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VIA RESS FILING and EMAIL

Ms. Christine E. Long
Registrar
Ontario Energy Board
2300 Yonge Street, 27th Floor,
P.O. Box 2319
Toronto, ON M4P 1E4

Dear Ms. Long,

Re: EB-2020-0290 – Application for Payment Amounts

Attached please find the Submissions of the Power Workers' Union in connection with the above-noted proceedings. An electronic copy has been filed through the Board's RESS filing system.

Yours very truly,
PALIARE ROLAND ROSENBERG ROTHSTEIN LLP

Richard P. Stephenson
RPS:pb

Doc 3919158 v1

EB-2020-0290

IN THE MATTER OF the Ontario Energy Board Act, 1998;

AND IN THE MATTER OF an Application by Ontario Power Generation Inc. for an order or orders approving payment amounts for prescribed generating facilities commencing January 1, 2022.

Submissions of the Power Workers' Union

1. The following are the Power Workers' Union's ("PWU") submissions on the unsettled issues related to Small Modular Reactors ("SMR") and the D2O Project reviewed in the matter of Ontario Power Generation Inc.'s ("OPG") 2022-2026 payment amounts for its prescribed assets.

Darlington Small Modular Reactor

Issue 13.1

Is the nature or type of costs recorded and the methodologies used to record costs in the deferral and variance accounts related to OPG's nuclear and regulated hydroelectric assets appropriate?

2. In its Decision on Issues List[1], the Ontario Energy Board ("OEB" or "the Board") determined that it would consider the narrow issue of whether it would be appropriate to record OPG's SMR-related costs in the Nuclear Development Variance Account ("NDVA") and whether such costs would be consistent with the purpose of the NDVA.

3. Under section 5.4(1) of O. Reg. 53/05, OPG has a statutory obligation to establish the NDVA to record variances relating to non-capital costs incurred and firm financial commitments made for planning and preparation for the development of proposed new nuclear generation facilities:

[1] Decision on Issues List, May 20, 2021, p. 9

> 5.4 (1) Ontario Power Generation Inc. shall establish a variance account in connection with section 78.1 of the Act that records, on and after the effective date of the Board's first order under section 78.1 of the Act, differences between actual non-capital costs incurred and firm financial commitments made and the amount included in payments made under that section for planning and preparation for the development of proposed new nuclear generation facilities. O. Reg. 27/08, s. 1.[2]

4. Section 6(2)(4.1) of O. Reg. 53/05 provides that the OEB shall ensure that OPG 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 OEB is satisfied that:

a. the costs were prudently incurred, and

b. the financial commitments were prudently made.[3]

5. OPG is not seeking to recover any costs in relation to SMRs pursuant to s. 6(2)(4.1) in this proceeding. OPG's request is limited to the recording of SMR costs in the NDVA. Any request pursuant to s. 6(2)(4.1) for the recover of costs would be made in a future proceeding.

6. The OEB has approved the NDVA in the company's first payment amounts proceeding (EB-2007-0905) and in each of the company's subsequent payment amounts proceedings.[4] Moreover, the costs recorded in the NDVA for SMR are similar in nature to the types of costs historically recorded in the account.[5]

7. OPG has provided evidence that: (a) it is in the initial planning and preparation phase of developing an SMR at Darlington; (b) that neither an SMR proposal nor a business case has been developed; and (c) that it intends to develop a proposal by late 2021 upon which an investment decision can be made.[6]

8. OPG also acknowledges that the Province of Ontario has not provided a Directive to OPG to pursue SMRs. However, it has also noted that the Province of Ontario has publicly supported the development and deployment of SMRs through the MoU signed by the Government of Ontario with respect to the development of SMRs in Canada and

