

SEC Interrogatory #201

Interrogatory

**Reference:
G1-1-1, Table 1**

Question(s):

With respect to hydroelectric other revenue:

- a) Please provide 2025 actuals.
- b) Please explain the forecasted drop in Ancillary Services revenue (line 1) in 2026 and 2027 from the 2016-2024 average.

Response

- a) Refer to Ex. L-A1-CCC-001, Attachment 1, Table 64.
- b) The 2026 and 2027 hydroelectric Ancillary Services forecast revenues are lower than the historical average for 2016-2024, primarily due to lower forecasted Operating Reserve (“OR”) and the impact of the Niagara Hydrogen Center (“NHC”) on the Regulation Service revenues as described in Ex. L-G1-Staff-241.

As discussed in Ex. E1-2-1, Section 6.1, OPG expects the addition of approximately 3,000 MW of battery energy storage facilities in Ontario between 2025-2028. This increase in battery energy storage is expected to reduce OR prices going forward due to increased supply and competition in the OR markets.

CCC Interrogatory #097

Interrogatory

Reference:

Exhibit G2, Tab 1, Schedule 1, pp. 6-7

Preamble:

Direct costs for heavy water processing services are for estimated incremental direct labour costs attached to processing heavy water for Bruce Power at the TRF and direct labour (e.g., handling, testing, packaging) and other costs (e.g., shipping) attached to the provision of other services (e.g., loans, swaps, upgrading) to third parties.

Question(s):

- a) How does OPG establish the price it charges to 3rd parties, including Bruce Power, for Heavy Water processing?
- b) Please explain if and how the D2O Storage Facility is used to facilitate Heavy Water Processing.
- c) To the extent that the D2O Storage Facility is used to facilitate Heavy Water Processing, please explain if and how the costs of the D2O Storage Facility are allocated to the costs recovered from third parties for heavy water processing.
- d) Please provide a fully allocated pricing analysis of the heavy water processing service.

Response

- a) Current heavy water processing revenue is earned from the provision of detritiation services to Bruce Power LP only and responses to follow are specific to that commercial relationship.

OPG's current unit pricing for heavy water processing is set for a defined period based on a forecast of the heavy water processing volumes and costs. The unit price is determined on a forward-looking basis and includes provision for recovery of direct and allocated OM&A costs relating to the operations of the Tritium Removal Facility ("TRF") and a return of and on TRF related capital investments and, as discussed below, a portion of the Heavy Water Storage and Drum Handling Facility ("D2O Storage Facility"). The capital investment costs are straight line

1 depreciated over the respective useful lives and a cost on capital is applied on the
2 undepreciated asset balance. The unit price calculation includes a true-up
3 mechanism that adjusts for any over or under recovery from the previous period,
4 based on actual usage, accounting for the tritium content of the heavy water
5 processed, and costs.

6
7 As discussed in EB-2020-0290, the D2O Storage Facility was executed to meet
8 two distinct needs – to support the Darlington Refurbishment Program, and to
9 achieve operational improvement in heavy water processing.¹ The D2O Storage
10 Facility capacity for operational improvement is used to facilitate heavy water
11 processing by enabling greater storage of TRF feed and product to address gaps
12 between TRF availability and the demand for tritium removal, including when the
13 TRF is undergoing an outage, and facilitating a more flexible heavy water shipment
14 schedule between stations.

- 15
16 b) OPG recovers a portion of D2O Storage Facility costs through the unit pricing
17 charged to Bruce Power LP for heavy water processing, as described above. The
18 calculation of Bruce Power LP's share of the D2O Storage Project's costs reflects
19 the application of: (i) [REDACTED], being the determined allocation of the facility's capacity
20 supporting heavy water management services; and (ii) the ratio of the quantity of
21 heavy water processing services provided to Bruce Power LP by the TRF during
22 the relevant period compared to OPG's internal usage of the TRF.²
23
24 c) OPG's heavy water processing pricing basis for the detritiation services provided
25 to Bruce Power LP is described in part a) above. This fully allocated current price
26 of [REDACTED] is detailed in Chart 1 below.

¹ EB-2020-0290: Ex. D2-2-10, pp. 36-38; Tr. Vol. 2, pp. 17-20.

² EB-2020-0290: Ex. L-D2-02-SEC-091 and Ex. J2.8.

Chart 1 - Analysis of Current Heavy Water Processing Rate

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2

	Cumulative Pricing Period Forecasted Amounts
Expenses	
Direct OM&A Costs	
Allocated OM&A Costs	
Depreciation & Amortization	
Cost of Capital	
Total Heavy Water Processing Costs (\$) (A)	
Heavy Water Production Forecast (kg) (B)	
Heavy Water Processing Price (\$/kg) (A)/(B)	

3

¹ Excluding any true-up adjustments in respect of prior pricing period.

Board Staff Interrogatory #244

Interrogatory

Reference:

Ref 1: Exhibit G2 / Tab 1 / Schedule 1 / p. 4

Ref 2: Exhibit G2 / Tab 1 / Schedule 1 / Table 1

Preamble:

At Reference 1, OPG explains that heavy water processing is comprised of tritium removal (detritiation) at the Tritium Removal Facility (TRF) and the TRF is reaching end of life. OPG is therefore undertaking the TRF Major Component Replacement Program, consisting of multiple projects over six outages between 2026-2038 (D2-T1-S3, section 3.1.3). OPG further states that heavy water processing is planned over the IR term based on TRF availability assumptions.

