

# **FINAL REPORT**

## **IESO/OANHSS Project: Electricity Pricing and Use Analysis**

### **LTC Facility Interviews - Summary Report**

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## **METHODOLOGY**

### **Interview Strategy**

A joint initiative was established by the IESO and the OANHSS to help OANHSS members who constitute the Long Term Care facility sector to make the transition from Regulated Price Plan electricity pricing to market based pricing. The purpose of the project to provide OANHSS members with an improved understanding of the electricity market based pricing options, as well as the capacity to better manage their electricity costs through the implementation of energy use reduction opportunities.

Fifteen OANHSS facilities participated in a series of confidential telephone interviews which were completed during the months of February and March of 2009 using the 34 question questionnaire which is included as Appendix 1. The interviews explored the facility's current electricity tariff structure, the understanding of market based pricing, internal energy management technical infrastructures and programs, the use of incentive programs, planned or implemented energy cost reduction projects, and assistance requirements. Each participant was also asked to provide a copy of their electricity invoice, so that line items could be compared.

### **Facilities in Sample**

The participating facilities were located in communities ranging from large urban centers to rural villages in Southern and Central Ontario. They were either a component of a municipal or county network of LTC centers or stand alone charitable corporations. The available beds and floor area of the facilities ranged from 78 to 390 beds and 76,000 square feet to 492,000 square feet respectively. Three facilities had unassisted living apartments or detached dwelling units. The newest complex was constructed in 2006 while the oldest completed its first phase of construction in 1956. The sample included either both single and multi floor structures which made up single or multiple building complexes. Each centre had kitchen and laundry facilities. Most used natural gas as a second energy source, but where natural gas was unavailable propane was employed.

## **INTERVIEW RESULTS**

### **Overview of interview findings**

The matrix which summarizes the findings from the interviews is included in Appendix 2.

In general the responsibility for reviewing the electricity bills rested with the Building Operations, Maintenance or Environmental Managers. In one case, the municipality employed a corporate Energy Specialist and in another the Charitable Corporation created a Coordinator of Energy Infrastructure position. In the smallest facility the bill review was the responsibility of the home Administrator. Most of the participants had some level of understanding of the bill line items, but 3 out of the 15 had no knowledge of the electricity invoice's details.

Eight sites had installed interval meters but only three were analyzing the energy consumption and demand data from the meter. In two cases the homes had hired an energy consultant or marketer to do the analysis and in the other the utility had done a one time analysis of consumption and demand.

Only one facility has moved to wholesale pricing and did so in January of 2009 with the help of an energy market consultant/retailer. It had anticipated the transition from RPP and felt risk management of the wholesale price was the most cost effective option. A second home is well prepared to make the transition in May and is developing procurement strategies using an energy consultant. In general the remainder of the group is looking to OANHSS to provide help in defining whole market procurement options and management strategies. Two of the interviewees were completely unaware of the move from RPP to wholesale pricing and one other thought that approval had been granted for them to stay on RPP. When the interviews were conducted in February and March of this year, there was only one case noted where the local electric utility had informed the facility about the transition. In the majority of cases the notification came from OANHSS.

Four homes have taken advantage of government or utility incentive programs primarily to carry out equipment retrofits, three have conducted energy audits and four have implemented power factor correction. Thirteen of the participating facilities spent less than \$5000 on energy reducing opportunities while two spent between \$5000 and \$20,000. Each participant felt that their facility required an audit in order to affectively identify opportunities and that an electricity audit incentive program was necessary

Six participants have implemented formalized internal energy management/awareness programs which involve awareness campaigns, targeted actions eg shutting of lights and computers and on site energy or green committees. In one case the committee has been established at the county level. One centre has developed, implemented and commercialized an energy awareness program called CHESTER specifically designed for LTC facilities. Only three of the organizations stated that they had a formalized energy plan and strategy in place.

