ONTARIO POWER GENERATION

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December 2, 2016

VIA RESS & COURIER

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

Dear Ms. Walli:

Re: Application by Ontario Power Generation Inc. for 2017-2021 Payment Amounts (EB-2016-0152) – OPG Interrogatory Questions on OEB Staff evidence

On November 21, and November 23, 2016, the Ontario Energy Board ("OEB" or "Board") staff filed the following expert evidence for EB-2016-0152: (i) the report prepared by Kenneth M. Roberts of Schiff Hardin, LLP regarding the Darlington Refurbishment Program (Exhibit M1); (ii) the report prepared by Mark Lowry of Pacific Economics Group Research LLC entitled "IRM Design for Ontario Power Generation" (Exhibit M2); and (iii) the report prepared by Bente Villadsen of the Brattle Group Inc. entitled "Common Equity Ratio for OPG's Regulated Generation" (Exhibit M3).

Attached to this letter are OPG's interrogatory questions on Exhibits M1, M2 and M3. This cover letter and the attached interrogatory questions have been submitted through the Regulatory Electronic Submissions System (RESS) in both WORD and PDF format, as requested.

If you have any questions regarding these interrogatory questions, please contact me at 416-592-5419.

Yours truly,

[Original signed by Saba Zadeh on behalf of]

Barbara Reuber
Regulatory Affairs
Ontario Power Generation

Cc: Carlton Mathias (OPG) via email
Charles Keizer (Torys LLP) via email
Crawford Smith (Torys LLP) via email

EB-2016-0152

Ontario Power Generation (OPG)

Interrogatories on Evidence of

Schiff Hardin LLP at Exhibit M1

Issue 4.3: Are the proposed nuclear capital expenditures and/or financial commitments for the Darlington Refurbishment Program reasonable?

M1-4.3-OPG-1

Reference:

Exhibit M1, page 19
At page 19 of Exhibit M1, Mr. Roberts states: *"It is important to note that within the industry, nuclear power plant construction cost estimates are generally accepted as very uncertain."* This sentence is supported by a reference to an article cited as: David Schlissel and Bruce Biewald, "Nuclear Power Plant Construction Costs", Synapse Energy Economics, Inc., July 2008. Mr. Roberts goes on to state that: *"Costs have dramatically increased for several reasons including worldwide competition for resources, limited commodities and manufacturing capacity, limited engineer-procure-construct ("EPC") firms, and fewer suppliers of nuclear power plant components."*

Interrogatory:

Please confirm that the basis for Mr. Roberts' above-referenced statement about the reasons for nuclear cost increases is also the cited article by Schlissel and Biewald.

M1-4.3-OPG-2

Reference:

Exhibit M1, page 19
At page 19 of Exhibit M1, Mr. Roberts states: *"While OPG has asserted a high confidence level in the RQE, nevertheless, the risk of project cost increases cannot be wholly eliminated."*

Interrogatory:

a) In Mr. Roberts' experience, how often has he seen a megaproject estimate at a P90 confidence level?
b) Does Mr. Roberts' experience lead him to conclude that there is a greater probability of achieving an estimated project cost where the project cost is estimated at a P90 level than at a lower confidence level?

M1-4.3-OPG-3

Reference:

Exhibit M1, page 23
At page 23 of Exhibit M1, Mr. Roberts states that earned value can be a very effective tool for understanding project data and that, if earned value is effectively used, OPG would have the opportunity to understand where problems are and to develop appropriate problem-solving strategies using that information.

Interrogatory:

In Mr. Roberts' experience, if OPG uses earned value in the manner described in its policies and procedures, will OPG be well-placed to effectively control Darlington Refurbishment Program costs and schedule?

M1-4.3-OPG-4

Reference:

Exhibit M1, page 25
On page 25 of Exhibit M1, Mr. Roberts comments on the importance of a strong, capable and experienced project management team that is able to coordinate and track the work of such a complex project/program. He then states that: *"OPG provided information about the corporate executives involved in the DRP, but the evidence does not include any details regarding the DRP management team's prior experience and credentials including whether or not they possess: nuclear refurbishment experience; prior mega-project (or mega-program) project management experience; or prior experience managing a multi-prime project."*

Interrogatory:

Did Mr. Roberts review Ex. L-4.3-1 Staff-046 where OPG provided the CVs of the Darlington Refurbishment Program management team and also a written summary of their relevant experience?

