Scott Pollock
T: 613-787-3541
spollock@blg.com

Borden Ladner Gervais LLP
World Exchange Plaza
100 Queen Street, Suite 1300
Ottawa ON K1P 1J9
Canada
T 613-237-5160
F 613-230-8842 / F 613-787-3558 (IP)
blg.com

Borden Ladner Gervais

File No. 339583.000281

August 31, 2021

By electronic filing

Christine Long
Registrar and Board Secretary
Ontario Energy Board
2300 Yonge Street, 27th floor
Toronto, ON M4P 1E4

Dear Ms. Long

**Re: Ontario Power Generation Inc. ("OPG")
2022-2026 Payment Amounts Application
Board File #: EB-2020-0290**

Pursuant to Procedural Order #4 dated July 19, 2021, please find enclosed the written submissions, on behalf of our client, Canadian Manufacturers & Exporters ("CME").

Yours very truly

Scott Pollock

c. Evelyn Wong (OPG)
Aimee Collier (OPG)
Charles Keizer (Torys LLP)
Crawford Smith (Lax O'Sullivan Lisus Gottlieb LLP)
EB-2020-0290 Intervenors
Alex Greco (CME)

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EB-2020-0290

ONTARIO ENERGY BOARD

Ontario Power Generation Inc.

Application for payment amounts for the period
from January 1, 2022 to December 31, 2026

SUBMISSIONS OF CANADIAN MANUFACTURERS & EXPORTERS ("CME")

August 31, 2021

Scott Pollock
Borden Ladner Gervais LLP
Barristers & Solicitors
100 Queen Street
Suite 1300
Ottawa, ON K1P 1J9

Counsel for CME

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1.0 INTRODUCTION

1. These submissions are made on behalf of Canadian Manufacturers & Exporters ("**CME**").

2. CME's members, which include over 400 Ontario based companies, operate energy intensive businesses. Their continued competitiveness in their respective industries is tied directly to how much energy costs them. As a result, the costs of Ontario Power Generation's ("**OPG**") D2O Storage Project and the potential inclusion of small modular reactor ("**SMR**") costs into the Capacity Refurbishment Variance Account ("**CRVA**") are of paramount importance to CME's members.

3. OPG submitted its application for its 2022-2026 payment amounts on December 31, 2020. In its application, OPG requested approval for nuclear payment amounts of between $101.51/MWh - $120.67/MWh between 2022-2026.[1] OPG also requested a flat hydroelectric payment amount pursuant to O. Reg. 53/05.[2]

4. Pursuant to Procedural Order #1, issued on February 17, 2021, the parties engaged in a full hearing process, including a presentation by OPG, interrogatories, a refusals consultation, and a settlement conference.

5. The parties reached a proposed settlement on most of the outstanding issues during the settlement conference held from June 7-14, 2021.[3] Three issues were left unsettled, two of which were to be dealt with through an oral hearing, and one issue, rate smoothing, to be determined after the oral hearing through a separate process.[4]

6. The two issues dealt with at the oral hearing, to which these submissions relate, are the proposed in-service additions for the heavy water storage and drum handling facility (the "**D2O Project**"), and the recording of costs related to SMRs at the Darlington site to the Nuclear Development Variance Account ("**NDVA**").

[1] EB-2020-0290, Exhibit A1, Tab 3, Schedule1, p. 12.
[2] EB-2020-0290, Exhibit A1, Tab 3, Schedule1, p. 2.
[3] EB-2020-0290, Procedural Order #4, July 19, 2021, p. 1.
[4] EB-2020-0290, Transcript, Volume 3, p. 124.

7. CME submits that the Ontario Energy Board ("**OEB**" or the "**Board**") should disallow all amounts for the D2O Project over and above OPG's 2013 First Execution Release Business Case. The total disallowance would be approximately $400 million.

8. With respect to SMRs, CME does not oppose OPG's recording SMR related amounts in the Nuclear Development Variance Account ("**NDVA**"). However, OPG should consult with customers regarding their needs and preferences with respect to SMR development.

2.0 THE D20 PROJECT

2.1 Description of the D20 Project and Succeeding Business Cases

9. According to OPG's evidence, the D2O Project was undertaken to:

   (a) Provide storage for tritiated heavy water and processing capability for the removal of heavy water from Darlington units undergoing refurbishment;

   (b) To assist with heavy water management during normal operations; and

   (c) To provide additional storage to improve the functionality of OPG's tritium removal facility ("**TRF**").[5]

10. The drivers behind the D2O Project were two-fold:

   (a) to meet heavy water storage needs for the Darlington Refurbishment Project. Approximately 1,500 m^3 of the storage provided by the D2O project was intended to store heavy water from the primary heat transport and moderator systems of two Darlington units undergoing refurbishment simultaneously.[6]

   (b) to use 600 m^3 of capacity to facilitate flushing and other refurbishment support tasks, and improving Darlington's TRF operations.[7]

[5] EB-2020-0290, Exhibit D2, Tab 2, Schedule 10, p. 1.
[6] EB-2020-0290, Exhibit D2, Tab 2, Schedule 10, p. 8.
[7] EB-2020-0290, Exhibit D2, Tab 2, Schedule 10, p. 8.

