4TH Generation Incentive Regulation of Ontario's Electricity Distributors

EB-2010-0379

ELECTRICITY DISTRIBUTORS ASSOCIATION

MAY 27 2013

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The Numbers

Inflation Factor 0.5%*

Productivity Factor 0.1%

Stretch Factors ranging from 0.0% to 0.6%

Efficiency Cohort	Stretch Factor
I	0.0%
II	0.15%
III	0.3%
IV	0.45%
V	0.6%

*Report, p.26, Table 4, 2011 “Inflation Measure” was 1.46%; the 0.51% figure for 2012 was provided at May 16 2013 proceeding.

The Numbers

- Applying these components to the incentive regulation formula

$$\text{Allowable Rate Increase} = \text{RPI} - X - \text{Stretch Factor}$$

one obtains nominal rate increases ranging from -0.2% to +0.4%.

- For example, the 'median' utility would receive a rate increase of

0.5% - 0.1 - 0.3% = 0.1%.

3GIRM vs. 4GIRM

A number of changes recommended during the 3GIRM process have been implemented.

1. Reliance on Ontario (rather than U.S.) data
   a. Massive data development effort.
   b. Even more critical now as Ontario policies diverge from those in the U.S.

2. Total cost benchmarking (rather than OM&A benchmarking). In addition, the inclusion of input cost shares within the model.

3. Industry specific price index.

Productivity Factor

1. Two methodologies are proposed:
   a. Total factor productivity (TFP) index model.
   b. Estimation of costs using an econometric model.
2. Detailed empirical analysis.

Productivity Factor

Index based calculations of total factor productivity (TFP) obtained by PEG for the period 2002-2011:

- Including Toronto Hydro and Hydro One -1.24% per year
- Excluding Toronto Hydro and Hydro One -.05% per year, revised to +0.1% in the most recent update

PEG proposes to exclude Toronto Hydro and Hydro One because of their large impact on calculated TFP.

Productivity Factor

Cost Models

Using Ontario data for the period 2002-2011, PEG estimates a distributor cost model which captures the effects of a range of factors:

- prices of inputs (capital, labour)
- outputs (number of customers, capacity, energy)
- business conditions (% underground, area, line length, growth rates)
- cost trends in the industry.

Productivity Factor

The estimated 'trend' coefficient indicates that, after controlling for numerous factors, there has been upward pressure on costs in excess of 1% per year.

How does one interpret this empirical result?

*Report, p.47 Table 10, trend coefficient is 0.014; , p.55 Table 12, trend coefficient is 0.011. Results contained in the most recent update indicate a trend coefficient of 0.012.

Productivity Factor

Normally one would expect a negative trend coefficient, due to improvements in technology and more efficient use of resources.

One interpretation is that this reversal is due to slowing growth in sales driven by economic conditions and conservation programs.

Productivity Factor

There have been dramatic changes in the Ontario electricity industry and these have led to significant cost increases.

Additional responsibilities undertaken by distributors as a result of the Green Energy Act, FIT programs, smart meters and other initiatives have also contributed to cost increases without increases in measured outputs.

Productivity Factor

This finding, i.e., an upward trend in costs is broadly consistent with cost pressures in other jurisdictions which have implemented aggressive agendas for promoting conservation and renewables (e.g., FIT programs).

Cost Function Modeling is Preferable to TFP Index Modeling

Which approach is more appropriate – TFP index models or cost models?

There are powerful arguments in support of the use of cost models over index models.

Cost Function Modeling is Preferable to TFP Index Modeling

Cost models rely on detailed, utility-specific data, much of which is not incorporated in TFP index models.

Cost Function Modeling is Preferable to TFP Index Modeling

Cost models do not give disproportionate weight to large utilities. Consequently it is unnecessary to exclude observations on the basis of size (as has been done in the implementation of the TFP index model).