M1-4.3-OPG-5

Reference:

Exhibit M1, page 31
At page 31 of Exhibit M1, Mr. Roberts states that: *". . . the vast majority of mega-projects (including mega-programs) are over budget and over schedule. While OPG's detailed planning during the Definition Phase of the DRP mitigates some risk that may arise during the execution of the DRP, no amount of planning is a guarantee of successful completion. All mega-projects (including mega-programs) experience some form of cost and/or schedule issues. It is not a question of whether these type events occur, it is a matter of how OPG handles and responds to these issues when they arise."*

At footnote 42 of Exhibit M1, Mr. Roberts cites a 2014 article by Bent Flyvbjerg entitled "What You Should Know about Megaprojects and Why: An Overview".

At Appendix 2 of Exhibit M1, Mr. Roberts includes list of examples of megaprojects with cost overruns, which he notes is largely derived from the Flyvbjerg article.

Interrogatory:

a) Please clarify, where Mr. Roberts states that the vast majority of mega-projects are over budget, whether he is referring to the final cost of such projects: (i) being greater than the budgeted amount including or excluding planned contingency amounts, and (ii) exceeding the budgets of mega-projects that have been set at a P90 confidence level.
b) For the list of examples of megaprojects with cost overruns provided in Appendix 2 of Exhibit M1, please identify which of the projects were planned at a P90 confidence level and, in respect of each such project, clarify whether the stated cost overrun was calculated relative to the P90 cost estimate for that project.
c) Does Mr. Roberts acknowledge that some megaprojects have been completed within their budgets? If so, please comment on why those projects were successful in being completed on budget.

M1-4.3-OPG-6

Reference:

Exhibit M1, page 39
On page 39 of Exhibit M1, Mr. Roberts states that: *"There are risks related to the fact that the SNC/AECON joint venture is the contracting party performing work under three separate prime contracts. For instance, if either or both members of the SNC/AECON joint venture defaults, the risks to the program are unclear as the completion of three of the major scopes of work on the Project would be threatened or adversely impacted as would other aspects of the Program."*

Interrogatory:

a) Would Mr. Roberts consider selecting the contractor with the most relevant experience to be more important than selecting a greater number of contractors, some of which may not have the most relevant experience?
b) In making the referenced observation, has Mr. Roberts considered Ex. L-4.3-3 CME-020 relating to OPG's broad rights to transfer work to another contractor based on the needs of the Darlington Refurbishment Program?

M1-4.3-OPG-7

Reference:

Exhibit M1, page 40
On page 40 of Exhibit M1, Mr. Roberts states that: *"One risk is that the SNC/AECON joint venture will monopolize the schedule at the expense of other contractors when it can. OPG*

project management may also have a difficult time tracking which craft worker is working under each of the respective SNC/AECON contracts which is relevant for managing work under contracts with multiple pricing models and responding to any delay and impact claims that may arise."

Interrogatory:

a) On what basis does Mr. Roberts believe that there is a risk that the SNC/AECON Joint Venture may monopolize the schedule at the expense of other contractors?
b) Please explain the basis for the comment that OPG may have a difficult time with respect to tracking craft workers. Please clarify whether Mr. Roberts reviewed or considered OPG's Darlington Refurbishment Program governance processes and procedures filed as attachments to Ex. L-4.3-1 Staff-048, specifically, items 6, 11, 33, and 56, as well as OPG's response in Ex. L-4.3-1 Staff-057 in making this comment.

M1-4.3-OPG-8

Reference:

Exhibit M1, page 42
On page 42 of Exhibit M1, Mr. Roberts states: *"OPG should not depend exclusively on reporting by the contractors."*

Interrogatory:

Does Mr. Roberts' observation above take into consideration OPG's response to Ex. L-4.3-1 Staff-57 parts b) and c) and the referenced document cited in the response, namely, the Nuclear Refurbishment Cost Management and Reporting (N-MAN-00120-10001-PC-13) provided at Ex. L-4.3-1 Staff-048, Attachment 26?

