

K12.2

Actuarial Valuation as at January 1, 2014

Ontario Power Generation Inc. Pension Plan

Regulatory Registration Number: 1059120

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Executive Summary

An actuarial valuation has been prepared for the Ontario Power Generation Inc. Pension Plan (the "Plan") as at January 1, 2014 for the primary purpose of establishing a funding range in accordance with legislative requirements for the Plan until the next actuarial valuation is performed. This section provides an overview of the important results and the key valuation assumptions which have had a bearing on these results. The next actuarial valuation for the purposes of developing funding requirements should be performed no later than as at January 1, 2017.

All figures in this report are expressed in thousands of dollars unless otherwise stated.

Summary of Principal Results

Financial Position¹

| (\$000's) | January 1, 2014 | | | January 1, 2011 | | |
|--------------------------|-------------------|-------------------|----------------------|-------------------|------------------|----------------------|
| | Going Concern | Solvency | Hypothetical Wind Up | Going Concern | Solvency | Hypothetical Wind Up |
| Assets | \$ 10,908,000 | \$ 10,834,700 | \$ 10,834,700 | \$ 9,638,289 | \$ 9,282,952 | \$ 9,001,225 |
| Liabilities | <u>12,050,676</u> | <u>11,008,169</u> | <u>17,869,171</u> | <u>10,193,314</u> | <u>9,279,659</u> | <u>14,664,485</u> |
| Surplus/(Deficit) | \$ (1,142,676) | \$ (173,469) | \$ (7,034,471) | \$ (555,025) | \$ 3,293 | \$ (5,663,260) |

Legislative Ratios

| | January 1, 2014 | January 1, 2011 |
|-----------------------------------|-----------------|-----------------|
| Solvency Ratio² | 0.99 | 0.95 |
| Transfer Ratio² | 0.61 | 0.61 |

¹ Net of all smoothing adjustments and estimated wind up expenses, where applicable.

² See page 12 for a detailed calculation of the Solvency Ratio and page 16 for a detailed calculation of the Transfer Ratio.



Contribution Requirements

Considering the funding and solvency status of the Plan, the Company contributions with effect for the first plan year following January 1, 2014, and those at January 1, 2011, both of which are within the range outlined in Section 5 and in accordance with legislative requirements, are as follows:

| (\$000's) | January 1, 2014 | January 1, 2011 |
|-----------------------------------|-------------------|-------------------|
| Company normal cost | \$ 227,389 | \$ 217,621 |
| Special payments | <u>130,848</u> | <u>64,837</u> |
| Total Company Contribution | \$ 358,237 | \$ 282,458 |

Key Assumptions

The principal assumptions to which the valuation results are most sensitive are outlined in the following table.

| Going Concern Assumptions | January 1, 2014 | January 1, 2011 |
|---|---|--|
| Discount rate | 5.60% per year | 6.30% per year |
| Inflation rate | 2.00% per year | 2.50% per year |
| Increase in pensionable earnings (Active members) | 2.50% per year for 3 years, 3.00% per year thereafter; plus promotional scale | 3.50% per year, plus promotional scale |
| Increase in pensionable earnings (Disabled members) | 2.00% per year | 2.50% per year |
| Increase in year's maximum pensionable earnings ("YMPE") | 2.50% per year for 3 years, 3.00% per year thereafter | 3.50% per year |
| Increase in <i>Income Tax Act</i> maximum pension | 2.50% per years for 3 years, 3.00% per year thereafter | 3.50% per year |
| Mortality table | OPG-specific mortality table and mortality improvements based on Canadian Pensioner Mortality Improvement Scale CPM-B Table B in Appendix D | 85% of 1994 Uninsured Pensioner Mortality table with fully generational mortality improvements at Scale AA |
| Promotional increases | Table A in Appendix D | Table A in Appendix D |
| Retirement rates | Table C in Appendix D | Table C in Appendix D |
| Withdrawal rates | Table D in Appendix D | Table D in Appendix D |

Section 1: Introduction

Purpose and Terms of Engagement

We have been engaged by Ontario Power Generation Inc., and hereafter referred to as the “Company”, to conduct an actuarial valuation of the Plan as at January 1, 2014 for the general purpose of determining the minimum and maximum funding contributions required by pension standards, based on the actuarial assumptions and methods summarized herein. More specifically, the purposes of the valuation are to:

- Determine the financial position of the Plan on a going concern basis as at January 1, 2014;
- Determine the financial position of the Plan on a solvency and hypothetical wind up basis as at January 1, 2014;
- Determine the funding requirements of the Plan as at January 1, 2014; and
- Provide the necessary actuarial certification required under the *Pension Benefits Act* (Ontario) and the *Income Tax Act*.

