



July 29, 2010

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

Dear Ms. Walli:

Re: Ontario Power Generation Inc.
Application Approving Payment Amounts for Prescribed Generating Facilities
Submission of AMPCO Interrogatories
Board File No. EB-2010-0008

Pursuant to the Board's Procedural Order No. 1 dated June 29, 2010, attached please find AMPCO's interrogatories in the above proceeding.

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

Sincerely yours,

(ORIGINAL SIGNED BY)

Adam White
Association of Major Power Consumers in Ontario

Copies to: Ontario Power Generation Inc. (via email)
Intervenors (via email)

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1. GENERAL

1.1 Has OPG responded appropriately to all relevant Board directions from previous proceedings?

Interrogatory # 1

Ref: D2/1/1/Page 19 (regarding accounting for P2/3 isolation)

OPG has demonstrated eligibility for recovery of P2/3 safe storage costs from ONFA decommissioning funds.

a) Please indicate the effect of this withdrawal on the fund and the change in required contributions to the fund in future attributable to the P2/3 safe storage costs.

b) Please provide a reconciliation of the costs for P2/3 safe storage and isolation relative to the original project approved by OPG's Board of Directors.

2. RATE BASE

2.1 What is the appropriate amount for rate base?

Interrogatory # 2

Ref: B1/1/1/Table 1 and Table 2

With respect to projects closed to rate base in each year 2008 through 2012:

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1 a) Please identify those projects where the actual or forecast final cost is greater than the
2 budget originally approved by the OPG Board of Directors.

3
4 b) For each, please indicate OPG's view of how the provisions of O.Reg. 53/05 apply.

5
6 Interrogatory # 3

7
8 **Ref: B3/5/1/Table 1**

9
10 a) With respect to OPG's nuclear fuel inventory over the period 2007 through 2012, please
11 indicate the average cost of uranium in each year.

12
13 b) With respect to OPG's nuclear fuel inventory for 2008 through 2010, please indicate the
14 amount included in rates and the amount approved by the Board.

15
16 c) Please provide any benchmarking data OPG has with respect to the level of nuclear
17 materials and supplies included in working capital.

18
19 **2.2 Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project**
20 **appropriate?**

21
22 Interrogatory # 4

23
24 **Ref: D2/2/2/page 8**

25 **Ref: A2/3/1**

26
27 OPG asserts that "clearly, including of CWIP in rate base would help these ratings." Please
28 describe which specific challenges or weaknesses identified in the credit reports would be

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1 alleviated by including CWIP in rate base and to what extent OPG's ratings would improve as a
2 result, citing specific support for your conclusions in the credit reports or as otherwise provided
3 to OPG by the credit ratings agencies.

4
5 Interrogatory # 5

6
7 **Ref: D2/2/2**

8
9 a) Please indicate whether OPG considered a construction finance alternative to CWIP
10 where the utility was simply allowed to expense interest for the project and not
11 including return on investment for assets not yet in service.

12
13 b) Please provide the NPV of the revenue requirements associated with the Darlington
14 Refurbishment Project showing all calculations and assumptions based on the approach
15 OPG proposes for accelerated recovery, expensing interest only during construction, and
16 the standard regulatory recovery. Please calculate two scenarios, one using discount
17 rates equal to OPG's WACC and another using a discount rate of 10%.

18
19 Interrogatory # 6

20
21 **Ref: D4/1/1**

22
23 a) Please identify the cost to OPG for CRA's services with respect to regulatory matters,
24 including without limitation the costs of preparing the report included as evidence.

25
26 b) Please provide a curriculum vitae for Mr. Luciani. Please include copies of all testimony
27 or other publications Mr. Luciani has authored or coauthored dealing with CWIP in rate
28 base.

