

Toronto Hydro-Electric System Limited

EB-2014-0116

BOMA Compendium for Cross-Examination of Panel 2

Ontario Energy Board



EB-2010-0379

Report of the Board

**Rate Setting Parameters and Benchmarking
under the Renewed Regulatory Framework for
Ontario's Electricity Distributors**

Issued on November 21, 2013 and as corrected on December 4, 2013

3 Benchmarking

The Board's regulatory oversight of electricity distributors is supported by benchmarking analysis. Since 2008 benchmarking, based on operations, maintenance and administration ("OM&A") cost data, has provided the basis for the annual assignment of stretch factors to distributors.

In its RRF Report, the Board concluded that benchmarking will continue to be used to inform rate setting. The Board will continue to build on its approach to benchmarking with further empirical work on the electricity distribution sector in relation to the distributor customer service and cost performance outcomes, including total cost benchmarking for the 2014 rate year. Future work will involve comprehensive benchmarking (i.e., model(s) that combine standards for customer service, including distribution system reliability, and cost performance).

The Board has determined that PEG's econometric model will be used for benchmarking distributor cost performance and, as previously noted, for informing the Board's annual assignment of stretch factors to distributors. The Board may explore other methodologies (e.g., Data Envelopment Analysis) and other alternative approaches proposed in consultations to benchmarking performance in the future. The alternatives proposed are outlined in Appendix A.

PEG's model controls for the impact of various factors beyond management control on a distributor's total costs. These factors, determined by PEG's analysis to be statistically significant drivers of total costs, include:

- the number of customers served;
- kWh deliveries;
- system capacity peak demand;
- average circuit km of line; and
- share of customers served that were added over the last 10 years.

Furthermore, PEG's model employs a well-established estimation procedure, does not rely on peer grouping, and does not assume constant returns to scale.

This benchmarking model will be used to predict each distributor's total costs, and the distributor's actual total costs will be compared to the econometrically derived predicted value.

With respect to data issues, staff and stakeholders developed and proposed certain adjustments to the benchmarking data set to make distributors more comparable. Specifically, adjustments were proposed in relation to high voltage ("HV") equipment and low voltage ("LV") services. This work was carried out as planned subsequent to the issues identified at the end of the 3rd Generation IR consultations. Many stakeholders expressed concern over the proposed adjustments and asked the Board for an opportunity to refine them (i.e., the definitions of the proposed adjustments and/or the data) stating that further analysis is needed. VECC, Hydro One Networks Inc., and the Cornerstone Hydro Electric Concepts Association, made specific recommendations on what adjustments should be made. In its Draft Report, the Board directed staff to consult further with distributors on the LV and HV adjustments. The recommendations offered in written comment were to provide a basis for this consultation. Staff facilitated an industry workshop on October 7, 2013 to achieve stakeholder agreement on how to determine LV costs for each distributor that should be included in total cost benchmarking. Board staff enlisted the help of representatives with specific expertise from the industry to plan and lead the workshop. The Board accepts the resultant agreement that is posted on the Board's website and thanks workshop participants for their time and advice.

The Board acknowledges the concerns raised by some workshop participants that a host distributor's costs to own, operate, maintain and refurbish sub-transmission and LV facilities used by embedded distributors have not been fully reflected in the agreed upon LV adjustments. The LV workshop summary alludes to this issue vis-à-vis common sub-transmission line charges. Specifically, workshop participants advised that some of

these charges should be included, but since data is not available to help determine how much to include, participants agreed to exclude the charges completely. The Board notes that the broader issue of how to better estimate LV adjustments so that a host distributor's overall total costs are not overstated needs to be addressed in future benchmarking studies.

Unless otherwise determined by the Board, all distributors²¹ will be included in the Board's total cost benchmarking analyses. The concern over outliers is restricted to the estimation of Industry TFP for the purpose of setting rates.

²¹ Four distributors are excluded from PEG's analysis because their RRR data is not available: Attawapiskat First Nation; Fort Albany First Nation; Kashechewan First Nation; and Hydro One Remote Communities Inc.

**PRODUCTIVITY AND BENCHMARKING RESEARCH
IN SUPPORT OF INCENTIVE RATE SETTING IN
ONTARIO:**

FINAL REPORT TO THE ONTARIO ENERGY BOARD

November 2013

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Pacific Economics Group Research, LLC

**PRODUCTIVITY AND BENCHMARKING RESEARCH IN
SUPPORT OF INCENTIVE RATE SETTING IN ONTARIO:**

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and (2) a re-estimate of the econometric model used to benchmark distributors' cost performance using a measure of total cost that excluded the LV charges that embedded distributors pay to host distributors.

