are not interested, please specify the reason



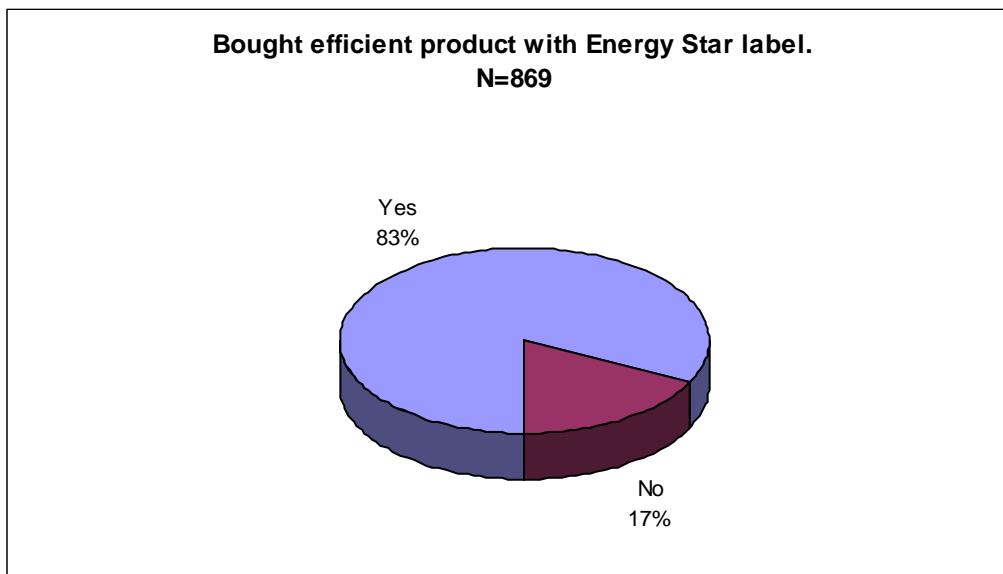
Question 20(a): Have you participated in the Power Pledge Campaign?

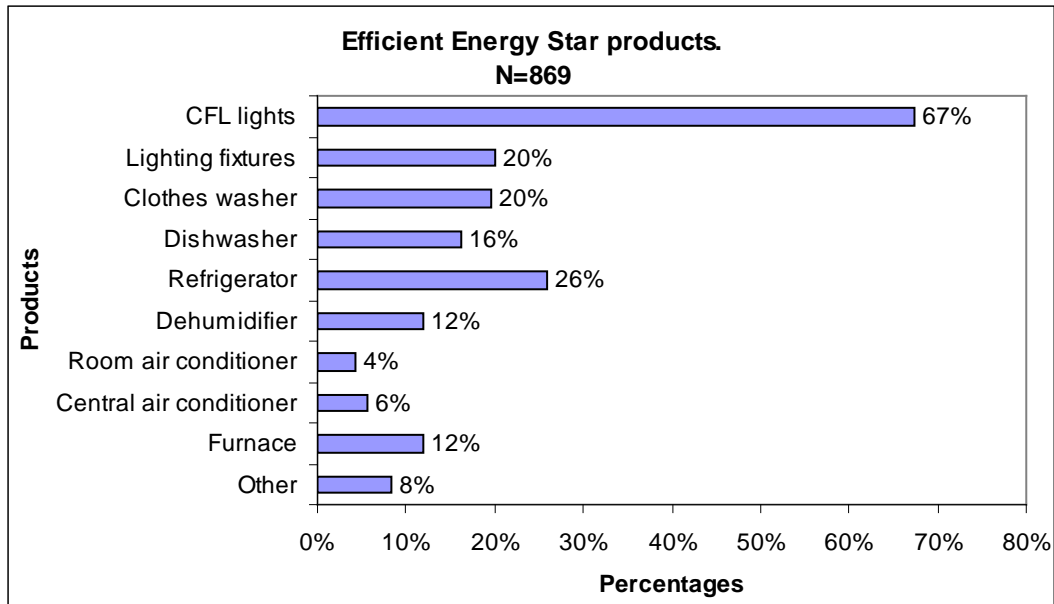


Question 20(b-i): As a result of the Power Pledge Campaign, did you plug electronics into a power bar with a timer or auto shut off?

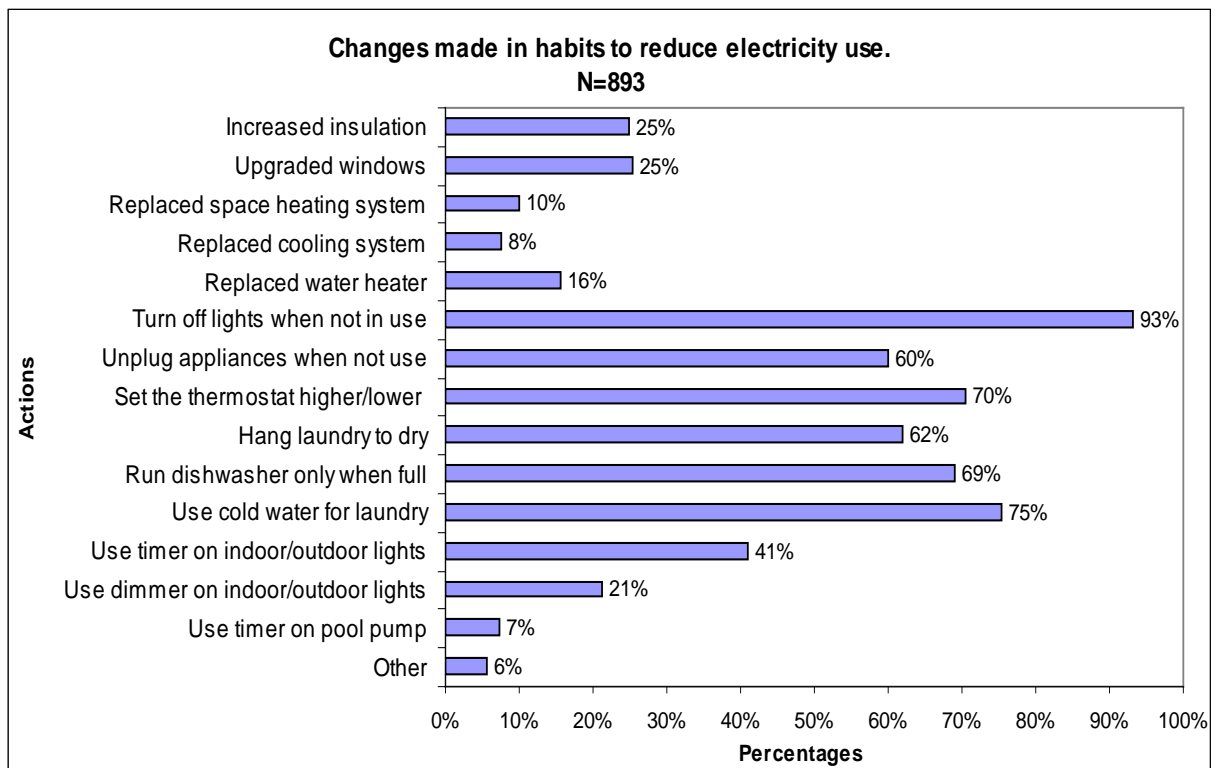


Question 20(b-ii): As a result of the Power Pledge Campaign, did you buy any efficient products with an Energy Star label and what products did you buy?

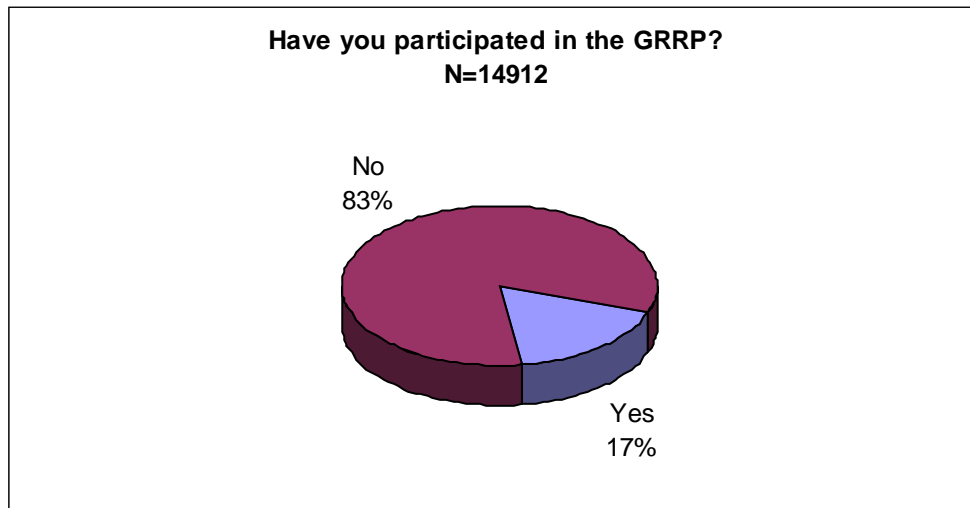




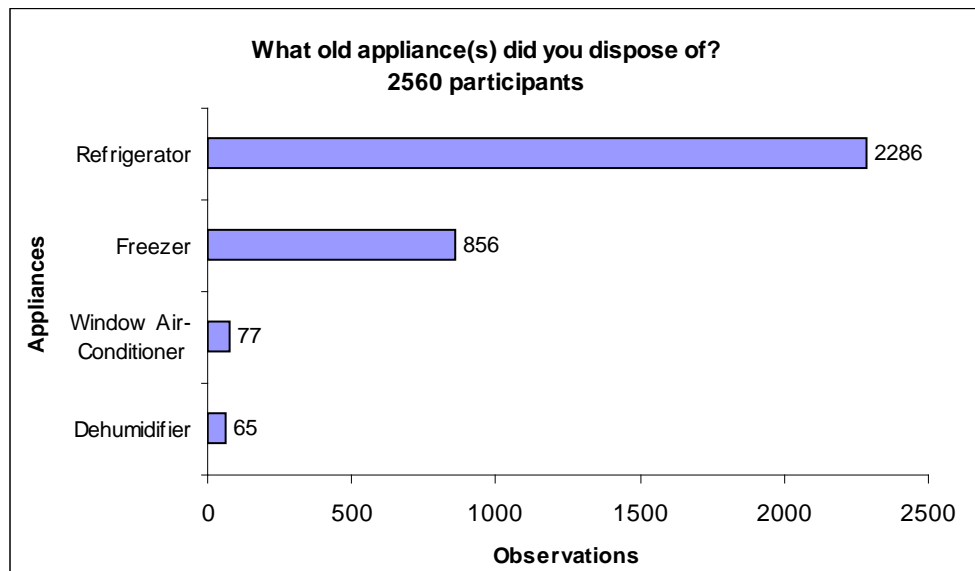
Question 20(b-iii): Please list any changes you made in your habits to reduce your electricity use as a direct result of the Power Pledge Campaign. (Check all that apply)

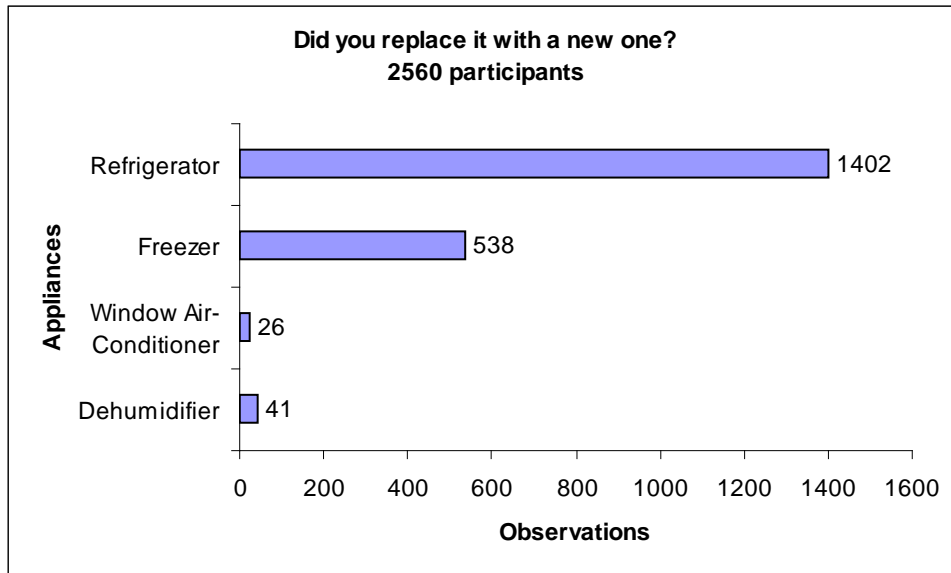


Question 21(a): Have you participated in the Great Refrigerator Round-up Program?

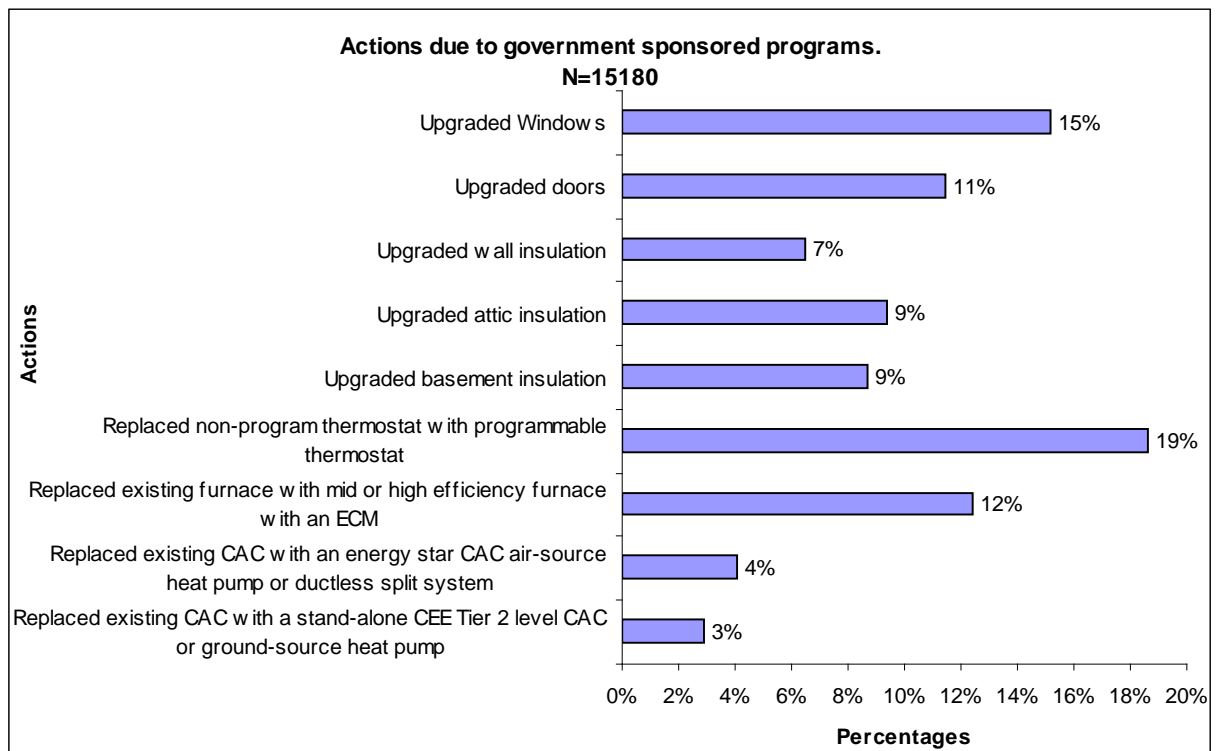


Question 21(b): If yes, please indicate which old appliance(s) you disposed of. Please also indicate whether you replaced the old appliance(s) with a new one?

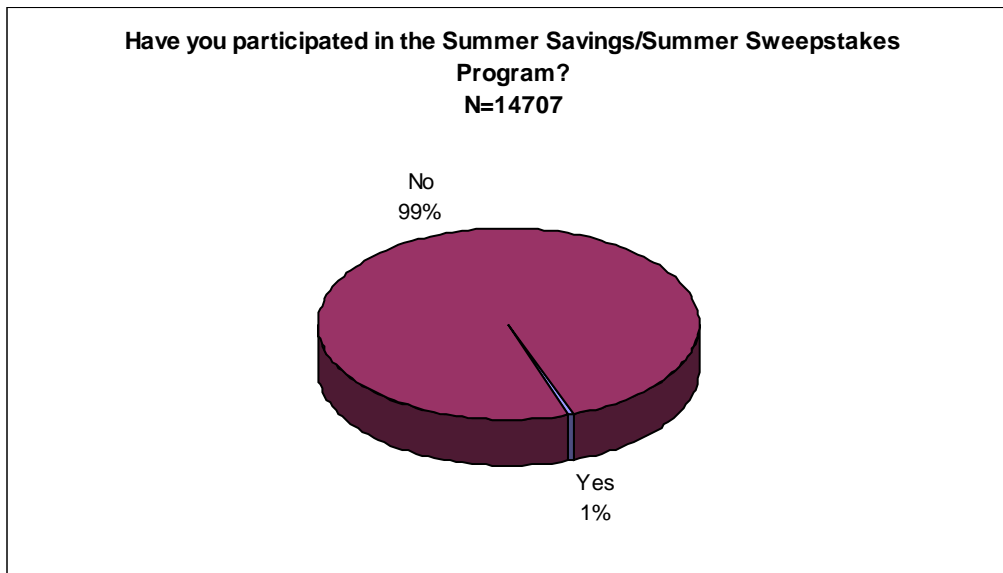




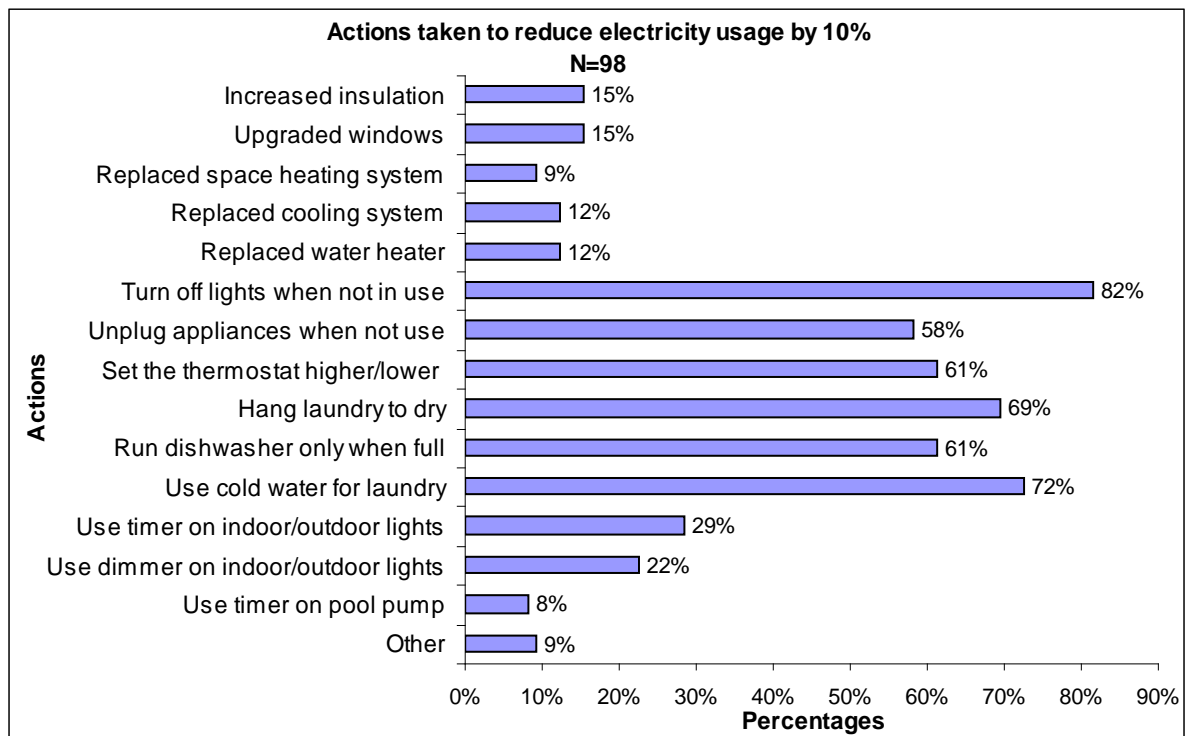
Question 22: Have you taken any of the following actions due to government sponsored programs such as the Cool Savings Rebate, the Eco-Energy Retrofit program, Ontario Home Energy Savings program, or the Home Renovation Tax Credit program?



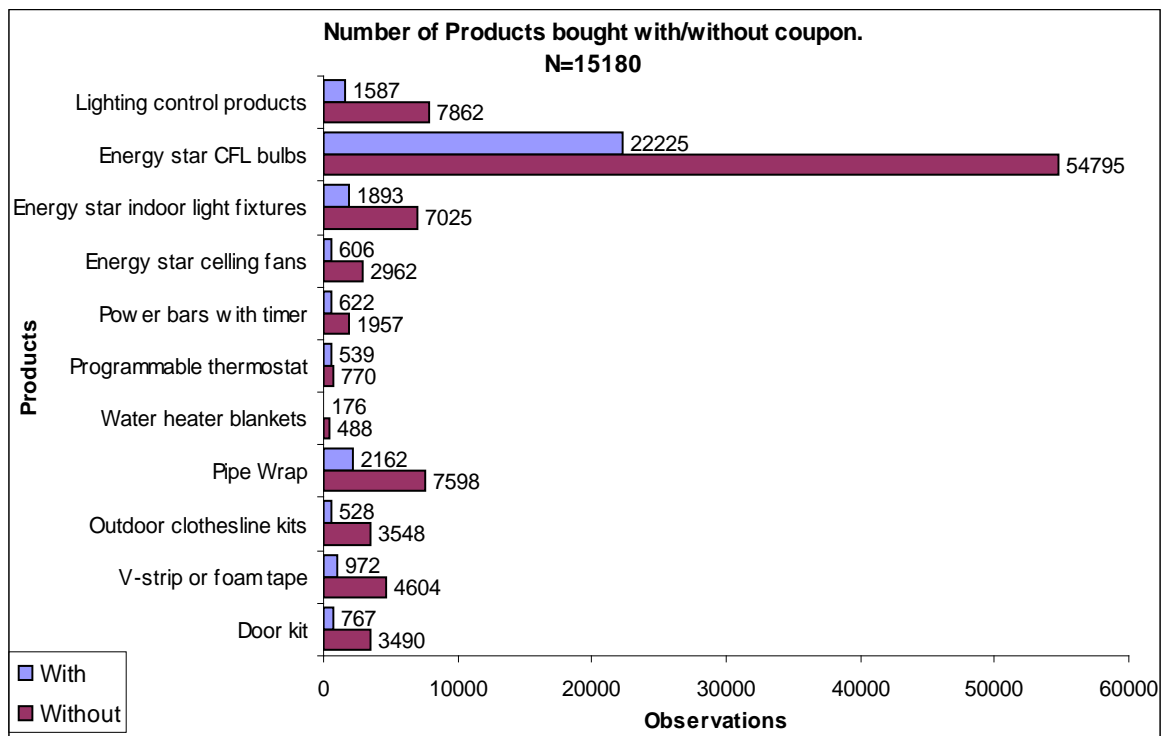
Question 23(a): Have you participated in the Summer Savings/Summer Sweepstakes Program?



Question 23(b): If yes, please list all the actions you took as part of the Summer Savings/Summer Sweepstakes Program in order to reduce you electricity usage by 10%. (Check all that apply)



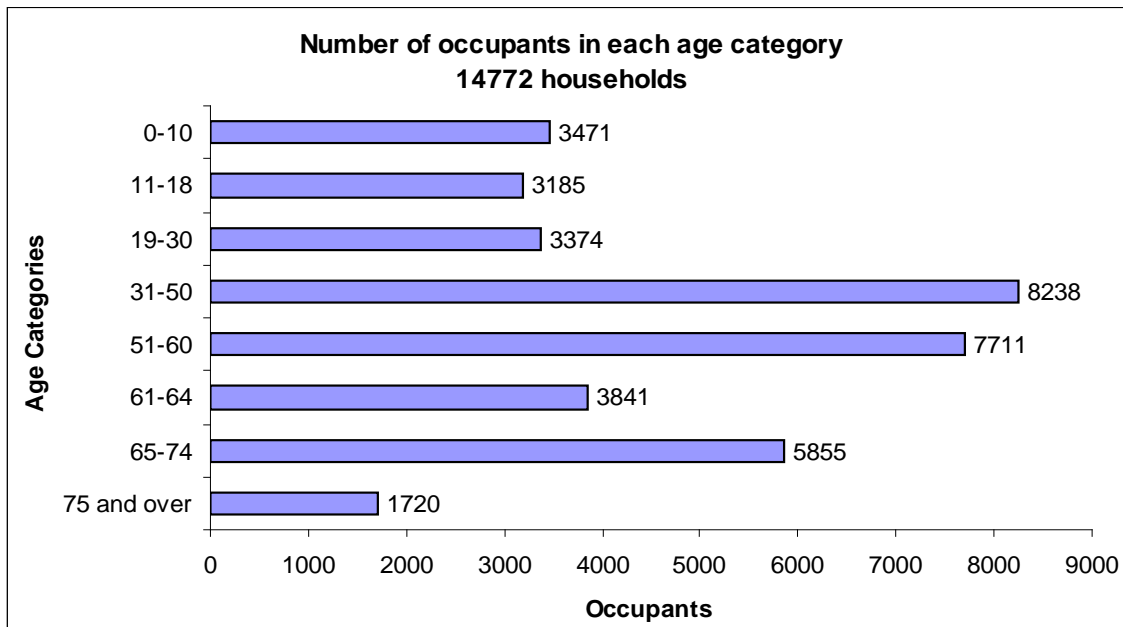
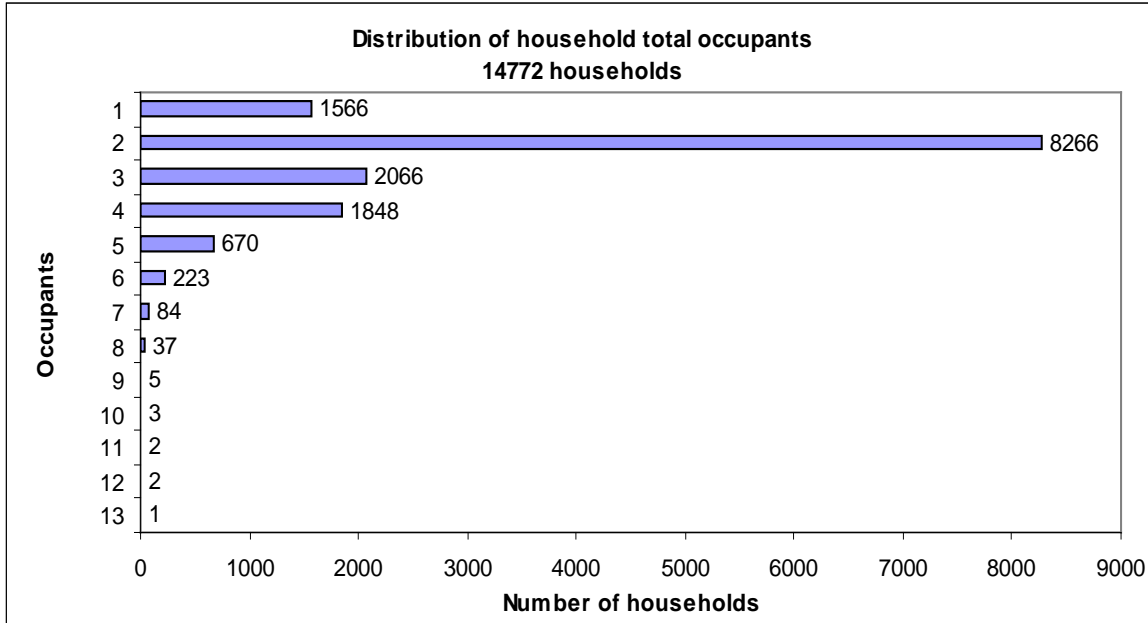
Question 24: Please indicate the number of products you purchased, within the last two years, with and without coupons/rebates (excluding manufacturer rebates).

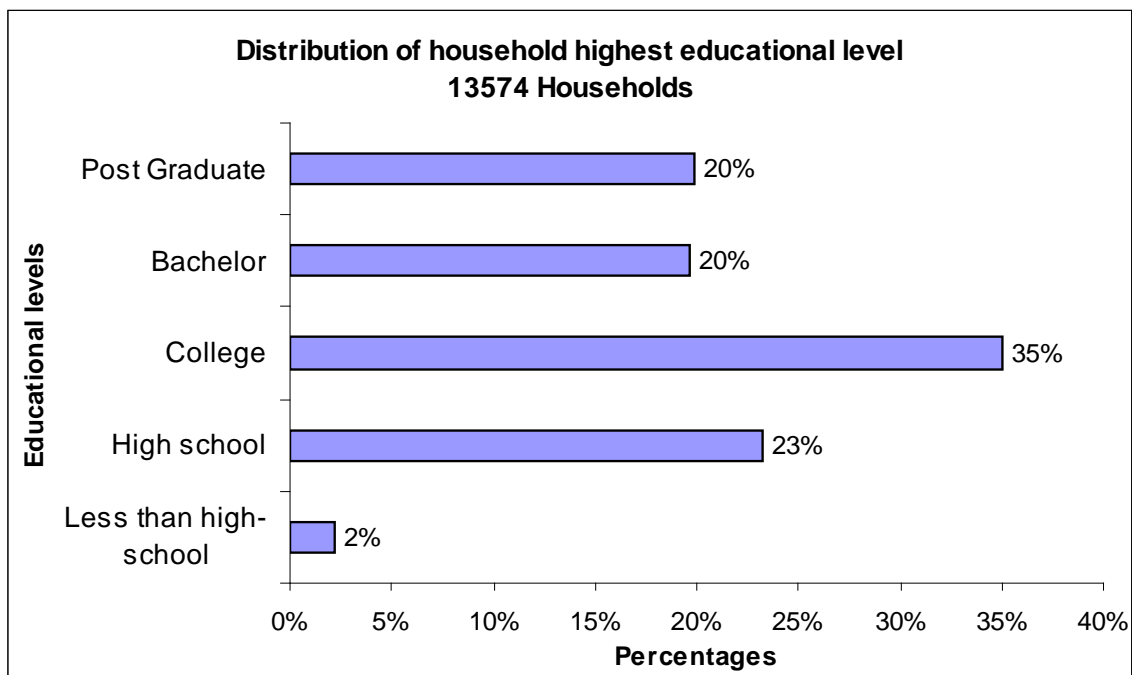


Question 25: What conservation actions have you undertaken that are NOT specifically related to any program/initiative identified in the previous questions?

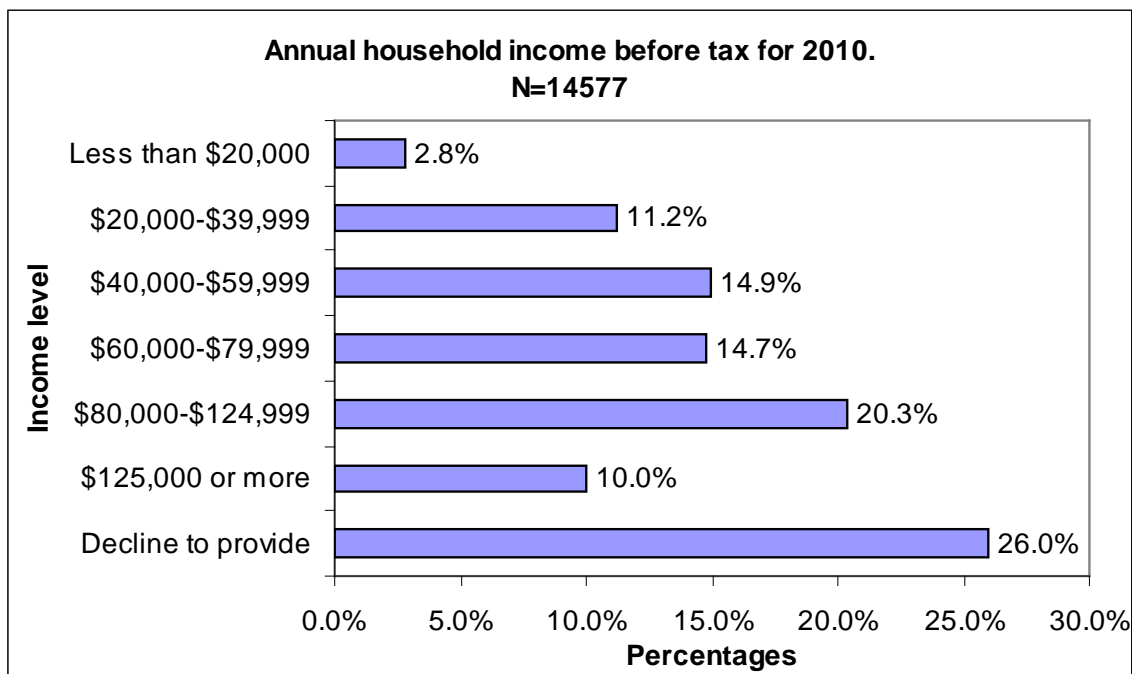
Actions	Always	Sometimes	Never	N/A	Total Sample
Set thermostat lower/higher at night	66%	14%	8%	8%	14575
Set thermostat lower/higher at home	66%	15%	6%	8%	14543
Use cold water for laundry	57%	31%	6%	3%	14596
Hang laundry outside or on a rack	28%	45%	17%	6%	14459
Use timers on indoor/outdoor lights	28%	22%	24%	18%	14018
Use dimmers on indoor/outdoor lights	16%	27%	25%	22%	13791
Turn off lights when not in use	83%	13%	0%	1%	14684
Use a fan or open windows instead of AC	48%	40%	4%	4%	14572
Run dishwasher only when full	70%	4%	0%	20%	14504
Use timer on pool pump	8%	1%	5%	75%	13587
Maintain Central Air Conditioner	44%	8%	2%	40%	14245

Question 26 (a): Please complete the following table indicating the age distribution and education levels for the residents in your home.

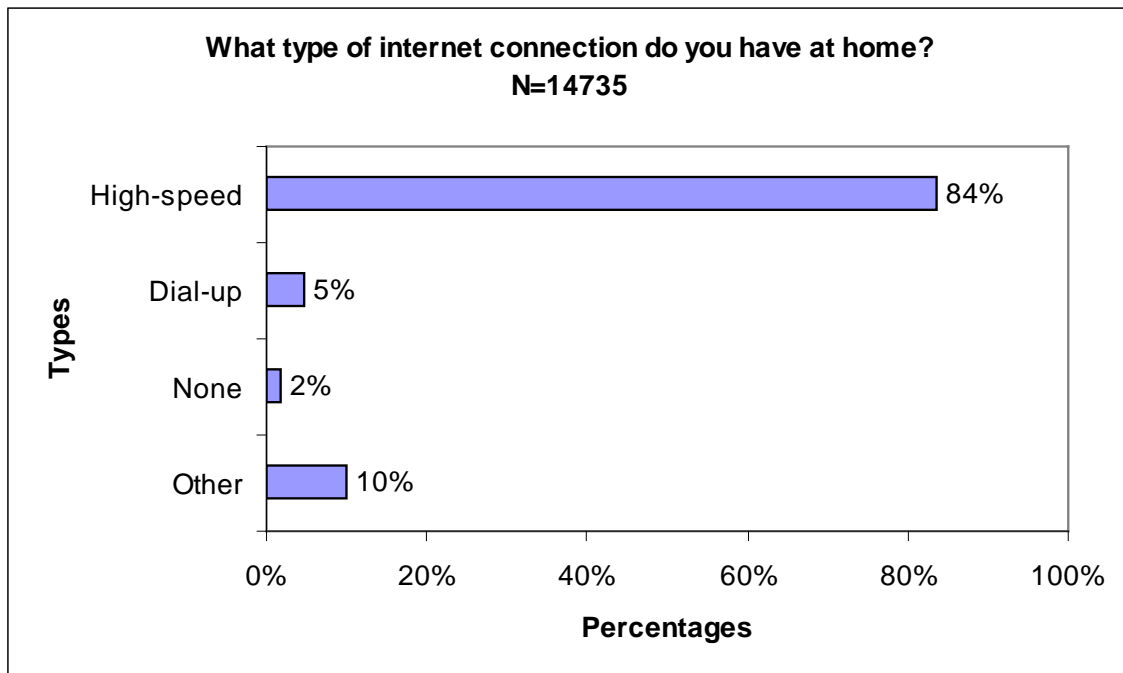




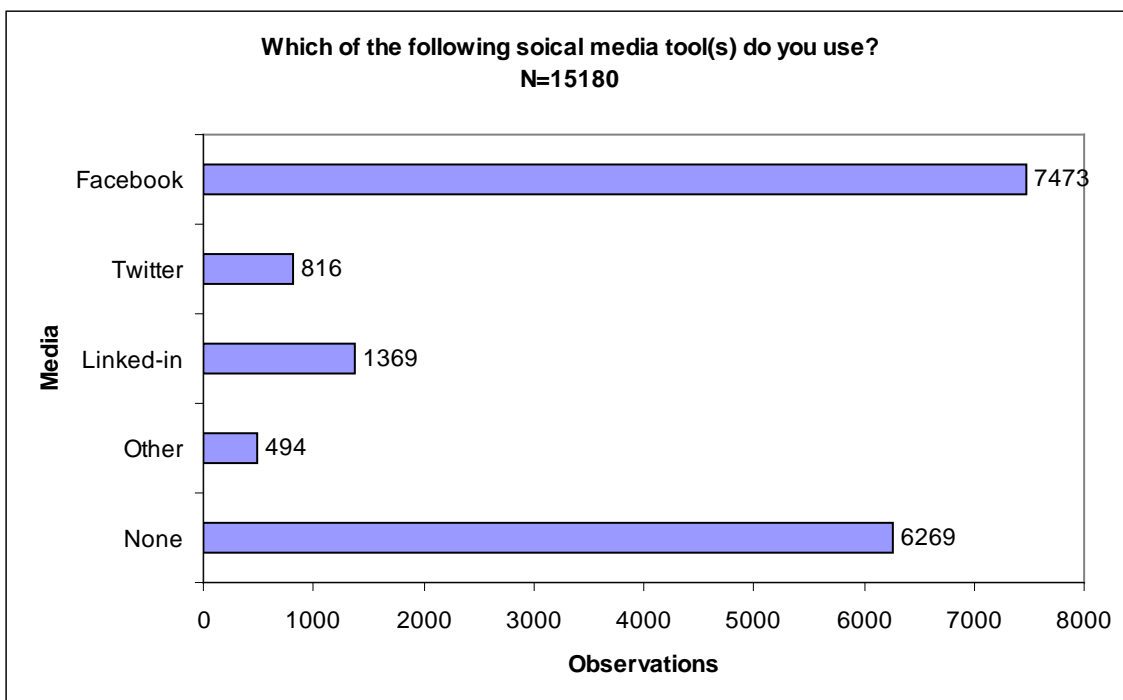
Question 27: What was your annual household income before taxes for 2010?



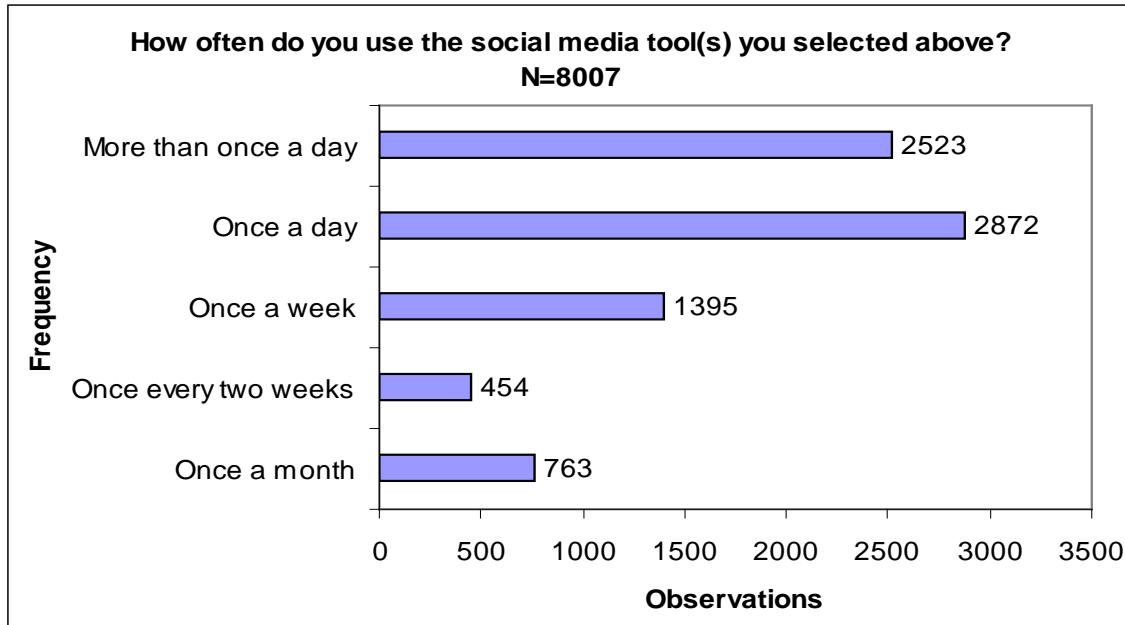
Question 28: What type of internet connection do you have at home?



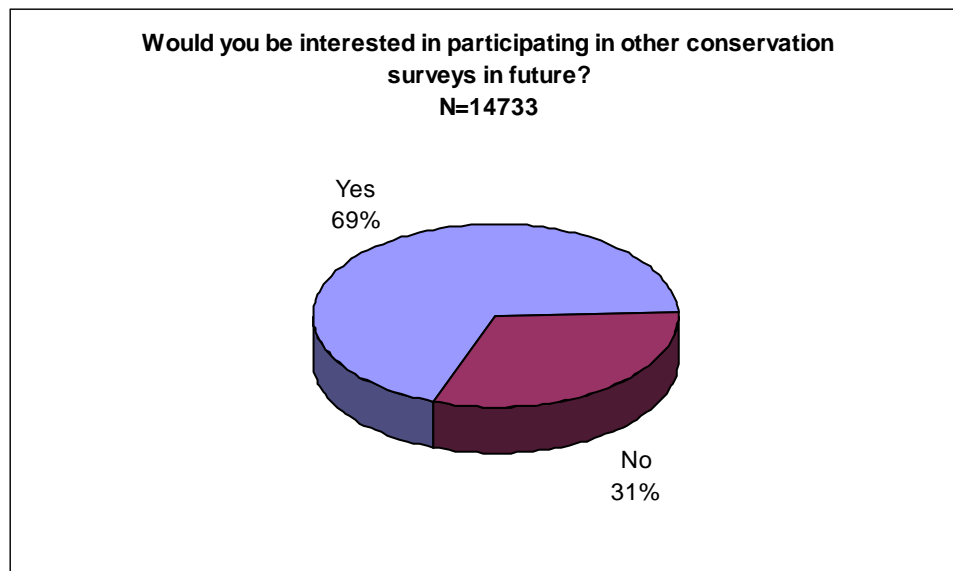
Question 29(a): Which of the following social media tool(s) do you use? (Choose all that apply)



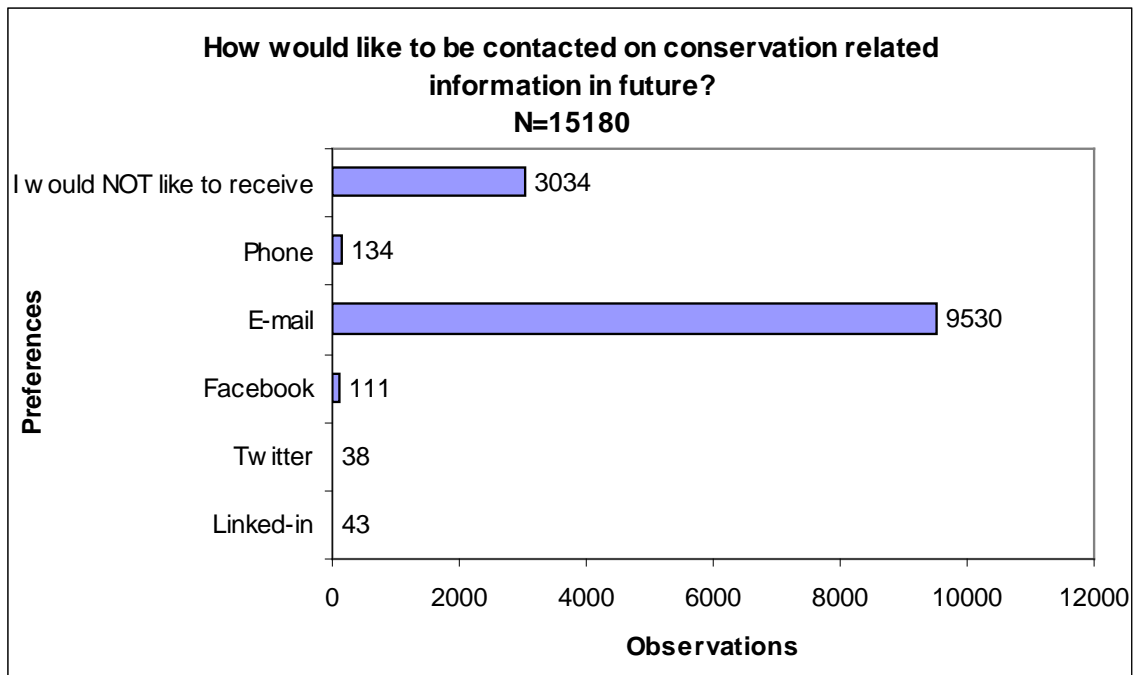
Question 29 (b): How often do you use the social media tool(s) you selected above?



Question 30: Would you be interested in participating in other conservation surveys in future?



Question 31: How would you like to be contacted on conservation related information in future? (Choose all that apply)



Attachment 12:
2012 Customer Equipment & Conservation Survey
Results (Long Version)

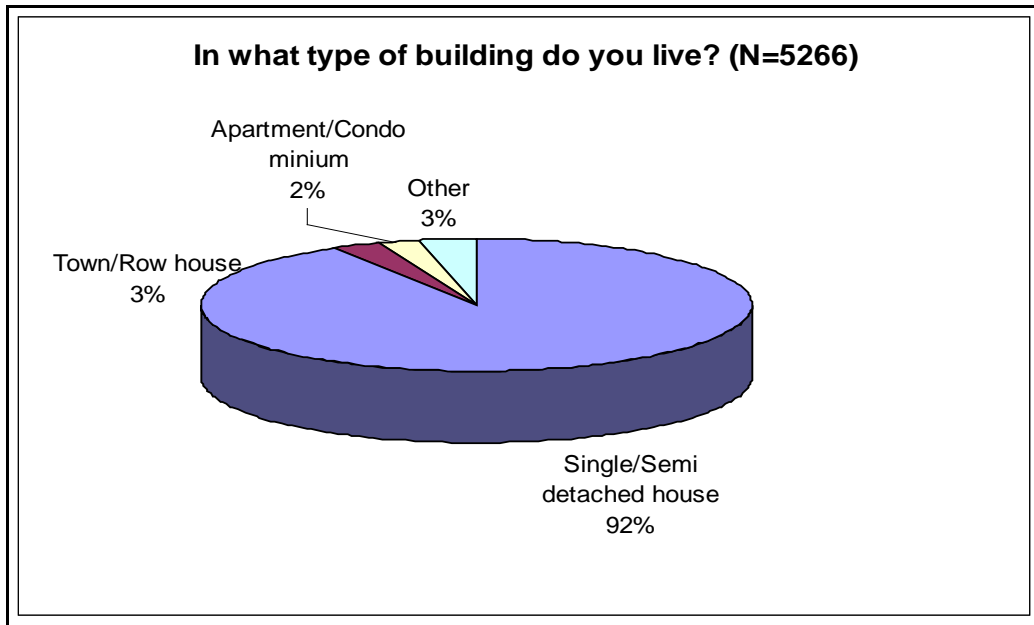
**2012 Customer Equipment and Conservation Survey
Long Version Survey to New Respondents**

Total number of surveys sent out: 83,500

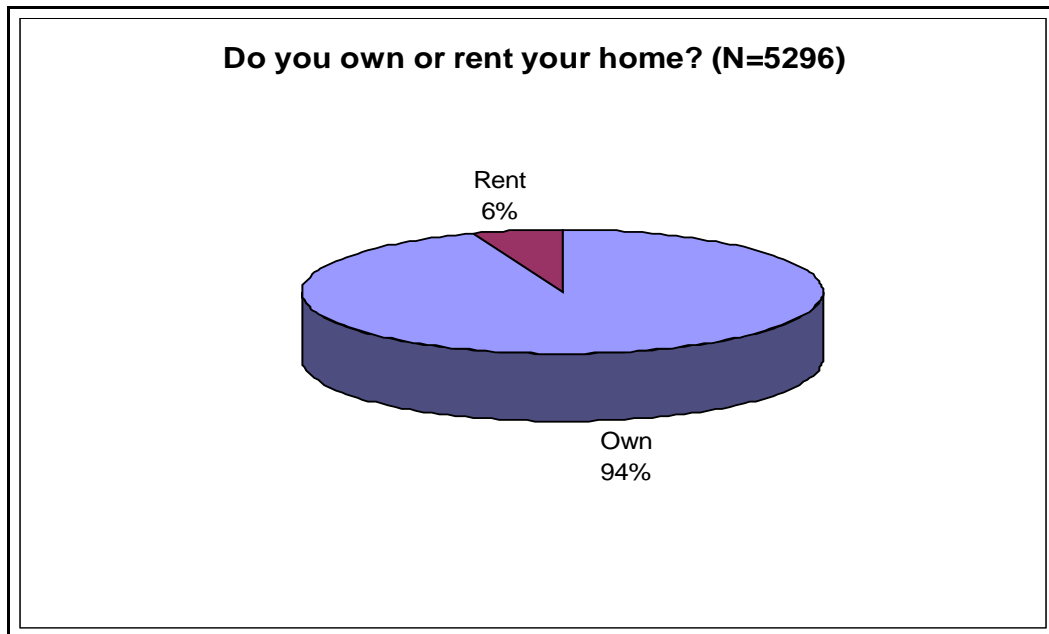
Total number of unique responses: 5,296

Response rate: 6.4%

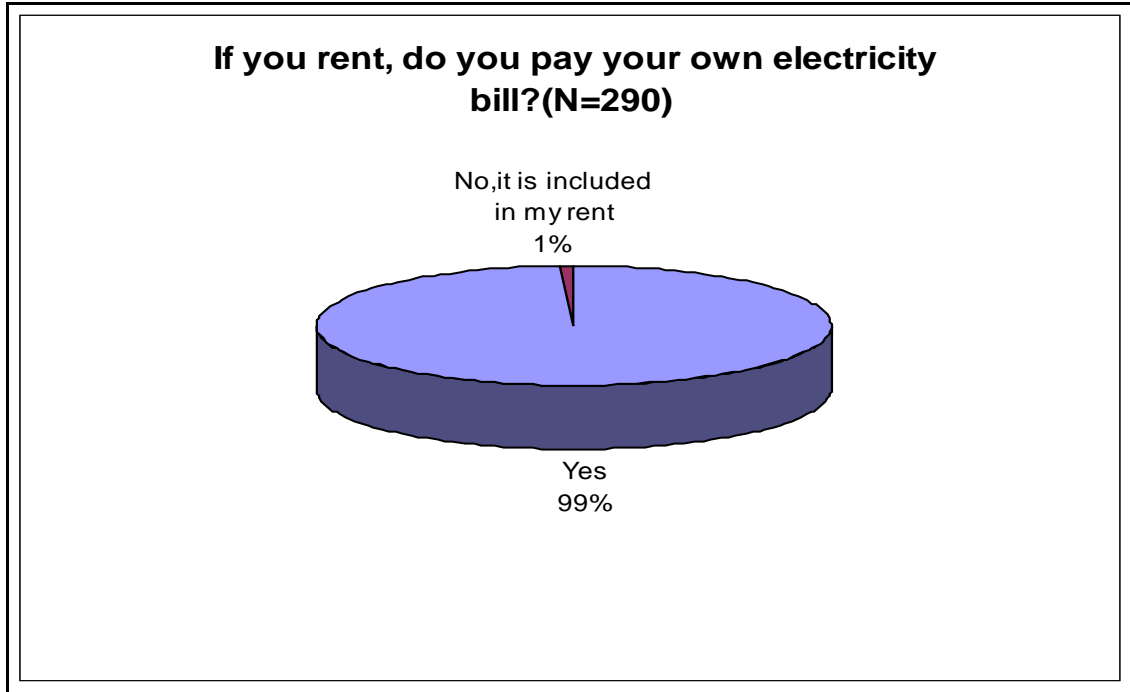
Question 1: In what type of building do you live?