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[2] Ontario Energy Board Act, 1998, ONTARIO REGULATION 53/05, s. 5.4(1)
[3] Ontario Energy Board Act, 1998, ONTARIO REGULATION 53/05, s. 6(2) (4.1)
[4] OPG Argument-in-Chief, page 3
[5] JT3.13
[6] F2-08-AMPCO-152, part b

that the Minister of Energy, Northern Development and Mines ("MENDM") and Minister of Indigenous Affairs publicly gave support to OPG's announcement on November 13, 2020 of the resumption of planning activities for future nuclear power generation at its Darlington site, to host an SMR.[7] The Government of Ontario has also concurred with OPG's 2020-2026 Business Plan, which requests that OPG continue "planning and preparation work for the development of a potential on-grid SMR at the Darlington site including completion of the SMR technology selection process."[8]

9. Notwithstanding the absence of a formal "proposal" with respect to a specific SMR project approved by OPG's Board of Directors, the PWU submits that OPG's current SMR activities as described in the application are eligible for inclusion in the NDVA pursuant to s. 5.4(1). The clear purpose of s. 5.4(1) is to permit OPG to track, for potential future recovery, preparatory costs regarding potential new nuclear generation, even where there is no certainty that any particular project will ultimately obtain all required approvals or be put into service.

10. Essentially, the object of s. 5.4(1) is to encourage OPG to undertake preparatory efforts to develop new nuclear facilities, on a prudent basis, by providing it with a mechanism which can provide it with reasonable confidence that ultimately it will be able to recoup those costs. This reflects the Provincial policy that nuclear power remains an important element of the future electricity security of the province.

11. It is self evident that there is a continuum of activities that are required to be undertaken before a project as complex as new nuclear generation can be put in service. The costs that are eligible for recording pursuant to s. 5.4(1) include those in relation to the "planning and preparation for the development" of proposed new nuclear facilities. Section 5.4(1) is designed to ensure that OPG has the opportunity (but not guarantee) to recover early stage work. It would entirely defeat the purpose of s. 5.4(1) and s. 6(2) (4.1) to preclude from any opportunity of recovery the costs OPG is required to undertake to formulate and finalize a formal proposal of a specific project.

[7] F2-08-AMPCO-152, part e
[8] Ex. L-A2-02-CCC-014, 11 Attachment 1, p. 2

12. The only remaining question is whether SMRs are “nuclear generation facilities” within the meaning of the above-referenced regulations. SMRs may be different from traditional nuclear reactors in terms of size, output, technology, deployment; nevertheless, SMRs are next-generation nuclear generation facilities. This was confirmed in the evidence of OPG’s Vice-President for Corporate Business Development and Financial Strategy, Ms. Lubna Ladak. Ms. Ladak explained that the definition of an SMR is a nuclear reactor which has a certain megawatt capacity and which is designed using modular construction technologies.[9] In other words, an SMR is just a specific kind of nuclear generation facility.

13. The PWU therefore supports OPG’s submission that the costs of planning and preparing for the development of an SMR nuclear generating facility at the Darlington site are within the legislative purpose of the NDVA.

Issue 1.2

How could OPG further improve its customer engagement process?

14. The specific aspect of Issue 1.2 that was not settled as part of the Settlement Proposal is the consideration of SMRs as a component of the customer engagement process that OPG undertook to understand customer preferences.

15. In the PWU’s view, the need for planning and preparation for an SMR nuclear generating facility at the Darlington arose from OPG’s statutory obligation as well as the consent or public support of the Minister of Energy. The development of SMRs is a resource procurement or a system planning decision that would require the involvement of the MENDEM, the IESO, the CNSC and any relevant regulatory authorities. The evidence before the Board is that at this point, the MENDEM has not given a firm direction to OPG to pursue SMRs. It is expected that the MENDM and all relevant authorities would engage customers and all affected stakeholders both before and after a firm investment decision is made to develop and construct SMRs. It is also apparent from OPG’s evidence that little is known with respect to the ownership or business model that OPG will adopt

[9] Cross-examination of Ms. Ladak, Hearing Transcript, Vol. 1, p. 71.

with respect to SMRs, how ratepayers will be affected by the decision to develop/construct SMRs, and in fact on whether SMRs will be a reality in Ontario by the end of the decade. Absent clear and evidence-based information on these and other questions that customers may have, any customer engagement by OPG would not have been effective.

