DEPRECIATION AND AMORTIZATION

1.0 PURPOSE

This evidence highlights aspects of OPG's depreciation and amortization policy, provides OPG's actions in response to the OEB's directive in EB-2010-0008 to conduct an independent depreciation study, and presents the depreciation and amortization expense for the regulated facilities.

2.0 OVERVIEW

OPG is seeking approval of a test period revenue requirement that includes depreciation and amortization expense of $164.0M for the previously regulated hydroelectric facilities, $125.3M for the newly regulated hydroelectric facilities, and $562.3M for the nuclear facilities, as shown in Ex. F4-1-1 Tables 1 and 2, respectively. Ex. F4-1-1 Tables 1 and 2 also present the depreciation and amortization expense for the historical and bridge years for the previously regulated hydroelectric facilities, the newly regulated hydroelectric facilities and the nuclear facilities.

In its EB-2010-0008 Decision with Reasons (p. 97), the OEB directed OPG to conduct an independent depreciation study. In response, OPG engaged Gannett Fleming Inc. ("Gannett Fleming") in 2011 to provide an independent review and assessment of the asset service life estimates and nuclear station end-of-life ("EOL") dates for OPG's regulated assets based on the net book values as at December 31, 2010 (the "2011 Depreciation Study"). The depreciation and amortization expense for the test and bridge periods incorporates all recommendations made by Gannett Fleming in their study. The 2011 Depreciation Study is provided in Attachment 1.

Subsequent to the completion of the 2011 Depreciation Study, OPG determined that it would update the study based on December 31, 2012 net book values and changes made to the EOL dates for Pickering effective December 31, 2012. Given its significance, the Niagara Tunnel, placed in-service in 2013, will be included in the scope of the updated study. OPG will file the updated study as soon as it becomes available.

Section 3.0 describes OPG's depreciation and amortization expense, summarizes OPG's depreciation and amortization policy and review process, and outlines the results of the 2011 Depreciation Study, the recommendations of the Depreciation Review Committee ("DRC") made subsequent to the 2011 Depreciation Study, and the impact of these recommendations on depreciation and amortization expense.

Section 4.0 discusses the trend in depreciation and amortization expense over the period 2010 - 2015.

The depreciation expense for the Bruce assets is presented in Ex. G2-2-1.

3.0 DEPRECIATION AND AMORTIZATION EXPENSE

With the few exceptions noted below, OPG continues to determine depreciation and amortization expense in the same manner as presented in EB-2010-0008. The expense is determined in the same manner for both newly and previously regulated hydroelectric assets.

Allocation is not required to attribute depreciation and amortization expense to the regulated facilities. Approximately 99 per cent of OPG's in-service fixed and intangible assets are associated with specific generation facilities or plant groups. The remaining in-service fixed and intangible assets continue to be either directly associated with a business unit, or be held centrally for use by both regulated and unregulated generation business units. The assets held centrally are not allocated to regulated facilities; instead the generating business units (both regulated and unregulated) are charged an asset service fee for the use of these assets. This charge is reported as an OM&A cost. The asset service fees are described in Ex. F3-2-1.

3.1 Depreciation and Amortization Policy and Review Process

With the exception of the treatment of gains and losses on asset retirements and the re-classification of certain other components of expense to OM&A discussed below, OPG's depreciation and amortization policy is unchanged from that presented in EB-2010-0008.

Depreciation and amortization rates for the various classes of OPG's in-service fixed and intangible assets continue to be based on their estimated service lives. The service life of an asset class continues to be limited by the service life of the station(s) to which it relates. A single EOL date is established for depreciation purposes for all units at a particular station, which is typically based on an average of estimated EOL dates of each unit. The determination of these station EOL dates for depreciation purposes involves an assessment of the condition of and expected remaining life of certain key components (referred to as life-limiting components), in conjunction with an estimate of the expected operation of the station, which includes economic viability considerations. For the nuclear stations, the life-limiting components are: steam generators, pressure tubes, feeders and reactor components. For hydroelectric stations, dams are considered to be the life-limiting component.