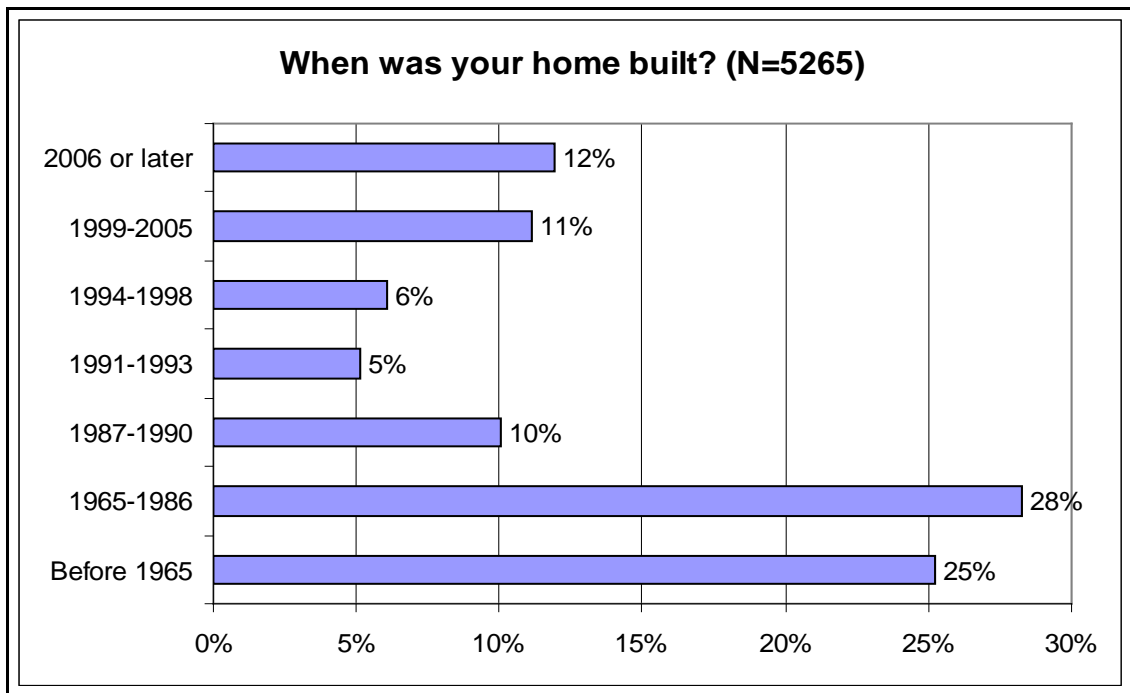
Question 2 (a): Do you own or rent your home?



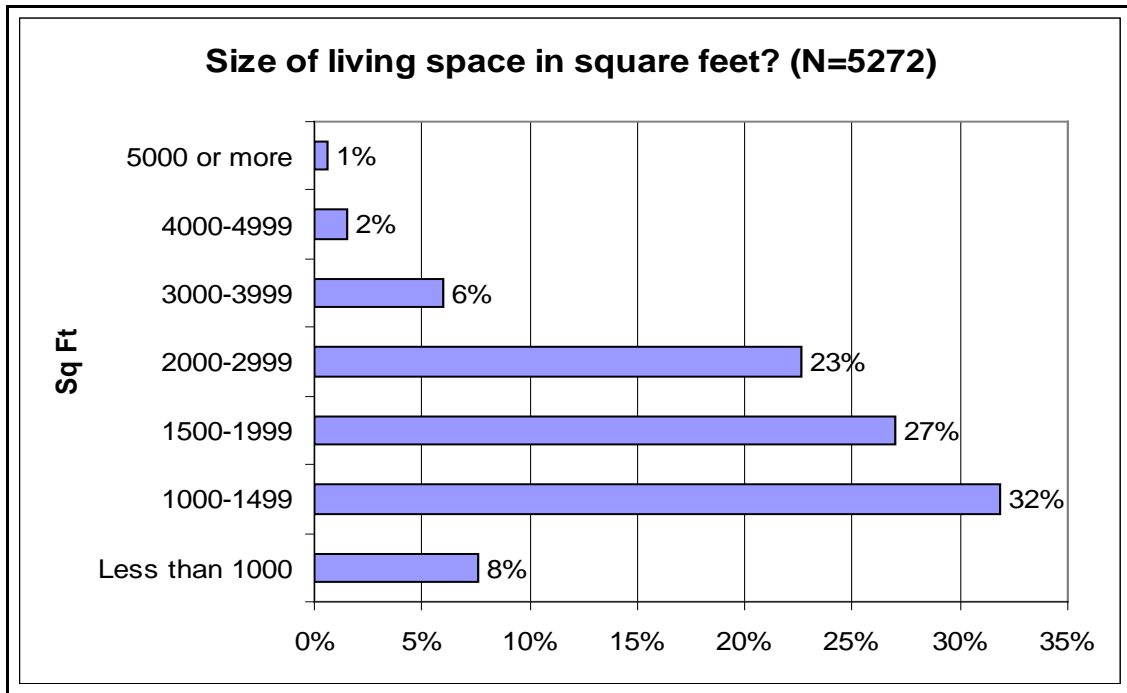
Question 2 (b): If you rent, do you pay your own electricity bill?



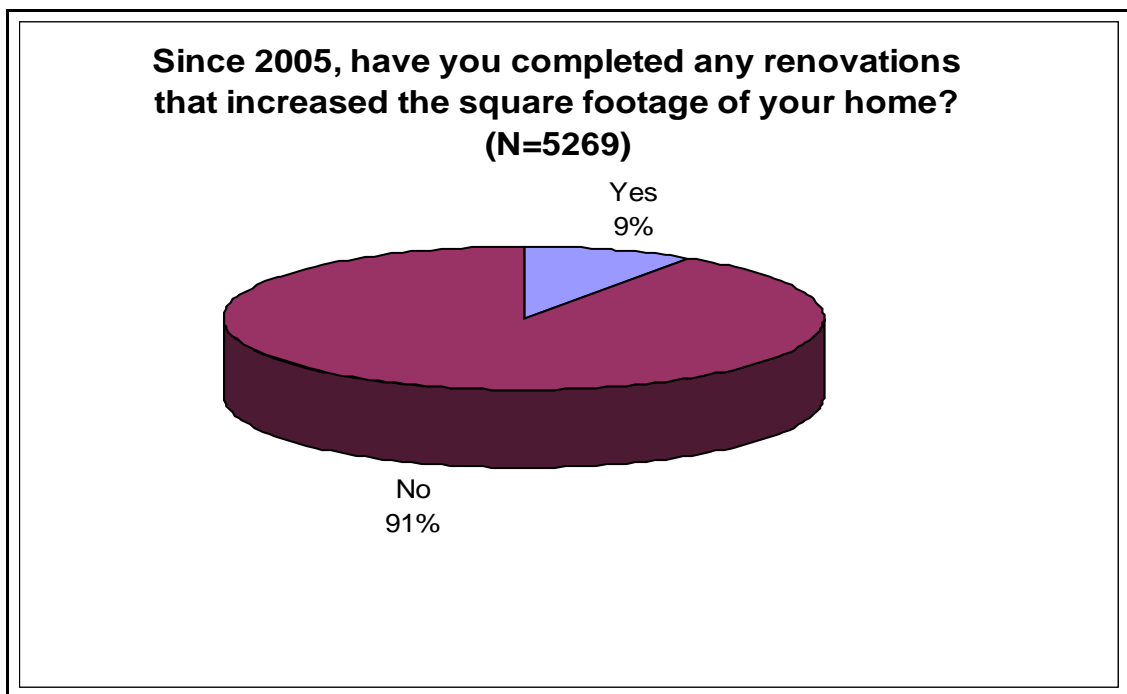
Question 3: When was your home built?



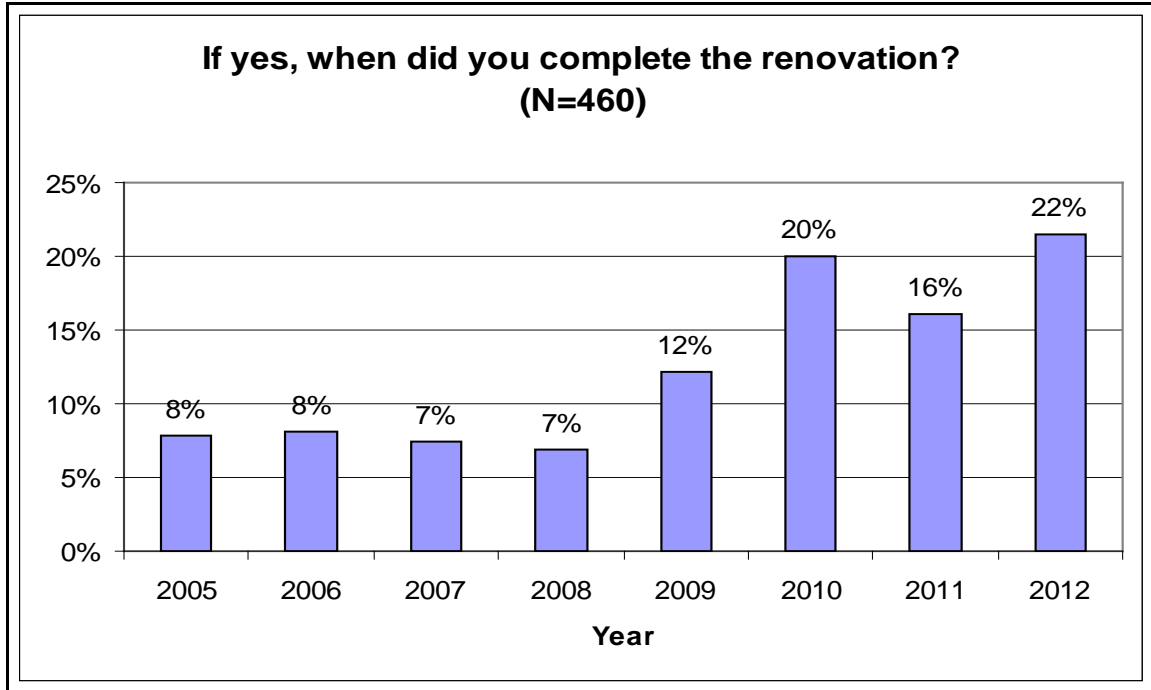
Question 4 (a): what is the size of the living space of your home in square feet without including your garage, attic or unfinished basement?



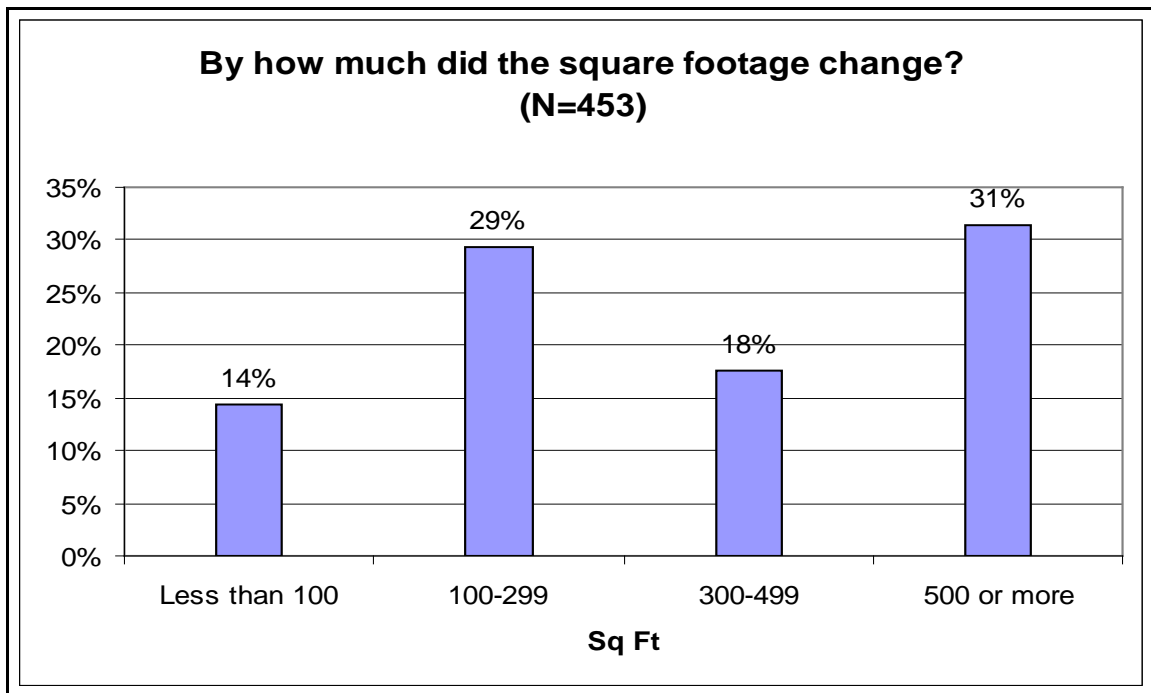
Question 4 (b): Since 2005, have you completed any renovations that increased the square footage of your home?



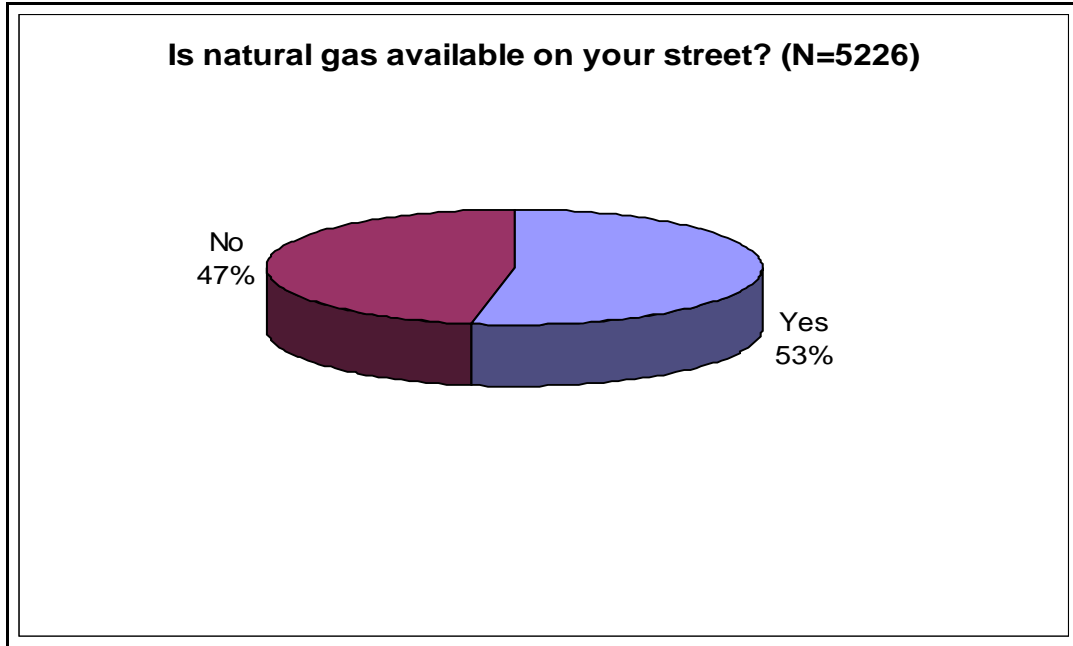
Question 4(c.i): If yes, when did you complete the renovation?



Question 4 (c.ii): If yes, by how much did the square footage of the house change because of the renovation?

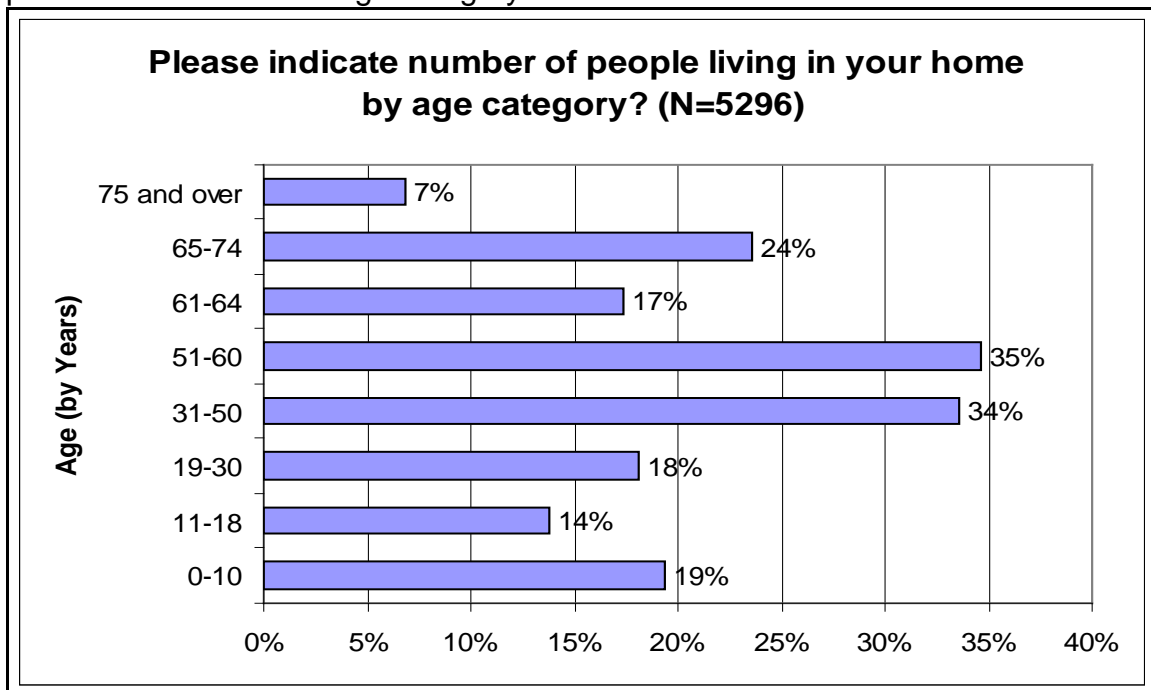


Question 5: Is natural gas available on your street?

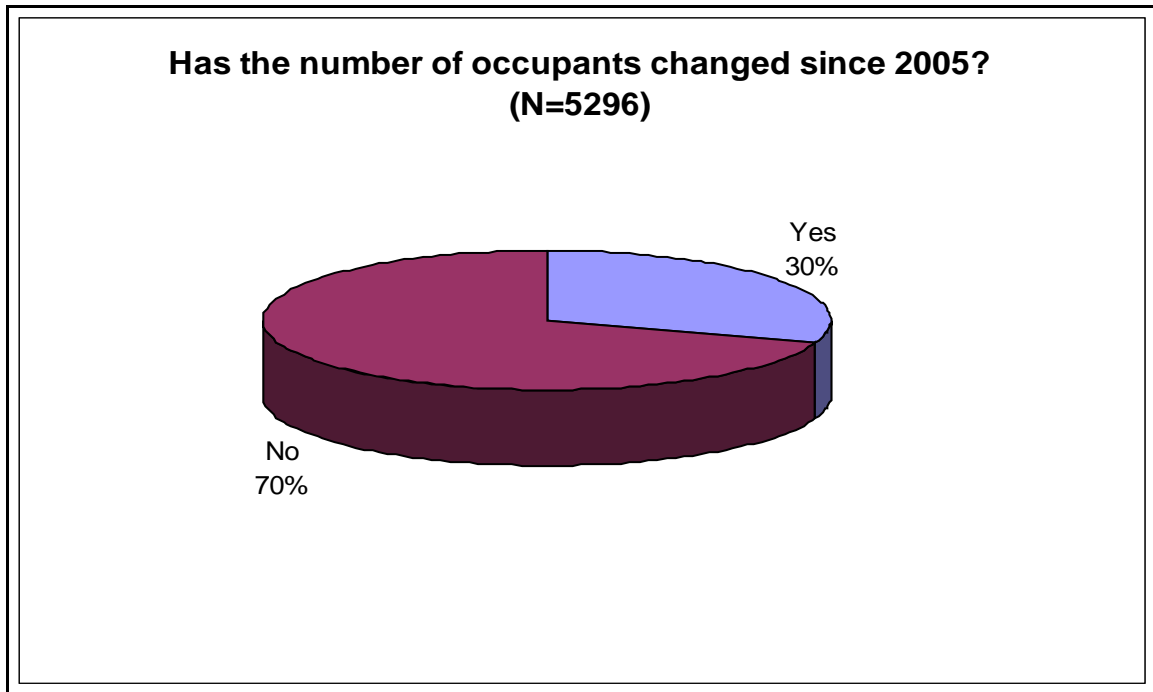


Question 6 (a): Please indicate the number of people living in your home by age category?

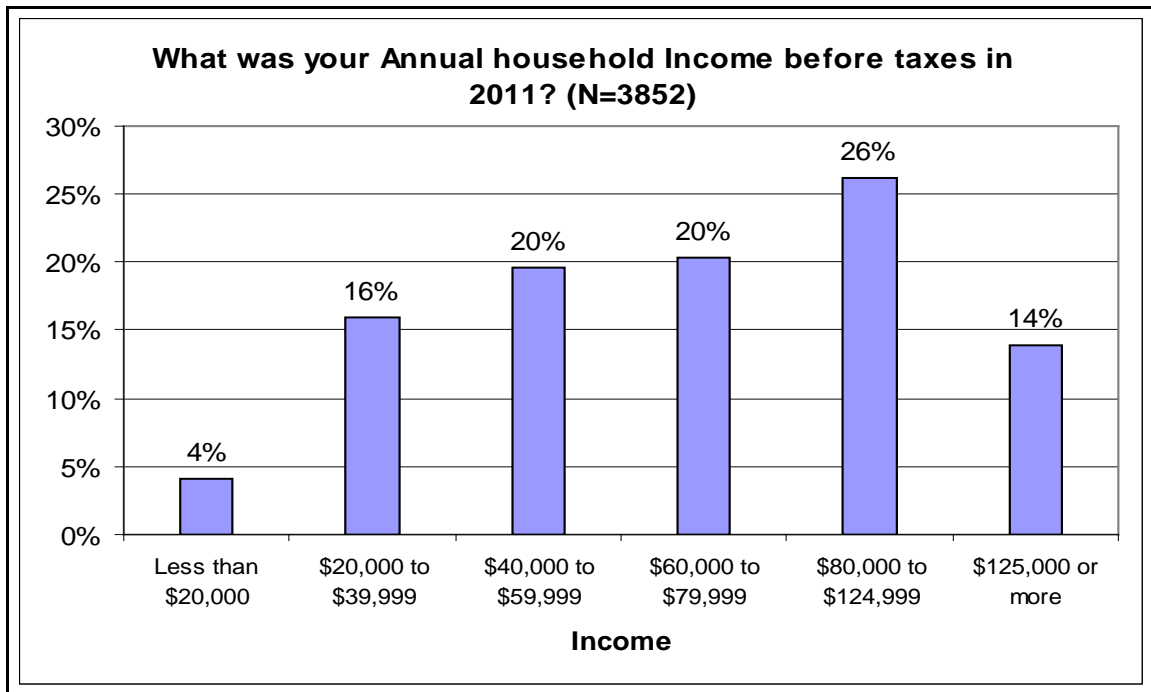
Note: Percentages represent total proportion of households with at least one person in the indicated age category.



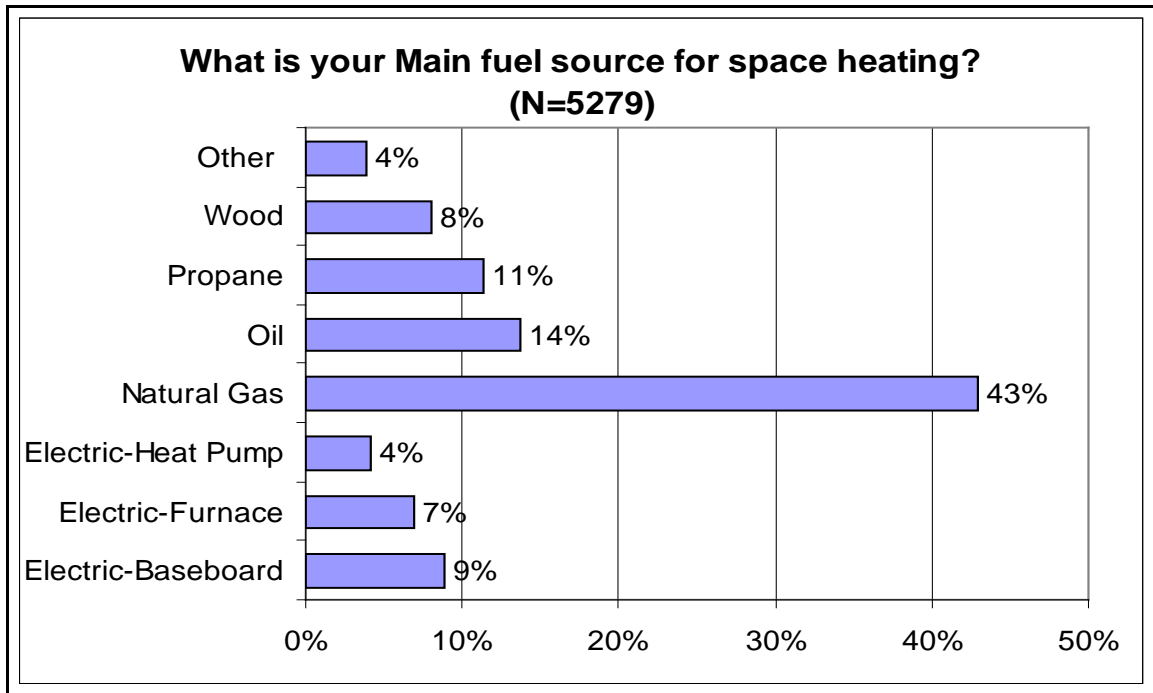
Question 6(b): The number of people living in your home can have a direct impact on your electricity usage. Has the number of occupants living in your home changed since 2005?



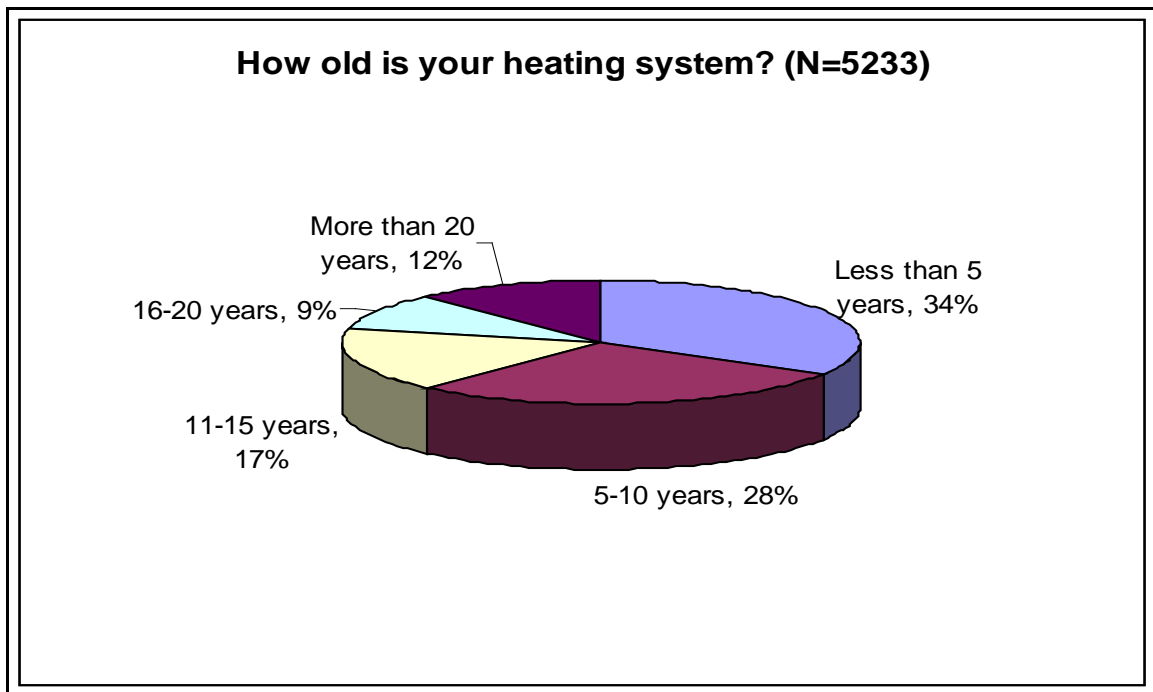
Question 7: What was your annual household Income before taxes for 2011?



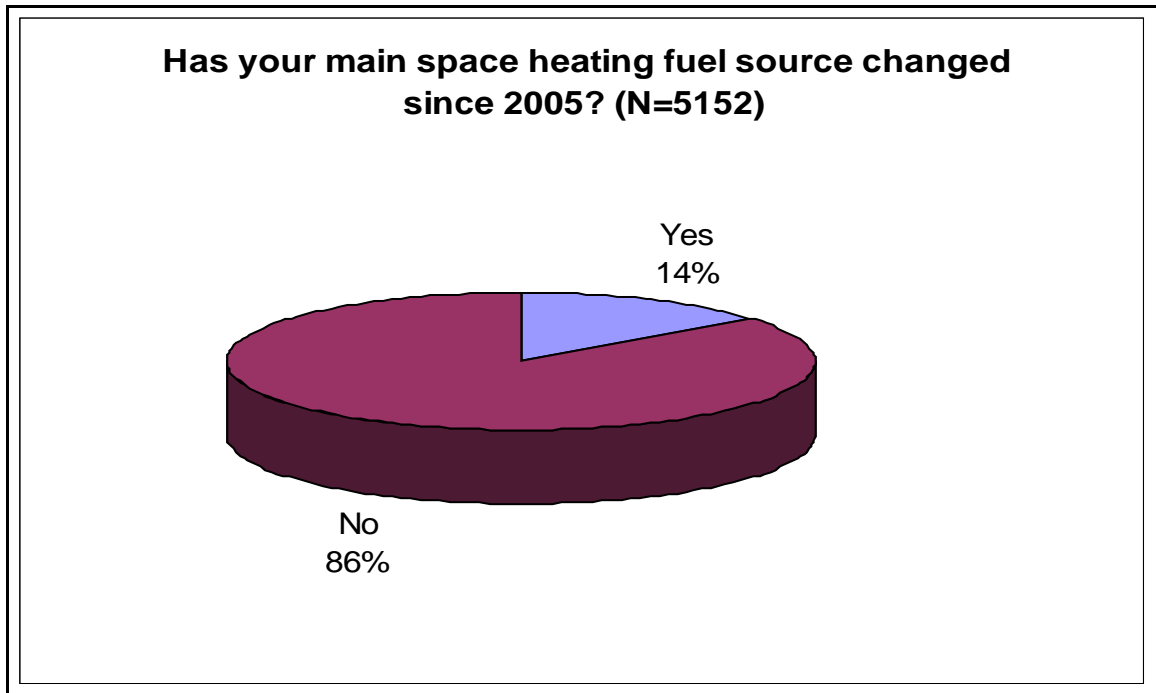
Question 8(a): What is your Main fuel source for space heating?



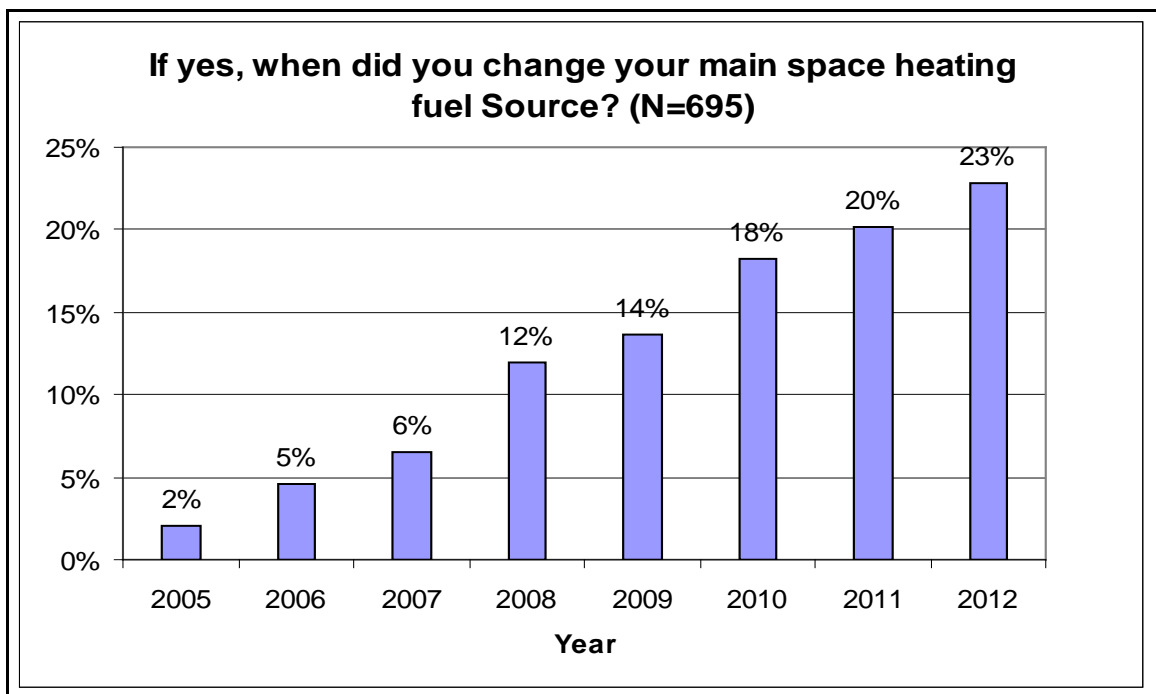
Question 8 (b): How old is your heating system?



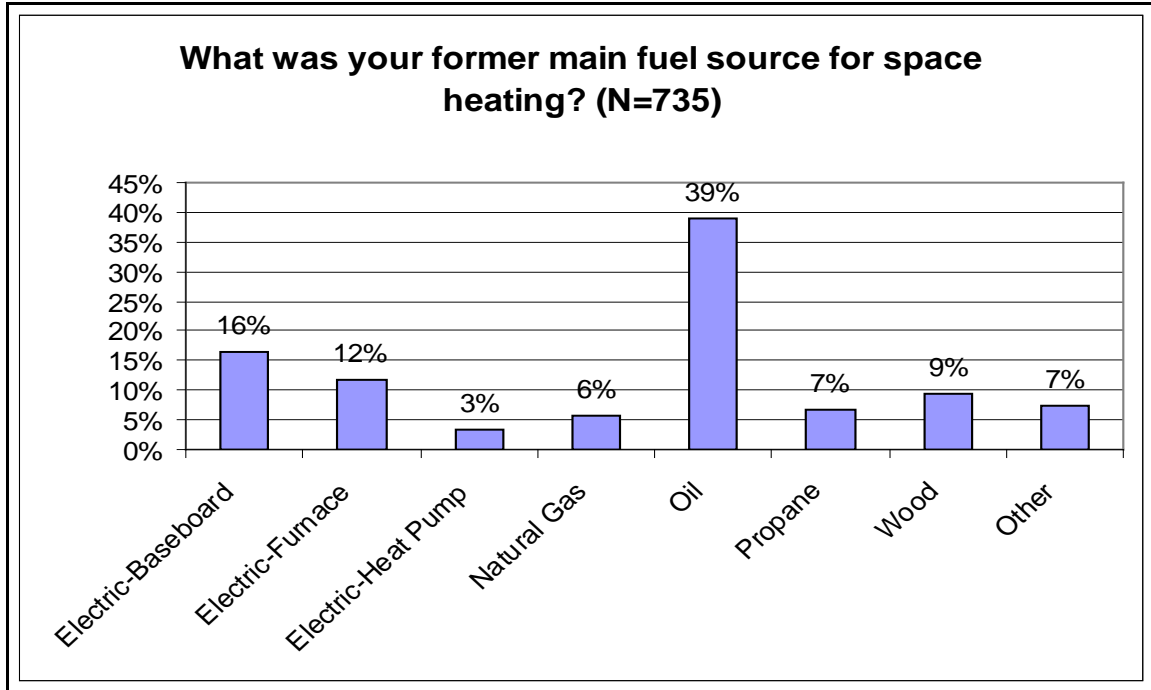
Question 8(c): In your current home, has your main space heating fuel source changed since 2005?



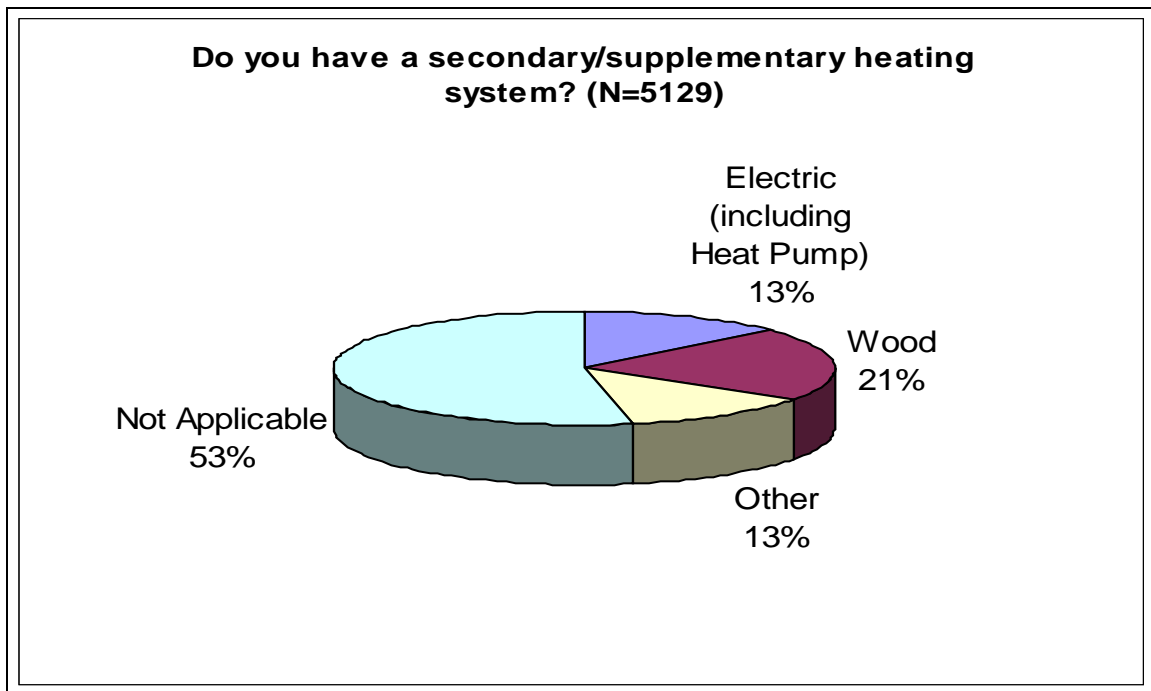
Question 8(d.i): If yes, when did you change your main space heating fuel Source?



Question 8(d.i): What was your former main fuel source for space heating?

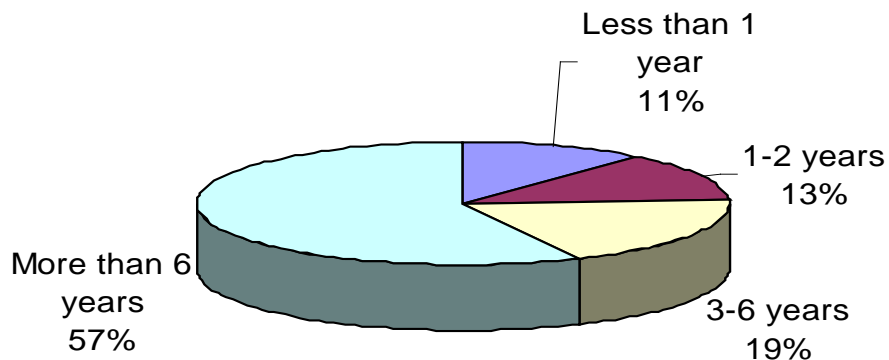


Question 9(a): In addition to your main source of space heating, do you have a secondary/supplementary heating system?



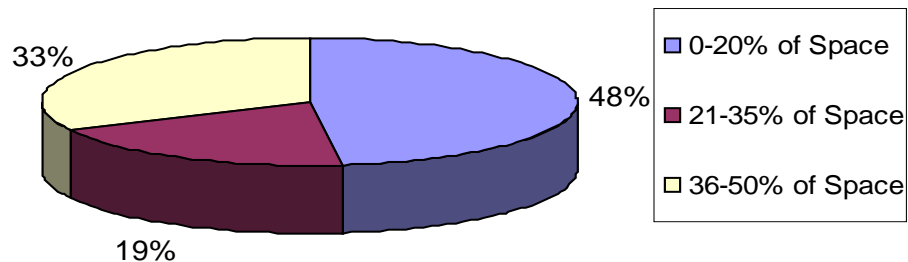
Question 9(b.i): If yes, how many years have you been using your secondary system?

If yes, how many years have you been using your secondary system? (N=2370)



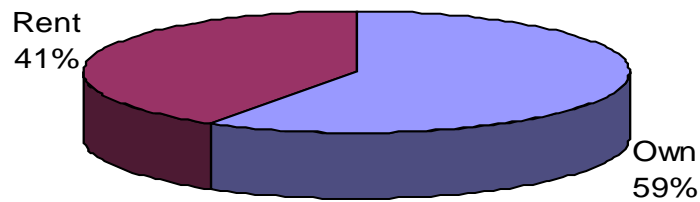
Question 9(b.ii): Please indicate the approximate percentage of space heated by secondary system.

Please indicate the approximate percentage of space heated by secondary system? (N=2359)



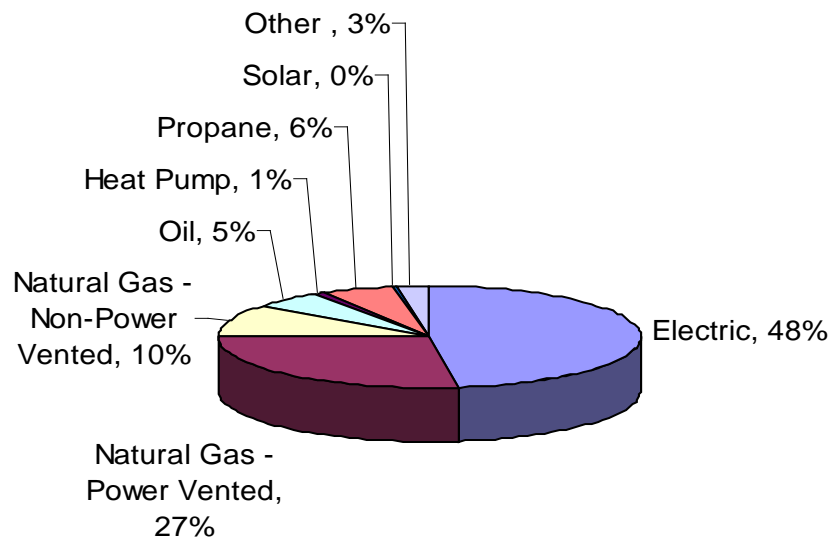
Question 10(a): Do you own or rent your water heater?

Do you own or rent your water heater? (N=5220)

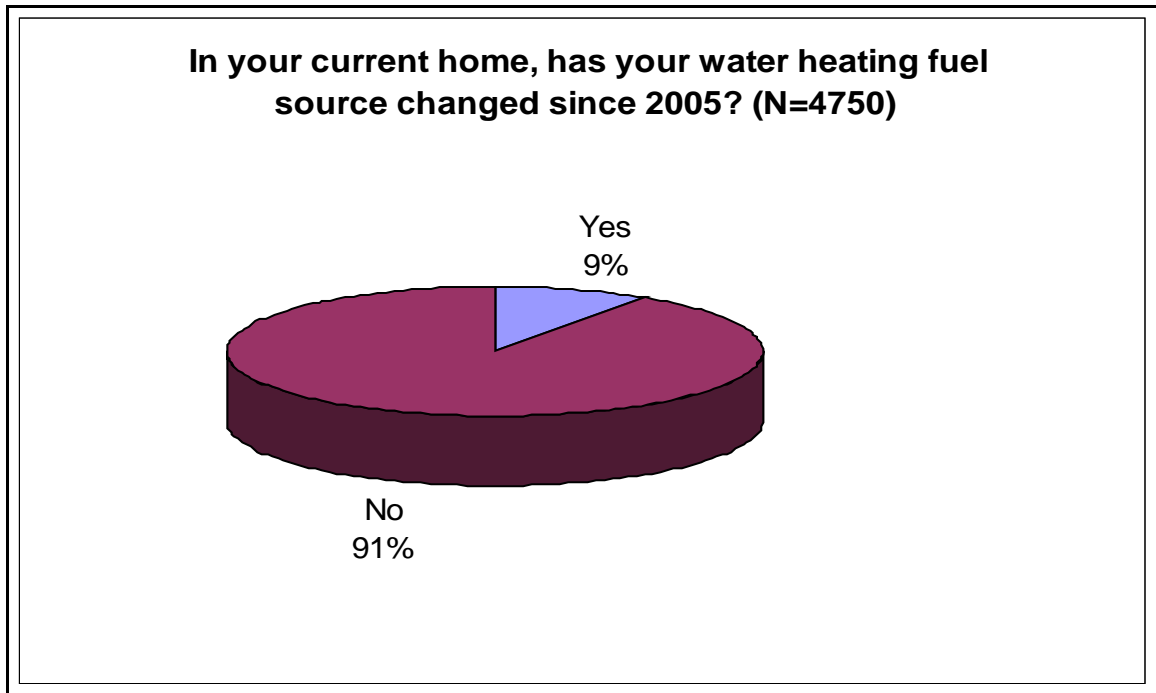


Question 10(b): What is your fuel source for water heating?

