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]

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[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:
>
> - 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

ONTARIO POWER GENERATION INC.

TORONTO, ONTARIO

ASSESSMENT OF REGULATED ASSET DEPRECIATION RATES AND GENERATING STATION LIVES DECEMBER 2011

Gannett Fleming
Valuation and Rate Division
Excellence Delivered As Promised

Harrisburg, Pennsylvania *Calgary, Alberta* *Valley Forge, Pennsylvania*

Gannett Fleming

Excellence Delivered ***As Promised***

December 16, 2011

Ontario Power Generation Inc.
700 University Avenue
Toronto, Ontario
M5G1X6

Attention:
Mr. David Bell
Manager, Corporate Accounting
Ontario Power Generation Inc.

Pursuant to your request, we have conducted a review and assessment of the Regulated Asset Depreciation Rates and Generating Station Lives of Ontario Power Generation Inc. ("OPG"). Our report presents a description of the methods used in the estimation of service life and our recommendations for average service life estimates.

We gratefully acknowledge the assistance of OPG personnel in the completion of the review.

Respectfully submitted,
GANNETT FLEMING INC.

LARRY E. KENNEDY
Director, Canadian Services
Valuation and Rate Division

LEK/hac
Project: 054762

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PART I. INTRODUCTION

ONTARIO POWER GENERATION

ASSESSMENT OF REGULATED ASSET DEPRECIATION RATES AND GENERATING STATION LIVES

PART I. INTRODUCTION

SCOPE

This report sets forth the results of the Gannett Fleming, Inc. (“Gannett Fleming”) review of the Ontario Power Generation Inc. (“OPG” or “the Company”) average service life estimates. The average service life estimates are used to establish asset depreciation rates and generating station lives for the Property, Plant and Equipment (“PP&E”) of the Prescribed Facilities, and directly assigned corporate PP&E balances as of December 31, 2010, for regulatory purposes. As the depreciation and amortization expense is calculated for revenue requirement purposes, the assets for which average service lives were developed include intangible assets.

The Prescribed Facilities for which average service lives were analyzed are as follows:

- Sir Adam Beck I Hydroelectric Generating Station
- Sir Adam Beck II Hydroelectric Generating Station
- Sir Adam Beck Pump Generating Station
- DeCew Falls I Hydroelectric Generating Station
- DeCew Falls II Hydroelectric Generating Station
- R.H. Saunders Hydroelectric Generating Station
- Pickering Nuclear Generating Station
- Darlington Nuclear Generating Station

REPORT STRUCTURE

Part I, Introduction, contains statements with respect to the scope and plan of the report and the basis of the study. Part II, Methods Used in the Estimation of Average Service Life, presents the methods used in the estimation of average service lives. Part III, Results of Study, presents a summary of the service life estimates and the comparable peer data used in the development of the average service life estimates. Schedule 1 of this report summarizes the average service life estimates for all accounts and also separates the nuclear Asset Retirement Costs ("ARC") which are depreciated over station lives.

BASIS OF THE STUDY

Background. In March 2007, Gannett Fleming submitted a report titled "Review of the Ontario Power Generation Inc. Depreciation Review Process". The 2007 report presented a summary of the findings of a review of the processes, procedures and methods used by OPG to review its depreciation expense. The 2007 report indicated that "Gannett Fleming has found that the processes, procedures and methods followed by Ontario Power Generation Inc. adequately meet regulatory objectives regarding depreciation generally accepted by Canadian regulatory authorities."[1] Additionally Gannet Fleming found that "OPG's current Depreciation Review Process results in the depreciation expense component of the revenue requirement that reasonably and appropriately reflects the consumption of the average service life of OPG's regulated assets. Gannett Fleming also views that, overall, the DRC process is adequate in meeting the generally accepted regulatory objectives regarding depreciation for

[1] Cover Letter to the March 2007 Gannett Fleming Report

regulated North American utilities."[2] Overall the March 2007 report issued by Gannett Fleming concluded that the procedural foundation upon which the Depreciation Review Committee ("DRC") has developed average service life estimates is robust and appropriate. The March 2007 Gannett Fleming report led, in part, to the Ontario Energy Board Decision EB-2007-0905 finding that the approach employed by OPG in the development of its depreciation expenses is reasonable.

The DRC has continued to follow the methods as outlined in the Gannett Fleming report in the four years since the issuance of the 2007 report and has modified and adapted its processes to address key recommendation points in the report. As such, the currently approved average service life estimates are based on a procedurally sound and reasonable DRC process. Given this previously-reviewed DRC process, and the prior Gannett Fleming findings regarding this process, Gannett Fleming, to a large extent, found much of the work prepared over the past few years by the DRC to be a reliable information source.

With the exception of minor fixed assets, which represent approximately 3% of OPG's total regulated investment excluding ARC, OPG currently depreciates its assets using a straight line method of depreciation, with the depreciation rates being calculated based on the Average Life Group – Whole Life Procedure. The Average Life Group – Whole Life procedure has been used by OPG for a number of years and has previously been approved by the Ontario Energy Board ("OEB").

<u>Service Life Estimates</u>. The service life estimates presented herein are based on commonly accepted methods and procedures for determining average service life

[2] March 2007 Gannett Fleming Report , page III-2

estimates for electric utility plant. The service life estimates were based on data through December 31, 2010, a review of the Company's practices and outlook as they relate to plant operation and retirement, and the service life estimates for other electric generation companies.

The average service life estimates for each depreciable group were reviewed based on the professional judgment of Gannett Fleming. In reviewing the average service lives, Gannett Fleming gave consideration to the average service lives currently approved for use by OPG, the approved service life estimates for a peer group of electric generation companies (as discussed at page II-8 of this report), the experience of internal OPG Operating and Management staff, and the experience of Gannett Fleming in selecting average service lives for similar plant.

Depreciation Policy. As discussed later in this report, Gannett Fleming has recommended that only one new account be created. In the review of account structure, Gannett Fleming considered the expectation of the diversity of asset retirement ages within each account in the development of the average service life estimate for each account. It should also be noted that the use of the Average Life Group - Whole Life Procedure applies the same annual accrual rate to all vintages of plant, which is calculated by dividing 100% by the average service life estimate. As such, a common life estimate is applied to each of the asset vintages, and each of the assets within each vintage. This procedure is widely used by a number of regulated electric utilities throughout North America, and results in a reasonable recovery of capital investment.

Depreciation related to the nuclear asset classes is based on the lesser of the generation station life or asset class life. Hydroelectric generating stations' lives are considered to be limited by the service lives of the dams; however, since the dams have service lives that exceed those of most other asset classes, Gannett Fleming is of the view that they are not a significant limiting factor at this time.

Gannett Fleming also notes that through the process of implementing Internal Financial Reporting Standards ("IFRS"), OPG reviewed its listing of accounts in order to comply with the componentization requirements of the International Accounting Standard No. 16. OPG determined that no changes to the accounts were required.

RECOMMENDATIONS

The average service life estimates set forth herein apply specifically to the PP&E of the Prescribed Facilities, including directly assigned corporate PP&E as of December 31, 2010, including intangible assets. The average service life recommendations contained in this report should be applied to all assets within each group of assets. As described in the Results section of this report, Gannett Fleming is recommending three changes to the average service life estimates as follows:

- 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.

Continued surveillance and periodic revisions are required to maintain use of appropriate average service lives and depreciation rates. Each account should be subjected to a complete depreciation study which re-evaluates its average service life estimates periodically. Gannett Fleming notes that the practice of OPG to review its various asset accounts over a five-year cycle meets this common depreciation practice. In addition, a company-wide review of the depreciation service lives should also be undertaken approximately every five years in order to ensure that the depreciation recovery policies align with the consumption of the service value of the assets.

The Company is undertaking a detailed assessment of the nuclear plant pressure tubes which may result in a significant amount of additional information regarding future economic life. Following this detailed review of the pressure tubes, a renewed period of five-year cycles for the review of all major plant accounts is recommended.

PART II. METHODS USED IN THE ESTIMATION OF AVERAGE SERVICE LIFE

PART II. METHODS USED IN THE ESTIMATION OF AVERAGE SERVICE LIFE

DEPRECIATION

Depreciation, in public utility regulation, is the loss in service value not restored by current maintenance, incurred in connection with the consumption or prospective retirement of electric generation plant in the course of service from causes which are known to be in current operation and against which the utility is not protected by insurance. Among the causes to be given consideration are wear and tear, deterioration, action of the elements, inadequacy and obsolescence.

Depreciation, as used in accounting, is a method of distributing fixed capital costs, less net salvage, over a period of time by allocating annual amounts to expense. Each annual amount of such depreciation expense is part of that year's total cost of providing utility service. Normally, the period of time over which the fixed capital cost is allocated to the cost of service is equal to the period of time over which an item renders service, that is, the item's service life. The most prevalent method of allocation is to distribute an equal amount of cost to each year of service life. This method is known as the Straight Line method of depreciation.

As described in earlier sections of this report, the recommendations of this report are to continue to incorporate the depreciation practices historically used at OPG - namely that the depreciation expense be calculated in accordance with the Straight Line method of depreciation, incorporating the Average Life Group - Whole Life procedure in the calculation of the depreciation rate. The calculation of annual depreciation expense based on the Straight Line - Average Life Group - Whole Life procedure requires the estimation of average life as discussed in the sections that follow.

AVERAGE SERVICE LIFE

The use of an average service life for property groups that include large numbers of similar assets implies that the various units in the group have different lives. Thus, the average life may be obtained by determining the separate lives of each of the units, or by constructing a life estimate that considers the retirements of units which survive at successive ages. The average service life estimates reviewed by Gannett Fleming were based on judgment which considered a number of factors, including:

- Understanding of the processes used in the development of the currently used average service life estimates through the completion of a prior review of the DRC process filed in EB-2007-0905;
- Understanding of the assets currently in service through discussions with company staff and through representatives of the nuclear and hydroelectric generation operating units;
- Physical site tours of nuclear and hydro generation sites;
- Review of current accounting practices and procedures applied and their consistency with those in place during the review submitted in EB-2007-0905;
- Review of the analysis and results of prior reviews by the OPG Depreciation Review Committee;
- Average service life estimates from other peer electric generation companies; and,
- The general experience and professional judgment of Gannett Fleming.

<u>Prior Assignments and Review of the DRC Process</u>. Gannett Fleming had been previously retained in 2007 to review the practices and procedures used by the DRC in the completion of prior depreciation studies. The 2007 review resulted in a report of the findings of Gannett Fleming which were submitted to the management of OPG in 2007. This prior review provided Gannett Fleming with an understanding of the processes used by OPG in the determination of average service life estimates, a general understanding of the type of generation plant in service at OPG and an understanding of the regulatory oversight of the Ontario Energy Board.

<u>Operating Discussions and Site Tours</u>. Discussions with operating representatives and the physical site tours undertaken by Gannett Fleming provided Gannett Fleming with an understanding of the type of assets in service for both nuclear and hydroelectric service. The site tours provide Gannett Fleming with the necessary background to make an assessment of the physical installations of the OPG plant, and to understand the type of plant in service and the operating conditions of the facilities. The operating interviews are undertaken to understand the historic operating conditions that have led to retirement of plant in the past and to understand the current condition of the assets which may impact future retirement plans. The operating interviews were conducted both during the Gannett Fleming tour of the physical facilities, immediately following the tours and again after Gannett Fleming completed an initial analysis of the average service life expectations.

Gannett Fleming toured the following generation sites in the conduct of this assignment:

- R.H. Saunders Hydroelectric Generating Station

- Sir Adam Beck I Hydroelectric Generating Station
- Sir Adam Beck II Hydroelectric Generating Station
- Darlington Nuclear Generating Station.

Tours of the above Hydroelectric and Nuclear Generating Stations provided Gannett Fleming with the necessary background to complete this assignment. During and immediately following each of the above site tours, interviews of the operational representatives were undertaken by Gannett Fleming. These interviews were conducted at the time of the site tours and covered the following topics:

- Operating history of both the plant being toured and of other similar plant not toured;
- Replacement history of major plant components and review of significant retirement programs;
- General operating experience of the major plant components;
- Review of any life restricting operational issues;
- Review of any issues that have emerged during the last DRC;
- Review of changes where advancements in technology may cause changes to average service life indications; and
- Discussions of the manner in which the OPG Hydro plants may be different than other peer Hydroelectric generation plants.

Interviews following the Darlington Nuclear plant tour involved considerable discussion regarding the Pickering Generating Station. In addition the discussions were conducted following the plant tours through a number of telephone interviews held between Gannett Fleming and operational representatives of OPG.

Review of Accounting Policies. Gannett Fleming had discussions with management representatives during the early phases of this assignment to discuss depreciation and accounting policies and practices. An understanding of the accounting policies is required to:

- Understand the accounting entries associated with the retirement of plant. In particular, Gannett Fleming required an understanding of the accounting entries associated with gains and losses on retirement;
- Understand any thresholds or policies with regard to capitalization of major component as compared to the replacement of minor components of plant through operating and maintenance budgets; and
- Determine if a review of the adequacy of the accumulated depreciation reserve is required.

Gannett Fleming notes that, with the exception of IFRS which did not exist at the time of the prior review, the current DRC policies and practices are the same as those that existed in EB-2007-0905 as modified to address the findings and recommendations from that report. Gannett Fleming also notes that the gains and losses on retirement transactions are normally booked to the income statement in the year of the retirement transaction. In this manner, the accumulated depreciation account does not include any significant embedded gains or losses from previous retirement transactions. Gannett Fleming understands that the total cumulative undepreciated value of embedded past losses, which OPG removed from the net book value of fixed and intangible assets in 2011, is less than $1M. Gannett Fleming also notes that any amount of cost of removal (that is not associated with the retirement of an asset for which an Asset Retirement

Obligation ("ARO") is established) is charged directly to the income statement in the year of the transaction. Both the recording of gains and losses to income and the charging of cost of removal to income is in accordance with provisions of IFRS. Gannett Fleming notes that while these are not the traditional practices of regulated utilities, the nature of the large plant components and small amount of retirement transactions have made these policies viable and reasonable for OPG. Additionally, because the accumulated depreciation account does not include any of the significant adjustments for past retirement transactions, the need to test the adequacy of the accumulated depreciation accounts is eliminated.

Analysis and Results of Prior DRC reviews. OPG is the world's largest operator of CANada Deuterium Uranium ("CANDU") nuclear units, has some of the oldest CANDU units, and has the most extensive operational knowledge of all CANDU operators in the world. OPG is heavily involved in technical exchanges with other CANDU operators, and closely monitors equipment degradation issues in order to assess potential impacts on OPG's units. OPG is often the "lead" utility in terms of the knowledge of degradation issues, which may impact unit and component lives. In the particular circumstance of the CANDU nuclear installations, OPG internal staff is recognized as experts in the technology.

Over the last five-year period, the DRC has completed a detailed review of the average service life expectations for the plant accounts that comprise in excess of 90% of the company's regulated investment. The DRC's technical reviews were conducted by internal and external experts in the specific areas associated with a number of accounts. As indicated above, the OPG operational staff is considered to be the world experts in the operational aspects of the CANDU units. Gannett Fleming reviewed this analysis which provided a significant background on the physical condition of the assets, a meaningful history of the manner in which plant assets have provided electric generation service over the past many years, and identified major upcoming replacement or retirement programs.

Peer Analysis. In order to provide a comparison for each account grouping, Gannett Fleming selected a peer group of companies to use in the development of average service lives. The companies selected for comparison were all companies for which Gannett Fleming has recently completed depreciation studies relating to Canadian electric generation plants. As such, Gannett Fleming is able to make a meaningful comparison giving consideration to factors such as capitalization and retirement policies, maintenance practices, and general operational practices. The companies selected for comparison were:

- BC Hydro
- Manitoba Hydro
- New Brunswick Power
- Newfoundland and Labrador Power Corporation (Nalcor)
- Northwest Territories Power Corporation
- Nova Scotia Power
- SaskPower

Asset service lives for the OPG hydroelectric asset classes lend themselves to comparison with other utilities due to the similar nature of the technology used in hydroelectric energy production. As such, the above utilities provided Gannett Fleming with a comparable base of average service life estimates to use in the development of the service life estimates for OPG hydroelectric asset classes.

Professional Judgment. The use of professional judgment in the development of average service life estimates is a practice that is appropriate and has been used for many years before North American regulatory jurisdictions. When available, the use of statistical analysis of the historic retirement transactions combined with the use of professional judgment which includes the physical site inspections, review of accounting procedures and practices, use of operational staff interviews, review of prior studies, and review of the approved life estimates of peer companies, provides the most complete method of service life analysis. However, the use of professional judgment alone also provides an appropriate basis for developing average service life estimates, when appropriate factors are considered, and has been accepted as a valuable depreciation analysis tool in many North American jurisdictions.

In the specific circumstances of the OPG average service life estimation, the volume of historic retirement transactions available to be analyzed is not sufficient to undertake a detailed study of retirement history. As such, a retirement rate analysis was not completed by Gannett Fleming. However, all of the remaining life estimate tools were available and were used to develop appropriate average service life estimates.

Life Span Dates. Life expectancy of electric generation plant assets are impacted not only by physical wear and tear of the assets but also by economic factors including the feasibility of the economic replacement of major operating components or the economic viability of the plant as a whole. In circumstances where the replacement of major operating components is not economically feasible, the life of the major component can be the determining factor of the generation plant and all of the assets within the plant. As such, the remaining depreciation life of electric generation plant assets is the lesser of the physical life expectation of the asset or the period to the end of the life span of the generation plant.

The use of life span dates for determining depreciable lives for regulated electric generation plant are common throughout many North American Regulatory jurisdictions. The basis for the determination of the life span date is usually based on one or all of the following:

- The physical life estimation of the major and vital components of the generating plant;
- The duration of operating licenses;
- Precedent and policy of the regulatory jurisdiction;
- Expiration of the supply source for which the generation plant is dependent; and
- Expiration of market demand upon which the generation plant is dependent.

In prior depreciation reviews, OPG has determined a life span date for each of the regulated nuclear plants. The life span dates have been determined through a review of the expected life of the significant components at each nuclear site. Additionally, the life span date has historically been influenced by the period through to any required major site refurbishment, as the continued operation of the plant is dependent upon the ability to economically refurbish the plant for continued use. It is the experience of Gannett Fleming that the depreciation schedules for most North

American nuclear generation plants are dependent upon appropriately developed life span dates. Furthermore, it is the view of Gannett Fleming that the use of life span dates is appropriate for the OPG nuclear generation plants.

Internal OPG reviews of the physical operating conditions of the regulated nuclear electric generation plants were last conducted as part of the 2010 DRC review. That review concluded that the following life span dates, which were approved by the OEB in its Decision EB-2010-0008, are appropriate:

- Pickering A - December 31, 2021;
- Pickering B - September 30, 2014;
- Darlington - December 31, 2051.

Gannett Fleming has reviewed the analysis made by the DRC which established the above dates, and has concluded they are reasonable for the continued use in this study. Gannett Fleming is of the view that the factors considered and methods used by the DRC continue to be appropriate and consistent with common regulatory practices and should continue to be used in future reviews.

In the review of the life span dates related to the two Pickering plants, it is noted that the technical and economic viability considerations of Pickering A Units 1 and 4 may not result in these units operating past the end of life of the last two Pickering B units. The operation of the Pickering A plant requires the joint operation of certain components of both Pickering A and B plants. As such, both physical and economic considerations may result in the circumstance that should the Pickering B units be shut down before the Pickering A units, there is a significant likelihood that the operation of the Pickering A units would not be viable.

Gannett Fleming believes that until the review of the Pickering B plant is completed it is premature to adjust the life span date of Pickering A from the current date of December 31, 2021. Gannett Fleming also believes that the use of a life span of September 30, 2014 for Pickering B is appropriate until such time as reviews to determine the economic feasibility of a major pressure tube program are completed, which Gannett Fleming understands is expected in 2012. In the circumstance that the assessment of the condition of the Pickering B pressure tubes results in a decision that the Pickering B plant cannot continue operations, future depreciation reviews may be required to adjust the life span date of the Pickering A units.

As recognized in the prior DRC review, a major refurbishment program is expected to be undertaken at the Darlington nuclear site. As a result, in the 2009 DRC review, OPG extended the life span date by 30 years to December 31, 2051, effective January 1, 2010. Given that the major operating components at the Darlington plant are expected to be refurbished in the near future, Gannett Fleming finds the December 31, 2051 date as being reasonable.

The regulated hydroelectric plant dams are considered to be the life-limiting component, but since the dams have service lives that exceed that of most other classes, Gannett Fleming is of the view that they are not a significant limiting factor at this time.

PART III. RESULTS OF STUDY

PART III. RESULTS OF STUDY

QUALIFICATION OF RESULTS

The review of the reasonableness, and recommended alternative average service life estimates related to plant in service as of December 31, 2010 is the principal result of the study. Continued surveillance and periodic revisions are required to maintain continued use of appropriate average service lives. An assumption that life estimates can remain unchanged over a long period of time implies a disregard for the inherent variability in service lives and for the change of the composition of property in service.

SUMMARY OF RESULTS

Gannett Fleming has reviewed the life span dates and average service life estimates for all regulated generation plants and asset categories, considering the factors as identified in Part II of this report. While this review included analysis of all asset categories, additional focus was made on the investment categories that comprise the majority of the plant in service.

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:

- 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.

A detailed discussion of the reasons and factors considered leading to the recommended change for the above three accounts is provided in the Appendix to this report.

DESCRIPTION OF APPENDIX

The Appendix to this report provides a summary of the factors considered in the review of each of the major accounts in which Gannett Fleming is recommending a change. While Gannett Fleming did review all accounts, the Appendix only provides detailed analyses of the accounts in which a change to the average service life estimate is recommended.

ONTARIO POWER GENERATION INC.
SCHEDULE 1. SUMMARY OF THE NET BOOK VALUE, CURRENTLY APPROVED AVERAGE SERVICE LIFE ESTIMATES AND GANNETT FLEMING RECOMMENDED AVERAGE SERVICE LIFE ESTIMATES

ASSET CLASS #	ASSET CLASS DESCRIPTION	CURRENTLY APPROVED LIFE ESTIMATE (Years)	GANNETT FLEMING RECOMMENDED LIFE ESTIMATE (Years)	ASSET CLASS NBV FOR PRESCRIBED NUCLEAR ($)	ASSET CLASS NBV FOR HYDRO REGULATED ($)	ASSET CLASS NBV TOTAL REGULATED ($)	% COVERAGE OF TOTAL REGULATED NBV (Note 1)
10101000	HYDROELECTRIC - EXCAVATION, DREDGING, RIPRAPPING AND GROUTING	100	100		1,247,749,106	1,247,749,106	18.14
10200000	HYDROELECTRIC - SUBSTRUCTURES AND SUPERSTRUCTURES	100	100		801,909,737	801,909,737	11.66
10312000	HYDROELECTRIC - DAMS - CONCRETE	100	100		344,426,803	344,426,803	5.01
10301000	HYDROELECTRIC - LINING OF TUNNELS AND PERMANENT SHAFTS	75	75		226,722,396	226,722,396	3.30
15200000	NUCLEAR - BUILDINGS AND STRUCTURES	55	55	211,417,013		211,417,013	3.07
15340000	NUCLEAR - PROCESS SYSTEMS	55	55	185,034,985		185,034,985	2.69
15600000	NUCLEAR - INSTRUMENTATION AND CONTROL	15	15	167,026,765		167,026,765	2.43
10318000	HYDROELECTRIC - GATES, STOPLOGS & OPERATING MECHANISMS	50	50		151,625,639	151,625,639	2.20
15701000	NUCLEAR - SERVICE WATER & FIRE PROTECTION SYSTEM	25	25	146,418,621		146,418,621	2.13
10501000	HYDROELECTRIC - MAIN ROTATIONAL ELECTRICAL EQUIPMENT - LESS WINDINGS	75	75		124,524,571	124,524,571	1.81
10400000	HYDROELECTRIC - TURBINES & GOVERNORS	75	70		112,402,258	112,402,258	1.63
15560000	NUCLEAR - AC STANDBY POWER	55	55	87,950,136		87,950,136	1.28
15720000	NUCLEAR - COMMON SERVICE SYSTEMS	35	35	87,511,779		87,511,779	1.27
10306000	HYDROELECTRIC - SURGETANK, PIPELINE, CONDUIT, PENSTOCK	75	75		85,155,151	85,155,151	1.24
10510000	HYDROELECTRIC - MAIN POWER & STATION SERVICE - TRANSMISSION	50	50		78,162,342	78,162,342	1.14
15450000	NUCLEAR - CONDENSER TUBING	30	30	73,255,547		73,255,547	1.07
10311000	HYDROELECTRIC - DAMS - EARTH AND ROCKFILL	100	100		72,865,843	72,865,843	1.06
15121000	NUCLEAR - ELECTRONIC SITE SECURITY SYSTEM	15	15	71,160,066		71,160,066	1.03
10210000	HYDROELECTRIC - SERVICE AND EQUIPMENT BUILDINGS	50	55		67,339,549	67,339,549	0.98
15120000	NUCLEAR - YARD FACILITIES	50	50	67,165,811		67,165,811	0.98
10700000	HYDROELECTRIC - AUXILIARY SYSTEMS	30	30		61,797,176	61,797,176	0.90
10300000	HYDROELECTRIC - CANAL, FOREBAY, RETAINING WALL LINING	75	75		59,919,212	59,919,212	0.87
10709000	HYDROELECTRIC - OWNED BRIDGES, RAILWAY TRACK, WHARVES	65	65		53,012,240	53,012,240	0.77
10405000	HYDROELECTRIC - TURBINE RUNNERS	40	40		50,815,870	50,815,870	0.74
10502000	HYDROELECTRIC - BUS, SWITCHING AND POWER CABLE	45	45		49,047,960	49,047,960	0.71
10500000	HYDROELECTRIC - MAIN ROTATING ELECTRICAL EQUIPMENT - WINDINGS	40	40		42,518,313	42,518,313	0.62
15360000	NUCLEAR - IRRADIATED FUEL BAYS	10	10	38,874,383		38,874,383	0.57
15550000	NUCLEAR - REACTOR BUILDING CABLING	40	40	38,271,584		38,271,584	0.56
15460000	NUCLEAR - AUXILIARY SYSTEMS	40	40	31,169,335		31,169,335	0.45
16310000	ADMINISTRATION AND SERVICE BUILDINGS - NUCLEAR TRAINING SIMULATORS	45	45	30,975,106		30,975,106	0.45
15341100	NUCLEAR - MODERATOR HEAT EXCHANGERS - PICKERING	25	25	26,478,843		26,478,843	0.38
15510000	NUCLEAR - STATION SERVICE MAIN TRANSFORMERS & AC POWER DIST. SYSTEMS	40	40	24,423,650		24,423,650	0.36
15500000	NUCLEAR - MAIN POWER OUTPUT SYSTEM	35	35	22,303,658		22,303,658	0.32
10100000	HYDROELECTRIC - LAND	100	100		21,220,304	21,220,304	0.31
10505000	HYDROELECTRIC - STATION SERVICE ELECTRICAL EQUIPMENT	50	50		20,909,192	20,909,192	0.30
15991000	NUCLEAR - MAJOR / STRATEGIC SPARES	100	100	20,818,403		20,818,403	0.30
10601000	HYDROELECTRIC - MECHANICAL EQUIPMENT - CRANES AND FOLLOWERS	55	55		19,361,317	19,361,317	0.28
16560100	ADMINISTRATION AND SERVICE BUILDINGS - INTANGIBLES ADMINISTRATION SYSTEM SOFTWARE	5	5	17,315,299	387,205	17,702,504	0.26
15420000	NUCLEAR - GENERATOR ROTORS, STATORS AND AUXILIARY SYSTEMS	40	40	15,205,044		15,205,044	0.22
10504000	HYDROELECTRIC - CONTROL BOARDS AND SWITCHBOARDS	25	25		15,196,990	15,196,990	0.22
15710000	NUCLEAR - WATER TREATMENT PLANT	20	20	14,357,648		14,357,648	0.21
10503000	HYDROELECTRIC - HIGH VOLTAGE SWITCHING	40	40		12,806,956	12,806,956	0.19
15330000	NUCLEAR - REACTIVITY CONTROL UNITS	40	40	10,341,525		10,341,525	0.15
10302000	HYDROELECTRIC - SPILLWAYS, SLUICES, FLUMES	75	75		9,636,162	9,636,162	0.14
16211000	ADMINISTRATION AND SERVICE BUILDINGS - BUILDINGS - LEASED	10	10	9,364,529		9,364,529	0.14
15352100	NUCLEAR - S/D COOLING HEAT EXCHANGERS - DARLINGTON	30	30	7,914,608		7,914,608	0.12
10205000	HYDROELECTRIC - OUTDOOR STRUCTURES	75	75		7,410,541	7,410,541	0.11
15700000	NUCLEAR - CIRCULATING WATER	40	40	7,184,370		7,184,370	0.10
15300000	NUCLEAR - REACTOR VESSELS	40	40	6,603,547		6,603,547	0.10
16210000	ADMINSTRATION & SERVICE BUILDINGS - PERMANENT BUILDINGS, ROADS & SITE IMPROVEMENTS	50	50	6,151,537		6,151,537	0.09
15501000	NUCLEAR - REVENUE METERING - MAIN POWER OUTPUT AND I&C-PICK/DARL	30	30	5,184,766		5,184,766	0.08
15990000	NUCLEAR - ALTERNATE SPARES	100	100	4,659,074		4,659,074	0.07

ONTARIO POWER GENERATION INC.
SCHEDULE 1. SUMMARY OF THE NET BOOK VALUE, CURRENTLY APPROVED AVERAGE SERVICE LIFE ESTIMATES AND GANNETT FLEMING RECOMMENDED AVERAGE SERVICE LIFE ESTIMATES

ASSET CLASS #	ASSET CLASS DESCRIPTION	CURRENTLY APPROVED LIFE ESTIMATE (Years)	GANNETT FLEMING RECOMMENDED LIFE ESTIMATE (Years)	ASSET CLASS NBV FOR PRESCRIBED NUCLEAR ($)	ASSET CLASS NBV FOR HYDRO REGULATED ($)	ASSET CLASS NBV TOTAL REGULATED ($)	% COVERAGE OF TOTAL REGULATED NBV (Note 1)
10503100	HYDROELECTRIC - REVENUE METERING - HIGH VOLTAGE SWITCHING CONTROL SWITCH BOARDS	30	30		4,530,975	4,530,975	0.07
16550000	ADMINISTRATION AND SERVICE BUILDINGS - LAN CABLE	10	10	1,640,945	1,558,074	3,199,019	0.05
15400000	NUCLEAR - TURBINES, AUX. EQUIP., STEAM REHEATER TUBE	40	40	3,049,671		3,049,671	0.04
15370000	NUCLEAR - TRITIUM REMOVAL FACILITY	40	40	2,583,781		2,583,781	0.04
16540000	ADMINSTRATION & SERVICE BUILDINGS ADMINISTRATIVE TELECOM EQUIPMENT	7	7	2,119,057		2,119,057	0.03
10531000	HYDROELECTRIC - CIRCUIT BREAKERS	50	50		2,099,359	2,099,359	0.03
10315000	HYDROELECTRIC - STEEL RACKS	40	40		1,974,365	1,974,365	0.03
15530000	NUCLEAR - BUILDING ELECTRICAL SERVICES SUPPLY	40	40	1,679,840		1,679,840	0.02
15352000	NUCLEAR - S/D COOLING HEAT EXCHANGERS - PICKERING	25	25	1,539,221		1,539,221	0.02
18500000	COMMUNICATIONS - RADIO EQUIPMENT	15	15	1,383,218		1,383,218	0.02
New	HYDROELECTRIC - SECURITY SYSTEMS	New	10		1,116,391	1,116,391	0.02
16230000	ADMINISTRATION AND SERVICE BUILDINGS - BUILDINGS- FRAME & METAL CLAD	25	25	986,575		986,575	0.01
16311000	ADMINISTRATION AND SERVICE BUILDINGS - NUCLEAR SIMULATORS - DESIGN UPGRADES	10	10	924,845		924,845	0.01
15540000	NUCLEAR - ELECTRICAL AUXILIARY SYSTEM	40	40	831,866		831,866	0.01
16630000	ADMINISTRATION AND SERVICE BUILDINGS - BUILDING SYSTEMS & EQUIPMENT	20	20	674,272		674,272	0.01
90000000	HYDROELECTRIC MISCELLANEOUS ASSETS	100	100		586,741	586,741	0.01
18633000	COMMUNICATIONS - OPTICAL WIRE - REVENUE METERING	30	30	49,342	391,082	440,424	0.01
15311000	NUCLEAR - FUEL CHANNEL ASSEMBLIES - PICKERING	25	25	188,331		188,331	0.00
16100000	ADMINISTRATION AND SERVICE - LANDS	0	0		141,758	141,758	0.00
18460000	COMMUNICATIONS - DATA ACQ. EQUIP, MAN. MACH. INTF EQUIPMENT	15	15	35,859	62,723	98,582	0.00
15430000	NUCLEAR - EXCITERS	30	30	92,779		92,779	0.00
18200000	COMMUNICATIONS - BUILDINGS	50	50		48,469	48,469	0.00
10302100	HYDROELECTRIC - PUBLIC SAFETY/WARNING BOOMS	15	15		35,967	35,967	0.00
18630000	COMMUNICATIONS - OPTICAL WIRE	25	25	18,506		18,506	0.00
16220000	ADMINISTRATION AND SERVICE BUILDINGS - BUILDINGS	10	10	16,134		16,134	0.00
18600000	COMMUNICATIONS - WOOD POLE, COMM. CAB, APPAR. & BOOTHS	40	40		1,796	1,796	0.00
	MINOR FIXED ASSETS (MFA)	*	*	170,769,026	887,997	171,657,023	2.50
	GRAND TOTAL ASSET CLASSES REVIEWED			**1,623,120,898**	**3,750,358,530**	**5,373,479,428**	**78.13**
	Add:						
	ASSET RETIREMENT COSTS (ARC)			1,504,390,796		1,504,390,796	21.87
	TOTAL FIXED ASSETS AND INTANGIBLES PER 2010 OEB RATE BASE SCHEDULE			**3,127,511,694**	**3,750,358,530**	**6,877,870,224**	**100.00**

Note 1
Represents percentage of each asset class reviewed in 2011 over total assets for regulated business based on year-end 2010 NBV's.

* Average service lives have not been modified in this report.

APPENDIX

ONTARIO POWER GENERATION INC.
Detailed Discussion Related To Accounts Where An Average Service Life Change Is Recommended

Account 10400 – Hydroelectric – Turbines & Governors

Net Book Value - $ 112,402,258

Current Average Service Life Estimate – 75 years

Recommended Average Service Life Estimate – 70 years

Average of Peer Average Service Lives – 56 years (Range from 45 to 75 years)

Discussion:

This account includes the investment related to two major components of the Hydro Generating Plant. The Hydro Turbine investment included in this account relates primarily to the turbine shaft and casings as the investment in the turbine runner is contained in Account 10405 – Hydroelectric Turbine Runners. The second major component of Account 10400 is the Governor which includes a hydraulic pumping unit, accumulator tanks and computerized governor controls.

A review of peer companies has indicated average service life estimates ranging from 45 years to as long as 75 years. The peer companies at the lower end of this range also include the investment in the turbine runner in their comparable accounts. This has had a life reducing impact on their life estimates, as the turbine runners are a shorter life component of the overall hydro Turbine than are the components in this account for OPG. Additionally, Gannett Fleming has noted the peer companies at the longer end of the range of life estimates do not have investment in Governors in their comparable account.

Discussions with the OPG operating staff have indicated that the investments in this account related to Turbine assets comprise approximately 95% of the investment. Additionally, it is the view of the operational staff that the expected life of this turbine equipment is at least 75 years. In the view of Gannett Fleming this expectation is consistent with typical industry practice for Turbine assets, although at the longer end of the peer estimates.

The discussions with operating staff have also indicated that investment in this account related to the Governor is approximately 5%, and would have a life expectation of approximately 40 years. However, it is also noted that the Governor technology is changing to a more digital based platform. Additionally the controls used with the

Governor are now much more computerized. This shift in technology to a more digital and computerized platform will have a life shortening influence in the overall average service life estimate. Given the small level of investment in this account related to Governors as compared to the investment in Turbines, Gannett Fleming is not recommending creation of a separate account at this time. However, future depreciation studies may find that further componentization is required.

The recommended 70-year average service life estimate has been developed giving consideration to all of the above influences. A weighting of average life expectations for both of the components was made based on the results of the peer analysis and comments from the operational staff as follows:

Turbines	75 years x 95% = 71.25 years
Governors	40 years x 5% = 2.00 years
Total	73.25 years

The weighted average was adjusted slightly to recognize that the 75-year estimated life for Turbines was at the long end of the peer average service lives and to recognize the technology changes to a more digital platform with regard to the Governor equipment. Gannett Fleming views that the adjustment of the weighted average age from 73.25 years to 70 years is an appropriate recognition of these factors.

ONTARIO POWER GENERATION INC.
Detailed Discussion Related To Accounts Where An
Average Service Life Change Is Recommended

Account 10210 – Hydroelectric - Service and Equipment Buildings

Net Book Value - $ 67,339,549

Current Average Service Life Estimate – 50 years

Recommended Average Service Life Estimate – 55 years

Average of Peer Average Service Lives – 49 years (Range from 40 to 60 years)

Discussion:

This account includes the OPG investment related to the physical building structure, fencing, concrete lining of access tunnels and shafts. The building related costs include all excavation, building, and costs of services. This account is similar in nature to similar accounts in the nuclear asset classes with a 55-year life.

A review of the peer companies has indicated average service life estimates ranging from 40 to 60 years with an overall average of 49 years. Therefore, based on a peer analysis, the average service life would not require modification. However, Gannett Fleming does not see any indication that the average life expectation of this asset category should be less than the same classes within the nuclear asset groupings. Gannett Fleming also notes that a 55-year life estimate would also be within the range of lives used by the comparable peer group.

ONTARIO POWER GENERATION INC.
Detailed Discussion Related To Accounts Where An
Average Service Life Change Is Recommended

NEW ACCOUNT – Hydroelectric Security Systems

Net Book Value - $ 1,116,391

Current Average Service Life Estimate – N/A

Recommended Average Service Life Estimate – 10 years

Average of Peer Average Service Lives – 15 years (Range from 5 to 25 years)

Discussion:

The investment in this account is related primarily to the electronic surveillance and security systems at the Hydro sites. This equipment is all based on digital technologies and will have a short life expectation.

Comparisons to peer companies are not relevant in the circumstances of this account, as virtually all of the peer companies have a divergent mix of assets in this account, with a wide range of technologies.

Gannett Fleming views that the digital nature of the assets in this account is consistent with a 10-year average life expectation.

Numbers may not add due to rounding.

Table 1

Depreciation and Amortization - Previously Regulated Hydroelectric and Newly Regulated Hydroelectric ($M)

Line No.	Cost Item	2010 Actual	2011 Actual	2012 Actual	2013 Budget	2014 Plan	2015 Plan
		(a)	(b)	(c)	(d)	(e)	(f)
	Niagara Plant Group and Saunders GS:						
1	**Niagara Plant Group**	41.9	42.7	44.0	44.6	44.3	44.3
2	**Niagara Tunnel Project**	0.3	0.3	0.3	12.4	15.8	15.8
3	**Saunders GS**	21.2	21.6	21.9	21.9	21.8	21.7
4	**Other**[1]	0.1	1.0	3.8	0.2	0.1	0.1
5	**Subtotal**	63.5	65.6	70.0	79.0	82.1	81.9
	Newly Regulated Hydroelectric:						
6	**Ottawa-St.Lawrence Plant Group**[2]	25.3	26.2	27.0	27.0	27.1	27.4
7	**Central Hydro Plant Group**	1.9	1.9	2.1	2.1	2.2	2.4
8	**Northeast Plant Group**	11.4	11.5	11.4	11.5	11.7	11.8
9	**Northwest Plant Group**	13.7	14.4	14.6	14.5	14.6	14.6
10	**Other**[1]	6.0	4.0	3.5	6.2	6.6	6.9
11	**Subtotal**	58.3	58.0	58.6	61.4	62.2	63.1
12	**Total**	121.8	123.5	128.6	140.5	144.3	145.0

Notes:

1 Includes losses on retirements, gains on sales and other related charges. Also includes asset removal costs for 2010 Actual. Starting with 2011 Actual, asset removal costs are included in hydroelectric OM&A, as discussed in Ex. F4-1-1.

2 Ottawa-St. Lawrence Plant Group values are for the balance of the Plant Group, i.e. Saunders GS costs are excluded.

Table 2
Depreciation and Amortization - Nuclear ($M)

Line No.	Cost Item	2010 Actual	2011 Actual	2012 Actual	2013 Budget	2014 Plan	2015 Plan
		(a)	(b)	(c)	(d)	(e)	(f)
1	**Darlington NGS**[1]	31.4	26.5	30.3	31.8	34.8	35.5
2	**Pickering NGS**	129.6	147.1	156.4	122.4	133.0	143.0
3	**Nuclear Support Divisions**	34.1	29.7	27.7	21.6	25.3	29.4
4	**Asset Retirement Costs**	26.3	29.0	127.2	80.7	80.7	80.7
5	**Waste Management Variable Expenses**[2]	1.1	0.0	0.0	0.0	0.0	0.0
6	**Other**[3]	8.6	(3.7)	0.3	0.0	0.0	0.0
7	**Total**	231.1	228.6	341.9	256.5	273.7	288.5

Notes:

1 Includes the following amounts related to in-service additions for Darlington Refurbishment projects discussed in Ex. D2-2-1: 2012 Actual - $0.02M, 2013 Budget - $1.0M, 2014 Plan - $3.0M, 2015 Plan - $6.1M.

2 Amount for 2010 Actual is from Ex. C2-1-1 Table 2, line 5, col (a). Starting with 2011 Actual, low and intermediate level waste management variable expenses are included in nuclear base OM&A at Ex. F2-2-1 Table 1, as discussed in Ex. F4-1-1.

3 Includes losses on retirements, gains on sales and other related charges. Also includes asset removal costs for 2010 Actual. Starting with 2011 Actual, asset removal costs are included in nuclear OM&A, as discussed in Ex. F4-1-1.

TAXES

1.0 PURPOSE

This evidence presents the taxes for the regulated facilities, including income tax, commodity tax, and property tax expense, for the historic, bridge and test years.

2.0 OVERVIEW

OPG seeks approval of the 2014 and 2015 income tax expense of $48.5M and $61.5M for the regulated hydroelectric facilities, $31.4M and $43.2M for the newly regulated hydroelectric facilities, and $140.8M and $47.5M for the nuclear facilities, respectively, as presented in Ex. F4-2-1 Tables 1 to 3. OPG also seeks approval of the 2014 and 2015 property tax expense of $0.3M and $0.3M for the regulated hydroelectric facilities, $0.2M and $0.2M for the newly regulated hydroelectric facilities, and $15.9M and $16.4M for the nuclear facilities, respectively, as presented in Ex. F4-2-1 Tables 1 to 3.

For all tax matters addressed in this exhibit OPG has applied the same principles and methodology for the historic, bridge and test years as in EB-2010-0008.[1] Income tax impacts associated with applicable variance and deferral accounts are reflected in the December 31, 2012 account balances approved by the OEB in EB-2012-0002 and accordingly, as noted in section 3.4, have not been included in the calculation of the regulatory income tax expense.

The methodology for determining the regulatory income tax expense starts with the determination of taxable income in accordance with the requirements of the tax legislation. This involves adjusting (through additions and deductions) regulatory earnings before tax to address differences between accounting and tax treatments. In most cases, these additions and deductions are commonly used by regulated utilities in their tax calculations; however, in some cases they result from items unique to OPG. To evaluate the appropriate amounts

[1] Refer to section 3.5 for a discussion of the impact of adoption of USGAAP on the treatment of the SR&ED Investment Tax Credits

attributable to ratepayers for regulatory income tax purposes, OPG has continued to apply the principles as established by the OEB in EB-2007-0905 and applied in EB-2010-0008, namely:

- The party that bears a cost should be entitled to any related tax savings or benefits; and
- Only the prescribed assets are to be considered in the evaluation. (Taxes included in the determination of Bruce Lease net revenues are discussed in Ex. G2-2-1.)

The newly regulated hydroelectric assets are considered in the calculation of the income tax expense starting in the test period, as the facilities are expected to become regulated in 2014.

3.0 INCOME TAX EXPENSE

3.1 General Requirements

Under the *Electricity Act, 1998,* OPG is required to make payments in lieu of corporate income and, up to June 30, 2010, capital taxes, to the Ontario Electricity Financial Corporation ("OEFC") and to file federal and provincial income tax returns with the Ontario Ministry of Finance. The tax payments are calculated in accordance with the *Income Tax Act* (Canada) and the *Taxation Act, 2007* (Ontario), as modified by the *Electricity Act, 1998* and related regulations. This effectively results in OPG paying taxes similar to what would be imposed under federal and Ontario tax legislation.

3.2 Regulatory Income Tax Expense for Prescribed Facilities

OPG continues to use the taxes payable method for determining regulatory income taxes for its prescribed assets, as it did in EB-2010-0008 and EB-2007-0905. Under the taxes payable method, only the current income tax expense is reflected in the revenue requirement.

Regulatory income taxes for the prescribed facilities are determined by applying the statutory tax rates to the regulatory taxable income of the combined prescribed nuclear and hydroelectric facilities and reducing the resulting amount by recognized investment tax credits ("ITCs") for qualifying Scientific Research and Experimental Development ("SR&ED") expenditures. Changes to existing statutory tax rates are applied when the changes are considered to be enacted. Corporate federal income tax rate reductions that were enacted in 2009 have been incorporated into the tax calculations for the historic, bridge and test periods. There have been no other applicable changes in the statutory income tax rates in the historic period and none are forecast in the bridge or test periods. SR&ED ITCs are discussed in section 3.5.

For the purpose of determining payment amounts for each regulated business, total income taxes, before SR&ED ITCs, determined for OPG's prescribed facilities are allocated based on each business's regulatory taxable income. In a situation where there is a tax loss in one of the regulated businesses, this approach reduces the total revenue requirement, as the loss in one regulated business would reduce the tax expense for the regulated business(es) in a taxable income position. SR&ED ITCs are primarily directly attributed to each business unit based on underlying SR&ED expenditures that give rise to the ITCs. This approach is the same as that applied in EB-2010-0008 and EB-2007-0905.

For the test period, newly regulated hydroelectric facilities are included in the calculation of regulatory income taxes and in the allocation of income taxes based on each business's regulatory taxable income. Income tax expense for the regulated hydroelectric facilities and the newly regulated hydroelectric facilities is presented in Ex. F4-2-1 Tables 1 and 2, and for the nuclear facilities in Ex. F4-2-1 Table 3.

Regulatory taxable income is computed by making additions and deductions to the regulatory earnings before tax for items affected by different regulatory accounting and tax treatment. These additions and deductions are detailed in the calculation of taxable income (loss) for the 2010 - 2012 and 2013 - 2015 periods in Ex. F4-2-1 Tables 4 and 5, respectively. The additions and deductions to regulatory earnings before tax are outlined in the next section. The nature of the additions and deductions is unchanged with the inclusion of the newly regulated hydroelectric facilities.

As noted in the next section, where applicable, the additions and deductions to earnings before tax in a given year are presented net of amounts recorded as additions in the variance and deferral account in that year. The additions and deductions are presented on this basis when they reverse amounts that are reflected on the same net basis in the regulatory earnings before tax.