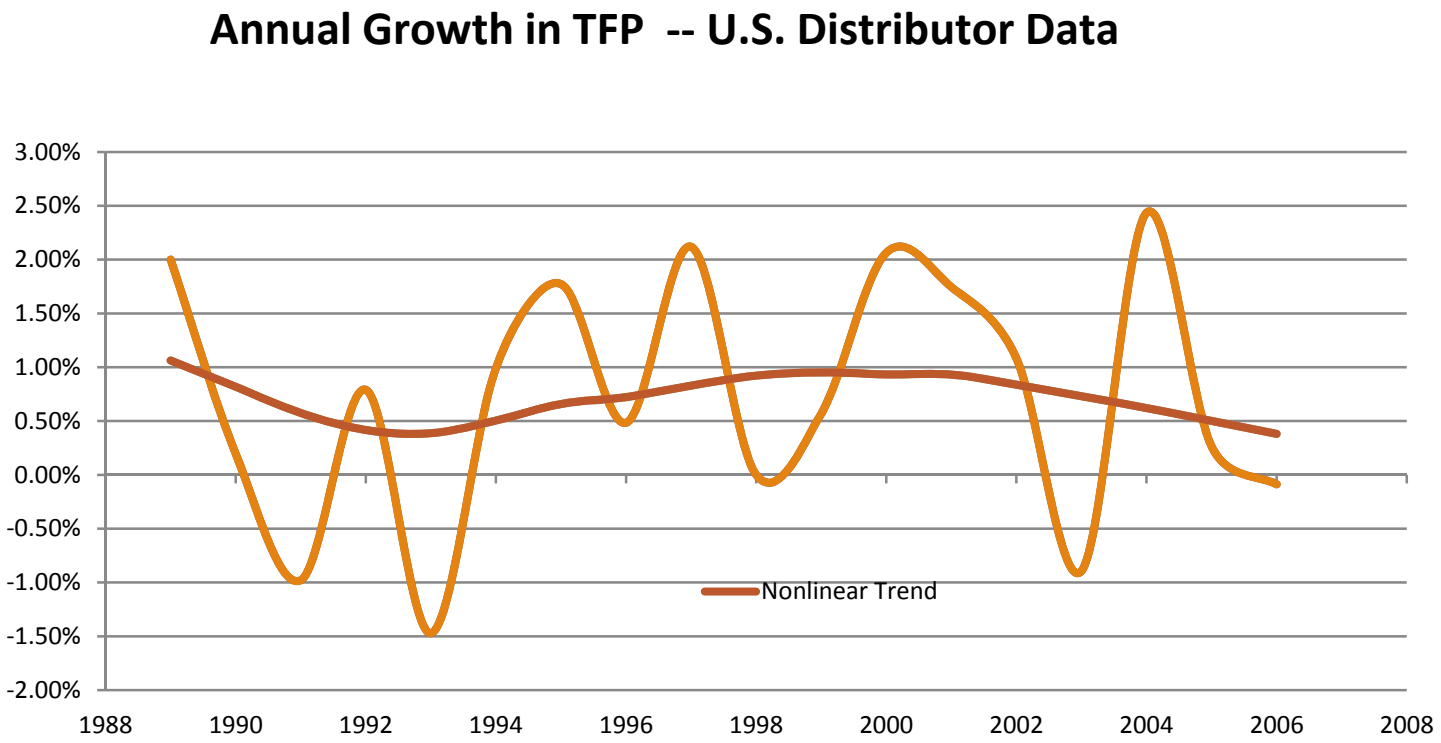
Cost Function Modeling is Preferable to TFP Index Modeling

Cost models can better identify forthcoming trends in the industry because they systematically adjust for a series of factors that affect costs.

Cost Function Modeling is Preferable to TFP Index Modeling

TFP index models were relied upon for purposes of setting the productivity factor during 3GIRM. They have not proved to be a good guide.