16. Moreover, OPG's evidence indicates that at the time it was developing its customer engagement process that informed the business planning underpinning this application, the development of such a facility was not being actively explored within OPG[10] and that customer engagement on SMRs would not have been practicable[11].

17. The PWU recognizes the need for OPG to engage customers once a firm policy decision is made to make investments on SMRs with respect to how such a decision would impact rate payers including options to mitigate rate impacts. However, given that such a decision has not been made and OPG is not seeking any disposition of the SMR amounts in the NDVA account in the current proceeding, the only reasonable and effective customer engagement on potential rate impacts would be one undertaken in preparation for OPG's next application.

18. For the reasons discussed above, the PWU agrees with OPG that a requirement that it engage with customers on SMRs as part of the company's business planning underpinning this payment amounts application is neither appropriate nor practicable.

Issue 14.1

Are the proposed reporting and record keeping requirements, including performance scorecards proposed by OPG, appropriate?

19. In its Argument-in-Chief, OPG has submitted that the reporting and recordkeeping requirements that are already included in the proposed and agreed upon Settlement Proposal not only include the NDVA but also envisage the possibility of a prescribed SMR facility at Darlington site.[12] OPG has indicated that these reporting requirements will be posted on the OEB and OPG's website, and include nuclear performance reporting

[10] Ex. L-A2-02-CCC-020, part c
[11] OPG Argument-in-Chief, page 6
[12] Ibid.

scorecard with discrete performance measures with separate annual reporting for each nuclear generating station on each measure. Moreover, the NDVA will continue to be included in quarterly reporting on OPG's deferral and variances accounts and OPG will annually report on the prior year's capital in-service additions and construction work in progress balances for prescribed facilities by April 30th.[13]

20. The PWU submits that more requirements in relation to a potential Darlington SMR would be redundant and agrees with OPG that the above cited reporting requirements are appropriate and sufficient.

D2O Storage Project

Issue 7.6

Are the proposed test period in-service additions for the D2O Project reasonable?

21. OPG's evidence demonstrates that the D2O Project was the least-cost option and its completion is integral to the Darlington Refurbishment Program ("DRP") on ongoing nuclear operations in Ontario. OPG and its contractors faced many challenges completing the project as it was a complex, first-of-its-kind project. The evidence shows that increases in project costs over time were associated with changes in scope that were necessary to safely complete the D2O structure, which has now been successfully commissioned by OPG. There is no evidence on the record which demonstrates that the D2O facility, or any facility which serves the same function, could have been constructed for a cost lower than OPG's proposed D2O Project rate base additions. As the first project undertaken within the Extended Services Master Services Agreement ("ESMSA") framework, OPG's project management evolved over time and provided valuable lessons learned for the remaining of the DRP.

22. The D2O Project was originally designed to leverage existing infrastructure to be a cost-effective way to handle the additional heavy water during unit refurbishments. The original designs were later changed for many reasons, including:

[13] Ibid.

- Soil contamination from a spill in 2009 required a soil lay down pad, different soil handling procedures, and additional water treatment equipment in order to lower the ground water table;
- The structure was intended to be directly affixed to the existing Tritium Removal Facility, but had to be detached into a separate structure;
- Changes to the structure to satisfy the environmental assessment;
- Material requirements which were higher with the new design; and
- Higher-than-anticipated ground water elevation led to dewatering and excavating challenges, which tripled the cost of site preparation field work.

23. OPG's internal estimates and estimates provided to the Board have increased substantially since the project was first considered. Early estimates, such as the $108.1 million estimate in the 2012 Full Release Definition BCS,[14] did not consider the full scope and potential risks of the Project. The estimate was incorrectly cited as a Class 2 cost estimate but should have been a Class 5 estimate.[15]

24. The release quality estimate provided in EB-2016-0152 projected capital costs of $381.1 million based on a better understanding of the project scope. This $381.1 million estimate is the Class 2 cost estimate considered within OPG's total $12.8 billion DRP forecast. The budget was later increased to $509.3 million with further changes to the design of the structure.