The results of this report may not be appropriate for accounting purposes or any other purposes not listed above.

The next required actuarial valuation will be as at January 1, 2017.

Summary of Changes Since the Last Valuation

The last such actuarial valuation in respect of the Plan was performed as at January 1, 2011. Since the time of the last valuation, we note that the following events have occurred:

- The Canadian Institute of Actuaries (“CIA”) issued new standards of practice for “Pension Commuted Values” for calculation dates on or after February 1, 2011. These new standards have been reflected in the determination of the solvency and hypothetical wind up valuations in this report.
- The CIA made revisions to the guidance for assumptions for solvency and hypothetical wind up valuations effective June 30, 2013. The key change to the guidance is that the cost to purchase annuities that are fully indexed to Consumer Price Index increases is estimated using a discount rate less than the yield on Government of Canada real-return long-term bonds.
- Aon Hewitt undertook a mortality experience study of the Plan. The results of this study were used to develop an OPG-specific base mortality table. The mortality table reflects OPG’s actual experience derived from OPG pensioner data for the period from 2005 to 2012.

The Canadian Pensioner Mortality Improvement Scale B (CPM-B) is applied to the base mortality table rates. The improvement scale was developed by the CIA for use by Canadian pension plans and is based on a comprehensive study of observed Canadian pensioner experience.

This OPG-specific mortality table together with improvement scale CPM-B have been used in the going concern valuation as at January 1, 2014.



- As part of this valuation, a full review of all assumptions and methods was performed.
- Effective with this valuation, a number of changes have been made to the going concern assumptions including:
 - Lowering of key economic assumptions (e.g. discount rate, inflation, etc.);
 - Adoption of a new base mortality table and improvement scale as described above; and
 - Changes to certain demographic assumptions (e.g. spouse age difference) to better reflect observed data.
- In conjunction with the adoption of the changes in assumptions, the actuarial value of assets has been reset to market value at January 1, 2014. This change results in the immediate recognition of deferred equity gains which serves as an offset to the increase in liability resulting from the changes in assumptions described above.
- The smoothing adjustment applied to solvency assets and liabilities for the purpose of determining the solvency special payments has been removed effective January 1, 2014.

Company Information and Inputs

In order to prepare our valuation, we have relied upon the following information:

- A copy of the previous valuation report prepared by Mercer (Canada) Limited as at January 1, 2011;
- Membership data compiled as at January 1, 2014 by the Company;
- Asset data taken from the Plan's audited financial statements; and
- A copy of the latest plan text and amendments up to and including December 31, 2013.

Furthermore, our actuarial assumptions and methods have been chosen with due respect to accepted actuarial practice and regulatory constraints.

The Company has not elected to defer the commencement of new Special Payments by 12 months as permitted by the *Pension Benefits Act* (Ontario).

Subsequent Events

As of the date of this report, we have not been made aware of any subsequent events which would have an effect on the results of this valuation. However, the following points should be noted in this regard:

- The CIA has completed a study of Canadian pensioner mortality levels and trends which was released on February 13, 2014. Some conclusions of the study are:
 - the 1994 Uninsured Pensioner (UP94) mortality table together with generational improvements using Scale AA overstates average Canadian pensioner mortality rates, and therefore understates expected future pension payments for many plans; and
 - more rapid improvements in longevity have been observed than suggested by Improvement Scale AA.

The results of the CIA pensioner mortality study do not yet have an impact on the solvency or hypothetical wind up valuation results. We expect that the solvency liabilities and hypothetical wind up liabilities will increase in the future once a new mortality table is promulgated by the Actuarial Standards Board. The expected date for this promulgation is not yet known.

- The Company has announced that effective July 1, 2014, the Plan will be amended as follows:
 - The "Rule of 84" will not apply to new Management Group employees hired on or after July 1, 2014; employees hired on or after this date will be eligible for an unreduced pension at the earlier of age 60 with 25 years of continuous service, 35 years of continuous service, and 90 age-plus-continuous service points; and
 - New Management Group employees hired on and after July 1, 2014 will contribute to the Plan at 7.60% of pensionable earnings up to the YMPE plus 9.50% of pensionable earnings in excess of the YMPE.
- Actual experience deviating from expected after January 1, 2014 will result in gains or losses which will be reflected in the next actuarial valuation report; and
- To the best of our knowledge, the results contained in this report are based on the regulatory and legal environment in effect at the date of this report and do not take into consideration any potential changes that may be currently under review. To the extent that actual changes in the regulatory and legal environment transpire, any financial impact on the Plan as a result of such changes will be reflected in future valuations.