M1-4.3-OPG-9

Reference:

Exhibit M1, page 42
On page 42 of Exhibit M1, Mr. Roberts states that: *"OPG's right to demand a Recovery Plan (See e.g., Steam Generator Contract, Section 8.6; Turbine Contract, Section 8.6) (the "Section 8.6 Recovery Plan") is not contractually triggered until after the contractor actually accrues schedule disincentives which are tied to the guaranteed dates. In Schiff's experience, the potential to exercise this right occurs too late to effectively manage or mitigate earlier project schedule risks and its value is diminished as a result. Generally, the best opportunity to correct the delay or potential delay generally occurs earlier in the project when an owner can review the applicable data and determine that a milestone or guaranteed date is either threatened or will be missed."*

OPG notes that its contracts also contemplate the preparation of recovery plans when the Progress Schedule has not been or is anticipated not to be complied with (for example, see section 2.7(c) of the Steam Generator Engineering, Procurement and Construction Contract

and section 2.7(c) of the Turbine Generators Engineering, Procurement and Construction Contract).

Interrogatory:

Given the additional contractual term noted in the second paragraph of the above reference, and OPG's tools for controlling and monitoring the schedule as set out in Ex. D2-2-6 and Ex. L-4.3-1 Staff-069 (in particular parts a) and b)), would Mr. Roberts still make this observation?

M1-4.3-OPG-10

Reference:

Exhibit M1, page 49
In describing the Bruce refurbishment on page 49 of Exhibit M1, Mr. Roberts states that "the planned budget was $2.75B and the total actual cost of the refurbishment was approximately $7B". OPG's information is that the scope of work originally budgeted for $2.75B (Units 1 and 2 Refurbishment) was completed for $4.8B.

Interrogatory:

Could Mr. Roberts provide additional details on the "total actual cost of $7B"?

Issue 4.5: Are the proposed test period in-service additions for the Darlington Refurbishment Program appropriate?

M1-4.5-OPG-11

Reference:

Exhibit M1, page 53
On page 53 of Exhibit M1, Mr. Roberts states that: *"In a traditional rate making approach, a utility first constructs a facility, and then seeks rate recovery for the facility after completing the construction."*

Interrogatory:

Please clarify whether the referenced comment from Mr. Roberts contemplates the use of a forward test period, whereby assets may be added to a utility's rate base on a forecast basis before those assets go into service.

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Ontario Power Generation (OPG)

Interrogatories on Evidence of

Pacific Economics Group, LLC (PEG) at Exhibit M2

Issue 11.1: Is OPG's approach to incentive rate-setting for establishing the regulated hydroelectric payment amounts appropriate?

M2-11.1-OPG-1

Reference: Exhibit M2, general

Interrogatory:

a) Please provide the data set, TFP model, and any other quantitative analysis or models used by PEG in its TFP analysis or in developing any of the tables in Exhibit M2. For example: regression analysis for the cost elasticities for generation capacity and volume as discussed on page 48 of Exhibit M2, and any calibrations and calculations of the capital input quantity index.

   Please provide all materials in "live" format, such as Microsoft Excel. Please make sure all formulas are intact and operable.

b) Please provide documentation as necessary to facilitate understanding of the materials provided in part (a) and to link them to the discussion of results in Exhibit M2. Sufficient information should be provided on the design and working of the model, the data used, and the firms used in the data set for the analysis to enable another researcher to replicate the results of PEG's analysis.

M2-11.1-OPG-2

Reference: Exhibit M2, section 5

Interrogatory:

Please provide the results of PEG's study and revised versions of Tables 3, 4, 5, and 6 in Exhibit M2, assuming one-hoss shay depreciation for the periods 1975-2014, 1996-2014, and 2003-2014.

M2-11.1-OPG-3

Reference: Exhibit M2, general

Interrogatory:

a) Please list and provide all studies of hydroelectric generation reviewed by PEG.
b) Please identify which of these studies use MW as an output and which use MWh.
c) Please identify which of these were used for regulatory purposes.

