PAYMENT AMOUNT SMOOTHING

1.0 PURPOSE

This evidence sets out OPG's revised proposal for smoothing payment amounts during the 2022-2026 IR term, inclusive of the impacts of the Settlement Proposal filed on July 16, 2021.[1] This proposal follows the same profile as OPG's proposal in Ex. I1-3-2, starting with a 4% change in weighted average payment amounts ("WAPA") in 2022 and a targeted 1% change in each subsequent year of the IR term. Additionally, the revised proposal ensures that there are no negative deferral amounts in any year of the IR term.

2.0 OVERVIEW

OPG proposes smoothed WAPA[2] of $74.63/MWh in 2022, $75.38/MWh in 2023, $75.40/MWh in 2024, $75.29/MWh in 2025, and $74.05/MWh in 2026, resulting in entries to the rate smoothing deferral account ("RSDA")[3] of $82.4M in 2022, $125.7M in 2023, $0.0M in 2024, $0.0M in 2025 and $0.0M in 2026. This proposal is pursuant to the requirements of O. Reg. 53/05 (the "Regulation") and consistent with the principles established in EB-2016-0152. The smoothing proposal is also consistent with customer feedback received during OPG's customer engagement (Ex. A2-2-1).

The average residential customer bill impact of OPG's revised rate proposal[4] set out in this Exhibit is 0.16% annually or approximately $0.18 on a typical monthly residential customer bill each year. If OPG were to propose a constant WAPA increase that recovered the entire settled nuclear revenue requirements for the 2022-2026 period, that increase would be approximately 1.8% per year, and the customer bill impact would be 0.4% annually on average or approximately $0.46 on a typical monthly residential customer bill each year.

Section 3.0 summarizes the rate smoothing requirements set out in the Regulation. Section 4.0 describes the inputs into the calculation of the WAPA. Section 5.0 sets out OPG's proposal

[1] This evidence is subject to any adjustments from the OEB's decision on the D2O Project and the final ROE rate as specified by the OEB's Cost of Capital Report as of the effective date of the final payment amounts order.
[2] PAO Appendix B, Table 2A, lines 7.
[3] PAO Appendix B, Table 3, lines 5.
[4] PAO Appendix B, Table 2A, lines 4 and 5.

and customer engagement efforts, evaluates the proposal using the established principles, and compares the proposal against alternatives.

3.0 REQUIREMENTS OF O. REG. 53/05

The Regulation sets out certain processes and parameters that OPG and the OEB must follow regarding the smoothing of OPG's payment amounts during the deferral period.[5]

The Regulation requires that, for each year of the deferral period, the OEB must approve a nuclear revenue requirement and must also determine a portion of that approved revenue requirement to defer.[6] The OEB is required to make this determination with "a view to making more stable the year-over-year changes in the OPG weighted average payment amount over each calculation period."[7] The "calculation period" is defined in s. 0.1(1) of the Regulation as:

> each period for which the Board determines the approved revenue requirements under subparagraph 12 ii of subsection 6 (2) together with the year immediately prior to that period.

Subparagraph 12(ii) of subsection 6(2) of the Regulation requires that the OEB determine nuclear revenue requirements and amounts to be deferred on a five-year basis for the first 10 years of the deferral period (2017-2026). Subparagraph 12(iv) requires that the balance in the RSDA be recovered on a straight-line basis over a period not to exceed 10 years beginning when the Darlington Refurbishment Program ends.

3.1 Calculation of the Weighted Average Payment Amount

Section 0.1(1) of the Regulation defines OPG's WAPA for a year through the following formula:

[5] O. Reg. 53/05 defines the deferral period which commences January 1, 2017 and ends when the Darlington Refurbishment Project ends.
[6] O. Reg. 53/05, s. 5.5 (1).
[7] O. Reg. 53/05, s. 6 (2), sub-para. 12 (i).

$$\frac{((NPA + NPR) \times NPF) + ((HPA + HPR) \times HPF)}{(NPF + HPF)}$$

NPA (**Nuclear Payment Amount**) is the Board-approved payment amount for the year in respect of the nuclear facilities

NPR (**Nuclear Payment Riders**) is the Board-approved payment amount rider for the year in respect of the recovery of balances recorded in the deferral accounts and variance accounts established for the nuclear facilities, excluding the RSDA

