

December 6, 2010

**BY COURIER (10 COPIES) AND EMAIL**

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Dear Ms. Walli:

**Re: Pollution Probe – Written Submissions  
EB-2010-0008 – Ontario Power Generation – 2011-12 Payment Amounts**

Pursuant to the Board's directions, please find enclosed Pollution Probe's written submissions for this matter.

Yours truly,



Basil Alexander

BA/ba

Encl.

cc: Applicant and Intervenors per Applicant and List of Intervenors attached to  
*Procedural Order No. 3*

**EB-2010-0008**

**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 (the "OPG 2011-2012 Payment Amounts Application").

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**POLLUTION PROBE**

**WRITTEN SUBMISSIONS**

**December 6, 2010**

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## Introduction

Pollution Probe's submissions are focused on two major issues:

1. OPG's proposal to include CWIP in rate base for the Darlington Refurbishment is not appropriate, and it should be accordingly denied; and
2. Differential capital structures ought to be implemented for OPG's nuclear and hydro-electric divisions that reflect the higher risk of the nuclear division, and the evidence of Dr. Kryzanowski and Dr. Roberts should be accepted in this regard. Accordingly, the equity ratio for OPG's nuclear division should be set at 53%, and the equity ratio for OPG's hydro-electric division should be set at 43%, which would maintain OPG's overall equity ratio at 47%.

Each of these issues is examined in detail below.

## CWIP Proposal Not Appropriate and Should Be Denied

### **Issue 2.2: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?**

Pollution Probe submits that it is not appropriate for OPG to include CWIP in rate base for the Darlington Refurbishment Project, and OPG's proposal should be accordingly denied.

Ontario Power Generation ("OPG") is seeking permission to include its construction work in progress ("CWIP") expenditures with respect to its proposed Darlington Refurbishment Project in rate base. OPG relies upon the Board's report in EB-2009-0152<sup>1</sup> as the basis for its request. Further, according to OPG, this project will eventually cost \$8.5 to \$14 billion<sup>2</sup> and will provide electricity at a cost of 6 to 8 cents per kWh.<sup>3</sup>

However, as detailed below, Pollution Probe submits that these bases do not stand up to scrutiny, and OPG's request should be accordingly denied.

### **Board Report Not Intended To Include This Nuclear Generation Project**

First, the report that OPG relies upon was intended for transmitters and distributors, particularly in light of the significant changes as a result of the *Green Energy and Economy Act, 2009*. Such

<sup>1</sup> Exhibit K13.8, *EB-2009-0152 – Report of the Board: The Regulatory Treatment of Infrastructure Investment in connection with the Rate-regulated Activities of Distributors and Transmitters in Ontario* dated January 15, 2010 (the "*EB-2009-0152 Report*").

<sup>2</sup> Exhibit JT1.2.

<sup>3</sup> Exhibit D2, Tab 2, Schedule 1, pgs. 4-5.

treatment reflects the new statutory context as well as the fact that transmission and distribution are natural monopolies.<sup>4</sup> However, the Darlington Refurbishment Project is not the same kind of project as it is a *generation* project, and electricity generation is not a natural monopoly. OPG also concedes that the proposed Project is not a project pursuant to the *Green Energy and Economy Act, 2009*.<sup>5</sup> OPG's request is thus outside the scope of the Board's report, and OPG should not be granted an advantage that other electricity generators do not have.<sup>6</sup>

### **Cannot Make Required Public Interest Finding To Include CWIP**

Second, even if the CWIP for the Darlington Refurbishment Project was potentially eligible to be included in rate base, an actual CWIP application should not be approved before the project has been found to be in the public interest. Pollution Probe submits that this cannot occur in this case.

### **Lack of Authorization for Project**

OPG characterizes the project as having to go through a "series of gates", but the reality is that OPG does not have full authorization to proceed with the project<sup>7</sup> (unlike the Bruce-Milton transmission line for example, which was approved by the Board after a full hearing and is thus potentially eligible for CWIP). There is also no approved Integrated Power System Plan ("IPSP") that includes the Darlington Refurbishment Project. Approvals that would warrant any consideration of the project's CWIP in rate base are thus at least months, if not years, away, and the Board should not prejudge any such approvals at this time.

