

IN THIS ISSUE...

Residential electricity price awareness

Results of the survey

Energy expenditure shares

People

Building Services

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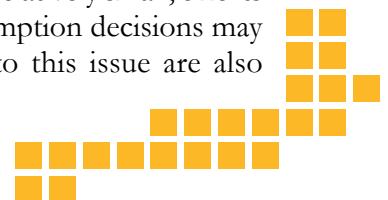
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Residential Electricity: How Price-Aware are Consumers, and Is this Level of Price-Awareness Rational?

In a previous newsletter (Winter 2010), we outlined an ongoing investigation by CBEEDAC researchers into how much residential consumers know about the price they are paying for electricity. For most consumption goods, the unit price is readily observable by consumers at the time of purchase, such as prices displayed in retail stores, or at the pump in the case of gasoline. With electricity, however, the price at the time of purchase (use) is not as obvious: there no price sticker, and the price typically comprises an energy charge and various additional charges and fees, some fixed and some that vary with the quantity consumed. Further, with many of these charges varying from month to month, particularly in Alberta, and with monthly bills being issued subsequent to consumption, and often based on estimated rather than actual usage, it would clearly take a concerted effort by the consumer to know the unit price of electricity, particularly at the time it is used.

This raises questions about how consumers make decisions about electricity use, and how likely they are to change such use if the price were to change. To investigate these issues, residential electricity consumers in the Edmonton area were asked about their awareness of the electricity price, their consumption of electricity, and how - if at all - they (i) become aware of price changes and (ii) respond to them. A brief summary of the survey responses that were obtained is provided in this newsletter. A full report on the survey results will be provided in a CBEEDAC Research Report available later this year.

The finding that many residents apparently do not know the electricity price raises the question of whether this is part of a rational consumer strategy. If expenditures on electricity are relatively small, efforts to determine its unit price in order to inform consumption decisions may be viewed as wasted. Some findings pertaining to this issue are also reported here.



Electricity Price Awareness Survey Results

by Lucie Maruejols

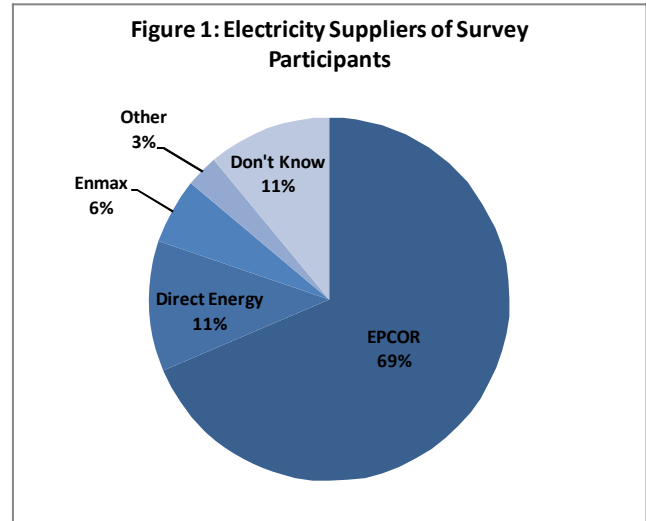
The survey

The aim of the survey was to determine the extent to which residential consumers are aware of the price of electricity and the amount and/or cost of their monthly electricity consumption, and how this knowledge affects their electricity consumption decisions. In total, 1019 participants living in Edmonton and its surrounding area were surveyed in various Edmonton shopping centres by CBEEDAC during February and March 2010.

Electricity use

In Alberta, restructuring of the electricity market at the retail level began in 2001. Since that time, residential consumers have been offered a choice of electricity suppliers. Residential consumers can either purchase electricity through a contract, where the price per unit (kilowatt hour, or kWh) of electricity (the energy charge) is typically fixed for the duration of the contract, or through the Regulated Rate Option (RRO), where the energy charge typically fluctuates each month. The price of electricity thus differs according to whether customers select the RRO, which in Edmonton is provided by the default supplier EPCOR, or select an electricity contract with another electricity supplier. Figure 1 shows the distribution of survey respondents according to their energy supplier. Other results of interest regarding electricity use include the following:

- 87.4% of respondents directly paid their own electricity bill. For other households, the elec-



tricity bill was paid by someone else such as a landlord or condominium association.

