



**Pacific Economics Group, LLC**  
Economic and Litigation Consulting

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***MEMORANDUM***

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**TO:** ANDREW SASSO, ENWIN UTILITIES  
**FROM:** LARRY KAUFMANN  
**SUBJECT:** RESPONSE TO INFORMATION REQUEST  
**DATE:** 5/8/2008  
**CC:**

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As requested at the 6 May Stakeholder conference, the following memorandum provides further details on the samples of US and Ontario electricity distributors that were used in PEG's total factor productivity (TFP) analyses. Some of the key features of these samples are summarized in the accompanying table, "Sample Average Values of Important Business Condition Variables for PEG's US and Ontario Samples, 2002-2006." For both the US and Ontario industries, this table presents average values for the following variables over the 2002-2006 period:

- Total number of companies in the sample
- Average number of customers per company
- Number of companies in five size ranges, as measured by customer numbers
  - More than 1 million customers
  - Between 500,000 and 1 million customers
  - Between 100,000 and 500,000 customers
  - Between 50,000 and 100,000 customers
  - Less than 50,000 customers
- Average kWh deliveries per company
- Average kWh deliveries per customer
- Average customers per km of distribution line
- Number of companies with gas distribution operations
- Percent of plant that is underground

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In addition, the table presents information on the regional breakdown of the US sample.

As expected, it can be seen that Ontario has more small companies than the US. There are 68 Ontario companies with less than 100,000 customers but only 5 such distributors in our US sample. In general, I believe this factor is likely to lead TFP estimates derived from US samples to *understate* the TFP growth for the Ontario power distribution industry. For power distributors, a given change in output growth generally leads to the realization of greater scale economies, and hence TFP growth, as the size of the company declines. This result is well known in Ontario, since much of the merger activity in the Province has been driven by a desire to achieve economies of scale (*e.g.* to a first approximation, a 10,000 customer distributor that acquires another 10,000 customer distributor has effectively doubled its output). Since power distribution output is generally expanding, the smaller size of the average Ontario distributor implies that a given level of output growth will lead to greater scale economies and TFP growth in Ontario than in the US.

Other data show that the US sample is diverse both geographically and in terms of the size composition of our sample. Nearly half of the US companies serve between 100,000 and 500,000 customers, which is also the size range for most of Ontario's larger distributors. The US sample is also well balanced geographically (recall that California, in particular, is served by a small number of very large distributors).

The table also shows that the other business conditions do not differ substantially between US and Ontario. For example, US and Ontario distributors have similar levels of energy density (kWh deliveries per customer) and customer density (customers per km of line). All else equal, these similarities should lead to similar changes in TFP. The percent of plant that is underground is somewhat higher in Ontario than in the US, perhaps reflecting the fact that a higher share of the Province's lines are concentrated in a major metropolitan area than is the case, on average, throughout the entire US. Twenty of the US distributors also have gas distribution assets, unlike any of the Ontario distributors. All else equal, owning gas distribution assets and having fewer underground lines should lead to lower costs and higher TFP *levels* in the US than in Ontario, but these factors have no clear impact on distributors' ability to achieve TFP growth (which are more likely to reflect *changes* in undergrounding and distributors' gas distribution ownership).

## Sample Average Values of Important Business Condition Variables For PEG's US and Ontario Samples, 2002-2006

<b>Business Condition Variable</b>	<b>Units</b>	<b>Ontario</b>	<b>U.S.</b>
Companies in Sample	Count	77	68
Number of Sample Companies by Region, US:	Count		
Northeast US			17
Southeast US (incl. TX)			20
Midwest			21
West (incl. CA and other Pacific)			10
Average Number of Customers	Count	56,987	806,863
Number of Companies, by Size:	Count		
Companies with more than 1,000,000 customers on average		1	16
500,000 - 1,000,000 customers		1	18
100,000 - 500,000 customers		7	29
50,000 - 100,000 customers		5	1
Less than 50,000 customers		63	4
Average Deliveries	MWh	1,773,356	21,022,411
Deliveries per Customer	MWh	25.3	27.7
Customers per Km of Line	Count	44.41	39.73
Number of Companies with Gas Distribution Operations	Count	0	20
% of Dx Plant that is Underground	Percent	25.8	19.8