K11.3

OPG 2014/2015 Payment Amounts Application

EB-2013-0321

AMPCO Compendium

Panel 7

Finance

DVA

Nuclear Liabilities

June 27, 2014

Ontario

ServiceOntario
e-Laws

Ontario Energy Board Act, 1998
Loi de 1998 sur la Commission de l'énergie de l'Ontario

ONTARIO REGULATION 53/05

PAYMENTS UNDER SECTION 78.1 OF THE ACT

Consolidation Period: From November 29, 2013 to the e-Laws currency date.

Last amendment: O. Reg. 312/13.

This Regulation is made in English only.

Definition

0.1 In this Regulation,

"approved reference plan" means a reference plan, as defined in the Ontario Nuclear Funds Agreement, that has been approved by Her Majesty the Queen in right of Ontario in accordance with that agreement;

"nuclear decommissioning liability" means the liability of Ontario Power Generation Inc. for decommissioning its nuclear generation facilities and the management of its nuclear waste and used fuel;

"Ontario Nuclear Funds Agreement" means the agreement entered into as of April 1, 1999 by Her Majesty the Queen in right of Ontario, Ontario Power Generation Inc. and certain subsidiaries of Ontario Power Generation Inc., including any amendments to the agreement. O. Reg. 23/07, s. 1.

Note: On July 1, 2014, section 0.1 is amended by adding the following subsection: (See: O. Reg. 312/13, ss. 1, 6)

(2) For the purposes of this Regulation, the output of a generation facility shall be measured at the facility's delivery points, as determined in accordance with the market rules. O. Reg. 312/13. s. 1.

Prescribed generator

1. Ontario Power Generation Inc. is prescribed as a generator for the purposes of section 78.1 of the Act. O. Reg. 53/05, s. 1.

Prescribed generation facilities

2. The following generation facilities of Ontario Power Generation Inc. are prescribed for the purposes of section 78.1 of the Act:

requirement impacts are accurately recorded in the accounts, based on the following items, as reflected in the audited financial statements approved by the board of directors of Ontario Power Generation Inc.,

Note: On July 1, 2014, paragraph 7 is amended by striking out the portion before subparagraph i and substituting the following: (See: O. Reg. 312/13, ss. 4 (1), 6)

7. The Board shall ensure that the balance recorded in the deferral account established under subsection 5.2 (1) is recovered on a straight line basis over a period not to exceed three years, to the extent that the Board is satisfied that revenue requirement impacts are accurately recorded in the account, based on the following items, as reflected in the audited financial statements approved by the board of directors of Ontario Power Generation Inc.,

i. return on rate base,

ii. depreciation expense,

iii. income and capital taxes, and

iv. fuel expense.

7.1 The Board shall ensure the balances recorded in the deferral account established under subsection 5.3 (1) and the variance account established under subsection 5.4 (1) are recovered on a straight line basis over a period not to exceed three years, to the extent the Board is satisfied that,

Note: On July 1, 2014, paragraph 7.1 is amended by striking out the portion before subparagraph i and substituting the following: (See: O. Reg. 312/13, ss. 4 (2), 6)

7.1 The Board shall ensure the balance recorded in the variance account established under subsection 5.4 (1) is recovered on a straight line basis over a period not to exceed three years, to the extent the Board is satisfied that,

i. the costs were prudently incurred, and

ii. the financial commitments were prudently made.

8. The Board shall ensure that Ontario Power Generation Inc. recovers the revenue requirement impact of its nuclear decommissioning liability arising from the current approved reference plan.

9. The Board shall ensure that Ontario Power Generation Inc. recovers all the costs it incurs with respect to the Bruce Nuclear Generating Stations.

10. If Ontario Power Generation Inc.'s revenues earned with respect to any lease of the Bruce Nuclear Generating Stations exceed the costs Ontario Power Generation Inc. incurs with respect to those Stations, the excess shall be applied to reduce the amount of the payments required under subsection 78.1 (1) of the Act with respect to output from the nuclear generation facilities referred to in paragraphs 3, 4 and 5 of section 2. O. Reg. 23/07, s. 4; O. Reg. 27/08, s. 2.

Note: On July 1, 2014, subsection (2) is amended by adding the following paragraph: (See: O. Reg. 312/13, ss. 4 (3), 6)

Table 5-3: Forecast GAAP Expense – Nuclear ARO, ARC, Segregated Funds

$ millions, periods ending December 31	2008 nine months	2009	Total
Pickering and Darlington			
Depreciation of ARC	$ 90	$ 120	$ 210
Nuclear waste variable expense	16	23	39
Accretion expense	251	344	595
Segregated fund earnings	(186)	(264)	(450)
Total - Pickering, Darlington	**$ 171**	**$ 223**	**$ 394**
Bruce			
Depreciation of ARC	$ 36	$ 48	$ 84
Nuclear waste variable expense	19	17	36
Accretion expense	201	282	483
Segregated fund earnings	(176)	(262)	(438)
Total - Bruce	**$ 80**	**$ 85**	**$ 165**

Sources: Ex. H1-1-3, page 2; Ex. J1.5; Ex. J7.2; Ex. 8.1; Ex. J15.1, Addendum #2.

5.2 OPG's Proposed Treatment of Nuclear Liabilities

Section 6(2)8 of O. Reg. 53/05 requires the Board to ensure that OPG recovers the "revenue requirement impact of its nuclear decommissioning liabilities arising from the current approved reference plan". OPG proposed the following ratemaking approach for nuclear liabilities related to the prescribed facilities, and the related segregated funds, for the test period:

- Depreciation of the ARC component of the net book value of the prescribed nuclear plants is included in the test period revenue requirement.
- Nuclear waste variable costs for Pickering and Darlington are included in the revenue requirement as either fuel costs or depreciation.
- The rate base for 2008 and 2009 would include the average net book values of OPG's Pickering and Darlington nuclear stations. Those net book values include significant amounts of ARC as shown in Table 5-2 above. OPG proposed

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applying its debt rate and return on equity to the entire rate base, including unamortized ARC, to determine the revenue requirement.

- Accretion expense and the earnings on segregated funds, both of which affect OPG's reported income under GAAP, are excluded from the revenue requirement under OPG's proposal.

OPG referred to this approach as the "rate base method."

Section 6(2)9 of O. Reg. 53/05 requires that the Board ensure OPG recovers all of the costs it incurs with respect to the Bruce Nuclear Generating Stations ("Bruce stations"). Section 6(2)10 requires that if OPG's revenues from the lease of the Bruce stations exceed its costs, the excess shall be applied to reduce the payment amounts for the Pickering and Darlington facilities. OPG proposed to use the rate base method for nuclear liabilities to calculate its test period costs of the Bruce stations.

Table 5-4 sets out the amounts OPG proposed to recover during the test period in respect of nuclear liabilities. The amounts for depreciation of ARC and nuclear waste variable expenses are the same as the amounts OPG forecasts it will charge to expense in its financial statements (as shown in Table 5-3). For ratemaking purposes, OPG proposed to ignore accretion expense and earnings on segregated funds. Instead, OPG proposed to recover $175 million as a return on the average unamortized ARC of the Pickering and Darlington facilities ($51 million of deemed interest and a return on equity of $124 million). OPG also proposed to include a $161 million return on unamortized ARC in its forecast costs related to the Bruce stations (deemed interest of $47 million and a return on equity of $114 million).

In addition to OPG's rate base method, four other methods of determining the revenue requirement impact of the nuclear liabilities were discussed during the hearing. Those methods and OPG's rate base method are summarized in Table 5-5, which is based on calculations filed by OPG. The table deals only with the "return on rate base" aspects of each method. It omits depreciation of unamortized ARC and the other elements of the revenue requirement proposed by OPG that were not opposed by any party. Table 5-5 includes amounts for both the prescribed assets (Pickering and Darlington) and the Bruce stations. (The Board did not have all of the information required to separate the Bruce amounts from the amounts for Pickering and Darlington.) Cost of capital in the table is based on OPG's application (a capital structure of 42.5% debt, 57.5% equity; proposed debt rates of 5.65% in 2008 and 6.47% in 2009; and a return on equity of 10.5%).

In their arguments, some intervenors proposed new approaches or variations on the methods shown in Table 5-5.

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5.3 The Issues and Board Findings

The ratemaking treatment for nuclear liabilities is complex, and it is made more complex in this case because the issues involve two types of facilities (Pickering and Darlington, which are prescribed facilities under O. Reg. 53/05, and the Bruce stations, which are not prescribed facilities) and two time periods (the test period, and the period prior to the date of the Board's first order.) Some of the relevant issues and considerations are common to both time periods and types of facilities while other issues are unique to a particular time period or type of facility. The Board has chosen to deal with OPG's rationale for its proposal, the positions of the parties, and the Board's findings under four headings:

- Interpretation of O. Reg. 53/05. OPG submitted that the regulation requires the Board to allow OPG to recover costs related to nuclear liabilities using the rate base method. Several intervenors disputed that claim and submitted that the Board has the discretion under the regulation to adopt other methods. Section 5.3.1 below deals with this issue. The Board finds that O. Reg. 53/05 does not obligate the Board to accept OPG's use of the rate base method and that the Board has the discretion to set the revenue requirement using other methods.
- Method of recovering the costs of nuclear liabilities of the prescribed facilities. Section 5.3.2 below reviews the arguments made in favour of and against the rate base method, and the alternatives suggested by intervenors. This section is restricted to the test period revenue requirement of the nuclear liabilities of the prescribed nuclear facilities, Pickering and Darlington. The Board has determined that OPG's revenue requirement related to the cost of nuclear liabilities for the prescribed facilities should not be calculated using the rate base method. Instead, the Board finds that OPG shall use a method that provides separate rate base treatment for the amount of unfunded liabilities.
- Section 5.1 and 5.2 deferral accounts. Section 5.3.3 below deals with the question of how the revenue requirement impact of the 2006 change in nuclear liabilities should be calculated for purposes of the deferral account mandated by Section 5.1 of the regulation. It also addresses how OPG should calculate entries into the deferral account mandated by Section 5.2 of O. Reg. 53/05, in the event OPG records a change in its nuclear liabilities after the date of the Board's first order. The Board finds that for each account the revenue requirement impact will

capital associated with the unfunded liability than the interest rate used in calculating the liability pursuant to ONFA."[65]

The Board finds that OPG should use a variation of Method 3(b) shown in Table 5-5. The Board will accept the rate base for the prescribed nuclear assets as proposed by OPG. Rate base shall be calculated using average annual fixed asset balances that are determined in accordance with GAAP. Those fixed asset balances include unamortized ARC. The return on rate base, however, will not be as proposed by OPG.

The Board will require that the return on a portion of the rate base be limited to the average accretion rate on OPG's nuclear liabilities, which is currently 5.6%. That portion of rate base that attracts that return will be equal to the lesser of: (i) the forecast amount of the average unfunded nuclear liabilities related to the Pickering and Darlington facilities, and (ii) the average unamortized ARC included in the fixed asset balances for Pickering and Darlington. When the average unfunded nuclear liabilities exceed the amount of unamortized ARC in fixed assets, then the portion of rate base that attracts the 5.6% return would be capped at the average amount of unamortized ARC; if the average unfunded liabilities are forecast to be lower than the average unamortized ARC, it is appropriate to limit the portion of rate base that attracts the 5.6% return to the unfunded amount. That approach recognizes that OPG has raised debt (or used its retained earnings) to fund part of the unamortized ARC.

For the balance of the rate base, the return on capital should be calculated using the capital structure, debt rate, and return on equity approved by the Board in Chapter 8 of this decision.

The Board has some, but not all, of the information required to calculate the portion of rate base that will attract the 5.6% return. OPG's evidence includes the forecast amounts of average unamortized ARC in the Pickering and Darlington fixed assets ($1,227 million for 2008 and $1,121 for 2009). Its evidence, however, did not include the forecast unfunded liability in respect of Pickering and Darlington (the evidence provided by OPG showed a combined unfunded amount that included amounts related to the Bruce stations). OPG should provide the amounts of forecast average unfunded liabilities related to Pickering and Darlington as part of the information supporting the draft payment order based on this decision.

[65] CIBC Report, page 19.

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a reduction to Bruce Lease net revenues, consisting of $144.9M for 2014 and $148.7M for 2015 (Ex. C2-1-1 Table 1, line 15). The associated income tax impacts are $48.3M for 2014 and $49.6M for 2015 (Ex. C2-1-1 Table 1, line 16).

The current approved ONFA Reference Plan covers the 2012-2016 period. The ONFA was approved by the Province effective January 1, 2012, as discussed in EB-2012-0002. The accounting consequences and financial impacts of the current approved ONFA Reference Plan are summarized in section 3.0. The impacts for the prescribed facilities projected for 2013 are discussed in Section 4.1 and, for 2014 and 2015, in Section 4.2.

3.0 SUMMARY OF IMPACTS

Accounting for the current approved ONFA Reference Plan increased the carrying balance of the ARO and ARC by $1,363.5M, as detailed in Ex. C2-1-1 Table 4, lines 6 and 7 (2011 ARO/ARC adjustment of $934.3M) and lines 13 and 14 (2012 ARO/ARC adjustment of $429.2M).[1] Exhibit C2-1-2 Table 4 includes the details of these adjustments at the program and station level.

The financial impacts of the current approved ONFA Reference Plan for 2013 to 2015 are summarized below. The methodologies applied in deriving these impacts are unchanged from those applied in EB-2012-0002 and EB-2010-0008.

1) With respect to the prescribed facilities, an increase in the 2014-2015 after-tax revenue requirement of $136.4M as detailed in Ex. C2-1-2 Table 5, and discussed in section 4.2
2) With respect to the Bruce facilities, a reduction in the 2014-2015 Bruce Lease net revenues of $229.4M as detailed in Ex. C2-1-2 Table 5 and discussed in Ex. G2-2-1 Section 6.0. The reduction in Bruce Lease net revenues results in a corresponding pre-tax increase in the test period revenue requirement and an associated increase of $76.5M in income taxes for the prescribed facilities as detailed in Ex. C2-1-2 Table 5.

[1] Ex. C2-1-2 Table 4 contains the same information as presented in EB-2012-0002 Ex. H1-1-2, Table 20

Numbers may not add due to rounding.