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- 1
- 2 c) For Mr. Luciani, please identify all the jurisdictions in the US that currently prohibit CWIP
- 3 in rate base for the purposes of electric utility regulation.
- 4
- 5 d) For Mr. Luciani, with reference to the accelerating decline in load since 2005, please
- 6 comment on the element of your opinion that rests on the view that CWIP in rate base
- 7 is justified by the need to “serve new load”.
- 8
- 9 e) For Mr. Luciani, with reference to OPG’s status as a government-owned enterprise, the
- 10 role of government regulations and directives in driving regulatory and business
- 11 decisions of OPG and the OEB, and OPG’s specific financing experience whereby large
- 12 projects are directly financed by government entities with provincial-backed credit,
- 13 please comment on the element of your opinion that rests on the view that CWIP in rate
- 14 base is justified by a need for utilities to have “greater regulatory certainty”.
- 15
- 16 f) For Mr. Luciani, please provide a quantitative estimate with all assumptions
- 17 documented to support your opinion that CWIP in rate base is “beneficial to Ontario
- 18 ratepayers.”
- 19
- 20 g) For Mr. Luciani, in considering arguments against including CWIP in rate base, please
- 21 comment on the concern that CWIP in rate base, by allowing utilities to potentially
- 22 profit from delays and cost overruns, invites a moral hazard.
- 23
- 24 h) For Mr. Luciani, with regard to your reliance in your opinion on the rate smoothing
- 25 attributes of CWIP in rate base, please comment on how the phased in-service dates of
- 26 the Darlington refurbishment project naturally smooth rates under a conventional
- 27 regulatory approach to investment cost recovery.
- 28

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4. CAPITAL PROJECTS

Regulated Hydroelectric

4.2 Are the capital budgets and/or financial commitments for 2011 and 2012 for the regulated hydroelectric business appropriate and supported by business cases?

Interrogatory # 7

Ref: D1/1/1

OPG reports at page 5 that a section of tunnel liner failed after the renegotiation with Strabag was completed. Please indicate the cost, cost responsibility, and schedule implications of this failure.

Interrogatory # 8

Ref: D1/1/2

a) Throughout the evidence with respect to the tunnel project, OPG identifies the original in-service as June 2010. On September 14, 2005 OPG issued a press release identifying the in-service date as "late 2009". Please comment on this difference.

b) In EB-2007-0905 Exhibit D1/1/1, OPG's evidence was that the non-tunnel Beck expenditures were primarily focused on the rehabilitation of generators G7, G9, and G10 at the SAB 1, with planned in-service dates of 2008, 2009, and 2010 respectively. G7 was completed in June 2009. G9 is forecast to be completed at the end of 2010 according to D1/1/2 Attachment 1 Tab 4 p. 7 and is described in D1/1/2 p. 10 as "on

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1 schedule". G10 is now scheduled to be in service in December 2014. Please discuss the
2 factors that are causing across-the-board schedule slippage.

3

4 Interrogatory # 9

5

6 **Ref: D1/1/2/Attachment 1/Table 1**

7

8 a) At page 2, the Niagara Tunnel project is described as being originally approved by the
9 OPG Board on July 28, 2005 with an expected in-service date of June 2010. Please
10 provide the presentation to the OPG Board that was the basis for the Board's approval
11 of the project.

12

13 b) The Background on page 2 indicates that preparation for the new Niagara Tunnel began
14 in 1982, that detailed engineering studies were undertaken and that an environmental
15 assessment was approved by the Minister of the Environment in 1998. Yet on page 9 the
16 reported progress is at a rate 27% of the planned rate. What engineering analysis was
17 the basis of the 2005 approval and what actions have been taken against the engineers
18 responsible for the erroneous estimate?

19

20 c) What portion of the currently estimated cost to complete the tunnel project does OPG
21 claim is outside the jurisdiction of the OEB for the purposes of the ultimate prudence
22 review?

23

24 d) Please confirm that some of the worst instances of overbreak with the current project
25 have occurred where the tunnel path has intersected bore holes used to investigate the
26 geology for tunneling purposes. Please indicate OPG's opinion as to whether the bore
27 holes could have been protected better when decommissioned after being drilled for
28 investigative purposes so as to protect the rock better for subsequent tunneling.