M2-11.1-OPG-4

Reference: Exhibit M2, general

Interrogatory:

a) Please list and provide all other North American productivity research reviewed by PEG for its report in Exhibit M2.
b) Please identify which of the reports identified in part (a) were used for regulatory purposes.

M2-11.1-OPG-5

Reference:

Exhibit M2, page 4
On page 4 PEG states that, "*Monetary approaches have to date been much more common in North American productivity research to calibrate X-factors.*"

Interrogatory:

Please provide all instances that PEG has identified where monetary approaches have been used to calibrate X-factors for rate setting of a generation related business.

M2-11.1-OPG-6

Reference:

Exhibit M2, page 5
On page 5 PEG states that *"Gradual asset decay matches the stylized facts of hydroelectric generation and is consistent with utility cost accounting."*

Interrogatory:

Please provide evidence that the assets of OPG or its peers in the hydroelectric generation sector exhibit the "gradual asset decay" to which PEG refers to in the reference above.

M2-11.1-OPG-7

Reference:

Exhibit M2, page 10
On page 10 PEG states the age of OPG's hydroelectric assets creates a *"steady stream of opportunities for OPG to repair, refurbish, and replace its facilities."*

Interrogatory:

Please describe the specific opportunities to which PEG refers to in the reference above.

M2-11.1-OPG-8

Reference: Exhibit M2, page 21

Interrogatory:

PEG lists three depreciation profiles used to establish the capital input quantity under the monetary method: geometric decay, one-hoss shay, and cost of service. Please identify all jurisdictions that calibrate utility X-factors using each type of depreciation profile.

M2-11.1-OPG-9

Reference: Exhibit M2, general

Interrogatory:

a) Please confirm that some statistics agencies, including the US Bureau of Labor Statistics, utilize a hyperbolic depreciation profile.
b) Is a hyperbolic depreciation profile more similar to a geometric decay or one-hoss shay?

M2-11.1-OPG-10

Reference:

Exhibit M2, page 36
On page 36 PEG states LEI and many government studies of productivity are guided by the *"notion that the capital quantity index should measure the flow of services from capital assets."*

Interrogatory:

In PEG's understanding, what 'flow of services' does OPG deliver to ratepayers?

M2-11.1-OPG-11

Reference: Exhibit M2, page 11

Interrogatory:

a) Please confirm that under PEG's model, which uses monetary capital input and capacity output measures, a significant capital project such as the Niagara Tunnel Project would:
    i. cause higher input growth;

ii. have no impact on output growth (as it does not increase capacity); and

b) cause a more negative MFP for the years when investment took place.
If you are unable to confirm any of i) through iii) above, please provide an explanation.

M2-11.1-OPG-12

Reference:

Exhibit M2, page 4
On page 4 PEG states *"a special smoothing technique may be needed to improve the estimate of the long-run productivity trend."*

Interrogatory:

a) Please specify the special smoothing technique(s) to which PEG is referring to in the above reference.
b) What circumstances necessitate the use of such a technique, and how effective is it?

M2-11.1-OPG-13

Reference:

Exhibit M2, page 46
On page 46 PEG states *"All utilities with hydroelectric generating plant exceeding $100 million in 2014 were considered."*

Interrogatory:

a) Please describe how PEG determined to use a $100M threshold.
b) Please confirm the relationship or level of correlation between the installed capacity and the generating plant value that was used as the threshold.
c) Please provide the underlying data that was used to determine the correlation in the previous sub-question.
d) Which companies were removed because of this threshold? Please provide the results of the study if there was no threshold. Please provide all the data and formulas intact for the MSP calculations.

M2-11.1-OPG-14

Reference:

Exhibit M2, page 17
On page 17 PEG states *"Productivity growth is also affected by changes in the miscellaneous business conditions."*

Interrogatory:

Please provide specific examples of what would qualify as 'miscellaneous business conditions' in the context of hydroelectric generation business?

M2-11.1-OPG-15

Reference:

Exhibit M2, page 26
On page 26 PEG states, *"[t]he productivity and volume/capacity trends of OPG should be monitored by the Board even if its data are not used to calibrate X."*

Interrogatory:

What in specific metrics does PEG recommend that the OEB monitor for, and what action does PEG recommend that the OEB take as a result of that monitoring?

