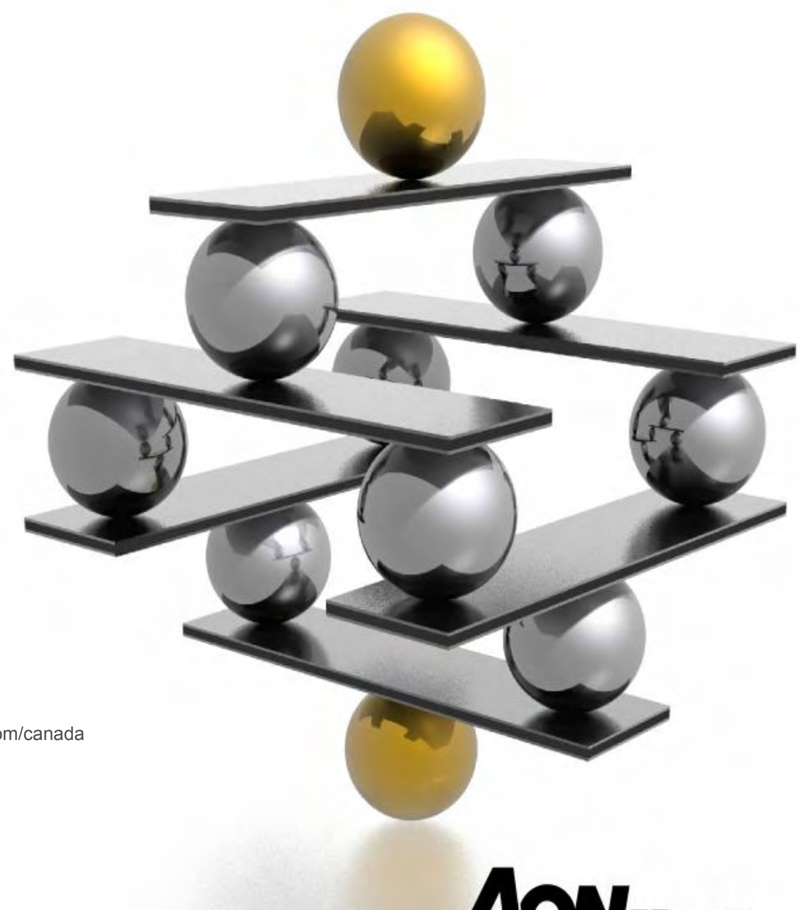
Aon Hewitt

Actuarial Valuation as at December 31, 2013

Public Service Pension Plan

Regulatory Registration Number: 0208769

June 19, 2014



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Executive Summary

An interim actuarial valuation has been prepared for the *Public Service Pension Plan* (the "PSPP") as at December 31, 2013 for the purpose of monitoring the PSPP's funding position. This section provides an overview of the important results and the key inputs to the valuation process. The next actuarial valuation for the purposes of developing funding requirements must be performed no later than as at December 31, 2014.

Summary of Main Results

	December 31, 2013		December 31, 2012	
	Going-Concern ($millions)	Solvency ($millions)	Going-Concern ($millions)	Solvency ($millions)
Assets	7,988	8,534	7,030	7,275
Liabilities	9,960	13,998	9,232	13,642
Surplus (Deficit)	**(1,972)**	**(5,464)**	**(2,202)**	**(6,367)**
Funded/Solvency Ratio	**80%**	**61%**	**76%**	**53%**

Contribution Rates

The rates of combined member and employer contributions that would be determined based on this report and that would commence January 1, 2014, as compared to those now in effect (and as recommended in the valuation report at December 31, 2011), are as follows:

Combined Member & Employer Contribution Rates (% of Pay)

	December 31, 2013	December 31, 2011
Current Service Cost	17.00%	16.28%
Unfunded Liability	9.64%	9.34%
Total	**26.64%**	**25.62%**
Earnings up to YMPE	24.42%	23.40%
Earnings over YMPE	34.88%	33.44%

Executive Summary

Basic Membership Information

As at valuation date, the basic membership information is as follows:

	Active Members	CPS Suspended Members	Deferred Members	Hold-on-Deposit Members	Retired Members
Percentage of going-concern liabilities	47.8%	7.2%	5.6%	0.1%	39.3%
Percentage of solvency liabilities	50.4%	7.6%	5.3%	0.1%	36.6%
Number	40,258	3,711	8,771	3,737	22,764
Average age	44.2	47.6	47.6	48.6	72.2
Average 2013 earnings/annual pension	$64,749	$104,459	$6,155	N/A	$13,860

Key Assumptions

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

	December 31, 2013		December 31, 2012	
	Going-Concern	Solvency	Going-Concern	Solvency
Discount rate	6.20%	Annuity purchases: 1.7% Lump sums: 2.2% for 10 years, 3.2% thereafter	6.20%	Annuity purchases: 1.4% Lump sums: 1.6% for 10 years, 2.2% thereafter
Inflation rate	2.25%	Implicit in discount rates	2.25%	Implicit in discount rates
Pensionable Earnings increases	2.25% for 2013, 2.25% for 2014, 3.50% thereafter, plus merit & promotion	n/a	2.25% for 2012, 2.25% for 2013, 2.25% for 2014, 3.50% thereafter, plus merit & promotion	n/a
Mortality table	Males: CPM Private Table projected with scale CPM-B Females: 95% CPM Private Table projected with scale CPM-B	UP94 generational	93% of UP94 generational	UP94 generational
Retirement rates	Rates varying by age and service	Immediate if over 55; otherwise at age 55	Rates varying by age and service	Immediate if over 55; otherwise at age 55

Section 1: Introduction

Purpose and Terms of Engagement

We have been engaged by the Public Service Pension Board (hereafter referred to as the "Board") to conduct an interim actuarial valuation of the PSPP as at December 31, 2013 for the purposes of:

- determining the financial position of the PSPP as at December 31, 2013 on a going-concern basis;
- determining the going-concern current service cost as at December 31, 2013;
- illustrating the contribution rates that would be applicable to the PSPP under the *Public Sector Pension Plans Act* and regulations (the "*Act*") for years after 2014 if a funding recommendation was developed based on the results of the valuation; and
- determining the financial position of the PSPP as at December 31, 2013 on a solvency basis.

As per our engagement, we have summarized the results of this actuarial valuation along with the ensuing opinions in this report to the Board. The results contained in this report may not be appropriate for accounting purposes, or any other purpose not listed above. Specifically, the results of this valuation have not been used to provide advice on the PSPP's funding and hence an updated contribution recommendation has not been formulated based on the results.

While we have been engaged by the Board to conduct this actuarial valuation, we note that the users of our work may well extend to parties external to the Board, notably the PSPP members. Out of respect for the Board's confidentiality, however, 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.

Summary of Changes Since the Last Valuation

The last interim actuarial valuation for the PSPP was performed as at December 31, 2012. Since the time of the last valuation, we note that the following have occurred:

- a mortality experience study was performed in 2014 resulting in a change to the mortality assumption; and.
- solvency assumptions have been changed to reflect the assumptions applicable to December 31, 2013 valuation date.

Section 1: Introduction

Information and Inputs

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

- membership data compiled as at December 31, 2013 by the PSPP's administrator, Alberta Pensions Services Corporation ("APS");
- asset data taken from the PSPP's annual financial statements for 2013;
- a copy of the PSPP regulations with amendments up to December 31, 2013; and
- information concerning events occurring subsequent to December 31, 2013 and prior to the date of this report, as identified below.

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

Subsequent to the valuation date, a mortality experience study was performed and provided important information about the PSPP as it was at the valuation date. As a result, the going-concern mortality assumption has been updated to reflect the findings of this experience study.

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

- Actual experience deviating from expected, since the valuation date to the date of this report, will result in gains or losses.
- 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 are currently the subject of debate, review and/or court appeal. One specific example of such a change involves proposed changes to the PSPP. These proposed changes were announced by the Minister of Finance on February 24, 2014 and could impact employee retirement behaviour in the future. To the extent that these or other changes in the regulatory and legal environment transpire, any financial impact on the PSPP as a result of such changes will be reflected in future valuations.

Section 2: Going-Concern Results

Going-Concern Financial Position of the PSPP

A going-concern valuation provides an assessment of the PSPP's financial position at the valuation date on the premise that the PSPP continues indefinitely. On the basis of the PSPP provisions, membership data, going-concern assumptions and methods and asset information described in the Appendices, the going-concern financial position of the PSPP as at December 31, 2013 is shown in the following table. The results as at December 31, 2012 are also shown for comparison purposes.

	December 31, 2013 ($millions)	December 31, 2012 ($millions)
Assets		
Market Value	8,559	7,300
Asset Fluctuation Adjustment	(571)	(270)
Total Assets	**7,988**	**7,030**
Liabilities		
Active Members		
Retirement	3,900	3,759
Termination	749	743
Death	124	104
Total Actives	4,773	4,606
CPS Suspended Members	714	618
Deferred Members	555	526
Hold-on-Deposit Members	9	9
Retired Members and Beneficiaries	3,909	3,473
Total Liabilities	**9,960**	**9,232**
Surplus / (Unfunded Liability)	**(1,972)**	**(2,202)**
Funded Ratio	**80%**	**76%**

Section 2: Going-Concern Results

Change in Going-Concern Financial Position

During the period from December 31, 2012 to December 31, 2013, the going-concern financial position of the PSPP changed from an unfunded liability of $2,202 million to an unfunded liability of $1,972 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, 2013

	($millions)
Unfunded Liability as at December 31, 2012	**(2,202)**
• Special payments made in inter-valuation period	215
• Expected interest on unfunded liability and special payments	(130)
Expected unfunded liability as at December 31, 2013	**(2,117)**
• Gain from investment earnings higher than assumed	323
• Gain due to salary increases lower than assumed	2
• Gain due to COLA increases lower than assumed	26
• Gain due to interest credited on employee contributions lower than assumed	7
• Administration expenses less than assumed	1
• Gain due to retirement experience	48
• Loss due to pensioner mortality experience	(5)
• Loss due to termination experience	(10)
• Miscellaneous	2
Unfunded liability before assumption changes	**(1,723)**
• Change in liabilities due to changes in actuarial assumptions:	
○ Mortality assumption	(259)
○ Discount rate for terminated members electing a lump sum	10
Unfunded liability as at December 31, 2013	**(1,972)**

Additional information regarding the change in going-concern financial position follows.

