3rd Generation Incentive Regulation for Ontario's Electricity Distributors

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Presentation on behalf of the

Electricity Distributors Association

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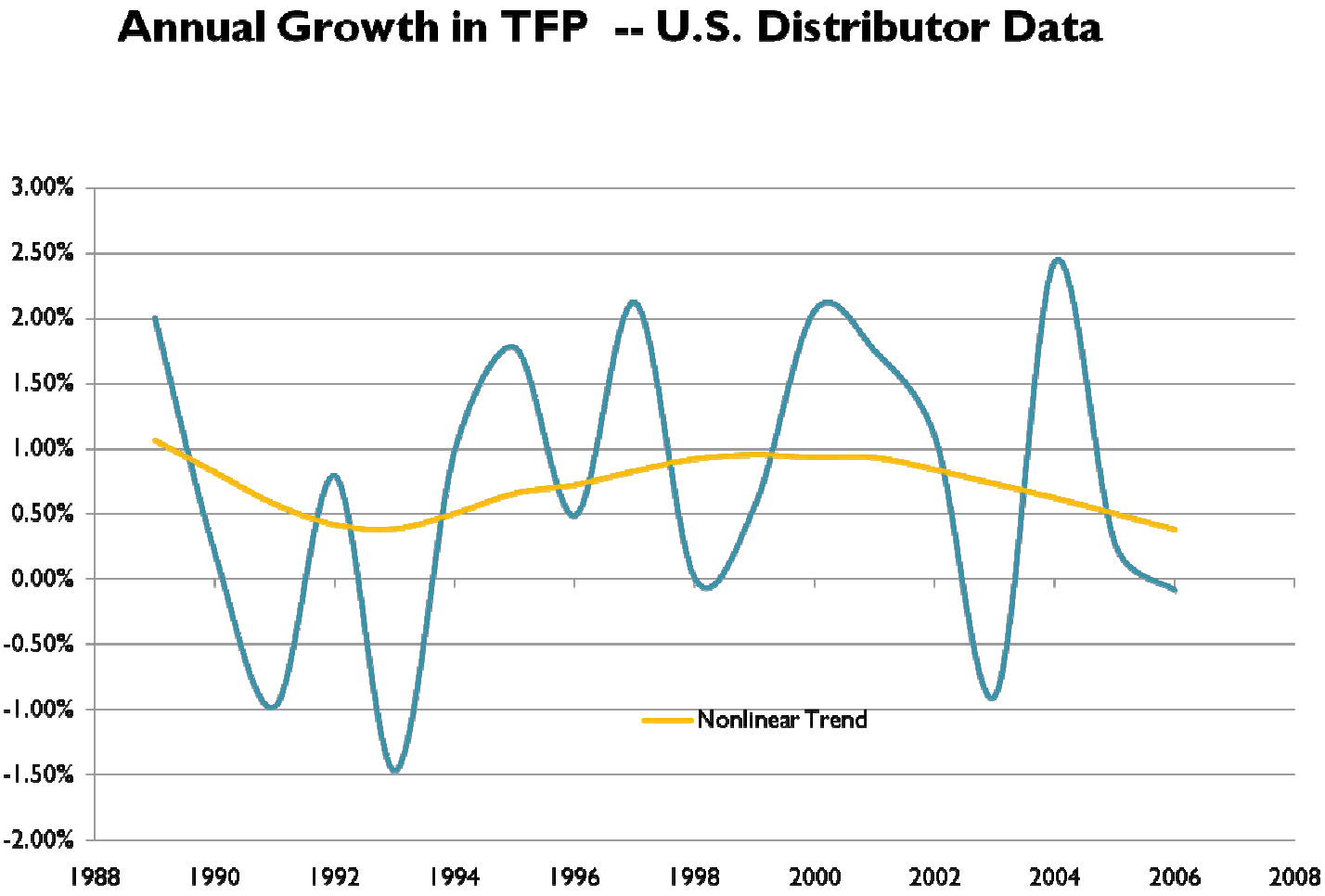
I. Productivity Factor



Source of data: Pacific Economics Group

I. Productivity Factor

1. Average annual productivity growth in the U.S. electricity distributor data is 0.72%.

2. There is no statistical evidence of systematic acceleration in productivity growth over the sample period.

3. Estimation of a nonlinear trend suggests variation in average productivity growth between 0.4% and just over 1% over the sample period.