Section 2: Going Concern Valuation Results

Going Concern Financial Position of the Plan

The going concern valuation provides an assessment of the Plan's financial position at the valuation date on the premise that the Plan continues indefinitely into the future.

The selection of the applicable actuarial assumptions and methods reflect actuarial standards of practice, and pension standards.

On the basis of the plan provisions, membership data, going concern assumptions and methods, and asset information described in the Appendices, the going concern financial position of the Plan as at January 1, 2014 is shown in the following table. The results as at January 1, 2011 are also shown for comparison purposes.

Going Concern Financial Position

| (\$000's) | January 1, 2014 | January 1, 2011 |
|---------------------------------------|-----------------------|----------------------|
| Assets | | |
| Market value of assets | \$ 10,908,000 | \$ 9,074,525 |
| Asset smoothing adjustment | <u>0</u> | <u>563,764</u> |
| Actuarial Value of Assets | \$ 10,908,000 | \$ 9,638,289 |
| Going Concern Liabilities | | |
| Active members and disabled members | \$ 5,426,807 | \$ 5,527,884 |
| Deferred vested members | 106,554 | 113,319 |
| Retired members and beneficiaries | 6,517,237 | 4,552,033 |
| Voluntary contributions with interest | <u>78</u> | <u>78</u> |
| Total Liabilities | \$ 12,050,676 | \$ 10,193,314 |
| Surplus (Unfunded Liability) | \$ (1,142,676) | \$ (555,025) |
| Funded Ratio | 90.5% | 94.6% |



On the basis of the plan provisions, membership data, going concern assumptions and methods and asset information described in the Appendices, the going concern normal cost of the Plan as at January 1, 2014 is shown in the following table. The normal cost as at January 1, 2011 is also shown for comparison purposes.

Going Concern Normal Cost

| (\$000's) | January 1, 2014 | January 1, 2011 |
|---|-------------------|-------------------|
| Normal Cost | | |
| Total normal cost | \$ 300,085 | \$ 294,417 |
| Required member contributions | <u>(72,696)</u> | <u>(76,796)</u> |
| Company Normal Cost | \$ 227,389 | \$ 217,621 |
| | | |
| Valuation compensation (in year following valuation date, excluding disabled members) | \$ 1,129,462 | \$ 1,203,279 |
| Company Normal Cost | | |
| As a % of total valuation compensation | 20.1% | 18.1% |



Change in Financial Position

During the period from January 1, 2011 to January 1, 2014, the going concern financial position of the Plan changed from an unfunded liability of \$555,025 to an unfunded liability of \$1,142,676. The major components of this change are summarized in the following table.

Reconciliation of the Going Concern Financial Position for the Period from January 1, 2011 to January 1, 2014

(\$000's)

| | |
|---|-----------------------|
| Surplus/(Unfunded Liability) as at January 1, 2011 | \$ (555,025) |
| Minimum company contributions during inter-valuation period | 871,000 |
| Actual employee contributions during inter-valuation period | 219,712 |
| Total current service costs during inter-valuation period | (770,372) |
| Expected recognition of deferred asset (loss)/gain from asset smoothing | (749,103) |
| Interest at 6.30% per year | (138,890) |
| Expected Surplus/(Unfunded Liability) as at January 1, 2014 | \$ (1,122,678) |
| Change in liabilities due to experience gains/(losses) | |
| Additional company contributions above minimum requirement | 99,000 |
| Investment return on smoothed assets since last valuation | (236,834) |
| Salary increases less than expected | 127,877 |
| YMPE increases less than expected | (8,016) |
| Change in ITA maximum pension less than expected | 14,321 |
| Indexation less than expected | 83,143 |
| Retirement experience | (122,487) |
| Disability experience | (23,945) |
| Turnover experience | (98,352) |
| Mortality experience | (28,562) |
| Change due to pensioner spousal data update | 18,774 |
| Net gain/(loss) due to other experience and miscellaneous items | (11,627) |
| Surplus/(Unfunded Liability) after experience gains/(losses) as at January 1, 2014 | \$ (1,309,386) |
| Change in mortality assumptions | (429,750) |
| Change in other demographic assumptions | (75,126) |
| Change in economic assumptions | (220,044) |
| Reset of actuarial value of assets to market value of assets | 891,630 |
| Surplus/(Unfunded Liability) as at January 1, 2014 | \$ (1,142,676) |



Discussion of Changes in Assumptions and Methods

Effective January 1, 2014, the following assumptions and methods have been changed (all figures in \$000's):

