

EB-2007-0050

**INTERROGATORIES FOR
ONTARIO POWER GENERATION**

Issue Number: 1 Project Need and Justification

1.1. Issue: Has the need for the proposed project been established?

1. As OPG is a successor to Ontario Hydro does OPG have on hand or have access to all of the records of Ontario Hydro in respect to the operations at the Douglas Point, Bruce "A" and Bruce "B" generating stations, in respect to generation and transmission records?
2. If parts only, what parts and during what calendar year?
3. Hydro One Networks Inc. ("HONI") has advised the OEB that none of the Ontario Power Authority ("OPA"), Independent Electrical System Operator ("IESO") or HONI have any records, or access to records, on the transmission or generation capacities in respect to power generators at and transmitted from the Bruce Complex for any years prior to 2002. Does OPG have any such records prior to 2002?
4. Has HONI, the OPA, or the IESO ever made any inquiries of OPG since March 29, 2007 to inquire as to what historic records were maintained by OPG in respect to any records about power generation capacities of each reactor at the Bruce Complex or transmission of generated power along 500 KV or 230 KV lines from the Bruce to the Southern Ontario power grid?
5. If so, would OPG provide all copies of such written request made by HONI, OPA or IESO in respect to Question # 4?
6. If the OPG were asked by any of HONI, OPA, IESO, Minister of Energy, Bruce Power, The Canadian Nuclear Safety Commission ("CNSC") or by the Ontario Energy Board to produce or make available such record on the generation and transmission of electrical power from The Bruce Complex from the early 1960's until the present or such earlier date of transfer of ownership/possession to HONI or Bruce Power would the OPG voluntarily make this information available?
7. CNSC advises that it is required to keep all of its records in respect to any nuclear generation station for 75 years beyond the de-commissioning of any Canadian Nuclear Generating Station (GS). What are the time requirements for OPG statutory, regulatory and/or self-imposed policy for the keeping of such power generation and transmission records?

8. What is the understanding of OPG as any statutory, regulatory and/or self-imposed for the time keeping of such power generation and transmission records by HONI, OPA and IESO?
9. Dennis Tinbrell, as Minister of Energy in 1976 advised the legislature in 1986 (see Hansard) that a 230 KV transmission line was designed to transmit at least 1,500 MW of power as generated from Bruce "A". Does OPG agree with that statement?
10. There are presently existing since the early 1980's, three 230 KV transmission lines running from the Bruce to Milton, Bruce to Owen Sound and Bruce to Detweiller. If OPG agrees that a 230 KV line can transmit a minimum of 1500 MW of power, would OPG agree that in the aggregate the above three 230 KV lines could simultaneously transmit 4,500 MW of power?
11. HONI has sent notices to various Interest Groups in the Environmental Assessment Act Application made to the Ministry of the Environment in which HONI has stated that a 500 KV transmission line can transmit 3,000 MW of power. Does OPG agree with that statement by HONI?
12. There are presently existing, since the early 1980's, two 500 KV transmission lines running namely, from Bruce to Milton, and Bruce to Longwood. If OPG agrees that a 500 KV line can transmit a minimum of 3000 MW of power, would OPG agree that in the aggregate the above two 500 KV lines could simultaneously transmit 6,000 MW of power?
13. If the three 230 KV transmission lines can simultaneously transmit at least 4,500 MW of power and the two 500 KV transmission lines can simultaneously transmit 6,000 MW of power would OPG agree that the combined transmission capability of all 5 lines running from The Bruce is 10,500 MW?
14. From records available to OPG would OPG agree with each of the following statements (and if no, please explain why):
 - a) Douglas Point Generating Station had a generating capacity of at least 200 MW?
 - b) Bruce "A" (with 4 Nuclear Units) producing has a generating capacity of 3,000 MW if not more?
 - c) Bruce "A" with 2 Nuclear Units producing, 3 and 4 has a generating capacity of 1,500 MW, if not more?

