

COMPARISON OF NUCLEAR FUEL COSTS

1.0 PURPOSE

This evidence presents period-over-period comparisons for nuclear fuel bundle costs for 2013-2021 in support of the approvals sought for nuclear fuel costs. Nuclear fuel costs consist of Total Fuel Bundle Cost, Used Fuel Storage and Disposal cost, and Fuel Oil. This exhibit discusses period-over-period changes for Total Fuel Bundle Cost. Used Fuel Storage and Disposal is discussed in Ex. C2-1-1. Comparisons for Fuel Oil are not discussed because the period-over-period changes are not material.

2.0 OVERVIEW

Period-over-period variances are presented in Ex. F2-5-2 Table 1 and are explained below. See Ex. F2-5-1 for a discussion of key drivers associated with nuclear fuel bundle costs.

3.0 PERIOD-OVER-PERIOD CHANGES – TEST YEARS

2017 Plan versus 2016 Budget

The decrease of \$36.0M in nuclear fuel bundle cost is due to lower energy production of -\$37.3M and higher fuel utilization efficiency of -\$1.2M, offset by higher unit prices for new fuel loaded at +\$2.4M.

2018 Plan versus 2017 Plan

The decrease of \$0.2M in nuclear fuel bundle cost is due to lower unit prices for new fuel loaded at -\$1.9M, offset by higher energy production of +\$1.3M and lower fuel utilization efficiency of +\$0.4M.

2019 Plan versus 2018 Plan

The decrease of \$0.5M in nuclear fuel bundle cost is due to lower unit prices for new fuel loaded at -\$2.7M and higher fuel utilization efficiency of -\$0.1M, offset by higher energy production of +\$2.3M.

1 **2020 Plan versus 2019 Plan**

2 The increase of \$5.4M in nuclear fuel bundle cost is due to higher unit prices for new fuel
3 loaded at +\$1.8M and the one time impact of +\$15.3M related to the requirement for a load
4 of new fuel to be included in the reactor core of Unit 2 prior to start-up, offset by lower energy
5 production of -\$6.8M and higher fuel utilization efficiency of -\$4.9M.

6

7 **2021 Plan versus 2020 Plan**

8 The decrease of \$15.8M in nuclear fuel bundle cost is due to lower energy production of
9 -\$9.2M and no repeat of the new fuel load in Unit 2 which occurred in 2020 (-\$15.3M), offset
10 by higher unit prices for new fuel loaded at +\$3.2M and lower fuel utilization efficiency of
11 +\$5.5M.

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13 **4.0 PERIOD-OVER-PERIOD CHANGES – BRIDGE YEAR**

14

15 **2016 Budget versus 2015 Actual**

16 The increase of \$12.4M in nuclear fuel bundle cost is due to higher energy production of
17 +\$10M, higher unit prices for new fuel loaded at +\$1.8M and lower fuel utilization efficiency
18 of +\$0.6M.

19

20 **5.0 PERIOD-OVER-PERIOD CHANGES - HISTORICAL YEARS**

21

22 **2015 Actual versus 2015 OEB Approved¹**

23 The decrease of \$15.6M in nuclear fuel bundle cost is due to lower energy production of
24 -\$8.7M and lower unit prices for new fuel loaded at -\$8.5M, offset by lower fuel utilization
25 efficiency of +\$1.6M.

26

27 **2015 Actual versus 2014 Actual**

¹ Fuel Bundle Cost for OEB Approved adjusted to reflect nuclear production forecast adjustments per EB-2013-0321 Ex. N1, Ex. N2 and Decision with Reasons, pp. 39 and 49.

1 The decrease of \$12.7M in nuclear fuel bundle cost is due to lower energy production of
2 -\$14.1M offset by higher unit prices for new fuel loaded at +\$0.6M and lower fuel utilization
3 efficiency of +\$0.8M.

4

5 **2014 Actual versus 2014 OEB Approved¹**

6 The decrease of \$9.6M in nuclear fuel bundle cost is due to lower energy production of
7 -\$4.5M, lower unit prices for new fuel loaded at -\$5.4M, offset by lower fuel utilization
8 efficiency of +\$0.3M.

