June 28, 2013

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
P.O. Box 2319, 27th Floor
2300 Yonge Street
Toronto, ON M4P 1E4

Re: Defining and Measuring Performance of Electricity Distributors
Board File No. EB-2010-0379

Dear Ms. Walli:

Attached please find AMPCO's comments in the above consultation.

Please do not hesitate to contact me if you have any questions or require further information.

Sincerely yours,

Adam White
President
Association of Major Power Consumers in Ontario

Encl.

Association of Major Power Consumers in Ontario
www.ampco.org
65 Queen Street West, Suite 1510
Toronto, Ontario M5H 2M5
P. 416-260-0280
F. 416-260-0442

EB-2012-0379
Defining and Measuring Performance of Electricity Transmitters and Distributors

AMPCO Submission
June 28, 2013

Introduction

In response to the Report of the Board entitled "A Renewed Regulatory Framework for Electricity Distributors: A Performance Based Approach" dated October 18, 2012, a consultation process is currently under way with respect to the implementation of the Board's conclusions in the Report in relation to performance standards, measures, and the development of benchmarking to support the Board's 4th Generation Incentive Regulation Mechanism (4GIRM).

As part of the consultation, Defining and Measuring Performance of Electricity Distributors (EB-2010-0379), Board staff's expert consultant, Dr. Lawrence Kaufmann and Pacific Economics Research Group, (PEG) have prepared its latest report entitled "Empirical Work in Support of Incentive Rate Setting in Ontario" (the "PEG Report"). The PEG Report makes specific recommendations for the inflation, productivity and stretch factor parameters for the Board's incentive rate-setting to be used in 4GIRM. The PEG Report also makes specific recommendations for the benchmarking of electricity distributor total costs.

As with 3rd Generation IR, the allowable rate of change in the price of regulated services in the Board's 4GIRM will be adjusted by the growth in an inflation factor minus an X-Factor. The allowable rate increase is defined by the following parameters:

Allowable Rate Increase = Inflation Factor – Productivity Factor – Stretch Factor

Proper calibration of the IRM parameters in 4GIRM is essential for effective incentive regulation. Based on the most recent updates from PEG, the calibration would be as follows:

a) an industry specific inflation factor of +0.5% (based on 3-year average of 2010-2012 period);
b) an industry-wide productivity factor of +0.1%;
c) a "stretch factor" ranging from 0.0% to 0.6%.

The allowable rate increases based on PEG figures would range from approximately -0.2% to +0.4%. The median utility would receive a rate increase of 0.1% (0.5%-0.1%-0.3% = 0.1%).

Comments on PEG's research and recommendations and/or alternative proposals or options for the inflation factor, productivity factor and stretch factor were put forward by: Prof. Adonis Yatchew, University of Toronto on behalf of the Electricity Distributors Association (Yatchew/EDA); Steve Fenrick, Power System Engineering, Inc. on behalf of the Coalition of Large Distributors (Fenrick/CLD); and Dr. Francis Cronin on behalf of Power Workers Union (Cronin/PWU).

The Board's letter of May 30, 2013 provided guidance on the topics to be considered in stakeholder comments. Below are AMPCO's written comments. AMPCO's comments are focused on the inflation factor, productivity factor and stretch factor proposals put forward by PEG, Yatchew/EDA and Fenrick/CLD.

The Inflation Factor

Preamble:
In the RRFE Report, the Board determined that it is now appropriate to adopt a more industry-specific inflation factor [p. 16] and provided the following policy direction:
•The inflation factor must be constructed and updated using data that is readily available from public and objective sources (e.g. Stats Canada);
•To the extent practicable, the component of the inflation factor designed to adjust for non-labor price inflation should be indexed by Ontario distribution industry-specific indices; and
•The component of the inflation factor that adjusts for labor prices will be indexed by an appropriate generic and off-the-shelf labor price index.

The Board also indicated in the RRFE Report that volatility will be mitigated by the methodology adopted by Board.

PEG
With respect to the Inflation Factor, PEG recommends a "Three Factor" industry-specific Inflation Factor:

- "Three Factor": capital, labour, non-labour OM&A
    - Capital Input Prices: capital service price calculation includes the Electric Utility Construction Price Index (EUCPI), WACC calculated using Board-approved cost of capital parameters, and PEG calculated value of economic "geometric" depreciation rate
    - Labour Prices: the average weekly earnings (AWE) for workers in Ontario
    - Non-Labour OM&A: GDP-IPI
- PEG assigns weights to each index based on estimated share in total distribution costs for industry.

