

**EB-2007-0615**  
**Technical Conference**  
**October 3-5, 2007**

**Enbridge Gas Distribution Inc. (EGD) Questions for  
Pacific Economics Group (PEG)**

EGD wishes to fully understand PEG's revenue per customer cap Index that it recommends for the Company. It would be helpful if PEG could address the following questions at the technical conference.

1. Please describe in detail PEG's revenue per customer cap index for EGD that was requested in Board Staff Interrogatory #1 to PEG.
2. Does PEG have any reason to conduct additional research or make further amendments to its X factor recommendation for the EGD revenue per customer cap index? If yes, when do you expect your conclusions to be available?
3. How would PEG's recommended X factor for a EGD revenue per customer revenue cap change to accommodate a Y factor for a capital expenditure of \$50 million; of \$100 million.
4. EGD has requested an IR plan term of 5 years. Is this term appropriate for a comprehensive incentive regulation plan? What are the disadvantages of a shorter term, say 3 years?
5. Please outline the details of PEG's proposed balancing account for a revenue cap index. Are only volume related impacts considered? What are the mechanics of the operation of the balancing account?
6. Is the Handy-Whitman US index of construction costs for gas distribution series used in the calculation of capital costs for the US sample firms? Please provide details as to Union's objections raised with PEG regarding the use of this series as it was originally applied in March 2007 to the Ontario gas utilities.

Questions arising from the Report entitled, *The O&M Cost Performance of Enbridge Gas Distribution: Update* filed in PEG's Q12 attachment response to EGD Interrogatory #12

7. In the report, PEG states,

The O&M productivity levels achieved by Enbridge were well above the year 2002 mean for the full U.S. sample throughout the historical 2000-2003 period and the bridge year. The productivity implicit in the 2005 test year proposal is about 13% above the mean productivity of the full

US sample and about 13% above the mean for the large gas-only utilities in the sample that provide extensive services in urban cores.

In light of PEG's recent work, do the conclusions still hold?

8. Please reconcile this report's conclusion that EGD is a "superior cost performer" relative to the US sample, to the June 2007 PEG report which indicates US O&M PFP as 2.23% relative to -0.70% for EGD.

9. In this report, PEG states,

Enbridge is one of the larger gas distributors in North American but is not a power distributor and serves two densely settled urban cores. To provide better benchmarks for Enbridge, we therefore compared its productivity levels to the sample norms for *gas only* distributors, *large* gas only distributors, and large gas only distributors with normal urban core activities, in addition to the comparison to the full sample norm.

Please indicate if PEG undertook a similar peer group analysis in the current work. If not, why not?

#### Questions arising from EGD's attempt to replicate PEG's historical data

10. In March 2007 PEG supplied the following data aggregation to EGD:

	PEG Net Salaries & Wages	Benefits	Pensions
2000	60.50	14.60	0.80
2001	62.40	13.50	1.10
2002	54.50	13.70	1.40
2003	60.60	16.50	1.70
2004	66.10	17.30	1.40
2005	64.90	18.70	2.30

Then, in response to an IR the following data aggregation was provided:

	PEG Net Salaries & Wages	Benefits	Pensions
2000	60.50	14.60	0.80
2001	62.40	13.50	1.10
2002	54.50	13.70	1.40
2003	60.60	16.50	1.70
2004	67.30	17.30	1.40
2005	71.40	18.70	2.30

Please explain the change to the series Net Salaries and Wages. How does PEG estimate net salaries and wages?

11. The definition of Total labour cost in PEG's report is given as (p. 21):

(T)he salaries and wages that contributed to net O&M expenses plus all expenses for pensions and other benefits. *Net* rather than gross salaries and wages are required to avoid double counting labour expenses that utilities capitalize.

In the table below, the left column displays the calculation defined above to the dataset received from PEG through IRs in September. The column on the right is the labour cost reported in Interrogatory #38.

	Labour Cost (Labour = Net S&W + Benefits + Pensions)	Labour Cost (IR #38)
2000	75.90	72.64
2001	77.00	73.90
2002	69.60	66.40
2003	78.80	74.94
2004	86.00	82.04
2005	92.40	87.95
2000-2005	3.93%	3.83%

Please explain the differences.

12. The definition of labour price is given as follows (p. 28):

Each quantity subindex for labour was calculated as the ratio of salary and wage expenses to a labour price index. For the Ontario utilities we used as a labour price deflator an Ontario construction worker salaries and wages index.

In Interrogatory #38 PEG provides information on the labour cost. In Table 6 of the June report PEG provides a labour quantity index and in Table 13a PEG provides the labour price index, as shown below:

	Total Salaries & Wages Index (IR #20)	PEG Labour Quantity Index (Table 6)	PEG Labour Price Index (Table 13a)
2000	1.000	0.549	117.90
2001	0.977	0.557	120.80
2002	0.750	0.475	124.60
2003	1.043	0.517	127.80
2004	1.162	0.563	131.50
2005	1.233	0.584	135.60
2000-2005	4.18%	1.24%	2.80%

Please indicate any adjustments made to the total salaries and wages to derive the labour price index.