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EB-2013-0321
Exhibit C2
Tab 1
Schedule 1
Table 1

Table 1
Revenue Requirement Impact of OPG's Nuclear Liabilities ($M)
Years Ending December 31, 2010 to 2015

Line No.	Description	Note or Reference	2010 Actual	2011 Actual	2012 Actual	2013 Budget	2014 Plan	2015 Plan
			(a)	(b)	(c)	(d)	(e)	(f)
	PRESCRIBED FACILITIES							
1	**Depreciation of Asset Retirement Costs**	Ex. C2-1-1 Table 2	26.3	29.0	127.2	80.7	80.7	80.7
2	**Used Fuel Storage and Disposal Variable Expenses**	Ex. C2-1-1 Table 2	23.5	26.0	51.9	52.7	56.1	56.7
3	**Low & Intermediate Level Waste Management Variable Expenses**	Ex. C2-1-1 Table 2	1.1	0.9	3.8	3.3	3.1	5.5
	Return on ARC in Rate Base:							
4	**Return on Rate Base at Weighted Average Accretion Rate**	Ex. C1-1-1 Tables 1-6	84.7	83.1	100.5	78.9	74.6	70.3
5	**Return on Rate Base at Weighted Average Cost of Capital**	Note 1	0.0	0.0	0.0	0.0	0.0	0.0
6	**Pre-Tax Revenue Requirement Impact**		135.5	139.1	283.5	215.6	214.6	213.2
7	**Income Tax Impact**	Note 2	(6.0)	(2.1)	58.8	39.2	14.8	13.5
8	**Total Revenue Requirement Impact** (line 6 + line 7)		129.5	137.0	342.3	254.8	229.4	226.6
	BRUCE FACILITIES							
9	**Depreciation of Asset Retirement Costs**	Ex. C2-1-1 Table 3	26.1	23.9	69.6	100.6	100.6	100.6
10	**Used Fuel Storage and Disposal Variable Expenses**	Ex. C2-1-1 Table 3	17.8	27.0	44.5	51.6	54.3	56.4
11	**Low & Intermediate Level Waste Management Variable Expenses**	Ex. C2-1-1 Table 3	0.9	1.0	1.8	2.8	2.4	3.8
12	**Accretion Expense**	Ex. C2-1-1 Table 3	283.1	296.6	327.8	367.8	382.9	397.3
13	**Less: Segregated Fund Earnings (Losses)**	Ex. C2-1-1 Table 3	418.0	240.1	350.9	330.8	347.0	359.8
14	**Impact on Bruce Facilities' Income Taxes**	Note 3	21.5	(27.5)	(23.2)	(48.0)	(48.3)	(49.6)
15	**Pre-Tax Revenue Requirement Impact (Impact on Bruce Lease Net Revenues)**		(68.6)	81.0	69.6	143.9	144.9	148.7
16	**Income Tax Impact on Revenue Requirement** (line 15 x tax rate / (1-tax rate))	Note 4	(28.0)	29.2	23.2	48.0	48.3	49.6
17	**Total Revenue Requirement Impact** (line 15 + line 16)		(96.6)	110.2	92.9	191.9	193.2	198.3
18	**Total Revenue Requirement Impact - Prescribed and Bruce Faciliites** (line 8 + line 17)		32.9	247.2	435.1	446.7	422.6	424.9

See Ex. C2-1-1 Table 1a for notes

The higher variable used fuel and L&ILW costs reflect higher storage and disposal baseline cost estimates as well as a lower discount rate. The changes in the ARO and ARC at the end of 2011 and the variable costs during 2012 were recorded at the accounting discount rate of 3.43 per cent, which is lower than the discount rate of 4.8 per cent used to value and accrete the previous ARO tranche and to determine the variable costs reflected in EB-2010-0008. The changes in the ARO and ARC at the end of 2012 were recorded at the accounting discount rate of 3.50 per cent, which is reflected in the projected variable costs for 2013 - 2015 presented in this Application. The weighted average accretion rate of 5.37 per cent used to calculate the projected return on rate base for the prescribed facilities' ARC for 2013 - 2015 reflects the impact of the ARO tranches recorded at 3.43 per cent and 3.50 per cent , as shown in EB-2012-0002.[4]

4.0 PROJECTED IMPACTS FOR PRESCRIBED FACILITIES

4.1 Impacts on Nuclear Liability Deferral Account for 2013

The Nuclear Liability Deferral Account has been authorized by the OEB pursuant to section 5.2(1) of O. Reg. 53/05 in order to capture the revenue requirement impact of any change in OPG's nuclear decommissioning liability arising from an approved reference plan under the ONFA.[5,6] Ontario Regulation 53/05 section 6(2)8 requires the OEB to ensure that OPG recovers the revenue requirement impact of its nuclear decommissioning liability arising from the current approved reference plan.

The forecast amounts approved in EB-2010-0008 were based on the previous reference plan. As a result, the 2013 impacts of the changes in the nuclear ARO from the current approved ONFA Reference Plan and the changes in segregated fund contributions are

[4] The derivation of the weighted average accretion rate of 5.37% is found at EB-2012-0002 Ex. M1-1, Att. 3, Table 1a, Note 1.
[5] As originally determined by the OEB in its EB-2007-0905 Decision with Reasons (p. 112) and as stated in the EB-2012-0002 Payment Amounts Order (Appendix B, p. 9 and 11), the cost impacts of changes in OPG's nuclear decommissioning and nuclear waste management liabilities for the Bruce facilities are recorded in the Bruce Lease Net Revenues Variance Account rather than the Nuclear Liability Deferral Account.
[6] The "nuclear decommissioning liability" is defined in O. Reg. 53/05 and the EB-2012-0002 Payment Amounts Order (Appendix F, p. 9) as "the liability of Ontario Power Generation Inc. for decommissioning its nuclear generation facilities and the management of its nuclear waste and used fuel."

Numbers may not add due to rounding.

Table 4

Impact of Current Approved ONFA Reference Plan - Assignment of ARO Adjustment and Allocation of ARC to Nuclear Stations ($M)

Line No.	Description	Pickering A	Pickering B	Darlington	Prescribed Facilities Total	Bruce A	Bruce B	Bruce Facilities Total	Total
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
	December 31, 2011 Actual:								
1	**Decommissioning Program**	(111.0)	(209.3)	(296.2)	(616.5)	(188.5)	(194.3)	(382.8)	(999.3)
2	**Low and Intermediate Level Waste Storage Program**	125.7	83.6	64.2	273.6	183.0	26.9	209.9	483.5
3	**Low and Intermediate Level Waste Disposal Program**	245.3	194.9	36.3	476.5	317.0	42.1	359.2	835.7
4	**Used Fuel Disposal Program**	(31.4)	(59.7)	(104.3)	(195.4)	(8.0)	(25.9)	(33.9)	(229.3)
5	**Used Fuel Storage Program**	139.7	166.4	194.9	501.1	78.1	264.6	342.6	843.7
6	**ARO Adjustment Assignment to Station Level**	368.4	175.9	(105.1)	439.2	381.6	113.5	495.1	934.3
7	**Asset Retirement Cost Adjustment**	368.4	175.9	(105.1)	439.2	381.6	113.5	495.1	934.3

Line No.	Description	Pickering A	Pickering B	Darlington	Prescribed Facilities Total	Bruce A	Bruce B	Bruce Facilities Total	Total
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
	December 31, 2012 Actual:								
8	**Decommissioning Program**	(18.8)	(43.0)	0.0	(61.8)	(33.0)	(40.4)	(73.4)	(135.2)
9	**Low and Intermediate Level Waste Storage Program**	(14.2)	11.9	(10.0)	(12.2)	60.3	21.1	81.4	69.2
10	**Low and Intermediate Level Waste Disposal Program**	(60.1)	(8.0)	(52.4)	(120.5)	76.0	37.3	113.3	(7.2)
11	**Used Fuel Disposal Program**	(74.0)	194.6	(176.6)	(56.0)	289.3	315.9	605.1	549.1
12	**Used Fuel Storage Program**	(11.3)	(22.2)	7.1	(26.4)	(10.4)	(9.9)	(20.3)	(46.7)
13	**ARO Adjustment Assignment to Station Level**	(178.5)	133.3	(231.7)	(276.9)	382.2	323.9	706.1	429.2
14	**Asset Retirement Cost Adjustment**	(178.5)	133.3	(231.7)	(276.9)	382.2	323.9	706.1	429.2

Chart 2
Projected 2014 and 2015 ARC Depreciation for Bruce Facilities ($M)[1]

		Bruce A	Bruce B	Total
(1) Net book value of ARC at Jan 1, 2014[2]	(a)	1,497.4	346.8	1,844.2
(2) Remaining service life at Jan 1, 2014 (yrs)[3]	(b)	35	6	
(3) 2014 Depreciation Expense *(3)=(1)/(2)*	(c)=(a)/(b)	42.8	57.8	**100.6**
(4) Net book value of ARC at Jan 1, 2015[2] *(4)=(1)-(3)*	(d) = (a)-(c)	1,454.6	289.0	1,743.6
(5) Remaining service life at Jan 1, 2015 (yrs)[3]	(e)	34	5	
(6) 2015 Depreciation Expense *(6)=(4)/(5)*	(f)=(d)/(e)	42.8	57.8	**100.6**

[1] Numbers may not calculate due to rounding
[2] Total ARC opening net book value for 2014 is as per Ex. C2-1-1 Table 3, line 20, col. (e) and for 2015 as per Ex. C2-1-1 Table 3, line 20, col. (f)
[2] Based on average station end-of-life dates of December 31, 2048 for Bruce A and December 31, 2019 for Bruce B, as noted on p. 3 of Ex. F4-1-1

Used Fuel Storage and Disposal Variable Expenses (Lines 2 and 10)

Line 2: Chart 3 (2014) and Chart 4 (2015) provide the derivation of projected used fuel storage ("UFS") and used fuel disposal ("UFD") variable expenses for the prescribed facilities

Line 10: Chart 5 (2014) and Chart 6 (2015) provide the derivation of projected UFS and UFD variable expenses for the Bruce facilities.

Chart 3
Projected 2014 Used Fuel Variable Expenses for Prescribed Facilities[1]

Facility	Used Fuel Volume (bundles) (a)	UFD Variable Cost Rate ($/bundle) (b)	UFS Variable Cost Rate ($/bundle) (c)	UFD Variable Expenses ($M) (d)=(a)x(b)	UFS Variable Expenses ($M) (e)=(a)x(c)	Total Used Fuel Variable Expense ($M) (f)=(d)+(e)
Pickering A	5,098	1,064	584	5.4	3.0	8.4
Pickering B	13,107	1,064	586	13.9	7.7	21.6
Darlington	23,214	1,064	61	24.7	1.4	26.1
Total	41,419			44.1	12.1	**56.1**

[1] Numbers may not calculate due to rounding

Witness Panel: Finance, D&V Accounts, Nuclear Liabilities

Chart 4
Projected 2015 Used Fuel Variable Expenses for Prescribed Facilities[1]

Facility	Used Fuel Volume (bundles) (a)	UFD Variable Cost Rate ($/bundle) (b)	UFS Variable Cost Rate ($/bundle) (c)	UFD Variable Expenses ($M) (d)=(a)x(b)	UFS Variable Expenses ($M) (e)=(a)x(c)	Total Used Fuel Variable Expense ($M) (f)=(d)+(e)
Pickering A	5,713	1,101	604	6.3	3.5	9.7
Pickering B	12,952	1,101	606	14.3	7.8	22.1
Darlington	21,335	1,101	63	23.5	1.3	24.8
Total	40,000			44.0	12.6	**56.7**

[1] Numbers may not calculate due to rounding

Chart 5
Projected 2014 Used Fuel Variable Expenses for Bruce Facilities[1]

Facility	Used Fuel Volume (bundles) (a)	UFD Variable Cost Rate ($/bundle) (b)	UFS Variable Cost Rate ($/bundle) (c)	UFD Variable Expenses ($M) (d)=(a)x(b)	UFS Variable Expenses ($M) (e)=(a)x(c)	Total Used Fuel Variable Expense ($M) (f)=(d)+(e)
Bruce A	17,076	1,064	49	18.2	0.8	19.0
Bruce B	21,382	1,064	589	22.8	12.6	35.3
Total	38,459			40.9	13.4	**54.3**

[1] Numbers may not calculate due to rounding

Chart 6
Projected 2015 Used Fuel Variable Expenses for Bruce Facilities[1]

Facility	Used Fuel Volume (bundles) (a)	UFD Variable Cost Rate ($/bundle) (b)	UFS Variable Cost Rate ($/bundle) (c)	UFD Variable Expenses ($M) (d)=(a)x(b)	UFS Variable Expenses ($M) (e)=(a)x(c)	Total Used Fuel Variable Expense ($M) (f)=(d)+(e)
Bruce A	17,081	1,101	50	18.8	0.9	19.7
Bruce B	21,499	1,101	609	23.7	13.1	36.8
Total	38,581			42.5	14.0	**56.4**

[1] Numbers may not calculate due to rounding

Low and Intermediate Level Waste Management Variable Expenses (Lines 3 and 11)

Line 3: Chart 7 (2014) and Chart 8 (2015) provide the derivation of projected low-level waste ("LLW") and intermediate-level waste ("ILW") variable expenses for the prescribed facilities.

Witness Panel: Finance, D&V Accounts, Nuclear Liabilities

Numbers may not add due to rounding.

Table 5
Impact of Current Approved ONFA Reference Plan on Nuclear Liabilities Costs ($M)
Years Ending December 31, 2014 and 2015

Line No.	Description	Note or Reference (for cols. (a) and (b))	With Current Approved ONFA Reference Plan		Note or Reference (for cols. (c) and (d))	Without Current Approved ONFA Reference Plan[1]		(a)-(c)+(b)-(d) Impact on Nuclear Liabilities Costs
			2014 Plan	2015 Plan		2014 Plan	2015 Plan	
			(a)	(b)		(c)	(d)	(e)
	PRESCRIBED FACILITIES							
1	Depreciation of Asset Retirement Costs	Ex. C2-1-1 Table 1	80.7	80.7	Note 2	29.0	29.0	103.3
2	Used Fuel Storage and Disposal Variable Expenses	Ex. C2-1-1 Table 1	56.1	56.7		31.1	31.8	49.9
3	Low & Intermediate Level Waste Management Variable Expenses	Ex. C2-1-1 Table 1	3.1	5.5		1.4	2.5	4.8
	Return on ARC in Rate Base:							
4	Return on Rate Base at Weighted Average Accretion Rate	Ex. C2-1-1 Table 1	74.6	70.3	Note 2	78.3	76.7	(10.0)
5	Return on Rate Base at Weighted Average Cost of Capital	Ex. C2-1-1 Table 1	0.0	0.0	Note 2	0.0	0.0	0.0
6	Pre-tax Revenue Requirement Impact		214.6	213.2		139.8	140.0	148.0
7	Income Tax Impact on Revenue Requirement	Ex. C2-1-1 Table 1	14.8	13.5	Note 3	20.3	19.7	(11.6)
8	Total Impact on Nuclear Liabilities Costs - Prescribed Facilities (line 6 + line 7)		229.4	226.6		160.0	159.6	136.4
	BRUCE FACILITIES							
9	Depreciation of Asset Retirement Costs	Ex. C2-1-1 Table 1	100.6	100.6		26.7	26.7	147.8
10	Used Fuel Storage and Disposal Variable Expenses	Ex. C2-1-1 Table 1	54.3	56.4		26.9	28.3	55.5
11	Low & Intermediate Level Waste Management Variable Expenses	Ex. C2-1-1 Table 1	2.4	3.8		1.0	1.6	3.5
12	Accretion	Ex. C2-1-1 Table 1	382.9	397.3		337.8	350.8	91.5
13	Less: Segregated Fund Earnings (Losses)	Ex. C2-1-1 Table 1	347.0	359.8		349.4	365.0	(7.6)
14	Bruce Facilities' Income Tax Impact	Ex. C2-1-1 Table 1	(48.3)	(49.6)	Note 4	(10.8)	(10.6)	(76.5)
15	Pre-Tax Revenue Requirement Impact (Impact on Bruce Lease Net Revenues)		144.9	148.7		32.3	31.9	229.4
16	Income Tax Impact on Revenue Requirement	Ex. C2-1-1 Table 1	48.3	49.6	Note 5	10.8	10.6	76.5
17	Total Impact on Nuclear Liabilities Costs - Bruce Facilities (line 15 + line 16)		193.2	198.3		43.1	42.5	305.9
18	Total Test Period Impact of Current Approved ONFA Reference Plan on Nuclear Liabilities Costs (col. (e): line 8 + line 17)							442.3

See Ex. C2-1-1 Table 5a for notes

Numbers may not add due to rounding.