3GIRM Productivity Factor



Source of data: Pacific Economics Group

Cost Function Modeling is Preferable to TFP Index Modeling

It could be argued that the shortcomings of TFP in 3GIRM result from

- the economic problems beginning in late 2008
- shifts in Ontario electricity policy beginning in 2009.

But these changes argue for greater attention to recent cost trends in Ontario which are better captured by cost modeling (rather than the TFP approach).

Furthermore, our preliminary analysis suggests that the upward cost pressures in distribution began before 2008, but were not recognized during the 3GIRM proceeding because of the absence of comprehensive Ontario data.

Inflation Factor

1. Previously, general economy-wide inflation measures were used. Utilities concerned about industry-specific costs (e.g., materials costs).
2. However, industry specific indexes tend to exhibit greater volatility.
3. Current report proposes to use industry specific measures and to implement moving average to smooth the series and reduce volatility.
4. Rationale for using industry specific factor is that electricity distribution is very capital intensive and therefore distributor costs evolve differently from general consumer or producer price indexes.
5. Proposed approach assigns the following weights to components of expenditures
    a. Materials 11%
    b. Wages 26%
    c. Capital Costs 62%

Inflation Factor

The large share of capital in total costs implies that the inflation factor

- will be lower than in the general economy if interest rates are stable or falling,
- will be higher than in the general economy if interest rates are rising.

Inflation Factor

	3-Year Industry Moving Average*	Ontario Annual CPI**
2008	1.81%	2.3%
2009	2.18%	0.4%
2010	2.11%	2.5%
2011	1.52%	3.1%
2012	0.51%	1.4%

*Report, p.26, Table 4, 2011 “Inflation Measure” was 1.46%; the 0.51% figure for 2012 was provided at May 16 2013 proceeding.
**Statistics Canada http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/econ09g-eng.htm .

Inflation Factor

- Low inflation factor (0.51%) evidently due to decline in weighted average cost of capital (WACC).
- Likely to continue to be low in the short-term.
- We are continuing to assess whether the proposed methodology fairly reflects inflationary pressures on distributors.

Utility Efficiency Rankings

Utility efficiency estimates are used to set stretch factors. These estimates are based on the cost model.

The actual assignments to efficiency groups (of which there are 5) are sensitive to the specification of the model.

Utility Efficiency Rankings

1. We have estimated the model using a standard panel data specification.
2. Our coefficient estimates are similar.
3. Our rankings differ somewhat
   a. there is some migration in and out of the most efficient groups
   b. the 'least efficient' group remains largely unchanged though the estimated efficiencies are not as extreme as estimated by PEG.
4. The following slides compare PEG rankings as found in Table 11, pages 51-52 of the Report to our preliminary rankings based on data made available on May 3, 2013.

Utility Efficiency Rankings PEG Report

PEG	Ours	
5	-44%	-24%
27	-42%	-10%
15	-38%	-43%
37	-30%	-30%
35	-27%	-30%
54	-22%	-28%
14	-22%	-27%
47	-21%	-25%
61	-21%	0%
2	-19%	-20%
24	-19%	-7%
31	-18%	-23%
73	-18%	-7%
3	-17%	-14%
38	-17%	-26%
40	-15%	-11%
4	-14%	-17%
69	-14%	-28%
43	-13%	-17%
8	-10%	-11%
23	-9%	-16%
16	-9%	-14%
7	-9%	-9%
57	-8%	-13%
19	-8%	-9%

PEG	Ours	
50	-6%	-10%
39	-6%	-18%
22	-5%	-7%
11	-2%	-3%
30	-2%	-12%
20	-1%	-5%
52	-1%	-1%
17	-1%	5%
6	-1%	-7%
33	-1%	-3%
56	1%	-6%
63	2%	-5%
36	2%	2%
32	3%	0%
28	4%	-3%
44	4%	-9%
18	7%	0%
25	7%	7%
21	10%	17%
64	10%	-6%
1	10%	-1%
10	10%	4%
72	11%	8%
66	13%	12%

