David I. Poch Barrister tel. (613) 264-0055 fax (613) 264-2878

28 July 2010

Ms. Kirsten Walli, Board Secretary
Ontario Energy Board

Via RESS and e-mail

Dear Ms Walli:

Re: EB-2010-0008 OPG Payments – GEC IRs to OPG

Attached are GEC's interrogatories to OPG.

Sincerely,

David Poch

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Issue 2.2: Exhibit D4-1-1:

1. Page 8 quotes the Louisiana PSC to the effect that "the recovery of a current cash return on CWIP may be needed to protect a utility's financial integrity…"

   a. Does Mr. Luciani believe that this consideration applies to OPG? If so, please provide any evidence that a cash return on CWIP is needed to protect OPG's financial integrity.

2. Page 8 quotes the Louisiana PSC to the effect that "the recovery of a current cash return on CWIP may be needed… to maintain an acceptable credit rating…."

   a. Does Mr. Luciani believe that this consideration applies to OPG? If so, please provide any evidence that a cash return on CWIP is required in that OPG or the Province would not "maintain an acceptable credit rating" in the absence of CWIP in rate base.

3. Page 8 quotes the Louisiana PSC to the effect that "the recovery of a current cash return on CWIP may be needed…to prevent an undue increase in the utility's cost of capital (p. 8)

   a. Does Mr. Luciani believe that this consideration applies to OPG? If so, please provide any evidence that OPG's cost of capital would increase unduly if it is not granted a current cash return on CWIP.

4. Regarding the first paragraph on page 9, please provide OPG's projection of the payment amount for the regulated hydroelectric facilities and the payment amount for the nuclear facilities for each year for which OPG has such projections.

   a. Please provide the projection of payment amounts both with a cash return on CWIP and without.

5. Please provide OPG's projection of all the charges for its services for each year for which OPG has such projections.

6. Please provide any projections of which OPG is aware of average consumer rates for electricity in Ontario.

7. Page 9 states that "the revenue requirement under standard cost-of-service ratemaking associated with the recovery of the capital expended on a new plant is said to be 'front end loaded'".

   a. Please state whether the inclusion of CWIP in rate base increases or decreases the front-end loading of cost recovery.

   b. Please provide OPG's projection of the annual revenue recovery for Darlington Refurbishment for each year though 2054, with CWIP in rate base.

   c. Please provide OPG's projection of the annual revenue recovery for Darlington Refurbishment for each year though 2054, if CWIP is not in rate base.

   d. Does Mr. Luciani agree that the total revenue recovery of the Darlington Refurbishment through 2025 would be greater if CWIP is in rate base than if CWIP is capitalized? If Mr. Luciani disagrees, please explain the basis for that disagreement.

8. Regarding the statement that "for a utility that has not constructed significant base load generating capacity for a number of years, the cost of a new plant represents a significant percentage of the remaining net book value of the utility's existing asset base… resulting in a sharp spike in rates." (p. 9), please provide the projected cost of each Darlington unit refurbishment and the projected net book value of OPG's total asset base in the year before each unit enters service.

9. Regarding the statement that "In effect, CWIP in rate base provides a smoothing, or phase-in effect on rates, and thereby mitigates the rate shock that would take place when the large new plant is placed into service."

   a. Is the Darlington Refurbishment a "large new plant"?

   b. Has OPG surveyed Ontario consumers to determine whether they prefer to pay for power projects before they enter service or to bear the "rate shock" resulting from deferring the return on CWIP? If so, please provide the survey vehicle and all results and analyses.

   c. Can "rate shock" also be avoided by deferring some costs past the in-service date, so that the phase-in occurs after the in-service date?

10. With regard to the statement that "Earlier cash returns on assets with long construction periods provide more certainty to investors which should encourage

a greater willingness to invest" (p. 11), please clarify whether the term "investors" refers to equity or debt investors.

a. If it refers to equity investors, does Mr. Luciani believe that the Province's willingness to invest in OPG would be increased by placing CWIP in rate base?

b. If it refers to debt investors, how is this point different from the discussion of borrowing costs in Section 3.2?

11. With regard to the quote from the NRRI publication on pp. 11-12 concerning tax financing of schools and transit projects, does Mr. Luciani agree that these projects are generally funding by bonding?