4. The most recent years of data suggest a period of deceleration. Recessionary effects in the U.S. are likely to have an adverse impact on productivity trends.

A. Productivity Factor

- Productivity growth in electricity distribution during recent years has been slow in the U.S. and in Ontario.

- PEG estimates of productivity growth for the period 2002-2006:
  - U.S. electricity distributors – 0.41% per year;
  - Ontario electricity distributors – 0.01% per year.

A. Productivity Factor

- Possible reasons for recent low productivity growth rates:
  - In Ontario – changing and expanding service mandates for distributors such as conservation and demand management, aging infrastructure, expanding regulatory requirements.
  - U.S. recessionary effects and job losses in Ontario have an adverse effect on productivity growth.

I. Productivity Factor

- A reasonable range for productivity growth is 0.5% to 0.6% with a point forecast of 0.55%. This figure
  - incorporates long-term average productivity growth of 0.72%;
  - assigns greater weight to recent rates of productivity growth.

I. Productivity Factor

- The Ontario Energy Board took both recent and long-term patterns in productivity growth into account at 1st GIRM.
- Following the Board approach and using contemporary data one obtains:
  - 0.49% = ⅔ 0.72% + ⅓ 0.01% .
  - 0.62% = ⅔ 0.72% + ⅓ 0.41% .

I. Productivity Factor

- The Pacific Economics Group is proposing a base productivity factor of 0.88%:
  - The average over the entire period 1988-2006 is 0.72%.
  - The 0.88% estimate proposed by PEG is restricted to the period 1995-2006, an estimate that is based on a "start date analysis".

I. Productivity Factor

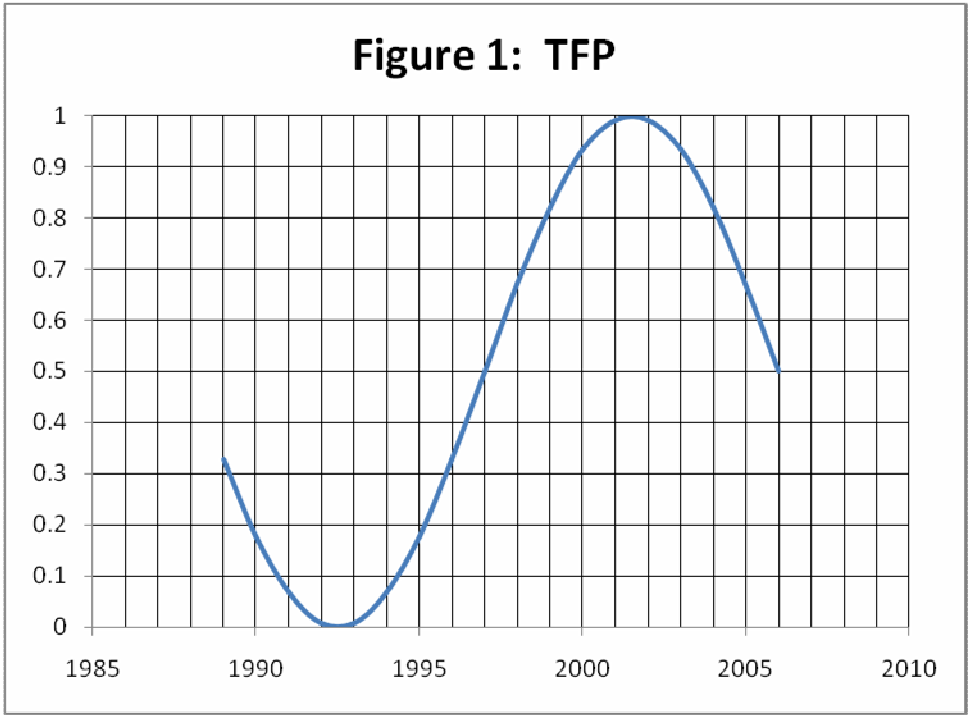
- Pacific Economics Group "Start-Date Analysis"
  - The statistical procedure selects a past year that is "the most similar" -- from the point of view of weather and economic conditions -- to the most recent year for which data are available.
  - The approach has a fundamental flaw which can be illustrated as follows.