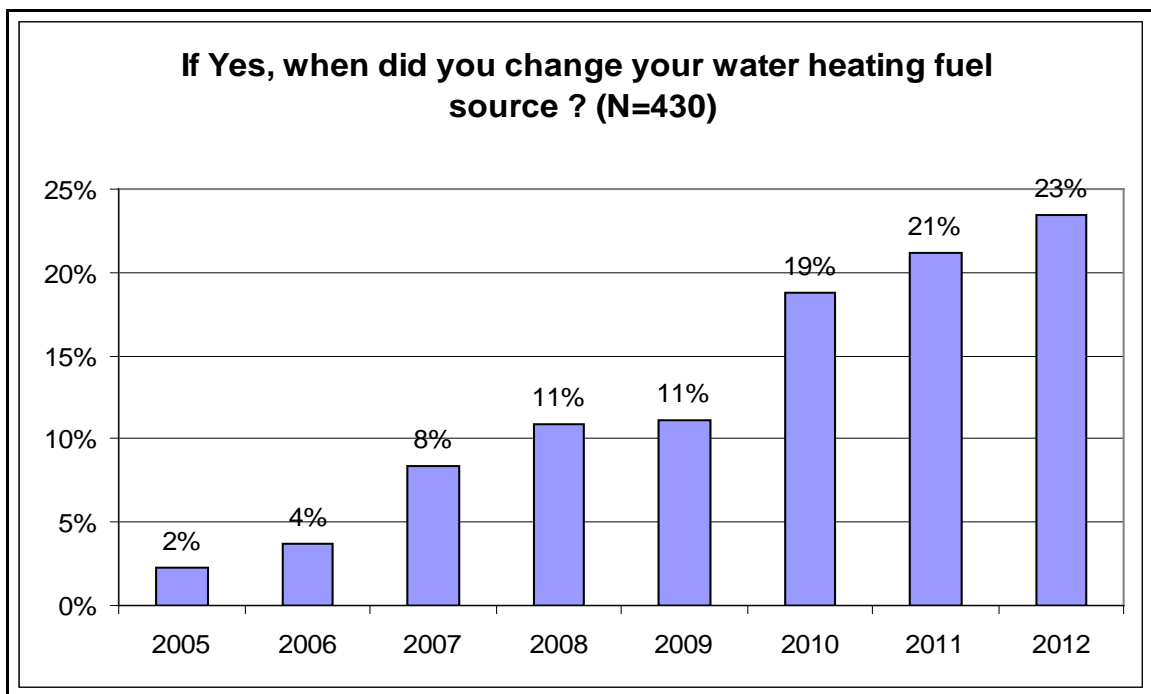
What is your fuel source for water heating? (N=5025)



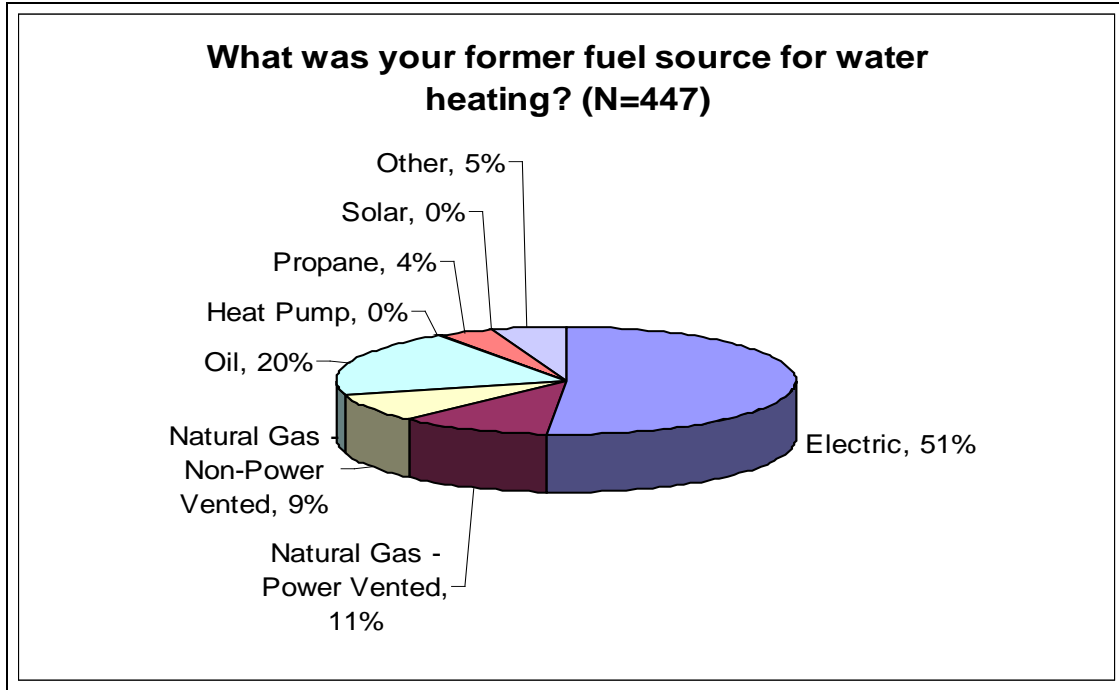
Question 10(c): In your current home, has your water heating fuel source changed since 2005?



Question 10 (d): If yes, when did you make the change?



Question 10 (d.ii): What was your former fuel source for water heating?

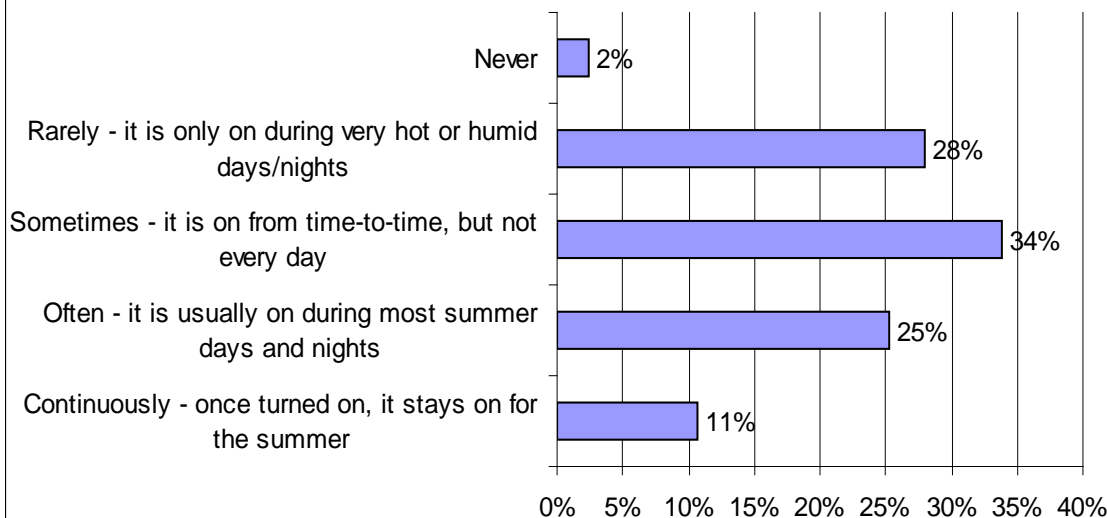


Question 11(a): What type of air-conditioning equipment do you have and how old is it?

Air-Conditioning Equipment	Age (In Years)				
	Less than 5	5 to 10	11 to 15	More than 15	Do not have
Central Air-Conditioner	23%	19%	11%	9%	38%
Heat Pump	9%	3%	2%	4%	83%
Window Air-Conditioner #1	21%	9%	2%	2%	68%
Window Air-Conditioner #2	9%	3%	1%	0%	87%

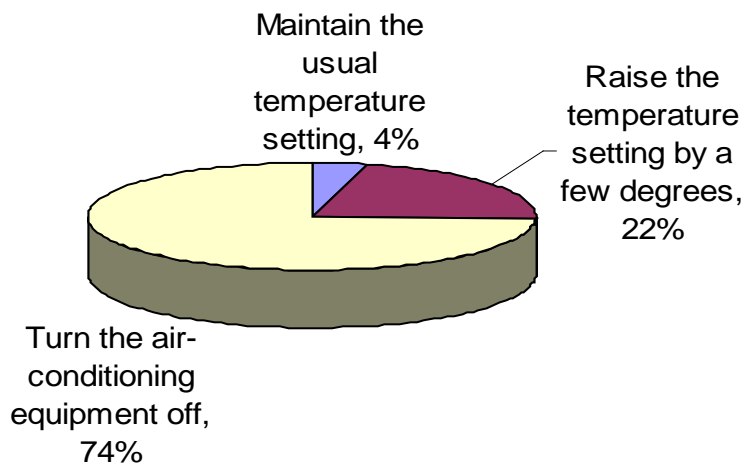
Question 11(b): How often do you use your air-conditioning equipment during the summer?

How often do you use your air-conditioning equipment during the summer?(N=4008)



Question 11(c): When you are away for an extended period of time, how do you set your air conditioner (AC)?

When you are away for an extended period of time, how do you set your AC? (N=3934)



Question 12: How is the circulating fan in your current heating and cooling system normally set to operate?

Season	Automatic	Continuous	Don't know	Not Applicable	Sample Size
Winter	65%	12%	4%	18%	5223
Summer	48%	15%	5%	32%	5161

Question 13(a): On a typical summer day, to what temperature do you normally set your thermostat?

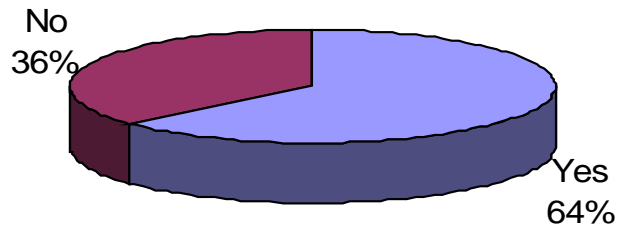
Typical Temperature Setting in Summer	When you are at home?	When you are away?	At Night/When you are sleeping?
Not Applicable	29%	40%	30%
Less than 15°C	6%	8%	6%
15-17°C	3%	6%	6%
18-22°C	33%	11%	33%
23-26°C	28%	24%	23%
More than 26°C	1%	11%	2%

Question 13(b): On a typical winter day, to what temperature do you normally set your thermostat?

Typical Temperature Setting in Winter	When you are at home?	When you are away?	At Night/When you are sleeping?
Not Applicable	3%	5%	4%
Less than 15°C	1%	12%	5%
15-17°C	6%	38%	32%
18-22°C	83%	44%	57%
23-26°C	6%	1%	2%
More than 26°C	0%	0%	0%

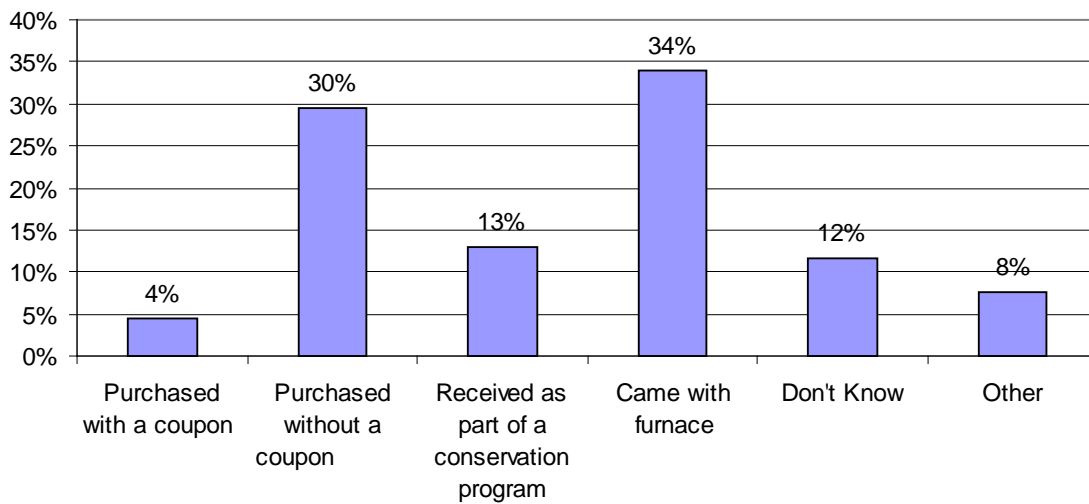
Question 14(a): Do you have a programmable thermostat?

Do you have a programmable thermostat?(N=5207)



Question 14(b): If yes, did you purchase the programmable thermostat or was it part of a conservation program (such as the PeakSaver program)?

If yes, did you purchase or was it part of a program? (N=3286)



Question 15(a): In what year did you purchase each of your major appliances?

Year of Purchase of Major Appliances	Before 1993 (20 Years or Older)	Between 1993 and 1997 (15-19 years old)	Between 1998 and 2004 (8-14 years old)	Between 2005 and 2010	2011	2012	Came with purchase/rental of home	Don't Know	Do Not Have*	Sample Size
Full Size Refrigerator #1	2%	4%	20%	42%	9%	9%	12%	2%	1%	5296
Full Size Refrigerator #2	2%	3%	8%	11%	2%	1%	2%	1%	69%	5296
Stand-Alone Freezer #1	9%	7%	16%	27%	4%	4%	2%	3%	27%	5296
Stand-Alone Freezer #2	1%	1%	2%	3%	1%	1%	1%	1%	91%	5296
Mini/Bar Fridge #1	1%	1%	5%	12%	3%	2%	1%	1%	75%	5296
Mini/Bar Fridge #2	0%	0%	0%	1%	0%	0%	0%	0%	98%	5296
Top Load Washing Machine	3%	4%	12%	16%	4%	4%	5%	1%	52%	5296
Front Load Washing machine	0%	0%	6%	30%	8%	5%	4%	0%	46%	5296
Dishwasher	2%	3%	14%	32%	7%	8%	11%	1%	22%	5296

*Note: Blank answers were considered to be "Do Not Have".

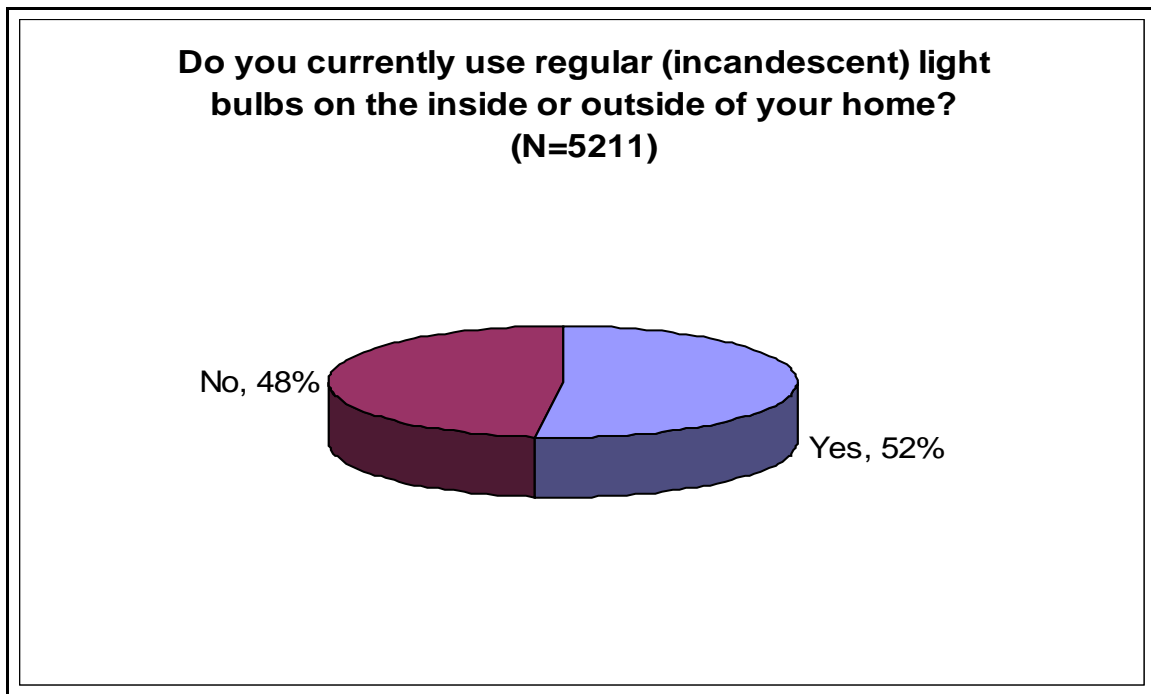
Question 15(b): How many of the following do you have?

Electrical Equipment	None	1	2	More than 2	Sample Size
Laptop Computer (including tablets)	15%	48%	31%	21%	4387
Desktop Computer	27%	56%	13%	4%	4940
Conventional (CRT) Computer Monitor	85%	13%	1%	1%	4224
Flat Screen Computer Monitor	31%	51%	12%	5%	4779
Printer	42%	47%	8%	2%	5100
Fax Machine	91%	9%	0%	0%	4173
Copier Machine	91%	8%	1%	0%	4055
Printer/Fax/Copier Combo	34%	60%	5%	1%	4613
Conventional (CRT) Television	49%	34%	12%	4%	4306
LED/LCD Television	20%	42%	26%	13%	4908
Plasma Television	71%	24%	4%	1%	4111
Stereo or Home Entertainment System	26%	61%	11%	2%	4792
Game Console	52%	33%	10%	5%	4395
DVD Player/Recorder	10%	62%	21%	7%	4915
Digital Cable box	38%	36%	15%	11%	4581
Microwave Oven	3%	93%	4%	0%	5202
Whirlpool Bathtub	76%	23%	1%	0%	4370
Dehumidifier	42%	53%	5%	1%	4624
Electric Air Filter	81%	17%	1%	0%	4264
Pool Pump	83%	17%	0%	0%	4293
Hot Tub	86%	14%	0%	0%	4266

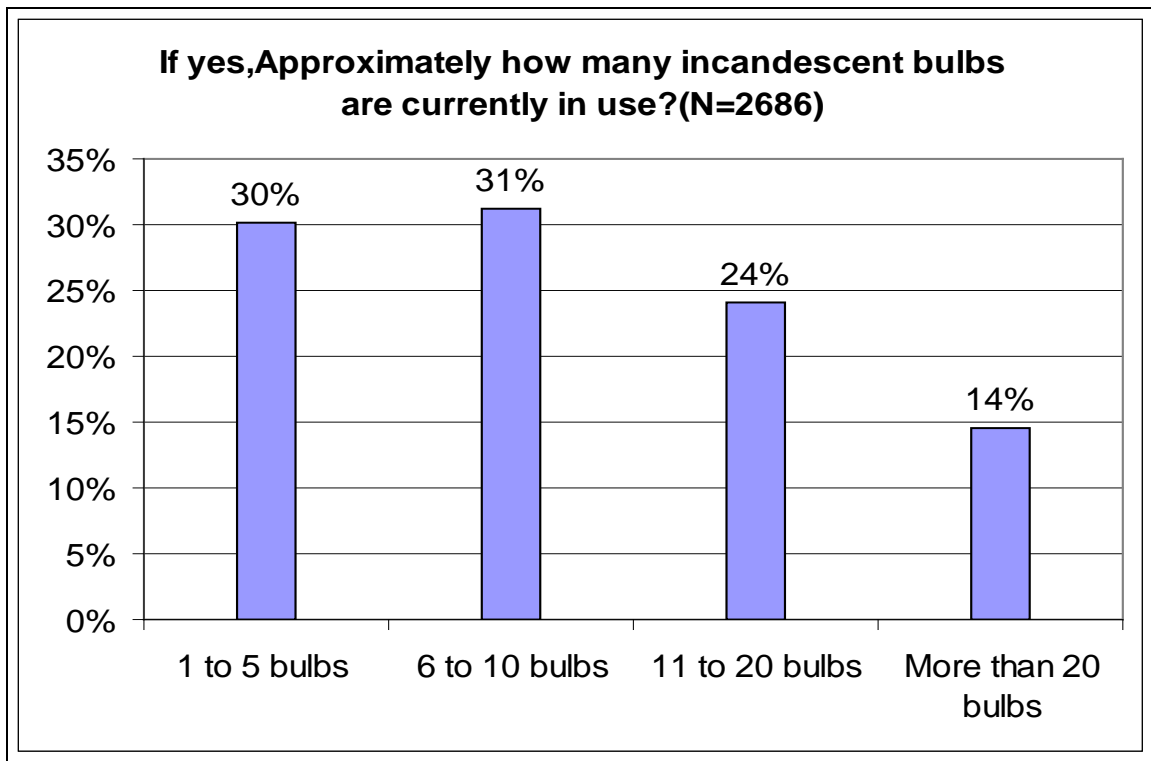
Question 15 (c): Provide information on the Fuel source of appliances?

Fuel Source of Appliances	Range/Oven	Clothes Dryer	Pool Heater	Sauna
Natural Gas	12%	8%	2%	0%
Electricity	83%	87%	5%	4%
Propane	4%	2%	1%	0%
Other	0%	0%	2%	1%
Not Applicable	0%	4%	91%	96%

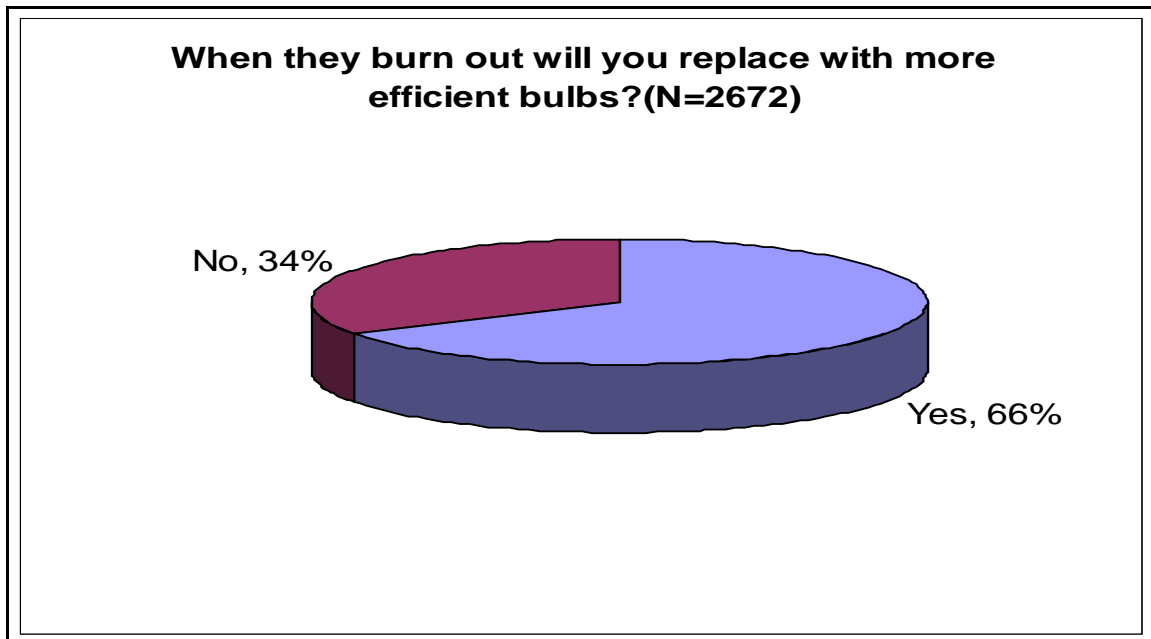
Question 15(d): Do you currently use regular (incandescent) light bulbs on the inside or outside of your home?



Question 15(d.i): If yes, approximately how many incandescent bulbs are currently in use?

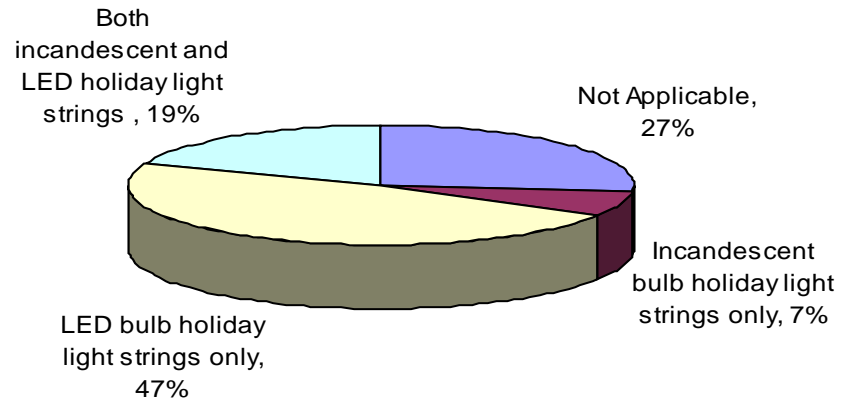


Question15 (d.ii): When these bulbs burn out do you plan on replacing them with more efficient lighting products such as LED Light Bulbs or Halogen Light Bulbs?



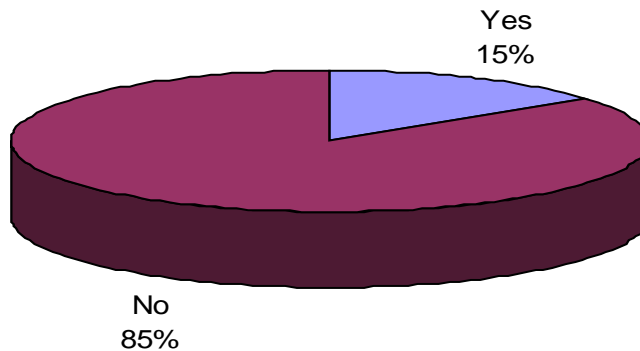
Question 15(e): What type of holiday light strings do you use?

What type of holiday light strings do you use?(N=5231)



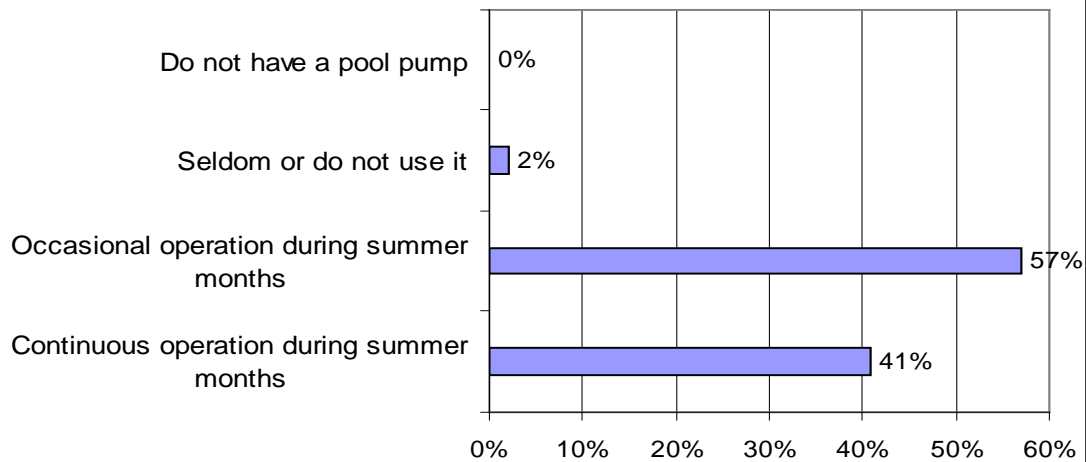
Question 16(a): Do you have a swimming pool?

Do you have a swimming pool? (N=5195)



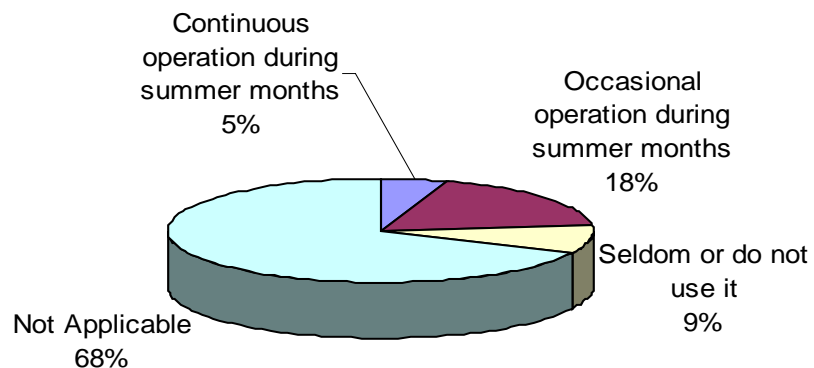
Question 16(b): If yes, how often do you use your pool pump?

If you have a swimming pool, how often do you use your pool pump? (N=745)



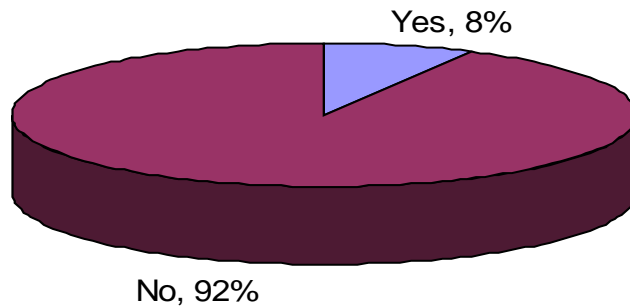
Question 16(c): If you have a pool heater, how often do you use it?

If you have a swimming pool, how often do you use your pool heater? (N=699)



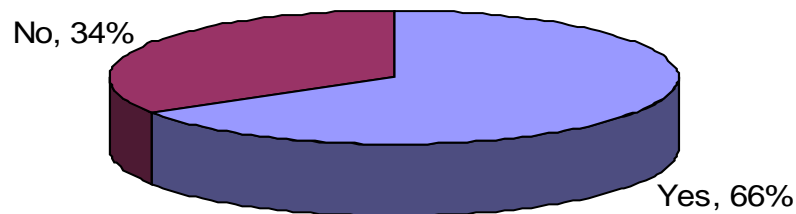
Question 17(a): Have you completed the PowerSaverPlus Online Energy Audit?

Have you completed the PowerSaverPlus Online Energy Audit? (N=5213)

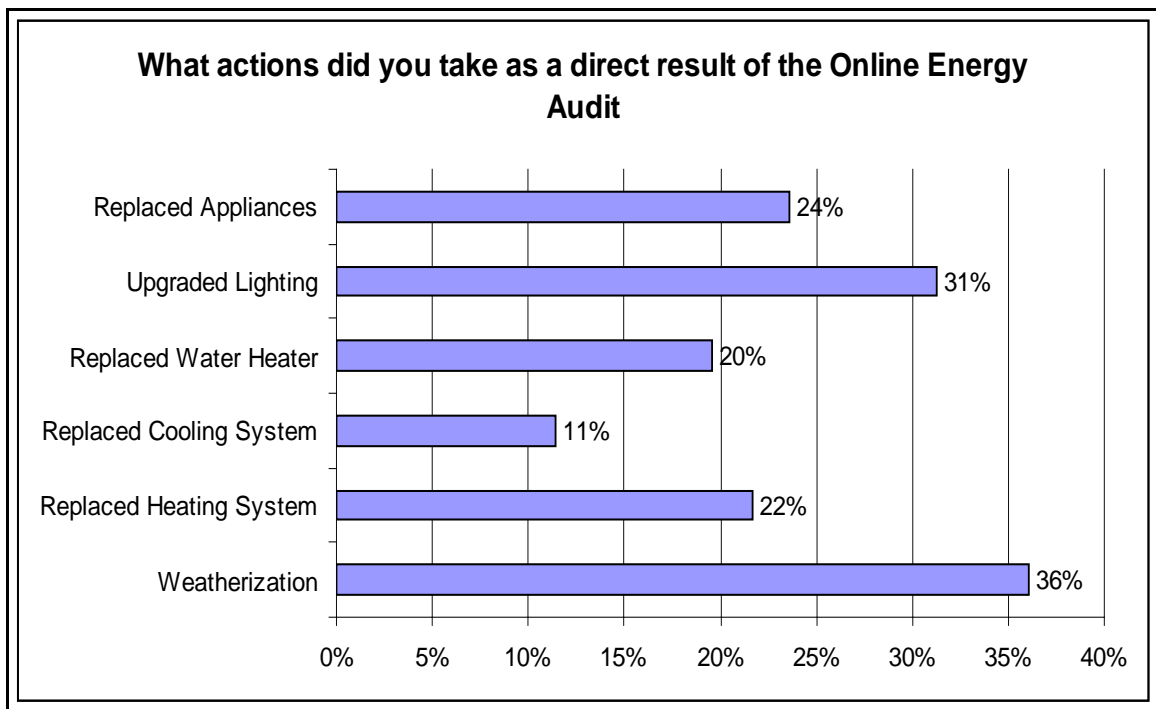


Question 17(b.i): If yes, did the audit provide you with useful tips for lowering your energy consumption?

If you have completed the Power SaverPlus Online Energy Audit, Did the audit provide you with useful tips? (N=381)



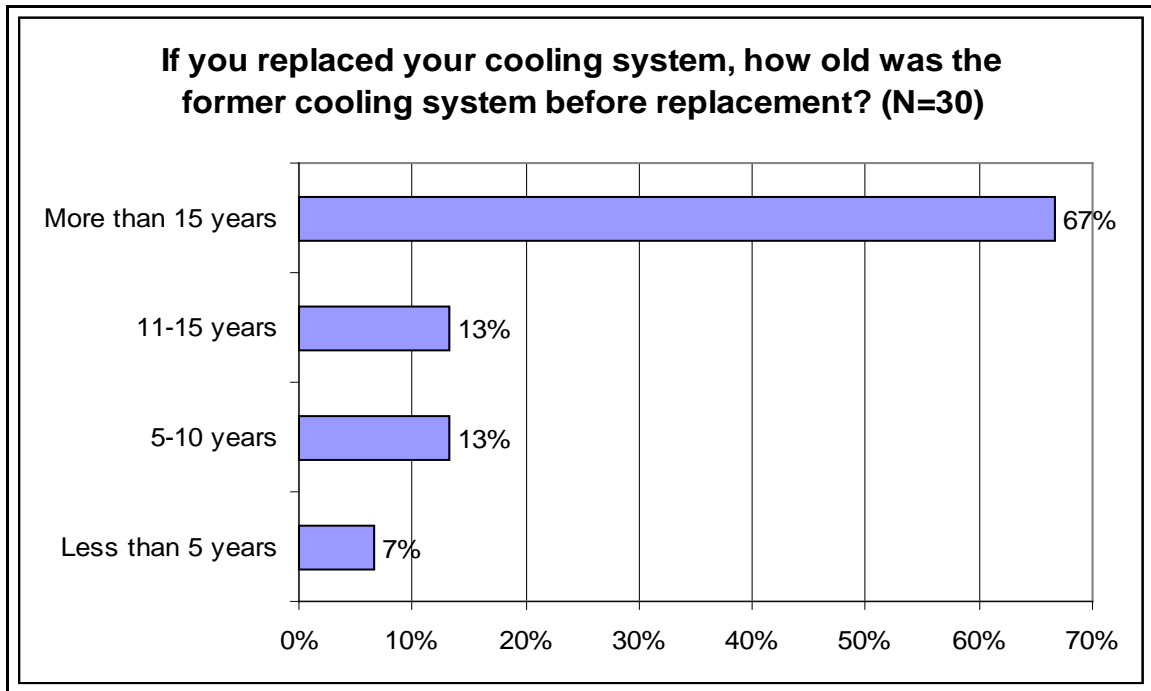
Question 17(b.ii): What actions did you take as a direct result of the Online Energy Audit?



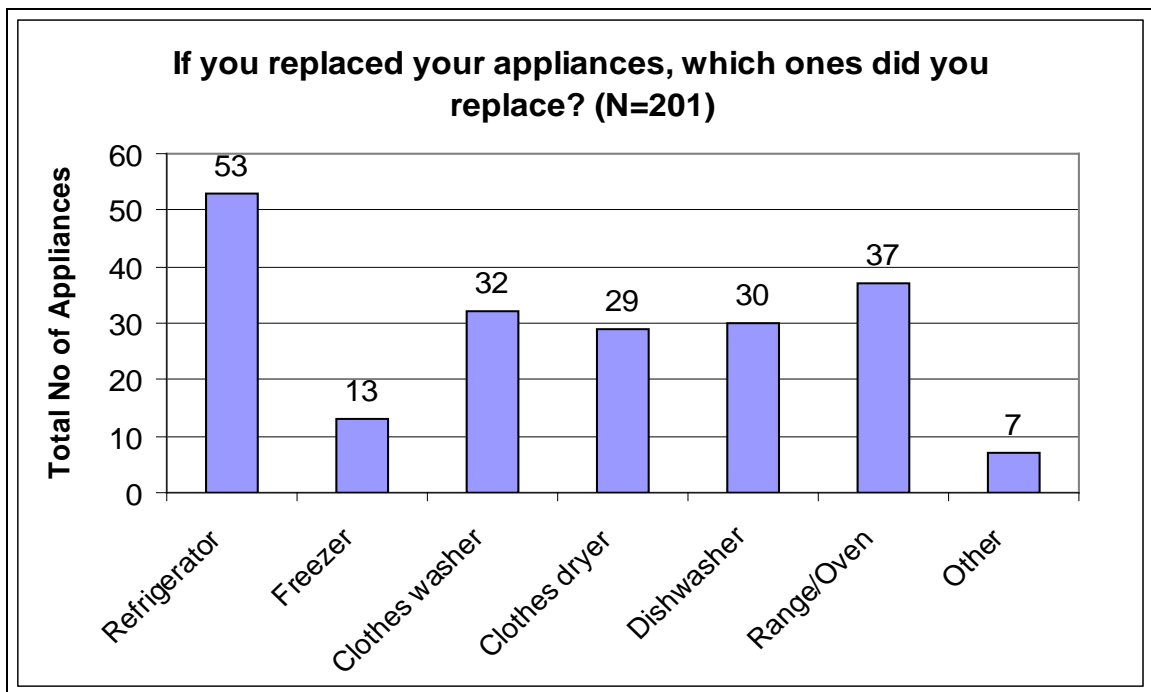
In which year were the actions taken as a result of Online Energy Audit?

Conservation Action	2007-2009	2010	2011	2012
Weatherization	22%	21%	16%	41%
Replaced Heating System	22%	19%	32%	27%
Replaced Cooling System	24%	17%	41%	17%
Replaced Water Heater	13%	15%	44%	27%
Upgraded Lighting	22%	25%	18%	34%
Replaced Appliances	26%	20%	21%	33%

Question 17(b.iii): If you replaced your cooling system, how old was the former cooling system before replacement?

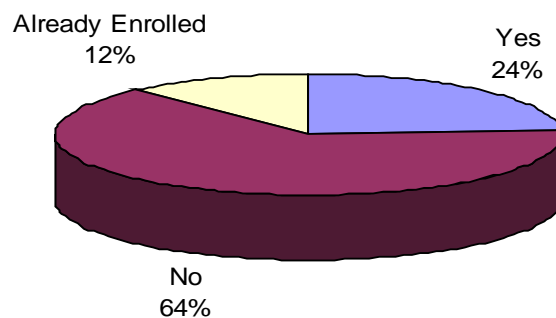


Question 17(b.iv): If you replaced your appliances, which ones did you replace?



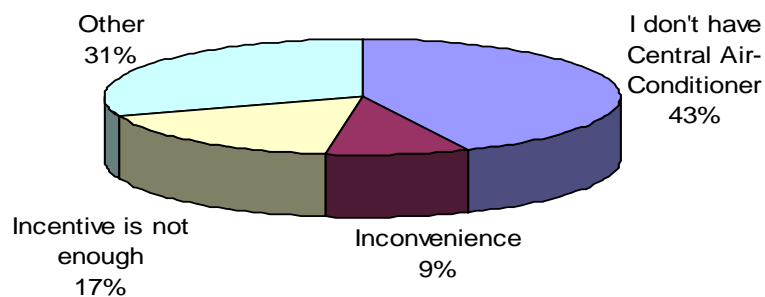
Question 18(a): Would you be interested in participating in the PeakSaverPlus program?

Would you be interested in participating in the PeakSaverPlus program? (N=5186)



Question 18(b): If no, please specify the reason?

If no, please specify the reason? (N=3262)

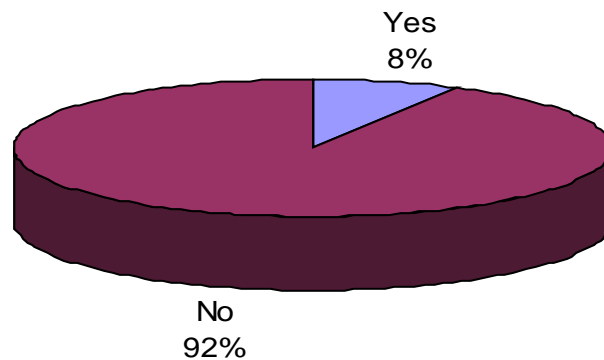


Common responses to "Other":

- Hardly use Air-Conditioning
- Prefer self controlling and do not wish to give up control
- Already have a Programmable thermostat

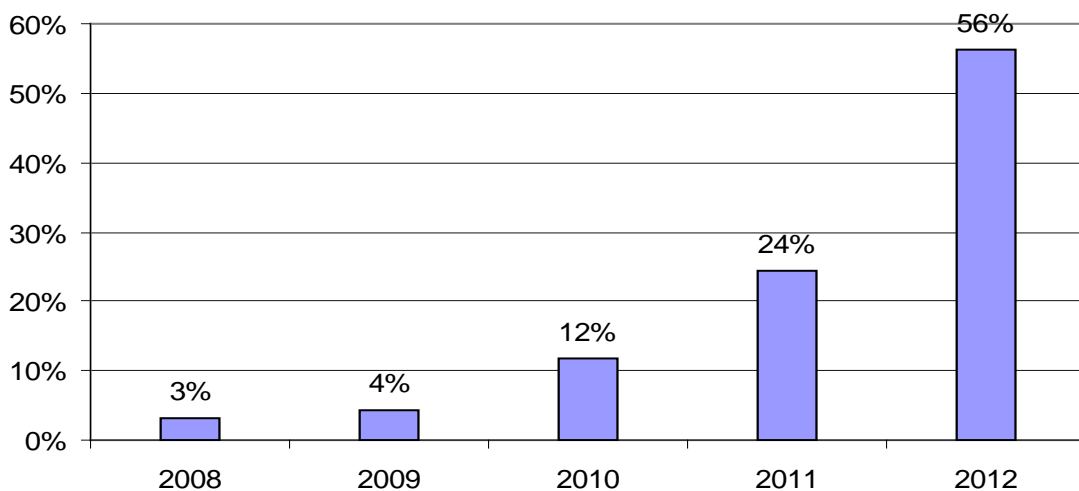
Question 19(a.i): Have you participated in the Save on Energy Pledge (or Power Pledge Campaign)?

**Have you participated in the SaveOnEnergy Pledge
(or Power Pledge Campaign)? (N=5158)**



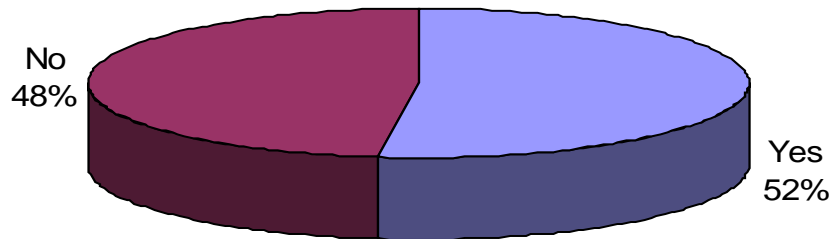
Question 19(a.ii): If yes, please provide the year or participation.

**If you participated in the SaveOnEnergy Pledge ,
please provide the year or participation.(N=344)**



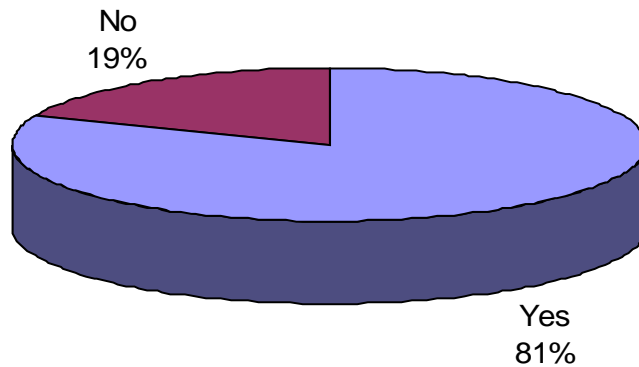
Question 19(b.i): If Participated, did you plug electronics into a power bar with a timer or auto shut off and make sure they are off during periods of inactivity?

If Participated, Plugged electronics into a power bar with a timer or auto shut off and made sure they are off during periods of inactivity? (N=353)

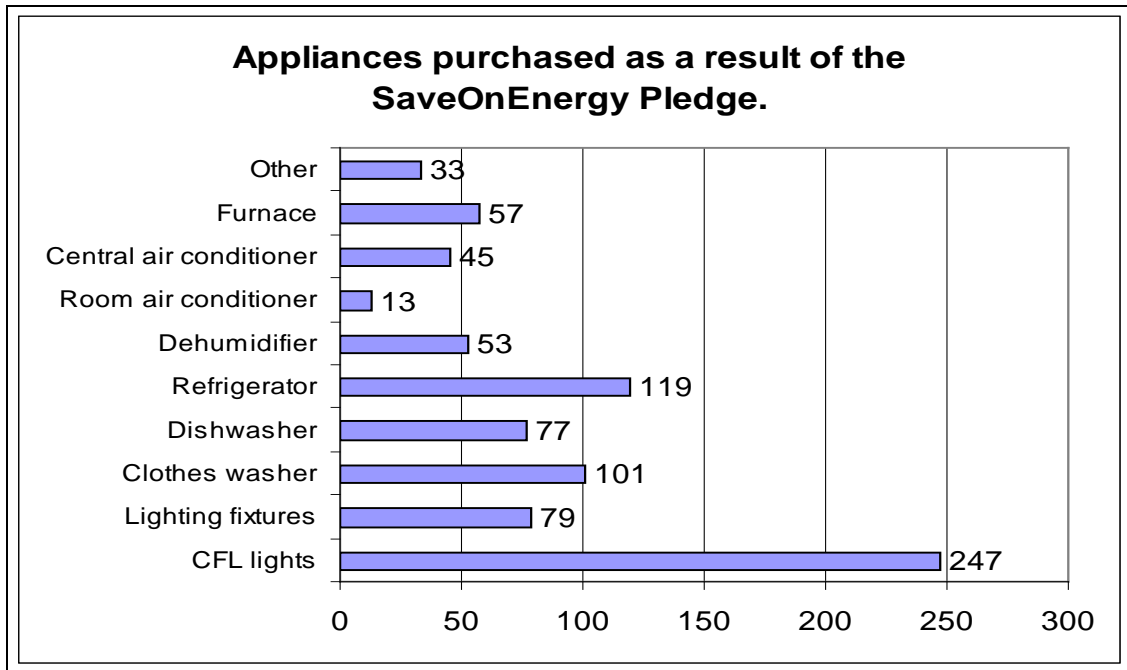


Question 19(b.ii): As a result of participation, did you buy efficient products with Energy Star labels?

As a Result of participation, Bought efficient products with Energy Star labels? (N=380)

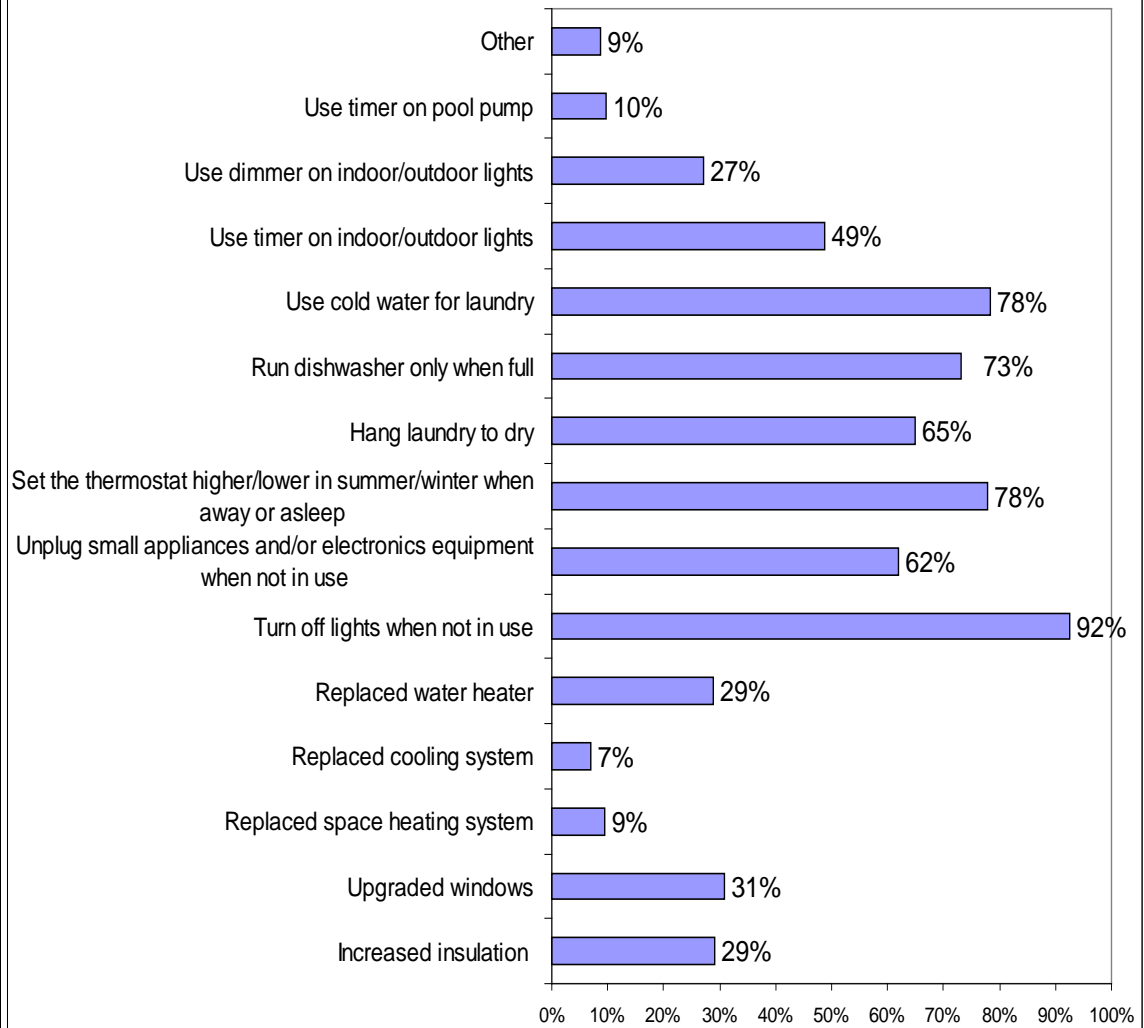


If yes, please list the products you bought.



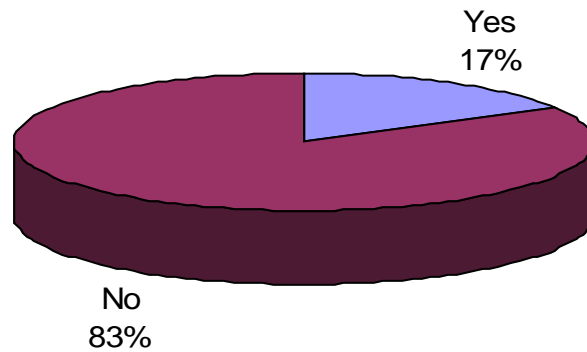
Question 19(b.iii): Please list any change you made in your habits due to the SaveOnEnergy Pledge to reduce your electricity usage.

Please list any change you made in your habits to reduce your electricity usage? (N=411)

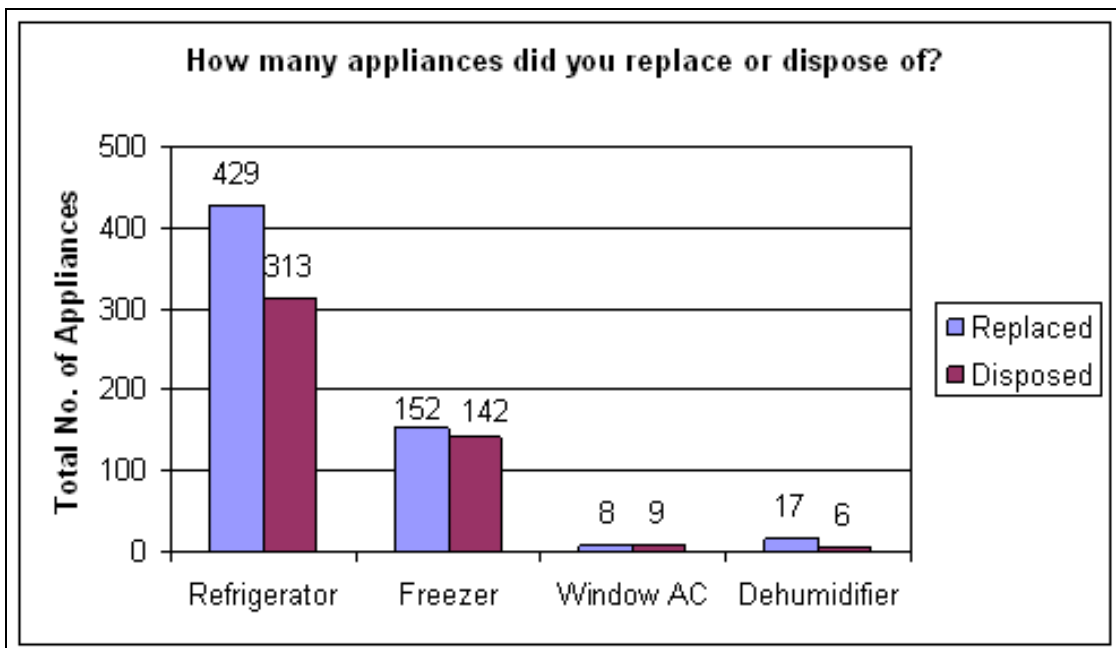


Question 20(a): Have you participated in the Fridge & Freezer Pickup Program?