12. With regard to the statement that, during the construction period of a baseload plant, "The utility, for example, may not enter into the same amount of longer-term contracts, or may not build as many shorter-term assets given that a baseload plant will be coming into service. That is, the new plants will affect actual utility costs and rates during the construction period with or without CWIP in rates." (p. 12)

a. Please describe all the "longer-term contracts" that OPG would enter into in the absence of the Darlington Refurbishment.

b. Please explain why those "longer-term contracts" would be reflected in rates during the Darlington Refurbishment construction period.

c. Please define the "shorter-term assets" that Mr. Luciani is describing in this section.

d. Please describe all the "shorter-term assets" that OPG would build in the absence of the Darlington Refurbishment.

13. With regard to the statement that regulators "have often disregarded the used and useful concept when the reliability of future service is in doubt" (p. 12), please explain whether the reliability of future service to Ontario consumers would be in doubt if OPG did not earn a cash return on CWIP, and if so, why.

14. Please provide the most recent rating report for OPG from Standard & Poor's (S&P) and Dominion Bond Rating Service (DBRS).

15. For each major nuclear project that OPG has undertaken (including the restart of each of the Pickering A units, and any other project costing more than $20 million), please provide

    a. Actual project cost.

    b. OPG's estimate of project costs at the beginning of the preliminary planning phase.

    c. OPG's estimate of project costs nine years before the planned completion date (or the earliest estimate, if that is less than six years before planned completion).

16. **Issue 4.5, Exhibit D2-2-1 Attachment 4 page 23**

Please provide a copy of the Management Report and other documents considered by the Executive Committee and the NGPC leading to acceptance on April 14th and April 24th, respectively, of Management's report to exclude Steam Generator's from the Refurbishment scope of Darlington. Please provide the reports or motions of those committees.

Issues 2.2 and 4.5: Exhibit D2-2-1 – Darlington Refurbishment and New Nuclear At Darlington:

17. Regarding the statement on page 13: "Analysis has shown that OPG's large nuclear operating fleet allows the sharing of Corporate and Support Costs over a broader base of generation, resulting in economies of scale in these costs. A decision not to proceed with the refurbishing of Darlington would add upward pressure on Corporate and Nuclear Support costs on the remainder of OPG's nuclear fleet", given the Pickering nuclear station will be shut down in 2020, please explain how a decision not to refurbish Darlington will increase support costs for "the remainder of OPG's nuclear fleet."

18. Regarding the statement on page 13: "A decision not to refurbish Darlington would also have a significant impact on staff morale. Significant management oversight would be required to ensure there is no potential impairment of plant performance for the remaining life of the station":

    a. Has OPG studied whether its February 2010 announcement that it would close the Pickering station has had a "significant impact on staff morale"? If so, please provide observations and conclusions.

    b. What "significant management oversight" has OPG put in place to ensure there is no impairment of the performance of the Pickering nuclear station during its

remaining life? Please provide cost estimates for this increased management oversight.

19. In regard to the statement on page 13 of Attachment 4 of D2-2-1: "If Pickering were to also cease operations in the late 2010s, and no Nuclear New Build were to be in-service by that period, significant workforce downsizing would be required in the OPG nuclear program. The loss of these high quality jobs would have a significant impact on Durham Region":

    a. Please provide expected retirement schedule for OPG's nuclear workforce over the next two decades.

    b. Does OPG agree that the provision of replacement power from renewables and conservation would increase employment elsewhere in the province?

20. An Integrated Safety Review (ISR) is required to be approved by the Canadian Nuclear Safety Commission before the refurbishment of the Darlington can take place. An ISR will require a comparison of the Darlington station against current nuclear safety requirements and require upgrades where appropriate. Please describe how safety upgrades are determined? Specifically, please describe how cost benefit analysis will be considered and approved for the Darlington refurbishment.

21. Regarding the statement on page 7 of Attachment 2 of D2-2-1: "Time required to obtain Canadian Nuclear Safety Commission (CNSC) approval of the ISR, currently estimated as 2 years from the Final ISR submission (Tentative Completion Date (TCD): December 2013)", how long did it take for OPG to gain approval from the CNSC for approval of the ISR for the proposed refurbishment of the Pickering B nuclear station?