PEG	Ours	
34	13%	4%
45	14%	24%
70	14%	9%
60	15%	9%
29	15%	9%
13	15%	9%
53	17%	11%
62	17%	12%
67	18%	9%
42	18%	5%
65	18%	13%
58	18%	2%
41	23%	17%
46	26%	22%
9	26%	22%
51	27%	18%
59	30%	19%
71	35%	25%
55	41%	42%
12	44%	41%
48	48%	52%
68	55%	28%
49	61%	43%
26	72%	32%

Utility Efficiency Rankings
Our Preliminary Analysis

PEG	Ours	
15	-38%	-43%
37	-30%	-30%
35	-27%	-30%
69	-14%	-28%
54	-22%	-28%
14	-22%	-27%
38	-17%	-26%
47	-21%	-25%
5	-44%	-24%
31	-18%	-23%
2	-19%	-20%
39	-6%	-18%
43	-13%	-17%
4	-14%	-17%
23	-9%	-16%
16	-9%	-14%
3	-17%	-14%
57	-8%	-13%
30	-2%	-12%
40	-15%	-11%
8	-10%	-11%
27	-42%	-10%
50	-6%	-10%
7	-9%	-9%
44	4%	-9%

PEG	Ours	
19	-8%	-9%
6	-1%	-7%
24	-19%	-7%
73	-18%	-7%
22	-5%	-7%
64	10%	-6%
56	1%	-6%
63	2%	-5%
20	-1%	-5%
11	-2%	-3%
28	4%	-3%
33	-1%	-3%
52	-1%	-1%
1	10%	-1%
32	3%	0%
18	7%	0%
61	-21%	0%
36	2%	2%
58	18%	2%
10	10%	4%
34	13%	4%
42	18%	5%
17	-1%	5%
25	7%	7%

PEG	Ours	
72	11%	8%
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66	13%	12%
62	17%	12%
65	18%	13%
41	23%	17%
21	10%	17%
51	27%	18%
59	30%	19%
9	26%	22%
46	26%	22%
45	14%	24%
71	35%	25%
68	55%	28%
26	72%	32%
12	44%	41%
55	41%	42%
49	61%	43%
48	48%	52%

Peer Group Analysis

1. Peer group analysis is a challenging exercise.
2. Assignment to groups can be contentious.
3. Peer group analysis may be *less* transparent than cost modeling which compares actual to predicted costs.
4. It is unclear that it provides additional independent evidence upon which stretch factor assignments can be made.

Peer Group Analysis

We are giving careful consideration to the role that peer group analysis could play in the regulatory process.

- For example, spatial analysis which situates utilities within ‘quadrants’ may help distributors identify others that are similar to them.

- The subsequent unit cost comparisons may be unnecessary.

Conclusions

1. We have entered a period where productivity growth in the Ontario electricity industry -- as measured by conventional variables -- may *appear* to be negative.
2. This is likely because conventional measures do not fully reflect the broader range of activities that utilities are undertaking. Economic turmoil in recent years has also been a contributory factor.
3. A greener industry, will for the foreseeable future, mean a costlier industry. This is consistent with cost increases in other jurisdictions with ambitious conservation and FIT programs.

Conclusions

4. Development of Ontario capital and total cost data, as undertaken for 4GIRM constitutes an important step in the determination of regulatory parameters for the industry.
5. Data development is an ongoing exercise – the need for adjustments and refinements continues.
6. Overall, especially given the complexities of assembling data in a dynamic industry, the progress that has been made by the OEB, its advisors, the various stakeholders and distributing utilities is impressive.

Conclusions

7. These data show significant increasing trends in electricity distribution costs. Our best current estimate is that unit costs are increasing in excess of 1% per year, in addition to the usual inflationary pressures.
8. It is *essential* that these cost pressures be reflected in the regulatory regime.