Actuarial Valuation Report as at December 31, 2010

Universities Academic Pension Plan

Canada Revenue Agency Registration No.: 0339572

November 30, 2011

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Executive Summary

Key Valuation Results

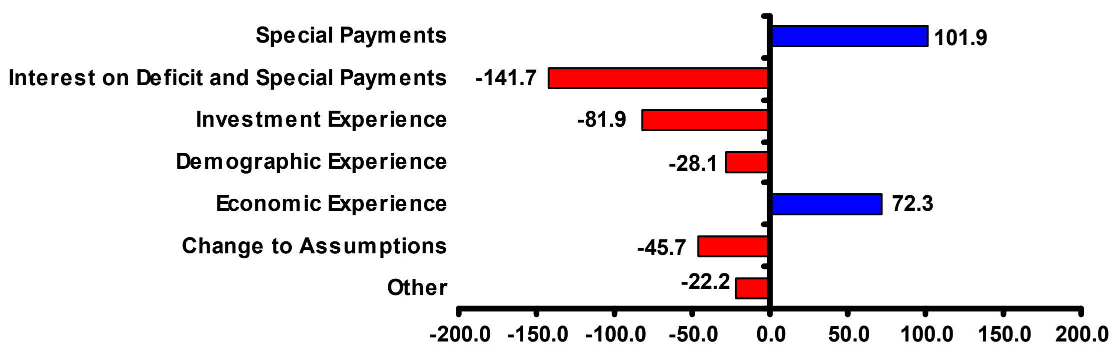
	($,000,000)	
Valuation Date	**December 31, 2010**	**December 31, 2008**
Going Concern Financial Position		
Actuarial value of assets	$2,427.3	$2,185.8
Actuarial liabilities	$3,641.2	$3,254.3
Excess Assets/(Unfunded Liability)	**($1,213.9)**	**($1,068.5)**
Funded Ratio	**0.6666**	**0.6717**
Pre-1992 unfunded liability	$786.9	$709.1
Post-1991 unfunded liability	$427.0	$359.4
Solvency Position		
Market value of assets	$2,537.8	$1,984.5
Actuarial liabilities	$5,146.9	$3,675.9
Solvency Surplus/(Deficiency)	**($2,609.1)**	**($1,691.4)**
Solvency Ratio	**0.4931**	**0.5399**
Contribution Summary		
Estimated current service cost	$136.1	$122.7
Total current pensionable earnings	$764.8	$714.7
Current service cost as a percentage of capped earnings	17.80%	17.17%
Pre-1992 unfunded liability payments as a percentage of uncapped earnings (excluding government share)	2.34%	2.04%
Post-1991 unfunded liability payments as a percentage of capped earnings	5.54%	4.64%
Minimum annual member and employer contribution effective July 1, 2012	25.68% of earnings	23.85% of earnings
Maximum member and employer contribution until the next valuation	17.80% of earnings plus $2,330.1 million	17.17% of earnings plus $1,421.2 million
Implemented contribution rate effective July 1, 2012 (2010) (excluding government share)	25.68%	24.29%
Government share of pre-1992 unfunded liability contributions as a percentage of uncapped earnings	1.25%	1.25%
Membership		
Number of active members	7,576	7,352
Average age of active members	48.2 years	47.7 years
Number of deferred pensioners and Hold-on-Deposit members	1,358	1,087
Number of pensioners, surviving spouses, and beneficiaries receiving pension	3,840	3,475

Executive Summary

Reconciliation of Going Concern Financial Position

The going concern financial position of the Plan has changed during the intervaluation period from an unfunded liability of $1,068.5 million to an unfunded liability of $1,213.9 million

Primary Sources of Change in Financial Position ($millions)



Basic Membership Information

As at December 31, 2010, the basic membership information is as follows:

	Active Members	Hold-on-Deposit and Deferred Pensioners	Pensioners, Surviving Spouses, and Beneficiaries
Percentage of going concern liabilities	46.9%	3.3%	49.8%
Percentage of solvency liabilities	50.5%	3.4%	46.2%
Number	7,576	1,358	3,840
Average age	48.2	48.6	71.9
Average earnings/lifetime pension	$105,395	$8,591	$42,235

Executive Summary

Key Assumptions

The principal assumptions to which the valuation results are most sensitive are outlined in the following table and are described in greater detail in the Appendices:

	Going Concern	
	December 31, 2010	**December 31, 2008**
Discount Rate	6.40%	6.70%
Inflation Rate	2.4%	2.7%
Salary Increase	4.00% for 2 years after valuation date, 2.90% plus merit and promotion scale thereafter	6.25% for 2 years after valuation date, 3.20% plus merit and promotion scale thereafter
Mortality	UP94 generational projection	UP94 generational projection
Retirement	Varies by age	Varies by age

	Solvency	
	December 31, 2010	**December 31, 2008**
Discount Rate (net of indexing)	Annuity purchases: 2.04% Transfers: 2.3% for 10 years, 3.3% thereafter	Annuity purchases: 4.02% Transfers: 3.4% for 10 years, 4.5% thereafter
Mortality	UP94 @ 2020	UP94 @ 2015 for benefits expected to be settled by an annuity purchase UP94 @ 2020 for benefits expected to be settled by lump sum transfer
Retirement age	100% immediate retirement if at least age 55 at employment termination; otherwise 100% at age 55	100% immediate retirement if at least age 55 at employment termination; otherwise 100% at age 55
Settlement Method	Annuity purchase for pensioners, other members aged at least 55, and 30% of remaining members; Lump sum transfer for remaining members (70% of active and deferred members younger than 55)	Annuity purchase for pensioners and other members aged at least 55; Lump sum transfers for remaining members

Section 1: Introduction

Purpose and Terms of Engagement

We have been engaged by the Universities Academic Pension Plan Board of Trustees (the “Board”) to conduct an actuarial valuation as at December 31, 2010 of the *Universities Academic Pension Plan* (the “Plan”). The purposes of the actuarial valuation are to:

- determine the financial position of the Plan on a going concern basis as at December 31, 2010;
- determine the current service cost of the Plan on a going concern basis as at December 31, 2010;
- determine the rule to be used for determining required member and employer contributions to the Plan (as a percent of pensionable earnings) from January 1, 2011 and prior to the effective date of the next actuarial valuation;
- determine the financial position of the Plan on a solvency basis as at December 31, 2010; and
- provide the actuarial funding recommendations for the Plan under the Alberta *Employment Pension Plans Act* and the *Income Tax Act*.