The EOL dates for depreciation purposes for the prescribed nuclear facilities and Bruce stations are provided below. As discussed in EB-2012-0002, effective December 31, 2012, OPG changed the EOL dates of Pickering A and B and Bruce A and B stations. This change impacts the 2013 - 2015 depreciation and amortization expense and is discussed in Section 3.3.

	Effective January 1, 2012[1]	**Effective December 31, 2012**
Darlington	December 31, 2051	December 31, 2051
Pickering A	December 31, 2021	December 31, 2020
Pickering B	September 30, 2014	April 30, 2020
Bruce A	December 31, 2042	December 31, 2048
Bruce B	December 31, 2014	December 31, 2019

The net book value of the prescribed nuclear facilities and Bruce assets continues to include asset retirement costs ("ARC") relating to OPG's nuclear fixed asset removal and nuclear

[1] These EOL dates are as presented in EB-2010-0008, with the exception of subsequent extensions to the Bruce A EOL date in 2010 and 2011 discussed in EB-2012-0002 Ex. H2-1-2, Section 5.0 and L-2-1 Staff-19, Attachments 1 and 2.

waste management liabilities (asset retirement obligation or "ARO"). Accordingly, the depreciation and amortization expense also includes the depreciation of ARC. The depreciation of ARC is presented separately in Ex. F4-1-1, Table 2. The depreciation of ARC forms part of the revenue requirement impact for the recovery of the ARO, as shown in Ex. C2-1-1 Tables 1-3.

Prior to 2011, OPG's approach for asset retirements in the normal course was to eliminate the gross asset value from the cost and the related accumulated depreciation/ amortization of an asset class, effectively resulting in any gains or losses on retirement being depreciated/ amortized over the estimated service life of the class. However, if it was determined that an asset was being retired significantly in advance of the end of the life of its asset class (i.e., a premature retirement), OPG recorded the resulting loss in depreciation and amortization expense.

The majority of OPG's retirements have been premature retirements and were immediately expensed. The impact on OPG's depreciation and amortization expense of not immediately expensing losses (recognizing gains) related to normal retirements has been minimal. Starting in 2011, OPG records all gains and losses immediately in income, regardless of the nature of the retirement. As such, for both financial accounting and regulatory purposes, OPG charged the total un-depreciated amount of past losses to income in 2011. On an OPG-wide basis, the impact on net income was less than $1M. This change in approach is consistent with the findings of Gannett Fleming. Gannett Fleming noted that the approach of recognizing losses and gains was appropriate for OPG in light of the nature of its large plant components and small amount of retirement transactions.[2] The full amount of the recognized losses and gains is presented in the Other category of depreciation and amortization expense in Ex. F4-1-1 Tables 1 and 2.

Asset removal costs and variable expenses related to the management of nuclear low and intermediate level waste ("L&ILW") were previously reported by OPG as components of depreciation and amortization expense (in the Other category). Starting in 2011, OPG

[2] Attachment 1, p. II-7

reports these same expenses as part of OM&A for financial accounting and regulatory purposes.[3] Starting in 2011, removal costs are included as part of nuclear project OM&A (Ex. F2-3-1) and hydroelectric base OM&A (Ex. F1-2-1). Variable expenses for L&ILW management for the prescribed facilities are included as part of nuclear base OM&A (Ex. F2-2-1). These reclassifications do not otherwise impact on the nature or treatment of these expenses. The L&ILW management costs for the prescribed assets are also presented in Ex. C2-1-1 Tables 1 and 2.

As part of its due diligence process, OPG convenes an internal DRC to examine the service lives of fixed and intangible assets and ultimately the calculation of depreciation and amortization expense. The DRC is comprised of business unit representatives as well as staff from the Finance and Regulatory Affairs functions. The DRC considers available engineering, technical, operational and financial assessments/information as part of its review.