22. Regarding the statement on page 7 of Attachment D2-2-1: "Time required obtaining CNSC approval of the EA (TCD: October 2012) – currently estimated as approximately 18 months from the submission of the EA Project Description (TCD: May 2011). How long did it take for OPG to gain approval from the CNSC for its environmental assessment on the proposed Pickering B nuclear station following its submission of an EA project description?

23. Please provide a breakdown of the costs associated with OPG's environmental, safety and economic studies regarding the viability of refurbishing the Pickering B nuclear station?

24. Did OPG achieve its original schedule for gaining the regulatory approval for the Pickering B Integrated Safety Review and environmental review – please provide details?

25. Regarding the statement: “Time needed to design, procure and commission the required retube tooling and mockup, as well as ordering and supply of all long lead retube components. Current estimates suggest this time to be between 2.5 and 4 years prior to outage start”, please provide an estimate of lead time for contracting and purchasing essential components such as pressure tubes and feeder pipes before a refurbishment outage can take place?

26. Regarding this statement on page 2 of Attachment 2 to D2-2-1: “Current medium confidence estimates, based on Darlington pressure tubes fitness for service, predict that the Darlington NGS (DNGS) reactors will reach the end of their current operating lives between 2018 and 2020”:

    a. What are the low, medium and high confidence end-of-life estimates for the DNGS feeder pipes?

    b. What are the low and high confidence end-of-life estimates for the DNGS pressure tubes?

    c. Please provide an inventory of Darlington’s other life-limiting components with the low, medium and high confidence end-of-life estimates for each.

27. Regarding the statement on page 2 of Attachment 4 to D2-2-1: “Based on publicly available information, the economics of Darlington Refurbishment are more attractive than alternative generation options including New Nuclear and Combined Cycle Gas Turbines (CCGT)”, please provide the “publicly available information” used to make this cost comparison.

28. The statement on page 4 of attachment 4 of D2-2-1: “As recommended by Management in April, 2009, steam generator (SG) replacement has been excluded from the reference outage scope” is notable because other CANDU refurbishment projects have included steam generator replacement.

    a. Please provide the low, media and high risk end-of-life estimates for the Darlington steam generators.

    b. Please provide an approximate cost estimate for purchasing replacement steam generators for the Darlington nuclear station.

    c. Please provide a description of the cost and work required to replace Darlington’s steam generators?

d. If steam generator replacement were to take place at a date following of the proposed 36 month refurbishment outages, what would be the outage time required to replace the steam generators?

e. Have the costs of eventual steam generator replacement at Darlington been included in the LUEC price for the Darlington refurbishment? If not please provide the impact of a subsequent SG replacement on LUEC.

f. Has the Canadian Nuclear Safety Commission approved the exclusion of steam generator replacement from the scope of the Darlington refurbishment?

g. Has OPG evaluated the cost effectiveness of replacing Darlington steam generators if refurbishment outages were to take place as originally envisioned post 2018?

29. At what LUEC estimate would OPG consider the Darlington refurbishment uneconomical?

30. What was the cost criteria (including LUEC) used by OPG to determine that the refurbishment of the Pickering B refurbishment was uneconomical?

31. Regarding the statement on page 8 of Attachment 4 to D2-2-1: "An economic feasibility assessment of the refurbishment of Darlington has indicated that this is one of the most economic generation options available to OPG to maintain a significant footprint in the Ontario Electricity Marketplace", has OPG assessed whether other non-OPG generation options could pose less of an economic risk and/or cost to the Ontario rate-payer?

32. Has the specific Darlington reactor design ever undergone refurbishment previously?

33. The federal government has tabled legislation, the Nuclear Liability and Compensation Act, which would raise the limit on OPG's required minimum insurance from $75 million to $650 million. If passed, this legislation would increase the insurance fees for Darlington as well as for Pickering A and B.

a. Please provide the annual insurance fees paid under the current Nuclear Liability Act for the Pickering A and B as well as Darlington.

b. Has OPG considered the impact of an increased minimum accident insurance requirement in its operational costs in this rate application? If so, please provide OPG's estimates of how much its nuclear accident insurance fees will increase if the Nuclear Liability and Compensation Act is passed for each of its nuclear facilities.

c. Has OPG been required to pay increase fees to insure the Pickering A, B and Darlington nuclear stations since the terrorist attacks September 11th. If so, please provide a breakdown of fees for each station with rational.

