K11.2

EB-2016-0152

CME Compendium

Panel 2B

OPG Interrogatory #6

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

Interrogatory:

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."*

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.

Response:

The following response was provided by PEG:

There are several kinds of evidence in the record of this proceeding already that suggest that gradual asset decay matches the stylized facts of hydroelectric generation. One is the rapid decline in O&M productivity that has typified companies managing aging hydroelectric generating stations. Another is the extensive hydroelectric generation plant additions that utilities have made after plants are constructed which do not increase their capacity. Some of these additions were likely used to maintain capacity and generation volumes or to extend the lives of assets. PEG does not believe that these additions were always matched by retirements.

It should also be noted that the monetary method captures the *efficiency* with which utilities make replacement and refurbishment capex whereas LEI's method does not. For example, if OPG hypothetically invested a billion dollars for a replacement or refurbishment project where 100 million would suffice there would be no impact on measured productivity using LEI's methodology. Under PEG's methodology, this hypothetical wasteful project would rightly result in poor productivity performance.

2.3.3.2. Stretch Factor

OPG proposes to use a 0.3% stretch factor based on OPG's performance on independent hydroelectric benchmarking. As described in this section, OPG arrived at this proposal by adopting the range of stretch factors used in the OEB's 4GIRM methodology (i.e., 0%, 0.15%, 0.3%, 0.45% and 0.6%), and identifying a stretch factor that corresponds with the company's hydroelectric benchmark performance.

As required by the OEB's decision in EB-2013-0321, OPG retained Navigant to conduct an independent total-cost benchmarking study of its hydroelectric business.[14] A copy of the hydroelectric benchmarking report is field as Attachment 2 to this schedule.

Navigant benchmarked approximately 92% of OPG's 2013 costs attributable to its regulated hydroelectric operations against a peer group comprised predominantly of U.S. and Canadian generators that represent approximately 100,000 MW of installed capacity. Facilities comprising the peer group are diverse in size, type and age, and include hydroelectric generation stations with reservoirs, run-of-river generating facilities, and pumped storage stations. Chart 6 summarizes the peer group composition and compares it to OPG's regulated hydroelectric facilities:

Chart 6 – Composition of Peer Group and Comparison to OPG Regulated Hydro

	Peer Group	OPG
No. of Station Groups	222	54
Median Station Age (years)	45	84.5
Median Station Group Size (MW)	152	10
Median Unit Size (MW)	37	5

[14] EB-2013-0321, Decision with Reasons (November 20, 2014), pages 17-18.

Navigant excluded costs that were unique to OPG's regulated hydroelectric operations. Costs not benchmarked include adjustments to centrally held pension and OPEB costs, IESO non-energy charges, costs attributable to electricity sales and trading, and corporate business development costs. Navigant separately benchmarked OPG's regulated hydro investment costs (i.e., regulatory and sustaining project OM&A and capital investment) and reliability performance (i.e., availability and EFOR).

OPG's regulated hydroelectric operating costs benchmark in the second quartile relative to the study's peer group based on Partial Function Cost. Navigant identified Partial Function Cost as the key cost metric for benchmarking purposes to assess OPG's relative performance to its peers. (The Total Function Cost metric includes Gross Revenue Charges – a regulatory water and property tax not within OPG's control and which does not apply to others in the peer group). With respect to investment, the regulated hydro facilities benchmark in the second quartile, with marginally lower investment than the median compared to the peer group. The results of the benchmarking are summarized in Chart 7.

Chart 7 – Hydroelectric Benchmarking Results

	Partial Function Cost[15] ($M)* *Key Measure	**Total Function Cost[16] ($M)**	**Investment[17] ($M)**	**Availability (%)**	**Forced Outage (%)**
OPG Regulated Hydro	201	527	140	92.8	1.3
1st Quartile	114	142	64	95.7	0.3

[15] Partial Function Cost includes costs incurred for hydroelectric station operations, maintenance, waterways and dams, buildings and ground, and HTO & Corporate support costs. Navigant identified Partial Function Cost as the key performance indicator of OPG's regulated hydroelectric facilities.
[16] Total Function Cost includes Partial Function Cost, as well as costs incurred for Public Affairs and Regulatory which, in the case of OPG, is mostly Gross Revenue Charge payable on hydroelectric production.
[17] "Investment" includes both Capital and Project OM&A expenditures.