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 the users of our work may well extend to parties external to the Board, notably Alberta Finance & Enterprise, Canada Revenue Agency and the Plan 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.

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

Section 1: Introduction

Summary of Changes since the Previous Valuation

The most recent actuarial valuation of the Plan was performed as at December 31, 2008. Since the time of the last valuation, the following changes have been introduced and the subsequent effects have been reflected in this report:

- Changes in annuity purchase rate discount factors and general fluctuations in bond rates over the year have affected the solvency liability calculations. The changes affecting solvency liabilities are summarized as follows:
  - Transfer value discount rate decreased to 2.3% per annum for 10 years and 3.3% per annum thereafter from 3.4% per annum for 10 years and 4.5% per annum thereafter.
  - Annuity purchase discount rate decreased from 4.02% per annum to 2.04% per annum.
- Going concern actuarial assumptions have been revised. The changes are summarized as follows:
  - The discount rate assumption was changed to 6.4% per annum from 6.7% per annum to reflect a more conservative investment environment.
  - The inflation rate assumption was changed to 2.4% per annum from 2.7% per annum to reflect anticipated changes in long-term inflation trends.
  - The YMPE and *Income Tax Act* maximum pension limit increase assumption was decreased to 2.9% per annum commencing in 2012 from 3.0% per annum commencing in 2010.
  - Interest credited on member contributions increased to 4.0% per annum from 3.0% per annum.

Information and Inputs

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

- a copy of the previous valuation report as at December 31, 2008;
- Plan membership data compiled as at December 31, 2010, as summarized in Appendix B;
- Plan asset and fund activity data for the period from January 1, 2009 to December 31, 2010, as summarized in Appendix A;
- a copy of the latest Plan text and amendments up to and including the valuation date;
- information concerning events subsequent to the effective date of the valuation and prior to the date of this report.

Section 1: Introduction

Our actuarial assumptions and methods have been chosen to reflect our understanding of the Board's desired funding objectives within accepted actuarial practice and regulatory constraints.

Subsequent Events

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

- Actual experience deviating from expected since December 31, 2010 to the date of this report, will result in gains or losses which will be reflected in the next actuarial 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 are currently the subject of debate, review and/or court appeal. 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.

Summary of Recommended Action

The following summarizes the specific recommendations in this report:

- The contribution rates be at least the minimum contribution rates as detailed in Section 4;
- The report be filed with the Alberta Finance & Enterprise and Canada Revenue Agency; and
- The post-91 going concern funded ratio is 0.7882. Assuming that the Plan receives a waiver from the Alberta Superintendent of Pensions for filing an annual valuation when the going concern funded ratio is less than 0.8500, the next actuarial valuation for the purpose of developing a contribution recommendation must be performed no later than as at December 31, 2013.

Respectfully submitted,

Robert J. Thiessen, FSA, FCIA
Vice President

Karen Hall, FSA, FCIA, MA
Vice President

November 30, 2011

Section 2: Going Concern Results

Financial Position of the Plan on a Going Concern Basis

A valuation on a going concern basis 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 actuarial value of assets is compared to the actuarial value of liabilities to determine the financial position of the Plan. Any difference, if positive, is an excess asset that can be retained in the Plan to offset the future contributions subject to defined limits and/or increase benefits under the Plan. Any difference, if negative, is an unfunded liability that must be amortized over a period not exceeding 15 years.

The financial position of the Plan on a going concern basis as at the current and previous valuation dates is shown below. Further information concerning the Plan provisions that have been valued, membership data, asset information and assumptions and methods used to determine the financial position of the Plan on a going concern basis is contained in the Appendices.

Going Concern Financial Position ($millions)

Valuation Date	**December 31, 2010**	**December 31, 2008**
Assets		
Actuarial Value of Assets	$2,427.3	$2,185.8
Actuarial Liabilities		
Actuarial present value of defined benefits on behalf of:		
Active members	$1,703.2	$1,526.2
Deferred pensioners	117.8	92.9
Hold-on-deposit members	3.2	3.0
Pensioners and surviving spouses	1,817.0	1,632.2
Total Going Concern Plan Actuarial Liabilities	$3,641.2	$3,254.3
Excess Assets/(Unfunded Liability)	**($1,213.9)**	**($1,068.5)**
Funded ratio	0.6666	0.6717

Section 2: Going Concern Results

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:

	As at December 31, 2010 ($000,000's)		
	Pre-1992	**Post-1991**	**Total**
Actuarial value of assets			
Market value	$886.3	$1,654.1	$2,540.4
Smoothing adjustment	($48.3)	($64.8)	($113.1)
Total actuarial value of assets	**$838.0**	**$1,589.3**	**$2,427.3**
Actuarial liability			
Present value of accrued benefits for: Active members Pensioners and survivors Deferred pensioners Hold-on-deposit members	 $316.5 $1,270.4 $36.7 1.3	 $1,386.7 $546.6 $81.1 1.9	 $1,703.2 $1,817.0 $117.8 3.2
Total liability	**$1,624.9**	**$2,016.3**	**$3,641.2**
Excess assets (unfunded liability)	**($786.9)**	**($427.0)**	**($1,213.9)**
Funded ratio	0.5157	0.7882	0.6666
Government share of unfunded liability	$275.6	$0.0	$275.6
Members' and employers' share of unfunded liability	$511.3	$427.0	$938.3

Section 2: Going Concern Results

Reconciliation of Going Concern Financial Position

The financial position of the Plan on a going concern basis has changed from an unfunded liability of $1,068.5 million at December 31, 2008, to an unfunded liability of $1,213.9 million at December 31, 2010, as follows:

	Pre-92	Post-91	Total
Excess assets/(Unfunded liability) at December 31, 2008	($709.1)	($359.4)	**($1,068.5)**
Special payments	$49.1	$52.8	$101.9
Interest on previous unfunded liability and special payments	($95.0)	($46.7)	($141.7)
Excess assets/(Unfunded liability) expected at December 31, 2010	($755.0)	($353.3)	**($1,108.3)**
Investment return different than assumed	($30.6)	($51.3)	($81.9)
Contributions less than cost of benefits	$0.0	($4.5)	($4.5)
Salary, YMPE, and Maximum Pensionable Earnings Increase different than assumed	$2.8	$18.4	$21.2
COLA different than expected	$25.9	$25.2	$51.1
Termination experience different than assumed	($4.7)	($11.0)	($15.7)
Retirement experience different than assumed	$8.9	$4.5	$13.4
Mortality experience different than assumed	($15.4)	($3.1)	($18.5)
New entrant experience different than assumed	$0.0	($7.3)	($7.3)
Miscellaneous items	($4.9)	($12.8)	($17.7)
Excess assets/(Unfunded liability) before assumption changes	($773.0)	($395.2)	**($1,168.2)**
Change in deferred pension election assumption	($0.1)	($11.3)	($11.4)
Change to inflation and salary assumptions	$27.6	$62.8	$90.4
Change to discount rate assumption	($41.4)	($83.3)	($124.7)
Excess assets/(Unfunded liability) at December 31, 2010	($786.9)	($427.0)	**($1,213.9)**