Table 4

Impact of Current Approved ONFA Reference Plan - Assignment of ARO Adjustment and Allocation of ARC to Nuclear Stations ($M)

Line No.	Description	Pickering A	Pickering B	Darlington	Prescribed Facilities Total	Bruce A	Bruce B	Bruce Facilities Total	Total
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
	December 31, 2011 Actual:								
1	**Decommissioning Program**	(111.0)	(209.3)	(296.2)	(616.5)	(188.5)	(194.3)	(382.8)	(999.3)
2	**Low and Intermediate Level Waste Storage Program**	125.7	83.6	64.2	273.6	183.0	26.9	209.9	483.5
3	**Low and Intermediate Level Waste Disposal Program**	245.3	194.9	36.3	476.5	317.0	42.1	359.2	835.7
4	**Used Fuel Disposal Program**	(31.4)	(59.7)	(104.3)	(195.4)	(8.0)	(25.9)	(33.9)	(229.3)
5	**Used Fuel Storage Program**	139.7	166.4	194.9	501.1	78.1	264.6	342.6	843.7
6	**ARO Adjustment Assignment to Station Level**	368.4	175.9	(105.1)	439.2	381.6	113.5	495.1	934.3
7	**Asset Retirement Cost Adjustment**	368.4	175.9	(105.1)	439.2	381.6	113.5	495.1	934.3

Line No.	Description	Pickering A	Pickering B	Darlington	Prescribed Facilities Total	Bruce A	Bruce B	Bruce Facilities Total	Total
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
	December 31, 2012 Actual:								
8	**Decommissioning Program**	(18.8)	(43.0)	0.0	(61.8)	(33.0)	(40.4)	(73.4)	(135.2)
9	**Low and Intermediate Level Waste Storage Program**	(14.2)	11.8	(10.0)	(12.2)	60.3	21.1	81.4	69.2
10	**Low and Intermediate Level Waste Disposal Program**	(60.1)	(8.0)	(52.4)	(120.5)	76.0	37.3	113.3	(7.2)
11	**Used Fuel Disposal Program**	(74.0)	194.6	(176.6)	(56.0)	289.3	315.9	605.1	549.1
12	**Used Fuel Storage Program**	(11.3)	(22.2)	7.1	(26.4)	(10.4)	(9.9)	(20.3)	(46.7)
13	**ARO Adjustment Assignment to Station Level**	(178.5)	133.3	(231.7)	(276.9)	382.2	323.9	706.1	429.2
14	**Asset Retirement Cost Adjustment**	(178.5)	133.3	(231.7)	(276.9)	382.2	323.9	706.1	429.2

Board Staff Interrogatory #04

Ref: Exh H2-1-1 Table 3

Issue Number: 1
Issue: Is the nature or type of amounts recorded in the deferral and variance accounts appropriate?

Interrogatory

Table 3 lists amounts associated with each of the five nuclear programs (under Description line items row #'s 1 to 12) in relation to each nuclear station (under Prescribed Facilities columns a to c and Bruce Facilities columns e and f).

a) Please provide detailed calculations, including all inputs and assumptions, showing and explaining how these amounts were derived.

b) What methodology was used to attribute and allocate these costs to each station unit and how was it applied?

c) What is the probability of significant differences (or range of probability outcomes) in estimating these amounts based on the inputs and assumptions in the ONFA Reference Plan effective January 1, 2012?

d) Was any sensitivity analysis performed to determine whether the results and impacts were reasonable and acceptable, and if so, what was the methodology used and the results of this analysis?

Response

a) The actual asset retirement obligation ("ARO") adjustment at the end of 2011 and that projected at the end of 2012 associated with each of the five nuclear programs (under Description line items rows 1 to 5 and 8 to 12 in Ex. H2-1-1, Table 3) in relation to each nuclear station were derived as described below.

Actual 2011 ARO Adjustment

Assumptions:

1) Base line cost estimates are from the approved 2012 ONFA Reference Plan.
2) Estimated assumed station end-of-life dates are based on the approved 2011 Depreciation Review Recommendations (L-2-1 Staff-19 Attachment 2).
3) Nuclear waste volume forecast consistent with assumed station end-of-life dates.

Witness Panel: USGAAP/Nuclear Liabilities/Bruce Lease

- Decommissioning and Used Fuel Storage programs: The cost estimates for these two programs are prepared at the station level with individual estimates prepared for each station; therefore no allocation is required.
- Used Fuel Disposal, L&ILW Storage and L&ILW Disposal programs: As these three programs involve central facilities, the cost estimates are prepared at the program level. The costs are allocated to stations based on the lifecycle waste volume forecast underlying the calculation of the liabilities.

ARC is recorded at the station level based on the ARO amounts attributed to each station.

c) and d) During the development of the 2012 ONFA Reference Plan in 2011, OPG prepared an analysis to test the sensitivity of the overall estimated lifecycle liability for each of the decommissioning and waste management programs, to changes in input assumptions. This sensitivity analysis conducted for these programs was not conducted at the station level. This sensitivity analysis was completed in two phases. In the first phase, OPG focused on the three longer-term programs, i.e., Decommissioning, Used Fuel Disposal and L&ILW Disposal, which together make up over 80 per cent of the total estimated ONFA lifecycle liability, and tested the estimates of the liability to changes in specific inputs, such as assumed escalation and discount rates, timing of decommissioning, timing of in-service of the used fuel repository, and costs of the programs. The result of this work provided OPG with an indication of the range of possible values for each of the three major programs' liability estimates.

In the second phase, confidence ranges were developed around the liabilities for each of all five individual programs (i.e., including Used Fuel Storage and L&ILW Storage) as well as the total nuclear waste and decommissioning ONFA lifecycle liability estimate. This was accomplished by developing probability distributions around the key input assumptions for the liability estimates for each program, then applying Monte Carlo simulation techniques to sample the distributions of each of these input variables in order to develop overall probability distributions of the liability estimates for each of the five programs as well as the total nuclear waste and decommissioning liability estimate. The results of this second phase of work showed that there is an 80 per cent confidence that the total nuclear waste and decommissioning lifecycle liability lies between $13.1B (2012$PV) and $20.8B (2012$PV) OPG's point estimate of the total ONFA lifecycle liability is $15.7B (2012$PV).

ONTARIO POWER GENERATION

OPG's NUCLEAR WASTE MANAGEMENT AND DECOMMISSIONING LIABILITY

Presented to Pickering CAC, April 15, 2014

ONTARIOPOWER GENERATION

Cost Estimate Structure

Physical Decommissioning

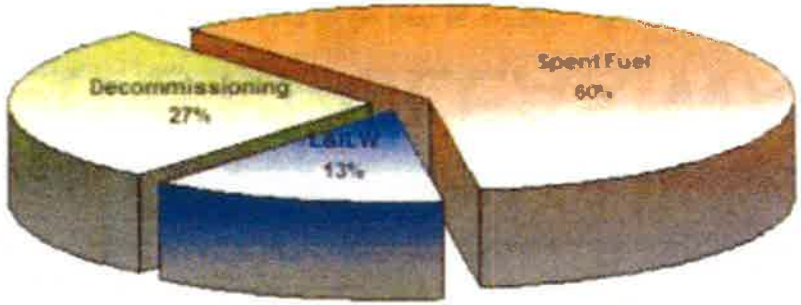
- Bruce A/B NGS's
- Pickering A/B NGS's
- Darlington NGS's
- WWMF
- Pickering WMF
- Darlington WMF
- RWOS-1
- CMLF

Used Fuel Management

- Used Fuel Interim Storage
- Used Fuel Long-Term

L&ILW Management

- L&ILW Interim Storage
- L&ILW Long-Term



ONTARIO POWER GENERATION

Nuclear Waste

Sources of Financing

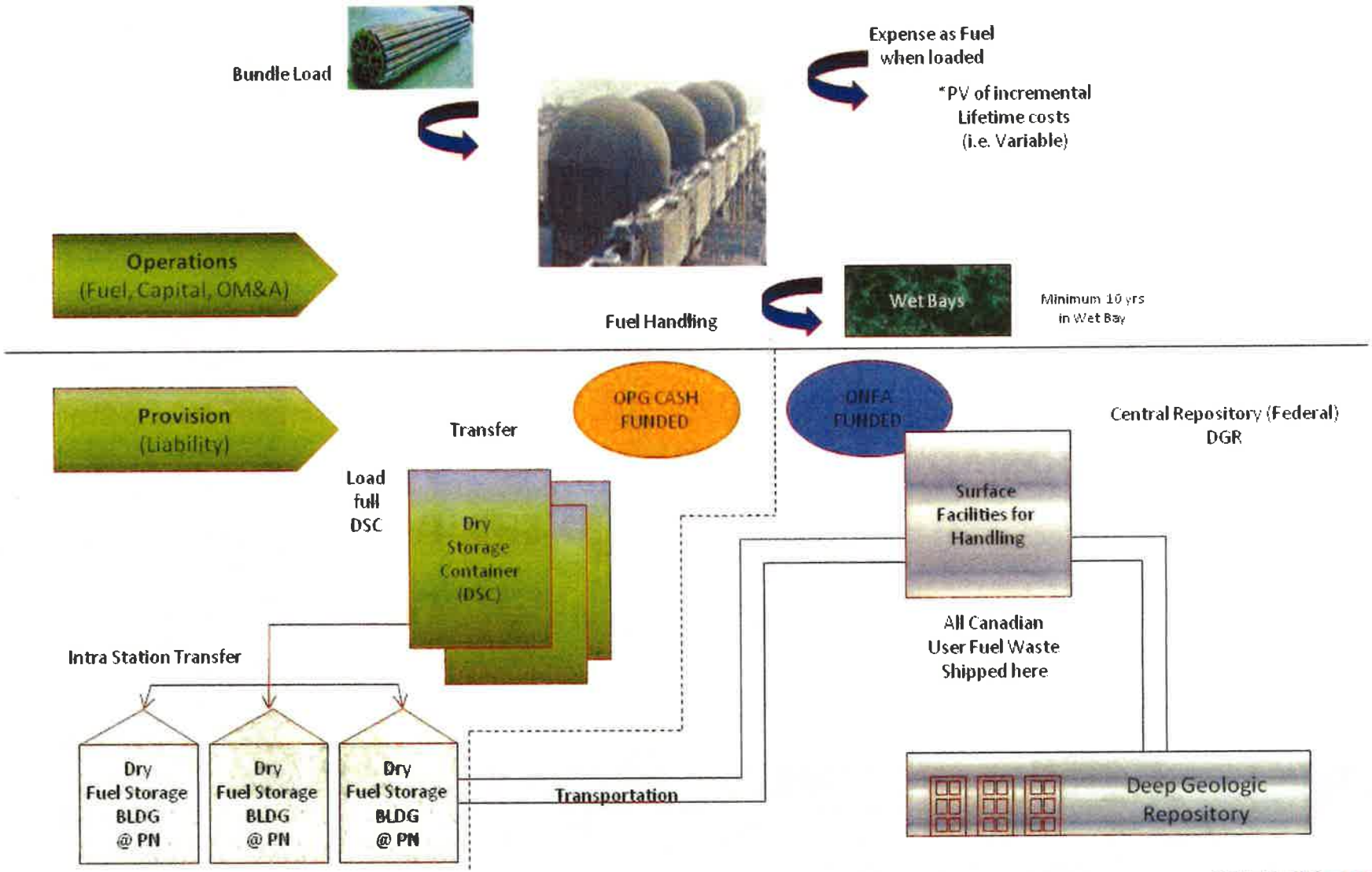
Pickering Community Advisory Council

February 21, 2012

John Mauti
Director – Nuclear Reporting
Ontario Power Generation Inc.

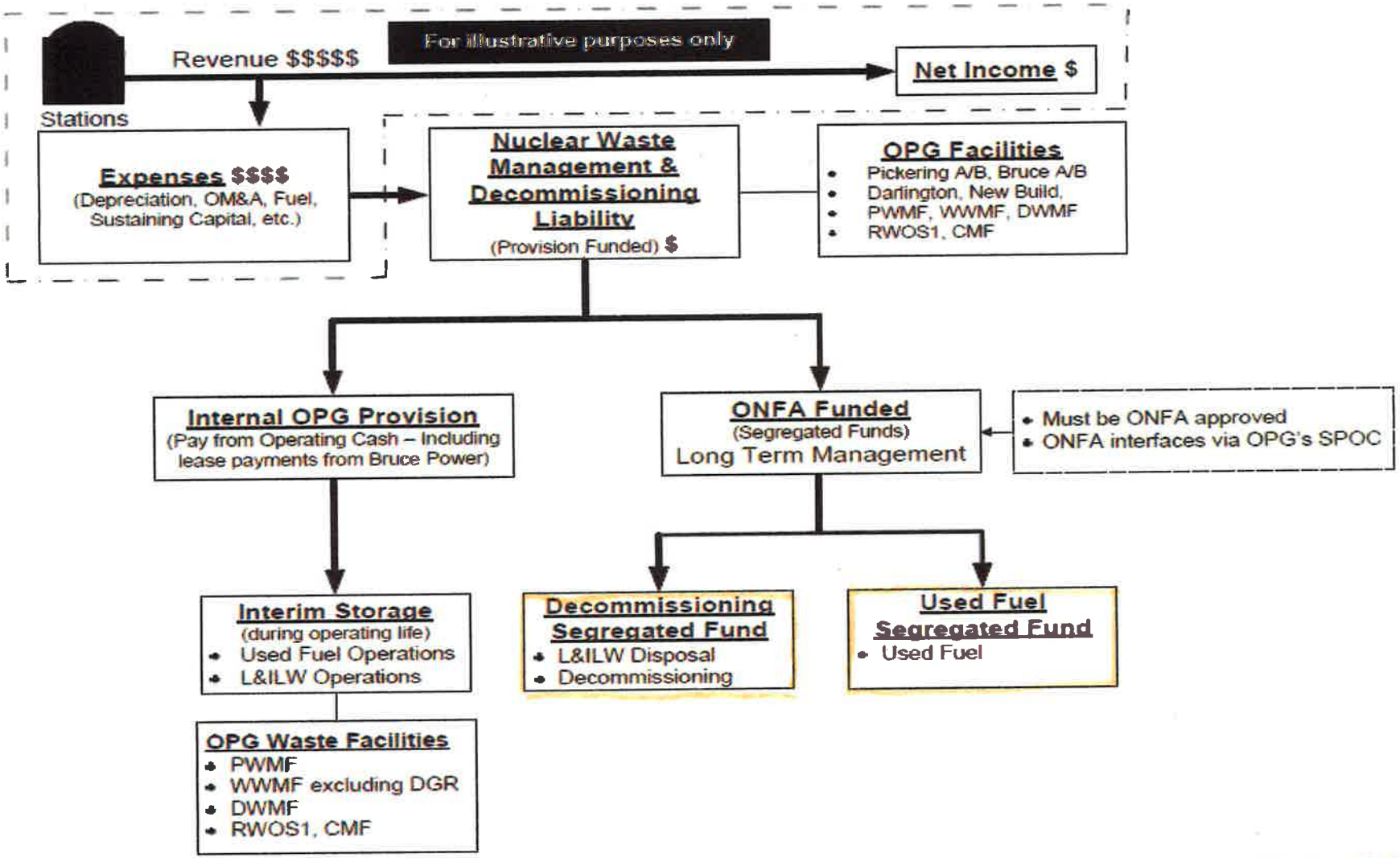
ONTARIO POWER GENERATION

Used Fuel Liability Flow



ONTARIO POWER GENERATION

Nuclear Waste and Decommissioning Liability



ONTARIO POWER GENERATION

Some frequently asked questions ....

Q1 - How do you know you have enough money in the long run?

The waste and decommissioning programs last several decades. Technology changes. Value of our segregated funds and their earnings change. Every five years, we completely re-estimate all factors (cost estimates and nuclear fund balances) and recalibrate.

Q2 - Why aren't all nuclear liability expenses paid by the ONFA funds?

The primary purpose of the ONFA funds is to ensure cash will be available to pay for the long-term execution of each program. Cash we need in the short term (used fuel storage, handling and safe storage of L&ILW) is part of our normal ongoing operations and we may as well pay from our operating cash funds. It's a normal part of everyday business for OPG.

Q3 - What if OPG is not around when some of these programs need to spend money?

One main intent of ONFA is to provide for such a scenario. If the funds are available, in a segregated set of accounts, regardless of OPG's existence, the money can be accessed (by either the Province or the CNSC) to pay for these programs.

ONTARIO POWER GENERATION

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Financial Considerations

For Ontario Power Generation:

- All money required to manage fuel from reactors, to wet bays to interim dry storage at site is funded 100% by OPG using cash flow from operations – NO SEPARATE FUNDING AVAILABLE
- All money required to manage Low and Intermediate Level Waste (L&ILW) including transportation to a central facility at the Bruce site, handling, containers and storage in ground or in buildings is funded 100% by OPG using cash flow from operations – NO SEPARATE FUNDING AVAILABLE
- All money required to manage fuel from storage to eventual long term disposal deep underground comes from a separate segregated nuclear fund (Used Fuel Fund).
- All money required to manage L&ILW for the long term, including deep underground disposal and the cost to decommission nuclear facilities comes from a separate segregated nuclear fund (Decommissioning Fund).
- At year end 2010, value of Used Fuel Fund was $5.98 B
- At year end 2010, Value of the Decommissioning Fund was $5.27 B

ONTARIO POWER GENERATION

24

AMPCO Interrogatory #082

Ref:
C2-T1-S1

Issue Number: 8.1
Issue: Is the revenue requirement methodology for recovering nuclear liabilities in relation to nuclear waste management and decommissioning costs appropriate? If not, what alternative methodology should be considered?

