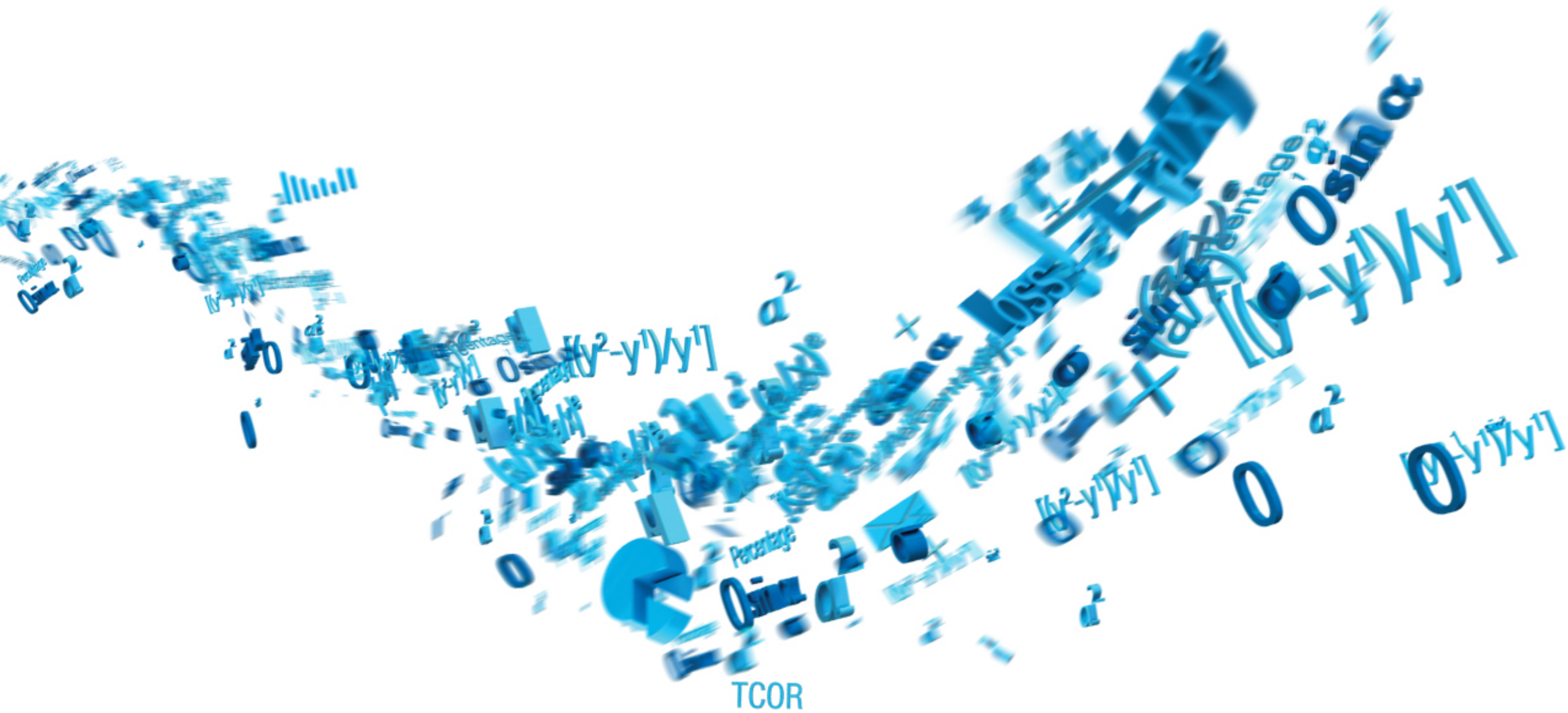

Actuarial Valuation as at December 31, 2014 for Universities Academic Pension Plan

Regulatory Registration Number: 0339572

October 30, 2015

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Executive Summary

An actuarial valuation has been prepared for the Universities Academic Pension Plan (the "Plan") as at December 31, 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 December 31, 2017.

Summary of Principal Results

Financial Position (000's)

December 31, 2014	**Going Concern**	**Solvency**
Assets	$ 3,564,800	$ 3,764,900[1]
Liabilities	4,773,800	7,418,500
Actuarial Excess/(Deficit)	**$ (1,209,000)**	**$ (3,653,600)**

December 31, 2012	**Going Concern**	**Solvency**
Assets	$ 2,889,700	$ 2,949,400[1]
Liabilities	4,153,300	6,559,600
Actuarial Excess/(Deficit)	**$ (1,263,600)**	**$ (3,610,200)**

Legislative Ratios

	December 31, 2014	**December 31, 2012**
Funded ratio	0.7467	0.6958
Solvency ratio	0.5075	0.4496

[1] Net of estimated wind up expenses

Contribution Requirements

Considering the funding status of the Plan, the member and employer contributions with effect from July 1, 2016, and those recommended at December 31, 2012 and effective July 1, 2014, both of which are within the range of minimum and maximum contribution amounts as outlined in Section 4 and in accordance with legislative requirements, are as follows:

(000's)	December 31, 2014	December 31, 2012
Estimated normal cost	$ 169,400	$ 151,400
As a % of capped earnings	20.03%	18.40%
Pre-1992 unfunded liability payments as a percentage of total earnings (excluding government share)	3.54%	2.87%
Post-1991 unfunded liability payments as a percentage of capped earnings	4.93%	5.79%
Minimum annual member and employer contribution effective July 1, 2016 (2014)	28.50% of pensionable earnings[1]	27.06% of pensionable earnings[1]
Maximum member and employer contribution until the next valuation	20.03% of capped earnings plus $3,653,600	18.40% of capped earnings plus $3,610,200
Implemented contribution rate effective July 1, 2016 (2014) as a percentage of pensionable earnings[1] (excluding government share)	28.50%	27.06%
Government share of pre-1992 unfunded liability contributions as a percentage of total earnings	1.25%	1.25%

[1] Total earnings used for Pre-1992 unfunded liability contributions and capped earnings used for other contributions

Key Assumptions

The principal going concern and solvency assumptions to which the valuation results are most sensitive, as well as any assumption changes, are outlined in the following tables.

Going Concern	**December 31, 2014**	**December 31, 2012**
Discount rate	5.95% per annum	6.25% per annum
Inflation rate	2.25% per annum	Same
Pensionable earnings – Base	1.0% plus merit and promotion scale for 2 years, 2.75% plus merit and promotion scale thereafter	1.5% for 2 years, 2.75% plus merit and promotion scale thereafter
Maximum Pension Increase	2.75% per annum	Same
Mortality table	85% (100% for females) of CPM 2014 Public Sector Mortality Table with generational improvements using CPM Scale B ("CPM-B")	92% of UP94 Mortality Table with generational improvements using Scale BB
Retirement rates	Rates based on 2009 to 2014 experience	Rates based on 1988 to 1993 experience
Termination rates	Rates based on 2009 to 2014 experience	Rates based on 1988 to 1993 experience
Merit and promotion salary scale	Rates based on 2009 to 2014 member earnings	Rates based on 1988 to 1993 experience
Total payroll growth	2.25% per annum for 2 years and 4.0% per annum thereafter	2.25%* per annum for 2 years and 5.0%* per annum thereafter

* *Total payroll growth rates used for post-1991 amortization schedule in the December 31, 2012 valuation did not include 0.75% per annum headcount growth (1.5% and 4.25%).*

Solvency	**December 31, 2014**	**December 31, 2012**
Discount rate	Annuity purchases: 0.7% per annum; net of indexing Transfers: 1.8% per annum for 10 years, 2.5% per annum thereafter; net of indexing	Annuity purchases: 1.12% per annum; net of indexing Transfers: 1.6% per annum for 10 years, 2.2% per annum thereafter; net of indexing
Mortality table		
- Annuity purchases	100% of 1994 Uninsured Pensioner ("UP94") Mortality Table with generational improvements using Scale AA	Same
- Transfers	92% of UP94 Mortality Table with generational improvements using Scale BB	100% of UP94 Mortality Table with generational improvements using Scale AA
Retirement rates	100% immediate retirement if at least age 55; otherwise 100% at age 55	Same
Termination rates	100% on valuation date	Same

Section 1: Introduction

Purpose and Terms of Engagement

We have been engaged by the Universities Academic Pension Plan Board of Trustees, and hereafter referred to as the “Board”, to conduct an actuarial valuation of the Plan, registered in Alberta, as at December 31, 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 December 31, 2014;
- Determine the financial position of the Plan as at December 31, 2014 on a solvency basis;
- Determine the funding requirements of the Plan as at December 31, 2014; and
- Provide the necessary actuarial certification required under the *Employment Pension Plans Act* (the “*EPPA*”) and the *Income Tax Act.*

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

As per our engagement, we have summarized the results of this actuarial valuation along with the ensuing opinions and recommendations in this report to the Board.

While we have been engaged by the Board to conduct this actuarial valuation, we note that users of our work may well extend to parties external to the Board, notably Alberta Treasury Board and Finance, Canada Revenue Agency and the Plan participants. Out of respect for the confidentiality of the Board, we shall not undertake to communicate the terms of our engagement or results of our work with such other users unless so directed by the Board.

In accordance with the Sponsorship and Trust Agreement for the Plan, an actuarial valuation report must be filed at least once every three years; therefore, the next required valuation will be as at December 31, 2017, or earlier.

As directed by the Board, this report will be filed with Alberta Treasury Board and Finance and Canada Revenue Agency.

Summary of Changes Since the Last Valuation

The last such actuarial valuation in respect of the Plan was performed as at December 31, 2012. Since the time of the last valuation, we note that the following events have occurred:

- The Canadian Institute of Actuaries ("CIA") made revisions to the guidance for assumptions for hypothetical wind up and solvency valuations effective June 30, 2013. The key changes to the guidance are:
  - The cost of purchasing non-indexed annuities are estimated using the duration of the liabilities expected to be settled through the purchase of annuities; and
  - The cost of purchasing annuities that are fully indexed to the Consumer Price Index increases are estimated using a discount rate less than the yield on Government of Canada real-return long-term bonds.
- Solvency assumptions have been revised due to general fluctuations in bond rates over the past two years and the CIA guidance revision effective June 30, 2013 described above. The changes affecting solvency liabilities are summarized on page 5 of this report.
- Going concern actuarial assumptions have been revised. The changes are summarized on page 5 and the financial impact of these changes is summarized on pages 12 to 14 of this report.
- The new *Employment Pension Plans Act* and *Regulations* were released in 2014, with an effective date of September 1, 2014. This report includes the effects of the changes to the legislation.

Board Information and Inputs

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

- A copy of the previous valuation report as at December 31, 2012;
- Membership data compiled as at December 31, 2014 by Buck Consultants, and staff of the Board as summarized in Appendix C;
- Asset data taken from the Plan's audited financial statements as summarized in Appendix B; and
- A copy of the latest Plan text and amendments up to and including December 31, 2014.

Furthermore, our actuarial assumptions and methods have been chosen to reflect our understanding of the Board's desired funding objectives with due respect to accepted actuarial practice and regulatory constraints.

Subsequent Events

As of the date of this report, we have been made aware of a subsequent event which has an effect on the development of going concern assumptions for this valuation. The target asset mix has been revised effective March 11, 2015, and as a result we have adopted the revised target asset mix to develop the best-estimate rate of return.

We have not been made aware of any other subsequent events which would have an effect on the results of this valuation; however, the following points should be noted in this regard:

- The Actuarial Standards Board ("ASB") issued its Final Communication of a Promulgation of the Mortality Table Referenced in the Standards of Practice for Pension Plans (Subsection 3530) in June 2015. Effective October 1, 2015, the promulgated mortality table used in the calculation of commuted values will be updated to the 2014 Canadian Pensioner Mortality Table ("CPM2014") combined with the mortality improvement scale CPM-B. In accordance with Board Policy, the same mortality table is to be used for all administration of the Plan. Therefore, it is expected that the going concern mortality assumption as at December 31, 2014, described on page 5, will be implemented for commuted value calculations.
- Actual experience deviating from expected after December 31, 2014 will result in gains or losses which will be reflected in the next actuarial valuation report.
- 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 on into the future indefinitely.

The selection of the applicable actuarial assumptions and methods reflect the Plan's funding objectives, as communicated by the Board, 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 December 31, 2014 is shown in the following table. The results as at December 31, 2012 are also shown for comparison purposes.

