

ONTARIO ENERGY BOARD

EB-2013-0321

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.

MOTION RECORD **(Environmental Defence Motion For Full and** **Adequate Interrogatory Responses)**

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Index

Tab	Contents	Page
1.	Notice of Motion	1-7
2.	Response to Interrogatory No. 2.1-ED-2	8
3.	Response to Interrogatory No. 2.1-ED-3	9
4.	Response to Interrogatory No. 2.1-ED-4	10
5.	Response to Interrogatory No. 4.7-ED-7	11-13
6.	Response to Interrogatory No. 4.7-ED-8	14
7.	Response to Interrogatory No. 4.7-ED-9	15
8.	Response to Interrogatory No. 4.12-ED-14	16-21
9.	Response to Interrogatory No. 4.12-ED-15	22-23
10.	Excerpt from O. Reg 53/05	24-25

Note: Some of the above are excerpts of the relevant interrogatory response.

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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.

NOTICE OF MOTION

Environmental Defence will make a motion to the Ontario Energy Board (“Board”) on a date fixed by the Board, at the offices of the Board, 2300 Yonge Street, 25th Floor, Toronto, Ontario.

PROPOSED METHOD OF HEARING: This motion is to be heard in writing.

THE MOTION IS FOR:

1. An order that Ontario Power Generation (“OPG”) provide a full and adequate responses to the following interrogatories:
 - a. 2.1-ED-2
 - b. 2.1-ED-3
 - c. 2.1-ED-4
 - d. 4.7-ED-7
 - e. 4.7-ED-8
 - f. 4.7-ED-9

- g. 4.12-ED-14
 - h. 4.12-ED-15
2. Further and other relief as counsel may request, including in relation to the following outstanding undertaking responses arising from the technical conference:
- a. JT1.14 (to respond to 4.7-ED-15 (a) and (b))
 - b. JT2.1 (to respond to 4.7-ED-5)
 - c. JT2.2 (to respond to 4.12-ED-11)

THE GROUNDS FOR THE MOTION ARE:

3. Under Rule 27, an applicant is required to provide a “full and adequate response” to each interrogatory unless the interrogatory is irrelevant or cannot be answered for another valid reason. Environmental Defence submits that OPG has failed to comply this Rule with respect to the above-listed interrogatories. Environmental Defence therefore seeks an order for full and adequate responses.

Calculation of Rate Base for Newly Regulated Hydro Facilities (2.1-ED-2, 3, & 4)

4. Interrogatory numbers 2.1-ED-2, 2.1-ED-3, and 2.1-ED-3 each request information relating to the calculation of rate base for the newly regulated hydroelectric facilities. OPG refused to provide the requested data on the grounds of relevance.
5. The requested information is necessary to determine:
- a. Whether OPG’s methodology for determining rate base for its newly regulated hydro facilities is consistent with the Board’s methodology for calculating rate base, namely, historic cost minus depreciation; and
 - b. The magnitude of the gap, if any, between:
 - i. The “cost” values of the asserts (i.e. the values would be used in the Board’s typical rate base methodology); and
 - ii. The “fair market” values (i.e. the values appearing in OPG’s financial statements and application).

6. OPG's argues that this information is irrelevant since O. Reg 53/05 requires the Board to accept the values for these assets and liabilities as set out in OPG's most recently audited financial statement. Environmental Defence does not dispute that the Board must accept certain values pursuant to O. Reg 53/05. However, the requested information is nevertheless relevant to this proceeding, including for the following reasons:
 - a. The Board's rate making process must be transparent. If there is to be a departure from the Board's standard procedure for determining rate base then the public is entitled know that this is occurring and what the impact on rate base and rates will be. In particular, the public is entitled to know if OPG will be awarded "windfall" income in comparison to what would be awarded if the Board's typical rate base methodology was followed.
 - b. While O. Reg 53/05 may require that the Board accept certain values, it does not mandate a specific the rate of return. Environmental Defence submits that the existence of a significant gap between the "cost" and "fair market" values for these assets would justify a lower rate of return. Intervenors and the Board must know the value of this gap to assess what rate of return is fair to customers. Although the Board may or may not accept Environmental Defence's position, Environmental Defence should at least be afforded the opportunity to make this argument based on adequate interrogatory responses from OPG.
7. Full details regarding the information refused by OPG appears in the attached interrogatory responses. Generally speaking, the refused information includes:
 - a. The annual values for the assets and liabilities of the newly regulated hydro facilities for the period 1999 to 2009;
 - b. The Ontario Hydro March 31, 1999 values for the assets and liabilities for the newly regulated hydro facilities; and
 - c. The "cost" values for the newly regulated hydro facilities with respect to gross plant, accumulated depreciation and amortization, and net plant.
8. Again, this requested data may show that, by virtue of the "fair market" asset values set out in OPG's financial statements, OPG will receive significant "windfall" income in

comparison to what would be awarded if the Board's typical rate base methodology was followed. This is relevant information for a number of reasons, including those set out above.

Darlington's Lifetime Annual Capacity Factor (4.7-ED-7)

9. Interrogatory 4.7-ED-7 requested Darlington's capacity (MW), output (GWh) and annual capacity utilization factor for each year of its life. OPG's response is deficient in two respects. First, it only provides data for the 2005 to 2013 time period. Second, it provides Darlington's "unit capability factor" instead of its annual capacity utilization factor.
10. OPG argues that it need not provide pre-2005 data because it is not required to do so by Board filing requirements. However, that is not the criteria for interrogatory responses; the scope of information that can be requested by interrogatories is not limited to the information required under the filing guidelines.
11. Environmental Defence seeks Darlington's annual capacity utilization factors during each year of its operating life to help assess the reasonableness of OPG's LUEC calculations for the Darlington Refurbishment Project ("DRP"). Those calculations assume an annual capacity factor of 88% (see 4.7-ED-5). Environmental Defence wishes to assess whether that assumption is consistent with the average annual capacity factor over Darlington's lifetime.

