ENERGY PROBE RESEARCH FOUNDATION INTERROGATORIES

CUSTOM PRICE ESCALATION FACTOR /CUSTOM IR PLAN

M-EP-1
Reference: Exhibit M, Page 7
Preamble: *"We believe that it desirable to go beyond econometric total cost benchmarking in Custom IR proceedings by benchmarking major cost sub-aggregates such as operation, maintenance, and administration ("OM&A") expenses ("opex") and capital cost."*

a) Please provide a copy of the Letter of Retention from Board Staff and if available, detailed terms of reference.

b) Please confirm this is the first utility benchmarking study in Ontario that PEG has examined each of Total Cost, Opex and Capex using separate Models.

c) Please explain why this scope was determined in this case. For example, was the Hydro Ottawa CPEF/CIRM proposal to escalate O&M but not Capital, a driver/consideration.

d) Is PEG now advocating separate benchmarking of O&M, Capital and Total Cost as Best Practice? Please discuss.

Response to EP-1:

a) There is no formal Letter of Retention between OEB staff and PEG. Procurement of goods and services through external parties, including consultants, is done in accordance with rules and procedures established by the Provincial Government.

OEB staff filed a letter on April 24, 2020 in this proceeding documenting that it had engaged PEG to provide expert evidence and witnessing in this proceeding. OEB staff's letter provided an overview of the work and evidence that PEG was engaged to cover, along with the estimated budget for this engagement.

In order to provide further assistance on the scope of PEG's work, we are providing the following from Section 6 of the Statement of Work agreed to between OEB staff and PEG.

> 6. *Scope of Services and Deliverables* - The Services and Deliverables to be provided by the Vendor under this Statement of Work include the following:
>
> **Project Overview:**

The Vendor will act as an external expert retained by the Client's staff to review Hydro Ottawa's 2021-2025 Custom IR plan and the total cost benchmarking (TCB) evidence of its expert, Clearspring Energy (Clearspring). Clearspring has made recommendations on the parameters of Hydro Ottawa's proposed Custom IR plan. In addition, the Vendor will provide evidence on capital stretch factors, as well as on OM&A, capital and capital expenditure benchmarking. The Vendor will also respond to Hydro Ottawa's critique of the cost benchmark-forecasting model that the Vendor developed for the Client in an earlier consultation. The schedule for the Hydro Ottawa case requires that expert evidence proposed by the Client's staff (or any other party) be filed by June 12, 2020 and the Vendor will meet the deadline. The Vendor will also assist the Client's staff on an ongoing basis during the proceeding.

The Vendor will perform the following Services and Deliverables:

Pre-filing and Filing of Expert Evidence

- Project and Administration.
- Review Hydro Ottawa's pre-filed evidence including the total cost and service quality benchmarking, and Custom IR revenue cap proposal;
- Assess and critique Custom IR plan designs, and propose alternatives, as appropriate;
- Assess and critique Clearspring's Total Cost Benchmarking analysis and model. Prepare alternative analyses;
- Separately conduct analyses benchmarking of OM&A, capital, and capital expenditures (capex) cost benchmarking;
- Prepare S-factor or equivalent measure to incentivize capital efficiency/productivity;
- Analyze OM&A Partial Factor Productivity; and
- Prepare and file Direct Testimony (Evidentiary Report) based on its analyses.

Post-Filing (Interrogatories on PEG Evidence and Oral Hearing)

- Respond to interrogatories on prepared Direct Testimony;
- Preparation for and testimony on its evidence at the oral hearing;
- Respond to in-hearing undertakings; and
- Briefing preparation and other direct costs (e.g. communications with OEB staff).

b) This statement is not confirmed. In the recent Toronto Hydro Electric preceding (EB-2018-0165) PEG developed and presented OM&A expense, capital cost, and total cost benchmarking models as well as a capital expenditure benchmarking model.

c) Hydro Ottawa's proposal to have a CPEF applicable only to OM&A expenses was one consideration in deciding to benchmark major cost components. However, with the frequent requests for supplemental capital revenue by large Ontario electric utilities, the benefits of decomposing total cost benchmarking results have been apparent for some time. PEG has developed the capability to do more granular benchmarking over several projects, including as part of the OEB's Activity and Program Based Benchmarking ("APB") project (EB-2018-0278).

d) Yes. However, budget constraints sometimes make this approach impractical.

M-EP-2
Reference: Exhibit M, pages 20 and 21
Preamble: In its report PEG quotes the submission of OEB Staff on the OEB Staff on the EB-2015-0004 Settlement Proposal.