Going Concern Financial Position (000's)

	December 31, 2014	December 31, 2012
Actuarial Value of Assets		
Market Value	$ 3,767,600	$ 2,952,000
Smoothing adjustment	(202,800)	(62,300)
Total actuarial value of assets	**$ 3,564,800**	**$ 2,889,700**
Going Concern Liabilities		
Active and suspended members	$ 2,008,100	$ 1,893,500
Deferred vested members	178,500	148,300
Amounts held on deposit	2,900	3,000
Retired members and beneficiaries	2,584,300	2,108,500
Total Liabilities	**$ 4,773,800**	**$ 4,153,300**
Actuarial Excess/(Unfunded Liability)	**$ (1,209,000)**	**$ (1,263,600)**
Funded Ratio	0.7467	0.6958

Since an agreement is in place whereby a portion of the pre-1992 unfunded liabilities are funded by the Government of Alberta, it is necessary to track the financial status of the benefits in respect of service pre and post January 1, 1992. The following table summarizes this split:

Financial Position – Going Concern Basis (000's)

	As at December 31, 2014		
	Pre-1992	**Post-1991**	**Total**
Actuarial Value of Assets			
Market value	$ 824,900	$ 2,942,700	$ 3,767,600
Smoothing adjustment	(51,000)	(151,800)	(202,800)
Total actuarial value of assets	**$ 773,900**	**$ 2,790,900**	**$ 3,564,800**
Actuarial Liability			
Present value of accrued benefits for:			
Active and suspended members	$ 167,900	$ 1,840,200	$ 2,008,100
Deferred vested members	18,400	160,100	178,500
Amounts held on deposit	1,200	1,700	2,900
Retired members and beneficiaries	1,487,000	1,097,300	2,584,300
Total Liabilities	**$ 1,674,500**	**$ 3,099,300**	**$ 4,773,800**
Actuarial Excess/(Unfunded Liability)	**$ (900,600)**	**$ (308,400)**	**$ (1,209,000)**
Funded Ratio	0.4622	0.9005	0.7467
Government share of unfunded liability	$ 237,400	$ 0	$ 237,400
Members' and employers' share of unfunded liability	$ 663,200	$ 308,400	$ 971,600

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 December 31, 2014 is shown in the following table. The normal cost as at December 31, 2012 is also shown for comparison purposes.

Going Concern Normal Cost in the 12 Months Following the Valuation Date (000's)

	December 31, 2014		December 31, 2012	
Normal Cost				
Total normal cost	$	169,400	$	151,400
Total Normal Cost	**$**	**169,400**	**$**	**151,400**
Estimated pensionable earnings (in year following valuation date)	$	845,700	$	822,700
Total Normal Cost				
As a % of total pensionable earnings		20.03%		18.40%

Change in Financial Position

During the period from December 31, 2012 to December 31, 2014, the going concern financial position of the Plan changed from an unfunded liability of $1,263.6 million to an unfunded liability of $1,209.0 million. The major components of this change are summarized in the following table.

Reconciliation of the Going Concern Financial Position for the Period from December 31, 2012 to December 31, 2014 ($000's)

	Pre-92	Post-91	Total
Actuarial Excess/(Unfunded Liability) as at December 31, 2012	**$ (863,800)**	**$ (399,800)**	**$ (1,263,600)**
Expected interest on actuarial excess/(unfunded liability)	(111,300)	(51,600)	(162,900)
Special payments with interest	68,300	101,400	169,700
Expected Actuarial Excess/(Unfunded Liability) as at December 31, 2014	**$ (906,800)**	**$ (350,000)**	**$ (1,256,800)**
Change in financial position due to experience gains/(losses)			
Gain/(loss) from investment experience	77,600	201,500	279,100
Contributions less than normal cost	0	(8,700)	(8,700)
Gain/(loss) due to salary increases	(2,500)	(26,600)	(29,100)
Gain/(loss) due to retirement experience	11,200	11,000	22,200
Gain/(loss) due to termination experience	600	(1,000)	(400)
Gain/(loss) due to mortality experience	(11,800)	(600)	(12,400)
Gain/(loss) due indexation experience	6,700	4,500	11,200
Gain/(loss) due to data corrections	12,700	1,500	14,200
Net gain/(loss) due to other experience	4,100	2,200	6,300
Actuarial Excess/(Unfunded Liability) After Experience Gains/(Losses) as at December 31, 2014	**$ (808,200)**	**$ (166,200)**	**$ (974,400)**
Change in liabilities due to assumption changes			
Change in retirement assumption	6,600	66,300	72,900
Change in termination assumption	(100)	(10,100)	(10,200)
Change in mortality assumption	(57,900)	(67,000)	(124,900)
Change in merit and promotion assumption	(100)	(12,300)	(12,400)
Change in 2-year salary assumption	1,800	18,500	20,300
Change in termination settlement assumption	0	(8,600)	(8,600)
Change in contribution interest rate assumption	0	2,000	2,000
Change in discount rate assumption	(42,700)	(131,000)	(173,700)
Actuarial Excess/(Unfunded Liability) as at December 31, 2014	**$ (900,600)**	**$ (308,400)**	**$ (1,209,000)**

Discussion of Experience Gains and Losses

Investment Earnings

The annualized rate of return earned by the pension fund based on the Actuarial Value of Assets for the valuation period from December 31, 2012 to December 31, 2014 was 10.7% per year. The assumed rate of return for going concern valuation purposes is 6.25% per year. An actual rate of return greater than the assumed rate resulted in a net actuarial gain of $279.1 million.

Current Service Contributions

The cost of benefits earned for the two-year period from December 31, 2012 to December 31, 2014 was greater than the current service contribution remitted to the Plan for the same period by $8.7 million. This loss was primarily due to the timing of contribution rates changes from December 31, 2012 to July 1, 2014, and changes in the average age of the active group over the inter-valuation period.

Membership Experience

Over the inter-valuation period there were actuarial gains and losses as shown on the previous page due to terminations, retirements and mortality different than expected. This is due to the differences in actual versus assumed decrements shown below, as well as the prescribed transfer value basis which produced lump sum payouts greater than the liability held on the going concern basis.

Analysis of Experience During Intervaluation Period

	Actual	Assumed
Average annual actuarial investment return, net of expenses	10.7%	6.25%
Average annual salary increase	3.5%	1.5%
Average annual YMPE increase	2.4%	2.75%
Average *Income Tax Act* maximum pension limit increase	2.2%	2.75%
Average COLA	1.1%	1.35%
Membership experience:		
Terminations from active membership	897	438.5
Retirements from active membership	613	723.5
Average age of active retirements	63.7	64.2
Deaths from retired membership	185	250.2
Deaths from non-retired membership	15	34.2

Discussion of Changes in Assumptions

Effective December 31, 2014, the following assumptions were changed:

Economic Assumption

- The discount rate assumption was changed to 5.95% per annum from 6.25% per annum.
- The salary increase assumption for 2015 and 2016 was changed to 1.0% per annum plus merit and promotion from 2.75% per annum plus merit and promotion.
- The interest on employee contributions assumption was changed to 3.0% per annum from 3.5% per annum.

In combination, these changes in assumptions increased the going concern liabilities by $151.4 million and the total normal cost by $7.0 million.

Demographic Assumptions

- The salary increase for merit and promotion was changed to rates based on 2009 to 2014 member earnings, from rates based on 1985 to 1993 experience.
- The mortality table was changed to 85% (100% for females) of the 2014 Canadian Pensioner Mortality Public Sector Table projected generationally with scale CPM-B, from 92% of the UP94 table projected generationally with scale BB.
- Retirement rates were changed to an age/service table based on 2009 to 2014 experience, from age only rates based on 1988 to 1993 experience.
- The termination rates were changed to select/ultimate rates for males and females based on 2009 to 2014 experience, from unisex rates based on 1988 to 1993 experience.
- The percent of deferred pension take-up was changed to 60% from 70%, and the discount rate used to calculate commuted values was changed from 4.5% to 4.25%.

In combination, these changes in assumptions increased the going concern liabilities by $83.2 million and the total normal cost by $3.0 million.

Reconciliation of Normal Cost

The total normal cost as a percentage of pensionable earnings has increased from 18.40% at December 31, 2012 to 20.03% at December 31, 2014. A reconciliation of this change is shown in the table below:

Normal cost at December 31, 2012	18.40%
Plan data and experience different from expected since previous valuation	0.41%
Change in retirement assumption	(0.56)%
Change in termination assumption	0.26%
Change in mortality assumption	0.27%
Change in merit and promotion assumption	0.26%
Change in 2-year salary assumption	(0.06)%
Change in termination settlement assumption	0.14%
Change in contribution interest rate assumption	(0.06)%
Change in discount rate assumption	0.97%
Normal cost at December 31, 2014	**20.03%**

Going Concern Valuation Sensitivity Results

In accordance with the CIA Standards of Practice specific to pension plans that became effective December 31, 2010, the table below presents the sensitivity of the going concern liabilities and the total normal cost of using a discount rate 1% lower than that used for the going concern valuation.

	Valuation Basis	**Based on Rate of**	**Effect**	
(000's)	**December 31, 2014**	**1% Lower**	**$**	**%**
Going concern liabilities	$ 4,773,800	$ 5,456,900	$ 683,100	14.3%
Normal cost	$ 169,400	$ 201,900	$ 32,500	19.2%

The total going concern liabilities and the total normal cost are based on a nominal discount rate assumption of 5.95% per annum. Combined with an assumed inflation rate of 2.25% per annum, the real discount rate assumption is 3.7% per annum. The table above presents the impact of reducing the nominal discount rate assumption by 1% per annum to 4.95% per annum, which means the real discount rate assumption is lowered from 3.7% per annum to 2.7% per annum.

Note that using a discount rate 1% higher than that assumed would result in a comparable reduction in the Plan's going concern liabilities and normal cost.

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 *EPPA* 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 *EPPA* are settled on the valuation date for all members. The *EPPA* does not require funding based on the solvency valuation results.

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 *EPPA*, the solvency financial position of the Plan as at December 31, 2014 is shown in the following table. The solvency financial position of the Plan as at December 31, 2012 is shown for comparison purposes.

Solvency Financial Position (000's)

	December 31, 2014	December 31, 2012
Assets		
Solvency assets	$ 3,767,600	$ 2,952,000
Estimated wind up expenses	(2,700)	(2,600)
Total Assets	**$ 3,764,900**	**$ 2,949,400**
Solvency Liabilities		
Active and suspended members	$ 3,632,400	$ 3,418,400
Deferred vested members	296,300	246,800
Amounts held on deposit	2,900	3,000
Retired members and beneficiaries	3,486,900	2,891,400
Total Liabilities	**$ 7,418,500**	**$ 6,559,600**
Solvency Excess/(Deficiency)	**$ (3,653,600)**	**$ (3,610,200)**
Solvency ratio	0.5075	0.4496

The financial position as at December 31, 2012 on a solvency basis split for service pre and post January 1, 1992 is as follows:

Financial Position – Solvency Basis (000's)

	As at December 31, 2014		
	Pre-1992	**Post-1991**	**Total**
Assets			
Market value of assets	$ 824,900	$ 2,942,700	$ 3,767,600
Wind-up expenses	0	(2,700)	(2,700)
Actuarial value of assets	**$ 824,900**	**$ 2,940,000**	**$ 3,764,900**
Liabilities			
Active and suspended members	$ 289,100	$ 3,343,300	$ 3,632,400
Deferred vested members	26,600	269,700	296,300
Amounts held on deposit	1,200	1,700	2,900
Retired members and beneficiaries	1,925,900	1,561,000	3,486,900
Total Liabilities	**$ 2,242,800**	**$ 5,175,700**	**$ 7,418,500**
Solvency excess (deficiency)	**$ (1,417,900)**	**$ (2,235,700)**	**$ (3,653,600)**
Solvency Ratio	0.3678	0.5680	0.5075

Impact of Plan Wind Up

In our opinion, the value of the Plan's assets would be less than its actuarial liabilities if the Plan were to be wound up on the valuation date.

Specifically, actuarial liabilities would exceed the market value of Plan assets by $3,653.6 million. This calculation includes a provision of $2.7 million for termination expenses that might be payable from the pension fund if the plan were wound up.

Part of this deficiency would be shared by the Government of Alberta in respect of pre-1992 service.

Solvency Valuation Sensitivity Results

In accordance with the CIA Standards of Practice specific to pension plans that became effective December 31, 2010, the table below presents the sensitivity of the solvency liabilities to using a discount rate of 1% lower than that used for the solvency valuation.

(000's)	Valuation Basis December 31, 2014	Based on Rate of 1% Lower	Effect $	Effect %
Solvency liabilities	$ 7,418,500	$ 8,658,300	$ 1,239,800	16.7%

Note that using a discount rate 1% higher than that assumed would result in a comparable reduction in the solvency liabilities.

Incremental Cost on a Solvency Basis

The incremental cost on a solvency basis represents the present value at December 31, 2014 of the expected aggregate change in the solvency liabilities between December 31, 2014 and the next calculation date, that is December 31, 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 solvency basis, for the period from December 31, 2014 to December 31, 2017, is $1,244.1 million.

	2015	2016	2017
Incremental cost on a solvency basis	$ 414,200	$ 418,200	$ 411,700

Section 4: 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; and
- An estimate of the normal cost for the 12 months following the valuation date.

(000's)		**2015**		**2013**
Normal Cost				
Actuarial present value of benefits	$	169,400	$	151,400
Total Normal Cost	**$**	**169,400**	**$**	**151,400**
Total pensionable earnings	$	845,700	$	822,700
Total Normal Cost				
As a % of pensionable earnings		20.03%		18.40%

In the event an updated funding range in accordance with legislative requirements is not certified before December 31, 2017, the rule for determining the total normal cost contributions outlined in this section will continue to be appropriate for the plan year commencing on the next valuation date of December 31, 2017. Adjustment to the total contributions may be required once the next actuarial funding range in accordance with legislative requirements is certified.

Development of Special Payments

Due to the different funding arrangements in place for unfunded liabilities relating to service before and after January 1, 1992, the special payments for these two periods are determined separately, as shown in this section.

The amortization schedules for unfunded liabilities were developed using the going concern interest rate of 5.95% per annum compounded annually in arrears with monthly payments; total payroll increases of 2.25% for two years and 4.0% thereafter (the assumed base salary increase plus 0.5% per annum for additional increases and 0.75% per annum headcount growth rate) have been used for the pre-1992 and post-1991 amortization schedules.