M2-11.1-OPG-16

Reference:

Exhibit M2, section 5
PEG's study shows significantly different results between different time periods. On page 52 of Exhibit M2, PEG states that *"MFP growth of the sampled US utilities is considerably slower than in the past."*

Interrogatory:

Please explain PEG's understanding of the factors contributing to slow MFP growth in the recent period and specifically how business conditions contribute to these differences in reported results.

M2-11.1-OPG-17

Reference:

Exhibit M2, page 64
"*Research by PEG in other proceedings has shown that utility productivity growth is substantially higher when a share of plant additions is removed from the calculations. If the CRVA is approved as proposed, an increase in the X factor is indicated which is commensurate with the excluded capex.*"

Interrogatory:

Please identify instances in which a regulator has increased the X-factor to reflect the approval of a capital tracker. Please specify the jurisdiction and case number, with reference to the specific decision.

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Ontario Power Generation (OPG)

Interrogatories on Evidence of

The Brattle Group at Exhibit M3

Issue 3.1: Are OPG's proposed capital structure and rate of return on equity appropriate?

M3-3.1-OPG-1

Reference:

Exhibit M3, page 4
"Further, I evaluate OPG's risk relative to a refined sample of proxy companies, whose generation and regulatory characteristics more closely match OPG than do those of Concentric's sample. This sample is characterized by having very little non-regulated operations, little to no market risk exposure, nuclear generation, and an investment grade credit rating."

Exhibit M3, page 4:
"I therefore reduce the sample to consist of only companies with substantial nuclear (or hydroelectric) generation and to only those that have in excess of 90 percent of generation assets subject to regulation."

Exhibit M3, pages 32-34, in the section titled, "Results from Refined Proxy Group."
The Brattle Group's addition of one company (i.e., DTE Energy Company) and two operating subsidiaries (i.e., Entergy Arkansas, Inc., and Entergy Louisiana, LLC) that were not included in Concentric's proxy group.

Interrogatory:

a) Please provide the analysis that The Brattle Group performed on proxy companies to develop its "Refined Proxy Group" including:
   i. The work paper supporting Figure 6 in Exhibit M3, including the data supporting the "Composition" and "Book Value Equity Capitalization" columns;
   ii. The "screening model" or other analysis performed to develop the Refined Proxy Group; and
   iii. The universe of utilities considered, including utilities that were ultimately excluded from the analysis, along with excluded companies' "Composition" and "Book Value Equity Composition."

b)
   i. How does The Brattle Group define the percentage of each company's assets subject to regulation (e.g., dollars, MW, etc.)?

ii. Please provide the percentage of assets subject to regulation for each company in the Concentric proxy group and in the Refined Proxy Group.

c) With regard to The Brattle Group's statement that, "I therefore reduce the sample to consist of only companies with substantial nuclear (or hydroelectric) generation and to only those that have in excess of 90 percent of generation assets subject to regulation," How does The Brattle Group define "substantial"?

M3-3.1-OPG-2

Reference:

Exhibit M3, page 12:
"Further, as shown in Exhibit BV-1 many of the proxy companies used by Concentric own substantial coal generation, which faces its own challenges and may require substantial capital investments to adhere to current and impending environmental regulation."

Interrogatory:

a) Is it The Brattle Group's opinion that coal generation requires greater levels of capital investments than nuclear generation? Please provide any analyses, studies or reports supporting such opinions.
b) For the companies in the Refined Proxy Group, please provide any analysis performed by The Brattle Group of the effects of current and impending environmental regulations on required capital investments.
c) For the companies in Concentric's proxy group that were excluded from the Refined Proxy Group, please provide any analysis performed by The Brattle Group of the effects of current and impending environmental regulations on required capital investments.
d) Please provide all analyses, studies or reports by the Brattle Group comparing the business and risks of coal generation to nuclear generation.