Section 2: Going-Concern Results

Special Payments – Special payments were made towards funding the unfunded liability.

Interest – Notional interest is applied at the previous valuation rate of 6.20% per annum.

Investment Return – The actuarial value of assets earned 10.7% per annum during the inter-valuation period, higher than the assumed return of 6.20% per annum.

Salary Increases – Members' salary increases during the inter-valuation period were lower than the assumed increase rates.

COLA Increases – COLA increase was 0.72% for 2013, which is lower than the assumed increase rate of 1.35% per annum.

Interest on employee contributions – Employee contributions were credited interest at 1.45% for 2013 which is lower than the assumed rate of 4.25%.

Expenses – Actual expenses incurred in the inter-valuation period were less than the contributions allocated for administrative expenses.

Retirement Experience – This item reflects a combination of members who commenced pension and received benefits that had a lower value than the going-concern liability previously attributed to them as well as members who deferred their retirement past the optimal age.

Pensioner Mortality – The number of pensioner deaths during the inter-valuation period was different than the expected number resulting in a loss.

Termination Experience – This item reflects members terminating and receiving a higher value than the going-concern liability previously attributed to them.

Assumption Changes – Details of assumptions and changes are shown in Appendix C.

Section 3: Solvency Results

Solvency Financial Position of the PSPP

The solvency valuation is required by the *Act* for the purpose of providing an assessment of the PSPP's financial position at the valuation date on the premise that the PSPP's obligations are settled on the valuation date for all members. The *Act* does not require funding based on the solvency valuation results.

The financial position of the PSPP on the solvency basis is measured by comparing the value of the assets, reduced by an allowance for estimated wind-up expenses, with the actuarial liability for benefits earned for service up to the valuation date determined on the assumption the PSPP is terminated on the valuation date, with immediate settlement of liabilities.

On the basis of the PSPP provisions, membership data, solvency assumptions and methods and asset information described in the Appendices, as well as the requirements of the *Act*, the solvency financial position of the PSPP as at December 31, 2013 is shown in the following table. The solvency financial position of the PSPP as at December 31, 2012 is shown for comparison purposes.

	December 31, 2013 ($millions)	December 31, 2012 ($millions)
Assets		
Market Value	**8,559**	**7,300**
Estimated Wind-up Expenses	(25)	(25)
Total Solvency Assets	**8,534**	**7,275**
Liabilities		
Active Members	7,055	7,028
CPS Suspended Members	1,070	962
Deferred Members	747	814
Hold-on-Deposit Members	9	9
Retired Members and Beneficiaries	5,117	4,829
Total Solvency Liabilities	**13,998**	**13,642**
Solvency Excess / (Deficit)	**(5,464)**	**(6,367)**
Solvency Ratio	**61%**	**53%**

Section 4: Contribution Rates

This section illustrates the contributions that would be required to fund the PSPP's current service costs and deficit if a funding recommendation was formulated based on the December 31, 2013 valuation results. Until a formal funding recommendation is made, however, the contribution rates recommended on the basis of the December 31, 2011 valuation remain in effect.

Contribution Rate In Respect of Current Service Costs

The annual going-concern cost of benefits in respect of service accruing after the valuation date is known as the normal actuarial cost. On the basis of the PSPP provisions, membership data, going-concern assumptions and methods and asset information described in the Appendices, the following table sets out:

- the normal actuarial cost expressed as a percentage of pensionable earnings;
- the provision for expenses included in the current service contribution rate; and
- the resulting total current service contribution rate.

Corresponding results from the previous valuation are also shown.

	December 31, 2013	**December 31, 2012**
Present value of:		
- Normal actuarial cost	$398,940,000	$383,889,000
- Next year's contributory earnings	$2,418,278,000	$2,399,959,000
Normal actuarial cost rate	16.50%	16.00%
Provision for PSPP expenses	0.50%	0.50%
Total current service contribution rate	17.00%	16.50%

The December 31, 2013 current service contribution rate is calculated on the basis that current service contributions are remitted on the December 31, 2013 rate beginning January 1, 2015 with 2014 current service contributions being remitted on the December 31, 2011 rate.

Reconciliation of Current Service Rate

The table below identifies the main components of the change in the current service rate from the prior valuation to this valuation:

Reconciliation of Current Service Rate (% of Pensionable Earnings)	
Current Service Rate at December 31, 2012	16.50%
Demographic experience	0.26%
Actuarial assumption changes	0.24%
Current Service Rate at December 31, 2013	17.00%

Section 4: Contribution Rates

Contribution Rate in Respect of Unfunded Liability

Since the PSPP has a going-concern unfunded liability, additional contributions would be required to fund this deficiency. The following table summarizes the additional contributions that would be necessary to fund this deficiency over the maximum 15-year period prescribed under the *Act*. These additional contributions are comprised of deficit contribution schedules established in previous funding recommendations as well as in this valuation.

For purposes of developing a contribution rate, the additional unfunded liability disclosed in this valuation is assumed to be amortized as a level percent of pay over 15 years from December 31, 2013, with such assumed amortization payments commencing January 1, 2015.

Effective Date	Contribution Rate (% pay)	End Date	Present Value at December 31, 2013 ($millions)
September 1, 2003 *	2.76%	December 31, 2017	270
January 1, 2007 **	0.16%	December 31, 2020	26
January 1, 2010 ***	3.76%	December 31, 2023	853
January 1, 2012 ****	0.26%	December 31, 2025	69
January 1, 2013 *****	2.40%	December 31, 2026	682
January 1, 2015 ******	0.30%	December 31, 2028	72
Total	9.64%		1,972

* December 31, 2002 Unfunded Liability amortized as a level % of pay over 15 years from December 31, 2002, with amortization payments commencing September 1, 2003.

** Additional December 31, 2005 Unfunded Liability amortized as a level % of pay over 15 years from December 31, 2005, with amortization payments commencing January 1, 2007.

*** Additional December 31, 2008 Unfunded Liability amortized as a level % of pay over 15 years from December 31, 2008, with amortization payments commencing January 1, 2010.

**** Additional December 31, 2010 Unfunded Liability amortized as a level % of pay over 15 years from December 31, 2010, with amortization payments commencing January 1, 2012.

***** Additional December 31, 2011 Unfunded Liability amortized as a level % of pay over 15 years from December 31, 2011, with amortization payments commencing January 1, 2013.

****** Additional December 31, 2013 Unfunded Liability amortized as a level % of pay over 15 years from December 31, 2013, with amortization payments commencing January 1, 2015.

Excess Surplus

The *Income Tax Act* prescribes the maximum going-concern surplus that may be retained by the PSPP while full contributions continue. Since there is no going-concern surplus, contribution rates would not be affected by the prescribed maximum surplus limit.

Section 4: Contribution Rates

Contribution Rate in Respect of Solvency Deficiency

The *Act* does not require additional contributions to fund the solvency deficiency.

Total Required Contribution Rate

The total contribution rates that would be required commencing January 1, 2015 to provide for accruing service and 15-year amortization of the unfunded liability, on the basis of 50/50 total cost sharing between PSPP active members and their employers, are as follows:

Total Contribution Rates
(% of Pensionable Earnings)

	Members	Employers	Total
Level Rate On All Earnings			
Current Service Rate	8.50%	8.50%	17.00%
Unfunded Liability Payments			
• December 31, 2002	1.38%	1.38%	2.76%
• December 31, 2005	0.08%	0.08%	0.16%
• December 31, 2008	1.88%	1.88%	3.76%
• December 31, 2010	0.13%	0.13%	0.26%
• December 31, 2011	1.20%	1.20%	2.40%
• December 31, 2013	0.15%	0.15%	0.30%
Total Contribution Rate	13.32%	13.32%	26.64%
Split Rate Below/Above YMPE			
On Earnings Below YMPE	12.21%	12.21%	24.42%
On Earnings Above YMPE	17.44%	17.44%	34.88%

Section 5: Additional Disclosures

This section provides the following additional disclosures as at the valuation date:

- effect on the going-concern valuation liability and on the current service cost, of using an interest rate 1% lower than that used for the valuation,
- effect on the solvency valuation liability, of using an interest rate 1% lower than that used for the valuation, and
- incremental cost on a solvency basis due to the membership in the plan between December 31, 2013 and December 31, 2014.

Effect – Going-Concern Valuation Interest Rate Reduced by 1%

The going-concern valuation liability shown in Section 2 and the current service cost shown in Section 4 are based on an interest rate assumption of 6.20% per year. The impact on these results of using an interest rate 1% lower is as follows:

	At 6.20% ($millions)	At 5.20% ($millions)	Effect	
			In $millions	In %
Total going-concern liability	$9,960	$11,398	+ $1,438	+ 14.4%
Total current service cost	$399	$464	+ $65	+ 16.2%

Current service cost under the reduced discount rate has been calculated assuming future employee contribution would not change.

Effect –Solvency Valuation Interest Rate Reduced by 1%

The solvency liability shown in Section 3 is based on an interest rate before adjustments for indexing of 3.0% per annum for the first 10 years and 4.6% per annum thereafter for the calculations of transfer values and on a rate before adjustments for indexing of 3.93% per annum for the estimation of the cost of purchasing the pensions for retirees and beneficiaries. The impact on the solvency results of using an interest rate that is 1% lower than assumed is as follows.

	Valuation basis at December 31, 2012	Based on Interest Rate Lower by 1%	Effect	
			In $millions	In %
Total liability - solvency	$13,998	$16,315	+ $2,317	+ 16.6%

Section 5: Additional Disclosures

Incremental Cost on a Solvency Basis

The incremental cost on a solvency basis represents the present value at December 31, 2013 of the expected aggregate change in the solvency liability between December 31, 2013 and the next calculation date, adjusted upwards for expected benefit payments between those dates. Appendix D gives more details on the calculation methodology and on assumptions.

The main purpose of this disclosure requirement is to provide some insight into how the solvency liability will change in the future.

Based on the methodology and assumptions described in Appendix D, the incremental cost on a solvency basis, for the period from December 31, 2013 to December 31, 2014, is $599 million.