Special Payments in Respect of the Pre-1992 Unfunded Liability

Under the terms of the Plan and the *Public Sector Pension Plans Act* which, in accordance with the *EPPA*, remain in effect, additional contributions will be made by the Government of Alberta, plan members, and employers to eliminate the Plan's unfunded liability in respect of pre-1992 service and the benefits that were in place, as at December 31, 1991. These contributions are to be determined such that the pre-1992 unfunded liability will be eliminated on or before December 31, 2043 and will be split between the three parties as follows:

	Percent of Total
Government	1.25% of total payroll
Members and Employers	Each, 50% of remaining balance
Total	100%

The following table summarizes the previously established amortization schedules of pre-1992 going concern special payments before adjustment to reflect any gains or losses due to the going concern results.

				Present Value as of December 31, 2014
	Date of Last Payment	**Special Payment as % of Pensionable Earnings**	**Annual Special Payment (000's)**	**For Going Concern Valuation (000's)**[1]
Government contributions	31-Dec-2043	1.25%	$ 11,140	$ 237,400
Member contributions	31-Dec-2043	1.435%	12,790	272,600
Employer contributions	31-Dec-2043	1.435%	12,790	272,600
Total		**4.12%**	**$ 36,720**	**$ 782,600**

[1] The values in the table were developed using the going concern interest rate of 5.95% per annum compounded annually in arrears with monthly payments

As at December 31, 2014, the pre-1992 unfunded liability is $900.6 million. The following table summarizes the amortization schedules of pre-1992 going concern special payments after adjustment to reflect any gains or losses due to the going concern results.

	Date of Last Payment	Special Payment as % of Pensionable Earnings	Annual Special Payment (000's)	Present Value as of December 31, 2014 For Going Concern Valuation (000's) [1]
Government contributions	31-Dec-2043	1.25%	$ 11,140	$ 237,400
Member contributions	31-Dec-2043	1.435%	12,790	272,600
Employer contributions	31-Dec-2043	1.435%	12,790	272,600
Member contributions	31-Dec-2043	0.335%	2,970	59,000
Employer contributions	31-Dec-2043	0.335%	2,970	59,000
Total		**4.79%**	**$ 42,660**	**$ 900,600**

The special payment schedule effective December 31, 2014, is calculated on the assumption that contribution changes take effect July 1, 2016. Until then, the existing pre-1992 contribution schedule of 4.12% of pay will remain in place. The percentage of pensionable earnings is calculated as a level percentage of pay through to the last payment date, assuming pensionable earnings grow at 2.25% per annum for 2 years after the valuation date and 4.0% per annum thereafter.

Note that pre-1992 additional contributions are payable as a percentage of total unannualized earnings, whereas normal cost contributions and post-1991 unfunded liability special payments are payable as a percentage of capped pensionable earnings.

[1] The values in the table were developed using the going concern interest rate of 5.95% per per annum compounded annually in arrears with monthly payments

Special Payments in Respect of the Post-1991 Unfunded Liability

Under the terms of the Plan, any unfunded liability in respect of post-1991 service shall be funded in accordance with the *EPPA*. Since the Plan has an unfunded liability with respect to post-91 service, special payments must be made in order to eliminate the deficiency over no more than 15 years from the date that the unfunded liability was established.

The following table summarizes previously established amortization schedules of post-1991 going concern special payments before adjustment to reflect any gains or losses due to the going concern results.

					Present Value as of December 31, 2014
	Effective Date	**End Date**	**Special Payment as % of Capped Earnings**	**Annual Special Payment (000's)**	**For Going Concern Valuation (000's)** [1]
Member contributions	31-Dec-2006	31-Dec-2021	0.54%	$ 4,570	$ 28,600
Employer contributions	31-Dec-2006	31-Dec-2021	0.54%	4,570	28,600
Member contributions	31-Dec-2008	31-Dec-2021	1.50%	12,690	79,600
Employer contributions	31-Dec-2008	31-Dec-2021	1.50%	12,690	79,600
Member contributions	31-Dec-2008	31-Dec-2023	0.505%	4,270	33,800
Employer contributions	31-Dec-2008	31-Dec-2023	0.505%	4,270	33,800
Member contributions	31-Dec-2010	31-Dec-2025	0.225%	1,900	18,000
Employer contributions	31-Dec-2010	31-Dec-2025	0.225%	1,900	18,000
Member contributions	31-Dec-2012	31-Dec-2027	0.125%	1,060	11,600
Employer contributions	31-Dec-2012	31-Dec-2027	0.125%	1,060	11,600
Total			**5.79%**	**$ 48,980**	**$ 343,200**

[1] The values in the table were developed using the going concern interest rate of 5.95% per annum compounded annually in arrears with monthly payments

As at December 31, 2014, the post-1991 unfunded liability is $308.4 million. The following table summarizes the amortization schedules of post-1991 going concern special payments after adjustment to reflect any gains or losses due to the going concern results.

	Effective Date	End Date	Special Payment as % of Capped Earnings	Annual Special Payment (000's)	Present Value as of December 31, 2014 — For Going Concern Valuation (000's) [1]
Previously established special payments up to and including June 30, 2016					
Member contributions	31-Dec-2012	30-June-2016	2.895%	$ 24,490	$ 35,400
Employer contributions	31-Dec-2012	30-June-2016	2.895%	24,490	35,400
Total contributions up to June 30, 2016			5.790%	$ 48,980	
Revised special payments from July 1, 2016					
Member contributions	31-Dec-2006	31-Dec-2021	0.11%	$ 950	4,600
Employer contributions	31-Dec-2006	31-Dec-2021	0.11%	950	4,600
Member contributions	31-Dec-2008	31-Dec-2021	1.50%	12,690	61,200
Employer contributions	31-Dec-2008	31-Dec-2021	1.50%	12,690	61,200
Member contributions	31-Dec-2008	31-Dec-2023	0.505%	4,270	27,600
Employer contributions	31-Dec-2008	31-Dec-2023	0.505%	4,270	27,600
Member contributions	31-Dec-2010	31-Dec-2025	0.225%	1,900	15,300
Employer contributions	31-Dec-2010	31-Dec-2025	0.225%	1,900	15,300
Member contributions	31-Dec-2012	31-Dec-2027	0.125%	1,060	10,100
Employer contributions	31-Dec-2012	31-Dec-2027	0.125%	1,060	10,100
Total			**4.93%**	**$ 41,740**	**$ 308,400**

The special payment schedule effective December 31, 2014, is calculated on the assumption that the existing contribution rates continue until June 30, 2016, with reduced contributions commencing on July 1, 2016. The percentage of pensionable earnings is calculated as a level percentage of capped pensionable earnings through to the last payment date, assuming pensionable earnings grow at 2.25% per annum for 2 years after the valuation date and 4.0% per annum thereafter.

In determining the contributions after June 30, 2016, the oldest amortization payments were reduced, resulting in amortization of the post-1991 unfunded liability over the longest period allowed by the EPPA.

[1] The values in the table were developed using the going concern interest rate of 5.95% per annum compounded annually in arrears with monthly payments

Excess Surplus

The *Income Tax Act* requires that any excess surplus first be applied to reduce or eliminate the employer 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, there is no excess surplus and therefore it does not impact the development of the total contribution requirements.

Total Contributions

The minimum amount under the *EPPA* and the maximum amount, under the *Income Tax Act* that the member and employer must contribute are described in Appendix A.

The member and employer contributions recommended in this valuation report are at least equal to the legislated minimum requirements and do not exceed the legislated maximum requirements.

The minimum and maximum member and employer contributions to the Plan each year, as a percentage of the applicable earnings amount, are shown in the following table.

	Minimum Permitted Under the *Employment Pension Plans Act*	**Maximum Permitted Under the *Income Tax Act***
Pre-1992 unfunded liability		
▪ Government	1.25%	1.25%
▪ Members and employers	3.54%	26.09%
Post-1991 unfunded liability	4.93%	9.87%
Solvency deficiency	0.00%	71.27%
Post-1991 normal cost	20.03%	20.03%
Total		
▪ Government	1.25%	1.25%
▪ Members and employers	28.50%	127.26%

The minimum permitted under the *Employment Pension Plans Act* column illustrates the minimum amount of funding that would be required for the period July 1, 2016 to the effective date of the contribution recommendation contained in the next actuarial valuation to meet the *EPPA's* funding requirements, expressed as a percentage of pay. The maximum permitted under the *Income Tax Act* column represents the maximum amount of funding that would be permitted under the *Income Tax Act* for the period January 1, 2015 to December 31, 2018, expressed as a level percentage of pay each year.

Based on the results of the valuation, the Board has adopted a 1.44% increase in total employer and member contribution rates. The total employer and member contribution rate will increase from 27.06% to 28.50% effective July 1, 2016.

The new contribution rates effective July 1, 2016 are shown in the following table. Note that the employers pay matching contributions except at Athabasca University and the Banff Centre where employers contribute 1.0% more than members.

New Contribution Rates effective July 1, 2016

		Equal Share	Employer = Members + 1%	
	Member	**Employer**	**Member**	**Employer**
Pre-1992 unfunded liability additional contributions	1.77%	1.77%	1.77%	1.77%
Post-1991 unfunded liability amortization payments	2.465%	2.465%	2.465%	2.465%
Normal cost				
-earnings below YMPE	8.175%	8.175%	7.675%	8.675%
-earnings above YMPE	11.675%	11.675%	11.175%	12.175%
Total Contributions				
On earnings below YMPE	12.41%	12.41%	11.91%	12.91%
On earnings above YMPE, but less than pensionable salary cap	15.91%	15.91%	15.41%	16.41%
On earnings above pensionable salary cap	1.77%	1.77%	1.77%	1.77%

Note that pre-1992 additional contributions are payable as a percentage of total earnings, whereas the normal cost contributions and post-1991 unfunded liability special payments are payable as a percentage of capped pensionable earnings.

The amortization schedules for unfunded liabilities were developed using the going concern interest rate of 5.95% per annum compounded annually in arrears with monthly payments. Capped pensionable earnings are assumed to grow at 2.25% per annum for 2 years after the valuation date and 4.0% per annum thereafter (the assumed base salary increase plus 0.5% per annum for additional increases and 0.75% per annum for headcount growth). Total earnings used to determine the pre-1992 additional contributions are assumed to grow at the same rates as those used for the post-1991 amortization payments.

Section 5: Actuarial Certificate

Actuarial Opinion, Advice and Certification for the Universities Academic Pension Plan

Canada Revenue Agency Registration Number: 0339572

Opinion

This actuarial certification forms an integral part of the actuarial valuation report for the Plan as at December 31, 2014. We confirm that we have prepared an actuarial valuation of the Plan as at December 31, 2014 for the purposes outlined in the Introduction section to this report and consequently:

Our advice on funding is the following:

- Contributions should be made within the range of minimum and maximum contribution amounts as outlined in Section 4 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 December 31, 2017.

We hereby certify that, in our opinion:

- With respect to the purposes of determining the Plan's financial position on a going concern basis as at December 31, 2014:
  - The Plan has a going concern unfunded liability of $1,209.0 million as at December 31, 2014, based on going concern assets of $3,564.8 million less going concern liabilities of $4,773.8 million.
  - There is no excess surplus as defined by Section 147.2(2) of the *Income Tax Act* in the Plan at December 31, 2014.
  - The going concern funded ratio is 0.7467 as at December 31, 2014.
- With respect to the purpose of determining the Plan's financial position on a solvency basis:
  - The Plan has a solvency deficiency of $3,653.6 million as at December 31, 2014, determined as solvency assets net of wind up expenses of $3,764.9 million less solvency liabilities of $7,418.5 million.
  - The solvency ratio is 0.5075 as at December 31, 2014.
  - The Plan's liabilities would exceed the Plan's assets, net of estimated wind up expenses, by $3,653.6 million if the Plan was terminated and wound up as at December 31, 2014.

- With respect to determining the funding requirements of the Plan:
  - The rule for determining the total normal cost for the 12 months following the valuation date is 20.03% of pensionable earnings.
  - The estimated total normal cost is as follows:

(000's)		**2015**
Normal Cost		
Actuarial present value of benefits	$	169,400
Total Normal Cost	**$**	**169,400**
Total pensionable earnings	$	845,700
Total Normal Cost		
As a % of pensionable earnings		20.03%

  - The minimum special payments and additional contributions effective July 1, 2016 until the next actuarial opinion, as a percentage of earnings, are summarized in the following table:

Minimum Special Payments and Additional Contributions for Unfunded Liability

	Pre-1992	**Post-1991**	**Annual Special Payment as % of Pensionable Earnings**
Government	1.25%	n/a	1.25%
Member	1.77%	2.465%	4.235%
Employer	1.77%	2.465%	4.235%
	4.79%	**4.93%**	**9.72%**

Note that contributions with respect to the pre-1992 unfunded liability are expressed as a percentage of total earnings, and contributions with respect to the post-1991 unfunded liability are expressed as a percentage of capped pensionable earnings. The complete amortization schedules with respect to the unfunded liabilities are shown in Section 4.