Economic Assumptions

- The assumed increase in Consumer Price Index has been changed from 2.50% per year to 2.00% per year.
- The nominal discount rate has been changed from 6.30% per year to 5.60% per year.
- The net impact of the change in the assumed inflation rate and the nominal discount rate is a change in the real discount rate from 3.80% per year to 3.60% per year.
- The assumed increase in pensionable earnings for active members has been changed from 3.50% per year plus promotional scale to 2.50% per year for three years, 3.00% per year thereafter, plus promotional scale. The assumed increase in pensionable earnings for disabled members has been changed from 2.50% per year to 2.00% per year.
- The assumed increase in the YMPE and in the maximum pension under the *Income Tax Act* has been changed from 3.50% per year to 2.50% for three years, 3.00% per year thereafter.

In combination, these changes in assumptions increased the going concern liabilities by \$220,044 and the total normal cost by \$6,564.

Demographic Assumptions

- The mortality rates have been changed from 85% of 1994 Uninsured Pensioner Mortality Table with fully generational mortality improvements at Scale AA to an OPG-Specific Mortality Table with future mortality improvements at Scale CPM-B.
- The assumed spousal age difference has been changed from a male assumed to be four years older than a female spouse, to a male assumed to be three years older than a female spouse.
- A margin of \$100 million has been added to the liability in anticipation of higher than expected retirements in the short-term before the next valuation.

In combination, these changes in assumptions increased the going concern liabilities by \$504,876 and the total normal cost by \$8,914.

Asset Valuation Method

- The actuarial value of assets has been reset to equal the market value of assets at January 1, 2014. This reset results in the recognition of \$891,630 in asset gains which would otherwise have been deferred.
- The resetting of the actuarial value of assets has been done at this time to offset the impact of the adoption of certain changes in economic and demographic assumptions which had a significant increase in the liability. It is expected that an asset smoothing approach will continue to be used in the future although alternate smoothing approaches will be examined.



Going Concern Valuation Sensitivity Results

In accordance with the Canadian Institute of Actuaries Standards of Practice, the table below presents the sensitivity of the going concern liabilities and the total normal cost to using a discount rate 1% lower than that used for the going concern valuation.

| (\$000's) | Valuation Basis January 1, 2014 | Based on Rate of 1% Lower | Effect | |
|---------------------------|------------------------------------|------------------------------|--------------|-------|
| | | | \$ | % |
| Going concern liabilities | \$ 12,050,676 | \$ 14,053,945 | \$ 2,003,269 | 16.6% |
| Total normal cost | \$ 300,085 | \$ 383,506 | \$ 83,421 | 27.8% |



Section 3: Solvency Valuation Results

Solvency Financial Position of the Plan

The solvency valuation is a financial assessment of the Plan that is required by the *Pension Benefits Act* (Ontario) and is performed in accordance with requirements prescribed by that legislation. It is intended to provide an assessment of the Plan's financial position at the valuation date on the premise that certain obligations as prescribed by the *Pension Benefits Act* (Ontario) are settled on the valuation date for all members.

On the basis of the plan provisions, membership data, solvency assumptions and methods, and asset information described in the Appendices, as well as the requirements of the *Pension Benefits Act* (Ontario), the solvency financial position of the Plan as at January 1, 2014 is shown in the following table. The solvency financial position of the Plan as at January 1, 2011 is shown for comparison purposes.

Solvency Financial Position

| (\$000's) | January 1, 2014 | January 1, 2011 |
|---|----------------------|---------------------|
| Assets | | |
| Solvency assets | \$ 10,908,000 | \$ 9,074,525 |
| Estimated wind up expenses | <u>(73,300)</u> | <u>(73,300)</u> |
| Total Assets | \$ 10,834,700 | \$ 9,001,225 |
| Solvency Liabilities | | |
| Active and disabled members | \$ 8,650,749 | \$ 8,582,248 |
| Deferred vested members | 172,438 | 163,850 |
| Retired members and beneficiaries | 9,045,906 | 5,918,309 |
| Voluntary contributions with interest | 78 | 78 |
| Value of excluded benefits ¹ | <u>(6,861,002)</u> | <u>(5,203,066)</u> |
| Total Liabilities | \$ 11,008,169 | \$ 9,461,419 |
| Solvency Position | \$ (173,469) | \$ (460,194) |
| Solvency asset adjustment | | |
| Present value of special payments | 173,469 ² | 0 ² |
| Solvency asset smoothing | 0 | 281,727 |
| Solvency liability adjustment | <u>0</u> | <u>181,760</u> |
| Solvency Surplus/(Deficiency) | \$ 0 | \$ 3,293 |
| Solvency Ratio (Solvency Assets/Total Liabilities) | 0.99 | 0.95 |

¹ Future escalated adjustments (indexation) are excluded from solvency liabilities as provided for by the *Pension Benefits Act* (Ontario)

² Limited to amount required to eliminate the deficit



Solvency Concerns

A report indicates solvency concerns under the *Pension Benefits Act* (Ontario) if the ratio of the solvency assets to solvency liabilities is less than 0.85.

