EB-2013-0321

**Before the Ontario Energy Board**

**IN THE MATTER OF** the *Ontario Energy Board Act, 1998*, S. O. 1998, c. 15, Schedule B;

**AND IN THE MATTER OF** an application by Ontario Power Generation Inc. pursuant to section 78.1 of the *Ontario Energy Board Act, 1998* for an order or orders determining payment amounts for the output of certain of its generating facilities.

**Green Energy Coalition (GEC) Interrogatories to OPG**

**Issue 4.9**

**1)** Ex. D2-2-1, p. 17 & D2-2-1 Atts. 5 & 6-1: (Darlington Contracting Strategy) -- Please update D-2-2-1 Att. 5, Table 1 to include alternative 4 (Abandon the DRP) using a representative range of current gas price forecasts and with and without GHG emission impacts. Also, please provide LUECs corresponding to each entry in the table.

**2)** Please provide a detailed list of major contracts for the Darlington refurbishment indicating the value of each contract, when they have been signed or are expected to be signed (or the extent of expenditure contractually committed) and categorizing them according to risk management strategy. Specifically, for each contract please indicate whether, and to what extent, and under what circumstances, OPG assumes any of the risk of cost overruns or costs of delay. Please provide an estimate of the value of minor contracts in each risk category.

**3)** The LTEP document speaks of entrenching appropriate and realistic off-ramps and scoping for the nuclear projects. For each major contract listed in answer to IR 2 above, please provide details of the manner and extent to which these features have been incorporated.

**4)** What major contracts are being delayed or could be delayed as a result of the recent LTEP policy calling for risk minimization including off ramps?

**Issues 4.5 & 6.6**

**5)** Re: Pickering Continued Operations

Ex. D2-1-3 -- The LTEP notes that "an earlier shutdown of the Pickering units may be possible depending on projected demand, the progress of the fleet refurbishment program, and the timely completion of the Clarington Transformer Station". Please provide any information that OPG has about the timing of the Clarington Transformer Station completion, and the dates when uncertainties in that regard are expected to be reduced.

**6)** In EB-2012-0031, Exhibit D1-3-3, Appendix B it states "System studies performed for the Ontario Power Authority by the IESO indicated that a minimum of two Pickering units are required to be in service to maintain reliable supply for the area during peak load periods." There are six reactors currently in operation at the Pickering nuclear station. Using the LTEP 2013 demand and supply forecast, please provide showing electricity surpluses between 2014 and 2020 for the following three scenarios: 1) all six reactors operating at Pickering 2) four reactors operating at Pickering. 3) two reactors operating at Pickering. The graphs should be in terawatt hours. For each scenario provide estimated impacts on the global adjustment.

**7)** In the government's 2013 Long Term Energy Plan (LTEP), it states:

> *The Pickering Generating Station is expected to be in service until 2020. An earlier shutdown of the Pickering units may be possible depending on projected demand going forward, the progress of the fleet refurbishment program, and the timely completion of the Clarington Transformer Station. (LTEP 2013, p5)*

The OPA states in F2-2-3, Attachment 2 states that in absence of OPG's proposal to continue operating the Pickering nuclear station the six operating reactors "are currently expected to operate around 2015." The OPA also provides its updated 2012 assessment of the prudency of Pickering's continued operation. It states:

> "*On balance, the OPA's assessment of system cost impacts suggests an expected cost advantage to Pickering continued operation (in the order of approximately $100 Million). This advantage predominately reflects expected costs savings from reduced natural gas-fired energy production and lower replacement capacity requirements. Based on evaluation to date of the broader uncertainties, the OPA estimates a range of up to approximately $1.3 billion in potential net-benefit from Pickering continued operation to $0.76 billion in potential net-cost (dis-benefit). These estimates represent illustrative bookends and explore combinations of factors that together would increase or decrease the cost impacts of Pickering continued operations."*

In contrast, the OPA's 2010 analysis provided to the OEB (EB-2010-0008, Exhibit F2-2-3, Attachment 2) states*: "Depending on the amount of gas-fired generation or similarly-priced imports replaced by Pickering NGS generation, the overall system benefit could be up to 1.6 B$ (104 TWH multiplied by 15 $/MWh) due to the reduction of system costs."*

In F2-2-3, Schedule 3, OPG's 2012 assessment of the Pickering continued operation estimates the net present value to be *"approximately $520 million (2012 PV dollars)."*

a) Please provide the low, mid and high demand forecast, including the implied baseload demand, in terawatt hours until 2020 used to calculate OPG's 2012 assessment of the net present value of the Pickering continued operation.

b) Please describe how OPG estimated implied baseload demand in its forecast?

c) Please provide the low, mid and high demand forecast, including the implied baseload demand, in terawatt hours until 2020 to calculate the OPA's 2012 assessment of the net present value of Pickering continued operation.

d) Please describe how the OPA estimated implied baseload demand in its forecast?

e) Please provide the demand forecast used in the government's 2013 Long Term Energy Plan, including the implied baseload demand, in terawatt hours until 2020?

f) Please discuss define "overall system benefit"? What value have these analyses placed on the impact of Pickering operations on SBG and export prices?

g) What work is being delayed or could be delayed until such time as a decision by government has been made in accord with the recent LTEP policy recognizing the possibility of earlier Pickering shutdowns?