Median	203	318	146	90.7	1.3
3rd Quartile	408	625	444	81.5	4.1

OPG has set the proposed hydroelectric stretch factor based on the company's performance on Partial Function Cost. Navigant found that OPG's regulated hydroelectric facilities are effectively at the median for the hydroelectric generation industry on this measure. Using the range of stretch factors applied in the 4GIRM method, OPG's performance should result in a 0.3% stretch factor.

2.4. Incremental and Advance Capital Module Eligibility

As in 4GIRM, OPG would be eligible to request an Incremental Capital Module ("ICM") funding for qualifying hydroelectric capital projects. Any such request would be prepared pursuant to OEB policy.[18] Although OPG has not included an Advance Capital Module ("ACM") in this application, the company's proposed regulatory framework would permit the use of an ACM or ICM in subsequent applications.

2.5. Unforeseen Events (Z-Factor)

OPG proposes that the OEB's policy on unforeseen events would apply during the term of this application, as set out in OEB policy.[19] OPG proposes that the company's regulatory materiality threshold of $10 million apply.

2.6. Deferral and Variance Accounts

[18] EB-2014-0219, *Report of the Board: New Policy Options for the Funding of Capital Investments* (Sept. 18, 2014).
[19] *Report of the Board on 3rd Generation Incentive Regulation for Ontario's Electricity Distributors*, July 14, 2008.

MR. SHEPHERD: I haven't even talked about what your capital budget is going to be, except to quote what you said it's going to be.

MR. PUGH: You've used them in other areas with OM&A and GRC, so I'm applying it here.

MR. SHEPHERD: Here's my problem. Your rate base is going to be roughly the same at the end of five years as it is now, right? Except for the CRVA numbers, it's going to be roughly the same, right?

MR. PUGH: Except it's going up by $100 million, plus $200 million for the CRVA numbers, and they still have to be financed.

MR. SHEPHERD: Okay. Well, no, because you get extra for those, right?

MR. PUGH: We don't get extra for them. We have a capital tracker at the end, and if we spend more than what's collected from the Board then we would get more. If we spend less then we get less.

MR. SHEPHERD: Sorry, those CRVA amounts -- and maybe I misunderstand what the CRVA is. You have a forecast of 250 million, roughly. It's actually -- it's actually more than 250. 330 million of CRVA plant additions. Those are not in your base rates, right?

MR. PUGH: The CRVA numbers?

MR. SHEPHERD: Yeah.

MR. PUGH: That's a forecast number from 2017 to 2021, so --

MR. SHEPHERD: And so the amount of revenue

requirement for each of those $330 million, whatever revenue requirement kicks out of that number, that's what goes in your CRVA. There is no deduction from it, right?

MR. PUGH: There is a deduction.

MR. SHEPHERD: What's the deduction?

MR. PUGH: The deduction, as I explained to Ms. Blanchard this morning and Mr. Millar yesterday, is the CRVA capital that is built into base rates, that's a revenue-requirement amount, and that is the amount that people are paying for those type of projects. And that will be a credit to the CRVA at the end of the five-year term.

MR. SHEPHERD: And what's that amount?

MR. PUGH: What is the revenue-requirement impact associated with that?

MR. SHEPHERD: Yes.

MR. PUGH: I believe it's around $2 million.

MR. SHEPHERD: Two million?

MR. PUGH: Yeah.

MR. SHEPHERD: So you've got --

MR. PUGH: Each year.

MR. SHEPHERD: So you've got $20 million of -- roughly, give or take, of CRVA capital baked into rates, so two million of your revenue requirement is -- you're not allowed to collect it from the CRVA projects; is that right?

MR. PUGH: That is the capital tracker. That is the amount associated with that type of capital that is

reflected in rates, so that's what ratepayers are paying. That credit would offset the actual CRVA projects that we will undergo through the 2017 to 2021 period.

MR. SHEPHERD: And those $330 million of additional spending, will you accept subject to check that that's about $100 million of revenue requirement?

MR. PUGH: No, I think in the response to SEC 95 we indicated it was $52 million, if we do all the projects that we intended to do.