In Attachment 1, OPG is providing, as confidential material, the most recent corporate income tax returns. The returns are for the 2012 taxation year, for the same companies included in EB-2010-0008. Ex. F4-2-1 Table 6 presents the reconciliation of OPG's consolidated taxable income based on its tax returns to the calculation of the regulatory taxable income for the prescribed facilities for 2012. The reconciliation is presented in the same format and performed in the same manner as that provided and described in EB-2010-0008. The notices of assessment for 2012 have not been received from the tax authorities at this time. OPG will file in confidence any such notices received prior to the completion of the oral portion of the hearing.

3.3 Description of Additions and Deductions to Regulatory Earnings Before Tax

3.3.1 Depreciation and Amortization/Capital Cost Allowance

Accounting depreciation and amortization of fixed/intangible assets is not deductible for income tax purposes; however, capital cost allowance ("CCA") is deductible. Therefore, depreciation and amortization expense is an addition to earnings before tax, while CCA is deducted from earnings before tax. Accounting depreciation and amortization of fixed/intangible assets for the prescribed facilities is determined in accordance with OPG's depreciation and amortization policy, as described in Ex. F4-1-1 section 3.1.

The amount of depreciation/amortization expense added back in Ex. F4-2-1 Tables 4 and 5 is net of depreciation amounts for the prescribed assets recorded as additions to variance and deferral accounts (i.e., Nuclear Liability Deferral Account and Capacity Refurbishment Variance Account) in the year.

OPG's 2012 income tax returns provided in Attachment 1 include the calculations of CCA deductions by applying a prescribed rate for each asset class to the Undepreciated Capital Cost of that class (Schedules 8 of Ex F4-2-1 Attachment 1). These schedules contain consolidated information for both OPG's regulated and unregulated assets. UCC and CCA schedules for OPG's prescribed assets only are provided in Ex. F4-2-1 Tables 8-10 to support the forecast CCA deduction for the bridge and test period years. The equivalent schedule for 2012 is provided in Ex. F4-2-1 Table 7.

3.3.2 Nuclear Waste Management Expenses

Consistent with the provisions of the *Income Tax Act* (Canada), accounting expenses accrued by OPG relating to its obligations for decommissioning its nuclear stations and managing nuclear used fuel and low and intermediate level waste produced by these facilities (collectively, the "nuclear liabilities") are not deductible for tax purposes. Therefore, the portion of the used fuel storage and disposal and variable waste management expenses relating to the prescribed assets has been added back to earnings before tax to determine the taxable income for OPG's prescribed assets. The portions of these expenses pertaining to the prescribed facilities are presented in Ex. C2-1-1 Table 2 Lines 4 and 5. The amount added back to earnings before tax for these expenses in Ex. F4-2-1 Tables 4 and 5 is net of amounts for the prescribed assets recorded as additions to the Nuclear Liability Deferral Account in the year.

3.3.3 Cash Expenditures for Nuclear Waste Management and Decommissioning

Cash expenditures incurred and charged against the nuclear liabilities for waste management and decommissioning activities are generally deductible for tax purposes in accordance with the *Income Tax Act* (Canada). The expenditures for the prescribed facilities are presented in Ex. C2-1-1 Table 2 Line 7.

The full amount of cash expenditures relating to the prescribed assets is presented at line 15 in Ex. F4-2-1 Table 4 and line 13 in Table 5 as a deduction from earnings before tax in determining regulatory taxable income for OPG's prescribed assets. As part of other additions presented at line 12 in Ex. F4-2-1 Table 4 and line 10 in Table 5 and noted in section 3.3.8 below, a portion of expenditures deemed to be capital for tax purposes is added back to earnings before tax in order to adjust the amount of cash expenditures deducted in arriving at taxable income. The CCA deduction discussed in section 3.3.1 includes the additional CCA related to these expenditures.

Payment amounts established in EB-2010-0008 reflect a tax deduction for the full amount of the cash expenditures (i.e., no portion of the expenditures was treated as capital for tax purposes). The change in treatment for capital items resulted from the resolution of a tax audit of prior years. The net impact on income tax expense of the change is recorded in the Income & Other Taxes ("I&OT") Variance Account for each of 2011, 2012 and 2013.

3.3.4 Segregated Fund Contributions and Receipts

The regulations under the *Electricity Act, 1998* allow OPG a tax deduction for contributions made to segregated funds pursuant to the Ontario Nuclear Funds Agreement ("ONFA"). The ONFA contribution schedule based on the current approved ONFA Reference Plan is used to determine OPG's forecast contributions to the segregated funds. The contributions related to OPG's prescribed facilities are presented in Ex. C2-1-1 Table 2 line 16 and are deducted from earnings before tax.

When OPG receives disbursements from the funds for reimbursement of eligible expenditures, the amounts received are taxable as per the regulations under the *Electricity Act, 1998*. The amounts related to OPG's prescribed facilities are presented in Ex. C2-1-1 Table 2 line 17, and are added to earnings before tax.

3.3.5 Pension and Other Post-Employment Benefits

Pension and other post-employment benefits ("OPEB") costs recorded by OPG for accounting purposes (discussed in Ex. F4-3-1, section 6) are not deductible for tax purposes per the provisions of the *Income Tax Act* (Canada). Therefore, these costs are added back to earnings before tax. OPG's cash contributions to its registered pension plan, as well as the payments for its OPEB and supplementary pension plans, are deductible for tax purposes, and are reflected as deductions from earnings before tax. The amount added back to earnings before tax for pension and OPEB costs in Ex. F4-2-1 Tables 4 and 5 is net of amounts for the prescribed assets recorded as additions to variance and deferral accounts (i.e., Pension and OPEB Cost Variance Account and Impact for USGAAP Deferral Account) in the year.

3.3.6 Adjustment Related to Financing Cost for Nuclear Liabilities

OPG adds back to regulatory earnings before tax an adjustment in respect of the financing cost (i.e., return on rate base) of the nuclear liabilities related to its prescribed facilities. This adjustment is required as a result of the methodology for the recovery of the revenue requirement impact of the nuclear liabilities (approved in EB-2007-0905 and applied in EB-2010-0008), and the tax deductions taken for contributions to the nuclear segregated funds and cash expenditures for nuclear waste management and decommissioning.

As part of the approved methodology, the revenue requirement includes an amount derived by applying the weighted average accretion rate to the lesser of the average unfunded nuclear liabilities and the average unamortized asset retirement costs for the prescribed facilities. This amount is deducted as a cost in determining regulatory earnings before tax. For years 2010-2015, the derivation of this amount is presented in Ex. C1-1-1 Tables 1-6, line 7. The segregated fund contributions also include financing costs related to the nuclear liabilities, and are also deducted in determining taxable income for the prescribed facilities, as discussed in section 3.3.4 above. Therefore, an adjustment related to the financing cost for the nuclear liabilities is included as an addition to regulatory earnings before tax to remove the duplicate deduction. The amount added to earnings before tax in Ex. F4-2-1 Tables 4 and 5 is net of the amount for the prescribed assets recorded as an addition to the Nuclear Liability Deferral Account in the year.

3.3.7 Environmental Provision

The amount recorded in 2011 for accounting purposes as a result of a reversal of an accounting environmental provision in the regulated hydroelectric segment is not taxable consistent with the provisions of the *Income Tax Act* (Canada). Therefore, this amount has been deducted from earnings before tax in 2011. The reversal of the provision is discussed in Ex. F1-2-1.

3.3.8 <u>Other</u>

This category includes other required additions or deduction to earnings before tax such as:

- Nuclear materials and supplies obsolescence expenses recorded for accounting purposes as part of nuclear base OM&A (as noted in Ex. F2-2-1, section 3.2) that are not deductible for tax purposes as per the *Income Tax Act* (Canada).
- Computer equipment expenditures that are expensed for accounting purposes but must be capitalized and are eligible for CCA deductions for tax purposes.
- Fifty per cent of OPG's nuclear fuel expense incurred in a given year is not deductible for tax purposes until the following year. Therefore, OPG adds back 50 per cent of a given year's nuclear fuel expense and deducts 50 per cent of the prior year's nuclear fuel expense. The resulting net addition or net deduction adjusts earnings before tax.
- Meals and entertainment expenses that are subject to the 50 per cent tax deduction limitation.
- Adjustment to reduce the deduction for cash expenditures on nuclear waste management and decommissioning for the portion of the expenditures deemed to be capital for tax purposes, as discussed in section 3.3.3.

3.4 Regulatory Tax Treatment of Variance and Deferral Account Recovery

Amounts recorded by OPG in variance and deferral accounts, which are reported as regulatory assets or liabilities for accounting purposes in a given period, typically impact OPG's actual taxable income in a different period. As a result, amounts recognized for accounting purposes as regulatory assets or liabilities in the period are reversed from regulatory earnings before tax in determining OPG's actual taxable income.

For regulatory purposes, as in EB-2010-0008, the tax impact (i.e., tax benefits or costs) to be recovered from, or provided to, ratepayers of the amounts recorded in variance and deferral accounts is reflected in the calculation of regulatory taxable income over the same period as these amounts are recovered from, or refunded to, ratepayers. This approach is intended to result in the same total tax impact as the actual tax payable by OPG in respect of recovery or refund of the amounts, considering the entire period from when the variance or deferral account balance is initially recorded to when the balance is fully recovered or refunded. This regulatory treatment provides for a matching of costs and benefits in accordance with the principle established by the OEB in EB-2007-0905 and applied in EB-2010-0008 that the party who bears a cost should be entitled to any related tax savings or benefits.

In calculating earnings, the balance of the variance and deferral accounts recovered or refunded through payment amounts in a period is reflected in both the regulated revenues and the amortization expense (or amortization credit) for that period. Amortization is not deductible for income tax purposes. Since these would be equal and offsetting amounts, there is no net impact on earnings before tax for the period. In calculating regulatory income taxes, no adjustment to regulatory earnings before tax is made, subject to the discussion below, because the amount that would otherwise be added back to, or deducted from, earnings before tax as amortization expense/credit is the same as the amount that would be deducted from, or added back to, earnings before tax in order to attribute the associated benefit or cost to ratepayers.

To the extent that there is no tax benefit/cost to be matched to the variance or deferral account recovery or refund, there is a net income tax impact associated with the amounts recorded in the accounts. In instances where this impact is not otherwise reflected in the account balance, an adjustment to earnings before tax is required.

The balances approved in EB-2012-0002 for the Pension and OPEB Cost Variance Account, the Nuclear Liability Deferral Account and the Impact for USGAAP Deferral Account as at December 31, 2012 contain amounts that do not have a matching tax benefit. As these balances reflect the associated income tax impacts, no adjustment to earnings before tax is made in respect of the recovery of these balances.

An adjustment to regulatory earnings before tax continues to be required to address the impact of the regulatory treatment of the Bruce Lease net revenues on the disposition of the Bruce Lease Net Revenues Variance Account. The forecast net revenues from the Bruce Lease reduce OPG's revenue requirement, and therefore the earnings before tax for the prescribed facilities as shown in Ex. F4-2-1 Table 5, note 2. To the extent that there is a difference between the forecast and actual net revenues from the Bruce Lease (i.e., an entry into the Bruce Lease Net Revenues Variance Account), there is a difference in the regulatory earnings before tax and therefore the taxes for the prescribed facilities. Hence, an adjustment to regulatory earnings before tax is required in the year of recovery/refund of the variance recorded in the Bruce Lease Net Revenues Variance Account to ensure that any shortfall in, or over-collection of, regulatory taxes is also recovered/refunded from/to the ratepayers. Accordingly, the amortization of the Bruce Lease Net Revenues Variance Account is added back to regulatory earnings before tax, as shown for 2010 - 2012 in Table 4, line 7 and for 2013 - 2015 in Ex. F4-2-1 Table 5, line 6.

3.5 SR&ED Investment Tax Credits

OPG can claim a non-refundable federal ITC equal to 15 per cent (20 per cent prior to 2014) and an Ontario ITC of 4.5 per cent of the qualifying SR&ED expenditures incurred in the year. OPG files annual ITC claims based on its qualifying expenditures. The federal ITCs reduce the federal portion of corporate income taxes otherwise payable and are taxable in the subsequent year. The Ontario ITCs reduce the Ontario portion of corporate income taxes otherwise payable and are taxable in the year earned.[2] The reduction in the federal ITC rate

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[2] Prior to 2009, SR&ED ITCs could not be used to reduce provincial taxes payable and no provincial taxes were payable on the amount of federal SR&ED ITCs claimed. Effective in 2009, federal and provincial SR&ED ITC rules were harmonized, whereby SR&ED ITCs became both available to reduce provincial taxes payable and taxable provincially in the year earned. Income tax information, including forecast income tax expenses for 2010-2012, was presented in EB-2010-0008 on a pre-harmonization basis consistent with OPG's business plan. Income tax information, including actual expense for 2010-2012 and forecast expense for 2013-2015, is presented on a harmonized basis in this application. As harmonization was designed such that the net tax benefit

from 20 per cent to 15 per cent was introduced in the 2012 federal budget and subsequently enacted effective 2014. Additionally, prior to 2014, the capital portion of the qualifying SR&ED expenditures is deductible from earnings before tax in the year incurred. Effective 2014, otherwise qualifying SR&ED capital expenditures will no longer be deductible for tax purposes in the year incurred nor be eligible for SR&ED ITCs. Like other capital expenditures, these expenditures will qualify for CCA deductions over time.

As in EB-2010-0008, the amount of ITCs recognized for accounting purposes is determined based on an assessment of the likelihood of their allowance, in accordance with generally accepted accounting principles. As discussed in EB-2012-0002, under USGAAP, the amount is recorded as a reduction to income tax expense in the year the ITCs are recognized and does not impact earnings before tax.[3] The reduction to income tax expense is presented for 2011 and 2012 at line 28 in Ex. F4-2-1 Table 4 and for 2013 - 2015 at line 24 in Ex. F4-2-1 Table 5. In 2010, the recognized ITCs were recorded as a reduction to OM&A expenses (crediting centrally held costs presented in Ex. F4-4-1) in accordance with Canadian GAAP. The amount of SR&ED ITCs is the same under USGAAP and Canadian GAAP.

In 2011, as a consequence of the completion of the 2002 to 2005 income tax audit, OPG determined that it was acceptable to increase to 75 percent from 50 percent the amount recognized for accounting purposes for taxation years the audit of which has not yet been resolved. For years the audit of which has been resolved, OPG adjusts the previously recognized amount to reflect the audit resolution.

OPG's forecast of income tax expense for 2013 - 2015 is based on the recognition of 75 per cent of the estimated SR&ED ITCs for those years. The benefit of the additional 25 per cent of SR&ED ITCs recognized for 2013 is being recorded in the I&OT Variance Account (Ex. H1-1-1 Table 6). To the extent the ultimate percentage of recognition for SR&ED ITCs for the

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of a SR&ED ITC after harmonization would be equivalent to the benefit before harmonization, no amounts related to the harmonization are recorded in the Income and Other Taxes Variance Account.

[3] Refer to Ex. A2-1-1 and EB-2012-0002 Ex. A3-1-2, Section 4.2.1

period from April 1, 2008 to December 31, 2015 differs from that previously applied in crediting ratepayers, OPG will continue to record the difference in the I&OT Variance Account.

As shown in Ex. H1-1-1 Table 6, the projected 2013 additions to the I&OT Variance Account also include a debit entry related to another SR&ED ITC change enacted as a result of the 2012 federal budget, being the reduction from 100 per cent to 80 per cent of the amount of payments to contractors qualifying for SR&ED ITCs. This change to the SR&ED ITC rules is effective in 2013; therefore, the forecast of SR&ED ITCs for the test period reflects this change.

4.0 INCOME TAX EXPENSE FOR 2010 – 2015

The actual annual regulatory income tax expense for the prescribed facilities (nuclear and previously regulated hydroelectric facilities only) for years 2010 to 2012 has been computed using the approach described in section 3. The computation of taxable income results in \$103.2M for 2010, \$217.5M for 2011, and \$252.3M for 2012, as presented in Ex F4-2-1 Table 4. The 2010, 2011 and 2012 taxable income and SR&ED ITCs resulted in actual income tax expense of \$29.9M, \$8.1M, and \$41.7M, respectively.

The actual tax expense in 2011 is lower as compared to 2012. This is primarily due to a one-time adjustment to increase the recognition of SR&ED ITCs for accounting purposes from 50 per cent to 75 per cent for prior years as a result of the completion of the 2002 to 2005 income tax audit, as discussed in section 3.5.

The actual tax expense in 2011 is also lower as compared to 2010. This is primarily due to the presentation of the 2011 expense under USGAAP which treats SR&ED ITCs as a reduction to the tax expense rather than a reduction to OM&A expenses, as shown in 2010 under Canadian GAAP.

The regulatory income tax expense calculations for the prescribed facilities for the bridge year and test period are shown in Ex F4-2-1 Table 5. The forecast income tax expense for years 2013 - 2015 was computed using the approach described in section 3.

The forecast tax expense in the test period years of 2014 and 2015 is $220.6M and $152.3M based on taxable incomes of $924.1M and $650.6M, respectively, and SRE&ED ITCs of $10.4M per year. The forecast tax recovery for 2013 is $23.7M based on a tax loss of $35.6M and SR&ED ITCs of $14.8M. The annual tax expense for the test period is forecast to be higher than in 2013 primarily due to higher revenue and earnings from operations, and the inclusion of the newly regulated hydroelectric facilities. The forecast nuclear operational loss in 2013 is also the primary reason for the tax recovery in 2013 as compared to a tax expense in 2012.

The forecast income tax expense in 2015 is lower than in 2014 mainly due to higher forecast pension plan contributions and OPEB and supplementary pension plan payments and a higher forecast CCA deduction in 2015.

5.0 COMMODITY TAX

Pursuant to the *Excise Tax Act* (Canada), effective July 1, 2010, OPG is subject to the 13 per cent Harmonized Sales Tax ("HST") on almost all of its purchases of goods and services.[4] The recoverable portion of HST paid by OPG is claimed as input tax credits on returns filed monthly. The recoverable portion of HST forecast to be paid is therefore not included in the revenue requirement. The non-recoverable portion, which results from the restrictions pursuant to the *Excise Tax Act* (Canada) (i.e., restricted input tax credits), forms part of the cost of the underlying item (e.g., OM&A, capital, inventory, etc.) and is included either in the test period forecasts for these items or other centrally held costs presented in Ex. F4-4-1. OPG's purchases of energy (electricity, gas, steam, fuel) for non-production purposes are

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[4] Prior to July 1, 2010, OPG was subject to the 8 per cent retail sales (provincial sales tax or "PST") under the *Retail Sales Tax Act* (Ontario) and the 5 per cent goods and services tax ("GST") levied under Part IX of the *Excise Tax Act* (Canada). For expenditures subject to PST, the tax amount formed part of OPG's cost of the underlying item or was recorded as a centrally held cost. The GST paid was recoverable through input tax credits.

examples of items subject to restricted input tax credits. As in EB-2010-0008, the impact of HST is also incorporated into the computation of the cash working capital component of rate base presented in Ex. B1-1-2.

Where applicable, OPG pays duty under the *Customs Act (*Canada) on goods imported into Canada; however, currently most of these imports continue to be either exempt or have duty free status through the North American Free Trade Agreement. For supply and installation contracts, the contractor's price includes duty, if applicable, on the goods imported to perform the work. Any duty paid forms part of the cost of the underlying item.

6.0 PROPERTY TAX EXPENSE

The nature, basis and components of OPG's property tax expense are unchanged from the evidence presented in EB-2010-0008. OPG remains responsible for both the payment of municipal property taxes and a payment in lieu of property tax to the Province of Ontario. The total of these two payments is intended to represent what a commercial generating company would pay as property tax on OPG's assets based on full Current Value Assessment ("CVA") and represents OPG's property tax expense. OPG's property tax expense for the previously regulated hydroelectric facilities, the newly regulated hydroelectric facilities and the nuclear facilities is presented in Ex. F4-2-1 Tables 1, 2 and 3, respectively, for the historical, bridge and test periods. Municipal property taxes paid by OPG for properties that are not directly associated with specific generation business units and are held centrally form part of the asset service fees as discussed in Ex. F3-2-1. Property taxes associated with the Bruce assets are presented separately in Ex. G2-2-1.

6.1 Municipal Property Taxes

Municipal property taxes are regulated under the *Assessment Act, R.S.O. 1990* (the "Act"). Municipal property tax payments are made to about 100 municipalities each year by OPG. For prescribed nuclear and Bruce assets, property tax payments to municipalities continue to be paid based on a statutory assessment rate of $86.11 per square meter for "generating" buildings (e.g., buildings that are used in, or auxiliary to, the generating process, such as a power house, water treatment plant, pump houses, etc.) pursuant to the Act, and at CVA for "non-generating" buildings (e.g., administration/office buildings). For both "generating" and "non-generating" buildings, the Municipal Property Assessment Corporation issues notices of assessments annually. Additionally, for "generating" buildings, OPG continues to be subject to payment in lieu of property tax discussed below.

For both previously and newly hydroelectric assets, OPG continues to pay municipal property tax under the Act only for properties that are not associated with a generating station or dam site. These property taxes are paid at CVA. For the previously and newly regulated hydroelectric facilities, the forecast taxes are approximately $0.3M and $0.2M per year, respectively.

6.2 Payment in Lieu of Property Tax

Payment in lieu of property tax is regulated through O. Reg. 224/00 under the *Electricity Act, 1998* and is paid to the Province of Ontario through the OEFC. The payment in lieu of property tax represents taxes based on the difference between CVA and the prescribed municipal assessment rate of $86.11 per square meter for certain generating assets.

The assessment basis under O. Reg. 224/00 has not been updated since 1999. Consequently, the CVA used for payment in lieu of property tax calculations and the payments in lieu of tax amounts themselves remain subject to a possible update. As indicated in EB-2010-0008 and EB-2007-0905, the Province has previously indicated that it intends at some point to update the assessment values in O. Reg. 224/00 retroactive to April 1, 1999. This would result in retroactive increases in OPG's property tax payments, with increases for periods starting on or after April 1, 2008 being recorded in the I&OT Variance Account (the account includes the financial impact of changes in regulations on property taxes). Property tax expense forecasts for all years presented in this Application for the prescribed and Bruce assets, including OEB-approved amounts, assume that O. Reg. 224/00 will not be updated during those years.

LIST OF ATTACHMENTS

Attachment 1: Income Tax Returns for 2012 (filed separately requesting treatment as confidential material)

Table 1

Taxes - Previously Regulated Hydroelectric ($M)

Line No.	Cost Item	2010 Actual	2011 Actual	2012 Actual	2013 Budget	2014 Plan	2015 Plan
		(a)	(b)	(c)	(d)	(e)	(f)
1	**Income Tax**[1,2]	29.9	33.4	32.3	(0.7)	48.5	61.5
2	**Capital Tax**[3]	2.8	N/A	N/A	N/A	N/A	N/A
	Property Tax:						
3	**Niagara Plant Group**	0.1	0.1	0.1	0.2	0.2	0.2
4	**Saunders GS**	0.0	0.1	0.1	0.1	0.1	0.1
5	**Subtotal**	0.1	0.2	0.2	0.3	0.3	0.3
6	**Total**	32.9	33.6	32.5	(0.4)	48.8	61.8

Notes:

1 Starting in 2011, SR&ED investment tax credits (“ITCs”) are presented as a reduction in income tax expense in accordance with USGAAP as discussed in Ex. A2-1-1. The 2010 amount is presented on the basis of Canadian GAAP.

2 The income tax expense is calculated on a combined basis for OPG’s prescribed facilities in Ex. F4-2-1 Tables 4 and 5. As described in Ex. F4-2-1, the resulting expense is allocated between the regulated hydroelectric, newly regulated hydroelectric (starting in 2014) and nuclear businesses on the basis of each business’s taxable income and, for SR&ED ITCs, on the basis of the underlying expenditures.

3 Capital tax was eliminated effective July 1, 2010. Amount for 2010 is computed as: rate base for 2010 from Ex. B1-1-1 Table 1, line 6 for previously regulated hydroelectric and Ex. B1-1-2 Table 1, line 7 for nuclear, less the general capital tax deduction, times 0.150% Ontario Capital Tax rate for 2010, divided by 2 (as the tax was only in effect for 1/2 of 2010).

Table 2
Taxes - Newly Regulated Hydroelectric ($M)

Line No.	Cost Item	2010 Actual	2011 Actual	2012 Actual	2013 Budget	2014 Plan	2015 Plan
		(a)	(b)	(c)	(d)	(e)	(f)
1	**Income Tax**[1]	N/A	N/A	N/A	N/A	31.4	43.2
2	**Capital Tax**	N/A	N/A	N/A	N/A	N/A	N/A
	Property Tax:						
3	**Ottawa-St.Lawrence Plant Group**[2]	0.0	0.0	0.0	0.0	0.0	0.0
4	**Central Hydro Plant Group**	0.0	0.0	0.0	0.0	0.0	0.0
5	**Northeast Plant Group**	0.1	0.1	0.1	0.1	0.1	0.1
6	**Northwest Plant Group**	0.1	0.1	0.1	0.1	0.1	0.1
7	**Subtotal**	0.2	0.2	0.2	0.2	0.2	0.2
8	**Total**	0.2	0.2	0.2	0.2	31.6	43.4

Notes:
1 See Ex. F4-2-1 Table 1, Note 2.
2 Ottawa-St. Lawrence Plant Group values are for the balance of the Plant Group, i.e. Saunders GS costs are excluded.

Numbers may not add due to rounding.

Table 3
Taxes - Nuclear ($M)

Line No.	Cost Item	2010 Actual	2011 Actual	2012 Actual	2013 Budget	2014 Plan	2015 Plan
		(a)	(b)	(c)	(d)	(e)	(f)
1	**Income Tax**[1,2]	0.0	(25.3)	9.4	(23.9)	140.8	47.5
2	**Capital Tax**[3]	2.9	N/A	N/A	N/A	N/A	N/A
	Property Tax:						
3	**Darlington NGS**	8.8	8.5	8.3	9.7	10.1	10.4
4	**Pickering NGS**	5.2	5.1	5.0	5.6	5.8	6.0
5	**Sub-total**	14.0	13.6	13.3	15.3	15.9	16.4
6	**Total**	16.9	(11.7)	22.7	(8.6)	156.7	63.9

Notes:

1 See Ex. F4-2-1 Table 1, Note 1.
2 See Ex. F4-2-1 Table 1, Note 2.
3 See Ex. F4-2-1 Table 1, Note 3.

Table 4
Calculation of Regulatory Income Taxes for Prescribed Facilities ($M)
Years Ending December 31, 2010, 2011 and 2012[1]

Line No.	Particulars	Note	2010 Actual	2011 Actual	2012 Actual
			(a)	(b)	(c)
	Determination of Regulatory Taxable Income				
1	**Regulatory Earnings Before Tax**	2	169.6	168.1	195.2
	Additions for Regulatory Tax Purposes:				
2	**Depreciation and Amortization**		292.9	294.2	313.6
3	**Nuclear Waste Management Expenses**		24.5	26.9	30.7
4	**Receipts from Nuclear Segregated Funds**		61.8	35.3	41.6
5	**Pension and OPEB/SPP Accrual**		251.3	340.6	275.7
6	**Regulatory Asset Amortization - Nuclear Liability Deferral Account**		47.5	17.8	21.4
7	**Regulatory Asset Amortization - Bruce Lease Net Revenues Variance Account**		0.0	113.4	136.0
8	**Regulatory Liability Amortization - Income and Other Taxes Variance Account**		0.0	(12.8)	(15.4)
9	**Reversal of Amounts Recorded in Income and Other Taxes Variance Account**		13.2	0.0	0.0
10	**Adjustment Related to Financing Cost for Nuclear Liabilities**		84.7	83.1	78.7
11	**Taxable SR&ED Investment Tax Credits**		23.7	19.5	49.5
12	**Other**		29.5	43.0	56.7
13	**Total Additions**		829.0	961.0	988.5
	Deductions for Regulatory Tax Purposes:				
14	**CCA**	3	292.7	305.5	302.7
15	**Cash Expenditures for Nuclear Waste & Decommissioning**		122.0	104.0	115.5
16	**Contributions to Nuclear Segregated Funds**		150.2	145.0	107.1
17	**Pension Plan Contributions**		208.5	235.5	297.1
18	**OPEB/SPP Payments**		63.6	68.5	79.1
19	**Reversal of Environmental Provision**		0.0	19.0	0.0
20	**Regulatory Asset Deduction - Nuclear Liability Deferral Account**		2.4	3.9	4.6
21	**SR&ED Qualifying Capital Expenditures**		17.5	20.0	20.6
22	**SR&ED Investment Tax Credits Recognized in Regulatory Earnings Before Tax**		18.8	0.0	0.0
23	**Other**		19.6	10.2	4.7
24	**Total Deductions**		895.4	911.5	931.4
25	**Regulatory Taxable Income** (line 1 + line 13 - line 24)		103.2	217.5	252.3
26	**Regulatory Income Taxes - Federal** (line 25 x line 30)		18.6	35.9	37.8
27	**Regulatory Income Taxes - Provincial** (line 25 x (line 31 + line 32))		11.4	21.8	25.2
28	**Regulatory Income Taxes - SR&ED Investment Tax Credits**		0.0	(49.5)	(21.4)
29	**Total Regulatory Income Taxes** (line 26 + line 27 + line 28)		29.9	8.1	41.7
	Income Tax Rate:				
30	**Federal Tax**		18.00%	16.50%	15.00%
31	**Provincial Tax**		13.00%	12.00%	11.00%
32	**Provincial Manufacturing & Processing Profits Deduction**		-2.00%	-2.00%	-1.00%
33	**Total Income Tax Rate**		29.00%	26.50%	25.00%

Notes:

1 2010 amounts are presented on the basis of Canadian GAAP and therefore the Regulatory Earnings Before Tax at line 1 reflect a reduction for SR&ED investment tax credits ("ITCs"). Starting in 2011, SR&ED ITCs are presented as a reduction in income tax expense (line 29) in accordance with USGAAP, as discussed in Ex. A2-1-1. Under CGAAP, SR&ED ITCs were presented as a reduction to centrally-held OM&A costs (See Ex. F4-4-1 Table 1). The amount of SR&ED ITCs is the same under US GAAP and CGAAP.

2 Regulatory EBT for 2010 (Canadian GAAP), 2011 (USGAAP) and 2012 (USGAAP) are from Ex. C1-1-1 Section 4.2, Chart 1. A reconciliation of Regulatory EBT for 2011 between Canadian GAAP and USGAAP is as follows:

Table to Note 2 - Reconcilation of Regulatory EBT ($M)

Line No.		2011
		(a)
1a	Regulatory EBT - Canadian GAAP	205.2
2a	Difference in Long-Term Disability Benefits Costs (EB-2012-0002, Ex. H1-1-2 Table 6, col. (c), line 4)	9.3
3a	SR&ED ITCs (from line 28)	49.5
4a	Amounts for SR&ED ITCs Recorded in Income and Other Taxes Variance Account	(21.7)
5a	Regulatory EBT - USGAAP (line 1a - line 2a - line 3a - line 4a)	168.1

3 Amount for 2012 is from Ex. F4-2-1 Table 7, line 17: col. (j) - col. (i)

Table 5
Calculation of Regulatory Income Taxes for Prescribed Facilities ($M)
Years Ending December 31 ,2013, 2014 and 2015[1]

Line No.	Particulars	Note	2013 Budget	2014 Plan	2015 Plan
			(a)	(b)	(c)
	Determination of Regulatory Taxable Income				
1	**Regulatory Earnings Before Tax**	2	88.4	613.5	519.8
	Additions for Regulatory Tax Purposes:				
2	**Depreciation and Amortization**		305.9	418.0	433.6
3	**Nuclear Waste Management Expenses**		28.8	59.3	62.2
4	**Receipts from Nuclear Segregated Funds**		53.3	62.6	116.5
5	**Pension and OPEB/SPP Accrual**		314.0	682.0	672.7
6	**Regulatory Asset Amortization - Bruce Lease Net Revenues Variance**		62.9	41.9	0.0
7	**Regulatory Liability Amortization - Income and Other Taxes Variance**		(18.7)	(12.4)	0.0
8	**Adjustment Related to Financing Cost for Nuclear Liabilities**		76.9	74.6	70.3
9	**Taxable SR&ED Investment Tax Credits**		21.4	14.8	10.4
10	**Other**		33.4	45.9	49.7
11	**Total Additions**		878.0	1,386.7	1,415.4
	Deductions for Regulatory Tax Purposes:				
12	**CCA**	3	316.7	419.0	467.0
13	**Cash Expenditures for Nuclear Waste & Decommissioning**		131.6	148.8	197.6
14	**Contributions to Nuclear Segregated Funds**		98.1	170.1	172.8
15	**Pension Plan Contributions**		305.7	238.0	340.2
16	**OPEB/SPP Payments**		85.4	99.7	106.5
17	**Reversal of Return on Rate Base Recorded in Capacity Refurbishment Variance Account**		53.3	0.0	0.0
18	**SR&ED Qualifying Capital Expenditures**		14.3	0.0	0.0
19	**Other**		0.5	0.5	0.5
20	**Total Deductions**		1,005.6	1,076.1	1,284.6
21	**Regulatory Taxable Income** (line 1 + line 11 - line 20)		(39.2)	924.1	650.6
22	**Regulatory Income Taxes - Federal** (line 21 x line 26)		(5.9)	138.6	97.6
23	**Regulatory Income Taxes - Provincial** (line 21 x (line 27 + line 28))		(3.9)	92.4	65.1
24	**Regulatory Income Taxes - SR&ED Investment Tax Credits**		(14.8)	(10.4)	(10.4)
25	**Total Regulatory Income Taxes** (line 22 + line 23 + line 24)		(24.6)	220.6	152.3
	Income Tax Rate:				
26	**Federal Tax**		15.00%	15.00%	15.00%
27	**Provincial Tax**		11.00%	11.00%	11.00%
28	**Provincial Manufacturing & Processing Profits Deduction**		-1.00%	-1.00%	-1.00%
29	**Total Income Tax Rate**		25.00%	25.00%	25.00%

Notes:

1 Newly Regulated Hydroelectric is included starting in 2014.

2 Regulatory Earnings Before Tax for 2013 is from Ex. I1-1-1 Table 5, col. (c), line 20. Regulatory Earnings Before Tax for 2014 and 2015 are calculated as follows:

Table to Note 2 - Calculation of Regulatory EBT for 2014 and 2015 ($M)

Line No.	Item	Reference	2014	2015
			(a)	(b)
1a	Requested After Tax Return on Equity	Ex. C1-1-1 Tables 1 and 2, line 5	420.2	420.5
2a	Less: Bruce Lease Net Revenues	Ex. G2-2-1 Table 1, line 3	39.7	40.6
3a	Single Payment Amounts Adjustment		12.3	(12.3)
4a		line 1a - line 2a + line 3a	392.8	367.6
5a	Additions for Regulatory Tax Purposes	line 11	1,386.7	1,415.4
6a	Deductions for Regulatory Tax Purposes	line 20	1,076.1	1,284.6
7a		line 4a+ line 5a - line 6a	703.4	498.4
8a	Regulatory Income Taxes - Federal	(line 7a + line 24) x line 26 / (1 - line 29)	138.6	97.6
9a	Regulatory Income Taxes - Provincial	(line 7a + line24) x (line 27 + line 28) / (1- line 29)	92.4	65.1
10a	Regulatory Income Taxes - SR&ED Investment Tax Credits	line 24	(10.4)	(10.4)
11a	Total Regulatory Income Taxes	line 8a + line 9a + line 10a	220.6	152.3
12a	Requested After Tax Return on Equity	line 1a	420.2	420.5
13a	Less: Bruce Lease Net Revenues	line 2a	39.7	40.6
14a	Add: Total Regulatory Income Taxes	line 11a	220.6	152.3
15a	Single Payment Amounts Adjustment		12.3	(12.3)
16a	Regulatory Earnings Before Tax	line 12a - line 13a + line 14a + line 15a	613.5	519.8

3 Amount for 2013 is from Ex. F4-2-1 Table 8, line 16: col. (j) - col. (i); for 2014 from Ex. F4-2-1 Table 9, line 19: col. (j) - col. (i); and for 2015 from Ex. F4-2-1 Table 10, line 19: col. (j) - col. (i)

Numbers may not add due to rounding.

Table 6
Reconciliation of Tax Return to Regulatory Tax Calculation ($M)
Year Ending December 31, 2012

Line No.	Particulars	2012 Tax Return: OPG Parent	Subsidiaries	(1) + (2) Total	Unregulated	(3) - (4) Regulated	Adjustments: Bruce Lease	Other Adjustments	(5) - (6) - (7) Regulatory Tax Calc'n[1]
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Determination of Taxable Income								
1	**Earnings Before Tax**	486.1	(51.9)	434.2	140.6	574.8	164.0	(543.6)	195.2
	Additions for Tax Purposes:								
2	**Depreciation and Amortization**	540.7	81.1	621.8	(135.0)	486.8	(78.9)	(94.3)	313.6
3	**Nuclear Waste Management Expenses (incl Accretion Expense)**	864.9	0.0	864.9	0.0	864.9	(375.3)	(458.9)	30.7
4	**Receipts from Nuclear Segregated Funds**	69.7	0.0	69.7	0.0	69.7	(28.1)	0.0	41.6
5	**Pension and OPEB/SPP Accrual**	640.4	0.0	640.4	(126.2)	514.2	0.0	(238.5)	275.7
6	**Regulatory Asset Amortization - Nuclear Development and Capacity Refurbishment Variance Accounts**	(65.0)	0.0	(65.0)	0.0	(65.0)	0.0	65.0	0.0
7	**Regulatory Asset Amortization - Nuclear Liability Deferral Account**	21.4	0.0	21.4	0.0	21.4	0.0	0.0	21.4
8	**Regulatory Asset and Liability Amortization - Other Variance Accounts**	(33.6)	0.0	(33.6)	0.0	(33.6)	0.0	33.6	0.0
9	**Regulatory Liability Amortization - Income and Other Taxes Variance Account**	(21.7)	0.0	(21.7)	0.0	(21.7)	0.0	6.3	(15.4)
10	**Regulatory Asset Amortization - Bruce Lease Net Revenues Variance Account**	136.1	0.0	136.1	0.0	136.1	0.0	(0.1)	136.0
11	**Regulatory Asset Amortization - Tax Loss Variance Account**	128.5	0.0	128.5	0.0	128.5	0.0	(128.5)	0.0
12	**Reversal of Bruce Lease Net Revenues Variance Account Additions**	(336.2)	0.0	(336.2)	0.0	(336.2)	0.0	333.8	(2.4)
13	**Adjustment Related to Financing Cost for Nuclear Liabilities**	0.0	0.0	0.0	0.0	0.0	0.0	78.7	78.7
14	**Taxable SR&ED Investment Tax Credits**	32.0	0.0	32.0	(4.2)	27.8	0.0	21.7	49.5
15	**Materials and Supplies Inventory Obsolescence**	50.7	0.0	50.7	(10.5)	40.2	0.0	0.0	40.2
16	**Other**	309.6	0.0	309.6	(34.1)	275.5	(249.0)	(7.6)	18.9
17	**Total Additions**	2,337.5	81.1	2,418.6	(310.0)	2,108.6	(731.3)	(388.8)	988.5
	Deductions for Tax Purposes:								
18	**CCA**	477.7	6.0	483.7	(175.0)	308.7	(6.1)	0.1	302.7
19	**Cash Expenditures for Nuclear Waste & Decommissioning**	199.6	0.0	199.6	(0.4)	199.2	(83.7)	0.0	115.5
20	**Contributions to, and Earnings on Nuclear Segregated Funds**	888.5	0.0	888.5	0.0	888.5	(425.8)	(355.6)	107.1
21	**Pension Plan Contributions**	370.0	0.0	370.0	(72.9)	297.1	0.0	0.0	297.1
22	**OPEB/SPP Payments**	98.5	0.0	98.5	(19.4)	79.1	0.0	0.0	79.1
23	**Reversal of Nuclear Liability Deferral Account Additions**	147.7	0.0	147.7	0.0	147.7	0.0	(143.1)	4.6
24	**Reversal of Pension and OPEB Cost Variance Account Additions**	194.7	0.0	194.7	0.0	194.7	0.0	(194.7)	0.0
25	**Reversal of Impact fo USGAAP Deferral Account Additions**	47.5	0.0	47.5	0.0	47.5	0.0	(47.5)	0.0
26	**Reversal of Other Variance Account Additions**	50.9	0.0	50.9	0.0	50.9	0.0	(50.9)	0.0
27	**Reversal of Nuclear Development and Capacity Refurbishment Variance Account Additions**	34.0	0.0	34.0	0.0	34.0	0.0	(34.0)	0.0
28	**SR&ED Qualifying Capital Expenditures**	24.9	0.0	24.9	(4.3)	20.6	0.0	0.0	20.6
29	**Construction In Progress Interest Capitalized**	81.7	0.0	81.7	(5.4)	76.3	0.0	(76.3)	0.0
30	**Other**	173.8	0.0	173.8	(129.6)	44.2	(14.2)	(25.3)	4.7
31	**Total Deductions**	2,789.5	6.0	2,795.5	(407.0)	2,388.5	(529.8)	(927.3)	931.4
32	**Taxable Income** (line 1 + line 17 - line 31)	34.1	23.2	57.3	237.6	294.9	(37.5)	(5.1)	252.3

Notes:
1 Amounts are as shown in Ex. F4-2-1 Table 4, col. (c).

Numbers may not add due to rounding.

Table 7
Undepreciated Capital Cost and Capital Cost Allowance Schedule for OPG's Regulated Operations ($M)
Year Ending December 31, 2012[1]

Line No.	Class	Undepreciated Capital Cost at Beginning of Year	Cost of Acquisitions	Net Adjustments	Proceeds of Dispositions	(a)+(b)+(c)-(d) UCC1	50% Rule	(e)-(f) Reduced Undepreciated Capital Cost	CCA Rate	Recapture/ Terminal Loss	Capital Cost Allowance	(e)+(i)-(j) Undepreciated Capital Cost at End of Year
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
1	**1**	1,639.1	218.8	(1.0)	0.0	1,856.9	109.4	1,747.5	4%	0.0	69.9	1,787.0
2	**1-rolling start**	261.8	75.8	0.0	0.0	337.6	0.0	337.6	4%	0.0	13.5	324.1
3	**1.1**	138.1	27.0	0.0	0.0	165.1	13.5	151.6	6%	0.0	9.1	156.0
4	**1.1-rolling start**	0.0	10.6	0.0	0.0	10.6	0.0	10.6	6%	0.0	0.6	10.0
5	**2**	1,260.4	0.0	0.0	0.0	1,260.4	0.0	1,260.4	6%	0.0	75.6	1,184.8
6	**8**	276.9	60.2	3.1	0.8	339.4	29.7	309.7	20%	0.0	61.9	277.5
7	**10**	21.5	5.9	0.3	0.3	27.5	2.8	24.6	30%	0.0	7.4	20.1
8	**12**	5.4	18.0	0.0	0.0	23.4	9.0	14.4	100%	0.0	14.4	9.0
9	**13**	4.4	0.0	(0.0)	0.0	4.4	0.0	4.4	N/A	0.0	0.7	3.7
10	**17**	556.3	42.7	(2.4)	0.0	596.7	21.4	575.3	8%	0.0	46.0	550.6
11	**17-rolling start**	0.0	21.7	0.0	0.0	21.7	0.0	21.7	8%	0.0	1.7	20.0
12	**38**	0.0	0.0	0.0	1.3	(1.3)	0.0	(1.3)	30%	1.3	0.0	0.0
13	**42**	0.8	0.2	0.0	0.3	0.7	0.0	0.7	12%	0.0	0.1	0.6
14	**45**	0.1	0.0	0.0	0.0	0.1	0.0	0.1	45%	0.0	0.1	0.1
15	**50**	3.3	3.8	0.0	0.0	7.1	1.9	5.2	55%	0.0	2.8	4.2
16	**52**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100%	0.0	0.0	0.0
17	**Total**	4,168.3	484.7	(0.0)	2.7	4,650.3	187.6	4,462.6		1.3	303.9	4,347.6

Notes:
1 All amounts are for the previously regulated hydroelectric and nuclear facilities.

Numbers may not add due to rounding.

Table 8
Undepreciated Capital Cost and Capital Cost Allowance Schedule for OPG's Regulated Operations ($M)
Year Ending December 31, 2013[1]

Line No.	Class	Undepreciated Capital Cost at Beginning of Year[2]	Cost of Acquisitions	Net Adjustments	Proceeds of Dispositions	(a)+(b)+(c)-(d) UCC1	50% Rule	(e)-(f) Reduced Undepreciated Capital Cost	CCA Rate	Recapture/ Terminal Loss	Capital Cost Allowance	(e)+(i)-(j) Undepreciated Capital Cost at End of Year
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
1	**1**	1,787.0	149.4	0.0	0.0	1,936.4	74.7	1,861.7	4%	0.0	74.5	1,861.9
2	**1-rolling start**	324.1	27.5	0.0	0.0	351.6	0.0	351.6	4%	0.0	14.1	337.5
3	**1.1**	156.0	36.8	0.0	0.0	192.8	18.4	174.4	6%	0.0	10.5	182.3
4	**1.1-rolling start**	10.0	29.2	0.0	0.0	39.2	0.0	39.2	6%	0.0	2.4	36.9
5	**2**	1,184.8	0.0	0.0	0.0	1,184.8	0.0	1,184.8	6%	0.0	71.1	1,113.7
6	**8**	277.5	48.0	0.0	0.0	325.4	24.0	301.5	20%	0.0	60.3	265.1
7	**10**	20.1	10.6	0.0	0.0	30.6	5.3	25.4	30%	0.0	7.6	23.0
8	**12**	9.0	16.3	0.0	0.0	25.3	8.2	17.2	100%	0.0	17.2	8.2
9	**13**	3.7	0.0	0.0	0.0	3.7	0.0	3.7	N/A	0.0	0.7	3.0
10	**17**	550.6	120.1	0.0	0.0	670.7	60.0	610.7	8%	0.0	48.9	621.9
11	**17-rolling start**	20.0	59.7	0.0	0.0	79.7	0.0	79.7	8%	0.0	6.4	73.4
12	**38**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30%	0.0	0.0	0.0
13	**42**	0.6	0.1	0.0	0.0	0.7	0.1	0.6	12%	0.0	0.1	0.6
14	**45**	0.1	0.0	0.0	0.0	0.1	0.0	0.1	45%	0.0	0.0	0.0
15	**50**	4.2	3.3	0.0	0.0	7.5	1.7	5.9	55%	0.0	3.2	4.3
16	**Total**	4,347.6	501.0	0.0	0.0	4,848.6	192.3	4,656.3		0.0	316.7	4,531.9

Notes:
1 All amounts are for the previously regulated hydroelectric and nuclear facilities.
2 Amounts are from Ex. F4-2-1 Table 7, col. (k).

Numbers may not add due to rounding.