### **Questions To Determine Whether In Public Interest**

The regulatory expert put forward by OPG testified that a finding of public interest is usually done at the same time as approval of CWIP.<sup>8</sup> However, as part of any determination as to whether the Darlington Refurbishment Project is in the public interest, Pollution Probe submits that the Board must ask at least the following questions:

1. Are OPG's cost estimates credible? and
2. Is the proposed project the lowest cost and/or lowest risk option to meet Ontario's base-load electricity needs?

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<sup>4</sup> See e.g. *EB-2009-0152 Report* at pg. i, and Transcript, Volume 13, October 29, 2010, pg. 140.

<sup>5</sup> Transcript, Volume 13 (October 29, 2010), pg. 76, lines 2-6.

<sup>6</sup> See e.g. Transcript, Volume 13 (October 29, 2010), pg. 145.

<sup>7</sup> See e.g. Transcript, Volume 13 (October 29, 2010), pg. 138.

<sup>8</sup> Transcript, Volume 13 (October 29, 2010), pg. 150.

Pollution Probe submits that these questions need to be examined carefully given the significant potential addition of over a billion dollars to rate base for 2011-12 that is related to the project.<sup>9</sup>

As detailed below, Pollution Probe submits that there are significant issues with both questions that cannot be dealt with in the context of this rates case. Rather, these issues should be fully canvassed in the context of the upcoming hearing regarding the Ontario Power Authority's proposed IPSP. This is accordingly not the appropriate forum for the Board to make any determinations that the Darlington Refurbishment Plan is in the public interest and that its CWIP should be included in rate base.

As an illustration, each of these questions is explored below.

### **OPG's Cost Estimates Are Not Credible**

First, Pollution Probe submits that OPG's cost estimates for the proposed Darlington Refurbishment Project are not credible. This is because OPG's assertion that the Refurbishment Project would result in the production of electricity at a cost of 6 to 8 cents per kWh is based on the problematic assumptions that:

1. a rebuilt Darlington will have an overly high average annual capacity utilization rate of 82% to 92%;
2. the project's cost of capital will be significantly less than the estimate for Bruce Power's recent refurbishment of Bruce A Units 1 and 2; and
3. there is a very low probability that the project will experience cost overruns.

Each of these assumptions is examined in detail below.

#### *Problematic Assumption #1 – Overly High Annual Capacity Utilization Rate*

OPG's estimate of 6 to 8 cents per kWh assumes that a re-built Darlington will have an average annual capacity utilization rate of 82 to 92%.<sup>10</sup> However, this assumption is problematic for the following reasons:

- During the last 25 years, Ontario's fleet of nuclear reactors has *never* achieved an average annual capacity utilization rate of 82% or better.<sup>11</sup>
- Bruce Power recently refurbished two of its nuclear reactors (i.e. Bruce A Units 3 and 4). However, their average annual capacity utilization rate during the past four years was only 75%.<sup>12</sup>

<sup>9</sup> Transcript, Volume 6 (October 18, 2010), pgs. 188-191.

<sup>10</sup> Exhibit L, Issue 4.5, Tab 10, Schedule 2, part (c).

<sup>11</sup> Transcript, Volume 6 (October 18, 2010), pg. 167, line 23 to pg. 168, line 10. See also Exhibit K6.3, Tab 1, pg. 2.

<sup>12</sup> Transcript, Volume 6 (October 18, 2010), pg. 169, lines 12 to 25. See also Exhibit K6.3, Tab 1, pg. 2.

- OPG also recently refurbished two nuclear reactors (i.e. Pickering A Units 1 and 4). However, the average annual capacity utilization rates of Units 1 and 4 during the last four years has been 69% and 59% respectively. Their combined average annual capacity utilization rate during the past 4 years was thus only 64%.<sup>13</sup>

Given this history, Pollution Probe submits that OPG's assumption for the annual capacity utilization rate for the proposed Darlington Refurbishment is overly high. For illustration purposes, according to OPG, the Darlington Refurbishment Project's cost of producing electricity would rise to 8 to 10 cents per kWh if a 64% annual average capacity utilization rate were assumed instead.<sup>14</sup> This illustrates the problematic impact of using overly optimistic utilization rates to determine the proposed project's viability.

