

## OTHER REVENUES – REGULATED HYDROELECTRIC

### 1.0 PURPOSE

The purpose of this evidence is to present the forecast of revenues for the 2027 test year from sources other than energy production (“Other Revenues”) from OPG’s regulated hydroelectric generating facilities and to explain the proposed treatment of these revenues.

The forecast of Other Revenues is included as an offset in the calculation of OPG’s 2027 revenue requirement for the regulated hydroelectric facilities presented in this Application.

### 2.0 OVERVIEW

Other Revenues earned by OPG’s regulated hydroelectric facilities are revenues associated with ancillary services,<sup>1</sup> segregated mode of operation (“SMO”), water transactions, the Installed Capacity (“ICAP”) market, and Clean Energy Credits (“CEC”). Other Revenues also include the Hydroelectric Incentive Mechanism (“HIM”) Revenue Requirement Adjustment.

Consistent with the methodology approved in EB-2013-0321, differences between forecast and actual revenues associated with ancillary services, including impacts of future contract negotiations with the IESO, are recorded in the Ancillary Service Net Revenue Variance Account – Hydroelectric Sub Account (Ex. H1-1-1, Section 5.2).

The treatment of potential impacts of the IESO’s Market Renewal Program (“Renewed Market”) is discussed below as part of the detailed description of each Other Revenues forecast.

Exhibit G1-1-1, Table 1 presents the Other Revenues associated with the regulated hydroelectric assets for the period 2016-2027. Where possible, Other Revenues are tracked and recorded on a facility-specific basis. For the purposes of this exhibit, only those revenues that are directly associated with the regulated generation facilities have been included.

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<sup>1</sup> Ancillary Services include black start capability, operating reserve (“OR”), reactive support/voltage control, and Regulation Service (formerly referred to as Automatic Generation Control).

1     **3.0     ANCILLARY SERVICES**

2     Under the IESO Market Rules, ancillary service suppliers receive compensation for costs  
3     associated with supplying ancillary services. These include out-of-pocket costs, lost production  
4     costs and opportunity costs when providing the service, and any other compensation deemed  
5     by the IESO to be fair and reasonable.

6  
7     Ancillary service revenues are tracked at the station level and only those revenues related to  
8     the regulated facilities are included in this exhibit.

9  
10    Ancillary service revenue forecasts are expected to remain largely unaffected in the Renewed  
11    Market. Aside from OR, ancillary service revenues are generally determined by system needs  
12    and operating conditions rather than by market price signals or other changes that were  
13    introduced in the Renewed Market. Any variances from the forecast of revenues will be  
14    recorded and captured in the Ancillary Services Net Revenues Variance Account.

15  
16    **3.1     Black Start Capability**

17    Black start capability, as defined in the Market Rules, refers to the capability of a generation  
18    facility to start without an outside electrical supply so as to be used to energize a defined  
19    portion of the IESO-controlled grid.

20  
21    Black start revenues are paid to OPG on a fixed basis annually and are not impacted by the  
22    implementation of the Renewed Market.

23  
24    OPG forecasts revenues for black start capability for the 2027 test year on the same basis as  
25    the terms of the IESO-OPG Procurement of Certified Black Start Facilities Agreement effective  
26    June 1, 2021-May 31, 2026.

27  
28    **3.2     Reactive Support/Voltage Control Service**

29    Under the IESO Market Rules, Reactive Support and Voltage Control services (“RSVC”) refer  
30    to services provided by a market participant to allow the IESO to maintain the reactive power  
31    and voltage levels required by the IESO-controlled grid.

1 RSVC is not scheduled or settled based on market price and as a result is not impacted by the  
2 implementation of the Renewed Market.

3  
4 OPG forecasts revenues for RSVC for the 2027 test year per the terms of the IESO-OPG  
5 agreement for RSVC service effective August 1, 2025-July 31, 2028.

### 6 7 **3.3 Regulation Service**

8 As defined in the IESO Market Rules, Regulation Service refers to the process that  
9 automatically adjusts the output from a generation facility based on automated, electronic  
10 signals in order to provide frequency control and to maintain the balance between the demand  
11 from load and the supply from generation facilities.

12  
13 In the Legacy Market (referring to the market prior to the Renewed Market), the Regulation  
14 Service contract provided payments related to OR-related opportunity losses. In the Renewed  
15 Market these losses are compensated as Real-Time OR Make-Whole Payments and captured  
16 within OR revenues as described in Section 3.4. OPG forecasts revenues for Regulation  
17 Service for the 2027 test year as per the terms of the IESO-OPG Procurement of Regulation  
18 Services Agreement effective February 1, 2023-January 31, 2034.