Table 9
Undepreciated Capital Cost and Capital Cost Allowance Schedule for OPG's Regulated Operations ($M)
Year Ending December 31, 2014

Line No.	Class	Undepreciated Capital Cost at Beginning of Year[1]	Cost of Acquisitions[2]	Net Adjustments[3]	Proceeds of Dispositions	(a)+(b)+(c)-(d) UCC1	50% Rule	(e)-(f) Reduced Undepreciated Capital Cost	CCA Rate	Recapture/ Terminal Loss	Capital Cost Allowance	(e)+(i)-(j) Undepreciated Capital Cost at End of Year
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
1	**1**	1,861.9	88.2	537.4	0.0	2,487.6	44.1	2,443.5	4%	0.0	97.7	2,389.9
2	**1-rolling start**	337.5	0.0	0.0	0.0	337.5	0.0	337.5	4%	0.0	13.5	324.0
3	**1.1**	182.3	78.4	2.4	0.0	263.1	39.2	223.9	6%	0.0	13.4	249.7
4	**1.1-rolling start**	36.9	61.8	0.0	0.0	98.7	0.0	98.7	6%	0.0	5.9	92.8
5	**2**	1,113.7	0.0	557.0	0.0	1,670.7	0.0	1,670.7	6%	0.0	100.2	1,570.4
6	**3**	0.0	0.0	0.8	0.0	0.8	0.0	0.8	5%	0.0	0.0	0.8
7	**8**	265.1	55.4	22.7	0.0	343.2	27.7	315.5	20%	0.0	63.1	280.1
8	**10**	23.0	11.7	2.9	0.0	37.7	5.9	31.8	30%	0.0	9.6	28.2
9	**12**	8.2	21.3	3.0	0.0	32.5	10.7	21.8	100%	0.0	21.8	10.7
10	**13**	3.0	0.0	0.0	0.0	3.0	0.0	3.0	N/A	0.0	0.7	2.4
11	**17**	621.9	219.6	142.3	0.0	983.8	109.8	874.0	8%	0.0	69.9	913.9
12	**17-rolling start**	73.4	126.4	0.0	0.0	199.7	0.0	199.7	8%	0.0	16.0	183.7
13	**38**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30%	0.0	0.0	0.0
14	**42**	0.6	0.5	2.2	0.0	3.3	0.2	3.1	12%	0.0	0.4	2.9
15	**43.1**	0.0	0.0	0.4	0.0	0.4	0.0	0.4	30%	0.0	0.1	0.3
16	**43.2**	0.0	0.0	6.1	0.0	6.1	0.0	6.1	50%	0.0	3.1	3.1
17	**45**	0.0	0.0	0.2	0.0	0.2	0.0	0.2	45%	0.0	0.1	0.1
18	**50**	4.3	3.3	0.3	0.0	7.9	1.7	6.2	55%	0.0	3.4	4.5
19	**Total**	4,531.9	666.6	1,277.8	0.0	6,476.3	239.2	6,237.1		0.0	419.0	6,057.3

Notes:
1 Amounts are from Ex. F4-2-1 Table 8, col. (k) and are for the previously regulated hydroelectric facilities and nuclear facilities.
2 Amounts are for previously and newly regulated hydroelectric facilities and nuclear facilities.
3 Amounts represent the inclusion of the Undepreciated Capital Cost for the newly regulated hydroelectric facilities effective in 2014.

Numbers may not add due to rounding.

Table 10
Undepreciated Capital Cost and Capital Cost Allowance Schedule for OPG's Regulated Operations ($M)
Year Ending December 31, 2015[1]

Line No.	Class	Undepreciated Capital Cost at Beginning of Year[2]	Cost of Acquisitions	Net Adjustments	Proceeds of Dispositions	(a)+(b)+(c)-(d) UCC1	50% Rule	(e)-(f) Reduced Undepreciated Capital Cost	CCA Rate	Recapture/ Terminal Loss	Capital Cost Allowance	(e)+(i)-(j) Undepreciated Capital Cost at End of Year
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
1	**1**	2,389.9	86.6	0.0	0.0	2,476.4	43.3	2,433.1	4%	0.0	97.3	2,379.1
2	**1-rolling start**	324.0	0.0	0.0	0.0	324.0	0.0	324.0	4%	0.0	13.0	311.1
3	**1.1**	249.7	174.7	0.0	0.0	424.4	87.4	337.0	6%	0.0	20.2	404.2
4	**1.1-rolling start**	92.8	138.7	0.0	0.0	231.5	0.0	231.5	6%	0.0	13.9	217.6
5	**2**	1,570.4	0.0	0.0	0.0	1,570.4	0.0	1,570.4	6%	0.0	94.2	1,476.2
6	**3**	0.8	0.0	0.0	0.0	0.8	0.0	0.8	5%	0.0	0.0	0.7
7	**8**	280.1	63.7	0.0	0.0	343.8	31.8	312.0	20%	0.0	62.4	281.4
8	**10**	28.2	13.2	0.0	0.0	41.4	6.6	34.8	30%	0.0	10.4	31.0
9	**12**	10.7	23.3	0.0	0.0	34.0	11.7	22.3	100%	0.0	22.3	11.7
10	**13**	2.4	0.0	0.0	0.0	2.4	0.0	2.4	N/A	0.0	0.7	1.7
11	**17**	913.9	416.2	0.0	0.0	1,330.0	208.1	1,122.0	8%	0.0	89.8	1,240.3
12	**17-rolling start**	183.7	283.6	0.0	0.0	467.3	0.0	467.3	8%	0.0	37.4	429.9
13	**38**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30%	0.0	0.0	0.0
14	**42**	2.9	0.5	0.0	0.0	3.4	0.3	3.2	12%	0.0	0.4	3.1
15	**43.1**	0.3	0.0	0.0	0.0	0.3	0.0	0.3	30%	0.0	0.1	0.2
16	**43.2**	3.1	0.0	0.0	0.0	3.1	0.0	3.1	50%	0.0	1.5	1.5
17	**45**	0.1	0.0	0.0	0.0	0.1	0.0	0.1	45%	0.0	0.1	0.1
18	**50**	4.5	3.3	0.0	0.0	7.8	1.7	6.1	55%	0.0	3.4	4.4
19	**Total**	6,057.3	1,203.8	0.0	0.0	7,261.1	390.8	6,870.3		0.0	467.0	6,794.0

Notes:
1 All amounts are for previously and newly regulated hydroelectric facilities and nuclear facilities.
2 Amounts are from Ex. F4-2-1 Table 9, col. (k).

COMPENSATION AND BENEFITS

1.0 PURPOSE

The purpose of this Exhibit is to:

- Detail the total test period compensation and benefits costs included in the revenue requirement,
- Discuss OPG's use of overtime,
- Describe the compensation framework for OPG's regulated facilities,
- Respond to the OEB's direction to file an independent compensation study, and
- Respond to the OEB's direction to discuss alternatives to the use of AA bond yields to forecast the discount rates.

2.0 OVERVIEW

The following table summarizes OPG's historical, bridge year and test period compensation and benefits levels:

Table 1 – Summary Compensation and Benefits Table ($ million)

Organization	2010 Actual	2011 Actual	2012 Actual	2013 Budget	2014 Plan	2015 Plan
Nuclear	1,297.7	1,317.8	1,173.3	1,215.6	1,195.8	1,219.1
Previously Regulated Hydro	50.4	54.5	51.8	57.1	58.4	59.0
Allocated Corporate Support	135.1	142.2	284.1	315.5	308.0	297.4
Sub-total	1,483.2	1,514.5	1,509.2	1,588.2	1,562.2	1,575.5
Newly Regulated Hydro	79.2	87.9	91.5	102.1	105.8	104.1
Allocated Corporate Support	18.6	18.7	23.0	23.6	26.4	25.3
Sub-total	97.7	106.6	114.4	125.6	132.2	129.4

TOTAL REGULATED COSTS [1]	1,581.0	1,621.0	1,623.7	1,713.8	1,694.4	1,704.9
Increase in Pension/OPEB Costs Since 2010 [2]	0.0	68.0	123.2	172.3	184.3	188.7
TOTAL REGULATED COSTS EXCLUDING INCREASE IN PENSION/OPEB	1,581.0	1,553.0	1,500.5	1,541.6	1,510.1	1,516.2

- As Table 1 above demonstrates, over the four years between 2011 and 2015, OPG's total compensation and benefit cost for its regulated operations is projected to grow by a bit more than one per cent per year. This figure includes the effects of staff increases associated with Darlington Refurbishment and New Build.
- Table 1 also illustrates the impact of increases in Pension and OPEB costs on overall regulated compensation costs. Pension and OPEB cost increases are driven primarily by changes in discount rates, a factor beyond OPG's control. Total regulated compensation costs, excluding increases in Pension and OPEB costs, decline approximately 4% between 2010 and 2015.
- OPG's forecast compensation and benefit costs over the test period are reasonable, stable and below bridge year levels. Forecast compensation costs are largely a function of the collective bargaining agreements that cover about 90 per cent of OPG's employees and to which OPG is legally bound. OPG cannot unilaterally reduce the compensation of its represented employees or reduce staff through the use of contract workers except as permitted by its collective agreements, and is limited in terms of its ability to adjust the overall size of the unionized workforce in order to cut costs.
- Within the constraints of the collective agreements, OPG has taken steps to reduce staff levels, and modify its cost structure, consistent with its objective to continue

[1] Includes base salary and wages, overtime, incentive pay, and total benefits (comprised of statutory benefits, employee health tax, non-statutory benefits, and current pension and other post employment benefits service cost).
[2] The increase in pension/OPEB costs during the period is due primarily to decreases in discount rates, as discussed in Section 6.0.

being a low cost provider of electricity in Ontario. As fully discussed in Ex. A4-1-1, by year-end 2015 OPG expects to reduce its 2011 headcount by 2,000 employees through attrition. This decreased headcount is expected to reduce OPG's OM&A by $700M between 2011 and 2015.[3]

- Safe and reliable operations remain OPG's top priority. Key to meeting this priority is having employees with the appropriate skills and experience. OPG must continue to be able to attract and retain the highly specialized and skilled staff needed to manage and operate its complex generating stations, particularly in the Nuclear business.

As discussed below in Section 3, OPG uses contract employees and overtime as tools to meet peak work periods. In Nuclear these periods are largely, but not exclusively, associated with outages when base resources are insufficient to meet all of the scheduled work (See Ex.F2-4-1, Section 3.2). OPG also uses overtime for Nuclear base OM&A work to meet peak work requirements, maintain coverage for key staff positions in accordance with licensing requirements; and complete necessary work impacted by short-term absences (See Ex. F2-2-1, Section 3.2). In hydroelectric these resources are used for peak work requirements (e.g. outages and responding to weather events), seasonal work, or to complete necessary work impacted by short-term staff absences or vacancies (See Ex. F1-2-1, Section 3.1.2).

The remainder of this Exhibit is organized as follows:

Section 3.0 – OPG's Workforce. This section discusses OPG's workforce, including staffing levels, use of contract employees and overtime, demographics and the extent of unionization.

Section 4.0 – OPG's Collective Agreements and Labour Relations Environment. This section discusses OPG's collective bargaining agreements, its approach to collective bargaining and the labour relations context in which OPG operates.

[3] Of these figures, approximately 1,300 staff and $550M are attributable to regulated operations.

Section 5.0 – Management Compensation. This section discusses OPG's management compensation costs.

Section 6.0 – Pension and Benefits. This section discusses pension and benefit plans reflected in OPG's compensation levels.

Section 7.0 – Summary of Staffing, Compensation and Benefits. This section summarizes OPG's staffing, and compensation and benefit levels.

Section 8.0 – Business Transformation. This section discusses the significant impact Business Transformation will have on OPG's forecast of test period compensation levels.

Section 9.0 – Benchmarking. This section discusses the results of the compensation benchmarking performed by AON Hewitt.

Section 10.0 – Conclusion.

3.0 OPG's WORKFORCE

At the end of 2012, OPG had approximately 10,844 employees. Of this total approximately 9,582 employees work directly in or are allocated to OPG's regulated activities. This figure includes some 8,307 employees associated with OPG's nuclear business, 485 employees associated with the previously regulated hydroelectric plants and 790 employees associated with the newly regulated hydroelectric facilities.

OPG's regulated staff work in a predominantly unionized environment, with approximately 90 per cent of staff belonging to either the Power Workers' Union ("PWU") or the Society of Energy Professionals ("Society"). Of this 90 per cent, approximately two thirds belong to the PWU and approximately one third belong to the Society. The extent of unionization and the mix of PWU, Society and non-represented staff have generally remained stable.

OPG has a mature and experienced workforce. As of year-end 2012, approximately 20% of active employees were eligible to retire with an undiscounted pension. By the end of the test period (year-end 2015) more than 28% of the year-end 2012 employees will be eligible to retire.

In 2011, OPG began a Business Transformation initiative to better align cost with revenue and improve efficiency so as to be able to operate with fewer employees (see Ex. A4-1-1). Through attrition, OPG has a company-wide staff reduction target of 2,000 by the end of 2015 and has already realized half this target (i.e., a headcount reduction through attrition of approximately 1,000 employees since 2011).[4] Business Transformation focuses on building the framework for long-term sustainable operation at these lower staffing levels by re-engineering programs and restructuring to streamline and simplify.[5] Becoming a leaner, more efficient organization will help ensure OPG's financial sustainability, allow the pursuit of opportunities to strengthen and grow the company and deliver on OPG's mission to be Ontario's low-cost electricity generator of choice.

OPG uses a variety of resource types to meet ongoing, planned and unplanned work requirements. These are outlined below:

1. Regular Staff: Employees hired directly by OPG with the expectation of on-going, long-term employment. This category includes probationary, as well as part-time regular employees and regular-seasonal staff (employees who are permanently employed, but subject to seasonal, layoffs).

2. Non-Regular Staff: Temporary Employees hired directly by OPG where there is little or no expectation of on-going employment. This category includes:
   - Students and other temporary employees hired into PWU, Society or non-represented positions.

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[4] Approximately 1,300 staff out of the target staff reductions of 2,000 are attributable to regulated operations.
[5] A number of strategies and programs are in place to mitigate the risk of knowledge loss associated with ongoing retirements, including succession planning, training & development programs, knowledge management risk assessments and the development of retention plans where necessary.

- Temporary tradespersons and members of various craft unions hired by OPG from the trade union halls where there is little or no expectation of on-going employment. These are often referred to as casual construction staff.

3. Overtime: Incremental pay, as set out in collective agreements, to regular employees represented by the PWU or Society or to non-regular staff for work outside of their core hours.

4. Purchased Services: External services used to augment OPG's resources. These resources are not hired directly by OPG as employees. They can be:
   - Individuals engaged "independently", through a pre-qualified staffing agency or provided by another, external firm. These are often referred to as augmented staff. These individuals typically work in the same environments as employees and under the direct supervision of an OPG staff person.
   - Work provided by third parties where OPG defines the outcome but the resources are not under the direct supervision of OPG staff. This category includes consultants, construction contractors, maintenance services and specialised technical services.

As outlined in Nuclear and hydroelectric evidence (See Ex. F1-2-1, Section 3; Ex. F2-4-1, Section 3.2; and Ex. F2-2-1 Section 3.2) there are a number of factors that lead to the use of resources incremental to regular staff:

- Compliance with collective agreements
- To meet planned and unplanned peak work demand when it is not economic to maintain ongoing regular staff compliments at levels required for periodic peaks
- Where required skills are not available internal to OPG
- To meet a short term need to complete necessary work such as projects or to replace employees on maternity leave and other short term absences

OPG's business units determine the resource option to employ based on factors such as cost, time frame (duration of need and lead time), availability of internal resources (skills and capacity) and the need for specialized skills or equipment.

4.0 OPG's COLLECTIVE AGREEMENTS AND LABOUR RELATIONS ENVIRONMENT

Pursuant to the Ontario *Labour Relations Act*, as a successor employer to Ontario Hydro OPG was required by law to adopt collective agreements covering the employees transferred from Ontario Hydro to OPG when it began operation on April 1, 1999. For the unionized employees within OPG, items such as wages, pensions, and benefits can only be changed through the collective bargaining process; they cannot be changed unilaterally by OPG.

The nature of collective bargaining dictates that outcomes result from agreements reached by both parties. To obtain agreement, parties often must modify their initial positions. Ultimately, "success" in collective bargaining is influenced by the priorities and approaches pursued by both management and the union over the course of negotiations. Since subsequent collective agreements build on past agreements, changes can only occur where bargaining produces new arrangements that both sides can agree to.

4.1 OPG's Approach to Collective Bargaining

OPG and its unions follow a formal and structured approach to collective bargaining. The following paragraphs outline the process.

Research and Consultation – OPG begins with a review of the external labour relations landscape. The review focuses on the bargaining results of Ontario Hydro successor companies and other broader public sector employers. Included in the review is an assessment of recent agreements and arbitrated decisions relating to wages, benefits, pensions, contracting out, job security, productivity issues, and other compensation issues. Sources used as part of this review include the Ministry of Labour (MOL) and successor companies collective agreements. The economic and political environment is also reviewed to evaluate general economic conditions and to identify any government directives or initiatives that impact collective bargaining. Internal consultation is carried out to identify key strategic, operational, cost, revenue and productivity issues facing the company.

Formation of the Bargaining Team – Representatives from OPG's business units are selected by business unit leaders to represent OPG in collective bargaining. The individuals selected are senior level, experienced leaders with good insight into the strategic and key operational issues facing the company. The collective bargaining process is directed by an experienced team of labour relations staff who have extensive negotiating experience and frequent dealings with OPG's unions. OPG periodically engages external labour lawyers directly in collective bargaining or to advise on key issues. OPG's legal support is comprised of experienced lawyers who represent major Canadian employers including other government agencies.

Development of the Bargaining Agenda – The Bargaining Team develops the bargaining agenda based on the company's priorities. OPG's priorities are established by soliciting input from across the company on key issues that should be addressed through the collective bargaining process. Each item is critically evaluated on its merits and prioritized based on the value to the company and anticipated reaction of the relevant union. The team also anticipates items that will be brought forward by the unions. These items are assessed based on their value and compared to OPG's items to determine potential areas of agreement. OPG and the union exchange bargaining agendas at an agreed date at the start of negotiations.

Negotiations – A schedule for negotiations is established based on the expiry date of the collective agreements to allow time for meaningful discussions. For the Society, a typical round of negotiations takes approximately one month; for the PWU negotiations take anywhere from two to four months. These estimates do not include the preparation time involved for each side. OPG's negotiating team is led by a management chairperson who is accountable for representing the company and empowered to reach an agreement based on a mandate approved by the Board and consistent with Government direction. The chairperson works to ensure that key priorities are achieved and reports on major developments to the executive leadership team.

Impasse – In the event of an impasse with the PWU, the parties are required to satisfy statutory requirements of the Ontario Labour Relations Act (the Act) before engaging in a strike/lockout. Where the parties become deadlocked on issues they must engage in mandatory conciliation under the Act. Mandatory conciliation involves the appointment of a mediator by the Minister of Labour to confer with the parties in the interest of resolving any impasse prior to a work stoppage. OPG and the PWU have engaged in mandatory conciliation twice in recent history following a deadlock. In the event of an impasse with the Society, the parties are required to enter into an interest mediation/arbitration process due to the no strike/no lock-out clause in the collective agreement. OPG and the Society have used interest mediation/ arbitration to resolve their differences for the two most recent contracts.

Agreement/Award – Where an agreement is reached, the unions must take the agreement out for a ratification vote by their members. Once an agreement/award is finalized, the details of the agreement are communicated through a comprehensive change management plan that is put in place to ensure line managers are informed about contract changes.

Implementation – Once the parties have an agreement (or arbitration award), Labour Relations oversees the implementation of the changes to the collective agreement.

4.2 The PWU and Society Collective Agreements

As discussed above, OPG has collective agreements with the PWU and the Society covering approximately 90 per cent of its regulated staff. The PWU represents the majority of employees who perform the work of technicians, tradespersons, plant operators, security guards and administrative assistants.

4.2.1 PWU

The current collective agreement with the PWU covers the period from April 1, 2012 to March 31, 2015. The wage increases provided under agreement are: April 1, 2012 – 2.75%; April 1, 2013 - 2.75%; and April 1, 2014 - 2.75%.

The PWU agreement was negotiated in early 2012. Prior to that time, the Government had passed the Public Sector Compensation Restraint to Public Services Act, 2010 (Compensation Restraint Act) as part of Bill 16. The Compensation Restraint Act included measures to extend controls over management compensation. While its provisions covered only OPG's non-unionized employees, the Government requested that OPG, and other Provincially-owned entities, achieve contracts with net zero compensation increases, meaning any increase in compensation had to be offset by corresponding savings elsewhere in the collective agreement. OPG negotiated a number of cost and productivity offsets to the wage increases in the PWU agreement.

OPG tracks the differences between the union wages it pays and those that other employers pay to the extent possible. The primary competitor for nuclear jobs represented by the PWU is Bruce Power LP. A wage comparison, conducted following the last round of negotiations between the PWU and Bruce Power LP is shown in Table 2. Overall OPG wages for PWU represented staff are lower than those at Bruce Power LP.

Table 2 - 2013 Wage Comparison of PWU Positions between OPG and Bruce Power

PWU Job Category (2013)	OPG	Bruce Power	Difference ($/Hr)	Difference (%)
Civil Maintainer I	$38.95	$52.36	-$13.41	34.43%
Emergency Response Maintainer	$38.95	$47.19	-$8.24	21.16%
Civil Maintainer II	$38.95	$49.04	-$10.09	25.91%
Nuclear Operator	$50.08	$58.32	$-8.24	16.45%
Shift Control Technician	$50.08	$57.27	-$7.19	14.36%
Mechanical Maintainer	$50.08	$57.10	-$7.02	14.02%
Nuclear Security Officer	$38.95	$40.87	-$1.92	4.93%
Business Support Representative (OPG - Office Support Representative II)	$38.95	$46.02	-$7.07	18.15%
Project Tech II – E&C (OPG - Project Technician - E&C)	$50.08	$51.34	-$1.26	2.52%
Chemical Technician	$50.08	$51.99	-$1.91	3.81%
Cost & Scheduling Technician (OPG - Planning $ Cost Control Technician)	$50.08	$52.63	-$2.55	5.09%
Finance Clerk (OPG- Finance & Payroll Representative)	$38.95	$48.74	-$9.79	25.13%

***** Wage comparisons for PWU positions are based on top step of the OPG salary bands and top step of the Bruce Power competency based scales or multi-trade scales (if applicable).

Bruce Power wage information was obtained from the collective agreement between Bruce Power and the PWU. The above classifications account for the majority of Bruce Power classifications. Some classifications in OPG do not exist at Bruce Power (e.g., Thermal and Hydroelectric classifications).

The following table compares OPG's base wage increases for the PWU since 2001 to the increases in other companies that have collective agreements derived from Ontario Hydro. Cumulative compound 2001-2012 increases are shown for all organizations. Compound increases through 2013 and 2014 are provided where available. OPG negotiated increases have been at or below most of the successor companies in most years since 2001 resulting in cumulative increases that are below most of the successor companies. A comparison of recent (2010-2013) negotiated increases where data is available shows OPG has continued to achieve lower increases. During this period OPG negotiated a simple cumulative increase of 11.5%, which is lower than Bruce Power (12%), Hydro One (12.25%) and Kinetrics (12%).

Table 3 – PWU Increases Compared Among Successor Companies

	PWU General Wage Increases (%)						
	OPG	Bruce Power	Hydro One	Kinectrics	New Horizons	Inergi	IESO
2001	3.00%	3.00%	3.00%	0.00%	3.00%	3.00%	2.00%
2002	2.00%	3.10%	3.00%	5.00%	3.00%	3.00%	2.00%
2003	3.00%	4.00%	3.00%	1.50%	3.50%	3.00%	3.00%
2004	2.50%	3.00%	3.00%	1.50%	3.30%	3.00%	3.00%
2005	2.50%	3.00%	3.50%	3.00%	3.00%	3.00%	2.50%
2006	3.00%	3.00%	3.50%	1.50%	3.00%	2.80%	3.00%
2007	3.00%	3.30%	3.00%	1.50%	3.00%	3.00%	3.00%
2008	3.00%	3.20%	3.00%	3.00%	3.00%	3.00%	3.00%
2009	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
2010	3.00%	3.00%	3.00%	3.00%	2.70%	3.00%	3.00%
2011	3.00%	2.75%	3.00%	3.00%	2.70%	3.00%	3.00%
2012	2.75%	2.75%	3.00%	3.00%	2.70%	2.66%	3.00%
Cumulative	**39.5%**	**44.1%**	**44.0%**	**33.1%**	**42.4%**	**41.8%**	**39.1%**
2013	2.75%	3.50%	3.25%	3.00%	2.60%	n/a	n/a
Cumulative	**43.3%**	**49.1%**	**48.6%**	**37.1%**	**46.1%**	**n/a**	**n/a**
2014	2.75%	n/a	2.50%	n/a	2.65%	n/a	n/a

Cumulative	**47.3%**	**n/a**	**52.4%**	**n/a**	**50.0%**	**n/a**	**n/a**

4.2.2 Society

The Society of Energy Professionals represents the majority of employees who perform the work of professional engineers, front line managers, and accountants. The current collective agreement with the Society covers the period from January 1, 2013 to December 31, 2015. Pursuant to the Government's direction, OPG attempted to negotiate zero compensation increase in the current collective agreement. When a negotiated agreement was not achieved, the matter was submitted to interest arbitration as the collective agreement requires. The terms of the agreement, including compensation were fixed by binding arbitration conducted within the criteria established by the collective agreement, and the generally established protocol for interest arbitrators (See Attachment 1, "An Assessment of the Industrial Relations Context and Outcomes at OPG" by Professor Richard Chaykowski, which is discussed in Section 4.4).

The collective agreement requires the arbitrator to consider:

a) A balanced assessment of internal relativities, general economic conditions, external relativities
b) OPG's need to retain, motivate and recruit qualified staff
c) The cost of changes and their impact on total compensation
d) The financial soundness of OPG and its ability to pay

Section 4.4 below and Attachment 1 provide additional discussion of the considerations that inform interest arbitration decisions.

The Interest Arbitrator awarded annual increases over 2013, 2014 and 2015 of 0.75, 1.75 and 1.75 per cent, respectively, based on his assessment of the criteria and evidence presented by each side. He also ordered a temporary freeze on pay progression through the established pay grid for employees during the 2nd and 3rd years of the collective agreement (2014 and 2015).

Table 4 below compares OPG's 2013 pay ranges for the various classifications (bands) of Society represented employees to those of Bruce Power. For each band, both the minimum and the maximum weekly salary offered by Bruce Power exceed the corresponding salary offered by OPG. For the highest salary bands (MP5 and MP6), Bruce Power's minimum weekly salary is more than five percent above OPG.

Table 4 - 2013 Wage Comparison between Society Bands for Bruce Power and OPG ($ per week)

Salary Band	OPG (2013)	Bruce Power (2013)
MP6 Max	2509.67	2528
Min	2162.66	2274
MP5 Max	2353.50	2372
Min	2006.49	2133
MP4 Max	2207.26	2224
Min	1286.42	1331
MP3 Max	2070.93	2086
Min	1286.42	1331
MP2 Max	1942.05	1957
Min	1286.42	1331

Table 5 below compares base wage increases for Society represented employees since 2001 to the increases in companies that have collective agreements derived from Ontario Hydro. Cumulative compound 2001-2013 increases are shown for all organizations. Compound increases through 2014 and 2015 are provided where available. As with PWU, OPG's increases have been at or below most of the successor companies in most years since 2001 resulting in compound increases that are below most of the successor companies. A comparison of recent (2010-2013) cumulative increases shows OPG has continued to achieve lower increases. During this period OPG achieved a simple cumulative increase of 9.75%, which is lower than Bruce Power (12%), and all other successor organizations.

Table 5 – Society Wage Increases Compared Among Successor Companies

	Society General Wage Increases (%)						
	OPG	Bruce Power	Hydro One	Kinetrics	New Horizons	Inergi	IESO
2001	3.00%	3.00%	3.00%	1.00%	3.00%	3.00%	4.50%
2002	2.50%	2.50%	2.00%	1.00%	2.50%	2.00%	4.00%
2003	2.00%	3.00%	3.00%	2.00%	2.50%	3.00%	3.00%
2004	3.00%	4.00%	3.00%	2.00%	3.00%	3.00%	3.00%
2005	3.00%	3.30%	3.00%	3.00%	3.00%	2.00%	3.00%
2006	3.00%	3.30%	3.00%	3.00%	3.00%	3.00%	3.00%
2007	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
2008	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
2009	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
2010	3.00%	3.00%	3.00%	3.00%	2.75%	3.00%	2.60%
2011	3.00%	2.75%	2.50%	3.00%	2.75%	3.00%	2.70%
2012	3.00%	2.75%	2.50%	3.00%	2.75%	2.75%	2.50%
2013	0.75%	3.50%	2%	3.00%	3.00%	1.50%	2.50%
Cumulative	**41.6%**	**48.4%**	**42.6%**	**38.5%**	**44.4%**	**41.6%**	**48.0%**
2014	1.75%	2.75%	2.25%	n/a	n/a	1.50%	2%
Cumulative	**44.0%**	**52.5%**	**45.8%**	**n/a**	**n/a**	**43.7%**	**50.9%**
2015	1.75%	n/a	2.25%	n/a	n/a	1.50%	n/a
Cumulative	**46.6%**	**n/a**	**49.1%**	**n/a**	**n/a**	**45.9%**	**n/a**

4.3 **Other Relevant Terms of the Collective Agreements**.

As in most unionized environments, OPG's collective agreements with both the PWU and Society restrict the company's ability to reduce compensation costs through contracting out work or reorganizing the workforce. The paragraphs below explain how these limitations are structured in both the PWU and Society agreements.

4.3.1 Contracting Out

With respect to contracting out, both the PWU and Society collective agreements contain clauses that restrict the degree to which OPG can contract out the work of employees who are members of the union. Given the degree of unionization, these clauses capture substantially all of the work at OPG. As discussed below, in general terms, the contracting out clauses are principle-based and rely on management and union cooperation to assess the merits of contracting out against the impact on employment continuity. With some exceptions, the agreement of the union is required before work can be contracted out. In the event of a disagreement an arbitrator is required to determine whether or not the contracting is permissible.

4.3.1.1 PWU

Contracting out has been a long standing issue between OPG and PWU. Since the late 1970's, the PWU agreement has contained a provision for job security in the event that the contracting out of work normally performed by PWU members results in job loss. The genesis of the current restrictions on contracting out in the PWU collective agreement is found in the resolution of a province-wide strike in 1985. To avoid another strike over this issue, the parties have agreed on a provision that requires a significant assessment of the merits of contracting compared to the impact on employment continuity.

The existing clause in the PWU collective agreement provides for a jointly managed process for determining what work can be contracted out. The process for contracting work is stringent and requires OPG to justify its proposals to contract work and assess the impact on employment continuity. For work to be contracted out there must be joint agreement between OPG and the PWU. Failing agreement, any work to be contracted out requires the development of a business case that compares the benefits of contracting out versus performing the work internally and assesses the impact on employees. Where agreement cannot be reached the dispute moves to arbitration for resolution.

One unique aspect of the contracting out provision with the PWU is the use of thresholds to establish amounts or types of work that can be contracted. Thresholds represent agreed, pre-defined characteristics that if met, enable OPG to contract out without additional union approval. A new threshold was negotiated in 2012 to provide that distinct work programs or packages of 250 hours or less are within the threshold.

4.3.1.2 Society

The Society collective agreement includes a detailed process for contracting out work normally performed by Society members. The process is managed jointly between the Company and the Society and is designed to make effective business decisions through the full involvement of employees and their representatives in the decision-making process. For work to be contracted out there must be joint agreement between OPG and the Society. Failing agreement, any work to be contracted out requires the development of a business case that supports contracting out versus performing the work internally and assesses the impact on employees. Where no agreement is reached, the dispute moves to arbitration for resolution.

In 2010, OPG and the Society agreed to suspend the collective agreement provision on contracting out work in favour of an alternative agreement. Under this agreement, OPG obtained flexibility to contract out work in exchange for agreeing that it would not lay off employees as a direct result of contracting. OPG can contract work up to an annual value of $165M. For any contracting in excess of $165M per year, a payment equal to 1% of the amount in excess of $165M is paid to the Society. The company is required to advise the Society on the amount of contracting through regularly scheduled meetings and reports detailing the annual amounts spent. This agreement also provides a similar payment for contracted out work in the context of major, multi-year projects such as the Niagara Tunnel and the Darlington Refurbishment Projects that would be otherwise performed by Society represented employees. These payments are made on an annual basis over the life of the project. This agreement will expire on December 31, 2015 unless it is renewed.

4.3.2 Re-organizing the Workforce.

Re-organization of the workforce entails reducing and redistributing staff, and restructuring jobs. Each of these aspects of reorganization is limited by the collective agreement. Where OPG determines a staff excess, three options can be employed: redistribute excess staff to fill vacant positions; encourage employees to resign by offering a voluntary severance package; or invoke a layoff process.

4.3.2.1 PWU

In general, the PWU collective agreement uses seniority to govern re-organization of the workforce. Seniority dictates that employees with the most service have a right to continued employment over employees with less service. Under a layoff, the collective agreement provides that an employee who is qualified and senior can displace another employee with less service anywhere in the province. The displacement of employees disrupts business operations, involves re-training and can involve relocation costs where employees are required to relocate more than specified distances. Employees who are laid off are entitled to severance, or can elect to be recalled to a vacant position within 3 years from their date of layoff.

Voluntary severance is an alternative to lay-offs. Under a voluntary severance arrangement OPG is required to make severance packages available to broad classes of employees and must select employees in order of seniority from those who volunteer for severance. Thus, OPG can control how many employees leave, but has limited control over which employees leave. Given the lack of ability to control which employees leave, workforce rebalancing often is required to match the remaining employees to the positions created by senior employees volunteering to leave. This process also disrupts business operations and requires re-training and relocating employees.

In lieu of layoff or severance, OPG can redistribute staff to balance staffing levels in circumstances where a demand for labour exists in one area and excess labour exists in another. Like layoffs and voluntary severance, staff redistribution is based on seniority. Thus, the actual employee whose position is in excess of OPG's needs may not be the employee who ends up transferring. Retraining may be required when an employee is displaced and if an employee is required to relocate over a specified distance, OPG incurs relocation cost.

Based on collective bargaining with the PWU, a no lay-off clause was included in the PWU contract. As a result, excess staff can only be addressed through staff redistribution or voluntary severance.

4.3.2.2 Society

The Society collective agreement contains an employment continuity clause which addresses layoff, voluntary severance and redistribution of employees. Many aspects of the Society agreement are the same as the PWU agreement discussed in the preceding section. The primary difference is how excess employees are identified for lay-off or redistribution. While seniority is a feature of the process, the dominant factor is the employee's skill set.

Under the agreement with the Society, the parties must jointly match employees' skills to positions in the organization and then identify which employees are excess. Determining which employees are excess involves examining the qualifications of each employee against the qualifications for each job identified in the organization. Where multiple employees are qualified for the same job, seniority applies. As a result, the person currently doing a job may not retain it if another qualified employee has seniority. Once this matching is completed, employees are either laid off or redistributed to other organizations.

Where an employee is displaced, re-training is offered. An employee who is laid off is entitled to a job search period of up to 60 weeks to secure employment in OPG. During the search period the employee remains on the payroll. An employee who has not found a new position during the search period is severed.

The entire exercise of lay-offs and redistribution is disruptive to business operations due to employee turnover, and the time required for retraining and relocating employees. Redistribution of excess employees may result in re-training and relocation costs.

4.4 The Labour Relations Context

OPG's compensation levels and the terms of the PWU and Society collective agreements exist within a labour relations context defined by legal requirements and a long history of collective agreements. This context bears directly on the amount of compensation paid by OPG and on the prospects of achieving significantly different labour costs.

To assist in understanding this context, Attachment 1 is a report by Professor Richard Chaykowski, entitled “An Assessment of the Industrial Relations Context and Outcomes at OPG.” Dr. Chaykowski, a faculty member in the School of Policy Studies and in the Faculty of Law (cross-appointed) at Queen's University. He has been a visiting scholar at MIT, the University of Toronto and McGill University. Dr. Chaykowski is a recognized expert in the area of labour relations. As set out in his report, it is Dr. Chaykowski’s opinion that:

- The compensation levels and increases of unionized employees at OPG are determined solely through the collective bargaining process, and not through the unfettered interaction of supply and demand in the labour market.
- The set of main factors that determine the relative bargaining power of the major unions and OPG all function to increase the bargaining power of the unions relative to the bargaining power of OPG.
- Consistent with the empirical research evidence that unions deliver a sizable wage premium, both the PWU and Society should be successful in raising compensation levels considerably above the wage levels that would be expected to prevail in broader competitive labour markets characterized by little or no unionization.
- In terms of pay and other employment related outcomes, the relevant and appropriate comparators for OPG are those firms that are subject to similar regulatory and legislative regimes, especially labour relations policy, similar legal regimes, and that have similarly high levels of unionization.
- OPG wage settlements tend to track the negotiated increases in the Ontario broader public sector over time. This outcome is to be expected given the very high level of unionization across the Ontario public sector, and in the electricity industry.
- The most recent OPG contract settlement with the PWU and interest arbitration award for the Society include lower pay increases than the previous contracts. This outcome is consistent with the long term trend whereby negotiated wage settlements at OPG tend to track the average wage negotiated in large Ontario broader public service bargaining units.

5.0 MANAGEMENT COMPENSATION

As a result of the Agency Review Panel findings, OPG has adopted a Management Group (MG) compensation policy of generally paying at the 50th percentile while balancing the need to attract and retain qualified staff. In some instances OPG has paid above the 50th percentile for key positions where it has been difficult to attract and retain the necessary talent. OPG's MG compensation complies with government requirements.

Each fall, OPG's MG compensation band structure and base pay merit budget are reviewed against external benchmarks to ensure that MG compensation is in line with the 50th percentile. Since 2008, changes to OPG MG compensation have been driven by self-imposed salary restraints and Government legislation in the form of Bill 16 and Bill 55. The MG band structure has been frozen since 2008 and base pay and merit increases have been restricted as follows:

- In January 2009, OPG voluntarily imposed the same constraints the Ontario Government had implemented for elected officials and government employees. These were: no base pay increases for senior management, and base pay budgets were established providing 1.5 per cent for employees earning greater than $150,000 and 2 per cent for remaining employees. These increases were below the average general market increases of 3.5% as reported by major salary surveys. In 2009, OPG also voluntarily rolled back all incentive payments by 5%.
- In January 2010, OPG voluntarily imposed a base pay budget limit of 1.5 per cent. This budget was distributed according to competency and performance levels. There were no across-the-board increases. The increases were below general market increases which ranged between 2.3% and 3.0% as reported by major salary surveys. Also in 2010, OPG voluntarily rolled back all incentive payments by 10%.
- Effective March 2010, the Ontario Government introduced the Public Sector Compensation Restraint to Protect Public Services Act (part of Bill 16) for employees that do not collectively bargain compensation. The Act prohibited increases in pay ranges for non-bargaining employees before April 2012, but did allow increases based on individual merit.
- In January 2011 there were no MG base pay increases and the salary structure remained frozen.

- In March 2012, the Government introduced Bill 55, the Strong Action for Ontario Act (Budget Measures), which included measures to extend controls over executive compensation. The Act covers OPG's MG employees at the Vice President level and above and is to remain in effect until the Province of Ontario ceases to have a budget deficit. Additionally, in response to OPG's financial situation and Government preference for net-zero wage increase, OPG extended the Bill 55 restrictions to all MG staff including those below the Vice President level. No adjustments have been made to base salaries for any MG employee except as permitted under the Act.

These salary restraint measures have contributed to a reduction in OPG's total cost of MG base salaries since 2010 and, as noted in Section 9 (Benchmarking), have reduced management salaries such that they are now generally at or below the 50th percentile relative to the comparator groups.

5.1 Goals and Operation of the Management Group Compensation Program

OPG's MG compensation program is designed to ensure that OPG is able to attract, retain, and motivate key talent in a highly specialized and technical industry that is facing increasing competition for resources due to entry by new firms and a shrinking supply of experienced personnel due to demographics. Specifically, the objectives of OPG's MG compensation program include:

- Attract, motivate and retain talent to enable the company to meet its operational and financial performance objectives.
- Motivate employees by creating a pay-for-performance environment that rewards strong performance and drives desired behaviours while ensuring that business-related risks are managed.
- Provide an appropriate level of compensation relative to its talent market by ensuring alignment with strategic business objectives, and a balance of fixed and variable compensation.
- Meet Government direction related to compensation.

While the salary restraint measures mentioned in section 5.0 have helped to reduce MG wage costs, they have created challenges to the fundamental objectives of the MG compensation program listed above:

- Significant salary compression exists across OPG with 161 managers currently earning less than one or more of the staff they supervise.
- Salary levels for MG staff in administrative and clerical positions are moving below comparable positions held by OPG's represented staff.
- The prospect of a long term salary freeze is a concern for represented staff when recruiting qualified internal personnel into MG positions.

The OPG Board of Directors approves changes to the MG compensation program and monitors MG compensation on an ongoing basis through its Compensation and Human Resources Committee ("CHRC"). The CHRC consists of four independent Board members plus the Board Chair and OPG's CEO. The current CHRC members are seasoned former CEOs and senior executives of large, complex, multi-national corporations including international nuclear and other energy companies, each of whom possesses considerable financial and human resources experience. The CHRC is responsible for overseeing all significant compensation matters including:

- Reviewing compensation structures, decisions and payouts (base salary, short-term incentive, etc.), and ensuring the link between pay and performance.
- Annually reviewing and approving changes, as appropriate, to OPG compensation, including compensation principles and objectives for total compensation, desired competitive positioning and comparator groups.
- Ensuring that performance measures in the Corporate Balanced Scorecard appropriately reflect the corporation's approach to risk management.
- Ensuring that executive compensation levels and performance targets are consistent with the Board's compensation philosophy and are aligned with and designed to achieve OPG's strategic and operating objectives.

- Overseeing senior executive pay, including total compensation, and individual contract provisions in senior executive employment offers and severance agreements.

The CHRC establishes salary band ranges for all MG staff including executives. The President and CEO does not participate in CHRC decisions that could impact his compensation. When reviewing executive salaries (and incentives and benefits), the CHRC uses external compensation advisors to provide information on market-based executive compensation.

5.2 Management Group Annual Incentive Plan ("AIP")

OPG has an Annual Incentive Plan (AIP) for MG employees. The intent of the AIP is to deliver a portion of compensation on a pay at-risk basis, if key financial and operational objectives of the corporation, business unit and individual are met. The AIP program design provides line of sight to corporate objectives and provides control over program costs. Corporate objectives must be met in order for the AIP to payout because in the event that corporate objectives are not met, the AIP is not funded. The AIP envelope for a given year is capped based on corporate performance. In accordance with Bill 55, the AIP envelop is further constrained to ensure the total performance pay envelope is capped at the envelope awarded for 2011 performance (paid in 2012). Corporate, business unit and individual scorecards are established at the beginning of the year, outlining the expectations for performance. The Corporate Scorecard is reviewed by the CHRC and approved by the OPG Board of Directors. There have been no changes to the current AIP Plan design since January 2010. Performance incentives costs are presented in Ex. F4-4-1.

6.0 PENSION AND BENEFITS

OPG's pension and benefit programs consist of a registered pension plan ("RPP"), a supplementary pension plan, health, dental, life insurance and other benefits for current employees and their dependants, and other post employment benefits ("OPEB"). OPEB include post retirement benefits, such as group life insurance and health and dental care for pensioners and their dependants, as well as long-term disability plan ("LTD") benefits for current employees.[6]

The collective agreements with the PWU and Society contain pension and benefits clauses. Pension and benefits levels for Management Group employees are determined by OPG's Board of Directors.

6.1 Pension

The RPP is funded by member and OPG contributions. Independent actuarial valuations are required to be performed periodically to determine the funded status of the RPP and contributions that are required to fund any deficit. As required by the *Pension Benefits Act* (Ontario), the valuations are filed with the Financial Services Commission of Ontario ("FSCO"), and deficits are funded over a period of time (5 - 15 years depending on the nature of the deficit). The most recently filed actuarial valuation was as at January 1, 2011 and showed that the pension fund was in a deficit position. This valuation was previously filed with the OEB in EB-2012-0002.[7] The next actuarial valuation for funding purposes will be completed in 2014 and must be filed with the FSCO by September 30, 2014.[8] There have been no significant changes to the pension plans since EB-2010-0008.

6.2 Benefits

All regular employees and pensioners at OPG can receive health, dental and life insurance benefits. OPG has been taking steps to both monitor and control benefits and has implemented a number of changes to stabilize costs and to better align benefit provisions with those of the external market. Changes for the employees represented by the Society and the PWU are achieved only through the collective bargaining process and are, therefore, tied to the timelines of the agreements.

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[6] The term "other post retirement benefits" refers to post employment benefit plans other than the RPP and LTD benefits.
[7] EB-2002-0002, Ex. H2-1-3, Attachment 3
[8] The supplementary pension plan is not funded but is secured by letters of credit.

OPG outsources claims administration to Great-West Life and has a number of plan management and adjudication mechanisms in place to control benefit costs. These include the mandatory substitution of generic drugs, maximizing coordination of benefit opportunities, and a requirement for prior approval for certain drug and treatment therapies.

Other cost containment initiatives include:

- Implementation of the 55 and 10 rule for Society represented and Management Group employees:
    - Removes the ability to retire with less than 10 years of service and receive post retirement benefits for life. Provides for lifetime benefits only if, at age 55, the employee has a minimum of 10 years of service with OPG.
- Outsourcing Benefits/Pension Administration
    - OPG was successful at arbitration in obtaining a Purchased Services Agreement (PSA) to outsource some incremental Benefits/Pension administrative duties to existing carriers. This eliminates duplication of effort and allows for reassignment of OPG staff currently performing this work.
- 24 month Health and Dental benefit claim window
    - Requires employees to submit all Health & Dental Benefits claims within a 24 month window of obtaining the service. This lowers administration costs on the adjudication of old claims and is now in place for all employees.
- Millenium Health & Dental Benefits Plan
    - New externally hired MG employees receive Health & Dental Benefits based on the Management Group Millenium Plan. This plan provides lower coverage levels, both in terms of dollar amounts of coverage and in terms of diversity of coverage, compared to the Management Group Heritage Plan for legacy staff.

6.3 Pension and Benefits Costs

OPG is seeking recovery of test period pension and benefits costs associated with the regulated operations determined in accordance with USGAAP. With the exception of the difference in accounting for LTD benefit costs between USGAAP and Canadian GAAP, the nature of the costs and the methodologies used to derive them are unchanged from those presented in EB-2010-0008 and EB-2012-0002. The difference in the accounting treatment for LTD costs is discussed in Ex. A2-1-1, Section 4.0 and was previously discussed in EB-2012-0002, Ex. A3-1-1, Section 4.1.

6.3.1 Accounting Treatment for Pension and Benefit Plans

In accordance with USGAAP, OPG's pension and other post retirement benefit costs for the current year are based on the measurement of benefit obligations and RPP fund assets at the end of the previous year. The full impact of certain events arising during a year is not charged to pension and OPEB costs for that year, rather certain amounts are accumulated and amortized over future periods.

In accordance with USGAAP, OPG's LTD costs for the current year are based on the measurement of the benefit obligation at the end of both the current and the previous year. The full impact of events arising during a year related to LTD benefits is charged to OPEB costs for that year.

The obligations for pension and other post retirement benefits continue to be determined using the projected benefit method pro-rated on service. Under this method, an equal portion of the total estimated future benefit is attributed to each year of service until the date the plan participant would be entitled to the full benefit. The obligation at a particular date is the actuarial present value of the benefits attributed to the service rendered up to that date.

The LTD obligation continues to be determined using the projected benefit method on a terminal basis. Under this method, the total estimated future benefit is attributed to the year of service in which a disability actually occurs.