*Problematic Assumption #2 – Cost of Capital Will Be Significantly Less than Bruce Power's*

OPG's 6 to 8 cent per kWh cost estimate also assumes that the cost of capital for the Darlington Refurbishment Project will be less than CIBC World Markets' estimate of Bruce Power's cost of capital for its Bruce A Units 1 and 2 Refurbishment Project.<sup>15</sup> This assumption is problematic for the following reasons:

- The current forecasted capital cost of the proposed Darlington Refurbishment Project is 3 to 5 times greater than the original forecast cost for the Bruce Project (i.e. \$8.5-14 billion to \$2.75 billion respectively). Thus, everything else being equal, there would normally be a greater risk from a cost of capital perspective given the proposed project's significantly higher total capital cost due to its much larger scale.
- Moreover, the Bruce Refurbishment Project is significantly late and already \$2 billion over budget.<sup>16</sup> This poor performance can only increase the market's perception of the risks associated with the proposed Darlington Project from a cost of capital perspective.
- OPG's cost of capital estimate also appears to be based on the assumption that the Ontario Electricity Financial Corporation will borrow billions of dollars in the name of the Government of Ontario to provide taxpayer-subsidized financing for the Darlington Refurbishment Project.<sup>17</sup> However, this is only an assumption, and there is no evidence on the record to indicate that the Government of Ontario *will* direct the Ontario Electricity Financial Corporation to finance such a high-risk project.

Given this context, Pollution Probe submits it is problematic and inappropriate for OPG or the Board to assume that the costs of capital for the Darlington Refurbishment Project will be less than that for the Bruce Refurbishment Project.

<sup>13</sup> Transcript, Volume 6 (October 18, 2010), pg. 168, line 15 to pg. 169, line 11. See also Exhibit K6.3, Tab 1, pg. 2.

<sup>14</sup> Exhibit L, Issue 2.2, Tab 10, Schedule 4, part (b).

<sup>15</sup> Transcript, Volume 11 (October 26, 2010), pg. 16, line 21 to pg. 20, line 18. See also Exhibit K11.1, Tab 2, pg. 8.

<sup>16</sup> John Spears and Robert Benzie, "Bruce nuclear refit \$2 billion over budget", *Toronto Star*, November 4, 2010.

<sup>17</sup> Transcript, Volume 13 (October 29, 2010), p. 56, lines 16 to 26.

For illustration purposes, the following are OPG's estimates of the impacts on the proposed Darlington Refurbishment Project's cost of electricity if more realistic assumptions (from Pollution Probe's perspective) were used instead:<sup>18</sup>

- the cost of electricity rises to 10 to 14 cents per kWh assuming:
  - a cost of capital comparable to CIBC World Market's estimate of the Bruce Refurbishment Project's cost of capital; and
  - an 82% annual capacity utilization rate (i.e. the lower end of the utilization rate assumed by OPG);
- the cost of electricity rises to 12 to 18 cents per kWh assuming:
  - a cost of capital comparable to CIBC World Market's estimate of the Bruce Refurbishment Project's cost of capital; and
  - a 64% capacity utilization rate (i.e. the average utilization rate resulting from OPG's recent Pickering refurbishment).

This again illustrates the issues associated with OPG's problematic assumptions.

*Problematic Assumption #3 – The Very Low Probability of Cost Overruns*

Finally, OPG assumes the probability that the cost of electricity from the Darlington Refurbishment Project will exceed 8 cents per kWh is less than one quarter of 1%.<sup>19</sup> Pollution Probe respectfully submits that this assumption is not reasonable given OPG's and Ontario's history of cost overruns as summarized below:

- *Every* nuclear project in Ontario's history has gone significantly over budget. In fact, on average, the actual costs of Ontario's nuclear projects have been 2.5 times greater than their original cost estimates.<sup>20</sup>
- The actual cost of the original Darlington Nuclear Project was 4.5 times greater than its original cost estimate.<sup>21</sup>
- Further, the real cost of OPG's most recent nuclear refurbishment project (i.e. Pickering A Unit 1) was 4.8 times greater than its original cost estimate.<sup>22</sup> Despite this reality, Pollution Probe notes that in February of this year OPG issued a news release that asserted that this project was completed "on budget".<sup>23</sup> Pollution Probe thus submits that OPG appears to take a selective rather than realistic view of its budgetary success and cost overruns, and the Board should be accordingly skeptical of OPG's claims in this regard.