M3-3.1-OPG-3

Reference:

Exhibit M3, page 27:
"As discussed above, OPG will have elevated operating, and construction and execution risks during the Darlington Refurbishment Program. During this period, OPG will have large capital expenditures without associated revenues, and will experience increase in its credit risks. The timing of the delayed cash flow will impact OPG's liquidity, credit metrics and likely, its leverage. In contrast, the refined sample of comparable companies is not engaged in capital expenditure programs at this scale and thus – on this dimension – have lower risk compared to OPG. However, the inclusion of DRP in the provincial LTEP, establishing the need for the refurbishment program, and enacting of regulation to assure regulatory support and recovery of prudent costs, are substantial mitigating factors for OPG's elevated construction and execution risks. I believe that, as a result of these mitigating factors, OPG's

risk during the refurbishment program will be comparable to the average company in my refined sample."

Interrogatory:

Does the Brattle Group believe that these "risk mitigating factors" completely offset the "elevated operating, and construction and execution risks during the Darlington Refurbishment Program" in relation to the comparator companies? If so, please explain the basis for this conclusion.

M3-3.1-OPG-4

Reference: Exhibit M3, Exhibits BV-1, BV-4 and BV-5

Interrogatory:

Please provide the work papers supporting Exhibit M3, Exhibits BV-1, BV-4 and BV-5, including "expected future interest rates" in Exhibit BV-4b.

M3-3.1-OPG-5

Reference:

Exhibit M3, page 4:
"The regulatory risk from the methodology used to recover pension and OPEB cost is minimal."

Exhibit M3, pages 6-7:
"However, the difference between recovering accrual or cash based pension and OPEB cost is one of timing, so only if $450 million of pensions and OPEB costs were disallowed would the $450 million be lost. However the reliance on accrual or cash pension and OPEB costs for OPG's payment determination will impact the timing of the recovery and hence the timing of cash inflows. OPG's exposure is thus the time value of the funds and, if applicable, disallowance risk for amounts outside the 2014-2015 test years. Such amounts are magnitudes smaller then a $450 million."

Exhibit M3, pages 14-15:
"[T]he issue, which Concentric did not address, is primarily whether there is any risk of disallowances. These risks are mitigated by regulatory precedence for including pension and OPEB in rates, so I consider the risk low in the long-term and modest in the near term as incentive regulation is being implemented for the first time."

Exhibit M3, pages 30-31:
"Because the accrual of OPG's pension and OPEB are currently larger than its cash costs, the regulatory treatment defers recovery to future periods. Thus, the distinction between accrual and cash recovery of cost is one of timing, so while OPG's current cash flow is

impacted, the total cash flow is not (absent future disallowances). Therefore the notion that the accrued difference between the accrual amount and the cash amount is "at risk" exaggerates OPG's regulatory risk. The amount would only be lost if disallowed. Thus, there is a timing difference and as the going forward treatment has yet to be determined, OPG faces some uncertainty, but Concentric's statements that the full amount is "at risk" substantially exaggerates the risk."

OPG Submission on Pension and OPEB Recovery (EB-2015-0040, September 22, 2016, page 23)

OPG's Submission highlighted that the amounts recorded in the Pension and OPEB Cash to Accrual Variance Account are at risk if the OEB determines that the effective date of a decision to adopt the cash basis for pension and OPEB is the date the account was approved; however, if the effective date is after December 31, 2016, OPG would be able to recover these amounts:

"*The first financial issue raised by OPG at the consultation was an immediate write-off to net income of approximately $190M, which is the value of the regulatory asset on OPG's balance sheet for the RPP portion of the Pension & OPEB Cash versus Accrual Differential Deferral Account (forecast as of December 31, 2016)*[1]*. The write-off would take place to the extent the OEB does not allow recovery of this balance in transitioning OPG to a contribution funding method of recovery. For example, if the OEB were to prospectively transition OPG to a contribution funding method as of January 1, 2017, the proposed effective date for new payment amounts in OPG's EB-2016-0152 rate application, and therefore allow recovery of the December 31, 2016 account balance, the write-off would be avoided."*

OPG Submission on Pension and OPEB Recovery (EB-2015-0040, September 22, 2016, page 24)

Page 24 of OPG's submission also notes that the cash and accrual basis are only equal over time if regulation starts at inception of the company. Under these circumstances, over time the same total costs are recovered with timing differences as noted by The Brattle Group; however OPG has not been regulated since inception.