OPG's pension and OPEB costs and obligations continue to be determined annually by an independent actuary using management's best estimate assumptions, both economic (e.g., inflation, salary escalation and health care cost trends) and demographic (e.g., mortality rates, termination rates and retirement rates). In accordance with USGAAP, the discount rates used in determining benefit obligations and costs for pension and OPEB continue to be based on AA corporate bond yields in Canada for the appropriate duration of the benefit obligation. Discount rates are discussed further in Sections 6.3.4 below.

For purposes of determining pension costs, RPP fund assets continue to be valued using a market-related value of assets. The market-related value used in determining OPG's pension costs recognizes gains and losses on equity assets relative to a six per cent assumed real return over a five-year period. This contributes to the smoothing of impacts from equity market volatility over time.

Pension and OPEB costs are made up of a number of components, including current service costs, interest costs on the obligations at the appropriate discount rate, the expected return on RPP fund assets using an estimated long-term rate of return, amounts for past service costs arising from plan amendments, and amounts for actuarial gains or losses. Actuarial gains and losses consist of experience gains and losses, which arise because actual experience differs from that assumed (e.g., investment experience different than expected or higher inflation), and adjustments for changes in assumptions (e.g., discount rates or mortality assumptions).

Actuarial gains and losses for pension and other post retirement benefits are generally amortized over future periods. In accordance with USGAAP, OPG amortizes the net cumulative unamortized gain or loss for each of these plans in excess of 10 per cent of the greater of the benefit obligation and the market-related value of the plan assets over the expected average remaining service life of the employees. This is known as the "corridor approach." Past service costs for pension and other post retirement benefits continue to be amortized over the expected average remaining service period to full eligibility of the affected employee groups.

As a result of the use of a market-related asset value and the corridor approach, and the amortization of actuarial gains and losses and past service costs, certain components of the actuarial gains and losses and past service costs are not fully charged to pension and other post retirement benefits costs in the year they arise. However, in accordance with USGAAP, all actuarial gains and losses and past service costs related to LTD benefits are recognized in the year they arise.

Costs associated with plans that provide benefits to OPG's employees during their employment, such as health and dental coverage, continue to be recorded on the basis of actual benefit payments made by OPG to, or on behalf of, the employees as required by USGAAP.

6.3.2 Forecasting and Assumptions for Pension and OPEB Costs

Forecasting pension and OPEB costs requires estimating the values of the benefit obligations and pension fund assets at the end of the year, for which actual results are not known, that precedes the forecast year. Developing these estimates requires making projections of the actual pension fund performance and the assumptions that will be used to determine the obligations. Forecasting LTD costs also requires estimating the value of the obligation at the end of the last year in the forecast period.

The costs for 2013-2015 reflected in this application were determined using the actual December 31, 2012 values of the benefit obligations and pension fund assets and the final assumptions as at December 31, 2012. The determination of 2014 and 2015 costs reflected projections of benefit obligations and pension fund assets at the end of 2013 and 2014 using these assumptions. OPG's total projected pension and OPEB costs for 2013-2015 were calculated by an independent actuary, Aon Hewitt, as shown in Attachment 2.

As the final assumptions as at December 31, 2012 were used to project the 2013-2015 costs, except LTD costs, the 2013 pension and OPEB costs are expected to be close to the actual costs for the year, absent any significant unexpected changes in legislation or OPG's operations. The 2013 LTD cost projections are less definitive because these costs are calculated using information as of year-end 2013.

For the purpose of projecting pension and OPEB costs, OPG may adjust discount rate assumptions from those provided by its independent actuary by a maximum of 25 basis points. This type of adjustment can occur when bond yields are not indicative of historical trends or are volatile. OPG made no adjustment to the December 31, 2012 discount rates provided by the independent actuary in projecting 2014 and 2015 costs. OPG does not adjust discount rates in determining actual costs.

The long-term inflation assumption used for projecting pension and OPEB costs continues to be based on the Ontario consumer price index. OPG uses the final year in the most recent forecast from a publicly available economic report, subject to an adjustment if the rate is outside of the Bank of Canada's target range for inflation. The salary schedule escalation rate assumption used to project the 2013-2015 pension and OPEB costs is equal to the long term inflation assumption plus 0.5 per cent. As in the past, OPG's independent actuary has reviewed and agreed with these assumptions.

The expected long-term rate of return on the pension fund continues to be calculated by an independent actuary. The rate is based on the current and expected asset mix and the expected return, considering long-term historical risks and returns associated with each asset class within the fund portfolio and the impact of active fund management.

Chart 1 below presents the assumptions used to determine OPG's 2010-2012 actual and 2013-2015 projected pension and OPEB costs. The assumptions for 2011-2013 (as well as those used for 2011 and 2012 OEB-approved costs) were previously presented in EB-2012-0002, Ex. H1-1-2, Chart 6.[9]

[9] As LTD costs are established in accordance with USGAAP using discount rates determined at the end of the year and in accordance with Canadian GAAP using discount rates determined at the beginning of the year, assumptions for the LTD discount rates differ from those presented in EB-2012-0002.

Chart 1

Pension and OPEB Cost Assumptions						
	2010 Actual	2011 Actual	2012 Actual	2013 Projection[10]	2014 Plan[4]	2015 Plan[4]
Discount rate for pension	6.80% per annum	5.80% per annum	5.10% per annum	4.30% per annum	4.30% per annum	4.30% per annum
Discount rate for other post retirement benefits	6.90% per annum	5.80% per annum	5.20% per annum	4.40% per annum	4.40% per annum	4.40% per annum
Discount rate for long-term disability[11]	5.40% per annum	4.00% per annum	3.50% per annum	3.50% per annum	3.50% per annum	3.50% per annum
Expected long-term rate of return on pension fund assets	7.0% per annum	6.5% per annum	6.5% per annum	6.25% per annum	6.25% per annum	6.25% per annum
Inflation rate	2.0% per annum	2.0% per annum	2.0% per annum	2.0% per annum	2.0% per annum	2.0% per annum
Salary schedule escalation rate	3.0% per annum	3.0% per annum	3.0% per annum	2.5% per annum	2.5% per annum	2.5% per annum
Rate of return used to project year-end pension fund asset values	N/A	N/A	N/A	N/A	6.25% per annum in 2013	6.25% per annum in 2013 and 2014

Projections of rates of return to determine year-end pension fund asset values are not required for the calculation of the 2010-2013 costs because the actual prior year-end asset values are known. The actual returns on pension fund assets were 12.2 per cent in 2010, 6.9

[10] The assumptions for 2013-2015 can also be found at pages 4-5 of Aon Hewitt's report in Attachment 2.

[11] As the costs for 2010 are presented under Canadian GAAP, the discount rate assumption used to determine LTD costs for 2010 represents the rate as at December 31, 2009. In accordance with USGAAP, the discount rates for 2011-2015 are actual (2011-2012) or projected (2013-2015) rates at December 31 of those years.

per cent in 2011, and 9.4 per cent in 2012. Up to end of August 2013, the return on pension fund assets was 1.7 per cent.

6.3.3 Use of AA Corporate Bond Yields in Determining Discount Rates

The discount rates used in determining OPG's actual and forecast benefit obligations and costs for pension and OPEB are based on AA corporate bond yields for durations similar to those of the obligations. The payment amounts established for OPG in EB-2007-0905 and EB-2010-0008, as well as the December 31, 2012 balances in the Pension and OPEB Cost Variance Account and Impact for USGAAP Deferral Account approved in EB-2012-0002, reflected pension and OPEB costs determined using such discount rates. These discount rates are also used in determining pension and OPEB costs for the purposes of OPG's audited consolidated financial statements (e.g., Ex. A2-1-1, Attachment 1) as well as the audited financial statements for OPG's prescribed facilities (e.g., Ex. A2-1-1, Attachment 2, which will be filed when available).

In the EB-2010-0008 Decision with Reasons (p. 96), the OEB directed OPG "to provide a fuller range and discussion of alternatives to the use of AA bond yields to forecast discount rates in its next application." The discussion that follows responds to this direction and demonstrates that:

- USGAAP requires the use of high quality corporate bonds that are rated AA or higher in calculating the discount rate, and OPG's auditors concur with this view;
- OPG's approach for determining the AA corporate bond yields is consistent with the framework put forward by the Canadian Institute of Actuaries ("CIA"); and
- OPG's auditors and actuaries have accepted OPG's approach for determining the AA corporate bond yields.

Based on these factors, as discussed below, OPG has concluded that there are no viable alternatives to the use of AA corporate bond yields in determining discount rates.

6.3.3.1 USGAAP Requires the Use of AA Bonds

In accordance with USGAAP, OPG is required to select discount rates by reference to market yields on "high-quality fixed-income investments."[12] USGAAP further specifies that "fixed income debt securities that receive one of the two highest ratings given by a recognized ratings agency be considered high quality (for example, a fixed-income security that receives a rating of Aa or higher from Moody's Investors Service, Inc.)."[13] In Canada, the Employee Future Benefits Implementation Guide issued by the Canadian Institute of Chartered Accountants ("CICA") cites the use of AA bonds by reference to the above USGAAP guidance.[14]

OPG's auditors, Ernst & Young, are of the view that the use of corporate bond yields rated AA or higher is required to be compliant with USGAAP. They also agree that the use of bonds with ratings lower than AA (e.g., A-rated bonds) in determining pension and OPEB obligations and costs would not comply with USGAAP.

International Financial Reporting Standards ("IFRS") similarly require that discount rates be determined by reference to yields on "high quality corporate bonds."[15] In November 2012, the IFRS Interpretations Committee ("IFRIC"), the official interpretative body of the International Accounting Standards Board, explicitly noted that "the predominant practice has been to consider corporate bonds to be high quality if they receive one of the two highest ratings given by a recognized rating agency (i.e., 'AAA' and 'AA')."[16]

6.3.3.2 <u>OPG's Approach for Determining, AA Corporate Bond Yields Is Consistent with the CIA Framework</u>

The CIA issued an educational note in September 2011 entitled "Accounting Discount Rate Assumption for Pension and Post-employment Benefit Plans" (the "CIA Note") (see

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[12] United States Financial Accounting Standards Board Accounting Standards Codification Topic 715-30-35 to 43

[13] United States Financial Accounting Standards Board Accounting Standards Codification Topic 715-20-S99-1

[14] CICA Employee Future Benefits Implementation Guide, Second Edition, para. 41R. The guide was issued in connection with Section 3461, which is now Part V of the CICA Handbook – Accounting. In para. 065, Section 3461 requires the use of "high-quality debt instruments" in determining discount rates.

[15] International Accounting Standard 19, *Employee Benefits*, para.83

[16] IFRIC Update, November 2012, Interpretations Committee's work in progress, IAS 19 *Employee Benefits* – Actuarial assumptions: discount rate; refer to http://media.ifrs.org/2012/IFRIC/IFRIC-Update-November-2012.pdf

Attachment 3).[17] Consistent with the discussion in Section 6.3.3.1, the CIA Note states that: "it is understood that "high quality" in Canada has generally been interpreted as referring to market yields on corporate bonds rated Aa or higher, as is the practice in most other countries where Accounting Standards [USGAAP or IFRS] also apply."[18]

There is a limited population of AA-rated corporate bonds with longer-term maturities denominated in Canadian dollars. As such, historically, the development of discount rates by major independent actuaries in Canada, such as Mercer and Aon Hewitt, involved an extrapolation of AA corporate bond yields at the long end of the yield curve based on a small number of corporate bond issues available in the marketplace ("Historical Approach"). The discount rates presented in OPG's past applications were developed by its independent actuaries using this approach.

The CIA Note was issued to address the scarcity of AA corporate bonds with longer-term maturities denominated in Canadian dollars. It encourages actuaries to consider long-term AA-rated Canadian provincial bond yields, subject to a spread adjustment, in calculating AA corporate bond yields for terms longer than 10 years.

The CIA Note also suggests a specific approach for calculating the spread between provincial and corporate bonds. Under this approach, the spread adjustment is calculated as: 50 per cent of the difference between the average spread separating AA corporate and AA provincial bonds with terms between 5 to 10 years, and the average spread separating such bonds with terms above 10 years ("CIA Approach"). In presenting this calculation approach, however, the CIA Note acknowledges that deriving the spread adjustment for provincial bonds with longer-term maturities requires judgment and that other approaches could be acceptable with sufficient justification. (Attachment 3, pp. 11 and 13)

[17] A supplement to the CIA Note titled "Accounting Discount Rate – Calculating Spread Above Provincial Yields" was subsequently issued in August 2013 and is provided in Attachment 4.

[18] The CIA Note observed that while no AAA-rated corporate bonds denominated in Canadian dollars with long maturities currently exist, "an actuary may consider including Aaa-rated corporate bonds as "high quality" bonds in the analysis if they become available." (p. 4) Thus, while using AAA-rated corporate bond yields is theoretically acceptable; it is not currently a viable alternative. Should such bonds become available, their inclusion in the calculation would be expected to lower discount rates.

In the second half of 2012, Mercer, a leading Canadian actuarial firm, developed the Enhanced Mercer Model to calculate discount rates.[19] The Enhanced Mercer Model follows the framework of the CIA Note but uses a different approach for determining the spread between provincial and corporate bonds, and an expanded set of bond issues.[20] Attachment 5 is a letter prepared by Mercer that provides a summary description of the Enhanced Mercer Model and a comparison against the CIA Approach.

In 2012, Ernst & Young advised OPG of their position that the Historical Approach for determining discount rates was no longer acceptable under USGAAP. Absent an acceptable alternative approach at that time from OPG's main independent actuary, Aon Hewitt, OPG reviewed both the CIA Approach and the Enhanced Mercer Model to determine the approach to use for establishing the December 31, 2012 discount rate assumptions.

After reviewing the two approaches, OPG decided to adopt the Enhanced Mercer Model. OPG concluded that the Enhanced Mercer Model produced spreads that were more consistent with market theory. The discount rates produced by the Enhanced Mercer Model as at December 31, 2012 were higher than those under the CIA Approach, resulting in lower pension and OPEB costs.[21] The Enhanced Mercer Model is generally expected to produce discount rates that are higher than those under the CIA Approach. Both Aon Hewitt and Ernst & Young accepted the discount rates produced using the Enhanced Mercer Model.[22]

6.3.4 Pension and Benefit Cost Distribution

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[19] This approach is known as the "Enhanced Mercer Model" because it is an enhancement of Mercer's previous approach, to take into account the guidance of the CIA Note on the use of longer-term provincial bond yields.

[20] At p. 2 of Attachment 5, Mercer notes that, as of March 2013, the bond issues used in the CIA Approach and the Enhanced Mercer Model are aligned.

[21] The CIA Approach would have produced discount rates of 3.90% for pension, 4.00% for other post retirement benefits and 3.40% for LTD benefits as at December 31, 2012, as compared to the rates of 4.30%, 4.40% and 3.50%, respectively, produced by the Enhanced Mercer Model shown in Chart 8.

[22] Other large OEB-regulated companies that report under USGAAP also base their discount rate forecasts on AA corporate bond yields. See EB-2011-0210, Exhibit D1, Tab 3, Page 2, Line 21-22, ADDENDUM (Union Gas); 2012 Annual Consolidated Financial Statements, page 39 (Hydro One); EB-2012-0459, Ex. D1, Tab 16, Schedule 1, Appendix 1, page 5 (Enbridge Gas Distribution). Enbridge, like OPG, proposes calculating the discount rate using the Enhanced Mercer Model.

A portion of OPG's total pension and OPEB costs continues to be charged directly to the business units as part of standard labour rates. The portion of pension and OPEB costs included in standard labour rates is based on an estimate of the current service cost for pension and OPEB. The remainder of pension and OPEB costs, which includes interest costs on the obligations, the expected return on pension plan assets, amounts for past service costs and actuarial gains and losses, and any current service cost variance from the estimate reflected in the standard labour rates, continues to be recorded as a centrally-held cost (presented in Ex. F4-4-1, Section 3.0).

The centrally-held costs for pension and OPEB are directly assigned and allocated to the regulated business units in proportion to the amount of pension and OPEB costs directly charged to the regulated business units plus the costs assigned and allocated from the support services groups. The same methodology was used in EB-2010-0008 and EB-2012-0002. It has been reviewed by HSG Group, Inc. in the cost allocation study presented in Ex. F5-5-1, as well as by Black & Veatch Corporation Inc. in the cost allocation study filed in EB-2010-0008.

The costs associated with plans that provide benefits to OPG's employees during their employment continue to be charged to regulated business units largely via standard labour rates with a small portion included in centrally-held costs.

6.3.5 Comparison of Pension and OPEB Costs

Charts 2, 3 and 4 below present pension and OPEB costs attributed to nuclear, previously regulated hydroelectric and newly regulated hydroelectric operations, respectively, for the 2010-2015 period.[23] The 2011 and 2012 amounts for the nuclear and previously hydroelectric operations were reflected in the December 31, 2012 balances of the Pension and OPEB Cost Variance Account (on a Canadian GAAP basis) and the Impact for USGAAP Deferral Account approved in EB-2012-0002. Actuarial and audit reports in support of the 2011 and

[23] The figures in these Charts differ from those used in Table 1 and Attachment 6 because the amounts here include total pension and OPEB costs (i.e., all components) while Table 1 and Attachment 6 include only the current service cost component of pension and OPEB costs.

2012 costs were filed in EB-2012-0002.[24] As noted above, OPG is providing in Attachment 2 an independent actuarial report in support of the 2013-2015 costs.

Chart 2

Pension and OPEB Costs – Nuclear[25] ($M)						
	2010 Actual	**2011 Actual**	**2012 Actual**	**2013 Projection**	**2014 Plan**	**2015 Plan**
Pension – Standard Labour Rate Component	113.8	165.8	163.5	229.7	222.4	220.6
Pension – Centrally Held Component	(21.2)	29.7	110.9	131.5	120.2	110.7
Total Pension Cost	**92.6**	**195.5**	**274.4**	**361.2**	**342.6**	**331.3**
OPEB – Standard Labour Rate Component	45.9	62.9	65.6	79.8	76.9	76.0
OPEB – Centrally Held Component	103.7	139.6	153.1	165.1	172.4	177.7
Total OPEB Cost	**149.6**	**202.5**	**218.7**	**244.9**	**249.3**	**253.7**

Chart 3

Pension and OPEB Costs - Previously Regulated Hydroelectric[17] ($M)						
	2010 Actual	**2011 Actual**	**2012 Actual**	**2013 Projection**	**2014 Plan**	**2015 Plan**
Pension – Standard Labour Rate Component	5.3	7.9	8.2	12.4	12.2	12.0
Pension – Centrally Held Component	(1.0)	1.5	5.6	7.1	6.6	6.0
Total Pension Cost	**4.3**	**9.4**	**13.8**	**19.5**	**18.8**	**18.0**

[24] Refer to EB-2012-0002 Ex. H2-1-3, Attachment 2 for an independent actuary's report on the 2011 costs and EB-2012-0002 Ex. H1-1-2, Attachment 3 for the equivalent report on the 2012 costs. The 2011 report should be read in conjunction with EB-2012-0002 Ex. A3-1-2, Attachment 3, which is an independent actuarial report on OPG's transition to USGAAP and provides 2011 LTD costs under USGAAP.

[25] Includes allocations of costs related to support services functions. Supplementary pension plan costs are included in OPEB costs. Amounts for 2010 are presented on the basis of Canadian GAAP. Nuclear pension and OPEB costs include approximately $2M each in 2010 and 2011 and approximately $4M in 2012 related to the costs of the Nuclear Waste Management Organization ("NWMO"), which is consolidated into OPG's financial statements. OPG does not forecast these costs as they are determined by the NWMO.

OPEB – Standard Labour Rate Component	2.1	3.0	3.2	4.3	4.2	4.1
OPEB – Centrally Held Component	4.9	6.7	7.7	8.9	9.4	9.7
Total OPEB Cost	**7.0**	**9.7**	**10.9**	**13.2**	**13.6**	**13.8**

Chart 4

Pension and OPEB Costs – Newly Regulated Hydroelectric[17] ($M)

	2010 Actual	2011 Actual	2012 Actual	2013 Projection	2014 Plan	2015 Plan
Pension – Standard Labour Rate Component	8.8	14.2	14.5	21.4	21.7	21.0
Pension – Centrally Held Component	(1.7)	2.5	9.9	12.3	11.7	10.6
Total Pension Cost	**7.1**	**16.7**	**24.4**	**33.7**	**33.4**	**31.6**
OPEB – Standard Labour Rate Component	3.5	5.3	5.7	7.4	7.5	7.3
OPEB – Centrally Held Component	8.1	12.0	13.7	15.4	16.8	17.0
Total OPEB Cost	**11.6**	**17.3**	**19.4**	**22.8**	**24.3**	**24.3**

Pension and OPEB costs increase significantly over the 2010 to 2013 period. The increase is not due to changes in benefit levels or plan provisions. Instead, the primary driver of the increase over the period is a declining trend in discount rates, as shown in Chart 1. In addition, a decline in the expected rate of return on the pension fund assets as shown in Chart 1 and the expected net growth in the cost components during the period also contribute to the increase in the costs. The expected net growth (change) in the cost components includes impacts of changes in current service costs in the normal course, higher interest costs on a higher benefit obligation due to the passage of time, and expected changes in the pension asset values. The increases in 2011 and 2012 were partly offset by the impact of gains on pension fund assets in 2010 and 2011. The increase in 2013 was offset in part by the impact of changes in staffing levels. In the projection for 2014 and 2015, pension costs decrease reflecting negative expected net growth, primarily due to projected increases in pension asset values. The projection of OPEB costs increases slightly over the same period, reflecting expected net growth.

Pension and OPEB costs charged to regulated business units directly via payroll burden increased in 2011-2012, as compared to 2010, chiefly due to lower discount rates. The costs charged via payroll burden increase further in 2013 mainly due to lower discount rates, partly offset by the impact of lower staff levels. The projection for payroll burden pension and OPEB amounts is relatively stable in 2014 and 2015, as compared to 2013.

The declining trend in discount rates over 2010-2013 reflects the impact of financial market conditions on long-term bond rates. Decreases in expected rates of return over the same period reflect lower anticipated returns due to global financial market conditions.

Chart 5 below presents the OEB-approved (2011 and 2012) and budgeted (2010) pension and OPEB costs, which were determined in accordance with Canadian GAAP.

Chart 5

Pension and OPEB Costs[26] ($M)						
	Nuclear			Previously Regulated Hydroelectric		
	2010 Budget	2011 Plan	2012 Plan	2010 Budget	2011 Plan	2012 Plan
Pension – Burden Component	112.9	117.7	121.6	5.7	6.0	6.0
Pension – Centrally Held Component	(18.8)	(3.7)	41.2	(1.0)	(0.2)	2.1
Total Pension Cost	**94.1**	**114.0**	**162.8**	**4.7**	**5.8**	**8.1**
OPEB – Burden Component	45.2	47.5	49.6	2.2	2.4	2.4
OPEB – Centrally Held Component	106.8	111.8	117.1	5.4	5.6	5.9

[26] Includes allocations of costs related to support services functions. Supplementary pension plan costs are included in OPEB costs.

Total OPEB Cost	**152.0**	**159.3**	**166.7**	**7.6**	**8.0**	**8.3**

As discussed in EB-2012-0002, Ex. H2-1-3, Section 3.2, pension costs were higher than the OEB-approved amounts in 2011 and 2012 primarily due to lower discount rates and expected long-term rates of return on pension fund assets than those underpinning the OEB-approved amounts. These impacts were partially offset by higher-than-forecast pension fund asset values at the end of 2010 and 2011. OPEB costs were higher than the OEB-approved amounts for 2011 and 2012 mainly due to lower discount rate assumptions. Both pension and OPEB costs were largely on budget in 2010.

As a result of assumptions and projections required in forecasting pension and OPEB costs, significant variances may occur between the forecast and actual costs. Effective March 1, 2011, differences between the forecast pension and OPEB costs reflected in the approved revenue requirement and such actual costs are recorded in the Pension and OPEB Cost Variance Account. As per the approved terms of the account, projected 2013 additions are calculated using cost amounts determined in accordance with Canadian GAAP, as this is the basis upon which the EB-2010-0008 payment amounts were determined. The Pension and OPEB Cost Variance Account, including projected 2013 additions, is discussed in Ex. H1-1-1, Section 4.6.

7.0 SUMMARY OF STAFFING, COMPENSATION AND BENEFITS

In EB-2010-0008, OPG committed to providing staff levels on an FTE basis and overall compensation and benefits information in a format equivalent to Appendix 2K for Electricity Distributors. This information is found in Attachment 6, "FTE, Compensation and Benefit Information for OPG's Regulated Facilities ('Appendix 2K')." The sections that follow provide a summary discussion of this information. Additional detail is found in the Nuclear, hydroelectric and corporate exhibits referenced below.

7.1 Staffing

Including the newly regulated facilities, hydroelectric staffing levels are largely stable between 2010 and 2014, except for a one-year jump in 2011 due to additional hiring in both the Hydroelectric Central Support and Plant Groups in order to provide increased support for projects and maintenance activities (See Ex. F1-2-1, Section 3 and Table 4). By the end of 2015, staffing levels are expected to fall by about two per cent relative to 2014 levels.

Nuclear staff levels began to decline in 2009 reflecting completion of safe storage of Pickering Units 2 and 3, the end of the provision of inspection and maintenance services to Bruce Power, and various cost saving initiatives as explained in Ex.F2-1-1. Through various initiatives from 2010 to 2013, Nuclear regular staff levels continued to decline (See Ex. F2-1-1, Table 3). Going forward, OPG's 2013-2015 Business Plan set outs further regular staff reductions over the plan period.

Allocated corporate staff level increased substantially in 2012 due to the creation of centre-led organizations as part of Business Transformation (BT) (See Section 8 below and Ex. A4-1-1, Section 3.1.1). From 2013 through 2015, FTE levels decline due to attrition supported by BT initiatives.

7.2 Compensation and Benefits

Hydroelectric compensation and benefits costs increased in 2011 primarily due to increases in pension/OPEB costs and the staffing increases described above and shown in Attachment 6. These costs increase again in 2013 due to changes in labour rates before stabilizing between 2013 and 2015.

Nuclear compensation and benefits costs decline substantially between 2011 and 2012 due to a reduction in Nuclear FTEs as employees moved to centre led organizations under BT and net staff levels declined due to attrition combined with aggressively managing hiring. However, labour cost escalation partially offsets the decrease from FTE reductions. From 2012 to 2015 these costs remain fairly constant as shown in Attachment 6.

Corporate support services compensation costs allocated to the regulated operations tend to fluctuate from 2011-2015. Increases from 2011 to 2012 are the result of creating centre-led organizations whose costs are allocated back to the business units. Allocated costs increase across all segments in 2013 compared to 2012 due to higher pension/OPEB costs. Costs for the Newly Regulated hydroelectric facilities increase in 2014 compared to 2013 due to changes in management estimates of support required for these stations by Business & Administrative Services (BAS) and Finance, as well as, an increase in allocated Pension and OPEB costs. Costs allocated to Nuclear in 2014 decrease due to a change in BAS management's estimate of the cost to support the Nuclear business. Allocated costs decrease in 2015 compared to 2014 due to cost reduction initiatives in the corporate support services groups.

8.0 BUSINESS TRANSFORMATION

OPG's BT initiative, discussed in Ex.A4-1-1, will have a substantial impact on staff levels and compensation costs during the test period by implementing initiatives to allow OPG to use attrition to reduce its workforce by 2,000 between 2011 and 2015.[27] The test period figures in this exhibit are based on the successful implementation of BT.

9.0 BENCHMARKING

As discussed above, the collective bargaining agreements between OPG and the PWU and the Society that cover the test period compare favourably to the collective agreements negotiated by OPG's best comparators - Bruce Power and Ontario Hydro successor companies.

In EB-2010-0008, the Board directed OPG to conduct an independent compensation benchmarking study to be filed with this application. In response to this direction, OPG retained AON Hewitt. A copy of AON Hewitt's report is attached as Ex. F5-4-1. As discussed there, in determining the appropriate comparator group AON Hewitt focused on organizations: from which OPG recruits; to which OPG loses staff; which operate in the same

[27] This figure represents projected total OPG headcount reductions, not including the impact of hiring for Darlington Refurbishment and New Build. Approximately 1,300 of the 2,000 are attributable to regulated operations.

or similar industry sectors; and, which reflect the complexity and size of OPG. AON Hewitt also considered broader general industry information in the form of its Total Compensation Measurement Survey and the Mercer Benchmark Database.

AON Hewitt makes the following observations on the results of their survey:

- OPG's PWU Group's total cash compensation is above the market competitive zone at the 50th percentile
- OPG's Society Group's total cash compensation is within the market competitive zone at the 50th percentile
- OPG's Management Group's total cash compensation is within the market competitive zone at the 50th percentile
- Based on U.S. survey data, there is evidence that jobs in nuclear organizations in the U.S. are paid a premium over similar jobs in non-nuclear organizations

Aon Hewitt found that the existing data are insufficient to quantify a premium for work in Canadian nuclear organizations. However, OPG believes it is reasonable to assume that such a premium also would apply in Canada, which would tend to drive compensation above the 50th percentile.

10.0 CONCLUSION

OPG's compensation and benefits are largely the product of its collective agreements. These agreements represent significant constraints on the company's ability to reduce these costs. Nonetheless, by controlling staffing levels, constraining management compensation and bargaining aggressively, OPG has managed to hold the overall increase in these costs since 2011 to slightly more than 1 percent per year while continuing to retain, and where necessary attract, the staff required to operate the regulated facilities safely and reliably.

LIST OF ATTACHMENTS

Attachment 1 – Report by Professor Richard Chaykowski, entitled "An Assessment of the Industrial Relations Context and Outcomes at OPG"

Attachment 2 – AON Hewitt Report calculating Pension and Benefit costs for 2013-15

Attachment 3 – CIA issued educational note entitled "Accounting Discount Rate Assumption for Pension and Post-employment Benefit Plans" issued in September 2011

Attachment 4 – A supplement to the CIA educational note entitled "Accounting Discount Rate – Calculating Spread Above Provincial Yields" issued in August 2013

Attachment 5 – Letter from Mercer regarding Mercer Model for developing accounting discount rates in Canada.

Attachment 6 – FTE, Compensation and Benefit Information for OPG's Regulated Facilities ("Appendix 2k**")**

An Assessment of the Industrial Relations Context and Outcomes at OPG

Richard P. Chaykowski

(September 2013)

Contents

1 Executive Summary and Main Conclusions

The guiding principles of Ontario policy support the public interest in:

- Ensuring good labour relations and the rights of association of BPS employees.
- Maintaining the continuous provision of services that are, to varying degrees, essential or, at the least, of very high importance to the welfare and well-being of the public.

While there are a variety of specific circumstances under which a government may want to intervene in a labour-management dispute because there is a broader public interest at stake:

- The power of the government to over-ride collective agreements is constrained.
- The government has demonstrated an understanding that unilateral actions regarding collective agreements and bargaining that attempt to impose employment-related outcomes where collective agreements are in place would likely be subject to a *Charter* challenge.

With respect to unionization and pay determination under collective bargaining:

- A main objective of unions is to achieve greater compensation for their members, relative to nonunionized employees; and unions are better able to achieve this, the higher is the union density in an industry, and the lower is the degree of competition.
- Collective agreements, once in place, are absolutely binding on the parties.

With respect to the impact of unions on compensation and other outcomes that affect labour costs:

- Unions significantly raise the total compensation levels of unionized employees.
- Unions disproportionately increase the wages of lower-skilled workers at the bottom of the wage distribution within a firm, and reduce overall wage differentials across employees within establishments.

With respect to the resolution of impasses in collective bargaining, and essential services:

- An impasse in negotiations can be resolved through mutual agreement or through binding interest arbitration.
- In industries or business lines where services are essential, or where service disruptions impose an undue hardship, as well as in industries where services are not essential, interest arbitration remains a major policy option for dispute resolution.
- In practice interest arbitration is used extensively to determine wages and other terms and conditions of employment throughout the Ontario BPS.

With respect to unionization and pay determination at OPG:

- Aside from the impacts of unions on pay levels, broader external labour market forces are expected to establish pay levels that represent a *base* for the wages/earnings that would be required at OPG to successfully attract and retain workers over time.

- The relevant "comparator" firms for purposes of considering industrial relations outcomes at OPG are those in the same broader industry, that are subject to the same labour market and labour relations regulatory regime, and that have similarly very high levels of unionization.

- Ontario Hydro labour relations legacy effects were substantial and highly deterministic because OPG was bound to accept the existing collective agreements and to recognize and negotiate with the PWU and SEP; and the collective agreements inherited by OPG are highly developed and complex contracts.

- On net, consistent with the empirical research evidence that unions deliver a sizable compensation premium, I expect both the PWU and SEP to be successful in raising compensation levels, considerably, above the wage levels that would be expected to prevail were there broader competitive labour markets characterized by little or no unionization.

- OPG wage settlements are consistently either at or below the wage increases that have been negotiated at the most appropriate comparators in the electricity industry; and the salary levels of individual occupations compare closely as well.

With respect to my assessment of the prospects for achieving significantly different labour costs at OPG: In view of the industrial relations context and specific industrial relations circumstances at OPG, I expect OPG to make incremental changes in various aspects of the terms and conditions of employment negotiated with the unions, including aspects of compensation, job security, or other characteristics of the employment contract deemed significant to the union. In particular:

- OPG faces significant structural challenges even as it engages in workforce downsizing, including ongoing workforce renewal in the context of sustained labour demand in the broader Ontario electricity industry, and across occupational categories, that will create overall upward pressures on wages in the labour market.

- OPG faces significant labour cost challenges associated with growing pension obligations.

- While the government has attempted to set guidelines for wage increases in collective bargaining, there is little prospect of government imposing ongoing limits on wage increases for unionized employees in the electricity sector.

- A "forcing strategy" in collective bargaining that attempts to achieve substantial reductions in the labour cost structure at OPG is not likely to be successful in the near term.

- The best likelihood of success through collective bargaining is to adopt a fostering approach and negotiate incremental change that also preserves the high quality of the labour-management relationship.

- Interest arbitration at OPG will not yield significant labour cost reductions at OPG.

- The OPG collective agreements with the PWU and SEP provide very little scope for achieving significant labour cost reductions through either some form of contracting out or a restructuring.

2 Scope of the Report

The scope of the analysis in this Report includes the industrial relations context and outcomes related to unionized employees at OPG.

In addition to the Executive Summary and this section that describes the scope of the Report, this Report consists of five main sections:

Section 3, which provides a context for the conduct of labour-management relations and collective bargaining at OPG, including:

- An overview of the labour relations policy framework in Ontario, labour policy and the public interest;
- The scope for government intervention in bargaining outcomes, and the importance of the extent of unionization as a determinant of union power and collective bargaining outcomes, including compensation; and
- The resolution of impasses in collective bargaining impasses, and work stoppages in essential services.

Section 4, which considers the impacts of unions, including:

- The factors that determine the capacity of unions to raise wages and enhance the terms and conditions of employment above what is expected to prevail in the absence of collective bargaining;
- Union impacts on wage levels and increases, benefits, and total compensation; and
- Union effects on pay relativities and on operations and human resource management outcomes.

Section 5, which considers:

- The need to resolve work stoppages that would disrupt the provision of services in the broader public sector that would, thereby, impose an undue hardship on the public; and
- The role of interest arbitration in the event of an impasse in negotiations, and the impact of arbitration on pay levels.

Section 6, which considers pay determination at OPG, including:

- The role of the broader labour market in relation to pay levels at OPG;
- Pay determination at OPG, including the legacy effects of collective bargaining at Ontario Hydro, and current factors determining pay levels at OPG;
- Wage increases at OPG, including appropriate comparators of pay increases at OPG, the context of negotiated pay increases at OPG in relation to the Ontario broader public sector, and in relation to pay increases at appropriate comparator firms;

- Pay structures at OPG, including union effects on internal pay relativities, and pay rises associated with pay structures and automatic adjustments.

Section 7, which provides an assessment of the prospects for achieving significantly lower labour costs at OPG, including:

- The constraints imposed by labour market and industrial relations pressures on the labour costs at OPG;
- The prospects for OPG to achieve significantly different collective bargaining outcomes, including the prospect of some form of broad-based government intermediation;
- The prospects for achieving a lower labour cost structure through the collective bargaining route, through arbitration, or through some form of contracting out.

3 Context for Labour-Management Relations in the Ontario Broader Public Sector and Electricity

3.1 Ontario Labour Relations Policy Framework

The labour relations legislative framework within which OPG conducts labour relations and collective bargaining is highly structured and imposes specific requirements and obligations on management and unions regarding the bargaining process and collective agreements. Labour relations at Ontario Hydro, the predecessor company to OPG, were governed under the Ontario *Labour Relations Act* (OLRA);[1] and OPGs unionized employees are currently covered under the OLRA.[2]

The current Ontario legislative framework governing labour relations, as embodied in the OLRA, has been relatively stable; it was derived from the model established by the Canadian wartime Order in Council *PC1003* of 1944 as well as by the American *Wagner Act* of 1935.[3] This framework enshrined several basic principles and processes that continue today including:

- The rights of employees to form a union for purposes of collective bargaining;
- A process for establishing a bargaining unit appropriate to the purpose of collective bargaining between a union and an employer with a view to achieving a collective agreement;
- The rights to strike/lockout in the event of a breakdown of negotiations over interests (i.e., over the terms and conditions of the collective agreement).

[1] In 1993, the Supreme Court of Canada confirmed that jurisdiction for labour relations in nuclear facilities fell under federal jurisdiction; see Ontario Hydro v. Ontario (Labour Relations Board), 1993 CanLII 72 (SCC), [1993] 3 SCR 327, [See: <http://canlii.ca/t/1fs10> retrieved on 2012-05-14].
In 1998, the federal government delegated its authority to govern labour relations in nuclear facilities, under the *Canada Labour Code*, to Ontario
[see: http://www.thesociety.ca/secondmenu/agreements/opg/opg_ca/opg_part2.html [Accessed: 14/05/2012 12:02:38 PM]].
Labour relations in OPG nuclear facilities are currently governed by the OLRA (see the OPG and Society collective agreement under “Recognition”).
[2] OLRA = Ontario *Labour Relations Act*, 1995, 5.0.1995, c. 1, Sched. A.
[3] In addition to the *Wagner Act*, *PC1003* was also influenced by both the Canadian *Conciliation Act* of 1900 and *Industrial Disputes Investigation Act* (IDI) of 1907; PC1003 was followed in 1948 by the *Industrial Relations Disputes Investigation Act*(IRDI); see: Canada. Canada Labour Code Part I Review. *Seeking a Balance*, Hull, PQ. 1995, Figure B (Highlights of Federal Collective Bargaining Law in Canada) at p. 13.

- A process for the adjudication and arbitration of rights disputes during the term of a collective agreement, including provision for binding arbitration; and therefore no right to strike or lockout during the term of a contract.

Up until the 1960s, this labour relations framework applied across the private sector. Beginning in the 1960s, the federal and provincial governments undertook to extend this framework to the broader public sector (BPS) industries, in order to provide employees in those industries with the same rights to be represented by a union of their choice and to bargain collectively. However, in crafting the new legislation, it was also recognized that there was a need to take account of several key characteristics of public sector employers and labour markets including that:

- Services provided have either some degree of "public good" characteristic, or that ensuring broad access to the service is considered in the <u>public interest</u>;

- Many services provided to the public are considered necessary and, in some cases "<u>essential</u>", to the health and/or well-being of the public;

- Many BPS employers are <u>not straight-forward profit-maximizers</u>, and many private employers in BPS industries are publicly funded;

- The budget constraint (ability to pay) that many publicly funded BPS employers confront is determined by the capacity for taxation; while other employers are subject to <u>regulation</u> of their revenue generation.

Over a period of time, Ontario introduced further specialized legislation to govern the conduct of labour relations in certain BPS industries, and that in some cases included significant modifications of the established private sector legislation. Currently, labour relations in BPS industries are, variously, covered under nine major labour relations *Acts*, including the OLRA.[4] This array of BPS labour relations legislation and, in particular, the OLRA, reflects government support for several significant overarching labour policy principles, that reflect the importance of the key characteristics of public sector employers and labour markets, including:

- Support for the formation of unions and maintenance of union membership;

[4]These nine labour relations *Acts* include:

- *Ontario Labour Relations Act*
- *Hospital Labour Disputes Arbitration Act*
- *Crown Employees Collective Bargaining Act*
- *Colleges Collective Bargaining Act, 2008*
- *Police Services Act*
- *Fire Protection and Prevention Act*
- *Ambulance Services Collective Bargaining Act*
- *Ontario Provincial Police Collective Bargaining Act*
- *Education Act*

- Promotion of stable and harmonious labour-management relations;
- Minimization of conflict, especially work stoppages that would disrupt the output of services.

Consequently, the main guiding principles of Ontario labour policy, as embodied in the various labour relations legislation, support:

- **The public interest in ensuring good labour relations and the rights of association of BPS employees;**
- **The public interest, in maintaining the continuous provision of BPS services that are to varying degrees essential or, at the least, of very high importance to the welfare and well-being of the public.**

3.2 The Room for Government Intervention in Collective Agreements

There are a variety of specific circumstances under which a government may want to intervene in a labour-management dispute, or work stoppage, or impose terms or conditions of employment upon unionized employees. In general, a government may decide that there is a broader public interest at stake in a dispute and that this constitutes a sufficient reason for an intervention.

Two recent landmark Supreme Court of Canada (SCC) *Charter of Rights and Freedoms* cases dealing with labour relations, BC *Health Services* and *Fraser*, have significantly impacted labour relations policy.[5] In BC *Health Services*, the SCC essentially recognized collective bargaining as a constitutionally protected right. The SCC decision in *Fraser*, in 2011, delineates the constraints on governments in undertaking policies that impact collective agreements: "In practical terms, the SCC decision in Fraser specifies that a substantive change that is unilaterally imposed on unionized employees (that is significant to, and materially hinders bargaining) is likely to be held invalid unless the government:

(i) engages in a "meaningful process" of consultation and/or negotiation with the union(s); and
(ii) that the negotiation be undertaken in "good faith." "[6]

In the March 2012 budget, the Ontario government indicated a clear interest in either imposing or actively encouraging restraint in wage and salary increases in the BPS.

[5] BC *Health Services* is: *Health Services and Support – Facilities Subsector Bargaining Assn v British Columbia* 2007 SCC 27, [2007] 2 SCR 391.
Fraser is: *Ontario (Attorney General) v. Fraser*, 2011 SCC 20.
[6] Source: Chaykowski and Hickey (2012: 92).

With respect to nonunionized employees in the BPS:

- The Ontario government introduced a pay freeze through the *Public Sector Compensation Restraint to Protect Public Services Act*, 2010; and in 2013 the government introduced legislation to extend the pay freeze, through Bill 5 (*Comprehensive Public Sector Compensation Freeze Act, 2013*);[7]

With respect to unionized employees and their contracts:

- The government explicitly noted that, while its objective was to achieve restraint in pay increases, its approach would be "…consistent with the protections afforded to collective bargaining under the Supreme Court of Canada's interpretation of the Charter of Rights and Freedoms."[8]

- The government drafted and announced comprehensive restraint legislation in 2012 that was intended to cover nonunionized as well as unionized employees across the broader public sector; and which proposed, specifically, the *Respecting Collective Bargaining Act (Public Sector), 2012*, which would, potentially, under certain circumstances, impose a collective agreement on the parties – however, this legislation was never introduced in the legislature.

- The government passed Bill 115 (*An Act to Implement Restraint Measures in the Education Sector*) in 2012, which introduced restraint, but only on teacher collective bargaining and outcomes. The government subsequently imposed collective agreements on some teachers under this legislation (the Ontario Secondary School Teachers Federation (OSSTF) and Elementary Teachers' Federation of Ontario (ETFO),) in January of 2013;[9] but the government then rescinded Bill 115 on January 23, 2013.[10] Both unions pursued a Charter challenge to the legislation, even though the government resumed negotiations with the OSSTF and EFTO, and eventually reached agreements with the unions in March and June (of 2013), respectively.[11]

[7] This Act passed Second Reading in the Ontario Legislative Assembly in February 2013, and remains under active consideration. (Source: http: //www.ontla.on.ca/web/bills/bills_detail.do?locale=en&BillID=2717&detailPage=bills_detail_status.)
[8] Source: *Strong Action for Ontario. 2012 Ontario Budget*. Toronto: Queen's Printer. p. 70.
[9] Source: Government of Ontario News Release (January 3, 2013). Accessed at: http://news.ontario.ca/edu/en/2013/01/new-agreements-for-teacher-support-staff-introduced---bill-115-to-be-repealed.html.
[10] Source: Government of Ontario News Release (January 21, 2013). http://news.ontario.ca/edu/en/2013/01/ontario-to-repeal-putting-students-first.html?utm_source=ondemand&utm_medium=email&utm_campaign=p.
[11] Sources: Government of Ontario News Releases (March 31, 2013; and June 13, 2013). OSSTF Release accessed at: http://news.ontario.ca/edu/en/2013/03/statement-by-minister-sandals-on-etfo-and-extracurricular-activities.html; and EFTO Release accessed at: http://news.ontario.ca/edu/en/2013/06/agreement-in-principle-with-etfo.html.

Therefore,

- **The power of the government to over-ride collective agreements is constrained.**

- **The government has acknowledged that there are limits to unilateral actions regarding existing collective agreements and bargaining and that there are legal constraints to overcome in terms of their ability to impose the terms and conditions of a collective agreement.**

- **The government has acknowledged that, while it might today enact legislation that could impose terms and conditions of a collective agreement, such legislation may in the future be subject to a Charter challenge.**

4 Pay Determination under Unionization and Collective Bargaining

4.1 Pay Determination through Collective Bargaining

Pay determination through collective bargaining is fundamentally different from wage determination in workplaces that are nonunionized, because unions and management negotiate over the terms and conditions of employment to achieve a collective agreement. The outcome of the negotiations process is largely dependent upon the relative *power* of management and the union.

The degree of power of the parties in negotiations depends upon their respective costs of agreeing and disagreeing;[12] for example, for management, the cost of agreeing to the compensation demands of the union would include the actual cost of the higher wages and benefits paid, while the costs of disagreeing would be the cost of lost production in the event of a work stoppage.

Critically, there are a number of major factors that, generally, are found to determine relative bargaining power including:[13]

- **The legal and political context**:
  - public support/opposition; and
  - legal and legislative regime;

- **Economic conditions**:
  - Product demand and the business cycle;
  - Unemployment levels;
  - Possibilities for product substitution;

- **Organizational factors**:
  - Ability to stockpile;
  - Ability to maintain production – at that facility – or globally;
  - Union’s financial strength and the degree of internal political cohesion.

[12]The concept of bargaining power is based on the parties’ costs of agreement and costs of disagreement and is the:

> “… ability to secure another’s agreement on one’s own terms. A union’s bargaining power at any point of time is, for example, management’s willingness to agree to the union’s terms. Management’s willingness, in turn, depends upon the costs of disagreeing with the union terms relative to the costs of agreeing to them.” [Chamberlain and Kuhn 1986:176]

[13] See: Chaykowski (2009).

Therefore,

- **The role of bargaining power, and the impact of the factors that determine bargaining power, are fundamental to determining the terms and conditions of employment under collective bargaining, including pay increases.**

4.2 Union Density and the Capacity of Unions to Raise Wages under Collective Bargaining

One of the main objectives of unions in Canada is to raise the wages (earnings) of their members through collective bargaining.[14] However, increases in wages (or benefits) achieved through collective bargaining can increase the cost of labour relative to the cost of other inputs into the production process. This creates an incentive for firms to substitute away from the relatively more expensive unionized labour input, typically toward less expensive nonunionized labour.[15] The greater the proportion of employees that is unionized in an industry, the fewer the options that are available to firms to substitute towards nonunionized workers.