#### 19 20 **3.3.1 Niagara Hydrogen Centre**

21 Currently, the provision of Regulation Service at Sir Adam Beck 2 GS requires turbine  
22 modulation that can result in a portion of water flows not being utilized by OPG for electricity  
23 production (“Unutilized Water”).

24  
25 The Niagara Hydrogen Centre (“NHC”), to be constructed and operated by Atura H2 L.P and  
26 expected to enter service in 2026, will make use of this otherwise Unutilized Water.  
27 Specifically, the NHC’s electrolyzer will produce low-carbon hydrogen using electricity  
28 generated behind the meter at the Sir Adam Beck 2 GS facility from water that generally would  
29 not be used for electricity production. The Regulation Service agreement incorporates

1 provisions related to the NHC and is consistent with the expectations set out in the Ministry of  
 2 Energy’s letter to the IESO dated December 9, 2022.<sup>2</sup>

3  
 4 **3.4 Operating Reserve**

5 OPG’s regulated hydroelectric fleet offers OR as an ancillary service to the IESO. Operating  
 6 Reserve refers to the capacity that can be called upon in short notice by the IESO to replace  
 7 scheduled energy supply that is unavailable because of an unexpected outage or to augment  
 8 scheduled energy due to unexpected demand or other contingencies. In the Renewed Market,  
 9 the IESO procures OR in both day-ahead and real-time for all three categories of OR.<sup>3</sup>

10  
 11 Other changes to OR introduced in the Renewed Market include a single OR schedule in both  
 12 the Day-Ahead Market and the Real-Time Balancing Market, both of which are settled on  
 13 Locational Marginal Prices (“LMP”), and the use of an OR Demand Curve during periods of  
 14 scarcity. As OR CMSCs are eliminated, the Renewed Market uses Day-Ahead and Real-Time  
 15 OR Make Whole Payments to ensure revenue sufficiency in cases of uneconomic OR  
 16 scheduling. Chart 1 provides a summary of OR revenues received by OPG’s regulated  
 17 hydroelectric facilities during the first five months in the Renewed Market.

18  
 19 **Chart 1 – OR Market Revenues Since Market Renewal Implementation**

	<b>DA OR Revenues</b>	<b>RT OR Revenues</b>	<b>DA OR MWP</b>	<b>RT OR MWP</b>	<b>Total OR Revenues</b>
Month	\$M	\$M	\$M	\$M	\$M
May	8.1	(0.8)	0.1	1.8	9.1
June	6.2	(6.1)	0.0	3.2	3.4
July	7.7	(3.5)	0.0	2.3	6.5
August	3.3	(0.3)	0.0	0.5	3.5
September	1.1	(0.3)	0.0	0.5	1.3

<sup>2</sup> Smith, T, *Letter to Ms. Lesley Gallinger regarding the Niagara Hydrogen Centre and Regulation Service Contract*, December 9, 2022 <<https://www.ieso.ca/-/media/Files/IESO/Document-Library/corporate/ministerial-directives/Letter-from-the-Minister-of-Energy-20221209.pdf>>.

<sup>3</sup> 10-minute synchronized (spinning) reserve, 10-minute non-synchronized (non-spinning) reserve, and 30-minute reserve (non-synchronized).

1 As described in Ex. E1-2-1, the ability to draw conclusions from data in the Renewed Market  
2 is limited due to (i) short duration the renewed market has been in operation; (ii) participants  
3 learning how the Renewed Market works and adjusting their strategies; and (iii) experience in  
4 only two seasons.<sup>4</sup> As such, OPG does not expect the observed increase in average total OR  
5 revenues in the Renewed Market as compared to the Legacy Market to sustain into the future.  
6 The higher OR revenues in the first few months of the Renewed Market and subsequent  
7 declining trend could be explained by a combination of system conditions as well as a  
8 maturation of participant behavior. OPG notes that its total OR revenues in the month of  
9 September of \$1.3M are in line with its historical monthly average of \$1.2M for the 2020-2024  
10 period. As discussed in Ex. E1-2-1, Section 6.1, the IESO will be making targeted changes to  
11 Market Rules to address specific circumstances under which unwarranted MWPs are  
12 calculated. This change is expected to result in lower MWPs, including OR MWPs. Additionally,  
13 in OPG's view the expected addition of approximately 3,000 MW of battery energy storage  
14 facilities between 2025-2028 will put downward pressure on OR prices beyond those  
15 experienced in the Legacy Market.

