Ontario Energy Board | Commission de l'énergie de l'Ontario

BY EMAIL

August 31, 2021

Ms. Christine E. Long
Registrar
Ontario Energy Board
2300 Yonge Street, 27th Floor
Toronto, ON M4P 1E4
Registrar@oeb.ca

Dear Ms. Long:

Re: Ontario Power Generation Inc.
2022-2026 Payment Amounts Application
Ontario Energy Board (OEB) Staff Submission on the Unsettled Issues
OEB File Number: EB-2020-0290

Please find attached OEB staff's submission on the unsettled issues in the above referenced proceeding, pursuant to Procedural Order No. 4.

Yours truly,

Lawrie Gluck

Lawrie Gluck
Project Advisor, Generation and Transmission

Encl.

cc: All parties to EB-2020-0290

ONTARIO ENERGY BOARD

OEB Staff Submission on the Unsettled Issues

Ontario Power Generation Inc.

2022-2026 Payment Amounts Application

EB-2020-0290

August 31, 2021

Introduction

Ontario Power Generation Inc. (OPG) filed an application dated December 31, 2020, with the Ontario Energy Board (OEB) under section 78.1 of the *Ontario Energy Board Act, 1998* (the Act) seeking approval for changes in payment amounts for the output of its nuclear generating facilities in each of the five years beginning January 1, 2022 and ending on December 31, 2026. OPG also requested approval to maintain, with no change, the base payment amount it charges for the output of its regulated hydroelectric generating facilities at the payment amount in effect December 31, 2021 for the period from January 1, 2022 to December 31, 2026.

OPG filed a settlement proposal on July 16, 2021 covering nearly all of the issues set out in the Issues List, with only a limited number of partially settled and unsettled issues.

The OEB approved the settlement proposal (with written reasons to follow) at the conclusion of the oral hearing on August 6, 2021.[1]

The issues that were not settled, which were the subject of examination at the oral hearing held between August 4 and August 6, 2021, were as follows:

1) Small Modular Reactor (SMR)-related Issues
    a. whether recording of SMR-related costs in the Nuclear Development Variance Account (NDVA) is appropriate and consistent with the purpose of the account
    b. whether OPG appropriately considered SMRs as a component of OPG's customer engagement process
    c. whether there should be reporting and record keeping requirements for the SMR-related costs.

2) Heavy Water Storage and Drum Handling Facility (D2O Project)-related Issues
    a. whether the proposed in-service additions for the D2O Project are reasonable
    b. whether the deferral and variance (DVA) balances associated with the D2O project are reasonable.

The parties agreed to defer the consideration of rate smoothing to the process of establishing the final payment amounts order arising from the OEB's decision on the settlement proposal and the above noted unsettled issues.[2] The OEB agreed with this

[1] Oral Hearing Transcripts / Vol. 3 / pp. 123-124.
[2] Settlement Proposal / p. 8.

approach at the conclusion of the oral hearing on August 6, 2021.[3]

OEB staff's submissions on the SMR-related and D2O Project-related issues are set out below.

OEB Staff Submission on the Unsettled Issues

SMR-related Issues

In the pre-filed evidence, OPG noted that it forecast OM&A expenses of $66 million in 2020 and $206 million in 2021 (total of $272 million) associated with the preliminary planning and preparation for a SMR generating station at the Darlington site. There was no forecast of planning and preparation expenditures for the development of a SMR included in OPG's 2017-2021 Payment Amounts proceeding.[4] Therefore, OPG proposed to record the preliminary planning and preparation amounts expected to be incurred in 2020 and 2021 related to the SMR project in the NDVA. OPG is not seeking disposition of the SMR-related amounts recorded in the NDVA in the current proceeding. OPG also noted that there are no SMR-related costs included in its proposed 2022-2026 revenue requirements.[5]

Through the course of the proceeding, OPG updated its forecast OM&A expenses over the 2020-2021 period associated with the preliminary planning and preparation for a SMR generating station at the Darlington site to $166 million.[6]

In its Decision on Issues List, dated May 20, 2021, the OEB defined the issue in this proceeding with respect to SMRs as follows, "[t]he OEB will consider the narrow issue of whether OPG's SMR-related costs are consistent with the purpose of the NDVA and thereby appropriate to be booked in the account."[7] There are also customer engagement and reporting issues associated with OPG's SMR proposal that were not settled.

Appropriateness of Recording SMR-related costs in the NDVA

OEB staff submits that the preliminary planning and preparation costs associated with the development of a SMR generating station at the Darlington site, as described by OPG, are appropriately recorded in the NDVA. However, the recovery of the actual

[3] Oral Hearing Transcripts / Vol. 3 / p. 124.
[4] EB-2016-0152.
[5] Exhibit F2 / Tab 8 / Schedule 1 / pp. 1-2; and Oral Hearing Transcripts / Vol. 1 / p. 29.
[6] Exhibit L / F2-08-Society-13 / p. 1; and Oral Hearing Transcripts / Vol. 1 / pp. 26-27.
[7] Decision on Issues List / p. 9.

costs incurred associated with this activity will be subject to a prudence review at the time that OPG seeks to dispose of these balances.

OEB staff notes that the scope of the NDVA is established in section 5.4(1) of Ontario Regulation (O. Reg) 53/05 as follows:

> 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.[8]

Further, section 6(2)4.1 of O. Reg. 53/05 states:

> The Board shall ensure that Ontario Power Generation Inc. recovers the costs incurred and firm financial commitments made in the course of planning and preparation for the development of proposed new nuclear generation facilities, to the extent the Board is satisfied that,
>
> i. the costs were prudently incurred, and
> ii. the financial commitments were prudently made.[9]

OEB staff submits that the result of the above noted sections of O. Reg 53/05 is that OPG can record non-capital costs associated with the planning and preparation for the development of new nuclear generation facilities in the NDVA, subject to a prudence review upon disposition.

OEB staff notes that the costs to be recorded in the NDVA in 2020 and 2021 related to the preliminary planning and preparation for the development of a SMR generating station at Darlington are as follows:

- selecting a technology developer
- preparing for a construction license application
- developing the necessary project and engineering support organization
- obtaining more certainty on project costs.