Interrogatory

Please review the following and verify if AMPCOs understanding is correct.

The Nuclear Segregated Funds are two Funds which are the Decommissioning Segregated Fund and the Used Fuel Segregated Fund. There exists five Nuclear Decommissioning and Waste Management programs. The Decommissioning program is funded by the Nuclear Decommissioning Fund. The remaining 4 programs are funded by the Used Fuel Segregated Fund. Is this understanding correct? If not please clarify.

Response

No.

In accordance with the Ontario Nuclear Funds Agreement ("ONFA"), the Decommissioning Segregated Fund is established to pay for costs associated with the decommissioning program, the low and intermediate level waste disposal program, certain costs of the used fuel storage program incurred after the stations are shut down, and the costs of the low and intermediate level waste storage program incurred after the stations are shut down. The Used Fuel Segregated Fund is established to pay for costs associated with the used fuel disposal program, and certain costs of the used fuel storage program incurred after the stations are shut down.

The costs of the used fuel storage and low and intermediate level waste storage programs incurred during the stations' operating lives are funded from OPG's operational cash and, in accordance with the ONFA, are not drawn from the segregated funds.

Witness Panel: Nuclear Projects

A new ONFA Reference Plan is expected to be completed in 2011 to be applicable to the 2012 - 2016 period. Any change resulting from the new ONFA Reference Plan for the 5-year period 2012 - 2016 will be reflected in the Nuclear Liability Deferral Account described in Ex H1-T1-S1 section 6.2.

As part of the ONFA Reference Plan update in 2006, updated nuclear funds contribution profiles were submitted to the Province. The contribution profile of the used fuel fund was updated in 2008 to reflect the settlement of the extraordinary payment required for Bruce fuel obligations. The funding profiles are provided in Attachment 1. Total contributions from both funds are used to determine OPG's unfunded nuclear liability and to support income tax calculations. In accordance with the ONFA, segregated fund contributions are made at the end of each quarter. Contributions continue until the end of individual station lives as assumed within the reference plan.

The Province has significant oversight on funds management and as such provides approval of contributions to segregated funds and fund investment decisions. Ontario Nuclear Funds Agreement funds management is the responsibility of OPG's Treasury Department which uses external fund managers to manage the funds.

Withdrawals by OPG for ONFA-eligible expenditures require the approval of the Province. Disbursements of funds are allowed to address cost for long term programs such as used fuel disposal, L&ILW disposal and decommissioning as discussed in Ex. C2-T1-S2, section 3.1 and reflected in Ex. C2-T1-S2 Tables 1 and 2.

3.2 Provincial Guarantees for Used Fuel

Under the ONFA, the limit to OPG's financial exposure with respect to the cost of long-term management of used fuel was capped at $5.94B (January 1, 1999 present value) for the first 2.23M fuel bundles. OPG is responsible for funding the incremental costs associated with the long-term management of fuel bundles in excess of 2.23M. It is currently estimated that physically, the 2.23M bundle threshold will be reached in 2012.

Numbers may not add due to rounding.

Table 1
Revenue Requirement Impact of OPG's Nuclear Liabilities ($M)
Years Ending December 31, 2010 to 2015

Line No.	Description	Note or Reference	2010 Actual	2011 Actual	2012 Actual	2013 Budget	2014 Plan	2015 Plan
			(a)	(b)	(c)	(d)	(e)	(f)
	PRESCRIBED FACILITIES							
1	**Depreciation of Asset Retirement Costs**	Ex. C2-1-1 Table 2	26.3	29.0	127.2	80.7	80.7	80.7
2	**Used Fuel Storage and Disposal Variable Expenses**	Ex. C2-1-1 Table 2	23.5	26.0	51.9	52.7	56.1	56.7
3	**Low & Intermediate Level Waste Management Variable Expenses**	Ex. C2-1-1 Table 2	1.1	0.9	3.8	3.3	3.1	5.5
	Return on ARC in Rate Base:							
4	**Return on Rate Base at Weighted Average Accretion Rate**	Ex. C1-1-1 Tables 1-6	84.7	83.1	100.5	78.9	74.6	70.3
5	**Return on Rate Base at Weighted Average Cost of Capital**	Note 1	0.0	0.0	0.0	0.0	0.0	0.0
6	**Pre-Tax Revenue Requirement Impact**		135.5	139.1	283.5	215.6	214.6	213.2
7	**Income Tax Impact**	Note 2	(6.0)	(2.1)	58.8	39.2	14.8	13.5
8	**Total Revenue Requirement Impact** (line 6 + line 7)		129.5	137.0	342.3	254.8	229.4	226.6
	BRUCE FACILITIES							
9	**Depreciation of Asset Retirement Costs**	Ex. C2-1-1 Table 3	26.1	23.9	69.6	100.6	100.6	100.6
10	**Used Fuel Storage and Disposal Variable Expenses**	Ex. C2-1-1 Table 3	17.8	27.0	44.5	51.6	54.3	56.4
11	**Low & Intermediate Level Waste Management Variable Expenses**	Ex. C2-1-1 Table 3	0.9	1.0	1.8	2.8	2.4	3.8
12	**Accretion Expense**	Ex. C2-1-1 Table 3	283.1	296.6	327.8	367.8	382.9	397.3
13	**Less: Segregated Fund Earnings (Losses)**	Ex. C2-1-1 Table 3	418.0	240.1	350.9	330.8	347.0	359.8
14	**Impact on Bruce Facilities' Income Taxes**	Note 3	21.5	(27.5)	(23.2)	(48.0)	(48.3)	(49.6)
15	**Pre-Tax Revenue Requirement Impact (Impact on Bruce Lease Net Revenues)**		(68.6)	81.0	69.6	143.9	144.9	148.7
16	**Income Tax Impact on Revenue Requirement** (line 15 x tax rate / (1-tax rate))	Note 4	(28.0)	29.2	23.2	48.0	48.3	49.6
17	**Total Revenue Requirement Impact** (line 15 + line 16)		(96.6)	110.2	92.9	191.9	193.2	198.3
18	**Total Revenue Requirement Impact - Prescribed and Bruce Faciliites** (line 8 + line 17)		32.9	247.2	435.1	446.7	422.6	424.9

See Ex. C2-1-1 Table 1a for notes

Chart 2
Projected 2014 and 2015 ARC Depreciation for Bruce Facilities ($M)[1]

		Bruce A	Bruce B	Total
(1) Net book value of ARC at Jan 1, 2014[2]	(a)	1,497.4	346.8	1,844.2
(2) Remaining service life at Jan 1, 2014 (yrs)[3]	(b)	35	6	
(3) 2014 Depreciation Expense *(3)=(1)/(2)*	(c)=(a)/(b)	42.8	57.8	**100.6**
(4) Net book value of ARC at Jan 1, 2015[2] *(4)=(1)-(3)*	(d) = (a)-(c)	1,454.6	289.0	1,743.6
(5) Remaining service life at Jan 1, 2015 (yrs)[3]	(e)	34	5	
(6) 2015 Depreciation Expense *(6)=(4)/(5)*	(f)=(d)/(e)	42.8	57.8	**100.6**

[1] Numbers may not calculate due to rounding
[2] Total ARC opening net book value for 2014 is as per Ex. C2-1-1 Table 3, line 20, col. (e) and for 2015 as per Ex. C2-1-1 Table 3, line 20, col. (f)
[2] Based on average station end-of-life dates of December 31, 2048 for Bruce A and December 31, 2019 for Bruce B, as noted on p. 3 of Ex. F4-1-1

Used Fuel Storage and Disposal Variable Expenses (Lines 2 and 10)

Line 2: Chart 3 (2014) and Chart 4 (2015) provide the derivation of projected used fuel storage ("UFS") and used fuel disposal ("UFD") variable expenses for the prescribed facilities

Line 10: Chart 5 (2014) and Chart 6 (2015) provide the derivation of projected UFS and UFD variable expenses for the Bruce facilities.

Chart 3
Projected 2014 Used Fuel Variable Expenses for Prescribed Facilities[1]

Facility	Used Fuel Volume (bundles) (a)	UFD Variable Cost Rate ($/bundle) (b)	UFS Variable Cost Rate ($/bundle) (c)	UFD Variable Expenses ($M) (d)=(a)x(b)	UFS Variable Expenses ($M) (e)=(a)x(c)	Total Used Fuel Variable Expense ($M) (f)=(d)+(e)
Pickering A	5,098	1,064	584	5.4	3.0	8.4
Pickering B	13,107	1,064	586	13.9	7.7	21.6
Darlington	23,214	1,064	61	24.7	1.4	26.1
Total	41,419			44.1	12.1	**56.1**

[1] Numbers may not calculate due to rounding

Witness Panel: Finance, D&V Accounts, Nuclear Liabilities

Chart 4
Projected 2015 Used Fuel Variable Expenses for Prescribed Facilities[1]

Facility	Used Fuel Volume (bundles) (a)	UFD Variable Cost Rate ($/bundle) (b)	UFS Variable Cost Rate ($/bundle) (c)	UFD Variable Expenses ($M) (d)=(a)x(b)	UFS Variable Expenses ($M) (e)=(a)x(c)	Total Used Fuel Variable Expense ($M) (f)=(d)+(e)
Pickering A	5,713	1,101	604	6.3	3.5	9.7
Pickering B	12,952	1,101	606	14.3	7.8	22.1
Darlington	21,335	1,101	63	23.5	1.3	24.8
Total	40,000			44.0	12.6	**56.7**

[1] Numbers may not calculate due to rounding

Chart 5
Projected 2014 Used Fuel Variable Expenses for Bruce Facilities[1]

Facility	Used Fuel Volume (bundles) (a)	UFD Variable Cost Rate ($/bundle) (b)	UFS Variable Cost Rate ($/bundle) (c)	UFD Variable Expenses ($M) (d)=(a)x(b)	UFS Variable Expenses ($M) (e)=(a)x(c)	Total Used Fuel Variable Expense ($M) (f)=(d)+(e)
Bruce A	17,076	1,064	49	18.2	0.8	19.0
Bruce B	21,382	1,064	589	22.8	12.6	35.3
Total	38,459			40.9	13.4	**54.3**

[1] Numbers may not calculate due to rounding

Chart 6
Projected 2015 Used Fuel Variable Expenses for Bruce Facilities[1]

Facility	Used Fuel Volume (bundles) (a)	UFD Variable Cost Rate ($/bundle) (b)	UFS Variable Cost Rate ($/bundle) (c)	UFD Variable Expenses ($M) (d)=(a)x(b)	UFS Variable Expenses ($M) (e)=(a)x(c)	Total Used Fuel Variable Expense ($M) (f)=(d)+(e)
Bruce A	17,081	1,101	50	18.8	0.9	19.7
Bruce B	21,499	1,101	609	23.7	13.1	36.8
Total	38,581			42.5	14.0	**56.4**

[1] Numbers may not calculate due to rounding

Low and Intermediate Level Waste Management Variable Expenses (Lines 3 and 11)
Line 3: Chart 7 (2014) and Chart 8 (2015) provide the derivation of projected low-level waste ("LLW") and intermediate-level waste ("ILW") variable expenses for the prescribed facilities.

Witness Panel: Finance, D&V Accounts, Nuclear Liabilities

Line 11: Chart 9 (2014) and Chart 10 (2015) provide the derivation of projected LLW and ILW variable expenses for the Bruce facilities. As waste volumes are based on forecasts received from Bruce Power, this information is confidential.

Chart 7
Projected 2014 LLW and ILW Variable Expenses for Prescribed Facilities[1]

		Pickering A (Units 1 & 4)	Pickering B (Units 5-8)	Darlington	Total
Waste Volume (m^3)	(1) LLW Storage	341	682	276	1,299
	(2) LLW Disposal	341	682	276	1,299
	(3) ILW Storage	54	108	24	186
	(4) ILW Disposal	54	108	24	186
Rate ($/$m^3$)	(5) LLW Storage	1,026	1,026	1,026	
	(6) LLW Disposal	352	352	352	
	(7) ILW Storage	5,987	5,987	5,987	
	(8) ILW Disposal	1,239	1,239	1,239	
Variable Expenses ($M)	(9) LLW Storage *(9)=(1)x(5)*	0.3	0.7	0.3	1.3
	(10) LLW Disposal *(10)=(2)x(6)*	0.1	0.2	0.1	0.5
	(11) ILW Storage *(11)=(3)x(7)*	0.3	0.6	0.1	1.1
	(12) ILW Disposal *(12)=(4)x(8)*	0.1	0.1	0.0	0.2
Total LLW and ILW Variable Expenses		0.9	1.7	0.6	**3.1**

[1] Numbers may not calculate due to rounding

Chart 8
Projected 2015 LLW and ILW Variable Expenses for Prescribed Facilities[1]

		Pickering A (Units 1 & 4)	Pickering B (Units 5-8)	Darlington	Total
Waste Volume (m^3)	(1) LLW Storage	382	764	294	1,440
	(2) LLW Disposal	382	764	294	1,440
	(3) ILW Storage	128	255	76	459
	(4) ILW Disposal	128	255	76	459
Rate ($/$m^3$)	(5) LLW Storage	1,062	1,062	1,062	
	(6) LLW Disposal	364	364	364	
	(7) ILW Storage	6,196	6,196	6,196	
	(8) ILW Disposal	1,283	1,283	1,283	
Variable Expenses ($M)	(9) LLW Storage *(9)=(1)x(5)*	0.4	0.8	0.3	1.5
	(10) LLW Disposal *(10)=(2)x(6)*	0.1	0.3	0.1	0.5
	(11) ILW Storage *(11)=(3)x(7)*	0.8	1.6	0.5	2.8
	(12) ILW Disposal *(12)=(4)x(8)*	0.2	0.3	0.1	0.6
Total LLW and ILW Variable Expenses		1.5	3.0	1.0	**5.5**

[1] Numbers may not calculate due to rounding

Nuclear depreciation expense is presented in Ex. F4-T1-S2. A portion of this depreciation expense is attributable to unamortized ARC for each year. For the 2008 to 2012 period, these amounts are shown in Ex C2-T1-S2 Table 1, line 26. The amounts of depreciation expense attributable to unamortized ARC for each year for the 2008 to 2012 period are shown in Ex C2-T1-S2 Table 5, line 1.

3.2.2 Variable Incremental Used Fuel Costs

Nuclear fuel expense is presented in Ex. F2-T5-S1 Table 1. A portion of the nuclear fuel expense is attributable to the present value of the variable costs related to incremental quantities of used fuel generated in each period. The difference between the lifecycle estimate and the amount of committed costs relating to used fuel included in the nuclear liabilities balance represents the variable costs of future fuel waste. Using a present value basis, these variable costs are divided by the forecast number of future fuel bundles to calculate the $/bundle rate. Used fuel expenses are then calculated by applying the $/bundle rate to forecast used fuel generated. Each bundle is charged an equal amount in present value terms. The amount of this expense for each year for the 2008 to 2012 period are shown in Ex C2-T1-S2 Table 5, line 2.

3.2.3 Variable Incremental Low and Intermediate Level Waste Expense

Low and intermediate level waste is a separate component of the depreciation expense presented in Ex. F4-T1-S2. A portion of this depreciation expense is attributable to the present value of the variable costs related to incremental volumes of L&ILW produced in each period. The difference between the lifecycle estimate and the amount of committed costs included in the nuclear liabilities balance represents the variable costs of future waste. Using a present value basis, these variable costs are divided by the L&ILW volume estimates to calculate the $/m^3 rate. Low and intermediate level waste expenses are then calculated by applying the $/m^3 rate to the forecast waste volumes generated. The amount of this expense for the 2008 to 2012 period are shown in Ex C2-T1-S2 Table 5, line 3.