  - The total maximum special payments and additional contributions from January 1, 2015 to December 31, 2018, as a percentage of earnings each year are 27.34% for the pre-1992 unfunded liability, 9.87% for the post-1991 unfunded liability, and 71.27% for the solvency deficiency. Note that contributions with respect to the pre-1992 unfunded liability are expressed as a percentage of total earnings, and contributions with respect to the solvency deficiency and post-1991 unfunded liability are expressed as a percentage of capped pensionable earnings.
  - The contribution range as outlined in this report is expected to be sufficient to satisfy the Plan's funding requirements.
  - The contribution range outlined in this report qualifies as eligible contributions under Section 147.2(2) of the *Income Tax Act.*
  - The member contributions recommended in this report exceed the limits imposed by paragraph 8503(4)(a) of the *Income Tax Regulations*, however we will apply for a ministerial waiver in accordance with paragraph 8503(5) of the *Income Tax Regulations*. Upon approval by the Minister, the member contributions recommended in this report will be eligible contributions.

- 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 our 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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Associate Partner

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10025 – 102A Avenue, Suite 900
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October 30, 2015

Appendix A: Glossary of Terms

- The **actuarial excess/(unfunded liability)** is the difference between the actuarial value of assets and the going concern liabilities.
- The **actuarial value of assets** is the asset value used for going concern valuation purposes. Smoothing methods are sometimes used to smooth investment gains and losses over a certain period.
- The **estimated wind up expenses** is an estimate of the administrative and other expenses expected to be charged against the pension fund if the Plan were to terminate on the valuation date.
- The **going concern funded ratio** compares the actuarial value of assets to the going concern liabilities for the purposes of Section 38(2)(c) of the *EPPA* and *EPPA* Update 14-05 to determine the latest effective date of the next required valuation.
- The **going concern liabilities** are the actuarial present value of benefits earned in respect of service prior to the valuation date. The going concern liabilities are calculated using the going concern assumptions and methods summarized in Appendix D of this report.
- The **going concern position** is the difference between the actuarial value of assets and the going concern liabilities.
- The **maximum deductible employer contribution** refers to an eligible contribution pursuant to Section 147.2(2) of the *Income Tax Act*. Under Subsection 8502(b) of the Regulations to the *Income Tax Act*, each employer contribution made after 1991 in respect of a defined benefit provision of a registered pension plan must be such eligible contribution.

  In an employer's fiscal year, the following contributions are eligible under Section 147.2 of the *Income Tax Act*.

  - The employer normal cost, eligible under Section 147.2(2) subject to certification by the actuary and approval by the Canada Revenue Agency; plus
  - Special payments eligible under Section 147.2(2) up to the amount of the unfunded liability or the solvency deficiency, whichever is greater, subject to certification by the actuary and approval by the Canada Revenue Agency; less
  - Required application of excess surplus.

  The employer normal cost and special payments for this Plan will be deductible under Section 147.2(2) of the *Income Tax Act*, subject to the approval of the Canada Revenue Agency.

  Note that contributions to a Plan are still permissible and deductible if there is an excess surplus, providing there is simultaneously a solvency deficiency in the Plan or the contributions are required as minimum contributions under provincial legislation, pursuant to Subsections 8516(2) and (3) of the Regulations to the *Income Tax Act*.

  One restriction under the *Income Tax Act* is that if there is an excess surplus, and a solvency deficiency, the maximum deductible contribution is restricted to the full amount of the deficiency without allowance for interest or any other contributions such as employer normal cost and/or transfer deficiency payments.

  In order to be deductible in a given fiscal year, employer contributions must be made not later than 120 days after the end of the fiscal year.

- The **minimum required employer contribution** for each plan year is equal to:
  - The employer normal cost; plus
  - Special payments toward amortizing any post-1991 unfunded liability over 15 years from the date on which the unfunded liability was established; plus
  - Special payments toward amortizing any pre-1992 unfunded liability over the period ending December 31, 2043; less
  - Required application of excess surplus; less
  - Permitted application of excess surplus.

  In order to satisfy the requirements of the *Employment Pension Plans Act* and its Regulations, contributions to the fund must be made in accordance with the following rules:
  - Required member contributions (if any) must be remitted to the pension fund within 30 days following the month in which the contributions were received from the member or deducted from his or her remuneration.
  - Employer contributions must be remitted to the pension fund within 30 days after the end of the month for which the contributions are payable.
- **Solvency assets** are the market value of pension fund assets adjusted to reflect contributions, benefit payments, transfers and fees/expenses in-transit at the valuation date.
- The **solvency liabilities** are the actuarial present value of benefits earned in respect of service prior to the valuation date determined as if the Plan were wound up on the valuation date. The solvency liabilities are determined using benefit entitlements on the assumption that the Plan has neither an actuarial excess nor a deficit. The solvency liabilities are calculated using the solvency valuation assumptions summarized in Appendix E of this report.
- The **solvency position** is the difference between the solvency assets (net of estimated wind up expenses) and the solvency liabilities.
- The **solvency ratio** compares the solvency assets less estimated wind up expenses to the solvency liabilities.
- The **special payments** are payments required to liquidate the unfunded liability:
  - The going concern special payments are those payments required to liquidate an unfunded liability, with interest at the going concern valuation discount rate, over a period of 15 years from the valuation date of the report in which the unfunded liability was determined. The going concern special payments are determined by calculating the level percentage of pensionable earnings commencing 18 months following the valuation date and continuing for 13.5 years (15 years after the valuation date). Pre-1992 unfunded liabilities for the Plan are amortized over the period ending December 31, 2043 as shown in Section 4.
- The **total normal cost** is the actuarial present value of benefits expected to be earned in respect of service for each year starting on the valuation date. The total normal cost is calculated using the going concern valuation assumptions and methods summarized in Appendix D of this report.

Appendix B: Assets

Asset Data

The Plan's assets are held in trust by the Board and are invested by Alberta Investment Management Corporation (AIMCo), Beutel Goodman and Fiera Capital in accordance with the Statement of Investment Policies and Goals (SIP&G) approved by the Board. At the asset class level, the Plan's investments are managed for purposes of evaluating the Plan's risk exposure and investment performance against approved benchmarks based on market value. The Plan's investments are primarily invested in pooled funds managed by AIMCo.

This type of trust arrangement governs only the investment of the assets deposited into the fund and in no way guarantees the benefits provided under the Plan or the costs of providing such benefits. Any excess income or, in fact, any other profit caused by the actual Plan experience varying from the actuarial assumptions will accrue to the fund. It is, of course equally true that any losses due to variations of actual experience from the actuarial assumptions will emerge as a liability of the Plan, which will either cause a reduction in the surplus generated from other sources or require an increase in contributions to maintain the same benefit level.

The asset information presented in this report is based on the audited financial statements of the Plan for 2013 and 2014, and additional asset data obtained from staff of the Board.

Tests of the sufficiency and reliability of the asset data were performed and the results were satisfactory. The tests included:

- A reconciliation of actual cash flow with expected cash flow from the previous actuarial report; and
- A reconciliation of any anticipated benefit payments in 2013 and 2014 (for retirees, terminated or deceased employees) against the financial statements of the pension fund for confirmation of payments.

Market Value of Assets

The following is a summary of the market values of the fund as reported in the Plan's financial statements as at December 31, 2014. For comparison purposes, the composition at the previous valuation date of December 31, 2012 is also shown.

(000's)	**December 31, 2014**	**December 31, 2012**
Invested Assets	$ 3,748,524	$ 2,933,339
Net receivables and payables	19,050	18,669
Market Value	**$ 3,767,574**	**$ 2,952,008**

Asset Allocation

The following is a summary of the allocation of the Plan's invested assets:

	2014		2012	
(000's)	**Fair Value**	**%**	**Fair Value**	**%**
Interest-bearing securities				
Cash and short-term securities	$ 12,765	0.3%	$ 13,735	0.5%
Bonds and mortgages	891,969	23.8%	686,874	23.4%
Real return bonds	243,921	6.5%	197,919	6.7%
	1,148,655	**30.6%**	**898,528**	**30.6%**
Equities				
Canadian public equities	656,306	17.5%	509,580	17.4%
Foreign public equities	1,169,061	31.2%	885,055	30.2%
Emerging markets equities	285,767	7.6%	260,324	8.9%
	2,111,134	**56.3%**	**1,654,959**	**56.4%**
Alternative investments				
Real estate	275,531	7.4%	220,774	7.5%
Infrastructure and private debt/loans	144,731	3.9%	126,591	4.3%
Timberland	30,675	0.8%	21,917	0.8%
	450,937	**12.1%**	**369,282**	**12.6%**
Strategic opportunities	**37,798**	**1.0%**	**10,570**	**0.4%**
Total Invested Assets	**$3,748,524**	**100.0%**	**$2,933,339**	**100.0%**

Target Asset Mix

The target asset mix of the Plan is contained in the Plan's Statement of Investment Policies and Goals and is as follows:

Asset Class	Benchmark	Policy Weight	Allowable Range
Fixed Income			
Cash and Short-term	FTSE TMX 91 Day T-bill Index	0.0%	0%-1%
Canadian Bonds (Universe)	FTSE TMX Universe Bonds	10.0%	8%-12%
Long-term Canadian Bonds	FTSE TMX Long Bond Index	10.0%	8%-12%
Mortgages	FTSE TMX Universe Bonds + 100 bps	5.0%	3%-7%
Real Rate of Return Bonds	FTSE TMX Real Return Index	7.0%	5%-9%
		32.0%	**26%-38%**
Equities			
Canadian Equities	S&P/TSX Composite Capped Index	17.5%	15%-20%
Global Equities	MSCI World Total Return Index	29.5%	26%-31%
Emerging Markets Equities	MSCI Emerging Markets Index, Net	8.0%	4%-9%
		55.0%	**50%-60%**
Alternatives			
Real Estate	ICREIM/IPD Large Institutional All Property Index	8.0%	5%-11%
Private income	CPI + 600 bps	4.0%	1%-6%
Timberland	CPI + 400 bps	1.0%	0%-1%
		13.0%	**6.5%-17%**
Total Investments		**100.0%**	

In addition, up to 5% of the fund may be invested on an opportunistic basis in investments that are not part of any other asset class.

Reconciliation of Changes in Market Value of Assets

The table below reconciles changes in the market value of assets between December 31, 2012 and December 31, 2014.

(000's)	**2013**	**2014**
Market Value of Assets, Beginning of Plan Year	**$ 2,952,008**	**$ 3,357,162**
Contributions During Plan Year		
Employer	$ 104,608	$ 109,012
Member	104,715	109,057
Prior service	1,950	1,983
Government	10,582	11,007
Total	**$ 221,855**	**$ 231,059**
Benefit Payments During Plan Year		
Non-retired members[1]	$ (21,236)	$ (26,004)
Retired members	(184,154)	(197,638)
Total	**$ (205,390)**	**$ (223,642)**
Fees/Expenses		
Investment fees/expenses	$ (11,801)	$ (12,778)
Non-investment fees/expenses	(1,739)	(2,050)
Total	**$ (13,540)**	**$ (14,828)**
Investment Income	**$ 402,229**	**$ 417,823**
Market Value of Assets, End of Plan Year	**$ 3,357,162**	**$ 3,767,574**
Rate of return, net of fees/expenses	13.13%	11.99%

[1] Includes members who have terminated employment or died

Development of Actuarial Value of Assets

The method to determine the actuarial value of assets is described in Appendix D. The development of the actuarial value of assets as of December 31, 2014 is shown below:

Actuarial Value of Assets (Three-Year Average Market Value) ($ millions)

	Pre-1992	Post-1991	Total
Market value at January 1, 2013	**$ 819.5**	**$ 2,132.5**	**$ 2,952.0**
Contributions	30.7	191.2	221.9
Benefit Payments & Expenses	(127.8)	(79.4)	(207.2)
Assumed Investment Income (at 6.25% per annum)	48.2	136.8	185.0
Projected value at December 31, 2013	770.6	2,381.1	3,151.7
Contributions	34.2	196.9	231.1
Benefit Payments & Expenses	(130.9)	(94.8)	(225.7)
Assumed Investment Income (at 6.25% per annum)	45.1	152.0	197.1
Projected value at December 31, 2014 (A)	**$ 719.0**	**$ 2,635.2**	**$ 3,354.2**
Market value at January 1, 2014	**$ 826.0**	**$ 2,531.2**	**$ 3,357.2**
Contributions	34.2	196.9	231.1
Benefit Payments & Expenses	(130.9)	(94.8)	(225.7)
Assumed Investment Income (at 6.25% per annum)	48.6	161.4	210.0
Projected value at December 31, 2014 (B)	**$ 777.9**	**$ 2,794.7**	**$ 3,572.6**
Market Value of Assets at December 31, 2014 (C)	**$ 824.9**	**$ 2,942.7**	**$ 3,767.6**
Actuarial Value of Assets at December 31, 2014			
Smoothed Market Value (average of A, B, and C)	$ 773.9	$ 2,790.9	$ 3,564.8
Minimum actuarial value (90% of market value)	742.4	2,648.4	3,390.8
Maximum actuarial value (110% of market value)	907.4	3,236.9	4,144.3
Capped Actuarial Value of Assets	**$ 773.9**	**$ 2,790.9**	**$ 3,564.8**

Appendix C: Membership Data

Source of Data

This funding valuation was based on member data provided by Buck Consultants, and staff of the Board as of December 31, 2014. Tests of the sufficiency and reliability of the member data were performed and the results were satisfactory. The tests included:

- A reconciliation of membership status against the membership status at the last valuation. This test was performed to ensure that all members were accounted for. A summary of this reconciliation follows on the next page;
- A reconciliation of birth, hire, and participation dates against the corresponding dates provided for the last valuation to ensure consistency of data;
- A reconciliation of credited service against the corresponding amount provided for the last valuation to ensure that no member accrued more than 2 years of credited service from December 31, 2012, notwithstanding increases due to service purchases during the inter-valuation period. This test also revealed any members who had any unexpected changes in service, such as having accrued less than 2 years of credited service or had no change in credited service;
- A reconciliation of pensionable earnings against the corresponding amounts provided for the last valuation to identify any unusual increases or decreases (more than 15% per annum);
- A reconciliation of accrued benefits against the corresponding amounts provided for the last valuation to identify any unusual benefit accruals;
- A reconciliation of any stated benefit payments in 2013 and 2014 (for retired, terminated or deceased employees) against the financial statements of the pension fund for confirmation of the payments; and
- A reconciliation of inactive member benefit amounts against the corresponding amounts provided for the last valuation to ensure consistency of data.