Darlington's Cost Competitiveness vis-à-vis Generation Alternatives (4.7-ED-8 & 9)

12. Interrogatory 4.7-ED-8 notes that OPG has compared the LUEC of the DRP with the LUEC of new natural gas-fired combined-cycle turbines. The interrogatory asks if OPG had also compared the DRP's LUEC with the LUECs of other alternative options such as increased energy efficiency, increased use of Ontario's existing generation facilities, increased water power imports from Quebec and new combined heat and power plants? If "yes", it asks OPG to provide copies of all such studies. If "no", it asks OPG to explain why not.
13. OPG responded by referring to a cost comparison analysis by the OPA. However, this is not responsive to the interrogatory since it does explain whether OPG has done its own cost comparison analysis; and if "yes," it does not provide Environmental Defence with

copies of its analysis. Furthermore, the OPA analysis provided by OPG does not include an analysis of the marginal cost of increased use of Ontario's existing generating facilities or the cost of increased water power imports from Quebec.

14. Interrogatory 4.7-ED-9 requested the *incremental* cost of various generation options and OPG's estimate of the potential additional capacity (MW) and energy (GWh) that could be provided by various supply and conservation options. OPG refused to provide this information.
15. The cost comparison information requested in interrogatory 4.7-ED-8 and 4.7-ED-9 is relevant. For instance, the cost competitiveness of Darlington vis-à-vis other generation alternatives is one of the potential factors to consider in determining appropriate payment amounts.
16. Furthermore, OPG has itself put cost competitiveness in issue by supporting its application with a detailed analysis comparing the LUEC of the Darlington Refurbishment Project with the LUEC of new natural gas-fired combined-cycle turbines (see Ex. D2-2-1, Attachment 5, p. 18). In addition, OPG itself stated that: "Cost competitiveness vis-à-vis other generation alternatives is one of many criteria that OPG's management provides to OPG's Board of Directors to aid their decision-making process" (see Board Staff Interrogatory #040).

Cost Overruns of Ontario's Historic Nuclear Projects (4.12-ED-14)

17. Interrogatory 4.12-ED-14 reads as follows:
 - a. Appendix A of The Darlington Re-Build Consumer Protection Plan (attached) provides the original cost forecasts and the actual costs of Ontario's nuclear projects. Does OPG dispute the accuracy of any of the facts provided in this Appendix? If "yes", please state the facts that OPG disputes and provide OPG's opinion as to the correct value(s).
18. The attached document details the history of nuclear cost overruns in Ontario based primarily on OPG's own data. OPG refused to respond to the interrogatory on the grounds that this interrogatory "is an attempt to introduce this document into the record through an interrogatory on OPG's evidence."

19. This interrogatory is not an attempt to introduce a document into the record for the truth of its contents. Instead, the interrogatory asks OPG to confirm the cost overrun figures listed in the document or provide alternative figures. It is not improper to ask questions in relation to a particular document. This technique has been used effectively in Board proceedings in the past.¹
20. OPG seems to imply that Environmental Defence should hire an expert to establish the magnitude of the nuclear cost overruns in Ontario. This would not be efficient use of resources seeing as the relevant facts are in OPG's possession. Intervenors should not be made to hire experts, at the expense of ratepayers, to establish basic factual information in Board hearings such as the information sought in this interrogatory.

Costs of Pickering Generating Station Costs (6.3-ED-15)

21. Interrogatory 6.3-ED-15 sought, among other things, a comparison of Pickering's total operating, maintenance & administration costs to the *incremental* costs of meeting Ontario's electricity needs in 2014 & 2015 by: (i) increased energy efficiency; (ii) increased output of Ontario's existing generating facilities; (iii) reduced electricity exports; and (iv) increased water power imports from Quebec.
22. OPG refused to provide this information. This information is relevant as one of the benchmarks that could be used to assess the reasonableness of the payment amounts sought by OPG for Pickering. Environmental Defence submits that the relative cost effectiveness of Pickering is one of the many factors that should be considered in determining the payment amounts that OPG will be provided in relation to that generating station.

Confidential Treatment of 4.7-ED-11 and Adequacy of Undertaking Responses

23. During the technical conference OPG undertook to provide more complete responses to certain interrogatories filed by Environmental Defence (JT1.14, JT2.1, and JT2.2).
24. In JT2.2 OPG undertook to provide a revised and complete response to 4.7-ED-11. A response to JT2.2 was provided but was redacted in its entirety. Environmental Defence

¹ See e.g. Environmental Defence's Interrogatory #s 4, 5, 6, and 7 in EB-2012-0394.

may object to the confidential treatment of this information. Environmental Defence has not yet been provided with a confidential version of the response. After this has occurred it will be in a better position to make submissions regarding the confidentiality issue as well as the adequacy of this response.

25. OPG has been delayed in filing the other two undertaking responses (JT2.1 and JT1.14). Those undertakings relate to interrogatory 4.7-ED-15 (a) and (b) and 4.7-ED-5. Environmental Defence will review those undertaking responses when they are provided and may seek an order from the board for full and adequate responses.

THE FOLLOWING DOCUMENTARY EVIDENCE will be used at the hearing of the motion:

- a. Evidence on the record in this proceeding; and
- b. Any further evidence as counsel may advise and the Board may permit.

Date: May 5, 2014

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TO: The Applicant and Parties

ED Interrogatory #002

Ref: Exhibit B1, Tab 1, Schedule 1, Table 1

Issue Number: 2.1

Issue: Are the amounts proposed for rate base appropriate?

Interrogatory

a) Please expand Table 1 to show for the “Newly Regulated Hydroelectric” its gross plant at cost, accumulated depreciation and amortization, net plant, cash working capital, and materials and supplies for each year from 1999 to 2013 inclusive. Please also provide these values as of April 1, 1999.

b) Please provide Ontario Hydro’s March 31, 1999 values for the “Newly Regulated Hydroelectric” facilities’ gross plant at cost, accumulated depreciation and amortization, net plant, cash working capital, and materials and supplies.

Response

Part a) and b)

The requested information for the 2010 to 2013 period has already been filed by OPG. Specifically, Ex. B2-1-1 provides gross plant, accumulated depreciation and amortization and net plant for 2010 - 2012 at line 9 and line 19. Cash working capital and materials and supplies for 2010 - 2013 are provided at Ex. B2-5-1, Table 2.

Provision of three years of historic data is in compliance with OPG’s most recent filing requirements established by the OEB on November 11, 2011. Three years of historic data has been provided for OPG’s previously regulated hydroelectric facilities and nuclear facilities. As noted in Ex. B1-1-1, page 2, rate base components for the newly regulated hydroelectric facilities for 2010 - 2013 are presented for illustrative comparison and continuity purposes in the Exhibit B2 tables referenced above.