Interrogatory:

a) If the OEB determined that the cash basis of cost recovery for Pension and OPEB costs is to be used for ratemaking purposes and OPG's rates are currently established on a cash basis, on what basis does The Brattle Group assume that the risk is minimal that OPG will not be allowed to recover the cash to accrual differences

[1] The risk of the write-off was also raised at page 11 lines 16-19 in OPG's July 31, 2015 submission to the consultation
OPG, EB-2015-0040 Initial Written Submissions on the Regulatory Treatment of Pensions and Other Post-Employment Benefit Costs, 31 July 2015, [*OPG Initial Submission*].
http://www.rds.ontarioenergyboard.ca/webdrawer/webdrawer.dll/webdrawer/rec/489086/view/OPG_Sub_20150731.PDF

prior to the issuance of the OEB's determination establishing the cash basis of cost recovery of pension and OPEB costs?

b) As OPG has not been regulated since inception, is there a risk that cost recovery would in fact not simply be timing differences as discussed in the Brattle Group submission reference? Given the magnitude of this amount for OPG, is this risk not a substantial regulatory risk?

M3-3.1-OPG-6

Reference:

Exhibit M3, page 18:
"Further, because OPG's nuclear generation is fully regulated, OPG's exposure to risks association with outages is mitigated."

EB-2007-0905 – OEB Decision with Reasons dated November 3, 2008, Section 9.2.1, pages 173-174:
"The Board will continue the current 100% variable payment structure for nuclear output... The Board believes OPG should be fully incented to produce as accurate a forecast of nuclear production as possible and should be at risk if actual output falls short of forecast. This is the same position OPG would be in if the nuclear facilities were not regulated and were compensated through the hourly spot market or bilateral contracts."

Exhibit E2-1-1, page 3, Chart 2:

Chart 2

OPG Nuclear Production Variance and Revenue Impact

Line No.		2008	2009	2010	2011	2012	2013	2014	2015	Average	Total
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
1	OPG Application - TWh	51.4	49.9	-	48.9	50.0	-	48.5	46.1		
2	OEB Approved - TWh+	51.4	49.9	50.7	50.4	51.5	51.0	49.0	46.6		
3	Actual -TWh	48.2	46.8	45.8	48.6	49.0	44.7	48.1	44.5		
4	Variance (TWh) (line 3 - line 2)	-3.2	-3.1	-4.9	-1.8	-2.5	-6.3	-0.9	-2.1	-3.2	-24.7
5	Revenue Impact - $M#	-159.9	-154.9	-242.4	-87.3	-121.3	-305.7	-45.9	-114.3	-154.0	-1231.8

\+ 2010 is the average of 2008 and 2009 Board Approved; 2013 is average of 2011 and 2012 Board Approved.

\# At OEB-approved rates of $52.98/MWh for 2008-2010 less fuel cost, and $51.52/MWh for 2011-2013 less fuel cost.
For 2014, 10 months at OEB–approved rate of $51.52/MWh and 2 months at OEB approved rate of $59.29/MWh, less fuel cost (average $52.82/MWh).
For 2015, at OEB approved rate of $59.29/MWh less fuel cost

Interrogatory:

a) Given the design of OPG's payment amount set through regulation is intended to maximize OPG's exposure to outage risk to incent OPG to minimize unforeseen outages, how does regulation mitigate OPG's exposure to risks associated with outages?

b) Given the impacts of production shortfalls illustrated in Exhibit E2-1-1, Chart 2 would The Brattle Group not agree that production shortfalls have been a significant contributor to OPG's under earnings since regulation?
c) Given both Darlington and Pickering operations going forward will be substantially different (i.e., refurbishment and extending operations) than they have been in the past (i.e., pure operational focus), is it not reasonable to assume that outage planning will becoming increasingly less certain, increasing the risks associated with outages?

M3-3.1-OPG-7

Reference: Exhibit M3, Appendix

Interrogatory:

Please provide Dr. Villadsen's filed evidence in Arizona on behalf of Arizona Public Service on the cost of equity (i.e., Direct Testimony on return on equity for Arizona Public Service Company, Arizona Corporation Commission, Docket E-01345A-16-0036, June 2016).