Have you participated in the Fridge & Freezer Pickup Program?(N=5226)



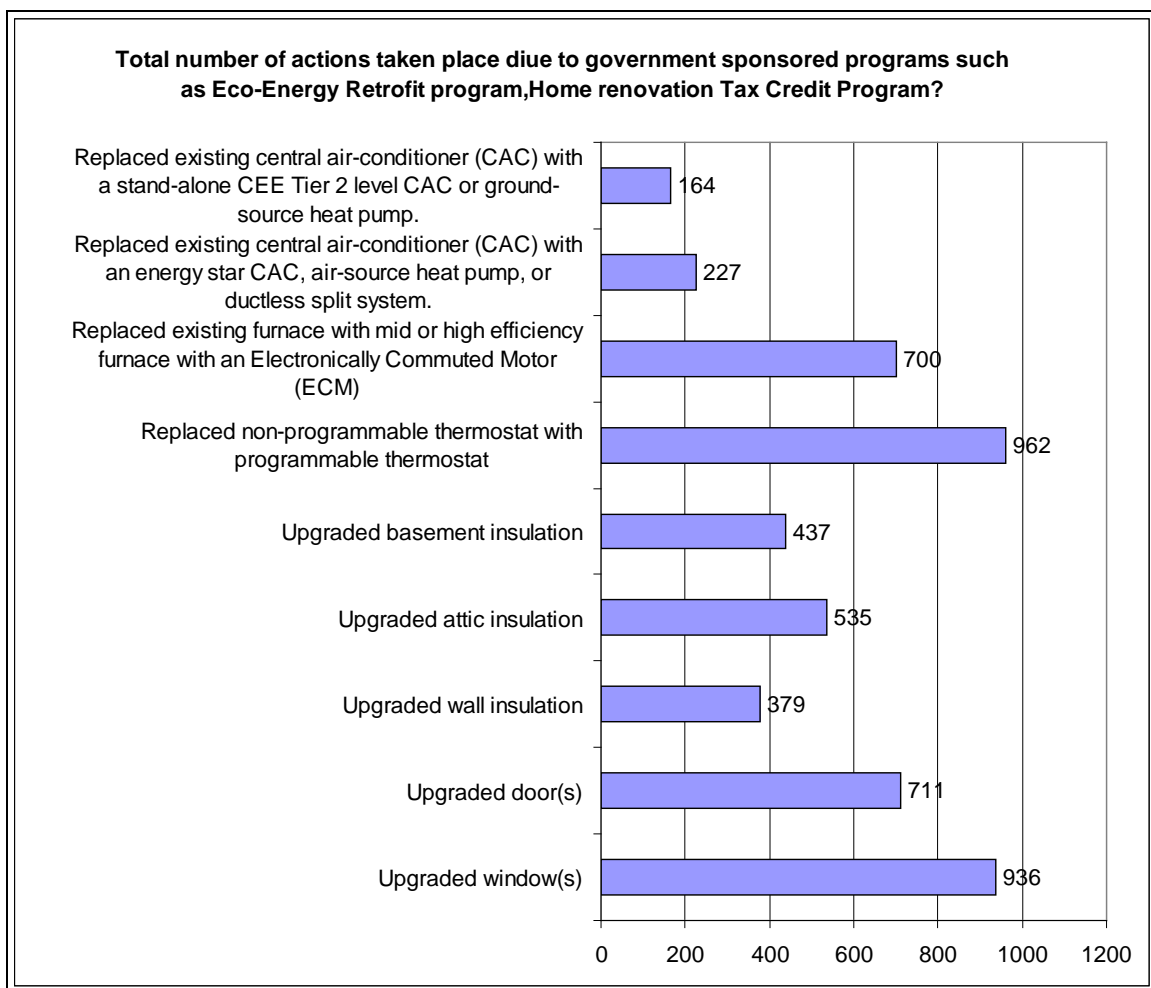
Question 20(b): If yes, please indicate which appliances you disposed of and whether you replaced the old appliances with a new one?



In which year were the actions taken as a result of the Fridge & Freezer Program?

Total Number of Appliances by Year	2006-2009	2010	2011	2012
Refrigerator	392	76	7	4
Freezer	180	30	4	1
Window Air-Conditioner	128	34	8	2
Dehumidifier	92	22	2	1

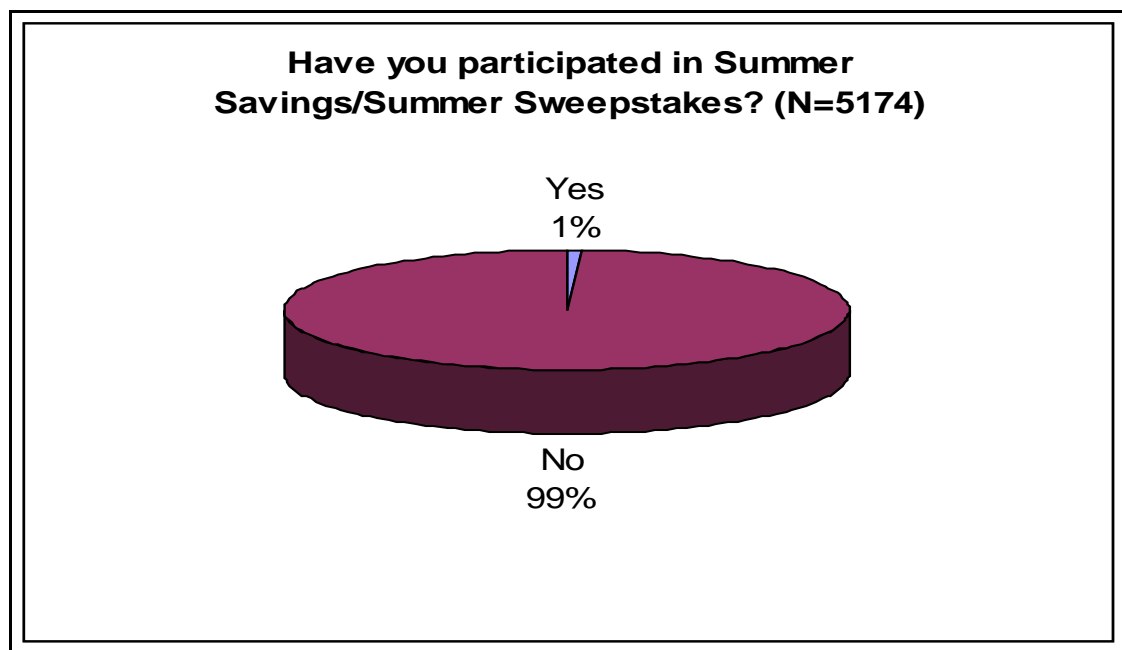
Question 21: Have you taken any actions due to government sponsored programs such as Eco-Energy Retrofit program, Ontario Energy Savings Program or the Home Renovation Tax Credit Program?



In which year did you take these actions?

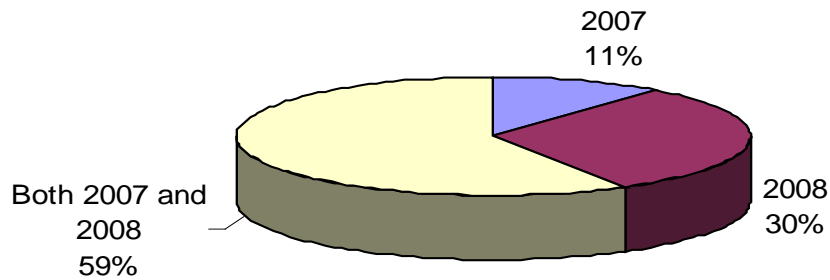
Conservation Action	2008-2009	2010	2011	2012
Upgraded window(s)	41%	26%	16%	17%
Upgraded door(s)	39%	26%	17%	18%
Upgraded wall insulation	43%	24%	16%	17%
Upgraded attic insulation	41%	28%	16%	15%
Upgraded basement insulation	34%	29%	18%	19%
Replaced non-programmable thermostat with programmable thermostat	40%	21%	16%	23%
Replaced existing furnace with mid or high efficiency furnace with an Electronically Commuted Motor (ECM)	37%	22%	21%	20%
Replaced existing central air-conditioner (CAC) with an energy star CAC, air-source heat pump, or ductless split system.	27%	24%	24%	26%
Replaced existing central air-conditioner (CAC) with a stand-alone CEE Tier 2 level CAC or ground-source heat pump.	37%	23%	20%	21%

Question 22(a): Have you participated in the Summer Savings/Summer Sweepstakes Program?



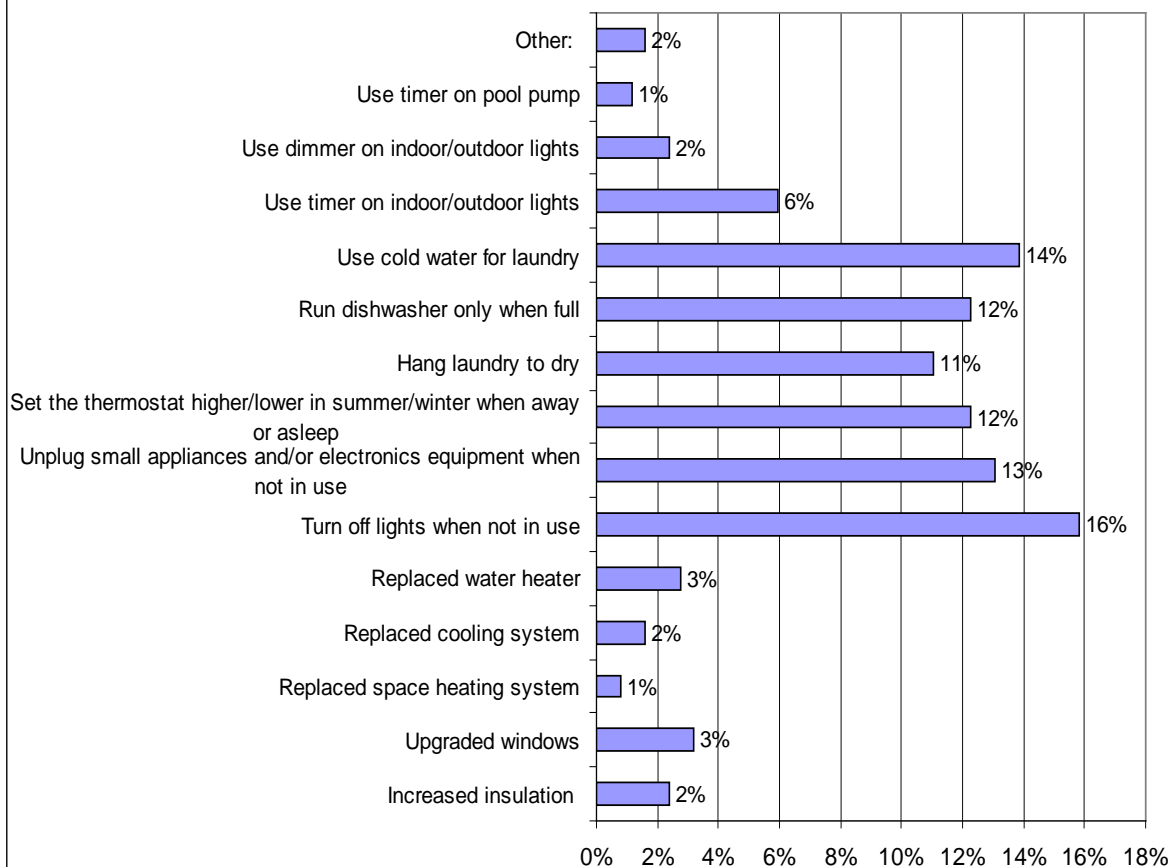
Question 22(b.i): If yes, please indicate the year(s) of participation.

If you participated in Summer Savings/Summer Sweepstakes, please indicate the years of participation (N=46)



Question 22(b.ii) What actions did you take as a part of the Summer Savings/Summer Sweepstakes program in order to reduce your electricity consumption by 10%

What actions did you take as a part of the Summer Savings/Summer Sweepstakes program in order to reduce your electricity(N=253)

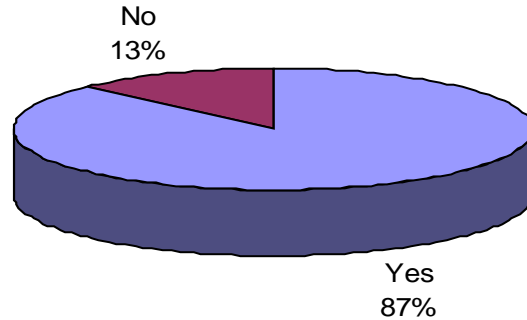


Question 23: Please indicate the number of products you purchased since 2005 WITH and WITHOUT coupons/rebates.

Please indicate how many purchased with and without coupons?	Number Purchased with Coupons or Rebates	Number Purchased without Coupons or Rebates
Lighting control products such as Motion Sensor, Timer and Dimmer Switches	815	4171
Energy Star qualified specialty CFL bulbs	3940	6586
Energy Star qualified standard CFL bulbs	7214	25422
Energy Star qualified LED bulbs	1788	6980
Energy Star qualified indoor light fixtures	550	2390
Energy Star qualified ceiling fans	326	1576
Power bars with integrated timer or automatic shutoff	240	1064
Programmable thermostats for electric baseboards	153	420
Water heater blankets for electric water heaters	61	236
Pipe Wrap for electric water heater	535	3327
Outdoor clothesline kits/Umbrella stands	257	1200
V-strip/foam tape for weather-stripping	379	2317
Door kit for weather-stripping	302	1888

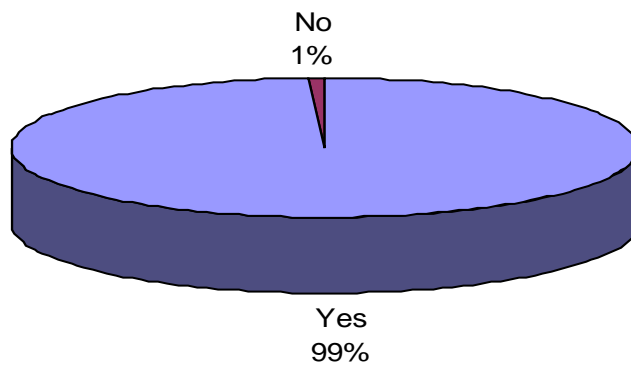
Question 24(a): Would you say that you have made adjustments to the way you use electricity as a direct result of Time of Use (TOU) Prices?

Would you say that you have made adjustments to the way you use electricity as a direct result of Time Of Use (TOU) Prices?(N=5147)

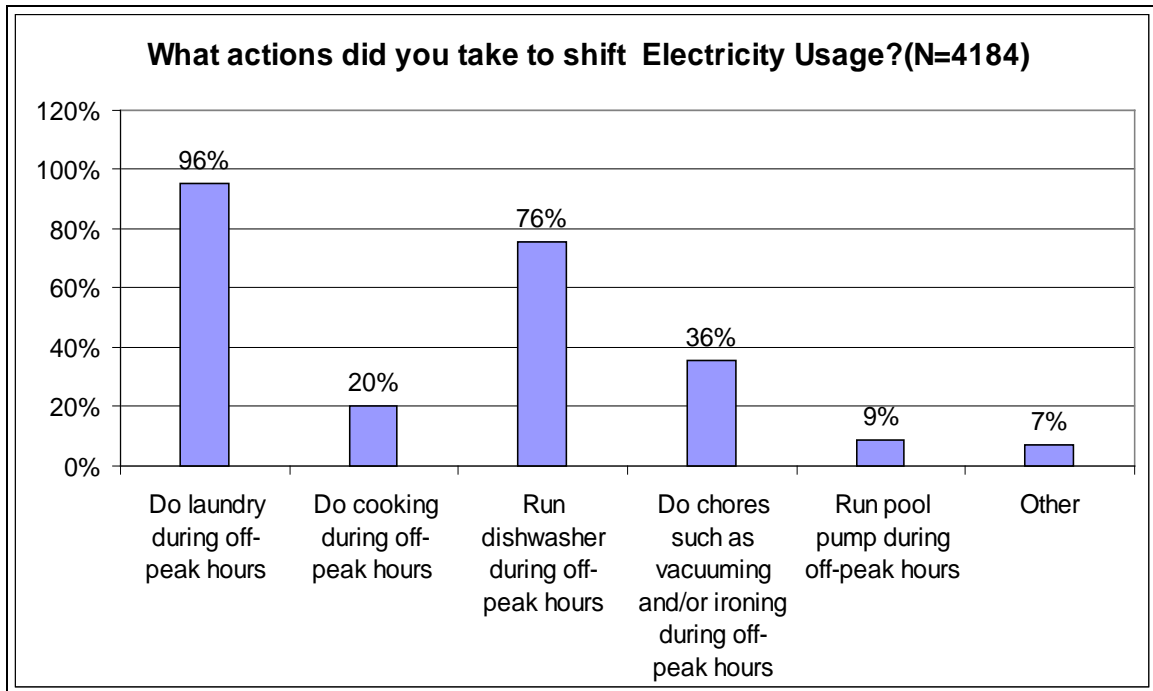


Question 24(b.i): As a result of TOU, have you shifted electricity usage from on-peak to mid-peak or off-peak periods?

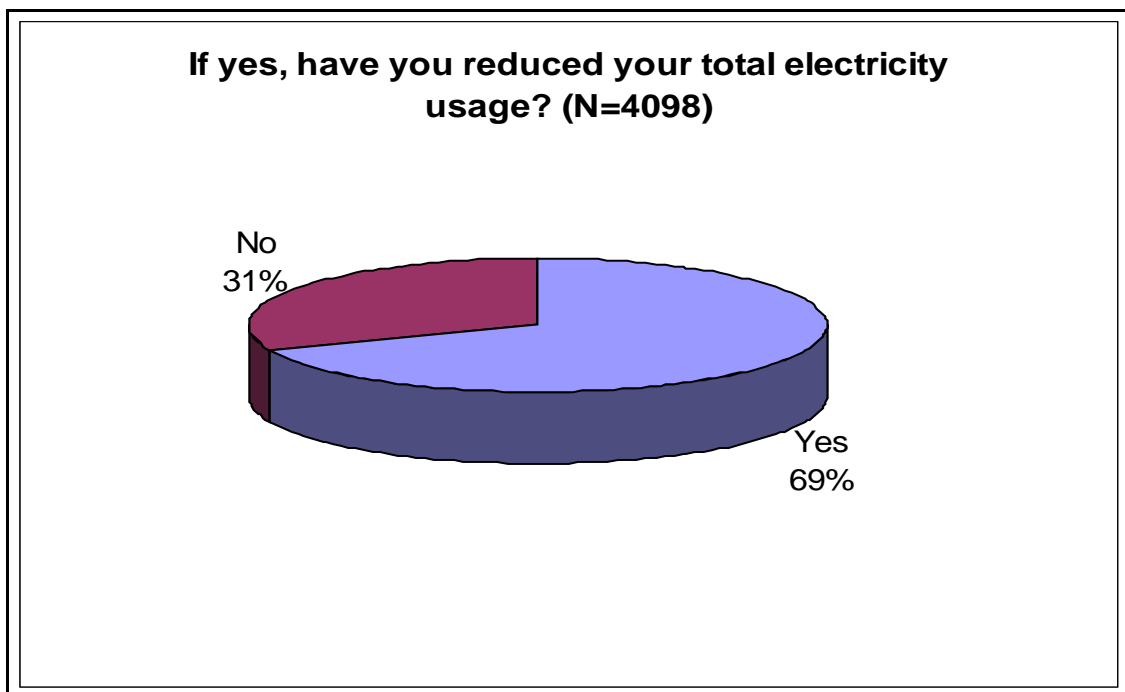
If yes, have you shifted electricity usage from on-peak to mid-peak or off-peak periods? (N=4213)



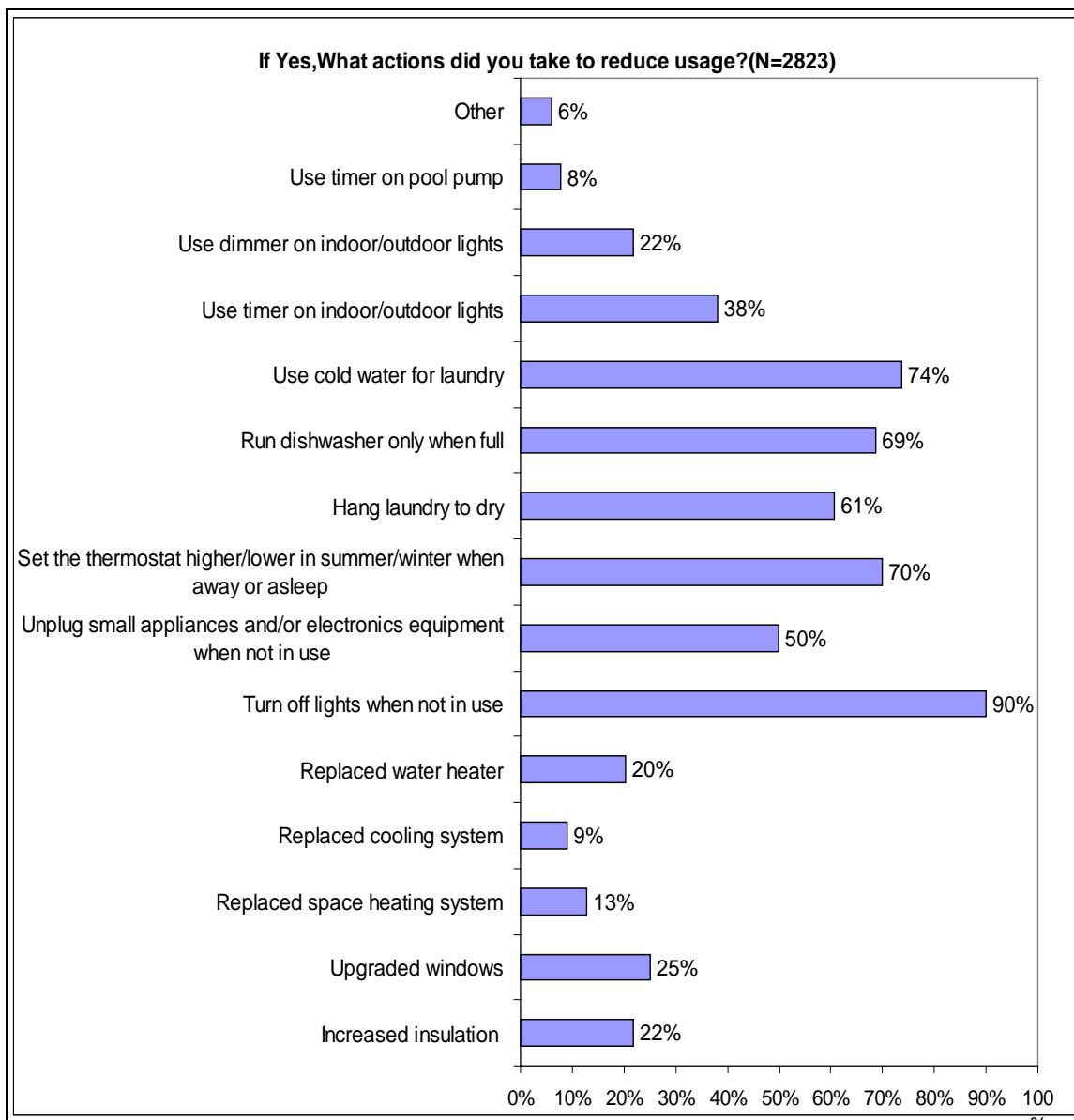
If Yes, What actions did you take to shift electricity usage?



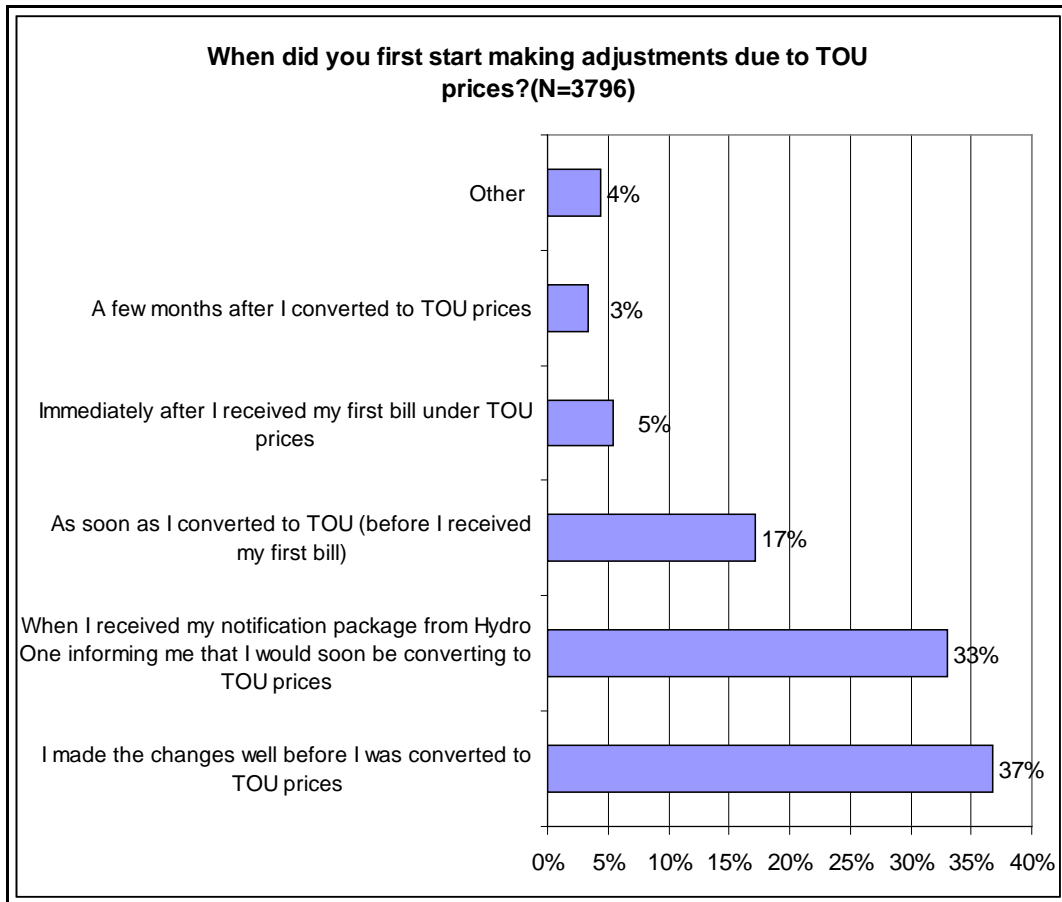
Question 24(b.ii): As a result of TOU, have you reduced your total electricity usage?



If Yes, What actions did you take to reduce electricity usage?



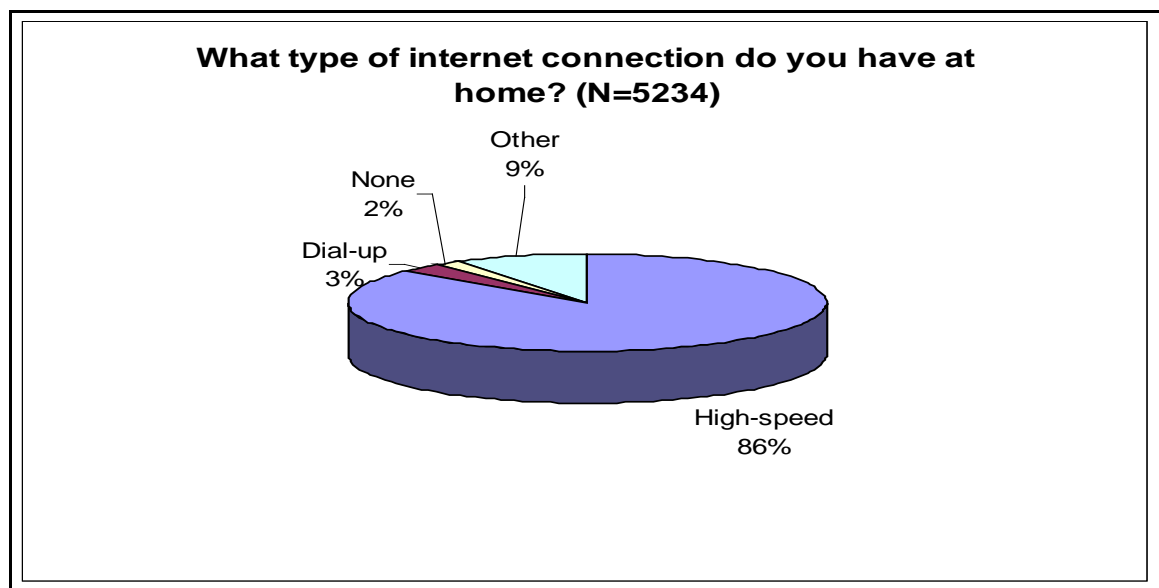
Question 24(c): When did you first start making adjustments due to TOU prices?



Question 25: What Conservation Actions have you undertaken that are not specifically related to any program/Initiative

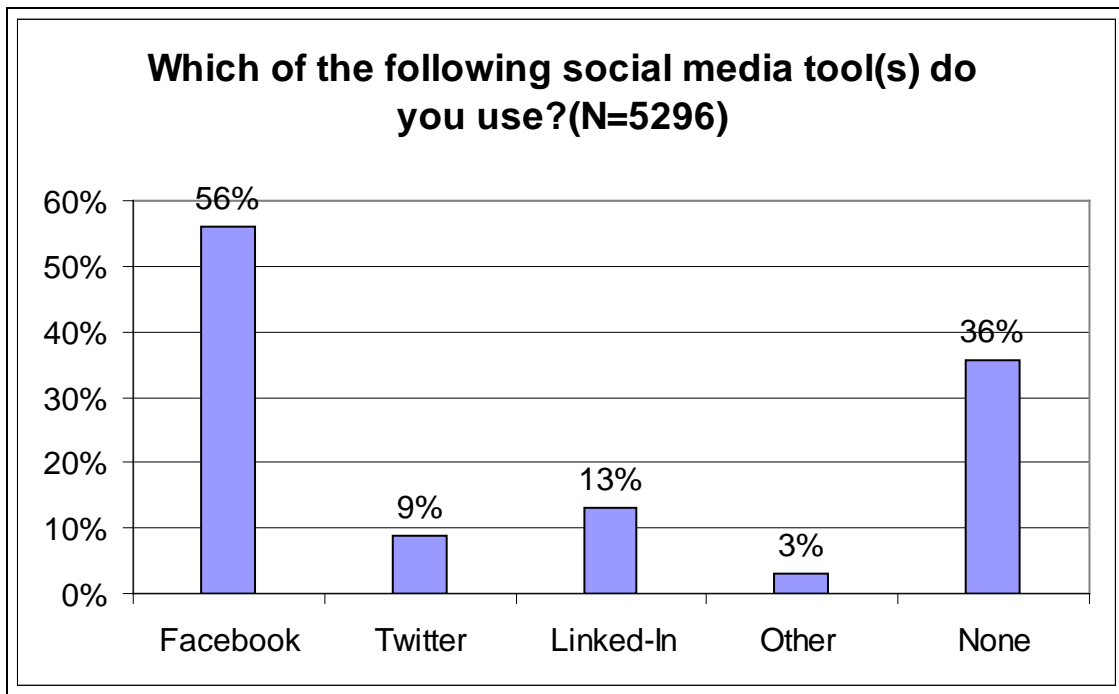
Actions	Always	Often	Sometimes	Never	N/A
Set thermostat lower/higher at night	63%	12%	8%	8%	9%
Set thermostat lower/higher when away from home	66%	13%	8%	5%	8%
Use cold water for laundry	55%	21%	15%	5%	3%
Hang laundry outside or on a rack	26%	28%	22%	17%	7%
Use timers on indoor/outdoor lights	28%	13%	14%	22%	22%
Use dimmers on indoor/outdoor lights	17%	15%	17%	23%	28%
Turn off lights when not in use	75%	22%	2%	0%	1%
Use a fan or open windows instead of AC	44%	30%	17%	4%	5%
Run dishwasher only when full	67%	10%	2%	0%	21%
Use timer on pool pump	9%	1%	1%	5%	84%
Maintain Central Air Conditioner	38%	12%	6%	2%	42%

Question 26: What type of internet connection do you have at home?

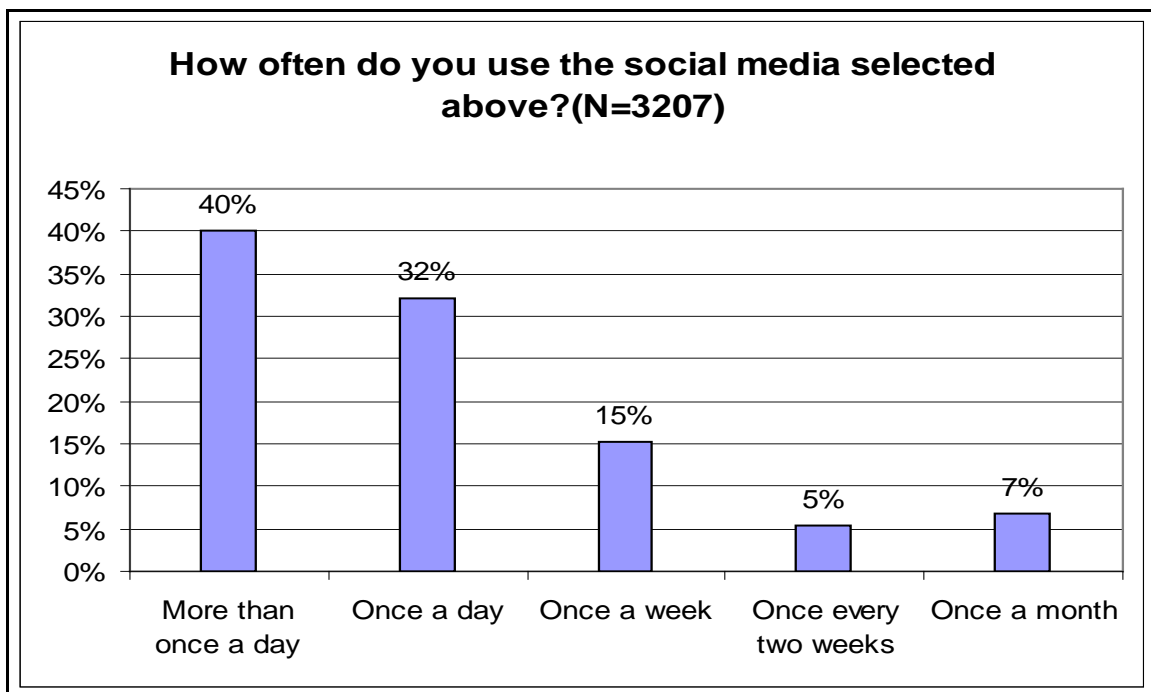


Common responses to “Other”: Wi-Fi, satellite, mobile phone, 3G, Rocket stick

Question 27: Which of the following social media tool(s) do you use?

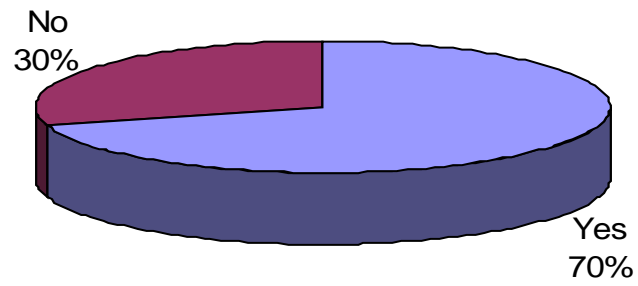


Question 27 (b) How often do you use the social media selected above?



Question 28: If necessary, may we contact you with a follow-up survey?

If necessary, may we contact you with a follow-up survey? (N=5208)



Attachment 13:

**2012 Customer Equipment & Conservation Survey
Results (Follow-Up Version)**

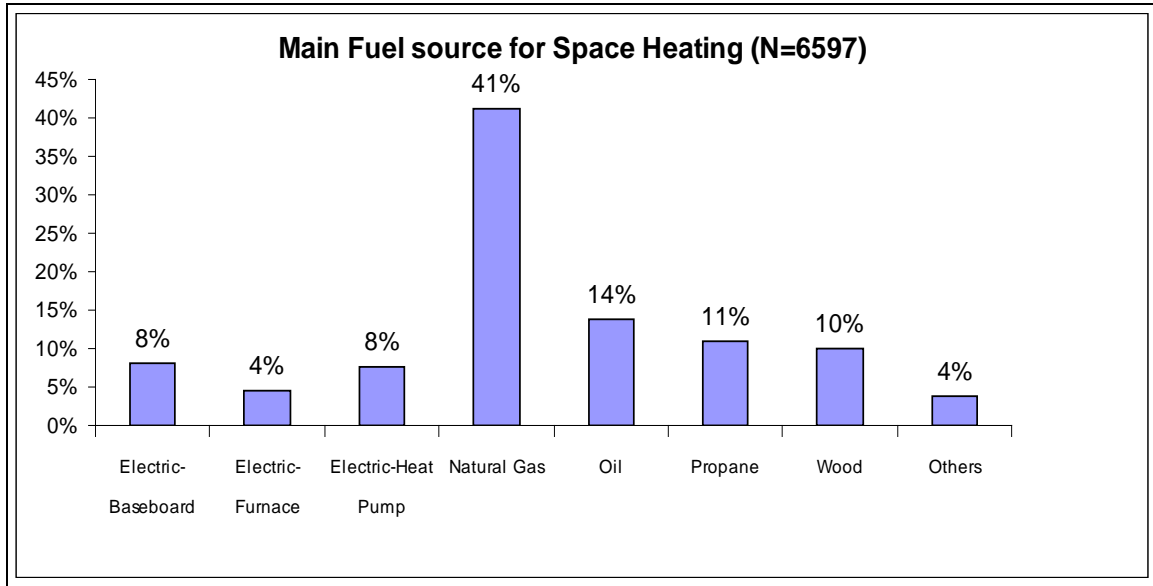
2012 Customer Equipment and Conservation Survey Follow-Up Survey to 2011 Respondents

Total number of surveys sent out: 12,383

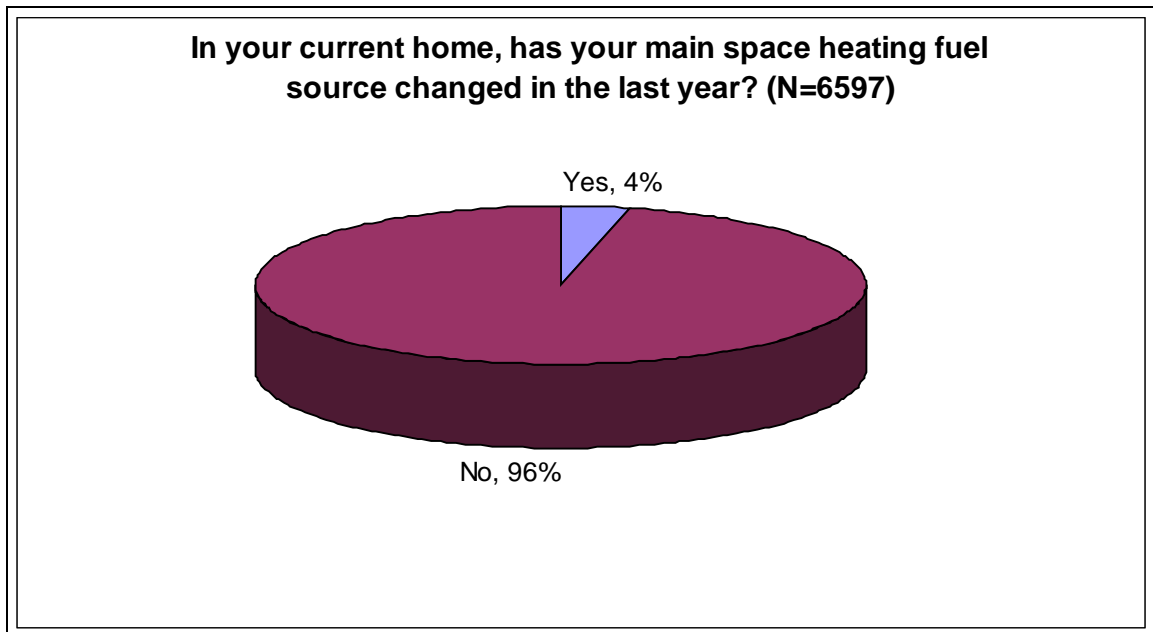
Total number of unique responses: 6,597

Response rate: 53%

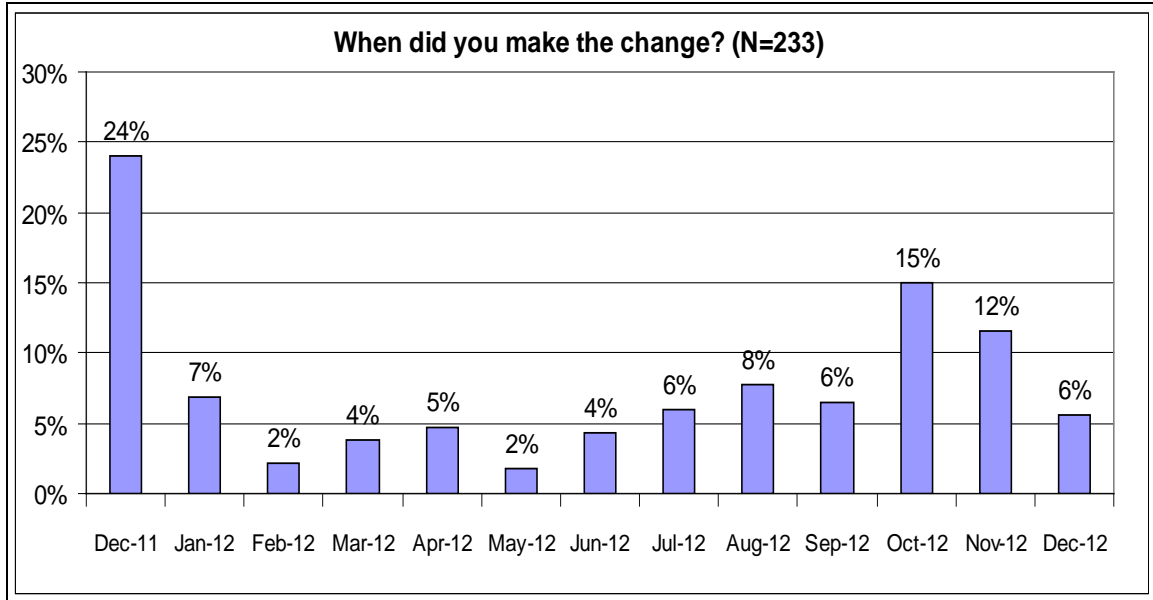
Question 1 (a): What is your main fuel source for space heating?



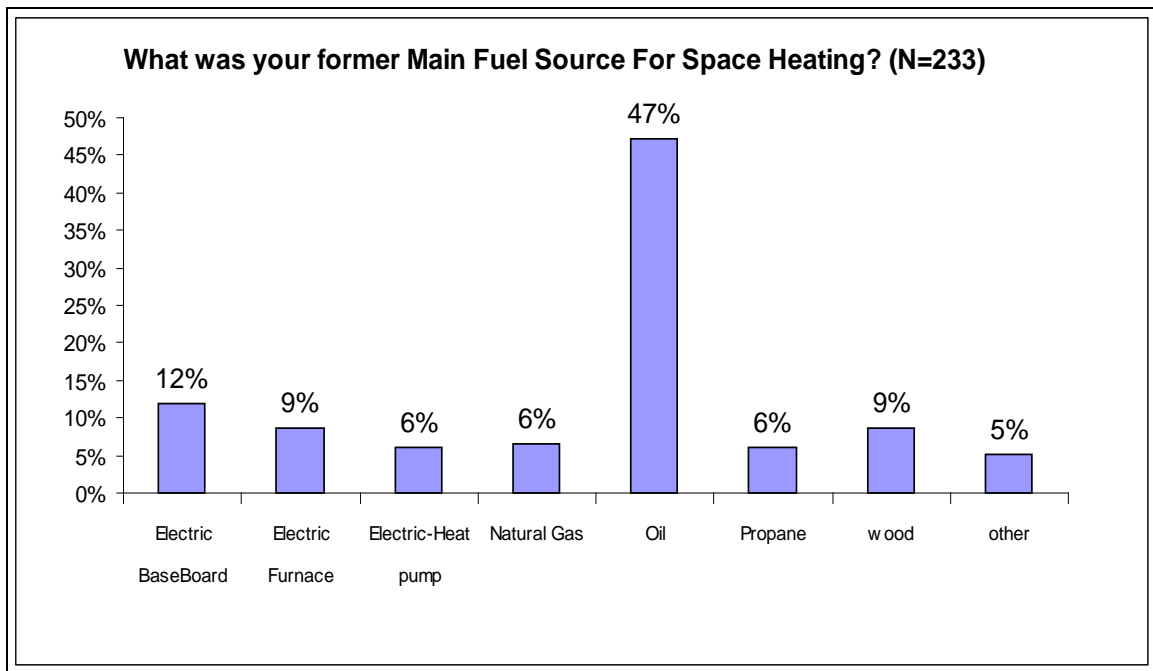
Question 1 (b): In your current home, has your main space heating fuel source changed in the last year?



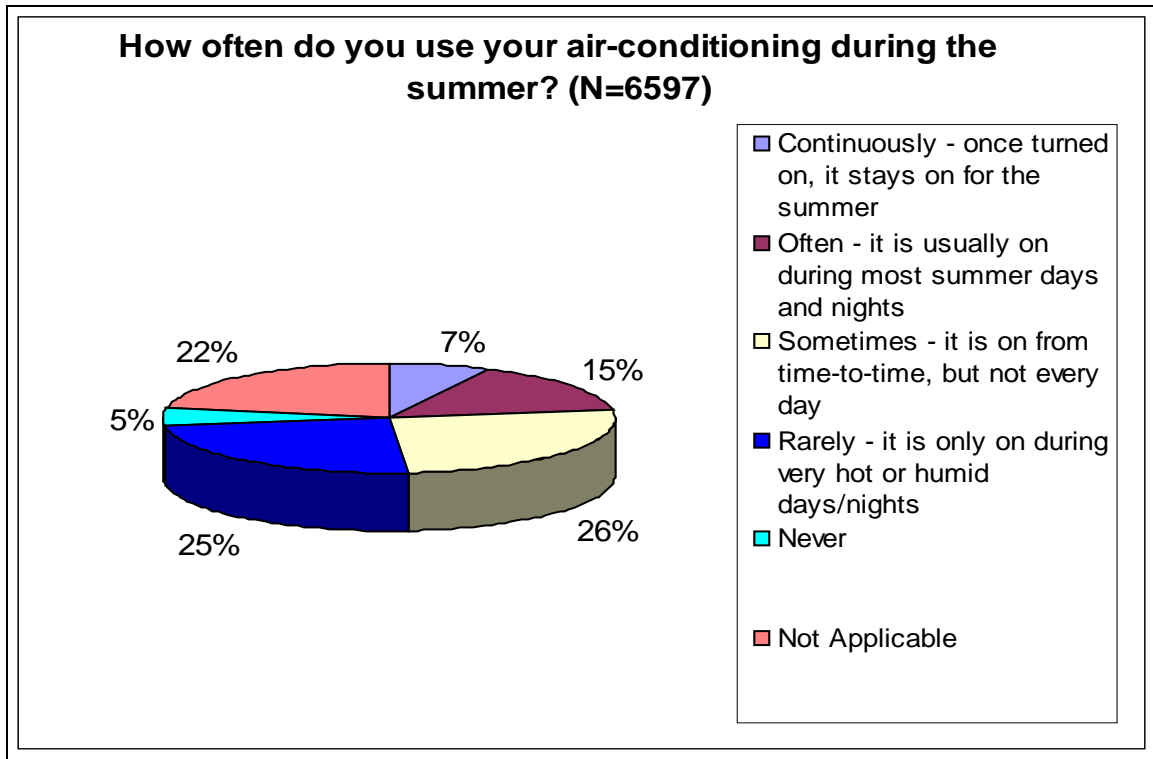
Question 1 (c.i): If yes, when did you make the change?