PEG recommends that inflation be measured as a 3 year moving average to smooth and reduce annual volatility in the index. PEG notes its capital service price is somewhat volatile.[1] For 2012, PEG recommends an industry specific inflation factor of 0.5%. AMPCO submits that PEG's approach meets the Board's policy direction, i.e. PEG's capital service price uses publicly available information and the labour price (AWE) is generic and off-the-shelf.

Both Fenrick/CLD and Yatchew/EDA questioned the volatility and sensitivity of PEG's recommended industry specific inflation factor methodology.

Fenrick/CLD
Fenrick/CLD indicates the volatility in PEG's recommended inflation factor will be greater than the historic volatility of the 3GIRM inflation factor, the GDP-IPI[2], even though PEG has recommended a 3-year moving average to reduce annual volatility in the index. Fenrick/CLD agrees with PEG's "Three Factor" industry-specific inflation factor methodology, and agrees the two input price components of labour and non-labour put forward by PEG are appropriate but instead of PEG's capital service price calculation as the capital price component, Fenrick/CLD recommends adjusting the capital component to allow the use of the most current annual number in order to reduce volatility. Fenrick/CLD suggests

[1] PEG Report, Page 19
[2] Fenrick/CLD Report dated June 13, 2013, Page 4

this can be done by eliminating the cost of capital component in the inflation factor. This way Fenrick/CLD assumes that the cost of capital is fixed between re-basing years. Alternatively, Fenrick/CLD recommends using a weighted average growth rate of the Electric Utility Construction Price Index (EUCPI) as the capital component of the inflation factor. Fenrick/CLD believes adjusting the capital component in this way will substantially reduce volatility and adequately account for the cost pressures faced by distributors. In AMPCO's view, Fenrick/CLD's "Three Factor" approach is also consistent with Board policy.

Fenrick/CLD notes the PEG "Three Factor" annual inflation factor for 2012 is -1.62%, (compared to 0.70% in 2011) and believes this shows volatility and how one year of inflation data can bring down the inflation factor and thus, it is conceivable that PEG's 3-year moving average inflation factor could become negative, resulting in rate declines, or moving forward it could increase rapidly resulting in substantial rate increases. Fenrick/CLD calculates an inflation factor of 2.16% for 2012 based on its proposed methodology.[3] AMPCO notes Fenrick/CLD observes TFP trends over a shorter timeframe, i.e. 2006-2012.

Yatchew/EDA

In Yatchew/EDA's view, PEG's recommended inflation factor methodology is highly sensitive to shifts in interest rates, even though it is based on a 3-year moving average. Yatchew/EDA does not recommend an alternate industry specific inflation factor value but suggests the Board implement a regulatory formula which reduces rate shock to customers through a smoothing mechanism by considering the difference between the industry-specific inflation rate and a board measure of inflation.[4] Yatchew/EDA does not provide any detailed analysis on its proposal.

AMPCO Position

AMPCO submits that the Board should be concerned with volatility. The experts' concerns regarding the potential volatility of an industry specific inflation factor are well documented. Fenrick/CLD provides an analysis to show its proposed industry specific inflation factor (which is based on a different capital input price calculation) is less volatile than PEG's 3-year moving average, however Fenrick/CLD's analysis covers a shorter time period which in itself is problematic.

In AMPCO's view, none of the industry-specific methodologies put forward by the experts achieve a measurable improvement over the volatility of the inflation factor currently in place, and given the volatility in the industry specific inflation factors proposed, AMPCO submits that the inflation factor approach used in 3GIRM should be maintained (i.e. the GDP-IPI measure of inflation).

<u>The Productivity Factor</u>

Preamble:

With respect to the productivity factor, the Board provided the following policy direction in the RRFE Report [p.17]

- It is intended to be the external benchmark which all distributors are expected to achieve;

[3] Fenrick/CLD Report, Page 14 Table 6

[4] Yatchew/EDA Report, Executive Summary, Page i

•It will be based on Ontario Total Factor Productivity (TFP) trends; and
•It will continue to use an index-based approach for the derivation of an industry productivity trend to form the basis for the productivity factor.