OPG has not provided any of the requested information prior to 2010.

ED Interrogatory #003

Ref: Exhibit B1, Tab 1, Schedule 1, Table 1

Issue Number: 2.1

Issue: Are the amounts proposed for rate base appropriate?

Interrogatory

a) Please provide a copy of OPG's most recent audited financial statements that were approved by its board of directors;

b) Please provide a table listing the annual values for the assets and liabilities of the Newly Regulated Hydroelectric facilities as set out in OPG's Inc.'s audited financial statements that were approved by the board of directors since OPG was established; and

c) Please indicate the values for the assets and liabilities of the Newly Regulated Hydroelectric facilities as set out in Ontario Hydro's audited financial statements that were approved by its board of directors prior to those assets being transferred to OPG.

Response

a) Refer to Attachment 1.

b) As noted in Ex. L-2.1-6 ED-002, applicable historical information for the 2010 - 2013 period has already been filed by OPG for the newly regulated hydroelectric assets, in compliance with the most recent filing requirements established for OPG by the OEB on November 11, 2011. Section 6(2)11 of O. Reg. 53/05 requires the OEB to accept the values for the assets and liabilities of the newly regulated hydroelectric facilities as set out in OPG's most recently audited financial statements approved by OPG's Board of Directors before the making of the OEB's first payment amounts order in respect of these facilities. The most recently audited financial statements approved by OPG's Board of Directors are OPG's 2013 audited consolidated financial statements. As the 2013 audited financial statements are the only year relevant to ratemaking, OPG has provided a table (Attachment 2) with 2013 values the OEB is required to accept for assets and liabilities of the newly regulated hydroelectric facilities. Section 6(2)11 of O. Reg. 53/05 also applies to income tax effects of timing differences and the revenue requirement impact of accounting and tax policy decision reflected in the above noted financial statements. Timing differences are measured by comparing accounting and tax values of assets and liabilities. Attachment 2 also sets out the accounting value and tax value related used to determine the timing difference, and the resulting deferred (future) income tax liability.

c) Refer to Ex. L-2.1-6 ED 002.

ED Interrogatory #004

Ref: Reference: Exhibit B1, Tab 1, Schedule 1, Table 1

Issue Number: 2.1

Issue: Are the amounts proposed for rate base appropriate?

Interrogatory

a) Please estimate the following figures for the “Newly Regulated Hydroelectric” facilities based on the actual cost of those facilities, not the fair market values: (i) its gross plant at cost, (ii) accumulated depreciation and amortization, (iii) net plant, (iv) cash working capital, and (v) materials and supplies.

Response

The cash working capital and materials and supplies for Newly Regulated Hydro provided in Ex B2-5-1, Table 2 are provided on a cost basis as opposed to a fair market value basis.

Ex L-09.7-1 Staff-193, Attachment 1 provides the conditions the OEB is required to follow in setting payment amounts for the Newly Regulated Hydroelectric Assets. As required in O. Reg. 53/05, the OEB is required to accept the asset and liability values for these facilities as set out in Ontario Power Generation Inc.’s most recently audited financial statements. OPG has set out the gross plant, accumulated depreciation and amortization and net plant amounts in Ex L-01.0 –1 Staff-002. The asset values requested are not relevant to the setting of payment amounts for OPG, and have consequently not been provided.

ED Interrogatory #007

Ref: Ex. D2-2-1, Attachment 5, Updated 2014-02-06

Issue Number: 4.7

Issue: Are the proposed nuclear capital expenditures and/or financial commitments reasonable?

Interrogatory

Please provide the actual capacity (MW), output (GWh) and annual capacity utilization factor of the Darlington Nuclear Station for each year of its operating life.

Response

The following table provides the net maximum continuous rating, net output and unit capability factor of the Darlington Nuclear Generating Station from 2005 - 2013.

DN	2005	2006	2007	2008	2009	2010	2011	2012	2013
Net MCR (MW)	3,512	3,512	3,512	3,512	3,512	3,512	3,512	3,512	3,512
Net Output (TWh)	27.5	26.9	27.2	28.8	26.0	26.5	28.9	28.3	25.1
UCF (%)	90.63	88.71	89.45	94.51	85.93	87.63	95.19	93.21	82.92

Historical information for 2004 or earlier years has not been provided for the reasons set out in EB-2007-0905, Ex. L-12-6, provided in Attachment 1.

Pollution Probe Interrogatory #6

Ref: Ex. B1-T1-S1, Table 1

Issue Number: 5.4

Issue: Are the corporate costs allocated to the regulated hydroelectric and nuclear businesses appropriate?

Interrogatory

Please provide the gross plant (at cost) and accumulated depreciation of the Niagara Plant Group and the Saunders Generating Station as of March 31, 1999. Please also provide a break-out of the major changes (i.e. \$100 million or more) to the gross plant (at cost) and accumulated depreciation of the Niagara Plant Group and the Saunders Generating Station between March 31, 1999 and March 31, 2008.

Response

Historical information for 2005 – 2007 and forecast information for 2008 and 2009 is provided in the tables in Ex. B2-T1-S1 in the filing, and explanations of changes are provided in Ex. B1-T1-S1 consistent with the OEB report: "Filing Guidelines for Ontario Power Generation", EB-2006-0064, July 27, 2007.

Historical information for the period from 1999 to 2004 is not provided. In issuing the filing guidelines for OPG's prescribed facilities, the OEB stated:

OPG, along with some other stakeholders, submitted that data should not be required for 2004 or earlier years, as proposed in staff's discussion paper. As the current payment regime was implemented in April 2005, these stakeholders questioned the relevance of 2004 and pre-2004 information. OPG, for its part, also indicated that providing the information would be a significant burden for it. The Board has accepted these submissions, and has not included information relating to 2004 or earlier years in the Filing Guidelines.

Setting Payment Amounts for Ontario Power Generation Inc.'s Prescribed Generation Assets. Filing Guidelines, EB-2006-0064, July 27, 2007, page 3.