9

10 **2014 Actual versus 2013 Actual**

11 The increase of \$5.6M in nuclear fuel bundle cost is due to higher energy production of
12 +\$14.1M offset by lower unit prices for new fuel loaded at -\$7.3M and higher fuel utilization
13 efficiency of -\$1.2M.

14

15 **2013 Actual versus 2013 Budget**

16 The decrease of \$22.6M in nuclear fuel bundle cost is due to lower energy production of
17 -\$14.9M, lower unit prices for new fuel loaded at -\$7.2M and higher fuel utilization efficiency
18 of -\$0.5M.

Table 1
 Comparison of Nuclear Fuel Costs (\$M)

Line No.	Business Unit	2013 Budget	(c)-(a) Change	2013 Actual	(g)-(c) Change	2014 OEB Approved ¹	(g)-(e) Change	2014 Actual	(k)-(g) Change	2015 OEB Approved ¹	(k)-(i) Change	2015 Actual
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
	Uranium:											
1	Darlington NGS	119.7	(12.4)	107.3	7.3	118.1	(3.5)	114.6	(16.1)	109.0	(10.5)	98.5
2	Pickering NGS	96.2	(10.2)	86.0	(1.8)	90.3	(6.1)	84.2	3.5	92.8	(5.1)	87.7
3	Total Fuel Bundle Cost	215.9	(22.6)	193.3	5.6	208.4	(9.6)	198.8	(12.7)	201.8	(15.6)	186.2
4	Used Fuel Storage & Disposal²	52.7	(3.7)	49.0	4.6	56.1	(2.5)	53.6	(0.5)	56.7	(3.6)	53.1
5	Fuel Oil	4.0	(1.6)	2.4	(0.0)	4.1	(1.7)	2.3	2.8	4.2	0.9	5.1
6	Total Nuclear Fuel Costs	272.6	(27.9)	244.7	10.1	268.6	(13.8)	254.8	(10.4)	262.6	(18.3)	244.3

Line No.	Business Unit	2015 Actual	(c)-(a) Change	2016 Budget	(e)-(c) Change	2017 Plan	(g)-(e) Change	2018 Plan	(i)-(g) Change	2019 Plan	(k)-(i) Change	2020 Plan
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
	Uranium:											
7	Darlington NGS	98.5	14.1	112.5	(29.9)	82.6	(0.1)	82.5	(0.1)	82.4	3.2	85.5
8	Pickering NGS	87.7	(1.7)	86.0	(6.1)	79.9	(0.1)	79.9	(0.3)	79.5	2.2	81.8
9	Total Fuel Bundle Cost	186.2	12.4	198.6	(36.0)	162.6	(0.2)	162.3	(0.5)	161.9	5.4	167.3
10	Used Fuel Storage & Disposal²	53.1	8.9	62.0	(8.9)	53.0	2.2	55.2	11.5	66.7	(10.4)	56.3
11	Fuel Oil	5.1	(0.9)	4.2	0.1	4.3	0.1	4.4	0.1	4.5	0.1	4.6
12	Total Nuclear Fuel Costs	244.3	20.4	264.8	(44.8)	219.9	2.1	222.0	11.1	233.1	(4.9)	228.2

Line No.	Business Unit	2020 Plan	(c)-(a) Change	2021 Plan
		(a)	(b)	(c)
	Uranium:			
13	Darlington NGS	85.5	(13.7)	71.9
14	Pickering NGS	81.8	(2.2)	79.6
15	Total Fuel Bundle Cost	167.3	(15.8)	151.4
16	Used Fuel Storage & Disposal²	56.3	0.2	56.5
17	Fuel Oil	4.6	0.1	4.7
18	Total Nuclear Fuel Costs	228.2	(15.5)	212.7

Notes:

- 1 Fuel Bundle Cost on lines 1, 2 and 3 adjusted to reflect nuclear production forecast adjustments per EB-2013-0321 Ex. N1, Ex. N2 and Decision with Reasons, pp. 39 and 49.
- 2 2013 Actual, 2014 Actual, 2015 Actual, 2016 Budget, 2017 Plan, 2018 Plan, 2019 Plan, 2020 Plan, and 2021 Plan from Ex. C2-1-1 Table 2, line 2. Used Fuel Storage & Disposal is discussed in Ex. C2-1-1.