"Such asymmetry between the treatment of OM&A and capital expenses was not the intent of the Custom IR option. Instead, with the onset of the RRFE, the OEB has advocated comprehensive, total cost incentive rate-setting, on the grounds that it creates stronger and more balanced incentives. As has been argued elsewhere, including during RRFE consultations, an asymmetrical I-X framework applied to OM&A but not to capital may distort incentives, promote sub-optimal investments and alter a distributor's response to cost and revenue changes."

a) Does PEG agree with the OEB Staff submission? Please explain your answer.

b) Does the Hydro Ottawa's proposed Custom IR in the current case have balanced incentives for Capital and OM&A? Please explain your answer.

c) Does the proposed Custom IR plan provide an incentive for Hydro Ottawa to cut back on OM&A and increase spending on Capital? Please explain your answer.

Response to EP-2:

a) Yes. PEG agrees that imbalance incentives to contain OM&A and capital cost are undesirable.

b) No. Incentives to contain capital and OM&A costs are imbalanced in Hydro Ottawa's proposed plan, as PEG discusses in Section 6.1 of pages 65-66 of its evidence (Exhibit M). 99.85% of the Company's proposed capital cost growth would be recoverable if incurred, and the entirety of cumulative capital revenue requirement savings would be passed through customers. The proposed ESM would, meanwhile, permit Hydro Ottawa to keep a sizable share of any opex savings.

   Hydro Ottawa has acknowledged that certain kinds of capex reduce OM&A expenses, stating, for example, on pages 270-271 of Exhibit 2/Tab 4/Schedule 3, that:

> [a]s certain assets age, the required maintenance and associated costs increase. Assets which have deteriorated to the point of failure result in high O&M costs associated with the emergency work required to respond and restore power. When an asset is replaced, maintenance is still required, but typically involves

less time and resources resulting in lower O&M expenses in comparison. Through proactive replacement, additional O&M costs can be avoided.

As Hydro Ottawa replaces assets, new technologies are introduced. There are benefits to such improvements, such as reduced crew travel time, but other added costs such as software licencing, increased communication infrastructure and the need for device specific training can increase O&M costs.

System undergrounding also reduces OM&A expenses.

c) Please see the response to part b) of this interrogatory.

M-EP-3

Reference: Exhibit M, Table 1, page 35

Preamble: The information in Table 1 indicates that old plans with a scale escalator terminated and were not replaced with new plans that had a scale escalator.

Is the use of scale escalators going out of favour? Please discuss.

Response to EP-3:

PEG does not believe that the use of scale escalators is going out of favor.

Many gas and electric utilities in the United States pair a revenue decoupling mechanism with a revenue adjustment mechanism ("RAM") that formulaically escalates allowed revenue between rate cases. Many of these RAMs are not part of multiyear rate plans. Most of these RAMs have a scale escalator and the number of customers is nearly always used for this purpose (without a scaling factor).

Table 1 provides details of revenue cap indexes that are part of multiyear rate plans. Only one utility, Southern California Gas, went from a revenue cap index ("RCI") with a scale escalator to an RCI without one. Most of the current plans detailed in the table are from Ontario and Massachusetts. In Ontario, the lack of a scale escalator in the revenue cap indexes for the two transmission plans was due to an expectation of little or no system growth during the plan term. The lack of a scale escalator in both Massachusetts revenue cap index plans can be tied to previous decisions by the state regulator to exclude growth terms in those companies' RAMs.

It should also be noted that, in California, hybrid revenue caps have escalated OM&A revenue only for inflation. The Commission defended this treatment with the assumption that productivity growth equalled customer growth.

M-EP-4
Reference: Exhibit M, Page 44
Preamble: *"Cost benchmarking should ideally be combined with reliability benchmarking to gain a balanced view of performance, and reliability performance is germane when considering requests for supplemental capex funding."*

a) Was PEG retained to either examine the Clearspring Reliability modelling and/or prepare an alternative model?

b) Has PEG examined the Clearspring Reliability Benchmarking evidence? If so, please provide your comments.

Response to EP-4:

a) No, Board Staff elected not to make reliability benchmarking part of this project. PEG accordingly did not address this matter.

b) Please see the response to part a) of this interrogatory.

M-EP-5

References: Exhibit M, Page 47 and Table 3

Preamble: The following table which was prepared by Energy Probe compares the methods used by PEG with those used by Clearspring.

