COMPARISON OF NON-ENERGY REVENUES
NUCLEAR

1.0 PURPOSE

This evidence presents period-over-period comparisons of nuclear non-energy revenues net of costs (non-energy revenues).

2.0 OVERVIEW

This evidence supports the approvals OPG is seeking with respect to non-energy revenues from its nuclear facilities. Exhibit G2-1-2, Table 1a-1b presents year-over-year comparisons of nuclear non-energy revenues.

Nuclear non-energy revenues will fluctuate year-over-year. Heavy water processing revenues may vary year-over-year primarily due to production fluctuations at the Tritium Removal Facility ("TRF") based on the TRF outage schedule, and changes in pricing assumptions. Sales of Cobalt-60, produced at Pickering, vary year-over-year primarily due to the scheduling of the cobalt harvest windows (Cobalt-60 rods which are inserted into Pickering Unit 6, Unit 7 and Unit 8 can only be removed during a unit planned outage, and therefore the level of Cobalt-60 harvesting is subject to the outage schedule of these units). Cobalt-60 sales are also impacted by the planned shutdown schedule for Pickering.

3.0 PERIOD-OVER-PERIOD CHANGES - IR TERM

2022 Plan versus 2021 Budget

Planned nuclear non-energy revenues for 2022 are $24.2M, a decrease of $10.2M over 2021 budgeted nuclear non-energy revenues, primarily due to lower Cobalt-60 sales as a result of the timing of harvesting, partially offset by higher revenues from heavy water processing due to an expected increase in TRF availability to process heavy water from Bruce Power and higher pricing.

2023 Plan versus 2022 Plan

Planned nuclear non-energy revenues for 2023 are $41.9M, an increase of $17.7M over 2022 planned nuclear non-energy revenues, primarily due to increased Cobalt-60 sales as a result of the timing of harvesting at Pickering, with two units to be harvested in 2023.

2024 Plan versus 2023 Plan

Planned nuclear non-energy revenues for 2024 are $52.3M, an increase of $10.4M over 2023 planned nuclear non-energy revenues, primarily due to increased heavy water processing in 2024 as a result of an expected increase in TRF availability, partially offset by lower Cobalt-60 sales as only one unit at Pickering will be subject to harvesting in 2024.

2025 Plan versus 2024 Plan

Planned nuclear non-energy revenues for 2025 are $21.8M, a decrease of $30.5M over 2024 planned nuclear non-energy revenues, primarily due to decreased heavy water processing and Cobalt-60 sales. There will be no harvesting of Cobalt-60 at Pickering in 2025 as there are no regular planned outages.

2026 Plan versus 2025 Plan

Planned nuclear non-energy revenues for 2026 are $63.8M, an increase of $42.0M over 2025 planned nuclear non-energy revenues, primarily due to increased heavy water processing and Cobalt-60 sales. Cobalt-60 will be harvested in 2026 following the planned shutdown of Pickering at the end of 2025.

4.0 PERIOD-OVER-PERIOD CHANGES – BRIDGE YEARS

2021 Budget versus 2021 OEB Approved

Budgeted nuclear non-energy revenues for 2021 are $34.4M, an increase of $9.8M over 2021 OEB approved nuclear non-energy revenues. Factors contributing to this variance include increased Cobalt-60 sales due to the Pickering outage schedule and heavy water processing, partially offset by reduced heavy water sales. In addition, there was an increase in ancillary services revenue of $2.9M as the rate for the compensation for production losses used in the IESO agreement was updated to the OEB-approved nuclear payment amount.

2021 Budget versus 2020 Budget

Budgeted nuclear non-energy revenue for 2021 are $34.4M, an increase of $1.4M over 2020 budgeted nuclear non-energy revenues. Factors contributing to this variance include increased Cobalt-60 sales due to the Pickering outage schedule for 2021 which allows for increased Cobalt-60 harvesting, partially offset by a decrease in heavy water processing due to a TRF outage in 2021.

2020 Budget versus 2020 OEB Approved

Budgeted nuclear non-energy revenues for 2020 are $33.0M, an increase of $9.3M over 2020 OEB approved nuclear non-energy revenue. Factors contributing to this variance include higher budgeted revenues from heavy water processing as a result of a shift in the outage schedule of the TRF into 2021, partially offset by a decrease in Cobalt-60 sales due to timing of harvesting at Pickering, and reduced Tritium and heavy water sales. In addition, there was an increase in ancillary services revenue of $3.8M as the rate for the compensation for production losses used in the IESO agreement was updated to the OEB-approved nuclear payment amount.

2020 Budget versus 2019 Actual

Budgeted nuclear non-energy revenues for 2020 are $33.0M, an increase of $14.2M over 2019 actual nuclear non-energy revenue, primarily due to higher budgeted revenues from heavy water processing in 2020 compared to 2019, which had an unplanned TRF outage that limited heavy water processing services.