Pollution Probe respectfully submits that, given this history and context, the Ontario Energy Board should be wary of approving OPG's request to include CWIP in rate base on the basis of

<sup>18</sup> Exhibit K6.3, Tab 1, pg. 2 and Exhibit L, Issue 4.5, Tab 10, Schedule 6.

<sup>19</sup> Transcript, Volume 7 (October 19, 2010), pg. 36, lines 18 to 26.

<sup>20</sup> Transcript, Volume 6 (October 18, 2010), pg. 180, line 1 to pg. 182, line 9. See also Exhibit K6.3, Tab 1, pg. 6.

<sup>21</sup> Exhibit K6.3, Tab 1, pg. 6.

<sup>22</sup> Transcript, Volume 6 (October 18, 2010), pg. 174, line 1 to pg. 177, line 4. See also Exhibit K6.3, Tabs 5-8, pgs. 16-27.

<sup>23</sup> Transcript Volume 6 (October 18, 2010), pg. 177, line 5 to p. 178, line 7. See also Exhibit K6.3, Tab 9, pgs. 28 & 30.

OPG's assertion that it is extremely unlikely that the proposed Darlington Refurbishment Project will experience significant cost overruns.

**The Proposed Darlington Refurbishment Project is not the Lowest Cost and/or Lowest Risk Option to Meet Ontario's Base-load Electricity Needs**

OPG also assumes that at a cost of 6 to 8 cents per kWh, its proposed Darlington Refurbishment Project is a "more attractive" option to meet Ontario's base-load electricity needs than the refurbishment of Pickering B or the construction and operation of new natural gas-fired combined-cycle turbines and "compares very favourably" to new nuclear.<sup>24</sup>

However, Pollution Probe submits that there are other credible and realistic options to meet Ontario's base-load electricity needs that OPG did not examine. For example, such options include energy efficiency, combined heat and power, and water power imports from the Province of Quebec. OPG has not provided the Board with any evidence to demonstrate that its proposed Darlington Refurbishment Project can meet our electricity needs at a lower cost and/or lower risk than an integrated combination of energy efficiency, combined heat and power and water power imports from Quebec.<sup>25</sup> The Board is thus not in a position to find that the proposed Darlington Refurbishment Project can meet Ontario's electricity needs at the lowest cost or risk. It thus cannot approve or find that the proposed Project is in the public interest, and its CWIP cannot accordingly be included in rate base.

**Conclusion for CWIP**

OPG's assertion that its proposed Darlington Refurbishment Project can provide Ontario with base load electricity at a cost of 6 to 8 cents per kWh is based on *all* of the following very optimistic assumptions being true:

- The Project's actual average annual capacity utilization rate will be between 82 and 92% continuously for 30 years;
- The Government of Ontario is willing to provide OPG with taxpayer-subsidized financing for this multi-billion dollar high risk project so that the Project's cost of capital is significantly less than that of the Bruce Refurbishment; and
- No cost overruns.

Pollution Probe respectfully submits that these assumptions do not stand up to scrutiny or are not sufficiently supported by credible evidence on the record. In short, Pollution Probe respectfully submits that it would be neither prudent nor reasonable for the Board to assume that it is likely that the proposed Darlington Refurbishment Project can provide Ontario with base-load electricity at a cost of 8 cents per kWh or less. In fact, given historical experience, the actual cost will likely be significantly more.

<sup>24</sup> Exhibit D2, Tab 2, Schedule 1, Attachment 4, pg. 10.

<sup>25</sup> Transcript, Volume 6 (October 18, 2010), p. 182, line 10 to p. 183, line 8. See also Exhibit K6.3, Tab 1, pgs. 3-4.

Pollution Probe also notes that OPG has not provided sufficient evidence to demonstrate that its proposed Darlington Refurbishment Project can meet our electricity needs at a lower cost and/or risk than other options, including an integrated combination of energy efficiency, combined heat and power and water power imports from Quebec. OPG is also asking for CWIP to be included as part of rate base despite the fact that the Project does not have approval or authorization to proceed and that it would have a rate base impact of over a billion dollars.