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Ref: C2-T1-S1 Table 2

Issue Number: 8.1
Issue: Is the revenue requirement methodology for recovering nuclear liabilities in relation to nuclear waste management and decommissioning costs appropriate? If not, what alternative methodology should be considered?

Interrogatory

Disbursements of funds are allowed to address cost for long term programs such as used fuel disposal, L&ILW disposal and decommissioning. In Ex. C2-1-1, Table 2 and table 3, a disbursement of $62.6M in 2014 and $116.5M in 2015 for the prescribed facilities and $50.1M in 2014 and $89.3M in 2015 for the Bruce facilities. Please break down actual, budget, and plan disbursements by Decommissioning and Waste Management program and Facility.

a) Please fill table provided below.

b) Please explain the increase in disbursements from Nuclear Segregated Funds in 2015?

Witness Panel: Finance, D&V Accounts, Nuclear Liabilities

Response

a) Completed tables are provided below. Refer to Ex. L-08.1-2 AMPCO-082 for an explanation of the funding boundary of the ONFA segregated funds.

For the reasons discussed in Ex. L-02.1-2 AMPCO-11, OPG continues to calculate nuclear liabilities and depreciation and amortization expenses separately for Pickering Units 1 and 4 and Pickering Units 5 - 8.

b) The referenced increase is mainly due to an increase in planned expenditures for the Low and Intermediate Level Disposal Program and the Used Fuel Disposal Program.

Table 3
Prescribed Facility - Disbursements - Nuclear Segregated Funds ($M)

Line No.	Description	Pickering Units 1 & 4	Pickering Units 5-8	Darlington	Total
		(a)	(b)	(c)	(d)
	December 31, 2010 Actual				
1	Decommissioning Program	(17.4)	(11.2)	(4.5)	(33.2)
2	Low and Intermediate Level Waste Storage Program	0.0	0.0	0.0	0.0
3	Low and Intermediate Level Waste Disposal Program	(8.4)	(5.5)	(2.2)	(16.1)
4	Used Fuel Disposal Program	(3.5)	(3.5)	(5.5)	(12.5)
5	Used Fuel Storage Program	0.0	0.0	0.0	0.0
6	Total	(29.3)	(20.2)	(12.2)	(61.8)
	December 31, 2011 Actual				
7	Decommissioning Program	(0.7)	(0.6)	(0.2)	(1.5)
8	Low and Intermediate Level Waste Storage Program	0.0	0.0	0.0	0.0
9	Low and Intermediate Level Waste Disposal Program	(10.1)	(8.4)	(2.6)	(21.2)
10	Used Fuel Disposal Program	(3.5)	(3.5)	(5.5)	(12.6)
11	Used Fuel Storage Program	0.0	0.0	0.0	0.0
12	Total	(14.4)	(12.6)	(8.3)	(35.3)
	December 31, 2012 Actual				
13	Decommissioning Program	(4.5)	(2.5)	(2.0)	(9.0)
14	Low and Intermediate Level Waste Storage Program	0.0	0.0	0.0	0.0
15	Low and Intermediate Level Waste Disposal Program	(8.6)	(4.7)	(3.8)	(17.1)
16	Used Fuel Disposal Program	(2.7)	(3.2)	(9.6)	(15.5)
17	Used Fuel Storage Program	0.0	0.0	0.0	0.0
18	Total	(15.8)	(10.4)	(15.4)	(41.6)
	December 31, 2013 Actual				
19	Decommissioning Program	(3.3)	(1.4)	(1.1)	(5.7)
20	Low and Intermediate Level Waste Storage Program	0.0	0.0	0.0	0.0
21	Low and Intermediate Level Waste Disposal Program	(10.0)	(4.2)	(3.4)	(17.6)
22	Used Fuel Disposal Program	(3.8)	(4.4)	(13.1)	(21.3)
23	Used Fuel Storage Program	0.0	0.0	0.0	0.0
24	Total	(17.0)	(10.0)	(17.7)	(44.7)
	December 31, 2014 Plan				
25	Decommissioning Program	(2.8)	(2.2)	(1.8)	(6.9)
26	Low and Intermediate Level Waste Storage Program	0.0	0.0	0.0	0.0
27	Low and Intermediate Level Waste Disposal Program	(7.8)	(6.2)	(4.9)	(18.9)
28	Used Fuel Disposal Program	(6.5)	(7.7)	(22.7)	(36.9)
29	Used Fuel Storage Program	0.0	0.0	0.0	0.0
30	Total	(17.2)	(16.0)	(29.4)	(62.6)
	December 31, 2015 Plan				
31	Decommissioning Program	(3.3)	(2.6)	(2.1)	(8.0)
32	Low and Intermediate Level Waste Storage Program	0.0	0.0	0.0	0.0
33	Low and Intermediate Level Waste Disposal Program	(21.9)	(17.2)	(13.8)	(52.8)
34	Used Fuel Disposal Program	(9.8)	(11.6)	(34.3)	(55.7)
35	Used Fuel Storage Program	0.0	0.0	0.0	0.0
36	Total	(35.0)	(31.3)	(50.2)	(116.5)

Table 4
Bruce Facility - Disbursements - Nuclear Segregated Funds ($M)

Line No.	Description	Bruce A	Bruce B	Total
		(a)	(b)	(c)
	December 31, 2010 Actual			
1	Decommissioning Program	(12.4)	(4.2)	(16.6)
2	Low and Intermediate Level Waste Storage Program	0.0	0.0	0.0
3	Low and Intermediate Level Waste Disposal Program	(6.0)	(2.0)	(8.0)
4	Used Fuel Disposal Program	(8.3)	(5.3)	(13.6)
5	Used Fuel Storage Program	0.0	0.0	0.0
6	Total	(26.8)	(11.5)	(38.2)
	December 31, 2011 Actual			
7	Decommissioning Program	(0.5)	(0.2)	(0.7)
8	Low and Intermediate Level Waste Storage Program	0.0	0.0	0.0
9	Low and Intermediate Level Waste Disposal Program	(7.2)	(2.4)	(9.6)
10	Used Fuel Disposal Program	(8.4)	(5.3)	(13.7)
11	Used Fuel Storage Program	0.0	0.0	0.0
12	Total	(16.1)	(7.9)	(24.0)
	December 31, 2012 Actual			
13	Decommissioning Program	(3.9)	(0.8)	(4.7)
14	Low and Intermediate Level Waste Storage Program	0.0	0.0	0.0
15	Low and Intermediate Level Waste Disposal Program	(7.4)	(1.5)	(9.0)
16	Used Fuel Disposal Program	(8.7)	(5.7)	(14.4)
17	Used Fuel Storage Program	0.0	0.0	0.0
18	Total	(20.0)	(8.1)	(28.1)
	December 31, 2013 Actual			
19	Decommissioning Program	(2.2)	(0.5)	(2.6)
20	Low and Intermediate Level Waste Storage Program	0.0	0.0	0.0
21	Low and Intermediate Level Waste Disposal Program	(6.6)	(1.4)	(8.0)
22	Used Fuel Disposal Program	(11.9)	(7.9)	(19.8)
23	Used Fuel Storage Program	0.0	0.0	0.0
24	Total	(20.7)	(9.8)	(30.4)
	December 31, 2014 Plan			
25	Decommissioning Program	(3.5)	(0.7)	(4.2)
26	Low and Intermediate Level Waste Storage Program	0.0	0.0	0.0
27	Low and Intermediate Level Waste Disposal Program	(9.8)	(1.9)	(11.7)
28	Used Fuel Disposal Program	(20.6)	(13.7)	(34.2)
29	Used Fuel Storage Program	0.0	0.0	0.0
30	Total	(33.9)	(16.2)	(50.1)
	December 31, 2015 Plan			
31	Decommissioning Program	(4.1)	(0.8)	(4.9)
32	Low and Intermediate Level Waste Storage Program	0.0	0.0	0.0
33	Low and Intermediate Level Waste Disposal Program	(27.4)	(5.3)	(32.7)
34	Used Fuel Disposal Program	(31.1)	(20.6)	(51.7)
35	Used Fuel Storage Program	0.0	0.0	0.0
36	Total	(62.6)	(26.7)	(89.3)

capital associated with the unfunded liability than the interest rate used in calculating the liability pursuant to ONFA."[65]

The Board finds that OPG should use a variation of Method 3(b) shown in Table 5-5. The Board will accept the rate base for the prescribed nuclear assets as proposed by OPG. Rate base shall be calculated using average annual fixed asset balances that are determined in accordance with GAAP. Those fixed asset balances include unamortized ARC. The return on rate base, however, will not be as proposed by OPG.

The Board will require that the return on a portion of the rate base be limited to the average accretion rate on OPG's nuclear liabilities, which is currently 5.6%. That portion of rate base that attracts that return will be equal to the lesser of: (i) the forecast amount of the average unfunded nuclear liabilities related to the Pickering and Darlington facilities, and (ii) the average unamortized ARC included in the fixed asset balances for Pickering and Darlington. When the average unfunded nuclear liabilities exceed the amount of unamortized ARC in fixed assets, then the portion of rate base that attracts the 5.6% return would be capped at the average amount of unamortized ARC; if the average unfunded liabilities are forecast to be lower than the average unamortized ARC, it is appropriate to limit the portion of rate base that attracts the 5.6% return to the unfunded amount. That approach recognizes that OPG has raised debt (or used its retained earnings) to fund part of the unamortized ARC.

For the balance of the rate base, the return on capital should be calculated using the capital structure, debt rate, and return on equity approved by the Board in Chapter 8 of this decision.

The Board has some, but not all, of the information required to calculate the portion of rate base that will attract the 5.6% return. OPG's evidence includes the forecast amounts of average unamortized ARC in the Pickering and Darlington fixed assets ($1,227 million for 2008 and $1,121 for 2009). Its evidence, however, did not include the forecast unfunded liability in respect of Pickering and Darlington (the evidence provided by OPG showed a combined unfunded amount that included amounts related to the Bruce stations). OPG should provide the amounts of forecast average unfunded liabilities related to Pickering and Darlington as part of the information supporting the draft payment order based on this decision.

[65] CIBC Report, page 19.

5.1.3 Financial reporting

For external financial reporting purposes, OPG accounts for its nuclear liabilities in accordance with the requirements of Section 3110 of the Handbook of the Canadian Institute of Chartered Accountants (CICA).

Section 3110 defines an asset retirement obligation (ARO) as:

> [A] legal obligation associated with the retirement of a tangible long-lived asset that an entity is required to settle as a result of an existing or enacted law, statute, ordinance or written or oral contract, or by legal construction of a contract under the doctrine of promissory estoppel.[39]

OPG's nuclear liabilities meet the definition of an ARO.

Section 3110 requires that an entity recognize the fair value of an ARO as a liability on its balance sheet in the period in which it is incurred, provided a reasonable estimate of fair value can be made. The fair value of an ARO is generally calculated by discounting expected future cash flows, the approach used by OPG.

When an ARO is recognized as a liability, Section 3110 requires that an equal amount be recorded as an increase in the net book value of the related long-lived assets. The addition to net book value is referred to as an asset retirement cost (ARC). An ARC is amortized over the useful life of the assets in the same manner as any other capital cost related to the asset.

Section 3110 is essentially the same as the United States accounting standard on asset retirement obligations issued by the Financial Accounting Standards Board (FASB) in 2001.

The net book values of OPG's nuclear stations include material amounts of unamortized ARC, as shown in Table 5-2.

[39] CICA Handbook Section 3110, "Asset Retirement Obligations," paragraph .03 (a), issued March 2003. OPG adopted Section 3110 in 2003 and retroactively applied the new standard to financial statements for earlier periods.

Numbers may not add due to rounding.

Table 2
Prescribed Facilities - Asset Retirement Obligation, Nuclear Segregated Funds, and Asset Retirement Costs ($M)
Years Ending December 31, 2010 to 2015

Line No.	Description	Note	2010 Actual	2011 Actual	2012 Actual	2013 Budget	2014 Plan	2015 Plan
			(a)	(b)	(c)	(d)	(e)	(f)
	ASSET RETIREMENT OBLIGATION							
1	**Opening Balance**	1	6,391.2	7,174.5	7,935.9	8,034.1	8,400.6	8,772.2
2	**Darlington Refurbishment Adjustment**	2	497.4	0.0	0.0	0.0	0.0	0.0
3	**Adjusted Opening Balance** (line 1 + line 2)		6,888.6	7,174.5	7,935.9	8,034.1	8,400.6	8,772.2
4	**Used Fuel Storage and Disposal Variable Expenses**		23.5	26.0	51.9	52.7	56.1	56.7
5	**Low & Intermediate Level Waste Management Variable Expenses**		1.1	0.9	3.8	3.3	3.1	5.5
6	**Accretion Expense**		382.2	399.0	432.6	442.1	461.3	479.8
7	**Expenditures for Used Fuel, Waste Management & Decommissioning**		(122.0)	(104.0)	(115.5)	(131.6)	(148.8)	(197.6)
8	**Consolidation and Other Adjustments**		1.2	0.3	0.9	0.0	0.0	0.0
9	**Closing Balance Before Year-End Adjustments** (lines 3 through 8)		7,174.5	7,496.7	8,309.7	8,400.6	8,772.2	9,116.7
10	**Current Approved ONFA Reference Plan Adjustment**	3	0.0	439.2	(276.9)	0.0	0.0	0.0
11	**New CNSC Requirements Adjustment**	4	0.0	0.0	1.3	0.0	0.0	0.0
12	**Closing Balance** (line 9 + line 10 + line 11)		7,174.5	7,935.9	8,034.1	8,400.6	8,772.2	9,116.7
13	**Average Asset Retirement Obligation** ((line 3 + line 9)/2)		7,031.6	7,335.6	8,122.8	8,217.3	8,586.4	8,944.4
	NUCLEAR SEGREGATED FUNDS BALANCE							
14	**Opening Balance**	1	5,058.7	5,564.9	5,895.3	6,316.5	6,687.8	7,142.4
15	**Earnings (Losses)**		417.7	220.7	355.7	326.5	347.2	369.3
16	**Contributions**		150.2	145.0	107.1	98.1	170.1	172.8
17	**Disbursements**		(61.8)	(35.3)	(41.6)	(53.3)	(62.6)	(116.5)
18	**Closing Balance** (line 14 + line 15 + line 16 + line 17)		5,564.9	5,895.3	6,316.5	6,687.8	7,142.4	7,568.0
19	**Average Nuclear Segregated Funds Balance** ((line 14 + line 18)/2)		5,311.8	5,730.1	6,105.9	6,502.1	6,915.1	7,355.2
	UNFUNDED NUCLEAR LIABILITY BALANCE (UNL)							
20	**Opening Balance** (line 3 - line 14)		1,829.9	1,609.6	2,040.6	1,717.6	1,712.8	1,629.8
21	**Closing Balance** (line 9 - line 18)		1,609.6	1,601.4	1,993.2	1,712.8	1,629.8	1,548.7
22	**Average Unfunded Nuclear Liability Balance** ((line 20 + line 21)/2)		1,719.8	1,605.5	2,016.9	1,715.2	1,671.3	1,589.2
	ASSET RETIREMENT COSTS (ARC)							
23	**Opening Balance**	1	1,098.0	1,504.5	1,914.7	1,510.5	1,429.8	1,349.1
24	**Reconciliation Adjustment**	5	(42.7)	0.0	0.0			
25	**Darlington Refurbishment Adjustment**	2	475.5	0.0	0.0	0.0	0.0	0.0
26	**Adjusted Opening Balance** (line 23 + line 24 + line 25)		1,530.8	1,504.5	1,914.7	1,510.5	1,429.8	1,349.1
27	**Depreciation Expense**		(26.3)	(29.0)	(127.2)	(80.7)	(80.7)	(80.7)
28	**Closing Balance Before Year-End Adjustments** (line 26 + line 27)		1,504.5	1,475.4	1,787.5	1,429.8	1,349.1	1,268.4
29	**Current Approved ONFA Reference Plan Adjustment**	3	0.0	439.2	(276.9)	0.0	0.0	0.0
30	**Closing Balance** (line 28 + line 29)		1,504.5	1,914.7	1,510.5	1,429.8	1,349.1	1,268.4
31	**Average Asset Retirement Costs** ((line 26 + line 28)/2)		1,517.6	1,490.0	1,851.1	1,470.2	1,389.5	1,308.8
32	**LESSER OF AVERAGE UNL OR ARC** (lesser of line 22 or line 31)		1,517.6	1,490.0	1,851.1	1,470.2	1,389.5	1,308.8

Notes:

1 Opening balances in col. (a) from EB-2010-0008, Ex. C2-1-1 Table 1.

2 Adjustment recorded on January 1, 2010 associated with the changes to the end-of-life date assumptions underlying the ARO calculation, as a result of the approval of the definition phase of the Darlington Refurbishment project.