4. The September 4, 2013 report *Empirical Research in Support of Incentive Rate-Setting: 2012 Update*. This report updated PEG's TFP and cost benchmarking analyses to include 2012 data. The report also included PEG's updated recommendations for the productivity factor and stretch factor assignments.

PEG's Recommendations

This report presents the final results of PEG's productivity and benchmarking research for the Ontario electricity distribution industry for the 2002-2012 period.

Productivity

PEG's estimate of the industry's TFP growth excludes Toronto Hydro and Hydro One because these firms directly and materially impact the industry's estimated TFP growth, and the measured TFP growth trend in an IR plan should be "external" to the utilities in the industry that are potentially subject to that plan. Using index-based methods, PEG estimated that TFP for the Ontario electricity distribution sector grew at an average rate of -0.33% per annum between 2002 and 2012.

Several factors lead PEG to conclude that a negative productivity factor would not be appropriate. One is that the Board is currently examining the application of revenue decoupling to electricity distribution. Not to prejudge the outcome of this Board examination, but a decoupling mechanism would largely address the impact of declining output on industry TFP and, by extension, industry revenue change. One of the main reasons electricity distributors' TFP has slowed and become negative in recent years is because of the decline in distributor output, and a revenue decoupling mechanism would counter this trend.

Another is that there may be concerns associated with the rate riders and related rate recovery mechanisms that exist in Ontario. Some costs transferred to the 2012 Trial Balance data may have been previously reflected in and recovered by a rate rider. If so, it would not be appropriate for costs previously recovered through rate riders to be reflected in the TFP

trend, and therefore the rate adjustment mechanism, that will apply during an IR term. Doing so would mean increasing future customer rates to pay for costs that have already been recovered in previous customer rates.

Third, it is not clear that the negative 2002-2012 TFP trend is in fact industry-wide rather than the experience of a relatively small number of distributors. The RRFE will have multiple ratemaking options available to distributors. As previously noted, one of these options is designed to be “custom” to distributors with especially rapid capital investment needs. Although it is not clear which distributors will elect to file custom IR proposals, it is conceivable that distributors with historically high capital spending could depress industry-wide TFP trends, and thereby reduce the X factor in Price Cap IR, and later choose to opt out of this ratemaking approach precisely because of their atypical capital requirements. This would lead to higher price adjustments under Price Cap IR than are warranted for distributors with more typical capital requirements. Because of these concerns, PEG recommends that the productivity factor in Price Cap IR be set to zero.

Benchmarking

PEG developed an econometric model to benchmark distributors’ total cost performance. PEG’s recommended model finds that there is a statistically significant relationship between a distributor’s total costs and five business condition variables: 1) the number of customers served; 2) kWh deliveries; 3) system peak capacity; 4) the average km of distribution over the sample period; and 5) the percent of customers added in the last 10 years.

PEG used the cost model to generate econometric evaluations of the cost performance of distributors by inserting values for each distributor’s business condition variables into the cost model that is “fitted” with the estimated coefficients for the business condition variables. This process yields a value for the predicted (or expected) costs for each distributor in the sample given the exact business condition variables faced by that distributor. The model also generates confidence intervals around that cost prediction.

PEG believes that the empirical research used to develop its recommendations can provide a solid foundation for future incentive rate-setting in Ontario. PEG has estimated TFP trends and benchmarked the total costs of electricity distributors in Ontario. Our TFP

and benchmarking studies can be updated and refined over time to accommodate new data from the industry or consider different business condition variables, including measures of service reliability such as SAIDI and SAIFI. Overall, PEG believes the methodologies used strike a reasonable balance between rigor, objectivity and feasibility (given the data constraints), while simultaneously developing empirical techniques that can provide a foundation for effective IR applications for Ontario in the future.

Overview of this Report

This report is structured as follows. After this introduction, Chapter Two details the basic indexing logic that underpins the calibration of X factors. Chapter Three presents PEG's input price research, which is necessary to estimate industry TFP trends. Chapter Four discusses data sources and issues associated with available data. Chapter Five estimates historical TFP growth for the Ontario electricity distribution industry for the 2002-2012 period. Chapter Six presents PEG's econometric research on the cost performance of Ontario electricity distributors. Chapter Seven presents concluding remarks.

There are also two appendices. Appendix One presents a mathematical decomposition of TFP growth into its various components. Appendix Two presents some technical details of PEG's econometric modeling.