MR. SHEPHERD: 52 million?

MR. PUGH: That's the number in SEC 95. Based on the current timing of our schedule, yes.

MR. SHEPHERD: Okay. So that's 52 million compared to the 10 million that's already in rates, so you're going to collect another $42 million.

MR. PUGH: Based on the forecast, that would be the implication.

MR. SHEPHERD: All right. I wonder if you can turn to page 26 of our compendium. So this is a table of gross PP&E for hydroelectric, right? This is regulated only, and it includes both previously regulated and newly regulated; isn't that right?

MR. PUGH: Looks like it, yes.

MR. SHEPHERD: Okay. This is, by the way, from Undertaking JT3.16. And then the next page is the accumulated depreciation, and if you deduct the accumulated depreciation from the gross PP&E you get the closing balance of the rate base, right?

SEC Interrogatory #6

Issue Number: 11.1
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Interrogatory:

Reference: Exhibit M2

[p.55] Please confirm that it is reasonable to conclude, from this data, that in a steady state operating mode (i.e. excluding the Niagara Tunnel impacts) OPG has demonstrated that it is able to operate its hydroelectric generating business at a cost that escalates at inflation less 1.35%, and that in none of the years from 2002 to 2013 did its overall costs go up, relative to outputs, by an amount exceeding inflation.

Response:

The following response was provided by PEG:

PEG cannot agree that "OPG has demonstrated that it is able to operate its hydroelectric generating business at a cost that escalates at inflation less 1.35%." It is not clear that OPG's cost trend was normal over the 2002-2013 period. Its cost growth may have been slowed by good cost management and/or by a preoccupation with other initiatives, such as the Niagara Tunnel Project, which affected cost afterwards. On the other hand, completion of the NTP should slow OPG's hydroelectric generation cost growth going forward as the large plant addition depreciates.

SEC Interrogatory #8

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

Interrogatory:

Reference: Exhibit M2

[p.63] Please estimate, if possible, the materiality threshold that would be appropriate for an OPG hydroelectric ICM given its forecast asset lives and the proposed 0.59% X factor.

Response:

The following response was provided by PEG:

PEG has not had the mandate or funding in this project to consider the optimal materiality threshold for an OPG hydroelectric ICM. However, it believes that the threshold formula approved for power distributors in EB-2014-0219 is generally applicable. The growth factor in this formula should be amended to exclude billing determinants (e.g. number of customers served) that are irrelevant to hydroelectric generation. The capex forecast should be based to the extent possible on sensible formulas to reduce regulatory cost and strengthen capex containment incentives.

SEC Interrogatory #9

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

Interrogatory:

Reference: Exhibit M2

[p.64] Please assess whether, if a CRVA is approved, an ICM or ACM should also be available. If more than one mechanism is approved, what adjustments if any should be implemented to integrate those mechanisms with each other, and with the price cap formula?

Response:

The following response was provided by PEG:

PEG believes that the CRVA should ideally be eliminated and that any problem with capex surges should instead be addressed by an ICM/ACM mechanism. In a first generation plan, this mechanism could be similar to that which the Board has developed for power distribution. A key feature of the current ICM/ACM regime is a materiality threshold that recognizes the funding for capex which is available from depreciation, price cap escalation, and billing determinant growth. The threshold formula also contains a dead zone (currently 10%) that, in addition to reducing regulatory cost, strengthens capex containment incentives and guards against overcompensation for capex surges. Refinements to the ICM/ACM mechanism can be considered for the second-generation IRM.

PEG nonetheless recognizes that a CRVA may be approved in this proceeding. In that event, the need for an ICM/ACM mechanism is reduced since many of the capital projects that the mechanism might address will instead be addressed by the CRVA. It is difficult to design an appropriate ICM/ACM mechanism for the residual capital cost without further clarification from OPG regarding the plant additions that the CRVA would and would not address. Better definition of the working of the CRVA with respect to what hydroelectric generation capital projects and costs can be tracked and how the costs will be reviewed for recovery is recommended.

PEG has also noted that, if the CRVA is approved as proposed, an X factor based on the industry MFP trend may no longer be appropriate without adjustment since the price cap index applies to the declining cost of older plant but not to a sizable share of the growing cost of new plant.