NPF (**Nuclear Production Forecast**) is the Board-approved production forecast for the nuclear facilities for the year

HPA (**Hydroelectric Payment Amount**) is the Board-approved payment amount for the year, or the expected payment amount resulting from a Board-approved rate-setting formula, as applicable, in respect of the [prescribed] hydroelectric facilities

HPR (**Hydroelectric Payment Riders**) is the Board-approved payment amount rider for the year in respect of the recovery of balances recorded in the deferral accounts and variance accounts established for the hydroelectric facilities

HPF (**Hydroelectric Production Forecast**) is the Board-approved production forecast for the hydroelectric facilities for the year

The NPR, NPF, HPA, HPR, and HPF are collectively referred to as the “inputs”, since they are the values that the OEB must approve to determine the annual amounts of nuclear revenue requirement to be recorded in the RSDA for the 2022-2026 period. While the NPA is also approved by the OEB, it is an output (rather than an input) of the prescribed formula since it will reflect the annual deferral of nuclear revenue requirement.

4.0 INPUTS TO RATE SMOOTHING

This section identifies the values for the inputs required to determine annual deferral amounts to be recorded in the RSDA during the IR term.

Each of the following steps is necessary in order to determine the amounts to be deferred in the RSDA:

Step	Action	Basis in O. Reg. 53/05
1	Approve annual nuclear revenue requirements for the five-year IR Term, absent any deferral	s. 5.5(1)(a) s. 6(2)12(ii) s. 6(2)12(iii)
2	Approve required WAPA inputs for each year	
3	Determine the annual change in the WAPA, applying the principles established in EB-2016-0152 to assess options with a view to making more stable the year-over-year changes in the WAPA over each calculation period ("Smoothed WAPA Rate")	s. 0.1(1) s. 6(2)12(i)
4	Using the Smoothed WAPA Rate determined in Step 3 and the inputs approved in Step 2, determine the annual NPA	s. 0.1(1)
5	Determine annual deferred amount to be recorded in RSDA for each year of the five year term [Step 1 - (NPA x NPF)]	s. 5.5(1)(b) s. 6(2)12(i)

The nuclear revenue requirements proposed in the Settlement Proposal in this application are summarized in Chart 1 below.

Chart 1: Nuclear Revenue Requirement[8]

	2022	2023	2024	2025	2026
Nuclear Revenue Requirement Net of Stretch Factor ($M)	$3,511.7	$3,425.9	$3,510.5	$3,188.0	$2,428.7

[8] PAO, Appendix A, Tables 1-5, Line 26.

Hydroelectric Payment Amount (HPA): The 2022-2026 HPA is $43.88/MWh, being the 2021 hydroelectric payment amount that is to remain in effect during the IR term pursuant to O. Reg. 53/05.

Nuclear Payment Rider (NPR) and Hydroelectric Payment Rider (HPR): Per the Settlement Proposal, OPG is to recover certain audited December 31, 2019 balances in the deferral and variance accounts, except for $40.0M of debit balances recorded in the Surplus Baseload Generation Variance Account and subject to the OEB's decision on the D2O Storage Project, and as adjusted for 2020-2021 amortization amounts approved in EB-2016-0152 and EB-2018-0243 and other adjustments, through nuclear payment riders and hydroelectric payment riders over the January 1, 2022 to December 31, 2026 period. The nuclear payment rider[9] is $1.74/MWh in 2022, $1.87/MWh in 2023, $1.72/MWh in 2024, $5.34/MWh in 2025, and $7.58/MWh in 2026. The hydroelectric payment rider[10] is $1.03/MWh in 2022, 2023, and 2024, and $0.69/MWh in 2025 and 2026.

The rate smoothing proposal does not reflect payment riders for recovery (or refund) of deferral and variance account balances after December 31, 2019, as none were included in OPG's application and the Settlement Proposal. Any payment riders the OEB may establish for those account balances would be separate from the rate smoothing proposal and would not affect the revenue requirement deferral amounts approved by the OEB in this proceeding. In a subsequent proceeding, the OEB could assess the future bill impact of potential payment riders for recovery (or refund) of any amounts approved.