- d) Bruce "B" with 4 Nuclear Units producing has a generating capacity of 3,000 MW, if not more?
 - e) The OEB calculates that since 1997 when units 1 and 2 of Bruce "A" were de-commissioned that the generation capacity of units 3 & 4 of Bruce "A" and Units 1, 2, 3 and 4 of Bruce "B" has been 5,060 MW.
 - f) Does OPG agree? If not, what does OPG opine that total generating capacity to be and why?
 - g) The OEB has calculated that prior to the de-commissioning of Units 1 & 2 at Bruce "A" that Bruce "A" with 4 Units and Bruce "B" with 4 Units had a total generation capacity of 6,560 MW. Does OPG agree? If not, what does OPG opine that total generation to be and why?
15. Did Douglas Point GS generate 200 MW of power while Bruce "A" and "B" were generating at full capacity and if so during what calendar period? If not, did it generate 200 MW of power in any event?
16. If there was simultaneous generation of power from Douglas Point GS, 4 units of Bruce "A" and 4 units from Bruce "B" was the total generation capacity of those three generating stations 6,760 MW? If not, what was the maximum total generating capacity expressed in MW and please explain the breakdown calculations?
17. In the opinion of OPG were the 5 high voltage transmission lines (3 x 230 KV and 2 x 500 KV) engineered and designed to carry and transmit all of the combined generating capacity from all three generating stations at the Bruce, with sufficient residue for projection?
18. The OPA and HONI state the present transmission capacity from The Bruce over the existing 5 transmission lines running from the Bruce to the Ontario grid is 5,060 MW. Does OPG agree? If not, why not?
19. If OPG does agree, how does OPG explain the degradation of the present transmission capacity to 5,060 MW from 1984 when 3 generating stations, including Bruce produced (by alleviation) 6,760 MW of power and the 5 transmission lines transmitted all of that power produced for that transmission?
20. If the electrical highway (5 lines) was sufficient to transmit 6,760 MW of power in the early 1980's what has happened to shrink the highway to accommodate now only 5,060 MW of power?

21. The IESO published a detailed report in August of 2005 in which it concluded that no new transmission lines were needed for the renewed power of 1,500 MW (plus) to be generated from Units 1 and 2 of Bruce "A" after refurbishments and commissioning by December 2011. Does the OPG agree with the IESO?
22. Does OPG agree with HONI and the OPA that a new 500 KV line is needed to be constructed to receive the fresh 1,500 MW(plus) that will be generating from refurbished units 1 and 2 of Bruce "A" by December 2011? If not, why not?
23. Does OPG know of any electrical and/or contractual reason why any power generated by any of the approved and contemplated wind generation facilities (farms) in Bruce and Huron counties have to have any of the generated electrical power routed to the Bruce Complex for transmission over 230 KV or 500 KV transmission lines? If so, please explain?
24. If such renewable wind generation power is generated within Bruce or Huron countries is there any reasonable and more economic way of transmitting that total wind generated power to the Ontario grid other than by receiving at the Bruce Complex and transmission there from?
25. If not, who pays for the transmission cost of such wind power so generated from the generation facilities to the Bruce (i.e. from Goderich area to Bruce of over 50 km) and if so, how does OPG opine that such power would be transmitted to the Bruce, and at what additional cost?
26. What facilities would have to be constructed within the Bruce Complex to receive such wind generated power and process such power to be transformed into such transmittable condition to be dispersed through the 230 and 500 KV lines running from the Bruce and what would be the cost estimated for the construction of such facilities and who would pay for this cost — Bruce Power, The Wind Generators, HONI or OPA?
27. Has OPG reviewed the application of HONI for the construction of the new 500 transmission lines and from that review determined whether HONI has made provisions for planning for, modelling and or allowance for the receipt into the Bruce Complex of any power from any wind generation facilities within Bruce and Huron counties, and specifically make any cost allowance/estimate for the receipt of such power for transmission out of the Bruce? Is so determined, please summarize the review understandings of OPG.
28. What is the understanding of OPG as to what is the minimal wind speed

required to turn wind turbine blades to make any marketable generated power to be transmitted to the Ontario grid?

29. What is the maximum wind speed that turbines are allowed to rotate to before any resistance energy is applied to such rotation to prevent the blade rotation speed from accelerating beyond that maximum speed?
30. In typical wind turbine generation is any electrical energy used to rotate the turbine blades below the minimum ambient wind speed needed to sustain marketable power production, and also to resist over blade rotation during excessive ambient wind speeds?

If so, what amount of energy is typically consumed, measured over such periods of time as OPG may choose to use to explain the average wind generated power consumption/production ratios?
31. Can OPG summarize what are the purposes of shunts, series capacitors, and thyristor devices (need correct spelling and description)?
32. Can the installation of these devices embellish the power transmission capacities of any or all three 230 KV lines and two 500 KV lines running from The Bruce to the Ontario grid? If so can OPG opine on and advise what its estimated additional/total transmission capacity would be if installed within that Bruce transmission system?
33. What would OPG estimate to be the total generation capacity of the 5 existing high voltage lines running from The Bruce to the Ontario grid after the installation of those devices?
34. Once installed would those devices create a permanent system that could sustain such transmission capacity during the remaining contemplated life span of the existing 5 transmission lines?