The DRC conducts a regular review of the service lives of generating stations, including the Bruce stations, and a selection of asset classes with the general objective of reviewing all significant asset classes for the regulated assets over a five-year cycle. Periodic independent reviews of the service live estimates of significant asset classes for the regulated assets are also performed over a five-year period, as recommended by Gannett Fleming.[4] The DRC's scope and recommendations are submitted for approval to the Chief Financial Officer, the Chief Nuclear Officer, Senior Vice President, Hydro-Thermal, and Senior Vice President, Commercial Operations and Environment (the "Approvals Committee"). Approved DRC recommendations are used to calculate the depreciation and amortization expense that is reflected in OPG's financial statements and business plan. OPG's DRC review process was found by Gannett Fleming to be procedurally sound and meeting generally accepted regulatory objectives regarding depreciation.[5]

[3] For financial statement presentation purposes, the comparative 2010 expenses were reclassified to OM&A. The Application presents these expenses as a component of depreciation and amortization expense for 2010.
[4] Attachment 1, p. I-7
[5] Attachment 1, pp. I-3 and I-4

The DRC was convened once subsequent to the issuance of the 2011 Depreciation Study. This took place in 2012. The 2012 DRC recommendations for the regulated and Bruce assets are discussed in Section 3.3.

3.2 Independent Depreciation Study

As discussed above, OPG retained Gannett Fleming in 2011 to conduct an independent assessment of depreciation rates and generating station lives for the regulated facilities based on the net book values as at December 31, 2010. All in-service fixed and intangible assets for the regulated facilities, including centrally-held assets directly assigned to the regulated facilities and included in rate base, were included in the scope of the independent study.

The 2011 Depreciation Study is included as Attachment 1. The results of the study are summarized as follows:[6]

> Gannett Fleming recommends the continuation of the life span dates as approved for use in OEB Decision EB-2010-0008 pending the technical results of a pressure tube study, expected in the latter part of 2012, as discussed earlier in the report. Furthermore, Gannett Fleming recommends the continued use of the currently approved average service life estimates for all accounts with only the following exceptions:
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> - Account 10400 – Hydroelectric – Turbines and Governors – from the currently approved 75 years to 70 years;
> - Account 10210 – Hydroelectric – Service and Equipment Buildings – from the currently approved 50 years to 55 years;
> - New Account – Hydroelectric – Security Systems – Create a new plant account with an average service life estimate of 10 years.

OPG accepted and, effective January 1, 2012, implemented all recommendations from the study, including the above changes to the above hydroelectric asset classes. The bridge and test period depreciation and amortization expense incorporates the impact of these changes,

[6] Attachment 1, p. III-2

estimated as an increase to the regulated hydroelectric expense of approximately $1M annually. Other implemented recommendations related to the depreciation review process and timing.

Gannett Fleming also concluded that OPG's average EOL dates for the regulated nuclear facilities in effect at the time of the review were reasonable.[7]

3.3 Depreciation Review Committee Recommendations

In EB-2012-0002, OPG filed the memorandum documenting the DRC's recommendations for the regulated business for 2012 (L-2-2 AMPCO-06, Attachment 1). These recommendations were approved by OPG's Approvals Committee.

As discussed in EB-2012-0002, the 2012 DRC recommendations included changes to the EOL dates for Pickering A and B and Bruce A and B stations, effective December 31, 2012. The changes in the Pickering average EOL dates resulted from the achievement of high confidence, through the Fuel Channel Life Cycle Management ("FCLM") project's work program, that Pickering B Units 5-8 could operate until at least 247,000 effective full power hours (EFPH) and the resulting alignment of the average EOL date for Pickering A Units 1 and 4 with those of the last two units at Pickering B. The FCLM project's work program and the continued operation of the Pickering Units 5-8 are discussed in Ex. F2-2-3.

The service life extension of the Bruce A station reflected OPG's high confidence that, supported by the results of the FCLM project work program, pressure tubes can operate beyond the originally assumed nominal life. The DRC recommended a revision to the average EOL date for Bruce A based on this high confidence and on Bruce Power L.P.'s intent to refurbish Bruce Units 3 and 4, and the return-to-service in 2012 of the refurbished Bruce A Units 1 and 2. Similarly, the extension of the Bruce B average EOL date was based on OPG having high confidence that the condition of the pressure tubes for the Bruce B units should allow these units to operate longer, given the results from the FCLM project's work program for Pickering B Units 5-8 and on Bruce Power's indicated intent to operate them

[7] Attachment 1, p. III-10

longer. The FCLM project's work program is an OPG-initiated industry effort including Bruce Power L.P. and is being coordinated through the CANDU Owners Group.