OPG stated that the purpose of the activities discussed above is to develop a Class 5 estimate by November 2021 upon which an investment decision can be made for

[8] Ontario Regulation 53/05 – Payments Under Section 78.1 of the Ontario Energy Board Act / Section 5.4(1).
[9] Ontario Regulation 53/05 – Payments Under Section 78.1 of the Ontario Energy Board Act / Section 6.4.1.

continued project development work, leading to an application for a license to construct.[10]

OEB staff notes that the preliminary planning and preparation activities, described above, associated with the development of a SMR generating station at the Darlington site are consistent with expectations of the Province of Ontario. The Minister of Energy's concurrence letter with respect to OPG's 2022-2026 business plan requested that OPG continue to support Ontario's commitments under the interprovincial SMR-related Memorandum of Understanding to advance SMR development and deployment, including the proposed Darlington on-grid SMR project.[11]

OEB staff submits that the SMR-related costs that OPG intends to record in the NDVA are directly associated with the planning and preparation for the development of a proposed new nuclear facility at Darlington. Therefore, in accordance with O. Reg 53/05, the costs are eligible to be recorded in the account.

In addition, as discussed by OPG,[12] OEB staff agrees that while the NDVA is referred to as a variance account, as opposed to a deferral account, O. Reg. 53/05 does not preclude the recording of variances between actual non-capital costs incurred associated with the planning and preparation for the development of new nuclear generation facilities to a nil figure in OPG's payment amounts.

OEB staff also notes that, in previous applications, OPG has recorded (and was granted approval to dispose) cost variances in the NDVA that are similar to the types of costs which it has proposed to record related to the preliminary planning and preparation for the development of a SMR generating station at the Darlington site in the current application. The cost variances previously recorded (and approved for disposition) in the NDVA that are similar to the SMR-related costs are summarized below.

In OPG's 2011-2012 Payment Amounts proceeding,[13] OPG sought and was granted approval to dispose of a $110.8 million credit[14] representing variances between actual and budgeted costs associated with activities undertaken by OPG over the 2007-2010 period in support of a nuclear new build project. These activities included:

- obtaining government approvals and licenses to develop new nuclear at the Darlington site

[10] Exhibit F2 / Tab 8 / Schedule 1 / pp. 3-5.
[11] Exhibit L / A2-02-CCC-014 / Attachment 1 / pp. 3-4.
[12] Undertaking J1.2.
[13] EB-2010-0008.
[14] EB-2010-0008 / Payment Amounts Order / April 11, 2011 / Appendix F / p. 1.

- evaluating and reviewing nuclear plant technologies
- preparing to enter the project definition phase for a new nuclear build project (including the eventual procurement of the new nuclear plant and related components)[15]

In OPG's 2014-2015 Payment Amounts proceeding[16], OPG sought and was granted approval to recover a $56.5 million debit[17] representing variances between actual and budgeted costs associated with activities undertaken by OPG over the 2011-2013 period in support of a nuclear new build project. These activities included:

- regulatory hearing costs for the preparation and participation in a Joint Review Panel hearing regarding environmental assessment and application for "Licence to Prepare Site" for a new nuclear build
- site readiness activities
- support for Ontario's ongoing evaluation of nuclear energy in Ontario (including preparation and analysis of construction plans)[18]

The OEB's previous approval of the disposition of cost variances recorded in the NDVA, in both OPG's 2011-2012 and 2014-2015 Payment Amounts proceedings, which are similar to the SMR-related costs set out in the current proceeding, further supports the appropriateness of OPG's proposal to include the SMR-related costs in the NDVA.

Overall, OEB staff is of the view that the SMR-related costs as described in the application are eligible to be recorded in the NDVA. However, the actual SMR-related costs incurred should be reviewed at the time that OPG seeks recovery of those costs to ensure the costs are eligible to be recorded in the NDVA as the actual costs may be different to those described in the application. OEB staff also submits that the actual SMR-related costs incurred should be subject to a prudence review. The prudence review should consider whether OPG properly managed the SMR-related planning and preparation activities to ensure that the costs incurred are reasonable.

OEB staff notes that if any capital costs are incurred related to the development of a SMR generating station at the Darlington site during the 2022-2026 Custom IR term, those costs will not be recorded in the NDVA (as the NDVA is only available for non-capital costs and firm financial commitments). Any capital costs incurred during the 2022-2026 period (or a future period), in the scenario that the SMR asset is prescribed

[15] Undertaking JT3.13 / p. 1.
[16] EB-2013-0321.
[17] EB-2013-0321 / Payment Amounts Order / December 18, 2014 / Appendix F / Table 1.
[18] Undertaking JT3.13 / p. 2.

by regulation and OPG seeks to recover those costs from ratepayers, would be subject to the OEB's review and approval at the time that OPG seeks such recovery.[19]

Consideration of SMRs in the Customer Engagement Process

OPG stated that a requirement that it engage with customers on SMRs as part of its business planning underpinning a payment amounts application is neither appropriate nor practicable. OPG stated that engagement on planning and preparing for a SMR nuclear generating facility at the Darlington site would not have been appropriate, since the decision as to the progress and construction of a SMR is a system planning decision that rests with the Minister of Energy.

OPG stated that a SMR at the Darlington site is necessarily subject to a range of policy decisions and regulatory requirements. While OPG would own the facility, the major policy questions related to such a facility, including the Independent Electricity System Operator's determination of the system need, will not ultimately be made by OPG. Similarly, decisions around the configuration and construction of a SMR nuclear generating facility at the Darlington site would be subject to regulatory approval by the Canadian Nuclear Safety Commission (CNSC). CNSC requirements include mandatory public and Indigenous community engagement activities.

OPG noted that, in addition to the above considerations, customer engagement on SMRs in the context of the current application would not have been practicable. At the time OPG was developing its customer engagement process that informed the business planning underpinning this application, the development of such a facility was not being explored by OPG.[20]

OEB staff agrees with OPG that the consideration of SMRs as part of the current application would not have been possible due to the timing issues discussed above.

OEB staff submits that, going forward, the manner in which customers are to be engaged on the potential development of a SMR will be subject to broader discussions by the government bodies involved in the relevant policy decisions. In addition, OEB staff notes that as CNSC approval is required (and this approval includes mandatory public and Indigenous community engagement activities, should the development of a SMR nuclear generating facility at Darlington proceed), future engagement with stakeholders can be anticipated. Therefore, OEB staff submits that no OEB-directed customer engagement with respect to SMRs is necessary.