Where a report indicates solvency concerns, the effective date of the next valuation that needs to be filed under the *Pension Benefits Act* (Ontario) is one year from the valuation date of the valuation that gave rise to the solvency concerns.

Since the ratio of solvency assets to solvency liabilities is equal to 0.99, this report does not indicate solvency concerns.

Solvency Asset Adjustment

The present value of scheduled special payments for solvency valuation purposes has been calculated by discounting the annual special payments to be remitted up to the end of their amortization period (to a maximum of five years), at the blended solvency discount rate of 3.80% per year compounded monthly in arrears determined proportionately by the solvency discount rates used to settle the solvency liabilities.

(\$000's)

| Nature of Deficiency | Effective Date | End Date | Annual Special Payment | Present Value as of January 1, 2014 |
|--|-----------------|-------------------|------------------------|-------------------------------------|
| Going concern | January 1, 2005 | December 31, 2019 | \$ 27,726 | \$ 126,248 |
| Going concern | January 1, 2011 | December 31, 2025 | 37,111 | 169,041 |
| Going concern | January 1, 2014 | December 31, 2028 | 66,011 | <u>300,645</u> |
| Present Value of Special Payments | | | | \$ 595,934 |

The solvency asset adjustment is limited to \$173,469 which is the amount required to eliminate the difference between the solvency assets (net of estimated wind up expenses) and liabilities.

Solvency Valuation Sensitivity Results

| (\$000's) | Valuation Basis January 1, 2014 | Based on Rate of 1% Lower | Effect | |
|-----------------------------|------------------------------------|------------------------------|--------------|-------|
| | | | \$ | % |
| Solvency liabilities | \$ 11,008,169 | \$ 12,531,331 | \$ 1,523,162 | 13.8% |

Smoothing Adjustment

Smoothing adjustments have not been applied to the solvency assets or liabilities.



Pension Benefits Guarantee Fund ("PBGF")

The development of the PBGF Assessment Base is as follows:

(to the nearest dollar)

| PBGF Assessment Base | January 1, 2014 |
|---|-------------------|
| (1) Solvency assets | \$ 10,908,000,000 |
| (2) PBGF liabilities | \$ 11,008,169,000 |
| (3) Solvency liabilities | \$ 11,008,169,000 |
| (4) Ontario asset ratio: [(2) divided by (3)] | 1.000 |
| (5) Ontario portion of fund: [(1) multiplied by the ratio in (4)] | \$ 10,908,000,000 |
| PBGF assessment base: [(2) subtract (5); if negative, enter zero] | \$ 100,169,000 |

The calculation of the PBGF Assessment is as follows:

PBGF Assessment

| | |
|--|---|
| 0.5% of any portion of the applicable PBGF assessment base that is less than 10% of the PBGF liabilities | \$ 500,845 |
| 1.0% of any portion of the applicable PBGF assessment base that is 10% or more but less than 20% of the PBGF liabilities | 0 |
| 1.5% of any portion of the applicable PBGF assessment base that is 20% or more of the PBGF liabilities | <u>0</u> |
| (1) Total | \$ 500,845 |
| Number of Ontario plan members, former members and other beneficiaries | 22,093 |
| (2) \$5.00 x Number of Ontario Plan Members, Former Members and Other Beneficiaries | \$ 110,465 |
| (3) \$300.00 x Number of Ontario Plan Members, Former Members and Other Beneficiaries | \$ 6,627,900 |
| Total Guarantee Fund Assessment | Lesser of [(1)+(2)] and (3) \$ 611,310¹ |

The Guarantee Fund Assessment may be adjusted to the extent that contributions during a plan year are in excess of the minimum required company contributions.