11. In order to house the necessary quantities of heavy water simultaneously, OPG decided to build a facility to house 25 interconnected stainless steel nuclear grade storage tanks.[8] The tanks are held in a seismic dyke.[9] OPG also constructed a drum handling facility, which cleans and stores the heavy water drums.[10]

12. OPG completed various components of the D2O Project in the years prior to this application as follows:[11]

2014	$14,600,000.00
2016	$160,000,000.00
2019	$320,900,000.00
2020	$13,800,000.00
Total	$509,300,000.00

13. The $14.6 million completed in 2014 has already been added to rate base. Accordingly, of the $509.3 project cost, OPG is requesting the Board include the remaining $494.7 in OPG's rate base in this proceeding.[12]

14. The D2O was originally forecast to cost approximately $110 million. However, the project went through significant changes in proposed cost, scope and schedule. In total, there were numerous business cases, which included the following:

    (a) Full Release Definition Business Case Summary – Released in June, 2012, the full release business case summary estimated that the project would cost $108.1 million;[13]

[8] EB-2020-0290, Exhibit D2, Tab 2, Schedule 10, p. 18.
[9] EB-2020-0290, Exhibit D2, Tab 2, Schedule 10, p. 18.
[10] EB-2020-0290, Exhibit D2, Tab 2, Schedule 10, p. 28.
[11] EB-2020-0290, Exhibit D2, Tab 2, Schedule 10, p. 12, Chart 2.
[12] EB-2020-0290, Exhibit D2, Tab 2, Schedule 10, p. 12.
[13] EB-2020-0290, Exhibit D2, Tab 2, Schedule 10, p. 107.

(b) Partial Release Execution Business Case Summary – Released in August, 2012, the Partial release execution business case summary estimated that the project would cost $108.1 million;[14]

(c) Full Release Execution Business Case Summary – Released in May, 2013, the Full Release Execution Business Case Summary projected the cost of the D2O Project to be $110 million.[15]

(d) Superceding Release Execution Business Case – After the delivery of the first full release execution business case summary, OPG terminated the EPC contract with Black & McDonald, the contractor chosen to the complete the D2O project. OPG engaged another contractor, CanAtom to complete the project. As a result of the change in contractors, OPG reviewed the project cost and projected that the D2O project would cost $381 million.[16] OPG determined that the increased costs were attributable to scope creep, the inclusion of costs to treat tritiated soil and water, which OPG knew about but told bidders not to include in their bids,[17] and the change to a standalone building rather than an extension of the TRF.[18]

(e) The 2018 Superseding Release Execution Business Case Summary – Released in 2018, the 2018 Superseding Release Execution Business Case Summary projected that the D2O project would cost $498.5 million. In addition to continued issues with scope creep and a underestimation of cost, the 2018 Superseding Release Execution Business Case Summary determined that costs increased because of:[19]

i) increased interest due to schedule extension;

[14] EB-2020-0290, Exhibit D2, Tab 2, Schedule 10, Attachment 2n, p. 2.
[15] EB-2020-0290, Exhibit D2, Tab 2, Schedule 10, p. 108.
[16] EB-2020-0290, Exhibit D2, Tab 2, Schedule 10, p. 109.
[17] EB-2020-0290, Transcript, Volume 2, pp. 134-135
[18] EB-2020-0290, Exhibit D2, Tab 2, Schedule 10, p. 110.
[19] EB-2020-0290, Exhibit D2, Tab 2, Schedule 10, pp. 111-112.

ii) increased OPG project management costs due to schedule extension and the transition of the project to a new contractor; and

iii) costs incurred by OPG when it acted as the general contractor.

15. After the 2018 Superseding Release Execution Business Case Summary, even further costs were added to the project, some of which were absorbed by CanAtom, and some by OPG.[20]

16. Accordingly, the D2O Project, which was originally projected to cost $110 million, ended up costing nearly $600 million, of which OPG seeks to add $509.3 million to rate base.[21] This amount represents an overage of approximately $400 million, or nearly 400% of the original project cost.

2.2 The Test for Inclusion Into Rate Base

17. In *Ontario (Energy Board) v. Ontario Power Generation Inc.*, the Supreme Court of Canada determined that the OEB could use a variety of analytical tools to assess the justness and reasonableness of a utility's proposed payment amounts.[22]

18. The prudent investment test is one tool that the Board could employ to determine whether the amounts spent by OPG on the D2O project should be added to rate base. It is not bound to use the prudent investment test however, and could use other analytical tools.

19. In order for a utility's decision to be prudent, it must be reasonable under the circumstances that were known or ought to have been known by the utility at the time the decision was made.[23] The prudence review is a retrospective factual inquiry and the evidence must be concerned with the facts that could or did enter into the decision at the time.[24]

[20] EB-2020-0290, Transcript, Volume 2, pp. 124-125.
[21] The other approximately $70 million being absorbed by CanAtom.
[22] *Ontario (Energy Board) v. Ontario Power Generation,* 2015 SCC 44 at para. 103.
[23] *Enbridge Gas Distribution Inc. v. Ontario (Energy Board)*, 2006 CarswellOnt 2106 at para. 10.
[24] *Enbridge Gas Distribution Inc. v. Ontario (Energy Board)*, 2006 CarswellOnt 2106 at para. 10.