I. Productivity Factor

- Suppose productivity growth follows the cyclical curve in Figure 1, varying between 0 and 1 and averaging about 0.5% over the period 1989 to 2006.

- Suppose further that the methodology proposed by the Pacific Economics Group is used to estimate long term productivity growth. Since 1997 and 2006 both have identical productivity growth of 0.5%, the long term estimate will be the average over the period 1997-2006 which is about .75%. The period of lower productivity growth 1989-1996 has been ignored and long-term productivity growth has been overestimated by fifty percent.

I. Productivity Factor



I. Productivity Factor

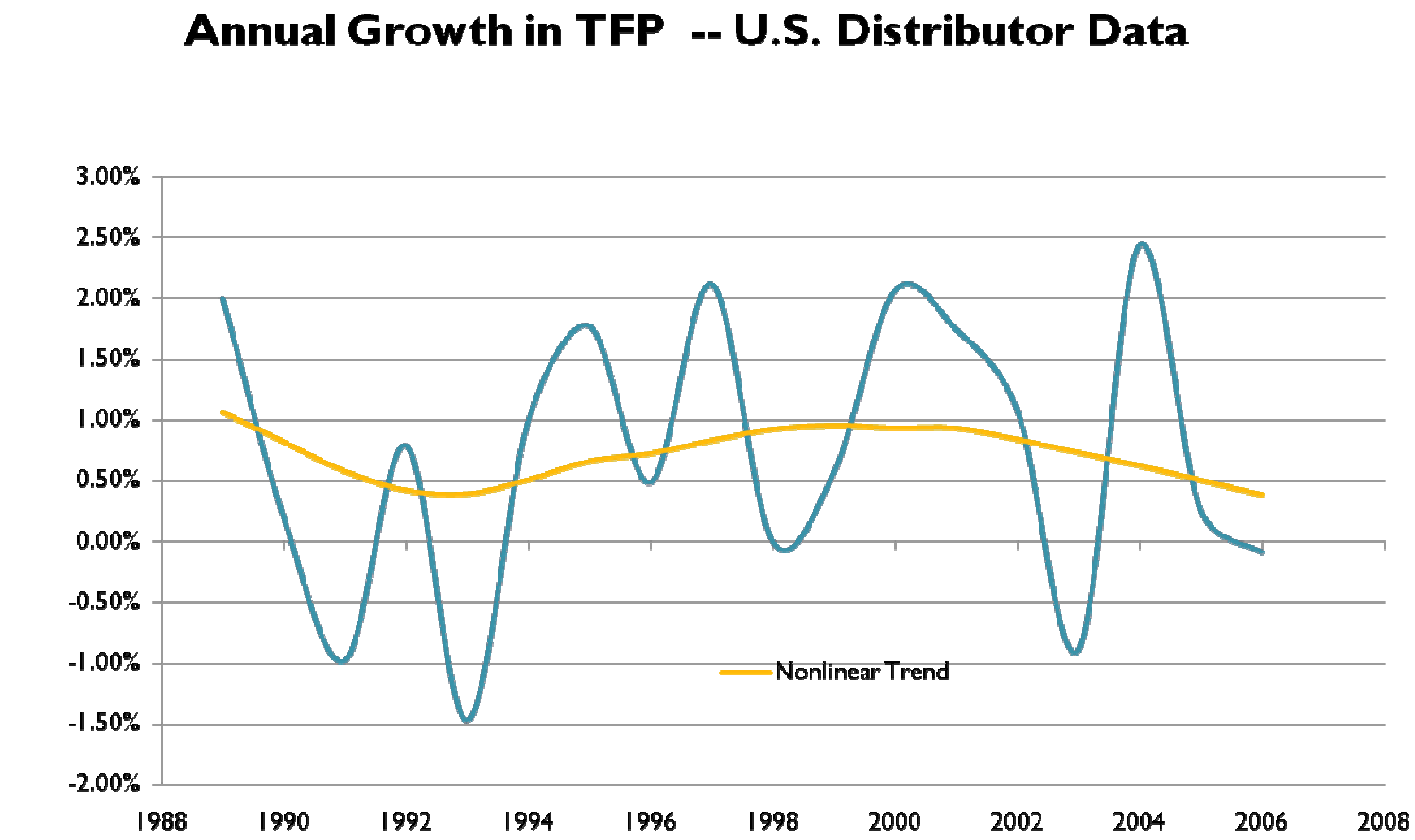
- In simplest terms, the "start-date analysis" fails because it searches for a single year that is most similar to the most recent year, rather than for a period that is likely to be representative of the future.