Analysis of Experience During Intervaluation Period	**Actual**	**Expected**
Average annual investment return, net of expenses	4.9%	6.7%
Average annual salary increase	6.2%	6.1%
Average annual YMPE increase	2.1%	3.0%
Average annual Maximum Pensionable Earnings Increase	2.2%	3.0%
COLA	0.3%	1.6%
Membership experience:		
Terminations and deaths from active membership	727	485
Retirements from active membership	405	578
Average age of active member retirements	60.9	62.1
Pensioner Deaths	128	214

Section 3: Solvency Results

Financial Position of the Plan on a Solvency Basis

The solvency valuation is a financial assessment of the Plan that is required by the *Employment Pension Plans Act* and is performed in accordance with requirements prescribed by the *Act*. It is intended to provide an assessment of the Plan's financial position at the valuation date on the premise that the obligations of the Plan are settled on the valuation date for all participants. The *Act* does not require funding based on the solvency valuation results.

The financial position of the Plan on the solvency basis is measured by comparing the market 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 assuming the Plan is terminated on the valuation date with immediate settlement of liabilities.

Presented below is the financial position of the Plan determined on the solvency basis as at December 31, 2010. For comparison purposes, the results as at December 31, 2008 are also shown. Information concerning the asset data, membership data, assumptions and methods used to determine the solvency position, and Plan provisions that have been valued, is disclosed in the Appendices.

Financial Position of the Plan on a Solvency Basis ($millions)

Valuation Date	**December 31, 2010**	**December 31, 2008**
Solvency Assets		
Market value of fund	**$2,540.4**	**$1,987.1**
Estimated wind-up expenses	(2.6)	(2.6)
Solvency Assets	**$2,537.8**	**$1,984.5**
Solvency Liabilities		
Actuarial present value of benefits for:		
Active members	$2,593.7	$1,790.5
Deferred pensioners	169.5	106.4
Hold-on-deposit members	3.2	3.0
Pensioners and surviving spouses	$2,380.5	1,776.0
Total Solvency Liabilities	**$5,146.9**	**$3,675.9**
Solvency surplus (deficit)	($2,609.1)	($1,691.4)
Solvency ratio	0.4931	0.5399

Section 3: Solvency Results

The financial position as at December 31, 2010 on a solvency basis split for service pre and post January 1, 1992 is as follows:

Financial Position - Solvency Basis ($000,000's)

	As at December 31, 2010		
	Pre-1992	**Post-1991**	**Total**
Assets			
Market value of assets	$886.3	$1,654.1	$2,540.4
Wind-up expenses	$0.0	($2.6)	($2.6)
Actuarial value of assets	$886.3	$1,651.5	$2,537.8
Liabilities			
Active members	$475.9	$2,117.8	$2,593.7
Deferred pensioners	$48.9	$120.6	$169.5
Hold-on-deposit members	$1.3	$1.9	$3.2
Pensioners and survivors	$1,644.9	$735.6	$2,380.5
Total	$2,171.0	$2,975.9	$5,146.9
Solvency surplus (deficiency)	($1,284.7)	($1,324.4)	(2,609.1)
Solvency ratio	0.4082	0.5550	0.4931

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 $2,609.1 million. This calculation includes a provision of $2.6 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.

Section 4: Contribution Requirements

Contribution Requirements 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 current service cost. On the basis of the Plan provisions, membership data, asset data and going concern assumptions and methods described in the Appendices, the following table sets out:

- the current service cost in the 12 months following the valuation date; and
- the development of the rule to determine the current service cost as a percent of pensionable earnings until the effective date of the next actuarial valuation.

Current Service Cost ($, millions)

Year Following the Valuation Date	**2011**	**2009**
Total current service cost	$136.1	$122.7
Total capped pensionable earnings	$764.8	$714.7
Current service cost as a percentage of total capped pensionable earnings	**17.80%**	**17.17%**

The rule for determining the current service cost recommended in the above table for 2011 will continue to be appropriate through 2014, or until the effective date of the next actuarial opinion, if earlier.

Reconciliation of Current Service Cost

The current service cost as a percent of pensionable earnings has changed from 17.17% at December 31, 2008 to 17.80% at December 31, 2010.

Current service cost at December 31, 2008	17.17%
Actual Plan membership and economic experience	0.05%
Changes in assumptions	0.58%
Current service cost at December 31, 2010	**17.80%**

Section 4: Contribution Requirements

Contribution Requirements In Respect of Deficiencies

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.

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 *Employment Pension Plans Act*, 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%

As at December 31, 2010, the pre-1992 unfunded liability is $786.9 million. The following table outlines the minimum additional contributions that must be made to the Plan to eliminate the pre-1992 unfunded liability as at December 31, 2010:

Minimum Annual Pre-92 Additional Contribution ($000,000's)

	Percentage of Total Payroll	**Annual Dollar Amount (2011)**	**Present Value of Future Additional Contributions**	**First Payment**	**Last Payment**
Government contributions	1.25%	$10.40	$275.65	1-Jan-2011	31-Dec-2043
Member contributions	1.015%	$8.45	$223.83	1-Jan-2011	31-Dec-2043
Employer contributions	1.015%	$8.45	$223.83	1-Jan-2011	31-Dec-2043
Member contributions	0.155%	$9.71	$31.79	1-Jul-2012	31-Dec-2043
Employer contributions	0.155%	$9.71	$31.79	1-Jul-2012	31-Dec-2043

Section 4: Contribution Requirements

The special payment schedule effective December 31, 2010, is calculated on the assumption that contribution changes take effect July 1, 2012. Until then, the existing pre-1992 contribution schedule of 3.28% of pay will remain in place.

