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June 7, 2010

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
2300 Yonge Street
Suite 2700
Toronto, Ontario, M4P 1E4

Dear Ms. Walli:

Re: EB-2008-0346 – Demand Side Management Guidelines for Natural Gas Distributors - Comments of BOMA and LPMA on PEG Report "Top Down" Estimation of DSM Program Impacts on Natural Gas Usage

In its March 19, 2010 letter to participants in the EB-2008-0346 and EB-2008-0150 Consultation Processes, the Board indicated that it had posted a report entitled "Top Down" Estimation of DSM Program Impacts on Natural Gas Usage prepared by Pacific Economics Group Research ("PEG").

A webinar was held with representatives of PEG on May 13, 2010. Participants were also allowed an opportunity to submit written questions to PEG by May 18, 2010. The Board invited participants to comment in writing on the PEG Report by commenting on the methodology used and the findings of the report. By way of a letter dated May 4, 2010, the deadline for filing this comments was extended from May 13, 2010 to June 7, 2010.

These are the written comments of the Building Owners and Managers Association of the Greater Toronto Area ("BOMA") and the London Property Management Association ("LPMA") on the methodology used and the findings of the PEG Report.

The Purpose

PEG was asked to advise the Ontario Energy Board ("OEB) Staff on whether a top-down econometric approach to estimating gas savings was feasible for Enbridge Gas Distribution ("EGD") and Union Gas ("Union"). A top-down approach of estimating gas usage reductions resulting from DSM efforts would eliminate, or at least reduce, the need for assumptions about specific DSM measures, judgments on free riders, spillovers and the attribution of benefits need in the current process to evaluate the DSM efforts and in calculating LRAM and SSM amounts to be recovered from rate payers.

PEG indicated in its Report that it was not aware of any top-down econometric approaches to measuring energy savings that were derived using data for all customers on a specific rate. PEG did note that California used a variant of an econometric measurement of DSM savings in the 1990s. The techniques used there, however, used customer-specific data and distinguished between the energy consumption of customers that were participating in company DSM programs from those that were not. This involves a more data-intensive econometric approach than the top down methods that PEG was asked to investigate.

The Methodology and Findings

The PEG Report used three approaches to try and estimate a top-down estimate of gas savings resulting from DSM activity. These approaches were new gas demand models, use of company demand models but including DSM spending as an independent variable, and examining the difference between the actual gas consumption and gas consumption predicted by the gas demand models that exclude DSM as an explanatory variable to see if there was a statistically significant difference that could be an indicator of the impact of DSM on gas consumption.

PEG used a total of eight rates classes in its analysis (3 residential - 1 from EGD and 2 from Union) and 5 commercial - 2 from EGD and 3 from Union).

a) New Gas Demand Models

The first approach used by PEG was a two-stage approach to modeling gas demand. In the first stage, PEG regressed monthly values of gas consumption on heating degree days and final delivered prices for natural gas. The results of this first stage was then used to develop normalized gas consumption volumes.

The normalized monthly consumption figures were then compressed into annual values to reflect that data on some potential explanatory variables (such as DSM spending) was only available on an annual basis. Because of the limited number of years of data available for each rate class, PEG stacked the residential customers for EGD and Union into one regression. Similarly, the commercial customers were combined into one regression.

This approach only allows estimates of how DSM expenditures impact gas savings for residential customers in Ontario and commercial customers in Ontario and not for different estimates in these two classes of customers for EGD and Union. LPMA believes that the assumption that the impact on gas savings for residential customers would be the same in the EGD and Union service territories may not be appropriate even though the residential class of customers is relatively homogenous across the province (see below for reasons). Similarly, the assumption that commercial customers are relatively homogenous across the province may not be accurate as these customers tend to be less homogenous than the residential class.

LPMA has reviewed the results of the first stage regression models shown in Tables 1 through 8 of the PEG Report and submit that they are reasonable and appropriate. The coefficients on heating degree days and the price variable are correct and statistically significant in all equations. A trend variable was also found to be statistically significant in all but one of the equations.

However, LPMA notes that there is only one coefficient for each of heating degree days, price and trend even though monthly data for 18 years as used. It is quite likely, in the

view of the LPMA, that the impact on gas usage is different month to month for heating degree days. For example, an increase of 1% in heating degree days is likely to have a different impact in January than it would in July. It may also be that the impact of price has different impact on consumption in the winter months when bills are high relative to the summer months when consumption is low. There could even be differences in trends on a month to month basis. There could be a decrease in winter consumption reflecting the impact of movement to higher efficiency gas furnaces, replacement of windows and upgrades in insulation. Summer consumption, however, could be showing an increasing trend as the penetration of gas water heating, cooking, etc. increases.

As can be seen in the equations shown in Tables 1 through 8, there are significant differences among the 3 classes of residential customers and among the 5 classes of commercial customers.

In particular, while the heating degree day elasticity for the residential classes in southern Ontario are similar (0.288 for EGD Class 20 and 0.296 for Union Class M2), the corresponding elasticity for northern Ontario (Union Class 01) is significantly higher at 0.556. The price elasticity is significantly different across all three residential classes, ranging from a low of -0.129 for EGD Class 20, to -0.629 for Union Class 01 and to -1.325 for Union Class M2. Also highlighting the difference between the customer classes in the coefficient on the trend variable. From a high of 0.037 in the Union M2 class and a value of 0.01 in Union Class 01, the trend is actually negative (-0.005) in the EGD Class 20 equation.

As a result of these significant differences in the three residential customer classes used, LPMA does not believe that the normalized annual results can be stacked together and have one equation estimated as part of the second stage of the analysis, even with the allowance for different constant terms in the equation (Table 9). The impact on use is different for heating degree days, prices and trends across the three regions represented by the different rate classes. There is no reason to expect that the independent variables used in the second stage analysis shown in Table 9 (EcoEnergy dummy variable,

unemployment rate, customer vintage, number of people per household and DSM spending in the previous year) would necessarily have the same impact on residential gas usage of customers in the different rate classes.