1. Productivity Factor

- A second argument for including the entire 1988-2006 period is based on the fundamental idea in statistics that larger samples deliver more precise estimates.

- By including all the data rather than restricting it to the 1995-2006 sub-period, one effectively increases the sample size by about 50% thereby increasing the accuracy and reliability of the estimator.

I. Productivity Factor



Source of data: Pacific Economics Group

I. Productivity Factor

- The early 1990's were a period of relatively higher unemployment which arguably should not be excluded precisely because the subsequent years enjoyed higher employment levels and are therefore not likely to be representative of the longer term.

- Neither the raw U.S. data, depicted by the volatile line, nor the estimated trend model would suggest that the data prior to 1995 should be excluded.

1. Productivity Factor

SUMMARY

- We recommend a productivity factor of 0.55% which combines the 1988-2006 estimated productivity factor of 0.72% and the recent (2002-2006) slower productivity growth observed in both Ontario and U.S. data.

- The PEG productivity factor of 0.88% inappropriately restricts data to the 1995-2006 period and does not assign any additional weight to the more recent data.

2. Stretch Factors

- "Stretch factors" are rationalized on the basis that a utility should experience "accelerated productivity growth" as one transitions from cost-of-service to incentive regulation.

2. Stretch Factors

- Ontario distributors have been under a form of price-cap regulation for a period of time.
- In addition, Ontario distributors have been engaged in a form of yardstick competition for many years.
- These two factors weaken the case for stretch factors.

2. Stretch Factors

- The intent is to use OM&A cost data to assess Ontario distributor efficiency and to assign stretch factors.
- There are serious concerns about the validity of the benchmarking analysis which focuses on OM&A costs rather than total costs.
- Potential for "misclassification". For example, some efficient firms with high OM&A costs but low total costs, will be misclassified as inefficient and assigned a higher stretch factor.

2. Stretch Factors

- To assess misclassification errors arising out of the use of the PEG OM&A cost model we have used the U.S. data:
  - The PEG total cost model for U.S. distributors was re-estimated. Utilities were ranked into efficiency quartiles.
  - An analogue of PEG's OM&A cost benchmarking model was estimated and utilities were again ranked into efficiency quartiles.
  - The two rankings were compared.

2. Stretch Factors

- Result of the misclassification analysis:
  - Over 30% of utilities were misclassified when the OM&A model was used; (20 of 63 utilities).