[19] Oral Hearing Transcripts / Vol. 1 / pp. 84-85.
[20] Argument-in-Chief / pp. 5-6.

SMR-related Reporting and Record Keeping Requirements

OPG has not proposed any specific reporting and record keeping requirements for SMR-related costs. However, OEB staff notes that the approved settlement proposal includes the requirement for OPG to file quarterly reports, which provide unaudited DVA balances (including the balance in the NDVA).[21] Therefore, the OEB will have quarterly updates available regarding the balance in the NDVA during the 2022-2026 period. OEB staff expects that the balance in the NDVA will largely reflect SMR-related costs as the other non-SMR costs eligible to be recorded in the NDVA during the 2022-2026 period are likely to be minimal.

As noted previously, any capital costs incurred during the 2022-2026 period (or a future period), in the scenario that the SMR asset is prescribed by regulation and OPG seeks to recover those costs from ratepayers, would be subject to the OEB's review and approval at the time that OPG seeks such recovery.

OEB staff submits that no additional reporting and record keeping requirements are necessary with respect to the SMR-related costs. OPG will have to provide detailed evidence regarding the actual non-capital costs incurred associated with the planning and preparation for the development of a SMR generating station at the Darlington site at the time that it seeks recovery of the balance in the NDVA. OPG will also have to provide detailed evidence regarding any capital costs incurred related to the development of a SMR generating station at the Darlington site if these costs are incurred and OPG seeks recovery of these costs from ratepayers.

D2O Project-related Issues

The D2O Project involved construction of a seismic dike and a concrete and steel building to house the tanks and equipment necessary to store various streams of heavy water and handle, clean, test and store the drums used to transport heavy water.[22]

The D2O Project is designed to store tritiated heavy water from Darlington units undergoing refurbishment and to support the operations of the Tritium Removal Facility (TRF) to remove tritium from heavy water, which is necessary to operate Ontario's nuclear fleet. Until the last Darlington unit is refurbished, 1,700 m^3 of the 2,100 m^3 of heavy water storage contained in the D2O Project will be used to support the Darlington Refurbishment Program (DRP). Once the DRP is complete, this storage capacity will

[21] Settlement Proposal / Appendix A / p. 1.
[22] Exhibit D2 / Tab 2 / Schedule 10 / pp. 14-15.

support the entire Ontario nuclear fleet including the possible storage of heavy water from the planned Pickering shutdown. The remaining heavy water storage capacity, 400 m^3, supports ongoing operations at Darlington and the TRF.[23]

On June 22, 2012, OPG issued a purchase order to Black & McDonald to begin work on the D2O Project.[24] In the spring of 2013, site preparation work was started.[25] The D2O Project was substantially complete in November 2019 and declared capable of receiving heavy water in March 2020.[26] Final commissioning of the D2O Project was completed in November 2020 for the Primary Heat Transport (PHT) system and in early 2021 for the moderator and TRF product and feed systems. OPG's completion of commissioning allowed the D2O Project to begin accepting heavy water from Unit 3 on November 26, 2020.[27]

The actual total cost of the D2O Project is $510 million, consisting of $509.3 million in capital and $0.7 million in OM&A for removal costs incurred in 2013.[28] Of the $509.3 million in capital cost, OPG noted that $14.6 million was approved for inclusion in rate base in 2014 and is reflected in the rate base approved in OPG's 2017-2021 Payment Amounts proceeding.[29] OEB staff notes that while the OEB approved the inclusion of D2O Project-related costs in rate base in 2014, the OEB was clear that the approval of a portion of the project cost does not mean that the entire project is accepted by the OEB. The OEB further stated that a prudence review should take place when the D2O Project is completed.[30]

In the current application, OPG requested approval to incorporate the remaining $494.7 million of the D2O Project capital cost into rate base.[31] OPG also requested approval for recovery of the portion of the Capacity Refurbishment Variance Account (CRVA) balance, as at December 31, 2019, related to the D2O Project.[32]

The D2O Project cost estimate was subject to a number of updates between 2012 and 2018, as shown in Table 1 below. The cost estimates span the period encompassing the Full Definition Release to the final Superseding Execution Release.

[23] Exhibit D2 / Tab 2 / Schedule 10 / pp. 5 and 9.
[24] Exhibit D2 / Tab 2 / Schedule 10 / p. 47.
[25] Exhibit D2 / Tab 2 / Schedule 10 / Attachment 4 / p. 3.
[26] Exhibit D2 / Tab 2 / Schedule 10 / p. 102; and Exhibit D2 / Tab 2 / Schedule 10 / Attachment 4 / p. 8.
[27] Argument-in-Chief / p. 31.
[28] Exhibit D2 / Tab 2 / Schedule 10 / p. 1.
[29] *Ibid.*
[30] EB-2013-0321 / Decision with Reasons / November 20, 2014 / pp. 58-59.
[31] Exhibit D2 / Tab 2 / Schedule 10 / p. 12. The $494.7 million capital cost for which OPG seeks approval to close to rate base in the current proceeding includes $160 million in 2016, $320.9 million in 2019, and $13.8 million in 2020.
[32] Exhibit H1 / Tab 1 / Schedule 1 / p. 20.

Table 1: D2O Project Releases and Cost Estimates (June 2012 – January 2018)[33]

	Date	Estimate ($ million)	General Contractor[34]
Full Definition Release	June 2012	108	Black & McDonald
Partial Execution Release	August 2012	108	Black & McDonald
Full Execution Release	May 2013	110	Black & McDonald
Superseding Execution Release	March 2015	381	CanAtom[35]
Superseding Execution Release	February 2018	510	CanAtom

OPG stated that it acted prudently with respect to the D2O Project and that the costs it seeks to recover for the project reflect the true cost to design, engineer, procure materials for, construct, and commission the D2O Project.[36] In support of its position, OPG filed an expert report prepared by Bates White Economic Consulting (Bates White).

Overview of OEB Staff's Position

OEB staff does not dispute the need for the D2O Project. Although it can be debated whether the D2O Project is truly, as OPG says, a "first of a kind" project,[37] there can be little doubt that building a facility of this scale and complexity, especially within an existing nuclear power plant, and in accordance with the applicable nuclear standards, was a challenging undertaking. OEB staff acknowledges that OPG's witness, Mr. Reiner, said that "this is the most complex engineering modification under the Darlington refurbishment project," and that OPG's independent advisers noted in a 2014 report that the project "is as technically and logistically complex as virtually any work on the DR Project."[38]

OEB staff's submission focuses on OPG's management of the D2O Project.