Determination of Annual Change in WAPA: Pursuant to the Regulation, the calculation period in this application is 2022-2026. OPG calculates WAPA for each year in the calculation period as demonstrated in the draft Payment Amounts Order ("PAO"), Appendix B, Table 2. The Regulation requires that a rate smoothing proposal result in a WAPA that is more stable than would be the case without deferral of nuclear revenue requirement.[11]

---

[9] PAO, Appendix D, Table 1, Line 32.
[10] PAO, Appendix C, Table 1, Line 23.
[11] O. Reg. 53/05, s. 6 (2)(12)(i); relative to WAPA as defined in s. 0.1 (1).

Total OPG Regulated Production: Consistent with the approach underlying the rate smoothing proposal in EB-2016-0152, for the hydroelectric facilities, OPG has used the average of the 2014 and 2015 OEB-approved hydroelectric production.[12] For the purpose of WAPA smoothing, this amount is used for each year in the 2022-2026 period. Per the Settlement Proposal[13], the nuclear production forecast is 33.6 TWh in 2022, 31.2 TWh in 2023, 34.0 TWh in 2024, 31.1 TWh in 2025, and 21.9 TWh in 2026.

4.1 Post-2026 Projections used in Smoothing Analysis

An understanding of forecast nuclear costs and production for the entire deferral and recovery period is necessary context to determine the appropriate rate smoothing proposal under the Regulation. While it is not possible to precisely forecast revenue requirement and production over 15 years, Chart 2 provides OPG's view of the approximate longer-term nuclear revenue requirements and production, along with indicative average nuclear rates that would result for the 2026-2036 period without smoothing (in nominal dollars).

Chart 2: Nuclear Revenue Requirement, Production and Average Unsmoothed Rate

	2022-2026	2027-2031	2032-2036
Anticipated Revenue Requirement[14] ($B)	$16.0[15]	$15.9	$15.8
Anticipated Production (TWh)	152[16]	134	141
Average Rate ($/MWh)	$105	$119	$112

In consideration of the magnitude of costs being deferred, OPG's smoothing proposal continues to assume that the RSDA balance is recovered over the maximum ten-year period.

The average nuclear rate (absent rate smoothing) for the 2032 to 2036 period reflects the stabilization of OPG's operations post completion of the Darlington Refurbishment Program

[12] 33 TWh, per EB-2013-0321, Decision with Reasons, November 20, 2014, p. 9.
[13] Settlement Proposal, P. 29.
[14] Excludes Pickering closure costs that will be recorded in the Pickering Closure Costs Deferral Account.
[15] Sum of 2022-2026 Revenue Requirement net of Stretch Factor from PAO Appendix A, Tables 1-5, Line 26.
[16] Sum of 2022-2026 Production per PAO, Appendix B, Table 1, Line 2.

and activities associated with the end of Pickering commercial operations.[17] OPG believes that the average forecast 2032 to 2036 rate is therefore a reasonable proxy for the rate that will prevail after the rate smoothing deferral and recovery cycle (i.e., the "new normal"), that is approximately $112/MWh as forecast in Chart 2 above.

5.0 RATE SMOOTHING PROPOSAL

Exhibit I1-3-2 provided OPG's initial rate smoothing proposal as compared to several alternatives, based on the proposed nuclear revenue requirements and production forecast. Of these alternatives, OPG proposed Alternative E, which resulted in an annual increase to the WAPA of 4% in 2022, 1% in 2023, 1% in 2024, 1% in 2025, and 1% in 2026. OPG proposed this approach because, in OPG's view, it provided an effective balance between financial viability and customer-focused criteria outlined in Ex. I1-3-2, section 5.3.[18]

After updating for the impact of the Settlement Proposal, an annual WAPA increase of 4% in 2022, and 1% in each of 2023-2026 would result in aggregate net negative deferral amounts of $186M over the IR term. In view of this, OPG has revised its rate smoothing proposal to limit the WAPA increase in any single year to the lowest amount that does not result in a negative deferral amount in that year.

Chart 3 below provides a summary of OPG's original rate smoothing proposal (E), the original rate smoothing proposal as updated to reflect the Settlement Proposal (E1), and the new, revised rate smoothing proposal (E2) that does not result in negative deferral amounts in any year of the IR term.

[17] Anticipated production is higher in the 2032-2036 period reflecting the Darlington Vacuum Building Outage scheduled in 2027, and return to 1% target forced loss rate ("FLR") for all units after a period of assumed higher FLR immediately post refurbishment based on industry experience (see Ex. E2-1-1).