Section 6: Actuarial Certificate

Actuarial Opinion and Certification for the *Public Service Pension Plan*

CRA Registration: 0208769

Opinion

This actuarial certification forms an integral part of the actuarial valuation report for the PSPP as at December 31, 2013. We confirm that we have prepared an actuarial valuation of the PSPP as at December 31, 2013 for the purposes outlined in the Introduction section to this report and consequently:

We hereby certify that, in our opinion:

1. With respect to the purposes of determining the PSPP's financial position on a going-concern basis:
   a) The PSPP has a going-concern unfunded liability (excess of liabilities over assets) of $1,972 million as at December 31, 2013, based on total assets of $7,988 million and total liabilities of $9,960 million.
   b) There is no excess surplus as defined by Section 147.2(2) of the *Income Tax Act* at December 31, 2013.

2. With respect to the purpose of determining the PSPP's financial position on a solvency basis:
   a) The PSPP has a solvency deficit of $5,464 million as at December 31, 2013, determined as solvency assets of $8,534 million less solvency liabilities of $13,998 million.
   b) The solvency ratio is 61% as at December 31, 2013.
   c) The liabilities of the PSPP would exceed the PSPP's assets by $5,464 million if the PSPP was terminated and wound-up as at December 31, 2013.

3. If a funding recommendation was formulated based on the December 31, 2013 valuation results, the contribution rates that would be applicable to the PSPP for years after 2014 are as follows:
   a) The PSPP's going-concern normal actuarial cost is estimated to be 16.50% of aggregate member contributory earnings. The total current service cost would be determined as 17.00% of aggregate member contributory earnings, which includes an amount of 0.50% of aggregate member contributory earnings for PSPP expenses.

Section 6: Actuarial Certificate

b) The additional contributions that would be required to fund the going-concern unfunded liability in accordance with the *Act* are as summarized in the following table.

Unfunded Liability Identified as at	Contribution Rate (% pay)	Amortization Ending Date
December 31, 2002	2.76%	December 31, 2017
December 31, 2005	0.16%	December 31, 2020
December 31, 2008	3.76%	December 31, 2023
December 31, 2010	0.26%	December 31, 2025
December 31, 2011	2.40%	December 31, 2026
December 31, 2013	0.30%	December 31, 2028
Total	9.64%	

4. 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.

5. 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.*

6. Notwithstanding the above certifications, emerging experience differing from the assumptions will result in gains or losses that will be revealed in subsequent valuations.

Original signed by

Donald Ireland
Fellow, Canadian Institute of Actuaries

Original signed by

Colleen Blanchette
Fellow, Canadian Institute of Actuaries

June 19, 2014

Appendix A: Assets

PSPP assets are held in trust and are managed by Alberta Investment Management Corporation. This type of arrangement governs only the investment of the assets deposited into the trust fund and in no way guarantees the benefits provided under the PSPP or the costs of providing such benefits. Any excess income or, in fact, any other profit caused by the actual PSPP experience varying from the actuarial assumptions will accrue to the fund. It is conversely true that any losses due to variations of actual experience from the actuarial assumptions will emerge as a liability of the PSPP, 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 data required for the valuation in respect of the PSPP's trust fund was taken from the PSPP's audited financial statements at December 31, 2013. The valuation included an examination of the asset data to test for general reasonableness, internal consistency, consistency with asset data provided in prior years, a comparison of the contributions and disbursements reported with those expected to be made, as well as a reconciliation with the previous valuation's asset data. These tests demonstrated that the asset data is sufficient and reliable for the purposes of the valuation.

Asset Allocation

The following is a summary of the composition of the PSPP's trust fund assets by asset type as reported in the financial statements as at December 31, 2013. For comparison purposes, the composition at the previous valuation date is also shown.

	December 31, 2013	**December 31, 2012**
Cash and Short Term	0.6%	0.7%
Fixed-Income	29.8	32.0
Canadian Equities	11.9	12.1
US Equities	20.3	20.5
Non-North American Equities	20.3	20.5
Private Equities	2.5	1.6
Real Estate	7.8	5.8
Alternative Investments	6.8	6.8
Total Invested Assets	100.0%	100.0%

Appendix A: Assets

Reconciliation of Invested Assets

A reconciliation of the invested assets during 2013 is summarized below. The following table reconciles the opening and closing market value of the fund (adjusted for in-transit items) over the past year. The reconciliation for 2012 is also shown for comparison purposes.

	Year Ending December 31 2013 ($ million)	 2012 ($ million)
Opening Market Value	$ 7,300	$ 6,481
Contributions:		
Employees	314	256
Employer	315	257
Prior Service	5	4
Transfers from Other Plans	15	13
Benefits:		
Pension Benefits	(292)	(269)
Disability Benefits	(2)	(2)
Termination Benefits	(92)	(75)
Death Benefits	(28)	(24)
Transfers to Other Plans	(31)	(78)
Investment Earnings	1,109	780
Expenses:		
Investment Expenses	(43)	(32)
Administrative Expenses	(11)	(11)
Closing Market Value	$ 8,559	$ 7,300
Approximate Rate of Return (net of investment expenses)	14.4%	11.5%

Appendix A: Assets

Target Asset Mix

We understand that the target asset mix of the PSPP is as follows:

Money Market	0.5%
Long Bonds	15.0
Universe Bonds	2.0
Real Return Bonds	5.0
Mortgages	5.0
Canadian Equities	12.0
Global Equities	26.0
Emerging Market Equities	5.0
Private Equities	4.5
Canadian Real Estate	12.5
Foreign Real Estate	2.5
Infrastructure and Private Debt	10.0
	100.0%

Rates of Return

The PSPP's assets achieved the following rate of return during the inter-valuation period, before administration expenses but after investment expenses:

	2013
Market Value	14.4%
Actuarial Asset Value	10.7%

Appendix A: Assets

Development of Asset Fluctuation Adjustment

The development of the asset fluctuation adjustment is shown in the following tables. Please refer to Appendix C for a description of the asset valuation methodology.

	2009	2010	2011	2012	2013
Accum / Market Value Dec. 31, 2009	$5,488				
Net Cash Flow 2010	134				
Assumed Income @ 6.75%	375				
Accum / Market Value Dec. 31, 2010	$5,997	$6,167			
Net Cash Flow 2011	104	104			
Assumed Income @ 6.50%	393	404			
Accum / Market Value Dec. 31, 2011	$6,494	$6,675	$6,481		
Net Cash Flow 2012	71	71	71		
Assumed Income @ 7.08%	461	474	460		
Accum / Market Value Dec. 31, 2012	$7,026	$7,220	$7,012	$7,300	
Net Cash Flow 2013	194	194	194	194	
Assumed Income @ 7.06%	504	518	502	522	
Accum / Market Value Dec. 31, 2013	$7,724	$7,932	$7,708	$8,016	$8,559

Summary	
Average of Final Values	$7,988
90% of 2013 Market Value	$7,703
Higher of these two values	$7,988
Less 2013 Market Value	(8,559)
Asset Fluctuation Adjustment	$(571)

Source of Data

This actuarial valuation is based on membership data compiled as at the valuation date and obtained from APS.

Various tests on the membership data were conducted to ensure its validity. Tests performed included the following:

- Membership reconciliation with prior valuation data, which is presented hereunder.

Appendix B: Membership Data

- Comparison of changes in salaries, years of membership and credited service.
- Comparison of pensions paid to retirees and lump sum benefits paid following termination of employment or death to amounts contained in the asset data.
- Validation with APS of all deviations observed in information compared to data provided for the previous actuarial valuation and adjustments made where necessary.

The results of the tests performed demonstrated that the membership data was complete, except that 2013 pensionable earnings data were missing for 911 active/CPS members. To complete this missing data, we substituted their 2013 pensionable earnings with the group average, by age and service.

In our opinion, the impact of these data estimates does not materially affect the results of the valuation. The adjusted data is sufficient and reliable for the purposes of this valuation.

Appendix B: Membership Data

Membership Reconciliation

The reconciliation of all members since the last actuarial valuation is as follows:

	Active	CPS Suspended	Deferred	Hold-on-Deposit	Retired/ Beneficiaries	Total
As at December 31, 2012	**40,710**	**3,161**	**8,642**	**3,764**	**21,878**	**78,155**
New members	4,410	3	2	16	170	4,601
Return to Active	209	(35)	(140)	(33)	(1)	-
New CPS	(274)	274	-	-	-	-
Terminations - Deferred	(1,029)	(71)	995	105	-	-
ATB Transfers	(159)	-	-	-	-	(159)
Paid out/Transfers	(2,026)	(28)	(446)	(130)	-	(2,630)
Retirements	(993)	(102)	(262)	(1)	1,358	-
Deaths	(76)	(1)	(2)	(2)	(642)	(723)
Expiry of Guarantee	-	-	-	-	(9)	(9)
Data adjustments	(514)[1]	510[1]	(18)	18	10	6
As at December 31, 2013	**40,258**	**3,711**	**8,771**	**3,737**	**22,764**	**79,241**

Membership Summary

Active Members

	December 31, 2013	December 31, 2012
Number		
Male	12,891	13,090
Female	27,367	27,620
Total	**40,258**	**40,710**
Average Age		
Male	43.9	43.9
Female	44.4	44.3
Total	**44.2**	**44.2**
Average PSPP Service		
Male	10.3	10.4
Female	10.1	10.1
Total	**10.2**	**10.2**
Average Annualized Earnings		
Male	$ 72,295	$ 70,889
Female	61,195	60,051
Total	**$ 64,749**	**$ 63,536**

[1] Historically, former PSPP members who transferred to the UAPP were reported as active members in the data. For the December 31, 2013 valuation, 512 such members have been identified and allocated to the CPS membership.