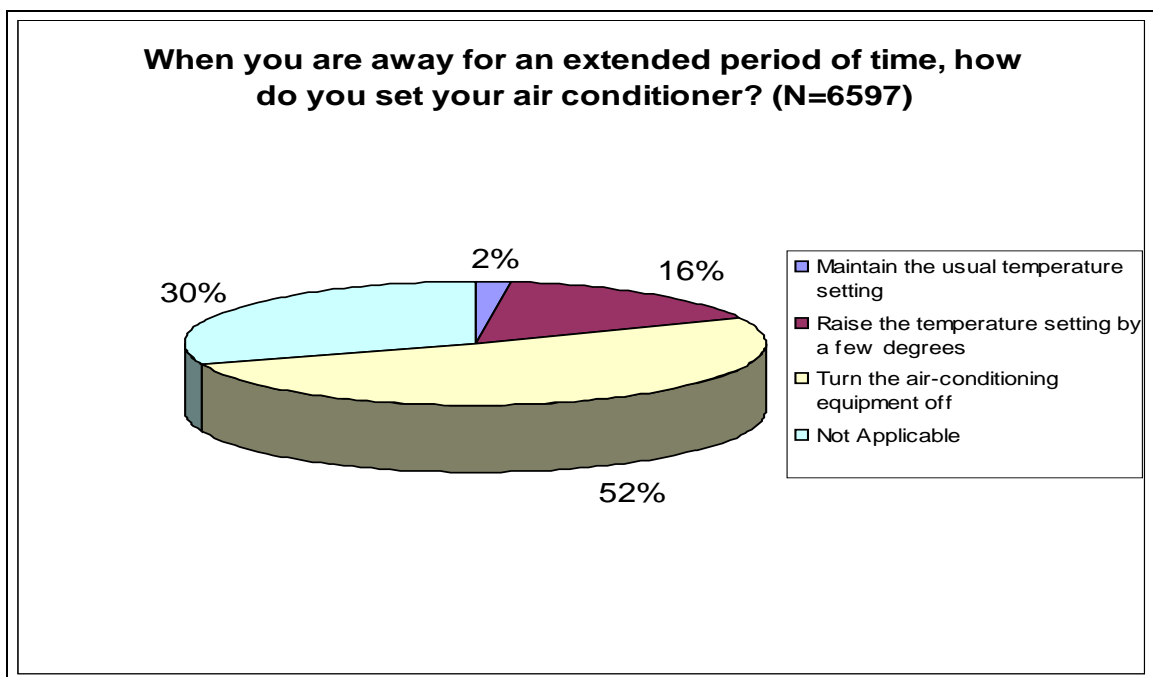
Question 1 (c.ii): What was your former Main Fuel Source For Space Heating?



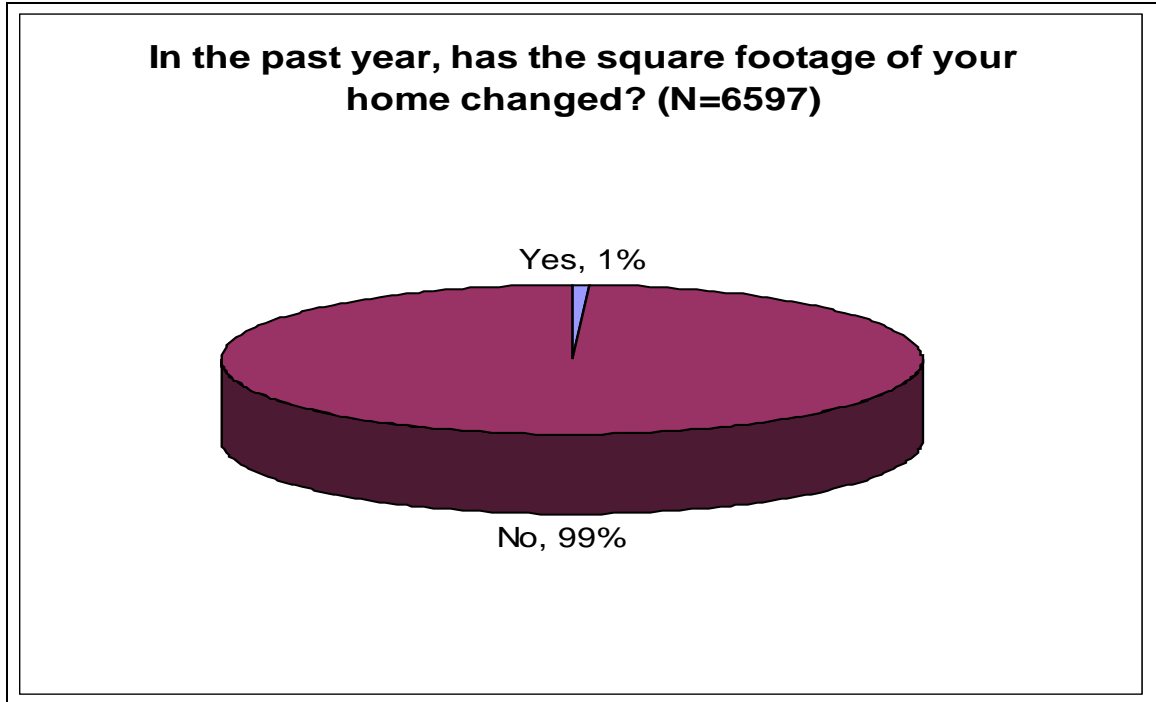
Question 2 (a): How often do you use your air-conditioning equipment during the summer?



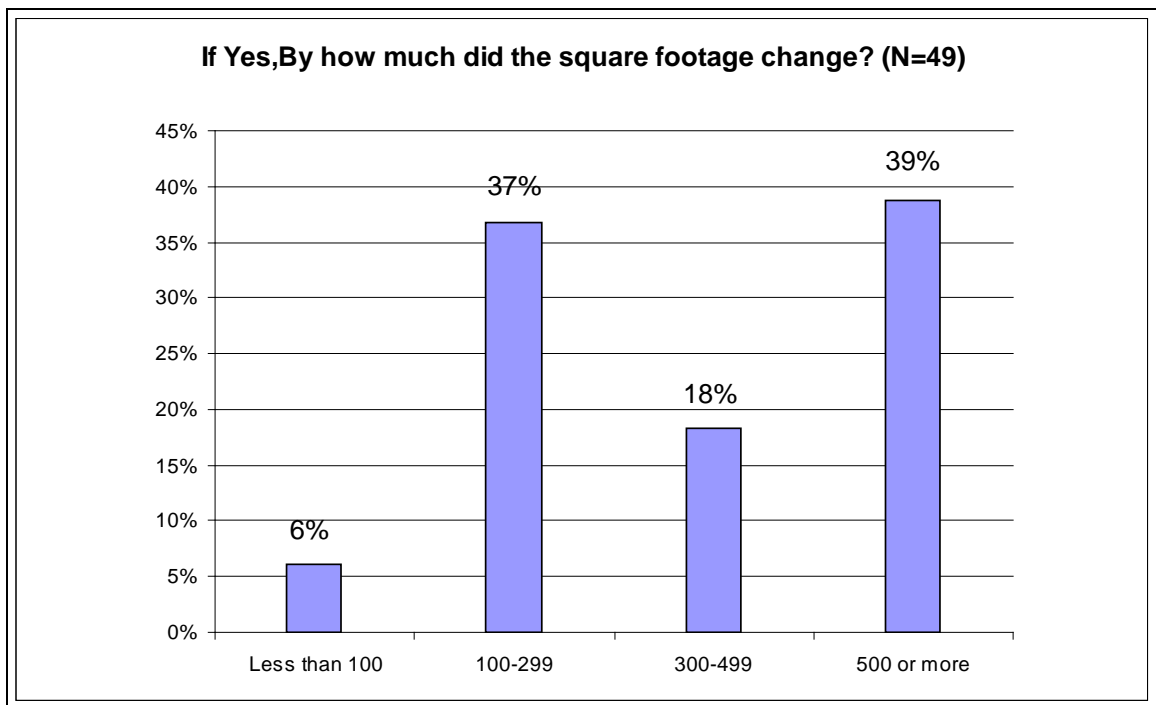
Question 2 (b): When you are away for an extended period of time, how do you set your air conditioner?



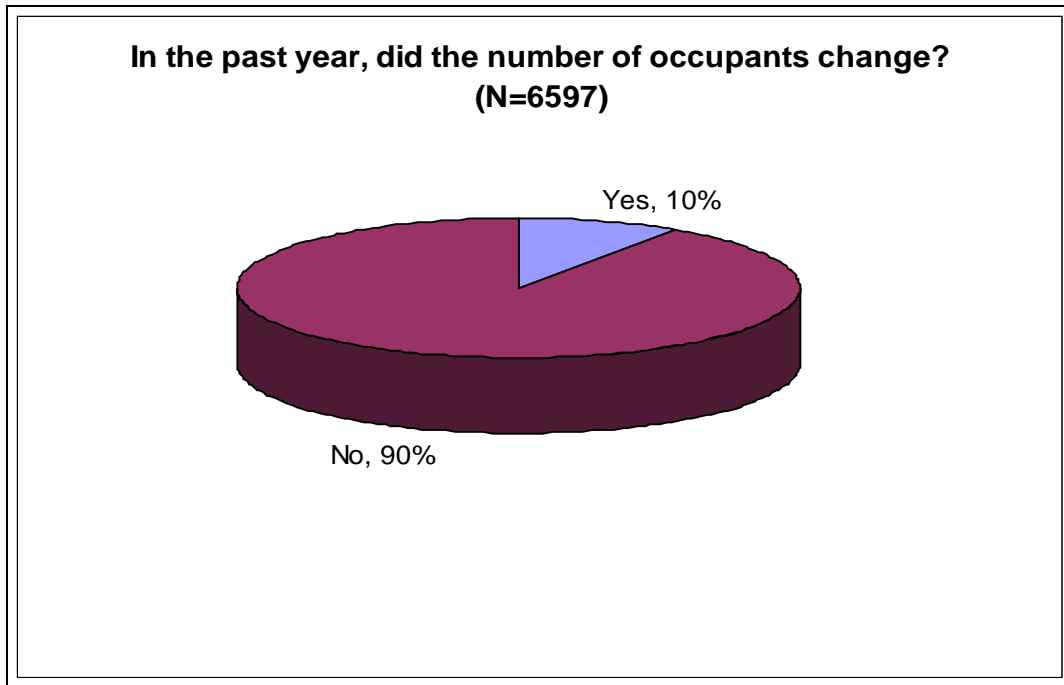
Question 3 (a): In the past year, has the square footage of your home changed?



Question 3 (a.ii): If Yes, by how much did the square footage change?

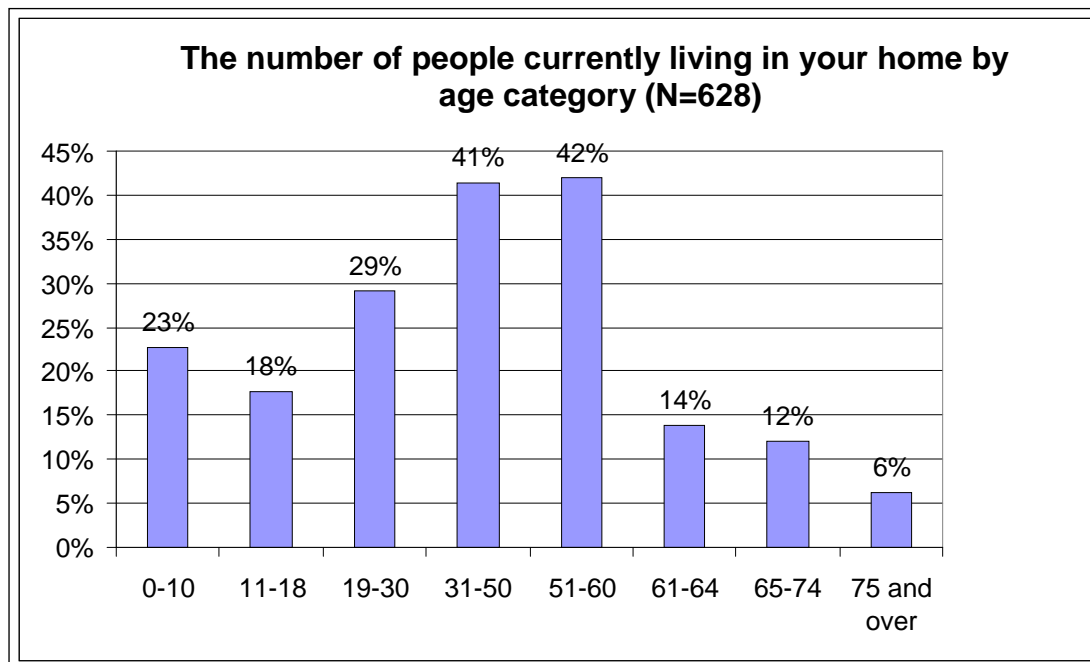


Question 3 (b): In the past year, did the number of occupants living in your home change?

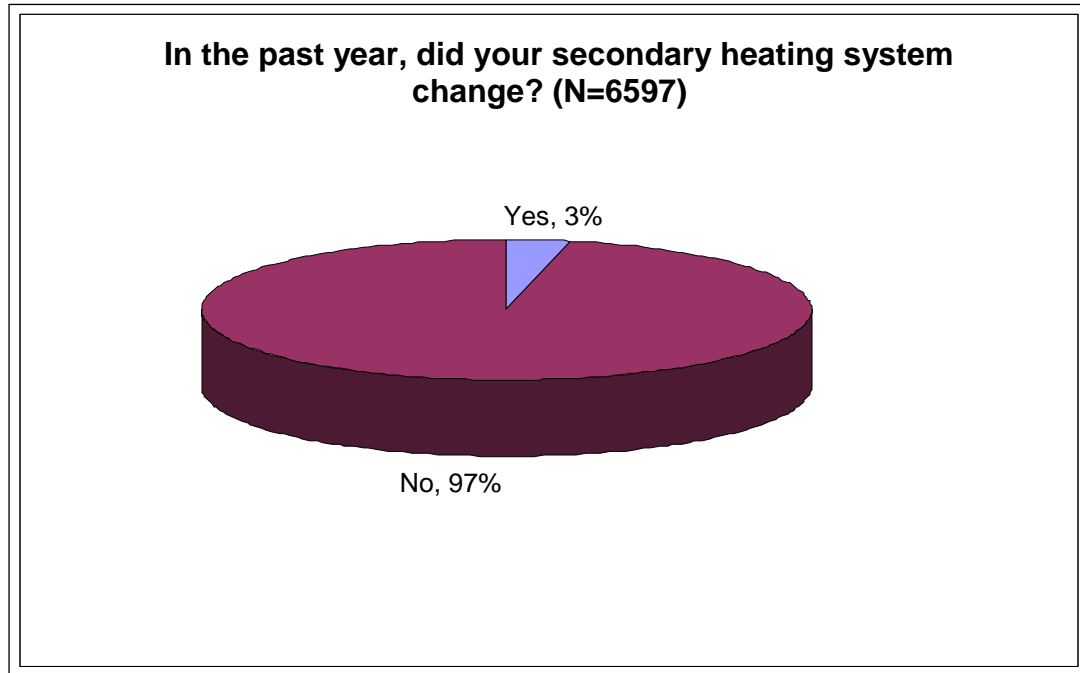


Question 3 (b.i): Please indicate the number of people currently living in your home by age category.

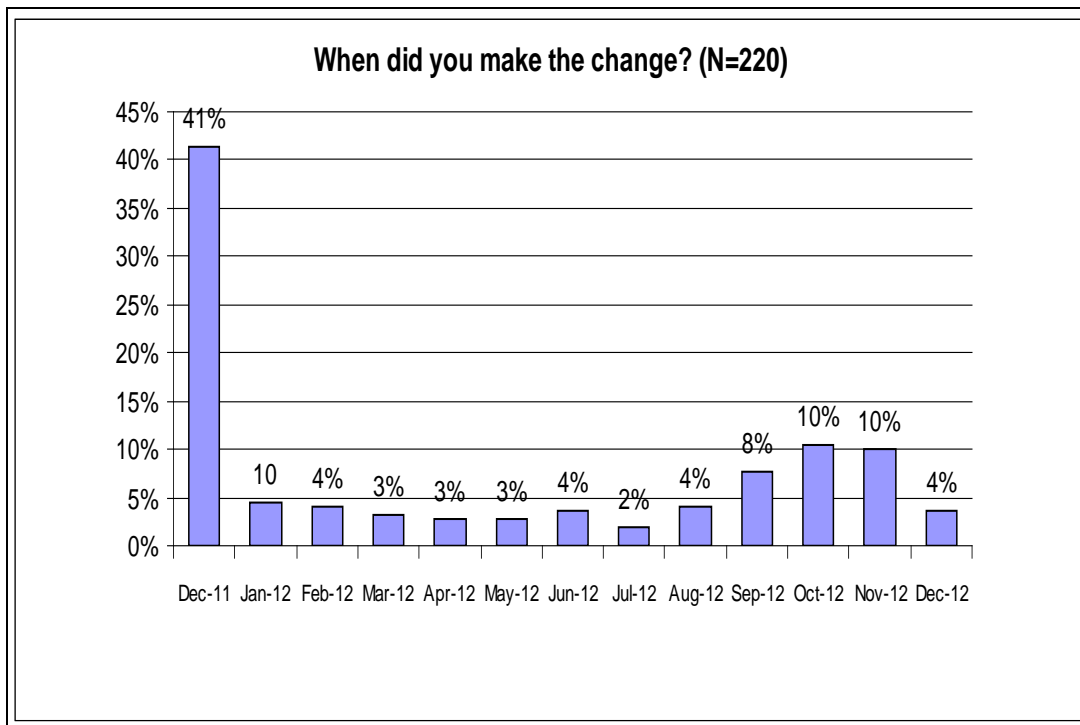
Note: Percentages represent total proportion of households with at least one person in the indicated age category.



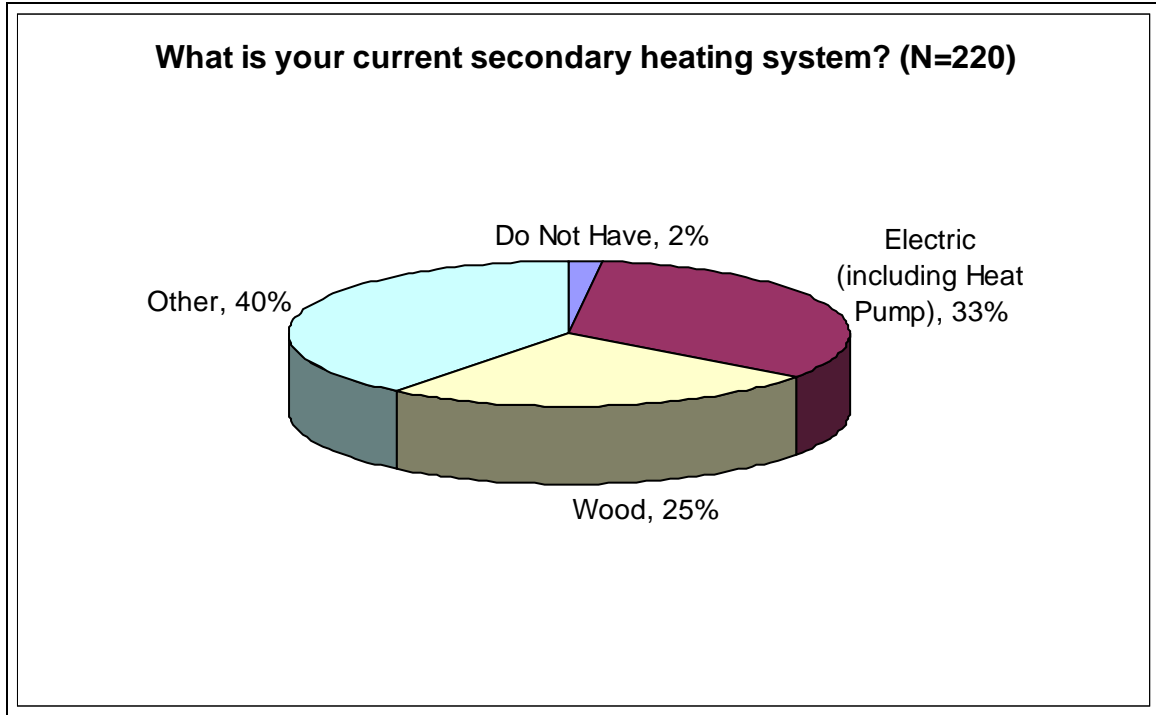
Question 3 (c): In the past year, did your secondary/supplementary heating system change?



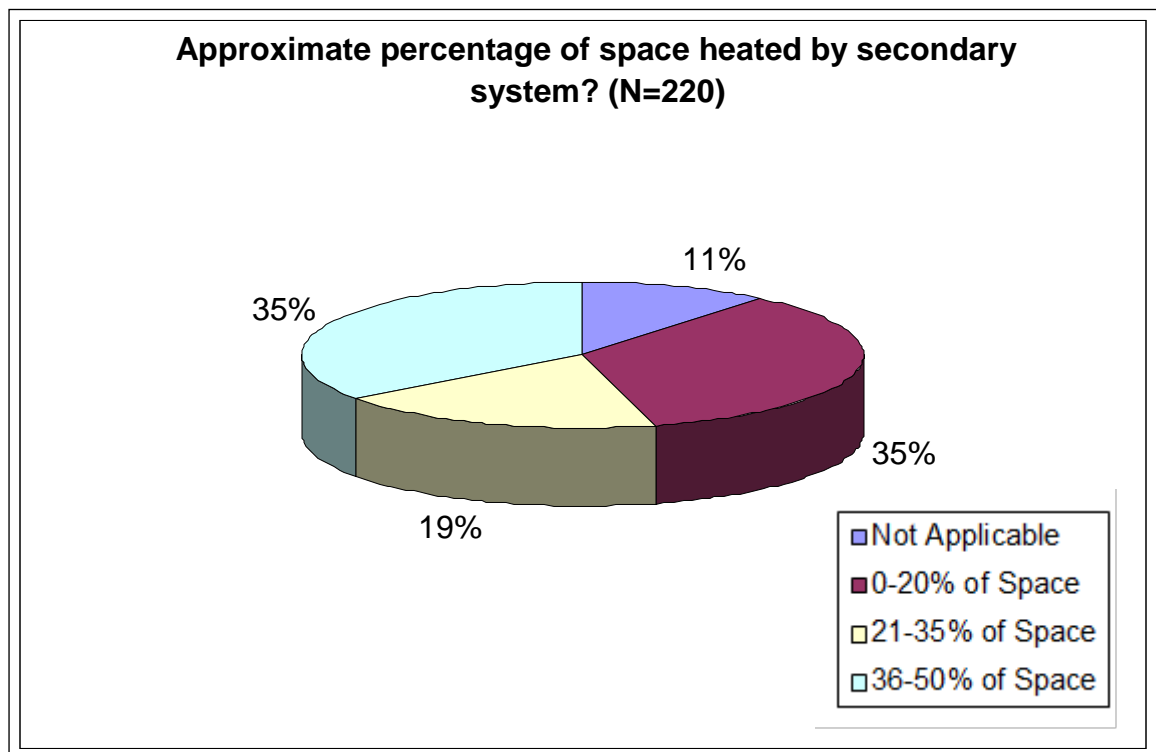
Question 3 (c.i): If yes, when did you make the change?



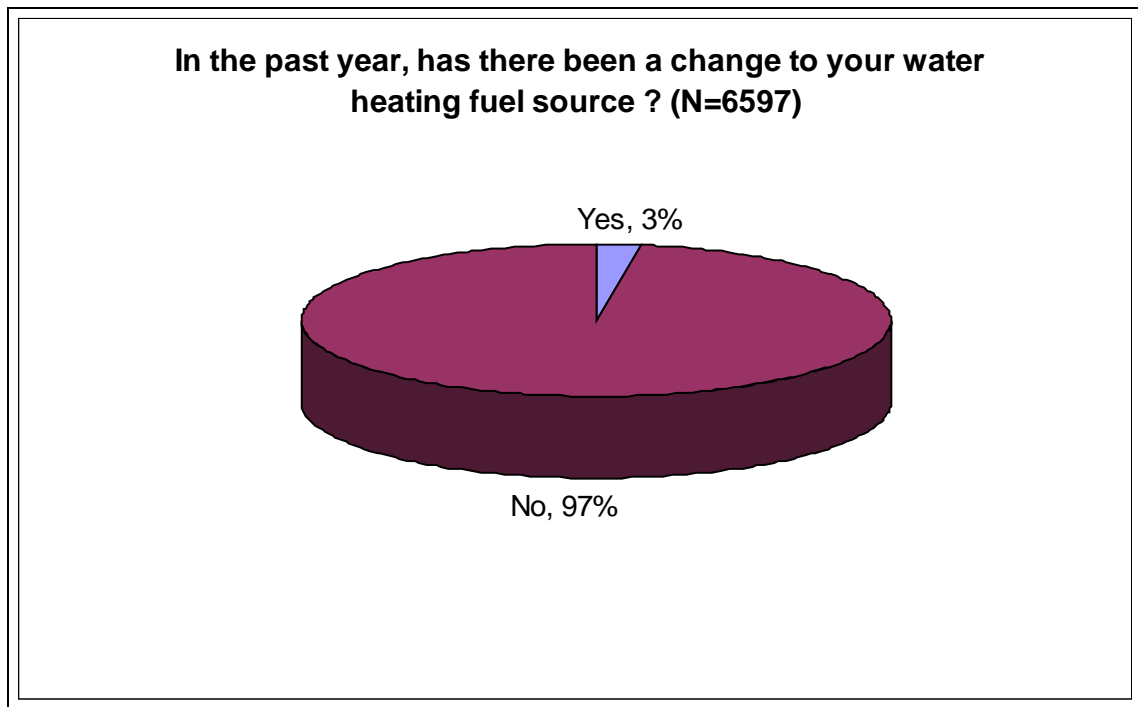
Question 3 (c.ii): What is your current secondary heating system?



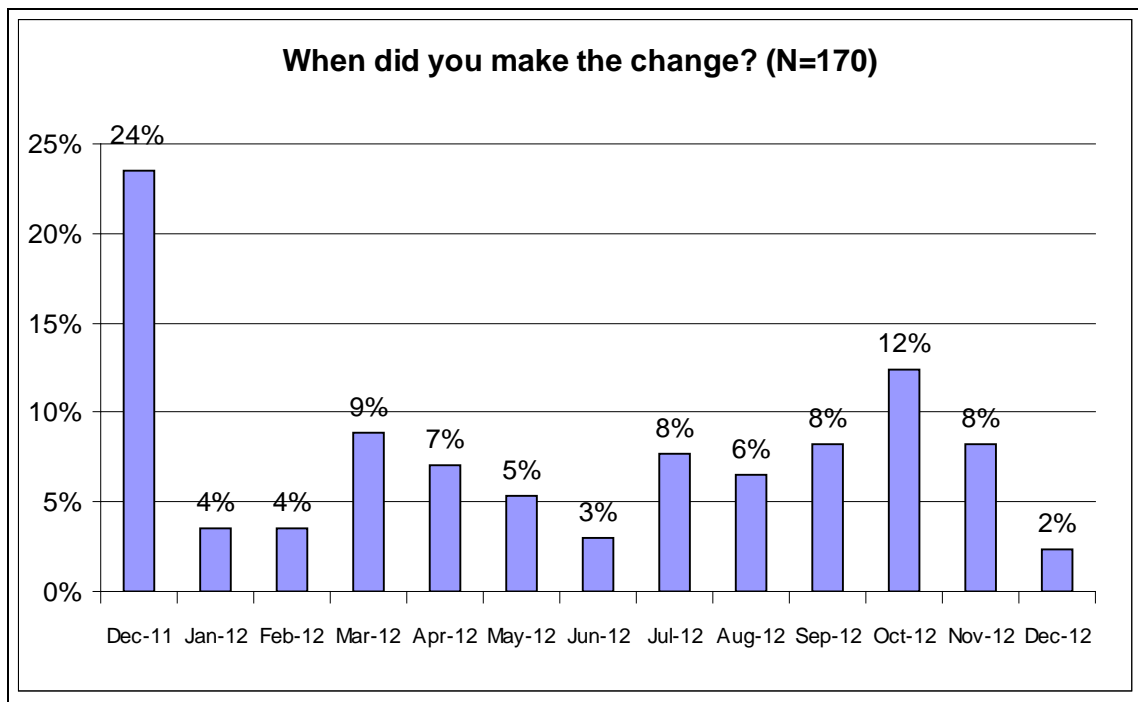
Question 3 (c.iii): Please indicate the approximate percentage of space heated by your secondary system.



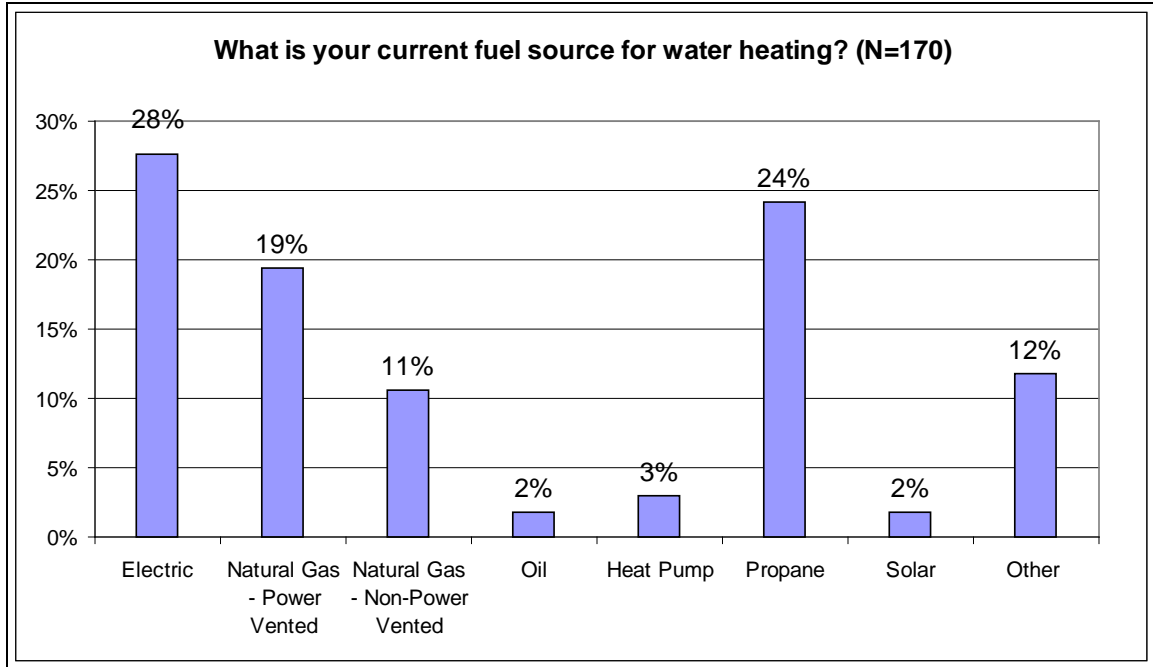
Question 3 (d): In the past year, has there been a change to your water heating fuel source?



Question 3 (d.i): If yes, when did you make the change?



Question 3 (d.ii): What is your current fuel source for water heating?



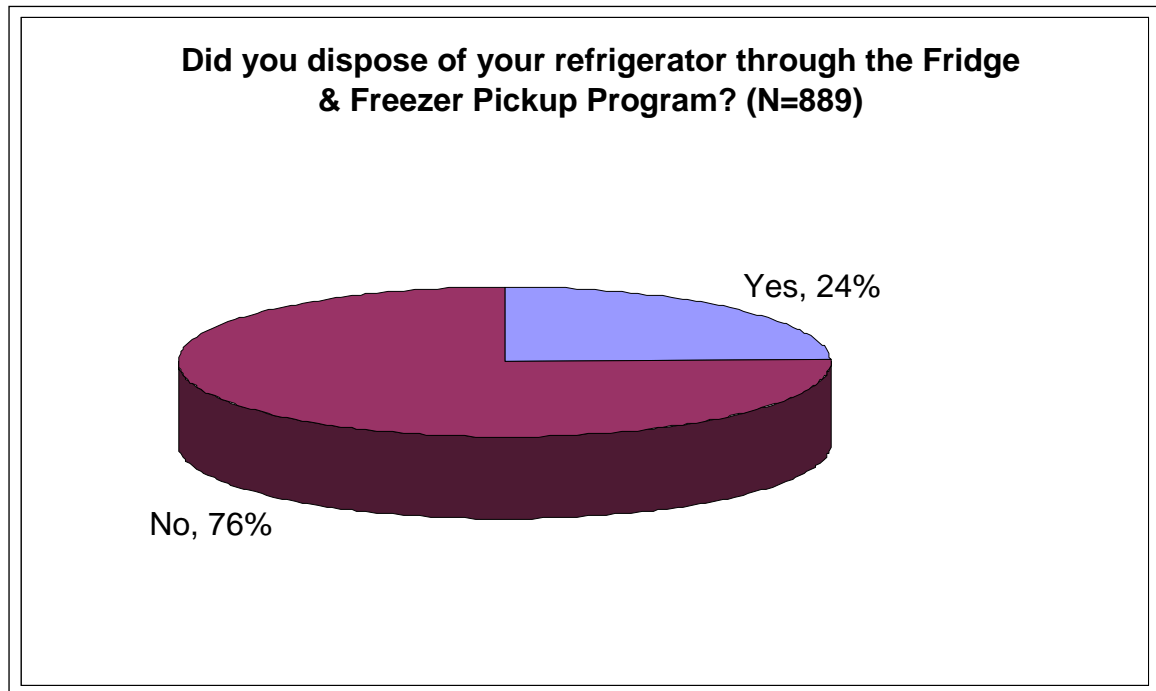
Question 4(a): In what year did you buy each of your major appliances?

Year of Purchase of Major Appliances	Before 1993 (20 years old or older)	Between 1993 and 1997 (15-19 years old)	Between 1998 and 2004 (8-14 years old)	Between 2005 and 2010	2011	2012	Came with purchase/ rental of home	Don't Know	Do Not Have	Sample Size
Full Size Refrigerator #1	3%	5%	26%	45%	7%	6%	8%	1%	0%	6597
Full Size Refrigerator #2	4%	4%	9%	12%	2%	1%	2%	1%	65%	6596
Stand-Alone Freezer #1	11%	8%	19%	29%	5%	3%	2%	2%	20%	6597
Stand-Alone Freezer #2	2%	1%	3%	3%	1%	1%	0%	1%	89%	6596
Mini/Bar Fridge #1	1%	2%	5%	13%	2%	2%	1%	1%	73%	6596
Mini/Bar Fridge #2	0%	0%	1%	1%	0%	0%	0%	0%	97%	6596
Top Load Washing Machine	3%	6%	16%	17%	3%	3%	5%	1%	47%	6597
Front Load Washing machine	0%	1%	7%	30%	6%	4%	2%	1%	50%	6596
Dishwasher	3%	4%	17%	35%	7%	5%	9%	1%	19%	6597

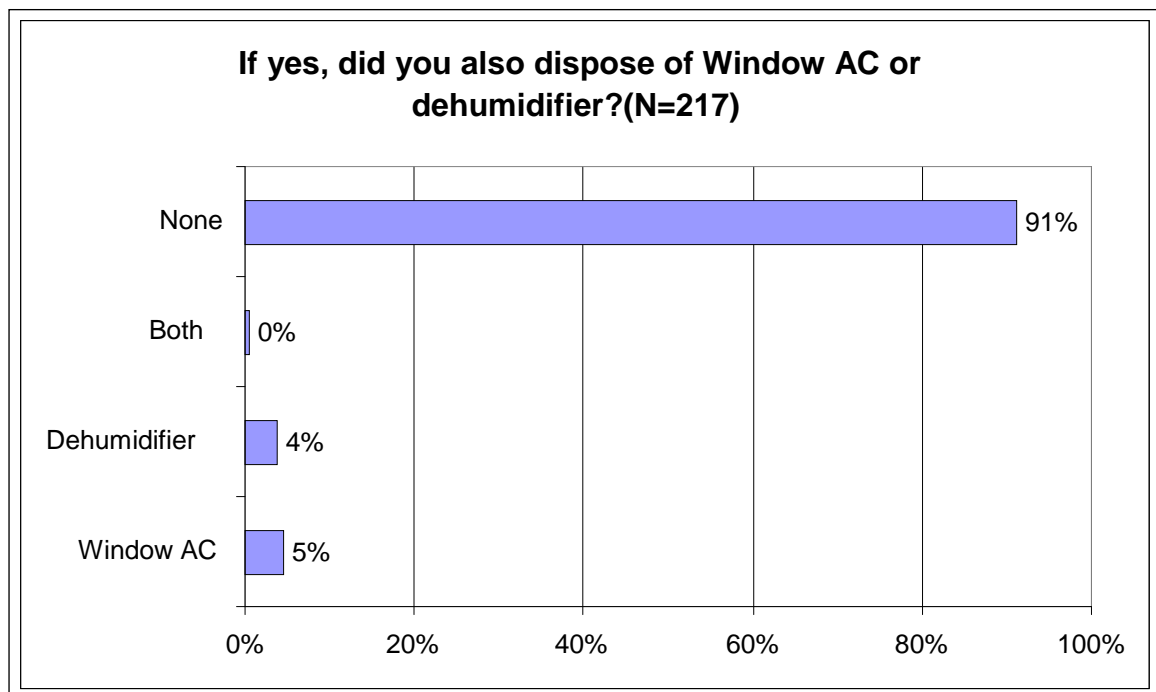
Question 4 (b): In the past year, have you purchased, disposed of and/or replaced any of the following?

Appliance	Purchased Without Disposing of an Old One	Disposed of and REPLACED with a New One	Disposed of and DID NOT REPLACE with a New One	Not Applicable
Full Size Refrigerator	4%	11%	2%	83%
Stand-Alone Freezer	3%	6%	2%	89%
Mini/Bar Fridge	2%	1%	1%	96%
Top Load Washing Machine	1%	7%	2%	91%
Front Load Washing Machine	2%	5%	1%	92%
Electric Clothes Dryer	2%	10%	1%	88%
Dishwasher	2%	9%	1%	88%
Electric Furnace	0%	1%	0%	98%
Non-Electric Furnace	1%	4%	1%	95%
Central Air-Conditioner	2%	3%	0%	95%
Heat Pump	1%	1%	0%	98%
Window (or Room) Air-Conditioner	2%	1%	1%	96%
Electric Range/Stove	1%	9%	1%	89%
Hot Tub (with Electric Heater)	1%	0%	1%	98%

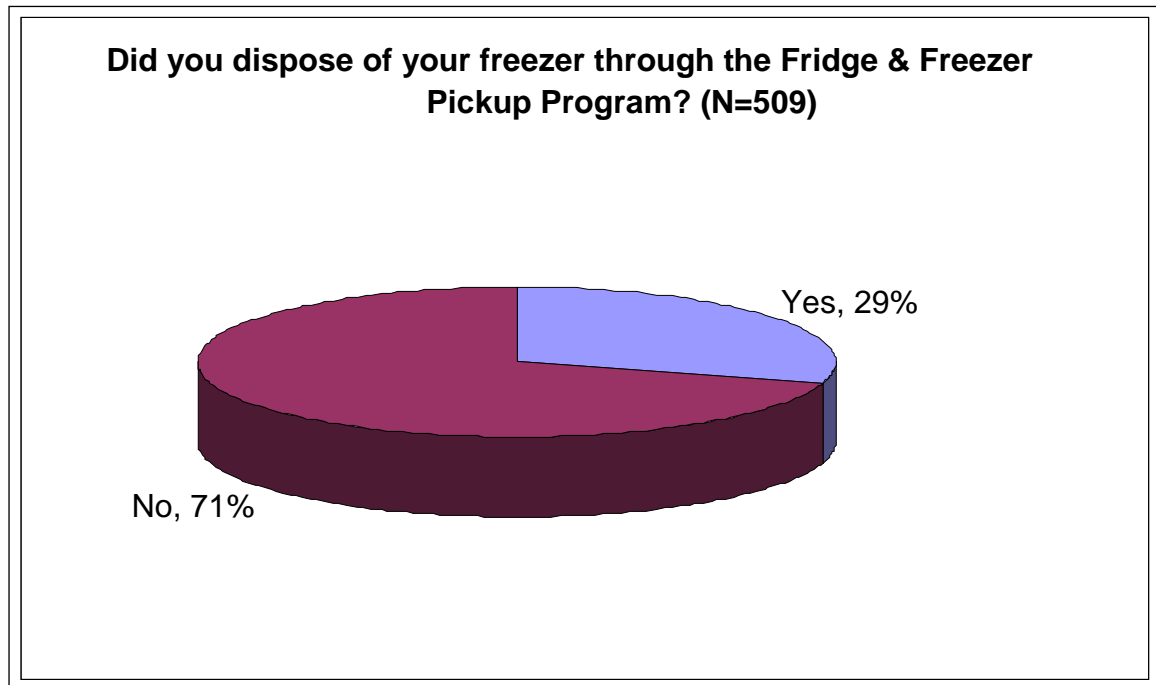
Question 4 (b.i): Did you dispose of your refrigerator through the Fridge & Freezer Pickup Program?



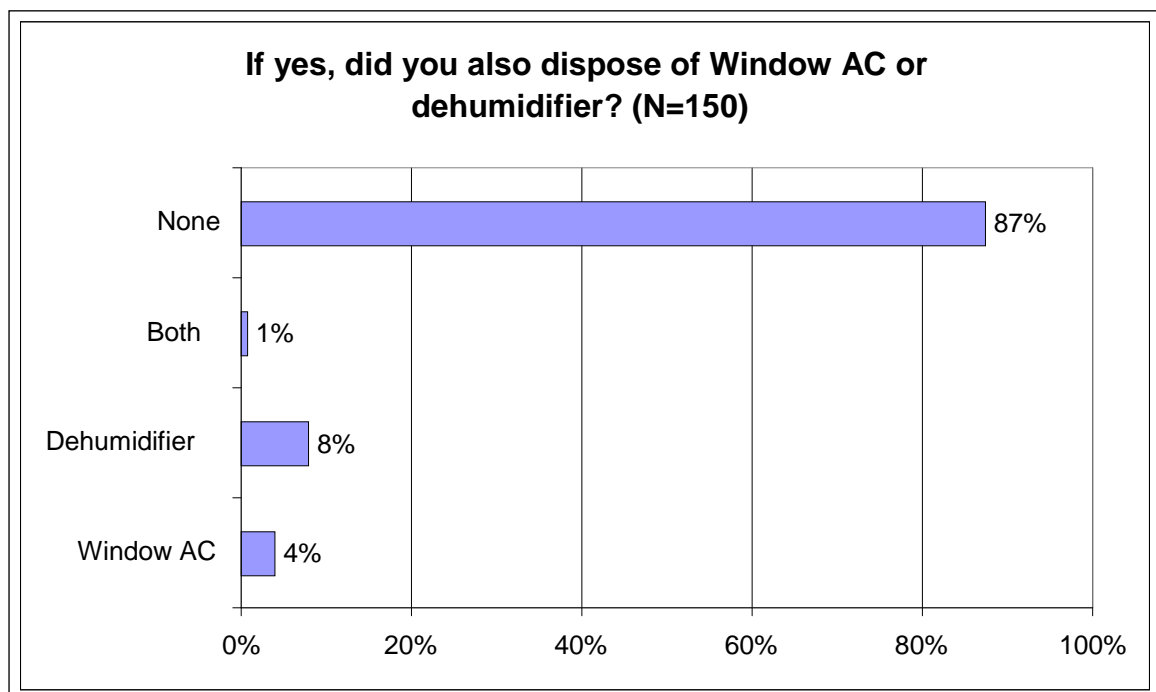
If yes, did you also dispose of Window Air Conditioner and/or dehumidifier?



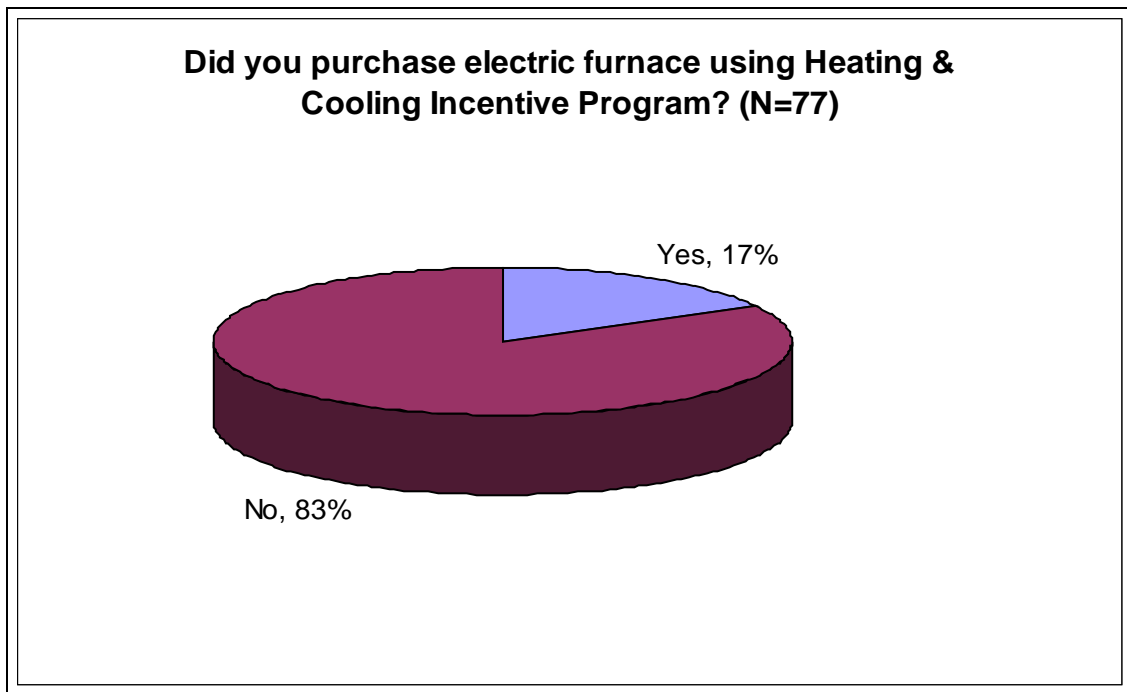
Question 4 (b.ii): Did you dispose of your freezer through the Fridge & Freezer Pickup Program?



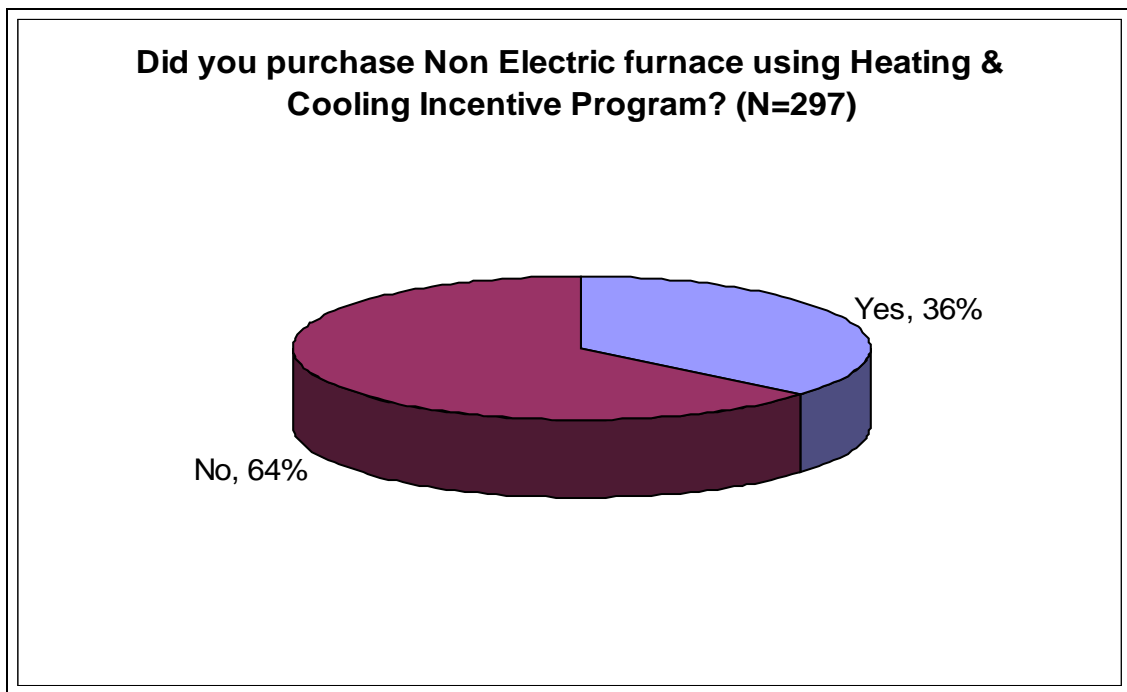
If yes, did you also dispose of a Window Air Conditioner and/or dehumidifier?



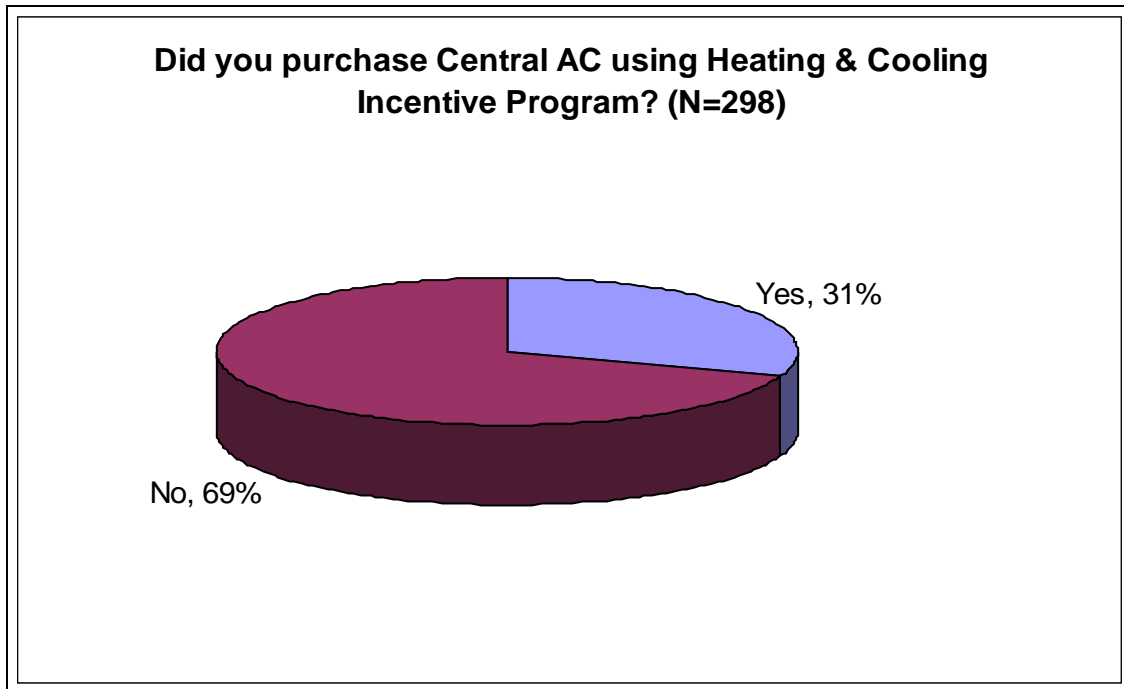
Question 4 (b.iii): Did you purchase your electric furnace as part of the Heating & Cooling Incentive Program?