[33] Exhibit L / D2-02-SEC-094 / p. 1.
[34] Exhibit D2 / Tab 2 / Schedule 10 / pp. 44-47 provides an overview of OPG selecting Black & McDonald as the first contractor for the D2O Project while Exhibit D2 / Tab 2 / Schedule 10 / pp. 69-71 details Black & McDonald's termination. Exhibit D2 / Tab 2 / Schedule 10 / pp. 78-80 provides an overview of OPG selecting CanAtom as the second contractor for the D2O Project.
[35] CanAtom is a SNC-Lavalin / Aecon joint venture.
[36] Argument-in-Chief / p. 11.
[37] Oral Hearing Transcripts / Vol. 2 / pp. 103-111.
[38] Oral Hearing Transcripts / Vol. 2 / p. 109; and Exhibit L / D2-02-Staff-105 / Attachment 2 / p. 17.

The D2O Project was completed more than four years late[39] and $400 million overbudget.[40] A substantial portion of the overrun can be attributed to poor project management by OPG. Therefore, a substantial disallowance is in order.

The D2O Project was star-crossed from the beginning. OPG's own advisers noted that the group tasked with managing it had never taken on a project of similar scale and was "completely overwhelmed".[41] The same advisers noted shortcomings with the corporate "culture" that reduced risk management to a "check-the-box" exercise.[42]

OPG's "hands-off" approach to supervising its contractors[43] in the early years of the D2O Project led to a cascade of cost and schedule increases. OPG ended up having to fire its first general contractor.[44] After hiring the second one, significant redesign work had to be done.[45]

OPG argues that the project costs increased due to the evolving scope of the D2O Project. It maintains that it acted prudently at all times, and that, "[i]n the end, OPG's cost to complete the project reflects the true cost of constructing the heavy water storage facility, as established by the Bates White team of independent experts."[46]

OEB staff disagrees. There is no doubt that the scope changes – including both deliberate changes to the design and functionality of the D2O Project, and changes that had to be made to deal with construction conditions that were not fully factored into the initial planning – contributed to the final $510 million cost to OPG being several times higher than the earlier estimates. However, scope changes do not tell the whole story. OPG's project management was clearly responsible for some of the cost overrun experienced.

As discussed in more detail below, OEB staff submits that the approach the OEB took in OPG's 2017-2021 Payment Amounts proceeding in respect of two other Darlington

[39] As shown in the 2013 Full Execution Release business case summary at Exhibit D2 / Tab 2 / Schedule 10 / Attachment 2o / p. 3, the estimated in-service date for the D2O Project was October 2015. The project was substantially complete in November 2019 as shown at Exhibit D2 / Tab 2 / Schedule 10 / p. 102.
[40] At Exhibit D2 / Tab 2 / Schedule 10 / p. 1, the final cost of the D2O Project is $510 million. The 2013 Full Execution Release forecast a total cost of the project of $110 million as shown at Exhibit D2 / Tab 2 / Schedule 10 / p. 108. The D2O Project costs are largely capital as only $0.7 million of the total project cost is an OM&A expense.
[41] Exhibit L / D2-02-Staff-105 / Attachment 2 / p. 176.
[42] Exhibit L / D2-02-Staff-105 / Attachment 2 / pp. 182 and 189.
[43] Exhibit L / D2-02-Staff-105 / Attachment 2 / p. 180.
[44] Exhibit D2 / Tab 2 / Schedule 10 / p. 69.
[45] Exhibit D2 / Tab 2 / Schedule 10 / pp. 81-82.
[46] Argument-in-Chief / p. 32.

projects managed by the same OPG project team, the Auxiliary Heating System (AHS) and Operations Support Building (OSB), applies to the D2O Project. For the AHS and the OSB projects, the OEB first determined the amount of the overrun by comparing the final proposed in-service amount against OPG's own estimate in the first execution business case. The OEB then apportioned the overrun between the two contributing factors – scope changes, for which OPG could not be faulted, and "performance issues", for which it could be – and concluded based on the facts that the appropriate split was 50:50. It therefore disallowed half of the overrun on each of the AHS and OSB projects.[47]

In this case, for the reasons that follow, OEB staff submits that the appropriate split is 60:40. Therefore, 40% of the $400 million cost overrun on the D2O project ($160 million) should be disallowed.

In addition, OEB staff submits that OPG's proposed timing of the D2O Project-related in-service additions is not appropriate. OEB staff is of the view that the D2O Project-related assets for which OPG proposed a 2016 in-service date and a 2019 in-service date were not used or useful in those years. OEB staff submits that these assets should instead be applied a March 2020 in-service date to align with the timing that the D2O Project was capable of receiving heavy water.

OPG's Poor Management of the D2O Project

Some of the best evidence of OPG's poor management of the D2O Project can be found in the reports prepared for OPG's board of directors by Modus Strategic Solutions Canada and Burns & McDonnell Canada (Modus / Burns).[48] The Auditor General also cites OPG's poor management of the D2O Project as a reason for the cost overruns experienced in its 2018 report.[49] The issues revealed in these reports include: poor contracting practices, poor project management and contractor oversight, and poor risk assessment and mitigation.

Poor Initial Contracting Practices

With respect to contracting, Modus / Burns stated that OPG's Projects and Modifications (P&M) group mischaracterized vendor bids in the business case summaries and overvalued "…price as a consideration in the contractor selection process, especially in light of the fact that the work was going to be performed on a cost-reimbursable basis

[47] EB-2016-0152 / Decision and Order / December 28, 2017 / pp. 20-21.
[48] Exhibit L / D2-02-Staff-105 / Attachment 2.
[49] Exhibit K1.9.

and the bid prices were not binding."[50] Further, "P&M gave only token consideration to determining which contractor had a better approach for executing the work. P&M chose the 'low bidder' even though the other contractor's qualifications and project approach were viewed more favorably. Thus, P&M created the conditions for a perfect storm of cost and schedule overruns."[51]

The Auditor General was also critical of OPG's criteria for selecting contractors in its 2018 report. The Auditor General observed that OPG's underweighting of technical criteria when selecting a contractor contributed to cost overruns and delays.[52]

The flaws in the contractor selection process were confirmed by OPG's termination of Black & McDonald's D2O Project Purchase Order on October 16, 2014, citing Black & McDonald having issues in carrying out its obligations related to estimating, scheduling, and managing the D2O Project.[53] OEB staff also notes that when OPG undertook efforts to select the second contractor to complete the D2O Project, it revised its weighting criteria. OPG reaffirmed, in its Argument-in-Chief, that the technical merit was revised to comprise 75% of the weighting when selecting the second contractor, an increase from the 50% used when originally selecting Black & McDonald.[54] This change in approach highlights that OPG should have more heavily weighted the technical criteria in its initial contracting strategy.