**8)** At F2-2-3 p. 2 OPG notes that there are significant technical and economic challenges to operating Pickering units 1-4 without two of units 5-8 in operation. Please explain the reasons for that observation.

**9)** Ex. H1-1-1, p, 4 Please indicate the impact on expected SBG and forced exports with Pickering life extensions as planned, with no life extensions, and with only two units life extended.

**10)** Reference Document: Exhibit F2, Tab 2, Schedule 3, Pages 3-4 -- In its August 2013 licence renewal decision, the Canadian Nuclear Safety Commission (CNSC) "does not accept CNSC staff's proposed delegation of authority to remove the regulatory hold point to allow OPG to proceed beyond 210,000 EFPH. The Commission will consider this matter in a future proceeding of the Commission with public participation."

The Commission then directs OPG to provide the following before permission will be given to run the Pickering B reactors behind its design life:

> *The Commission directs OPG to provide the following, before the removal of the hold point can be approved:*
>
> *• the revised PSA for Pickering A that meets the requirements of CNSC Regulatory Standard S-294;*
> *• an updated PSA for both Pickering A and Pickering B that takes into account the enhancements required under the Fukushima Action Plan; and*
> *• a whole-site PSA or a methodology for a whole-site PSA, specific to the Pickering NGS site.*
>
> *The Commission understands that if the PSA values are between the limits and the targets, then safety improvements should be put in place if practicable, and that if the PSA values are above acceptable limits then safety improvements would be mandatory. As such, the Commission requests that OPG provide an action plan to address any identified issues should OPG exceed its targeted safety goals.*
>
> *The Commission notes that OPG will be considering filtered containment as part of its analysis of future enhancements to protect containment through its Fukushima Action Items. The Commission directs OPG to report on its analysis and way forward on this issue at the time of its request to remove the hold point to proceed beyond 210,000 EFPH.*

The CNSC's August 2013 Record of Decision can be found here: http://nuclearsafety.gc.ca/eng/the-commission/pdf/2013-05-29-Decision-OPG-Pickering-e-Edocs4177096.pdf

The CNSC has published notice that it will hold a hearing on May 7th to consider OPG's request to run the Pickering B reactors beyond 210000 EFPH.

a. Please provide the summary of the results of the Pickering A and B Probabilistic Safety Assessment results that will be presented to the Commission for the removal of the hold point.

b. Please provide a summary of the safety limits and safety targets used to determine if safety improvements or upgrades are required.

c. Please provide OPG's current policy document on how it considers whether safety upgrades are required.

d. Please provide the action plan requested by the Commission.

e. Please indicate the potential cost requirements of various safety improvements in the action plan.

f. How have the regulatory and financial risks of this action plan been considered in OPG's submission to the OEB? What is OPG's plan if the CNSC denies permission to operate the

Pickering reactors beyond 210000 EFPH and what are the revenue requirement implications?

g. Please provide the report and analysis OPG must submit to the CNSC regarding the filtered containment system upgrades.

h. What are the cost implications filtered containment system upgrades?

**Issue 6.11**

**11)** Ex. F5-3-1 The LTEP document speaks of off ramps for the Darlington refurbishment. Using illustrative examples, please indicate the impact on depreciation if off ramps are exercised at various stages.

**12)** The LTEP speaks of a possible early shutdown of Pickering. Please indicate the impact on depreciation expense if such an event should occur using illustrative dates.

**Issues 4.7 & 4.8**

**13)** Does the LUEC for the DRP assume OPG will eventually be given the go-ahead for additional reactors and an associated economy of scale in the provision of nuclear and corporate support? If so, please provide LUEC tables for the DRP in the event that OPG's reactor fleet is limited to the remaining Darlington reactors?

**14)** The federal government has proposed a new Bill-22, which includes the Nuclear Liability and Compensation Act (NLCA). The NLCA would raise OPG's absolute liability for offsite damages in the event of an accident from $75 million to $1 billion. Under this legislation OPG's liability would be capped at $1 billion in the event of an accident.

a) Does the LUEC price provided by OPG take into account for the increased insurance premiums expected under the NLCA?

b) Please provide an estimate of how much the increased insurance premiums will cost OPG over the life of the Darlington life-extension.

c) If a future federal government eliminated the cap on OPG's liability for offsite damage in the future would it impact OPG's LUEC estimates for Darlington's continued operation? If so, how?

**15)** Have changes in regulatory requirement or expected changes in regulatory requirements since the 2011 Fukushima nuclear accident changed OPG's LUEC estimates for the Darlington refurbishment? If so, explain with cost estimates.

**16)** Does OPG expect changes in provincial offsite nuclear emergency plans following the Fukushima nuclear accident to impact the LUEC estimates of the DRP?