- 5% of direct-pay respondents and 45% of non direct-pay respondents did not know the name of their electricity supplier.
- More than 1 in 4 direct-pay respondents were not able to provide an estimate of the dollar amount of their last electricity bill.

Awareness

- Although most direct-pay households could indicate the dollar amount of their last electricity bill, few could estimate their monthly consumption or the unit price they paid.
- Only 12.8% of the direct-pay sample attempted to state the most recent unit price, although 39.8%

Percentage of Respondents Who are Able to:	Pay Directly for Electricity	DO NOT Pay Directly for Electricity
Estimate Quantity of Electricity Consumed Last Month	6.8%	0%
Estimate Amount of Last Electricity Bill	73.4%	35.9%
Estimate Per-Unit Price Paid for Electricity Last Month	12.8%	2.3%
Estimate Change in Price of Electricity Over the Last 12 Months	39.8%	24.2%

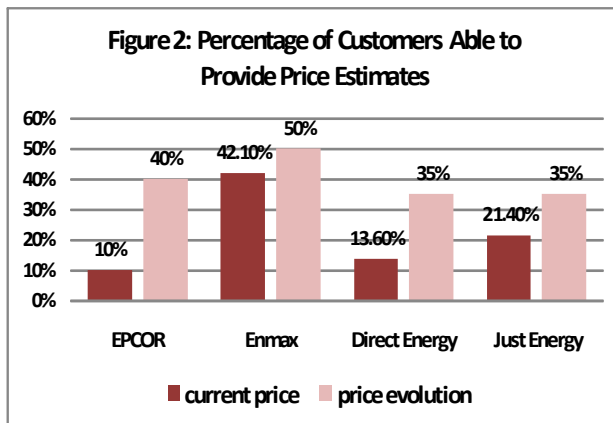


provided an answer when asked about electricity price evolution over the last 12 months.

Price of electricity

The energy charge via the RRO (EPCOR) was 6.261c/kWh in February 2010. The rate had remained within a range of 5.377c/kWh (October 2009) to 10.953c/kWh (February 2009) over the previous 12 months. Rates for other suppliers may vary across customers depending on the starting date of their contract. There are noticeable variations between the responses of different customers (Figure 2):

- Only 10% of EPCOR customers provided an estimate of the current price. Their average answer was 12c/kWh.
- Between 13% and 40% of customers of other suppliers provided answers, and their answers were generally closer to the current RRO rate than was the case for EPCOR customers.

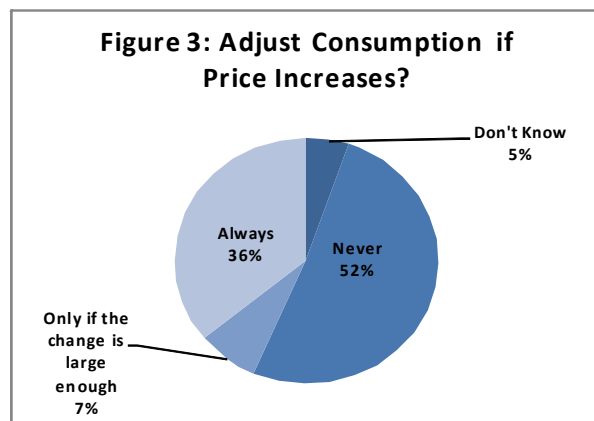


- Most answers regarding the current rate were reasonably close to recent RRO charges.

Evolution of price/customer reaction

The RRO price decreased by 42% between February 2009 and February 2010. There were increases during 4 months (May, June, November and December 2009) and decreases in the other months.