Parameter	PEG	Clearspring EA
Benchmark Year	1984	
Asset Price Deflator	50/50 average of the growth of HWI NE US and growth of the ICSD for the Canadian utility sector.	HWI Power Distribution Construction Costs in the Northeast US.
Material and Service price sub-index	Canada "GDP-IPI"	US GDPPI material and service price sub-index for the Ontario distributors
Labor price trend index	AWE of Ontario workers	US employment cost index -all of sample
OM&A input price index	Company specific cost share weights for Hydro Ottawa and the US distributors in the sample. The cost share weights for the other Ontario distributors fixed at 70/30.	
OM&A expenses	O&M grows at CPEF	O&M grows at CPEF
Service territory area	3rd scale variable	Included
Forestation variable	Replaced with % Plant Overhead x % Forested	Included forestation variable
Methodology	Benchmarked O&M Capital and Total Cost	Benchmarked Total Cost

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a) Please confirm that the information in the table is correct and that no relevant information is missing. If it is not correct, or if there is missing information, please file a similar table with the correct and complete information.

b) Please indicate directionally which of the PEG modifications to the methods
   - increased the Hydro Ottawa Relative Total Cost Benchmark
   - decreased the Hydro Ottawa Relative Total Cost Benchmark
   - Please add any comments about relative magnitude of the change.

Response to EP-5:

a) PEG provides the following corrections and clarifications to the above table.

- The benchmark year used by Clearspring was 1989 for US companies and 2002 for Ontario companies. PEG did the same with the exception of using a 1989 benchmark for Hydro Ottawa.
- Although both Clearspring and PEG escalated OM&A expenses using indexes, PEG's formula included updated forecasts and scale growth.
- Clearspring used fixed 70/30 cost share weights for the OM&A price indexes of all sampled utilities, ignoring available data that showed that these weights are implausible for Hydro Ottawa and most US utilities. A 70/30 weight is not in alignment with Hydro Ottawa's own proposed CPEF.
- Clearspring's model did not have an area variable but did have log-linear and quadratic density (customer/area) variables.
- PEG updated Hydro Ottawa's plant additions data to reflect Hydro Ottawa's latest publicly available forecast.

b) This task would have involved considerable extra work in a project with limited budget and was not undertaken. PEG did not calculate scores after every change implemented. However, PEG believes that the benchmarking year adjustment is the biggest source of difference in the benchmarking results in a direction that did not favor Hydro Ottawa. In the recollection of PEG, the impact of the price index choices was more minor and the direction of impact unclear. The net impact of the modifications made to the OM&A escalation formula increased the projected cost of the company without changing the benchmark. The net impact of the modifications to the company's plant additions also increased the projected cost of the company without changing the benchmark. Please see also the response to EP-6 b).

M-EP-6

References: Exhibit M, Page 55, Table 6, and Page 56, Figure 1.

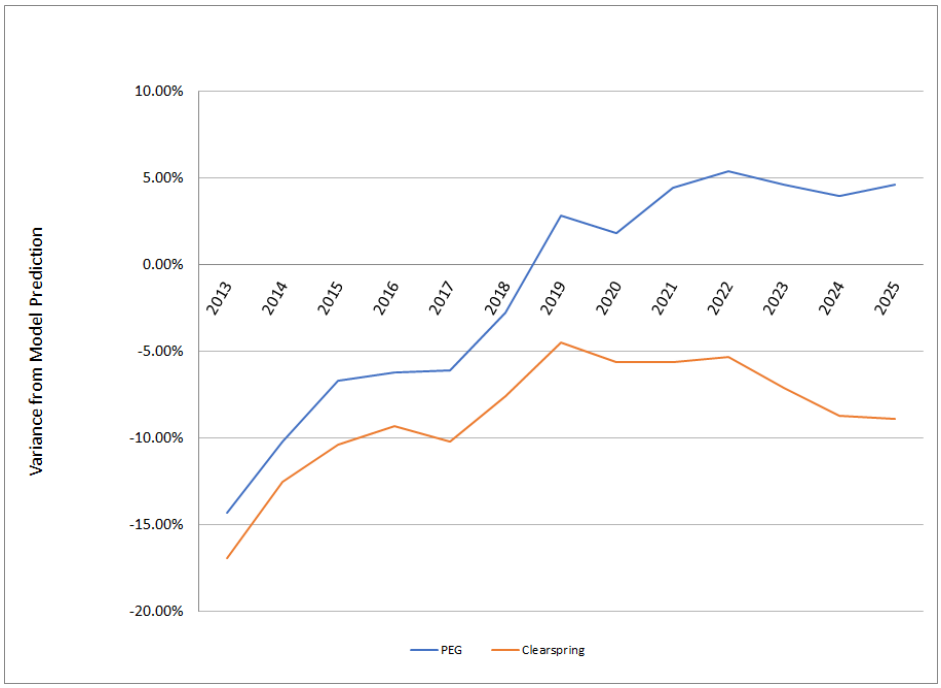
a) Please provide a version of Figure 1 with the both the PEG and Clearspring Total Cost Benchmarks plotted.