25. It is clear from the evidence that the earlier $108.1 million and $381.1 million project cost estimates were based on previous D2O Project designs that would not have safely met the water handling requirements of the DRP. OPG addressed ongoing challenges and risks by refining the scope of the project. Though scope refinements typically increased costs, all changes were necessary to safely commission the D2O structure. OPG would have acted imprudently had it not successfully addressed these challenges and risks.

[14] Ex. D2-02-10, page 113
[15] Ex. D2-02-10, page 107

26. Despite the growing project costs, it is clear that OPG was mindful of its need to manage costs throughout the process, to the benefit of ratepayers. In hindsight, in the initial competitive bidding process to select ESMSA contractors, OPG placed too much emphasis on pricing proposals and not enough focus on the technical capabilities of the bidders. However, in the context of the circumstances in which that decision was made, the selection of Black & McDonald ("B&M") was a prudent one. It was, and is, a substantial and reputable contractor, with whom OPG had a longstanding relationship. Moreover, given ongoing pressures from the OEB and intervenors for OPG to control costs, it is no surprise that OPG evaluated pricing proposals at a level on par with technical capability evaluations. Had OPG selected the higher priced ES Fox bid at this stage, the Board could reasonably have expected to receive submissions from intervenors stating that OPG acted imprudently by selecting the higher-priced bidder.

27. OPG monitored the progress of its first project under the ESMSA framework and demonstrated continuous improvement by taking the lessons learned and making necessary changes to D2O and other projects. OPG recognized that the project would be more efficiently managed with more coordinated management between B&M and OPG and took steps to improve that coordination. As B&M's cost estimates increased, OPG took action to terminate the B&M contract and assume more control over the project. The PWU submits that both the engagement and termination of B&M were prudent decisions based on the information available to OPG at that time.

28. OPG selected a new contractor under the ESMSA framework to complete outstanding work with more recognition of the project complexity. Having learned from its initial evaluation structure, OPG placed more emphasis on technical capabilities in this competitive bidding process. OPG ultimately selected CanAtom in 2015. In view of CanAtom's qualifications, that was a prudent decision. Soon after CanAtom was selected, it raised issues related to the seismic dike top slab designed by another contractor, RCMT. OPG prudently sought a third-party, High Bridge Associates, to evaluate the cost and design, which ultimately led to another modification of the structure design.

29. OPG the negotiated a fixed price contract with CanAtom to complete outstanding work. The cost of outstanding work was forecast to be $100 million, but OPG negotiated

a maximum price of $70 million. By 2019, CanAtom's actual costs were considerably higher than forecast, leading to a loss of at least $77 million. This loss exemplified the difficulties of accurately forecasting a first-of-its-kind project such as the D2O Project.[16] Additionally, this demonstrates prudent project management by OPG. The total cost spent on the D2O Project was at least $586.3 million, of which only $509.3 million[17] is proposed to be added to rate base and recovered from ratepayers. The PWU submits that OPG prudently managed the costs of the D2O Project.

30. In its reasons for disallowances of the Auxiliary Heating System ("AHS") and Operations Support Building ("OBS") in EB-2016-0152,[18] the OEB cited the Modus report[19] which criticized contractor selection and poor overall project management at the time. The Board decided to assign 50% of the cost overage to increased scope and 50% to poor management. In absence of evidence which demonstrates the degree to which the project cost increases were due to changes in scope or due to poor project management, this equal assignment was not unreasonable. The decision also suggests there was a lost opportunity to pursue alternate and less costly options. The reasons for disallowances of the AHS and OBS projects are not applicable to the D2O Project.

31. The Bates White report provides compelling evidence that an estimate of the cost of D2O would be $517.7 million, with full knowledge of the scope and unknown factors that would have to be addressed by OPG.[20] This is approximately $8.4 million higher than the proposed rate base additions. Furthermore, with project contingency at P90, which is the approved contingency level for the DRP as a whole[21], the estimated cost would be $576.5 million. This estimated project cost at P90 is approximately $9.8 million higher than the total project cost, including CanAtom's losses.