34. In regard to this statement on post-refurbishment operations costs on page 17: "A range of $450M to $525M per year (2009 dollars) of post-refurbishment costs, including operations, outages and projects were considered in the feasibility assessment", did OPG consider the impact of increases in nuclear accident insurance in its annual operational cost estimates? If so, please provide a break down and rationale.

35. The minutes of the April 1st information session regarding its rate application state "OPG was unable to confirm whether the Province had to finally approve the Darlington project for completion, although Barrett indicated that they will certainly be well informed about the project. OPG will try to determine the governance requirements around the project in reply to this question." Will OPG contract for services or components before a final approval for the Darlington refurbishment is given by its board of directors and the Ontario government?

36. The minutes of the April 1st information session state: "Responding to a question regarding existence of "Plan B" for funding the nuclear liabilities if the Darlington refurbishment does not go ahead, OPG indicated it could not comment beyond what was included in the ONFA reference plan and the presumption that Darlington refurbishment will proceed." Has OPG developed an end-of-life and decommissioning plan for the Darlington nuclear station if the final business case shows that the project is too risky or uneconomical? If not, is OPG planning to develop such a contingency scenario?

37. Has OPG estimated the operational and maintenance costs of operating the Darlington reactors until their nominal end-of-life date between 2018 and 2020 instead of refurbishing the station in the 2015 to 2016 period.

38. Please provide the cost assumption for used nuclear fuel management in calculating the LUEC price for the Darlington refurbishment project. If this involves a range of low, medium and high estimates please provide them.

39. Please provide the decommissioning cost assumptions used in calculating the LUEC price for the Darlington refurbishment project.

40. Please provide the fuel cost assumption used in calculating the LUEC price for the Darlington refurbishment project.

41. At the March 29th information session held by OPG it states that "The LUEC at $0.08/kWh has no risk transfer to AECL." Other refurbishment projects, such as Bruce A and Point Lepreau have all used AECL as the principal contractor and projector manager due to its expertise in CANDU design and refurbishment. The economics of these projects (from the operator perspective) have been enhanced by fixed-price contracts, which transfer risk for cost over-runs, delays and future performance to AECL, which is currently backstopped by the federal tax-payer. This has lowered the upfront costs to nuclear operators pursuing CANDU refurbishment.

    a. Does OPG plan on assuming the project risks for cost over-runs or delays or to transfer these risks to another entity via contractual performance guarantees?

    b. Does OPG plan on assuming the risks of future reactor performance or transfer these risks to another entity via contractual performance guarantees?

42. Figure 5 of Attachment 4 to Exhibit D2-2-1 includes CO2 costs in the estimated LUEC costs for Combined Cycle Gas Turbines (CCGT) in comparison with the Darlington LUEC estimates. Please provide the rationale for include CO2 costs and what assumptions were used in estimating these costs.

43. At hearings of the federal government's Natural Resources Committee in 2009 on the proposed Nuclear Liability and Compensation Act, the president of GE Hitachi's Canadian division Peter Mason, stated that his company's nuclear division is severed from the international parent in order because of concern that it could be sued in case of an accident at a Canadian facility. For this reason, the company will not sell any equipment built or designed by the U.S. parent to be used in Canadian reactors under the current Nuclear Liability Act. Does OPG cost estimates for the proposed Darlington refurbishment project assume that it will have open access to services and components from US companies? Or, does it assume that contracting for components and servicing for the Darlington refurbishment will be restricted to Canadian based companies because of the limited liability protection provided to them under Canadian law?

44. In 1998, Ontario Hydro stated the cost of retubing a reactor as follows: "The most recent estimate of reactor retubing costs are $265M per unit (1997 Constant $ Excluding Capitalized Interest). In addition, there is a one-time set-up cost ranging from $50-$100

MW per station.[1] Since that time, cost estimates for retubing projects have increased significantly with OPG estimating the refurbishment of Darlington to range from $6 – 10 billion for four units. Please provide an outline of the OPG's cost estimates for re-tubing and refurbishment projects since 1997. Please discuss the reasons behind the increase in cost estimates.

45. Has OPG carried out condition assessments on Darlington's calandria vaults? When and how will calandria vaults be inspected before, during or after the refurbishment?

[1] Vince Gonsalves (Manager, Financial Business Planning and Decision Support, Ontario Hydro), to Ms. Sumita Dixit (Researcher, Campaign for Nuclear Phaseout), Letter, "September 9, 1998).