Appendix B: Membership Data

CPS Suspended Members

	December 31, 2013	December 31, 2012
Number		
Male	1,691	1,506
Female	2,020	1,655
Total	**3,711**	**3,161**
Average Age		
Male	47.9	48.1
Female	47.3	47.2
Total	**47.6**	**47.6**
Average PSPP Service		
Male	9.5	10.0
Female	9.7	10.2
Total	**9.6**	**10.1**
Average CPS		
Male	6.6	7.1
Female	5.5	6.4
Total	**6.0**	**6.7**
Average Annualized Earnings		
Male	$109,567	$108,212
Female	100,184	100,230
Total	**$104,459**	**$104,033**

Deferred Members

	December 31, 2013	December 31, 2012
Number		
Male	2,860	2,832
Female	5,911	5,810
Total	**8,771**	**8,642**
Average Age		
Male	48.5	48.6
Female	47.1	47.0
Total	**47.6**	**47.5**
*Average Deferred Pension**		
Male	$ 7,276	$ 7,272
Female	5,613	5,555
Total	**$ 6,155**	**$ 6,118**

* Including indexation as at January 1, 2014

Appendix B: Membership Data

Hold-on-Deposit Members

	December 31, 2013	December 31, 2012
Number		
Male	1,192	1,197
Female	2,545	2,567
Total	**3,737**	**3,764**
Average Age		
Male	50.2	49.5
Female	47.9	47.1
Total	**48.6**	**47.9**
Average Contributions with Interest		
Male	$ 2,487	$ 2,341
Female	2,472	2,310
Total	**$ 2,477**	**$ 2,320**

Retired Members and Survivors/Beneficiaries

	December 31, 2013	December 31, 2012
Number		
Male	8,907	8,659
Female	13,857	13,219
Total	**22,764**	**21,878**
Average Age		
Male	72.2	72.2
Female	72.2	72.2
Total	**72.2**	**72.2**
Average Current Pension (including any coordination)*		
Male	$ 16,649	$ 16,014
Female	12,068	11,459
Total	**$ 13,860**	**$ 13,262**

* Including indexation as at January 1, 2014

Active Membership Distribution

The following tables provides a break-down of the active membership at December 31, 2013 by years of credited service and by age group, showing the number of members, the average earnings and the average accumulated member contributions with interest in each age/service group.

Appendix B: Membership Data

All Active

COMPLETED YEARS OF PENSIONABLE SERVICE

Age	Under 5	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 and Over	Total
Under 25	1,251	18							1,269
	46,220	51,380							46,294
	5,856	23,667							6,108
25-29	3,710	689	1						4,400
	54,327	60,465	67,393						55,291
	10,429	30,860	45,376						13,636
30-34	3,158	1,960	184	4					5,306
	59,199	67,283	67,955	64,861					62,493
	13,191	37,502	53,830	57,810					23,614
35-39	2,154	1,857	779	83					4,873
	61,668	70,534	74,869	72,616					67,343
	14,368	41,444	63,411	71,497					33,500
40-44	1,648	1,595	970	415	117	8			4,753
	60,373	70,195	74,487	73,724	67,745	73,489			67,919
	13,795	42,379	64,885	78,339	84,080	95,500			41,317
45-49	1,303	1,395	865	557	574	249	30		4,973
	61,634	67,866	73,184	71,636	70,889	69,828	66,533		68,020
	14,096	40,995	65,270	76,577	93,896	102,041	106,399		51,712
50-54	1,091	1,209	877	644	712	642	676	39	5,890
	60,379	65,255	68,905	70,599	69,913	72,342	67,770	66,976	67,115
	13,916	39,361	61,190	77,604	95,651	111,826	114,962	111,642	65,938
55-59	698	900	731	593	598	629	693	325	5,167
	60,451	65,888	67,173	67,411	68,695	69,031	71,650	67,673	67,103
	14,764	40,593	60,630	74,385	96,038	110,304	128,369	111,862	74,975
60-64	285	489	398	348	368	304	408	329	2,929
	61,411	64,982	65,277	66,859	64,929	68,740	68,939	71,004	66,509
	17,255	39,379	60,033	75,828	91,246	112,200	128,782	118,146	79,739
65 and Over	64	110	106	84	73	74	85	102	698
	64,952	63,377	66,086	68,835	65,343	68,291	68,146	73,036	67,309
	18,041	38,705	61,744	74,733	90,934	113,369	126,355	117,822	80,258
Total	15,362	10,222	4,911	2,728	2,442	1,906	1,892	795	40,258
	57,850	67,405	71,059	70,115	68,853	70,194	69,441	69,705	64,749
	12,452	39,578	62,547	76,276	93,974	110,096	123,229	115,216	46,579

Each cell shows:

Number of Members
Average annual pensionable earnings
Average contributions with interest

Appendix B: Membership Data

Male Active

COMPLETED YEARS OF PENSIONABLE SERVICE

Age	Under 5	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 and Over	Total
Under 25	423	3							426
	49,654	58,463							49,716
	6,291	27,230							6,438
25-29	1,208	209	1						1,418
	56,954	66,301	67,393						58,339
	10,782	35,399	45,376						14,435
30-34	1,010	656	55	1					1,722
	63,228	70,688	74,999	62,624					66,446
	13,798	40,826	62,111	56,570					25,662
35-39	741	650	262	38					1,691
	68,224	75,269	80,903	79,461					73,149
	15,902	45,926	70,309	81,115					37,338
40-44	539	574	352	148	35	2			1,650
	67,962	77,656	80,998	81,505	72,561	70,549			75,431
	15,713	48,835	73,364	89,229	93,242	94,879			47,869
45-49	371	451	272	189	182	82	5		1,552
	72,342	76,928	83,827	80,639	76,561	78,667	74,159		77,532
	17,039	48,418	79,131	90,212	105,468	117,916	114,248		61,963
50-54	294	329	230	182	228	239	158	3	1,663
	73,495	76,599	81,883	82,647	77,902	79,076	77,617	71,238	78,065
	17,291	47,779	76,082	95,649	109,638	125,774	136,817	121,057	79,824
55-59	210	263	186	161	178	208	268	99	1,573
	72,191	75,867	82,878	77,209	77,495	76,795	80,727	76,748	77,533
	18,314	49,366	79,583	88,774	114,496	126,140	150,026	137,493	93,045
60-64	83	146	107	90	87	100	179	149	941
	73,562	78,100	75,165	80,400	80,949	78,262	78,221	79,180	78,061
	22,654	49,170	73,710	92,126	119,930	133,088	149,747	138,287	102,433
65 and Over	30	40	33	19	21	28	33	51	255
	71,856	74,027	73,541	89,377	73,569	82,329	79,893	81,971	78,074
	20,526	46,653	71,663	96,940	107,296	139,974	159,566	134,801	98,046
Total	4,909	3,321	1,498	828	731	659	643	302	12,891
	63,703	74,711	81,054	80,667	77,451	78,294	79,171	78,775	72,295
	13,775	45,688	74,622	90,856	110,155	126,531	146,914	137,267	54,782

Each cell shows:

- Number of Members
- Average annual pensionable earnings
- Average contributions with interest

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Appendix B: Membership Data

Female Active

COMPLETED YEARS OF PENSIONABLE SERVICE

Age	Under 5	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 and Over	Total
Under 25	828	15							843
	44,467	49,963							44,564
	5,634	22,955							5,942
25-29	2,502	480							2,982
	53,059	57,924							53,842
	10,259	28,883							13,257
30-34	2,148	1,304	129	3					3,584
	57,304	65,569	64,951	65,606					60,593
	12,906	35,829	50,300	58,223					22,630
35-39	1,413	1,207	517	45					3,182
	58,230	67,984	71,811	66,835					64,258
	13,564	39,031	59,915	63,376					31,460
40-44	1,109	1,021	618	267	82	6			3,103
	56,685	66,001	70,778	69,411	65,689	74,469			63,924
	12,863	38,750	60,056	72,302	80,170	95,707			37,833
45-49	932	944	593	368	392	167	25		3,421
	57,372	63,538	68,302	67,012	68,256	65,488	65,008		63,704
	12,924	37,448	58,913	69,574	88,523	94,246	104,829		47,061
50-54	797	880	647	462	484	403	518	36	4,227
	55,541	61,015	64,292	65,852	66,150	68,349	64,767	66,621	62,808
	12,671	36,214	55,896	70,495	89,063	103,554	108,296	110,857	60,475
55-59	488	637	545	432	420	421	425	226	3,594
	55,399	61,768	61,813	63,760	64,966	65,195	65,926	63,697	62,538
	13,237	36,971	54,162	69,022	88,215	102,480	114,712	100,634	67,066
60-64	202	343	291	258	281	204	229	180	1,988
	56,418	59,398	61,641	62,136	59,969	64,073	61,684	64,236	61,041
	15,037	35,212	55,004	70,142	82,365	101,960	112,394	101,474	68,997
65 and Over	34	70	73	65	52	46	52	51	443
	58,860	57,291	62,717	62,830	62,021	59,747	60,692	64,100	61,112
	15,848	34,163	57,260	68,242	84,326	97,174	105,279	100,844	70,019
Total	10,453	6,901	3,413	1,900	1,711	1,247	1,249	493	27,367
	55,101	63,889	66,671	65,516	65,179	65,914	64,431	64,149	61,195
	11,831	36,639	57,247	69,923	87,061	101,411	111,036	101,709	42,715

Each cell shows:

- Number of Members
- Average annual pensionable earnings
- Average contributions with interest

Appendix B: Membership Data

Pensioner/Beneficiary Membership Distribution

The following table provides a break-down of the retired membership at December 31, 2013 by age and years since retirement, showing the number of members and the average annual pension in each age/service group.

Pensioners

YEARS SINCE RETIREMENT

Age	Under 5	5 - 14	15 - 24	25 - 34	35 and Over	Total
Under 60	1,587 21,419	152 9,731	55 9,166	10 5,469		1,804 19,972
60-64	1,924 21,388	1,459 16,800	58 8,432	20 6,047	4 3,438	3,465 19,130
65-69	1,974 18,103	2,952 14,364	138 8,233	39 6,560	4 6,012	5,107 15,577
70-74	315 16,983	2,163 13,519	1,588 10,216	61 8,078	12 5,859	4,139 12,413
75-79	18 21,028	907 11,777	2,226 10,124	141 9,812	21 7,367	3,313 10,605
80-84	2 20,951	77 9,793	1,548 9,903	872 9,171	18 6,660	2,517 9,632
85-89		3 9,326	657 9,702	855 9,350	34 6,133	1,549 9,429
90 and Over			44 10,456	631 9,792	195 8,418	870 9,518
Total	5,820 20,043	7,713 14,145	6,314 9,986	2,629 9,311	288 7,753	22,764 13,860

Each cell shows:
Number of Members
Average annual pension

Appendix C: Going-Concern 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. In other words, the costs of each member's benefits are allocated in some fashion over each 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. In order to prepare a going-concern valuation, two important elements need to be established:

- going-concern assumptions in respect of future events upon which a plan's benefits are contingent; and;
- going-concern methods which effectively determine the way in which a plan's costs will be allocated over the members' service.