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- 1
- 2 e) The Financial Sensitivity Analysis presented on page 7 of the Niagara Tunnel Project
- 3 Business Case Summary (BCS) shows a Levelized Unit Energy Cost (LUEC) of 6.8
- 4 cents/kWh and an equivalent PPA of 9.5 cents/kWh. Please outline the factors that
- 5 cause the difference between the two results.
- 6
- 7 f) The second table on page 9 indicates that starting March 3/2009 until its completion,
- 8 the forecasted average rate of progress of the tunnel per day was to be 8.4 meters.
- 9 Please confirm that over the period from March 3, 2009 until July 3, 2010 that rate of
- 10 progress was approximately 7.05 m/day. Please indicate the impact of the slower rate
- 11 of progress on the remainder of the project schedules and costs.
- 12
- 13 g) In calculating the cost-effectiveness of the tunnel project, OPG assumes that the costs
- 14 associated with adding incremental generation capacity at Beck units, such as SAB 1 G9,
- 15 ought not to be considered. Please justify this assumption.
- 16
- 17 h) In renegotiated the design/construct deal with Strabag in 2009, OPG moved from a fixed
- 18 price/fixed date contract structure to a "target cost" contract. Please compare the
- 19 major commercial terms of the original and renegotiated contract.
- 20

21 **4.3 Are the proposed in-service additions for regulated hydroelectric projects appropriate?**

22

23 Interrogatory # 10

24

25 Please provide the Post Implementation Review report for the SAB 1 G7 project.

26

27

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Nuclear

4.5 Are the capital budgets and/or financial commitments for 2011 and 2012 for the nuclear business appropriate and supported by business cases?

Interrogatory # 11

Ref: D2/1/2

Both Darlington and Pickering have major capital programs associated with standby, emergency and auxiliary generators. Common themes to the underlying problems with Darlington and Pickering include obsolescence, lack of spare parts and performance decline.

a) Please comment on the degree of equipment standardization between stations and within this general class of generation equipment.

b) Please comment on whether Bruce Power uses related equipment and whether there are opportunities for sharing spares with Bruce Power or other opportunities for efficiencies.

Interrogatory # 12

Ref: D2/1/2/Table 1a, 2a and 2b

Please produce a revision of Table 1a to include the originally approved final in-service date.

Please produce a revision of Tables 2a and 2b to include the originally approved final in-service date and cost, where different from the figures shown.

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Interrogatory # 13

Ref: D2/1/2/Table 2a, line 8

Renovations to Pickering's administrative building cafeteria took almost 4 years from the time of project approval. Please comment on why such conventional commercial renovation requires such a protracted time period when implemented by OPG.

Interrogatory # 14

Ref: D2/1/2/Attachment 1/Tab 4

The replacement of Darlington change rooms is scheduled to take almost three and a half years from the time of first approval for developmental funding. The cost of the project is in the order of \$1,260/square foot. Please comment on why such conventional commercial construction requires such a protracted time period and significant cost when implemented by OPG.

Interrogatory # 15

Ref: D2/2/1

a) For the Darlington refurbishment project, please provide a PPA equivalent and revenue requirement for the first full year in service for the first unit equivalent to the LUEC prices OPG has claimed.

b) Please provide the analysis that OPG relies upon in its "review of current refurbishment experience in the industry." For each of the following, provide the originally approved cost and final costs whether estimated or actual: Bruce 3 and 4 return to service; Bruce

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1 1 and 2 retubing, reboiling and return to service; Pickering A retubing; Pickering A
2 return for service; and Point Lepreau retubing If the data is available, do not include
3 replacement power costs but include interest cost.
4

5 c) In Figure #1 OPG expresses near-100% confidence that the LUEC cost for Darlington
6 could never exceed 8 cents/kWh. Given the uncertainties with respect to capital costs,
7 contractor reliability, operating costs, productivity, life expectancy, interest costs, fuel
8 costs, changing safety requirements, and other cost factors please explain how OPG
9 supports its assertion of near-100% certainty that the LUEC cost will never exceed 8
10 cents/kWh.
11