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[16] The PWU submits that the $77 million loss to CanAtom is strong evidence of the true magnitude of the costs of the project. In circumstances where the contractor is shouldering non-recoverable costs of a project, there is no logical basis to assume that those costs are excessive in any way. To the contrary, the contractor would be under an extremely strong incentive to minimize those costs.
[17] Including rate base amounts that have already been approved.
[18] EB-2016-0152 Decision and Order, pages 20-22
[19] Reproduced in this proceeding as Ex. L-D2-02-Staff-105, Attachment 2
[20] Ex. D2-02-11, Attachment 3, page 6
[21] EB-2016-0152 Decision and Order, page 38

32. The AHS and OBS projects evaluated in the 2016 decision were considerably smaller than the D2O Project. The issues raised in the Modus report regarding the AHS and OBS projects were present in the early stages of the D2O Project. These issues persisted through the duration of those projects so it was reasonable for the Board to make a disallowance due to poor management. OPG learned lessons from these issues and subsequently implemented changes to its project management for D2O and other DRP projects. The period in which Modus assessed there to be poor project management comprises only a short period of D2O's project life before the majority of D2O costs were incurred.

33. Despite cost increases, the cost of the D2O Project remains lower than the alternatives, as discussed in each business case summary. Those projects would have also been first-of-their-kind projects and would have faced the same, and possibly more, challenges. There is no evidence on the record which shows that it would have been possible to complete the D2O Project or a project that served the same functions for a cost less than OPG's proposed rate base additions.

34. The evidence on the record is that all of the cost increases are due to increases in project scope. Consistent with the decision in EB-2016-0152 to base disallowances on the assignment of cost responsibility, the PWU submits that the Board should approve 100% of the proposed D2O Project rate base.

35. Should the Board assess that any portion of cost increases are the result of project management, then the PWU submits that the $77 million cost savings would more than outweigh any attribution of costs based on poor management.

36. In this proceeding, the proposed rate base additions of $494.7 million have been considered against earlier, lower estimates which did not accurately reflect the full scope and complexities of the project. In the PWU's submission, this limited view does not reflect the full range of potential outcomes.

37. First-of-its-kind projects are inherently complex. It is impossible to have perfect knowledge of risks and challenges until they arise. Though there are no direct comparables, the Bates White report describes two projects that are similarly designed to process radioactive materials and were constructed over a similar timeframe as the

D2O Project. Bates White evaluated the project costs based on the square footage of the facilities and linear feet of process piping.[22]

38. Compared to the Salt Waste Process Facility, the cost of D2O is materially lower on per square foot and per foot of process piping bases. The cost per foot of process piping in the Salt Waste Process Facility project is about 70% higher than D2O, and the cost per square foot is about 40% higher.

39. The cost of the Integrated Waste Treatment Unit, per square foot, is about 50% higher than D2O. The only comparable estimate that is lower than D2O is the "Construction Complete" cost of the Integrated Waste Treatment Unit. The "Construction Complete" status was the cost after initial construction but before it was put in service. However, the project was not commissioned and there was extensive redesign at a cost of almost $700 million, reaching a total of $1.3 Billion.

40. The costs of indirectly comparable projects were materially higher than the cost OPG achieved with the D2O Project. The need to redesign of the Integrated Waste Treatment Unit highlights OPG's prudent decisions throughout the Project to address challenges and risks on a timely basis. The D2O cost increases through the duration of the project were necessary to safely complete and commission the Project.

Issue 13.2

Are the balances for recovery and the proposed disposition amounts in each of the deferral and variance accounts related to OPG's nuclear and regulated hydroelectric assets appropriate?

41. The portion of Issue 13.2 which remains unsettled is related to the D2O Project amounts within the Capital Recovery Variance Account ("CRVA"). As discussed above in Issue 7.6, the PWU submits that proposed in-service addition for the D2O Project are reasonable and should be approved. Since the D2O Project amounts are appropriate, the PWU submits that the balances within CRVA, and therefore the balances within all deferral and variance accounts, are also appropriate.

[22] Ex. D2-02-11, Attachment 3, page 32

All of which is respectfully submitted.