The following information was missing, and assumptions were made as follows with respect to such missing data:

- Annualization of Pensionable Earnings: Since the data provided did not include annualized earnings for some members, earnings were annualized using actual earnings and in-year service where required. Annualized earnings for the first year after the valuation date (2015) were assumed to be 1.5% higher than those provided for 2014.
- Earnings: If earnings were available for 2009 to 2013, the most recent data was utilized and increased to 2014 using the salary increase assumptions from the previous valuation.
- Service Ratios: If the service ratio was blank we assumed a service ratio of 1.0.
- Detail in Financial Information: Due to the nature of the financial information, it was not possible to trace the refunds individually for every terminating member. The potential effect of this data omission was immaterial to the overall results of the valuation; however, it could affect the gain/loss analysis.
- Pension Amounts: For members included in active member data with termination dates before the valuation date we have calculated the value of benefits based on available active member data.

- Pension Amounts for Pensioners: Current pension amounts in-pay were provided by UAPP staff, and included actual pension indexing up to January 1, 2015. Any incomplete data was supplemented with the pensioner data provided by Buck Consultants.

A copy of the administrator certification certifying the accuracy and completeness of the member data (and the Plan provisions summarized in this report) is included in Appendix G of this report.

Membership Summary

The table below reconciles the number of members as of December 31, 2014 with the number of members as of December 31, 2012 and the changes due to experience in the period.

	Active and Suspended Members	Deferred Vested Members	HOD	Pensioners and Survivors	Total
Members, December 31, 2012	**7,713**	**1,247**	**321**	**4,189**	**13,470**
Changes due to:					
New entrants	1,364	0	0	0	1,364
Termination					
Non-vested	(10)	0	10	0	0
Deferred vested	(423)	423	0	0	0
Lump sum	(464)	(127)	(13)	0	(604)
Death					
No further benefits	0	0	0	(109)	(109)
Lump sum	(1)	(3)	0	(3)	(7)
Surviving beneficiary	(11)	0	0	(73)	(84)
Expiry of guarantee period	0	0	0	(1)	(1)
New beneficiary	0	0	0	84	84
Retirement	(613)	(59)	0	672	0
Transfer	21	(18)	(3)	0	0
Data correction	4	(4)	1	(2)	(1)
Net change	(133)	212	(5)	568	642
Members, December 31, 2014	**7,580**	**1,459**	**316**	**4,757**	**14,112**

Active and Suspended Members

	December 31, 2014	December 31, 2012
Number	7,580	7,713
Average age	48.8	48.6
Average credited service	9.9	9.8
Total expected 2015 unlimited earnings for members with a normal cost	$ 891,057,116	$ 875,521,372
Total expected 2015 capped earnings for members with a normal cost	$ 845,726,480	$ 822,706,184
Total expected 2015 annualized capped earnings for all members	$ 850,004,271	$ 840,114,486
Average expected 2015 annualized capped earnings for all members	$ 112,138	$ 108,922
Average expected 2015 annualized capped earnings for members with normal cost	$ 112,773	$ 108,799
Proportion female	47.1%	46.4%

Active and Suspended Members – Pre-1992 Service

	December 31, 2014	December 31, 2012
Number	734	1,047
Average age	60.6	59.8
Average pre-1992 pensionable service	5.6	6.5
Average expected 2015 annualized unlimited earnings for all members	$ 167,263	$ 157,388
Proportion female	30.2%	30.7%

Deferred Vested Members

	December 31, 2014	December 31, 2012
Number	1,459	1,247
Average age	48.4	48.0
Average annual pension	$ 8,363	$ 8,092
Average annual pre-1992 pension	$ 542	$ 968
Proportion female	48.9%	48.1%

Participants with Amounts Held-on-Deposit

	December 31, 2014	December 31, 2012
Number	316	321
Average age	55.1	53.8
Average contributions with interest	$ 9,271	$ 9,225
Proportion female	48.4%	48.9%

Pensioners and Survivors

	December 31, 2014	December 31, 2012
Number	4,757	4,189
Average age	72.5	72.4
Average annual pension	$ 44,048	$ 43,307
Average years since retirement	11.7	11.8
Proportion female	32.9%	36.1%

Pensioners and Survivors – Pre-1992 Pension

	December 31, 2014	December 31, 2012
Number	3,693	3,491
Average age	74.7	73.9
Average annual pre-1992 pension	$ 35,841	$ 36,423
Average years since retirement	13.9	13.3
Proportion female	27.2%	32.7%

Active and Suspended Membership Distribution

The following table provides a detailed summary of the active and suspended membership at the valuation date by years of credited service and by age group using expected average annualized capped 2015 earnings.

	Years of Credited Service								
Age	**< 5**	**5–10**	**10–15**	**15–20**	**20–25**	**25–30**	**30–35**	**>=35**	**Total**
< 25	13								13
	$59,513								$ 59,513
25–30	111	5							116
	$72,349	$ 79,795							$ 72,670
30–35	429	67							496
	$83,986	$ 93,004							$ 85,325
35–40	542	316	46	2					906
	$88,046	$101,684	$108,566	*					$ 93,929
40–45	453	537	246	25					1,261
	$91,594	$102,865	$116,529	$128,438					$101,989
45–50	320	388	378	178	10	1			1,275
	$100,031	$106,675	$122,283	$132,921	*	*			$113,577
50–55	275	324	344	245	104	36	3		1,331
	$101,010	$107,177	$123,795	$135,248	$141,263	$137,613	$143,408		$118,933
55–60	187	248	232	167	140	130	25	2	1,131
	$107,327	$114,209	$125,166	$134,897	$140,021	$144,279	$139,422	*	$125,653
60–65	86	132	138	118	67	132	91	31	795
	$107,772	$116,263	$130,009	$134,116	$141,717	$146,724	$146,480	$143,422	$132,101
>=65	28	33	42	26	25	28	32	42	256
	$111,688	$119,702	$116,044	$141,297	*	*	$152,210	$153,049	$134,874
Total									
Count	2,444	2,050	1,426	761	346	327	151	75	**7,580**
Average pensionable earnings	$92,595	$106,242	$122,246	$134,411	$140,637	$144,765	$146,465	$149,102	**$112,138**

* *Not shown for confidentiality reasons to comply with privacy legislation.*

Pre-1992 Active and Suspended Membership Distribution

The following table provides a detailed summary of the active and suspended membership who have pre-1992 service at the valuation date by years of pre-1992 credited service and by age group using expected average annualized 2015 earnings.

	Years of Pre-1992 Credited Service					
Age	**< 5**	**5–10**	**10–15**	**15–20**	**20–25**	**Total**
45–50	4					4
	$ 131,251					$ 131,251
50–55	73	10				83
	$ 162,880	$ 127,245				$ 158,586
55–60	154	59	13			226
	$ 157,565	$ 176,975	$ 151,311			$ 162,273
60–65	136	104	53	9		302
	$ 156,902	$ 167,784	$ 180,284	$ 178,571		$ 165,399
>=65	28	37	32	21	1	119
	$ 175,025	$ 185,405	$ 194,845	*	*	$ 188,733
Total						
Count	395	210	98	30	1	**734**
Average pensionable earnings	$ 159,290	$ 171,540	$ 181,195	*	*	**$ 167,263**

* *Not shown for confidentiality reasons to comply with privacy legislation.*

Pensioner/Survivor Membership Distribution

The distribution by pensioner age and spouse age for the pensioners and survivors in receipt of monthly pension payments is as follows:

		Spouse Age						**No**	
Age		**< 55**	**55–65**	**65–75**	**75–85**	**85–95**	**>=95**	**Spouse**	**Total**
< 55	Count	2	1	1				17	21
	Average Pension	$ 20,166	*	*				$ 26,049	$ 25,396
	Average of J&S%**	0.84	0.67	0.67				8.45	
55–60	Count	40	142	16				85	283
	Average Pension	$ 30,419	$ 32,485	$ 25,924				$ 25,644	$ 29,767
	Average of J&S%**	0.82	0.87	0.84				4.79	
60–65	Count	39	287	132	6	2		179	645
	Average Pension	$ 33,210	$ 37,444	$ 34,230	$ 44,079	$ 32,210		$ 36,898	$ 36,424
	Average of J&S%**	0.81	0.86	0.85	0.78	0.84		3.90	
65–70	Count	32	191	450	27	3		284	987
	Average Pension	$ 50,201	$ 43,728	$ 43,855	$ 31,905	$ 46,231		$ 40,339	$ 42,705
	Average of J&S%**	0.84	0.83	0.83	0.85	0.78		2.16	
70–75	Count	11	97	537	91	7		353	1,096
	Average Pension	$ 67,355	$ 49,078	$ 55,058	$ 44,766	$ 51,557		$ 44,448	$ 50,358
	Average of J&S%**	0.88	0.80	0.83	0.84	0.86		1.24	
75–80	Count	7	24	221	239	9		283	783
	Average Pension	$ 45,711	$ 50,781	$ 50,613	$ 51,554	$ 49,294		$ 45,271	$ 48,916
	Average of J&S%**	0.86	0.77	0.82	0.85	0.85		0.30	
80–85	Count	2	8	28	198	39	1	215	491
	Average Pension	$ 41,687	*	$ 48,817	$ 49,431	$ 48,640	*	$ 41,996	$ 45,830
	Average of J&S%**	0.84	0.75	0.76	0.87	0.92	1.00	0.01	
85–90	Count		3	5	72	75	1	151	307
	Average Pension		*	$ 41,042	$ 45,228	$ 46,350	*	$ 42,500	$ 44,015
	Average of J&S%**		0.67	0.80	0.87	0.91	1.00	0.00	
90–95	Count			1	9	34	5	69	118
	Average Pension			*	$ 50,934	$ 43,087	$ 20,794	$ 37,082	$ 39,111
	Average of J&S%**			0.67	0.82	0.90	1.00	0.00	
>=95	Count					2	4	20	26
	Average Pension					$ 39,267	$ 30,232	$ 30,613	$ 31,220
	Average of J&S%**					0.75	0.84	0.00	
Total	Count	133	753	1,391	642	171	11	1,656	**4,757**
	Average Pension	$ 39,872	$ 40,082	$ 48,188	$ 48,323	$ 46,341	$ 24,626	$ 40,944	**$ 44,048**
	Average of J&S%**	0.83	0.84	0.83	0.86	0.90	0.94	1.44	

** Not shown for confidentiality reasons to comply with privacy legislation.*
*** J&S% for members with no spouse is remaining guarantee period.*

Pre-1992 Pensioner/Survivor Membership Distribution

The distribution by pensioner age and spouse age for the pensioners and survivors in receipt of monthly pre-1992 pension payments is as follows:

		Spouse Age						No	
Age		**< 50**	**50–60**	**60–70**	**70–80**	**80–90**	**>=90**	**Spouse**	**Total**
< 55	Count	1						6	7
	Average Pension	*						*	$ 25,107
	Average of J&S%**	1.00						3.22	
55–60	Count	8	39	15				34	96
	Average Pension	$ 12,955	$ 12,663	$ 17,046				$ 13,811	$ 13,779
	Average of J&S%**	0.79	0.85	0.82				3.76	
60–65	Count	8	43	157	19	1		96	324
	Average Pension	*	$ 17,405	$ 20,618	$ 19,296	*		$ 20,283	$ 19,886
	Average of J&S%**	0.84	0.79	0.87	0.74	0.67		2.50	
65–70	Count	9	44	293	106	4		199	655
	Average Pension	$ 21,770	$ 28,284	$ 30,278	$ 27,447	$ 23,335		$ 29,160	$ 29,187
	Average of J&S%**	0.93	0.83	0.82	0.82	0.84		1.79	
70–75	Count	3	34	220	356	17	1	294	925
	Average Pension	$ 45,001	$ 33,625	$ 37,728	*	$ 30,831	*	$ 34,753	$ 37,726
	Average of J&S%**	0.67	0.84	0.82	0.84	0.83	1.00	1.06	
75–80	Count	2	10	70	346	48	1	274	751
	Average Pension	$ 40,871	$ 35,880	*	$ 44,113	$ 40,534	*	$ 39,428	$ 41,238
	Average of J&S%**	0.84	0.84	0.79	0.84	0.86	1.00	0.27	
80–85	Count	1	5	13	112	134	7	213	485
	Average Pension	*	$ 30,692	$ 38,422	$ 45,165	$ 46,247	*	$ 40,025	$ 42,843
	Average of J&S%**	1.00	0.74	0.77	0.85	0.89	0.91	0.01	
85–90	Count			4	25	104	22	151	306
	Average Pension			$ 44,328	$ 43,941	$ 44,060	$ 48,669	$ 41,672	$ 43,207
	Average of J&S%**			0.67	0.85	0.90	0.91	0.00	
90–95	Count			1	1	25	22	69	118
	Average Pension			*	*	$ 47,614	$ 36,783	$ 37,033	$ 39,172
	Average of J&S%**			0.67	0.67	0.88	0.92	0.00	
>=95	Count					1	5	20	26
	Average Pension					*	$ 37,015	*	$ 31,220
	Average of J&S%**					1.00	0.77	0.00	
Total	Count	32	175	773	965	334	58	1,356	**3,693**
	Average Pension	$ 20,926	$ 23,670	$ 30,865	$ 40,679	$ 43,645	$ 42,374	$ 34,955	**$ 35,841**
	Average of J&S%**	0.85	0.82	0.83	0.84	0.88	0.90	0.83	

** Not shown for confidentiality reasons to comply with privacy legislation.*
*** J&S% for members with no spouse is remaining guarantee period.*

Deferred Vested Membership Distribution

Annual pension amounts shown for deferred vested members are the amounts payable without adjustment for early or postponed retirement, but include cost of living adjustments granted up to January 1, 2015.