¹ Does not include retail sales tax



Section 4: Hypothetical Wind Up Valuation Results

Hypothetical Wind Up Financial Position of the Plan

A hypothetical wind up valuation is performed to determine the financial position of the Plan as at the valuation date on a wind up basis, reflecting market settlement rates as of the valuation date. Unlike the solvency valuation, all benefits are included that would be payable under the postulated scenario that would maximize benefits. The hypothetical wind up valuation is determined using benefit entitlements on the assumption that the Plan has neither a surplus nor a deficit, and that a competitive market for inflation-indexed annuities exists. Contingent benefits are included in the liabilities that would be payable under the postulated scenario. Assets are set equal to market value net of estimated wind up expenses. All assumptions for the hypothetical wind up valuation are listed in Appendix E of the report.

On the basis of plan provisions, membership data, hypothetical wind up assumptions and methods, and asset information described in the Appendices, as well as the requirements of the *Pension Benefits Act* (Ontario), the hypothetical wind up financial position of the Plan as at January 1, 2014 is shown in the following table. The hypothetical wind up financial position of the Plan as at January 1, 2011 is shown for comparison purposes.

Hypothetical Wind Up Financial Position

| (\$000's) | January 1, 2014 | January 1, 2011 |
|--|-----------------------|-----------------------|
| Assets | | |
| Hypothetical wind up assets | \$ 10,908,000 | \$ 9,074,525 |
| Estimated wind up expenses | <u>(73,300)</u> | <u>(73,300)</u> |
| Total Assets | \$ 10,834,700 | \$ 9,001,225 |
| Hypothetical Wind Up Liabilities | | |
| Active and disabled members | \$ 8,650,749 | \$ 8,582,248 |
| Deferred vested members | 172,438 | 163,850 |
| Retired members and beneficiaries | 9,045,906 | 5,918,309 |
| Voluntary contributions with interest | <u>78</u> | <u>78</u> |
| Total Liabilities | \$ 17,869,171 | \$ 14,664,485 |
| Hypothetical Wind Up Surplus/(Deficiency) | \$ (7,034,471) | \$ (5,663,260) |



Hypothetical Wind Up Valuation Sensitivity Results

In accordance with the Canadian Institute of Actuaries Standards of Practice, the table below presents the sensitivity of the hypothetical wind up liabilities to using a discount rate of 1.00% lower than that used for the hypothetical wind up valuation.

| (\$000's) | Valuation Basis January 1, 2014 | Based on Rate of 1% Lower | Effect | |
|---|------------------------------------|------------------------------|--------------|-------|
| | | | \$ | % |
| Hypothetical wind up liabilities | \$ 17,869,171 | \$ 21,181,062 | \$ 3,311,891 | 18.5% |

Incremental Cost on a Hypothetical Wind Up Basis

The incremental cost on a hypothetical wind up basis represents the present value at January 1, 2014 of the expected aggregate change in the hypothetical wind up liabilities between January 1, 2014 and the next calculation date, that is January 1, 2017. Appendix E gives more details on the calculation methodology and on assumptions.

Based on this methodology and on these assumptions, the incremental cost on a hypothetical wind up basis for the period from January 1, 2014 to January 1, 2017 is \$2,378,196.

| (\$000's) | 2014 | 2015 | 2016 |
|---|------------|------------|------------|
| Incremental cost on a hypothetical wind up basis | \$ 702,499 | \$ 783,800 | \$ 891,897 |

Transfer Ratio

The transfer ratio is determined as follows:

| (\$000's) | | January 1, 2014 |
|---|-----------------------|-----------------|
| (1) Hypothetical wind up assets | | \$ 10,908,000 |
| Prior year credit balance | (A) | \$ 0 |
| Total company normal cost and required special payments until next mandated valuation | (B) | \$ 1,091,907 |
| (2) Asset adjustment | Lesser of (A) and (B) | \$ 0 |
| (3) Hypothetical wind up liabilities | | \$ 17,869,171 |
| Transfer Ratio [(1)-(2)] / (3) | | 0.61 |

Section 5: Contribution Requirements

Contribution Requirements in Respect of the Normal Cost

The annual going concern cost of benefits in respect of service accruing after the valuation date is known as the normal cost. The following table sets out:

- The development of the rule to determine the normal cost until the next actuarial funding range in accordance with legislative requirements is certified;
- An estimate of the normal cost for the three years following the valuation date; and
- The portion of the going concern normal cost that is to be paid by the members.

| (\$000's) | 2014 | 2015 | 2016 |
|---|-------------------|-------------------|-------------------|
| Normal Cost | | | |
| Total normal cost | \$ 300,085 | \$ 307,587 | \$ 315,276 |
| Required member contributions | <u>(72,696)</u> | <u>(74,513)</u> | <u>(76,376)</u> |
| Company Normal Cost | \$ 227,389 | \$ 233,074 | \$ 238,900 |
| | | | |
| Valuation compensation (in year following valuation date excluding disabled members) ¹ | \$ 1,129,462 | \$ 1,157,698 | \$ 1,186,641 |
| Company Normal Cost | | | |
| As a % of valuation compensation | 20.1% | 20.1% | 20.1% |

In the event an updated funding range in accordance with legislative requirements is not certified before January 1, 2017, the rule for determining the company normal cost contributions outlined in the above table will continue to be appropriate for the plan year commencing on the next valuation date of January 1, 2017. Adjustment to the company contributions may be required once the next actuarial funding range in accordance with legislative requirements is certified.