2. Stretch Factors

Classification Frequencies			
	Total Costs		
OM&A Costs	Bottom Quartile	Second and Third Quartiles	Top Quartile
Top Quartile	0	5	11
Second and Third Quartiles	5	22	5
Bottom Quartile	10	5	0

Source: Commentary on "Benchmarking the Costs of Ontario Power Distributors", Pacific Economics Group, March 20, 2008. Prepared for the Electricity Distributors Association, by Adonis Yatchew, and submitted to the Ontario Energy Board, April 28, 2008. The above table is derived from Table 1, page 4 of the document.

2. Stretch Factors

- Misclassification can also occur as a result of mismeasured or omitted variables:
  - For example, the "labour variable" used by PEG is an index based on Statistics Canada data. It does not directly measure utility labour rates.
  - The absence of a good measure of the age of capital stock can also lead to erroneous results and significant misclassifications.

2. Stretch Factors

- Niagara-On-The-Lake Hydro (NOTL Hydro) was assigned a cost of labour index of 0.891 while a neighbouring utility was assigned 1.015, a difference of 14%.
- The actual differences in benchmark lineman rates between the two utilities has been less than 4%.
- Since labour comprises about 50% of OM&A costs at NOTL Hydro, there is likely a substantial impact on the corresponding performance score.

2. Stretch Factors

- Misclassification will occur with statistical regularity as a result of the tests of efficiency that are being used to divide utilities into efficiency cohorts.

- Under the proposed procedure, 20% of utilities will on average be misclassified as either "statistically superior" or "statistically inferior".

2. Stretch Factors

- Regulatory focus on OM&A costs rather than total costs distorts incentives and can lead to:
  - over-capitalization by utilities seeking to reduce OM&A expenditures;
  - under-spending on OM&A;
  - sub-optimal decisions with respect to own vs. lease alternatives.

2. Stretch Factors

- Given the strong likelihood of substantial misclassification, and given that the Board has determined that non-negative stretch factors will be implemented, we recommend that the stretch factors be materially lower than those recommended by the Pacific Economics Group.

- Specifically, we recommend the following stretch factors:
  - the least efficient group – 0.2%
  - the most efficient group – 0.0%
  - all other utilities – 0.1%.

2. Stretch Factors

- PEG is recommending an average productivity factor of 1.15% consisting of:
  - 0.88% base productivity factor
  - "stretch factors" ranging from 0.0% to 0.5%
- Productivity factors would range from 0.88% to 1.38%.

"Source: Calibrating Rate Indexing Mechanisms for Third Generation Incentive Regulation in Ontario: Update", Presentation to IRM3 Stakeholders, Larry Kaufmann, Pacific Economics Group, May 6, 2008, Slide 73.

2. Stretch Factors

- PEG's recommended 1.15% productivity factor is outside the range of average productivity growth rates observed in the U.S. during the entire 1988-2006 period.

2. Stretch Factors

- The determination of a productivity factor should not be prejudiced by those that have been imposed elsewhere, but rather informed by productivity factors that have been actually observed.

2. Stretch Factors

SUMMARY

- **Rationale for "stretch factors" is weak.** Stretch factors are rationalized on the basis that a utility should experience "accelerated productivity growth" as one transitions from cost-of-service to incentive regulation but Ontario distributors have been under a form of incentive regulation for an extended period of time.

- **Misclassification potential is high.** Reliance on OM&A rather than total cost models; absence of capital data; mismeasurement of important variables such as labour rates; probability of Type I error is at 20%.

- **Potential risk of incentive distortion.** Utilities may focus on reducing OM&A costs rather than total costs, resulting in inefficient resource allocation.

2. Stretch Factors

SUMMARY

- Stretch factors should therefore be substantially smaller than those proposed by the Pacific Economics Group.
- We recommend stretch factors of 0.0%, 0.1% and 0.2% for the three groups with resulting X-factors of 0.55%, 0.65% and 0.75%.
- The average industry X-factor will be approximately 0.65%. This figure is substantially higher than recently observed productivity growth rates in the U.S. and in Ontario.