For example, unionized firms may seek to substitute towards less costly nonunionized labour by contracting out, or by opening nonunionized facilities at another location. The problem with these strategies is that unions have tended to be successful in negotiating clauses that prevent contracting out, or in organizing non-union facilities of the same firm.

Therefore, unions seek to "take wages out of competition"; that is, to organize as large a proportion of employees in an industry as is possible, precisely in order to limit substitution possibilities, thereby increasing their bargaining power and enabling them to further increase wages and enhance other employment terms:

> "There seems to be a strong relationship between the extent of unionism in an industry (or occupation) and the wage markup … in industries where almost all firms are unionized, unions will have more bargaining power and will therefore be able to secure a higher wage markup. This is known as the "extent of unionism" effect."[16]

[14] In contrast to unions in other major countries of the world, which have a strong social and/or political agenda, Canadian unions are generally characterized as "business unions" because their main focus is on enhancing the terms and conditions of employment, including the wages, benefits and other working conditions of their members. Most employment terms that are negotiated have either a direct cost, or monetary equivalent value.

[15] Another (typically long term) possibility is for firms to increase the utilization of capital or labour-saving technologies. The standard way in which unions mitigate the employment impacts of substitution towards capital or technology are by negotiating limits to technological change, or strong job security provisions. Alternatively, unions may accept lower employment levels but negotiate for higher wages that are supported by the higher productivity arising from the higher capital-to-labour ratio.

[16] Source: Aidt and Tzannatos (2002: 57).

The process of globalization of product markets, production systems, and distribution networks poses a fundamental challenge to many Canadian unions because, even in industries in which unions have traditionally been strong domestically, firms can now readily re-position their production facilities worldwide and operate on a non-union basis. This directly undermines the ability of unions to organize workers across an industry and therefore limits their ability to negotiate sustained high wage increases relative to nonunionized employees (i.e., a wage mark-up, or premium). The impact of globalization on unions has been uneven across industries – while it has been pronounced in many manufacturing industries, not all firms produce products or services that can take advantage of global production and distribution.

Ontario BPS industries produce products or services which, for the most part, cannot be produced off-shore and then distributed domestically – including education, health care, social services, police and firefighting, government services, and electricity. Consequently, the relevant geographic boundaries for purposes of union organizing remain within Canada or, in some cases, within a province, thereby limiting the scope for employers to locate production elsewhere, or otherwise substitute towards nonunionized workers.

In Ontario, the extension to BPS employees of the right to form unions and collectively bargain coincided with the rapid expansion of BPS employment levels so that:

- By the mid-1980s, unionization reached roughly 39% in health, 68% in education, and 80% in public administration.[17]

- By the end of the 1990s, union density in the Ontario public sector was approximately 69.3%, compared to only 17.7% in the Ontario private sector and 32.3% across all industries; and in utilities in Ontario, of which a major segment is electricity, union density was 70.3%.[18]

Whereas union density in utilities has remained at the very high level of about 70% throughout the 2000 – 2011 period, union density has declined in the private sector, to about 14.9% in 2011 (refer to Figure 1).

While there remains some variation in union density across industries within the BPS (e.g., health has a lower union density), utilities consistently remain, over time, at the particularly high level of about 68-71%, along with education and public administration (refer to Figure 2).[19] The level of unionization in Ontario BPS industries is especially high relative to other major

[17] Source: Rose (1995: 30, Table 3).
[18] Source: Statistics Canada, CANSIM, Table 282-0078 (Labour force Survey Estimates (LFS)) (Accessed March 30, 2012).
[19] It is important to note that not all employees are eligible to join a union (e.g., managerial employees), so that the estimate of 70% likely understates the extent of unionization.

countries and, notably, is in marked contrast to the experience in the United States, where union density:[20]

- Was only 7.3% in the overall private sector and 39.6% in the overall public sector in 2012;
- Was only 29.8% in utilities, and 29.7% in the electricity industry, in 2012;[21]
- Declined in utilities and electricity, between 2003 and 2012, from 32.2 to 29.8%, and from 33.3% to 29.7%, respectively.

The particularly high level of unionization in Ontario utilities serves to significantly enhance the bargaining position of unions.

Therefore,

- **A main objective of unions is to achieve greater economic outcomes for their members, relative to nonunionized employees; and unions are better able to achieve this, the higher is the union density in an industry, and the lower is the degree of competition.**
- **While in some sectors economic globalization has undermined the ability of unions to organize employees across an industry, in Ontario BPS industries, services remain geographically bounded within Ontario; this permits unions to effectively organize employees across Ontario and, thereby, limit the possibilities for firms to substitute towards the employment of nonunionized workers.**
- **The extent of unionization in Ontario BPS industries is exceptionally high, thereby permitting unions to "take wages out of competition;" and this significantly enhances the bargaining power of unions and their ability to raise wages to high levels through bargaining.**

[20] Source: Hirsch and Macpherson (2003); (data accessed at unionstats.com on 16.06.2013). Union density is defined as the proportion of workers covered by a collective agreement.
[21] The US Electricity industrial classification includes electric power generation, transmission, and distribution.

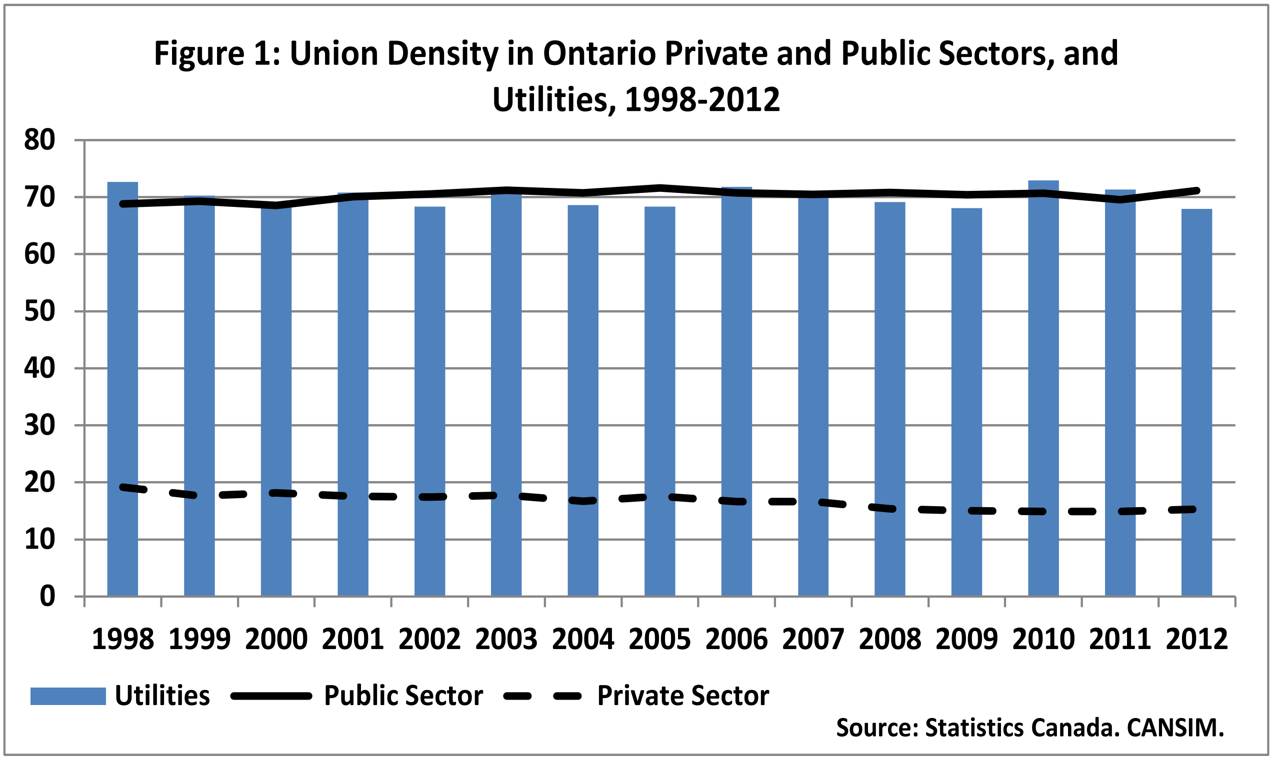


Figure 1: Union Density in Ontario Private and Public Sectors, and Utilities, 1998-2012
80
70
60
50
40
30
20
10
0
1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012
Utilities
Public Sector
Private Sector
Source: Statistics Canada. CANSIM.

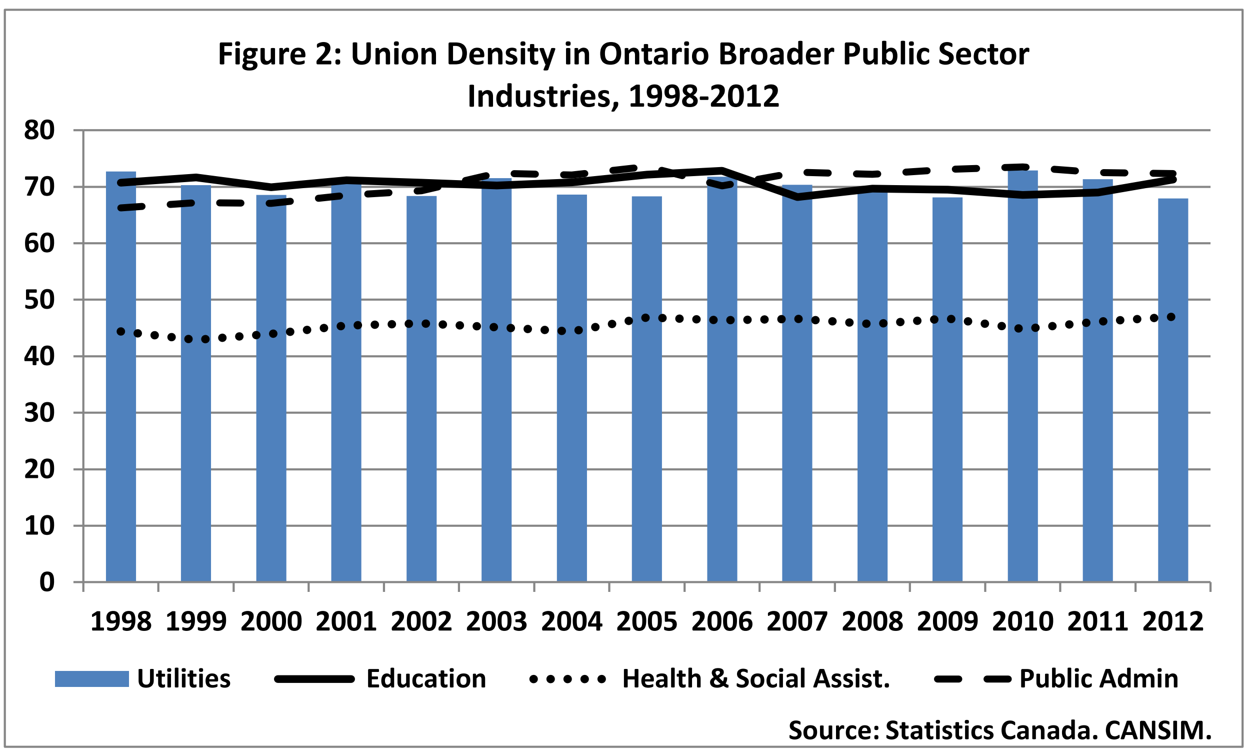


Figure 2: Union Density in Ontario Broader Public Sector Industries, 1998-2012
80
70
60
50
40
30
20
10
0
1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012
Utilities
Education
Health & Social Assist.
Public Admin
Source: Statistics Canada. CANSIM.

4.3 Effects of Unions on Compensation and Other Outcomes that Affect Labour Costs

Since unions are free to negotiate over the complete range of terms and conditions of employment through the process of collective bargaining, both compensation and other employment-related outcomes are expected to vary between unionized and nonunionized workplaces. In this section I consider the empirical research evidence regarding the effects of unions on: wage levels and increases; benefits; internal pay relativities; and operations and management practices.

<u>Union Effects on Wage Levels and Increases</u>

One of the main objectives of unions is to raise the wages of their members through collective bargaining. After taking account of the variation in employees' characteristics that determine wages (such as education, gender, or age), the magnitude of the overall union-nonunion wage differential (i.e., the "union wage premium") in Canada is in the range of about 5-10%.[22]

Wage levels and increases for employees are set in nominal (i.e., not inflation-adjusted) terms, so the real wage levels (wages that reflect real purchasing power after accounting for inflation) tend to decline with general price inflation, unless there are ongoing wage adjustments. Unions tend to factor projected inflation increases into their wage negotiations precisely for that reason; in addition, major unions may negotiate "cost-of-living allowance" ("COLA") adjustment clauses that automatically adjust nominal wages upward as inflation increases, according to a pre-set formula specified in the collective agreement. This results in automatic wage increases, linked to inflation, during the term of the contract.

One consequence of the prevalence of these COLA clauses is that nominal wages are "downward sticky"; that is, while inflation would normally erode the value of nominal wages if wages were left unchanged during the term of a collective agreement (i.e., would decrease real wages), the COLA adjustments prevent this from happening.[23] This is especially relevant during periods of inflation and where there are multi-year contracts.

The rate of pay increases in unionized establishments can also be affected when unions pattern in their bargaining (i.e., unions seek to attain a wage increase that is at least at parity with the pay increases attained in other recently negotiated contracts in order to maintain

[22] There is extensive empirical research evidence on the extent to which unions have been able to raise the wages of their members above the wages (earnings) of comparable non-unionized workers. See the comprehensive review of Canadian evidence by Blanchflower and Bryson (2003); and, in particular, Canadian studies by Renaud (1997) and Verma and Fang (2002). The results for Canada are consistent with evidence internationally that finds a sizable positive union wage premium. Within Canada, the magnitude of the union wage premium varies across characteristics such as industry and occupation, and varies, as well, over time.
[23] See: Christofides and Li (2005); Christofides and Stengos (1994); and Christofides and Leung (2003).

"comparability"). In addition, in BPS industries with access to interest arbitration as an option, in the event that negotiations reach an impasse, there is an incentive for unions to utilize interest arbitration because unions are aware that "comparability" is a well-accepted arbitral criterion in deciding on an appropriate wage increase.[24]

With regard to union effects on wage levels and increases, the research evidence unambiguously finds that:

- **Wage levels under unions and collective bargaining are considerably higher than the levels that would prevail if employees were not unionized.**

- **Unions have a major impact on the rate of wage increases, as well as levels, by negotiating cost-of-living adjustments and because of the patterning of agreements.**

Union Effects on Benefits

Unions negotiate over the full range of compensation elements and, although wages tend to be the centre of attention, benefits are important potential sources of labour costs. Evidence from Canada, the United States, as well as international evidence, underscores the very sizable effect of unionization in increasing both the share and level (cost) of fringe benefits.[25] The effect in Canada is especially large:

> "… the union impact is to increase total compensation by 12.4 percent, compared to an impact of 10.4 percent on wages … the percentage impact of unions on benefits is estimated to be 45.5 percent. This latter estimate implies a very substantial impact of unions on benefits in Canada, as large or larger than those reported in the United States."[26]

Therefore, with regard to union effects on overall compensation:

- **Unions have a direct and very substantial impact on benefit levels as well as on wages, thereby significantly raising the total compensation levels of unionized employees.**

Union Effects on Internal Pay Relativities

In a unionized employment context, pay levels, pay increases, internal pay relativities, and pay raises through grids are all determined through collective bargaining and negotiated with the union. Unions generally adopt policies aimed at the standardization of pay rates:

> "Unionism is expected to reduce the dispersion of wages among organized workers because of long-standing union wage policies in favor of the "standard rate," defined as uniform piece or

[24] See: Chaykowski and Hickey (2012: 37-44).
[25] For the U.S. see: R. Freeman (1981).For a comprehensive international review of the evidence see: Aidt and Tzannatos (2002), Table 4-3.
[26] Source: Renaud (1998).

time rates among comparable workers across establishments and impersonal rates or ranges of rates in a given occupational class within establishments."[27]

In addition to being associated with higher pay levels and increases, and higher benefits, unions have a significant impact on internal pay relativities by generating a higher degree of wage compression relative to nonunionized firms.[28] With respect to union impacts on internal pay relativities:

- **Unions both disproportionately increase the wages of lower-skilled workers at the bottom of the wage distribution within a firm, as well as reduce overall wage differentials across employees within establishments.**

Union Effects on Operations and Human Resource Management

Unions have impacts on a range of terms and conditions of employment other than wage and benefit related items. Unions negotiate contractual terms that can constrain managerial discretion by creating rules around decision-making, workforce deployment, staffing processes and requirements, and business decisions. Unions have significant effects that include reducing:[29]

- hours of work and increasing the use of overtime;
- flexibility in overall staffing levels and (re)deployment by relying upon seniority rules in layoffs as well as in job competitions;
- flexibility in work arrangements – affecting the use of part-time or other flexible work arrangements, including contracting out.

The research evidence clearly underscores that, with respect to union effects on management operations and human resource management:

- **Unions have significant effects on a range of terms and conditions of employment, other than wages and benefits, which impact labour costs.**

[27] Source: Freeman (1980).
[28] Evidence for both the United States and the UK indicates that within-establishment pay dispersion is lower within unionized establishments; see Freeman (1980); Gosling and Machin (1995); and Freeman (1982). Also see the extensive review by Kuhn (1998).
[29]See Verma (2005).

5 Impasse Resolution and the Use of Interest Arbitration to Determine the Terms of Employment in the Ontario BPS

5.1 The Resolution of Impasses in Collective Bargaining and the Binding Nature of Collective Agreements

In general, in the event of an impasse in negotiations, the legislative framework allows a union to engage in a strike to impose costs on the employer in order to induce them to make concessions; alternatively, the employer may lock out employees in order to impose economic costs on the union members. In some circumstances, an impasse may be resolved by having the disputed matters referred to arbitration (i.e., "interest arbitration") for a decision that is binding upon the parties.

The resultant collective agreement is binding on the parties. Disputes over the interpretation or application of the contract terms are subject, by law, to binding "rights arbitration". Since the parties are unable to breach a collective agreement, the terms of the collective agreement constrains management from reducing the rate of wage increases and the overall salary mass during the term of the contract.

Therefore,

- **An impasse in negotiations can, ultimately, be resolved through mutual agreement following a work stoppage; or through binding interest arbitration, if the parties agree to arbitration, or if the government refers the dispute to arbitration.**

- **Collective agreements, once in place, are absolutely binding on the parties.**

5.2 Work Stoppages and Essential Services in the BPS

Under the current labour relations policy framework, as noted above, the standard process for resolving an impasse in negotiations provides for either a strike or lockout in order to impose costs on the other party to force concessions. While this process is fairly straightforward in its application in the private sector, in BPS industries this approach is problematic in situations where a cessation of the provision of a service or product has negative consequences for the well-being of the public:[30]

> "Widespread concern exists that the public will suffer undue hardship from stoppages by certain strategically placed groups of workers – most commonly, perhaps, health care workers, but also

[30] Source: Labour Law Casebook Group. *Labour and Employment Law*. Eighth Edition. Toronto: Irwin Law, pp. 486-487.

> those who provide other services such as policing public transit, electricity and water supply, garbage collection, snow clearing, and teaching." [31]

Generally, a service is considered *essential* if the withholding of the services imposes an "undue hardship" on the individuals who rely upon it; typically, the hardship test would require that a reduction or cessation of services materially affected the health or security of the public; but it could also encompass economic hardship if these costs were sufficiently high and extensive.[32]

Importantly, there is no "bright line test" of whether or not a given service or product would be deemed "essential"; [33] so that:[34]

> "... there are a wide variety of legislative approaches in different jurisdictions across Canada, and sometimes even in different sectors in the same jurisdiction, with respect to the determination of essentiality and the manner of regulating strikes and lockouts once a particular service is deemed essential."

Furthermore, as noted in the 2012 Drummond Commission Report, there are significant pressures on governments from the public to limit disruptions to the provision of services whether essential or merely desirable:[35]

> "Various governments have tended to undertake policy measures to respond to public pressures to avoid the public outcry that would result from public service delivery disruptions."

Political responsiveness to public pressure increases significantly the appeal of using arbitration to resolve collective bargaining impasses.

Given that a given service is deemed essential, current labour relations policy provides, generally, two ways to ensure a sufficient provision of the services:

i. A portion of the workforce may be "designated" as essential and this group is required to continue to work and provide services, even where the non-designated portion of the workforce is permitted to strike. Unions typically dislike this option because it has the

[31] Although, is important to note that there is also concern that the scope of what may be considered essential is often too broad:

> "There is a countervailing view among other observers ... that too wide a range of services are thought to be essential, and that even those which are truly essential can safely be reduced to a much lower level than usual for considerable periods." [Source: Labour Law Casebook Group. *Labour and Employment Law*. Eighth Edition. Toronto: Irwin Law, p. 487.]

[32] See: Labour Law Casebook Group. *Labour and Employment Law*. Eighth Edition. Toronto: Irwin Law, pp. 486-487.
[33] See: Adell, Grant and Ponak (2001).
[34] Source: Labour Law Casebook Group. *Labour and Employment Law*. Eighth Edition. Toronto: Irwin Law, p. 487.
[35]Source: Drummond Commission Report (2012: 369).

obvious effect of weakening the impact of a strike, thereby reducing the leverage that a strike provides;

ii. Work stoppages are prohibited (including either a strike or lockout) and outstanding interest disputes are subject to final and binding interest arbitration.

In any event, governments have often, from time to time, also resorted to *ad hoc* back-to-work legislation, and referred a dispute to binding arbitration, when the disruption from a strike is considered contrary to the public interest.[36]

Relative to the private sector, contract settlements at the strike stage are very infrequent across Ontario broader public sector industries; whereas interest arbitration is frequently utilized to achieve a settlement and resolve impasses in bargaining. The frequency of settlements at the strike stage in the Ontario private versus public sectors is provided in Figure 3; and the relative use of interest arbitration to achieve a settlement in the Ontario private and public sectors is presented in Figure 4. The interest arbitration process is a major determinant of overall wage outcomes across many segments of Ontario broader public sector industries.

Therefore,

- **There is no "bright line test" to determine when a particular service or product would be considered essential by the government.**

- **Public tolerance for service delivery disruptions would be expected to be a significant factor affecting whether the government considers a particular service to be essential.**

- **In industries or business lines where services are essential, or where service disruptions impose an undue hardship, as well as in industries where services are not essential, interest arbitration remains a major policy option for dispute resolution.**

- **In practice interest arbitration is used extensively to determine wages and other terms and conditions of employment throughout the Ontario BPS.**

[36] See: Labour Law Casebook Group. *Labour and Employment Law*. Eighth Edition. Toronto: Irwin Law, p. 487.

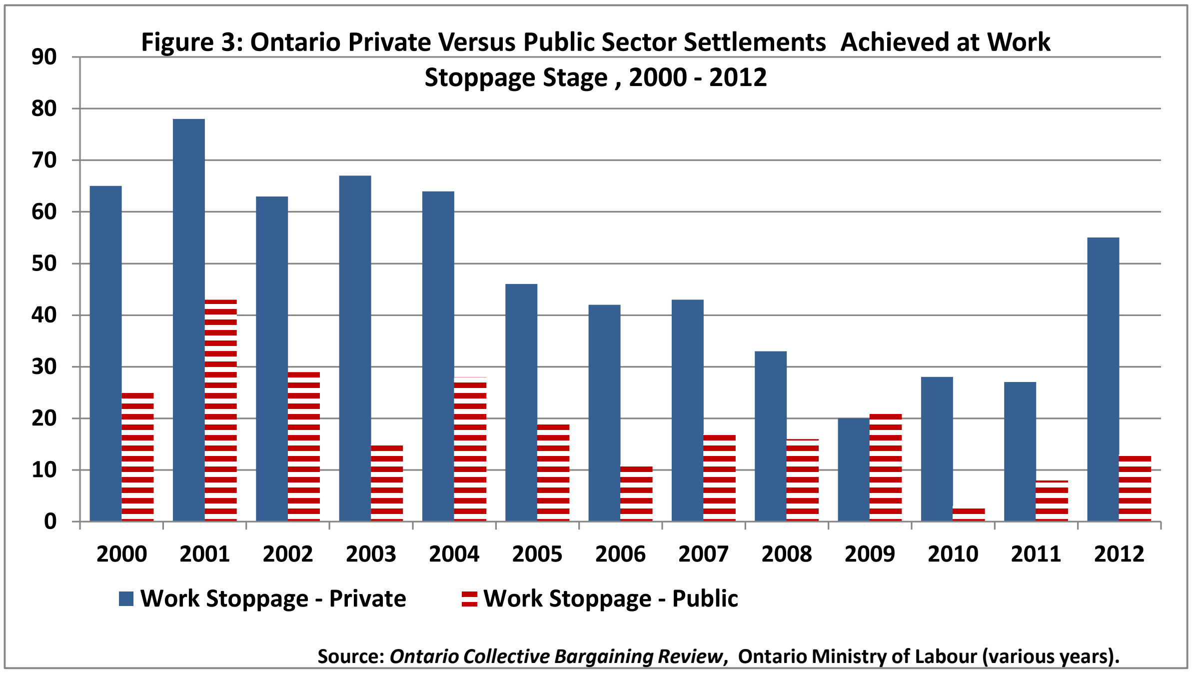


Figure 3: Ontario Private Versus Public Sector Settlements Achieved at Work Stoppage Stage , 2000 - 2012
90
80
70
60
50
40
30
20
10
0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Work Stoppage - Private
Work Stoppage - Public
Source: Ontario Collective Bargaining Review, Ontario Ministry of Labour (various years).

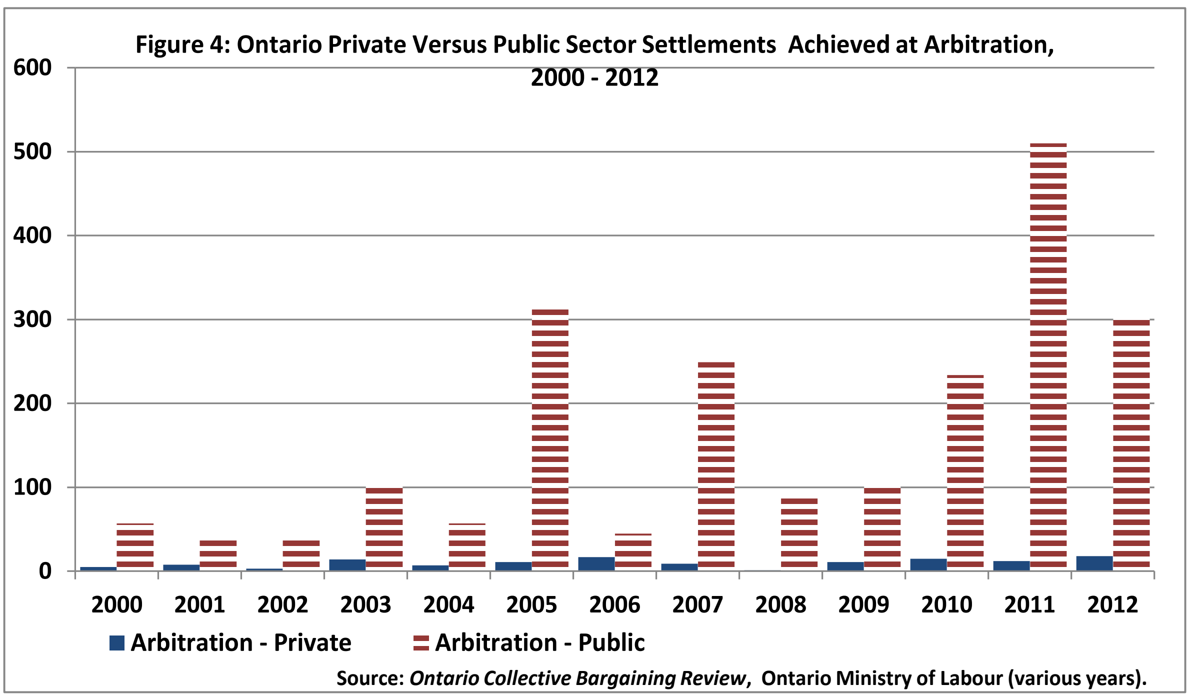


Figure 4: Ontario Private Versus Public Sector Settlements Achieved at Arbitration, 2000 - 2012
600
500
400
300
200
100
0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Arbitration - Private
Arbitration - Public
Source: Ontario Collective Bargaining Review, Ontario Ministry of Labour (various years).

5.3 Interest Arbitration Outcomes in the Ontario BPS

Across Canada, the use of interest arbitration is particularly prevalent across public and quasi-public sector industries because of the nature of many of the services provided and the potential impact on the public of a disruption in the provision of these services arising from a work stoppage.

In the Ontario BPS, the right to strike is significantly limited in certain industries, either by the extensive use of essential service restrictions, or by widespread prohibitions against the right to strike combined with interest arbitration.[37] The right to strike exists in the energy sector, but there are collective agreements with consensual interest arbitration as an alternative to a work stoppage. This particular approach is aligned with long-standing broader labour policy objectives of limiting costly conflicts and in maintaining the uninterrupted provision of services to the public.

Some Ontario labour relations legislation enumerates specific criteria that arbitrators are to consider in crafting their awards, such as:[38]

- employer ability to pay;
- the general economic circumstances of the province (i.e., the ultimate funder);
- comparability of pay across comparable employees in different establishments; and
- the need to offer competitive pay levels.

These types of standards represent, for the most part, very common criteria that arbitrators tend to rely upon. The crucial problems with the arbitration process are that:[39]

i. The "ability to pay" criterion has been rejected or minimized by arbitrators;

[37]Industries with mandatory binding arbitration of interest disputes include:
- Hospital and acute care;
- Police and firefighters;
- Ontario Provincial Police;
- Long-term care;
- Toronto Transit Commission;

Industries with a right to strike/lockout but subject to limitations imposed by essential services designation include:
- Ontario Public Service;
- Various agencies, Boards and Commissions;
- Ambulance services;

Source: Chaykowski and Hickey (2012: 24-25, Chart 1).

[38] For example, the *Ontario Hospitals Labour Disputes Arbitration Act* stipulates that an arbitration board must consider these criteria.

[39] See: Chaykowski and Hickey (2012).

ii. Arbitrators apply, to varying degrees, well-known criterion in deciding awards, but the dominant criteria in use lend themselves to patterning; in particular, the application of the principle of comparability is very difficult to operationalize, in practice, with the result is that:

> "Under interest arbitration in the Ontario BPS, there is a tendency to simply pattern after previous, recent BPS awards or settlements, largely on the basis of achieving "comparability" or historical parity (equality) regardless of other characteristics that might be present and that differentiate workplace and enterprise outcomes."[40]

The consequences of patterning across arbitration awards are three-fold:

i. It tends to promote upward biased wage awards over time;[41]

ii. It leads to wage awards that are, increasingly, disconnected from the economic circumstances of particular employers;

iii. It creates an incentive for unions to seek arbitration whenever there is an impasse, because under the criteria typically relied upon by arbitrators the award is likely to be as good as, or better, than one achieved through collective bargaining alone or one following a work stoppage.

When the Ontario government introduced the *Public Sector Compensation Restraint to Protect Public Services Act*, 2010, it simultaneously appealed to unionized employers and unions to *voluntarily* restrain pay increases because the *Act* was not binding on unionized employers/unions.

In fact, arbitrators have consistently and entirely rejected the applicability of the legislation and government guidelines as providing any basis or rationale for affecting pay awards. Arbitrator Burkett's arbitration award of February 3, 2011, regarding the renewal agreement between OPG and the Society of Energy Professionals, in which he enumerates some of the recent major arbitration awards that reject the government policy, reflects this approach.[42]

[40]Source: Chaykowski and Hickey (2012: 54).
[41]The available empirical research evidence for Canada supports the conclusion that overall wage levels that occur under interest arbitration are likely somewhat higher relative to what we expect to observe under collectively bargained settlements and that the variance is lower. See Currie and McConnell (1991); Currie and McConnell (1996); Dachis and Hebdon (2010); Gunderson, Hebdon, and Hyatt (1996) on the effects of arbitration on outcomes levels; and Currie (1994) on the variance.
[42] See: In the Matter of an Arbitration Between: Ontario Power Generation ("the employer") and: The Society of Energy Professionals ("the Society") in the Matter of: Renewal Collective Agreement. (Sole Arbitrator: Kevin Burkett) (February 3, 2011). Hereafter: the Burkett Award (2011).

Taken together, I conclude that:

- **The use of interest arbitration in Ontario BPS industries is widespread; and the use of arbitration is supported by labour policy as well as by industrial relations practices and conventions.**

- **The explicit mandate in some Ontario labour relations legislation to consider comparability, combined with the established practice of arbitrators of significantly weighting comparability as a criterion in arbitration awards, can result in significant wage patterning and impart an upward bias to wage settlements.**

- **Arbitrators have determined that they are not bound by the Government of Ontario's current legislation or policy of compensation restraint.**

Arbitrator Burkett's award takes note of the following major arbitration awards that reject the government policy:

- Science Centre and SEIU (August 19, 2010) unreported (McDowell)
- Participating Hospitals and SEIU (November 5, 2010) unreported (Burkett)
- University of Toronto and Faculty Association (October 5, 2010) unreported (Teplitsky)
- Participating Nursing Homes and SEIU (September 15, 2010) unreported (Jessin)
- Brain Injury Services of Hamilton, etc. and United Steel, Paper, etc. Workers International Union, Local 1-500 2010 OLAA No. 581 (Albertyn).

6 Unionization and Pay Determination at OPG

6.1 General Role of the Broader Labour Market in Relation to Pay Levels of Unionized Employees at OPG

Wage (earnings) levels in the broader external labour market for the various classes of unionized employees at OPG (e.g., engineers, technicians, technologists, trades) provides, in effect, a *base* for pay levels at OPG if OPG is to successfully attract and retain workers over time. If pay levels at OPG were to fall below the levels available to OPG employees in the broader labour market, then I would expect OPG to experience unwanted turnover as employees seek better paying employment opportunities elsewhere.[43] In this general circumstance, OPG would need only to match (competitively) determined pay offers in the labour market in order to attract and retain workers.

Even so, a reasonable pay strategy would also account for such considerations as the merits of being a high-pay organization; or the benefits of being an industry pay leader (e.g., a high pay strategy may result in desirable worker incentive/productivity effects , including decreased turnover, increased retention and commitment, and the ability to attract talent).[44]

In the first instance, and aside from the impacts of unions on pay, the relevant “comparator” firms for OPG, in offering “competitive” pay levels for most classes of employees, would be firms that employ similar classes of workers (in terms of the education and skill profile), in the same broader industry and geographical region within which OPG has operations; and firms that are subject to the same labour market regulatory regime.

Therefore,

> **Aside from the impacts of unions, broader external labour market forces are expected to establish pay levels that represent a *base* for the wages/earnings that would be required at OPG to successfully attract and retain workers over time.**
> - **In the first instance, the relevant “comparator” firms are those in the same broader industry and geographical region and that are subject to the same labour market regulatory regime.**

[43] On the functioning of labour markets, see Ehrenberg, Smith and Chaykowski (2004).
[44] See: Ehrenberg, Smith and Chaykowski (2004:347-348).

6.2 Pay Determination for Unionized Employees at OPG

Legacy Effects of Collective Bargaining at Ontario Hydro

Both the PWU and SEP had well-established bargaining relationships and collective agreements at Ontario Hydro, the predecessor company to OPG. Ontario Hydro had been unionized by:

- the Ontario Hydro Employees' Union (the predecessor to the PWU) in the 1950s;[45] and
- the SEP since 1992.[46]

Therefore, the collective agreements Ontario Hydro had entered into prior to the creation of the successor companies were very well-established contracts.

The PWU and SEP collective agreements in effect at Ontario Hydro just prior to the formation of the successor companies were, in fact, among the most highly sophisticated (i.e., in terms of being comprehensive in scope of subject matter, and highly detailed in terms of specifying rules and obligations), amongst all major collective agreements in Canada.

As a successor company to Ontario Hydro, OPG assumed the full range of labour relations obligations in force at Ontario Hydro, the predecessor company; OPG was obligated to recognize the PWU and SEP as the bargaining agents for the employees, and OPG was bound by those collective agreements, with all associated obligations (e.g., regarding terms and conditions of employment; and collective bargaining). The legacy in terms of coverage and complexity of the contracts included:

- Firmly established patterns of wage settlements;
- Detailed pay grids;
- Extensive rules regarding working conditions;
- Well-defined and strong discipline and discharge procedures;
- Detailed rules relating to job classifications, filling vacancies;
- Strong employment security provisions, including provisions relating to contracting out;
- Strong successor rights and obligations in the event of the sale or transfer of any element of the business.

[45] Source: http://www.pwu.ca/history.php [Accessed 22/05/2012 10:50:55 AM].
[46] Sources: Memorandum of Settlement on a Voluntary recognition Agreement Between Ontario Hydro and the Society of Ontario Hydro Professional and Administrative Employees (Dated September 12, 1991); and *Hydro One Local Member Handbook*. (Rev. May 28, 2009) at p. 1.) Accessed at: http://www.thesociety.ca/files/mylocal/12/New_Member_Handbook_-_Orientation_Manual_-_Revised-Jan%2018-10%20FINAL.pdf [Accessed 22/5/2012 at 11:00AM]. Although not yet certified as a union under the Ontario LRA, the SEP concluded a voluntary recognition agreement with Ontario Hydro in 1961 which afforded the Society the right to collectively bargain on behalf of engineers.

In addition, there was an extensive line of grievance and arbitration decisions regarding employee rights under the collective agreement that had been built up over an extended period of time. These decisions, collectively, would also have a major role in defining OPG management obligations under their collective agreements.

Therefore,

- **Ontario Hydro labour relations legacy effects were substantial and highly deterministic because OPG was bound to accept the existing collective agreements and to recognize and negotiate with the PWU and SEP; and**

  - **the collective agreements inherited by OPG were highly developed and complex contracts.**

  - **the collective agreements inherited by OPG contained, in particular, strict limitations on contracting out.**

Current Factors Determining Pay of Unionized Employees at OPG

The level of unionization at OPG is at about 90%. In labour relations terms, OPG is essentially fully unionized. There are two major unions at OPG: the Power Workers Union (PWU) and the Society of Energy Professionals (SEP); although OPG also has collective agreements with a variety of other unions, primarily relating to trades employees.[47]

The compensation levels for most employees at OPG are established through collective bargaining, and the actual pay outcomes are determined by the relative power of the parties. There are several key conditions and factors that enhance the relative bargaining power of the unions at OPG:

i. Challenging overall labour market conditions:

- projected sustained overall strong demand for labour;[48] and
- demographic trends that result in an aging workforce.

These trends reinforce each other to produce a relatively competitive market for many of the classes of skilled workers employed at OPG.

ii. Significant organizational constraints:

- an inability of OPG to shift production to alternative facilities, either locally, nationally or globally; versus,
- considerable financial strength within the unions, which increases their capacity to bargain effectively.[49]

[47] As examples, OPG also has collective agreements with the Brick and Allied Craft Union of Canada, the Canadian Union of Skilled Workers, and the International Association of Machinists and Aerospace Workers.
[48] Source: Electricity Sector Council (2012). Taking account of the range of factors that affect both the demand for (e.g, replacement needs arising from retirements; demand arising from expansion of the industry) and supply of labour (e.g, enrolments in education programs related to careers in the electricity industry; immigration; demographics) in the broader Ontario electricity industry, the Electricity Sector Council projects overall “tight” labour markets (i.e., pressures on supply of labour) in the electricity industry through 2016 (see: Electricity Sector Council 2012: 103-105).
[49] See, for example: Grant Thornton (March 31, 2011). Financial Statements. The Society of Energy Professionals – IFPTE Local 160. Independent Auditor’s Report.

iii. Determinative constraints in the legal and political context:

- political sensitivity to the public's dependence on uninterrupted electricity supply, which lowers the political tolerance for work stoppages and increases the likelihood of reliance upon interest arbitration;[50]

- a legal and legislative regime that enforces successorship rights of the unions, which ensures that attempts to restructure or privatize a business segment would not result in deunionization or shedding of collective agreements.[51]

iv. Very high extent of union organization:

- The PWU and SEP also represent employees at other major firms in the industry that employ similar classes of workers:

  - The PWU has bargaining units at over 40 firms in the electricity industry, including major employers: OPG, Hydro One, Bruce Power, Kinectrics, Transalta Energy Corporation, and London Hydro.[52]

  - The SEP has bargaining units with major firms including: Bruce Power, Hydro One, Inergi, Kinectrics, OPG, and Toronto Hydro.[53]

- At the aggregate level, the electricity industry in Ontario is highly organized, so that unions have a very high capacity to "take wages out of competition."

Therefore,

- **The compensation levels and increases of unionized employees at OPG are determined solely through the collective bargaining process, and not through the unfettered interaction of supply and demand in the labour market.**

- **The set of main factors that determine the relative bargaining power of the major unions and OPG – including sensitivity to the public's reliance on uninterrupted electricity supply and, therefore, reliance upon interest arbitration – all function to increase the bargaining power of the unions relative to the bargaining power of OPG.**

[50] For acknowledgement of this general political sensitivity in the context of Ontario, see: Drummond Commission Report (2012: 369).
[51] See: Ontario *Labour Relations Act*, 1995, 5.0.1995, c. 1, Sched. A. Section 68 and 69, on Successor Rights; and the Drummond Commission Report (2012) does not recommend that the current Successor Right provisions in the OLRA be altered.
[52] Source: http://www.pwu.ca/employers.php.
[53] Source: http://www.thesociety.ca/secondmenu/agreements/index.html.

- **On net, consistent with the empirical research evidence that unions deliver a sizable wage premium, I expect both the PWU and SEP to be successful in raising compensation levels, considerably, above the wage levels that would be expected to prevail were there broader competitive labour markets characterized by little or no unionization.**

6.3 Wage Increases among Unionized Employees at OPG

Appropriate Comparators for Pay Increases of Unionized Employees

Any assessment of whether or not the pay levels at OPG are "comparable" to the pay levels elsewhere in the labour market, must take into account:

- The broader industry and geographical region within which OPG has operations;
- Competitors in the labour market for similar classes of workers (in terms of education and skill) and who are subject to similar labour market regulatory regimes; and also, importantly,
- The critical roles played by the very high level of unionization and the labour relations regime governing employment relations.

The electricity industry in Canada, especially nuclear power generation, is populated by a few firms, among which OPG predominates. Even so, other major firms in the broader Canadian electricity industry employ some of the same, or similar, classes of employees, including Bruce Power and Hydro One. Either or both of these major firms would constitute reasonable comparators because they are similarly unionized, operate within the same jurisdiction (i.e., are subject to the same labour relations regulatory regime), and hire workers within the same general labour market in the electricity and (broader) utilities industries – both of which are among the most highly organized industries in the country.

In contrast, using U.S. comparators, for example, would likely be problematic because of the fundamentally different labour relations legal and policy context. Specifically, there are significant differences between the Canadian and American labour relations legal/policy regimes that have important impacts on the relative viability and strength of unions in the two countries, including key legislative differences with respect to: union recognition (including the process by which unions are recognized as well as the criteria to obtain recognition); first-contract arbitration, which is prevalent in Canada (but not mandated in the U.S.); union security (especially the prevalence of right-to-work laws in the U.S. versus the use of the Rand formula in Canada); the scope of issues that are subject to bargaining, which is more limited in the U.S. than in Canada; the treatment of the right to employ replacement workers in the event of a strike, which is highly restricted in Canada; and union successor rights, which are strong in Canada but not in the U.S.[54]

[54] Source: Wood and Godard (1999: 213-222 and 228, Table 1); and Sack (2000). As Wood and Godard (1999: 222) explain:

> "None the less, there is little question that the superior effectiveness of the Canadian system reflects some combination of: (1) more broadly defined recognition criteria, (2) expeditious determination of support for the union in order to minimize the opportunity for employer interference, (3) minimization of the employer's interference during the recognition process so that he/she is less able to play upon

Therefore,

- **In terms of pay and other employment related outcomes of unionized employees, the relevant and appropriate comparators for OPG are those firms that are, in addition to other criteria, subject to similar labour relations policy and legal regimes, and that have similarly high levels of unionization.**

Negotiated Pay Increases at OPG Relative to the Pay Increases in the Broader Public Sector

A process of patterning of wage settlements is expected within many broader public sector industries because of the high level of unionization in most industries. Therefore negotiated pay increases are expected to be similar among employers within many industries in the broader public sector.[55]

The very high degree of unionization in the Ontario electricity industry supports the ability of the two main unions to pattern wage settlements and other terms and conditions of employment across employers in the industry, by “whipsawing” employers over successive rounds of collective bargaining. In view of the high degree of industry concentration in Ontario, and Canada, and the very high level of unionization in electricity, the negotiated wage increases at OPG are expected to be broadly similar to increases elsewhere in the Ontario electricity industry, and at least as high as in the Ontario broader public sector.

The negotiated wage increases in major public sector contracts (bargaining units of 500 or more employees) and the increases at OPG are presented in Figure 5, for the period 2001 through 2013. OPG wage settlements track very closely the negotiated increases in the broader public sector through 2008; although public sector settlements start to trend lower beginning in 2009, OPG settlements remained somewhat higher because:

i. the collective agreements at OPG are long term and remain in force;

> employees' fears and misgivings, (4) no mandatory/non-mandatory distinction, (5) provision for first contract arbitration, (6) strong powers for the administrative body and more effective enforcement mechanisms, (7) provision for union security, and (8) bans on permanent, and in some jurisdictions temporary, replacements for workers on strike.
> The implication of this US-Canadian comparison is that the design and administration of a statutory system can indeed make a critical difference to its effectiveness.”

In fact, these significant differences in labour policy regimes is a major reason for the greater success of the Canadian labour movement, as evidenced by the much higher unionization rates in Canada compared to the U.S. (refer to Section 4.2 above on Ontario and U.S. union density).

[55] It is also a feature of some private sector industries with a high degree of unionization and common unions (e.g., Ford, GM and Chrysler in the automobile industry); see Kumar (1999: 142).

ii. in the case of the SEP, the Burkett Award (2011) mandated that OPG pay increases of 3% in 2011 and about 3% in 2012.