¹ Valuation compensation in 2015 and 2016 is projected from 2014 at the assumed increase in pensionable earnings (2.5% per year) based on headcount at January 1, 2014.



Development of Special Payments

The following table summarizes the amortization schedules of special payments after adjustment to reflect any gains or losses due to the going concern and solvency valuation results.

(\$000's)

| Nature of Deficiency | Effective Date | End Date | Annual Special Payment | Present Value as of January 1, 2014 | |
|----------------------|-----------------|-------------------|------------------------|--|-------------------------------------|
| | | | | For Going Concern Valuation ¹ | For Solvency Valuation ² |
| Going concern | January 1, 2005 | December 31, 2019 | \$ 27,726 | \$ 141,577 | \$ 126,248 |
| Going concern | January 1, 2011 | December 31, 2025 | 37,111 | 326,154 | 169,041 |
| Going concern | January 1, 2014 | December 31, 2028 | 66,011 | 674,945 | 300,645 |
| | | | \$ 130,848 | \$ 1,142,676 | \$ 595,934 |

Prior Year Credit Balance ("PYCB")

There is no PYCB as at January 1, 2014.

Excess Surplus

The *Income Tax Act* requires that any excess surplus first be applied to reduce or eliminate the company contribution requirements. Excess surplus is defined in Section 147.2(2)(d) of the *Income Tax Act* as the portion of surplus (if any) that exceeds 25% of the going concern liabilities.

Since the plan has an unfunded liability and hypothetical wind up deficiency, there is no excess surplus and therefore it does not impact the development of the company contribution requirements.

¹ The values in the table were developed using the going concern interest rate of 5.60% per year compounded monthly in arrears.
² The values in the table were developed using the weighted average solvency interest rate of 3.80% per year compounded monthly in arrears with a maximum of five years of such payments included in the calculation.



Development of Minimum Required Company Contribution

The table below presents the development of the minimum required company contribution for each of the plan years covered by this report.

While we have shown a fixed company normal cost in the table below, the Company may fund the normal cost as a percentage of projected pensionable earnings.

| (\$000's) | 2014 | 2015 | 2016 |
|--|-------------------|-------------------|-------------------|
| Company normal cost | \$ 227,389 | \$ 233,074 | \$ 238,900 |
| Special payments toward amortizing unfunded liability | 130,848 | 130,848 | 130,848 |
| Special payments toward amortizing solvency deficiency | 0 | 0 | 0 |
| Required application of excess surplus | 0 | 0 | 0 |
| Permitted application of surplus | 0 | 0 | 0 |
| Permitted application of PYCB | 0 | 0 | 0 |
| Minimum Required Company Contribution | \$ 358,237 | \$ 363,922 | \$ 369,748 |

Development of Maximum Deductible Company Contribution

The table below presents the development of the maximum deductible company contribution for each of the plan years covered by this report.

The maximum deductible company contribution presented in the table below for a given plan year is calculated assuming that the Company makes the maximum deductible company contribution in the first plan year covered by this report.

While we have shown a fixed company normal cost in the table below, the Company may fund the normal cost as a percentage of projected pensionable earnings.

| (\$000s) | 2014 | 2015 | 2016 |
|---|---------------------|-------------------|-------------------|
| Company normal cost | \$ 227,389 | \$ 233,074 | \$ 238,900 |
| Greater of the unfunded liability and the hypothetical wind up deficiency | 7,034,471 | 0 | 0 |
| Required application of excess surplus | 0 | 0 | 0 |
| Maximum Deductible Company Contribution | \$ 7,261,860 | \$ 233,074 | \$ 238,900 |

If the Company wishes to make the maximum deductible company contribution, it is advisable to contact the Plan actuary before making such contribution to ensure that the contribution will be permissible and deductible and that any regulatory requirements are considered.