Pollution Probe thus submits that the Board should deny OPG's request to include the proposed Darlington Refurbishment Project's CWIP in rate base since OPG has not proven that its request is in the public interest. Pollution Probe further submits that the best forum for the Board to consider these and other related issues will be during an upcoming proceeding to consider the Ontario Power Authority's proposed Integrated Power System Plan. Pollution Probe also notes that OPG has indicated that even if CWIP is not approved, this will not affect OPG's work on the proposed Darlington Refurbishment Project (i.e. the proposed Project is not contingent on any potential CWIP approvals).<sup>26</sup>

## **Differential Capital Structures Ought to Be Implemented For OPG's Nuclear and Hydro-Electric Divisions**

**Issue 3.3      Should the same capital structure and cost of capital be used for both OPG's regulated hydroelectric and nuclear businesses? If not, what capital structure and/or cost of capital parameters are appropriate for each business?**

Pollution Probe submits that differential capital structures should be used for OPG's regulated hydroelectric and nuclear businesses to reflect the higher risk associated with nuclear, and the evidence of Dr. Kryzanowski and Dr. Roberts ought to be accepted in this regard. Given that OPG's overall capital structure consists of 47% equity, the capital structure for the hydroelectric business should accordingly consist of 43% equity, and the capital structure for the nuclear business should consist of 53% equity.

### ***The Previous Proceeding***

In its previous EB-2007-0905 decision, the Board noted OPG's hydroelectric and nuclear divisions are run in many ways as separate entities.<sup>27</sup> Accordingly, after determining the overall capital structure and cost of capital for OPG, the Board directed that the issue of differential capital structures would be a subject in this proceeding.<sup>28</sup> The Board also noted that it expected that the different risks would be reflected in different capital structures, and not on the overall cost of capital (and specifically the return on equity).<sup>29</sup>

<sup>26</sup> Transcript, Volume 6 (October 18, 2010), pg. 193, lines 15-19.

<sup>27</sup> *EB-2007-0905 Decision with Reasons* dated November 3, 2008 (the "*EB-2007-0905 Decision*") at pg. 160-161.

<sup>28</sup> *EB-2007-0905 Decision* at pg. 161.

<sup>29</sup> *EB-2007-0905 Decision* at pg. 161.

## **Good Reasons To Implement Differential Capital Structures**

Differential capital structures would reflect business risk differences and would be consistent with best practices.<sup>30</sup> Pollution Probe notes that in both the previous proceeding and this proceeding, OPG does not oppose in principle differential capital structures.<sup>31</sup> Pollution Probe also notes that one of the important benefits of implementing differential capital structures is that risk will be properly allocated and considered as part of project decisions. This consideration is important because what may appear to be a small difference becomes actually very significant given the scale of the money involved (e.g. potentially billions for new or refurbished nuclear reactors).<sup>32</sup> Otherwise, there is a bias towards accepting higher risk projects without properly considering the higher return that should accompany that risk, which in turn leads to an increase in the average overall risk of the company.<sup>33</sup>

While the setting of technology-specific capital structures involves judgment (as discussed below), the presence of judgment and a relatively small amount of ambiguity in a purely quantitative sense are not valid reasons to reject setting individual capital structures. This is because, as noted by Dr. Kryzanowski and Dr. Roberts, if the same single capital structure is used instead for different divisions that have different levels of business risk, a *greater* degree of error would be present instead. This is illustrated by the medical test analogy provided by Dr. Kryzanowski and Dr. Roberts.<sup>34</sup>

Pollution Probe notes that Ms. McShane was not asked in OPG's request for proposal to provide her opinion regarding whether OPG's capital expenditure review would be improved by using technology-specific capital structures.<sup>35</sup> As a result, the views of Dr. Kryzanowski and Dr. Roberts are the only evidence on the record on this point, and their views should be accordingly accepted.