3 Adjustments recorded on December 31, 2011 and December 31, 2012, as per Ex. C2-1-1 Table 4, associated with the current approved ONFA Reference Plan effective January 1, 2012.

4 Represents implementation, in accordance with GAAP, of new CNSC requirements in 2012 to include certain facilites with Waste Nuclear Substance Licenses not included in the 2012 ONFA Reference Plan due to timing of notification by the CNSC. As a result, ARO increased by $2.4M to include a legacy facility not used to support OPG's current operations, of which $1.3M is atttributed to prescribed facilities and $1.1M is attributed to Bruce facilities. In accordance with GAAP, this amount was expensed (i.e., not included in ARC) in 2012.

5 Adjustment to remove from the ARC continuity amounts reflected in the non-ARC portion of PP&E in rate base. Total rate base is not impacted.

Numbers may not add due to rounding.

Table 3
Bruce Facilities - Asset Retirement Obligation, Nuclear Segregated Funds, and Asset Retirement Costs ($M)
Years Ending December 31, 2010 to 2015

Line No.	Description	Note	2010 Actual	2011 Actual	2012 Actual	2013 Budget	2014 Plan	2015 Plan
			(a)	(b)	(c)	(d)	(e)	(f)
	ASSET RETIREMENT OBLIGATION							
1	**Opening Balance**	1	5,315.0	5,357.0	6,107.7	7,125.5	7,434.8	7,745.5
2	**Darlington Refurbishment Adjustment**	2	(204.4)	0.0	0.0	0.0	0.0	0.0
3	**Adjusted Opening Balance** (line 1 + line 2)		5,110.7	5,357.0	6,107.7	7,125.5	7,434.8	7,745.5
4	**Used Fuel Storage and Disposal Variable Expenses**		17.8	27.0	44.5	51.6	54.3	56.4
5	**Low & Intermediate Level Waste Management Variable Expenses**		0.9	1.0	1.8	2.8	2.4	3.8
6	**Accretion Expense**		283.1	296.6	327.8	367.8	382.9	397.3
7	**Expenditures for Used Fuel, Waste Management & Decommissioning**		(57.5)	(68.1)	(83.7)	(112.8)	(128.9)	(172.7)
8	**Consolidation and Other Adjustments**		1.9	(1.0)	0.6	0.0	0.0	0.0
9	**Closing Balance Before Year-End Adjustments** (lines 3 through 8)		5,357.0	5,612.6	6,398.7	7,434.8	7,745.5	8,030.3
10	**Current Approved ONFA Reference Plan Adjustment**	3	0.0	495.1	706.1	0.0	0.0	0.0
11	**New CNSC Requirements Adjustment**	4	0.0	0.0	20.6	0.0	0.0	0.0
12	**Closing Balance** (line 9 + line 10 + line 11)		5,357.0	6,107.7	7,125.5	7,434.8	7,745.5	8,030.3
13	**Average Asset Retirement Obligation** ((line 3 + line 9)/2)		5,233.8	5,484.8	6,253.2	7,280.1	7,590.2	7,887.9
	NUCLEAR SEGREGATED FUNDS BALANCE							
14	**Opening Balance**	1	5,187.2	5,680.9	6,002.5	6,400.1	6,779.6	7,045.2
15	**Earnings (Losses)**		418.0	240.1	350.9	330.8	347.0	359.8
16	**Contributions**		113.9	105.5	74.9	85.9	(31.3)	(29.4)
17	**Disbursements**		(38.2)	(24.0)	(28.1)	(37.2)	(50.1)	(89.3)
18	**Closing Balance** (line 14 + line 15 + line 16 + line 17)		5,680.9	6,002.5	6,400.1	6,779.6	7,045.2	7,286.3
19	**Average Nuclear Segregated Funds Balance** ((line 14 + line 18)/2)		5,434.0	5,841.7	6,201.3	6,589.9	6,912.4	7,165.8
	ASSET RETIREMENT COSTS (ARC)							
20	**Opening Balance**	1	1,035.8	817.6	1,288.8	1,944.8	1,844.2	1,743.6
21	**Reconciliation Adjustment**	5	(9.6)	0.0	0.0			
22	**Darlington Refurbishment Adjustment**	2	(182.4)	0.0	0.0	0.0	0.0	0.0
23	**Adjusted Opening Balance** (line 20 + line 21 + line 22)		843.7	817.6	1,288.8	1,944.8	1,844.2	1,743.6
24	**Depreciation Expense**		(26.1)	(23.9)	(69.6)	(100.6)	(100.6)	(100.6)
25	**Closing Balance Before Year-End Adjustments** (line 23 + line 24)		817.6	793.7	1,219.2	1,844.2	1,743.6	1,643.0
26	**Current Approved ONFA Reference Plan Adjustment**	3	0.0	495.1	706.1	0.0	0.0	0.0
27	**New CNSC Requirements Adjustment**	4	0.0	0.0	19.5	0.0	0.0	0.0
28	**Closing Balance** (line 25 + line 26 + line 27)		817.6	1,288.8	1,944.8	1,844.2	1,743.6	1,643.0
29	**Average Asset Retirement Costs** ((line 23 + line 25)/2))		830.7	805.7	1,254.0	1,894.5	1,793.9	1,693.3

Notes:

1 Opening balances in col. (a) from EB-2010-0008, Ex. C2-1-1 Table 2.

2 Adjustment recorded on January 1, 2010 associated with the changes to the end-of-life date assumptions underlying the ARO calculation, as a result of the approval of the definition phase of the Darlington Refurbishment project.

3 Adjustments recorded on December 31, 2011 and December 31, 2012, as per Ex. C2-1-1 Table 4, associated with the current approved ONFA Reference Plan effective January 1, 2012.

4 Represents implementation, in accordance with GAAP, of new CNSC requirements in 2012 to include certain facilites with Waste Nuclear Substance Licenses not included in the 2012 ONFA Reference Plan due to timing of notification by the CNSC. As a result, ARO increased by $2.4M to include a legacy facility not used to support OPG's current operations, of which $1.3M is attributed to prescribed facilities and $1.1M is attributed to Bruce facilities. In accordance with GAAP, this amount was expensed (i.e., not included in ARC) in 2012. ARO increased by a further $19.5M to include a facility dedicated to supporting the Bruce facilities. In accordance with GAAP, this amount was included in ARC.

5 Adjustment to remove from the ARC continuity amounts reflected in the non-ARC portion of PP&E. Total Bruce Lease net revenues are not impacted.

The Lower Mattagami River project in northeast Ontario continues to progress ahead of schedule and budget. The 67 MW incremental unit at the Little Long GS was declared in-service on Jan. 19, 2014, ahead of its scheduled February 2014 completion date. When completed in 2015, the project will bring 438 MW of clean, dispatchable, emission-free capacity to the electricity system or enough clean electricity to power more than 300,000 homes, nearly double the peak demand of Greater Sudbury. OPG's focus on strong project management and partnership with private sector contractors and First Nations continues to benefit ratepayers.

In addition, OPG has invested in continued operation of the six nuclear units at the Pickering station and is preparing for the refurbishment of all four units at the Darlington station in accordance with the 2013 Ontario Long-Term Energy Plan.

Business Segment, Generating, and Operating Performance

OPG's income before interest and income taxes from the electricity generation business segments was $301 million in 2013, compared to $562 million in 2012, due primarily to lower generation from nuclear stations. The lower nuclear generation was partially offset by higher hydroelectric generation.

The Regulated – Nuclear Waste Management business segment recorded a loss before interest and income taxes of $122 million in 2013, compared to a loss before interest and income taxes of $68 million in 2012. The lower earnings were primarily due to higher accretion expense and lower recognized earnings from the Decommissioning Segregated Fund. The Decommissioning Segregated Fund is overfunded due to market performance. As a result, OPG is required to limit the earnings recognized from the Decommissioning Segregated Fund at 5.15 per cent to match the discount factor used to determine the decommissioning obligation under the Ontario Nuclear Funds Agreement.

Total electricity generated in 2013 of 80.3 terawatt hours (TWh) decreased slightly from generation of 83.7 TWh in 2012. The decrease was mainly due to lower nuclear and thermal generation, partially offset by higher hydroelectric generation.

Nuclear production of 44.7 TWh in 2013 decreased by 4.3 TWh primarily due to extensions to planned outages at the Pickering and Darlington Nuclear generating stations. Thermal generation decreased by 1.3 TWh due to ceasing operations using coal at the Lambton and Nanticoke generating stations. The 2.2 TWh increase in hydroelectric generation was primarily due to higher water levels and the in-service of the Niagara Tunnel. The increase in generation in 2013 was partially offset by the water spilled due to increased Surplus Baseload Generation conditions.

The availability of OPG's regulated and unregulated hydroelectric stations remained at high levels in 2013. OPG's regulated hydroelectric stations achieved an availability of 90.8 per cent in 2013, compared to 91.4 per cent in 2012. OPG's unregulated hydroelectric stations achieved an availability of 91.8 per cent in 2013, compared to 91.1 per cent in 2012.

The Darlington Nuclear GS capability factor of 82.9 per cent in 2013 was lower than the 93.2 per cent achieved in 2012, mainly as a result of an additional planned outage in the third quarter of 2013. At the Pickering Nuclear GS, work continues on plant condition to prepare the station, which is the longest-running nuclear plant in Ontario's

reference, then. We are looking at Exhibit L, tab 2.1, schedule 6, ED 3. We're obviously looking in the wrong spot.

MR. CROCKER: Take a look at page 2, attachment 1. I'm sorry, attachment 1.

MR. BARRETT: Oh, it's the attachment? Okay.

MR. CROCKER: Sorry. Sorry, attachment 1. And I am looking at page 2 of that. And I am going to read the paragraph -- the second paragraph under "Business segment generating and operating performance" and ask questions as I go here.

You said:

> "The regulated nuclear waste management business segment recorded a loss before interest and income taxes of 122 million in 2013, compared to a loss before interest and income taxes of 68 million in 2012. The lower earnings were primarily due to a higher accretion expense and lower recognized earnings from the decommissioning segregated fund. The decommissioning segregated fund is over-funded due to market performance. As a result, OPG is required to limit the earnings recognized from the decommissioning segregated fund to 5.15 percent."

And my question is: How do you do that? How do you limit the earnings?

MR. MAUTI: The way this would work is the segregated

fund itself has earnings based on its investments when the fund is in an over-funded position, and by "over-funded" that means the value of the segregated fund is higher than the balance to complete all future obligations.

So when there is more money in the fund than the future obligations, instead of recording the actual earnings, our accounting policy has us record an amount in the fund equal to the targeted long-term rate of return of 5.15 percent, and the difference basically goes into an account due to or due from the province of Ontario.

So we basically split the earnings between the 5.15 percent and the excess.

MR. CROCKER: And --

MR. MAUTI: It effectively forms a cushion against any future changes in the funds.

MR. CROCKER: And is it the same thing with the used fuel segregated fund?

MR. MAUTI: Generally the same, but there is a little nuance to that. The used fuel fund is split into two portions, one portion that relates to, we call, the first 2.23 million used fuel bundles, and then a portion of the fund that relates to the bundles in excess of 2.23.

The agreement we have with the province related to the Ontario Nuclear Funds is that the 2.23 million portion of that fund is guaranteed at a real rate of return plus 3.25 percent, so equivalent to that 5.15 percent, yes.

MR. CROCKER: And do you transfer funds between the two accounts?

Under the ONFA, the Province guarantees the rate of return earned in the used fuel fund for the first 2.23M bundles at a specified rate of 3.25 per cent over the change in the Ontario consumer price index. The Province is obligated to make additional contributions to the used fuel fund if this fund earns a rate of return that is less than the rate of return guaranteed by the Province for the first 2.23M bundles. If the return on the assets in the used fuel fund exceeds the Province's guaranteed rate for the first 2.23M bundles, the Province is entitled to the excess.

The same rate of return is used as the target rate of return for the used fuel fund for bundles in excess of 2.23M, although the rate of return is not guaranteed by the Province. Every 5 years, after the update to the ONFA reference plan, the contribution profile is recalculated to reflect the change in contributions necessary in accordance with the terms of the ONFA agreement that in part limit downward adjustment to the contribution profile.

For the decommissioning fund, the rate of return target is presently 5.15 per cent per annum. As defined in ONFA, this consists of a 3.25 per cent real rate of return plus an inflation adjustment. For the 2006 Reference Plan, this inflation adjustment is 1.9 per cent per annum. This rate of return is not guaranteed by the Province; therefore, OPG is required to fund any shortfall between the achieved and target rate of return through additional contributions as part of a renewed reference plan assessment. To the extent the ratio of the decommissioning fund assets exceeds 120 per cent of the decommissioning liabilities, OPG has the option to elect to transfer amounts in excess of 120 per cent. While no such transfer has occurred to date, to the extent a transfer may occur at some point in the future, the transfer of the amounts in excess of 120 per cent would be attributed 50 per cent to the OEFC and 50 per cent to the used fuel fund. As discussed above, the used fuel fund contribution profile is then reassessed to reflect the impact of this transfer from the decommissioning fund.

3.3 Provincial Guarantee to the CNSC

The provincial guarantee provided to the CNSC is intended to supplement accumulated funds in the ONFA nuclear funds to meet the requirements of the CNSC financial guarantee. OPG pays a guarantee fee to the Province for providing this guarantee. This fee is included

Nuclear Fixed Asset Removal and Nuclear Waste Management Funds as of December 31

	O/F - 1999 Ref Plan	O/F - 2006 Ref Plan	O/F - 2006 Ref Plan	U/F - 2006 Ref Plan	U/F - 2006 Ref Plan	U/F - 2006 Ref Plan	U/F - 2006 Ref Plan	O/F - 2012 Ref Plan	O/F - 2012 Ref Plan	O/F - 2012 Ref Plan
	-10.6%	-5.7%	-0.1%	-	-	-	-	-1.1%	-9.5%	-12.3%
Asset	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**Q1 2014**
Decommissioning Fund	$ 4,583	$ 5,169	$ 5,075	$ 4,325	$ 4,876	$ 5,267	$ 5,342	$ 5,771	$ 6,591	$ 6,878
Due to Province	$ -484	$ -294	$ -3	$ 0	$ 0	$ 0	$ 0	$ -64	$ -624	$ -845
Total	**$ 4,099**	**$ 4,875**	**$ 5,072**	**$ 4,325**	**$ 4,876**	**$ 5,267**	**$ 5,342**	**$ 5,707**	**$ 5,967**	**$ 6,033**
Used Fuel Fund	$ 2,995	$ 3,879	$ 4,702	$ 4,424	$ 5,403	$ 6,198	$ 6,509	$ 7,245	$ 8,519	$ 8,907
Due to Province	$ -306	$ -641	$ -511	$ 460	$ -33	$ -219	$ 47	$ -235	$ -990	$ -1,262
Total	**$ 2,689**	**$ 3,238**	**$ 4,191**	**$ 4,884**	**$ 5,370**	**$ 5,979**	**$ 6,556**	**$ 7,010**	**$ 7,529**	**$ 7,645**
Total Nuclear Funds	$ 6,788	$ 8,113	$ 9,263	$ 9,209	$ 10,246	$ 11,246	$ 11,898	$ 12,717	$ 13,496	$ 13,678
Less: Current Portion							$ 20	$ 27	$ 25	$ 16
Non-Current Nuclear Funds	**$ 6,788**	**$ 8,113**	**$ 9,263**	**$ 9,209**	**$ 10,246**	**$ 11,246**	**$ 11,878**	**$ 12,690**	**$ 13,471**	**$ 13,662**
Ontario NFWA Trust			$ 1,244	$ 1,386	$ 1,693	$ 1,949	$ 2,296	$ 2,559	$ 2,668	$ 2,913