The filing guidelines themselves state:

In addition, OPG should meet the following guidelines in preparing its filing:

- *Five years of data (2005 - 2009) should be submitted.*

Filed: 2008-04-08
EB-2007-0905
Exhibit L
Tab 12
Schedule 6
Page 2 of 2

1 *Filing Guidelines for Ontario Power Generation*, EB-2006-0064, July 27, 2007, page 10.

2
3 The OEB has, therefore, already made a determination that data from before 2005 is not
4 relevant. OPG has complied with the findings and directions of the OEB.

5
6 Moreover, O. Reg. 53/05 requires the OEB to accept the asset and liability values from
7 the most recent audited financial statements (2007). This is a further reason why
8 historical data on asset values and depreciation for the period prior to regulation are not
9 relevant to the determination of payment amounts in the test period.

10
11 Information on actual results for the period from January 1, 2008 to March 31, 2008 will
12 be prepared as OPG completes its Quarterly Financial Statements for the first quarter of
13 2008, and will be made public after they are approved by OPG's Board of Directors.

ED Interrogatory #008

Ref: Ex. D2-2-1, Attachment 5, Updated 2014-02-06, pages 18 and 45.

Issue Number: 4.7

Issue: Are the proposed nuclear capital expenditures and/or financial commitments reasonable?

Interrogatory

OPG has compared the LUECs of the DRP with the LUECS of new natural gas-fired combined-cycle turbines. Has OPG also compared the DRP's LUECs with the LUECs of other alternative options such as increased energy efficiency, increased use of Ontario's existing generating facilities, increased water power imports from Quebec and new combined heat and power plants? If "yes", please provide copies of all these studies. If "no", please explain why not.

Response

Planning Ontario's electricity system and conducting comparisons of supply options is the responsibility of the OPA. Please refer to the 2013 Long Term Energy Plan, page 22, Figure 9, for a comparison of options.

ED Interrogatory #009

Ref: Ex. D2-2-1, Attachment 5, Updated 2014-02-06, pages 18 and 45.

Issue Number: 4.7

Issue: Are the proposed nuclear capital expenditures and/or financial commitments reasonable?

Interrogatory

a) Please provide an estimate of the incremental cost (\$ per MWh) of: (i) increased use of Ontario's existing generating facilities (broken out into gasfired and renewable generation), (ii) increased water power imports from Quebec, (iii) new combined heat and power plants, and (iv) increased energy efficiency?

b) Please provide an estimate of the of the potential additional capacity (MW) and output (GWh) available from: (i) increased use of Ontario's existing generating facilities, (ii) increased water power imports from Quebec, (iii) new combined heat and power plants, and (iv) increased energy efficiency by (A) 2016, (B) 2020, (C) 2025, (D) 2030, and (E) 2035?

Response

a) & b) The Levelized Unit Energy Cost ("LUEC") provided by OPG for Darlington refurbishment is 7.9 cents/kWh (\$2013). The OPA provides the unit cost of various types of generation on the tab in Module 4 Excel Sheet Tab: Gen. Unit Cost by Resource (<http://www.powerauthority.on.ca/power-planning/long-term-energy-plan-2013>); please see excerpt below.

The OPA data has a nuclear average cost from 2020 to 2032 of 7.7 cents/kWh (\$2012). All available Ontario hydroelectric power is fully utilized in the Long Term Energy Plan ("LTEP"). The Natural Gas and Planned Flexibility resource averages about 12.0 cents/kWh over the same period.

Unit Cost for Generation by Resource

Real \$2012/MWh	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Nuclear	\$ 77	\$ 87	\$ 90	\$ 78	\$ 74	\$ 74	\$ 75	\$ 76	\$ 72	\$ 73	\$ 71	\$ 70	\$ 71
Natural Gas and Planned Flexibility	\$ 158	\$ 131	\$ 132	\$ 120	\$ 121	\$ 123	\$ 127	\$ 121	\$ 120	\$ 111	\$ 102	\$ 102	\$ 98
Hydro	\$ 50	\$ 50	\$ 51	\$ 47	\$ 47	\$ 47	\$ 46	\$ 46	\$ 46	\$ 45	\$ 45	\$ 44	\$ 43
Bio	\$ 159	\$ 173	\$ 171	\$ 169	\$ 160	\$ 150	\$ 148	\$ 146	\$ 143	\$ 142	\$ 140	\$ 139	\$ 136
Wind	\$ 111	\$ 112	\$ 111	\$ 109	\$ 107	\$ 105	\$ 103	\$ 100	\$ 98	\$ 95	\$ 93	\$ 90	\$ 82
Solar	\$ 359	\$ 352	\$ 345	\$ 338	\$ 331	\$ 325	\$ 319	\$ 312	\$ 306	\$ 300	\$ 294	\$ 285	\$ 275

ED Interrogatory #014

Ref: Appendix A of *The Darlington Re-Build Consumer Protection Plan* (attached)

Issue Number: 4.12

Issue: Does OPG's nuclear refurbishment process align appropriately with the principles stated in the Government of Ontario's Long Term Energy Plan issued on December 2, 2013?

Interrogatory

Appendix A of *The Darlington Re-Build Consumer Protection Plan* (attached) provides the original cost forecasts and the actual costs of Ontario's nuclear projects. Does OPG dispute the accuracy of any of the facts provided in this Appendix? If "yes", please state the facts that OPG disputes and provide OPG's opinion as to the correct value(s).

Response

OPG objects to this interrogatory.

The OEB's Procedural Order 1 (December 20, 2013) at page 4 requires that "interrogatories must reference the pre-filed evidence filed on September 27, 2013 or information and reports subsequently filed on December 5 and 6, 2013." This interrogatory's sole reference is to a document that does not form any part of OPG's evidence. What Environmental Defence purports is an attempt to introduce this document into the record through an interrogatory on OPG's evidence. This is improper. Environmental Defence may otherwise sponsor a witness to introduce this document into evidence, availing itself of the opportunity the OEB has provided to intervenors to file evidence.