At Reference 2, the table indicates Heavy Water Sales & Processing (which is redacted) has historically accounted for the majority of Total Non-Energy Revenues and the forecast trend in the latter for the IR term appears to be consistent with the actual Total Non-Energy Revenues trend, except for 2027 where there is a significant decline from \$42.9 million to \$16.4 million and then increases back up to \$43.5 million in 2028.

Question(s):

- a) Please provide the TRF availability assumptions. For example, is 2027 the only year during the IR term that heavy water processing is expected to be impacted by the TRF Major Component Replacement Program?

Response

- a) Expected TRF availability over the IR term considers planned TRF outage scheduling, inclusive of the Tritium Removal Facility Major Component Replacement program ("TRF MCR") requirements and the TRF maintenance cycle, and an operating capacity factor that accounts for recent TRF performance while anticipating a phased improvement in availability through the TRF MCR. An operating capacity factor of [REDACTED] is applied for the years [REDACTED] and [REDACTED] is applied for the years [REDACTED]. Such operating capacity factors exclude the period of time when the TRF is in a planned outage.

1 The TRF is expected to be available in all years in the IR term, although the
2 availability is impacted each year by the planned TRF outage scheduling. Such
3 greatest impact on expected TRF availability occurs in 2027, as the TRF is
4 scheduled to undergo a planned outage for the majority of the year to accommodate
5 the corresponding TRF MCR scope. The outage impacts in the other years of the
6 IR term are lower based on their planned scope and duration, with the 2029 year
7 experiencing the second largest outage impact over the IR term.

Board Staff Interrogatory #245

Interrogatory

Reference:

Ref 1: Exhibit G2 / Tab 1 / Schedule 1 / p. 2

Ref 2: Exhibit F3 / Tab 2 / Schedule 1 / p. 1

Preamble:

At Reference 1, in relation to reactive support and voltage control (RSVC) service, OPG states forecast revenues over the IR term are expected to be zero under an agreement with the IESO. The reason provided for zero revenues is OPG only earns revenue “tied to production losses resulting from provision of the RSVC service outside the standard capability range of the respective resources”. OPG further notes it is proposing to discontinue entries into the related Ancillary Revenues Variance Account sub-account since no revenues are expected and the relatively modest variance amounts historically settled through the sub-account.

At Reference 2, OPG explains that the 2026 budgeted RSVC revenues are higher than the OEB approved revenues due to higher utilization of this ancillary service than OPG had expected.

Question(s):

- a) Please clarify what revenue “tied to production losses ... outside the standard capability range” means within the context of providing RSVC service.
- b) Did budgeted RSVC revenues exceed OPG expectations in 2026 under the current agreement with the IESO? If so, please explain why OPG expects zero revenues over the IR term.
- c) Given the current agreement with the IESO ends in July 2028 and the IR term extends out to 2031, does OPG’s expectation of continued zero revenues mean OPG expects to cease providing this service and will not enter into a new agreement with the IESO starting in August 2028?
- d) If OPG does expect to enter into a new agreement with the IESO starting in August 2028, please explain why OPG plans do so if it expects no revenues (i.e., no utilization of RSVC service).

1 Response
2

3 a) Within the context of RSVC services, “revenue tied to production losses resulting
4 from provision of RSVC service outside the standard capability range” refers to
5 revenues associated with operations outside the range required by the connection
6 requirements provided for in Chapter 4, Appendix 4.2 of the Market Rules.
7 Specifically, to connect to the IESO-controlled grid, generators must be able to
8 “continuously (i.e., dynamically) inject or withdraw reactive power at the high-
9 voltage terminal of the main output transformer up to 33% of the applicable rated
10 active power at all levels of active power, and at the typical transmission system
11 voltage...” thereby establishing a “standard capability range”.¹
12

13 b) Yes, 2026 budgeted RSVC revenues exceed OPG expectations reflected in the
14 2026 OEB-approved amounts. [REDACTED]
15 [REDACTED]
16 [REDACTED]
17 [REDACTED]
18 [REDACTED]
19 [REDACTED]
20 [REDACTED]

21 c) No. OPG’s expectation of zero RSVC revenue during the IR term does not mean
22 that OPG expects to cease providing RSVC service. It also does not mean that
23 OPG will not enter into a subsequent agreement with the IESO after July 2028.
24 [REDACTED]
25 [REDACTED]
26 [REDACTED]
27 [REDACTED]
28 [REDACTED]

29 d) OPG expects its RSVC agreement with the IESO, which includes both its nuclear
30 and hydroelectric facilities, will be renewed beyond July 2028. OPG notes that the
31 Market Rules direct the IESO to obtain reactive power resources to maintain
32 reactive support service and voltage control service in accordance with all
33 applicable reliability standards and that reactive support service and voltage control
34 service shall be made available by market participants. While OPG does not expect
35 any resulting revenues from its nuclear facilities during the IR term, it expects to
36 receive revenues from its regulated hydroelectric facilities for speed-no-load and
37 condense mode of operations.

¹ <https://www.ieso.ca/-/media/Files/IESO/Document-Library/Renewed-Market-Rules-and-Manuals/market-rules/ieso-mr-chapter0-4-appx.pdf>