Enbridge #12

INTERROGATORY

Ref: Econometric Cost Model and Productivity Differential

Issue Number:
Issue:

On page 26 of the June 20, 2007 report, it is stated,

> "In the latest research we calculate elasticity-weighted output indexes using elasticity estimates that vary by company and reflect each company's special operating conditions."

a. Please describe in detail the justification for using elasticity estimates that vary by company in the June 20, 2007 report.
b. Has PEG used elasticity estimates that vary by company in any other study that relied on an econometric cost model? If so, please provide a copy of the study.
c. Please provide the formula used to calculate elasticity estimates for EGDI, Union, and each U.S. utility considered for the June 20, 2007 report.
d. Please provide in usable electronic format the data reflecting each company's special operating conditions that was used to calculate elasticity estimates for EGDI, Union, and each U.S. utility considered for the June 20, 2007 report.

RESPONSE

a. The flexible (e.g., translog) forms that we conventionally use in cost function estimation give rise to cost elasticities that vary by company. For example, the elasticity of cost with respect to growth in the delivery volume is a function of the level of volume and of local input prices. We have not conventionally used company-specific elasticities in X factor calibration but chose to do so rather than using sample mean elasticities for two reasons. First, Union and Enbridge have very different output mixes, with Union having an unusually large delivery volume relative to its customer base due to its transmission system. The use of company-

specific elasticities was one of the few tools available to capture the special circumstances of Union. The second reason that we decided to use company-specific elasticities is that results were generally more sensible using them.

b. Yes. We have used company specific elasticities in all of our cost level benchmarking studies based on econometric cost models. A benchmarking study that we prepared for submission in an EGDI rate case in 2004 is attached in the document Q12 Attachment as a representative sample of this work.

c. Elasticity estimates that vary by company are calculated, for each time period t, using:

$$\frac{\partial \ln C}{\partial \ln Y_j} = \hat{\alpha}_j + \hat{\gamma}_{jj} \ln Y_j + \sum_n \hat{\gamma}_{jn} \ln W_n, \qquad j = yn, yvrc, yvoth \text{ and } n = wl, wk .$$

The symbols with hats over them are parameter estimates of the model, C and W are cost and input prices, normalized by the price of materials, and Y is output. In the current model there are three outputs yn, yvrc and yvoth, which are customer numbers, residential & commercial deliveries, and other deliveries, respectively. The prices wl and wk are those of labor and capital, normalized by the price of materials as already stated.

Each firm's output elasticities are estimated using mean-scaled and logged values of its output and prices, along with the first order parameter of each output, the parameter estimate for its quadratic term and the parameter estimate of the interaction term between the prices and outputs.

d. The data that reflects the special operating conditions used to calculate elasticity estimates for EGDI, Union and each U.S. utility is provided in the file EGD-12 for elasticity estimates.xls, which is attached. The values y1, y2 and y3 are the mean-scaled and logged values of each utility's customer numbers, residential & commercial deliveries, and other deliveries, respectively. The values for wl (labor prices), wkGD (geometric decay based capital price) and wkCS (cost of service based capital price) are the normalized, mean-scaled and logged values of each utility's prices. For our assumptions about Union's and Enbridge's prices, please see our answer to question 6, part d.