Together, the going-concern assumptions and methods provide a basis from which a plan's cost can be estimated and also help establish an orderly program for meeting the ultimate cost of a plan. 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 adopted for the going-concern valuation of the PSPP at the valuation date. It is important to note that these assumptions and methods should be reviewed periodically to ensure that they adequately reflect the experience of the PSPP and continue to satisfy the PSPP's funding objectives. For purposes of this valuation, the going-concern methods and assumptions were reviewed and changes as indicated below were made.

Margins

Margins for conservatism or provisions for adverse deviation have been built into the going-concern assumptions where appropriate. These margins are aimed at reducing the potential adverse effect of the uncertainty inherent in the going-concern assumptions. If the future unfolds in accordance with what are considered to be best estimate assumptions (that is, assumptions with no such margins), then the margins built into the going-concern assumptions will be released into surplus. These margins have been discussed with the Board, and the Board has expressed their comfort with the margin level.

Appendix C: Going-Concern Assumptions and Methods

Going-Concern Assumptions

	December 31, 2013	December 31, 2012
Demographic		
Mortality	Males: CPM Private Table projected with Scale CPM-B Females: 95% of CPM Private Table projected with Scale CPM-B	93% of UP94 Generational
Retirement	Actives: age and service-based, gender distinct table Deferred: age 55	Same
Termination	5-year select, gender distinct, age-based table	Same
Proportion of vested terminated members electing a lump sum	80% if service < 5 years, 50% if service >= 5 years	Same
Marital Status and Spousal Ages	100% married; Male spouse 3 years older	Same
Economic		
Discount rate	6.20%	Same
Inflation rate	2.25%	Same
Discount rate for terminated members electing a lump sum	4.00%	3.60%
Inflation rate for terminated members electing a lump sum	2.00%	2.27%
General earnings increase rates	2.25% for 2013 and 2014 3.50% thereafter	2.25% for 2012, 2013 and 2014 3.50% thereafter
YMPE and Max Pension Limit	3.50%	Same
Interest on member contributions	4.25%	Same
Increase on advance pensioners	10%	Same
Expenses	0.5% of pensionable earnings	Same

Further detail concerning these assumptions is summarized below.

Appendix C: Going-Concern Assumptions and Methods

Demographic Assumptions

Mortality

Benefits paid from the PSPP in respect of a particular member are contingent to a very large degree on the survival of the member and/or the member's spouse. For example:

- if an active member dies prior to retirement, pre-retirement death benefits are triggered;
- a pension is paid to a pensioner only while the pensioner is alive; and
- where a pensioner has elected a joint and survivor form of benefit, a pension is paid to the pensioner's spouse in the event the pensioner predeceases his/her spouse

Consequently, an assumption has been made regarding the survival of members and, where applicable, spouses to each age into the future.

For this valuation, the gender-distinct mortality rates have been assumed to be in accordance with:

- for males, 100% of the Canadian Pensioner Mortality (CPM) 2014 – Private Sector Males mortality table without adjustment for pension size with future improvements in mortality in accordance with the CPM Scale B; and

- for females, 95% of the Canadian Pensioner Mortality (CPM) 2014 – Private Sector Females mortality table without adjustment for pension size with future improvements in mortality in accordance with the CPM Scale B.

This assumption is based on the analysis and conclusions of the PSPP’s 2014 Mortality Experience Study and is considered best estimate.

The previous valuation used gender-distinct mortality rates in accordance with 93% of the Uninsured Pensioner 1994 mortality table with mortality improvements projected generationally using Scale AA.

Appendix C: Going-Concern Assumptions and Methods

Retirement

A member's benefit entitlement under the PSPP is dependent on when the member decides to commence, or is deemed to commence, to receive a pension from the PSPP (referred to as retirement from the PSPP). Accordingly, an assumption with respect to when a member is expected to retire from the PSPP has been made.

The retirement rates used for active/CPS members in the valuation are shown in the following tables. Recent PSPP experience indicates that the retirement rates that are shown in the following two tables reflect PSPP retirement experience. These retirement rates vary by age, service (including CPS service) and gender, and are considered to be best estimate. The same assumption was used in the previous valuation.

For both this and the previous valuation, deferred vested members are assumed to retire at age 55, which is the age that maximizes the pension value for such members.

Appendix C: Going-Concern Assumptions and Methods

Retirement Rates – Male Members

	Age									
Service	**55**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**
2	3.0%	3.5%	3.5%	3.5%	4.5%	6.5%	5.5%	6.5%	6.5%	14.5%
3	3.5%	3.5%	3.5%	3.5%	4.5%	6.5%	6.0%	6.5%	6.5%	15.0%
4	3.5%	3.5%	3.5%	3.5%	5.0%	6.5%	6.0%	6.5%	6.5%	15.0%
5	3.5%	3.5%	3.5%	3.5%	5.0%	6.5%	6.0%	6.5%	6.5%	15.0%
6	3.5%	3.5%	3.5%	4.0%	5.0%	6.5%	6.0%	6.5%	6.5%	15.5%
7	3.5%	3.5%	4.0%	4.0%	5.0%	7.0%	6.0%	7.0%	7.0%	15.5%
8	3.5%	4.0%	4.0%	4.0%	5.0%	7.0%	6.0%	7.0%	7.0%	16.0%
9	3.5%	4.0%	4.0%	4.0%	5.0%	7.0%	6.5%	7.0%	7.0%	16.0%
10	3.5%	4.0%	4.0%	4.0%	5.0%	7.0%	6.5%	7.0%	7.0%	16.5%
11	4.0%	4.0%	4.0%	4.0%	5.5%	7.0%	6.5%	7.0%	7.0%	16.5%
12	4.0%	4.0%	4.0%	4.0%	5.5%	7.5%	6.5%	7.5%	7.5%	17.0%
13	4.0%	4.0%	4.0%	4.0%	5.5%	7.5%	6.5%	7.5%	7.5%	17.0%
14	4.0%	4.0%	4.0%	4.5%	5.5%	7.5%	7.0%	7.5%	7.5%	17.0%
15	4.0%	4.0%	4.5%	4.5%	5.5%	7.5%	7.0%	7.5%	7.5%	17.5%
16	4.0%	4.0%	4.5%	4.5%	5.5%	7.5%	7.0%	7.5%	7.5%	17.5%
17	4.0%	4.5%	4.5%	4.5%	6.0%	8.0%	7.0%	8.0%	8.0%	18.0%
18	4.0%	4.5%	4.5%	4.5%	6.0%	8.0%	7.0%	8.0%	8.0%	18.0%
19	4.0%	4.5%	4.5%	4.5%	6.0%	8.0%	7.0%	8.0%	8.0%	18.5%
20	4.5%	4.5%	4.5%	4.5%	6.0%	8.0%	7.5%	8.0%	8.0%	18.5%
21	4.5%	4.5%	4.5%	4.5%	6.0%	8.0%	7.5%	8.0%	8.0%	29.0%
22	4.5%	4.5%	4.5%	4.5%	6.0%	8.5%	7.5%	8.5%	17.5%	27.5%
23	4.5%	4.5%	4.5%	5.0%	6.0%	8.5%	7.5%	25.0%	8.5%	28.0%
24	4.5%	4.5%	5.0%	5.0%	6.5%	8.5%	17.0%	7.5%	8.0%	28.5%
25	4.5%	5.0%	5.0%	5.0%	6.5%	16.5%	7.0%	7.0%	7.0%	28.5%
26	4.5%	5.0%	5.0%	5.0%	9.5%	8.5%	8.0%	8.5%	8.5%	29.0%
27	4.5%	5.0%	5.0%	15.5%	9.0%	9.5%	9.5%	9.5%	9.5%	29.5%
28	4.5%	5.0%	9.0%	8.5%	8.5%	9.0%	8.5%	9.0%	9.0%	29.5%
29	5.0%	12.5%	8.5%	8.5%	8.5%	9.0%	9.0%	9.0%	9.0%	30.0%
30	14.5%	11.5%	11.5%	11.5%	11.5%	12.5%	12.0%	12.0%	12.0%	30.0%
31	11.0%	11.5%	11.5%	11.5%	11.5%	12.5%	12.0%	12.0%	12.0%	30.5%
32	11.5%	11.5%	11.5%	11.5%	12.0%	12.5%	12.0%	12.0%	12.5%	31.0%
33	12.5%	12.5%	12.5%	13.0%	13.0%	13.5%	13.0%	13.5%	13.5%	31.0%
34	14.5%	15.0%	15.0%	15.0%	15.5%	16.0%	15.5%	16.0%	16.0%	31.5%
35	23.5%	24.0%	24.0%	24.5%	24.5%	26.0%	25.0%	25.5%	25.5%	32.0%

Retirement rates are 100% when a member reaches 36 years of service or age 65.