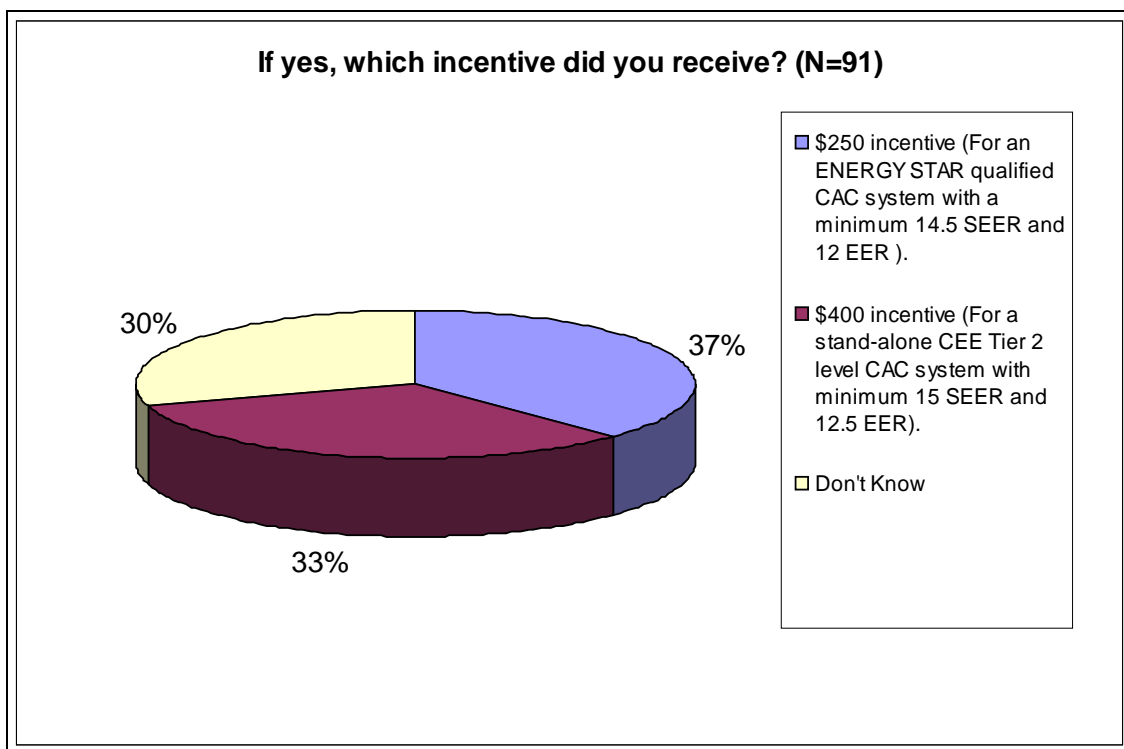
Question 4(b.iv): Did you purchase your Non Electric furnace as part of the Heating & Cooling Incentive Program?



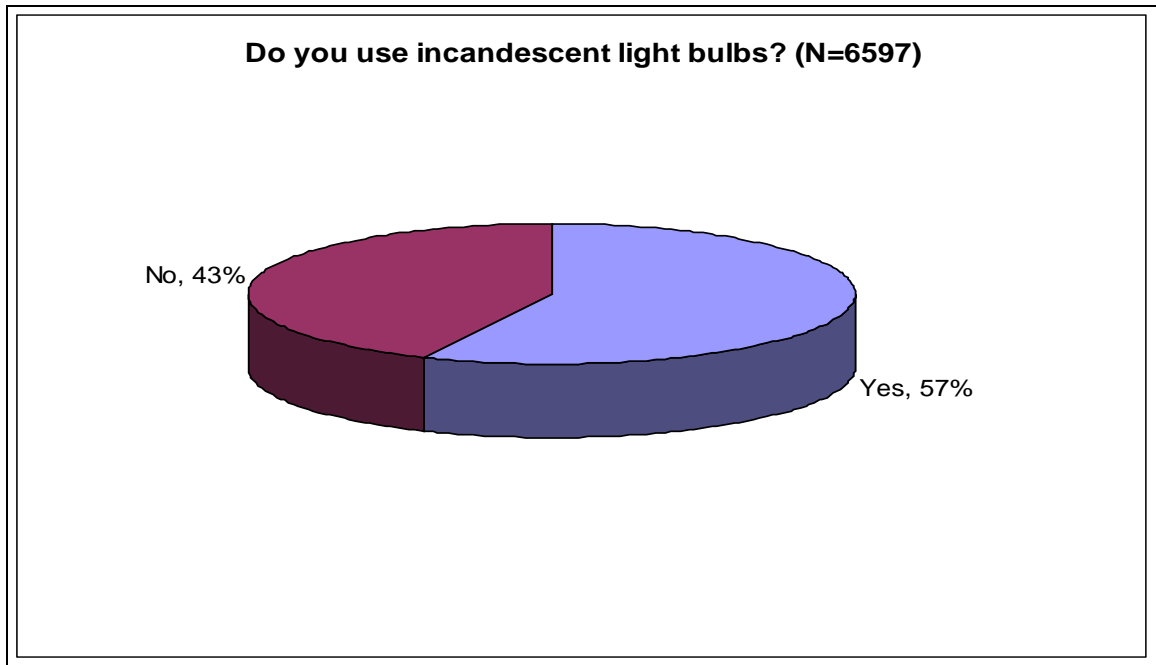
Question 4(b.v): Did you purchase your Central Air Conditioner as part of the Heating & Cooling Incentive Program?



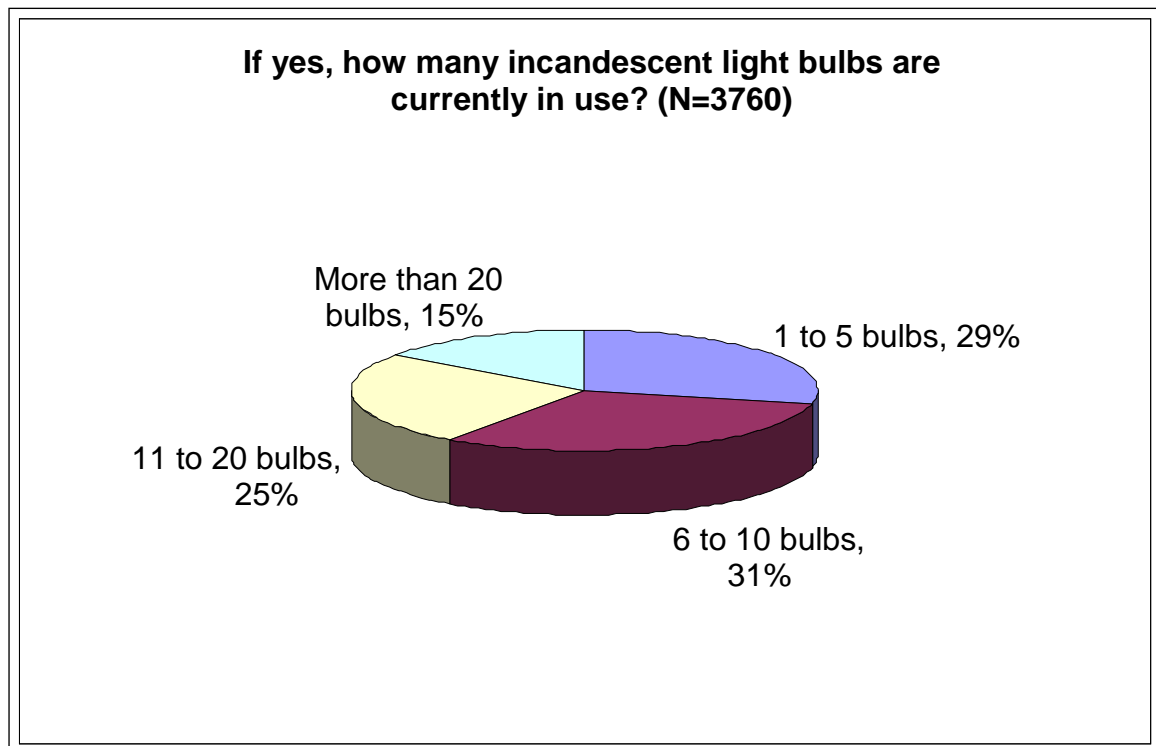
If yes, which incentive did you receive?



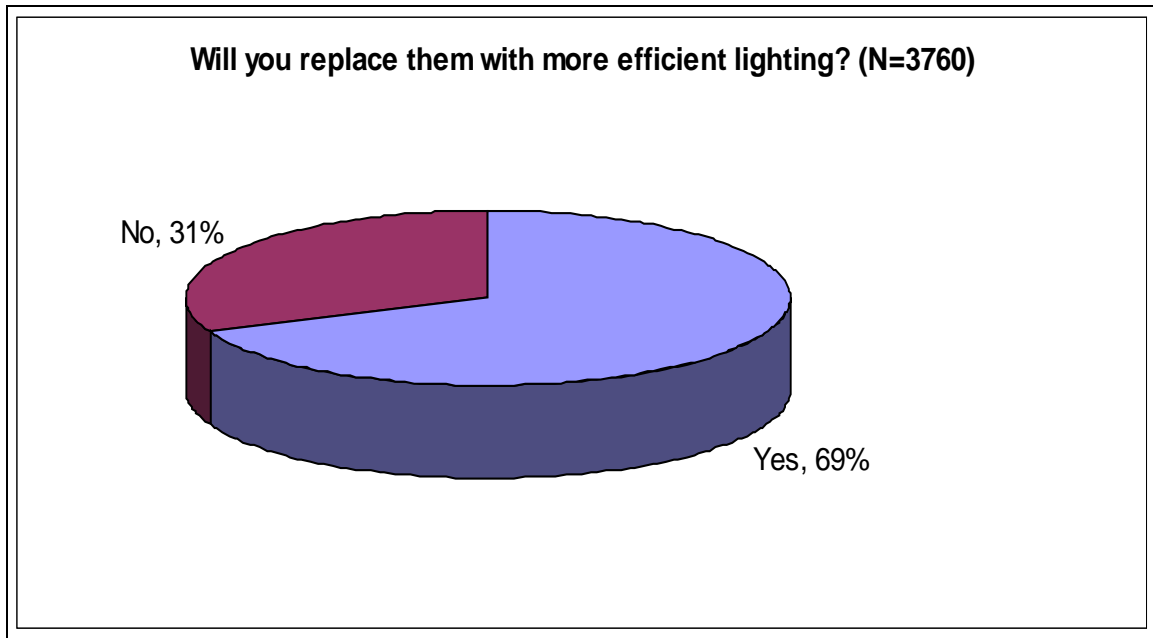
Question 5(a): Do you currently use regular (incandescent) light bulbs on the inside or outside of your home?



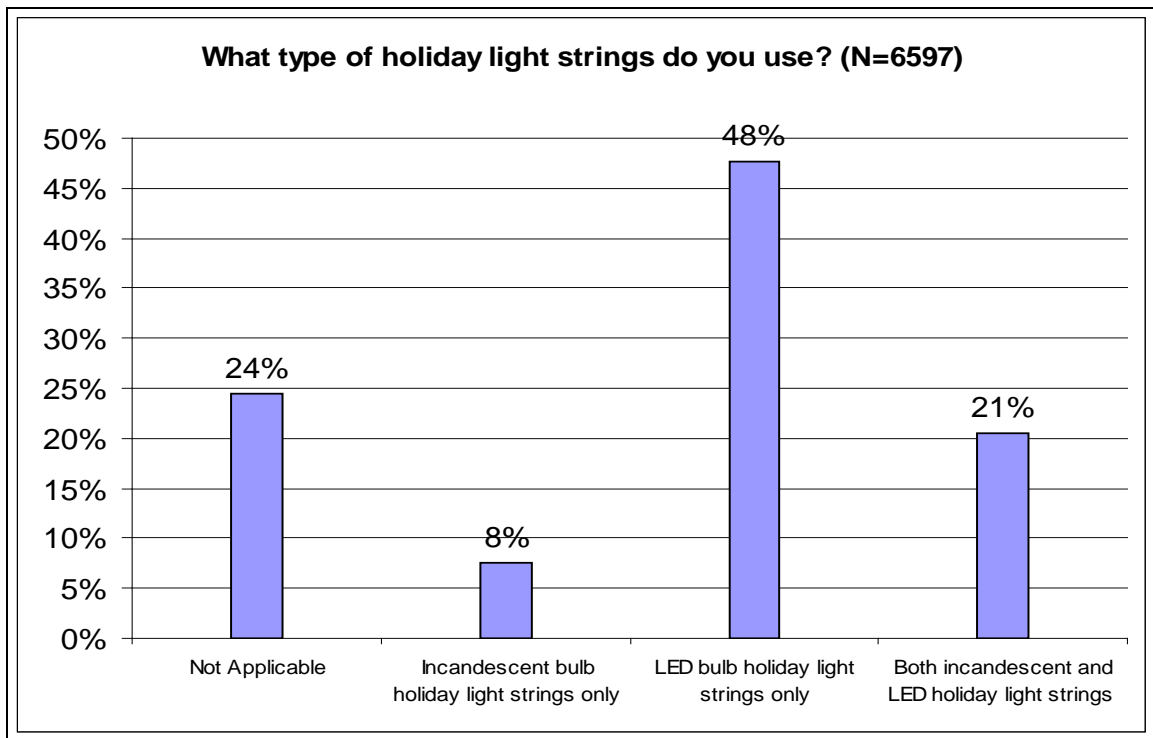
Question 5 (a.i): If yes, approximately how many incandescent bulbs are currently in use?



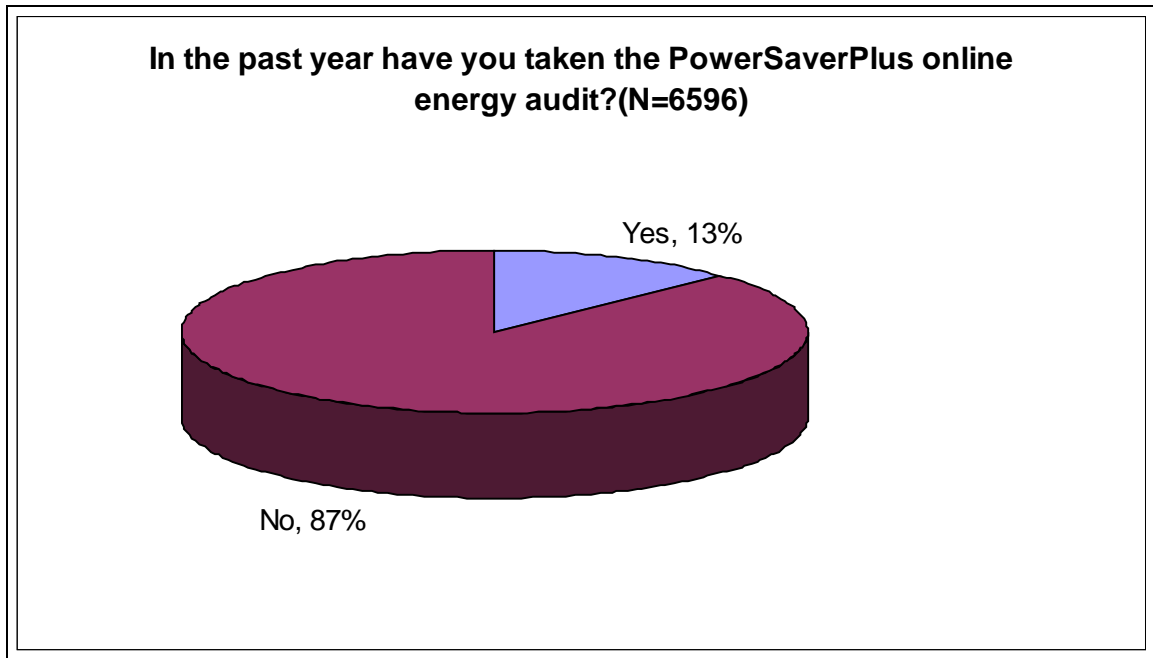
Question 5 (a.ii): When these bulbs burn out, do you plan on replacing them with more efficient lighting products such as Compact Fluorescent Light Bulbs, LED Light Bulbs, or Halogen Light Bulbs?



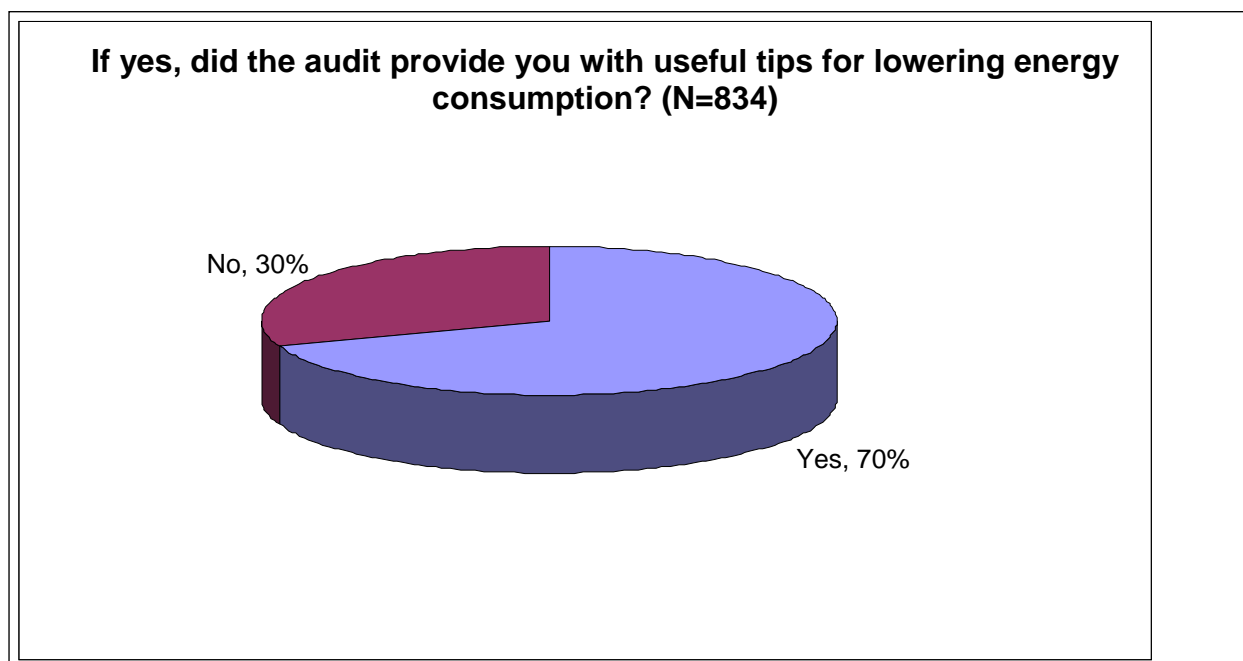
Question 5 (b): What type of holiday light strings do you use?



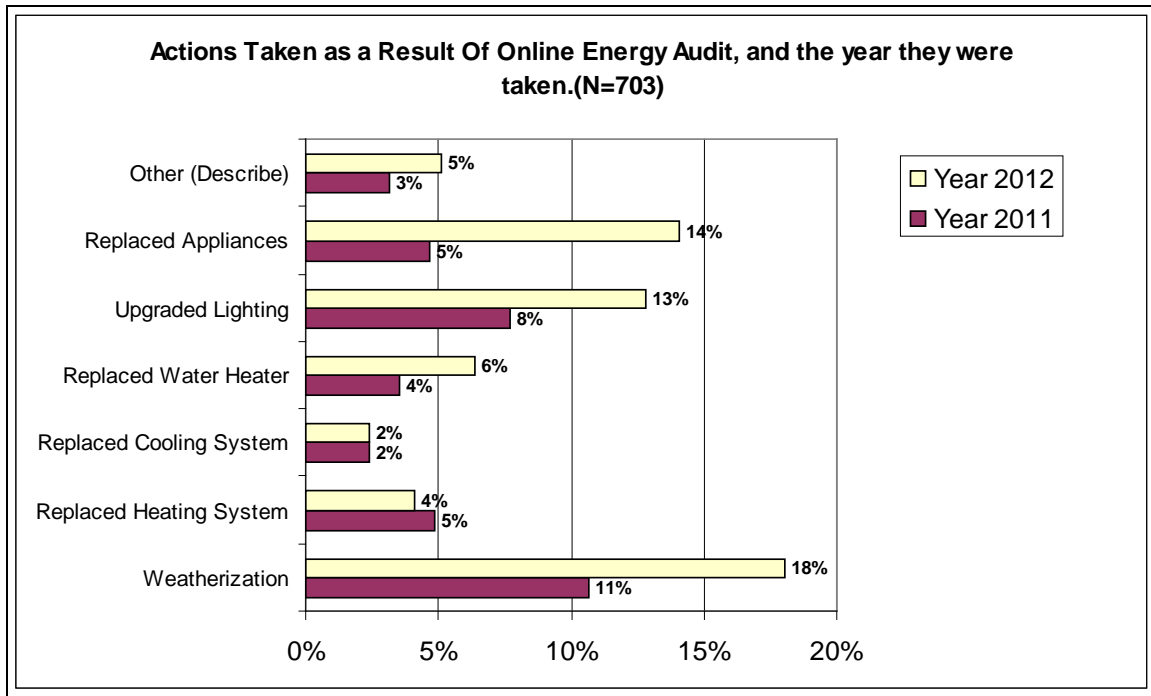
Question 6 (a): In the past year have you taken the PowerSaverPlus online energy audit?



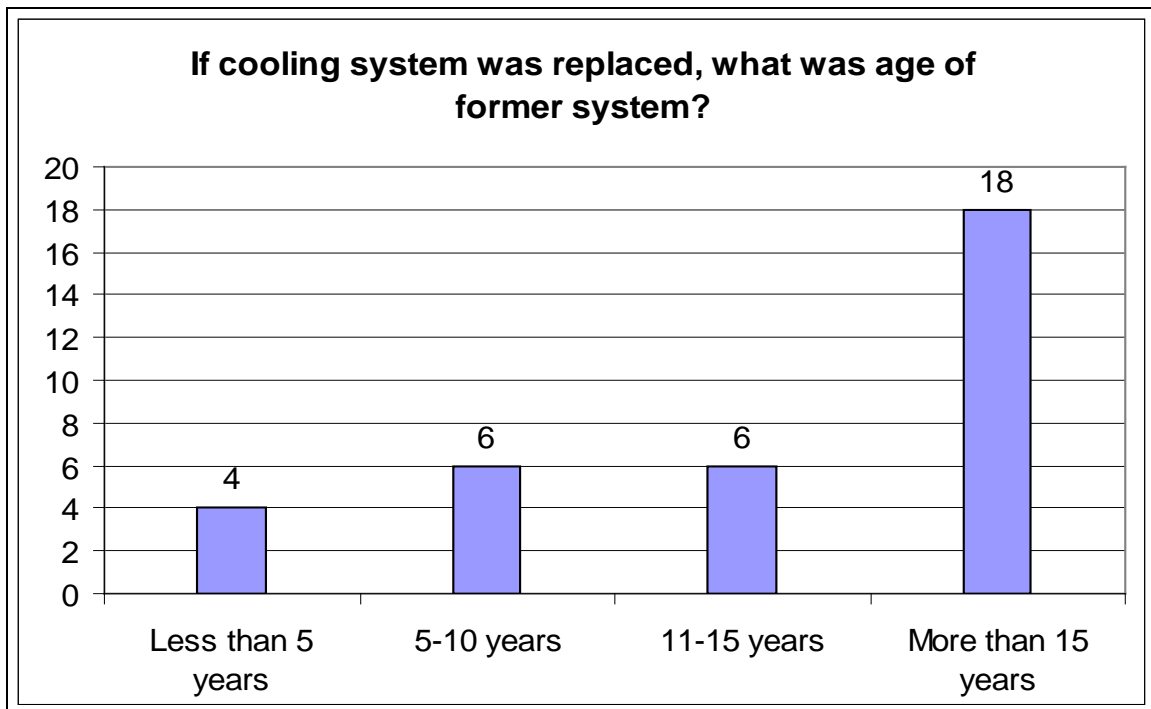
Question 6 (a.i): If yes, did the audit provide you with useful tips for lowering your energy consumption?



Question 6 (a.ii): If yes, what actions were taken as a direct result of the online energy audit?



Question 6 (a.iii): If you replaced your cooling system, what was the age of your former system?



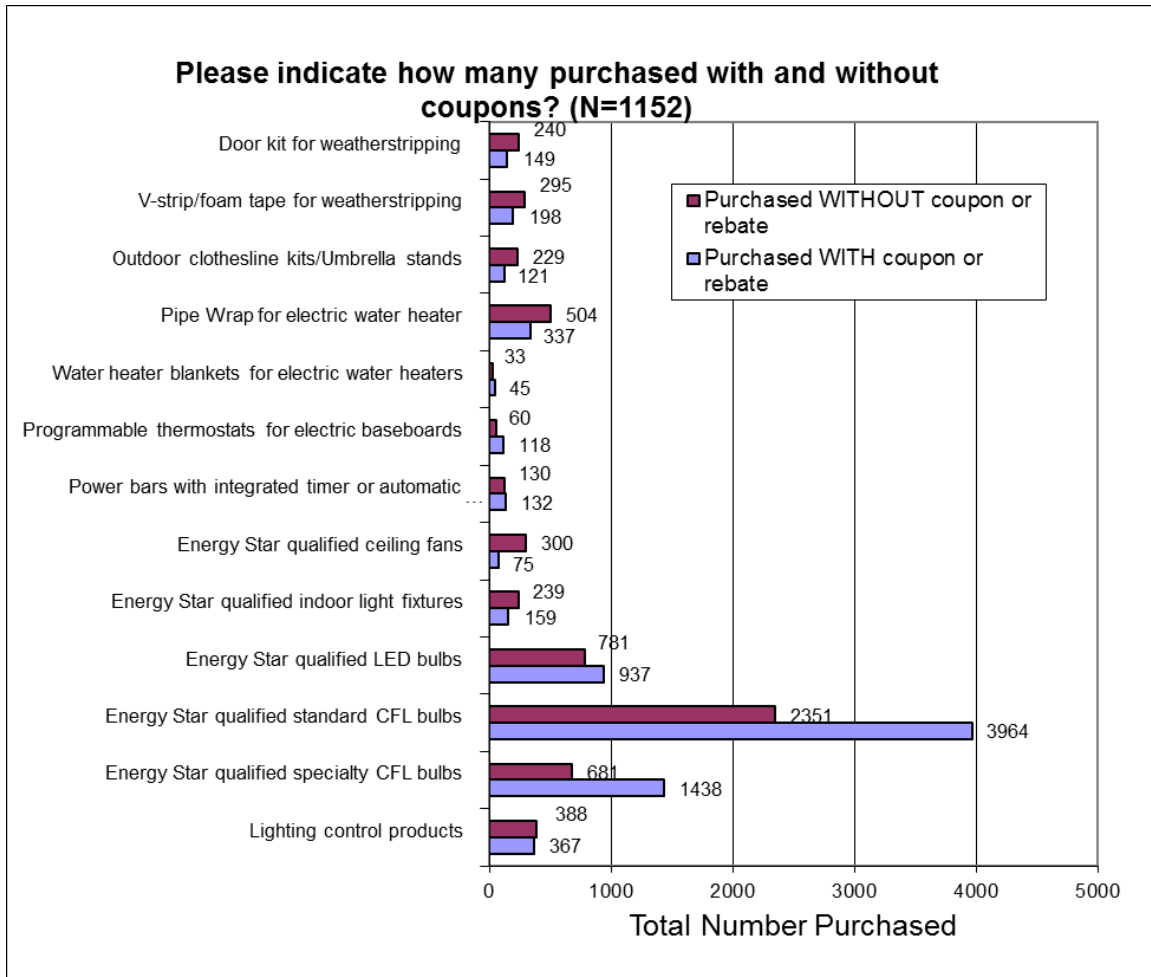
Question 6 (a.iv): If you replaced any of your appliances due to the Online Energy Audit, please indicate which appliances.

Appliance	Total Number Replaced
Refrigerator	53
Freezer	23
Clothes Washer	46
Clothes Dryer	37
Dishwasher	33
Range/Oven	46
Other	20

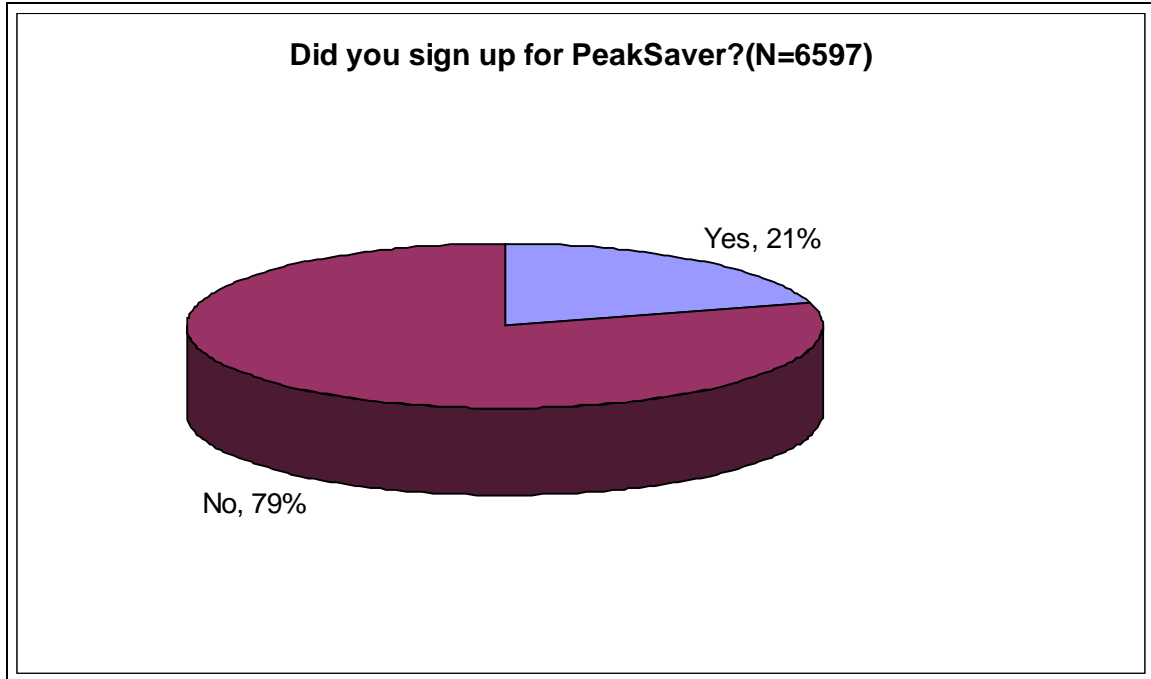
Question 6 (b): In the past year, did you purchase any products using SaveOnEnergy instant rebate coupons?



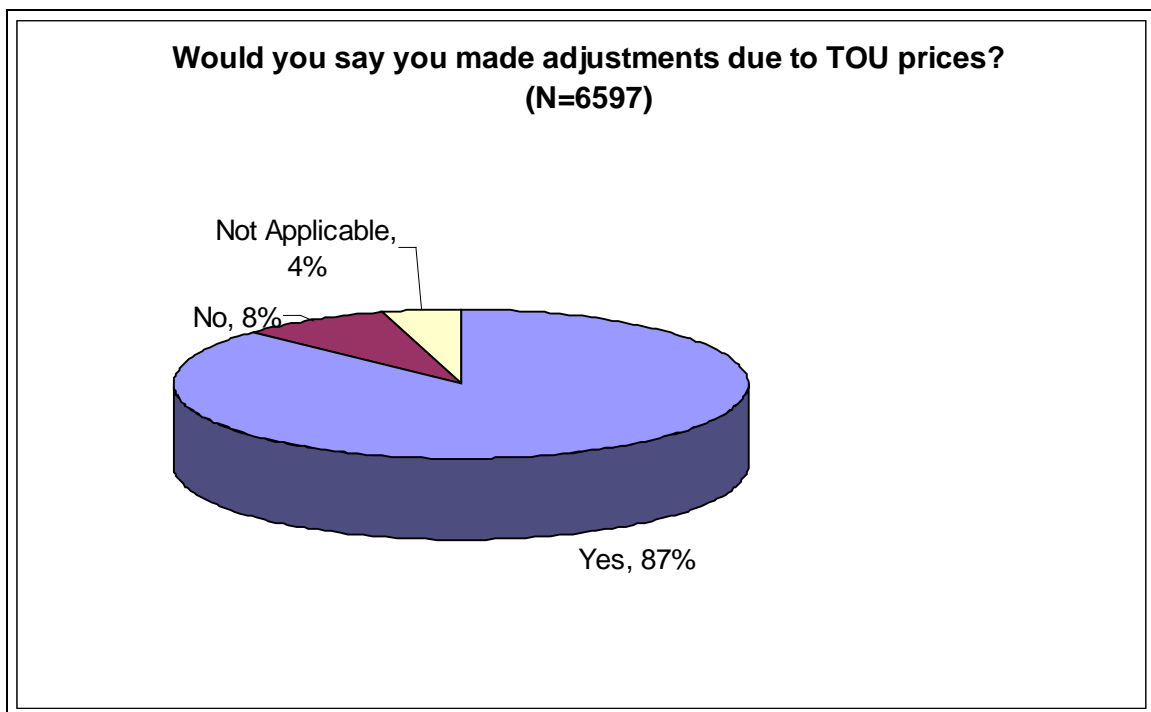
Question 6 (b.ii): Please indicate how many energy saving products you bought with and without coupons?



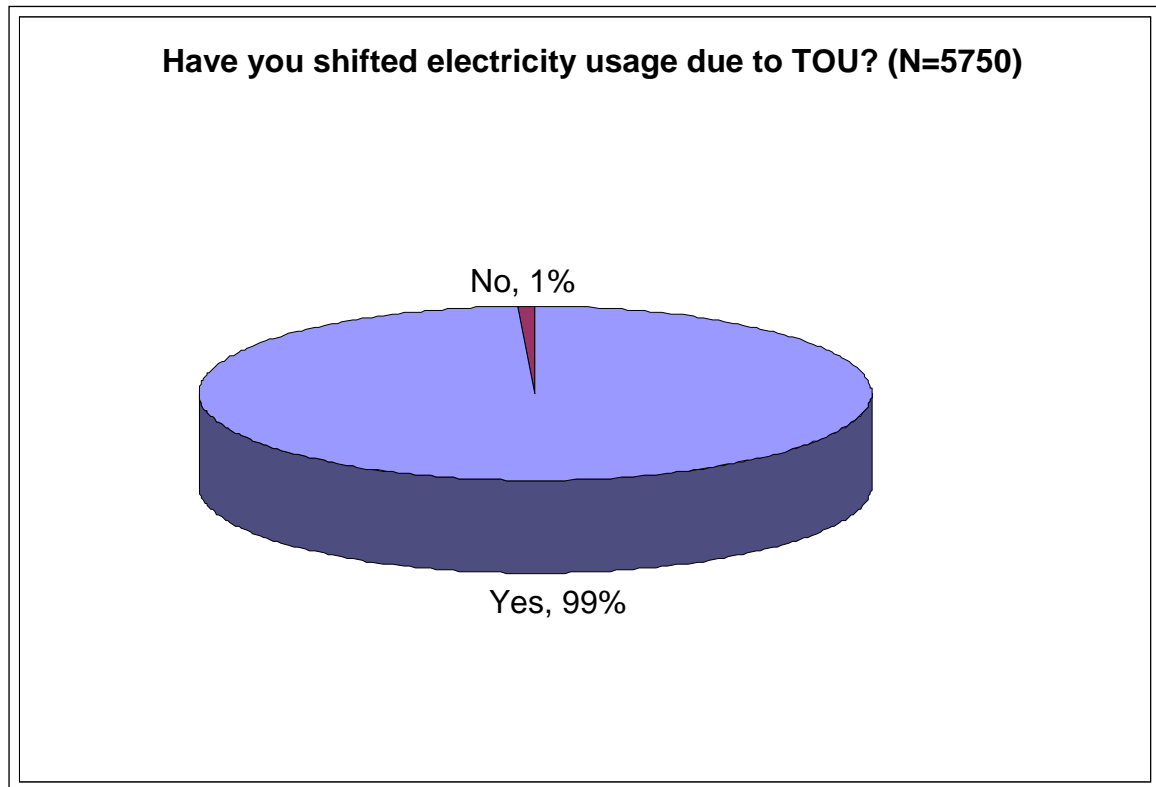
Question 6(c): In the past year, did you sign up for the PeakSaver Program?



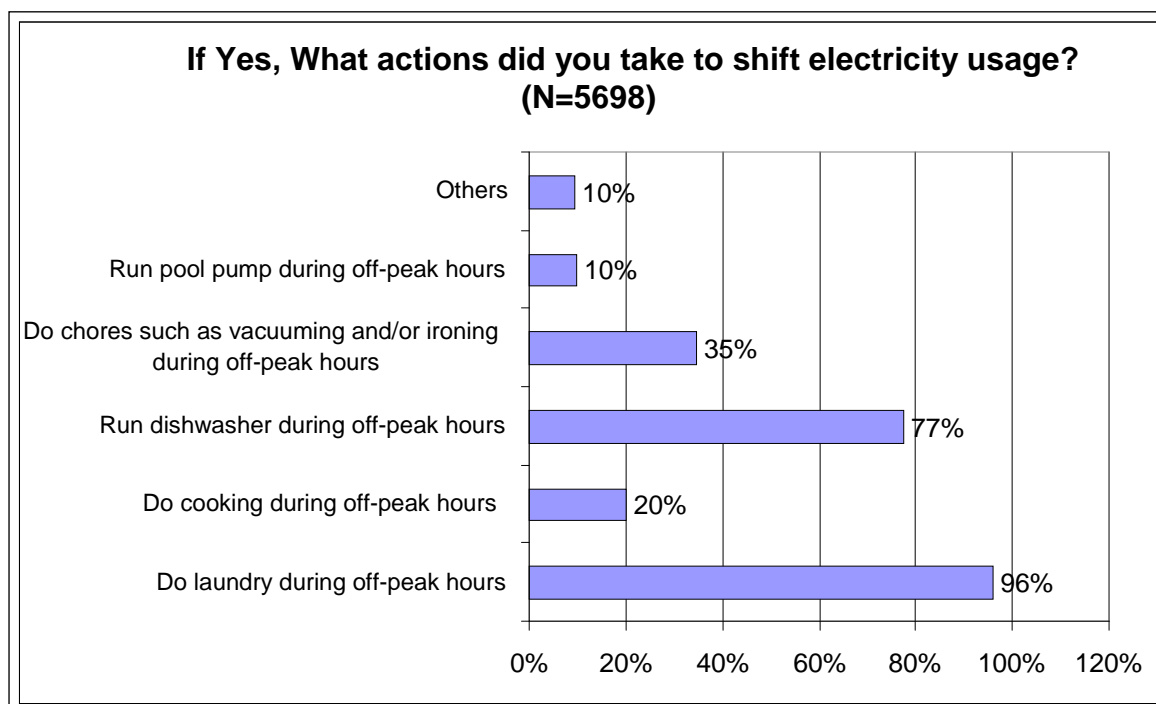
Question 7 (a): Would you say you have made adjustments to the way you use electricity as a direct result of Time-of-Use (TOU) prices?



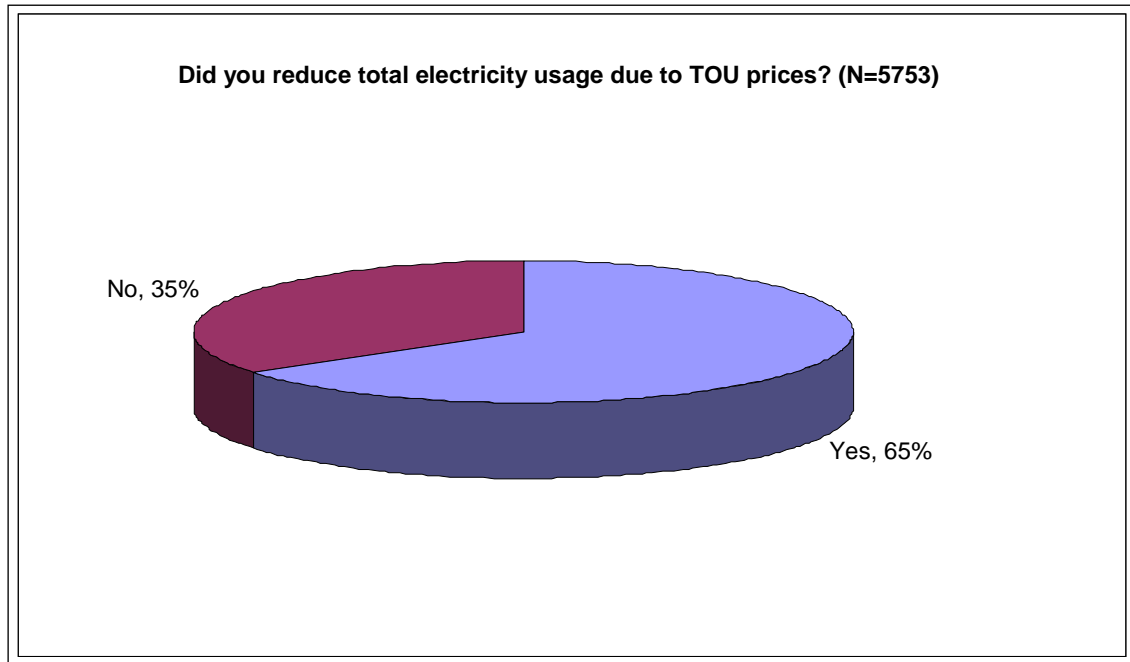
Question 7 (b.i): Have you shifted electricity usage from on-peak to mid-peak or off-peak periods?



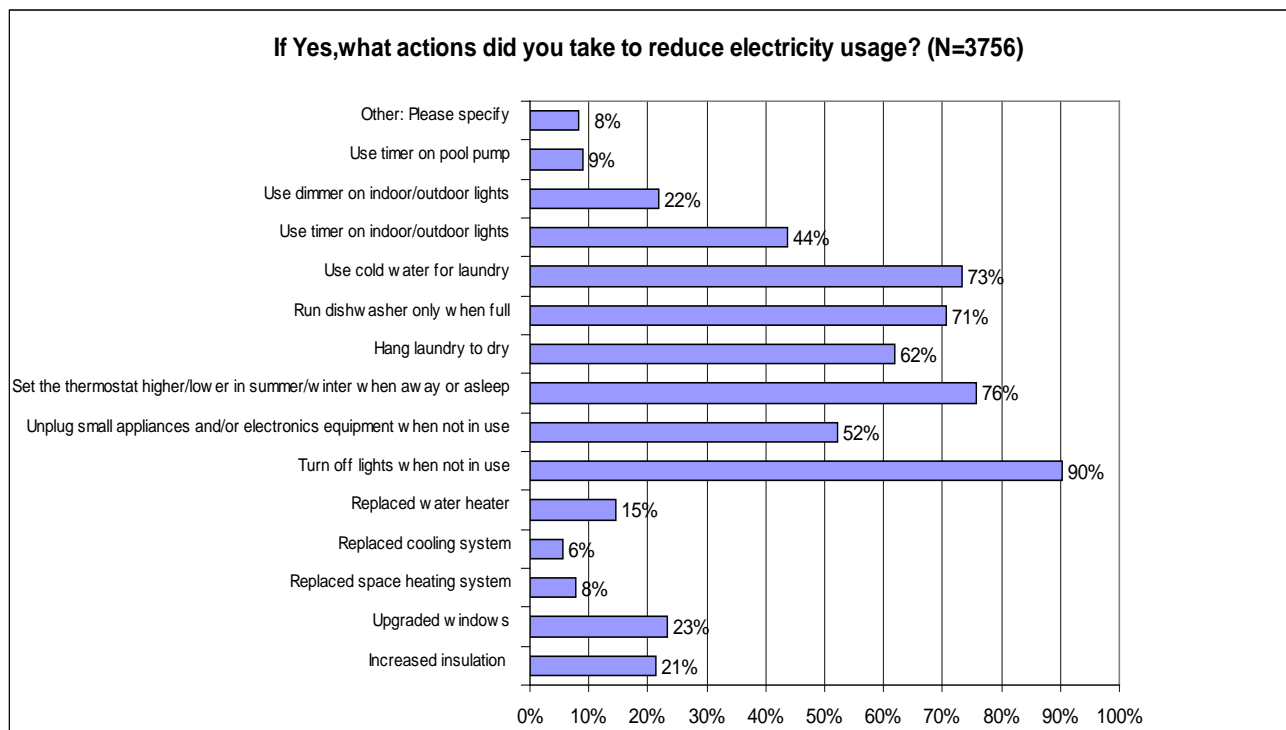
If Yes, What actions did you take to shift electricity usage?



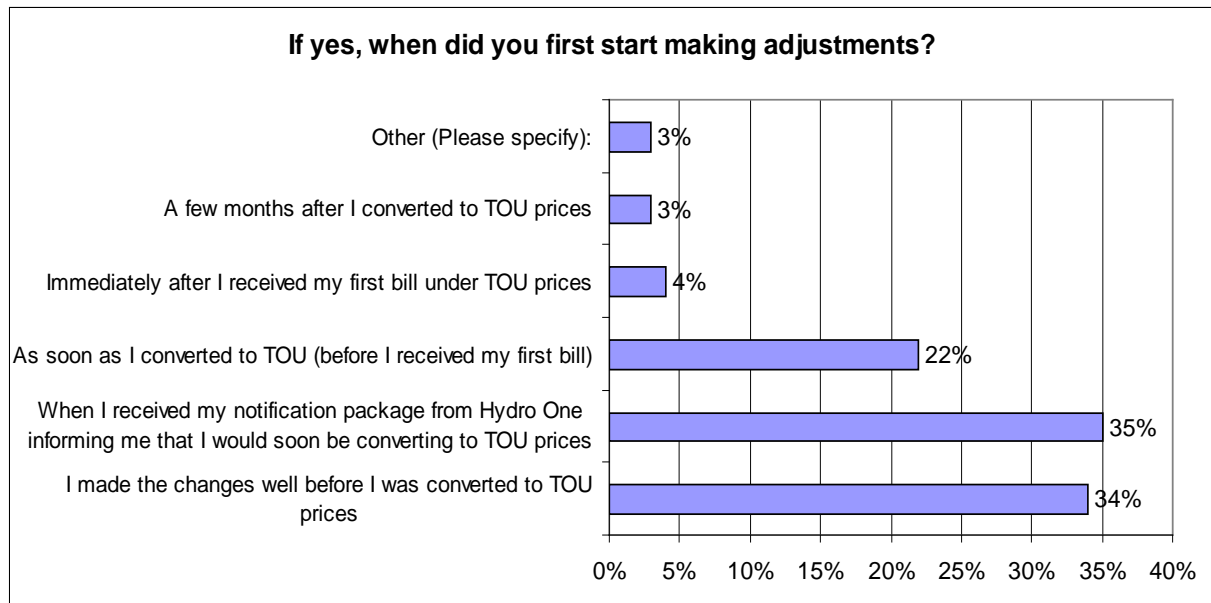
Question 7 (b.ii): As a result of TOU prices, did you reduce your total electricity usage?



If Yes, what actions did you take to reduce electricity usage?



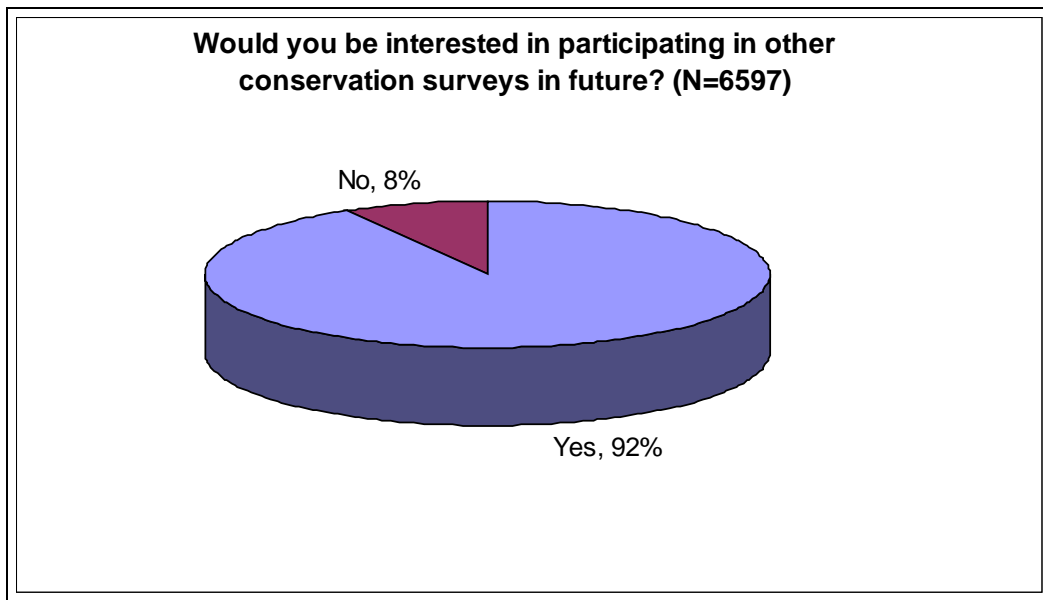
Question 7 (c): When did you first start making adjustments due to TOU prices?



Question 8: What conservation actions have you undertaken that are NOT specifically related to any program/initiative (i.e. actions that you decided to take that are unrelated to your participation in any conservation program and that were not a direct response to TOU prices)?

Actions	Always	Often	Sometimes	Never	N/A
Set thermostat lower/higher at night	64%	10%	7%	8%	8%
Set thermostat lower/higher when away from home	65%	12%	7%	4%	8%
Use cold water for laundry	52%	22%	17%	6%	3%
Hang laundry outside or on a rack	25%	29%	23%	17%	6%
Use timers on indoor/outdoor lights	31%	14%	15%	20%	20%
Use dimmers on indoor/outdoor lights	16%	14%	20%	24%	26%
Turn off lights when not in use	73%	24%	2%	0%	1%
Use a fan or open windows instead of AC	41%	30%	18%	5%	6%
Run dishwasher only when full	66%	11%	2%	0%	21%
Use timer on pool pump	9%	1%	1%	5%	85%
Maintain Central Air Conditioner	41%	12%	5%	2%	41%

Question 9: Would you be interested in participating in other conservation surveys in future?