Decommissioning Fund	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Start	$ 3,882	$ 4,099	$ 4,875	$ 5,072	$ 4,325	$ 4,876	$ 5,267	$ 5,342	$ 5,707
Return on Investment	$ 459	$ 592	$ 5	$ -681	$ 631	$ 465	$ 108	$ 469	$ 854
Reimbursement of expenditures	$ -7	$ -6	$ -99	$ -69	$ -80	$ -74	$ -33	$ -40	$ -34
Increase Due to Province (Expense)	$ -235		$ 0	$ 0	$ 0	$ 0	$ 0	$ -64	$ -560
Decrease in Due to Province (Expense)		$ 190	$ 291	$ 3	$ 0	$ 0	$ 0	$ 0	$ 0
End	**$ 4,099**	**$ 4,875**	**$ 5,072**	**$ 4,325**	**$ 4,876**	**$ 5,267**	**$ 5,342**	**$ 5,707**	**$ 5,967**

Used Fuel	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Start	$ 2,118	$ 2,689	$ 3,238	$ 4,191	$ 4,884	$ 5,370	$ 5,979	$ 6,556	$ 7,010
Contributions	$ 454	$ 454	$ 788	$ 454	$ 339	$ 264	$ 250	$ 182	$ 184
Return on Investment	$ 283	$ 443	$ 55	$ -719	$ 664	$ 557	$ 87	$ 584	$ 1,131
Reimbursement of expenditures	$ -16	$ -13	$ -20	$ -13	$ -24	$ -26	$ -26	$ -30	$ -41
Increase Due (to) from Province (Expen	$ -150	$ -335		$ 460	$ -493	$ -186	$ 266	$ -282	$ -755
Decrease in Due to Province (Expense)			$ 130	$ 511					
End	**$ 2,689**	**$ 3,238**	**$ 4,191**	**$ 4,884**	**$ 5,370**	**$ 5,979**	**$ 6,556**	**$ 7,010**	**$ 7,529**

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of the Provincial Guarantee provided by the Province. The current value of the Provincial Guarantee amount of $1,551 million is in effect through to the end of 2017. In each of January 2013 and 2014, OPG paid a guarantee fee of $8 million based on a Provincial Guarantee amount of $1,551 million.

Decommissioning Fund

Upon termination of the ONFA, the Province has a right to any excess funding in the Decommissioning Fund, which is the excess of the fair market value of the Decommissioning Fund over the estimated completion costs, as per the most recently approved ONFA Reference Plan. When the Decommissioning Fund is overfunded, OPG limits the earnings it recognizes in its consolidated financial statements by recording a payable to the Province, such that the balance of the Decommissioning Fund is equal the cost estimate of the liability based on the most recently approved ONFA Reference Plan. The payable to the Province may be reduced in subsequent periods in the event that the Decommissioning Fund earns less than its target rate of return or in the event that a new ONFA Reference Plan is approved with a higher estimated decommissioning liability. When the Decommissioning Fund is underfunded, the earnings on the Decommissioning Fund reflect actual fund returns based on the market value of the assets.

The Province's right to any excess funding in the Decommissioning Fund upon termination of the ONFA results in OPG capping its annual earnings at 3.25 percent plus long-term Ontario Consumer Price Index (CPI), which is the rate of growth in the liability for the estimated completion cost, as long as the Decommissioning Fund is in an overfunded status.

The Decommissioning Fund's asset value on a fair value basis was $5,967 million as at December 31, 2013, which was net of the due to the Province of $624 million, as the asset value of the fund was higher than the liability per the approved 2012 ONFA Reference Plan. As at December 31, 2012, the Decommissioning Fund's asset value on a fair value basis was $5,707 million, also higher than the liability per the 2012 ONFA Reference Plan. Under the ONFA, if there is a surplus in the Decommissioning Fund such that the liabilities, as defined by the most recently approved ONFA Reference Plan, are at least 120 percent funded, OPG may direct up to 50 percent of the surplus over 120 percent to be treated as a contribution to the Used Fuel Fund and the OEFC would be entitled to a distribution of an equal amount. Since OPG is responsible for the risks associated with liability cost increases and investment returns in the Decommissioning Fund, future contributions to the Decommissioning Fund may be required should the fund be in an underfunded position at the time of the next liability reference plan review.

The investments in the Decommissioning Fund include a diversified portfolio of equities and fixed income securities that are invested across geographic markets, as well as investments in infrastructure and Canadian real estate. The Nuclear Funds are invested to fund long-term liability requirements and, as such, the portfolio asset mix is structured to achieve the required return over a long-term horizon. While short-term fluctuations in market value will occur, managing the long-term return of the Nuclear Funds remains the primary goal.

Used Fuel Fund

Under the ONFA, the Province guarantees OPG's annual return in the Used Fuel Fund at 3.25 percent plus the change in the Ontario CPI for funding related to the first 2.23 million of used fuel bundles (committed return). OPG recognizes the committed return on the Used Fuel Fund and includes it in the earnings on the nuclear fixed asset removal and nuclear waste management funds. The difference between the committed return on the Used Fuel Fund and the actual market return, based on the fair value of the Used Fuel Fund's assets, which includes realized and unrealized returns, is recorded as due to or due from the Province. The due to or due from the Province represents the amount the fund would pay to or receive from the Province if the committed return were to be settled as of the consolidated balance sheet date. As prescribed under the ONFA, OPG's contributions for incremental fuel bundles are not subject to the Province's guaranteed rate of return, but rather earn a return based on changes in the market value of the assets of the Used Fuel Fund.

6. FIXED ASSET REMOVAL AND NUCLEAR WASTE MANAGEMENT LIABILITIES

The liabilities for fixed asset removal and nuclear waste management on a present value basis as at March 31, 2014 and December 31, 2013 consist of the following:

(millions of dollars)	March 31 2014	December 31 2013
Liability for nuclear used fuel management	10,086	9,957
Liability for nuclear decommissioning and low and intermediate level waste management	6,012	5,946
Liability for non-nuclear fixed asset removal	358	354
Fixed asset removal and nuclear waste management liabilities	16,456	16,257

Nuclear Funds

Beginning January 1, 2014, the Company applied ASC 946 for all investments owned by the Decommissioning Fund and the Used Fuel Fund. OPG's consolidated financial statements retained investment company accounting for the Nuclear Funds. The adoption of investment company accounting for the Nuclear Funds did not result in an effect on net income or change in net assets from operations as investments held by OPG's Nuclear Funds continue to be recorded at fair value.

The policy for distinguishing the nature and type of investments made by OPG which retain investment company accounting from other investments made by OPG is that these investments have the attributes of an investment company in accordance with ASC 946 as amended by Accounting Standards Update 2013-08, *Financial Services – Investment Companies (Topic 946): Amendments to the Scope, Measurement, and Disclosure Requirements.*

The historical cost, gross unrealized aggregate appreciation and depreciation of investment, gross unrealized foreign exchange gains and fair value of the Nuclear Funds as of March 31, 2014 are summarized as follows:

(millions of dollars)	Decommissioning Fund	Used Fuel Fund [1]	Total
Historical cost	5,837	7,633	13,470
Unrealized gains			
Gross unrealized aggregate appreciation	1,041	1,233	2,274
Gross unrealized aggregate depreciation	(98)	(101)	(199)
Gross unrealized foreign exchange gains	98	142	240
	6,878	8,907	15,785
Due to Province	(845)	(1,262)	(2,107)
Total fair value	6,033	7,645	13,678
Less: current portion	9	7	16
Non-current fair value	6,024	7,638	13,662

[1] The Ontario NFWA Trust represented $2,913 million as at March 31, 2014 of the Used Fuel Fund on a fair value basis.

The historical cost, gross unrealized aggregate appreciation and depreciation of investment, gross unrealized foreign exchange gains and fair value of the Nuclear Funds as of December 31, 2013 are summarized as follows:

(millions of dollars)	Decommissioning Fund	Used Fuel Fund [1]	Total
Historical cost	5,571	7,240	12,811
Unrealized gains			
Gross unrealized aggregate appreciation	1,111	1,365	2,476
Gross unrealized aggregate depreciation	(118)	(136)	(254)
Gross unrealized foreign exchange gains	27	50	77
	6,591	8,519	15,110
Due to Province	(624)	(990)	(1,614)
Fair value	5,967	7,529	13,496
Less: current portion	12	13	25
Non-current fair value	5,955	7,516	13,471

[1] The Ontario NFWA Trust represented $2,668 million as at December 31, 2013 of the Used Fuel Fund on a fair value basis.

Net realized and unrealized gains or losses from investments for the three months ended March 31, 2014 are summarized as follows:

(millions of dollars)	Decommissioning Fund	Used Fuel Fund	Total
Net realized gains			
Realized gains	**204**	**293**	**497**
Realized foreign exchange gains	**25**	**24**	**49**
Net realized gains	**229**	**317**	**546**
Net unrealized gains (losses)			
Unrealized losses	**(50)**	**(97)**	**(147)**
Unrealized foreign exchange gains	**71**	**92**	**163**
Net unrealized gains (losses)	**21**	**(5)**	**16**

Net realized and unrealized gains or losses from investments for the three months ended March 31, 2013 are summarized as follows:

(millions of dollars)	Decommissioning Fund	Used Fuel Fund	Total
Net realized gains			
Realized gains	43	53	96
Realized foreign exchange losses	(3)	(1)	(4)
Net realized gains	40	52	92
Net unrealized gains			
Unrealized gains	180	241	421
Unrealized foreign exchange losses	(5)	(10)	(15)
Net unrealized gains	175	231	406

As at December 31, 2013, the Used Fuel Fund asset value on a fair value basis was $7,529 million. The Used Fuel Fund value included a due to the Province of $990 million related to the committed return adjustment. As at December 31, 2012, the Used Fuel Fund asset value on a fair value basis was $7,010 million, including a due to the Province of $235 million related to the committed return adjustment.

Under the ONFA, the Province is entitled to any surplus in the Used Fuel Fund, subject to a threshold funded ratio of 110 percent compared to the value of the associated liabilities.

The nuclear fixed asset removal and nuclear waste management funds as at December 31 consist of the following:

	Fair Value	
(millions of dollars)	**2013**	**2012**
Decommissioning Fund	**6,591**	5,771
Due to Province – Decommissioning Fund	**(624)**	(64)
	5,967	5,707
Used Fuel Fund [1]	**8,519**	7,245
Due to Province – Used Fuel Fund	**(990)**	(235)
	7,529	7,010
Total Nuclear Funds	**13,496**	12,717
Less: current portion	**25**	27
Non-current Nuclear Funds	**13,471**	12,690

[1] The Ontario NFWA Trust represented $2,668 million as at December 31, 2013 (2012 – $2,559 million) of the Used Fuel Fund on a fair value basis.

The fair value of the securities invested in the Nuclear Funds as at December 31 is as follows:

	Fair Value	
(millions of dollars)	**2013**	**2012**
Cash and cash equivalents and short-term investments	**262**	335
Alternative investments	**598**	362
Pooled funds	**2,173**	2,093
Marketable equity securities	**7,332**	5,670
Fixed income securities	**4,713**	4,523
Net receivables/payables	**32**	41
Administrative expense payable	**-**	(8)
	15,110	13,016
Due to Province	**(1,614)**	(299)
	13,496	12,717

The bonds and debentures held in the Used Fuel Fund and the Decommissioning Fund as at December 31 mature according to the following schedule:

	Fair Value	
(millions of dollars)	**2013**	**2012**
1 – 5 years	**1,334**	1,151
5 – 10 years	**871**	631
More than 10 years	**2,508**	2,741
Total maturities of debt securities	**4,713**	4,523
Average yield	**3.2%**	2.7%

The change in the Nuclear Funds for the years ended December 31 is as follows:

(millions of dollars)	Fair Value 2013	2012
Decommissioning Fund, beginning of year	5,707	5,342
Increase in fund due to return on investments	854	469
Decrease in fund due to reimbursement of expenditures	(34)	(40)
Increase in due to Province	(560)	(64)
Decommissioning Fund, end of year	5,967	5,707
Used Fuel Fund, beginning of year	7,010	6,556
Increase in fund due to contributions made	184	182
Increase in fund due to return on investments	1,131	584
Decrease in fund due to reimbursement of expenditures	(41)	(30)
Increase in due to Province	(755)	(282)
Used Fuel Fund, end of year	7,529	7,010

The earnings from the Nuclear Funds during 2013 and 2012 were impacted by the Bruce Lease Net Revenues Variance Account authorized by the OEB. The earnings on the Nuclear Funds for the years ended December 31 are as follows:

(millions of dollars)	2013	2012
Decommissioning Fund	294	405
Used Fuel Fund	376	302
Bruce Lease Net Revenues Variance Account *(Note 5)*	(42)	(56)
Total earnings	628	651

9. INCOME TAXES

OPG follows the liability method of tax accounting for all of its business segments. The Company records an offsetting regulatory asset or liability for the deferred income taxes that are expected to be recovered or refunded through future regulated prices charged to customers for generation from OPG's regulated facilities.

During 2013, OPG recorded a decrease in the deferred income tax liability for the income taxes that are expected to be recovered or refunded through regulated prices charged to customers of $109 million (2012 – $31 million). Since these deferred income taxes are expected to be refunded through future regulated prices, OPG recorded a corresponding decrease to the regulatory asset for deferred income taxes. As a result, the deferred income tax expense for 2013 and 2012 was not impacted.

The amount of taxes paid during 2013 was $14 million (tax refund received net of taxes paid during 2012 – $7 million).

The nuclear fixed asset removal and nuclear waste management funds as at December 31 consist of the following:

	Fair Value	
(millions of dollars)	**2012**	**2011**
Decommissioning Fund	**5,771**	5,342
Due to Province – Decommissioning Fund	**(64)**	-
	5,707	5,342
Used Fuel Fund [1]	**7,245**	6,509
Due (to) from Province – Used Fuel Fund	**(235)**	47
	7,010	6,556
Total Nuclear Funds	**12,717**	11,898
Less: current portion	**27**	20
Non-current Nuclear Funds	**12,690**	11,878

[1] The Ontario NFWA Trust represented $2,559 million as at December 31, 2012 (2011 – $2,296 million) of the Used Fuel Fund on a fair value basis.

The fair value of the securities invested in the Nuclear Funds as at December 31 is as follows:

	Fair Value	
(millions of dollars)	**2012**	**2011**
Cash and cash equivalents and short-term investments	**335**	555
Alternative investments	**362**	212
Pooled funds	**2,093**	1,842
Marketable equity securities	**5,670**	4,863
Fixed income securities	**4,523**	4,345
Derivatives	**-**	2
Net receivables/payables	**41**	38
Administrative expense payable	**(8)**	(6)
	13,016	11,851
Due (to) from Province	**(299)**	47
	12,717	11,898

The bonds and debentures held in the Used Fuel Fund and the Decommissioning Fund as at December 31 mature according to the following schedule:

	Fair Value	
(millions of dollars)	**2012**	**2011**
1 – 5 years	**1,151**	1,153
5 – 10 years	**631**	594
More than 10 years	**2,741**	2,598
Total maturities of debt securities	**4,523**	4,345
Average yield	**2.7%**	2.8%

The change in the Nuclear Funds for the years ended December 31 is as follows:

	Fair Value	
(millions of dollars)	**2012**	**2011**
Decommissioning Fund, beginning of year	**5,342**	5,267
Increase in fund due to return on investments	**469**	108
Decrease in fund due to reimbursement of expenditures	**(40)**	(33)
Increase in due to Province	**(64)**	-
Decommissioning Fund, end of year	**5,707**	5,342
Used Fuel Fund, beginning of year	**6,556**	5,979
Increase in fund due to contributions made	**182**	250
Increase in fund due to return on investments	**584**	87
Decrease in fund due to reimbursement of expenditures	**(30)**	(26)
Increase in due (to) from Province	**(282)**	266
Used Fuel Fund, end of year	**7,010**	6,556

The earnings from the Nuclear Funds during 2012 and 2011 were impacted by the Bruce Lease Net Revenues Variance Account authorized by the OEB. The earnings on the Nuclear Funds for the years ended December 31 are as follows:

(millions of dollars)	**2012**	**2011**
Decommissioning Fund	**405**	108
Used Fuel Fund	**302**	353
Bruce Lease Net Revenues Variance Account *(Note 5)*	**(56)**	48
Total earnings	**651**	509

9. INCOME TAXES

OPG follows the liability method of tax accounting for all its business segments. The Company records an offsetting regulatory asset or liability for the deferred income taxes that are expected to be recovered or refunded through future regulated prices charged to customers for generation from OPG's regulated facilities.