Questions arising from the response to IGUA Interrogatory #12: PEG Objections to EGD's Testimony

13. Section 2.1 – “Enbridge witnesses propose adjustments to the X-factor to reflect factors (referring to cast iron expenditures and average use declines) that are likely to increase the Company’s unit cost are allegedly not considered in PEG’s analysis”

Please indicate where in its application the Company has applied an adjustment to the X factor.

14. In the Interrogatory response PEG indicates that it is inappropriate for the Company to rely on its own history in establishing a TFP benchmark. On page 13, PEG states, “in North America, X factors are usually based on *industry* productivity and input price trends”

For clarification, does PEG believe that the TFP benchmark or projection used to establish the TFP<sup>industry</sup> component of the productivity differential could be established either through a modeling exercise (as PEG has undertaken) or through the use of industry history (rather than Company-specific history)?

15. Can PEG produce the actual TFP histories (rather than the modeled histories) for the US LDC sample? If possible, please produce this information on an individual company basis for the entire 39 firm sample. Please produce the history for both the cost-weighted TFP and the revenue-weighted TFP. From PEG’s IR responses are the following mnemonics underlying the actual histories as follows:

yndx2 – Cost-weighted output  
yndx3 – Revenue-weighted output  
tfpndx2 – Cost-weighted TFP  
tfpndx3 – Revenue-weighted TFP  
xndx – Input quantity index

16. What would be the affect on PEG's incentive power model if EGD were classified as a "superior cost performer" as in the 2004 O&M report? What would be the affect if an ESM plan were added to the IR plan? What would be the combined affect?

Questions arising from the PEG's response to EGD Interrogatories

17. With regard to PEG's response to EGD Interrogatory #34, which revised Tables 8a, 8b, 9a and 9b in PEG's June 20 report:
- a) Does PEG plan or foresee further changes or updates to the results contained in its June 20 report?
  - b) If so, when would these changes or updates be provided?
18. With regard to PEG's response to EGD Interrogatory #34, which contained (in Revised Tables 8a and 8b) "Expected Scale Economies" calculations for EGD and PEG's sample of U.S. utilities:
- a) PEG's "Expected Scale Economies" for EGD using the GD capital costing method is slightly different in its Revised Table 8a (0.63%) than in Table 8a in its June 20 report (0.72%).
    - i. Which is correct?
    - ii. If the number in PEG's Revised Table 8a is correct, does PEG plan to update Table 10 in its June 20 report, which also shows "Expected Scale Economies" of 0.72% for EGD using the GD capital costing method?
  - b) EGD's consultants have been unable to replicate PEG's calculations of "Expected Scale Economies" for PEG's U.S. utility sample, as shown in its Revised Tables 8a and 8b.
    - i. Could PEG confirm that it used the same methodology to compute "Expected Scale Economies" for its U.S. utility sample in Revised Tables 8a and 8b as it used to calculate "Returns to Scale" in Table 10 of its June 20 report?
    - ii. In particular, could PEG confirm that it substituted a zero value for all negative elasticities (which PEG considers to be unreasonable and inconsistent with economic theory) in calculating elasticity weights and in calculating the sum of output elasticities for its U.S. utility sample, as PEG did for EGD under the COS capital costing method in Table 10 of its June 20 report?

19. With regard to PEG's response to EGD Interrogatory #34, which contained (in Revised Tables 8a and 8b) "Expected Scale Economies" calculations for EGD and PEG's sample of U.S. utilities:
- a) Please confirm that the "Expected Scale Economies" calculation for EGD is for the time period 2000–2005.
  - b) Please confirm that the "Expected Scale Economies" calculations for the U.S. utility sample are for the period 1994–2004.
  - c) Has PEG attempted to perform "Expected Scale Economies" calculations for Enbridge and the U.S. utility sample over a consistent time period? If so, please provide the results of these calculations. If not, why not?
20. With regard to PEG's response to EGD Interrogatory #15, which included two files ("EGD-15 elasticities CS full translog model.xls" and "EGD-15 elasticities GD full translog model.xls") containing output elasticities associated with PEG's "full translog" model:
- a) EGD's consultants have been able to replicate PEG's parameter estimates and t-statistics from its "full translog" model, but have not been able to replicate the output elasticities for the "full translog" model provided in response to EGD Interrogatory #15 (or those provided in response to EGD Interrogatory #14). Could PEG confirm that it computed annual output elasticities as  $\partial \ln C / \partial \ln y_i$ , for  $y_i = y_n, y_{vrc}$  and  $y_{voth}$ , and averaged annual output elasticities over 1994–2004 for each company to obtain the elasticities provided in response to EGD Interrogatory #14?
  - b) Although PEG claims to estimate a full translog model, it omitted the interaction variables associated with the time trend and the output variables.
    - i. Please confirm this observation.
    - ii. Please provide the estimates related to a complete translog model.
  - c) In PEG's response to EGD Interrogatory #15 part c, PEG states that "In the case of Enbridge (ID 58), for instance, we find using GD costing substantially negative elasticities with respect to the residential and commercial delivery volume. The sum of the output elasticities is below 0.4 each year."
    - i. Could PEG confirm that these sums are below 0.4 each year only if the negative elasticities for the residential and commercial volumes are not treated as zero elasticities?
    - ii. Could PEG confirm that these sums are above 0.9 each year if the negative elasticities for the residential and commercial volumes are treated as zero elasticities, as PEG did for EGD under the COS capital costing method in Table 10 of its June 20 report?
21. With regard to PEG's response to EGD Interrogatory #7, which includes company-specific rates of technological change for PEG's U.S. sample and for EGD and Union:

- a) PEG makes use of company-specific output elasticities in its June 20 report. Why doesn't PEG also make use of company-specific rates of technological change?
22. With regard to PEG's response to Enbridge Interrogatory #12 part b, which included as an attachment a PEG study titled *The O&M Cost Performance of Enbridge Gas Distribution* dated 18 February 2004:
- a) On page 17 of this study, PEG states that it included data on maximum frost depth in its econometric model.
    - i. Please provide all frost depth data PEG relied on for its U.S. utility sample in its February 2004 study, updated if possible to be consistent with the sample of 36 companies and time period (1994 – 2004) that PEG used in its June 20 study.
    - ii. If it is not possible for PEG to update its frost depth data for its U.S. utility sample to be consistent with the sample of 36 companies and time period (1994 – 2004) that PEG used in its June 20 study, then provide the frost depth data PEG relied on in its February 2004 study, and a detailed description of the sources and methodology PEG used to assemble this data.
    - iii. Please provide all frost depth data PEG relied on for EGD in its February 2004 study.
    - iv. Please update the frost depth data provided for EGD in iii. for the period 2000 – 2005, if possible. If this is not possible, provide a detailed description of the sources and methodology PEG used to assemble the data provided in iii.
23. With regard to the confidential U.S. utility output data PEG provided in response to EGD Interrogatory #2, and output data PEG provided for Union in Table 7 of its June 20 report:
- a) Could PEG confirm whether its "Other Volume" output quantity for Union includes deliveries under Union's M12 transportation and C1 storage services?
  - b) Could PEG provide a breakdown by year from 1999 to 2005 of its "Other Volume" output quantity for Union by rate class, showing separately:
    - i. M12 transportation deliveries,
    - ii. C1 storage service deliveries, and
    - iii. Remaining "Other Volume" deliveries by rate class.
  - c) Could PEG explain whether it includes deliveries to and from storage, or associated with storage services, in "other deliveries" for its U.S. utility sample?
24. With regard to the confidential U.S. utility output data PEG provided in response to EGD Interrogatory #2, and output data PEG provided for EGD in Table 7 of its June 20 report:

- a) Could PEG confirm that it included deliveries to industrial customers in its “other deliveries” output measure for its U.S. utility sample?
  - b) Could PEG confirm that it included EGD’s deliveries under its Rate 100 (Large Volume Firm) in EGD’s “weather normalized residential and commercial” output measure for Enbridge?
25. With regard to PEG’s responses to EGD Interrogatory #9 part a and b, which relate to any adjustments PEG made to the stochastic errors in its econometric model for autocorrelation and/or heteroskedasticity:
- a) In its response to EGD Interrogatory #9 part b, PEG describes adjustments it made for firm-wise heteroskedasticity. Did PEG test for or make any adjustments for cross-sectional heteroskedasticity? If not, please explain why not. If so, please describe the adjustments in detail.
  - b) PEG does not discuss adjustments for autocorrelation. Did PEG test for or make any adjustments for autocorrelation? If not, please explain why not. If so, please describe the adjustments in detail.
26. With regard to the confidential U.S. utility output data PEG provided in response to EGD Interrogatory #2:
- a) Did PEG compute correlation coefficients between its U.S. utility output variables (number of customers, weather adjusted residential and commercial volumes, and other deliveries) prior to completing its June 20 report?
  - b) Did PEG perform any analysis for multicollinearity prior to completing its June 20 report?
  - c) Did PEG consider making adjustments or changes to its model due to high correlation among its output variables? If not, please explain why not. If so, please describe all adjustments or changes in detail.
27. With regard to PEG’s response to EGD Interrogatory #27, which discusses incremental scale economies as a driver of TFP growth:
- a) Did PEG perform any tests to determine whether firm variability or differences were accepted or rejected by its confidential U.S. utility data? If so, please describe these tests in detail, and provide all relevant documentation. If not, please explain why not.
  - b) In particular, did PEG attempt to estimate its econometric cost model on subgroups of U.S. utilities? If so, please describe these estimations in detail, and provide all relevant documentation. If not, please explain why not.