Appendix A: Ontario's History of Nuclear Cost Overruns and Ontario Hydro's Stranded Nuclear Debt

Ontario's History of Nuclear Cost Overruns

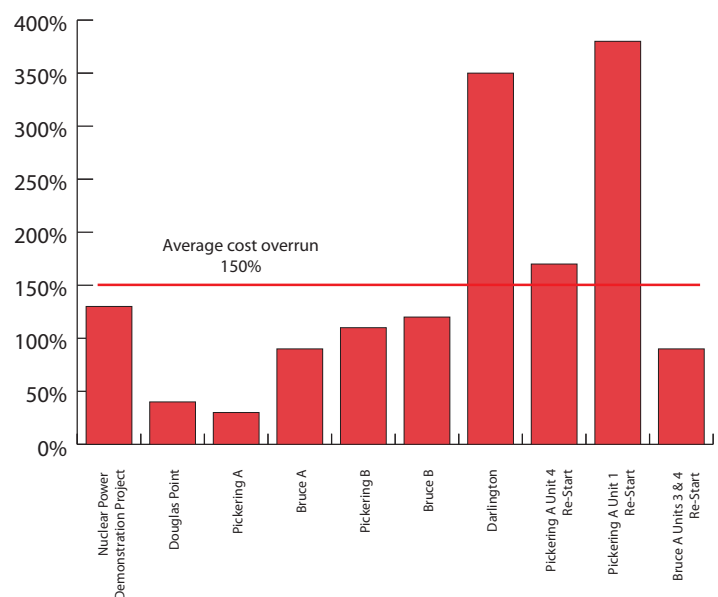
Every nuclear project in Ontario's history has gone over budget.

- The original cost estimate for the 20 megawatt (MW) Nuclear Power Demonstration Project on the Ottawa River was \$14.5 million.³⁹ The actual cost was 2.3 times higher at \$33 million.⁴⁰
- The original cost estimate for the 200 MW Douglas Point Nuclear Power Station on Lake Huron was \$60 million.⁴¹ The actual cost was 1.4 times higher at \$85 million.⁴²
- In 1967 Ontario Hydro estimated that the 2,160 MW Pickering A Nuclear Generating Station would cost \$527.65 million.⁴³ The actual cost was 1.3 times higher at \$700 million.⁴⁴
- In 1969 Ontario Hydro estimated that the 3,200 MW Bruce A Nuclear Generating Station would cost \$944 million.⁴⁵ The actual cost was 1.9 times higher at \$1.8 billion.⁴⁶
- In 1975 Ontario Hydro estimated that the 2,160 MW Pickering B Nuclear Generating Station would cost \$1.8 billion.⁴⁷ The actual cost was 2.1 times higher at \$3.8 billion.⁴⁸
- In 1975 Ontario Hydro estimated that the cost of the 3,200 MW Bruce B Nuclear Generating Station would be \$2.7 billion.⁴⁹ The actual cost was 2.2 times higher at \$5.9 billion.⁵⁰
- In 1975 Ontario Hydro estimated that the cost of the 3,400 MW Darlington Nuclear Generating Station would be \$3.2 billion.⁵¹ The actual cost was 4.5 times higher at \$14.319 billion.⁵²
- In 1999 Ontario Power Generation (OPG) estimated that the total cost of returning the shutdown Pickering A Unit 4 to service would be \$457 million.⁵³ The actual cost was 2.7 times higher at \$1.25 billion.⁵⁴

- In 1999 OPG estimated that the total cost of returning the shutdown Pickering A Unit 1 to service would be \$213 million.⁵⁵ The actual cost was 4.8 times higher at \$1.016 billion.⁵⁶ Nevertheless, a February 2010 OPG news release asserted that the project was completed "on budget".⁵⁷
- Bruce Power estimated that the total cost of returning the shutdown Bruce A Units 3 and 4 to service would be \$375 million. The actual cost was 1.9 times higher at \$725 million.⁵⁸
- In 2005 the Ontario Power Authority signed a contract with Bruce Power for the return to service of the shutdown Bruce A Units 1 and 2. In 2005 the estimated capital cost was \$2.75 billion. The units have still not been returned to service, but in February 2010 TransCanada Corp. (a major shareholder of Bruce Power) estimated that the project will cost \$3.8 billion.⁵⁹

On average, the actual costs of the Ontario nuclear projects that have been completed to-date have exceeded their original cost estimates by 2.5 times.

Ontario's History of Nuclear Cost Overruns



Fool me once, shame on you. Fool me twice, shame on me. Fool me 11 times...

Ontario Hydro's Stranded Nuclear Debt

In 1999, as a result of the cost overruns and the poor performance of its nuclear reactors, Ontario Hydro was broken up into five companies. All of its generation assets were transferred to Ontario Power Generation (OPG). In order to keep OPG solvent, \$19.4 billion of Ontario Hydro's debt or unfunded liabilities associated with electricity generation facilities was transferred to the Ontario Electricity Financial Corporation (an agency of the Government of Ontario) as "stranded debt" or "unfunded liability".⁶⁰

The Ontario Electricity Financial Corporation (OEFC) collects revenues from the following sources to help pay off the nuclear stranded debt.

- A debt retirement charge of 0.7 cents per kWh which is levied on all Ontario electricity consumers.
- All of the provincial income tax payments from OPG, Hydro One and Ontario's municipal electric utilities (e.g., Toronto Hydro).

- All of the dividend payments from OPG and Hydro One to their sole shareholder, the Government of Ontario.

In 2009, the sum of the above-noted nuclear debt retirement payments was \$1.8 billion.⁶¹ This is equivalent to an annual nuclear debt retirement charge of \$137.73 per person in Ontario or \$551 for a family of four.⁶²

The defunct Ontario Hydro's nuclear debt costs Ontario's consumers and taxpayers \$1.8 billion per year.