OEB staff submits that OPG's approach, which overvalued price in the selection process, particularly for a project, as characterized by OPG, as being a "first of a kind, multifaceted facility",[55] does not reflect a prudent management decision, and as noted by the Auditor General,[56] contributed to cost overruns and schedule delays.

Poor Project Management and Contractor Oversight

Modus / Burns observed that OPG's P&M group had never managed anything like the D2O Project, and was "completely overwhelmed":[57]

> Many of the Campus Plan Projects are forecasted to complete significantly beyond the approved budgets and schedules…the predominant cause was OPG's Projects & Modifications ("P&M") organization, who is managing this work for the DR Project, incorrectly applied an "oversight" project management approach for its

[50] Exhibit L / D2-02-Staff-105 / Attachment 2 / p. 182.
[51] *Ibid.*
[52] Exhibit K1.9 / p. 150.
[53] Exhibit D2 / Tab 2 / Schedule 10 / p. 69.
[54] Argument-in-Chief / pp. 17 and 25.
[55] Exhibit D2 / Tab 2 / Schedule 10 / p. 2.
[56] Exhibit K1.9 / p. 150.
[57] Exhibit L / D2-02-Staff-105 / Attachment 2 / p. 176.

> EPC contracting strategy, leading to a series of cascading management failures and contractor performance issues, including misunderstandings of scope, uncontrolled scope creep, poor quality cost estimates, unrealistic and incorrect schedules and an inability to manage known risks, additional costs and delays. For multiple reasons described herein, P&M was completely overwhelmed in trying to manage Campus Plan Projects – in particular, the two largest of these projects, the D2O Storage Facility and Auxiliary Heat Steam Plant ("AHS") which were the "pilot" projects for this new contracting model.[58] [Emphasis added]

Referring to the passage above, the Auditor General noted that, "[i]n May 2014, a Project advisor engaged by OPG's Board of Directors indicated that OPG had a 'hands-off' approach in its oversight of contractor planning of prerequisite work, 'leading to a series of cascading management failures and contractor performance issues.'"[59]

Modus / Burns further observed that "Project & Modifications' (P&M) early management of the pre-requisite Campus Plan Projects, and in particular the D2O Storage Facility and Auxiliary Heating Steam system (AHS), exposed some critical project management gaps."[60]

Modus / Burns stated that OPG placed excessive faith in the contractor's ability to complete the necessary work and an over-reliance on the perceived ability of the Engineer, Procure and Construct (EPC) contracting model to shift project risk to the contractor and reduce the need for active project management. As a result, OPG chose to provide oversight of the contractor's work at arms-length.[61] Modus / Burns further stated that the P&M group did not have the necessary experience, training or internal management direction to properly manage the campus plan work,[62] and that "P&M gave the contractors complete latitude to develop their [p]roject schedules and did not adequately vet these schedules' quality."[63] On top of that, P&M's leadership was in flux: in October 2015, Modus / Burns reported that "P&M is undergoing a fourth leadership transition since July 2013 and stability and direction is urgently required."[64]

Modus / Burns' assessment of the P&M team's inexperience in managing a project like the D2O Project is corroborated by OPG's first contractor, Black & McDonald, in its October 21, 2014 response to being terminated by OPG: "OPG project management on the project had never managed a construction project of this magnitude and it became apparent that they had little to no influence with the other OPG stakeholders to remove

[58] *Ibid.*
[59] Exhibit K1.9 / p. 156.
[60] Exhibit L / D2-02-Staff-105 / Attachment 2 / p. 3.
[61] Exhibit L / D2-02-Staff-105 / Attachment 2 / p. 180.
[62] *Ibid.*
[63] Exhibit L / D2-02-Staff-105 / Attachment 2 / p. 22.
[64] Exhibit L / D2-02-CME-019 / Attachment 39, p. 2. Presentation by Modus / Burns prepared for OPG Board of Directors retreat, October 1-2, 2015.

obstacles, secure access or obtain approvals to facilitate the B&M project team to proceed on time and within budget."[65]

Modus / Burns went so far as to state that OPG's handling of the D2O Project and AHS Project "may cause external stakeholders to question OPG's management prudence."[66]

The Auditor General added that, "[i]n July 2016, a group of advisors engaged by OPG senior management identified weaknesses in OPG's contractor oversight and project management culture (such as 'a cultural tolerance for acceptance of work delays' and '[weak m]anagement behaviour when [s]chedule expectations are missed'). In particular, the advisory group stated that 'the prevailing "discussion" at a meeting is focused on when the new target completion date is, but little to no discussion as to why was it missed, why [were] there no previous warnings or requests for assistance [and] why there was not a previous recovery plan to ensure the target completion date would not be missed."[67]

The Auditor General tied the P&M group's limited experience with complex projects and poor project management and oversight of external contractors to the cost overruns and delays that were experienced with the Darlington Refurbishment prerequisite projects (including the D2O Project).[68] OEB staff submits that OPG's poor performance in the area of project management and contractor oversight led to a portion of the cost overrun experienced with respect to the D2O Project.

Poor Risk Assessment and Mitigation

With respect to risk management, the P&M group was observed to not actively manage risks as part of an effective risk management program, with very little attention paid to risk management after obtaining full execution funding. Modus / Burns stated that:

> …it appears that all 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 part of an effective risk management program. As an example, the risk sections of the D2O 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.[69]

[65] Exhibit L / D2-02-SEC-096 / Attachment 2 / p. 3.
[66] Exhibit L / D2-02-Staff-105 / Attachment 2 / p. 185.
[67] Exhibit K1.9 / p. 156. Although the Auditor General does not specifically identify the report being referenced, it appears to be the Construction Review Board Report for the July 18-22, 2016 period. This report can be found at EB-2016-0152 / Exhibit L / Tab 4.3 / Schedule 15 / SEC-037 / Attachment 2.
[68] Exhibit K1.9 / p. 150.
[69] Exhibit L / D2-02-Staff-105 / Attachment 2 / p. 182.