PEG

PEG estimated Total Factor Productivity (TFP) growth in Ontario's electricity distribution using two methods: index based approach (TFP index model) that compares the rate of growth of inputs to rate of growth of outputs; and cost based approach (econometric model). The cost model includes a range of factors such as price of inputs (capital, labour); outputs (# of customers, system capacity, energy); business conditions (% underground, area, line length, growth rates of each distributor); and costs trends in the industry.

PEG used indexing as the primary method to calculate the productivity factor, and econometric back casting was used as a double check of the indexing method. PEG undertook detailed empirical analysis using these two methodologies. Properly implemented with appropriate data, the two methods should lead to similar results. PEG's index-based calculation of the Ontario electric distribution industry TFP trend for all utilities over the period 2002-2011 is -1.10%.

PEG assigns weights to distributors that are proportional to their size. If Hydro One and Toronto Hydro are excluded, PEG's restricted estimate of TFP growth is +0.1%. PEG proposes to exclude Hydro One and Toronto Hydro from the TFP index model calculations due to their disproportionate impact on calculated TFP. PEG's economic model predicted average TFP growth of +0.07% over the 2012-2011 period. Given that both the index-based and econometric-based TFP estimates are both close to zero, PEG believes a productivity factor of +0.1% is reasonable. PEG submits its analysis shows that the industry's slower TFP growth stems primarily from a slowdown in output growth rather than an acceleration in distributors' spending, noting the slower output growth has been particularly pronounced since the introduction of CDM programs in 2006.[5]

As a result of the May 27-28, 2013 EB-2010-0379 stakeholder conference, PEG was asked to conduct two supplementary empirical analyses. One was to estimate TFP growth for the industry using an average of each distributor's TFP growth over the 2002-2011 period. (PEG originally estimated industry TFP using aggregate measures of output quantity and input quantity growth). Average measures of TFP growth resulted in a TFP of -0.26%. The value is -0.20% if Hydro One & Toronto Hydro are removed. As a result of its analysis, PEG continues to recommend that the productivity factor for 4GIRM be set using the aggregate TFP trend and that the value for the productivity factor be 0.1%.

Fenrick/CLD

Fenrick/CLD indicates that although they disagree with excluding any cost categories that are part of the 4GIRM formula as PEG has done[6], for the most part, PEG's TFP indexing methodology and calculations should be accepted as they are. Fenrick/CLD does not agree however, that the recommended productivity factor should exclude Hydro One and Toronto Hydro, which represents approximately 40%

[5] PEG Report, May 2013, Page 73

[6] Fenrick/CLD Report, Page 19, Example: PEG excluded Bad Debt on the basis not likely to continue at same level

of the Ontario industry. Fenrick/CLD believes that the full industry sample should form the basis for the Ontario TFP trend (no exclusions). Fenrick/CLD believes all distributors are to be subject to the same productivity factor and notes this is reflected in the Board's RRFE Report (Page 17). In Fenrick/CLD's view, if PEG's recommendation is used as a precedent, numerous other industry segments (e.g. northern distributors, GTA distributors, rural distributors etc.) could also be arbitrarily excluded and this could move the TFP trend line significantly up or down.[7] To illustrate this point, Fenrick/CLD calculated the TFP trend range if each distributor is systematically taken out of the sample one at a time. This produces an external TFP trend of -0.56% to-1.18%. PEG's full industry TFP estimate is -1.10% for 2002-2011. Fenrick/CLD recommends using the -1.10% estimate as the productivity factor, rather than suggesting individual external factors for each distributor.

Yatchew/EDA

Yatchew/EDA reviewed PEG's report and based on its preliminary analysis, made recommendations for an alternate approach to calculating the productivity factor. In Prof. Yatchew/EDA's view, PEG's proposed productivity factor of +0.1% does not adequately take into account evolving cost patterns in the industry.

In its analysis, Yatchew/EDA estimated productivity growth using two methodologies: index based & cost based, which resulted in estimates of -0.7% & -0.8%,respectively, indicating significant upward cost pressures in the industry (i.e. unit costs have been rising at a rate of 0.7% to 0.8% per year).