Section 6: Actuarial Certificate

Actuarial Opinion, Advice and Certification for the Ontario Power Generation Inc. Pension Plan

Financial Services Commission of Ontario Registration Number: 1059120

Canada Revenue Agency Registration Number: 1059120

Opinion

This actuarial certification forms an integral part of the actuarial valuation report for the Plan as at January 1, 2014. I confirm that I have prepared an actuarial valuation of the Plan as at January 1, 2014 for the purposes outlined in the Introduction section to this report and consequently:

My advice on funding is the following:

- The Company should contribute the amounts within the range outlined in Section 5 of this report, in accordance with legislative requirements.
- The next actuarial valuation for the purpose of developing funding requirements should be performed no later than as at January 1, 2017.

I hereby certify that, in my opinion:

- With respect to the purpose of determining the Plan's financial position on a going concern basis as at January 1, 2014 (all figures in \$000's):
 - The Plan has a going concern unfunded liability of \$1,142,676 as at January 1, 2014, based on going concern assets of \$10,908,000 less going concern liabilities of \$12,050,676.
 - There is no excess surplus as defined by Section 147.2(2) of the *Income Tax Act* in the Plan at January 1, 2014.
 - The pre-1990 maximum pension restrictions in Subsection 8504(6) of the Regulations to the *Income Tax Act* do not apply to any members of the Plan.



- With respect to the purpose of determining the Plan's financial position on a solvency basis and hypothetical wind up basis (all figures in \$000's):
 - The Plan has a solvency deficit (before solvency asset adjustment) of \$173,469 as at January 1, 2014, determined as solvency assets of \$10,834,700 (after deducting estimated wind up expenses of \$73,300) less solvency liabilities of \$11,008,169. After reflecting the solvency asset adjustment the solvency deficiency is \$0.
 - The solvency ratio is 0.99 as at January 1, 2014.
 - The transfer ratio is 0.61 as at January 1, 2014.
 - The Plan's liabilities would exceed the Plan's assets, net of estimated wind up expenses, by \$7,034,471 if the Plan was terminated and wound up as at January 1, 2014.
 - A PBGF assessment is required to be paid where the PBGF assessment base is equal to \$100,169 and the PBGF liabilities are \$11,008,169.

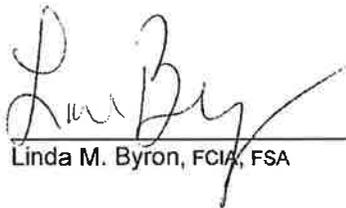
- With respect to determining the funding requirements of the Plan:
 - The rule for determining the company's normal cost is 20.1% of projected valuation compensation.
 - The estimated total normal cost for the three years following the valuation date, including the portions of the normal cost attributed to members and the employer are as follows:

| (\$000's) | 2014 | 2015 | 2016 |
|---|-------------------|-------------------|-------------------|
| Normal Cost | | | |
| Total normal cost | \$ 300,085 | \$ 307,587 | \$ 315,276 |
| Required member contributions | <u>(72,696)</u> | <u>(74,513)</u> | <u>(76,376)</u> |
| Company Normal Cost | \$ 227,389 | \$ 233,074 | \$ 238,900 |
| | | | |
| Valuation compensation (in the following years, excluding disabled members) | \$ 1,129,462 | \$ 1,157,698 | \$ 1,186,641 |
| Company Normal Cost | | | |
| As a % of valuation compensation | 20.1% | 20.1% | 20.1% |

- The special payments required to fund the going concern unfunded liability and the solvency deficiency are as summarized in the following table:

| (\$000's) | Effective Date | End Date | Annual Payment |
|---------------|-----------------|-------------------|-------------------|
| Going concern | January 1, 2005 | December 31, 2019 | \$ 27,726 |
| Going concern | January 1, 2011 | December 31, 2025 | 37,111 |
| Going concern | January 1, 2014 | December 31, 2028 | <u>66,011</u> |
| | | | \$ 130,848 |

- The prior year credit balance is \$0 as at January 1, 2014.
- The contribution range as outlined in this report is expected to be sufficient to satisfy the Plan's funding requirements.
- The company contribution range outlined in this report qualifies as eligible contributions under Section 147.2(2) of the *Income Tax Act*.
- For the purposes of the valuation:
 - The data on which this valuation is based are sufficient and reliable;
 - The assumptions used are appropriate; and
 - The actuarial cost methods and the asset valuation methods used are appropriate.
- This report and its associated work have been prepared, and my opinion given, in accordance with accepted actuarial practice in Canada and in compliance with the requirements outlined in subparagraphs 147.2(2)(a)(iii) and (iv) of the *Income Tax Act*.
- Notwithstanding the above certifications, emerging experience differing from the assumptions will result in gains or losses that will be revealed in subsequent valuations.



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June 2014



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