16

17 Considering the insufficient data from a steady-state, Renewed Market, OPG's OR revenue  
18 forecast for the 2027 test year is based primarily on historical volumes and forecasted OR  
19 market prices inclusive of the expected price dampening impact of battery energy storage  
20 facilities expected in the coming years.

21

## 22 **4.0 SEGREGATED MODE OF OPERATION**

23 Segregated Mode of Operation is defined in the Market Rules as an electrical configuration  
24 where a portion of the IESO-controlled grid is used to connect one or more registered  
25 generating facilities to a neighbouring control area using a radial intertie for the purposes of  
26 delivering electricity. R.H. Saunders GS and Chats Falls GS, both in the Eastern Region, are  
27 the only prescribed hydroelectric facilities that are capable of entering into SMO. As a result,  
28 all SMO revenues are included within this exhibit.

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<sup>4</sup>IESO, "Update on Renewed Market Performance and Operations", August 21, 2025 <<https://ieso.ca/-/media/Files/IESO/Document-Library/engage/renewed-market/rmo-20250821-presentation-renewed-market-update.pdf>>.

1 Segregated Mode of Operation is conducted by OPG when it identifies economic opportunities  
2 in neighbouring markets. These transactions are arranged in advance with counterparties.  
3 Forecast market prices in Ontario and surrounding markets are the economic drivers  
4 considered when deciding whether to engage in a SMO transaction.

5  
6 Segregated Mode of Operation net revenues are calculated by subtracting the incremental  
7 costs associated with these transactions from the SMO revenues received. The incremental  
8 costs incurred in transacting SMO consist of export fees, transmission losses between  
9 generator source and point of delivery, production losses during the switching process  
10 between control areas, and the costs associated with the non-regulated trading business to  
11 carry out these transactions.

12  
13 The Renewed Market introduces two main changes that affect SMO: IESO transaction  
14 approval timelines and market prices. Under the new Day-Ahead Market framework, the  
15 IESO's approval process for SMO transactions is more restrictive than it was in the Legacy  
16 Market. While this change is expected to reduce the number of SMO transactions OPG can  
17 conduct, uncertainty related to prevailing market prices in the Renewed Market will also impact  
18 SMO revenue.

19  
20 Based on the limited experience OPG has had in the Renewed Market, OPG has forecast  
21 2027 SMO revenues on the historical five-year average of SMO revenues and has not made  
22 adjustments for market prices. This approach smooths out annual variability in performance  
23 and addresses the inherent challenges of producing forward forecasts with limited experience  
24 in the Renewed Market.

## 25 26 **5.0 WATER TRANSACTIONS**

27 The New York Power Authority ("NYPA") and OPG are responsible for operating hydroelectric  
28 facilities on the Niagara and St. Lawrence Rivers. Pursuant to an agreement between the  
29 parties, NYPA and OPG coordinate certain operations to maximize energy production from the  
30 total volume of water available for generation under the relevant international treaties.

1 The Water Transfer agreements between OPG and NYPA allow one entity the opportunity to  
2 extract the potential energy from the other entity's share of water (i.e., referred to as a "Water  
3 Transfer") in order to optimize the use of available water. Water Transfers could be done at  
4 the request of the sender, receiver, or the Niagara River Control Centre.

5  
6 The transferred water is used to generate electricity that is then sold into the respective entity's  
7 electricity market (the IESO-administered market if OPG is the receiving entity, or the New  
8 York Independent System Operator ("NYISO") administered market if NYPA is the receiving  
9 entity). The water transfer agreements specify how the benefits and costs associated with the  
10 types of water transfer are shared between entities. Water Transfers only pertain to regulated  
11 hydroelectric facilities. As a result, all Water Transaction revenues are included within this  
12 Exhibit.

13  
14 The volume of Water Transactions completed in a year is not impacted by the implementation  
15 of the Renewed Market. Water Transaction revenues, however, are impacted by market prices.  
16 To the extent the Renewed Market leads to higher or lower average market prices than the  
17 Legacy Market, there will be a corresponding impact on Water Transaction revenues.

18  
19 To calculate net water transfer revenues, accommodation charges and gross revenue charges  
20 attributable to these transactions are subtracted from the gross water transfer revenues. Based  
21 on the limited experience OPG has had in the Renewed Market, OPG has forecast the 2027  
22 water transfer revenues based on the historical five-year average of net water transfer  
23 revenues and has not made adjustments for market prices. This approach smooths out annual  
24 variability in the volume of water transactions and addresses the inherent challenges of  
25 producing forward forecasts with limited experience in the Renewed Market.