For the index-based approach, the rate of growth of inputs is compared to the rate of growth of outputs. Yatchew/EDA assigned equal weights to all distributors (Hydro One and Toronto Hydro included) which differs from PEG's approach to assign weights to distributors based on size, and calculated an individual productivity index for each distributor, averaged across all distributors to arrive at an average productivity factor of -0.7%. (If Hydro One & Toronto Hydro are excluded, the productivity factor changes to -0.6%)[8]

For the purposes of analysis, Yatchew/EDA submits that productivity growth as measured by the index model should be approximately equal to the combined effects of technology and scale. Yatchew/EDA's cost based approach focuses on the estimation of technological driven cost trends and scale effects. The cost model separately identifies these effects and permits evaluation of the effects of changing business conditions on cost and productivity. The technology effect is the trend coefficient. Under this cost model, Yatchew/EDA estimated the technology driven cost trend to be 1.2% (trend coefficient in the cost model which indicates upward cost pressures; impact on TFP is -1.2%) partially offset by a favourable scale effect of 0.4%, to arrive at a productivity factor of -0.8%. Yatchew/EDA recommends a productivity factor of -0.75%.[9]

AMPCO Position

[7] Fenrick/CLD Report, Page 20
[8] Yatchew/EDA Report, Page 15
[9] Yatchew/EDA Report, Executive Summary, Page vi

AMPCO notes that when all distributors are included in the analysis, the calculations result in negative TFP values. PEG's decision to exclude Hydro One and Toronto Hydro from the TFP calculation changes the TFP from -1.1% to +0.1%, which demonstrates that the two distributors have a significant impact on the result, and this outcome must be considered when determining an appropriate productivity factor. AMPCO supports SEC's analysis that the two excluded utilities were low productivity performers, and their inclusion brings the overall standard to be applied to distributors way down. AMPCO agrees with SEC's proposal that the external benchmark which all distributors are expected to achieve should be calculated without the lowest performing distributors so that the standard is not calibrated towards the level of the substandard performers.

As a matter of principle, AMPCO does not support a negative or zero productivity factor as it is incompatible with the Board's incentive rate-setting objectives of encouraging cost efficiency. A negative or zero productivity factor sends the wrong signal to the industry. In simple terms, incentive rate making must continue to encourage more to be accomplished with less. Accordingly, the Board should avoid implementing an allowable rate increase formula that includes negative productivity.

<u>Total Cost Benchmarking & Efficiency Cohorts/Rankings & Stretch Factors</u>

Preamble:
The Board states in the RRFE Report that benchmarking models will continue to be used to inform rate Setting, and that 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 [p. 60].

The Board notes in the RRFE Report that stretch factors are intended to reflect the incremental efficiency gains that distributors are expected to achieve under incentive regulation and can vary by distributor and depend on the efficiency of a given distributor at the outset of the incentive regulation plan [p. 17]. The Board provided the following policy direction:
- The Board's approach in relation to the use and assignment of stretch factors will continue;
- Distributors will continue to be assigned annually to efficiency cohorts;
- Assignments will be made on the basis of total cost benchmarking evaluations; and
- The Board will further consider whether the current stretch factor values continue to be appropriate or whether there should be greater differentiation between the values.

In 3GIRM there are three efficiency cohorts with three stretch factors: 0.2%, 0.4% and 0.6%. These efficiency cohorts were determined at the time based on the results of two evaluations: econometric and OM&A unit cost/peer group benchmarking evaluations. Specifically, if a distributor is a superior cost performer and in the top quartile on the unit cost benchmark, it was assigned a stretch factor of 0.2% and in cohort #1. Higher stretch factors are assigned to relatively less efficient distributors as they have greater potential to achieve incremental productivity gains.

PEG, Fenrick/CLD and Yatchew/EDA have each proposed different changes in the stretch factor range. PEG and Fenrick/CLD specifically proposed an increase in the number of cohorts.

PEG

For 4GIRM, PEG used econometric benchmarking and unit cost benchmarking results (peer group analysis) in order to benchmark distributors' total cost performance (not just OM&A as in 3GIRM) and make recommendations for efficiency cohorts and stretch factors.

PEG's econometric model estimates the main drivers of electricity distribution costs in Ontario and is used to predict the cost of each distributor. The difference between actual and predicted costs identifies statistically superior, inferior and average cost performers, including confidence levels.