20. The utility does not benefit from the presumption of prudence. In the *OPG* case, the Supreme Court found that a presumption of prudence runs contrary to the statutory scheme of the *Ontario Energy Board Act*, *1998*, S.O. 1998, c. 15, Sched B.[25] Accordingly, under section 78.1(6), OPG has the burden of proof to demonstrate that payment amounts are just and reasonable, including amounts related to rate base additions.

21. While OPG correctly articulated the prudent investment test in its argument-in-chief, it has incorrectly applied it to the circumstances of the D2O project.

22. While CME agrees that the adjudicator must be cautious not to apply hindsight in making determinations about prudence, the prudent investment test properly takes into account both what the utility knew and what it ought to have known at the time that a decision was made. The analysis should not be limited to what the utility actually knew if it could have taken reasonable steps to better inform itself at the relevant time.

23. OPG's narrowed application of hindsight in a prudence review is apparent in Mr. Reiner's evidence:

> ***"So if looking backwards, hindsight, now that we know the exact outcomes, one might argue, well, you made this decision and you should have made that decision. But we need to put ourselves in the shoes of what we <u>knew</u> at the time that decisions were made, the challenges were encountered, and the actions we took at that point in time.***
>
> ***I would argue the actions were all the right actions. They were prudent decisions and they were prudent corrective actions that were taken with the information that we <u>knew</u> at the time. Hindsight, because we now know the exact outcomes, hindsight might lead you to conclude otherwise. But we've got to stay -- I'm trying to keep us inside what did we <u>know</u> at the time decisions were made."***[26] **(emphasis added)**

24. If the test only included what the utility knew, and not what it should have known, utilities could justify any decision, regardless of its imprudence, on the basis of ignorance. The

[25] *Ontario (Energy Board) v. Ontario Power Generation,* 2015 SCC 44 at para. 79.
[26] EB-2020-0290, Transcript, Volume 2, pp. 94-95.

purpose of including what the utility ought to know is to engage an objective, reasonable standard against which the actions of the utility are measured.

25. In the context of what OPG knew or ought to have known, the evidence on the record in this case demonstrates numerous imprudent decisions on OPG's part, which caused the cost of the D2O project to increase from $110 million to $510 million.

2.3 OPG's Management of the D2O Project

26. OPG attempted to argue that it did not mismanage the D2O project, despite the significant increase in cost and schedule. In his evidence, Mr. Reiner testified that the cost of the D2O facility was always going to cost $510 million, and it would have always taken OPG 8 years to construct.[27] The cost did not change because of OPG's management practices, or imprudence, it simply became clearer that $510 million was the "true" cost of the facility.[28]

27. OPG's contention is not supported by the evidence. Accordingly, CME submits that it is appropriate for the Board to disallow the entire amount requested by OPG beyond the first execution business case of $110 million.

2.3.1 <u>The D2O Project Experience Schedule Delays and Increased Costs as a Result of OPG's Contractor Selection</u>

28. OPG's imprudence began almost from the project's inception. In its solicitation for the D2O Project, OPG determined that price would be worth 50% of the total available points. The other 50% of the score was provided for:

(a) technical expertise;

(b) risk management plans; and

(c) proposal quality.[29]

[27] EB-2020-0290, Transcript, Volume 2, pp. 130-131.
[28] EB-2020-0290, Transcript, Volume 2, p. 130 and 131.
[29] Auditor General of Ontario, Chapter 3, Section 3.02, "Darlington Nuclear Generating Station Refurbishment Project", p. 155.

29. OPG received bids from two contractors, Black & McDonald and a second contractor. Black & McDonald's proposal had the lowest price, and therefore scored 50/50 on the price.[30] Black & McDonald however, only scored 32/50 for the technical criteria.[31] Its experience with a project like D2O was limited.[32] It did not have experience with nuclear generating stations' heavy water storage facilities.[33]

30. In contrast, the other contractor scored a nearly perfect 49/50 on the technical proposal. It did have experience with heavy water storage projects. OPG also noted that the other contractors' proposal was "more thoroughly thought out".[34] The other contractor's bid however, was more expensive, and only scored 25/50 on the price. OPG chose Black & McDonald despite its relative lack of technical qualifications.[35]

31. Soon after the contract was awarded to Black & McDonald, it encountered serious issues on the project. As a result, OPG terminated its contract with Black & McDonald in October of 2014. In their termination letter, OPG outlined that Black & McDonald's failings went beyond simply estimating the "true" cost of the project and extended to how the project was being executed:

> ***"As a result of B&M's failure to estimate, schedule <u>and carry out</u> the project properly, the contract value is now forecast to exceed $300 million…***
>
> ***B&M's estimating, scheduling <u>and performance</u> of the D2O Project falls well below the standard of care normally exercised by professional contractors having specialized knowledge and expertise in performing work of a similar nature, scope and complexity to the D2O Project."[36]*** **(emphasis added)**

32. Subsequently, OPG replaced Black & McDonald in July of 2015 through another competitive bidding process. In this process, OPG determined that the contractors'