However, the wage increases after 2012 again more closely align with the overall increases in the Ontario broader public sector because:

- the 2012 agreement between the PWU and OPG provides for lower general wage increases of 2.75 % in the period from (April) 2012 through (March) 2015 (compared to 3% in the previous contract ending mid-2012);[56] and

- a 2013 interest arbitration award for the Society includes lower wage increases (less than 2%) for the 2013-2014 period.[57]

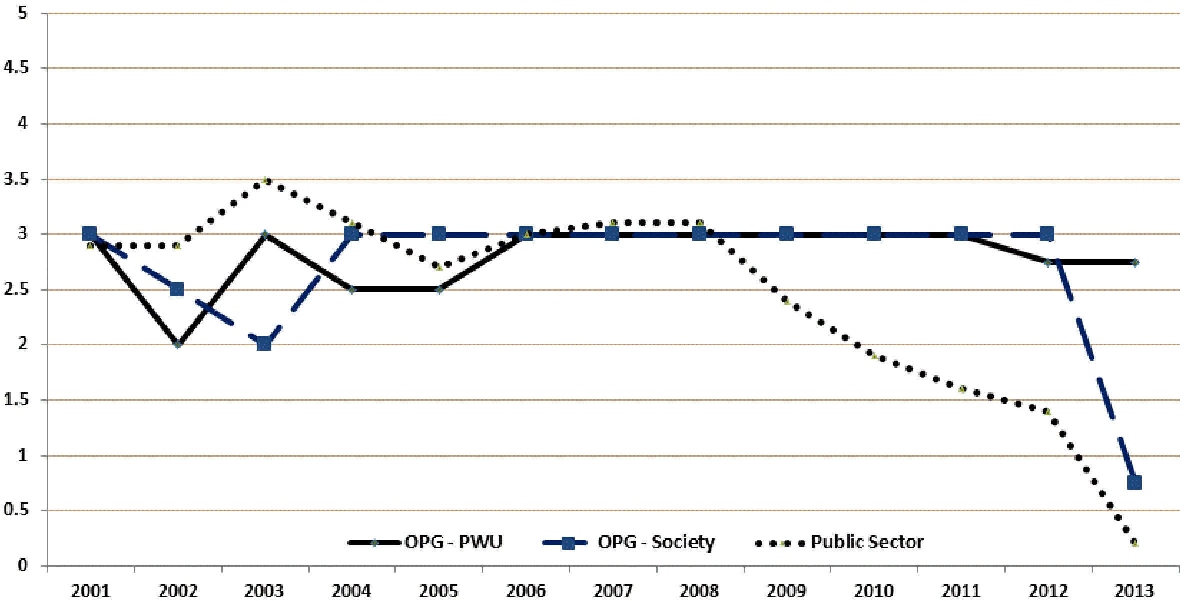
Therefore,

- **OPG wage settlements tend to track the negotiated increases in the Ontario broader public sector, over time; this is expected given the overall very high level of unionization across the Ontario public sector, and in the utilities and electricity industries.**

- **The most recent OPG contract settlement with the PWU and interest arbitration award for the Society include lower pay increases than the previous contracts; this is consistent with the long term trend whereby negotiated wage settlements at OPG tend to track the average wage negotiated in large Ontario BPS bargaining units.**

[56] Source: Memorandum of Settlement Between Ontario Power Generation Inc. and Power Workers' Union CUPE Local 1000 (March 20, 2012).
[57] See: Albertyn Award (2013).

Figure 5: Annual Wage Increases, Collective Bargaining, OPG and Ontario Public Sector, 2001-2013



Note: Public sector wage increases for 2013 are for teh January - June period.
Sources: *Collective Bargaining Review* (Ontario Ministry of Labour) various years.; OPG and PWU and Society collective agreements, Albertyn Arbitration Award (April 8, 2013; OPG and the Society) and information provided by OPG upon request.

Pay Increases of Unionized Employees at OPG Relative to Pay Increases at Appropriate Individual Comparators

Determining whether or not the negotiated pay levels and increases at OPG are (mis)aligned with the predominant pay patterns in the industry needs to be assessed in relation to the wage increases negotiated at other appropriate comparators in the electricity industry. The most appropriate comparators for purposes of industrial relations outcomes would (in addition to other relevant criteria[58]):

- be in the same jurisdiction;
- be subject to the same labour relations legislation; and
- negotiate with the same major unions.

Under these three criteria, the relevant comparator companies for industrial relations outcomes for OPG would be Ontario power companies; and among the potential comparator firms in Ontario, the most appropriate are:

- Hydro One, which shares a common predecessor company, the same shareholder, and the same major unions, and is in the BPS; and
- Bruce Power, which has similar operations, and the same major unions, but is in the private sector.

A comparison between OPG and these major comparators, in the general wage increases negotiated with the PWU over the period 2000 through 2013, indicates that:

- OPG wage increases consistently track at or somewhat lower than the increases observed at these comparators (refer to Figure 6);
- the cumulative wage increase at OPG, over the 2001-2013 period, is substantially lower than at either Bruce Power or Hydro One (refer to Figure 7); and
- pay comparisons by specific occupation (e.g., OPG vs. Bruce Power) shows that earnings at OPG are generally lower.[59]

Notably, OPG pay outcomes and increases therefore compare very favourably to Bruce Power, the major private sector comparator.

[58] These criteria are identified and discussed in Section 6.3 above.
[59] Source: [EB-2010-0008 Exhibit F4 Tab 3 Schedule 1 Chart 11 (Filed: 2010-05-26)].

The close tracking over time suggests a strong patterning factor in the determination of negotiated wage settlements across major firms in electricity, which follows from both the high level of unionization in electricity and the prevalence of the PWU and SEP across the industry.

I expect the patterning of wage settlements across electricity, and across the major power producers, to be reinforced where impasses in collective bargaining are referred to arbitration because arbitrators heavily weigh the "comparability" criterion. In the 2011 interest arbitration award between OPG and SEP, Arbitrator Burkett explicitly took account of recent settlements in the electricity industry in forming the decision;[60] and, in turn, in the 2013 interest arbitration award between the OPG and the Society, Arbitrator Albertyn concluded that: "…The most important comparator for the OPG-Society collective agreement is the agreement between OPG and the PWU", and he emphasized "The historical pattern of maintaining parity with the PWU settlement…".[61]

Furthermore, arbitration awards cannot be judicially reviewed merely on the basis of either party not accepting that the award was "reasonable" or "acceptable."

Therefore,

- **OPG wage settlements are consistently either at or below the wage increases that have been negotiated at the most appropriate comparators in the electricity industry; and the salary levels of individual occupations compare closely as well.**

[60] See: Burkett Award (2011).
[61] See: Albertyn Award (2013) at Para. 59.

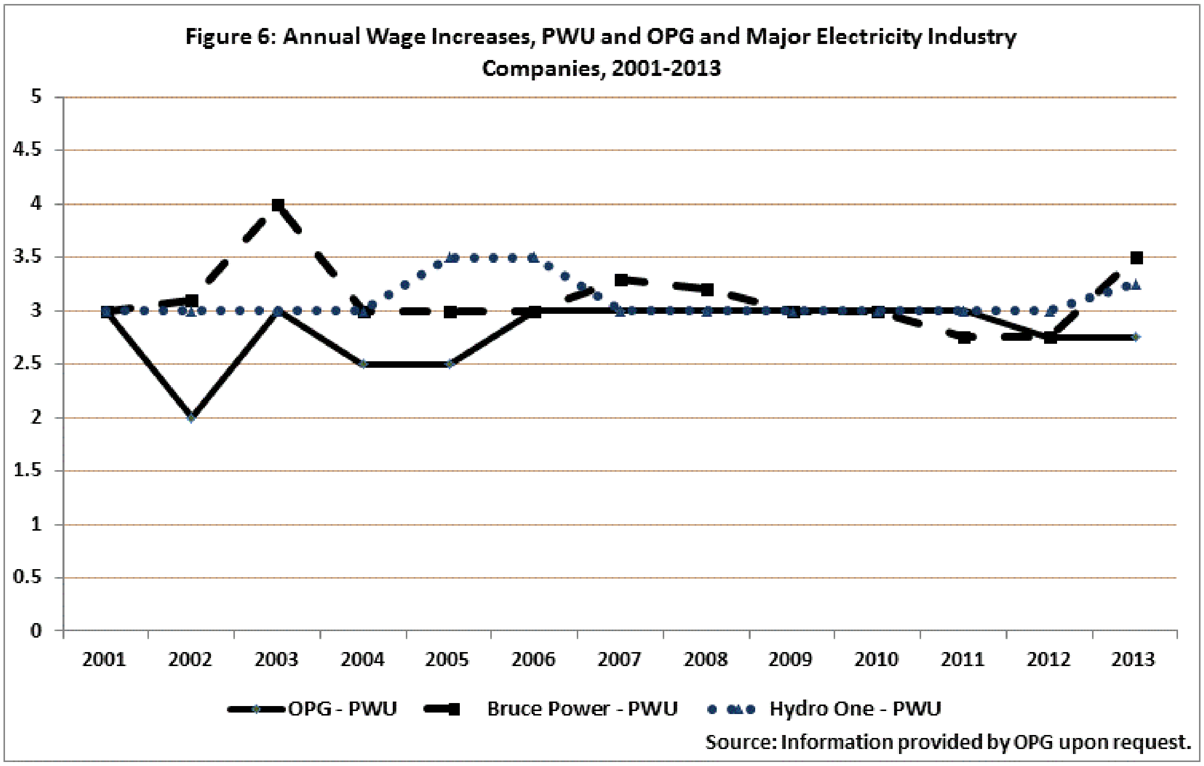


Figure 6: Annual Wage Increases, PWU and OPG and Major Electricity Industry Companies, 2001-2013
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
OPG - PWU
Bruce Power - PWU
Hydro One - PWU
Source: Information provided by OPG upon request.

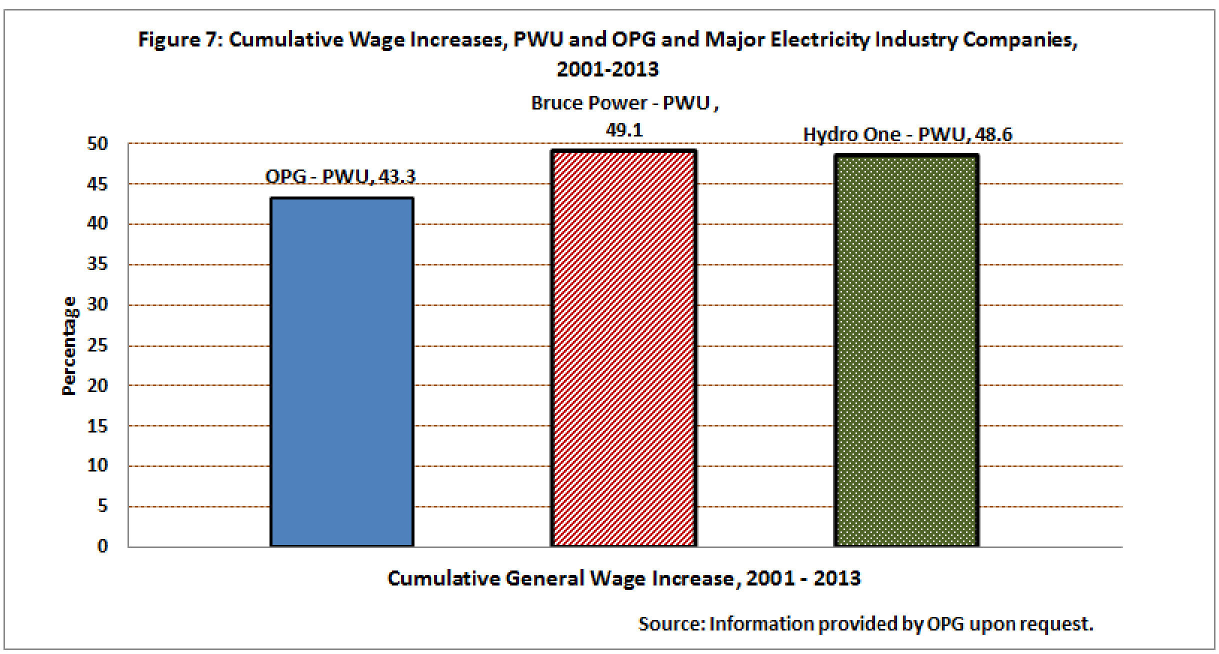


Figure 7: Cumulative Wage Increases, PWU and OPG and Major Electricity Industry Companies, 2001-2013
Bruce Power - PWU, 49.1
Hydro One - PWU, 48.6
OPG - PWU, 43.3
Percentage
50
45
40
35
30
25
20
15
10
5
0
Cumulative General Wage Increase, 2001 - 2013
Source: Information provided by OPG upon request.

6.4 Pay Structures among Unionized Employees at OPG

Internal Relativities in Pay at OPG

I expect that the combination of a union wage premium, which I expect to especially benefit lower skilled workers, combined with pay compression resulting from union standard rate policies, will result in:[62]

- A high degree of wage compression between the lowest and highest pay levels, and across employees of different skill levels;

- Disproportionately raising the lower end of the wage scale, thereby increasing the pay levels of the lower skilled/paid employees and reducing internal wage dispersion.

Therefore,

- **The pay structures defined by the collective agreements at OPG reduce the degree of differentiation in pay across employees of different skill levels, thereby increasing pay compression.**

Pay Rises Associated with Pay Structures and Automatic Adjustments

It is standard for major collective agreements in the electricity sector to have: comprehensive rules that specify wage steps through well-defined pay structures; criteria for filling job vacancies, transfers, and access to training; and comprehensive cost-of-living (COLA) clauses that essentially provide for additional wage increases during the term of the contract, in order to limit the erosion of the real value of wages due to inflation.[63] Major contracts in the electricity industry with COLA clauses include the following:

- Collective agreement between **Bruce Power** and the Power Workers' Union (CUPE Local 1000), January 1,2007 – December 31,2009;
- Collective Agreement between **Toronto Hydro** and CUPE Local No. 1, February 1, 2009 – January 31, 2014;
- Collective Agreement between **Hydro One Inc.** and Society of Energy Professionals, July 1, 2007 – March 31, 2013.

[62] In his 2013 arbitration award for OPG and the Society, Arbitrator Albertyn noted that wage compression is an important issue with respect to the internal pay structures at OPG.
[63] Typically, wage increases under COLA clauses are triggered once inflation [as measured by Statistics Canada's Consumer Price Index (CPI)] reaches a certain level, and the extent of the increase may be subject to a cap.

In addition to providing for annual general wage increases, the collective agreements between OPG and the PWU and SEP, respectively, have:

i. Defined pay grids (structures) characterized by standardized pay rises that are tied to employee movements across steps in the pay grid:

- estimates of wage increases due to progression and promotion (increases apart from the general negotiated (across-the-board) wage increases) at OPG appears to be about 1%, annually; [64]

- I expect that progression and promotion increases in Ontario broader public sector establishments to be of similar magnitude to the increases at OPG.

ii. Built-in wage increases arising from automatic cost-of-living (COLA) wage adjustments to account for inflation, and where:

- successive OPG contracts with the PWU have had COLA clauses; and the current 2012-2015 collective agreement between OPG and the PWU provides for a COLA that is effective in the third year of the contract and that specifies that COLA adjustments be made once inflation exceeds 2.75%;

- the OPG contract with the Society has a COLA clause, and the Burkett Award (2011) renewed the COLA clause (Article 24 in the OPG-SEP collective agreement that expired in December 2010) through to December 2012; and this COLA clause specifies that COLA adjustments be made once inflation reaches 3.5%; the Albertyn Award (2013) renewed the COLA clause, but for the third year of the contract he awarded a lower inflation threshold of 2.75%, after which the COLA is applied.

- for Ontario, the projected inflation rate (as measured by the percentage change in the CPI for Ontario is projected to be about 2%;[65] so that I expect that there is a reasonable expectation that the inflation rate may reach the range that will trigger the COLA adjustment in the third year of the PWU and Society contracts.

Therefore,

- **Regular pay increases at OPG arise from the ongoing movement of employees through pay grids and potential inflation-based pay adjustments (COLA increases); these structures and COLA adjustments are enshrined in the collective agreements.**

[64] Source: Factum of the Appellant, Ontario Power Generation Inc. (Ontario Superior Court of Justice Divisional Court. Ontario Power Generation Inc. and Ontario Energy Board, Court File No. 18411) At Para. 29.
[65] Source: Ontario. *2013 Ontario Budget*. TABLE 2.9 The Ontario Economy, 2011 to 2016. Accessed 16.06.2013 at: http://www.fin.gov.on.ca/en/budget/ontariobudgets/2013/ch2c.html#ch2_t2-9.

7 Assessment of the Prospects for Achieving Significantly Different Labour Costs among Unionized Employees at OPG

7.1 Constraints Imposed by Structural Pressures on the Workforce at OPG

There are three major structural pressures affecting the workforce at OPG that, in turn, create upward pressure on wages at OPG:

i. The first structural pressure arises because of the significant aging of the workforce at OPG. In 2010, the median age of the workforce at OPG was approximately 47 years;[66] this compares to approximately 41 years in 2010 in the general workforce.[67]

ii. A second structural pressure arises because of the relatively low age at which many employees at OPG are eligible to retire, which results in a very high proportion of OPG employees being eligible to retire over the next 5 years:

- Unionized employees at OPG are eligible to retire based upon achieving "factor 82" (the combination of years of service and an employee's age); for example, under this formula, an employee with 25 years of service could retire at age 57.

- The proportion of current employees (including those represented by the PWU and SEP, as well as management) who are eligible to retire over the period from 2012 through 2016 is approximately 35.7%.[68]

- There is employee choice as to when to retire; but the process of filling job vacancies created by the retirement of unionized employees is subject to any rules and restrictions in collective agreements regarding the hiring or transfer of employees.

iii. OPG is utilizing attrition to facilitate the downsizing of its overall workforce, however:

- Pension plan costs and "other post-employment benefit" (OPEB) costs are expected to continue to escalate as the number of pensioners increases;[69] while pension plan commitments are subject to the rules that have been negotiated through collective bargaining.

[66] Source: [EB-2010-0008 Exhibit F4 Tab 3 Schedule 1, At p. 3 (Filed: 2010-05-26)].
[67] Source: Carrière and Galarneau (2011: Chart F at p. 7). This estimate is based upon the Statistics Canada Labour Force Survey and is for employed persons.
[68] Source: Data provided by OPG upon request. This total includes approximately 19.8 % by the end of 2012; an additional 3.9% in 2013; and a further 3.5% in 2014, 4.1% in 2015, and 4.4% in 2016.
[69] Both pension and OPEB costs have increased significantly over the 2011 – 2013 (projected) period; see EB-2012-002, Exhibit H1, Tab 1, Schedule 1, Table 5 (filed 2012-09-24); and EB-2012-0002, Exhibit H1-1-2, Attachment 2, page 5 (filed 2013-02-08).

- The process of filling job vacancies created by the downsizing process, including through retirements and turnover, is subject to any rules and restrictions in collective agreements regarding the hiring or transfer of employees.

I expect these structural factors to combine to create pressures to recruit skilled workers in order to renew the workforce – even though the overall size of the workforce is expected to be smaller. The need for workforce renewal is expected to occur in the context of current and forecast sustained overall strong demand for a variety of skilled workers in the Canadian electricity sector, generally, and in the Ontario electricity industry, specifically.[70] This, in turn, places overall upward pressure on wages.

Therefore,

- **OPG faces significant structural challenges regarding workforce renewal including an aging workforce and downsizing with an emphasis on attrition. Strong overall labour demand in the broader industry, and across occupational categories, is expected to maintain overall upward pressures on wages in the labour market.**

7.2 Prospects for OPG to Achieve Significantly Different Collective Bargaining Outcomes

In view of the industrial relations context and specific industrial relations circumstances at OPG, I expect OPG to make incremental changes in various aspects of the terms and conditions of employment negotiated with the unions, including aspects of compensation, job security, or other characteristic of the employment contract deemed significant to the union.

I do not expect major changes to be possible without either:

i. a governmental intervention that (directly or indirectly) imposes the outcome; or

ii. achieving substantive change through collective bargaining.

In what follows, I consider both of these possibilities, in turn.

7.2.1 Government Intervention in Outcomes

(i) _Direct government intervention_.

In view of recent developments in Ontario education labour relations, in which the government briefly introduced direct intervention but then quickly returned to bargaining, there is little

[70] See: Electricity Sector Council (2012); and Electricity Sector Council (2012: 103-105).

prospect of direct, ongoing, government intervention in specific contract negotiations, or any outcomes of collective bargaining, at OPG – just as there is little at any employer in the province. Such an intervention would trigger even further debate regarding whether it constitutes interfering in collective bargaining and/or imposing a collective agreement and would, therefore, likely bring about a *Charter* challenge.

(ii) *Broader government limits on the compensation of unionized employees*.

One main factor affecting the prospects of a government intervention is the legal viability of any form of broad government compensation restraint legislation; and the Ontario government has been cautious about this type of intervention for unionized workers precisely because of the prospects that the legislation would be subject to a *Charter* challenge, in view of the SCC decisions in BC *Health Services* and *Fraser*.

Therefore,

- **There is little prospect of ongoing government limits on wage increases being imposed upon unionized employees in the electricity sector.**

7.2.2 Achieve Substantive Changes to the Labour Cost Structure Through Collective Bargaining

The two major unions at OPG, the PWU and SEP:

- Have organized essentially the entire workforce eligible for union representation at OPG;
- Have similarly organized the other major employers in the electricity industry, including the two main appropriate comparator firms, Hydro One and Bruce Power;
- Are situated in the broader utilities sector which, at about 70% organized, is among the most highly unionized sectors in Canada;
- Have maintained long-standing complex collective agreements that represent legacy contracts from the predecessor company Ontario Hydro.

These conditions confer a very high degree of bargaining power onto unions precisely because the extent of union organization across the electricity industry is extremely high, permitting the unions to:

- Take wages out of competition, by ensuring that firms cannot substitute towards non-union employees on any meaningful scale;

- Use wage levels/increases in the broader labour market as a floor and then negotiate a further significant wage premium for their members;

- Achieve patterning of wage settlements across the electricity industry.

Consequently, the only way in which OPG can achieve substantial reductions in labour costs is to move to a lower labour cost curve; that is, by such measures as:

- Substantially reducing the rate of increase in wages;

- Achieving structural changes in areas related to pay grids, overtime, or layoff policies;

- Increasing contracting out or other outsourcing measures.

Changes in these aspects of the employment relationship are determined entirely through the labour relations framework at OPG. There are, generally, three basic change strategies available to firms (including OPG):[71]

i. "escape", which essentially takes advantage of international markets and globalization;

ii. "foster" change, which is a long term change strategy that:

  - Aligns with an industrial relations context where constraints on change (e.g., a very strong union) are binding in the short run;
  - Tends to achieve incremental change over the longer term;
  - Seeks to foster positive and productive long term labour relations.

iii. "forcing strategy", that may seek more significant changes in a short term approach;

At OPG:

- moving operations (escape) is not an option;

- the fostering strategy is more closely associated with the current approach to labour relations;

- short term changes that involve significant concessions by the unions would most likely be associated with a forcing strategy.

In what follows, I consider the three most significant avenues by which OPG could, in practice, expect to achieve lower labour costs:

- collective bargaining;

[71]See Walton, Cutcher-Gershenfeld, and McKersie (1994).

- arbitration; and
- contracting out or restructuring.

I consider each of these, in turn.

(i) *Collective Bargaining Route*.

In the short term, achieving changes along any of the dimensions of the employment relationship that have potential for significant labour cost reductions would require concessions by the PWU and/or SEP in collective bargaining.

Neither union has a record of concession bargaining over wages or any other major terms and conditions of employment. In fact, the PWU and SEP both have significant bargaining power in the electricity industry, generally, and at OPG, specifically, where they negotiate collective agreements.

Concessions would therefore require that:

- OPG undertake a "forcing" strategy and "hard" bargaining in order to extract concessions;

- OPG have the capacity to undertake and sustain a work stoppage of sufficient cost to employees and the union that it outweighs the cost to the union(s) of agreeing to the change (e.g., substantially lower compensation levels).

In the case of the SEP, the collective agreement clearly specifies that, in the event of an impasse in negotiations, the outstanding issues in dispute be referred to binding arbitration (under Article 15).

In the case of the PWU, the capacity of OPG to undertake and sustain a work stoppage is dependent upon the public's tolerance for actual (or perceived) impacts of a work stoppage on the supply of electricity.

Electricity is considered a vital product necessary to the daily existence of the public; it is therefore highly likely that the government would have little tolerance for a work disruption and would refer any dispute to binding interest arbitration.

Therefore,

- **A "forcing strategy" in collective bargaining that attempts to achieve substantial reductions in the labour cost structure at OPG is not likely to be successful in the near term:**

- **Substantial changes to OPG collective agreements would require a high-conflict, hard bargaining approach, that would be resisted by the unions, including to the point of a strike;**

- **A strike is not likely to achieve the desired result of forcing a settlement on management's terms because the dispute is likely to be resolved by interest arbitration;**

- **A strike would lead to a significant deterioration in the quality of labour relations that would, in turn, reduce the prospect of more cooperative approaches to increasing productivity and lowering the cost structure.**

▪ **The best likelihood of success through collective bargaining is to adopt a fostering approach and negotiate incremental change that also preserves the high quality of the labour-management relationship.**

(ii) *Interest Arbitration Route*.

The interest arbitration route is an option to resolve disputes and achieve a collective agreement at OPG:

- The OPG collective agreement with the PWU does not provide for interest arbitration.

  However, in the event of a strike, I would expect the government to intervene by mandating that the dispute be resolved through interest arbitration. In this situation, I expect that the wage increases (and other employment terms) awarded would pattern after the wage increases (and other terms) found in other arbitration decisions.

- OPG has previously been subject to interest arbitration in its labour relations relationship with the SEP.[72]

  The OPG-SEP collective agreement (in Article 15) sets out that impasses in collective bargaining are to be resolved through binding interest arbitration of the outstanding issues. The collective agreement specifies general criteria to be considered by the arbitrator; and these criteria essentially parallel the standard criteria found in Ontario

[72] The arbitration awards include the March 2004 Arbitration Award by Arbitrator Adams (in the matter of OPG and the SEP Re: Renewal of a Collective Agreement); the February 2011 Arbitration Award by Arbitrator Burkett (in the matter of a renewal collective agreement); and the April 2013 Arbitration Award by Arbitrator Albertyn (in the matter of the renewal of a collective agreement)

labour relations legislation, and the types of criteria typically considered by arbitrators in interest disputes.[73]

The predominant criteria used by arbitrators tend to be "comparability" and "replicability," which are associated with patterning and upward pressure on wages. While there is no evidence that the labour cost outcomes achieved through arbitration are lower than those achieved through collectively bargained settlements, there is empirical research evidence that wage outcomes under arbitration will be somewhat higher over time.[74]

In addition, Ontario arbitrators have unconditionally rejected factoring in the Ontario government's stated policy of encouraging wage restraint in all BPS industries, including the electricity industry. This arbitral view has been applied in the context of OPG as recently as 2011. In the Burkett Award (2011), regarding the renewal agreement between OPG and the Society of Energy Professionals, Arbitrator Burkett made clear that government policy on restraint was of no relevance; as he said: "… these pronouncements are of no binding force or effect…".

Therefore,

- **The net result is that any arbitration award will tend to pattern after other awards and collectively bargained settlements in the industry, and the wage outcomes under arbitration will therefore tend to be at least as high and very likely higher, over time, than the outcomes achieved through a collectively bargained settlement.**

- **Interest arbitration at OPG will not yield significant labour cost reductions at OPG.**

[73] Arbitrator Burkett has highlighted that the collective agreement:
"… stipulates that I [the arbitrator] must weigh the following:

(a) A balanced assessment of internal relativities, general economic conditions, external relativities;
(b) OPG's need to retain, motivate and recruit qualified staff;
(c) The cost of changes and their impact on total compensation;
(d) The financial soundness of OPG and its ability to pay."

[74] Refer to the research studies in Footnote 41.

(iii) ***Contracting Out or Restructuring Route*.**

The scope for OPG to attain labour cost reductions through either some degree of contracting out, or ownership restructuring or transfer of a business unit, is extremely limited. Any aspect of this is regulated by:

i. Provincial legislation stipulates that full union successor rights apply when a business is sold, which means that union representation of affected workers and the collective agreement are both, in effect, transferred to the new enterprise (e.g., one that has been privatised);[75] and

ii. The PWU and SEP collective agreements, each of which contains an article that further requires OPG to abide by successor rights.[76]

Furthermore,

iii. The ability of OPG to contract out work is constrained by the collective agreements with the PWU and SEP.

- In the case of the OPG-PWU collective agreement:

[75] The applicable successor rights provision of the LRA:

> " 69 (2) Where an employer who is bound by or is a party to a collective agreement with a trade union or council of trade unions sells his, her or its business, the person to whom the business has been sold is, until the Board otherwise declares, bound by the collective agreement as if the person had been a party thereto and, where an employer sells his, her or its business while an application for certification or termination of bargaining rights to which the employer is a party is before the Board, the person to whom the business has been sold is, until the Board otherwise declares, the employer for the purposes of the application as if the person were named as the employer in the application."

[76] Specifically, Article 15 of the collective agreement between OPG and the PWU, CUPE, Local 1000 [April 1, 2012 -March 31, 2015) states that:

> "The Company agrees that it will not directly or indirectly request government to exempt the Company or the Union from the successor rights provisions of the applicable labour relations legislation.
> The successor rights provisions of the applicable labour relations statute shall be incorporated by reference into this collective agreement."

The collective agreement successor rights article dates back to the 1998 labour relations framework agreement crafted between Ontario Hydro and the PWU at the time of the formation of the successor companies to Ontario Hydro.

- any workers displaced as a result of contracting out will be afforded a degree of employment security through application of attrition, transfers and access to job vacancies, or retraining; Article 12 Appendix A] and

- with disputes resolved through a Joint Employment Security Committee with joint union and management membership and with final and binding arbitration of any disputes [Article 12 Appendix A].

- The SEP collective agreement similarly provides for job security from contracting out.

Therefore,

- **The OPG collective agreements with the PWU and SEP provide very little scope for achieving significant labour cost reductions through either some form of contracting out or a restructuring of some aspect of an enterprise (e.g., through a privatization or creation of a new business entity);**

- **Changes to the existing contract provisions regarding contracting out would likely require a strong forcing strategy in negotiations; and which would be viewed as concessions by the unions, therefore increasing the likelihood of a work stoppage in order to achieve the concessions, again raising the prospect of interest arbitration.**

- **Changes involving the restructuring of some aspect of an enterprise (e.g., through a privatization or creation of a new business entity) would be subject to the strict successor rights provisions that exist, resulting in the employer continuing to be bound by the collective agreement in any new business unit.**

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Attachment 2

Actuarial Report

Ontario Power Generation Inc.

Report on the Estimated Accounting Cost for Post Employment Benefit Plans for Fiscal Years 2013 to 2015

January 1, 2013 to December 31, 2015

Contents

Introduction

This report summarizes the estimated accounting costs for fiscal years 2013 through 2015 for the post employment benefit plans sponsored by Ontario Power Generation Inc. (“OPG”).

This report covers the following plans sponsored by OPG:

- Ontario Power Generation Inc. Pension Plan (“RPP”);
- Ontario Power Generation Inc. Supplementary Pension Plan (“SPP”) ;
- Non-pension Post Retirement Plan which provides other post retirement benefits (“OPRB”) including retiree medical, dental, life insurance, and retirement bonus benefits; and
- Post Employment Plan which provides long-term disability benefits (“LTD”) including sick leave benefits before LTD begins and the continuation of medical, dental and life insurance while on LTD.

Collectively SPP, OPRB and LTD are known as Other Post Employment Benefits (“OPEB”).

The results cover the fiscal years from January 1, 2013 to December 31, 2015. The results have been developed in accordance with US generally accepted accounting principles (“US GAAP”) under ASC 715, 712 and 710 and, for the fiscal year from January 1, 2013 to December 31, 2013, Canadian generally accepted accounting principles (“Canadian GAAP”) under CICA Handbook–Accounting (Part V), Section 3461 (“CICA 3461”).

The results in this report do not include amounts related to the benefit plans of the Nuclear Waste Management Organization, which are included in OPG’s consolidated financial statements.

Unless otherwise stated all assumptions, data elements, methodologies, plan provisions, and information about assets reflected in this report are the same as those underlying and/or contained in the December 31, 2012 disclosure reports (“the Reports”) prepared by Aon Hewitt in accordance with US GAAP for the post employment benefit plans sponsored by OPG. These disclosure reports were dated March, 2013 and are titled as follows:

- US GAAP Accounting Information Non-pension Post-retirement and Post-employment Benefits Plans; and
- US GAAP Accounting Information – Pension Plans.

Introduction (continued)

All figures are shown in Canadian $000s.

Sincerely,

Aon Hewitt Inc.

Linda M. Byron
Fellow of the Society of Actuaries
Fellow of the Canadian Institute of Actuaries

Aon Hewitt Inc.

Gregory W. Durant
Fellow of the Society of Actuaries
Fellow of the Canadian Institute of Actuaries

September 2013

Actuarial Report

Results for Fiscal Years 2013 to 2015

OPG's total estimated pension and OPEB costs for fiscal years 2013 through 2015 as determined in accordance with US GAAP and, for fiscal year 2013, Canadian GAAP are as follows:

(in Canadian $ 000's)	US GAAP			Canadian GAAP
	2013	2014	2015	2013
RPP	$ 473,282	$ 444,498	$ 426,544	$ 473,282
SPP	28,553	28,796	29,105	28,553
OPRB	257,010	258,469	260,490	257,010
LTD	35,338	36,219	37,142	38,333
Total	$ 794,183	$ 767,982	$ 753,281	$ 797,178

The estimated 2013 costs for the RPP, SPP and OPRB plans under both US GAAP and Canadian GAAP are not expected to change, unless a significant event, such as a curtailment or settlement or any other unexpected changes to OPG's operations were to take place prior to December 31, 2013. The final 2013 cost under US GAAP and Canadian GAAP for the LTD plan will be determined at December 31, 2013 based on applicable information and assumptions at that date.

The final 2014 and 2015 costs for all plans under US GAAP will be determined based on applicable information, experience and assumptions in the future.

Further details of the above OPG-wide estimated costs, by plan, as well as OPG's estimated contributions to the RPP fund and benefit payments for OPEB, are provided in Schedules 1 through 4 to this report.

Actuarial Methods and Assumptions

The actuarial methodology and accounting policies used in the development of the estimated costs for fiscal years 2013 through 2015 under US GAAP and, for fiscal year 2013, Canadian GAAP are summarized below.

- Benefit obligations for RPP, SPP and OPRB are determined using the projected benefit method prorated on service;
- Benefit obligations for LTD are determined using the projected benefit method on a terminal basis such that the total estimated future benefit is attributed to the year of service in which a disability occurs;
- The discount rates have been determined in accordance with US GAAP and Canadian GAAP. The discount rates have been set with reference to those representative of AA corporate bond yields in Canada having a duration similar to the liabilities of the plans. The December 31, 2012 discount rates were 4.30% per annum for determining the estimated 2013 through 2015 RPP and SPP costs, 4.40% per annum for determining the estimated 2013 through 2015 OPRB costs, and 3.50% per annum for determining the estimated 2013 through 2015 LTD costs. The actual discount rate as at December 31, 2013 will be used to determine the final 2013 LTD cost under US GAAP;
- A building block approach was used in determining the expected long-term rate of return on plan assets. Historical markets are studied and long-term historical relationships between equities and fixed-income are preserved consistent with the widely accepted capital market principle that assets with higher volatility generate a greater return over the long run. Current market factors such as inflation and interest rates are evaluated before long-term capital market assumptions are determined. The long-term portfolio return is established using target asset allocations, via a building block approach with proper consideration of diversification and rebalancing. An expected rate of return on assets of 6.25% per annum determined using the above approach was used for determining the estimated 2013 through 2015 RPP costs;
- Other actuarial assumptions are management's best estimate of future events, as determined in consultation with independent actuaries and as set out in the Reports. These assumptions include the inflation rate and the salary scale increase rate, which were established at 2.00% per annum and 2.50% per annum (plus Promotion, Progression, Merit), respectively;
- The active membership headcount is first calculated for each business unit based on the assumed decrements and then compared to the estimated active December 31, 2013 and December 31, 2014 headcounts for each business unit. As the calculated headcounts exceed the estimated headcounts, additional employees are assumed to retire to reduce the headcounts. The estimated December 31, 2013 active headcount used is 10,654 (i.e., 6,285 for Nuclear, 2,021 for Hydro / Thermal and 2,348 for Corporate). The estimated December 31, 2014 active headcount used is 10,360 (i.e., 6,158 for Nuclear, 1,982 for Hydro / Thermal and 2,220 for Corporate);
- Actuarial gains or losses for RPP, SPP and OPRB have been amortized using the 10% corridor method, except where immediate recognition is required under US GAAP and Canadian GAAP for non-routine events during the year (none expected during 2013 through 2015);

Actuarial Report (continued)

- Past service costs for RPP, SPP and OPRB have been amortized on a straight-line basis over the expected average remaining service lifetime at the amendment date, except where immediate recognition is required under US GAAP and Canadian GAAP for non-routine events during the year (none expected during 2013 through 2015);

- For LTD, under US GAAP, all actuarial gains and losses and past service costs are required to be recognized immediately in the cost. Therefore, under US GAAP, the cost is equal to the change in the benefit obligation plus benefit payments. Under Canadian GAAP, the change in the obligation due to changes in economic assumptions is deferred and amortized, and the sum of the following is recognized immediately: (i) the change in the obligation at the end of the year compared to the obligation at the beginning of the year on the same economic basis and (ii) actual benefit payments. In addition, past service costs are also deferred and amortized; and,

- Expected return on assets and amortization of actuarial gains/losses are based on a market-related value of assets where investment gains and losses on equity assets in excess of an expected return of 6.0% per annum plus the increase in Consumer Price Index are smoothed over five years.

The latest actuarial valuation as of January 1, 2011 for funding purposes of the RPP is the basis of contributions for 2013. The next actuarial valuation for funding purposes must have an effective date no later than January 1, 2014. In order to project contributions to the RPP for 2014 and 2015, an estimate of the going concern and solvency positions of the RPP is required.

The contributions for 2014 and 2015 are estimated based on the projected going concern and solvency funded status as of January 1, 2014. All funding assumptions used are the same as those used for the funding valuation as of January 1, 2011, updated to reflect the following for the determination of the estimated solvency funded status:

- The non-indexed discount rates were 2.50% per annum for the first 10 years and 3.70% per annum thereafter for commuted values, and 2.96% per annum for annuity purchase. The indexed discount rates were 1.10% per annum for the first 10 years and 1.30% per annum thereafter for commuted values;

- The mortality assumption was the 1994 Uninsured Pensioners Mortality Tables with fully generational mortality projection using Scale AA; and,

- The estimated wind-up expenses were $73,400,000.

Schedule 1—Summary of Estimated 2013 US GAAP Results

The following table provides a summary of the estimated US GAAP results for 2013 for the post employment benefit plans sponsored by OPG. The estimated net periodic pension/benefit cost for the period January 1, 2013 to December 31, 2013 is determined based on the balance sheet items at January 1, 2013.

(in Canadian $ 000's)	RPP	SPP	OPRB	LTD
Net Asset (Liability) Recognized as at January 1, 2013				
Projected Benefit Obligation	$ (13,614,479)	$ (293,242)	$ (2,871,995)	$ (290,026)
Fair Value of Plan Assets	10,286,143	0	0	0
Net Asset (Liability) Recognized	$ (3,328,336)	$ (293,242)	$ (2,871,995)	$ (290,026)
Amounts Recognized in Accumulated Other Comprehensive Income as at January 1, 2013				
Unrecognized Past Service Costs (Credits)	$ 0	$ 0	$ 3,973	$ 0
Unrecognized Net Actuarial Loss (Gain)	4,518,837	101,341	944,582	0
Unrecognized Transition Obligation (Asset)	0	0	0	0
Total Accumulated Other Comprehensive Loss (Income)	$ 4,518,837	$ 101,341	$ 948,555	$ 0
Components of Estimated Net Periodic Pension/Benefit Cost, January 1, 2013 to December 31, 2013				
Employer Current Service Cost	$ 287,535	$ 9,646	$ 79,804	$ 24,808
Interest Cost	586,807	12,855	128,334	10,530
Expected Return on Plan Assets	(644,460)	0	0	0
Amortization of Past Service Cost	0	0	535	0
Amortization of Net (Gain) Loss	243,400	6,052	48,337	0
Total Cost	$ 473,282	$ 28,553	$ 257,010	$ 35,338
2013 Estimated Employer Pension Contributions / Benefit Payments	$ 380,000	$ 7,863	$ 70,237	$ 27,933

Schedule 2—Summary of Estimated 2014 US GAAP Results

The following table provides a summary of the estimated US GAAP results for 2014 for the post employment benefit plans sponsored by OPG. The estimated net periodic pension/benefit cost for the period January 1, 2014 to December 31, 2014 is determined based on the projected balance sheet items at January 1, 2014.

(in Canadian $ 000's)	RPP	SPP	OPRB	LTD
Projected Net Asset (Liability) Recognized as at January 1, 2014				
Projected Benefit Obligation	$ (13,971,270)	$ (307,880)	$ (3,007,952)	$ (297,431)
Fair Value of Plan Assets	10,794,263	0	0	0
Net Asset (Liability) Recognized	$ (3,177,007)	$ (307,880)	$ (3,007,952)	$ (297,431)
Estimated Amounts Recognized in Accumulated Other Comprehensive Income as at January 1, 2014				
Unrecognized Past Service Costs (Credits)	$ 0	$ 0	$ 3,438	$ 0
Unrecognized Net Actuarial Loss (Gain)	4,274,226	95,289	894,301	0
Unrecognized Transition Obligation (Asset)	0	0	0	0
Total Accumulated Other Comprehensive Loss (Income)	$ 4,274,226	$ 95,289	$ 897,739	$ 0
Components of Estimated Net Periodic Pension/Benefit Cost, January 1, 2014 to December 31, 2014				
Employer Current Service Cost	$ 295,529	$ 9,887	$ 78,815	$ 25,420
Interest Cost	602,290	13,489	134,156	10,799
Expected Return on Plan Assets	(674,099)	0	0	0
Amortization of Past Service Cost	0	0	535	0
Amortization of Net (Gain) Loss	220,778	5,420	44,963	0
Total Cost	$ 444,498	$ 28,796	$ 258,469	$ 36,219
2014 Estimated Employer Pension Contributions / Benefit Payments	$ 268,000	$ 8,159	$ 75,511	$ 28,644

Schedule 3—Summary of Estimated 2015 US GAAP Results

The following table provides a summary of the estimated US GAAP results for 2015 for the post employment benefit plans sponsored by OPG. The estimated net periodic pension/benefit cost for the period January 1, 2015 to December 31, 2015 is determined based on the projected balance sheet items at January 1, 2015.

(in Canadian $ 000's)	RPP	SPP	OPRB	LTD
Projected Net Asset (Liability) Recognized as at January 1, 2015				
Projected Benefit Obligation	$ (14,341,560)	$ (323,097)	$ (3,143,307)	$ (305,006)
Fair Value of Plan Assets	11,208,910	0	0	0
Net Asset (Liability) Recognized	$ (3,132,650)	$ (323,097)	$ (3,143,307)	$ (305,006)
Estimated Amounts Recognized in Accumulated Other Comprehensive Income as at January 1, 2015				
Unrecognized Past Service Costs (Credits)	$ 0	$ 0	$ 2,903	$ 0
Unrecognized Net Actuarial Loss (Gain)	4,053,371	89,869	847,233	0
Unrecognized Transition Obligation (Asset)	0	0	0	0
Total Accumulated Other Comprehensive Loss (Income)	$ 4,053,371	$ 89,869	$ 850,136	$ 0
Components of Estimated Net Periodic Pension/Benefit Cost, January 1, 2015 to December 31, 2015				
Employer Current Service Cost	$ 297,539	$ 10,134	$ 78,658	$ 26,068
Interest Cost	618,101	14,134	139,987	11,074
Expected Return on Plan Assets	(698,581)	0	0	0
Amortization of Past Service Cost	0	0	535	0
Amortization of Net (Gain) Loss	209,485	4,837	41,310	0
Total Cost	$ 426,544	$ 29,105	$ 260,490	$ 37,142
2015 Estimated Employer Pension Contributions / Benefit Payments	$ 381,000	$ 9,057	$ 80,875	$ 29,374

Schedule 4—Summary of Estimated 2013 Canadian GAAP Results

The following table provides a summary of the estimated Canadian GAAP results for 2013 for the post employment benefit plans sponsored by OPG. The estimated net periodic pension/benefit cost for the period January 1, 2013 to December 31, 2013 is determined based on the balance sheet items at January 1, 2013.

(in Canadian $ 000's)	RPP	SPP	OPRB	LTD
Accrued Benefit Asset (Liability) as at January 1, 2013				
Accrued Benefit Obligation	$ (13,614,479)	$ (293,242)	$ (2,871,995)	$ (290,026)
Fair Value of Plan Assets	10,286,143	0	0	0
Excess (Deficit)	$ (3,328,336)	$ (293,242)	$ (2,871,995)	$ (290,026)
Unrecognized Past Service Costs (Credits)	0	0	3,973	1,199
Unrecognized Net Actuarial Loss (Gain)	4,518,837	101,341	944,582	57,628
Accrued Benefit Asset (Liability)	$ 1,190,501	$ (191,901)	$ (1,923,440)	$ (231,199)
Components of Estimated Net Periodic Pension/Benefit Cost, January 1, 2013 to December 31, 2013				
Employer Current Service Cost	$ 287,535	$ 9,646	$ 79,804	$ 24,808
Interest Cost	586,807	12,855	128,334	10,530
Expected Return on Plan Assets	(644,460)	0	0	0
Amortization of Past Service Cost	0	0	535	393
Amortization of Net (Gain) Loss	243,400	6,052	48,337	2,602
Total Cost	$ 473,282	$ 28,553	$ 257,010	$ 38,333
2013 Estimated Employer Pension Contributions / Benefit Payments	$ 380,000	$ 7,863	$ 70,237	$ 27,933

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Educational Note

Accounting Discount Rate Assumption for Pension and Post-employment Benefit Plans

Task Force on Pension and Post-retirement Benefit Accounting Discount Rates

September 2011

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Ce document est disponible en français

Members should be familiar with Educational Notes. Educational Notes describe but do not recommend practice in illustrative situations. They do not constitute Standards of Practice and are, therefore, not binding. They are, however, intended to illustrate the application (but not necessarily the only application) of the Standards of Practice, so there should be no conflict between them. They are intended to assist actuaries in applying Standards of Practice in respect of specific matters. Responsibility for the manner of application of Standards of Practice in specific circumstances remains that of the members in the pension practice area.

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Memorandum

To: All Pension Actuaries

From: Phil Rivard, Chair
Practice Council

Gavin Benjamin, Chair
Task Force on Pension and Post-retirement Benefit Accounting Discount Rates

Date: September 20, 2011

Subject: **Educational Note – Accounting Discount Rate Assumption for Pension and Post-employment Benefit Plans**

This Educational Note offers advice to pension actuaries who are engaged to provide guidance to a pension plan sponsor on the selection of the discount rate for a Canadian pension plan under Canadian, U.S., or international accounting standards.

This Educational Note has been prepared by the Task Force on Pension and Post-retirement Benefit Accounting Discount Rates ("the Task Force") which was appointed by the Practice Council. Members of the Task Force consist of certain members of the Committee on Pension Plan Financial Reporting (PPFRC), members of the Canadian Institute of Actuaries ("the Institute") who were not members of the PPFRC, and individuals who are not members of the Institute. The Practice Council wishes to express its gratitude to all the Task Force members, who are listed below. (*Not a member of the Institute.)

Wendy Achoy
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In accordance with the Institute's Policy on Due Process for the Approval of Guidance Material other than Standards of Practice, this Educational Note has been prepared by the Task Force and has received final approval for distribution by the Practice Council on September 13, 2011.

As outlined in subsection 1220 of the Standards of Practice, "*The actuary should be familiar with relevant Educational Notes and other designated educational material*." That subsection explains further that a "practice which the Educational Notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation." As well, "Educational Notes are intended to illustrate the application (but not necessarily the only application) of the standards, so there should be no conflict between them."

If you have any questions or comments regarding this Educational Note, please contact Gavin Benjamin at his CIA Online Directory address, gavin.benjamin@towerswatson.com.

1. INTRODUCTION

This Educational Note has been prepared by the Task Force on Pension and Post-retirement Benefit Accounting Discount Rates ("the Task Force") which was appointed by the Practice Council.