PEG's econometric cost model identified five statistically significant drivers of electricity distribution cost in Ontario (# of customers, kWh deliveries, system capacity peak demand, average circuit km of lines and share of customers added in the last 10 years).[10] These cost driver variables were used to select the peer groups that are used to benchmark unit costs. PEG's unit cost metric is calculated by dividing each distributor's total distribution cost by a comprehensive index of its output. Each distributor's unit cost was benchmarked relative to the unit cost of a designated peer group of Ontario distributors. The unit cost benchmarking/ peer group model compares each distributors total cost divided by output to the average for the peer group. Peer groups are determined based on similarities in cost drivers identified in the econometric model.

PEG recommends five efficiency cohorts. PEG indicates that increasing the number of cohorts makes it easier for distributors to migrate to higher cohorts and therefore benefit from actions to cut costs. In PEG's view benchmarking suggests some distributors can still achieve significant efficiency gains through cost-cutting. PEG's recommended stretch factors for 4GIRM are shown below.

Cohort	Stretch Factor	Econometric Benchmarking	Unit Cost Benchmarking
I	0.0%	Significantly Superior	Top Quintile
II	0.15%	Significantly Superior	Second Quintile
III	0.30%	All Others	Third Quintile
IV	0.45%	Significantly Inferior	Fourth Quintile
V	0.60%	Significantly Inferior	Fifth Quintile

Based on PEG's approach, PEG recommends that significantly superior cost performers at 90% confidence level, that are in the top quintile of distributors on the peer group/unit cost benchmarking analysis be assigned to efficiency cohort 1, with a stretch factor of 0.0%. The minimum of 0.0% encourages and rewards efforts to reduce unit cost, whereas the maximum of 0.6% reflects the potential for efficiency gains.

Yatchew/EDA

Yatchew/EDA notes the same model that is used to calibrate the output index in the index model approach is used to compare the relative efficiencies of distributors. Relative efficiencies are obtained by calculating costs predicted by the model for each distributor compared to their actual cost in recent years. In Yatchew/EDA's view, the accuracy of relative efficiencies involves a separate prediction for

[10] PEG Report, Page 59

each distributor and the potential for inaccuracies exists which creates the potential for the classification of a distributor into an incorrect efficiency cohort. Yatchew/EDA notes that in its analysis of the data even modest variations in model specification can lead to substantial changes in distributor rankings and migration to other efficiency cohorts. [11] Yatchew/EDA submits that the use of peer group analysis to inform cohort classification is problematic as there are too many variables that can affect distributor costs to allow confidence in the allocation to peer groups. Yatchew/EDA submits that the cost model is a better indicator of relative efficiency but notes that this model can also lead to anomalous results for some distributors. Yatchew/EDA puts forward another tool that that the Board might consider, i.e. the distributor specific index based productivity factor.

In Yatchew/EDA's view, PEG's allowable rate increase range of -0.2% to +0.4% for most distributors constitutes a rate freeze which he submits is inappropriate when there is clear evidence of externally driven pressure on distributor costs, aside from usual inflationary effects.

Yatchew/EDA proposes introducing a reward for top tier efficiency and thus recommends stretch factors -0.3% to +0.3%. Yatchew/EDA indicates that when these stretch factors are applied with PEG's industry specific inflation factor of 0.5%, the result is an allowable rate increase ranging from 0.95% to 1.55%, and most distributors would receive an increase of approximately 1.25% which would be well in line with the broader inflation measures faced by customers.[12]

Fenrick/CLD

Fenrick/CLD proposes to combine PEG's two approaches (unit cost indexing with econometrics) into one benchmarking evaluation, using a Unit Cost Econometric Model (UCEM) that Fenrick/CLD developed as the sole basis for determining 4GIRM stretch factors thereby eliminating the use of the "peer group" approach. Fenrick/CLD's model includes additional cost drivers beyond those included in PEG's model for a total of 11 cost drivers. The model estimates the impact of a number of cost drivers onto the cost per customer of each distributor in each year, after adjusting for input price differences.

