

PEG's Responses to Questions from Union Gas at the
November 14, 2007 Meeting

Question:

2. *With respect to the Price Cap Index Details table on pages iii/iv of the Executive Summary, provide, quantitatively, details, working papers and analysis of what, specifically, is driving the change of use (AU) factor for Union from the June report to this update (i.e., from -.72 to -.51).*

PEG's Response:

Using the COS approach to capital costing that we recommend, Union's AU factor in the latest raft of our report is virtually unchanged from the value in the June 20 report. Given the greater relevance of other questions and the limited time available we respectfully decline to answer this question.

PEG has now provided a response to this question. Please see the following files: /u

- PEG Working Papers Overview Nov. 22.xls
- (1.2) Union_Working_Papers Nov 2007.zip
- usftp4cs working papers (3.1.2 cs).zip
- ustfp4gd working papers (3.1.2 gd).zip

Question:

4. *Please provide the derivation of the 1.78 recent GDPIPI trend used in the above table [from Question 3].*

PEG's Response:

1.78% is the average logarithmic growth rate of the Canadian GDPIPI for final domestic demand from 2000 to 2006. Specifically (using the data in Table 14):

$$\ln(116.8/105.0)/6 = 1.775.$$

Question:

5. *With respect to page 31 and the sentence “We estimate that the X factor for a price cap index should be raised by 5 basis points if ongoing rate design is allowed along the lines that has transpired since the year 2000.” First, please explain what you mean by this. Second, please provide the numbers, calculations and analysis that produced this estimate.*

PEG's Response:

In the latest draft of its report to OEB Staff PEG states that the summary X factor should be raised by about 5 basis points if Enbridge and Union are to be permitted to continue the kind of gradual redesign of rates, involving greater reliance on fixed charges, during the upcoming incentive regulation (IR) period which each company undertook over the last six years. We discuss here the research that supports this statement.

Enbridge and Union both face the problem today of declining average use of gas by residential and commercial customers. By definition, this means that the number of customers served by each company grows more rapidly than delivery volumes. Under these conditions, a redesign of rates that raises fixed charges and lowers customer charges causes revenue growth to accelerate by gathering a higher percentage of revenue from the more rapidly growing billing determinant. This doesn't matter much under a regime of frequent rate cases since any overearning that might result is quickly rectified. However, it can affect the design of an appropriate multi-year rate adjustment mechanism.

In the case of PEG's proposed approach to calculating PCI X factors, this affects the calculation of the average use (AU) factor. This factor is the difference between the trends of revenue-weighted and elasticity weighted output indexes¹. AU will be less negative, raising X, the more rapid is the growth in the revenue-weighted index. And the growth of this index will be more rapid the heavier is the weight placed on growth in the number of customers --- the quantity that corresponds to the fixed charge.

In PEG's latest research the revenue weights are *fixed* at values that reflect the Board's 2007 rate decisions. These weights were chosen because we believe that the AU factor should reflect the latest rate designs --- which tend to mitigate the financial consequences of the average use problem --- rather than earlier rate designs that placed less weight on customer charges. 2007 weights will tend to make the AU factor less negative --- and thereby raise the X factor --- but will still place less of a weight on

¹ Recall that stakeholders requested this complication in order to split out the effects of cost efficiency trends and declining average use.

Question:

5. (continued)

customer growth than would be commensurate with *continuing* redesign of rates during the IR period.

How much higher would the summary X have to be to be consistent with continuing the gradual redesign of rates? Index logic suggests that the growth rate in the revenue of a company is the sum of the growth rates of appropriately calculated output and input quantity indexes.

$$\text{growth Revenue} = \text{growth Prices} + \text{growth Output.} \quad [1]$$

Rearranging terms, it follows that the growth in prices is the difference between growth in revenue and the growth in output.

$$\text{growth Prices} = \text{growth Revenue} - \text{growth Output.} \quad [2]$$

These theoretical results are specific to price and output indexes with flexible revenue weights.

We use equation [2] to compute the difference, from 2000 to 2006, in the measured price growth of Enbridge and Union when the output index has *flexible* weights and when it instead has weights that are fixed to reflect year 2000 revenue shares. Considering both Enbridge and Union, we find that average growth in the output indexes is about 5 basis points more rapid using flexible rates than using the year 2000 fixed weights. This implies rate growth that is slower by 5 basis points and this can be achieved by raising the summary X factor by a like amount.

Question:

6. *With respect page 41 and the sentence “Productivity actually declined in 2006 due, in part, to a major expansion of the transmission system which coincided with a weather-related downturn in transmission volume.”*
- (a) *Is either the major expansion of the transmission system or the weather-related downturn in transmission volume, or both, having an impact on the average use factor? If so, please explain how, and provide all quantitative analysis.*
 - (b) *If so, is it appropriate, in Dr. Lowry’s opinion, that the major expansion of the transmission system coinciding with a weather-related downturn in transmission volume should have an effect on the average use?*
 - (c) *Please weather normalize the transmission volumes and redo the analysis, showing the impact on the AU line in the Price Cap Index Details table on pages iii-iv of the Executive Summary.*

PEG’s Response:

- a) A weather related downturn in transmission volume can, in principle, reduce the AU factor. Recall that this factor is the difference between Union’s revenue weighted and elasticity weighted output indexes. The former index is not affected by this downturn because it is based on the contract demand of transmission customers and not on transmission volume. The elasticity-weighted index is based on transmission volume and would grow more slowly due to a volume downturn. However, the impact might not be large because the elasticity weight placed on delivery volumes is small in our current model. We cannot quantify the impact because we were unable to establish an effective control for weather.
- b) If a weather control could be established, it would be preferable if the effect on the AU is found to be material.
- c) We regressed Union’s transmission volumes on its heating degree days and did not find the effect to be statistically significant. Accordingly, we have not found any empirical support for the need for such an adjustment.

PEG's Responses to Questions from Enbridge Gas Distribution at the
November 14, 2007 Meeting

Question:

- 1. In your prior report you recommended that the Board use the COS costing method as opposed to the GD method in your study. In your Nov. 6 report you have removed that language (at p.iii of the redlined version). Which method, if any, are you now recommending?*

PEG's Response:

We recommend the COS approach to capital costing because of two general advantages. One is that it matches the way capital cost is calculated for purposes of setting rates in rate cases. The other is the greater stability of the COS input price index. Care must still be taken in the choice of the sample period used in the IPD calculations. As discussed in the report, we recommend an average of the comparisons for the 1997-2006 and 1998-2006 sample periods.

Question:

- 2. At page 31 of the redlined version of your Nov 6 report, you describe the sub-indexes used to construct the revenue-weighted output quantity indexes for the US utilities. Could you provide the underlying revenue data (and calculations) from Union and Enbridge that you used to derive the percentage weights for the three output variables? Why did these revenue shares change between your Jun and Nov reports?*

PEG's Response:

Please see PEG's response to Union's question 5 from the November 14, 2007 meeting.

Question:

3. *What is the empirical basis for the sentence added at page 32 in the redline version of your Nov 6 report: "We estimate that the X factor for a price cap index should be raised by 5 basis points if ongoing rate redesign is allowed along the lines that has transpired since 2000."*

PEG's Response:

Please see attached file "peer analysis wp".

Question:

- 4. Could you provide the underlying spreadsheets which calculate the Estimated Scale Effect based on the output of the econometric model for each of the US utilities and for Enbridge in Tables 8a and 8b of your November report?*

PEG's Response:

The data is contained in the Excel spreadsheet entitled "datasheet for Enbridge 2006 2.xls" that was issued on November 20, 2007.