During 2012, OPG recorded a decrease in the deferred income tax liability for the deferred income taxes that are expected to be recovered or refunded through regulated prices charged to customers of $31 million (2011 – $28 million). Since these deferred income taxes are expected to be recovered through future regulated prices, OPG recorded a corresponding decrease to the regulatory asset for deferred income taxes. As a result, the deferred income tax expense for 2012 and 2011 were not impacted.

The amount of tax refund received net of taxes paid during 2012 was $7 million (2011 – $23 million).

As at December 31, 2011, the Used Fuel Fund asset value on a fair value basis was $6,556 million. The Used Fuel Fund value included a receivable from the Province of $47 million related to the committed return adjustment. As at December 31, 2010, the Used Fuel Fund asset value on a fair value basis was $5,979 million, including a payable to the Province of $219 million related to the committed return adjustment.

Under the ONFA, the Province is entitled to any surplus in the Used Fuel Fund, subject to a threshold funded ratio of 110 percent compared to the value of the associated liabilities.

The nuclear fixed asset removal and nuclear waste management funds as at December 31 consist of the following:

	Fair Value	
(millions of dollars)	**2011**	2010
Decommissioning Fund	**5,342**	5,267
Used Fuel Fund[1]	**6,509**	6,198
Due from (to) Province – Used Fuel Fund	**47**	(219)
	6,556	5,979
	11,898	11,246

1 The Ontario NFWA Trust represented $2,296 million as at December 31, 2011 (2010 – $1,949 million) of the Used Fuel Fund on a fair value basis.

The fair value of the securities invested in the Nuclear Funds as at December 31 is as follows:

	Fair Value	
(millions of dollars)	**2011**	2010
Cash and cash equivalents and short-term investments	**555**	581
Alternative investments	**212**	61
Pooled funds	**1,842**	1,835
Marketable equity securities	**4,863**	5,226
Fixed income securities	**4,345**	3,735
Derivatives	**2**	3
Net receivables/payables	**38**	29
Administrative expense payable	**(6)**	(5)
	11,851	11,465
Due from (to) Province – Used Fuel Fund	**47**	(219)
	11,898	11,246

The bonds and debentures held in the Used Fuel Fund and the Decommissioning Fund as at December 31 mature according to the following schedule:

	Fair Value	
(millions of dollars)	**2011**	2010
1 – 5 years	**1,153**	1,135
5 – 10 years	**594**	1,092
More than 10 years	**2,598**	1,508
Total maturities of debt securities	**4,345**	3,735
Average yield	**2.8%**	3.4%

The change in the Nuclear Funds for the years ended December 31 is as follows:

	Fair Value	
(millions of dollars)	**2011**	2010
Decommissioning Fund, beginning of year	**5,267**	4,876
Increase in fund due to return on investments	**108**	465
Decrease in fund due to reimbursement of expenditures	**(33)**	(74)
Decommissioning Fund, end of year	**5,342**	5,267
Used Fuel Fund, beginning of year	**5,979**	5,370
Increase in fund due to contributions made	**250**	264
Increase in fund due to return on investments	**87**	557
Decrease in fund due to reimbursement of expenditures	**(26)**	(26)
Increase in due from (to) Province	**266**	(186)
Used Fuel Fund, end of year	**6,556**	5,979

The earnings from the Nuclear Funds during 2011 and 2010 were impacted by the Bruce Lease Net Revenues Variance Account authorized by the OEB. The earnings on the Nuclear Funds for the years ended December 31 are as follows:

(millions of dollars)	**2011**	2010
Decommissioning Fund	**108**	465
Used Fuel Fund	**353**	371
Bruce Lease Net Revenues Variance Account (NOTE 7)	**48**	(168)
Total earnings	**509**	668

NOTE 11 INCOME TAXES

OPG follows the liability method of tax accounting for all its business segments and records an offsetting regulatory asset or liability for the future income taxes that are expected to be recovered or refunded through future regulated prices charged to customers.

During 2011, OPG recorded a decrease to the future income tax liability for the future income taxes that are expected to be recovered or refunded through regulated prices charged to customers of $19 million. Since these future income taxes are expected to be recovered through future regulated prices, OPG has recorded a corresponding decrease to the regulatory asset for future income taxes. As a result, the future income taxes for 2011 were not impacted. The decrease in the future income tax liability of $19 million for the rate regulated operations for the year ended December 31, 2011 included $5 million related to the decrease to the regulatory asset for future income taxes.

The following table summarizes the future income tax liabilities recorded for the rate regulated operations:

(millions of dollars)	**2011**	2010
January 1:		
Future income tax liabilities on temporary differences related to regulated operations	**547**	452
Future income tax liabilities resulting from the regulatory asset for future income taxes	**164**	140
	711	592
Changes during the year:		
(Decrease) increase in future income tax liabilities on temporary differences related to regulated operations	**(14)**	95
(Decrease) increase in future income tax liabilities resulting from the regulatory asset for future income taxes	**(5)**	24
Balance at December 31	**692**	711

Used Fuel Fund

Under the ONFA, the Province guarantees OPG's annual return in the Used Fuel Fund at 3.25 percent plus the change in the Ontario Consumer Price Index for funding related to the first 2.23 million used fuel bundles ("committed return"). OPG recognizes the committed return on the Used Fuel Fund and includes it in the earnings on the nuclear fixed asset removal and nuclear waste management funds. The difference between the committed return on the Used Fuel Fund and the actual market return, based on the fair value of the Used Fuel Fund's assets, which includes realized and unrealized returns, is recorded as due to or due from the Province. The due to or due from the Province represents the amount OPG would pay to or receive from the Province if the committed return were to be settled as of the balance sheet date. As part of its regular contributions to the Used Fuel Fund, OPG was required to allocate $147 million of its 2010 contribution towards its liability associated with future fuel bundles that exceed the 2.23 million threshold. As prescribed under the ONFA, earnings related to OPG's contributions for incremental fuel bundles do not grow at the Province's guaranteed rate of return, but rather earn the return of the Used Fuel Fund based on changes in the market value of the assets.

As at December 31, 2010, the Used Fuel Fund asset value on a fair value basis was $5,979 million. The Used Fuel Fund value included a payable to the Province of $219 million related to the committed return adjustment. As at December 31, 2009, the Used Fuel Fund asset value on a fair value basis was $5,370 million, including a payable to the Province of $33 million related to the committed return adjustment.

Under the ONFA, the Province is entitled to any surplus in the Used Fuel Fund, subject to a threshold funded ratio of 110 percent compared to the value of the associated liabilities.

The nuclear fixed asset removal and nuclear waste management funds as at December 31, 2010 and 2009 consist of the following:

	Fair Value	
(millions of dollars)	**2010**	**2009**
Decommissioning Fund	**5,267**	4,876
Used Fuel Fund[1]	**6,198**	5,403
Due to Province – Used Fuel Fund	**(219)**	(33)
	5,979	5,370
	11,246	10,246

[1] The Ontario NFWA Trust represented $1,949 million as at December 31, 2010 (2009 – $1,693 million) of the Used Fuel Fund on a fair value basis.

The fair value of the securities invested in the Nuclear Funds, which include the Used Fuel Fund and the Decommissioning Fund, as at December 31, 2010 and 2009, is as follows:

	Fair Value	
(millions of dollars)	**2010**	**2009**
Cash and cash equivalents and short-term investments	**581**	463
Alternative investments	**61**	–
Pooled funds	**1,835**	1,497
Marketable equity securities	**5,226**	4,699
Fixed income securities	**3,735**	3,596
Derivatives	**3**	–
Net receivables/payables	**29**	30
Administrative expense payable	**(5)**	(6)
	11,465	10,279
Due to Province – Used Fuel Fund	**(219)**	(33)
	11,246	10,246

The bonds and debentures held in the Used Fuel Fund and the Decommissioning Fund as at December 31, 2010 and 2009 mature according to the following schedule:

(millions of dollars)	Fair Value 2010	2009
1 – 5 years	**1,135**	1,276
5 – 10 years	**1,092**	857
More than 10 years	**1,508**	1,463
Total maturities of debt securities	**3,735**	3,596
Average yield	**3.4%**	3.7%

The change in the Nuclear Funds for the years ended December 31, 2010 and 2009, is as follows:

(millions of dollars)	Fair Value 2010	2009
Decommissioning Fund, beginning of year	**4,876**	4,325
Increase in fund due to return on investments	**465**	631
Decrease in fund due to reimbursement of expenditures	**(74)**	(80)
Decommissioning Fund, end of year	**5,267**	4,876
Used Fuel Fund, beginning of year	**5,370**	4,884
Increase in fund due to contributions made	**264**	339
Increase in fund due to return on investments	**557**	664
Decrease in fund due to reimbursement of expenditures	**(26)**	(24)
Increase in due to Province	**(186)**	(493)
Used Fuel Fund, end of year	**5,979**	5,370

The earnings from the Nuclear Funds during 2010 and 2009 were partially reduced by the impact of the Bruce Lease Net Revenues Variance Account established by the OEB's 2008 decision. The earnings on the Nuclear Funds for 2010 and 2009 are as follows:

(millions of dollars)	2010	2009
Decommissioning Fund	**465**	631
Used Fuel Fund	**371**	171
Bruce Lease Net Revenues Variance Account (Note 7)	**(168)**	(119)
Total earnings	**668**	683

Used Fuel Fund

Under the ONFA, the Province guarantees OPG's annual return in the Used Fuel Fund at 3.25 percent plus the change in the Ontario Consumer Price Index for funding related to the first 2.23 million used fuel bundles ("committed return"). OPG recognizes the committed return on the Used Fuel Fund and includes it in the earnings on the nuclear fixed asset removal and nuclear waste management funds. The difference between the committed return on the Used Fuel Fund and the actual market return, based on the fair value of the Used Fuel Fund's assets, which includes realized and unrealized returns, is recorded as due to or due from the Province. The due to or due from the Province represents the amount OPG would pay to or receive from the Province if the committed return were to be settled as of the balance sheet date. As part of its regular contributions to the Used Fuel Fund, OPG was required to allocate $31 million of its December 31, 2009 contribution towards its liability associated with future fuel bundles that exceed the 2.23 million threshold. As prescribed under the ONFA, earnings related to OPG's contributions for incremental fuel bundles do not grow at the Province's guaranteed rate of return, but rather earn the return of the Used Fuel Fund based on changes in the market value of the assets.

As at December 31, 2009, the Used Fuel Fund asset value on a fair value basis was $5,370 million. The Used Fuel Fund value included a payable to the Province of $33 million related to the committed return adjustment. As at December 31, 2008, the Used Fuel Fund asset value on a fair value basis was $4,884 million, including a receivable from the Province of $460 million related to the committed return adjustment.

Under the ONFA, the Province is entitled to any surplus in the Used Fuel Fund, subject to a threshold funded ratio of 110 percent compared to the value of the associated liabilities.

The nuclear fixed asset removal and nuclear waste management funds as at December 31, 2009 and 2008 consist of the following:

	Fair Value	
(millions of dollars)	**2009**	**2008**
Decommissioning Fund	**4,876**	4,325
Used Fuel Fund [1]	**5,403**	4,424
Due (to) from Province – Used Fuel Fund	**(33)**	460
	5,370	4,884
	10,246	9,209

[1] The Ontario NFWA Trust represented $1,693 million as at December 31, 2009 (2008 – $1,386 million) of the Used Fuel Fund on a fair value basis.

The fair value of the securities invested in the Nuclear Funds, which include the Used Fuel Fund and the Decommissioning Fund, as at December 31, 2009 and 2008, are as follows:

	Fair Value	
(millions of dollars)	**2009**	**2008**
Cash and cash equivalents and short-term investments	**463**	455
Pooled funds	**1,497**	1,412
Marketable equity securities	**4,699**	3,795
Fixed income securities	**3,596**	3,090
Net receivables/payables	**30**	7
Administrative expense payable	**(6)**	(10)
	10,279	8,749
Due (to) from Province – Used Fuel Fund	**(33)**	460
	10,246	9,209

The bonds and debentures held in the Used Fuel Fund and the Decommissioning Fund as at December 31, 2009 and 2008 mature according to the following schedule:

	Fair Value	
(millions of dollars except where noted)	**2009**	**2008**
1 – 5 years	**1,276**	1,142
5 – 10 years	**857**	777
More than 10 years	**1,463**	1,171
Total maturities of debt securities	**3,596**	3,090
Average yield	**3.7%**	4.3%

The change in the Nuclear Funds for the years ended December 31, 2009 and 2008, is as follows:

	Fair Value	
(millions of dollars)	**2009**	**2008**
Decommissioning Fund, beginning of year	**4,325**	5,072
Increase (decrease) in fund due to return on investments	**631**	(681)
Decrease in fund due to reimbursement of expenditures	**(80)**	(69)
Decrease in Due to Province	**-**	3
Decommissioning Fund, end of year	**4,876**	4,325
Used Fuel Fund, beginning of year	**4,884**	4,191
Increase in fund due to contributions made	**339**	454
Increase (decrease) in fund due to return on investments	**664**	(719)
Decrease in fund due to reimbursement of expenditures	**(24)**	(13)
(Decrease) increase in Due to/from Province	**(493)**	971
Used Fuel Fund, end of year	**5,370**	4,884

As at December 31, 2008, the Used Fuel Fund asset value on a fair value basis was $4,424 million. The asset value included a receivable from the Province of $460 million related to the committed return adjustment. As at December 31, 2007, the Used Fuel Fund asset value on a fair value basis was $4,702 million. The asset value was offset by a payable to the Province of $511 million related to the committed return adjustment.

Under the ONFA, the Province is entitled to any surplus in the Used Fuel Fund, subject to a threshold funded ratio of 110 percent compared to the value of the associated liabilities.

The nuclear fixed asset removal and nuclear waste management funds as at December 31, 2008 and 2007 consist of the following:

	Fair Value	
(millions of dollars)	**2008**	2007
Decommissioning Fund	**4,325**	5,075
Due to Province – Decommissioning Fund	**–**	(3)
	4,325	5,072
Used Fuel Fund[1]	**4,424**	4,702
Due from (to) Province – Used Fuel Fund	**460**	(511)
	4,884	4,191
	9,209	9,263

1 The Ontario NFWA Trust represented $1,386 million as at December 31, 2008 (December 31, 2007 – $1,244 million) of the Used Fuel Fund on a fair value basis.

The fair value of the securities invested in the Nuclear Funds, which include the Used Fuel Fund and Decommissioning Fund, as at December 31, 2008 and 2007, are as follows:

	Fair Value	
(millions of dollars)	**2008**	2007
Cash and cash equivalents and short-term investments	**503**	833
Marketable equity securities	**4,451**	5,391
Bonds and debentures	**3,805**	3,559
Administrative expense payable	**(10)**	(6)
	8,749	9,777
Due to Province – Decommissioning Fund	**–**	(3)
Due from (to) Province – Used Fuel Fund	**460**	(511)
Total	**9,209**	9,263

The bonds and debentures held in the Used Fuel Fund and the Decommissioning Fund as at December 31, 2008 and 2007 mature according to the following schedule:

	Fair Value	
(millions of dollars)	**2008**	2007
1 – 5 years	**1,618**	1,631
5 – 10 years	**962**	879
More than 10 years	**1,225**	1,049
Total maturities of debt securities	**3,805**	3,559
Average yield	**4.6%**	4.9%