12 d) What assumptions have OPG made with respect to the role of AECL in the Darlington
13 refurbishment project?
14

15 e) What is the lead time currently estimated for ordering pressure and calandria tubes?
16 Please comment on factors driving the trend in recent years toward longer lead times
17 for ordering pressure and calandria tubes.
18

19 f) What is the currently estimated date to begin replacement of Darlington's boilers?
20

21 Interrogatory # 16
22

23 **Ref: D2/2/1/Attachment 1**
24

25 a) Regarding page 8, please indicate the total estimated costs for road, parking, vehicle
26 garage, and related projects. Given the size and duration of the original Darlington
27 construction effort, please comment on why existing road, parking, vehicle garage and

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1 related facilities are now inadequate. Please compare the peak site employment during
2 construction with the peak site employment during refurbishment.

3

4 b) Regarding page 9, the “key risks” identified for the nuclear refurbishment project appear
5 to relate only to risks associated with the timing of initiation of the refurbishment, and
6 not with the undertaking and completion of the refurbishment. Is this a complete list of
7 key risks? If not, please identify and describe any other key risks.

8

9 Interrogatory # 17

10

11 **Ref: D2/2/1/Attachment 2**

12

13 a) Attachment 2 is the Darlington Refurbishment Project Execution Plan issued October 30,
14 2009. Please confirm that the Project Execution Plan is approved by senior
15 management.

16

17 b) Figure 3 indicates that the Darlington refurbishment “initiation” was completed in early
18 2009. Section 5.4.1 indicates that during this phase of the project, asset condition
19 assessment of all major station components would be completed and the technical
20 scope of the project would be proposed. However, in D2/2/1 Attachment 4, issued at
21 almost the same time, there is a discussion of the technical scope of the project at
22 section 3.0a wherein incomplete scoping work is noted with respect to fuel handling,
23 turbine/generators, retube and feeder, and balance of plant. Was the asset condition
24 assessment of all major station components completed in early 2009?

25

26 c) Please indicate what OPG’s schedule is for ordering long lead time items.

27

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1 d) What contractual flexibility will OPG be seeking (or has OPG obtained) to adjust the
2 scope and/or schedule of the refurbishment project to accommodate longer-than-
3 expected lead times for such items?
4

5 Interrogatory # 18
6

7 **Ref: D2/2/1/Attachment 4**
8

9 a) Regarding p. 23, please comment on why OPG is not pursuing a Low Void Reactivity Fuel
10 option for Darlington.
11

12 b) At Appendix C Section 1.1.2 OPG refers to having completed benchmarking on the
13 refurbishment projects “such as Pt. Lepreau and the Bruce 1 & 2 Units”. Please provide
14 this analysis.
15

16 c) Regarding Appendix C Section 1.1.4, please compare the duration estimate OPG has
17 made for calandria tube installation for each unit with the experience currently
18 underway at Point Lepreau and comment on the difference.
19

20 **5. PRODUCTION FORECASTS**
21

22 **Regulated Hydroelectric**
23

24 **5.1 Is the proposed regulated hydroelectric production forecast appropriate?**
25

26 Interrogatory # 19
27

28 **Ref: E1/1/1/page 5**

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1

2 OPG observes that “[d]uring 2009, SBG [surplus baseload generation] was more prevalent in
3 Ontario than it has been for many years.” Please quantify the SBG impact on OPG for 2008 and
4 2009, in both energy and financial terms.

5

6 **Nuclear**

7

8 **5.2 Is the proposed nuclear production forecast appropriate?**

9

10 Interrogatory # 20

11

12 **Ref: E2/1/1**

13

14 What is the status of the Pickering A derate? Please provide a supporting explanation for the
15 derate and measures to mitigate the derate.