[30] Auditor General of Ontario, Chapter 3, Section 3.02, "Darlington Nuclear Generating Station Refurbishment Project", p. 155.
[31] Auditor General of Ontario, Chapter 3, Section 3.02, "Darlington Nuclear Generating Station Refurbishment Project", p. 155.
[32] Auditor General of Ontario, Chapter 3, Section 3.02, "Darlington Nuclear Generating Station Refurbishment Project", p. 155.
[33] Auditor General of Ontario, Chapter 3, Section 3.02, "Darlington Nuclear Generating Station Refurbishment Project", p. 155.
[34] Auditor General of Ontario, Chapter 3, Section 3.02, "Darlington Nuclear Generating Station Refurbishment Project", p. 155.
[35] Auditor General of Ontario, Chapter 3, Section 3.02, "Darlington Nuclear Generating Station Refurbishment Project", p. 155.
[36] EB-2020-0290, Exhibit L, D2-02-SEC-096, Attachment 1, p. 4 of 4.

technical ability should make up the majority of the points awarded on the bid, and made technical criteria worth 75% of the total score, and price worth 25%.[37]

33. OPG attempted to justify its failure to appropriately weight the technical criteria in its first solicitation on two bases:

   (a) That changing the weighting would have led to different bids being submitted, therefore the second bidder would not necessarily have been chosen; and

   (b) It was necessary to select a contractor based on price prior to understanding the scope of the project.

34. Neither justification holds up to scrutiny.

35. In his evidence, Mr. Reiner testified that if OPG changed the weighting criteria in the RFP to favour technical qualifications that it would not have necessarily selected the other, more technically proficient contractor. Mr. Reiner explained that this was because in the hypothetical world, the bidders would have been aware of the different weighted criteria, and would have changed their bids accordingly.[38]

36. CME agrees that bidders would have known to emphasize the technical criteria of their bids if the solicitation awarded more points in that area, but submits this simply demonstrates OPG's imprudence. If OPG weighted the evaluation of submissions properly, by making technical competence more meaningful, it would have led either to the more technically proficient contractor being selected, or it would have caused Black & McDonald to spend more time and effort understanding the technical requirements of the project prior to their selection.[39]

37. However, because of OPG's choices, Black & MacDonald was chosen without the benefit of having spent additional time and resources preparing the technical portion of their bid.

[37] Auditor General of Ontario, Chapter 3, Section 3.02, "Darlington Nuclear Generating Station Refurbishment Project", p. 155.
[38] EB-2020-0290, Transcript, Volume 3, p. 13.
[39] The Auditor General noted that OPG determined that Black & McDonald's proposal was not as well thought out as the other contractor's. See footnote 33.

This compounded Black & McDonald's lack of experience in this area and ensured that the D2O project would suffer increased costs and schedule delays.

38. Mr. Reiner claimed that it was necessary for OPG to select a contractor prior to understanding the full scope of the D2O project since the contractor was required to complete engineering and design. He claimed, OPG did not "jump the gun" and select a contractor too early in the process.[40]

39. However, when asked in cross-examination why price was weighted as a component at all, given OPG's uncertainty regarding the scope, cost or schedule, Mr. Reiner responded that the price is a necessary component because it:

> ***"[I]ncludes management of the project, the overall effort to oversee it. There's many aspects associated with it. The numbers of people, the efficiency in how the work gets executed."***[41]

40. CME disagrees. There is no value to according the price any weight in a solicitation without a firm understanding of what the project entails. Mr. Reiner is correct, the price includes the cost of management of the project, oversight of personnel, and the work execution efficiency, but they cannot be known without knowing the <u>scope</u> of the work you are asking the contractor to complete.

41. This fact is simply illustrated: If the Board received quotes to build a two-storey, three-bedroom house, it would come as no surprise when those estimates have no bearing on how much it costs to build a three-storey, seven-bedroom mansion.

42. Without a firm understanding of the scope of the project, there is no value in the price quote. The original price quotation is quickly drowned in a sea of increased costs and schedule delays. This is especially true when, as OPG did, you do not require a fixed price contract, thereby shifting the risk of cost overruns onto the contractor.[42]

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[40] EB-2020-0290, Transcript, Volume 2, p. 128.
[41] EB-2020-0290, Transcript, Volume 2, p. 129.
[42] EB-2020-0290, Exhibit K2.1, p. 33.

43. OPG's decision to award the original contract to Black & McDonald was imprudent. As discussed in section 2.2, it is not sufficient to determine whether OPG knew, in 2012, that the D2O facility would need significant reworks and greater technical ability than what Black & McDonald could provide. The question is whether OPG knew or should have known that a facility that required significant nuclear-grade engineering, required significant technical competence of its contractor.

44. CME submits that OPG knew or should have known. This is especially true after OPG learned of Bruce Power's experience with a smaller project to add heavy water storage at its own facility. Bruce Power's project experienced cost overruns, schedule delays and an external investigation.[43] OPG should have reviewed Bruce Power's experience, and learned from its mistakes.

45. OPG did not do so, and it failed to award the contract to the more technically competent contractor. Given what OPG knew or ought to have known, OPG's decisions constitutes imprudent management, and warrants the disallowance of the D2O Project's costs over and above the first full execution business case.

