

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”).

POLLUTION PROBE

**SUPPLEMENTARY CROSS-EXAMINATION
REFERENCE BOOK FOR OPG PANEL 10**

October 29, 2010

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ONTARIO ENERGY BOARD

FILE NO.: EB-2010-0008

VOLUME: 11

DATE: October 26, 2010

BEFORE:	Cynthia Chaplin	Presiding Member and Vice-Chair
	Cathy Spoel	Member
	Marika Hare	Member

1 these numbers feed into the calculation of the LUEC.

2 [Witness panel confers]

3 MR. PUGH: Yes.

4 MR. ALEXANDER: And I think this question would be
5 directed to Ms. McShane, given her expertise.

6 Would the market perceive the proposed Darlington
7 rebuild project to be more risky than the Bruce project?

8 MS. McSHANE: No.

9 MR. ALEXANDER: Why not?

10 MS. McSHANE: Well, I would -- I would say that the
11 major reason that it wouldn't view it to be more risky than
12 the Bruce project is because the Bruce project is not a
13 regulated project.

14 If the Darlington project is a regulated project, then
15 regulation brings to the project a degree of protection
16 that a merchant plant doesn't have. And I think the Board
17 well recognized in the last case that merchant generation
18 is a higher risk animal than regulated generation.

19 I would point you -- perhaps this might be informative
20 in this regard.

21 If you look at the response to -- it's GEC's response
22 to Energy -- no, sorry.

23 It is GEC's response to Staff Interrogatory No. 001.
24 And in that interrogatory, Board Staff asked Mr. Chernick
25 to file a copy of a report. The report was entitled, "The
26 Economics of U.S. Nuclear Power: Natural Gas Prices and
27 Loan Guarantees Are Key to Viability".

28 And the thing that I found interesting in that report,

1 and it is -- I don't know if you want -- if anybody wants
2 to pull it up and look at it, but there was a table 1 in
3 this report which had a comparison of -- it was a
4 comparison of a nuclear plant versus a gas plant. To be
5 sure, not necessarily nuclear versus hydroelectric.

6 But the interesting thing was that when it looked at
7 the capital structure and cost of equity and cost of debt
8 for a nuclear plant, it gave two different scenarios, if
9 you will.

10 And capital structure, debt equity in the first was
11 80/20, and then 50/50 was the second and the cost of equity
12 was 15 or 10.

13 And the difference between the two was that in the
14 scenario with the higher cost of equity and the lower debt
15 ratio, the assumption was that the plant was unregulated,
16 and in the other scenario the assumption was that the plant
17 was regulated.

18 And so the costs of debt and equity in that regulated
19 scenario were lower than the merchant plant.

20 MR. ALEXANDER: So would you characterize -- would the
21 market perceive the Darlington rebuild project to be the
22 same risk or less risk, in your opinion?

23 MS. McSHANE: Than Bruce?

24 MR. ALEXANDER: Than Bruce, in your view.

25 MS. McSHANE: I would say that in my view, it would be
26 of less risk than Bruce.

27 MR. ALEXANDER: And that's for the reasons that you
28 just stated?

1 MS. McSHANE: Because of the regulatory framework that
2 would exist around Darlington.

3 MR. ALEXANDER: My understanding is that with respect
4 to the Bruce -- sorry, with respect to the Darlington
5 refurbishment, the return on equity and the capital
6 structure that is proposed are not project-specific, is not
7 project-specific analysis or numbers; correct? Same with
8 the discount rate; is that fair?

9 MS. McSHANE: Sorry, could you repeat that, please?

10 MR. ALEXANDER: It is my understanding that the --
11 that for the Darlington refurbishment project, OPG is not
12 using project-specific capital structure or return on
13 equity, or discount rate. It is using the standard numbers
14 that it uses across OPG as an institution; is that fair?

15 I think Mr. Pugh might be able to answer that one.

16 MR. PUGH: That is correct.

17 MR. ALEXANDER: Okay. And Ms. McShane, I presume your
18 view remains the same, even though there is a significant
19 additional cost associated with the Darlington
20 refurbishment, and that there is a significant greater
21 scope of work associated with the Darlington refurbishment
22 compared to the Bruce plant, the Bruce refurb; is that
23 fair?

24 MS. McSHANE: I haven't studied the scope. I mean, my
25 view is based on the risk, the risk mitigation that is
26 afforded by regulation.

27 MR. ALEXANDER: So is it your view, does the size, the
28 amount of capital required or the scope of the work, that



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BEFORE: Cynthia Chaplin Presiding Member and Vice-Chair
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1 MR. POCH: All right. Turning to page 18 of my
2 materials, that is where -- there and a number of places in
3 your evidence is where you point to this 6 to 8 cents a
4 kilowatt-hour as the LUEC for a refurbished Darlington. I
5 take it, first of all, that is just the LUEC. That doesn't
6 include any sunk costs. That is just the LUEC of the cost
7 decisions going forward and the costs you would incur in
8 the future?

9 MR. ROSE: LUEC is a going-forward approach; correct.

10 MR. POCH: Right. When you did your analyses, the six
11 is the -- the six to eight is the medium to very high
12 confidence range? Have I interpreted that correctly? In
13 fact, if you just look at page 20 of my materials, there is
14 a graphic there.

15 MR. ROSE: So I would suggest that six to seven is our
16 very high -- is our medium to very high confidence.
17 Eight cents is extremely high.

18 MR. POCH: And your graphic suggests that at 8 cents
19 you pretty much have 100 percent confidence you can do it
20 for 8 cents or less?

21 MR. ROSE: Fairly close, as our Monte Carlo analysis
22 does look at the tails and the tail can go on, you know,
23 indefinitely. But it is a very small, you know, percentage
24 that it would. It basically says here that, you know,
25 99.78 percent chance that this project is going to come in
26 under 8 cents.

27 MR. POCH: Right. So if your median number is around
28 seven, that means you've basically got about -- you've got

1 close to 100 percent confidence, as you say, that you are
2 not going to have more than about a 15 percent cost
3 overrun?

4 That's what the -- when we add all of your ranges up,
5 do your -- run your probabilistic Monte Carlo assessment,
6 for the risks you covered, the bottom line is median
7 estimate around 7 cents, 100 percent -- pretty much
8 100 percent, 99 percent plus confidence that you are not
9 going to have a cost overrun above that 7 cents by more
10 than 1 cent or roughly 15 percent?

11 MR. ROSE: I would just clarify the first point.

12 Our median estimate is around, is around, in this
13 chart, 5.8 cents. Our high level estimate at 95 percent is
14 at seven.

15 MR. POCH: I'm sorry. I thought you told me a minute
16 ago the medium was seven.

17 MR. ROSE: No. I said the medium to very high was
18 between six and seven.

19 MR. POCH: Now, Mr. Alexander, I won't take you to it
20 again, because you were taken to it yesterday, but you were
21 taken to this history of nuclear projects in Ontario coming
22 in at, on average, two-and-a-half times their original
23 budget estimates.

24 How do you reconcile this very high level of
25 confidence that you are coming in maybe a third above your
26 planning number, at worst?

27 MR. REINER: You need to sort of look back at history,
28 I guess, and also extract from that the lessons learned