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

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 *Employment Pension Plans Act* of Alberta. 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 the schedule of recommended member and employer contributions that are necessary to fund post-1991 unfunded liability. It is noted that this deficiency is comprised in some fashion of deficiencies that were established from previous valuations. Consequently, the member and employer contributions outlined in the following table reflect the remaining value of previously established amortization schedules and the additional contributions required to amortize the unfunded liability established at December 31, 2010.

Minimum Annual Special Payments ($000,000's)

	Date Established	Percentage of Capped Earnings	Annual Dollar Amount (2011)	Present Value of Future Special Payments	Last Payment
Member special payments	Dec. 31, 2006	0.54%	$4.13	$39.91	31-Dec-2021
Employer special payments	Dec. 31, 2006	0.54%	$4.13	$39.91	31-Dec-2021
Member special payments	Dec. 31, 2008	1.50%	$11.47	$110.86	31-Dec-2021
Employer special payments	Dec. 31, 2008	1.50%	$11.47	$110.86	31-Dec-2021
Member special payments	Dec. 31, 2008	0.505%	$3.86	$43.30	31-Dec-2023
Employer special payments	Dec. 31, 2008	0.505%	$3.86	$43.30	31-Dec-2023
Member special payments	Dec. 31, 2010	0.225%	$1.72	$19.43	31-Dec-2025
Employer special payments	Dec. 31, 2010	0.225%	$1.72	$19.43	31-Dec-2025
Total		5.54%	$42.36	$427.00	

Section 4: Contribution Requirements

The special payment schedule effective December 31, 2010, is calculated on the assumption that contributions commence on July 1, 2012 and are amortized over 13.5 years. The percentage of covered earnings is calculated as a level percentage of pay through to the last payment date, assuming covered earnings grow at 4.0% per year for 2 years after the valuation date and 4.40% thereafter (the assumed base salary increase including average merit and promotion).

Special Payments in Respect of the Solvency Deficiency

In accordance with the *Employment Pension Plans Act*, solvency deficiency payments are not required to be made. As a result, the Plan has a net solvency deficit as at December 31, 2010, but no additional contributions are required due to the solvency position of the Plan.

Excess Surplus

The *Income Tax Act* prescribes the maximum going concern surplus (before contingency reserves) that may be retained by the Plan while employer contributions continue. Since the Plan has an unfunded liability, there is no excess surplus, and therefore employer contributions are not affected by the prescribed maximum surplus limit.

Total Contributions

The minimum amount under the *Employment Pension Plans Act* and the maximum amount, under the *Income Tax Act* that the member and employer must contribute are described in Appendix F.

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.

Section 4: Contribution Requirements

The minimum and maximum member and employer contributions to the Plan, 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	2.34%	23.93%
Post-1991 unfunded liability	5.54%	14.87%
Solvency deficiency	0.00%	45.47%
Post-1991 current service cost	17.80%	17.80%
Total		
▪ Government	1.25%	1.25%
▪ Members and employers	25.68%	102.07%

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, 2012 to the effective date of the next actuarial valuation to meet the Act'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, 2011 to December 31, 2014, expressed as a percentage of pay.

Based on the results of the valuation, the Board has adopted a 1.39% increase in total employer and member contribution rates. The total contribution rate will increase from 24.29% to 25.68% effective July 1, 2012.

Section 4: Contribution Requirements

The new contribution rates effective July 1, 2012 are shown in the following table. Note that the employers pay matching contributions except at the Athabasca University and the Banff Centre where employers contribute 1.0% more than members.

New Contribution Rates effective July 1, 2012				
	Equal Share		**Employer = Members + 1%**	
	Member	Employer	Member	Employer
Pre-1992 unfunded liability additional contributions	1.17%	1.17%	1.17%	1.17%
Post-1991 unfunded liability amortization payments	2.77%	2.77%	2.77%	2.77%
Current service contributions:				
- earnings below YMPE	7.23%	7.23%	6.73%	7.73%
- earnings above YMPE	10.32%	10.32%	9.82%	10.82%
Total Contributions				
On earnings below YMPE	11.17%	11.17%	10.67%	11.67%
On earnings above YMPE, but less than pensionable salary cap	14.26%	14.26%	13.76%	14.76%
On earnings above pensionable salary cap	1.17%	1.17%	1.17%	1.17%

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

Section 5: Additional Disclosures - Actuarial Standards of Practice

New Canadian Institute of Actuaries standards of practice specific to pension plans became effective December 31, 2010. Among other things, these new standards require that some additional information be disclosed in the valuation report as follows:

- effect on the going concern valuation liability and on the current service cost, of using a discount rate 1% lower than that used for the valuation,
- effect on the solvency valuation liability, of using a discount rate 1% lower than that used for the valuation, and
- incremental cost on a solvency basis due to the membership in the Plan between the December 31, 2010 and the next valuation date.

Effect - Use going concern valuation discount rate lower by 1%

The going concern valuation liability shown in Section 2 and the current service cost shown in Section 4 are based, among other assumptions, on a discount rate assumption of 6.4% per annum. The impact on these results of using a discount rate 1% lower is as follows:

Going Concern Sensitivities ($,000,000)				
	Discount 6.4%	Discount 5.4%	Effect	
			Increase ($)	Increase (%)
Total going concern liability	$3,641.2	$4,151.7	$510.5	14%
Total current service cost	$136.1	$165.9	$29.8	22%

Under the going concern valuation, the liability represents the present value, based on the method and assumptions used, of the Plan obligations in relation to the pension credits accrued at the valuation date and this amount becomes the target for the assets required to pay for those plan obligations. The current service cost represents the corresponding amounts for service accruing in the 12 months following the valuation date.

Note that using a discount rate 1% higher than that assumed would result in a comparable reduction in the Plan liabilities and current service cost. In determining the sensitivity results above, we have only changed the discount rate and left all other assumptions unchanged. Also note that difference between the discount rate and the inflation rate is sometimes referred to as the real discount rate; since the discount rate is changed and the inflation rate is not changed, the real discount rate has also changed.

Section 5: Additional Disclosures - Actuarial Standards of Practice

Effect - Use solvency valuation discount rate lower by 1%

The solvency liability shown in Section 3 is based, among other assumptions, on a discount rate assumption summarized in Appendix D. The impact on these results of using a discount rate 1% lower is as follows:

Solvency Sensitivities ($,000,000)				
	Valuation basis at December 31, 2010	Based on Discount Rate Lower by 1%	Effect	
			Increase ($)	Increase (%)
Total liability - solvency	$5,146.9	$5,896.5	$749.6	15%

Under the solvency basis, the liability represents the estimated amount required to pay for all the Plan obligations in relation to the pension credits accrued at the valuation date. The solvency liability is based on the market conditions at the valuation date to pay for the transfer values and for the purchase of pensions for retirees and beneficiaries.