2.3.2 OPG's P&M Group Were Not Up to Managing the D2O Project

46. Exacerbating OPG's imprudence selecting a contractor is the fact that OPG's Projects and Modifications Group ("**P&M Group**") was not prepared to manage a project as demanding and complex as the D2O Project.

47. As noted in the Auditor General's report, project management of the D2O Project was given to the P&M group, rather than the Darlington Refurbishment Group at OPG. The P&M group had historically been leveraged for smaller scale and routine projects, like replacing air conditioning units.[44]

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[43] EB-2020-0290, Exhibit D2, Tab 2, Schedule 10, p. 42.
[44] Auditor General of Ontario, Chapter 3, Section 3.02, "Darlington Nuclear Generating Station Refurbishment Project", p. 156.

48. In contrast, the Darlington Refurbishment Group included five senior managers with experience with the Point Lepreau Nuclear Generating Station refurbishment.[45]

49. Despite Black & McDonald's lack of experience on heavy water storage projects, OPG determined that it would engage in an "Engineering, Procurement, and Construction" contracting model whereby the contractor is obliged to deliver a completed facility to the owner as a turn-key solution. Moreover OPG elected not to engaged in a fixed price EPC contract, which shifted the risk of overages to the contractor, but instead a "cost reimbursable target price" where only part of the contractor's fee was at risk if there were overages.[46]

50. The P&M group decided to take a "hands-off" management approach. According to OPG's auditors, this caused "cascading management failures and contractor performance issues", including scope creep, an inability to manage risks, and additional costs and delays.[47] OPG's independent auditor found that the P&M Group was "completely overwhelmed" trying to manage the campus plan projects, including the D2O.[48] As a result, the P&M Group: [49]

    (a) Wrongly assumed that the contractors understood the scope of the basis of performance specifications that outlined initial requirements;

    (b) Used inexperienced project managers;

    (c) Allowed stakeholders to make scope changes long after the conceptual design period ended;

    (d) Accepted poor schedules and cost estimates by the contractors with vetting or challenging them; and

    (e) Failed to report accurately or in a timely way to senior management.

[45] Auditor General of Ontario, Chapter 3, Section 3.02, "Darlington Nuclear Generating Station Refurbishment Project", p. 156.
[46] EB-2020-0290, Exhibit K2.1, p. 33.
[47] EB-2020-0290, Exhibit K2.1, p. 29.
[48] EB-2020-0290, Exhibit K2.1, p. 29.
[49] EB-2020-0290, Exhibit K2.1, p. 33.

51. Moreover, the independent auditor found that the P&M Group had a cavalier approach to risk:

> ***"[A]ll P&M's identification of risks is a "check-the-box" activity due the fact that having a list of risks is a prerequisite to obtaining a funding release. P&M does not actively manage its on-going risks as a part of an effective risk management program. As an example, the risk sections of the D20 and AHS BCSs consist of lists of potential risks and some evaluation of their nature, but it is not apparent that these risks in any way influenced the calculation of these projects' contingency, nor are there any regular reviews or updates of these risks until required to do so in order to pass a gate and obtain a funding release. Once a project obtains full funding for execution, very little, if any, attention is paid to day-to-day risk management, including the ongoing identification of new risks and opportunities…"***[50]

52. Once again, to determine if OPG's actions were prudent, the question is whether or not OPG knew, or ought to know that its P&M Group could not manage the D2O project successfully. CME submits that OPG knew or ought to have known. In this regard:

(a) OPG knew or ought to know that the P&M Group did not have experience with projects of this scope and complexity;

(b) OPG knew or ought to know that the P&M Group didn't have experience with EPC contracts or the allocation of risk between OPG and the contractors for this project;

(c) OPG knew or ought to know that the target price contract only shifted risk of overages in part to Black & McDonald;

(d) OPG knew or ought to know that Black & McDonald had limited experience with heavy water storage projects, and had much less experience than the other bidder; and

(e) OPG's gross underestimation of the cost of the project was part of a "deliberate management strategy" where contractors were told to reduce their bid prices for known contingencies despite the extreme immaturity of the project definition.[51] Accordingly, OPG knew it was severely underestimating the cost of the project.

[50] EB-2020-0290, Exhibit K2.1, p. 35.
[51] EB-2020-0290, Exhibit K2.1, p. 34.

53. Despite its knowledge, OPG allowed the P&M Group to take a “hands-off” approach, failed to manage Black & McDonald, and allowed the project to spiral out of control with extra scope, cost and schedule delays.

54. Accordingly, based on what OPG knew or ought to have known, CME submits that OPG’s decisions with respect to its management of the project and the contractors were imprudent, and warrant the disallowance of all costs beyond the first full execution business case summary.