Pollution Probe also notes it is not disputed that the nuclear division has a higher business risk than the hydroelectric division. Both sets of experts agree that the nuclear division has higher business risk than the hydroelectric division,<sup>36</sup> and they also agree the risks have not changed materially in a cumulative sense since the last proceeding.<sup>37</sup> Accordingly, given that the return on equity is to remain constant, the only way to reflect the greater risk is by increasing the equity thickness of the nuclear division relative to the hydroelectric division.<sup>38</sup> Otherwise, the Board would be finding that the two divisions have the same business risk, which is not in accordance with the evidence.

<sup>30</sup> See e.g. Exhibit M, Tab 10, pgs. 6 & 15-16.

<sup>31</sup> Transcript, Volume 11 (October 26, 2010), pg. 88, lines 23-27. See also Exhibit K11.3, Tab 3, pg. 11.

<sup>32</sup> See e.g. Transcript, Volume 12 (October 28, 2010), pg. 184, lines 10-14.

<sup>33</sup> Transcript, Volume 12 (October 28, 2010), pg. 141, lines 3-15. See also Exhibit M, Tab 10, pgs. 6 & 15-16.

<sup>34</sup> Transcript, Volume 12 (October 28, 2010), pg. 144, line 21 to pg. 146, line 7.

<sup>35</sup> Transcript, Volume 12 (October 28, 2010), pg. 29, lines 2-9.

<sup>36</sup> See Exhibit M, Tab 10, pgs. 8 & 65; Exhibit C3, Tab 1, Schedule 1, pg. 9; Transcript, Volume 12 (October 28, 2010) pg. 64, lines 21-26.

<sup>37</sup> Exhibit M, Tab 10, pg. 8; Exhibit C3, Tab 1, Schedule 1, pgs. 26 & 36; Volume 11 (October 26, 2010) pg. 68, line 24 to pg. 71, line 15.

<sup>38</sup> Transcript, Volume 12 (October 28, 2010), pg. 38, line 21 to pg. 39, line 2 and pg. 170, lines 20-23.

## ***Why The Evidence of Dr. Kryzanowski and Dr. Roberts Should Be Accepted***

Dr. Kryzanowski and Dr. Roberts submitted expert evidence about setting differential capital structures for OPG's divisions. Their methodology and analysis built upon and extended their previous expert evidence when the Board accepted their recommendation for an overall capital structure for OPG.<sup>39</sup> This kind of heuristic methodology is the methodology used by both the Board and other regulatory bodies to set capital structures.<sup>40</sup> It was used by all the experts in the previous proceeding to set OPG's capital structure, and the Board exercised judgment among the range of recommendations to ultimately accept the recommendation of Dr. Kryzanowski and Dr. Roberts regarding what OPG's capital structure should be.<sup>41</sup> There is thus no reason why the Board should not now accept this methodology to in turn set differential capital structures for each OPG division. As Dr. Kryzanowski and Dr. Roberts noted, reasonable judgment is inherently involved in making these decisions,<sup>42</sup> and Pollution Probe submits that such judgment be used here.

In terms of their actual final recommendation, Dr. Kryzanowski and Dr. Roberts recommended that the nuclear division be assigned an equity ratio of 53% and that hydroelectric division be assigned an equity ratio of 43%.<sup>43</sup> They come to this conclusion given OPG's overall capital structure of 47% equity, which the Board expected would be maintained, and given the respective rate bases of each division. Pollution Probe notes that these final recommendations are relatively close to Dr. Kryzanowski's and Dr. Roberts's initial recommendations of 40% for the hydroelectric division and 50% for the nuclear division, which were based on the respective generation capacities of each division.<sup>44</sup> Although Dr. Kryzanowski and Dr. Roberts conceded that rate bases are a better basis to determine differential capital structure in order to ensure that there is no net revenue impact given the existing overall 47% equity ratio, the reality is that both recommendations are within a reasonable range that is smaller than the ranges considered in the previous proceeding.

Pollution Probe also notes that Dr. Kryzanowski and Dr. Roberts benchmarked their recommendations to examine the reasonableness of their recommendations.<sup>45</sup> They found that their recommended differential capital structure is consistent with the credit metrics needed to obtain reasonable bond ratings on a standalone basis in the A range.<sup>46</sup> These analyses, which were not done in the previous proceeding at a divisional level, along with other comparisons indicate the reasonableness and robustness of the recommendations. In addition, financial and credit market conditions are much improved since the credit crisis (which was in close proximity

<sup>39</sup> Exhibit M, Tab 10, pg. 8. See also *EB-2007-0905 Decision* at pgs. 149-150.