Appendix C: Going-Concern Assumptions and Methods

Retirement Rates – Female Members

	Age									
Service	**55**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**
2	3.5%	3.0%	3.0%	3.5%	5.5%	8.0%	6.5%	6.5%	7.5%	19.0%
3	3.5%	3.0%	3.0%	4.0%	5.5%	8.5%	6.5%	6.5%	7.5%	19.0%
4	3.5%	3.0%	3.0%	4.0%	5.5%	8.5%	6.5%	6.5%	7.5%	19.5%
5	3.5%	3.0%	3.0%	4.0%	5.5%	8.5%	6.5%	6.5%	8.0%	19.5%
6	3.5%	3.0%	3.0%	4.0%	5.5%	8.5%	7.0%	7.0%	8.0%	20.0%
7	4.0%	3.0%	3.0%	4.0%	5.5%	9.0%	7.0%	7.0%	8.0%	20.5%
8	4.0%	3.0%	3.5%	4.0%	6.0%	9.0%	7.0%	7.0%	8.0%	20.5%
9	4.0%	3.5%	3.5%	4.0%	6.0%	9.0%	7.0%	7.0%	8.5%	21.0%
10	4.0%	3.5%	3.5%	4.0%	6.0%	9.5%	7.0%	7.0%	8.5%	21.0%
11	4.0%	3.5%	3.5%	4.5%	6.0%	9.5%	7.5%	7.5%	8.5%	21.5%
12	4.0%	3.5%	3.5%	4.5%	6.0%	9.5%	7.5%	7.5%	8.5%	21.5%
13	4.0%	3.5%	3.5%	4.5%	6.0%	9.5%	7.5%	7.5%	9.0%	22.0%
14	4.0%	3.5%	3.5%	4.5%	6.5%	10.0%	7.5%	7.5%	9.0%	22.5%
15	4.5%	3.5%	3.5%	4.5%	6.5%	10.0%	7.5%	7.5%	9.0%	22.5%
16	4.5%	3.5%	3.5%	4.5%	6.5%	10.0%	8.0%	8.0%	9.0%	23.0%
17	4.5%	3.5%	4.0%	4.5%	6.5%	10.0%	8.0%	8.0%	9.0%	23.0%
18	4.5%	3.5%	4.0%	4.5%	6.5%	10.5%	8.0%	8.0%	9.5%	23.5%
19	4.5%	4.0%	4.0%	5.0%	7.0%	10.5%	8.0%	8.0%	9.5%	23.5%
20	4.5%	4.0%	4.0%	5.0%	7.0%	10.5%	8.5%	8.0%	9.5%	24.0%
21	4.5%	4.0%	4.0%	5.0%	7.0%	10.5%	8.5%	8.0%	9.5%	52.5%
22	4.5%	4.0%	4.0%	5.0%	7.0%	11.0%	8.5%	8.5%	27.0%	35.5%
23	4.5%	4.0%	4.0%	5.0%	7.0%	11.0%	8.5%	16.0%	8.5%	36.0%
24	5.0%	4.0%	4.0%	5.0%	7.0%	11.0%	23.5%	11.5%	11.5%	36.5%
25	5.0%	4.0%	4.0%	5.0%	7.5%	24.5%	10.0%	10.0%	10.5%	37.0%
26	5.0%	4.0%	4.0%	5.0%	11.0%	11.0%	11.0%	11.0%	11.0%	37.0%
27	5.0%	4.0%	4.5%	10.0%	10.0%	10.5%	10.0%	10.5%	10.5%	37.5%
28	5.0%	4.0%	12.0%	12.5%	13.0%	13.5%	13.0%	13.5%	13.5%	38.0%
29	5.0%	12.5%	12.5%	12.5%	13.0%	13.5%	13.0%	13.5%	13.5%	38.5%
30	14.5%	13.5%	13.5%	13.5%	14.0%	14.5%	14.0%	14.5%	14.5%	39.0%
31	14.0%	14.5%	14.5%	14.5%	15.0%	16.0%	15.0%	15.5%	15.5%	39.5%
32	13.0%	13.0%	13.0%	13.5%	13.5%	14.5%	14.0%	14.0%	14.0%	39.5%
33	12.5%	12.5%	12.5%	13.0%	13.0%	13.5%	13.0%	13.5%	13.5%	40.0%
34	9.5%	10.0%	10.0%	10.0%	10.0%	11.0%	10.5%	10.5%	10.5%	40.5%
35	18.5%	19.0%	19.0%	19.5%	19.5%	20.5%	20.0%	20.0%	20.5%	41.0%

Retirement rates are 100% when a member reaches 36 years of service or age 65.

Appendix C: Going-Concern Assumptions and Methods

Termination of Employment

A member's benefit entitlement under the PSPP 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 for reasons other than death has been made.

The results of a recent experience study of the PSPP's termination rates concluded that a 5-year select, gender distinct, age based table is appropriate to reflect PSPP termination experience. These termination rates are considered to be best estimate, and are shown in the following two tables. The same assumption was used in the previous valuation.

Appendix C: Going-Concern Assumptions and Methods

Select and Ultimate Withdrawal Rates – Male Members

Age	Less than 1 yr service	At least 1 but not 2 yrs service	At least 2 but not 3 yrs service	At least 3 but not 4 yrs service	At least 4 but not 5 yrs service	At least 5 yrs service
<21	27%	26%	20%	12%	10%	9%
21	27%	26%	20%	12%	10%	9%
22	27%	25%	20%	12%	10%	9%
23	27%	20%	15%	12%	10%	9%
24	27%	20%	15%	12%	10%	9%
25	21%	20%	15%	11%	9%	8%
26	20%	20%	15%	11%	9%	8%
27	19%	20%	15%	11%	9%	8%
28	19%	18%	15%	11%	9%	8%
29	19%	18%	12%	11%	9%	8%
30	16%	16%	12%	11%	9%	8%
31	16%	16%	12%	11%	9%	8%
32	16%	16%	12%	11%	9%	8%
33	16%	16%	12%	11%	9%	8%
34	16%	16%	12%	11%	9%	8%
35	14%	13%	10%	9%	9%	5%
36	14%	13%	10%	9%	9%	5%
37	14%	13%	10%	9%	9%	5%
38	14%	13%	10%	9%	9%	5%
39	14%	13%	10%	9%	9%	5%
40	14%	12%	8%	7%	7%	4%
41	14%	12%	8%	7%	7%	4%
42	14%	12%	8%	7%	7%	4%
43	14%	12%	8%	7%	7%	4%
44	14%	12%	8%	7%	7%	4%
45	11%	11%	7%	7%	6%	3%
46	11%	11%	7%	7%	6%	3%
47	11%	11%	7%	7%	6%	3%
48	11%	11%	7%	7%	6%	3%
49	11%	11%	7%	7%	6%	3%
50	11%	10%	7%	6%	5%	3%
51	11%	10%	7%	6%	5%	3%
52	11%	10%	7%	6%	5%	3%
53	11%	10%	7%	6%	5%	3%
54	11%	10%	7%	6%	5%	3%
>=55	0%	0%	0%	0%	0%	0%

Appendix C: Going-Concern Assumptions and Methods

Select and Ultimate Withdrawal Rates – Female Members

Age	Less than 1 yr service	At least 1 but not 2 yrs service	At least 2 but not 3 yrs service	At least 3 but not 4 yrs service	At least 4 but not 5 yrs service	At least 5 yrs service
<21	25%	24%	17%	14%	11%	10%
21	25%	23%	17%	14%	11%	10%
22	25%	22%	17%	14%	11%	10%
23	25%	21%	16%	14%	11%	10%
24	25%	20%	15%	12%	11%	10%
25	20%	19%	14%	12%	11%	9%
26	19%	18%	14%	12%	11%	9%
27	18%	17%	14%	12%	11%	9%
28	18%	16%	14%	12%	11%	9%
29	18%	15%	14%	12%	11%	9%
30	17%	15%	13%	11%	11%	8%
31	17%	15%	13%	11%	11%	8%
32	17%	14%	13%	11%	11%	8%
33	17%	13%	13%	11%	11%	8%
34	17%	12%	13%	11%	11%	8%
35	16%	12%	12%	10%	9%	6%
36	16%	12%	12%	10%	9%	6%
37	16%	12%	12%	10%	9%	6%
38	16%	12%	12%	10%	9%	6%
39	16%	12%	12%	10%	9%	6%
40	15%	12%	10%	7%	6%	4%
41	15%	12%	10%	7%	6%	4%
42	15%	12%	10%	7%	6%	4%
43	15%	12%	10%	7%	6%	4%
44	15%	12%	10%	7%	6%	4%
45	14%	12%	9%	7%	6%	4%
46	14%	12%	9%	7%	6%	4%
47	14%	12%	9%	7%	6%	4%
48	14%	12%	9%	7%	6%	4%
49	14%	12%	9%	7%	6%	4%
50	14%	12%	8%	7%	6%	4%
51	14%	12%	8%	7%	6%	4%
52	14%	12%	8%	7%	6%	4%
53	14%	12%	8%	7%	6%	4%
54	14%	12%	8%	7%	6%	4%
>=55	0%	0%	0%	0%	0%	0%

By way of example, 9% of the female members age 45 with 2 years of service are expected to terminate employment within one year.

Appendix C: Going-Concern Assumptions and Methods

Proportion of Vested Terminated Members Electing a Lump Sum Payment versus a Deferred Annuity

Given the additional cost to the PSPP at the present time of a member electing a lump sum transfer, an assumption regarding the proportion of members electing a lump sum transfer in lieu of the deferred pension has been made. Based on past experience, the proportion of future terminations assumed to elect a lump sum is set at 80% for vested members terminating with less than 5 years of service and at 50% for members terminating after 5 years of service. This assumption is considered to be best estimate.

The same assumption was used in the previous valuation.

Proportion of Members with Spouses and Spousal Age Differential

Under the PSPP terms, the value of pre-retirement death benefits depends on the existence and age of a surviving spouse. It has again been assumed that 100% of members are married to a spouse of the opposite gender, with the male spouse being 3 years older than the female spouse. This assumption may contain a small yet immaterial margin.

Future PSPP Membership for Funding the Unfunded Liability

The PSPP's unfunded liabilities are amortized over 15 years as a level percentage of contributory payroll. For purposes of determining the applicable contribution rates, it has again been assumed that future new entrants will keep the active PSPP membership stable over the 15 years following the valuation date, and that the total contributory pensionable earnings of these active members will increase at the assumed rate of general wage increases for PSPP members.

If the PSPP salary base were to grow more rapidly than assumed, existing unfunded liabilities might be eliminated sooner than assumed. Conversely, if the PSPP salary base were to grow less rapidly than assumed, contribution increases may be required in order to be able to eliminate existing unfunded liabilities within the required timeframe.

Appendix C: Going-Concern Assumptions and Methods

Economic Assumptions

Discount Rate

The actuarial present value of a future stream of benefit payments represents an estimate of the assets required at the valuation date that, together with future expected investment income, will be sufficient to provide for the future benefit stream. Therefore, in calculating actuarial present values, it is necessary to make an assumption with respect to the future expected investment returns that will be earned on the PSPP's assets. This future investment rate of return is called the discount rate.

In selecting the going-concern discount rate assumption, the following factors are typically taken into consideration:

- the PSPP's investment policy;
- long-term historical trends;
- the expected return on the invested assets; and
- the pattern of future expected benefit payments.

Based on the PSPP's current target asset mix, expected long-term asset class returns, and an underlying best-estimate long-term inflation rate of 2.25% per annum, the invested assets of the PSPP are expected to earn a rate of return of 7.00% per annum, before value added from active investment management and after passive investment management fees. The expected rate of return has been determined as the mean return over a 30 year period resulting from a Monte Carlo simulation applied to Aon's proprietary multi-variable asset model, using the PSPP's target asset mix policy.