2.3.3 <u>OPG Prudence is Not Dependent on CanAtom’s Willingness to Absorb Some of the Project Cost</u>

55. In his evidence, Mr. Reiner indicated that the D2O project is distinguishable from other campus plan projects, where the Board determined a significant disallowance was justified, in part because OPG is not asking for the full cost of the D2O project to be added to rate base.[52] Approximately $70 million of the $580 million cost of the project was absorbed by CanAtom.[53]

56. However, the fact that CanAtom absorbed approximately $70 million of the total cost is irrelevant to determining if the $510 million that OPG incurred to build the project was prudent or not. As previously outlined, the prudence of its expenditures depend on what it knew or ought to have known at the time of their decisions. It does not depend on whether there were additional costs even further beyond OPG’s original estimates which were not absorbed by OPG.

2.4 Increased Scope and Imprudent Management are Not Mutually Exclusive

57. As previously outlined, OPG’s position on this issue is that there was no mismanagement, it was simply the case that the D2O facility’s “true” cost was being discovered. OPG’s

[52] EB-2020-0290, Transcript, Volume 2, p. 133.
[53] EB-2020-0290, Transcript, Volume 2, pp. 124-125.

argument rests on one central pillar: that increased scope is mutually exclusive with imprudent management.

58. This contention is false. Increased scope is often a symptom of imprudent management. In this regard:

(a) Scope creep undermined the comparison of the D2O project to alternative solutions, depriving ratepayers of cheaper alternatives; and

(b) Scope creep continued to add cost and schedule delay to the project, such that major milestones were not completed in time to be used for the beginning of the Darlington Refurbishment Project, leading to even more costs and risks to ratepayers and the public.

59. Burns & McDonnell and Modus Strategic Solutions Canada (BMcD/Modus), OPG's auditors for the D2O Project, illustrate how OPG's mismanagement of the scope led to a failure to effectively evaluate other alternatives. While the discussion was with respect to the Auxiliary Heating System Project, BMcD/Modus made it clear that their comments were applicable to the D2O project as well:

> ***"This lack of accurate reporting has deprived senior management and the Board the option of revisiting the original BCS analysis in order to determine if building a new AHS facility continues to be the preferred option—and if not, change course…***
>
> ***D2O Storage provides a very similar example at a much higher overall cost."***[54]

60. In its original review, OPG identified four alternatives to meets its operational needs, as follows:

(a) A stand alone building;

(b) Additional storage in an existing structure;

[54] EB-2020-0290, Exhibit K2.1, p. 36. See also their conclusion in the Q2 2014 audit report, where they state "OPG should also examine other options in light of the overruns on these projects, as less permanent solutions that were narrowly rejected in the upfront BCS may now prove to be more economical solutions. At a minimum, we recommend OPG examine and parse the costs associated with non-Refurbishment scope that was added by OPG's other stakeholders and consider capitalizing those costs separately from Refurbishment for purposes of future rate recovery." EB-2020-0290, Exhibit K2.1, p. 39.

(c) Construction of a refurbishment only storage; and

(d) Construction of a drum warehouse.[55]

61. At the time of the 2013 Execution Release Business Case Summary, OPG estimated the alternatives that it did not select would cost approximately $48, $119 and $84 million respectively.[56]

62. Moreover, in April of 2011, OPG held a value engineering workshop, which examined other potential sites for the project and compared the costs to preferred solution. According to OPG's interrogatory responses, the alternatives considered at the workshop had an 'order of magnitude' cost estimated at between "$150 and $167 million".[57]

63. While it is impossible for CME to determine based on the evidence on the record whether the alternative projects could have been delivered with costs equivalent to OPG's estimation, all of the alternatives listed were estimated at costs that were significantly lower than the final cost of the D2O Project. As a result of OPG's poor understanding of the requirements of the D2O Project, OPG deprived itself of the opportunity to compare the "true" costs of the facility against other alternatives, and perhaps choose other solutions to meet its operational needs.

64. The record also shows that OPG's project managers failed to control the scope of the D2O project as it progressed. Instead, the P&M Group acquiesced to rapidly increased business demands:

> ***"Moreover, throughout 2011-13, P&M did not require Black & McDonald to timely update costs and provide visibility to the cost of these design changes as they were occurring; thus, as with AHS, P&M's management allowed the contractors to run up the tab and incorporate a flood of OPG stakeholder generated late design changes without adequate checks and balances or understanding of the magnitude of these changes. As a direct consequence of P&M's***

[55] EB-2020-0290, Exhibit D2, Tab 2, Schedule 10, pp. 39-41.
[56] EB-2020-0290, Exhibit D2 Tab 2, Schedule 10, Attachment 2o, p. 10.
[57] EB-2020-0290, Exhibit L, D2-02- CME-020 p. 1.

> ***failure to report these cost and schedule variances, senior management was deprived of the ability to:***
>
> - ***Stop the design changes that led to these increases;***
> - ***Stop the project entirely and resort to one of the other evaluated options;***
> - ***Identify and characterize the cost increases that are not related to Refurbishment and subject these changes to the same value-enhancing criteria as the remainder of the DR Project's work; and***
> - ***Mitigate the impact of the schedule delays and overruns.***
>
> ***Thus, the consequences to OPG are two projects that may cause external stakeholders to question OPG's management prudence."***[58]

65. As a result of its mismanagement, the D2O project was not completed in time to support the dewatering of unit 2 in the Darlington Refurbishment program.[59] This was despite the fact that containing heavy water for the Darlington Refurbishment program was one of the main drivers behind choosing to construct the D2O project.[60]

66. Instead, OPG was forced to store the heavy water drained from Unit 2 in the Heavy Water Management Building ("**HWMB**").[61] OPG was also forced to send heavy water to Pickering and Bruce. Not only did OPG have to expend additional resources for its ad-hoc solution, it also meant that there would be nowhere to store water if Darlington was required to complete a moderator drain.