- 70% of direct-pay households and 86% of non direct-pay households believed that prices had increased over the 12 months preceding the survey.
- Fewer than 10% of direct-pay households believed that prices had decreased over this same period.
- 40% of EPCOR customers, 50% of Enmax customers but only 35% Just Energy and Direct Energy customers were able to provide an estimate for the price evolution.
- 15% of direct-pay survey respondents declared a lack of awareness of when price changes occur.

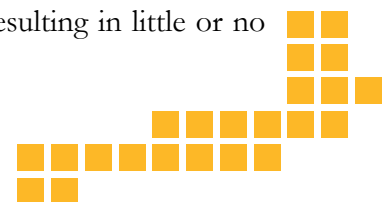


Energy Expenditure Shares in the Canadian Residential Sector

by Lucie Maruejols

A striking result of the CBEEDAC electricity price survey described above was a lack of adjustment of behaviour in the face of price increases (Figure 3). For many households, the relatively low costs of using energy compared to their overall budgets could be an underlying reason for their lack of enthusiasm in adopting energy-saving practices – or for their lack of attention to variations in the electricity price. Dollar savings are often presented as an important benefit from taking en-

ergy-conserving actions. However, households may only consider undertaking such actions if they highly value reductions in energy bills. In other words, households are more likely to engage in energy-saving behaviour if their current expenditures on energy are deemed relatively (too) large. If a household's share of expenditures dedicated to energy is low relative to other basic needs, the effect of a reduction in energy expenditures will have a limited overall budget impact, resulting in little or no





Energy Expenditures (Cont'd)

interest in energy conservation. Thus, slow adoption of energy-efficient equipment and habits might be due, in part, to the small portion of the household expenditures allocated to energy purchases.

To examine this issue, CBEEDAC researchers examined the amounts Canadians spent on energy from 1997 to 2008 using data from the annual Survey of Household Spending. In the latest year, 2008, energy expenditures comprised on average 12% of what might be referred to as necessary household expenditures (comprising energy, principal accommodation, non-restaurant food purchases and clothing). On average, expenditures on electricity constituted over 7% of household necessary consumption, while expenditures on natural gas and other fuels, comprised over 7% and 9%, respectively (non-using and non-paying households excluded).

A further examination by income groups revealed that total energy expenditure constitutes more than 15% of the lowest income households'

necessary expenditures, but below 10% of the highest income households' basic consumption. As income rises, electricity spending evolves differently as a share of necessary expenses than does spending on other types of energy: the share of expenditures on other fuels drops drastically as income rises, while that of electricity diminishes more slowly.

The shares of energy expenditures in total current consumption are relatively low overall. Energy payments by high income households represent only a minor part (less than 4%) of their current consumption, while energy payments made by households in the lowest income range are over twice as important, reaching more than 8% of their current consumption.

The evolution of these shares over recent years is currently being analyzed as part of this project. An analysis of the proportion of households using natural gas and other fuels, grouped according to income levels, is also being conducted.

PEOPLE

Graduate and undergraduate students **Noha Abdel Razak**, **Laura Adkins-Hackett** and **Xuanye Lu** continue their research endeavours for CBEEDAC on a number of on-going and new projects. Noha has begun an aggregate comparison of energy use between Canada and the USA over the past few decades, while Xuanye contributed to the study of the share of Canadian household expenditures related to energy consumption.

In addition, CBEEDAC benefitted this term from the support of **Ryan Thompson**, a qualify-

ing graduate student in the Department of Economics at the University of Alberta. Ryan is currently investigating the evolution of residential and commercial energy intensities and greenhouse gas emissions over time.

Several previous and current economics students, along with engineering graduate student **Andrew Steadman**, are involved in an update of a 2005-06 CBEEDAC study on standby power, collecting in-store measurements of power consumption of new electronic products and appliances.

BUILDING SERVICES

CBEEDAC has the expertise to provide services to the building sector in the area of data storage and analysis. For more information regarding these services, on becoming a sponsor of CBEEDAC, or about the services provided by other Data and Analysis Centres, contact CBEEDAC or see our website at our new web address: www.cbeedac.com.

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