All agreed that either savings opportunities existed or that an audit was needed to find them. Every participant supported the need for audit incentives. The largest barriers to taking action

were lack of upfront capital, lack of resources and lack knowledge of incentive programs. All felt that external assistance would be helpful from all levels of government and the utilities. All supported the need for a LTC center targeted workshop focused on the electricity pricing structure transition and the identification of energy savings opportunities

## **Information requested for final report**

A key deliverable of this project is the final report. During the interviews the participants made several suggestions about what guidance material would be most helpful for them in the report. What follows is a list of final report content items:

- Explanation of electricity bill line items reflecting the impact of the transition to wholesale market pricing – See Appendix 3 for a list of Line Items
- Explanation of wholesale market dynamics, rebates and price setting
- Explanation of the options for buying electricity in the wholesale market and a relative cost analysis for each option
- List of reputable electricity retailers
- List of relevant Electric Utilities and their contact information or client representatives
- Description of government and utility incentive programs, their targeted actions, and access protocols
- Updated energy performance benchmarking for LTC facilities
- List of reputable energy service providers with LTC facility experience
- Interview overview report that presents the cross-section of facility transition preparedness for the sample group
- List of energy reducing actions and opportunities implemented or identified within the group
- Summary reports from the 2 project facility audits

## **Wholesale Market Preparations**

One facility moved to market based pricing in January 2009. Another site is developing a strategy to make the transition. A third is working toward a strategy with the local utility. The following common actions were taken by these organizations in preparation for wholesale market pricing:

- The boards governing the facilities and senior management had an understanding of the transition to wholesale market and the fundamental operation of the wholesale market. As a result they approved and supported the process.
- Each site obtained help from either an energy marketing company, an energy consultant or the local utility.
- Interval meters were installed.
  
- Monthly and daily demand and consumption data from the interval meters was analyzed and energy profiles for the facility were established
- Price impacts were analyzed along with the cost risks associated with price volatility

- A procurement strategy was developed and approved by senior management. The execution of the strategy can be carried out by the facility manager, the municipality, an energy consultant, or a market consultant/retailer.

These three sites emphasized the need for help to analyze current energy performance and to develop a procurement strategy. It was also suggested that the smaller facilities should consider buying electricity as an aggregated group where appropriate and that they should contact the advanced homes in order to draw on transition expertise and experience within the sector.

## **Energy Savings Opportunities – Implemented or Identified**

The following LTC centre energy saving opportunities came to light during the interviews:

- Lighting retrofits to T8 or T5 fixtures
- Lighting motion detectors and switching
- Improved windows
- Improved insulation
- HVAC system automation, tuning and air balancing
- Operational and maintenance training for building energy consuming systems and control systems
- General energy awareness training
- Waste heat recovery from exhaust air systems and laundry waste water
- Installation of Variable Speed Drives on fans and pumps
- Installation of capacitors to correct Power Factor
- Electricity demand peak management and load shifting to off-peak hours
- Hot water boiler cleaning or replacement
- Energy efficient engineering of new facilities or additions to the LEED standard
- Chiller efficiency improvements
- Switching fuel source from electricity to natural gas for kitchen and laundry appliances as well as space heating
- Installation of heat pumps
- Replacement of refrigeration appliances including a change from water cooling to air cooling
- Replacement of hot water heaters
- LED Exit signs
- Building temperature set-backs
- Low flush toilets
- Improved maintenance of filters in air handling systems
- Timers or sensors on exterior lights

## **Energy Programs and Strategies**

Three of the facilities have formalized their approach to improving the efficiency of energy usage. One other is using a consultant to develop a formal energy plan and strategy. The remainder of the participants do not have structured programs, plans or strategies in place.

The formal structures take the following 3 forms:

- A Green Committee established by the Association of Municipalities which assesses the energy savings opportunities at a home and support the development of an implementation plan
- A Green Committee established internally with representatives from the key areas/departments of the facility that carries out internal audits, identifies opportunities, and develops internal action plans and strategies.
- CHESTER a commercially available program specifically designed for long term care centers that focuses on developing energy awareness within a facility.

# APPENDICES

## APPENDIX 1

### Interview Questions

#### A. Home information - All interview information will be kept confidential

- I. Name of home
- II. Location
- III. How many rooms/beds are in your facility? Floor area?
- IV. Do you have kitchen facilities/laundry, etc.?
- V. What levels of care does your home accommodate?
- VI. Do you operate any housing projects in your campus? Are they separately metered from your LTC facility? ( Multifaceted - LTC Residential )
- VII. What type of meter does your home have? Interval? Conventional? If you have an interval meter, are you able to provide one years worth of your interval meter data to get a sense of usage patterns and peaks? - annual consumption & demand
- VIII. Who is your electrical utility? How are you charged for electricity? How is the bill processed? Please provide a full copy of your hydro bill to Fax # 519 747 0881
- IX. Does your facility use natural gas? If so can you provide an annual consumption in cubic meters?
- X. Are you familiar with OANHSS Electricity Resource Guide and Price Evaluation Tool and Electrical Tracking Tool

#### B. ELECTRICITY PRICING

1. Are you aware that homes that are currently on the Regulated Price Plan for electricity are being moved onto the wholesale electricity market? If so, how did you find about this change in electricity pricing?
2. How does your home pay for electricity?
  - i. Regulated Price Plan
  - ii. Market price
  - iii. Retail contract or buying group (if so, what group and when did you sign up)
3. Are you familiar with the wholesale electricity market and how the price is set?