Note that using a discount rate 1% higher than that assumed would result in a comparable reduction in the Plan solvency liabilities. In determining the sensitivity results above, we have only changed the discount rate and left all other assumptions unchanged. Also note that difference between the discount rate and the inflation rate is sometimes referred to as the real discount rate; since the discount rate is changed and the inflation rate is not changed, the real discount rate has also changed.

Incremental cost on a solvency basis

The incremental cost on a solvency basis represents the present value at December 31, 2010 of the expected aggregate change in the solvency liability between December 31, 2010 and the next calculation date, which is December 31, 2013. Appendix D gives more details on the calculation methodology and on assumptions.

Based on the methodology and assumptions disclosed in Appendix D, the incremental cost on a solvency basis, for the period from December 31, 2010 to December 31, 2013, is $1,057.9 million.

Section 6: Actuarial Certificate

Universities Academic Pension Plan

Canada Revenue Agency Registration: 0339572

Opinion

This actuarial certification forms an integral part of the actuarial valuation report for the Plan as at December 31, 2010. We confirm that we have prepared an actuarial valuation of the Plan as at December 31, 2010 for the purposes outlined in the Introduction section to this report and consequently:

We hereby recommend that:

1. The members and employers should contribute the amounts recommended in Section 4 of this report.
2. The next actuarial valuation for the purpose of developing a funding recommendation should be performed no later than as at December 31, 2013.

We hereby certify that, in our opinion:

1. With respect to the purposes of determining the Plan's financial position on a going concern basis as at December 31, 2010

    a) The results of our valuation of the Plan are as follows:

	Pre-1992	Post-1991	Total
Total actuarial value of assets	**$838.0**	**$1,589.3**	**$2,427.3**
Total liability	**$1,624.9**	**$2,016.3**	**$3,641.2**
Excess assets (unfunded liability)	**($786.9)**	**($427.0)**	**($1,213.9)**
Funded ratio	0.5157	0.7882	0.6666
Government share of unfunded liability	$275.6	$0.0	$275.6
Members' and employers' share of unfunded liability	$511.3	$427.0	$938.3

    b) There is no excess surplus as defined by Section 147.2(2) of the *Income Tax Act* in the Plan at December 31, 2010.

Section 6: Actuarial Certificate

2. With respect to the purpose of determining the Plan's financial position on a solvency basis:

   a) The Plan has a gross solvency deficit of $2,609.1 million as at December 31, 2010, determined as solvency assets of $2,537.8 million less solvency liabilities of $5,146.9 million.

   b) The solvency ratio is 0.4931 at December 31, 2010.

   c) The liabilities of the Plan would exceed the Plan's assets by $2,609.1 million if the Plan was terminated and wound-up as at December 31, 2010.

3. With the respect to the purpose of determining the Plan's funding requirements:

   a) The Plan's going concern current service cost for the Plan year commencing 2011 is estimated to be $136.1 million.

   b) For the Plan year commencing 2011 and for each Plan year thereafter until the next actuarial valuation is certified, the total going concern current service cost to be paid by members and employers is determined as 17.80% of capped pensionable earnings. The current service cost increase from 17.17% determined in the last valuation will be implemented July 1, 2012.

   c) The minimum special payments and additional contributions effective July 1, 2012 until the next actuarial opinion, as a percentage of earnings, are as summarized in the following table.

Minimum Special Payments and Additional Contributions for Unfunded Liability			
	Pre-1992	Post-1991	Total
Government	1.25%	n/a	1.25%
Member	1.17%	2.77%	3.94%
Employer	1.17%	2.77%	3.94%
Total	3.59%	5.54%	9.13%

The total maximum special payments and additional contributions from January 1, 2011 to December 31, 2014, as a percentage of earnings are 25.18% for the pre-1992 unfunded liability, 14.87% for the post-1991 unfunded liability, and 45.47% for the solvency deficiency.

Note that contributions with respect to the pre-1992 unfunded liability are expressed a percentage of total earnings, and contributions with respect to the post-1991 unfunded liability are expressed a percentage of capped pensionable earnings.

Section 6: Actuarial Certificate

The complete amortization schedules with respect to the unfunded liabilities are shown in Section 4.

d) The contributions as recommended in this report are expected to be sufficient to satisfy the Plan's funding requirements.

e) The employer contributions recommended in this report are eligible contributions under Section 147.2(2) of the *Income Tax Act*.

f) 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

4. For the purposes of the valuation:
   - The data on which this valuation is based are sufficient and reliable;
   - The assumptions used are, in aggregate, 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 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.

Robert Thiessen

Robert J. Thiessen
Fellow, Canadian Institute of Actuaries

K Hall

Karen J. Hall
Fellow, Canadian Institute of Actuaries

November 30, 2011

Appendix A: Assets

Trustee/Investment Manager

The Plan assets are held in trust by the Universities Academic Pension Plan Board of Trustees, and are invested by AIMCo 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.

Necessary asset data required for the valuation was obtained from staff of the Board. The valuation included an examination of the asset data to test for general reasonableness, internal consistency, consistency with asset data provided in prior years as well as a reconciliation with the previous valuation's asset data. It did not include an independent audit from source records to test for completeness and accuracy. These tests demonstrated that the asset data is sufficient and reliable for the purposes of the valuation. A copy of the Administrator certification of asset data is included in Appendix G.