In 2001 the OEFC forecast that the nuclear debt would be fully paid off "in the years ranging from 2010 to 2017".⁶³ However, as of 2009, the debt has only been reduced by \$3.2 billion to \$16.2 billion.⁶⁴ The OEFC is now forecasting that the debt will be eliminated between 2014 and 2018.⁶⁵

Endnotes

- 1 Ontario Energy Board Docket No. EB-2010-0008, Exhibit D2, Tab 2, Schedule 1, Page 6.
- 2 Ontario Energy Board Docket No. EB-2010-0008, Exhibit D2, Tab 2, Schedule 1, Page 11.
- 3 Ontario Energy Board Docket No. EB-2010-0008, Exhibit L, Tab 10, Schedule 014.
- 4 Ontario Energy Board Docket No. EB-2010-0008, Exhibit D2, Tab 2, Schedule 1, Page 10.
- 5 Ontario Energy Board Docket No. EB-2010-0008, Exhibit JT1.2.
- 6 Ontario Energy Board Docket No. EB-2010-0008, Exhibit D2, Tab 2, Schedule 1, Pages 4 & 5.
- 7 Ontario Energy Board Docket No. EB-2010-0008, Undertaking JT1.3.
- 8 Ontario Energy Board Docket No. EB-2010-0008, Exhibit L, Tab 10, Schedule 002.
- 9 Ontario Ministry of Energy, Science and Technology, *Direction for Change: Charting a Course for Competitive Electricity and Jobs in Ontario*, (November 1997), page 7. The Ontario nuclear industry often claims higher average capacity utilization rates by ignoring the performance of reactors that are temporarily or permanently and pre-maturely shutdown.
- 10 Email from Carrie Reid, Customer Relations, Independent Electricity System Operator to Jack Gibbons, Ontario Clean Air Alliance, June 24, 2010.
- 11 OPG Review Committee, *Transforming Ontario's Power Generation Company*, (March 15, 2004), Page 50.
- 12 Email from Carrie Reid, Customer Relations, Independent Electricity System Operator to Jack Gibbons, Ontario Clean Air Alliance, June 24, 2010.
- 13 Emails from Carrie Reid and Rebecca Short, Customer Relations, Independent Electricity System Operator to Jack Gibbons, Ontario Clean Air Alliance, July 21, 2010 and September 14, 2010.
- 14 Ontario Energy Board Docket No. EB-2010-0008, Exhibit L, Tab 10, Schedule 004.
- 15 Ontario Energy Board Docket No. EB-2010-0008, Exhibit L, Tab 6, Schedule 002 and Tab 10, Schedule 002.
- 16 Letter from CIBC World Markets Inc. to James Gillis, Ontario Deputy Minister of Energy, October 17, 2005.
- 17 Ontario Energy Board Docket No. EB-2010-0008, Exhibit L, Tab 10, Schedule 006.
- 18 According to OPG, assuming 70% equity financing and a required equity rate of return of 18%, the Darlington Re-Build will produce electricity at a total cost of 10 to 14 cents per kWh (assuming an 82% capacity utilization rate) or 12 to 18 cents per kWh (assuming a 64% capacity utilization rate). Furthermore, according to OPG, the Darlington Re-Build's non-capital costs (i.e., operating, maintenance, administration and fuel costs) are 3.9 to 5.2 cents per kWh. All costs are in 2009\$. We have increased OPG's estimated capital costs per kWh by a factor of 2.5 to calculate the impact of a 150% capital cost overrun on the Darlington Re-Build's total cost of power. Ontario Energy Board Docket No. EB-2010-0008, Exhibit L, Tab 10, Schedules 003 and 006.
- 19 Ontario Clean Air Alliance, *Conservation vs. Electricity Supply: A summary of the Ontario Power Authority's procurement efforts*, (July 19, 2010).
- 20 Ontario Power Authority, *Industrial Accelerator Program: Program Rules Version 2.0*, (June 24, 2010), pages 13, 14 & 15.
- 21 Ontario Power Authority, *Supply Mix Analysis Report*, Volume 2, (December 2005), page 210; and *Integrated Power System Plan*, Exhibit G, Tab 2, Schedule 1, page 7.
- 22 Assuming energy efficiencies of 80 to 90% and an average annual capacity utilization rate of 90%. Ontario Power Authority, *Integrated Power System Plan*, Exhibit I, Tab 31, Schedule 90.
- 23 Ontario Power Authority, *Integrated Power System Plan*, Exhibit I, Tab 31, Schedule 21, page 1.
- 24 *Integrated Power System Plan*, Exhibit L, Tab 8, Schedule 7: Thomas R. Casten, Recycled Energy Development LLC, *The Role of Recycled Energy and Combined Heat and Power (CHP) in Ontario's Electricity Future*, page 3.
- 25 Catherine Strickland & John Nyboer, MK Jaccard and Associates, *Cogeneration Potential in Canada: Phase 2*, (April 2002), page 30.
- 26 Hagler Bailly Canada, *Potential for Cogeneration in Ontario: Final Report*, (August 2000), page 25.
- 27 Ontario Power Generation, *Sustainable Development Report 2009*, page 46.
- 28 Ontario Energy Board Docket No. EB-2008-0272, Exhibit I, Tab 5, Schedule 6.
- 29 Hydro Quebec, *Annual Report 2009: Shaping The Future*, page 53.
- 30 Ontario Power Authority, *A Progress Report On Electricity Supply: First Quarter 2010*, pages 6, 24 & 25.
- 31 Steve Erwin, "Bruce nuclear cost overruns will fall in taxpayers' laps: critics", *Brockville Recorder and Times*, October 18, 2005.
- 32 Tyler Hamilton, "Reactor repairs confirmed over budget", *Toronto Star*, April 18, 2008.
- 33 *Second Amending Agreement to the Bruce Power Refurbishment Implementation Agreement Between Bruce Power L.P. and Bruce Power A L.P. and Ontario Power Authority*, July 6, 2009. Available online at: www.powerauthority.on.ca/Page.asp?PageID=122&ContentID=891.
- 34 Ontario Ministry of Energy, *News Release*, "Ontario Takes Next Step To Ensure Clean, Affordable And Reliable Energy Supply For Generations To Come", (March 7, 2008).
- 35 According to the Government's news release, "The competitive process will help to ensure the greatest amount of cost certainty, lowest possible price and a fair approach to risk sharing." See Infrastructure Ontario, *Background*, "Nuclear Procurement Project Phase 2", (June 16, 2008).