26  
27 **6.0 CAPACITY EXPORT TRANSACTIONS**

28 Installed Capacity market transactions are permitted under the IESO Market Rules when a  
29 market participant has Ontario-based generating capacity that the IESO has determined to be  
30 surplus to Ontario's reliability and planned resource adequacy requirements. The IESO  
31 currently has a capacity export agreement in place with the NYISO along with a process in  
32 place to enable market participants to participate in the NYISO capacity market. OPG currently

1 has three aggregates at the Sir Adam Beck 2 GS<sup>5</sup> registered to participate in the NYISO  
2 capacity market and has been participating in this market since 2016.

3

4 The amount of capacity that can be sold by OPG to NYISO (and therefore revenues earned)  
5 depends on a number of factors that are not within OPG's control and are difficult to forecast.  
6 These factors include, but are not limited to, the amount of capacity the IESO approves to be  
7 released from the Ontario market, the external capacity rights NYISO allocates to Ontario, and  
8 capacity market clearing prices in the NYISO market.

9

10 The ICAP net revenues are calculated by subtracting the incremental costs associated with  
11 these transactions from the gross ICAP revenues received. The incremental costs incurred in  
12 ICAP transactions include auction participation costs and the cost of meeting NYISO ICAP  
13 compliance obligations. The ICAP revenues only pertain to regulated hydroelectric facilities.  
14 As a result, all ICAP revenues are included within this Exhibit.

15

16 The ICAP revenues are not influenced by Ontario market prices and as a result are not  
17 impacted by the Renewed Market. These revenues are determined by two external factors:  
18 the capacity market clearing prices established in New York's capacity auctions, and the  
19 amount of Ontario capacity that the IESO releases to participate in that market. The IESO's  
20 decision on how much capacity to release is based on Ontario's resource adequacy  
21 requirements, ensuring that domestic reliability needs are met before any export is permitted.  
22 As a result, ICAP revenues reflect New York capacity market outcomes and IESO capacity  
23 release decisions, rather than Ontario market price dynamics.

24

25 OPG forecasts ICAP net revenues for the 2027 test year based on the historical five-year  
26 average of ICAP net revenues. This approach smooths out annual variability in performance  
27 and addresses the inherent challenges of producing accurate forward forecasts.

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<sup>5</sup> There are three aggregated generation units at the facility registered with the IESO for export capacity to NYISO, each comprising a pair of generators: Generators 11 and 12, Generators 13 and 14, and Generators 17 and 18.

1     **7.0     HIM REVENUE REQUIREMENT ADJUSTMENT**

2     OPG forecasts HIM net revenues by applying market and operational information to the OEB-  
3     approved HIM formulas. Key inputs include Ontario supply and demand forecasts, LMP  
4     projections, water flow forecasts, and operational information for OPG's regulated  
5     hydroelectric fleet. OPG's proprietary model also incorporates external sources and market  
6     forecasts, to form the basis of OPG's HIM projections.

7  
8     Within its model, hydroelectric resources are scheduled according to expected water flows and  
9     operating limits, following Ontario's demand profile net of baseload nuclear, wind, and solar  
10    generation. When electricity prices are anticipated to fall below the Gross Revenue Charge,  
11    certain hydro units are considered uneconomic, leading to forecast Surplus Baseload  
12    Generation spill. These conditions inform both the expected incentives for time-shifting water  
13    and the calculation of unintended benefits under the HIM.

14  
15    OPG's HIM forecasting has been updated to incorporate features of the redesigned HIM in the  
16    Renewed Market as described in Ex. E1-2-1. These include the shift from monthly to daily  
17    averaging, the replacement of the Hourly Ontario Energy Price with LMP, and the introduction  
18    of a Day-Ahead HIM. While OPG's models reflect the design of the Renewed Market,  
19    forecasting HIM net revenues is subject to uncertainties.<sup>6</sup> The expected integration of battery  
20    energy storage facilities between 2025 and 2028 is expected to put downward pressure on  
21    LMP price spreads, reducing OPG's opportunities to earn HIM net revenues. The outcomes of  
22    the first few months of the Renewed Market are not sufficient to serve as a dependable model  
23    input on account of high month-to-month variability. Overall, OPG expects its forecast 2027  
24    HIM net revenue, which is an increase from OPG's HIM net revenues in the Legacy Market, to  
25    adequately capture OPG's revenues in a mature Renewed Market.

26  
27    OPG proposes to continue to include a revenue offset equal to 50% of forecast annual HIM  
28    net revenues. This treatment is consistent with the HIM Revenue Requirement Adjustment  
29    established in EB-2010-0008 and EB-2013-0321.