b) For the CPEF/Custom IRM period 2021-2025, please comment on the differences and basis for these between PEG and Clearspring Total Cost projections.

c) Given that the Hydro Ottawa CPEF/CIRM formula does not include a Capital Factor, does this have implications for the Total Cost Benchmarks from Clearspring and PEG for 2021-2025? Please discuss.

Response to EP-6:

a) The requested figure is shown here.



b) As illustrated in the figure in part a, both models show a notable deterioration in Hydro Ottawa's cost performance from 2013 to 2019. PEG shows Hydro Ottawa's performance to be worse in all years and to *worsen* modestly after 2019. Clearspring predicts Hydro Ottawa's cost performance to *improve* modestly after 2019 despite its request for a Custom IR plan to accelerate revenue growth. The difference in the trends post 2019 was due partly to PEG using updated plant additions and customer numbers

from Hydro Ottawa's Application and updates. PEG also used updated inflation forecasts from the Conference Board of Canada and Hydro Ottawa's proposed CPEF formula, including the addition of a growth factor to the formula, as outlined in Exhibit 1/Tab 1/Schedule 10, which Clearspring did not rely on.

c) PEG believes that the stretch factor should be based on Hydro Ottawa's total cost performance whether or not there is a C factor. The Clearspring and PEG total cost benchmarking studies both suggest that a 0.30% stretch factor is warranted.

M-EP-7
Reference: PEG report, pages 57 to 60

Do Figures 2 and 3 confirm that the 2016-2020 Custom IR Plan and the proposed 2021-2025 Custom IR plan encourage overspending on Capital and underspending on OM&A? Please discuss.

Response to EP-7:

PEG's revised capital cost benchmarking model is presented in their response to Hydro Ottawa-14 (Exhibit L/Tab 1/Schedule 14). It suggests that Hydro Ottawa's capital cost performance will deteriorate materially during its current Custom IR plan and the first year of its new plan. These results could reflect weakened capex containment incentives under Hydro Ottawa's approach to Custom IR. However, the apparent deterioration in capital cost performance could also reflect misspecification. For example, neither the total cost model nor the capital cost model have variables that could indicate an outsized need for a replacement capex or delivery capacity expansion. Our OM&A cost model suggests that OM&A cost performance deteriorated during the first Custom IR plan. However, this seems to be chiefly due to a surge in administrative expenses transferred to construction costs.

M-EP-8
References: Exhibit M, Page 58, Figure 2

a) Please confirm that based on PEG analysis per Figure 2, Hydro Ottawa OM&A has stabilized at the average Benchmark since 2018 and is projected to remain so in the 2021-2025 CPEF/IRM period.

b) What does this imply for the appropriate X- Factor and stretch factor?

c) How does the proposed Growth rate (G) affect the choice of an appropriate X and stretch factor?

Response to EP-8:

a) PEG's OM&A benchmarking reveals that Hydro Ottawa's proposal to escalate OM&A revenue by the CPEF would produce revenue that is commensurate with an average, stable cost performance.

b) The stretch factor should be based on Hydro Ottawa's total cost performance, which despite some deterioration during the new plan would be commensurate with a 0.30% stretch factor.

c) The lack of a G factor has occasionally been considered in the choice of an X factor on the grounds that it constitutes an implicit stretch factor.

M-EP-9
Reference: Exhibit M, Page 60

Preamble: *"The stretch factor should be based on the total cost of Hydro Ottawa's base rate inputs. The cost of the two major capex projects that the Company has taken should not be excluded."*

a) Please confirm that PEG finds that a 0.3% Stretch factor is appropriate with the two Capital projects included.

b) If the decision of Hydro Ottawa were to exclude one or both projects what would PEG recommend for the Stretch Factor(s)?

Response to EP-9:

a) This statement is confirmed.

b) PEG did not do a benchmarking run that excluded the cost of these two projects. However, it seems likely that the stretch factor would have remained at 0.30% since, under Price Cap IR precedent, 0.30% is applicable over the +/-10% range of benchmarking scores.