[Emphasis added]

In addition, Modus / Burns stated that, "risk management was not taken seriously in the P&M organization…Most importantly, there needs to be a culture shift towards recognizing risk management as an important aspect of maintaining cost and schedule. This culture shift can only be driven from the top of the organization."[70]

Based on the above discussion of OPG's poor contracting practices, poor project management and oversight, and poor risk assessment and mitigation, OEB staff submits that a portion of the total final costs incurred should be deemed imprudent and not recoverable from ratepayers.

OEB staff also submits that although OPG was working towards improving its management strategies and processes over the course of the D2O Project, OPG's poor management in the early stages had lasting impacts on the final actual cost of the project as is discussed further in the section below.

Poor Management and the Lasting Cost Impact

In cross-examination, OPG's witness, Mr. Reiner, emphasized that the Modus / Burns reports reflected "a backwards look up to that point in time" and that "[c]orrective actions were taken".[71] OEB staff acknowledges that it appears that OPG sought to modify its project management approach based on lessons learned as the project was ongoing. OEB staff further acknowledges that, as required by the OEB in the 2017-2021 Payment Amounts proceeding, OPG filed a KPMG audit of its P&M group in this proceeding, which is largely favourable in its assessment of the group's current project controls.[72]

Nevertheless, mistakes made early in a project can have lasting impacts. With respect to the D2O Project, that is the case. For instance, while Modus / Burns applauded OPG's engineering team for "taking on a much more active role in directly managing the remaining engineering work", it concluded that "the damage to a certain extent cannot be fully mitigated, as the affected Campus Plan Projects will cost more…"[73] Modus / Burns also observed that early mistakes constrained the options available for the duration of the project. In particular:

[70] Exhibit L / D2-02-Staff-105 / Attachment 2 / p. 189.
[71] Oral Hearing Transcripts / Vol. 3 / p. 4.
[72] EB-2016-0152 / Decision and Order / December 28, 2017 / p. 19. OPG was required to file "an independent audit of its nuclear P&M organization including adherence to best practices, measures and reporting regarding cost and schedule performance, and implementation of lessons learned." This audit was filed in the current proceeding as Exhibit D2 / Tab 1 / Schedule 1 / Attachment 2.
[73] Exhibit L / D2-02-Staff-105 / Attachment 2 / p. 177.

> As a direct consequence of P&M's 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.[74]

Similarly, Modus / Burns highlighted that "[t]he legacy issues that caused the schedule and cost variances for the two key projects – D2O Storage and AHS – will continue to be a challenge…"[75]

OEB staff submits that OPG's poor management in the early stages of the project resulted in lasting cost impacts on the D2O Project.

Hindsight is Not Required

OPG argues that hindsight should not be used in determining prudence, and that its decisions over the course of the D2O Project should be evaluated based on what was known or reasonably should have been known at the time of the project.[76] OEB staff's response is that no hindsight is required in order to identify imprudence. The evidence of imprudence is found mainly in contemporaneous accounts of the project, especially the Modus / Burns reports. Those reports reveal that it was apparent to an independent outsider monitoring the project in real time that OPG's early project management processes and controls were lacking.

The Bates White Report

OPG filed an independent expert report prepared by Bates White for the purposes of this proceeding at the request of OPG's counsel. Bates White asserts that, assuming "perfect knowledge" with respect to project scope, design requirements, and actual site conditions encountered, the cost estimate for constructing the D2O Project would have been calculated at $512.1 million prior to the start of construction.[77] Bates White was not asked to opine on prudence, and it did not: "[a]t no point did we consider the prudence of any action which was taken or not taken."[78]

[74] Exhibit L / D2-02-Staff-105 / Attachment 2 / p. 185.
[75] Exhibit L / D2-02-Staff-105 / Attachment 2 / p. 6.
[76] Argument-in-Chief / p. 10.
[77] Exhibit J3.04 / Attachment 1 / p. 5; and Oral Hearing Transcripts / Vol. 3 / p. 56.
[78] Oral Hearing Transcripts / Vol. 3 / p. 76.

OEB staff submits that the report prepared by Bates White should be given little weight. Bates White knew, before it prepared its report, that OPG's cost estimates for the D2O Project had kept growing, and that the 2018 Superseding Execution Release put the cost at $510 million. It did not ask OPG to withhold or redact such information, even though it acknowledged in cross-examination that "perhaps with 20/20 hindsight we could have proceeded differently on that front."[79] Bates White maintained that they "honestly did not let that colour our expectations as to where the number would come out. It's – I admit astonishing how close our estimate came out to what apparently was the actual cost."[80]

OEB staff submits that the possibility that the knowledge of OPG's actual costs at least subconsciously coloured the analysis cannot be ruled out. Knowing the $510 million figure may at least have created an "anchor bias". The authors' failure to shield themselves from such knowledge was a methodological flaw that calls into question the conclusions.

It is instructive to compare Bates White's approach with the approach taken by another third-party consultant who was asked to validate a D2O Project-related cost estimate. In March 2017, OPG and its second contractor on the project, CanAtom, agreed to a "D2O Recovery Plan" which, among other things, required CanAtom to retain High Bridge Associates, Inc. (High Bridge) to provide OPG with the cost, schedule and remaining scope to complete the D2O Project.[81] In its evidence, OPG explains that, "[t]o ensure independence, High Bridge avoided reviewing CanAtom's estimate of the cost to complete the project."[82]

The Appropriate Remedy

As noted above, OEB staff suggests that the OEB's decision to disallow some of the costs claimed by OPG in its 2017-2021 Payment Amounts proceeding for the AHS and OSB projects – projects that were also managed by the P&M group – is an informative precedent.

The OEB explained:

> The OEB has considered the submissions of parties as well as the Supplemental Report prepared by Modus. That report comments on the D2O and AHS projects, and states that the cause of the overruns "root from mistakes made by management." The report also states that "many of the cost variances appear to

[79] Oral Hearing Transcripts / Vol. 3 / pp. 118.
[80] Oral Hearing Transcripts / Vol. 3 / pp. 119.
[81] Exhibit D2 / Tab 2 / Schedule 10 / pp. 92-93.
[82] Exhibit D2 / Tab 2 / Schedule 10 / p. 93 (emphasis added).