<sup>40</sup> See e.g. Exhibit M, Tab 10, pg. 35-36.

<sup>41</sup> See generally *EB-2007-0905 Decision* at pgs. 134-150. See also

<sup>42</sup> See e.g. Exhibit M, Tab 10, pgs. 35-36.

<sup>43</sup> Exhibit M, Tab 10.15, Schedule 15, part (d) and Attachments 1-4. See also Transcript, Volume 12 (October 28, 2010), pg. 142, line 3 to pg. 144, line 2. See also Exhibit M, Tab 10, pgs. 66-70 for a further explanation of the calculations.

<sup>44</sup> Exhibit M, Tab 10, pgs. 8-9 and 65-66.

<sup>45</sup> See generally Exhibit M, Tab 10, pgs. 55-70 and Exhibit M, Tab 10.15, Schedule 15, part (d) and Attachments 1-4.

<sup>46</sup> Exhibit M, Tab 10.15, Schedule 15, part (d) and Attachments 1-4.

to the previous proceeding),<sup>47</sup> and the deemed equity thicknesses and allowed returns on equity for OPG's regulated assets would be "generous" relative to what would be otherwise available to the market.<sup>48</sup> Accordingly, OPG would have no issues obtaining such financing, and the recommendations are reasonable and robust.

### ***Issues With Ms. McShane's Evidence***

In terms of other evidence on this issue, Ms. McShane was the only other expert that was presented to the Board.<sup>49</sup> However, Pollution Probe respectfully submits that Ms. McShane's evidence was wanting in certain regards. First, most of the methodologies that Ms. McShane used are usually used to determine *rate of return*, not capital structure.<sup>50</sup> This is surprising given that the risk was to be reflected in the capital structure, not rate of return (which was to remain constant across the divisions). She should have thus used methodologies normally used to determine capital structure, such as she did in the previous proceeding. She also surprisingly did not use an approach employing the discounted cash flow model to determine potential capital structures,<sup>51</sup> although that would appear to be an obvious avenue to explore given the nature of her evidence both here and before. She also did not examine or use any kind of heuristic or qualitative problem-solving approach here similar to Dr. Kryzanowski or Dr. Roberts, but instead only put forward some comparisons with the S&P and Moody's guidelines.<sup>52</sup> As a result, Ms. McShane put forward that it was simply not possible to determine what the differential capital structures would be,<sup>53</sup> and Pollution Probe disagrees with this submission given the problems with her approach noted above and in Dr. Kryzanowski's and Dr. Roberts's evidence.

Regardless, Ms. McShane agrees that the nuclear division is riskier. For example, on page 9 of her evidence, she notes that:

The qualitative assessment of the relative business risks of the hydroelectric and nuclear operations supports the conclusion that *the nuclear operations face materially higher business risks than the hydroelectric operations*. [emphasis added]<sup>54</sup>

Nonetheless, Ms. McShane appears to take at face value OPG's assertion that this differential risk is accounted for in the cash flows through Monte Carlo simulations. This is despite the fact that Ms. McShane admitted that she is not familiar with Monte Carlo simulations and could not explain how the risk was reflected in the cash flows.<sup>55</sup> Another problem with this claim is that

<sup>47</sup> Transcript, Volume 12 (October 28, 2010), pg. 141, lines 19-26. See generally Exhibit M, Tab 10, pgs. 7-8 and 28-32.

<sup>48</sup> See e.g. Transcript, Volume 12 (October 28, 2010), pg. 140 and Exhibit M, Tab 10, pgs. 6, 11-13, & 62-63.

<sup>49</sup> See generally Exhibit C3, Tab 1, Schedule 1. For Dr. Kryzanowski's and Dr. Roberts's critique of Ms. McShane's evidence, please see Exhibit M, Tab 10, pgs. 19-27.

<sup>50</sup> Transcript, Volume 11 (October 26, 2010), pg. 82, line 7 to pg. 83, line 26. For a further detailed critique of Ms. McShane's approach here, please see Exhibit M, Tab 10, pgs. 21-24.