5.0 PERIOD-OVER-PERIOD CHANGES - HISTORICAL YEARS

2019 Actual versus 2019 OEB Approved

Actual nuclear non-energy revenues for 2019 were $18.8M, a decrease of $5.4M versus 2019 OEB approved nuclear non-energy revenues. Factors contributing to this variance include decreased heavy water sales and processing due to an extended outage of the TRF in 2019, and lower Cobalt-60 harvesting at Pickering due to the shifting of the Pickering outage schedule. Partially offsetting the decrease was an increase in ancillary services revenue by $3.9M as the rate for the compensation for production losses used in the IESO agreement was updated to the OEB-approved payment amount.

2019 Actual versus 2018 Actual

Actual nuclear non-energy revenues for 2019 were $18.8M, a decrease of $24.2M versus 2018 actual nuclear non-energy revenues. Factors contributing to this variance include a decrease in heavy water sales due to the reduction of non-tritiated heavy water sales in 2019, and lower Cobalt-60 sales in comparison to 2018, which had higher than planned sales due to a deferred Pickering outage from 2017 to 2018. Partially offsetting the decrease was an increase in heavy water processing revenues and an increase in ancillary services revenue by $4.2M as the rate for the compensation for production losses used in the IESO agreement was updated to the OEB-approved nuclear payment amount.

2018 Actual versus 2018 OEB Approved

Actual nuclear non-energy revenues for 2018 were $43.0M compared to 2018 OEB approved of $23.3M, an increase of $19.8M. Factors contributing to this variance include higher than planned Cobalt-60 harvesting at Pickering in 2018 due to the deferral of an outage from 2017, and increased heavy water sales. This was partially offset by a decline in heavy water processing due to the TRF outage extension into 2018.

In 2016, OPG's assessment of non-tritiated heavy water inventory indicated that the sales pool would be depleted after forecast sales were completed in 2017. However, in the EB-2016-0152 Settlement Proposal approved by the OEB, the parties agrees to increase the sales forecast by $12.2M over the period 2017-2021, including $1.3M in 2018.[1] OPG was able to realize sales of non-tritiated heavy water due to the partial deferral of sales from 2017 into 2018.

[1] EB-2016-0152 Ex. O-1-1, p.11.

2018 Actual versus 2017 Actual

Actual nuclear non-energy revenues for 2018 were $43.0M compared to 2017 actual of $40.6M, an increase of $2.4M. Factors contributing to this variance include higher revenue from the harvesting of Cobalt-60 at Pickering due to an outage that was deferred from 2017, and increased sales of heavy water due a portion of sales shifted from 2017 to 2018. This was partially offset by reduced revenues from heavy water processing due to the TRF outage extension into 2018.

2017 Actual versus 2017 OEB Approved

Actual nuclear non-energy revenues for 2017 were $40.6M compared to 2017 OEB approved of $37.8M, an increase of $2.8M. Factors contributing to this variance include the increase in heavy water processing due to the fully operational TRF in 2017, offset by lower heavy water sales that were shifted into 2018 and decreased isotope sales due to a shift in Pickering's outage schedules which resulted in no harvesting of Cobalt-60 in 2017.

2017 Actual versus 2016 Actual

Actual nuclear non-energy revenues for 2017 were $40.6M compared to 2016 actual of $27.6M, an increase of $13.0M. This increase was primarily due to strong operational performance of the TRF in 2017 increasing heavy water processing, whereas heavy water processing in 2016 was significantly lower due to the extension of the TRF outage from 2015. Offsetting the increased heavy water processing was a reduction in heavy water sales in 2017 versus 2016, and reduced isotope revenue due to no harvesting of Cobalt-60 at Pickering in 2017 as outage schedules were shifted over 2016-2018.

2016 Actual versus 2016 Budget

Actual nuclear non-energy revenues for 2016 were $27.6M compared to 2016 Budget of $24.1M, an increase of $3.5M. Factors contributing to this variance include increased Cobalt-60 sales and a slight increase in heavy water sales in 2016.

Numbers may not add due to rounding.

Table 1a
Comparison of Other Revenues - Nuclear ($M)

Line No.	Business Unit	2016 Budget	(c)-(a) Change	2016 Actual	(g)-(c) Change	2017 OEB Approved	(g)-(e) Change	2017 Actual	(k)-(g) Change	2018 OEB Approved	(k)-(i) Change	2018 Actual
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
	Non-energy Revenues:											
1	**Heavy Water Sales & Processing**[1]	18.0	0.9	18.9	24.2	31.5	11.6	43.1	(11.7)	17.4	14.0	31.4
2	**Isotope Sales (Cobalt 60 + Tritium)**	12.6	1.4	14.0	(12.0)	12.6	(10.6)	2.0	14.1	12.6	3.5	16.1
3	**Total Non-energy Revenues** (line 1 + line 2)	30.6	2.3	32.9	12.2	44.1	1.0	45.1	2.4	30.0	17.5	47.5
4	**Non-energy Direct Costs**	8.3	(1.8)	6.5	(1.0)	8.1	(2.6)	5.5	0.6	8.6	(2.5)	6.1
5	**Non-energy Contribution Margin** (line 3 - line 4)	22.3	4.1	26.4	13.2	36.0	3.6	39.6	1.8	21.4	20.0	41.4
6	**Ancillary Services**	1.8	(0.6)	1.2	(0.2)	1.8	(0.8)	1.0	0.6	1.8	(0.2)	1.6
7	**Total** (line 5 + line 6)	24.1	3.5	27.6	13.0	37.8	2.8	40.6	2.4	23.3	19.8	43.0