Administration and custodial expenses are taken into account in the current service contribution. It is assumed that the value add provided by active management will cover investment management fees. Consequently, the rate of return on assets net of investment expenses is expected to be 7.00% per annum. The discount rate was then set equal to this expected net rate of return less a margin for adverse deviation of 0.80% or 6.20% per annum.

The same discount rate assumption was used in the previous valuation.

Appendix C: Going-Concern Assumptions and Methods

Discount Rate and Inflation Rate for Vested Terminated Members Electing a Lump Sum

As it is assumed that a portion of vested terminated members will elect a lump sum settlement in lieu of a deferred pension, it is necessary for the going-concern valuation to make an assumption regarding the rate that will be used to determine the value of the lump sum amount. The discount rate has been assumed to be 4.0% and the inflation rate has been assumed to be 2.00%, both of which are representative of the prescribed assumptions used to determine such lump sum settlements at December 31, 2013.

The previous valuation assumed the discount rate to be 3.6% and the inflation rate to be 2.27%.

Inflation Rate

As the level of inflation influences the rate of increase in several economic factors that affect the PSPP, it is necessary for a going-concern valuation to make an assumption regarding the future inflation rate. The inflation rate is assumed to be 2.25% per annum. This assumption is considered to be best estimate considering current economic and financial market conditions.

The same assumption was used in the previous valuation.

Increases to Average Wages

As the rate of increase in average wages in the economy influences the rates of increase in the YMPE, member salaries, and other economic factors that affect the PSPP, it is necessary for a going-concern valuation to make an assumption regarding the future increases in average wages. Average wages are assumed to increase at 3.50% per annum. This assumption is comprised of an annual increase of 2.25% on account of inflation, plus a best-estimate assumed increase of 1.25% on account of productivity.

The same assumption was used in the previous valuation.

Appendix C: Going-Concern Assumptions and Methods

Increases in Pensionable Earnings

As the benefits paid to a member from the PSPP are dependent on the member's future pensionable earnings, it is necessary for a going-concern valuation to make an assumption regarding the future increases in such earnings. A member's pensionable earnings are assumed to increase with the rate of general earnings increases, plus age-related merit and promotion increases.

General earnings increases in pensionable earnings in the long-term were assumed at a rate equal to the rate of average wage increase (3.50% for this valuation and the previous valuation). To reflect current expectations of near-term increases for the first two years following this valuation, 2013 pensionable earnings have been assumed to increase by 2.25% at January 1, 2014 and 2.25% at January 1, 2015. This is a continuation of the same expectations used for the previous valuation; the general increase rate assumed for 2012, 2013 and 2014 was 2.25%, to reflect bargaining agreements then in effect.

The assumed age-related merit and promotion increases used for this valuation are as outlined in the following table of rates. These rates reflect recent PSPP experience. The same rates were used in the previous valuation:

Age	Rate of increase	Age	Rate of increase
<22	6.84%	39	0.75%
22	6.39%	40	0.70%
23	6.10%	41	0.65%
24	5.50%	42	0.61%
25	4.74%	43	0.56%
26	3.94%	44	0.51%
27	3.49%	45	0.47%
28	3.03%	46	0.42%
29	2.92%	47	0.37%
30	2.52%	48	0.33%
31	2.14%	49	0.28%
32	1.94%	50	0.23%
33	1.55%	51	0.19%
34	1.29%	52	0.14%
35	1.09%	53	0.09%
36	0.93%	54	0.05%
37	0.84%	55	0.00%
38	0.79%	>55	0.00%

Appendix C: Going-Concern Assumptions and Methods

YMPE Increase

As the benefits paid to a member from the PSPP are dependent on the future YMPE, it is necessary to make an assumption regarding the future increases in the YMPE. The YMPE was assumed to increase, up until the time the member retires, dies or terminates from active employment, at the assumed rate of average wage increases (3.50% per annum).

The same assumption was used in the previous valuation.

Increases in the Maximum Pension Limit

Pensions are limited to the maximum limits under the *Income Tax Act*. It is assumed that the maximum pension limit will increase at the assumed rate of average wage increases (3.50% per annum).

The same assumption was used in the previous valuation.

Interest on Member Contributions

As the PSPP's benefits are dependent to some degree on the member contribution account balances (the "50% Rule" test), it is necessary to make an assumption regarding interest that will be credited to member contribution account balances in the future. It has been assumed that member contribution account balances will be credited with interest at the assumed inflation rate plus 2.0%, or at 4.25% per annum. This is based on expected long-term rates of return for 5-year GIC products.

The same assumption was used in the previous valuation.

Cost-of-Living Adjustments ("COLA")

As the PSPP's benefits are increased after termination/retirement at 60% of the Alberta inflation rate, it is necessary to make an assumption regarding the rate of COLA that will be applied in the future. It has been assumed that COLA will be applied at 60% of the assumed inflation rate of 2.25%, or 1.35% per annum.

The same assumption was used in the previous valuation.

Increase on Advance Pensioners

Advance pensioners are pensioners who receive a pension payment, but have not elected their pension form yet. In order to take into account a reduction for a more generous payment form, the administrator has reduced the pension in payment. We have made the assumption that the reduction was 10% and have increased the advance pension by this amount. Also, we have valued the pension under the normal form of payment.

The same assumption was used in the previous valuation.

Appendix C: Going-Concern Assumptions and Methods

Expenses

Expenses relating to investment management fees and certain administration and consulting fees incurred in relation to the PSPP are paid from the PSPP's assets. Consequently, it is appropriate that an assumption regarding such expenses be made.

Investment expenses expected to be paid from the PSPP fund in the future are taken into account in the discount rate assumption. Administration and custodial expenses charged to the PSPP fund have been in the range of 0.4% to 0.5% of pensionable earnings over the past few years. An allowance for expenses of 0.5% of pensionable earnings has been added to the current service contribution rate.

This expense assumption is unchanged from the previous valuation.

Going-Concern 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 pre-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 a surplus 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 actuarial normal cost) is expressed as a percentage of the expected value of contributory pensionable earnings for that year. Actual contributions are determined each year by applying this percentage to the actual contributory pensionable earnings for the year.

Expected future benefits reflect pensionable earnings, YMPE, and *Income Tax Act* benefit limits projected to the time of benefit determination. Future service, as it relates to benefit eligibility (e.g. vesting, early retirement reductions), was also projected in projecting future benefits. 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.

Appendix C: Going-Concern Assumptions and Methods

The pattern of future contributions necessary to pre-fund future benefit accruals for any one particular individual will increase gradually as a percentage of his or her 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 current service cost will remain relatively level as a percentage of contributory pensionable earnings.

In the event of future adverse experience, contributions in addition to the current service cost calculated under the Projected Accrued Benefit Method may be required to ensure that the plan assets are adequate to provide the benefits. Conversely, favourable experience may generate surplus which may serve to reduce future contribution requirements.

The previous valuation also used the Projected Unit Credit Actuarial Cost Method.

Going-Concern Asset Valuation Method

The going-concern asset valuation method determines the value that will be assigned to the assets on the valuation date. The actuarial value of assets has been determined by applying a smoothing methodology to the PSPP's market value of assets at the valuation date. The same method was used in the previous valuation.

The actuarial value of assets is based on the market value of PSPP assets (adjusted for accrued contributions and payments), plus an Asset Fluctuation Adjustment. This adjustment is based on five-year smoothing, and is determined as described below.

Under this method, investment income is assumed to accrue each year at a rate equal to the discount rate assumed in the most recent valuation as at the beginning of that year[2]. Actual market values of the PSPP's assets from each of the four previous year-ends are projected to the current valuation date, using actual (adjusted) annual net cash flows and imputed investment income at these assumed rates for each year. These four projected results at the current valuation date, together with the actual market value at the current valuation date, are then averaged. This averaged value is then constrained to be no less than 90%, and no greater than 110%, of the current market value. The Asset Fluctuation Adjustment is calculated as the excess (positive or negative) of this constrained averaged value over the market value.

The actuarial asset value is then determined as the market asset value at the valuation date, plus the Asset Fluctuation Adjustment. Calculation of the Asset Fluctuation Adjustment for the current valuation is detailed in Appendix A of this report.

[2] Prior to 2012, the discount rate used to calculate the imputed investment income was net of the margin, and after 2011 the discount rate used was gross of margin.

Appendix D: Solvency Assumptions and Methods

The *Act* requires disclosure of the PSPP's financial position at the valuation date under the solvency valuation provisions of the Alberta *Employment Pension Plans Act* (the "*EPPA*"). The *Act* does not require funding of any solvency deficit.

The *EPPA* requires that a plan's solvency valuation liabilities be determined with the presumptions that:

- the plan is terminated and wound up on the valuation date, and
- the plan's liabilities are settled immediately.

The following summarizes the prescribed assumptions, methods and benefits that make up the solvency basis for the PSPP at the valuation date. Judgement must be exercised in setting certain assumptions, especially as related to determining:

- the proportion of the PSPP's benefits expected to be settled by way of annuity purchase and by way of lump sum transfer; and
- the hypothetical annuity purchase rates at the valuation date.

Consequently, if the PSPP was terminated and settled on the valuation date, these solvency liabilities may be different than the PSPP's actual termination liabilities. Such differences may be attributed to:

- differences between the actual and assumed proportion of benefits being settled by annuity purchase and lump sum transfer; and
- an actual annuity purchase rate that is different than the rates assumed to be representative of the annuity market on the valuation date.

Appendix D: Solvency Assumptions and Methods

Solvency Assumptions

Proportion of benefits settled by lump sum transfer and annuity purchase	The following members are assumed to have their benefit entitlement settled by way of annuity purchase: • all members receiving a monthly pension at the valuation date; and • members who, on the valuation date, are eligible for immediate retirement. All other members are assumed to have their benefit entitlement settled by way of a lump sum transfer.
Discount rate – annuity purchase	The net discount rate assumed to apply to benefits that are settled by way of annuity purchase is 1.7% per annum. This discount rate assumption is representative of the rate that, together with the UP-94 Generational Mortality Table, approximates partially indexed annuity purchase rates at the valuation date, in accordance with guidance provided by the Canadian Institute of Actuaries for solvency valuations as at December 31, 2013.
Discount rate – lump sum transfer	The net discount rate assumed to apply to benefits that are settled by way of lump sum transfer is 2.2% for 10 years and 3.2% thereafter.
Salary, YMPE and Maximum Pension Limits	No future increase is assumed.
Expenses	It is assumed that the windup expenses, if the PSPP were to be terminated, would be $25,000,000. These expenses have been treated as a reduction to assets, in accordance with the *EPPA* and accepted actuarial practice.