> be scope based, i.e. OPG is getting more value albeit for a higher cost." On the basis of these two considerations, mismanagement and increased scope, the OEB disallows 50% of the variances between the first execution business case and the proposed in-service addition on a permanent basis.
>
> The OEB is prepared to accept that there may be some merit to OPG's argument that there was an increase in scope. However, the OEB is not prepared to accept that the entire increase in cost is due to an increase in scope. The evidence shows that there were other options available to OPG when selecting a contractor that may not have been adequately explored. In addition, the Modus report speaks to issues with management of the project. The OEB cannot determine on an exact basis how much of the increased cost is due to additional scope and how much is due to project management issues. Therefore the OEB has considered both factors and has determined it will allow 50% of the increased cost on account of increased scope and disallow 50% of the increased cost to account for poor management.[83] [Emphasis added]

The passage above sets out a two-step process. First, the cost variance should be calculated by comparing the first execution business case and the proposed in-service amount. Second, the variance should be apportioned based on causality: the portion attributable to imprudence should be disallowed. This apportionment exercise is not a strictly scientific exercise but rather is a matter of judgment, based on the evidence.

In this case, the first execution business case estimate was the 2013 Full Execution Release estimate of $110 million. Subtracting that from the proposed final D2O Project cost of $510 million[84] results in a total cost overrun of $400 million. OPG argues that the $110 million estimate was prepared before the full scope of the project was understood.[85] That may be the case, but the fact is, it was presented to OPG's senior management as a Class 2 estimate, and full funding was authorized on that basis.[86] (It was also in evidence in OPG's 2014-2015 Payment Amounts proceeding, when the OEB first approved the addition of a small portion of the D2O Project costs to rate base.[87]).

OEB staff considered what else project performance could be measured against. OPG implies that the first realistic estimate was not until the 2018 Superseding Execution Release of $510 million,[88] which of course would mean that there is no variance at all. But that was prepared five years after the First Execution Release estimate, when construction was well underway; OPG had already spent $399 million[89] and the end

[83] EB-2016-0152 / Decision and Order / December 28, 2017 / pp. 20-21.
[84] OEB staff notes that the total D2O Project cost ($510 million) is almost entirely capital ($509.3 million).
[85] Argument-in-Chief / p. 10.
[86] Exhibit D2 / Tab 2 / Schedule 10 / pp. 108-109; Exhibit D2 / Tab 2 / Schedule 10 / Attachment 2o / p. 2; and EB-2016-0152 / Exhibit D2 / Tab 2 / Schedule 10 / p. 17.
[87] EB-2013-0321 / Undertaking JT3.12.
[88] Argument-in-Chief / p. 11.
[89] Undertaking JT1.12.

was in sight. OPG's logic, if taken to its extreme, would mean that there is no such thing as a cost overrun, only premature estimates. If the only estimate that matters is the estimate that aligns with the final cost of the project, and all earlier estimates can be discounted as premature or conceptual, then every project will be on budget.

OEB staff also considered how much of the $400 million overrun on the D2O Project is attributable to problems with project management. OPG's position is that none of it is: any cost increases are due entirely to scope changes, and there was no imprudence.[90] OEB staff does not dispute that a portion of the D2O Project cost overruns are directly associated with a poor initial cost estimate and various scope changes being required after more substantive design work had been completed and site-specific challenges were encountered. OEB staff believes that costs exceeding a low initial estimate should not be, in the absence of other issues, considered imprudent (i.e., if the final cost of a project is higher than a poorly developed estimate, it does not mean that all incremental spending is imprudent). However, with respect to the D2O Project, there is ample evidence demonstrating imprudent management.

OEB staff acknowledges that OPG was working towards rectifying the management problems while the D2O Project was ongoing, but the evidence reveals that the impact of OPG's poor management on the D2O Project cost could not be mitigated entirely. However, OEB staff submits that OPG does deserve credit for renegotiating its contractual arrangement with CanAtom in a way that resulted in CanAtom absorbing at least $77 million in expenses.[91] During the 2016-2017 period, OPG and CanAtom had contract disputes with respect to the D2O Project. Through negotiations, OPG and CanAtom reached a comprehensive settlement agreement on June 27, 2017. As part of the comprehensive settlement, CanAtom agreed to a maximum price that resulted in OPG paying no more than $510 million for the D2O Project.[92]

In OPG's 2017-2021 Payment Amounts proceeding, in respect of the AHS and OSB projects, the OEB explained that it was unable to "determine on an exact basis how much of the increased cost is due to additional scope and how much is due to project management issues", and that a 50:50 split was therefore appropriate.[93]

OEB staff's view is that attributing 50% of the D2O Project overrun to imprudence would be too high, as it would not take into account OPG's successful offloading of at least $77 million in costs to CanAtom. On the whole, for all the reasons previously discussed, OEB staff submits a 60:40 split is appropriate with respect to the D2O Project. This

[90] Argument-in-Chief / p. 11.
[91] Exhibit D2 / Tab 2 / Schedule 10 / p. 113.
[92] Exhibit D2 / Tab 2 / Schedule 10 / pp. 95-97.
[93] EB-2016-0152 / Decision and Order / December 28, 2017 / pp. 20-21.

results in a permanent disallowance of 40% of the $400 million cost overrun, or $160 million.[94]

D2O Project-related CRVA Balance

OPG requested approval for recovery of the portion of the CRVA balance, as at December 31, 2019, related to the D2O Project.[95]

OEB staff submits that, if the OEB agrees with OEB staff's argument, the impact of the proposed permanent rate base disallowance for the D2O Project should be reflected in the CRVA balance approved for recovery in the current proceeding.