67. Scope creep is not antithetical to imprudence, it is a consequence of it. OPG's mismanagement meant that senior leadership could not compare the increased costs of the D2O facility to other evaluated options in a timely manner, and the D2O Project could not be used to hold any water from the Unit 2 refurbishment. Accordingly, even if the Board were to determine that there was an increase in scope for the D2O Project, it is evidence of OPG's mismanagement, not an argument against it.

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[58] EB-2020-0290, Exhibit K2.1, pp. 37-38.
[59] EB-2020-0290, Exhibit D2, Tab 2, Schedule 10, p. 88.
[60] EB-2020-0290, Transcript, Volume 2, p. 97.
[61] EB-2020-0290, Exhibit D2, Tab 2, Schedule 10, p. 88.

2.5 The Bates White Report

68. In September, 2019, counsel for OPG retained Bates White Economic Consulting ("**Bates White**") to complete an estimate of the cost of a facility like the as built D2O Project facility (the "**Bates White Report**").[62]

69. The Bates White Report concluded that the mean estimated total cost of the D2O Project based on an assumption of perfect knowledge, was $517.7 million dollars.[63] Bates White later corrected that conclusion to find that the estimated mean cost was approximately $512 million.[64]

70. The Bates White Report contains assumptions that do not match up with the costs OPG actually incur. As a result, the conclusion it reaches regarding the mean cost is skewed to be overly high.

71. More importantly though, even if the Board accepts the conclusion set out in the Bates White Report, the mean cost of a D2O-like is not relevant to the matter at issue – OPG's prudence or imprudence. The Bates White Report does not provide an opinion on prudence. Accordingly, the Board should give the Bates White Report no weight when determining the prudence of OPG's management and the recoverability of the amounts spent.

2.5.1 <u>The Bates White Report Used Incorrect Assumptions to Create Its Model</u>

72. In order to create its model and come to a conclusion regarding the mean cost of a D2O-like facility, Bates White used assumptions which are not consistent with the evidence. For instance:

(a) Bates White used a 39% productivity rate. OPG witnesses confirmed that the average in the Darlington nuclear industry is 53-55%;[65] and

[62] EB-2020-0290, Exhibit D2, Tab 2, Schedule 11, p. 2.
[63] EB-2020-0290, Exhibit D2, Tab 2, Schedule 11, Attachment 3, p. 5.
[64] EB-2020-0290, Transcript, Volume 3, p. 55.
[65] EB-2020-0290, Transcript, Volume 3, p. 21.

(b) Bates White used a 4 person crew as the basis of their model. OPG witnesses confirmed that a 3 person crew was a reasonable average at OPG.[66]

73. As a result of these assumptions, Bates White's conclusion about the mean cost of a D2O-like facility is inflated, and cannot be compared to OPG's actual costs.

2.5.2 <u>The Bates White Report Does Not Determine the "True Cost" of the D20 Project</u>

74. Even if the Board were to accept the Bates White report uncritically, it does not conclude that the "true cost" of the D20 project is $512 million.[67] Bates White actually determined the mean cost of the D20 project by using a set of assumptions to model the potential costs and running a monte carlo simulation.

75. On cross-examination, when Mr. Reiner was brought to the Board's decision in EB-2016-0152, which found that the campus plan projects suffered from scope changes and mismanagement, Mr. Reiner testified that the D20 project was distinguishable from the other campus plan projects. Specifically, Mr. Reiner indicated that there was no mismanagement in the D20 project as demonstrated, in part, by Bates White's conclusion:

> ***"I don't agree to that with respect to D2O on the basis of two things, one, the independent estimate that we undertook for purposes of this hearing. That was not undertaken for AHS or OSB, so there was no comparator…"***[68]

76. This misconception is carried through in OPG's argument in chief, where OPG argues that Bates White determined the "true cost" of the D20 project.[69]

77. However, Bates White made it clear during cross-examination that their findings could not be used to determine OPG's mismanagement or imprudence:

> ***"[F]rom your analysis and from the fact that OPG came in at $510 million, we cannot conclude with any type of certainty that they were prudent in their management of the project, correct?***

[66] EB-2020-0290, Transcript, Volume 3, p. 22.
[67] While the Report indicates a mean cost of 517 million, this was corrected to be $512 at the hearing.
[68] EB-2020-0290, Transcript, Volume 2, p. 133.
[69] For instance, see page 7 or 11 in Ontario Power Generation's Argument-in-Chief, filed August 17, 2021.

> ***DR. GEORGE: We express no opinion regarding prudence, nor do we suggest that any opinion regarding prudence can be discerned from the analysis we performed."***[70]

78. Instead of determining the "true" cost, Bates White determined, what was, in their opinion, the mean cost of a D20-like project.