- 36 Shawn McCarthy & Karen Howlett, “Ontario’s move puts AECL’s future in doubt”, *Globe and Mail*, (June 30, 2009).
- 37 Tyler Hamilton, “Nuclear bid rejected for 26 billion reasons: Ontario ditched plan for new reactors over high price tag that would wipe out 20-year budget”, *Toronto Star*, (July 14, 2009).
- 38 Romina Maurino, “Province puts nuke plans on hold”, *Toronto Sun*, (June 30, 2009); and Susan Riley, “Nuclear summer”, *Ottawa Citizen*, (July 31, 2009).
- 39 G. Bruce Doern, *Government Intervention in the Canadian Nuclear Industry*, (The Institute for Research on Public Policy, 1980), page 104.
- 40 The Hydro-Electric Power Commission of Ontario, *Annual Report 1962*, page 60.
- 41 *Government Intervention in the Canadian Nuclear Industry*, page 107.
- 42 Paul McKay, *Electric Empire: The Inside Story of Ontario Hydro*, (Between The Lines, 1983), page 59.
- 43 The Hydro-Electric Power Commission of Ontario, *Annual Report 1967*, page 57.
- 44 Letter from Rosemary C. Watson, Manager, Corporate Records & Freedom of Information, Ontario Power Generation to Jack Gibbons, Ontario Clean Air Alliance, July 19, 2010.
- 45 The Hydro-Electric Power Commission of Ontario, *Annual Report 1969*, page 34.
- 46 Letter from Rosemary C. Watson, Manager, Corporate Records & Freedom of Information, Ontario Power Generation to Jack Gibbons, Ontario Clean Air Alliance, July 19, 2010.
- 47 Ontario Hydro, *Annual Report 1975*, page 4.
- 48 Letter from Rosemary C. Watson, Manager, Corporate Records & Freedom of Information, Ontario Power Generation to Jack Gibbons, Ontario Clean Air Alliance, July 19, 2010.
- 49 Ontario Hydro, *Annual Report 1975*, page 4.
- 50 Letter from Rosemary C. Watson, Manager, Corporate Records & Freedom of Information, Ontario Power Generation to Jack Gibbons, Ontario Clean Air Alliance, July 19, 2010.
- 51 Ontario Hydro, *Annual Report 1975*, page 4.
- 52 Letter from Rosemary C. Watson, Freedom of Information Coordinator, Ontario Power Generation to Ravi Mark Singh, Ontario Clean Air Alliance, April 27, 2004.
- 53 *Report of the Pickering “A” Review Panel*, (December 2003), page 4.
- 54 *Report of the Pickering “A” Review Panel*, (December 2003), page 4.
- 55 *Report of the Pickering “A” Review Panel*, (December 2003), page 3.
- 56 OPG, *News from Ontario Power Generation*, “Ontario Power Generation Reports 2005 Third Quarter Financial Results”, (November 11, 2005).
- 57 OPG, *News Release*, “OPG Moves to Planning Phase of Darlington Refurbishment”, (February 16, 2010).
- 58 Letter to James Gillis, Ontario Deputy Minister of Energy from CIBC World Markets Inc., October 17, 2005.
- 59 Ontario Energy Board Docket No. EB-2010-0008, Exhibit L, Tab 2, Schedule 015.
- 60 Ontario Electricity Financial Corporation, *Annual Report: April 1, 1999 to March 31, 2000*, page 8.
- 61 Ontario Electricity Financial Corporation, *Annual Report 2009*, page 12.
- 62 Ontario’s population in 2009 was 13,069,200.
- 63 Ontario Electricity Financial Corporation, *Annual Report 2001*, page 29.
- 64 Ontario Electricity Financial Corporation, *Annual Report 2009*, page 11.
- 65 Ontario Electricity Financial Corporation, *Annual Report 2009*, page 20.
66. According to the NB Power Group’s *2007/08 Annual Report*, total construction costs, excluding replacement fuel and purchased power costs, would be approximately \$1 billion (see page 20). According to recent reports, the project is approximately \$1 billion over budget. See Chris Morris, “Leaders spar over Lepreau”, *Telegraph-Journal*, (August 23, 2010).



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ED Interrogatory #015

Ref: Exhibits F2, F3 and F4

Issue Number: 6.3

Issue: Is the test period Operations, Maintenance and Administration budget for the nuclear facilities appropriate?

Interrogatory

a) Please provide the total operating, maintenance and administration costs for the Pickering Nuclear Station (\$ per MWh) for each of the following years: 2010, 2011, 2012 and 2013.

b) Please provide OPG's forecast total operating, maintenance and administration costs for the Pickering Nuclear Station (\$ per MWh) for: (i) 2014; and (ii) 2015. Please provide a break-out of these costs according to: (i) operating; (ii) maintenance; and (iii) administration costs.

c) Please provide a comparison of Pickering's forecast total operating, maintenance and administration costs (\$ per MWh) for 2014 and 2015 to the incremental cost of meeting Ontario's electricity needs by (i) increased energy efficiency, (ii) increased output of Ontario's existing generating facilities, (iii) reduced electricity exports and (iv) increased water power imports from Quebec. Please show your calculations. Please compare each of the alternatives separately.

Response

a) Non-Fuel Operating Cost per MWh is one of the key performance indicators used by OPG to benchmark financial performance against other utilities (Ex. F2-1-1, Attachment 1). It includes all OM&A costs associated with operating and maintaining each nuclear station, including indirect costs such as corporate costs.

The annual Non-Fuel Operating Costs per MWh for 2010 - 2013 for the Pickering Nuclear Station were:

Pickering	2010	2011	2012	2013
Non-Fuel Operating Cost per MWh (\$ per MWh)	58.75	57.82	55.20	58.54

The Non-Fuel Operating Cost increase in 2013 for Pickering was largely due to reduced production associated with extensions to planned outages.

Filed: 2014-03-19
EB-2013-0321
Exhibit L
Tab 6.3
Schedule 6 ED-015
Page 2 of 2

- b) 2014 and 2015 (Ex. F2-1-1, Attachment 2, page 8) Non-Fuel Operating Costs per MWh for the Pickering Nuclear Station are forecast to be:

From approved 2013-2015 Business Plan

Pickering	2014	2015
Non-Fuel Operating Cost per MWh (\$ per MWh)	55.71	53.34

OM&A costs are not budgeted separately as operating, maintenance and administration expenses so a cost breakdown according to these categories is unavailable.

- c) See response to ED Interrogatory #009.

Ontario Energy Board Act, 1998
Loi de 1998 sur la Commission de l'énergie de l'Ontario

ONTARIO REGULATION 53/05
PAYMENTS UNDER SECTION 78.1 OF THE ACT

...

Rules governing determination of payment amounts by Board

6. (1) Subject to subsection (2), the Board may establish the form, methodology, assumptions and calculations used in making an order that determines payment amounts for the purpose of section 78.1 of the Act. O. Reg. 53/05, s. 6 (1).