PEG may revise its response to this question if OPG provides further information in response to SEC's interrogatories.

LPMA Interrogatory #9

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

Interrogatory

Reference:
Ref: Exhibit A1, Tab 3, Schedule 2, page 22

a) Please provide an example of the materiality threshold calculation that would be required for an ICM application for inclusion as a 2020 rate rider.

b) In particular, please identify what figures would be used for each of the variables in the materiality threshold formula as set out in the *Report of the OEB: New Policy Options for the Funding of Capital Investments: Supplemental Report* (EB-2014-0219), issued January 24, 2016. For example, would the rate base, depreciation and growth factors be specific to the regulated hydroelectric assets or would they include the nuclear side of the business as well?

c) Does OPG accept the means test as set out in the *Report of the Board: New Policy Options for the Funding of Capital Investments* (EB-2014-0219), issued September 18, 2014? If no, please explain why not. If yes, please explain why OPG believes that the 300 basis point figure is appropriate for OPG.

d) Would the means test be based on the regulated hydroelectric earnings only or would it be based on the entire company, including the nuclear assets?

Response

a) and b)

An example of the materiality threshold calculation for an ICM application for a 2020 rate rider identifying the figures and their sources is provided below, consistent with the referenced Report of the Board.

An ICM is specific to a 4GIRM indexed price cap, which is the ratemaking approach OPG has proposed for hydroelectric operations to set payment amounts for 2017 to 2021. As such, all values in the example are specific to hydroelectric operations.

Witness Panel: Overview, Rate-setting Framework

Hydroelectric ICM Threshold Calculation

Line No.		2020
		(a)
	Hydroelectric ICM Calculation:	
	Rate Base ($M)[1]	7507.7
	Depreciation Expense Included in Rate Base ($M)[2]	143.2
	Distribution Revenue Change from Load Growth (%)[3]	0.00%
	Price Cap Index (%)[4]	1.50%
	Threshold (%)	188.6%
	Eligibility Threshold ($M)	270.14

Notes:

1 Average of 2014 & 2015 Hydroelectric Rate Base, EB-2013-0321 Payment Amount Order, Appendix A, Tables 1 and 2, line 4.

2 Average of 2014 & 2015 Hydroelectric Depreciation Expense, EB-2013-0321 Payment Amount Order, Appendix A, Tables 1 and 2, line 17

3 Not applicable to electric generators

4 Exhibit I1-2-1 Table 1, line 6

c) Yes, OPG accepts the means test as set out in the referenced Report of the Board. OPG has accepted the requirements of the 4GIRM approach to rate setting provided in the RRFE with modification only as required to address differences in the electricity distribution and generation businesses and to facilitate OPG's initial transition to 4GIRM.

d) OPG believes that a means test should be based on the entirety of the company's regulated earnings.

OPG understands that, under OEB policy, the purpose of a means test is to assess whether a regulated company should be able to fund necessary incremental capital work out of existing cash flow during the IR Term without seeking additional revenue from ratepayers. In the September 18, 2014 Report of the Board, the OEB says the following:

"While a means test that doesn't allow incremental funding if a distributor is earning more than its Board-approved ROE may be a barrier to a distributor seeking efficiency improvements during the IR term, a threshold of 300 basis points retains some flexibility for distributors to maximize their earnings while also recognizing that funding in

advance of the next rebasing is likely not required from a cash flow perspective. Distributors will have the option of explaining any overearnings."[1]

This policy allows distributors to retain earnings below the level that would trigger an off-ramp, but requires them to either fund incremental capital out of any additional earnings (i.e., earnings beyond the 300 BPS threshold), or provide an explanation for the over-earnings.

OPG operates as a single company, with a single cost of capital that covers both the hydroelectric and nuclear generating facilities. OPG believes that the ICM/ACM means test should be consistent with that structure and with the off-ramp proposal in this application, which is based on a combined ROE. A means test based only on hydroelectric earnings would not accurately reflect OPG's cash flow and its ability to fund necessary capital work during the IR term.

[1] *Report of the Board New Policy Options for the Funding of Capital Investments: The Advanced Capital Module*, EB-2014-0219, p. 16.