Age			
<=30	Count		13
	Average pre-92 pension	$	0
	Average total pension	$	1,250
30–35	Count		71
	Average pre-92 pension	$	0
	Average total pension	$	3,446
35–40	Count		163
	Average pre-92 pension	$	0
	Average total pension	$	4,862
40–45	Count		246
	Average pre-92 pension	$	0
	Average total pension	$	6,476
45–50	Count		334
	Average pre-92 pension	$	0
	Average total pension	$	8,041
50–55	Count		312
	Average pre-92 pension	$	277
	Average total pension	$	10,802
55–60	Count		194
	Average pre-92 pension	$	1,156
	Average total pension	$	10,181
60–65	Count		101
	Average pre-92 pension	$	2,907
	Average total pension	$	10,793
65–70	Count		21
	Average pre-92 pension	$	8,001
	Average total pension	$	19,031
>=70	Count		4
	Average pre-92 pension	$	4,524
	Average total pension	$	7,529
Total	Count		**1,459**
	Average pre-92 pension	**$**	**542**
	Average total pension	**$**	**8,363**

Appendix D: Going Concern Assumptions and Methods

Assumptions and Methods

A member's entitlements under a pension plan are generally funded during the period over which service is accrued by the member. The cost of each member's benefits is allocated in some fashion over the member's service. An actuarial valuation provides an assessment of the extent to which allocations relating to periods prior to a valuation date (often referred to as the actuarial liabilities) are covered by the plan's assets.

The going concern valuation provides an assessment of a pension plan on the premise that the plan continues on into the future indefinitely based on assumptions in respect of future events upon which a plan's benefits are contingent and methods that effectively determine the way in which a plan's costs will be allocated over the members' service. The true cost of a plan, however, will emerge only as experience develops, investment earnings are received, and benefit payments are made.

This appendix summarizes the going concern assumptions and methods that have been used for the going concern valuation of the Plan at the valuation date. The going concern assumptions and methods have been chosen to reflect our understanding of the Plan's funding objectives with due respect to accepted actuarial practice and regulatory constraints. For purposes of this valuation, the going concern methods and assumptions were reviewed and changes as indicated were made.

The actuarial assumptions and methods used in the current and previous valuations are summarized below and described on the following pages.

	December 31, 2014	**December 31, 2012**
Economic Assumptions		
Discount rate	5.95% per annum	6.25% per annum
Inflation rate	2.25% per annum	Same
Increases in pensionable earnings	1.0% for two years and 2.75% thereafter, plus merit and promotion scale	1.5% for two years and 2.75% plus merit and promotion scale thereafter
Increases in maximum pension limit	In accordance with *Income Tax Act*, then 2.75% per annum	Same
Interest on member contributions	3.0% per annum	3.5% per annum
Investment expenses	0.30% of assets (taken into account in the discount rate assumption)	0.29% of assets (taken into account in the discount rate assumption)
Non-investment expenses	0.08% of assets (taken into account in the discount rate assumption)	0.09% of assets (taken into account in the discount rate assumption)
Margin for adverse deviation	0.42% reduction to the discount rate assumption	0.76% reduction to the discount rate assumption

	December 31, 2014	December 31, 2012
Demographic Assumptions		
Mortality table	85% (100% for females) of CPM 2014 Public Sector Mortality Table with generational improvements using CPM Scale B (“CPM-B”) (sex-distinct rates)	92% of UP94 Mortality Table with generational improvements using Scale BB (sex-distinct rates)
Retirement rates	Rates based on 2009 to 2014 experience (Table A following)	Rates based on 1988 to 1993 experience
Termination rates	Rates based on 2009 to 2014 experience (Table B following)	Rates based on 1988 to 1993 experience
Disability rates	None	Same
Merit and promotion	Rates based on 2009 to 2014 member earnings (Table C following)	Rates based on 1985 to 1993 experience
Proportion married		
Non-retired proportion with spouse	80%	Same
Non-retired spousal age differential	Males four years older	Same
Retired members	Actual marital status and ages are used	Same
Deferred pension take-up	60%	70%
Settlement assumptions for commuted value transfers on termination	4.25% per annum discount 2.25% per annum inflation Mortality as above	4.50% per annum discount 2.25% per annum inflation Mortality as above
Headcount growth	0.75%	Same
Margin for adverse deviation	None	Same

Methods		
Actuarial cost method	Projected accrued benefit	Same
Asset valuation method	Market value smoothed over three years	Same

Table A—Retirement Rates

Sample age and service based retirement rates are in accordance with the following table:

Age	0	5	10	15	20	23	>=26
55	10%	8%	4%	2%	2%	5%	20%
57	10%	7%	5%	5%	5%	6%	9%
59	10%	7%	5%	5%	3%	5%	9%
60	14%	8%	8%	8%	5%	6%	13%
61	11%	8%	5%	5%	9%	9%	10%
63	11%	16%	8%	10%	8%	8%	12%
64	18%	16%	18%	17%	14%	14%	12%
65	25%	25%	25%	25%	25%	25%	25%
67	20%	20%	20%	20%	20%	20%	20%
68	70%	70%	70%	70%	70%	70%	70%
69	100%	100%	100%	100%	100%	100%	100%

Deferred participants are assumed to retire at age 55 or their current age, if older.

Table B—Termination Rates

Sample age and service rates for males and females used in this valuation are shown in the following table:

		Male		Female
Age	Select Period (First 5 Years)	Ultimate Period (After 5 Years)	Select Period (First 5 Years)	Ultimate Period (After 5 Years)
<=24	25%	6.3%	25%	21%
25	24%	6.3%	24%	21%
30	10%	10%	16%	17%
35	10%	5%	11%	8%
40	10%	4%	10%	5%
45	9%	3%	11.5%	4%
50	9%	3%	11%	3.5%
55	0%	0%	0%	0%

Table C—Merit and Promotion Scale

Service-based merit and promotion rates are shown in the following table:

Service	Rates
<=14	3.0%
15-24	1.5%
>=25	1.0%

Justification of Actuarial Assumptions and Methods

Economic Assumptions

Discount Rate

We have used a discount rate of 5.95% per annum.

The overall expected return ("best-estimate") is 6.51% per annum, which is based on an inflation rate of 2.25% per annum, yielding a real rate of return on the pension fund assets of 4.26% per annum. This overall expected return was developed using best-estimate returns for each major asset class in which the pension fund is invested. A Monte Carlo simulation is performed where the portfolio returns are projected assuming annual rebalancing. Expected plan cash flows are projected reflecting the plan's time horizon and discounted using the simulated returns. The internal rate of return is then calculated for each scenario and the average is used to develop an overall best-estimate rate of return for the entire pension fund. Gains from rebalancing and diversification are implicit to this return.

The above determined rate of return has been established based on the Board's investment policy and its funding policy and objectives. There may be some barriers to achieving this return such as inflation higher than expected, asset returns lower than expected, and assets and liabilities that are mismatched. We have derived a going concern discount rate which reflects the Board's investment policy combined with a margin for adverse deviation so as to account for the variables mentioned above. The following chart lays out the adjustments that have been made to the overall expected rate of return in order to arrive at our going concern discount rate assumption:

Development of Discount Rate

Overall expected return				6.51%
Non-investment expenses				(0.08)%
Investment expenses				
Passive	(1)	(0.06)%		
Actively managed	(2)	(0.24)%		
			(1)+(2)	(0.30)%
Additional returns due to active management				0.24%
Margin for adverse deviations				(0.42)%
Discount Rate				**5.95%**

Inflation Rate

The inflation rate is assumed to be 2.25% per annum. This reflects our best estimate of future inflation considering current economic and financial market conditions.

Increases in Pensionable Earnings

To reflect anticipated short-term salary budgets, we have assumed pensionable earnings increase at 1.0% per annum for two years from the valuation date and then increase at the rate of inflation plus 0.5% per annum for productivity growth. An allowance for seniority, merit and promotion ("SMP") has also been included in the salary increase assumption for all years (or 1.0% per annum plus SMP for two years and

2.75% per annum plus SMP thereafter). For the previous valuation, it was assumed that salaries would increase at 1.5% per annum for two years from the valuation date and then would increase at the rate of inflation plus 0.5% per annum for productivity growth, plus SMP (or 1.5% for two years and 2.75% per annum, plus SMP thereafter).

Total Payroll

In order to determine contribution rates for amortization of the unfunded liabilities as a percentage of earnings, it is necessary to make an assumption for the total payroll growth under the Plan. For this purpose, we have used the same increases for inflation and general wage increases as are used for individual member earnings. We have also included additional increases to average pensionable earnings of 0.5% per annum based on historical average increases under the UAPP from 2003 to 2015 in excess of Canadian average wage increases, and a provision for estimated headcount growth of 0.75% per annum. The assumption for the total payroll growth to be used for calculating the present value of pre-1992 additional contributions from January 1, 2015 to December 31, 2043 used the same increases as for the post-1991 amortization. The resulting salary increase rates that were used to determine contribution rates associated with unfunded liabilities of the plan are as follows:

- Pre-1992: 2.25% for two years, and 4.00% thereafter
- Post-1991: 2.25% for two years, and 4.00% thereafter

The construction of this assumption is similar to that used for the previous valuation, with the following differences:

- Instead of an additional increase to average pensionable earnings of 0.5% per annum, the previous valuation included an estimated average SMP increase of 1.5% per annum after two years; and
- Post-1991 amortization did not account for the 0.75% expected headcount growth.

The ultimate total payroll increase assumption for the previous valuation was 4.25% per annum for post-1991 amortization and 5.0% per annum to calculate the present value of pre-1992 additional contributions.

Increases in the Maximum Pension Limit

Pensions are limited to the maximum limits under the *Income Tax Act*. The maximum lifetime annual pension per year of pensionable service payable under the *Income Tax Act* is $2,818.89 in 2015. It is assumed that the maximum limit will increase at 2.75% per annum commencing in 2016. This is comprised of annual increases of 2.25% on account of inflation, plus 0.5% on account of productivity, which is consistent with historical real economic growth. This assumption has not changed from the previous valuation.

Interest on Member Contributions

Interest is credited on member contributions with the rate credited by chartered banks on five-year personal fixed term deposits which we have assumed at a rate of 3.0% per annum. The assumption reflects an assumed rate of future inflation plus 0.75% per annum, which is consistent with historical rates. This assumption has changed from the previous valuation where interest on member contributions was assumed to be credited at 3.5% per annum.

Expenses

Investment expenses expected to be paid from the Plan in the future are assumed to be 30 basis points (6 basis points for passive and 24 basis points for active management) and are taken into account in the discount rate assumption. The Board believes that active management of the funds will recoup the active portion of the fees. We assumed 29 basis points at the previous valuation. Based on past plan experience, administrative expenses are assumed to be 0.08% of assets and this amount is included in the discount rate determination.

Economic Margins for Adverse Deviations

Margins for conservatism or provisions for adverse deviation have been built into the going concern assumptions where appropriate.

The margins have been chosen so as to balance the need for financial security for existing Plan members against overly conservative contribution requirements that potentially result in intergenerational inequity among members and unnecessary financial strain on the Plan sponsors.

A margin for adverse deviations of 0.42% has been reflected in the interest rate assumption.

The actuary has discussed the Plan's experience with the Board and compared it to the expected experience. This review indicates that there is a need for use of margins for adverse deviations. The margins for adverse deviations incorporated in the assumptions reflect this review and the Board's desire to maintain safety cushions. The actuary has discussed with the Board the implications of incorporating margins for adverse deviations and the Board is fully cognizant and supports incorporating margins for adverse deviations.

Demographic Assumptions

Mortality

The CIA has completed a study of Canadian pensioner mortality levels and trends. Some conclusions of the study are:

- The 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.
- More rapid improvements in longevity have been observed than suggested by Improvement Scale AA.
- Mortality experience has been observed to vary significantly by pension income size and some industry groups, including educational institutions.