Fund Values

The market values of the fund as reported in the Plans' Financial Statements at the date of the previous valuation and at the date of this valuation were as follows:

Market Value of Plan Assets ($,000,000)		
	December 31, 2010	**December 31, 2008**
Invested Assets	$2,524.8	$1,972.3
Net receivables and payables	$15.6	$14.2
Market Value	$2,540.4	$1,986.5

Appendix A: Assets

Asset Allocation

The following is a summary of the allocation of the Plan's invested assets at December 31, 2010:

	($thousands)	
	2010	
	Fair Value	**%**
Interest-bearing securities		
Cash and short-term securities	$ 23,345	0.9
Bonds and mortgages	453,905	18.0
Real return bonds	187,997	7.4
	665,247	26.3
Equities		
Canadian public equities	445,292	17.7
Foreign public equities	1,129,119	44.7
	1,574,411	62.4
Alternative investments		
Real estate	171,024	6.8
Infrastructure	79,199	3.1
Absolute return strategy hedge funds	27,390	1.1
Timberland	7,529	0.3
	285,142	11.3
Total investments	$ 2,524,800	100.0

Appendix A: Assets

Target Asset Mix

The target asset mix of the Plan was provided by the staff of the Board and is stated as follows:

UAPP ASSET MIX				
		Current Policy Weight	**New Allocation**	
Asset Class	**Benchmark**		**Policy Allocation**	**Allowable Range**
Cash and Short-term	DEX 91 Day T-bill Index	0.5	0.0	0-1
Canadian Bonds (Universe)	DEX Universe Bonds	5.0	10.5	8-12
Long-term Canadian Bonds	DEX Long Bond Index	12.5	12.5	10-15
Real Rate of Return Bonds	DEX Real Return Index	7.0	7.0	5-9
Total Fixed Income		**25.0**	**30.0**	**25-35**
Canadian Equities	S&P/TSX Composite Capped Index	17.5	17.5	15-20
Global Equities	MSCI ACWI	42.5	33.5	30-35
Emerging Markets Equities	MSCI Emerging Markets Index, Net	0.0	4.0	0-5
Total Equities		**60.0**	**55.0**	**50-60**
Hedge Funds (Fund-of-Funds)	HFRX Global Investable Index (Hedged C$)	2.0	No Change	
Canadian Real Estate (Direct)	ICREIM/IPD Large Institutional All Property Index	8.0	No Change	
Private Income	CPI + 600 BPS	4.0	No Change	
Timberland	CPI + 400 BPS	1.0	No Change	
Total Alternatives		**15.0**	**15.0**	
Total		**100.0**	**100.0**	

Appendix A: Assets

Actuarial Value of Assets

The method to determine the actuarial value of assets is described in Appendix C. The actuarial value of assets at December 31, 2010 is derived as follows:

Actuarial Value of Assets (Three-Year Average Market Value) ($ millions)			
		2010	
	Pre-1992	Post-1991	Total
Market value at January 1, 2009	**851.8**	**1,134.8**	**1,986.5**
Contributions	23.4	142.8	166.3
Benefit Payments & Expenses	(115.9)	(47.6)	(163.5)
Assumed Investment Income (at 6.7% per annum)	54.0	79.2	133.2
Projected value at December 31, 2009	813.3	1,309.2	2,122.5
Contributions	26.7	163.3	190.0
Benefit Payments & Expenses	(119.8)	(56.3)	(176.1)
Assumed Investment Income (at 6.7% per annum)	51.4	91.3	142.7
Projected value at December 31, 2010 (A)	**771.6**	**1,507.5**	**2,279.1**
Market value at January 1, 2010	**892.6**	**1,401.7**	**2,294.3**
Contributions	26.7	163.3	190.0
Benefit Payments & Expenses	(119.8)	(56.3)	(176.1)
Assumed Investment Income (at 6.7% per annum)	56.7	97.5	154.2
Projected value at December 31, 2010 (B)	**856.2**	**1,606.2**	**2,462.4**
Market Value of Assets at December 31, 2010 (C)	**886.3**	**1,654.1**	**2,540.4**
Actuarial Value of Assets at December 31, 2010			
Smoothed Market Value (average of A, B, and C)	838.0	1,589.3	2,427.3
110% of market value	974.9	1,819.5	2,794.4
Capped Actuarial Value of Assets	**838.0**	**1,589.3**	**2,427.3**

Note that the post-91 funded ratio of the plan is 0.7882, and this ratio would be 0.8204 if the market value of assets was utilized instead of a smoothed market value.

Appendix A: Assets

Reconciliation of Funds

The transactions of the market value of the fund during the intervaluation period are summarized below:

	($, 000)	
Year	**2009**	**2010**
Market value at January 1	**$1,986,529**	**$2,294,300**
Employer contributions	76,966	88,821
Employee contributions	76,901	87,318
Government contributions	9,615	10,425
Prior service contributions	2,811	3,390
Investment income	311,913	238,852
Pension payments	(148,197)	(154,874)
Termination and death benefit payments	(13,422)	(19,343)
Investment management expenses	(6,929)	(6,683)
Other fees and expenses	(1,900)	(1,800)
Market value at December 31	**$2,294,300**	**$2,540,359**
Rate of return, net of all expenses	**15.34%**	**10.09%**

Appendix B: Membership

Source of Data

Data for active participants, pensioners, deferred participants and amounts held-on-deposit as at December 31, 2010, were supplied by ACS and Buck Consultants, and staff of the Universities Academic Pension Plan Board of Trustees. This data included dates of birth, gender, full/part-time status, service ratio, pensionable current service, prior bought service and prior service being bought. Service fields were split for pre-1992 and post-1991 service. Pensionable salary and in-year service were also provided for 2009 and 2010. Contribution information was provided split by employee/employer and pre-1992 and post-1991 service.

Numerous tests were performed on the data, reconciling 2010 data to 2008 data and testing the validity of the 2010 data. Any outstanding questions were sent to UAPP staff and adjustments made according to the responses received.

Despite these numerous tests, where data was still unreliable or unavailable, assumptions were required to complete the data. These assumptions are summarized below.

Description	Assumption
Annualization of Pensionable Earnings	Since the data provided did not include annualized salary, earnings were annualized using actual earnings and in-year service for each year.
Missing Earnings Information	Expected earnings for 2011 are assumed to be 4.0% higher than 2010 earnings. If 2010 earnings were not available, the most recent available earnings were utilized; otherwise the average of the group with the same gender was utilized.
Missing Service Ratios	If the service ratio was blank we assumed a service ratio of 1.0.
Missing 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.
Missing 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, 2011. Any incomplete data was supplemented with the pensioner data provided by Buck Consultants.