Similarly, there are wide variations in the coefficients in the commercial equations. The heating degree day coefficient varies from a low of 0.278 to a high of 0.683; the price coefficient varies from -.055 to -.604; the trend variable ranges from 0 to 0.031. Given the different impacts on commercial usage of these variables, it is not likely that the impact on use of the explanatory variables shown in the equation in Table 10 would be similar across the regions and types of customers in the five classes used.

The results of the two-stage analysis, as presented by PEG, indicate that DSM spending does not have a statistically significant impact on residential normalized gas use (Table 9). On the commercial side (Table 10), DSM spending actually has a positive impact on the change in normalized gas use. In particular, a 10% increase in DSM spending results in an increase in the change in normalized use of approximately 0.2%, with a confidence level of more than 80%. This result is not credible.

Both the residential and commercial results suggest that there was no negative impact (i.e. reduction) associated with utility DSM spending. PEG indicated that it was never able to identify a statistically significant relationship between changes in gas consumption and DSM spending in the previous year for either residential or commercial customers. LPMA accepts this conclusion based on the information filed.

If the Board were to consider this approach in the future, LPMA recommends an approach that would allow at least some of the coefficients (notably that for heating degree days) to vary on a month to month basis. Heating degree days is the most significant factor in explaining variations in use from month to month and year to year. Even a small difference in the estimated elasticity associated with heating degree days across the months may have a significant impact on the normalized annual use used in the second stage of the analysis. LPMA would also recommend trying to do the second stage

analysis without stacking the annual figures into a residential and commercial equation rather than by rate class as is done for the stage one analysis. As noted earlier, there are significant differences on the impact of the explanatory variables used in the first stage analysis even across classes where the customers are expected to be homogenous. With more data in the future, the number of degrees of freedom will increase. It may also be useful to try and reduce the number of explanatory variables used in the second stage analysis to deal with the limited number of degrees of freedom.

b) Update Variants of Company Gas Demand Models to Include DSM Spending

In this approach, PEG used models that corrected for statistical imperfections in the estimates provided by the company's gas demand models, but required estimates of monthly DSM spending. PEG noted that DSM expenditure data was not originally collected monthly and was less reliable than the annual data.

The regression results provided in Tables 11 through 18 are discussed at pages 47-48 of the PEG Report. In particular, LPMA notes the comments by PEG that a number of explanatory variables had an incorrect sign and were statistically significant. LPMA also notes that DSM was found to be not statistically significant in 3 out of the 8 equations.

PEG did not provide any regression analysis that removed explanatory variables that had the wrong sign or were statistically insignificant. As a result, it is not known what the impact on the statistical significance of the remaining explanatory variables would be.

Based on these results, and the limitations on the quality of the monthly DSM expenditures expressed by the companies, LPMA does not believe that the results can be used to provide a top-down estimate of savings related to utility DSM expenditures.

The estimates provided do, however, provide the Board and others with a simple perspective. The impact on average use of DSM expenditures is highly inelastic. The PEG report indicates that for 3 of the 8 classes, there is no statistically significant impact on use of DSM expenditures. For the remaining 5 classes, the elasticity ranges from a

high of -0.105% to -0.034%. As the following table illustrates, the effect of DSM spending is significantly more inelastic than the impact of a change in prices. The table, which is taken from a PEG response to a BOMA and LPMA question, has been modified to remove the classes where the DSM coefficient was found to be statistically not different from zero. The average price elasticity is more than 3 times the magnitude of the average DSM elasticity.

Revenue Class	Price Elasticity	DSM Elasticity	Price Elasticity/DSM Elasticity
EGD Class 20	-0.172	-0.105	1.638
EGD Class 12	-0.263	-0.084	3.131
Union Class 1 Res	-0.339	-0.077	4.403
Union Class M2 Res	-0.214	-0.056	3.821
Union Class 1 Com	-0.125	-0.034	3.676

c) Comparison Between Actual and Predicted Demand

Under this approach, PEG investigated whether there were statistically significant differences between actual and predicted changes in gas consumption using both annual and monthly regressions. The predicted gas demand was based on equations that excluded DSM as an explanatory variable.

PEG was not able to find any instances where the actual gas consumption was less than the predicted value and outside the range of the associated confidence interval. As a result, PEG concluded that there was no econometric evidence of gas savings from DSM spending.

Conclusions

PEG concludes that its research did not provide any top-down evidence for estimating gas savings from utility DSM programs by applying econometric methods to the aggregate billing data of EGD and Union that would be definitive enough to substitute for the bottom-up methods currently used in Ontario's gas DSM programs. Even in the case of the strongest results which integrated DSM spending into variants of the gas demand models used by EGD and Union, PEG notes that the monthly data on DSM spending are

unreliable so at best these results provide supporting evidence of the impact of spending on DSM programs on gas consumption.

The PEG Report concludes by stating that more appropriate estimates of DSM savings could be developed if demand models were estimated for participating and non-participating customers. PEG notes that developing detailed customer-specific data would entail significant costs and that it would take several years to accumulate enough sample data to be available to facilitate the statistical analysis. PEG also indicates that there would be no guarantee that this approach would be successful and yield statistically significant and robust results.

LPMA submits that at this time the Board should not consider requiring EGD and Union to starting collecting the detailed customer-specific data that would be required for this exercise. LPMA does not believe that this approach would be any more cost effective than the current bottom-up approach current used in Ontario. Nor would it likely be any less controversial than the current approach.

Sincerely,

Randy Aiken

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