When preparing pension-related information for their financial statements, pension plan sponsors are responsible for the selection of the assumptions used to value the plan liabilities. One of the most material assumptions that plan sponsors must select is the discount rate assumption (i.e., the assumption used to discount the projected pension plan cash flows to the accounting measurement date). Plan sponsors often engage actuaries to provide guidance on the selection of pension accounting assumptions. The purpose of this Educational Note is to highlight some of the considerations of which an actuary ought to be mindful when engaged to provide guidance to a plan sponsor on the selection of the discount rate for a Canadian pension plan under accounting standards. In addition, the Educational Note describes a methodology to extrapolate the long end of the high-quality corporate yield curve that the Task Force believes would be appropriate in the current economic environment.

More specifically, this Educational Note provides guidance for the selection of the discount rate for a Canadian defined benefit pension plan under the requirements of section 3461 of part II[1] and part V of the *Handbook* of the Canadian Institute of Chartered Accountants, codification 715.30.35-43 and 44 of the U.S. accounting standards, and section 19 of the International Accounting Standards (referred to collectively in this Educational Note as "Accounting Standards"). The guidance contained in this Educational Note may not be appropriate for the selection of discount rates in accordance with other accounting requirements. In such case, the actuary would use his or her judgment to determine whether the guidance contained in this Educational Note applies.

The guidance contained in this Educational Note would also be appropriate for post-employment benefits other than pensions that are accounted for in accordance with the Accounting Standards.

2. REQUIREMENTS OF ACCOUNTING STANDARDS

Accounting Standards generally require that, for an ongoing pension plan, the discount rate be selected by reference to market yields at the accounting measurement date of high-quality corporate[2] debt instruments with cash flows that match the timing and amount of expected benefit payments.

This definition can leave room for a wide range of different interpretations on issues such as:

- what "high quality" means,
- which debt instruments are to be included, and
- how to address the lack of suitable debt instruments at certain maturities.

[1] Under the deferral and amortization approach.

[2] Note that U.S. accounting standards do not specifically refer to corporate bonds, but this category of debt instruments has been widely used in setting discount rates in practice.

On the first issue, it is understood that "high quality" in Canada has generally been interpreted as referring to market yields on corporate bonds rated Aa or higher, as is the practice in most other countries where Accounting Standards also apply. It is worth noting that in the U.S., the Securities Exchange Commission has provided an interpretation under U.S. accounting standards that "high quality" means the two highest credit ratings given by a recognized ratings agency (e.g., a fixed income security that receives a rating of Aa or higher from Moody's Investors Service). An excerpt from that interpretation is provided in appendix A.

It is worth noting that at the time of preparation of this Educational Note, there were no Aaa-rated corporate bonds denominated in Canadian dollars with long maturities. As a practical matter, the rest of this Educational Note references Aa-rated corporate bonds as being representative of "high quality" bonds in Canada. An actuary may consider including Aaa-rated corporate bonds as "high quality" bonds in the analysis if they become available.

The second and third issues are discussed in the sections that follow.

Appendix B to this Educational Note contains a summary of the key elements of the Accounting Standards that are relevant to the selection of the discount rate.

3. INSUFFICIENT HIGH-QUALITY CORPORATE BONDS WITH LONG MATURITIES IN CANADA

Given the long-term nature of pension plan obligations, the yields that matter most for purposes of selecting the discount rate for a pension plan are often the yields for debt instruments with long terms to maturity (e.g., maturities of 15 years and above). While there is a deep market of Aa-rated corporate bonds denominated in Canadian dollars with short and medium terms to maturity, there are few Aa-rated corporate bonds with terms to maturity beyond 15 years. For example, based on one data source which is considered representative of the Canadian market, at March 31, 2011 there were five Aa-rated corporate bonds with maturities beyond 10 years that had a market capitalization of at least $100 million, only one of which had a maturity beyond 20 years.

In light of such scarcity in Aa-rated corporate bonds with long maturities, actuaries would consider the fact that yield curves developed from such a small pool of bonds may require a significant amount of subjectivity and may also lead to a lack of credibility in the outcome which could be heavily influenced by only a handful of issuers of long corporate bonds. Therefore, in preparing this Educational Note, various possibilities for improving the information used in the construction of the yield curve were reviewed.

4. APPROACH FOR SELECTING THE DISCOUNT RATE

When engaged to provide guidance on the selection of the discount rate assumptions, a reasonable approach commonly used by actuaries would consist of,

> developing a yield curve based on Aa-rated corporate bond data or alternatively obtaining such a curve from a third party provider. When developing the curve (or analyzing the curve provided by a third party), it is important that the actuary understand the underlying data, methods and assumptions that were used in constructing the curve, in particular with respect to extrapolating the long end of the yield curve.

converting the yields on the curve described in the immediately preceding step into spot rates (i.e., yields on zero coupon bonds). This is done because the yield at any point on the curve described in the immediately preceding step represents a blend of the yields on the semi-annual coupons and the yield on the principal that is repaid at the time the bond matures. The appropriate yields to reference in order to discount the projected stream of pension benefit payments would be yields on zero coupon bonds. Pension actuaries would be familiar with the difference between yield and spot curves.

calculating the present value of the pension plan's expected benefit payments using the spot rates developed in the immediately preceding step.

the actuary recommending the discount rate assumption that would be the unique discount rate that, when applied to the plan's expected benefit payments, provides for an equivalent present value as calculated in the immediately preceding step.

5. CONSIDERATIONS WHEN DEVELOPING AA-RATED CORPORATE YIELD CURVE

The following are some factors the actuary would consider when assessing the appropriateness of an Aa-rated corporate yield curve developed for accounting discount rate purposes, as described in the first step of section 4 above.

A. The approach used to extrapolate the long end of the yield curve, given the scarcity of Aa-rated corporate bonds with long maturities.

   Due to the long-term nature of pension obligations, the long end is often the portion of the yield curve that matters most for purposes of establishing the discount rate. A detailed discussion on extrapolating the long end of the yield curve is contained in sections 6 and 8 and in appendix C.

B. The characteristics of the bonds that have been included in the universe used to develop the yield curve.

   It may be appropriate to consider excluding bonds with an outstanding market value below a certain threshold (e.g., $100 million) because bonds with smaller market values tend to be traded less frequently than bonds with larger market values and, thus, their pricing may be considered less reliable.

   The actuary would consider excluding any bonds with characteristics that render the bond inappropriate for purposes of matching the timing and amount of expected payments from a pension plan. For example, the actuary would consider excluding bonds with one or more of the following features: callable (unless the call option includes a make-whole provision or the actuary is comfortable that the call option does not have a material effect on the bond price), putable, convertible, sinkable, extendable, perpetual, variable coupon, and inflation linked. At the time of preparation of this Educational Note, there are few corporate bonds denominated in Canadian dollars with characteristics that render them inappropriate for matching the timing and amount of expected benefit payments from a pension plan.

   The actuary would determine whether debt instruments such as private placements have been included in the universe. For a private placement, the robustness of its pricing would be a key consideration in determining whether to include it or not.

The actuary would consider whether it is appropriate for bonds issued by government agencies or quasi-government entities, such as energy utilities, airport authorities or universities, to be considered corporate bonds. If so, they would be eligible for inclusion in the universe used to develop the yield curve. Alternatively, if they are not considered corporate bonds, they could be included when extrapolating the long end of the yield curve subject to further adjustments to reflect Aa-rated corporate risk.

The actuary would consider whether to include outlier bonds (i.e., bonds with very high or very low relative yields). If the actuary decides to exclude outlier bonds, the actuary would consider the yield thresholds beyond which a bond would be classified as an outlier. A possible rationale for excluding outlier bonds could be that very high or low relative yields may indicate unusual characteristics of the bonds, market concerns about the strength of the bond issuer or the credit rating of these bonds, or may suggest an issue with the reliability of the pricing. On the other hand, a possible rationale for including outlier bonds could be that the classification of a bond as an outlier is subjective and the actuary often does not have sufficient knowledge to second-guess the bond ratings or the yield information provided by the bond data source.

Different ratings agencies may assign different ratings to a particular bond. For example, one ratings agency may rate a bond as Aa while another ratings agency may rate the same bond as A. The actuary would consider which ratings agency/agencies have been relied upon for purposes of selecting the bonds used to develop the yield curve and whether the choice of the ratings agency/agencies could materially affect the resulting discount rate.

C. During periods of financial market volatility, the actuary would consider the following matters with respect to the appropriateness of the bond yield information used to develop the yield curve.

If a bond has not been traded recently, the yield information provided for the bond is often based on the yields of similar bonds that were recently traded. During periods of financial market volatility, this approach for estimating the yield may become less reliable.

During periods of financial market volatility, the spread between the bid and ask yields may increase. The actuary would consider whether to use the bid yields, ask yields, or something in between the two (e.g., the average of the bid and ask yields).

The actuary would consider whether the yield information is dominated by either new issues or secondary sales. Bond issuers will often offer a new issue concession (i.e., higher yield) relative to the yield on the secondary sale of the same bond. While new issue concessions are not normally significant, they can increase significantly and become material during periods of financial market volatility.

The above information may not be readily available from the bond information the actuary normally receives. In that case, the actuary would generally question the data provider to understand how these issues are reflected in the data provided.

D. The actuary would consider the manner in which bond yields are weighted when developing the yield curve.

   One approach is to weight each bond by its market capitalization. However, the actuary would consider whether a few bonds with large relative market capitalizations are having undue influence on the resulting discount rate.

   A second approach is to weight each bond equally. However, the actuary would consider whether a large number of bonds with small relative market capitalizations are having undue influence on the resulting discount rate.

   A third approach is to use weightings which are between the two approaches above.

E. Fitting a yield curve to the available bond yield data requires judgment and the use of methodologies (e.g., a regression technique). The actuary would consider whether appropriate judgment is being applied, especially at the long end of the curve where bond yield information may be scarce.

6. EXTRAPOLATING THE LONG END OF THE YIELD CURVE: APPROACHES CONSIDERED

A number of approaches for extrapolating the long end of the yield curve have been assessed, given the scarcity of corporate bonds rated Aa and above with maturities beyond 10 years. The underlying objective of all the approaches that were examined is to increase the number of relevant data points used to extrapolate the long end of the yield curve, thereby avoiding reliance on too few data points.

The following approaches to extrapolate the long end of the yield curve have been considered and analyzed in detail.

A. For maturities greater than 10 years, supplement the Aa-rated corporate bonds with A-rated corporate bonds with or without a spread adjustment to reflect the additional credit risk of A-rated bonds (both approaches were analyzed).

B. For maturities greater than 10 years, supplement the Aa-rated corporate bonds denominated in Canadian dollars with Aa-rated corporate bonds denominated in U.S. dollars that are further translated into Canadian dollars.

C. For maturities greater than 10 years, use Canadian provincial bonds rated Aa to which a spread adjustment is added to reflect the additional credit risk of Aa-rated corporate bonds.

Further details and commentary regarding each of the above approaches are provided below.

A. For maturities greater than 10 years, supplement the Aa-rated corporate bonds with A-rated corporate bonds, with or without a spread adjustment to reflect the additional credit risk of A-rated bonds.

In order to increase the number of data points used to extrapolate the long end of the yield curve, the Aa-rated corporate bonds used to develop the long end of the yield curve are supplemented with A-rated corporate bonds.

The addition of A-rated corporate bonds adds a significant number of data points at longer maturities. For example, at March 31, 2011, based on one data source which is considered representative of the Canadian market, there were 105 A-rated corporate bonds with maturities beyond 10 years that had a market capitalization of at least $100 million, 67 of which had maturities beyond 20 years.

A-rated bonds are generally considered upper-medium grade (compared to high grade for Aa-rated bonds) and the issuers of such bonds are generally seen as having a strong capacity to meet their financial commitments (compared to a very strong capacity for Aa-rated bond issuers) and the market would generally assign wider credit spreads for A-rated versus Aa-rated bonds of similar duration/maturity in the same sector. Therefore, a spread adjustment may be subtracted from the yields on A-rated corporate bonds when extrapolating the long end of the yield curve.

B. For maturities greater than 10 years, supplement the Aa-rated corporate bonds denominated in Canadian dollars with Aa-rated corporate bonds denominated in U.S. dollars that are further translated into Canadian dollars.

This approach is based on the premise that Canadian pension plans have access to deep international high-quality corporate bond markets, whose cash flows could be used to match the timing and amount of expected benefit payments from a Canadian pension plan. Under this approach, Aa-rated corporate bonds denominated in Canadian dollars are supplemented with Aa-rated corporate bonds denominated in U.S. dollars with maturities greater than 10 years in order to increase the number of data points used to establish the long end of the yield curve.

This approach adds a significant number of data points at longer maturities. For example, at March 31, 2011, based on one data source which is considered representative of the U.S. market, there were 117 Aa-rated corporate bonds denominated in U.S. dollars with maturities beyond 10 years that had a market capitalization of at least $100 million, 81 of which had maturities beyond 20 years.

For the U.S. bonds, the U.S. dollar yields would be translated into Canadian dollar yields using market data on swap rates.

This approach is included in the initial analysis of the different approaches that is summarized in appendix C. Although this approach appears to be attractive because of the deepness of the U.S. bond market, it is understood that it may not be considered permissible under current Accounting Standards due to the underlying data being denominated in a currency other than Canadian dollars. Therefore, Approach B was not retained as a viable option by the Task Force.

C. For maturities greater than 10 years, use Canadian provincial bonds rated Aa to which a spread adjustment is added to reflect the additional credit risk of Aa-rated corporate bonds.

   This approach takes advantage of the fact that the market for high-quality Canadian provincial bonds is deep across the entire yield curve. For example, at March 31, 2011, based on one data source which is considered representative of the Canadian market, there were 71 Aa-rated provincial bonds with maturities beyond 10 years that had a market capitalization of at least $100 million, 42 of which had maturities beyond 20 years.

   For purposes of developing the yield curve, Aa-rated corporate bonds are used for maturities up to 10 years since the market is sufficiently deep at these maturities. For maturities greater than 10 years, the yield curve is extrapolated using Aa-rated Canadian provincial bonds. In order to reflect the difference in credit risk between Aa-rated corporate bonds and Aa-rated provincial bonds, a spread adjustment is added to the provincial bond yields.

7. FEEDBACK ON EXTRAPOLATION APPROACHES

In order to increase the likelihood that this guidance will be acceptable to auditors, feedback was requested from the Canadian audit firms' Technical Partners Committee (TPC) on Approaches A and C for extrapolating the yield curves that are described in section 6. While guidance from the TPC is not binding on Canadian auditors, it is understood that TPC guidance provides a strong indication of the approaches and methods that will likely be acceptable to Canadian auditors.

After considering the information provided, the TPC indicated that they have a preference for Approach C, since they view the methodology for extrapolating the Aa-rated corporate yield curve beyond 10 years to be reasonable. Also, in their view, this approach is most consistent with Canadian accounting standards as it is somewhat consistent with question and answer 41R of the CICA's *Employee Future Benefits Implementation Guide*. (Question and answer 41R is reproduced in appendix B.) In addition, Approach C is not based on bonds rated below Aa, which is a characteristic of Approach A.

Based on the Task Force's analysis and the guidance provided by the TPC, it was concluded that Approach C is an appropriate approach for extrapolating the yield curve in accordance with current Accounting Standards.

8. DERIVING THE SPREAD ADJUSTMENT TO ACCOUNT FOR THE CREDIT RISK OF AA-RATED CORPORATE BONDS

In order to implement Approach C, a methodology is needed for deriving an appropriate spread adjustment to the Aa-rated Canadian provincial bond yields to account for the additional credit risk of Aa-rated corporate bonds.

Deriving an appropriate spread adjustment under Approach C to translate Canadian provincial Aa bond yields into Canadian corporate Aa bond yields for bonds with maturities in excess of 10 years requires judgment. It is recognized that there are different ways to calculate such spread, but herein is suggested a methodology that is believed to be reasonable while not overly complex.

The suggested methodology can be described as follows:

A base spread, denominated $Spread^{base}$, would be calculated first. This base spread would be measured in a portion of the universe where there are sufficient data to derive a credible spread. For example, it may be reasonable to use the average spread between Aa-rated corporate and Aa-rated provincial bond yields with terms between five and 10 years.

It is recognized that there may be an additional spread between Aa-rated corporate bonds and Aa-rated provincial bonds at longer maturities, but such additional spread is difficult to measure (due to lack of data) and is thought to be usually relatively small. A study was done over the period from June 2004 to December 2009, which compared the spread between Aa-rated corporate bonds and Aa-rated provincial bonds at different maturities. The provincial bonds were comprised of an equal blend of issues from Québec and Ontario. Based on the study, the additional spread at terms from 21 to 30 years relative to the spread at terms from six to 10 years was, on average, 0.11% over the period, but ranged from 0% to 0.57% with the following exception. At December 31, 2008, which was at the height of the financial crisis, the additional spread was negative (-0.63%).

It is believed that most of the increase in spreads in corporate Aa yields above "risk-free" yields (i.e., above yields on securities issued by the Government of Canada) expected as the maturity of a bond increases is typically already reflected in the pricing of Aa-rated provincial bonds. Initially, it was suggested that, typically, no such additional spread need be assumed. However, following comments from various parties arguing for the use of as much as possible of the available data at long maturities, even if the data are scarce, it was concluded that it would be appropriate to suggest making an allowance for the additional spread at maturities beyond 10 years. One possible methodology for making this additional allowance would be to reflect one-half of the average spread calculated over the period from 11 to 30 years that is in excess of the average base spread calculated between five and 10 years. This methodology is described more precisely in the remainder of this section.

If the average spread calculated between 11 and 30 years is defined as $Spread^{long}$ and the excess spread as $Spread^{excess}$ then,

$Spread^{long}$ is calculated as the average spread between Aa-rated corporate and Aa-rated provincial bond yields with terms between 11 and 30 years using available data, even if scarce, and

$Spread^{excess}$ is calculated as 50% x ($Spread^{long} – Spread^{base}$).

Based on this methodology, the total spread to be added to the yields of Aa-rated provincial bonds with maturities in excess of 10 years would be calculated as

$$Spread^{Prov10+} = Spread^{base} + Spread^{excess}$$

which is equivalent to

$$Spread^{Prov10+} = Spread^{base} + 50\% \text{ x } (Spread^{long} – Spread^{base})$$

which is equivalent to

$$Spread^{Prov10+} = 50\% \text{ x } Spread^{base} + 50\% \text{ x } Spread^{long}$$

It is recognized that the suggested methodology includes a number of simplifications and a judgmental estimate of the credibility factor of 50% applied to the additional spread measured at maturities over 10 years. However, the suggested methodology has the advantage of being relatively easy to implement. Also, the credibility factor of 50% represents a reasonable compromise between no allowance at all for an additional spread beyond 10 years, which would imply that available corporate Aa-rated data beyond 10 years are not reflected, and a credibility factor of 100%, which would ignore the reality, as described in section 3, that in Canada there are few high-quality corporate bonds with long maturities. The actuary would use judgment in applying this methodology.

9. ILLUSTRATION OF THE YIELD CURVE DEVELOPED AS PER APPROACH C

The objective of this section is to illustrate the development of a yield curve based on Approach C described in section 6 above and the calculation of the spread described in section 8 above. The illustration describes one possible approach to develop the yield curve but it is recognized that other approaches may exist. The key steps in developing the yield curve are described below.

1. Select a suitable set of Aa-rated corporate and provincial bonds after consideration of the factors described in section 5.
2. Calculate the spread adjustments described in section 8 as follows.
    a) Calculate the difference/spread in bond yields between the corporate and provincial bonds of similar maturities for all bonds with a maturity between five and 10 years and for all bonds with a maturity above 10 years. This calculation could be simplified by grouping bonds that fall within a maturity band. For example, all bonds with a maturity between 7.50 and 8.49 years would be grouped and referenced as bonds with an eight-year maturity;
    b) Calculate $Spread^{base}$ as the average of the spreads calculated in 2.a) for bonds of maturities between five and 10 years. If using the simplified grouping approach mentioned in 2.a), this average could be derived by averaging the spreads calculated at maturities of five, six, seven, eight, nine, and 10 years;
    c) Calculate $Spread^{long}$ as the average of the spreads calculated in 2.a) for bonds of maturities between 11 and 30 years. Due to the small number of corporate bonds with maturities beyond 11 years, these bonds are not grouped into smaller maturity bands;
    d) Calculate $Spread^{excess}$ as 50% x ($Spread^{long} – Spread^{base}$).
    e) $Spread^{Prov10+} = Spread^{base} + Spread^{excess}$.
3. Add $Spread^{Prov10+}$ to the yield of each Aa-rated provincial bond with a maturity greater than 10 years.
4. Finally, fit a curve to the Aa-rated corporate bonds of maturities up to 10 years and the provincial bonds of maturities greater than 10 years adjusted with the spread calculated as described above. The resulting yield curve would be the starting point to derive accounting discount rates following the steps described in the last three steps of section 4.

This yield curve could be developed using a smoothing or regression technique that aims at fitting a yield curve to the selected bond yield data at the measurement date.

10. PUBLISHING A MONTHLY CURVE

The Task Force has recommended that the Canadian Institute of Actuaries consider partnering with a third party to produce a monthly spot curve derived from a yield curve based on Approach C that will be accessible to pension actuaries. Engaging a third party to produce monthly spot curves creates efficiencies by avoiding the need for actuarial firms and other parties to each set up their systems to implement Approach C. It would also lend itself to a consistent application of the suggested methodology.

This recommendation is not intended to imply that the Task Force believes that Approach C represents the only appropriate methodology for developing a high-quality corporate spot curve to be used in developing discount rates for accounting purposes. While other appropriate methods likely exist, the intention is to provide pension practitioners, plan sponsors, auditors and others with ready access to a monthly spot curve that the Task Force believes is appropriate given the research that it has conducted.

11. STANDARDS OF PRACTICE AND USING THE WORK OF OTHERS

Whether an actuary is relying on a yield curve purchased from a third party or pricing and ratings data for individual bonds, the actuary is using the work of another person. If the actuary's work is destined for use in Canada, the actuary's work is subject to Canadian actuarial standards of practice. When subject to Canadian actuarial standards of practice, the actuary would consider the following paragraphs of the Standards of Practice, which are reminders of the responsibility of an actuary to assess whether work obtained from others is appropriate to use for purposes of the actuary's work.

> Paragraph 1610.03: "Use of the work of outsiders raises questions. Is their work appropriate? Should the actuary take responsibility for it?"
>
> Paragraph 1610.05: "If the actuary does not take such responsibility, then the actuary reports with reservation . . ."
>
> Paragraph 1610.06: "Even when the actuary is not taking responsibility for the data, however, he or she would not accept supplied data blindly, but would make checks of reasonableness, if only to assure that the data had lost nothing in the transmission and that the actuary's understanding of the data is the same as the supplier's."

When assessing whether the yield curve purchased from a third party or the pricing and ratings data for individual bonds provided to the actuary is appropriate, the actuary would consider the guidance contained in this Educational Note. The actuary would pay particular attention to the manner in which the scarcity of Aa-rated corporate bonds with long maturities was addressed when developing the yield curve or in the data provided.

12. CONCLUSION

The various issues mentioned in the preceding sections of this Educational Note were examined and different approaches were explored for developing a high-quality corporate bond yield curve from which discount rates could be derived to value pension obligations. Subsequently the possible options were narrowed down, feedback was sought from the TPC and it was concluded that Approach C represents an appropriate approach in most economic environments, including the current environment. Further information about the associated work was provided in a webcast held on November 25, 2009 and in a session at the CIA Pension Seminar in Montréal on November 3, 2010.

Throughout its work, the objective of the Task Force was to address the scarcity of Aa-rated corporate bonds with long maturities in the Canadian market. Approach C uses Aa-rated provincial bonds at maturities beyond 10 years. The Aa-rated provincial bond market is liquid and deep across all terms to maturity and provides a solid base from which to extrapolate the corporate Aa-rated yield curve beyond 10 years. In order to adjust the yields on the provincial Aa-rated bonds to reflect the risk characteristics of high-quality corporate bonds, the use of as much information from current long-term high-quality corporate bonds as possible was reviewed. Although some judgment is required in developing this spread adjustment, it was concluded that the identified approach will provide for a reasonable yield curve to be used in providing guidance to plan sponsors on the selection of accounting discount rates.

If the number of long-term Aa-rated corporate bonds increases in the future (e.g., due to the issuance of more of these bonds or due to the upgrade of A-rated bonds to Aa rating), the actuary would use his or her judgment in deciding whether the changed environment enables reference to Aa-rated corporate bonds alone for purposes of developing a high-quality corporate yield curve.

Similarly, if a significant number of Aa-rated provincial bonds were to lose their Aa ratings, the actuary would evaluate the continued appropriateness of Approach C.

Pension actuaries are encouraged to consider the guidance described in this Educational Note, while recognizing that approaches other than Approach C could be acceptable with sufficient justification by the actuary. Pension actuaries are also reminded that decisions with respect to methods and assumptions used to prepare financial statements are made by the plan sponsor and not the actuary (although actuaries would be mindful of the potential application of Rule 6 of the Rules of Professional Conduct, Control of Work Product).

APPENDIX A

EXCERPT FROM AN INTERPRETATION OF THE SECURITIES AND EXCHANGE COMMISSION IN THE UNITED STATES ON THE DEFINITION OF HIGH-QUALITY BONDS

In the U.S., a quote from the September 23, 1993 U.S. FASB Emerging Issues Task Force meeting minutes on Administrative and Technical Matters is as follows: "The staff suggests that fixed-income debt securities that receive one of the two highest ratings given by a recognized ratings agency be considered high quality (for example, a fixed-income security that receives a rating of AA or higher from Moody's Investors Service, Inc.)."[3]

[3] Source: Question and answer 41R of the CICA's *Employee Future Benefits Implementation Guide.*

APPENDIX B

ACCOUNTING STANDARDS

This appendix contains a summary of certain Canadian, U.S. and International accounting standards and guidance that are relevant to the determination of the discount rate.

Canadian Accounting Standards

Part II—CICA 3461[4]

Discount rate

.063 *The discount rate used to determine the accrued benefit obligation shall be an interest rate determined by reference to:*

(a) market interest rates at the measurement date on high-quality debt instruments with cash flows that match the timing and amount of expected benefit payments; or

(b) the interest rate inherent in the amount at which the accrued benefit obligation could be settled.

.064 The objective of selecting a discount rate is to measure the single amount that, if invested at the measurement date in a portfolio of high-quality debt instruments, would provide the necessary pre-tax cash flows to pay the accrued benefits when due. For example, the current market value of a portfolio of high-quality zero coupon bonds acquired to pay the cost of benefits, when due, equals the amount of the actuarial present value of the benefits because cash inflows equal cash outflows in timing and amount. There is no reinvestment risk in the yields to maturity of the portfolio. However, in other than a zero coupon portfolio, such as a portfolio of long-term debt instruments that pay interest semi-annually or have maturities that do not extend far enough into the future to meet expected benefit payments, the discount rate (the yield to maturity) needs to incorporate reinvestment rates expected to be available in the future. Those reinvestment rates are extrapolated from the existing yield curve at the measurement date.

.065 When rates on high-quality corporate bonds are available, they are used to determine the discount rate. When the maturities of corporate bonds do not extend far enough into the future to match the cash flows inherent in the accrued benefit obligation, the rates on government bonds are used to determine the discount rate for the expected benefit payments that are farther into the future than the corporate bond maturities.

.066 The discount rate reflects the estimated timing of benefit payments. When some benefits are payable after the maturity of all available corporate or government bonds, the present value of that portion of the benefits is unlikely to vary significantly as a result of the selected discount rate. For that portion of the

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benefits, an entity may use a discount rate based on the yield of the last maturing corporate or government bond available.

.067 The discount rate is re-evaluated at each measurement date. When long-term interest rates rise or decline, the discount rate changes in a similar manner.

.068 Immediate settlement of an accrued benefit obligation may be possible through, for example, the purchase of an **insurance contract**, such as an annuity contract, that transfers the significant risks associated with the accrued benefit obligation to a third-party insurer. In such circumstances, the interest rate inherent in the amount at which the accrued benefit obligation could be settled may be used in determining the discount rate.

Employee Future Benefits Implementation Guide—Questions and Answers[5]

Question 41R: What constitutes a "high-quality debt instrument" in terms of the discount rate used to determine the accrued benefit obligation?

*Answer 41R***:** In the U.S., a quote from the September 23, 1993 U.S. FASB Emerging Issues Task Force meeting minutes on Administrative and Technical Matters is as follows: "The staff suggests that fixed-income debt securities that receive one of the two highest ratings given by a recognized ratings agency be considered high quality (for example, a fixed-income security that receives a rating of AA or higher from Moody's Investors Service, Inc.)."

In Canada, ratings on corporate bonds of AA or higher are not as common and there is no specific guidance on what a high-quality debt instrument is. Professional judgment is required in determining the appropriate discount rate. One possibility is to start with the yield on government of Canada bonds, and to add an appropriate adjustment to reflect the risk characteristics of high-quality corporate bonds.

Question 45: If an entity changes its basis of estimating assumed discount rates, for example, by using high-quality bond rates for one year and annuity rates for the following year, is that a change in method of applying an accounting principle?

*Answer 45***:** No. The purpose of paragraphs 3461.050 – .051 *[comments from the editor: these have now been renamed paragraphs 3461.063 - .064 under Part II CICA 3461]* is to describe the objective of selecting assumed discount rates, namely, to determine the interest rates inherent in the price at which the pension benefits could be effectively settled — currently. If an entity that previously used AA bond rates believes that in a subsequent year, in consideration of its pension plan's particular facts and circumstances, the interest rates that would be inherent in an effective settlement of the pension benefits are now more closely reflected by the rates implicit in current prices of annuity contracts, then those rates should be used. The change is viewed as a change in estimate (the estimate is the determination of the effective settlement rates). The key point is that the entity is using the rates implicit in current prices of annuity contracts as the basis to

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determine the best estimate of the effective settlement rates. The decision to use a particular methodology in a particular year does not mean that the entity must use that methodology in subsequent years. A change in the facts and circumstances may warrant the use of a different source that better reflects the rates at which the obligation could be effectively settled — currently. A position that holds such a change as a change in accounting principle would lend credence to the view that there are two or more acceptable alternatives. That is not the case. The objective is to select the best estimate of the effective settlement rates.

Another aspect of this issue is to determine when to change the basis of estimation from one particular methodology (for example, AA bond rates) to another (for example, rates implicit in current prices of annuity contracts). There is no prescribed mathematical formula for making that decision. As indicated above, the emphasis in selecting assumed discount rates should be the use of the best estimate. Changes in the methodology used to determine that best estimate should be made when facts or circumstances change (for example, a general decline or rise in interest rates that has not, as yet, been reflected in the rates implicit in the current prices of annuity contracts). If the facts and circumstances do not change from year to year, it would be inappropriate to change the basis of selection, particularly if the intent in changing the basis is to avoid a change in the assumed discount rate.

U.S. Accounting Standards

Codification 715.30.35-43 and -44[6]

43. Assumed discount rates shall reflect the rates at which the pension benefits could be effectively settled. It is appropriate in estimating those rates to look to available information about rates implicit in current prices of annuity contracts that could be used to effect settlement of the obligation (including information about available annuity rates published by the Pension Benefit Guaranty Corporation). In making those estimates, employers may also look to rates of return on high-quality fixed-income investments currently available and expected to be available during the period to maturity of the pension benefits. Assumed discount rates are used in measurements of the projected, accumulated, and vested benefit obligations and the service and interest cost components of net periodic pension cost.

44. The preceding paragraph permits an employer to look to rates of return on high-quality fixed-income investments in determining assumed discount rates. The objective of selecting assumed discount rates using that method is to measure the single amount that, if invested at the measurement date in a portfolio of high-quality debt instruments, would provide the necessary future cash flows to pay the pension benefits when due. Notionally, that single amount, the projected benefit obligation, would equal the current market value of a portfolio of high-quality zero coupon bonds whose maturity dates and amounts would be the same as the timing and amount of the expected future benefit payments. Because cash inflows would equal cash outflows in timing and amount, there would be no reinvestment risk in the yields to maturity of

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the portfolio. However, in other than a zero coupon portfolio, such as a portfolio of long-term debt instruments that pay semiannual interest payments or whose maturities do not extend far enough into the future to meet expected benefit payments, the assumed discount rates (the yield to maturity) need to incorporate expected reinvestment rates available in the future. Those rates shall be extrapolated from the existing yield curve at the measurement date. The determination of the assumed discount rate is separate from the determination of the expected rate of return on plan assets whenever the actual portfolio differs from the hypothetical portfolio described in this paragraph. Assumed discount rates shall be reevaluated at each measurement date. If the general level of interest rates rises or declines, the assumed discount rates shall change in a similar manner.

International Accounting Standards

IAS 19 (last revised in 2008)[7]

78 *The rate used to discount post-employment benefit obligations (both funded and unfunded) shall be determined by reference to market yields at the end of the reporting period on high quality corporate bonds. In countries where there is no deep market in such bonds, the market yields (at the end of the reporting period) on government bonds shall be used. The currency and term of the corporate bonds or government bonds shall be consistent with the currency and estimated term of the post-employment benefit obligations.*

79 One actuarial assumption which has a material effect is the discount rate. The discount rate reflects the time value of money but not the actuarial or investment risk. Furthermore, the discount rate does not reflect the entity-specific credit risk borne by the entity's creditors, nor does it reflect the risk that future experience may differ from actuarial assumptions.

80 The discount rate reflects the estimated timing of benefit payments. In practice, an entity often achieves this by applying a single weighted average discount rate that reflects the estimated timing and amount of benefit payments and the currency in which the benefits are to be paid.

81 In some cases, there may be no deep market in bonds with a sufficiently long maturity to match the estimated maturity of all the benefit payments. In such cases, an entity uses current market rates of the appropriate term to discount shorter term payments, and estimates the discount rate for longer maturities by extrapolating current market rates along the yield curve. The total present value of a defined benefit obligation is unlikely to be particularly sensitive to the discount rate applied to the portion of benefits that is payable beyond the final maturity of the available corporate or government bonds.

Note that the amended version of IAS 19 published by the International Accounting Standards Board in June 2011 has changed the numbering of the paragraphs above but not the content.

APPENDIX C

ANALYSIS OF ALTERNATIVES FOR EXTRAPOLATING THE LONG END OF THE YIELD CURVE

The Task Force retained Twist Financial to analyze various approaches for extrapolating the long end of the yield curve. The remainder of this section contains highlights from the analysis. Further details regarding the methodology used and the results of the analysis are contained in the slides prepared for a November 25, 2009 Canadian Institute of Actuaries ("CIA") webcast entitled Pension Accounting Discount Rates.

The following approaches for developing the long end of the yield curve were initially analyzed.

A1. For maturities greater than 10 years, supplement the Aa-rated corporate bonds with A-rated corporate bonds. No adjustment was made to the yields of the A-rated bonds to account for credit spreads between A-rated and Aa-rated bonds.

A2. For maturities greater than 10 years, supplement the Aa-rated corporate bonds with A-rated corporate bonds. In this case, an adjustment was made to the yields of the A-rated bonds to account for credit spreads between A-rated and Aa-rated bonds. The adjustment was determined as the average difference in yields between Aa-rated and A-rated corporate bonds for maturities of six years and less.

B. For maturities greater than 10 years, supplement the Aa-rated corporate bonds denominated in Canadian dollars with Aa-rated corporate bonds denominated in U.S. dollars that are further translated into Canadian dollars.

C. For maturities greater than 10 years, use Canadian provincial bonds rated Aa to which a spread adjustment is added to reflect the additional credit risk of Aa-rated corporate bonds. For purposes of the analysis, the spread adjustment was initially determined as the average difference in yields between Aa-rated corporate bonds and Aa-rated provincial bonds for maturities of six years and less.

D. For illustration purposes and comparison, the Task Force also developed the yield curve using only the available information on Aa-rated corporate bonds.

For each of the five approaches described above, a yield curve and discount rates were developed using available bond yield data after applying the methodology described in section 4. Three illustrative plans were used; a "short-duration" plan, with a modified duration of approximately nine years, a "mid-duration" plan, with a modified duration of approximately 12 years and a "long-duration" plan, with a modified duration of approximately 17 years.

This analysis was conducted using bond yield data at the following three dates:

December 31, 2006, i.e., before the financial crisis of 2008 and early 2009,

December 31, 2008, during the financial crisis, and

October 30, 2009, the most recent month-end prior to the CIA webcast.

The resulting discount rates obtained for the long-duration plan were

Discount Rate for Long-duration Plan			
Approach	**31/12/2006**	**31/12/2008**	**30/10/2009**
A1: supplement with A-rated bonds	5.35%	7.38%	5.88%
A2: supplement with A-rated bonds, adjusted for credit spreads	5.28%	6.54%	5.48%
B: supplement with U.S. Aa-rated bonds, translated into Cdn $	5.20%	6.99%	N/A
C: use Aa-rated provincial bonds, adjusted for credit spreads	4.82%	7.18%	5.51%
D: Aa-rated corporates only	5.01%	7.39%	6.41%

The following are some observations regarding the results of the analysis summarized above.

The discount rates using the different approaches at December 31, 2006 were relatively close, with the exception of Approach C. The difference between the highest and lowest rates was 53 basis points (bps).

The dispersion in discount rates between approaches at December 31, 2008 is much greater than at December 31, 2006. The increase in the dispersion is not surprising, as December 31, 2008 was in the midst of a financial market crisis. The difference between the highest and lowest discount rates at December 31, 2008 was 85 bps.

At October 30, 2009, with the exception of Approach D, the discount rates had converged considerably compared to December 31, 2008. This convergence likely reflected more stability in the fixed income markets relative to December 31, 2008.

One would typically expect that discount rates developed using Approach A (supplement with A-rated bonds) would be higher than discount rates developed using Approach D (Aa-rated bonds alone). However, at October 30, 2009 the discount rate using Approach D was higher by 53 bps. The reason for this apparent anomaly is that, under Approach D, because of the scarcity of Aa-rated corporate bonds of long maturities, the discount rates at December 31, 2008 and October 30, 2009 were heavily influenced by one bond which matures in 2037. This bond is from an issuer in the financial sector and the yields on financial sector bonds increased significantly relative to other industries during the financial crisis, whereas A-rated corporate bonds were better diversified into different industries and were less influenced by the financial crisis.

In light of the analysis performed and comments received after the November 2009 webcast, the Task Force deliberated on the alternatives and decided to remove Approach B as a viable approach. It did so because this approach was generally viewed by auditors as not acceptable under current Accounting Standards as it relies on bonds that are not of the same currency as the obligations.

After obtaining guidance from the TPC, it was concluded that Approach C is a reasonable approach for extrapolating the yield curve based on current Accounting Standards. However, it was also concluded that refinement to the method for calculating the spread adjustment to the yields on the Aa-rated provincial bonds would be appropriate. A possible method for calculating the spread is described in section 8.

Educational Note Supplement

Accounting Discount Rate Assumption – Calculating Spread Above Provincial Yields

Task Force on Pension and Post-retirement Benefit Accounting Discount Rates

August 2013

Document 213063

Memorandum

To: All Pension Actuaries

From: Bruce Langstroth, Chair
Practice Council

Gavin Benjamin, Chair
Task Force on Pension and Post-retirement Benefit Accounting Discount Rates

Date: August 6, 2013

Subject: **Educational Note Supplement: Accounting Discount Rate Assumption – Calculating Spread Above Provincial Yields**

In September 2011, the Task Force on Pension and Post-retirement Benefit Accounting Discount Rates published an educational note entitled Accounting Discount Rate Assumption for Pension and Post-employment Benefit Plans. The purpose of the educational note was to offer advice to actuaries who are engaged to provide guidance to a pension or post-employment plan sponsor on the selection of the discount rate for a Canadian plan under Canadian, U.S., or international accounting standards.

The educational note includes a suggested approach for extrapolating the corporate Aa yield curve for maturities greater than 10 years. Under this approach, the curve is extrapolated using Canadian provincial bonds rated Aa, to which a spread adjustment is added to reflect the additional credit risk of Aa-rated corporate bonds. The educational note also includes a suggested approach for calculating the spread to be added to the provincial Aa bond yields.

The task force has received a number of questions regarding the rationale for the approach suggested in the educational note for calculating the spread to be added to the provincial Aa bond yields. The purpose of this educational note supplement is to expand on that rationale.

This educational note supplement has been prepared by the task force in accordance with the Institute's Policy on Due Process for the Approval of Guidance Material Other than Standards of Practice, and has received final approval for distribution by the Practice Council on July 31, 2013.

If you have any questions or comments regarding this educational note supplement, please contact Gavin Benjamin at gavin.benjamin@towerswatson.com.

BL, GB

CALCULATING SPREAD ABOVE PROVINCIAL YIELDS

When preparing pension-related information for their financial statements, pension plan sponsors are responsible for the selection of the assumptions used to value the plan liabilities. In September 2011, the Task Force on Pension and Post-retirement Benefit Accounting Discount Rates published an educational note entitled Accounting Discount Rate Assumption for Pension and Post-employment Benefit Plans. The purpose of the educational note was to offer advice to actuaries who are engaged to provide guidance to a pension or post-employment plan sponsor on the selection of the discount rate for a Canadian plan under Canadian, U.S., or international accounting standards.

For ease of reference, the term "pension" will be used to refer to both a pension and post-employment plan in the rest of this note.

The educational note includes a suggested approach for extrapolating the corporate Aa yield curve for maturities greater than 10 years, which are the maturities at which the Canadian corporate Aa curve is not deep. Under this approach, the curve is extrapolated using Canadian provincial bonds rated Aa, to which a spread adjustment is added to reflect the additional credit risk of Aa-rated corporate bonds. The educational note also includes a suggested approach for calculating the spread to be added to the provincial Aa bond yields. The approach is described in detail on pages 9–12 of the educational note.

The task force has received a number of questions regarding the rationale for the approach suggested in the educational note for calculating the spread to be added to the provincial Aa bond yields. The purpose of this educational note supplement is to expand upon that rationale.

The overriding objective for all the approaches examined by the task force for extrapolating the corporate Aa yield curve beyond 10 years is to increase the number of relevant data points used for the extrapolation, and thus avoid generating discount rates reliant on too few data points.

Since the market for Aa-rated Canadian provincial bonds is deep across the entire maturity spectrum, the task force concluded that provincial Aa bonds could form an appropriate underlying basis for extrapolating the Canadian corporate Aa yield curve beyond 10 years.

When assessing a reasonable approach for calculating the spread to be added to the provincial Aa bond yields, the task force considered the merits of basing this spread solely on the difference between the yields on available corporate Aa bonds with maturities beyond 10 years and provincial Aa bond yields with similar maturities (this spread is referred to as "$Spread^{long}$" in the educational note). The rationale for this approach is that the spread for extrapolating the long end of the yield curve would be based on the yields on long-term corporate bonds. However, since there are few corporate Aa bonds with maturities beyond 10 years, this approach would result in a spread, and resulting yields, that represent the particular circumstances of only a few corporate bond issuers. This would leave the long end of the yield curve exposed to significant fluctuations following a change in the circumstances of one or two bond issuers. As noted in the educational note, given the long-term nature of pension plan obligations, the yields that matter most for purposes of selecting the discount rate for a pension plan are often the yields on debt instruments with long terms to maturity (e.g., maturities of 15 years and above). Any approach under which the level of all or a portion of the long end of the yield curve is dependent on a small number of corporate Aa bonds will result in a discount rate that is heavily dependent on the yields on these few bonds. This result would be inconsistent with the educational note's overriding objective.

An actuary who is providing guidance on the selection of the discount rate in accordance with section 19 of the International Accounting Standards (IAS 19) would also consider paragraph 86 of IAS 19 (Revised June 2011), which provides that: "In some cases, there may be no deep market in bonds with a sufficiently long maturity to match the estimated maturity of all the benefit payments. In such cases, an entity uses current market rates of the appropriate term to discount shorter-term payments, and estimates the discount rate for longer maturities by extrapolating current market rates along the yield curve".

One interpretation of paragraph 86 is that it is implying that the long end of the yield curve is extrapolated by reflecting "market rates" on high-quality corporate bonds at maturities where the market is deep (i.e., the extrapolation approach would not depend solely on corporate high-quality bond yields at maturities where the market is not deep).

The task force also considered the merits of basing this spread solely on the difference between the yields on available corporate Aa bonds with maturities of 10 years and less (e.g., maturities between five and 10 years) and provincial Aa bond yields with similar maturities (this spread is referred to as "$Spread^{base}$" in the educational note). The rationale for this approach is that, since there is a deep market of corporate Aa bonds with maturities of less than 10 years, the resulting spread would be based on a credible number of data points. However, basing the spread used to extrapolate the long end of the yield curve solely on the spreads of shorter-term bonds would exclude available information on long-term corporate Aa bonds' yields, even if these data points are scarce.

Due to the concerns about using either $Spread^{long}$ or $Spread^{base}$ to extrapolate the corporate Aa yield curve beyond 10 years, the task force concluded that a weighted average of $Spread^{long}$ and $Spread^{base}$ would be appropriate (e.g., the spread could be calculated as $50\% \cdot Spread^{long} + 50\% \cdot Spread^{base}$). The actuary would use judgment in determining the appropriate weight to assign to Spread^{long} based on factors such as the number of long bonds, the particular circumstances of the issuers, the volatility of the spreads, and the financial market environment.

Finally, the task force considered whether the spread to be added to the provincial Aa bond yields at maturities beyond 10 years would be adjusted so that it increases with maturity in order to reflect anticipated increases in credit risk premium as the maturity increases. The task force concluded that, in its view, such an adjustment was not warranted because:

- Professionals with expertise in the Canadian bond market who provided their views to the task force were of the opinion that the provincial Aa bonds used to extrapolate the curve likely capture the majority of increases in credit risk premium (relative to the Government of Canada bond yields) as the maturity increases; and
- Any adjustment made would be highly speculative and/or volatile, given the scarcity of corporate Aa bonds with maturities beyond 10 years.

The task force also observes that $Spread^{base}$ has been greater than $Spread^{long}$ at a number of month-ends. Although the relative values of $Spread^{base}$ and $Spread^{long}$ change over time, this may be supportive of the conclusion that an adjustment to the spread to increase with maturity is not warranted.

Finally, in the educational note, the task force acknowledges that the suggested approach includes a number of simplifications and a judgmental estimate of the weightings to be assigned to $Spread^{long}$ and $Spread^{base}$. But overall, considering the limitations on the data available to construct a corporate Aa yield curve, it is believed that the approach suggested in the educational note provides a reasonable representation of a corporate Aa yield curve.

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19 September 2013

Subject: Mercer Model for developing accounting discount rates in Canada

As requested, this letter provides an overview of the current Mercer Model (formerly referred to the Enhanced Mercer Model) for developing accounting discount rates in Canada. Mercer uses this model when assisting Canadian plan sponsors in establishing their best estimate assumption for accounting discount rates for their pension and non-pension post-retirement benefit plans. The letter also summarizes the accounting discount rates based on the CIA Model and the Mercer Model (both described in more detail below) at OPG's most recent fiscal year-end, December 31, 2012.

Background

Since the beginning of 2000, Mercer Canada has developed monthly accounting discount rates for Canadian pension and non-pension post-retirement benefit plans under Canadian, US and international accounting standards. These rates are used to assist Canadian plan sponsors in establishing their best estimate assumption for the accounting discount rate.

Prior to 2012, Mercer's calculation of monthly accounting discount rates (as well as those of a number of other actuarial firms) was based on representative AA rated corporate bond yields provided by PC Bond Analytics at a number of maturities.