Appendix B: Membership

Reconciliation of Membership

	Active members	Hold-on-Deposit Members	Deferred Pensioners	Pensioners and Surviving Spouses	Total
Number as at December 31, 2008	7,352	336	751	3,475	11,914
Data Adjustments	0	0	4	(4)	0
New Entrants	1,331	55	20	6	1,412
Return to Active	25	(6)	(19)	0	0
Retirements	(405)	0	(38)	443	0
Terminations of Employment					
- Deferred	(296)	(2)	298	0	0
- Hold on Deposit	(21)	21	0	0	0
- Lump sum / no further benefit	(392)	(26)	(42)	0	(460)
Deaths					
- Deferred	(8)	0	8	0	0
- Hold on Deposit	0	0	0	0	0
- Lump sum / no further benefit	0	(1)	0	(128)	(129)
Expiry of guarantee	0	0	0	(14)	(14)
New survivor pensions	(10)	0	(1)	62	51
Number as at December 31, 2010	**7,576**	**377**	**981**	**3,840**	**12,774**

Appendix B: Membership

Summary of Membership Data

Active members	December 31, 2010	December 31, 2008
Membership	7,576	7,352
Average age	48.2 years	47.7 years
Average pensionable service	9.5 years	9.4 years
Total 2010 unlimited earnings for members with a current service cost	$777,639,324	$702,891,043
Total expected 2011 capped earnings for members with a current service cost	$767,617,915	$712,387,326
Total expected 2011 annualized capped earnings for all members	$798,474,661	$733,177,368
Average expected 2011 annualized capped earnings for all members	$105,395	$99,725
Average expected 2011 annualized capped earnings for members with current service cost	$105,209	$99,324
Percent female	45.0%	44.7%

Active members with Pre-1992 Service	December 31, 2010	December 31, 2008
Membership	1,272	1,530
Average age	58.8 years	57.6 years
Average pre-1992 pensionable service	7.4 years	8.2 years
Average expected 2011 annualized unlimited earnings for all members	$151,301	$138,531
Percent female	30.1%	29.3%

Appendix B: Membership

Hold-on-Deposits Members	December 31, 2010	December 31, 2008
Membership	377	336
Average age	50.5 years	49.5 years
Average contributions with interest	$8,543	$8,883

Deferred Pensioners	December 31, 2010	December 31, 2008
Membership	981	751
Average age	47.9 years	48.2 years
Average annual pension	$8,591	$8,845
Percent female	47%	44%
Average annual pre-1992 pension	$1,766	

Pensioners and Survivors	December 31, 2010	December 31, 2008
Membership	3,840	3,475
Average age	71.9 years	71.6 years
Average annual pension	$42,235	$41,888
Average years since retirement	12.3 years	11.0 years
Percent female	34%	34%

Pensioners and Survivors with Pre-1992 Pension	December 31, 2010	December 31, 2008
Membership	3,335	3,112
Average age	73.1 years	72.3 years
Average Pre-1992 Pension	$36,088	$36,823
Average years since retirement	12.7 years	11.9 years
Percent female	31%	32%

Appendix B: Membership

Membership Distribution - Active Members

The distribution by age and service of the active membership (with average annualized capped 2011 expected earnings) is as follows:

		Years of Credited Service								
Age Nearest		Under 5	5-9.99	10-14.99	15-19.99	20-24.99	25-29.99	30-34.99	35 – 39.99	Total
20 - 24	Number	10								**10**
	Avg. Sal. $	57,004								**57,004**
25 - 29	Number	142	1							**143**
	Avg. Sal. $	*	*							**69,243**
30 - 34	Number	480	58							**538**
	Avg. Sal. $	80,186	87,197							**80,942**
35 - 39	Number	709	276	30						**1015**
	Avg. Sal. $	84,180	96,763	110,526						**88,380**
40 - 44	Number	539	463	206	14	1				**1223**
	Avg. Sal. $	89,499	*	114,990	116,347	*				**98,574**
45 - 49	Number	453	384	336	112	30	1			**1316**
	Avg. Sal. $	90,756	104,829	117,758	126,261	*	*			**105,547**
50 - 54	Number	360	289	254	155	161	43	3		**1265**
	Avg. Sal. $	*	107,426	118,339	127,205	130,264	*	113,609		**113,090**
55 - 59	Number	248	224	172	107	200	138	55	2	**1146**
	Avg. Sal. $	102,037	110,029	118,614	124,058	133,580	133,174	131,641	142,101	**118,888**
60 - 64	Number	117	98	84	52	81	94	100	42	**668**
	Avg. Sal. $	100,796	114,441	121,208	126,010	131,797	135,295	138,358	138,579	**123,940**
65 - 69	Number	27	25	9	20	25	37	44	65	**252**
	Avg. Sal. $	106,144	117,849	117,758	126,733	139,415	136,452	138,696	140,858	**131,742**
Total	**Number**	**3085**	**1818**	**1091**	**460**	**498**	**313**	**202**	**109**	**7,576**
	Avg. Sal. $	**88,691**	**103,863**	**117,572**	**125,757**	**131,840**	**132,540**	**136,235**	**140,002**	**105,395**

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

The distribution by age and service of active members who have pre-1992 service (with average annualized 2011 expected earnings) is as follows:

		Years of Pre-1992 Credited Service						
Age Nearest		Under 5	5-9.99	10-14.99	15-19.99	20-24.99	25-29.99	Total
40 - 44	Number	2						**2**
	Avg. Sal. $	105,377						**105,377**
45 - 49	Number	53	5					**58**
	Avg. Sal. $	140,064	110,214					**137,491**
50 - 54	Number	176	70	7				**253**
	Avg. Sal. $	140,296	136,734	116,322				**138,647**
55 - 59	Number	204	160	69	9			**442**
	Avg. Sal. $	140,088	150,687	154,375	145,427			**146,264**
60 - 64	Number	71	95	102	64	3		**335**
	Avg. Sal. $	149,425	151,831	165,018	172,083	191,091		**159,557**
65 - 69	Number	21	36	48	47	27	3	**182**
	Avg. Sal. $	165,789	172,382	164,140	167,108	189,054	188,882	**170,831**
Total	**Number**	**527**	**366**	**226**	**120**	**30**	**3**	**1,272**
	Avg. Sal. $	**142,305**	**149,896**	**160,074**	**168,135**	**189,258**	**188,882**	**151,301**