<sup>51</sup> Transcript, Volume 11 (October 26, 2010), pg. 83, line 27 to pg. 84, line 6. See also Exhibit M, Tab 10, pgs. 24-25.

<sup>52</sup> Transcript, Volume 11 (October 26, 2010), pg. 84, line 7 to pg. 85, line 15. See also Exhibit M, Tab 10, pgs. 25-26.

<sup>53</sup> Exhibit C3, Tab 1, Schedule 1, pg. 9.

<sup>54</sup> Exhibit C3, Tab 1, Schedule 1, pg. 9.

<sup>55</sup> Transcript, Volume 11 (October 26, 2010), pg. 38, line 21 to pg. 39, line 14. See also Exhibit M, Tab 10, pgs. 18-19 and Transcript, Volume 12 (October 28, 2010), pg. 146, line 24 to pg. 150, line. 27.

OPG does not actually reflect differences in the divisional risks through the key major cash flow associated with project evaluations (i.e. the cash outflows associated with the capital invested in the project being evaluated). Instead, OPG uses the same discount rate for each project (and division) instead of using differential discount rates for each project as part of the Monte Carlo simulations.<sup>56</sup> As noted by Dr. Kryzanowski, there must be *different* discount rate distributions for different projects in order to capture the different risks; simply running a Monte Carlo simulation with the *same* discount rate for all projects does not account for differences in business risks.<sup>57</sup>

Ms. McShane also noted in her evidence that the equity thickness for hydro should be no less than 45%,<sup>58</sup> which is not that different from Dr. Kryzanowski's and Dr. Roberts's ultimate recommendation of 43% for hydro. Ms. McShane also noted that the equity thickness for hydro had to be higher than 40%,<sup>59</sup> which is also consistent with Dr. Kryzanowski's and Dr. Roberts's recommendation. Thus, unlike the previous proceeding, the proposed thicknesses appear to be relatively close and there are only two expert reports on the issue. She also agrees that if nuclear is riskier than hydro and the return on equity is fixed, then the respective capital structures have to be different.<sup>60</sup> She also agrees that the differential equity ratios need to be set in such a way so that "you end up at the end of the day with the dollars of return that required to have 9.85 ROE and 47 percent equity",<sup>61</sup> which is exactly what Dr. Kryzanowski's and Dr. Roberts's recommendations do. The Board should accordingly exercise its judgment, as it did before, and set different equity thicknesses for the nuclear and hydro divisions in accordance with the recommendations of Dr. Kryzanowski and Dr. Roberts.

### ***Conclusion for Differential Capital Structures***

Given the evidence and all of the above, Pollution Probe submits that the Board ought to prefer the view of Dr. Kryzanowski and Dr. Roberts and implement differential capital structures accordingly. This would reflect the higher relative risk associated with OPG's nuclear division, and their methodology and analysis provides a reasonable and appropriate foundation for differential capital structures. Further, until the Board is willing to revisit OPG's overall capital structure of 47%, Dr. Kryzanowski's and Dr. Roberts's recommendation of 53% equity for the nuclear division and 43% for the hydroelectric division would result in no net difference to the overall capital structure given each division's current rate base.

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<sup>56</sup> Transcript, Volume 11 (October 26, 2010), pg. 45, lines 14-19.

<sup>57</sup> Transcript, Volume 12 (October 28, 2010), pg. 146, line 24 to pg. 150, line. 27.

<sup>58</sup> Transcript, Volume 12 (October 28, 2010), pg. 66, lines 18-20.

<sup>59</sup> Transcript, Volume 12 (October 28, 2010), pg. 127, lines 18-20.

<sup>60</sup> Transcript, Volume 12 (October 28, 2010), pg. 38, line 21 to pg. 39, line 2.

<sup>61</sup> Transcript, Volume 12 (October 28, 2010), pg. 35, lines 25-28.

## Costs

Pollution Probe requests that it be awarded 100% of its reasonable costs of participating in this proceeding. Pollution Probe notes that it is a registered charity with no pecuniary interest in the outcome of OPG's application, and Pollution Probe submits that its participation and its retained experts assisted the Board with understanding key issues in this proceeding.

ALL OF WHICH IS RESPECTFULLY SUBMITTED

December 6, 2010



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