Because of the limited number of AA rated corporate bonds in the Canadian market, especially at longer maturities, in September 2011 the Canadian Institute of Actuaries (the "CIA") published an educational note (the "Educational Note") proposing a methodology to derive a high quality corporate yield curve (the "CIA Methodology") which was generally believed to be an improvement to the use of representative yields provided by PC Bond Analytics.

MERCER

Under the CIA Methodology, AA rated corporate bond yields for maturities over 10 years are extrapolated based on AA rated provincial bond yields to which a spread is added to reflect the additional credit risk of AA rated corporate bonds. While recognizing that there are different ways to determine the spread used in extrapolating AA rated corporate bond yields, the Educational Note suggested an approach to determine the spread (the "CIA Spread").

On a monthly basis, Fiera Capital (formerly Natcan) publishes a spot rate curve based on the CIA Methodology and the CIA Spread (the "CIA Model" or "CIA Curve").

As a result of the Educational Note, Mercer updated its accounting discount rate model in 2012. The updated model (the "Mercer Model") is based on the framework proposed under the CIA Methodology but with a different spread approach, as described below. Mercer converted to the Mercer Model effective September 30, 2012. The Mercer Model is monitored periodically and may be adjusted in the future as needed to reflect changes in the market.

Bond Data Used

Under the Mercer Model, the data used is obtained from Bank of America Merrill Lynch, which is the same source of data used by Fiera Capital to develop the monthly CIA Curve.

At December 31, 2012, one difference between the CIA Model and the Mercer Model was which bonds were included under each model:

- The CIA Model considered AA rated corporate bonds that were rated AA by at least two rating agencies.
- Considering the limited number of high quality corporate bond issues available in Canada for longer maturities, Mercer believes that as much relevant information as possible should be used in the development of the high quality yield curve. As such, the Mercer Model includes corporate bonds that are rated AA by at least one rating agency.

We note that in March 2013, the CIA Model expanded its AA rated corporate bond universe to include bond issues that are rated at least AA by at least one rating agency. Following this modification to the CIA Model, both models now use the same data.

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As previously estimated by Mercer when the Mercer Model was developed, this modification in the bond universe used by the CIA Model increased the resulting CIA Model discount rates by approximately 20 basis points on average, bringing them closer to the level of the discount rates derived using the Mercer Model.

Development of the Yield Curve

Under the CIA Model, the short term yields to maturity (less than 10 years) are derived by fitting a curve through actual AA rated corporate bond yield data. For longer terms (over 10 years), a curve is fitted through extrapolated data created by adding the CIA Spread to long provincial bond yields at all maturities. The CIA Spread is set equal to 50% of the average AA corporate to provincials spread observed for mid-term maturities (5 to 10 years), plus 50% of the average spread observed for long maturities (above 10 years).Mercer's concerns with the CIA Spread are that:

- The spread remains constant after 10 years whereas an increasing spread would be more consistent with market convention/theory; and
- The 50/50 approach to determine the CIA Spread is arbitrary.

As a result, we believe that the CIA Model results in bond yields that will tend to underestimate the actual yields available on AA rated corporate bonds at the long end of the yield curve. In order to address the above concerns, under the Mercer Model, the Mercer Spreads are calculated differently than the CIA Spreads. To derive the Mercer Spreads, an average spread and average corresponding maturity are first calculated for three different maturity bands (6 to 10 years, 11 to 20 years, and 21 to 30 years). The results of these calculations at December 31, 2012 are summarized in the following table.

Maturity range	Number of bonds	Average spread	Average maturity
6 to 10 years	7	59 bps ("Base Spread")	7 years
11 to 20 years	7	83 bps ("Mid Spread")	15 years
21 to 30 years	2	96 bps ("Long Spread")	26 years

The spreads for all missing terms between the lowest and highest average maturities are then determined by linear interpolation between the Base Spread, Mid Spread and Long Spread. For

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maturities over the highest average maturity, the spread is assumed to remain constant at the level of the Long Spread.

Once the Mercer Spreads are established, AA rated corporate bond yields are extrapolated by adding the Mercer Spreads to the AA rated provincial bond data for all maturities beginning with the average maturity in the 6 to 10 years maturity range (i.e., from maturity of 7 years as at December 31, 2012). This is slightly different than under the CIA Model where extrapolated data points are only created for maturities greater than 10 years.

Under both the CIA Model and the Mercer Model, a yield to maturity curve is derived by fitting a curve through actual AA rated corporate bond yields at the short end and the longer-term hypothetical bond yields extrapolated using the methodology described above.

Accounting Discount Rate

Under both the CIA Model and the Mercer Model, the resulting yield-to-maturity curve must be converted to spot rates which can then be used to discount benefit payments (i.e., accounting discount rate).

The following table summarizes the accounting discount rates based on the CIA Model and the Mercer Model as of December 31, 2012.

Duration (years)	CIA Model	Mercer Model	Difference
5	3.17%	3.29%	+0.12%
10	3.73%	4.05%	+0.32%
15	3.94%	4.36%	+0.42%
20	4.06%	4.52%	+0.46%

The enclosed appendix summarizes the differences in the accounting discount rate for different plan durations under the two models at a number of dates between December 31, 2010 and December 31, 2012. Over this period, the discount rates based on the CIA Model were consistently lower than those based on the Mercer Model. As mentioned earlier, the gap between the two models narrowed in March 2013, when the CIA Model was modified to include bond issues that are rated AA by at least one rating agency (instead of two or more rating agencies).

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Summary

The key features of the Mercer Model are that it:

- Follows the framework proposed in the Educational Note, but with a different spread approach.
- Meets discount rate criteria as set out in the various accounting standards.
- Is more transparent than the previous model that relied on PC Bond Analytics representative yields.
- Is consistent with market convention and theory (i.e., positive term structure of credit spreads).
- Uses a spread approach based on observed data (i.e., no arbitrary weighting of data).

In Mercer's view, the Mercer Model is compliant with the recent Educational Note on accounting discount rates and with Canadian, US and international accounting standards. It is also our view that the Mercer Model addresses the concerns raised with respect to the CIA Model. We also believe that the yield to maturity curve obtained using the Mercer Model represents a valid extrapolation along the yield curve, producing accounting discount rates that typically will be higher than those under the CIA Model both prior to and subsequent to the alignment of bond data of the two models.

Sincerely,

Loyd Zadorozny

Loyd Zadorozny
Partner

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Appendix: Comparison of accounting discount rates produced by the CIA Model and the Mercer Model at various dates

Discount rates as of December 31, 2010

Duration (years)	CIA Model[1]	Mercer Model	Difference
5	4.36%	4.44%	+0.08%
10	4.95%	5.23%	+0.28%
15	5.19%	5.53%	+0.34%
20	5.27%	5.70%	+0.43%

Discount rates as of March 31, 2011

Duration (years)	CIA Model	Mercer Model	Difference
5	4.54%	4.57%	+0.03%
10	5.08%	5.34%	+0.26%
15	5.29%	5.63%	+0.34%
20	5.36%	5.80%	+0.44%

Discount rates as of June 30, 2011

Duration (years)	CIA Model	Mercer Model	Difference
5	4.29%	4.40%	+0.11%
10	4.94%	5.25%	+0.31%
15	5.19%	5.59%	+0.40%
20	5.28%	5.78%	+0.50%

[1] Estimated by applying CIA Model to market data obtained at December 31, 2010.

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Discount rates as of September 30, 2011

Duration (years)	CIA Model	Mercer Model	Difference
5	3.82%	3.92%	+0.10%
10	4.51%	4.81%	+0.30%
15	4.77%	5.24%	+0.47%
20	4.91%	5.47%	+0.56%

Discount rates as of December 30, 2011

Duration (years)	CIA Model	Mercer Model	Difference
5	3.67%	3.80%	+0.13%
10	4.28%	4.76%	+0.48%
15	4.52%	5.19%	+0.67%
20	4.64%	5.42%	+0.78%

Discount rates as of March 30, 2012

Duration (years)	CIA Model	Mercer Model	Difference
5	3.55%	3.70%	+0.15%
10	4.12%	4.53%	+0.41%
15	4.36%	4.93%	+0.57%
20	4.47%	5.08%	+0.61%

Discount rates as of June 30, 2012

Duration (years)	CIA Model	Mercer Model	Difference
5	3.44%	3.61%	+0.17%
10	4.04%	4.47%	+0.43%
15	4.28%	4.90%	+0.62%
20	4.40%	5.07%	+0.67%

Discount rates as of September 28, 2012

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Duration (years)	CIA Model	Mercer Model	Difference
5	3.13%	3.31%	+0.18%
10	3.69%	4.14%	+0.45%
15	3.89%	4.47%	+0.58%
20	4.01%	4.66%	+0.65%

Discount rates as of December 31, 2012

Duration (years)	CIA Model	Mercer Model	Difference
5	3.17%	3.29%	+0.12%
10	3.73%	4.05%	+0.32%
15	3.94%	4.36%	+0.42%
20	4.06%	4.52%	+0.46%

FTE, Compensation and Benefit Information for OPG's Regulated Facilities ("Appendix 2k")

Numbers may not add due to rounding

Line No.		2010 Actual	2011 Actual	2012 Actual	2013 Budget	2014 Plan	2015 Plan
		(a)	(b)	(c)	(d)	(e)	(e)
1	**Total Staff**	**FTEs**	**FTEs**	**FTEs**	**FTEs**	**FTEs**	**FTEs**
2	**Nuclear**						
3	Management	673.8	662.3	561.1	583.5	570.8	569.1
4	Society	2,631.6	2,604.7	2,112.9	2,142.2	2,051.1	1,994.1
5	PWU	5,042.8	4,868.3	4,018.5	4,040.4	3,919.7	3,915.3
6	EPSCA, Chestnut Park and Appendix A	97.2	79.8	69.3	41.1	38.1	41.4
7	Subtotal	8,445.4	8,215.1	6,761.8	6,807.2	6,579.7	6,519.9
8							
9	**Previously Regulated Hydroelectric (Includes Allocated Hydroelectric Central Groups)**						
10	Management	29.4	34.3	26.5	27.6	27.1	26.6
11	Society	82.4	92.9	80.3	80.6	79.3	77.9
12	PWU	247.9	242.2	237.1	238.7	236.7	236.4
13	Subtotal	359.7	369.4	343.8	346.8	343.1	340.9
14							
15	**Newly Regulated Hydroelectric (Includes Allocated Hydroelectric Central Groups)**						
16	Management	47.2	49.2	42.4	43.6	44.7	44.9
17	Society	154.8	165.5	154.8	152.5	155.5	154.2
18	PWU	382.2	402.7	403.7	400.7	399.4	383.0
19	Subtotal	584.3	617.4	600.9	596.8	599.5	582.2
20							
21	**Allocated Corporate Support to Nuclear**						
22	Management	280.3	288.4	391.0	394.9	379.7	361.0
23	Society	302.4	304.0	642.1	657.6	634.3	622.7
24	PWU	292.3	283.7	987.1	836.7	764.6	718.4
25	EPSCA, Chestnut Park and Appendix A	0.0	0.0	17.0	14.0	12.0	12.0
26	Subtotal	875.0	876.1	2,037.2	1,903.2	1,790.6	1,714.1
27							
28							
29	**Allocated Corporate Support to Previously Regulated Hydroelectric**						
30	Management	29.0	25.7	31.0	32.6	31.8	29.6
31	Society	40.8	37.5	52.6	51.3	52.2	49.1
32	PWU	18.9	17.6	25.3	20.8	20.6	19.1
33	Subtotal	88.7	80.8	108.9	104.7	104.6	97.8
34							
35	**Allocated Corporate Support to Newly Regulated Hydroelectric**						
36	Management	42.0	39.4	43.6	42.3	47.0	45.1
37	Society	57.0	50.0	69.9	62.8	70.9	67.6
38	PWU	28.7	26.2	39.3	27.4	30.7	28.1
39	Subtotal	127.7	115.6	152.8	132.5	148.6	140.8
40	Total OPG Regulated	10,480.8	10,274.4	10,005.5	9,891.2	9,566.1	9,395.6

FTE, Compensation and Benefit Information for OPG's Regulated Facilities ("Appendix 2k")

Numbers may not add due to rounding

Line No.		2010 Actual	2011 Actual	2012 Actual	2013 Budget	2014 Plan	2015 Plan
		(a)	(b)	(c)	(d)	(e)	(e)
41	**Total Salary & Wages (including Overtime, Incentive Pay and Fiscal Year Adjustment)**	$M	$M	$M	$M	$M	$M
42	**Nuclear**						
43	Management	111.8	109.6	98.6	93.4	92.2	91.8
44	Society	348.7	339.0	278.4	280.4	267.7	263.7
45	PWU	581.8	561.9	487.0	516.0	504.3	526.5
46	EPSCA, Chestnut Park and Appendix A	13.8	10.7	9.9	5.8	4.9	5.4
47	Subtotal	1,056.1	1,021.3	873.9	895.5	869.2	887.5
48							
49	**Previously Regulated Hydroelectric (Includes Allocated Hydrolectric Central Groups)**						
50	Management	4.6	5.0	4.3	4.6	4.5	4.5
51	Society	9.0	10.7	9.1	9.6	9.5	9.5
52	PWU	26.5	25.8	24.1	26.3	27.0	27.4
53	Subtotal	40.1	41.5	37.6	40.5	41.1	41.4
54							
55	**Newly Regulated Hydroelectric (Includes Allocated Hydrolectric Central Groups)**						
56	Management	2.5	2.5	2.1	2.1	2.2	2.3
57	Society	11.2	12.0	10.3	10.5	10.8	10.8
58	PWU	13.5	13.6	14.5	15.9	16.1	16.1
59	Subtotal	27.2	28.1	26.9	28.6	29.2	29.2
60							
61	**Allocated Corporate Support to Nuclear**						
62	Management	44.8	44.8	45.4	53.9	53.1	50.3
63	Society	32.0	31.2	75.6	77.2	74.9	74.8
64	PWU	20.3	19.7	76.9	74.6	70.8	66.8
65	EPSCA, Chestnut Park and Appendix A	0.0	0.0	1.4	1.4	1.3	1.3
66	Subtotal	97.1	95.7	199.3	207.0	200.1	193.2
67							
68	**Allocated Corporate Support to Previously Regulated Hydroelectric**						
69	Management	4.8	4.7	3.9	4.8	4.8	4.4
70	Society	4.4	4.2	5.9	5.8	6.0	5.7
71	PWU	1.3	1.3	1.7	1.7	1.8	1.7
72	Subtotal	10.4	10.1	11.5	12.4	12.5	11.8
73							
74	**Allocated Corporate Support to Newly Regulated Hydroelectric**						
75	Management	6.8	6.3	5.5	6.3	7.0	6.7
76	Society	6.2	5.0	7.9	7.3	8.2	8.0
77	PWU	2.0	1.8	2.7	2.3	2.8	2.5
78	Subtotal	15.0	13.2	16.0	15.9	17.9	17.2
79	Total OPG Regulated	1,245.9	1,209.8	1,165.3	1,199.8	1,170.0	1,180.3

FTE, Compensation and Benefit Information for OPG's Regulated Facilities ("Appendix 2k")

Numbers may not add due to rounding

Line No.		2010 Actual	2011 Actual	2012 Actual	2013 Budget	2014 Plan	2015 Plan
		(a)	(b)	(c)	(d)	(e)	(e)
80	**Total Benefits (Current Benefits and Pension & OPEB)**	**$M**	**$M**	**$M**	**$M**	**$M**	**$M**
81	**Nuclear**						
82	Management	27.1	32.1	31.8	35.1	35.4	36.1
83	Society	85.6	106.2	105.7	114.9	114.0	114.3
84	PWU	128.3	157.7	161.5	169.8	176.9	181.0
85	EPSCA, Chestnut Park and Appendix A	0.6	0.6	0.5	0.3	0.3	0.3
86	Subtotal	241.6	296.5	299.4	320.1	326.6	331.7
87							
88	**Previously Regulated Hydroelectric (Includes Allocated Hydroelectric Central Groups)**						
89	Management	1.2	1.6	1.3	1.7	1.7	1.8
90	Society	2.5	3.6	3.5	4.2	4.3	4.0
91	PWU	6.7	7.7	9.5	10.7	11.3	11.7
92	Subtotal	10.4	12.9	14.2	16.7	17.3	17.6
93							
94	**Newly Regulated Hydroelectric (Includes Allocated Hydroelectric Central Groups)**						
95	Management	1.7	2.1	2.2	3.1	3.2	3.4
96	Society	4.1	5.5	6.4	8.7	9.3	8.8
97	PWU	11.1	14.5	17.0	18.3	19.3	19.2
98	Subtotal	17.0	22.1	25.7	30.2	31.8	31.4
99							
100	**Allocated Corporate Support to Nuclear**						
101	Management	10.2	13.7	17.8	24.6	24.7	23.4
102	Society	9.8	13.0	28.1	37.4	37.2	37.2
103	PWU	5.2	6.7	23.0	28.7	28.0	26.7
104	EPSCA, Chestnut Park and Appendix A	0.0	0.0	0.1	0.1	0.1	0.1
105	Subtotal	25.3	33.4	68.9	90.7	90.0	87.3
106							
107	**Allocated Corporate Support to Previously Regulated Hydroelectric**						
108	Management	0.9	1.3	1.2	1.5	1.5	1.4
109	Society	0.9	1.2	1.9	2.3	2.3	2.2
110	PWU	0.4	0.6	1.3	1.5	1.5	1.4
111	Subtotal	2.2	3.1	4.4	5.3	5.4	5.0
112							
113	**Allocated Corporate Support to Newly Regulated Hydroelectric**						
114	Management	1.5	2.3	1.9	2.2	2.4	2.3
115	Society	1.5	2.2	2.9	3.2	3.6	3.5
116	PWU	0.7	1.0	2.1	2.2	2.4	2.3
117	Subtotal	3.6	5.6	6.9	7.7	8.5	8.1
118	Total OPG Regulated	300.0	373.6	419.5	470.6	479.6	481.0

FTE, Compensation and Benefit Information for OPG's Regulated Facilities ("Appendix 2k")

Numbers may not add due to rounding

Line No.		2010 Actual	2011 Actual	2012 Actual	2013 Budget	2014 Plan	2015 Plan
		(a)	(b)	(c)	(d)	(e)	(e)
119	**Total of Base Salary & Wages, Overtime, Incentive Pay, Fiscal Year Adjustment and Total Benefits**	**$M**	**$M**	**$M**	**$M**	**$M**	**$M**
120	**Nuclear**						
121	Management	138.9	141.7	130.3	128.5	127.7	127.9
122	Society	434.3	445.2	384.1	395.3	381.7	378.0
123	PWU	710.1	719.6	648.5	685.8	681.2	707.6
124	EPSCA, Chestnut Park and Appendix A	14.4	11.3	10.4	6.1	5.2	5.7
125	Subtotal	1,297.7	1,317.8	1,173.3	1,215.6	1,195.8	1,219.1
126							
127	**Previously Regulated Hydroelectric (Includes Allocated Hydroelectric Central Groups)**						
128	Management	5.7	6.6	5.6	6.3	6.3	6.3
129	Society	11.5	14.4	12.6	13.8	13.9	13.5
130	PWU	33.2	33.5	33.6	37.0	38.3	39.2
131	Subtotal	50.4	54.5	51.8	57.1	58.4	59.0
132							
133	**Newly Regulated Hydroelectric (Includes Allocated Hydroelectric Central Groups)**						
134	Management	9.1	9.5	9.2	10.4	10.7	10.8
135	Society	22.3	24.5	24.4	27.9	29.0	28.5
136	PWU	47.8	53.8	57.9	63.8	66.1	64.7
137	Subtotal	79.2	87.9	91.5	102.1	105.8	104.1
138							
139	**Allocated Corporate Support to Nuclear**						
140	Management	55.1	58.5	63.2	78.5	77.8	73.7
141	Society	41.9	44.2	103.6	114.5	112.1	112.0
142	PWU	25.5	26.4	99.8	103.2	98.8	93.5
143	EPSCA, Chestnut Park and Appendix A	0.0	0.0	1.5	1.5	1.3	1.3
144	Subtotal	122.4	129.1	268.2	297.8	290.1	280.5
145							
146	**Allocated Corporate Support to Previously Regulated Hydroelectric**						
147	Management	5.7	5.9	5.1	6.3	6.3	5.8
148	Society	5.3	5.4	7.7	8.1	8.3	7.9
149	PWU	1.7	1.8	3.0	3.3	3.3	3.1
150	Subtotal	12.7	13.1	15.9	17.7	17.9	16.8
151							
152	**Allocated Corporate Support to Newly Regulated Hydroelectric**						
153	Management	8.3	8.6	7.4	8.5	9.4	9.0
154	Society	7.7	7.2	10.8	10.5	11.8	11.5
155	PWU	2.6	2.8	4.8	4.5	5.2	4.8
156	Subtotal	18.6	18.7	23.0	23.6	26.4	25.3
157	Total OPG Regulated	1,581.0	1,621.0	1,623.7	1,713.8	1,694.4	1,704.9

FTE, Compensation and Benefit information for OPG's Regulated Facilities ("Appendix 2k")

Notes

Total Staff

Total staff FTE figures include regular and non-regular staff. A regular staff person occupies a position that is considered part of the ongoing organization of OPG, excluding those on paid absences or on probation. Non-regular staff are those hired for a short-term work assignment which is not ongoing, including Electrical Power Systems Construction Association ("EPSCA"), Chestnut Park Accord and Appendix A staff.

Total Salary & Wages

Total Salary & Wages figures include: *base pay* and leadership allowances for Nuclear employees who are authorized by the Canadian Nuclear Safety Commission ("CNSC"), Nuclear staff Outage Bonus; overtime pay for regular and non-regular staff; goalsharing for unionized staff (suspended effective 2012); Award for performance ("AFP") for Society-represented employees (suspended effective 2011); and Management Group Annual Incentive Plan ("AIP"). Total salary and wages exclude statutory benefits, non-statutory benefits and pension & OPEB costs.

Total Benefits

Total Benefits figures include statutory and non-statutory benefits and current service cost component of total pension & OPEB costs.

CENTRALLY-HELD COSTS

1.0 PURPOSE

This evidence presents OPG's centrally-held costs and the period-over-period comparisons of centrally-held costs that are directly assigned and allocated to OPG's regulated facilities.

2.0 OVERVIEW

This evidence supports the approval sought for the centrally-held costs included in the previously regulated hydroelectric, newly regulated hydroelectric and nuclear revenue requirements. The amounts included in revenue requirement for the 2014 - 2015 test period are $52.1M for the previously regulated hydroelectric facilities, $98.3M for the newly regulated hydroelectric facilities, and $838.0M for the nuclear facilities. Pension and OPEB-related costs comprise the majority of these amounts.

Centrally-held costs are an integral part of the costs of operating OPG's generation facilities. They are company-wide costs that are recorded centrally for a variety of reasons, such as achieving record-keeping efficiency and maintaining proper oversight. They are not support services costs.

Categories of centrally-held costs are separately identified for those exceeding $10M in either 2014 or 2015. The category of "Other" reflects the remaining centrally-held costs and includes a description of some of the more significant costs. The centrally-held cost items described below were identified in EB-2010-0008 and the nature of these costs is substantially unchanged.[1]

Centrally-held costs are directly assigned or allocated to OPG's regulated operations using the same methodology as in EB-2010-0008. The methodology was previously reviewed and

[1] As discussed in EB-2012-0002 and highlighted in Ex. A2-1-1, the adoption of USGAAP results in a reclassification of Scientific Research and Experimental Development investment tax credits from OM&A expenses to income tax expense. These credits are discussed in Ex. F4-2-1, Section 3.5. For 2010 and OEB-approved amounts for 2011 and 2012, amounts are presented on the basis of Canadian GAAP and therefore reflect these credits.

found to be appropriate by Black & Veatch Corporation in EB-2010-0008. The methodology was similarly found to be appropriate as part of the independent review of OPG's cost allocation methodology provided in this Application in Ex. F5-5-1.

In addition, centrally-held costs attributed to each of the hydroelectric plant groups are subsequently assigned and allocated between the newly regulated hydroelectric stations and unregulated stations. With the exception of pension and OPEB costs which are allocated using a labour-related allocator, all other centrally-held costs are allocated and assigned on the same basis as hydroelectric plant group costs are assigned and allocated between regulated and unregulated hydroelectric stations, as discussed in Ex F1-2-1. OPG uses a standardized allocation methodology for attributing costs within plant groups that include newly regulated and unregulated hydroelectric stations.

The above methodologies are applied to total OPG-wide centrally-held costs presented in Ex. F4-4-1 Table 1, which results in costs attributed to the regulated operations as presented in Ex. F4-4-1 Table 2 for the previously regulated hydroelectric facilities, Ex. F4-4-1 Table 3 for the newly regulated hydroelectric facilities and Ex. F4-4-1 Table 4 for the nuclear facilities.

Ex. F4-4-2 Tables 1, 2 and 3 provide the period-over-period comparisons for the historical, bridge and test periods for the previously regulated hydroelectric, newly regulated hydroelectric and nuclear facilities, respectively. Tables 1 and 3 also include a comparison to the OEB-approved amounts for 2011 and 2012 and budget amounts for 2010.

This evidence provides a description of the categories of centrally held costs and discusses trends and variances for each category. The key drivers of these costs are identified within the discussions of trends and variances. Where these drivers do not adequately explain a year-over-year variance, a specific explanation is provided to the extent the variance is equal to or greater than 10 per cent of category expenses. Similarly, a specific variance explanation is provided for historical years if the variance between the actual and budget or OEB-approved amount for a specific category of costs is not explained by the key drivers and is equal to or greater than 10 per cent of the budget or OEB-approved amount.

Total centrally-held costs increase from 2010 to 2013 primarily as a result of higher pension and OPEB-related costs, which represent over 65 per cent of the total forecast centrally-held costs attributed to the regulated facilities during the test period. The costs are forecast to remain relatively stable for 2013 to 2015.

3.0 PENSION AND OPEB-RELATED COSTS

3.1 Description

Certain components of pension and OPEB-related costs for all of OPG's employees and retirees continue to be included in centrally-held costs. These cost components continue to include interest costs on the obligations, the expected return on pension plan assets, amounts in respect of past service costs, actuarial gains and losses, and variances from the forecast current service costs reflected in the standard labour rates.

As in EB-2010-0008, the pension and OPEB-related costs are directly assigned and allocated to business units in proportion to the pension and OPEB costs directly charged to the business units. For a further discussion of OPG's pension and OPEB plans and costs, refer to Ex. F4-3-1, Section 6.

3.2 Trends and Variances

Pension and OPEB-related costs exhibit an upward trend in the 2010 - 2013 period but are forecast to be largely stable during the 2013 - 2015 period. The primary driver of the increase during the 2010 - 2013 period is a declining trend in discount rates. A decline in the expected long-term rate of return on pension fund assets and expected net growth in pension and OPEB cost components also contribute to the increase in the costs. The discount rates used to calculate pension and other post retirement benefits have decreased from 6.80 per cent and 6.90 per cent, respectively, for 2010 to 4.30 per cent and 4.40 per cent, respectively, for 2013, as shown in Ex. F4-3-1 Chart 8. Also shown in Chart 8 is the expected long-term of rate of return that has decreased from 7.0 per cent for 2010 to 6.25 per cent for 2013. The expected net growth in the pension and OPEB cost components includes impacts of changes in current service costs, higher interest costs on a higher benefit obligation due to the passage of time, and expected changes in the pension asset values. A further discussion of the discount rates is found in Ex. F4-3-1 Section 6.3.

The increase in the pension and OPEB-related costs expected in 2013 over 2012 is due to the above factors, partially offset by the impact of changes in staffing levels. The increase in costs in 2012 over 2011 and in 2011 over 2010, also due to the above factors, was partially offset by the impact of gains on the pension fund assets in 2011 and 2010, respectively.

4.0 OPG-WIDE AND NUCLEAR INSURANCE

4.1 Description

These are the costs of OPG's company-wide insurance program and the additional nuclear-specific insurance program. The company-wide program covers commercial general liability, directors and officers and fiduciary liability, all risk property, boiler and machinery breakdown, including statutory boiler and pressure vessel inspections, and business interruption.

As in EB-2010-0008, the costs of this program are primarily directly assigned to the business units based on the applicability of each type of insurance coverage and the asset replacement cost of the generation facilities. The nuclear-specific insurance program relates to liability insurance associated with nuclear operations and additional property insurance for damage to the nuclear portions of OPG's nuclear generating stations, which complements the conventional property insurance program. This portion of insurance costs continues to be directly assigned to the nuclear facilities.

4.2 Trends and Variances

OPG-wide insurance costs for the regulated facilities are generally stable over the 2010 - 2015 period, with period-over-period fluctuations and budget-to-actual variances attributable mainly to insurance premium escalation.

The fluctuations in nuclear insurance costs over the 2010 - 2015 period have two main drivers. First, the costs were higher in 2012 primarily as a result of expenditures related to a one-time transaction of OPG becoming a purchasing member of a mutual insurance company, which has been authorized to provide limited nuclear liability insurance capacity in Canada. This was also the primary driver of the variance between the actual and OEB-approved costs for that year.

Second, the forecast increases in nuclear insurance costs in 2014 and 2015 primarily reflect increased premiums due to expected higher statutory nuclear liability insurance limits to be phased-in over several years. Higher limits are forecast to result from the proposed federal legislation replacing the 1976 *Nuclear Liability Act*. The legislation is expected to be tabled late 2013[2] and relates to a specific recommendation by the Commissioner of the Environment and Sustainable Development on behalf of the Auditor General of Canada made in the fall of 2012 and accepted by Natural Resources Canada.[3]

5.0 PERFORMANCE INCENTIVES

These costs include performance incentives for OPG's employees. Performance incentive costs continue to be attributed to the business units based on the distribution of past performance incentive payments.

Performance incentive costs are stable over the 2012-2015 period. The decreases in the performance incentives in 2011 and 2012 result from the elimination of PWU goal sharing and the Society performance recognition plan for OPG's represented employees. This is also the primary reason for lower actual performance incentives costs incurred for the regulated facilities in 2011 and 2012, as compared to the OEB-approved amounts. Performance incentive plans are discussed in Ex. F4-3-1, Sections 4.0 and 5.0

6.0 IESO NON-ENERGY CHARGES

6.1 Description

IESO non-energy costs are charges that are applied to withdrawals of energy from the IESO-controlled grid. The charges include transmission charges, the debt retirement charge, the

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[2] Further details of the proposed legislation are found on the Natural Resources Canada website at http://www.nrcan.gc.ca/media-room/news-release/2013/7190

[3] The recommendation and the response by Natural Resources of Canada are found in paragraphs 2.45-2.50 of the *Fall 2012 Report of the Commissioner of the Environment and Sustainable Development*, which can be found at http://www.oag-bvg.gc.ca/internet/English/parl_cesd_201212_e_37708.html

rural or remote electricity rate protection charge, charges associated with IESO administration fees, OPA fees, uplift charges and the Global Adjustment. These charges are not discretionary and apply to all energy withdrawals from the IESO-controlled grid. These charges are directly assigned to the specific regulated facilities.

6.2 Trends and Variances

With the exception of the specific variances for the hydroelectric facilities described below, the fluctuations over the period for all regulated facilities are primarily due to the variability in Global Adjustment rates. Differences in Global Adjustment rates also represent the principle cause of differences between actual and OEB-approved amounts for 2011 and 2012 and the variance from budget for 2010.

For the previously regulated hydroelectric facilities, changes in the allocation of the Global Adjustment charges under *Ontario Regulation 429/04* as amended, effective January 1, 2011, are the primary reason for the actual 2011 and 2012 costs being lower than the corresponding OEB-approved amounts. This factor also accounts for the difference between the actual costs for 2010 and 2011.

The actual costs for 2012 for the previously regulated hydroelectric facilities were higher than in 2011 due mainly to a combination of higher rates for non-Global Adjustment charges in 2012 and lower energy withdrawals in 2011 due to an outage at the Sir Adam Beck Pump GS in 2011 discussed, in Ex. F1-1-1. The costs planned for these same facilities for 2014 are projected to be higher than in 2013 chiefly as a result of lower energy withdrawals expected in 2013 due to a separate outage at the Sir Adam Beck Pump GS in 2013, discussed in Ex F1-3-3.

For the newly regulated hydroelectric facilities, the actual costs were higher in 2012 than in 2011 due a combination of higher Global Adjustment rates and rates for non-Global Adjustment charges, as well as higher energy withdrawals in 2012.

7.0 OTHER

7.1 Description

Other centrally-held costs consist of a number of relatively smaller items. In the test period, close to 75 per cent of Other costs is comprised of labour-related costs and the annual Ontario Nuclear Funds Agreement ("ONFA") guarantee fee. Other costs include business claims and settlements and, as discussed in section 7.2, reflect a reduction for Scientific Research and Experimental Development ("SR&ED") investment tax credits ("ITCs") for periods presented under Canadian GAAP.

The labour-related costs include the fiscal calendar and labour balancing adjustments, as well as the vacation accrual. The fiscal calendar adjustment is a wage adjustment covering all business units that reflects the difference in the number of days between the 52 or 53 week fiscal calendar used for payroll accounting and OPG's financial year ending on December 31. The adjustment is temporary and fluctuates from year to year, as the starting and ending days of the fiscal calendar vary from year to year. A negative adjustment (i.e., a reduction to costs) can occur in years when the fiscal calendar has 53 weeks. The costs (or a reduction to costs) are directly assigned to business units on the basis of each unit's payroll.

The labour balancing adjustment relates to non-pension and OPEB components of the standard labour rates. The adjustment captures variances between the amount of such costs reflected in the rates charged to the business units and support services groups and the final amount of these costs.

The vacation accrual represents the cost to OPG of the estimated outstanding vacation entitlement for all of its employees. The 2013 - 2015 forecast expenses are based on an estimated vacation accrual expense for 2012, escalated by up to 2 per cent annually. The vacation accrual is directly assigned to business units on the basis of each unit's payroll.

The annual ONFA guarantee fee is the amount payable by OPG to the Province of Ontario pursuant to the ONFA. In exchange for the fee, the Province of Ontario supports financial guarantees to the Canadian Nuclear Safety Commission by providing a guarantee relating to OPG's nuclear decommissioning and waste management liabilities and nuclear segregated funds pursuant to the ONFA. The fee is calculated as 0.5 per cent of the amount guaranteed, which is currently $1,551M, and is directly assigned to the nuclear facilities.

7.2 Trends and Variances

Variances in Other costs are caused by several main factors over the 2010 - 2015 period, as discussed below.

As a result of the recognition of SR&ED ITCs as a reduction to OM&A expenses in accordance with Canadian GAAP, actual and budgeted Other costs for the nuclear facilities in 2010 were lower by $18.7M and $8.6M, respectively.[4] Similarly, the OEB-approved amounts for 2011 and 2012 were lower by $8.6M per year. As the actual credits for 2011 and 2012 are reported under USGAAP as part of income tax expense (discussed in Ex. A2-1-1), Other costs for the nuclear facilities appear higher in 2011 and 2012 primarily for this reason, compared to the respective OEB-approved amounts and the actual costs for 2010.

Other costs in 2012 are lower than 2011 actual costs and 2013 forecast costs primarily as a result of the negative fiscal calendar adjustment in 2012. The negative fiscal calendar adjustment in 2012 was due to the fact that OPG's 2012 fiscal year was four days longer than the 2012 calendar year (the 2011 and 2013 fiscal years are shorter than the respective calendar years). For the newly regulated hydroelectric facilities, the forecast increase in Other costs in 2013 is primarily attributable to amounts related to settlements, which continue in 2014 and 2015.

Other costs are forecast to increase for all regulated facilities during 2014 and 2015 primarily due to a labour balancing adjustment between burden amounts directly charged to business units and the final planned costs, and additional amounts business claims.

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[4] OPG can claim a non-refundable ITC as a percentage of qualifying SR&ED expenditures incurred in the year and records applicable amounts as a reduction to expenses in the year the ITCs are recognized. Refer to Ex. F4-2-1, Section 3.5 for a further discussion of SR&ED ITCs.

Table 1
Centrally Held Costs ($M)
OPG

Line No.	Corporate Costs	2010 Actual	2011 Actual	2012 Actual	2013 Budget	2014 Plan	2015 Plan
		(a)	(b)	(c)	(d)	(e)	(f)
1	**Pension/OPEB Related Costs[1]**	111.9	226.1	345.5	388.6	379.7	371.4
2	**OPG-Wide Insurance**	16.9	16.1	16.2	18.5	19.0	19.5
3	**Nuclear Insurance**	7.3	8.1	11.5	9.7	12.9	14.7
4	**Performance Incentives**	47.8	38.0	28.2	29.1	29.1	29.1
5	**IESO Non-Energy Charges**	70.0	67.6	78.6	93.0	102.7	95.2
6	**Other[2]**	0.7	26.7	(4.5)	31.4	39.0	44.6
7	**Total**	254.6	382.6	475.5	570.3	582.4	574.5

Notes:
1 2010 amount is presented on the basis of Canadian GAAP as discussed in Ex. A2-1-1.
2 2010 amount includes SR&ED Investment Tax Credits required by Canadian GAAP to be recorded in OM&A expenses, as discussed in Ex. F4-4-1, section 7.0 and Ex. A2-1-1.

Table 2
Allocation of Centrally Held Costs - Previously Regulated Hydroelectric ($M)

Line No.	Costs	2010 Actual	2011 Actual	2012 Actual	2013 Budget	2014 Plan	2015 Plan
		(a)	(b)	(c)	(d)	(e)	(f)
1	**Pension/OPEB Related Costs[1]**	3.9	8.2	13.4	16.0	16.0	15.7
2	**OPG-Wide Insurance**	2.8	2.6	2.0	2.3	2.4	2.4
3	**Performance Incentives**	2.4	1.7	1.4	1.5	1.5	1.5
4	**IESO Non-Energy Charges**	10.1	2.7	3.3	4.4	5.0	5.0
5	**Other[2]**	0.4	0.7	(0.5)	0.9	1.2	1.4
6	**Total**	19.6	15.9	19.6	25.1	26.1	26.0

Notes:
1 See Ex. F4-4-1 Table 1, Note 1.
2 See Ex. F4-4-1 Table 1, Note 2.

Numbers may not add due to rounding.

Table 3
Allocation of Centrally Held Costs - Newly Regulated Hydroelectric ($M)

Line No.	Costs	2010 Actual	2011 Actual	2012 Actual	2013 Budget	2014 Plan	2015 Plan
		(a)	(b)	(c)	(d)	(e)	(f)
1	**Pension/OPEB Related Costs**[1]	6.5	14.5	23.6	27.7	28.6	27.5
2	**OPG-Wide Insurance**	2.5	2.3	2.8	3.1	3.2	3.2
3	**Performance Incentives**	3.7	3.0	2.0	2.1	2.2	2.1
4	**IESO Non-Energy Charges**	6.3	4.1	5.5	8.1	8.8	8.7
5	**Other**[2]	0.0	1.2	(0.8)	6.2	6.8	7.2
6	**Total**	19.0	25.1	33.1	47.2	49.6	48.7

Notes:
1 See Ex. F4-4-1 Table 1, Note 1.
2 See Ex. F4-4-1 Table 1, Note 2.

Numbers may not add due to rounding.

Table 4
Allocation of Centrally Held Costs - Nuclear ($M)

Line No.	Costs	2010 Actual	2011 Actual	2012 Actual	2013 Budget	2014 Plan	2015 Plan
		(a)	(b)	(c)	(d)	(e)	(f)
1	**Pension/OPEB Related Costs[1]**	82.5	169.3	264.0	296.6	292.6	288.4
2	**OPG-Wide Insurance**	3.3	3.2	3.2	3.8	3.9	4.0
3	**Nuclear Insurance**	7.3	8.1	11.5	9.7	12.9	14.7
4	**Performance Incentives**	33.8	27.4	20.4	20.8	20.8	20.8
5	**IESO Non-Energy Charges**	35.2	37.9	45.4	54.3	60.2	59.6
6	**Other[2]**	(0.5)	21.2	(1.8)	21.9	27.8	32.3
7	**Total**	161.6	267.1	342.7	407.1	418.2	419.8

Notes:
1 See Ex. F4-4-1 Table 1, Note 1.
2 See Ex. F4-4-1 Table 1, Note 2.

Numbers may not add due to rounding.

Table 1
Comparison of Allocation of Centrally Held Costs ($M)
Previously Regulated Hydroelectric

Line No.	Corporate Group	2010 Budget	(c)-(a) Change	2010 Actual	(g)-(c) Change	2011 Board Approved	(g)-(e) Change	2011 Actual	(i)-(g) Change	2012 Actual
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
1	**Pension/OPEB Related Costs[1]**	4.4	(0.5)	3.9	4.3	5.4	2.8	8.2	5.2	13.4
2	**OPG-Wide Insurance**	2.8	0.0	2.8	(0.2)	2.8	(0.2)	2.6	(0.6)	2.0
3	**Performance Incentives**	2.3	0.1	2.4	(0.7)	2.3	(0.6)	1.7	(0.3)	1.4
4	**IESO Non-Energy Charges**	10.1	0.0	10.1	(7.4)	11.6	(8.9)	2.7	0.6	3.3
5	**Other[2]**	0.7	(0.3)	0.4	0.3	0.8	(0.1)	0.7	(1.2)	(0.5)
6	**Total**	20.3	(0.7)	19.6	(3.7)	22.9	(7.0)	15.9	3.7	19.6

Line No.	Corporate Group	2012 Board Approved	(c)-(a) Change	2012 Actual	(e)-(c) Change	2013 Budget	(g)-(e) Change	2014 Plan	(i)-(g) Change	2015 Plan
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
7	**Pension/OPEB Related Costs[1]**	8.0	5.4	13.4	2.6	16.0	0.0	16.0	(0.3)	15.7
8	**OPG-Wide Insurance**	2.9	(0.9)	2.0	0.3	2.3	0.1	2.4	0.0	2.4
9	**Performance Incentives**	2.3	(0.9)	1.4	0.1	1.5	0.0	1.5	0.0	1.5
10	**IESO Non-Energy Charges**	12.8	(9.5)	3.3	1.1	4.4	0.6	5.0	0.0	5.0
11	**Other[2]**	(0.5)	0.0	(0.5)	1.4	0.9	0.3	1.2	0.2	1.4
12	**Total**	25.5	(5.9)	19.6	5.5	25.1	1.0	26.1	(0.1)	26.0

Notes:
1 2010 Budget, 2010 Actual, 2011 and 2012 Board Approved amounts are presented on the basis of Canadian GAAP as discussed in Ex. A2-1-1.
2 2010 Budget, 2010 Actual, 2011 and 2012 Board Approved amounts include SR&ED Investment Tax Credits required by Canadian GAAP to be recorded in OM&A expenses, as discussed in Ex. F4-4-1, section 7.0 and Ex. A2-1-1.

Numbers may not add due to rounding.

Table 2
Comparison of Allocation of Centrally Held Costs ($M)
Newly Regulated Hydroelectric

Line No.	Corporate Group	2010 Budget	(c)-(a) Change	2010 Actual	(g)-(c) Change	2011 Board Approved	(g)-(e) Change	2011 Actual	(i)-(g) Change	2012 Actual
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
1	**Pension/OPEB Related Costs**[1]	N/A		6.5	8.0	N/A		14.5	9.1	23.6
2	**OPG-Wide Insurance**	N/A		2.5	(0.2)	N/A		2.3	0.5	2.8
3	**Performance Incentives**	N/A		3.7	(0.7)	N/A		3.0	(1.0)	2.0
4	**IESO Non-Energy Charges**	N/A		6.3	(2.2)	N/A		4.1	1.4	5.5
5	**Other**[2]	N/A		0.0	1.2	N/A		1.2	(2.0)	(0.8)
6	**Total**	N/A		19.0	6.1	N/A		25.1	8.0	33.1

Line No.	Corporate Group	2012 Board Approved	(c)-(a) Change	2012 Actual	(e)-(c) Change	2013 Budget	(g)-(e) Change	2014 Plan	(i)-(g) Change	2015 Plan
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
7	**Pension/OPEB Related Costs**	N/A		23.6	4.1	27.7	0.9	28.6	(1.1)	27.5
8	**OPG-Wide Insurance**	N/A		2.8	0.3	3.1	0.1	3.2	0.0	3.2
9	**Performance Incentives**	N/A		2.0	0.1	2.1	0.1	2.2	(0.1)	2.1
10	**IESO Non-Energy Charges**	N/A		5.5	2.6	8.1	0.7	8.8	(0.1)	8.7
11	**Other**	N/A		(0.8)	7.0	6.2	0.6	6.8	0.4	7.2
12	**Total**	N/A		33.1	14.1	47.2	2.4	49.6	(0.9)	48.7

Notes:
1 See Ex. F4-4-2 Table 1, Note 1.
2 See Ex. F4-4-2 Table 1, Note 2.

Table 3
Comparison of Allocation of Centrally Held Costs ($M)
Nuclear

Line No.	Corporate Group	2010 Budget	(c)-(a) Change	2010 Actual	(g)-(c) Change	2011 Board Approved	(g)-(e) Change	2011 Actual	(i)-(g) Change	2012 Actual
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
1	**Pension/OPEB Related Costs[1]**	88.0	(5.5)	82.5	86.8	108.1	61.2	169.3	94.7	264.0
2	**OPG-Wide Insurance**	3.3	0.0	3.3	(0.1)	3.4	(0.2)	3.2	0.0	3.2
3	**Nuclear Insurance[2]**	8.6	(1.3)	7.3	0.8	8.8	(0.7)	8.1	3.4	11.5
4	**Performance Incentives**	32.4	1.4	33.8	(6.4)	32.7	(5.3)	27.4	(7.0)	20.4
5	**IESO Non-Energy Charges**	26.3	8.9	35.2	2.7	30.3	7.6	37.9	7.5	45.4
6	**Other[3]**	12.4	(12.9)	(0.5)	21.7	13.2	8.0	21.2	(23.0)	(1.8)
7	**Total**	171.0	(9.4)	161.6	105.5	196.5	70.6	267.1	75.6	342.7

Line No.	Corporate Group	2012 Board Approved	(c)-(a) Change	2012 Actual	(e)-(c) Change	2013 Budget	(g)-(e) Change	2014 Plan	(i)-(g) Change	2015 Plan
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
8	**Pension/OPEB Related Costs[1]**	158.3	105.7	264.0	32.6	296.6	(4.0)	292.6	(4.2)	288.4
9	**OPG-Wide Insurance**	3.5	(0.3)	3.2	0.6	3.8	0.1	3.9	0.1	4.0
10	**Nuclear Insurance[2]**	9.0	2.5	11.5	(1.8)	9.7	3.2	12.9	1.8	14.7
11	**Performance Incentives**	33.1	(12.7)	20.4	0.4	20.8	0.0	20.8	0.0	20.8
12	**IESO Non-Energy Charges**	33.5	11.9	45.4	8.9	54.3	5.9	60.2	(0.6)	59.6
13	**Other[3]**	(7.5)	5.7	(1.8)	23.7	21.9	5.9	27.8	4.5	32.3
14	**Total**	229.9	112.8	342.7	64.4	407.1	11.1	418.2	1.6	419.8

Notes:
1 See Ex. F4-4-2 Table 1, Note 1.
2 Board Approved amounts reflect downward Board adjustments of $2.5M in 2011 and $4.4M in 2012 (EB 2010-0008 Decision with Reasons, p. 96).
3 See Ex. F4-4-2 Table 1, Note 2.