In addition, OEB staff submits that the D2O Project-related assets for which OPG proposed a 2016 in-service date[96] and a 2019 in-service date[97] should instead be applied a March 2020 in-service date to align with the timing that the facility was capable of receiving heavy water.[98]

OPG noted that the proposed 2016 in-service addition ($160 million) reflects the costs of the seismic dike, five PHT storage tanks, and the piping and equipment necessary to allow them to receive heavy water, if required. OPG stated that these assets were declared useful once the seismic dike was completed, piping was installed to create a flow path to fill the PHT tanks with Unit 2 PHT heavy water, and the tanks were capable of storing heavy water.[99] However, OPG stated that, given the availability of an alternative solution for storing the heavy water from Unit 2, the five PHT tanks that form part of the 2016 in-service addition were not used to store heavy water at that time.[100] OPG also noted that to actually use the D2O Project to store the heavy water from Unit

[94] Undertaking J3.2 / pp. 1-2. OPG provided an illustrative calculation of the impact of a $200 million disallowance to the D2O Project on the 2022-2026 revenue requirement. OPG noted that a $200 million rate base disallowance would reduce the 2022-2026 revenue requirement by $79.2 million. Extrapolating from that calculation, OEB staff estimates that a $160 million rate base disallowance on the D2O Project would reduce the 2022-2026 revenue requirement by approximately $63 million.
[95] Exhibit H1 / Tab 1 / Schedule 1 / p. 20.
[96] At Exhibit D2 / Tab 2 / Schedule 10 / p. 12, OPG notes that there was a $160 million in-service addition in 2016 related to the D2O Project. In Exhibit B3 / Tab 3 / Schedule 1 / Table 1 and Table 1a, the $160 million D2O Project-related in-service addition is shown to be added to rate base in 2016 but is applied a first-year weighting of zero as the assets came into service on December 31, 2016. The first year where this in-service addition has an impact on rate base (and therefore the revenue requirement recorded in the CRVA) is 2017. The revenue requirement recorded in the CRVA associated with the noted $160 million in-service addition is shown at Exhibit H1 / Tab 1 / Schedule 1 / Table 16.
[97] As shown in Exhibit B3 / Tab 3 / Schedule 1 / Table 1 and Table 1a, OPG proposed that the majority of the D2O Project ($320.9 million) be applied a November 30, 2019 in-service date. OPG proposed that a small portion of the D2O Project ($13.8 million) be considered in-service in 2020.
[98] Exhibit D2 / Tab 2 / Schedule 10 / Attachment 4 / p. 8.
[99] Exhibit D2 / Tab 2 / Schedule 10 / p. 13.
[100] Exhibit L / D2-02-SEC-093 / p. 1.

2 would have required the installation of a number of temporary systems (including leak detection and radiation monitoring).[101] Therefore, OEB staff submits that the D2O Project should not be considered used or useful in 2016 as not all of the systems necessary to actually store heavy water were installed at that time.

OPG noted that the proposed 2019 in-service addition ($320.9 million) reflects the costs when the project was substantially complete. At that time, almost all of the systems, equipment and the above ground portions of the building were placed into service. However, additional monitoring and control systems were still yet to be completed. These additional monitoring and control systems were placed in service in 2020. The D2O Project was not declared capable of accepting heavy water until March 2020. In November 2020, the D2O Project accepted PHT heavy water drained from Unit 3.[102]

OEB staff notes that the OEB has approved partial in-service amounts associated with large capital projects closing to rate base in the past. OEB staff is of the view that this is entirely appropriate as long as the assets that underpin the partial in-service amount are used or useful. With respect to the 2016 and 2019 D2O Project-related in-service additions, as discussed above, the relevant assets were not used or useful at those times. Therefore, it is appropriate to start cost recovery for the noted assets at the time that the that D2O Project was declared capable of receiving heavy water (March 2020).[103,104]

If the OEB agrees with OEB staff's submission, the CRVA balance proposed for disposition in the current proceeding should be adjusted to reflect both: (a) the impact of any permanent rate base disallowance for the D2O Project; and (b) the impact of changing the timing of the in-service additions associated with D2O Project-related assets from 2016 and 2019 to March 2020.

If the OEB does not accept OEB staff's argument with respect to the appropriate timing of the in-service additions but does apply a permanent rate base disallowance, OEB staff submits that OPG's illustrative approach to implementing the disallowance is not appropriate. OPG provided an illustrative calculation of the impact of a $200 million rate base disallowance on the year-end 2019 CRVA balance. OPG noted a $200 million disallowance would result in $2.8 million reduction to the CRVA balance sought for

[101] Exhibit D2 / Tab 2 / Schedule 10 / p. 88.
[102] Exhibit D2 / Tab 2 / Schedule 10 / pp. 101-102; and Exhibit D2 / Tab 2 / Schedule 10 / Attachment 4 / p. 8.
[103] Exhibit D2 / Tab 2 / Schedule 10 / Attachment 4 / p. 8.
[104] OEB staff notes that its argument with respect to the change in timing for the recovery of the D2O Project-related costs does not materially change the amount that is eventually recovered over the life of the asset (it is simply a shift in the time period over which the costs are recovered). This argument will, however, reduce the D2O Project-related CRVA balance sought for recovery in the current proceeding.

recovery in the current proceeding.[105] OPG appears to have applied this illustrative disallowance to the proposed rate base additions in 2019 and 2020.[106] OPG's approach operates to reduce only the 2019 CRVA entry (and not the entries in 2017-2018).[107] It is not clear to OEB staff why OPG intends to apply the rate base disallowance (which may, or may not be, ordered by the OEB) starting in 2019. OEB staff submits that any disallowance ordered by the OEB should be applied on an in-service addition weighted basis across the various years that the D2O Project-related assets were brought into service.[108] OEB staff is of the view that this would better reflect that the disallowance is applicable to the entire D2O Project.

OEB staff notes that its arguments with respect to a permanent rate base disallowance for the D2O Project and the timing of in-service additions will also impact the 2020 and 2021 CRVA balances (which OEB staff expects OPG will seek recovery of in a future application) and 2022 opening rate base.

~All of which is respectfully submitted~

[105] Undertaking J3.2 / pp. 2-3.
[106] As shown in Undertaking J3.2 / Attachment 1 / p. 2, OPG applied $186.2 million of the disallowance to rate base in 2019 and $13.8 million of the disallowance to rate base in 2020.
[107] Undertaking J3.2 / Attachment 1 / p. 3; and Exhibit H1 / Tab 1 / Schedule 1 / Table 16.
[108] An in-service addition weighted basis would apply any disallowance ordered by the OEB as follows: (a) 2016 – 32.3%; (b) 2019 – 64.9%; (c) 2020 - 2.8%. OEB staff submits that the 2014 in-service additions ($14.6 million) are already included in rate base and should not be applied any of the disallowance. As noted previously, even though the OEB approved the 2014 in-service additions, the total D2O Project cost is still subject to a prudence review.