79. In fact, even with Bates White's incorrect assumptions, their report found that a D20 project could cost as little as $350 million.[71]

80. Moreover, in Bates White's probabilistic analysis, instances near the "mean" cost could be the result of very competitive costs in certain aspects of the project, and extremely high costs on other components.[72] Accordingly, a D20 Project where the cost is equivalent to the mean cost could be the result of mismanagement, or even gross-mismanagement in certain respects, which is balanced out by competitive costs in other areas.

81. Moreover, Bates White confirmed that it was outside of its scope of work to analyze whether OPG required the D20 facility, or could have addressed its operational needs with a less expensive solution:

> ***"If I could use an analogy, your report would tell us, for instance, whether or not we got a good deal in buying a Lamborghini, but not necessarily whether a Honda Civic would get us from point A to point B as effectively?***
>
> ***DR. GEORGE: We're back to the question of comparability perhaps, but yes. Broadly speaking, your point is I think broadly accurate that our report does not address the alternatives which may or may not have been open to OPG to solve the issues they needed to at the Darlington site."***[73]

82. In CME's submission, the findings of OPG's own auditors and the Auditor General are clear – OPG's failed to: adequately manage the D20 project; provide timely and effective risk management; identify and pursue other cost effective alternatives; and oversee contractors and their work. This ultimately led to a cost increase of approximately $400 million, and a final in service date that was several years later than planned.

[70] EB-2020-0290, Transcript, Vol. 3, pp. 77-78.
[71] EB-2020-0290, Exhibit D2, Tab 2, Schedule 11, Attachment 3, p. 6, Figure 1.
[72] EB-2020-0290, Transcript, Volume 3, p. 73.
[73] EB-2020-0290, Transcript, Volume 3, p. 78.

2.6 Amounts to be Included in Rate Base

83. CME submits that the entire amount of the difference between the first execution release and the final amount should be permanently disallowed from entering rate base.

84. OPG has argued that it should be entitled to recover in rates the actual cost to OPG of completing the D2O projects because, had more detailed engineering and cost estimating work been undertaken at the outset, the execution release estimate would have been the actual or "true" cost to complete the projects.[74]

85. CME urges the Board to reject this reasoning.

86. As previously outlined, OPG knew, or ought to have known that a project of this complexity and magnitude required a contractor with experience completing heavy water storage tanks, and a P&M group with experience managing projects of this magnitude.

87. While the Board determined in EB-2016-0152 to disallow half of the difference between the first execution business case and the final cost for the other campus plan projects, CME submits that a full disallowance is warranted for the D2O project. Increasing scope is not mutually exclusive with imprudent management. It is a symptom.

88. CME agrees that the scope increased on the D2O project, but OPG was unable to effectively compare the final cost of the D2O Project with the cost of other alternatives which could have met OPG's operational needs as well as the D2O Project. Moreover, the evidence demonstrates that the cause of the scope creep was imprudent. Ratepayers should not have to bear D2O's inflated costs entering rate base.

3.0 SMALL MODULAR REACTOR ("SMR")

89. Pursuant to its Decision on the Issues List, dated May 20, 2021, the Board determined that costs recorded in the NDVA were before it in this proceeding. Specifically, the Board

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[74] EB-2020-0290, Ontario Power Generation Argument-in-Chief, filed August 17, 2021, p.28.

determined that it would consider whether OPG's SMR related costs are consistent with the purpose of the NDVA and thereby appropriate to be booked in the account.[75]

90. As a result of the settlement proposal, two issues remained unsettled related to SMRs: customer engagement, as well as the appropriateness of booking SMR-related costs in the NDVA.

91. CME has had the benefit of reading the intervenor submissions regarding the issues list, and their concerns with booking SMR costs in the NDVA for potential clearance at a later time.[76] These concerns are meritorious, and should be considered by the Board.

92. CME firmly supports however, the continued use of nuclear power as part of Ontario's energy mix to meet its needs now and in the future.

93. Given the fact that OPG has confirmed that any amount booked in the NDVA would be subject to a review for prudence to the extent OPG seeks to recover that amount from ratepayers,[77] CME does not oppose OPG recording SMR related entries in the NDVA.

94. With respect to customer engagement, CME submits that OPG should consult with customers regarding SMR development. While CME acknowledges that the ultimate decision whether to go ahead with SMR belongs to the minister of energy, ultimately SMRs are for the benefit of Ontarians, and ratepayers. OPG and the minister of energy would undoubtedly benefit by canvassing customer views on SMRs early and often prior to making any decisions that could affect Ontario's energy landscape for decades.

4.0 COSTS

95. CME requests that it be awarded 100% of its reasonably incurred costs in connection with this matter.

[75] EB_2020-0290, Decision on Issues List, May 20, 2021, pp. 8-9.
[76] For instance, AMPCO's submissions dated May 14, 2021 which cited concerns about the reasonableness of expecting ratepayers to bear the cost of R&D for SMR and the fragmentation of OPG's costs between applications.
[77] EB-2020-0290, Transcript, Volume 1, p. 67, 78.

ALL OF WHICH IS RESPECTFULLY SUBMITTED this 31st day of August, 2021.

Scott Pollock

Counsel for CME

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