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<sup>6</sup> The model is based on average price spreads and does not fully reflect the ability of the PGS to respond to significant short-run differences in hourly prices.

1 OPG is also proposing to eliminate the sharing of HIM net revenues that exceed the HIM  
2 revenue forecast as described in Ex. E1-2-1, Section 5.0.

3  
4 **8.0 CLEAN ENERGY CREDITS**

5 Within the Ontario CEC market, OPG sells environmental attributes associated with its  
6 regulated hydroelectric and nuclear generation facilities.

7  
8 On March 29, 2023, the Province of Ontario announced the launch of the Clean Energy Credit  
9 Registry, to be administered by the IESO with the stated objective being to boost Ontario's  
10 competitiveness in attracting investment and jobs.<sup>7</sup> As part of the announcement, the Province  
11 noted that proceeds from the sale of CECs held by the IESO and OPG would be directed to  
12 the government's Future Clean Electricity Fund, which will "help keep costs down for electricity  
13 ratepayers by supporting the development of new clean energy projects as the province builds  
14 out our grid to meet the demands of a growing population and economy, as well as the  
15 electrification of transportation and industry".<sup>8</sup>

16  
17 As part of the accompanying O. Reg 39/23 *Clean Energy Credits*, under section 4.2, the  
18 Province specifies that the proceeds OPG is to remit is equivalent to 80% of its revenues net  
19 of costs from the sale of CECs to the Province's Future Clean Electricity Fund. As such, the  
20 Province has already legislated the amount to be returned to the benefit of ratepayers through  
21 investments of the Future Clean Electricity Fund. OPG proposes to retain the remaining 20%  
22 of net revenues from the sale of CECs to provide an appropriate incentive for the organization  
23 to continue pursuing CEC sales.

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<sup>7</sup> Province of Ontario, News Release: Ontario launches Clean Energy Credit Registry to Boost Competitiveness and Attract Jobs, March 29, 2023 <<https://news.ontario.ca/en/release/1002876/ontario-launches-clean-energy-credit-registry-to-boost-competitiveness-and-attract-jobs>>.

<sup>8</sup> *Ibid.*

Numbers may not add due to rounding.

Updated: 2026-03-10  
 EB-2025-0297  
 Exhibit G1  
 Tab 1  
 Schedule 1  
 Table 1

Table 1  
 Other Revenues - Regulated Hydroelectric (\$M)

Line No.	Revenue Source	2016 Actual	2017 Actual	2018 Actual	2019 Actual	2020 Actual	2021 Actual	2022 Actual	2023 Actual	2024 Actual	2025 Budget	2026 Budget	2027 Plan
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
1	<b>Ancillary Services<sup>1</sup></b>	70.1	78.7	70.5	71.8	55.5	50.1	71.6	62.3	58.5	56.1	51.5	49.1
2	<b>Segregated Mode of Operation<sup>2</sup></b>	0.4	3.1	2.7	0.0	0.0	0.0	8.0	0.4	1.2	1.9	1.9	1.9
3	<b>Water Transactions<sup>3</sup></b>	1.1	0.9	1.6	0.9	0.2	0.6	0.6	1.6	3.5	1.3	1.3	1.3
4	<b>Capacity Exports<sup>4</sup></b>	0.1	0.6	2.3	0.2	0.0	0.4	0.0	1.5	3.0	1.0	1.0	1.0
5	<b>Total Ancillary Services</b>	71.8	83.2	77.1	72.8	55.7	51.1	80.2	65.8	66.4	60.3	55.8	53.3
6	<b>HIM Revenue</b>	14.0	12.3	10.9	6.2	5.1	16.8	14.3	14.8	28.4	10.5	20.2	17.8
7	<b>Total of Other Revenues</b>	85.8	95.5	88.0	79.0	60.7	67.8	94.5	80.6	94.7	70.9	76.0	62.2

Notes:

- 1 Ancillary Services related to regulated hydroelectric facilities are discussed in Ex. G1-1-1, Section 3.
- 2 Segregated Mode of Operation (SMO) net revenues are gross revenues less HOEP, less export fees, transmission charges in other control areas, transmission losses, production losses during the switching process between control areas and costs associated with the non-regulated Trading business.
- 3 Water Transactions revenues are gross revenues net of accommodation charges and Gross Revenue Charges (GRC).
- 4 2027 Total of Other Revenues includes 50% of the HIM Revenue forecast as described in Ex. G1-1-1, Section 7.