Attachment 14:
2013 Hydro One Energy Conservation Survey Results

2013 Hydro One Energy Conservation Survey

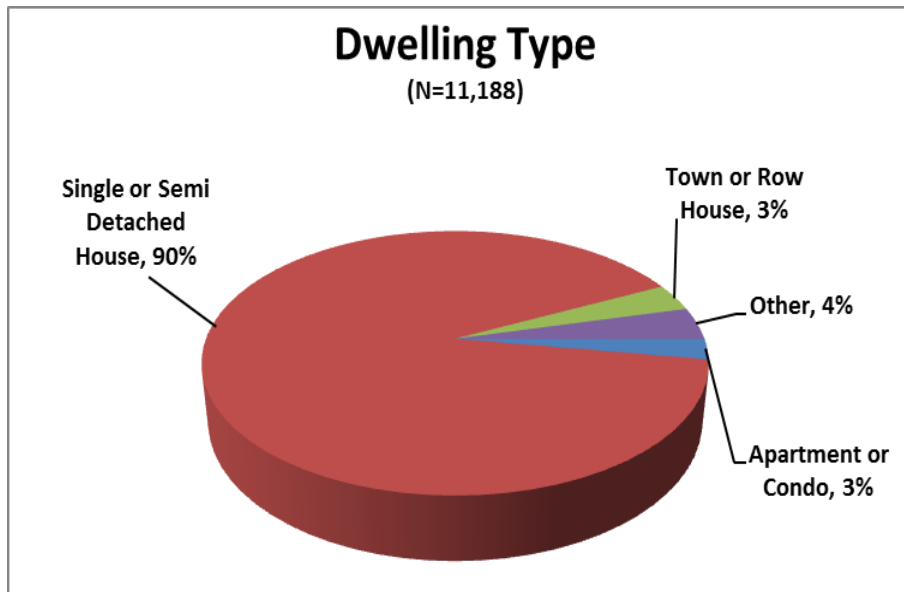
Total number of surveys sent out: 98,000

Total number of unique responses: 11,188

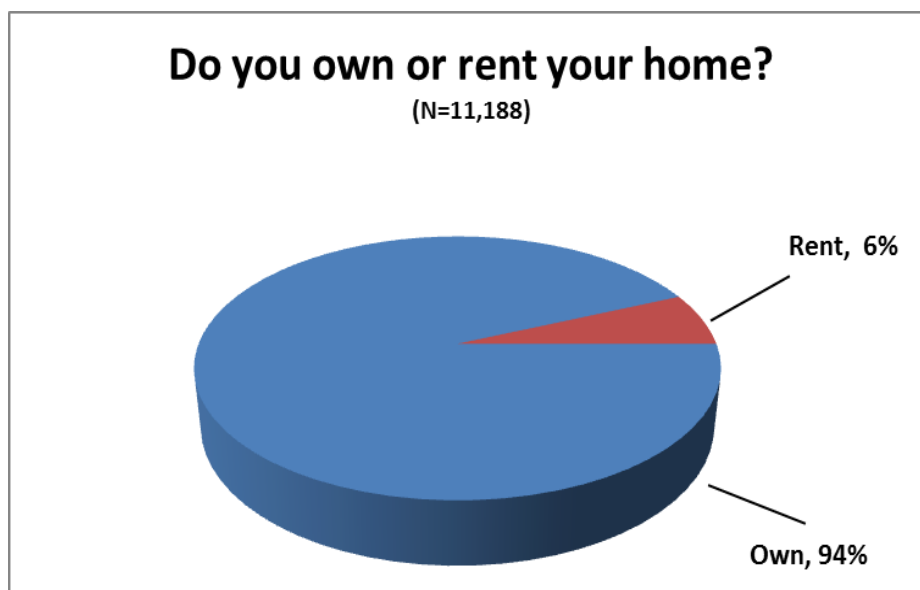
Response rate: 11%

Section 1: Your Home

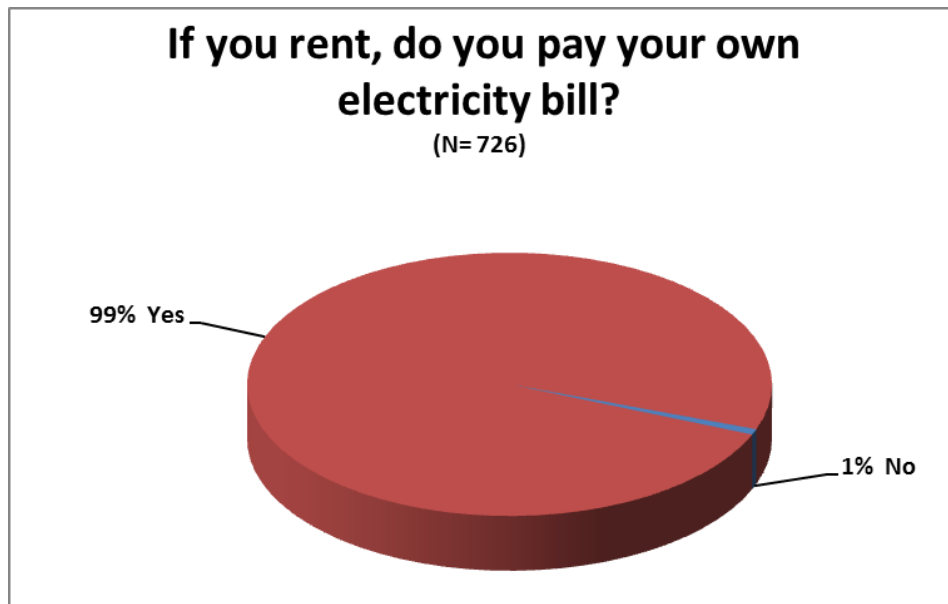
Question 1: In what type of building do you live?



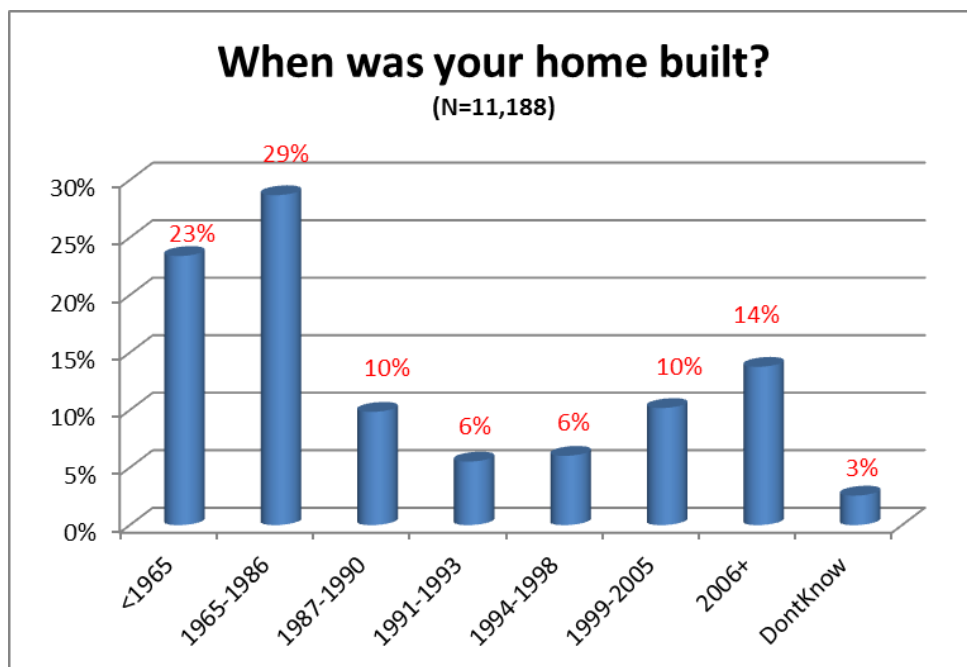
Question 2a: Do you own or rent your home?



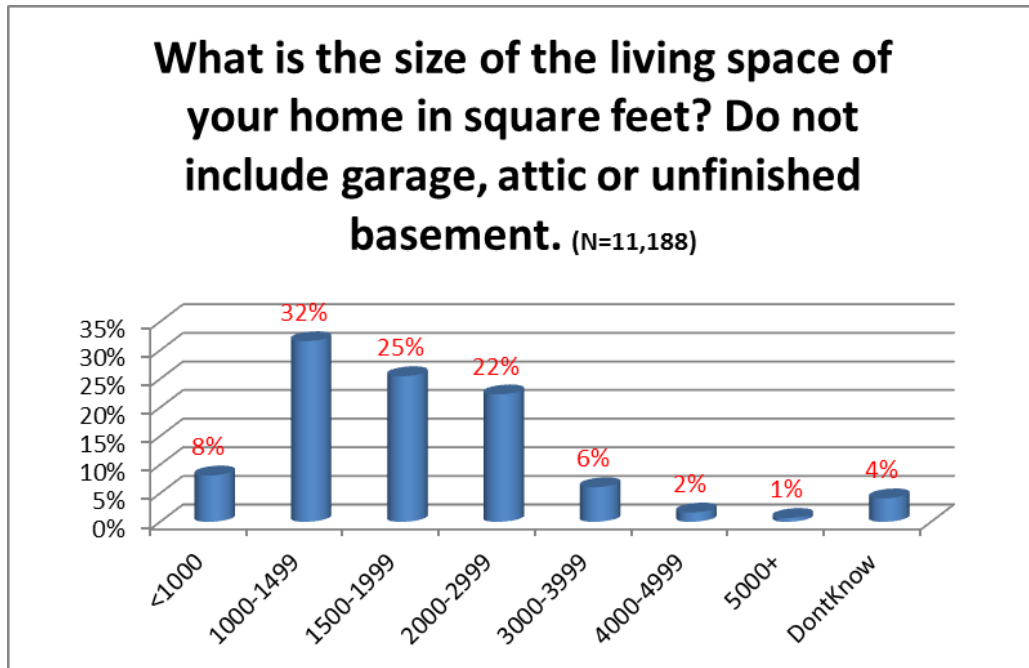
Question 2b: If you rent, do you pay your own electricity bill?



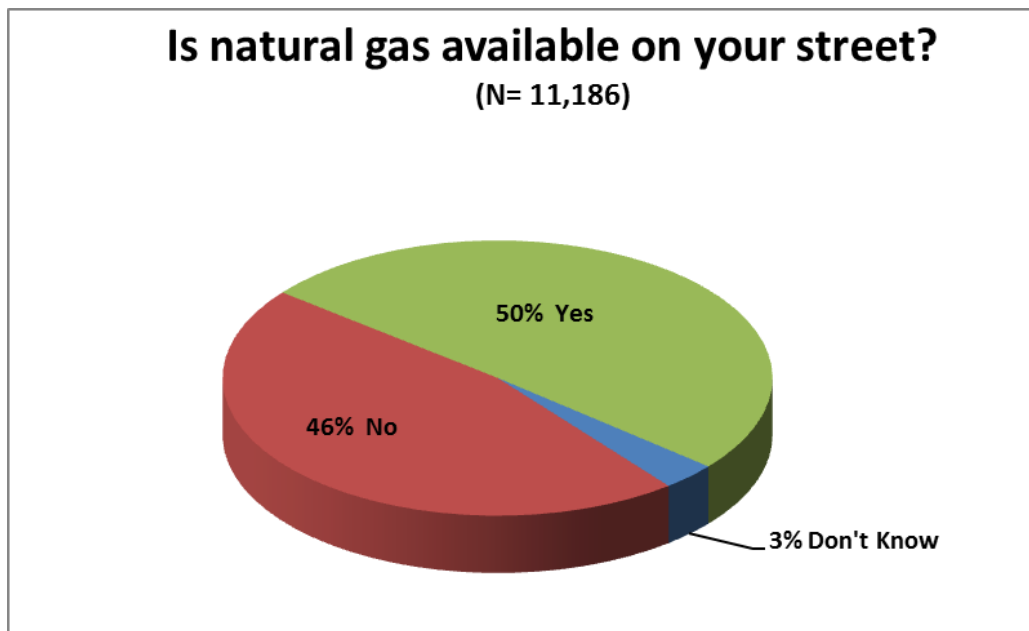
Question 3: When was your home built?



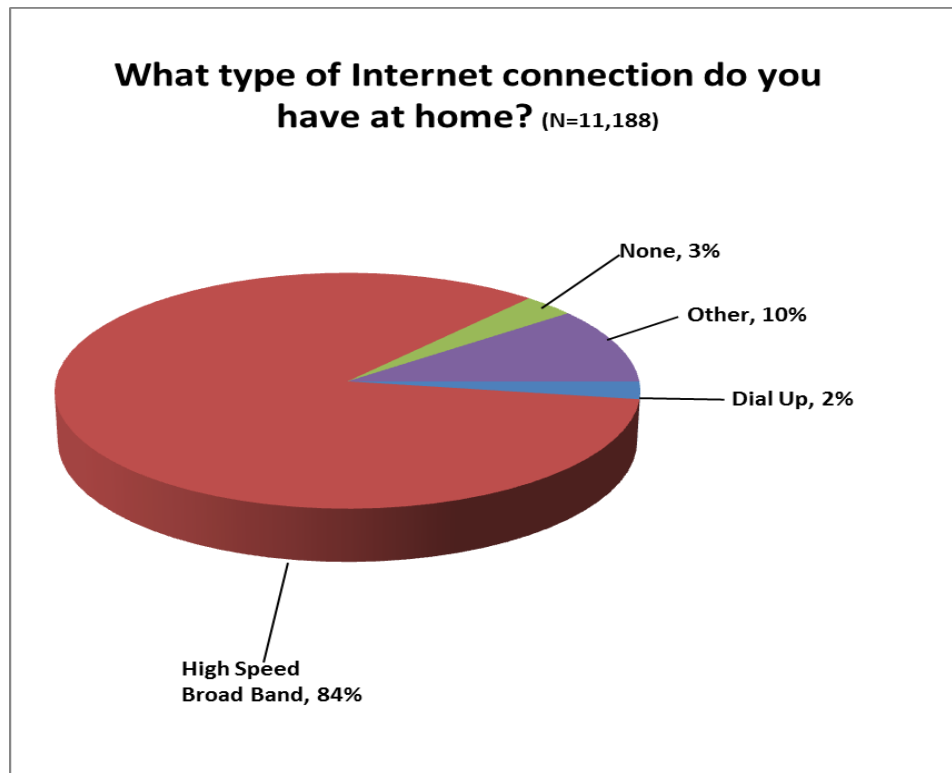
Question 4: What is the size of the living space of your home in *square feet*? DO NOT include garage, attic or unfinished basement.



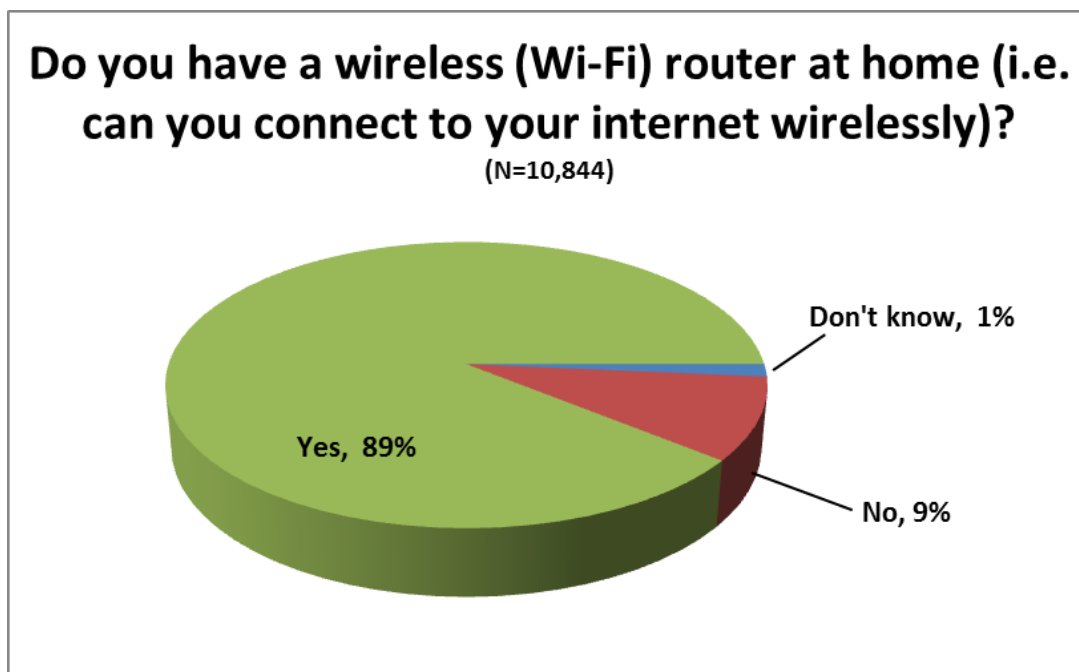
Question 5: Is natural gas available on your street?



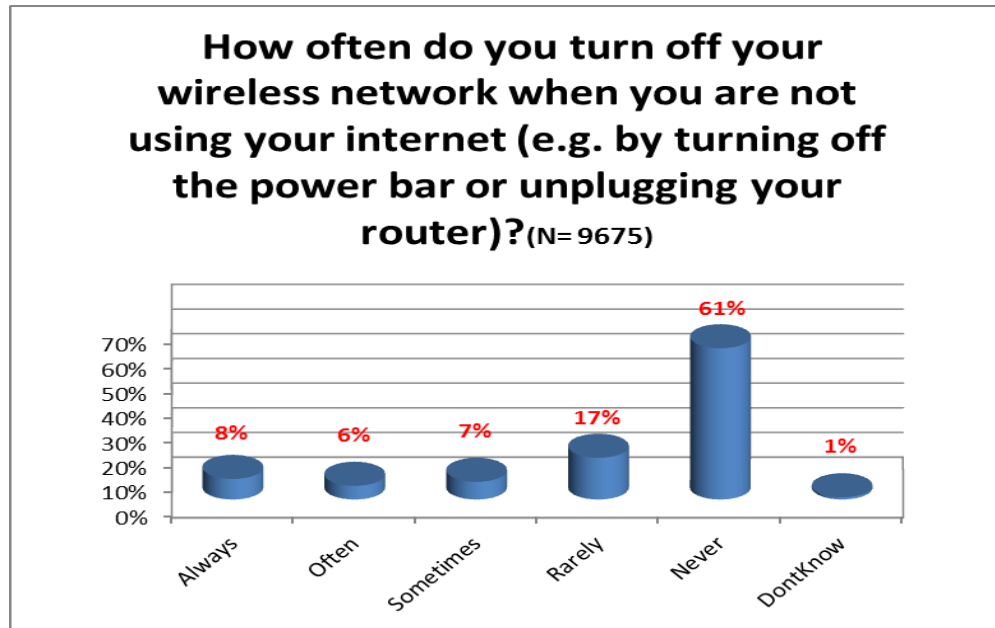
Question 6a: What type of Internet connection do you have at home?



Question 6b: Do you have a wireless (Wi-Fi) router at home (i.e. can you connect to your internet wirelessly)?

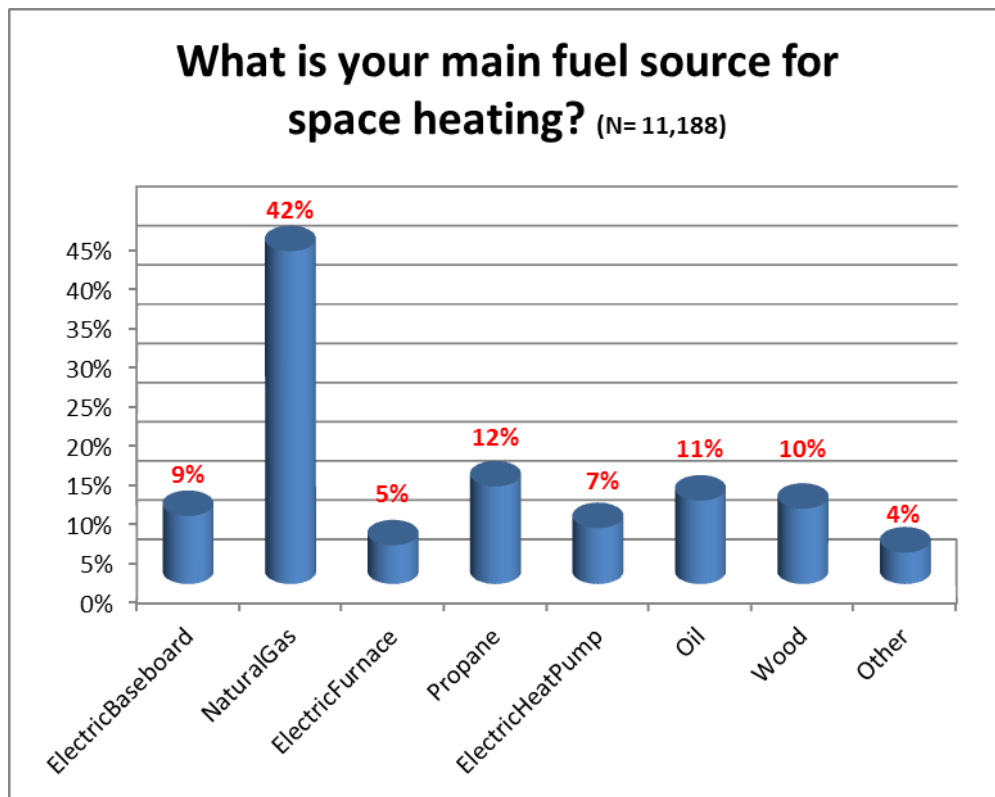


Question 6c: How often do you turn off your wireless network when you are not using your internet (e.g. by turning off the power bar or unplugging your router)?

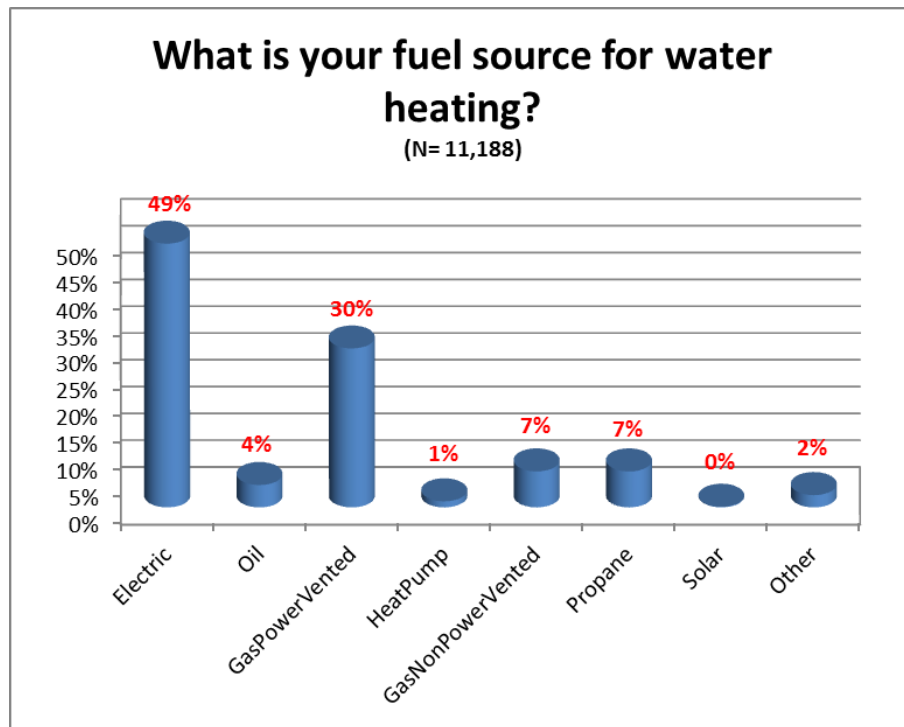


Section 2: Household Equipment

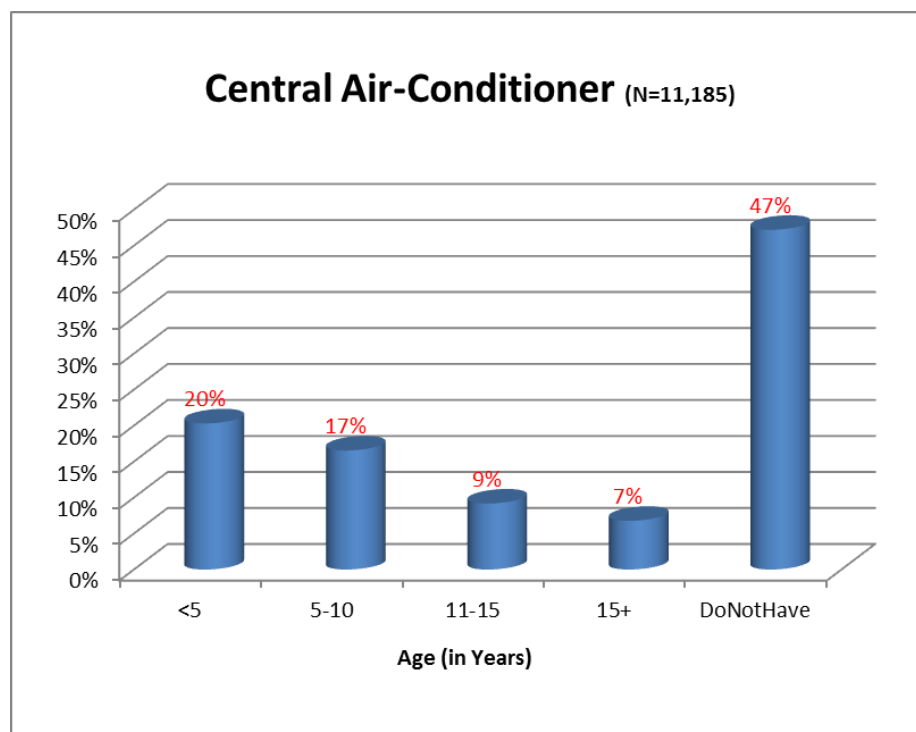
Question 7: What is your main fuel source for space heating?



Question 8: What is your fuel source for water heating?

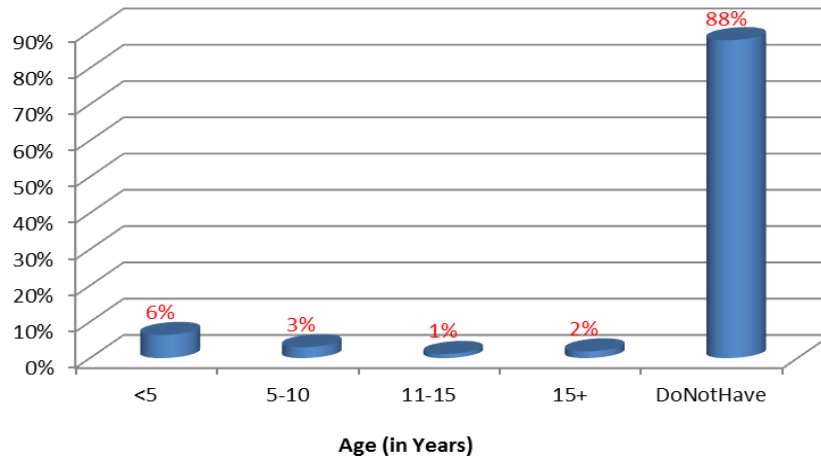


Question 9a: What type of air conditioning equipment do you currently have and how old is it?



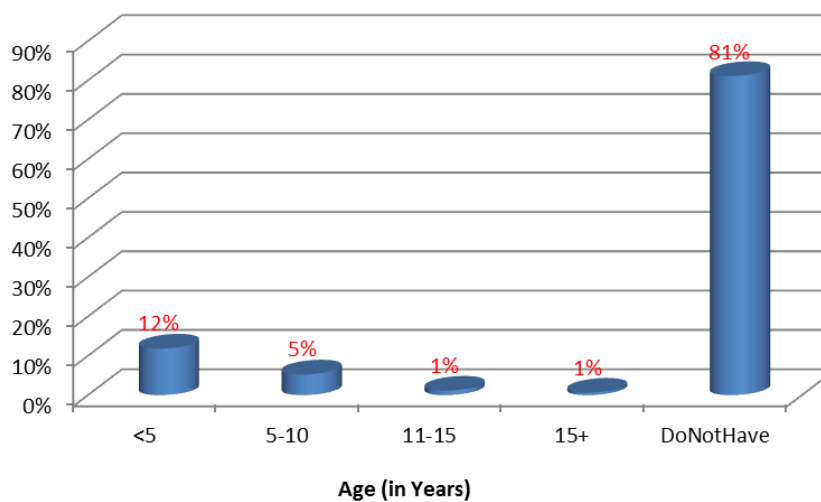
Heat Pump (including air-source and ground-source/geothermal)

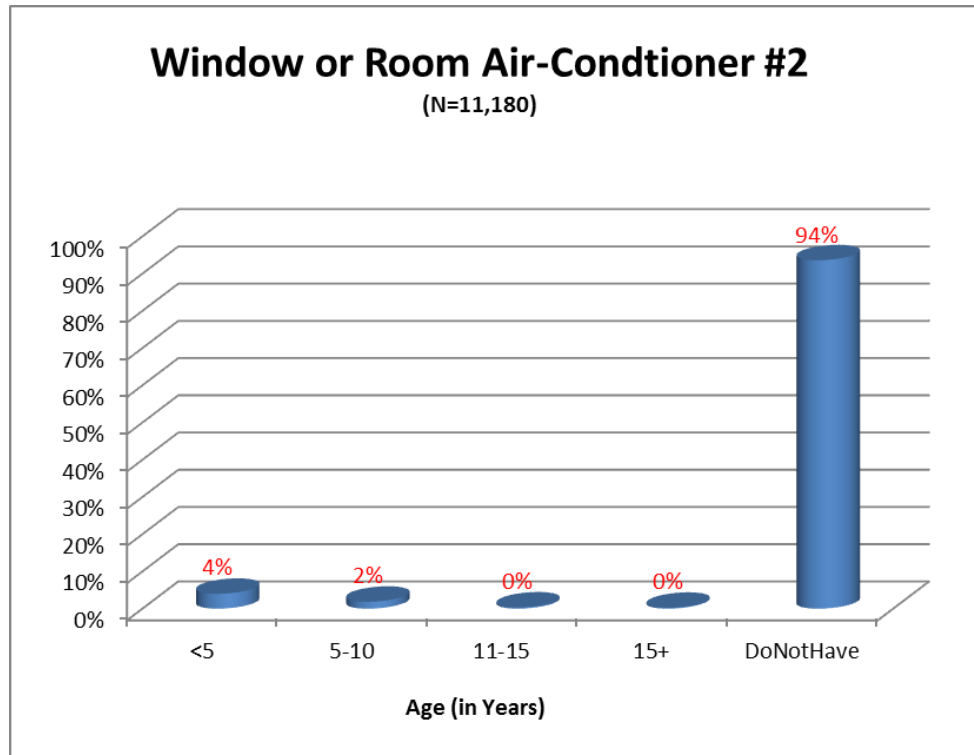
(N=11,182)



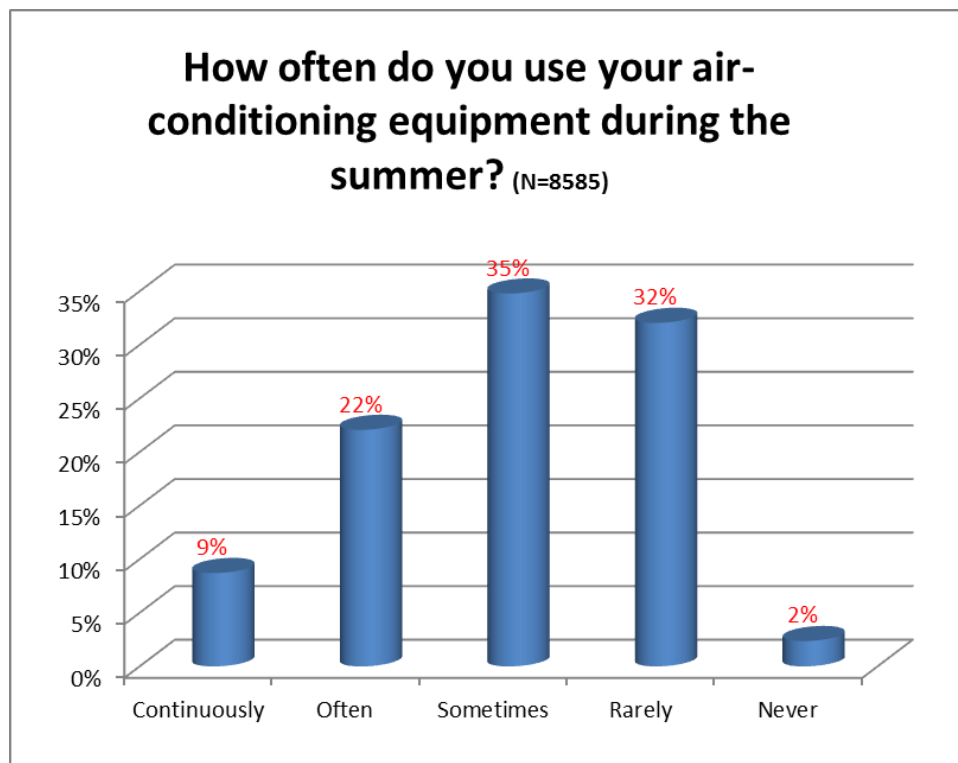
Window or Room Air-Conditioner #1

(N=11,181)





Question 9b: How often do you use your air-conditioning equipment during the summer?



Section 3: Conservation Actions

Question 10: In the table below, please indicate how often you do each of the following actions.

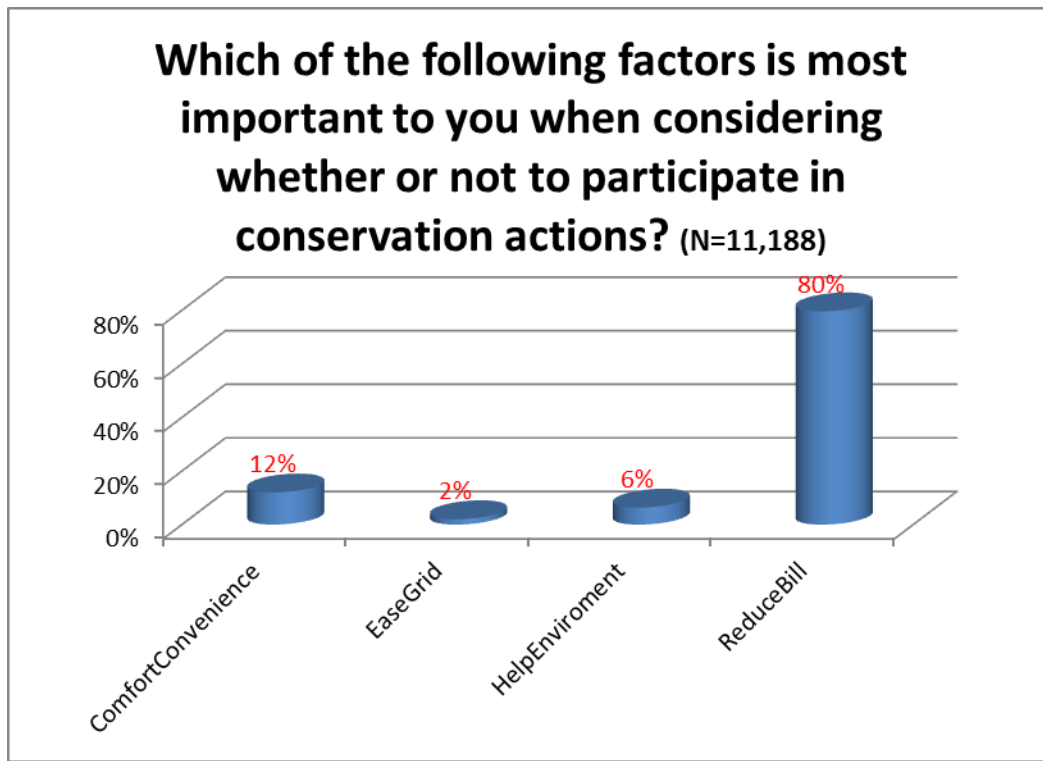
In the table below, please indicate how often you do each of the following actions. (N=11,188)

Action	Always	Often	Sometimes	Never	N/A
Set thermostat temperature higher at night in the summer (or lower in the winter)	47%	11%	10%	18%	13%
Set thermostat temperature higher when not at home in the summer (or lower in the winter)	48%	13%	8%	17%	14%
Use cold water for laundry	48%	27%	19%	5%	1%
Hang laundry outside or on a rack to dry	16%	29%	28%	24%	3%
Use timers on indoor or outdoor lights	23%	14%	18%	34%	12%
Use dimmers on indoor or outdoor lights	14%	18%	22%	33%	13%
Turn off lights when not in use	71%	26%	3%	0%	0%
Use a fan or open a window instead of air-conditioning	37%	35%	21%	5%	2%
Run dishwasher only when full	65%	10%	1%	1%	24%
Use Timer on pool pump	9%	2%	1%	5%	84%
Maintain central air-conditioner (clean or change filter)	35%	14%	7%	3%	41%

Question 11: For each of the following products, please indicate the number you purchased WITH and WITHOUT coupons or rebates within the last year.

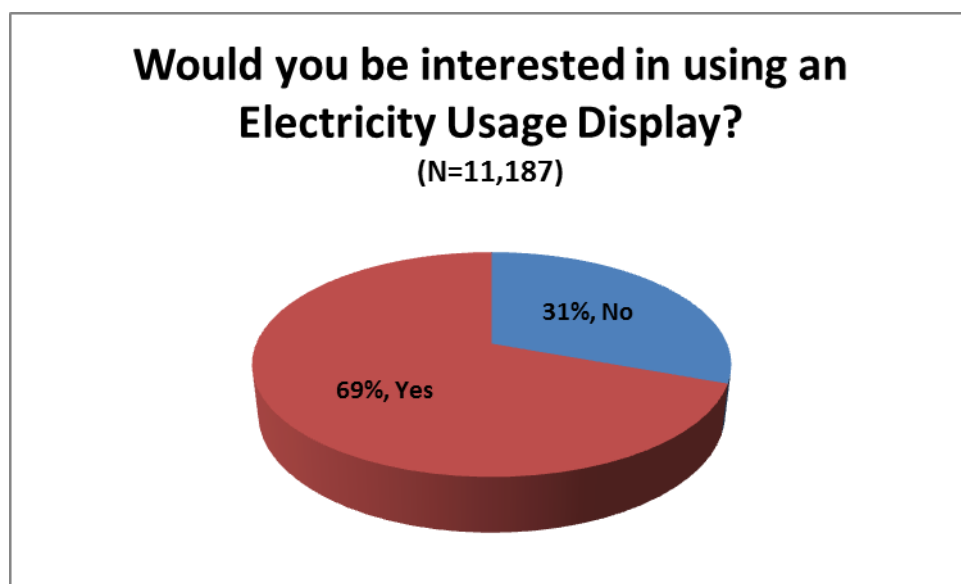
Energy Saving Product	Number Purchased WITH Coupons or Rebates	Number Purchased WITHOUT Coupons or Rebates
Lighting control products such as motion sensor, timer and dimmer switches	1500	7867
ENERGY STAR qualified specialty CFL bulbs	10180	31721
ENERGY STAR qualified LED bulbs	5533	15412
ENERGY STAR qualified indoor light fixtures	1302	5625
ENERGY STAR qualified ceiling fans	476	2788
Power bars with integrated timer or automatic shutoff	393	1838
programmable thermostats for electric baseboards	366	858
water heater blankets for electric water heaters	95	321
pipe wrap for electric water heater	728	4256
outdoor clothesline kits or outdoor clothesline umbrella stands	295	2244
V-strip or foam tape for weatherstripping	509	3780
Door kit for weatherstripping	484	3391

Q12: Which of the following factors is most important to you when considering whether or not to participate in conservation actions?

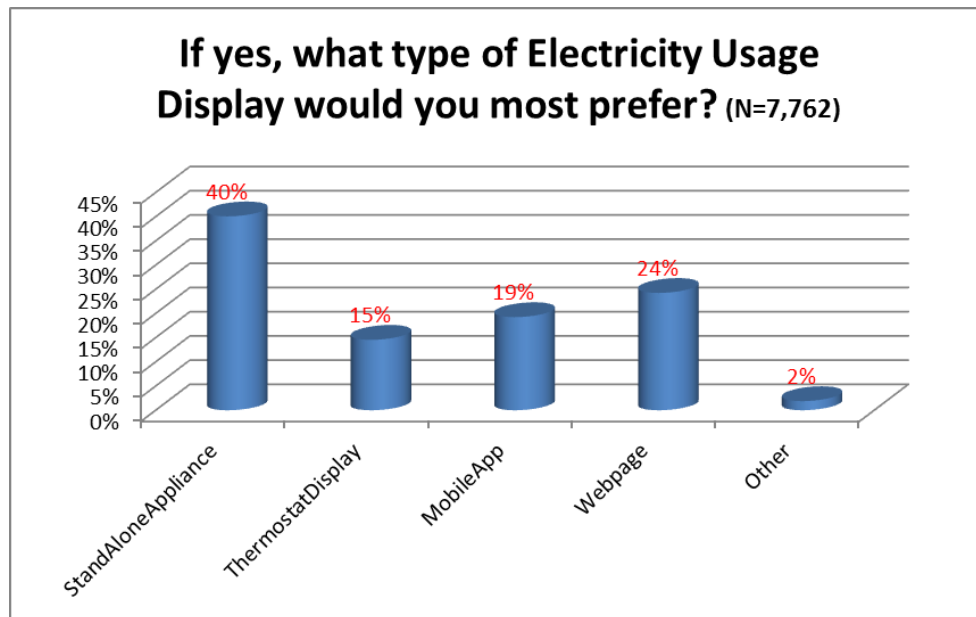


Section 4: Conservation Programs

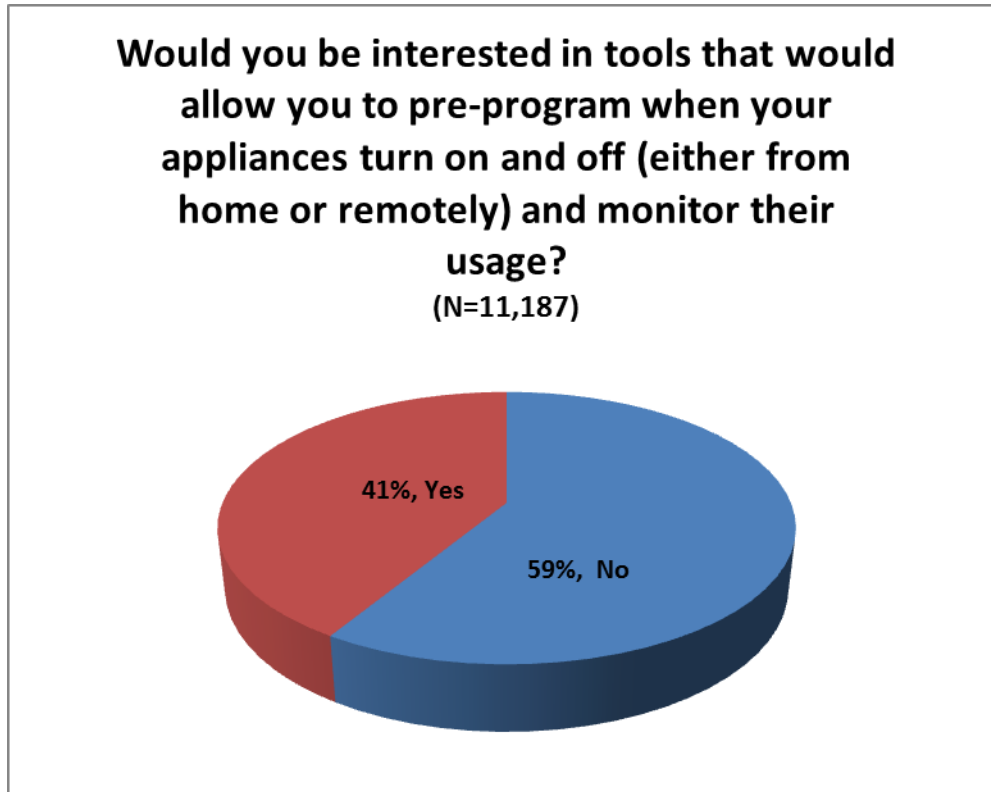
Q13a: An Electricity Usage Display is a device that communicates wirelessly with your smart meter to show you how much electricity you are using in your home in real time, similar to a speedometer.



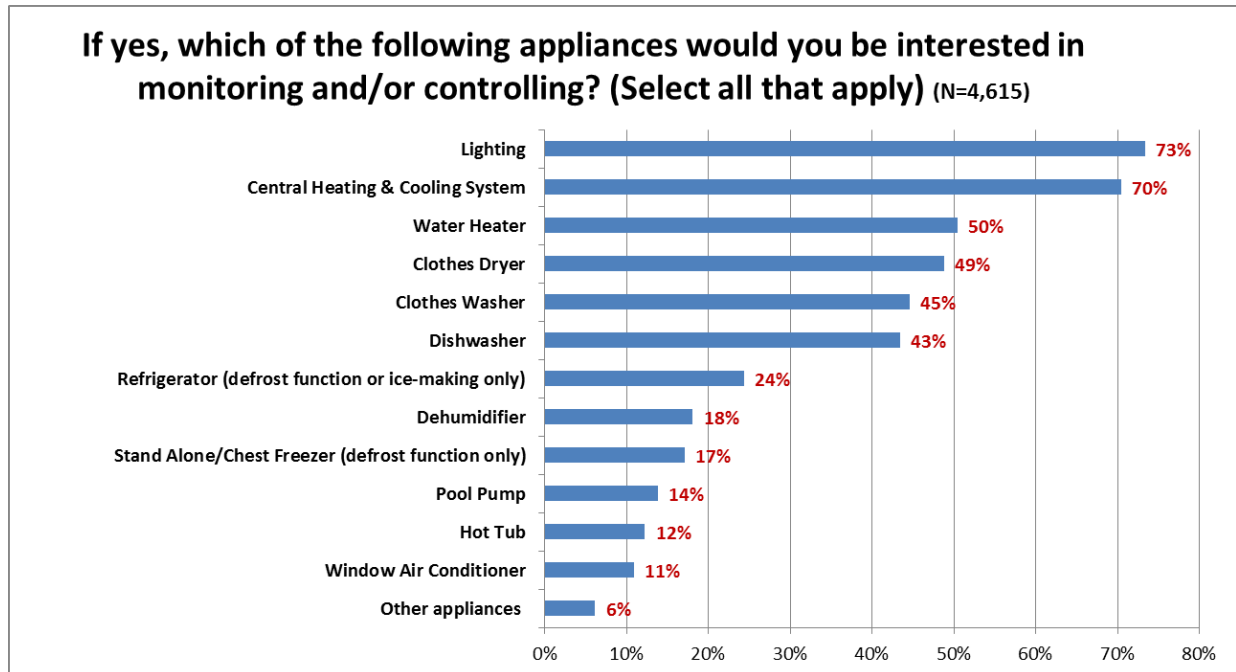
Q13b: If yes, what type of Electricity Usage Display would you most prefer?



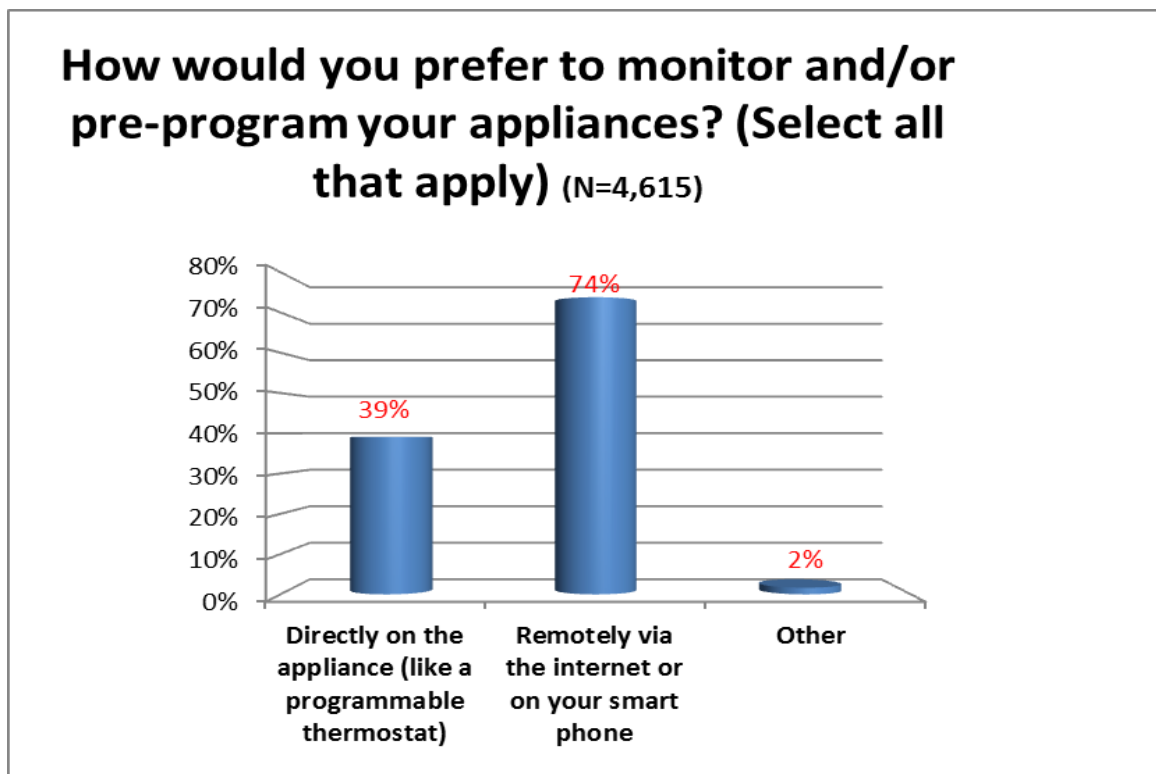
Q14a: New tools that allow you to monitor and control your home's appliances (from your smart phone, for example) are coming on the market to help you manage your electricity usage.