(2) The following rules apply to the making of an order by the Board that determines payment amounts for the purpose of section 78.1 of the Act:

1. The Board shall ensure that Ontario Power Generation Inc. recovers the balance recorded in the variance account established under subsection 5 (1) over a period not to exceed three years, to the extent that the Board is satisfied that,
 - i. the revenues recorded in the account were earned or foregone and the costs were prudently incurred, and
 - ii. the revenues and costs are accurately recorded in the account.
2. In setting payment amounts for the assets prescribed under section 2, the Board shall not adopt any methodologies, assumptions or calculations that are based upon the contracting for all or any portion of the output of those assets.
3. The Board shall ensure that Ontario Power Generation Inc. recovers the balance recorded in the deferral account established under subsection 5 (4). The Board shall authorize recovery of the balance on a straight line basis over a period not to exceed 15 years.
4. The Board shall ensure that Ontario Power Generation Inc. recovers capital and non-capital costs, and firm financial commitments incurred to increase the output of, refurbish or add operating capacity to a generation facility referred to in section 2, including, but not limited to, assessment costs and pre-engineering costs and commitments,
 - i. if the costs and financial commitments were within the project budgets approved for that purpose by the board of directors of Ontario Power Generation Inc. before the making of the Board's first order under section 78.1 of the Act in respect of Ontario Power Generation Inc., or
 - ii. if the costs and financial commitments were not approved by the board of directors of Ontario Power Generation Inc. before the making of the Board's first order under section 78.1 of the Act in respect of Ontario Power Generation Inc., if the Board is satisfied that the costs were prudently incurred and that the financial commitments were prudently made.
- 4.1 The Board shall ensure that Ontario Power Generation Inc. recovers the costs incurred and firm financial commitments made in the course of planning and preparation for the development of proposed new nuclear generation facilities, to the extent the Board is satisfied that,
 - i. the costs were prudently incurred, and
 - ii. the financial commitments were prudently made.
5. In making its first order under section 78.1 of the Act in respect of Ontario Power Generation Inc., the Board shall accept the amounts for the following matters as set out in Ontario Power Generation Inc.'s most recently audited financial statements that were approved by the board of directors of Ontario Power Generation Inc. before the effective date of that order:
 - i. Ontario Power Generation Inc.'s assets and liabilities, other than the variance account referred to in subsection 5 (1), which shall be determined in accordance with paragraph 1.
 - ii. Ontario Power Generation Inc.'s revenues earned with respect to any lease of the Bruce Nuclear Generating Stations.
 - iii. Ontario Power Generation Inc.'s costs with respect to the Bruce Nuclear Generating Stations.
6. Without limiting the generality of paragraph 5, that paragraph applies to values relating to,
 - i. capital cost allowances,
 - ii. the revenue requirement impact of accounting and tax policy decisions, and

- iii. capital and non-capital costs and firm financial commitments to increase the output of, refurbish or add operating capacity to a generation facility referred to in section 2.
- 7. The Board shall ensure that the balances recorded in the deferral accounts established under subsections 5.1 (1) and 5.2 (1) are recovered on a straight line basis over a period not to exceed three years, to the extent that the Board is satisfied that revenue requirement impacts are accurately recorded in the accounts, based on the following items, as reflected in the audited financial statements approved by the board of directors of Ontario Power Generation Inc.,

Note: On July 1, 2014, paragraph 7 is amended by striking out the portion before subparagraph i and substituting the following: (See: O. Reg. 312/13, ss. 4 (1), 6)

- 7. The Board shall ensure that the balance recorded in the deferral account established under subsection 5.2 (1) is recovered on a straight line basis over a period not to exceed three years, to the extent that the Board is satisfied that revenue requirement impacts are accurately recorded in the account, based on the following items, as reflected in the audited financial statements approved by the board of directors of Ontario Power Generation Inc.,
 - i. return on rate base,
 - ii. depreciation expense,
 - iii. income and capital taxes, and
 - iv. fuel expense.
- 7.1 The Board shall ensure the balances recorded in the deferral account established under subsection 5.3 (1) and the variance account established under subsection 5.4 (1) are recovered on a straight line basis over a period not to exceed three years, to the extent the Board is satisfied that,

Note: On July 1, 2014, paragraph 7.1 is amended by striking out the portion before subparagraph i and substituting the following: (See: O. Reg. 312/13, ss. 4 (2), 6)

- 7.1 The Board shall ensure the balance recorded in the variance account established under subsection 5.4 (1) is recovered on a straight line basis over a period not to exceed three years, to the extent the Board is satisfied that,
 - i. the costs were prudently incurred, and
 - ii. the financial commitments were prudently made.
- 8. The Board shall ensure that Ontario Power Generation Inc. recovers the revenue requirement impact of its nuclear decommissioning liability arising from the current approved reference plan.
- 9. The Board shall ensure that Ontario Power Generation Inc. recovers all the costs it incurs with respect to the Bruce Nuclear Generating Stations.
- 10. If Ontario Power Generation Inc.'s revenues earned with respect to any lease of the Bruce Nuclear Generating Stations exceed the costs Ontario Power Generation Inc. incurs with respect to those Stations, the excess shall be applied to reduce the amount of the payments required under subsection 78.1 (1) of the Act with respect to output from the nuclear generation facilities referred to in paragraphs 3, 4 and 5 of section 2. O. Reg. 23/07, s. 4; O. Reg. 27/08, s. 2.

Note: On July 1, 2014, subsection (2) is amended by adding the following paragraph: (See: O. Reg. 312/13, ss. 4 (3), 6)

- 11. In making its first order under section 78.1 of the Act in respect of Ontario Power Generation Inc. that is effective on or after July 1, 2014, the following rules apply:
 - i. The order shall provide for the payment of amounts with respect to output that is generated at a generation facility referred to in paragraph 6 of section 2 during the period from July 1, 2014 to the day before the effective date of the order.
 - ii. The Board shall accept the values for the assets and liabilities of the generation facilities referred to in paragraph 6 of section 2 as set out in Ontario Power Generation Inc.'s most recently audited financial statements that were approved by the board of directors before the making of that order. This includes values relating to the income tax effects of timing differences and the revenue requirement impact of accounting and tax policy decisions reflected in those financial statements.

...