4. Is there someone in your facility that analyses the electricity bill and tracks and monitors electricity use?
5. Do you understand your home's electricity bill, in general, and the difference between demand charges and energy charges, in particular?

***Already moved to the wholesale market***

6. When did you move to the wholesale market?
7. Why did you decide to move from the Regulated Price Plan to the wholesale market?
8. What effects have you seen that you attribute to being on the wholesale market (price increase/decrease?) Were these effects as expected?
9. What tools or strategies have you employed to deal with electricity prices (e.g. procuring electricity from a retailer)? Have these strategies been successful and met your objectives to date?
10. Are you contemplating/planning changes/refinements to your existing tools/strategies? What additional risk mitigation tools or strategies are you considering/developing to deal with electricity prices?
11. What strategies would you recommend other homes? Are there any strategies that you would not recommend?

***Those still on RPP***

12. What are your expectations for the move to wholesale pricing - do you expect your bills to go up or down?
  13. Have you done any analysis to determine what the impacts might be?
  14. In anticipation of the move from the Regulated Price Plan to wholesale pricing what strategies/activities will you employ/have you employed?
  15. What information would you like to obtain about the wholesale market and about your options to help you better prepare for the switch?
- 
16. In your opinion what organizations/groups should be providing information about electricity pricing or electricity use in general? (your electric utility, your trade association, Ontario Energy Board, IESO, OPA, other)

## C. ENERGY PLANNING

### Energy conservation programs

17. Are you currently participating or have you participated in energy conservation programs with any of the following organizations?
- o Ontario Power Authority (OPA - demand response programs - DRI/DR2/DR3 etc.)
  - o Gas distribution companies (Union Gas, Enbridge)
  - o Electricity distribution companies (e.g. ERIP)
  - o IESO
  - o Natural Resources Canada
  - o CIPEC
  - o Other

If so, please describe your participation in these programs including type of program, activities, length of participation etc.

18. Are you currently implementing any additional electricity conservation or demand response programs or policies in your facility (e.g. education and awareness, turn off lights/computer campaigns)? If so, please describe these programs or policies including type of program, activities, length of participation etc.
19. Are you currently implementing any programs to correct your power factor? To reduce your demand charges exclusively, or with other program components as well?
20. Have any of these programs or policies (referred to in questions 17-19 above) required the purchase of capital equipment? If yes, how much have you spent?
- i. Less than \$5000
  - ii. Between \$5000 and \$19,999
  - iii. Between \$20,000 and \$29,999
  - iv. Between \$30,000 and \$49,999
  - v. More than \$50,000
21. Are you planning any new electricity conservation or demand response programs in the future?
22. When would you consider using electricity conservation programs?
- i. When more incentives are available through government or other programs
  - ii. When you move to wholesale prices
  - iii. When it becomes a higher priority of the senior management or owner (whichever applies)?

## Energy audits and retrofits

23. Have you ever had an energy audit conducted in your facility? If so, when did this audit(s) take place and what were the results of this audit (savings identified, recommendations implemented etc.)? Would it be possible for us to get a copy of the audit report/results? If you have not ever conducted an audit in your facility, why not?
24. Are you interested in having/would you be willing to have an audit conducted of your facility? If not, why not?
25. Please provide a list/describe of all energy efficiency retrofit projects that are planned, underway or have been completed in the last 3-5 years in your facility. Where appropriate (e.g. where there are a large number of projects, where you have aggregated parameters for the grouping), please aggregate projects into their appropriate groupings.
26. Have energy management plans been prepared in the last 3-5 years for your facility? If yes, please provide a copy of the most recent energy management plan(s). If no, how have energy management projects been determined and implemented at your facility?
27. Does your facility have any environmental/sustainability programs that have an energy component?
  
28. Does your facility have a vision, mission or policy statement for electricity and energy or any environmental/sustainability statements that have an energy component?
29. Would you consider your home to be an efficient user of electricity/energy? If so, why? If not, why not?
30. What equipment and/or processes are the largest consumers of electricity in your home?
31. In your opinion where are the greatest opportunities in your home for saving electricity?