M-EP-10
Reference: Exhibit M, Page 63

Preamble: *"If the CPEF applies only to OM&A revenue, as proposed by Hydro Ottawa, our recommended CPEF formula is Inflation – 0.57% + G where the X factor is the sum of a 0.27% base OM&A productivity trend and a 0.3% stretch factor. If CPEF applies to all revenue (i.e., OM&A and capital) in a rate adjustment formula similar to what the OEB has approved for Hydro One and Toronto Hydro in 2019 decisions, we recommend a 0.30% X factor consisting of 0% base TFP trend and a 0.3% stretch factor."*

a) Have Board Staff requested PEG to examine a custom CPEF/IRM that encompasses Capital? If so what recommendation(s) does PEG have in this regard including the parameters in the CPEF.

b) If not, please confirm having considered potential modifications to the Hydro Ottawa CPEF, and provide PEG's recommendation for a comprehensive CPEF

Response to EP-10:

a) OEB staff did not specifically request that PEG consider the appropriate formula for the CPEF if it applied to capital as well as OM&A expenses. However, we have done so and concluded, given the limited evidence on TFP trends, that an Inflation - 0.30% + G formula would be appropriate. The weight on the labor price subindex in the inflation measure of the comprehensive CPEF should ideally be the share of OM&A labor expenses in total cost.

b) Please see the response to part a) of this interrogatory.

M-EP-11
References: Exhibit M, Page 69, and Page 72

Preamble: *"It is also notable that the full funding of its capital cost growth which Hydro Ottawa proposes is more remunerative than that available under Price Cap IR. We noted in Section 2.2 that ACMs and ICMs feature a materiality threshold with a meaningful dead band before projected capital revenue shortfalls are funded."*

a) Given this expressed concern, is PEG recommending the Board impose a Price Cap with ICM/ACM?

   If not, what other solutions does PEG recommend for the Hydro Ottawa CPEF/CIRM? Please discuss and provide examples in order of practicality and comment whether these should be generic such as ICM/ACM in Rate Cap IRM.

   - C Factor and S Factor
   - X Factor Adjustment
   - Alternative Capital Eligibility Restrictions

     Large Projects e.g. FRP and South Nepean MTS projects
   - Exclude Capex in the last year of the IRM Plan term
   - Incentivized Variance Account

b) Please comment how, in each case, the availability of a Capital in Service Variation Deferral Account and its disposition to ratepayers and the Company affects your recommendations.

Response to EP-11:

a) PEG does not recommend this option but believes that it merits consideration since the need for supplemental capital revenue might, with some flexibility on the part of the OEB, be satisfactorily addressed by the ACM, ICM, and Z factor provisions of Price Cap IR. Advantages of Price Cap IR include the fact that ACMs and ICMs already have meaningful materiality thresholds which reduce concerns about capex containment incentives and overcompensation. Controversy concerning the appropriate S factor and G factor terms for the CPEF could be sidestepped.

As for the other plan design options discussed in Section 6.2 of PEG's report, PEG has chiefly endeavored in this project to identify options and discuss their pros and cons rather than developing a specific proposal. Some of these options are more consistent with current Board guidelines than others. Some, such as borrowing revenue escalation privileges from future plans, may require a generic hearing.

Amongst the Custom IR options that PEG detailed, the option of a comprehensive CPEF with a C factor and material S factor, combined with a substantially incentivized capital variance account, would be an obvious incremental reform. Dr. Lowry finds the combination of a California-style hybrid revenue cap with a more incentivized capital variance account to be appealing. The panel would in this case not have to sign off on the Company's capex plan. Dr. Lowry will devote further thought to his ranking of options as he prepares for the hearing.

b) The Capital in Service Variance Account is the chief source of weak incentives in the proposed plan. Incentivizing this account would strengthen capex containment incentives but would not address overcompensation and regulatory cost concerns.

M-EP-12
Reference: PEG report, Page 69

Preamble: "It is also notable that the full funding of its capital cost growth which Hydro Ottawa proposes is more remunerative than that available under Price Cap IR."

Based on PEG's analysis are there any reasons why Hydro Ottawa should have a rate plan that is more remunerative than that available under a Price Cap IR. Please discuss.

Response to EP-12:

Hydro Ottawa's Custom IR proposal raises concerns about cost containment incentives, overcompensation, and regulatory cost. It may prove difficult to devise an approach to Custom IR under which continued operation under this ratemaking option is desirable. Under these circumstances, ensuring that Custom IR is no more remunerative than Price Cap IR is a sensible reform.