[18] As noted at Ex. I1-3-2, p. 9, OPG uses two financial metrics to gauge the potential impact of rate smoothing alternatives on the financial viability criterion: the Funds from Operations ("FFO") to Debt ratio and the Cash Flow from Operations Pre Working Capital ("CFO") to Debt Ratio. These are the primary metrics currently used by S&P Global Ratings ("S&P") and Moody's Investors Service ("Moody's), respectively, to evaluate OPG's financial risk as part of their credit rating process. A forecast of less than 13% consistently on the FFO to Debt metric could result in a negative rating action from S&P. A forecast of less than 12% on the Cash Flow to Debt metric on a sustained basis could lead to a downgrade by Moody's. As such, the financial viability criterion can ultimately affect OPG's cost of borrowing.

Chart 3: Smoothing Alternatives – Outcomes

Scenario	E Prefiled Proposal	E1 Prefiled Proposal, Updated for Settlement Proposal	E2 Revised Proposal
2022-2026 Change in WAPA	y1: 4% y2-y5: 1% AVG: 1.6%	y1: 4% y2-y5: 1% AVG: 1.6%	y1: 4%, y2: 1.0%, y3: 0.0%, y4: (0.1%), y5: (1.7%)
2027-2036 Average Change in WAPA	0.9%	0.6%	1.3%
Peak RSDA Balance ($B)	$1.5	$0.8	$0.9
2022-2026 Interest on Cumulative Deferral Amounts ($M)	$206	$121	$134
2022-2026 Deferral Amounts ($M)	$767	$(141)	$208
2022-2026 Interest on IR term Deferral Amounts ($M)	$102	$17	$31
2017-2026 Total Interest ($B)	$0.59	$0.28	$0.38
Interest Cost / Deferred Revenue Ratio	0.5	0.4	0.4
Lowest Cash Flow from Operations pre Working Capital to Debt Ratio (2022-2026)	12.0%	12.0%	12.0%
Lowest Funds from Operations to Debt Ratio (2022-2026)	Below 13% Threshold		
Nuclear Payment Amount Transition Impact Post 2036 ($/MWh)	$0.60	$5.67	$3.82
Average Annual Bill Impact (2022-2026)[19] in %	0.4%	0.4%	0.2%
Average Annual Bill Impact (2022-2026) in $	$0.41	$0.42	$0.18
Average Annual Bill Impact (2022-2036) in %	0.2%	0.2%	0.2%
Average Annual Bill Impact (2022-2036) in $	$0.27	$0.22	$0.24

The proposed nuclear payment amounts presented in PAO Appendix B have been determined based on the revised proposal, Alternative E2, which is further detailed in Chart 4 below. This proposal has lower IR term customer bill impacts and yields lower interest costs than OPG's initial proposal. In OPG's view, in consideration of inherent uncertainties of longer term forecasts, it also presents an acceptable estimated transition impact by the end of 2036. Additionally, the proposal continues to be consistent with feedback received through the customer engagement process, with forecasted interest over the 2017-2036 period that is

[19] Estimated customer bill impacts shown are for a typical residential consumer.

lower than $500M. Finally, the proposal continues to meet the financial viability criterion, recognizing that OPG expects its credit metrics to be under greater pressure during the earlier years of the 2020-2026 business plan period.[20]

Chart 4[21]

OPG Proposed Deferred Nuclear Revenue Requirement

	2022	2023	2024	2025	2026
Settled Revenue Requirement ($M)	$3,511.7	$3,425.9	$3,510.5	$3,188.0	$2,428.5
Settled Forecast Production (TWh)	33.6	31.2	34.0	31.1	21.9
Smoothed Rate ($/MWh)	$102.06	$105.68	$103.25	$102.54	$110.84
Smoothed Revenues ($M)	$3,429.2	$3,300.1	$3,510.5	$3,188.0	$2,428.5
Deferred Revenue Requirement ($M)	$82.4	$125.7	$0.0	$0.0	$0.0

[20] As noted in Ex. I1-3-2, p. 9, OPG assesses the financial viability criterion based on at least one of the two primary metrics currently used by the credit rating agencies to evaluate OPG's financial risk being within threshold at all times during the 2022-2026 period.
[21] PAO Appendix B, Table 1.