**Assistance in identifying and taking advantage of energy saving opportunities**

32. What barriers do you face in taking advantage of energy saving opportunities?
- o Lack of access to upfront capital to invest in upgrades
  - o Lack of knowledge about programs/funding opportunities
  - o Lack of resources (internal/external - please describe)
  - o Lack of assistance in accessing stackable funding programs
  - o Other, please describe

What suggestions do you have to help overcome these barriers?

33. Would you benefit from assistance in identifying and taking advantage of energy saving opportunities in your facility? If not, why not?

34. If so, what kind of help would be useful? Who would you prefer to provide this type of assistance to you?
- o OANHSS
  - o OPA
  - o IESO
  - o NRCan
  - o Gas distribution companies (Union Gas, Enbridge)
  - o Electricity distribution companies
  - o Natural Resources Canada

## APPENDIX 2

### Facility Interview Overview Matrix

**Table 1**

FACILITY	Interview Question Subjects										Wholesale
	Units	Apartments or Detached	Area	Natural Gas	Natural Gas / Propane Annual Consumption m3	Facilities: Kitchen ... Laundry	Understand Electricity Bill Charges	Energy Data	Interval Meter	RPP	
<b>X in Cell Denotes a Positive Response</b>											
Facility - 1	192	0	158930 sq ft	X	446,016	X	X			X	
Facility - 2	160	0	100,000 ft2	X	?	X			X	X	
Facility - 3	156	0	154,000 ft2	X	311,000	X	X	X	X	X	
Facility - 4	110	0	?		?	X	X		X	X	
Facility - 5	156	0	200,000 ft2	X	?	X	X		X	X	
Facility - 6	78	0	?		?	X				X	
Facility - 7	270	0	197,000 sq ft	X	815,000	X	X	X	X	X	
Facility - 8	128	96	?	X	200,000*	X	X			X	
Facility - 9	143	14	100,000 sq ft	X	303,801	X	X			X	
Facility - 10	256	0	158,000 sq ft	X	150,000	X	X			X	
Facility - 11	128	0	110,000 sq ft	X	?	X	X		X	X	
Facility - 12	390	0	492,000 sq ft	X	7,860*	X	X	X	X		X
Facility - 13	136	0	95,000 sq ft	X	?	X	X			X	
Facility - 14	136	0	78,000 sq ft	X	?	X	X			X	
Facility - 15	255	78	160000 sq ft	X	563,706	X			X	X	

**Table 2**

FACILITY	Retail Contract	Aware of May1 Move form RPP	Wholesale Mkt Strategy	Wholesale Price Impact Analysis	Gov't /utility EE Programs	Internal EE Programs	Power Factor Correction	Capital Spent	Energy Audits	EM Plan or Strategy	Savings Opportunities	Barriers	External Assistance Req'd	Workshop Req'd
X in Cell Denotes a Positive Response														
Facility - 1		X				X	X	X			X	X	X	X
Facility - 2											X	X	X	X
Facility - 3		X	X	X		X	X	X		X	X		X	X
Facility - 4		X									X		X	X
Facility - 5		X									X		X	X
Facility - 6		X			X						X		X	X
Facility - 7		X			X	X	X	X			X	X	X	X
Facility - 8		X							X		X	X	X	X
Facility - 9		X		X				X			X	X	X	X
Facility - 10		X	X			X					X	X	X	X
Facility - 11		X									X	X	X	X
Facility - 12	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Facility - 13												X	X	X
Facility - 14		X				X				X		X	X	X
Facility - 15		X			X			X	X		X	X	X	X

## **APPENDIX 3**

### **Electricity Invoice Line Item Charges**

- Electricity or Electricity Commodity
- Energy
- Generation
- Transmission
- Distribution
- Delivery
  - Distribution Fixed KW
  - Distribution Variable KW
  - Additional KW PF
  - Transmission Connection
  - Transmission Network
  - Wholesale Market
  - Distribution service
  - Administration
  - Market Services
- Regulatory
- Debt Retirement
- Provincial Benefit
- Interval Meter
- Non-competitive Electricity
- CCT Billing Adjustment
- Monthly Customer Charge
- 

#### **Technical Terms**

- Primary adjustment factor
- Adjustment factor
- Demand KW or KVA
- Peak Bill KW
- Distribution Loss Factor