The specific station EOL date revisions and estimated annual impacts on depreciation and amortization expense starting in 2013, excluding the impacts of the December 31, 2012 ARC adjustment discussed below, are as follows for the prescribed assets:[8]

- A decrease of approximately $85M from the extension of the average EOL date for Pickering B Units 5 to 8 from September 30, 2014 to April 30, 2020.
- An increase of approximately $13M from the change in the average EOL date for Pickering A Units 1 and 4 from December 31, 2021 to December 31, 2020

The above impacts include a net decrease of approximately $35M related to the non-ARC asset values.[9] The Pickering Life Extension Depreciation Variance Account established in EB-2012-0002 records this annual amount, plus associated income taxes, as a credit to customers starting in 2013 until the effective date of new nuclear payment amounts reflecting the revised service lives of the Pickering stations. The account is discussed further in Ex. H1-1-1, Section 4.15 and Ex. H1-3-1, Section 4.

The specific station EOL date revisions and estimated annual impacts on depreciation and amortization expense starting in 2013, excluding the impacts of the December 31, 2012 ARC adjustment discussed below, are as follows for the Bruce assets:

- A decrease of approximately $10M from the extension of the average EOL date for the Bruce A station from December 31, 2042 to December 31, 2048
- A decrease of approximately $25M from the extension of the average EOL date for the Bruce B station from December 31, 2014 to December 31, 2019

Additionally, the 2012 DRC recommended the establishment a new asset class with a 90-year service life for the lining of tunnels and permanent shafts for the Niagara Tunnel. It is estimated that this results in an annual decrease in depreciation expense of approximately

[8] Amounts are as presented in EB-2012-0002 Ex. M1-1 Attachment 3 Table 1a, note 3, lines 1a and 2a
[9] EB-2012-0002, Ex. M1-1, Attachment 3, Table 1, line 5

$1M relative to the 75-year asset service life of OPG's similar but older assets. This service life will be reviewed as part of the updated depreciation study being conducted in 2013.

4.0 DEPRECIATION AND AMORTIZATION EXPENSE TRENDS

The depreciation and amortization expense for the regulated hydroelectric facilities remains largely stable over the period 2010 – 2012, with small year-over-year increases largely due to the impact of in-service additions. In 2013, the expense is forecast to increase primarily due to the partial-year impact of the Niagara Tunnel coming in service. The expense increases further in 2014, reflecting the full-year impact of the depreciation on the Niagara Tunnel. The expense then stabilizes in 2015. Regulated hydroelectric in-service additions are discussed in Ex. D1-1-2 and the Niagara Tunnel is discussed in Ex. D1-2-1.

The depreciation and amortization expense for the newly regulated hydroelectric facilities is largely stable over the entire 2010 – 2015 period, with small year-over-year increases largely due to the impact of in-service additions.

The nuclear depreciation expense for OPG's prescribed facilities increased significantly in 2012 compared to 2011 and is forecast to decrease in 2013 related to 2012, as a result of the changes in the ARC at December 31, 2011 and December 31, 2012, respectively, arising from the accounting implementation of the current approved ONFA Reference Plan (discussed in Ex. C2-1-1). The projected decrease in 2013 reflects the impacts of the service life changes of Pickering A and B discussed above. The 2013 - 2015 impacts on depreciation of the prescribed assets arising from the current approved ONFA Reference Plan, including changes in the Pickering service lives, are presented in Ex. C2-1-1 Table 5.

In 2014, the nuclear depreciation and amortization expense is forecast to increase moderately mainly due to the impact of in-service additions, which are discussed in Ex. D2-1-2 and Ex. D2-2-1. There is a similar increase in 2015.

LIST OF ATTACHMENTS

Attachment 1:	Gannett Fleming Report: Assessment of Regulated Asset Depreciation Rates and Generating Station Lives - December 2011