Appendix D: Solvency Assumptions and Methods

Mortality – annuity purchases	For benefits that are settled by way of annuity purchase, mortality is assumed to be in accordance with the gender distinct rates of the UP-94 Generational Mortality Table. This mortality assumption is representative of the mortality table that, together with the net discount rate assumption of 1.7%, 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.
Mortality – lump sum transfer	For benefits that are settled by way of lump sum transfer, mortality is assumed to be in accordance with gender distinct rates of the UP-94 Generational Mortality Table.
Termination Rates	All members are assumed to terminate their active participation on the valuation date and subsequently retire from the PSPP in accordance with the retirement age assumption summarized below.
Retirement Age	The age at which members are assumed to retire from the PSPP varies depending on the specifics of each member as follows: • members who are entitled to retire from the PSPP and commence an immediate pension on the valuation date are assumed to do so; and • all other members are assumed to retire from the PSPP at age 55.

Solvency Actuarial Cost Method

The solvency liabilities have been calculated as the actuarial present value of the benefits to which a member would be entitled if participation in the PSPP was terminated on the valuation date. It is further noted that the solvency liabilities do not take into consideration any benefit reductions that may be required in the event of actual PSPP termination on the valuation date.

Solvency Asset Valuation Method

For purposes of the solvency valuation, assets have been valued at market value.

Appendix D: Solvency Assumptions and Methods

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 liability 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 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

- a projected hypothetical wind-up or solvency liability 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 hypothetical wind-up or solvency liability 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 liability 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.

Appendix E: Summary of PSPP Provisions

The following is a brief summary of the provisions of the PSPP that affect costs and liabilities as at the valuation date. This summary reflects all PSPP amendments up to the valuation date. This summary does not constitute a legal interpretation of the PSPP. The *Act* and regulation should be reviewed for an interpretation in any specific circumstance.

Effective Date

The PSPP was implemented by Bill 68 of the Alberta legislature which received Royal Assent on May 14, 1993. Most of its provisions, including those dealing with pension and related benefits, came into effect January 1, 1994. The PSPP is a continuation of the pension plan provided under the Public Service Pension Plan Act, which was applicable prior to 1994.

Schedule 2 to the *Act* established the Public Service Pension Board and outlines the duties of the Board and the funding disciplines. A separate regulation to the *Act* (the Public Service Pension Plan, Alberta Regulation 368/93) outlines the specific benefit provisions of the PSPP.

Eligibility

Full-time and part-time employees of the government of Alberta, and of the agencies, boards and Provincial corporations identified in Schedule 2 to regulation 368/93, are eligible to participate in the PSPP.

Retirement

Normal Retirement

The normal retirement age is 65.

Unreduced Early Retirement

A member who has attained age 55, and whose age and years of pensionable service total 85 or more, is entitled to an unreduced retirement pension commencing immediately.

Reduced Early Retirement

A member who has attained age 55 and who has completed two years of pensionable service, but whose age and years of pensionable service do not total 85, may elect to receive a pension commencing immediately that is reduced by an early retirement reduction. The early retirement reduction is 3% multiplied by the excess at pension commencement of 85 over the sum of age and years of pensionable service (without recognition of potential service).

Postponed Retirement

A member who is eligible for immediate retirement may defer pension commencement, up to the latest age permitted under the *Income Tax Act*. An actuarial increase applies in the case of postponement beyond the later of termination of employment and attaining eligibility for an unreduced pension.

Appendix E: Summary of PSPP Provisions

Credited Pension

The benefit payable at normal retirement age is an annual pension equal to the sum of:

- 2.0% of average pensionable salary multiplied by years of pensionable service earned or credited in respects of periods prior to January 1, 1966, plus
- 1.4% of average pensionable salary up to the average YMPE multiplied by years of pensionable service earned or credited in respect of periods after January 1, 1966, plus
- 2.0% of average pensionable salary in excess of average YMPE, multiplied by years of pensionable service earned or credited in respect of periods after January 1, 1966.
- Pensionable service accrues for a maximum of 35 years.
- Average pensionable salary is the member's average annual pensionable salary in the 60 consecutive months in which such average salary was the highest (including during continuing employment after attainment of 35 years of pensionable service). The pensionable salary of part time employees is grossed up to an annual basis to determine average pensionable salary.
- Average YMPE is the average of the Year's Maximum Pensionable Earnings (as defined in the Canada Pension Plan) over the same 60-month period over which pensionable earnings are averaged.
- Effective January 1, 1992, and only in respect of pensionable service after 1991, pensionable earnings for each calendar year are limited to the sum of:
  - 50 times the defined benefit annual maximum pension limit for the year under the *Income Tax Act*, plus
  - 30% of the YMPE for the year.

Cost-of-Living Increases

Pensions payable to retired members, former members with deferred pensions and survivors will be increased annually to reflect 60% of the increase in the Consumer Price Index for Alberta. The Board may approve additional ad hoc cost-of-living increases.

Benefits Paid Following Termination of Employment

Vesting

Benefits vest on attainment of 2 years of PSPP service.

Non-Vested Benefit

A non-vested terminated member is entitled to payment of the member's contributions with interest.

Appendix E: Summary of PSPP Provisions

Vested Benefit

The vested termination benefit is a deferred pension, commencing at or after age 55 calculated to reflect the early retirement discount applicable at the actual date of retirement of the member (i.e., 3% per annum) and reflecting only pensionable service performed to the date of termination. Portability is permitted.

Death Benefits Prior to Retirement

Non-Vested Benefit

The non-vested death benefit is a refund of the member's required contributions with interest.

Vested Benefit

The vested termination benefit is payment of the commuted value of the member's termination/retirement benefit. However, a surviving pension partner has the option to elect a monthly pension in lieu of the commuted value. Such a monthly pension is determined as the survivor's pension as if the member had retired on an unreduced pension and elected a Joint-and-Survivor 100% optional form.

Death Benefits After Retirement

The normal form of pension is payable for the member's lifetime with 60-month guarantee. Optional forms are available on an actuarial equivalence basis.

Disability

A member, or a former member who remains entitled to a deferred pension, who joined the PSPP prior to July 1, 2007, who is totally disabled and has completed two years of pensionable service, and who is not receiving benefits under an approved disability plan, is entitled to receive an immediate unreduced pension.

A person who satisfies the above conditions, but is only partially disabled, is entitled to receive a pension commencing immediately that is reduced as for early retirement.

A person who is receiving benefits from an approved disability plan is not entitled to receive, concurrently, a disability pension from the plan. While in receipt of benefits from an approved disability plan, participation in the plan continues. Salary, for the purpose of current service contributions or for the purpose of determining any pension to which the member may subsequently become entitled, is the salary that was being earned immediately before disability benefits commenced, increased by any subsequent general increases applicable to the pre-disability class of employment of the member.

Appendix E: Summary of PSPP Provisions

50% Rule (Excess Contributions)

Upon a member's retirement, or upon commuted value transfer after termination or death, if the member’s own contributions with interest are greater than half the value of the benefit otherwise payable, then the member/spouse/beneficiary receives a refund of such excess. This does not apply to benefits/contributions for purchased service.

Contributions

Current Service Contributions

With effect from January 1, 1992, the current service benefit accruals of the PSPP are funded in equal parts by contributions from PSPP members and their employers which, in total, are equal to the normal cost of the benefit accruals attributable to the years for which the contributions are made.

Unfunded Liability Contributions

Any unfunded liability of the Plan arising after 1998 is to be funded over a period not exceeding 15 years from the applicable valuation date, in equal parts by contributions from PSPP members and their employers.

Solvency Deficit

The *Act* does not require funding of any solvency deficit.

Purchase of Service

Members are entitled to contribute for the purchase of certain periods of service. The actuarial basis for determining the purchase price approximates the going-concern actuarial liability that will arise in respect of that service.

Credited Interest

Prior to 1994, Plan member contribution accounts were credited with interest at the rate of 4% per annum. Effective January 1, 1994, the interest credited to accumulated member contributions is equal to the rate of return credited on 5-year term deposits by Canadian chartered banks as reported in CANSIM series B14045 maintained by Statistics Canada.

Combined Pensionable Service

Combined Pensionable Service (“CPS”) affects members who transfer to (or from) employment covered by the PSPP from (or to) employment covered by either the Management Employees Pension Plan (“MEPP”) or the Universities Academic Pension Plan (“UAPP”).

When a member of MEPP or UAPP transfers to PSPP, only the member’s pensionable service as a member of PSPP is recognized as pensionable service for calculating his PSPP accrued pension. However, determination of eligibility to benefits from PSPP, such as vesting, early retirement, and the amount of early retirement reduction, is based on the member’s CPS. In this case, the member’s CPS is equal to his pensionable service under PSPP plus his pensionable service under his former plan.

Appendix E: Summary of PSPP Provisions

Likewise, when a PSPP member transfers to UAPP or to MEPP, only the member's PSPP pensionable service up to the time of transfer is used in calculating his PSPP accrued pension, but his CPS is used in determining benefit eligibility as described above. In this case, the member's CPS is equal to his pensionable service under PSPP plus his pensionable service under his new plan.

In either case, the member's accrued PSPP pension is based on his highest 5-year average earnings over his CPS under PSPP and the other plan.

Transfer Agreement – ATB

A transfer agreement has been established with Alberta Treasury Branches ("ATB"), a participating employer in the PSPP, under which assets and liabilities will be transferred from the PSPP to the ATB pension plan in respect of PSPP members who become ineligible to participate in the PSPP due to becoming eligible to participate in the ATB pension plan. The amount of such transfer is determined as the PSPP's estimated actuarial funding valuation liability for such member.

Portability Agreements – Other Public Sector Plans

Portability agreements have been established with other public sector pension plans, under which a member who transfers between the PSPP and such other plan has the option to transfer service credits from his former plan to his new plan, with a corresponding transfer of funds between the plans. The amounts of such service transfer and fund transfer are generally based on the estimated respective actuarial funding valuation liability for such member in each of the plans.

PSPP Plan Termination

The *Act* does not contemplate termination of the PSPP.