16

17 **6. OPERATING COSTS**

18

19 **Regulated Hydroelectric**

20

21 **6.1 Is the test period Operations, Maintenance and Administration budget for the regulated
22 hydroelectric facilities appropriate?**

23

24 Interrogatory # 21

25

26 **Ref: F1/1/1**

27

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1 a) How much station service power has been or will be paid by the regulated hydro-electric
2 business each year since 2005 through to the end of the test period? Please include a
3 breakout of GA costs.

4
5 b) Please provide an estimate of the impact of the AMPCO High 5 proposal as described in
6 EB-2008-0272 if it were to apply during the test period.

7
8
9 c) How was the \$1.2 million O&M reduction allocated to the regulated hydro-electric
10 business allocated internally within the regulated business?

11
12 **Nuclear**

13
14 **6.3 Is the test period Operations, Maintenance and Administration budget for the nuclear**
15 **facilities appropriate?**

16
17 Interrogatory # 22

18
19 **Ref: F2/1/1**

20
21 a) How much station service power has been or will be paid by the nuclear business each
22 year since 2005 through to the end of the test period? Please include a breakout of GA
23 costs.

24
25 b) Please provide an estimate of the impact of the AMPCO High 5 proposal as described in
26 EB-2008-0272 if it were to apply during the test period.

27

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c) Please update Chart 2-1: Comparative Nuclear PUEC Costs from the EB-2007-0905
Decision with Reasons.

**6.4 Is the benchmarking methodology reasonable? Are the benchmarking results and targets
flowing from those results for OPG's nuclear facilities reasonable?**

Interrogatory # 23

Ref: F5/1/1/page 13

Regarding the statement "Additionally, the WANO NPI results of all CANDU operators are
concentrated at the bottom of the peer group for the period 2006-2008":

a) Please provide the year by year WANO NPI results for Candu vs. PWR.

b) Is it the opinion of ScottMadden that the above statement reflects a temporary
anomaly? Alternatively, is it the opinion of ScottMadden that the above statement is
likely to prevail in future? In either case, please comment on the reasons for the opinion
expressed.

Interrogatory # 24

Ref: F2/1/1

a) OPG and its predecessor have over the years changed the titles and theme of nuclear
performance improvement initiatives every few years for decades, with titles like QIP,
NAOP, IIPA, and Say It/Do It. Please provide the most recently available analysis

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1 benchmarking the strengths and weaknesses of historic nuclear performance initiatives
2 within OPG and its predecessor.

3

4 b) When the A stations were forced to close in the late 1990s, some of the blame was
5 attributed by Ontario Hydro to the predecessor to the QIP program in the early 1990s,
6 under which Ontario Hydro had engaged in a O&M cost control and staff reductions
7 within operational programs. What is different this time?

8

9 c) How is staff productivity measured within OPG and what are the trends over the course
10 of the last decade?

11

12 d) Please indicate when the problem of calandria vault corrosion was first identified and
13 outline the measures taken to manage the problem since its discovery.

14

15 **Other Costs**

16

17 **6.11 Are the amounts proposed to be included in the test period revenue requirement for**
18 **other operating cost items, including depreciation expense, income and property**
19 **taxes, appropriate?**

20

21 Interrogatory # 25

22

23 **Ref: F4/1/1/page 4**

24 **Ref: F2/2/3 pp. 5-6,**

25 **Ref: F2/2/3/Attachment 1/page 7**

26

27 The end-of-life date for Pickering A extends beyond the life expectancy of Pickering B. In light of
28 the uncertainties surrounding life extension of Pickering B, the practicality of operating Pickering

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1 A independently, and the economic viability Pickering A, please comment on the advisability of
2 extending the end-of-life estimate for Pickering A beyond the most aggressive estimate available
3 for the end-of-life of Pickering B.

4
5 Interrogatory # 26

6
7 **Evidence: F2/2/3/page 4**

8
9 Please provide the analysis presented to the Board of Directors that lead OPG to decide to not
10 refurbish Pickering B.