We have reviewed the mortality experience of the Plan for the years 2009 to 2014 compared to the CPM 2014 Public table with improvement scale CPM-B and found that the mortality rates for the Plan are similar to the rates determined based on the industry and pension income size adjustment factors described in the CPM report.

In light of these findings, we have modified the mortality assumptions of the going concern basis and are now using the CPM 2014 Public table with adjustment factors of 85% for males and 100% for females, and with mortality improvements in accordance with scale CPM-B.

Retirement

Retirement rates are typically developed taking into account the past experience of the Plan. Accordingly, the rates of retirement for active participants have been developed based on a review of plan experience for the years 2009 to 2014. These rates are considered best-estimate rates of retirement based on the plan provisions. These rates have changed from the previous valuation which was based on plan experience for the years 1988 to 1993.

As in the previous valuation, all participants in receipt of disability benefits from an employer's approved long-term disability plan are assumed to continue to be disabled until termination or retirement. As such, they are included as active participants.

Based on Plan provisions which provide for an unreduced or subsidized early retirement reduction as early as age 55, deferred participants are assumed to retire at age 55 or six months following the valuation date if already older than 55.

Termination of Employment

A member's benefit entitlement under the Plan is affected by whether the member terminates employment prior to retirement for reasons other than death. In order to account for this in the calculation of the actuarial liability, an assumption regarding the probability that a member will terminate employment prior to retirement for reasons other than death has been made.

The termination rates were developed based on plan experience from the years 2009 to 2014 and are considered to be best estimate. The rates have changed from the previous valuation which was based on plan experience from the years 1988 to 1993.

Option Elections on Termination

We have assumed that 60% of members will elect a deferred annuity, and 40% will elect a commuted value transfer or cash on termination. This assumption has changed from the previous valuation where it was assumed that 70% of members would elect a deferred annuity. This assumption is based on an estimate of Plan experience and is considered best estimate.

In recognition of the lower prevailing discount rates to determine commuted values, we have employed a different discount rate basis used to calculate termination benefits for those electing a deferred annuity versus those that elect a lump-sum transfer value. The discount rate applied for those assumed to elect a commuted value transfer is 4.25% per annum and the inflation rate used is 2.25% per annum. This assumption has changed from the previous valuation where the commuted value discount rate used was 4.5% per annum.

Disability

As in the previous valuation, the probability of future disability of current active members was assumed to be nil. Members who become disabled normally continue to accrue benefits with earnings at the pre-disability level, with general increases, so long as they are in receipt of long term disability benefits. Use of an actual disability assumption in this case would reduce liabilities slightly, so a nil disability incidence assumption represents a small element of conservatism. The disability assumption has very little impact on the valuation results.

Proportion of Members with Spouses and Spousal Age Differential

These assumptions are relevant to the valuation of benefits since there is a subsidized joint and survivor benefit available for members with a spouse. The proportion of members who will have a spouse and the spousal age difference was based on broad population statistics.

For retired members, the actual marital status and spousal age are used.

As with the previous valuation, we assumed that 80% of participants would have a pension partner at the relevant time. All pension partners are assumed to be the opposite gender of the participant. Male partners were assumed to be four years older than their female partners based on an analysis of recent retirements. The remaining 20% of participants were assumed to have no pension partner. While the definition of pension partner includes same-sex relationships, this assumption adequately provides for all such contingencies.

Demographic Margins for Adverse Deviations

All demographic assumptions are considered best estimate so no margins for conservatism or provisions for adverse deviation have been built into the going concern demographic assumptions.

Seniority Merit and Promotion (SMP)

As described under “Increases in Pensionable Earnings”, we have included a SMP scale in addition to inflation and productivity growth. The SMP rates (Table C) were developed based on Plan member earnings for the years 2009 to 2014 and are considered to be best estimate. The rates have changed from the previous valuation which was based on plan experience from the years 1985 to 1993.

Other

Actuarial Cost Method

An actuarial cost method is a technique used to allocate in a systematic and consistent manner the expected cost of a pension plan over the years of service during which Plan members earn benefits under the Plan. By funding the cost of a pension plan in an orderly and rational manner, the security of benefits provided under the terms of the Plan in respect of service that has already been rendered is significantly enhanced.

The projected accrued benefit actuarial cost method has been used for this valuation. Under this method, the actuarial present value of benefits in respect of service prior to the valuation date, but based on pensionable earnings projected to retirement, is compared with the actuarial asset value, revealing either an actuarial excess or an unfunded actuarial liability.

With respect to service after the valuation date, the expected value of benefits for service in the year following the valuation date (i.e., the normal cost) net of any required employee contributions is expressed as a percentage of the expected value of participating payroll for that year. The employer normal cost contributions are determined each year by applying this percentage to the actual participating payroll for the year.

When calculating the actuarial present value of benefits at the valuation date, the present value of all retirement, withdrawal and pre-retirement death benefits are included. For each member, the retirement, withdrawal and pre-retirement death benefits for a particular period of service are first projected each year into the future taking into account future vesting, early retirement entitlements and minimum pension/value entitlements. These projected benefits for each future year are then capitalized, multiplied by the probability of the member leaving the Plan in that year and discounted with interest and survivorship to the valuation date. The actuarial present value of benefits for the particular period of service is then determined by summing the present values of these projected benefits.

The pattern of future contributions necessary to pre-fund future benefit accruals for any one particular individual will increase gradually as a percentage of their pensionable earnings as the individual approaches retirement. For a stable population (i.e., one where the demographics of the group remain constant from year to year), the normal cost will remain relatively level as a percentage of payroll. The projected accrued benefit actuarial cost method therefore allocates contributions among different periods in an orderly and rational manner for a stable population group.

In the event of future adverse experience, contributions in addition to the normal cost calculated under the projected accrued benefit actuarial cost method may be required to ensure that the Plan assets are adequate to provide the benefits. Conversely, favourable experience may generate an actuarial excess which may serve to reduce future contribution requirements.

Asset Valuation Method

The actuarial value of assets is a smoothed market value and is calculated as the average of the market value of invested assets at the valuation date and the two market values from preceding calendar year-ends accumulated to the valuation date. The accumulated market values at the end of each year equal the sum of:

- the appropriate (accumulated or actual) market value at the beginning of the year;
- the net contributions during the year (calculated as contributions less benefit payments plus net transfers); and
- the assumed investment return (determined as the going-concern liability discount rate applicable to the most recent funding valuation prior to the particular year).

To ensure that the asset valuation method develops an asset value that appropriately tracks market value over time, the calculated actuarial value of assets is adjusted, if necessary, so that it falls within 10% of the market value of assets ("10% corridor").

This asset valuation method is unchanged from the previous valuation.

Other Methodologies

We have prepared a list of additional assumptions and methods used in the valuation of the Plan. This list is intended to assist users of this report in understanding the specific benefits valued. Small differences in methods and assumptions in a plan of this size can sometimes have effects in the millions of dollars. Appendix C of the report deals with data omissions so they will not be repeated here.

- It is administrative practice for the Plan that indexation of deferred and immediate pensions commences January 1 of the year following termination or retirement;
- Normal cost contributions are based on pensionable earnings below the maximum earnings limit described earlier in this report;
- The pensionable earnings for calculating normal cost percentage is nil for participants with 35 years of combined pensionable service;
- For deferred benefits on termination (post-1991 service), the pensions were deferred to 55 with the early reduction factor calculated from the earlier of age 60 and the attainment of 80 points. Deferred vested members over age 55 at the valuation date were assumed to retire six months following the valuation date.

Appendix E: Solvency Assumptions and Methods

Valuation Assumptions

	December 31, 2014	December 31, 2012
Economic Assumptions		
Discount rate		
Transfer value basis		
—*Without indexation*		
Active and deferred members not retirement eligible	2.5% per annum for 10 years; 3.8% per annum thereafter	2.4% per annum for 10 years; 3.6% per annum thereafter
Annuity purchase basis		
—*Without indexation*		
Retirement eligible active and deferred members and all retired members, survivors and beneficiaries	2.6% per annum	3.0% per annum
Transfer value basis		
—*With indexation*		
Active and deferred members not retirement eligible	1.8% per annum for 10 years; 2.5% per annum thereafter	1.6% per annum for 10 years; 2.2% per annum thereafter
Annuity purchase basis		
—*With indexation*		
Retirement eligible active and deferred members and all retired members, survivors and beneficiaries	0.7% per annum	1.12% per annum

	December 31, 2014	December 31, 2012
Demographic Assumptions		
Mortality table		
Transfer value basis	92% of UP94 Mortality Table with generational improvements using Scale BB (sex-distinct rates)	UP94 Mortality Table with generational improvements using Scale AA (sex-distinct rates)
Annuity purchase basis	UP94 Mortality Table with generational improvements using Scale AA (sex-distinct rates)	Same
Termination rates	Not applicable	Same
Retirement age		
Active and Deferred vested members	100% immediate retirement if at least age 55 at employment termination; otherwise 100% at age 55	Same
Retired members and beneficiaries	Not applicable	Same
Termination of employment	Terminate with full vesting	Same
Marital status		
Non-retired spousal proportion	80%	Same
Non-retired spousal age differential	Males four years older	Same
Retired members	Actual marital status and ages are used	Same
Other		
Wind up expenses	$2,700,000	$2,600,000
Actuarial cost method	Unit credit	Same
Asset valuation method	Market value of assets adjusted to reflect contributions, benefit payments, transfers and fees/expenses in transit as of the valuation date	Same
Solvency Incremental Normal Cost		
The assumptions for the expected benefit payments and decrement probabilities, service accruals, and projected changes in benefits and/or pensionable earnings	Same as going concern	Same
New entrants	Full replacement for decrementing members	Same

Based on the CIA's Guidance and information such as pension legislation, Plan provisions and Plan experience, we have made the following assumptions regarding how the Plan's benefits would be settled on Plan wind up:

	Percent of Liability Assumed to be Settled By Purchase of Annuities	Percent of Liability Assumed to be Settled By Lump-Sum Transfer
Active Members		
Not retirement eligible	30%	70%
Retirement eligible	100%	0%
Deferred Vested Members		
Not retirement eligible	30%	70%
Retirement eligible	100%	0%
Retired Members and Beneficiaries	100%	0%

Benefits Valued

	Solvency Valuation
Vesting	We have treated all accrued benefits as vested on Plan wind up.
Post-valuation Date Benefit Increases	Benefits are based on the average earnings and service at the valuation date.
Indexing	According to Plan provisions, the benefits to which a member would be entitled if the Plan was terminated on the valuation date would include pension indexing of 60% of Alberta CPI. This indexing rate has been accounted for in the With Indexation discount rates summarized earlier in this Section.

Justification for Valuation Assumptions

Solvency lump-sum discount rate for 10 years (Non-indexed)	= V122542[1] + 90 bps = 1.62% + 0.90% **= 2.52% (rounded to 2.50%) per annum**
Solvency lump-sum discount rate for 10 years (Fully indexed)	= V122542[1] x (V122553[1] / V122544[1]) + 90 bps = 1.62 x (0.61 / 2.50) + 0.90 **= 1.29% (rounded to 1.30%) per annum**
Solvency lump-sum discount rate thereafter (Non-indexed)	= V122544[1] + 0.5 x (V122544[1] – V122542[1]) + 90 bps = 2.50% + 0.5 x (2.50% – 1.62%) + 0.90% **= 3.84% (rounded to 3.80%) per annum**
Solvency lump-sum discount rate thereafter (Fully indexed)	= V122553[1] + 0.5 x [V122553[1] – (V122542[1] x (V122553[1] / V122544[1]))] + 90 bps = 0.61 + 0.5 x [0.61 – (1.62 x (0.61 / 2.50))] + 0.90 **= 1.62% (rounded to 1.60%) per annum**
Solvency annuity purchase discount rate (Non-indexed)	= V39062 + Duration Adjustment = 2.22% + 0.41% **= 2.63%**
Solvency annuity purchase discount rate (Fully indexed)	= V39057 – Fully indexed Proxy = 0.62% - 1.20% **= -0.58%**
Solvency annuity purchase discount rate (60% indexed)	= (0.6 x Fully indexed solvency annuity purchase discount rate) + ((1 – 0.6) x Non-indexed solvency annuity purchase discount rate) = (0.6 x -0.58%) + ((1 – 0.6) x 2.63%) **= 0.70%**

The indexed rates currently used in the valuation were derived by applying 60% of CPI to the fully indexed rates.

The CIA's Guidance indicates that the cost of purchasing non-indexed annuities would be estimated based on the duration of the liabilities expected to be settled through annuity purchase. The duration of this Plan was estimated to be 11.83 and the resulting duration adjustment to the unadjusted CANSIM series V39062 interest rate is 0.41%.

We have set the aforementioned assumptions based on guidance prepared by the CIA Committee on Pension Plan Financial Reporting ("PPFRC") in the Educational Note Assumptions for Hypothetical Wind Up and Solvency Valuations with Effective Dates Between December 31, 2014 and December 30, 2015 ("CIA Guidance") released on April 24, 2015.

[1] CANSIM Series (annualized)

For benefit entitlements that are expected to be settled by purchase of annuities, we based the assumptions on information compiled by the PPFRC from insurance companies active in the group annuity market.

For benefit entitlements that are expected to be settled by lump-sum transfer, we based the assumptions on the CIA Standards of Practice for Pension Commuted Values, effective April 1, 2009, using rates corresponding to a valuation date of December 31, 2014.