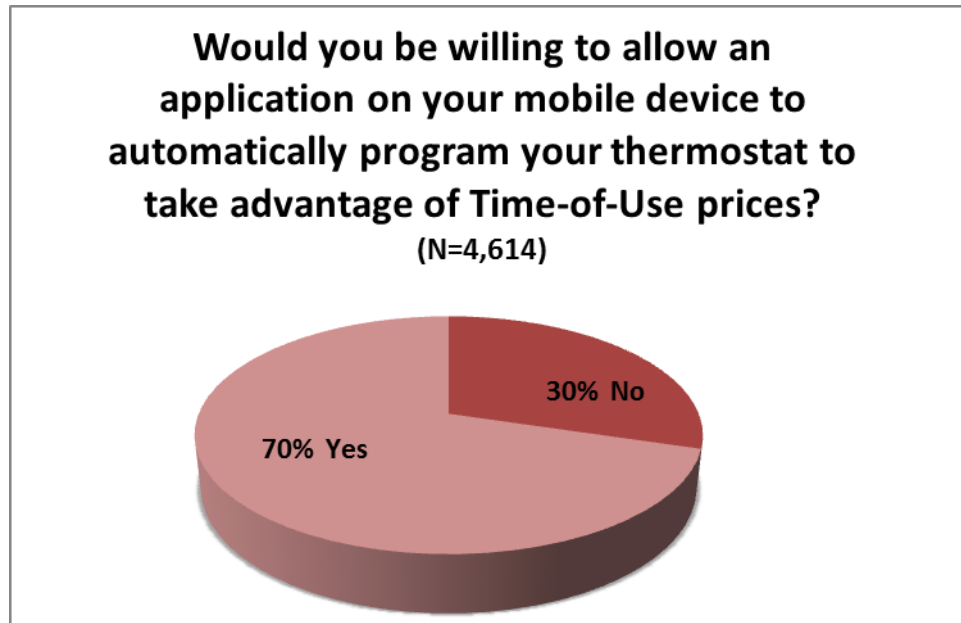
Q14b: If yes, which of the following appliances would you be interested in monitoring and/or controlling? (Select all that apply)



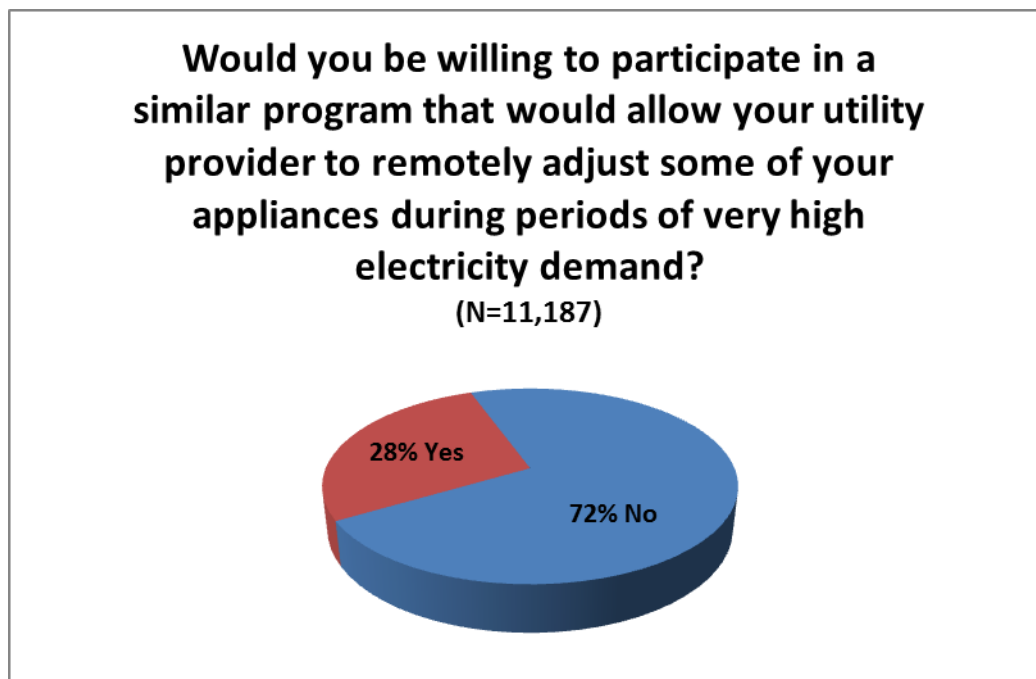
Q14c: How would you prefer to monitor and/or pre-program your appliances? (Select all that apply)



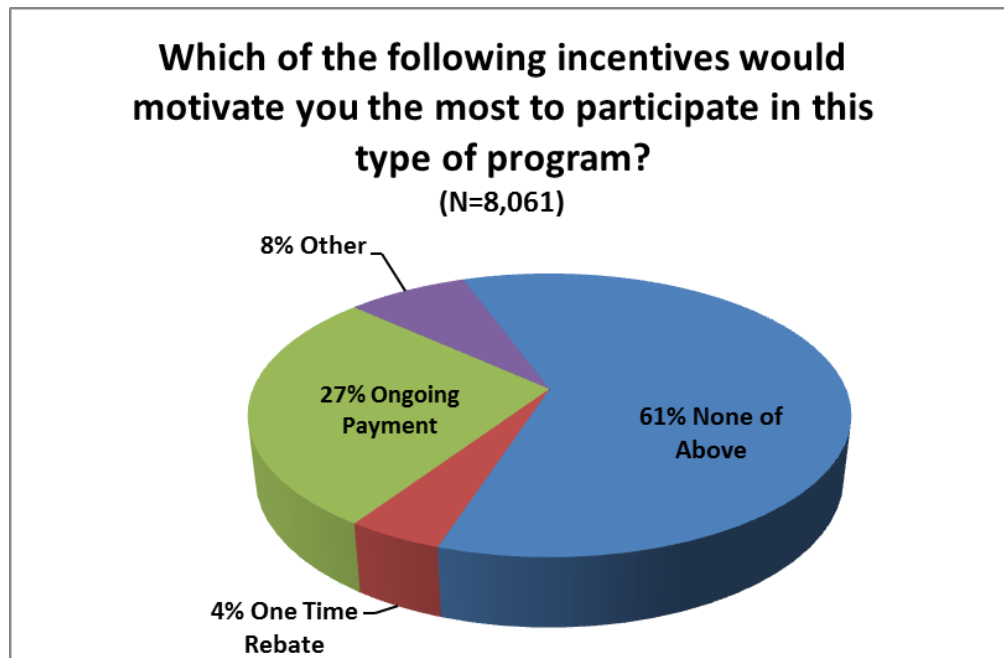
Q14d: Would you be willing to allow an application on your mobile device to automatically program your thermostat to take advantage of Time-of-Use prices?



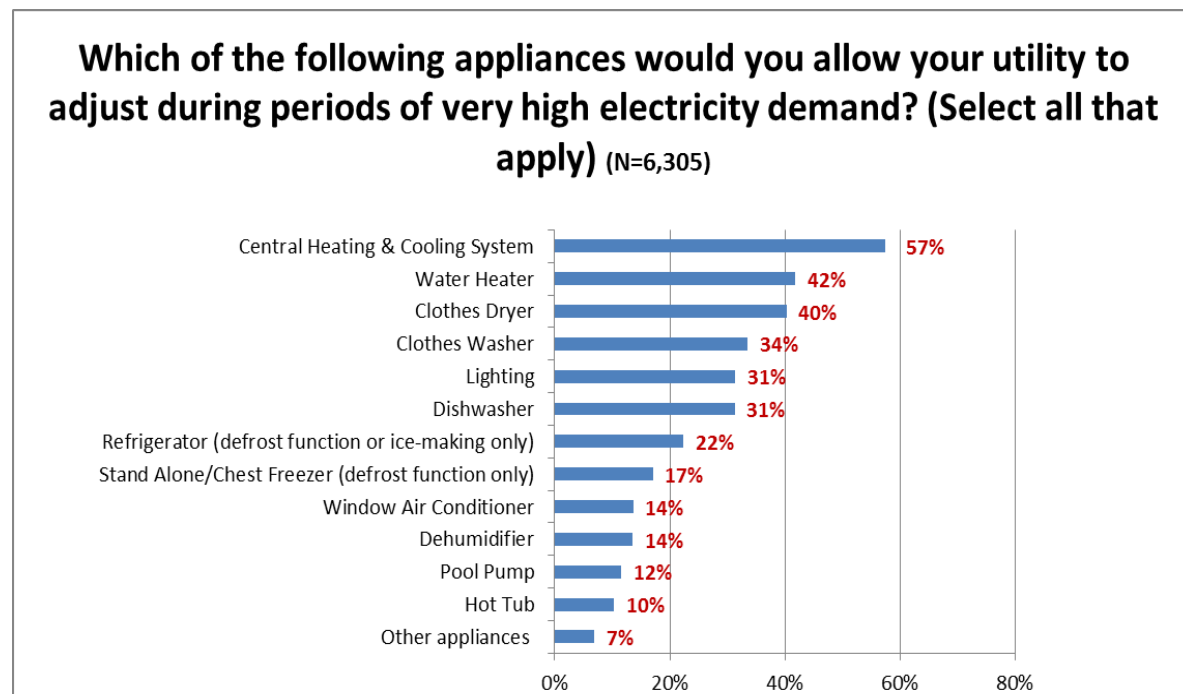
Q15a: Many utilities offer programs in which participants allow their utility to slightly adjust their air conditioners (by 1 to 2 degrees) during periods of very high demand to help ease the strain on the electricity grid.



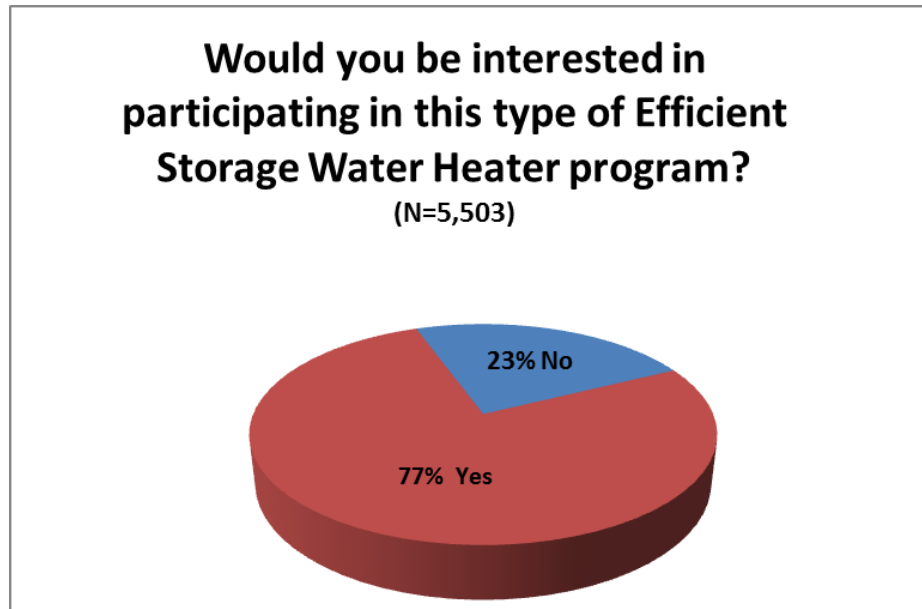
Q15b: Which of the following incentives would motivate you the most to participate in this type of program?



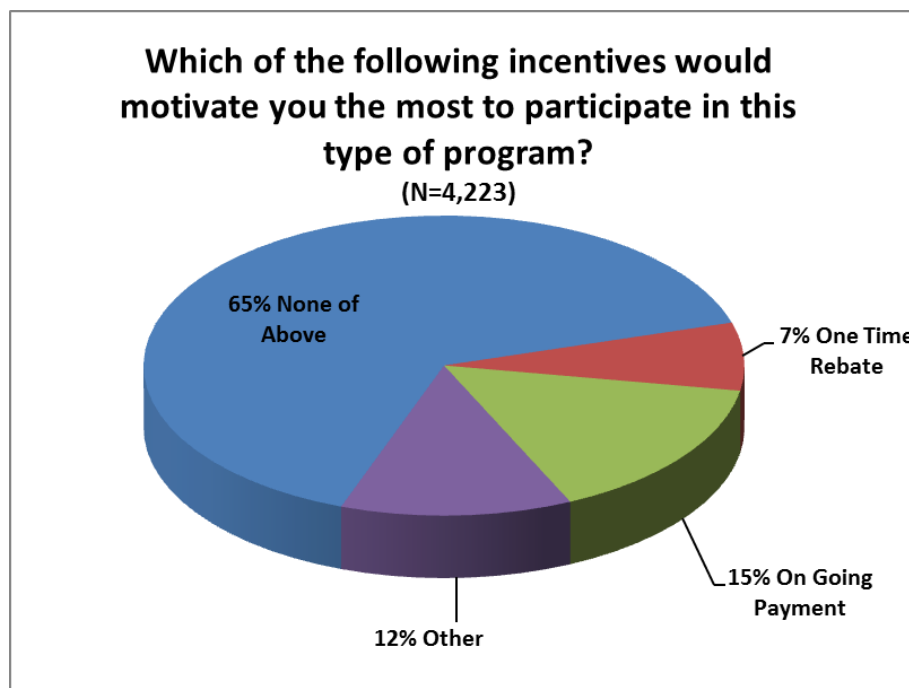
Q15c: Which of the following appliances would you allow your utility to adjust during periods of very high electricity demand? (Select all that apply)



Q16a: Heating water can account for a large proportion of your energy bill. Choosing to heat water during off-peak periods when prices are at their lowest can result in significant cost savings. New water heater technology has made it possible to only heat water during off-peak hours (between 7PM and 7AM on weekdays and all day during weekends), but still let an average household comfortably draw from it for the rest of the day.

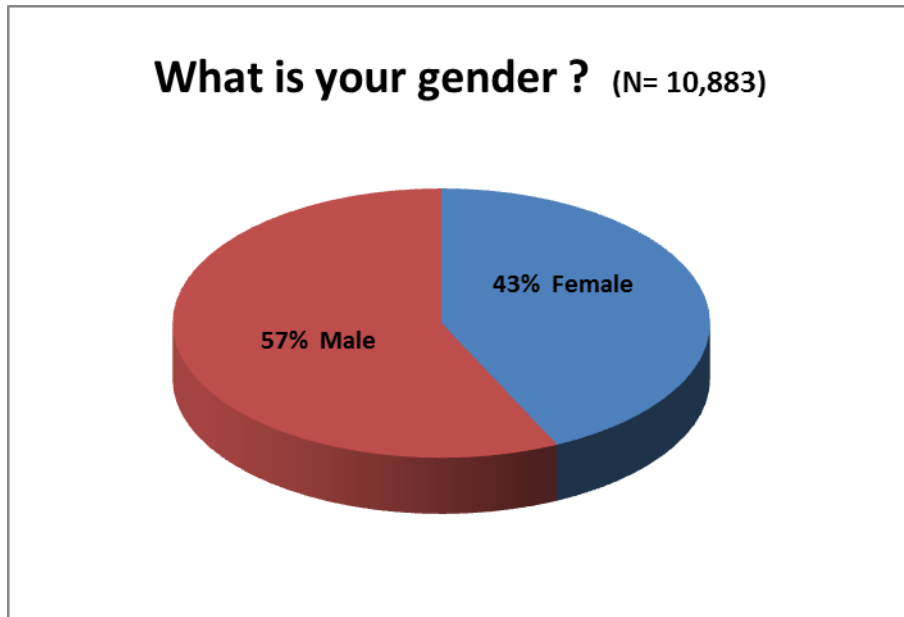


Q16b: Which of the following incentives would motivate you the most to participate in this type of program?

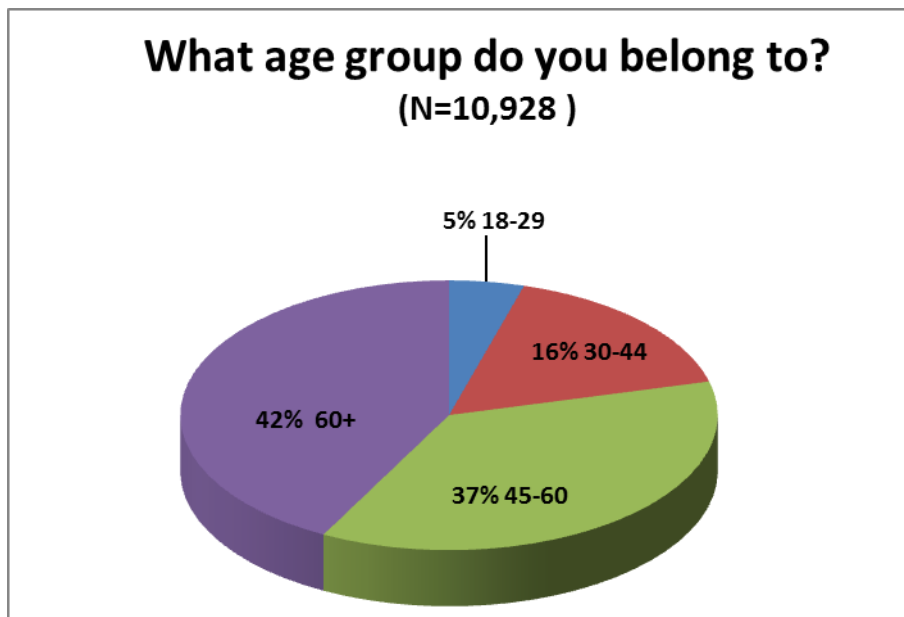


Section 5: Tell us about yourself

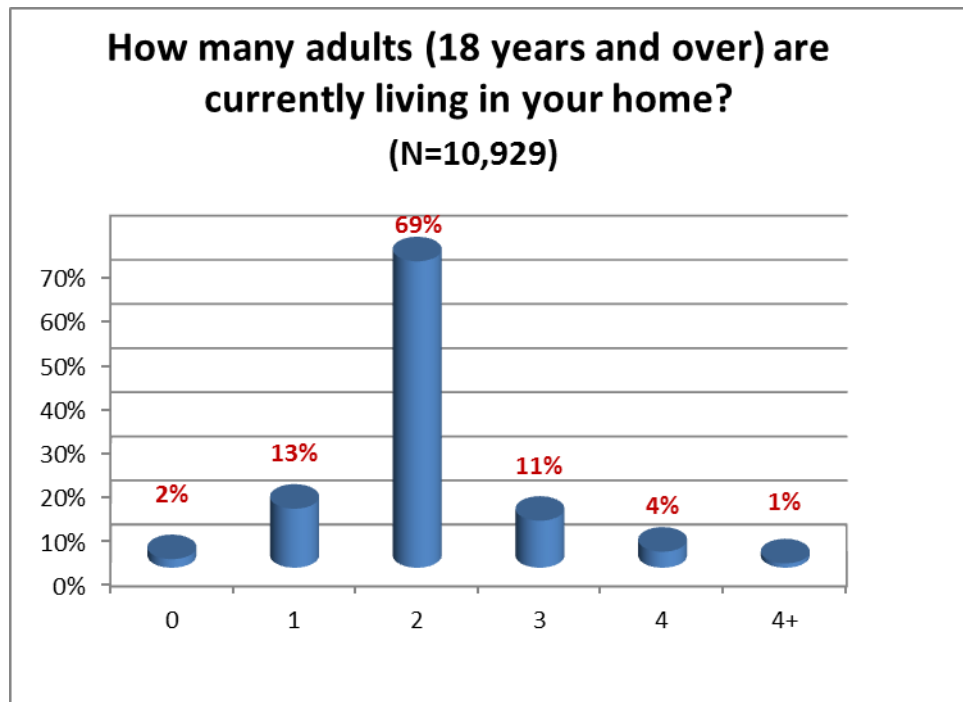
Q17: What is your gender?



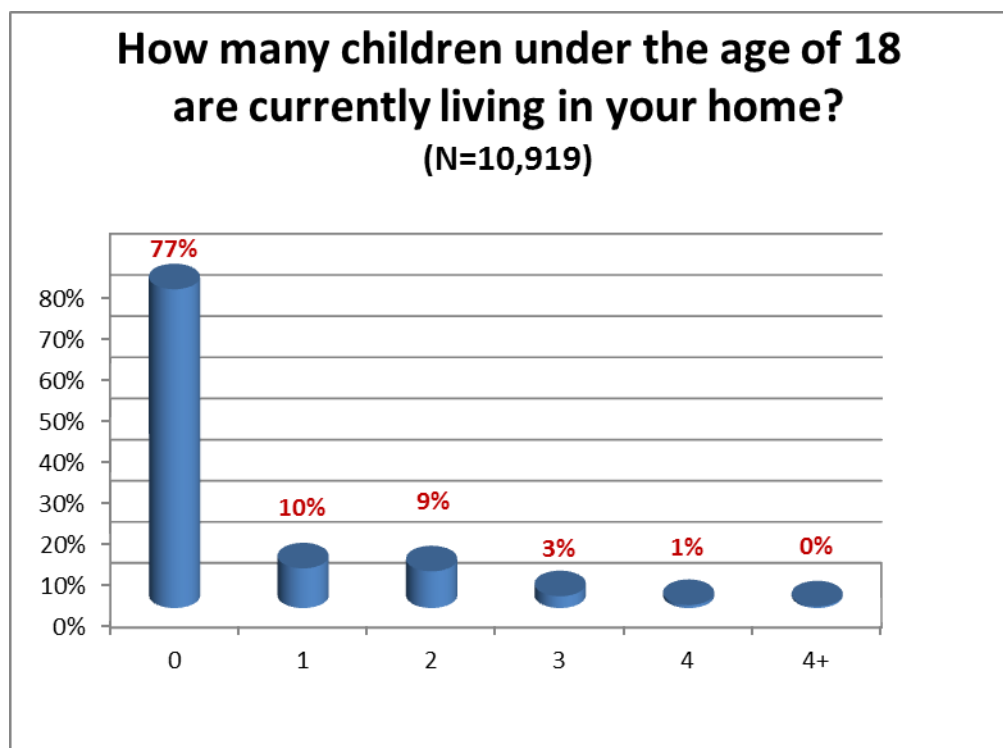
Q18: What age group do you belong to?



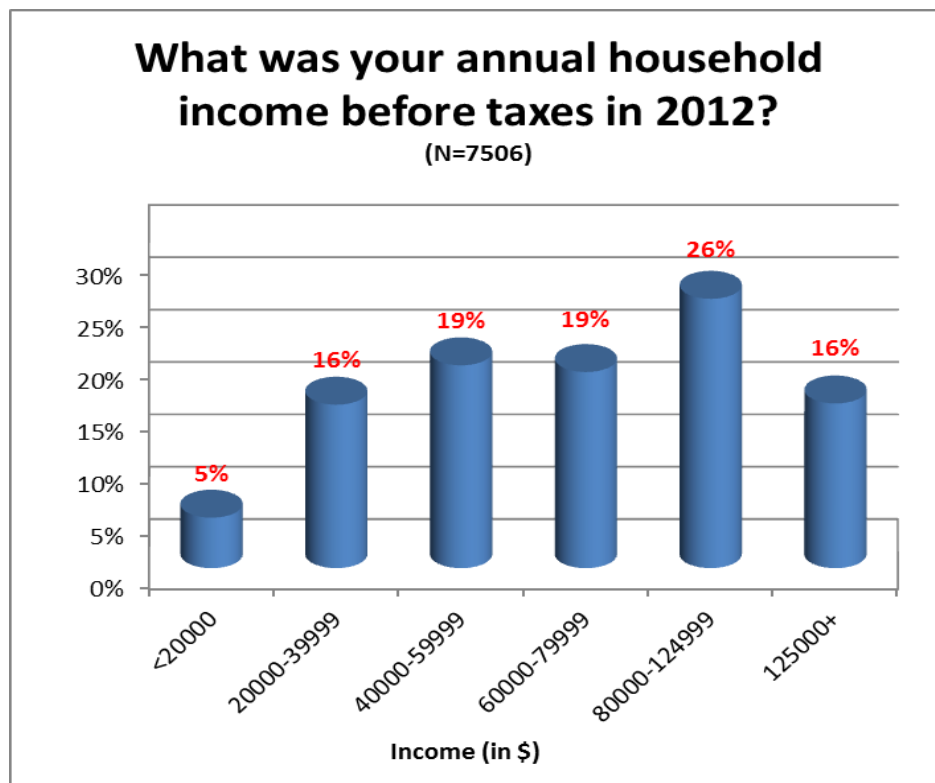
Q19: How many adults (18 years and over) are currently living in your home?



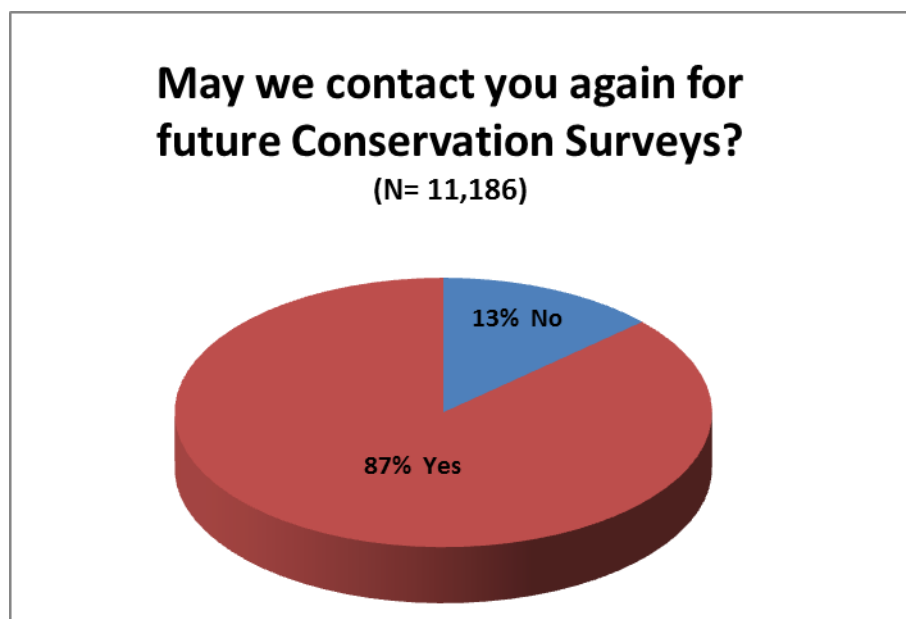
Q20: How many children under the age of 18 are currently living in your home?



Q21: What was your annual household income before taxes in 2012?



Q22: May we contact you again for future Conservation Surveys?



Green Energy Coalition (GEC) INTERROGATORY #24

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Please provide all studies that HONI has conducted in the last 10 years regarding the relationship of income, housing size and type (e.g., single and multi-family), and/or number of persons per household to residential electric usage, divided by winter heating fuel if available.

Response

Hydro One has not conducted any studies into this directly however this information was used as inputs to the Econometric Analysis using Survey Data presented in Exhibit A, Tab 16, Schedule 3, Appendices H and I (pages 118-153).

Green Energy Coalition (GEC) INTERROGATORY #25

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Please provide all studies in HONI's possession undertaken in the last 10 years (regardless of who conducted the study) regarding the relationship of income, housing size and type (e.g., single and multi-family), and/or number of persons per household to residential electric usage, divided by winter heating fuel if available.

Response

Hydro One is not aware of any studies.

Green Energy Coalition (GEC) INTERROGATORY #26

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Please provide load research data from HONI for each available residential customer in its load research sample showing each customer's load by season and time of use, each customer's contribution to the system peak in June-August and December-February, and each customer's contribution to the class NCP demand in June-August and December-February, together with customer weighting factors and an identifier for each customer.

Response

The requested information is provided in the attached XLS file, which has 5 MB of data (available electronically but not in printed form). The tabulation was based on a load research data set of randomly selected customers that Hydro One prepared for the OPA in its TOU impact evaluation. The analysis for this response included hourly data for almost 34,000 residential customers provided by the IESO.

Green Energy Coalition (GEC) INTERROGATORY #27

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Please provide all load studies that HONI has conducted in the last 10 years regarding the relationship of residential usage (either annual or seasonal) by size of customer to summer and winter coincident peak usage, usage by time of use, and class non-coincident peak usage. Provide all available sample data.

Response

Please see Attachment 5: 2008 Residential TOU Pilot in Exhibit I, Tab 7.07, Schedule 13 GEC 23 and the Econometric Analysis using Survey Data presented in Exhibit A, Tab 16, Schedule 3, Appendices H and I (pages 118-153).

Green Energy Coalition (GEC) INTERROGATORY #28

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Please provide all studies in HONI's possession undertaken in the last 10 years (regardless of who conducted the study) regarding the relationship of residential usage (either annual or seasonal) by size of customer to summer and winter coincident peak usage, usage by time of use, and class non-coincident peak usage in the province of Ontario

Response

The OEB has a list of Time-of-Use Studies conducted in Ontario available on its website. They can be found at the following URL.

<http://www.ontarioenergyboard.ca/OEB/Industry/Regulatory+Proceedings/Policy+Initiatives+and+Consultations/Regulated+Price+Plan/Regulated+Price+Plan+-+Ontario+Smart+Price+Pilot>

Green Energy Coalition (GEC) INTERROGATORY #29

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Please provide all studies that HONI has conducted in the last 10 years regarding the impact of changes to the customer charge on (a) cost-effectiveness of energy efficiency programs and measures to customers, and (b) total consumption of electricity in HONI's service area.

Response

Hydro One is not aware of any studies.

Green Energy Coalition (GEC) INTERROGATORY #30

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Please provide all studies in HONI's possession undertaken in the last 10 years (regardless of who conducted the study) regarding the impact of changes to the customer charges in Ontario on (a) cost-effectiveness of energy efficiency programs and measures to customers, and (b) total consumption of electricity.

Response

Hydro One is not aware of any studies.

Green Energy Coalition (GEC) INTERROGATORY #31

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Please provide all studies that HONI has conducted in the last 10 years regarding the elasticity of demand of its system or any of its customer classes.

Response

Hydro One has not done any studies.

Green Energy Coalition (GEC) INTERROGATORY #32

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Please provide all studies in HONI's possession undertaken in the last 10 years (regardless of who conducted the study) regarding the elasticity of demand in Ontario of any customer classes.

Response

Hydro One is not aware of any studies.

Green Energy Coalition (GEC) INTERROGATORY #33

Issue 7.7 Is an increase in the fixed charges revenue appropriate?

Interrogatory

Reference: Hydro One Annual Report 2012 page 15, which states under the heading “Our Strategy”: *Protecting and sustaining the environment for future generations.* Consistent with our value of stewardship, we play a central role in reducing Ontario’s carbon footprint through the delivery of clean and renewable energy and through measures that allow our customers to manage and reduce their energy use. We will engage our customers further regarding how we manage our sustainability obligations and activities on their behalf.”

Please explain in detail how reducing customers’ incentives to conserve energy by raising fixed charges is consistent with this environmental element of Hydro One’s “strategy.”

Response

Hydro One responds and participates in all OPA energy conservation programs available to help our customers manage and reduce their energy use. Any changes to the fixed charges will not change that commitment.

Hydro One’s proposal to raise fixed charges in this application is consistent with the principle of cost causality and results in only a small change to the fixed/variable revenue split from 40/60 to 42/58 across all rate classes. Given that the distribution portion of a customer’s total bill is typically less than 35% for most customers, the proposed increase in the fixed charge is not expected to have a material impact on customer incentives across Hydro One’s entire customer base.

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #111

Issue 7.8 Are the proposed charges for miscellaneous services over the 2015-2019 period reasonable?

Interrogatory

Reference: G2/T5/S1, pg. 31

- a) Please confirm that the costs shown in Table 16 for the years 2016-2019 were determined by applying a 1% / annum escalation rate to the 2015 costs. If not, please explain how the values were established.
- b) Why is 1% per year a reasonable escalation rate for the Joint Use - Telecom charge?
- c) What has been the historical escalation rate in the costs underlying this charge from since the currently approved rate was established up to the forecast 2015 costs?

Response

- a) Correct. 1% / annum escalation rate.
- b) The proposed Joint Use – Telecom rate is reasonable. The rate was determined using the formula found in “Appendix 2” of RP-2003-0249. This rate has been constant for ten years with no automatic escalator. The new proposed rate for 2015 captures ten years of increases in one year. The table “Telecom Specific Service Charges –Joint Use” captures the costs used in the OEB approved rate formula to determine the Joint Use Rates.

The rate increase of 1% per year is reasonable. The “Telecom Specific Service Charges –Joint Use” table illustrates the percentage increases by item. Rather than using a variable rate escalator based on CPI or GDP, the 1% increase is a better reflection of the average increase over the last five years. A fixed rate increase creates a more predictable financial planning platform for Telecom companies and Hydro One.

Telecom Specific Service Charges - Joint Use													
	RP-2003-0249 (Effective Date Mar. 7, 2005)	Historical Escalation Rate (%) Increase <u>Yearly</u> <u>Average</u> 2005 to 2015)	(Values from RP- 2010 -0228)	Historical Escalation Rate (%) Increase <u>Yearly</u> <u>Average</u> 2010 to 2015)	2015	Projected Escalation Rate (%) Increase 2015 to 2016)	2016	Projected Escalation Rate (%) Increase 2016 to 2017)	2017	Projected Escalation Rate (%) Increase 2017 to 2018)	2018	Projected Escalation Rate (%) Increase 2018 to 2019)	2019
Calculation of Telecom Joint Use Costs													
Net Embedded Cost	\$478.00	4.55	\$663.55	2.37	\$745.86	1.00	\$753.32	1.00	\$760.85	1.00	\$768.46	1.00	\$776.14
Depreciation per Pole	\$31.11	-8.58	\$12.14	0.87	\$12.68	1.03	\$12.81	0.94	\$12.93	1.05	\$13.06	1.00	\$13.19
Capital Carrying Cost	\$54.59	1.50	\$60.05	1.07	\$63.32	1.01	\$63.96	1.00	\$64.60	0.99	\$65.24	1.00	\$65.89
Maintenance (L&F)	\$7.61	26.90	*** \$81.39	0.25	\$82.41	1.00	\$83.23	1.01	\$84.07	1.00	\$84.91	1.00	\$85.76
Total Capital Related Costs	\$93.31	5.43	\$153.58	0.62	\$158.41	1.00	\$160.00	1.00	\$161.60	1.00	\$163.21	1.01	\$164.85
Allocated Capital Cost (21.9%)	\$20.43	5.43	\$33.63	0.62	\$34.69	1.01	\$35.04	1.00	\$35.39	0.99	\$35.74	1.01	\$36.10
Loss of Productivity	\$1.23	2.00	\$1.43	1.01	\$1.51	1.33	\$1.53	0.65	\$1.54	1.30	\$1.56	0.64	\$1.57
Administration	\$0.69	2.10	\$0.80	1.22	\$0.85	1.18	\$0.86	1.16	\$0.87	0.00	\$0.87	1.15	\$0.88
Vegetation Mgmt	\$0.00				\$0.00		\$0.00		\$0.00		\$0.00		\$0.00
Total Licensee Cost	\$22.35	5.18	\$35.86	0.66	\$37.05	1.00	\$37.42	1.02	\$37.80	1.01	\$38.18	1.00	\$38.56
Average Increase of Underlying Costs		4.067		1.132									
*** Note: Maintenance (L&F) costs are being calculated without reducing the forestry costs by 90% as was done in the Generator filing RP-2010-0228													

1

- 2 c) In the “Telecom Specific Service Charges –Joint Use” table, the historical escalation
3 rate in the costs from 2005 to 2015 are represented in the third and fifth columns from
4 the left. Between 2010 and 2015, Hydro One costs that determine the Joint Use rate
5 have increased on average by 1.13% per year.

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #112

Issue 7.8 Are the proposed charges for miscellaneous services over the 2015-2019 period reasonable?

Interrogatory

Reference: G2/T5/S1, pg. 32-33

- a) Please confirm that the costs shown in Table 17 for the years 2016-2019 were determined by applying a 1% / annum escalation rate to the 2015 costs. If not, please explain how the values were established.
- b) Why is 1% per year a reasonable escalation rate for the Joint Use – LDC and Generator charge?
- c) What has been the historical escalation rate in the costs underlying these charges since the currently approved rate was established up to the forecast 2015 costs?

Response

- a) Correct. 1% / annum escalation rate.
- b) Yes the rate is reasonable. Referring to decision of RP-2010-0228, the variable rates based on amount of pole space used, have been the same with no yearly automatic escalator. With the new proposed rate in 2015, five years of increases are captured in one year.

Note: In 2010 (RP-2010-0228), Hydro One inadvertently only used 10% of the Forestry maintenance costs rather than 100% in its pole maintenance expense calculation resulting in a rate that did not reflect actual costs.

Captured in the “Generator Specific Service Charges –Joint Use” and “LDC Specific Service Charges –Joint Use” tables are the items that are used in the OEB approved rate formula.

Generator Specific Service Charges - Joint Use

	RP-2010-0228 (Effective Date Dec. 17, 2010)	If the Correct Forestry Percentage was used in the Calculation for RP-2010-0228	If the Correct Forestry Percentage was used- Historical Escalation Rate (% Increase Yearly Average 2010 to 2015)	Historical Escalation Rate (% Increase Yearly Average 2010 to 2015)	2015	Proposed Escalatio n Rate (% Increase 2015 to 2016)	2016	Proposed Escalatio n Rate (% Increase 2016 to 2017)	2017	Proposed Escalatio n Rate (% Increase 2017 to 2018)	2018	Proposed Escalatio n Rate (% Increase 2018 to 2019)	2019
Calculation of Telecom Joint Use Costs													
Net Embedded Cost	\$663.55	\$663.55	2.37	2.37	\$745.86	1.00	\$753.32	1.00	\$760.85	1.00	\$768.46	1.00	\$776.14
Depreciation per Pole	\$12.14	\$12.14	0.87	0.87	\$12.68	1.03	\$12.81	0.94	\$12.93	1.05	\$13.06	1.00	\$13.19
Capital Carrying Cost	\$60.05	\$60.05	1.06	1.06	\$63.32	1.01	\$63.96	1.00	\$64.60	0.99	\$65.24	1.00	\$65.89
Maintenance (L&F)	*** \$20.92	\$78.66	0.94	31.60	\$82.41	1.00	\$83.23	1.01	\$84.07	1.00	\$84.91	1.00	\$85.76
Total Capital Related Costs	\$93.11	\$150.85	0.98	11.21	\$158.41	1.00	\$160.00	1.00	\$161.60	1.00	\$163.21	1.01	\$164.85
Allocated Capital Cost (28.1%)	\$26.17	\$42.39	0.98	11.21	\$44.51	1.01	\$44.96	1.00	\$45.41	1.00	\$45.86	1.00	\$46.32
Loss of Productivity	\$1.43	\$1.43	1.10	1.10	\$1.51	1.32	\$1.53	0.65	\$1.54	1.30	\$1.56	0.64	\$1.57
Administration	\$0.80	\$0.80	1.20	1.20	\$0.85	1.18	\$0.86	1.16	\$0.87	0.00	\$0.87	1.15	\$0.88
Vegetation Mgmt	\$0.00	\$0.00			\$0.00		\$0.00		\$0.00		\$0.00		\$0.00
Total Licensee Cost	\$28.40	\$44.62	0.99	10.54	\$46.88	1.00	\$47.34	1.01	\$47.82	1.00	\$48.30	0.99	\$48.78
Average Increase of Underlying Costs			1.26	6.37									
*** Note: In the Generator filing RP-2010-0228 Maintenance (L&F) costs were calculated incorrectly by reducing the forestry costs by 90%													

1

LDC Specific Service Charges - Joint Use

	RP-2005-0020/EB-2005-0378 Ex G2 Tab 93 S1 page 11	Historical Escalation Rate (% Increase Yearly Average 2005 to 2015)	2015	Proposed Escalation Rate (% Increase 2015 to 2016)	2016	Proposed Escalation Rate (% Increase 2016 to 2017)	2017	Proposed Escalation Rate (% Increase 2017 to 2018)	2018	Proposed Escalation Rate (% Increase 2018 to 2019)	2019
Calculation of Telecom Joint Use Costs											
Net Embedded Cost	\$491.22	4.27	\$745.86	1.00	\$753.32	1.00	\$760.85	1.00	\$768.46	1.00	\$776.14
Depreciation per Pole	\$16.12	-2.37	\$12.68	1.03	\$12.81	1.00	\$12.93	1.05	\$13.06	1.00	\$13.19
Capital Carrying Cost	\$56.10	1.22	\$63.32	1.01	\$63.96	1.00	\$64.60	0.99	\$65.24	1.00	\$65.89
Maintenance (L&F)	\$21.56	14.35	\$82.41	1.00	\$83.23	1.01	\$84.07	1.00	\$84.91	1.00	\$85.76
Total Capital Related Costs	\$93.78	5.38	\$158.41	1.00	\$160.00	1.00	\$161.60	1.00	\$163.21	1.01	\$164.85
Allocated Capital Cost (28.1%)	\$26.35	5.38	\$44.51	1.00	\$44.96	1.00	\$45.41	1.00	\$45.86	1.01	\$46.32
Loss of Productivity	\$1.57	-0.39	\$1.51	1.32	\$1.53	0.65	\$1.54	1.30	\$1.56	0.64	\$1.57
Administration	\$0.69	2.11	\$0.85	1.18	\$0.86	1.16	\$0.87	0.00	\$0.87	1.15	\$0.88
Vegetation Mgmt	\$0.00		\$0.00		\$0.00		\$0.00		\$0.00		\$0.00
Total Licensee Cost (10' of power space)	** \$28.61	5.06	\$46.88	1.00	\$47.34	1.02	\$47.82	1.01	\$48.30	1.00	\$48.78
Average Increase of Underlying Costs		3.20									
** Note: This rate was a historical rate that was agreed to by the LDCs in the province											

2

3

1 Generators are paying a rate on a sliding scale based on the amount of power space
2 they use. Hydro One is proposing that LDCs and Generators are both charged using
3 the same sliding scale rates.

- 4
5 c) The Generator (RP-2010-0228) and LDC (RP-2005-0020/EB-2005-0378 Exhibit G2
6 Tab 93, Schedule 1, historical escalation rates and new proposed rates to cover the
7 costs underlying these charges are shown above in “Generator Specific Service
8 Charges –Joint Use” and “LDC Specific Service Charges –Joint Use” tables.

9
10 In “Generator Specific Service Charges –Joint Use” (third column from the left), the
11 Maintenance (Lines and Forestry) costs are calculated using the corrected Forestry
12 costs. With that corrected, the average increase in underlying costs has increased by
13 1.26% per year, over the last five years.

14
15 In “LDC Specific Service Charges –Joint Use”, the average increase of the
16 underlying costs has increased by 3.2% per year, over the last ten years.

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #113

Issue 7.9 **Are the adjustments to reflect the Board-directed line loss study appropriate?**

Interrogatory

Reference: **G1/T8/S2, Attachment 1, pg. 27**

Preamble: The report states that the final list of feeders used serve over 80% of Hydro One Networks' customers.

a) What percentage of Hydro One Networks distribution load is serviced by these feeders?

Response

a) This information is not readily available, as the annual consumption data for individual customers was not collected or linked to individual feeders as part of this study. Given the sample design and feeder selection process, Navigant believes that the proportion of load served by the final list of feeders should be similar to the proportion of customers served.

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #114

Issue 7.9 Are the adjustments to reflect the Board-directed line loss study appropriate?

Interrogatory

Reference: G1/T8/S2, Attachment 1, pg. 29

- a) Since the purpose of the study is to determine loss factors which are related to electricity use, why was number of customers by class used to segment the feeders into clusters as opposed to the load (i.e. kWh) by class?

Response

The purpose of this element of the study was to try to better understand the extent to which line losses vary by customer class. Navigant identified feeders that served predominantly urban customers, predominantly rural customers, or a mix of urban and rural customers. The load served (i.e. kWh) by class would be highly correlated with the number of customers served by class.

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #115

Issue 7.9 Are the adjustments to reflect the Board-directed line loss study appropriate?

Interrogatory

Reference: G1/T8/S2, Attachment 1, pg. 32-35

- a) Why did the loss analysis focus on kW as opposed to kWh losses?
- b) In determining kW losses, what was the “peak” used (i.e. was it the peak of the originating feeder per Figure 21)?
- c) In measuring the “peaks” of the downstream segments and transformers were they all based on the “peaks” coincident with the peak of the originating upstream feeder? If not, how were they determined?
- d) Given that the actual peaks for the various downstream segments and transformers may occur at a different time (and be higher) why is this approach appropriate?

Response

- a) The underlying load (or power) flow modelling provides snapshots of the network at a particular point in time. Hence the losses are effectively estimated on an “instantaneous” or kW basis. As discussed in the report on page 36 under the heading “Peak to Average Losses” the kW losses are converted to kWh losses for the purpose of determining a total loss factor.
- b) Yes, “peak” is determined based on the peak load on the originating feeder.
- c) Yes, the load on downstream segments and transformers are estimated based on the load coincident with the peak on the upstream feeder.
- d) This was a simplifying assumption, given the load flow data that was available for the time of peak loading on the upstream originating feeder. The purpose of this element of the study was to try to better understand the extent to which line losses vary by customer class, it was not used to determine the magnitude of the losses that are incurred on the network. Given the diversity of feeders analyzed in the study and the fact that the losses for a given customer represent the summation of all upstream losses, this assumption does not introduce any material bias for any one particular customer class.

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #116

Issue 7.9 Are the adjustments to reflect the Board-directed line loss study appropriate?

Interrogatory

Reference: G1/T8/S2, Attachment 1, pg. 35

Preamble: The report states that secondary losses were estimated for each customer based on the estimated contribution of each customer to the load on the transformer.

- a) How was this contribution determined? For example, was it based on each customer's contribution to the peak for the transformer or to each customer's contribution to the peak of the originating upstream feeder?
- b) Is the determination of the contribution of each customer consistent with the definition of "peak" and "peak losses" as outlined in the section titled "Allocation of Losses to Distribution Transformers" (pg. 34-35)? Please explain why.

Response

- a) It was based on each customer's estimated contribution to the loading of the transformer that occurs coincident with the peak on the originating upstream feeder.
- b) No. The approach used to estimate each customer's contribution to the loading of the transformer that occurs coincident with the peak on the originating feeder is the regression analysis discussed in the section titled "Allocation of Losses to Customers".

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #117

Issue 7.9 Are the adjustments to reflect the Board-directed line loss study appropriate?

Interrogatory

Reference: G1/T8/S2, Attachment 1, pg. 35-36

Preamble: The report states (page 35) that where the distribution transformer served customers in different customer classes, the estimated peak load contribution of each type of customer was used as the basis for allocating losses. The equation on page 36 sets out the model used to estimate these values.

- a) Over what timeframe was the model estimated?
- b) Please confirm that a separate regression analysis done for each feeder, such that there were different estimated peak load contributions by customer class for each feeder?
- c) Please provide the resulting estimates of average peak load contribution for each customer class by feeder.
- d) Why was it assumed that the UR, R1 and R2 classes would all have the same average contribution per customer?
- e) What was the average load factor as determined for each of the customer classes (page 36)? In responding please indicate how the “peak load” value used in determination of the average load factor was determined.
- f) For each customer class, was the same load factor used for all feeders? If yes, why is this appropriate given that all feeders do not peak at the same time?
- g) What is the rationale for the formula (page 36) used to estimate LLF and, in particular, the basis for the “k” values used?

Response

- a) This is a cross-sectional regression, not a time-series regression. The timeframe is the instantaneous point in time, coincident with the peak demand on the originating feeder.
- b) A separate regression analysis was conducted for each originating feeder group.
- c) See below. All values are in kW.

Cluster	UGD	GSD	UGE	GSE	UR, R1, & R2	SEASONAL
1	n/a	205	n/a	5	1.8	0.5
2	n/a	35	n/a	3.4	2.9	n/a
3	n/a	n/a	n/a	3.8	1.4	0.6
4	n/a	n/a	4	2.4	1.5	0.5
5	n/a	41	n/a	6.5	2.3	0.9
6	n/a	142	n/a	4.2	1.6	2.4
7	n/a	n/a	n/a	n/a	n/a	n/a
8	n/a	39	n/a	3.2	1.4	n/a
9	118	106	11.9	12.2	0.7	0.7
10	n/a	n/a	n/a	n/a	n/a	n/a
11	n/a	96	n/a	2.4	1.3	1.2
12	n/a	39	n/a	2.2	1.4	2
13	n/a	19	n/a	9.6	4.4	1.5
14	n/a	48	n/a	1.8	1.7	0.8
15	76	19	5.9	20.9	1	0.5
16	199	103	7	7.2	2.2	n/a

Note: The sample feeders in cluster 7 and 10 only serve ST customers

- d) This was a simplifying assumption. Where predominantly one class of year-round residential customer was served by a particular feeder, it has a negligible impact on the result. Where there was a mix of year-round residential customers from different classes, the relative proximity of customers is such that the dwelling types are likely to be similar, in particular as compared to the non-residential customers served by the feeder.
- e) See below. The load factors were calculated using the hourly data provided to Navigant for the 2012 analysis discussed in Section 2 of Exhibit G1-8-2 Attachment 1. Peak load was based on the average demand in the highest 45 (~0.5%) of hours.

ST	UGD	GSD	UGE	GSE	UR	R1	R2	SEASONAL
0.79	0.63	0.67	0.6	0.64	0.51	0.56	0.57	0.44

- f) Yes. It was a simplifying assumption. The purpose of this element of the study was to try to better understand the extent to which line losses vary by customer class. While not all feeders peak at the same time, this assumption does not introduce a bias for any one particular customer class.

- 1 g) It is a standard engineering formula, with k typically varying between 0.1 and 0.3,
2 with 0.3 a relatively common assumption for sub-transmission systems and 0.2 a
3 relatively common assumption for medium voltage feeders and distribution
4 substations.
5

Vulnerable Energy Consumers Coalition (VECC) INTERROGATORY #118

Issue 7.10 **Are the proposed rate mitigation plans appropriate for some customers moving between rate classes in accordance with the results of the rate class review?**

Interrogatory

Reference: **G1/T7/S1, pg. 5**

- a) What is the expected cost (in terms of revenue reduction) for the proposed 2015 bill impact mitigation plan?
- b) What is the expected cost of implementing the proposed bill impact mitigation (as distinct from the anticipated revenue reduction)?

Response

- a) The expected 2015 credit to customers associated with the bill impact mitigation is estimated to be about \$265,000.
- b) The expected cost of implementing the proposed bill impact mitigation is expected to be minimal. Based on past experience with the bill impact mitigation of acquired customers in 2008 to 2011, no implementation costs were included in the variance account as the costs associated with identifying, tracking and reporting the implementation costs were considered to outweigh the benefits associated with recovery of those costs.