Fenrick/CLD recommends its model on the basis it has a number of advantages over PEG's econometric model. Fenrick/CLD proposes 6 cohorts ranging from 0.0% to 0.5% based on rankings of the UCEM benchmark results. The top sixth distributors out of the current 73 are placed in cohort one with a stretch factor of 0.0% and so on until the final sixth distributors are placed in cohort six with a stretch factor of 0.50%. Fenrick/CLD's methodology eliminates the peer group approach and allows distributors to move from one cohort to another. In Fenrick/CLD's view, this approach will encourage competition between distributors since internal cost savings will be rewarded through a stretch factor that is no longer dependent on the peer group in which a distributor is placed and cost savings will now be more influenced by the cost levels of each distributor.

Fenrick/CLD notes that PEG's peer group approach is heavily dependent on the econometric results to calculate its results (using the econometric model's coefficient estimate). Fenrick/CLD submits that the peer group analysis is not a true independent check on the econometric approach and it is unclear to Fenrick/CLD if PEG's approach provides any new information.

[11] Yatchew/EDA Executive Summary, page iv

[12] Report prepared by Adonis Yatchew, Ph.D. on behalf of Electricity Distributors Association, June 13, 2013, Page 22

Fenrick/CLD indicates that given that this is the 4th generation of incentive regulation, it is appropriate to reduce the highest stretch factor from +0.60% to +0.50% to reflect the fact that most distributors have already been given incentives to reduce costs. Furthermore, Fenrick/CLD notes that IR plans in other jurisdictions tend to have stretch factors between 0.0% and +0.50%.

AMPCO Position

Each expert proposed a different approach to benchmarking. Recommendations ranged from the cost model being the better indicator of relative efficiency (thereby eliminating peer group analysis) to including both econometric and unit cost methods. For PEG and Fenrick/CLD the efficiency estimates for each distributor are used to set stretch factors and these estimates are based on the cost model. AMPCO notes that actual assignments to efficiency groups are highly sensitive to the specification of the model. Fenrick/CLD's model included additional variables not included in PEG's model which results in some coefficient estimates that are similar to PEG's but the rankings differ in that there is some migration in and out of most efficiency groups. AMPCO submits that the expert evidence adequately demonstrates that minor variations such as business conditions in the econometric model can lead to migration of distributors from one efficiency cohort to another, which brings into question the validity of stretch factor assignments and the allowable rate increases applied under the Board's formula.

AMPCO acknowledges the concerns of distributors that under the current framework it is difficult for distributors to migrate to higher cohorts, and AMPCO submits greater differentiation of stretch factors is warranted to encourage cost efficiency and allow movement.

Table 1 below prepared by AMPCO proposes to compare the current price cap index parameters with those proposed by each expert group.

Table 1: Comparison of Proposed 4GIRM Parameters

Parameters	**3 GIRM**	**PEG**	**Yatchew/EDA**[13]	**Fenrick/CLD**
Inflation Factor	May 1 = +1.6% (GDP-IPI)	+0.5%	Accept IF=+0.5%	+2.16
Productivity Factor	+0.72	+0.1%	-0.75%	-1.1%
Stretch Factor	3 cohorts +0.2% to 0.6%	5 cohorts 0.0% to +0.6%	-0.3% to +0.3%	6 cohorts 0.0% to 0.5%
Minimum Rate Increase	+0.28%	-0.2%	+0.95%	+3.26%
Maximum Rate Increase	+0.68%	+0.4%	+1.55%	+3.76%

AMPCO notes that based on the figures in the above table (subject to check) there is a significant range in the minimum and maximum rate increases proposed by each expert, which highlights the different outcomes that result from each experts approach and the challenge in selecting an appropriate approach.

[13] Yatchew/EDA Report, Page vi

AMPCO has reviewed SEC's submissions and supports SEC's more detailed analysis of the experts total cost benchmarking work.

Stretch Factors

AMPCO proposes that the stretch factor range be 0.1% to 0.6%.

The stretch factor component of the X Factor is designed to ensure that customers benefit from incentive rate setting. In AMPCO's view a negative stretch factor eliminates this benefit. Accordingly, AMPCO submits that the Board should avoid formulaic rate making that incorporates a stretch factor that is less than or equal to zero. From a customer perspective, AMPCO supports PEG's recommendation of 0.6% as the upper limit of the stretch factor range to reflect continued efficiency gains by distributors.