Line No.	Business Unit	2018 Actual	(e)-(a) Change	2019 OEB Approved	(e)-(c) Change	2019 Actual	(i)-(e) Change	2020 OEB Approved	(i)-(g) Change	2020 Budget	(k)-(i) Change	2021 Budget
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
	Non-energy Revenues:											
8	**Heavy Water Sales & Processing**[1]	31.4	(21.7)	16.6	(6.9)	9.7	[redacted]	16.7	[redacted]	[redacted]	[redacted]	[redacted]
9	**Isotope Sales (Cobalt 60 + Tritium)**	16.1	(6.7)	13.6	(4.2)	9.4	[redacted]	13.6	[redacted]	[redacted]	[redacted]	[redacted]
10	**Total Non-energy Revenues** (line 8 + line 9)	47.5	(28.4)	30.2	(11.1)	19.1	17.0	30.3	5.8	36.1	1.7	37.8
11	**Non-energy Direct Costs**	6.1	0.0	7.9	(1.8)	6.1	2.7	8.5	0.3	8.8	(0.5)	8.3
12	**Non-energy Contribution Margin** (line 10 - line 11)	41.4	(28.4)	22.3	(9.3)	13.0	14.3	21.8	5.5	27.3	2.2	29.5
13	**Ancillary Services**	1.6	4.2	1.9	3.9	5.8	(0.1)	1.9	3.8	5.7	(0.8)	4.9
14	**Total** (line 12 + line 13)	43.0	(24.2)	24.2	(5.4)	18.8	14.2	23.8	9.3	33.0	1.4	34.4

Notes:

1 EB-2016-0152 heavy water sales reflect adjustments of $6.1M in 2017; $1.3M in 2018; $1.5M in 2019; $1.6M in 2020 and $1.7M in 2021 per partial settlement as described in EB-2016-0152 Decision Exhibit O page 11 of 17. The 2016-2019 Actuals are total amounts unadjusted for sharing.

Numbers may not add due to rounding.

Table 1b
Comparison of Other Revenues - Nuclear ($M)

Line No.	Business Unit	2021 OEB Approved	(c)-(a) Change	2021 Budget	(e)-(c) Change	2022 Plan	(g)-(e) Change	2023 Plan	(i)-(g) Change	2024 Plan	(k)-(i) Change	2025 Plan
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
	Non-energy Revenues:											
15	**Heavy Water Sales & Processing**[1]	16.8	[redacted]									
16	**Isotope Sales (Cobalt 60 + Tritium)**	13.6										
17	**Total Non-energy Revenues** (line 16 + line 17)	30.4	7.4	37.8	(11.2)	26.6	17.3	43.9	11.5	55.4	(33.6)	21.8
18	**Non-energy Direct Costs**	7.8	0.5	8.3	(0.6)	7.7	0.1	7.8	0.9	8.7	(2.8)	5.9
19	**Non-energy Contribution Margin** (line 17 - line 18)	22.7	6.8	29.5	(10.6)	18.9	17.2	36.1	10.6	46.7	(30.8)	15.9
20	**Ancillary Services**	2.0	2.9	4.9	0.4	5.3	0.5	5.8	(0.2)	5.6	0.3	5.9
21	**Total** (line 19 + line 20)	24.6	9.8	34.4	(10.2)	24.2	17.7	41.9	10.4	52.3	(30.5)	21.8

Line No.	Business Unit	2025 Plan	(c)-(a) Change	2026 Plan
		(a)	(b)	(c)
	Non-energy Revenues:			
22	**Heavy Water Sales & Processing**[1]	[redacted]		
23	**Isotope Sales (Cobalt 60 + Tritium)**			
24	**Total Non-energy Revenues** (line 22 + line 23)	21.8	45.0	66.8
25	**Non-energy Direct Costs**	5.9	0.3	6.2
26	**Non-energy Contribution Margin** (line 24 - line 25)	15.9	44.7	60.6
27	**Ancillary Services**	5.9	(2.7)	3.2
28	**Total** (line 26 + line 27)	21.8	42.0	63.8

Notes:

1 EB-2016-0152 heavy water sales reflect adjustments of $6.1M in 2017; $1.3M in 2018; $1.5M in 2019; $1.6M in 2020 and $1.7M in 2021 per partial settlement as described in EB-2016-0152 Decision Exhibit O page 11 of 17. The 2016-2019 Actuals are total amounts unadjusted for sharing.