Pensionable Earnings

To estimate active and disabled members' best average earnings, we have used actual historical member earnings.

Preretirement Mortality

We have made no allowance for preretirement mortality. The impact of including such an assumption would not have a material impact on the valuation, since the value of the death benefit is approximately equal to the value of the accrued pension.

Mortality Rates

For benefits that are settled by way of annuity purchase, mortality is assumed to be in accordance with the sex distinct rates of the UP94 Mortality Table with generational projection using scale AA. This mortality assumption is representative of the mortality table that, together with the discount rate assumption of 0.7%, approximates annuity purchase rates at the valuation date, in accordance with guidance provided by the Canadian Institute of Actuaries for solvency valuations as at the valuation date. This assumption has not changed from the previous valuation.

For benefits that are settled by way of lump sum transfer, mortality is assumed to be in accordance with the sex distinct rates generated from 92% of the UP94 Mortality Table with generational projection using scale BB in accordance with accepted actuarial practice as at the valuation date. This assumption has changed from the previous valuation where the UP94 Mortality Table with generational projection using scale AA was used.

Termination Rates

All participants who are actively employed on the valuation date are assumed to terminate their employment on this date and subsequently retire from the Plan in accordance with the retirement age assumption summarized below.

Retirement Rates

All participants age 55 or older who are actively employed on the valuation date are assumed to retire immediately and receive a pension in accordance with the terms of the Plan and the member's age and continuous service. All other Plan members are assumed to retire at age 55.

Assumptions Not Needed

The following are not relevant to the solvency valuation:

- Increases in pensionable earnings;
- Increases in Year's Maximum Pensionable Earnings;
- Increases in *Income Tax Act* maximum pension limit (we used the 2015 maximum); and
- Disability rates.

Estimated Wind Up Expenses

Plan wind up expenses would normally include such items as fees related to preparation of the actuarial wind up report, fees imposed by a pension supervisory authority, legal fees, administration, custodial and investment management expenses. We have assumed these fees would be $2,700,000. This assumption has changed from the previous valuation where fees were assumed to be $2,600,000.

Calculation of Special Solvency Payments

Pursuant to the *Employment Pension Plans Regulation* Amendment 245/2003, the Plan is exempt from making solvency deficiency payments, with effect from January 1, 2003 so it is not necessary to calculate solvency special payments.

Actuarial Cost Methods

Unit credit (accrued benefit) cost method as prescribed.

Asset Valuation Method Considerations

Assets for solvency purposes have been determined using market value with adjustments for:

- In-transit items at the valuation date; and
- Expenses for Plan termination as outlined above.

Incremental Cost on a Solvency Basis

The incremental cost on a solvency basis represents the present value, at the calculation date (time 0), of the expected aggregate change in the solvency liabilities between time 0 and the next calculation date (time t), adjusted upwards for expected benefit payments between time 0 and time t.

An educational note was published in December 2010 by the Canadian Institute of Actuaries' Committee on Pension Plan Financial Reporting to provide guidance for actuaries on the calculation of this new information.

The calculation methodology can be summarized as follows:

- The present value at time 0 of expected benefit payments between time 0 and time t, discounted to time 0,

  plus

- Projected solvency liabilities at time t, discounted to time 0, allowing for, if applicable to the pension plan being valued:
  - Expected decrements and related changes in membership status between time 0 and time t,
  - Accrual of service to time t,
  - Expected changes in benefits to time t,
  - A projection of pensionable earnings to time t,

  minus

- The solvency liabilities at time 0.

The projection calculations take into account the following assumptions and additional considerations:

- The assumptions for the expected benefit payments and decrement probabilities, service accruals, and projected changes in benefits and/or pensionable earnings would be consistent with the assumptions used in the pension plan's going concern valuation.
- The assumptions used to calculate the projected liability at time t are consistent with the assumptions for the solvency liabilities at time 0, assuming that interest rates remain at the levels applicable at time 0, that the select period is reset at time t for interest rate assumptions that are select and ultimate and that the Standards of Practice for the calculation of commuted values and the guidance for estimated annuity purchase costs in effect at time 0 remain in effect at time t.
  - Active and inactive Plan members as of time 0 and assumed new entrants over the period between time 0 and time t are considered in calculating the incremental cost.
  - We have made an allowance for new entrants over the incremental cost period. Members who retire, terminate or die are immediately replaced by a new entrant matching the profile created based on actual historic Plan experience of new entrants.

Appendix F: Summary of Plan Provisions

This funding valuation was based on Plan design information provided by the Board as of December 31, 2014. The following is a summary of the main provisions of the Plan.

Effective Date

Effective January 1, 2001 the Universities Academic Pension Plan became a non-statutory pension plan subject to and registered under the *Employment Pension Plans Act* of Alberta. Prior to January 1, 2001 the plan was governed by the Alberta *Public Sector Pension Plans Act* and the *Universities Academic Pension Plans Act* (before 1993). The Plan is also registered under the *Income Tax Act*. The Plan now operates under a Sponsorship and Trust Agreement signed by the Plan Sponsors. A complete description of the Plan can be found in the Sponsorship and Trust Agreement, and a summary of Plan provisions relevant to the valuation and extrapolation is included in this Appendix.

Jurisdiction of Registration

Alberta.

Eligibility for Membership

Open to full- and part-time employees who meet the criteria specified in the Plan.

Vesting

Vesting of benefits for all service is as follows:

- Members who terminate before January 1, 2001 are vested with five years of pensionable service.
- Members who terminate on or after January 1, 2001 and before September 1, 2014 are vested with at least two years of Continuous Plan Membership.
- Members who terminate on or after September 1, 2014 are immediately vested.

Normal Retirement

Eligibility

Normal retirement date is the June 30th following the member's 65th birthday.

Benefit

Annual pension payable in equal monthly installments calculated as the sum of the following:

a) for each year of pensionable service prior to January 1, 1992, 2.0% of the member's highest average salary; plus

b) for each year of pensionable service in 1992 and 1993, 2.0% of the member's highest average capped salary; plus

c) for each year of pensionable service after December 31, 1993, 1.4% of the lesser of the highest average capped salary and the average YMPE plus 2.0% of the excess of the highest average capped salary over the average YMPE, if any, plus a bridge benefit of 0.6% of the lesser of the highest average capped salary and the average YMPE, payable to age 65.

Highest average pensionable salary is the participant's average annual salary in the five consecutive years of pensionable service in which such average is the highest, and the average YMPE is the average of the Year's Maximum Pensionable Earnings under the Canada Pension Plan in the years used to determine the member's highest average pensionable salary.

Early Retirement

From active service

Eligibility

Age 55 with full vesting.

Benefit

For service after December 31, 1993, if a member commences pension payments prior to the normal retirement date, then the pension payable to the member will be equal to the normal retirement pension, reduced by an early retirement factor as described below.

The early retirement factor is 3.0% for each year by which the member's retirement date precedes the earliest of:

a) age 60; and
b) the day on which the member would have completed 80 points of age plus pensionable service (with no service after the date of termination).

If a member is vested and retires after attaining age 60 or 80 points as described above, no reduction is applied.

In addition, a member who retires before the normal retirement date will receive a bridge benefit for each year of pensionable service after December 31, 1993 equal to 0.6% of the lesser of the highest average capped salary and the average YMPE, reduced by the early retirement factor described above, and payable to age 65.

For service prior to January 1, 1994 the early retirement pension is equal to the unreduced normal retirement pension.

Postponed Retirement

Eligibility

Any time after normal retirement date and before December 31 of the year in which the member attains age 69. A member who terminates or retires prior to age 69 may defer pension commencement.

Benefit

Normal retirement benefit accrued to postponed retirement date. When pension commencement is deferred past a member's date of termination, the pension with respect to pre-1994 service is actuarially increased for commencement after age 55 (actuarial increase for commencement after age 65 for post-1993 service).

Termination of Employment

Pre-1994 service

Eligibility

Members are fully vested.

Benefit

a) the member will receive a deferred pension, or
b) a refund or transfer of the commuted value of the member's accrued pension plus excess contributions, or
c) a refund or transfer of the member's and employer's contributions with interest.

Post-1993 service

Eligibility

Members are fully vested.

Benefit

a) the member will receive a deferred pension, or
b) a transfer of the commuted value of the member's accrued pension plus excess contributions, or
c) a transfer of 175% of the member's contributions with interest.

Pre-retirement Death

Pre-1994 service

Eligibility	Members are fully vested upon death.
Benefit	No pension partner: The beneficiary or estate will receive the commuted value of the member's accrued pension plus excess contributions or the member's and employer's contributions with interest. Pension partner: The spouse will receive a lifetime survivor pension as if the member had retired on the day before death and elected a joint and survivor 100% pension, or a refund of the member's and employer's contributions with interest.

Post-1993 service

Eligibility	Members are fully vested.
Benefit	No pension partner: The beneficiary or estate will receive the commuted value of the member's accrued pension plus excess contributions or 175% of the member's contributions with interest. Pension partner: The spouse will receive a lifetime survivor pension as if the member had retired on the day before death and elected a joint and survivor 100% pension plus excess contributions, or – a transfer of the commuted value of the member's accrued pension plus excess contributions, or – a transfer of 175% of the member's contributions with interest.

Post-retirement Death

Pre-1994 service

Benefit	The normal form of pension is payable for life and guaranteed for 15 years in any event.

Post-1993 service

Benefit	If the member has a spouse at retirement, the normal form of pension provides a survivor benefit equal to 2/3 of the member's accrued pension would be paid, had the member continued to live. The normal form of pension for a member without a

spouse at retirement is payable for life and guaranteed for ten years in any event.

A different form of pension may be elected at retirement in an actuarially equivalent amount.

Disability

Eligibility

Qualification for benefits under employer-sponsored long-term disability plan.

Benefit

For members who are receiving benefits under the LTD plan, participation in the Plan continues, but no pension is payable concurrently with the benefit paid under the LTD plan.

For members who are not receiving benefits under the LTD plan, are permanently and totally disabled, and vested, they are entitled to receive an immediate unreduced pension based on pensionable service and salary to the date of the disability. If the member is partially disabled, the pension is reduced in accordance with the Plan.

Earnings during disability are deemed to be at the same level as in effect just prior to disability, with subsequent wage increases applicable for that member's class.

Contributions

Members and employers contribute the entire cost of the benefits accruing for future benefits as well as the amortization of deficiencies related to post-1991 service in accordance with the *Employment Pension Plans Act*. An agreement is in place whereby the Government of Alberta contributes 1.25% of total payroll towards the pre-1992 unfunded liability until the pre-1992 unfunded liability is eliminated, or December 31, 2043 if earlier. The members and employers contribute the remaining amounts calculated as necessary to eliminate the unfunded liability by December 31, 2043.

Maximum Benefit

Effective January 1, 1992, and only in respect of pensionable service after 1991, pensionable earnings for service in 1992 and 1993 are limited to 50 times the defined benefit annual maximum pension limit for the year under the *Income Tax Act.* Pensionable earnings for post 1993 service are limited to 50 times the defined benefit annual maximum pension limit plus 0.6% of the YMPE for the year under the *Income Tax Act.*

For years after 2006, the limit is as follows:

Year	**Limit 1992-1993 Svc**	**Limit Post-93 Svc**
2007	111,111	124,221
2008	116,667	130,137
2009	122,222	136,112
2010	124,722	138,882
2011	127,611	142,101
2012	132,334	147,364
2013	134,834	150,164
2014	138,500	154,250
2015	140,945	157,025
2016+	Indexed to Average Industrial Wage	Indexed to Average Industrial Wage

Cost-of-Living Increases

Cost-of-living increases based on 60% of the Alberta CPI apply to both deferred pensions and pensions-in-payment.

Definitions

Pensionable earnings

The participant's actual salary limited to the amount in any year after 1992 which results in the maximum defined benefit for that year under the *Income Tax Act Regulations*.

Credited interest

Prior to 1994, participants' contributions were accumulated at the rate of 4% per annum, compounded semi-annually. After 1993, the rate of interest credited to participants' contributions was changed to the average yield of 5-year personal fixed term chartered bank deposits (CANSIM series V122515) over the most recent 12-month period, calculated as of the first day of the calendar year.

Pensionable service

Combined pensionable service, as defined under the provisions of the Plan, cannot exceed 35 years. Combined pensionable service (service in the Plan plus pensionable service in the Public Service Pension Plan) is used to determine eligibility for benefits, vesting and determination of highest average salary.

A copy of a letter from the Board certifying the accuracy and completeness of the Plan provisions summarized in this report is included in Appendix G of this report.

Appendix G: Administrator Certification

With respect to the Universities Academic Pension Plan, forming part of the actuarial report as at December 31, 2014, I hereby certify that, to the best of my knowledge and belief:

- The asset data provided or made available to the actuary is complete and accurate;
- The membership data and subsequent query answers provided or made available to the actuary are complete and accurate for all persons who are entitled to benefits under the terms of the Plan in respect of service up to the date of the valuation;
- The actuary has been notified of all relevant events subsequent to the valuation measurement date; and
- The summary of the Plan provisions contained in Appendix F is an accurate summary of the Plan provisions.

Chris Schafer

Name (print) of Authorized Signatory

Director, Finance and Administration

Title

Signature

27 October 2015

Date

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