Appendix B: Membership

Membership Distribution of Members in Receipt of Pension

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	**Data**	**<50**	**50-59**	**60-69**	**70-79**	**80-89**	**≥ 90**	**Spouse**	**Total**
<55	Count							18	18
	Average of Annual Pension							$17,461	$17,461
	Average of J&S %*							7.06	n/a
55-60	Count	15	79	67	1	2		82	246
	Average of Annual Pension	$29,144	$31,204	$28,465	**	**		$23,668	$27,822
	Average of J&S %*	0.84	0.88	0.84	**	**		9.51	n/a
60-65	Count	11	77	254	22			182	546
	Average of Annual Pension	$41,152	$36,637	$40,909	$35,580			$35,112	$38,164
	Average of J&S %*	0.91	0.84	0.85	0.86			4.63	n/a
65-70	Count	6	65	458	85	7		264	885
	Average of Annual Pension	$39,460	$41,697	$46,521	$40,925	$32,032		$39,025	$43,231
	Average of J&S %*	0.83	0.82	0.83	0.85	0.86		2.65	n/a
70-75	Count	8	30	234	283	14		299	868
	Average of Annual Pension	$40,569	$46,231	$50,339	$49,098	$45,956		$45,001	$47,793
	Average of J&S %*	0.88	0.82	0.80	0.85	0.86		1.09	n/a
75-80	Count	2	10	46	256	38	2	222	576
	Average of Annual Pension	$39,887	$44,023	$44,187	$48,039	$41,585	$47,780	$42,617	$45,117
	Average of J&S %*	0.83	0.73	0.80	0.87	0.89	1.00	0.18	n/a
80-85	Count		3	9	91	105	5	191	404
	Average of Annual Pension		$45,709	$32,768	$42,962	$44,550	$44,397	$40,224	$41,891
	Average of J&S %*		0.67	0.85	0.87	0.92	1.00	0.02	n/a
85-90	Count			5	10	77	10	115	217
	Average of Annual Pension			$33,449	$49,752	$47,863	$34,380	$36,078	$40,751
	Average of J&S %*			0.63	0.83	0.88	0.93	0.01	n/a
90-95	Count				1	11	4	53	69
	Average of Annual Pension				**	**	$36,073	$33,176	$34,969
	Average of J&S %*				**	**	0.84	0.00	0.19
95-100	Count					2		9	11
	Average of Annual Pension					$45,662		$20,402	$24,995
	Average of J&S %*					0.58		0.00	0.11
Total Count		**42**	**264**	**1073**	**749**	**256**	**21**	**1435**	**3840**
Total Average of Annual Pension		**$36,450**	**$37,730**	**$44,621**	**$46,636**	**$44,677**	**$38,363**	**$38,772**	**$42,235**
Total Average of J&S %*		**0.87**	**0.84**	**0.83**	**0.86**	**0.89**	**0.93**	**1.97**	**n/a**

*J&S % for members with no spouse is remaining guarantee period

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

Appendix B: Membership

Membership Distribution of Members in Receipt of Pre-92 Pension

		Spouse Age						No	
Age	**Data**	**<50**	**50-59**	**60-69**	**70-79**	**80-89**	**≥90**	**Spouse**	**Total**
<55	Count							10	10
	Average of Pre-92 Annual Pension							$15,730	$15,730
	Average of J&S %*							4.04	n/a
55-60	Count	8	44	35	1			39	127
	Average of Pre-92 Annual Pension	**	$17,914	$18,650	**			$18,435	$18,083
	Average of J&S %*	**	0.88	0.85	**			7.08	n/a
60-65	Count	9	49	179	16			131	384
	Average of Pre-92 Annual Pension	$25,685	$23,916	$27,350	$20,495			$24,305	$25,548
	Average of J&S %*	0.89	0.84	0.84	0.83			3.99	n/a
65-70	Count	5	55	389	67	4		220	740
	Average of Pre-92 Annual Pension	$27,071	$27,372	$35,502	$32,743	$34,207		$31,635	$33,434
	Average of J&S %*	0.87	0.82	0.84	0.83	0.83		2.20	n/a
70-75	Count	8	28	220	263	14		282	815
	Average of Pre-92 Annual Pension	$28,926	$32,616	$39,607	$41,609	$37,758		$38,011	$39,324
	Average of J&S %*	0.88	0.82	0.80	0.85	0.86		0.99	n/a
75-80	Count	2	10	46	252	38	2	219	569
	Average of Pre-92 Annual Pension	**	$29,625	$36,365	$44,069	**	$45,535	$40,031	$41,258
	Average of J&S %*	**	0.73	0.80	0.87	**	1.00	0.19	n/a
80-85	Count		3	9	91	104	4	188	399
	Average of Pre-92 Annual Pension		$43,520	$31,223	$41,446	$44,379	$46,700	$40,106	$41,417
	Average of J&S %*		0.67	0.85	0.87	0.92	1.00	0.02	n/a
85-90	Count			5	9	76	10	112	212
	Average of Pre-92 Annual Pension			$33,752	$48,162	$48,188	$34,523	$36,125	$40,829
	Average of J&S %*			0.63	0.81	0.88	0.93	0.01	n/a
90-95	Count				1	10	4	53	68
	Average of Pre-92 Annual Pension				**	**	$36,073	$33,223	$34,798
	Average of J&S %*				**	**	0.84	0.00	n/a
95-100	Count					2		9	11
	Average of Pre-92 Annual Pension					$45,662		$20,402	$24,995
	Average of J&S %*					0.58		0.00	n/a
Total Count		**32**	**189**	**883**	**700**	**248**	**20**	**1263**	**3335**
Total Average of Pre-92 Annual Pension		**$24,392**	**$25,427**	**$34,196**	**$41,194**	**$44,084**	**$38,370**	**$34,866**	**$36,088**
Total Average of J&S %*		**0.89**	**0.83**	**0.83**	**0.86**	**0.89**	**0.93**	**1.31**	**n/a**

*J&S % for members with no spouse is remaining guarantee period

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

Appendix B: Membership

Membership Distribution of Deferred Pensioners

The distribution by member age for deferred pensioners is as follows:

Age	Count	Average of Pre-1992 Pension	Average of Total Annual Pension
25-30	11	$0	$2,530
30-35	50	$0	$2,792
35-40	124	$0	$4,100
40-45	207	$1	$5,639
45-50	170	$201	$7,381
50-55	213	$937	$9,984
55-60	128	$3,661	$12,242
60-65	54	$9,800	$17,246
65-70	20	$17,297	$25,920
>70	4	$38,713	$46,622
Total	**981**	**$1,766**	**$8,591**

Annual pension amounts shown for deferred pensioners are the amounts payable without adjustment for early or postponed retirement, but include cost of living adjustments granted up to January 1, 2011.

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 the plan's benefits are contingent; and
- going concern methods which effectively determine the way in which the plan's costs will be allocated over the members' service.

Together, the going concern assumptions and methods provide a basis from which a pension plan's cost can be estimated and also help establish an orderly program for meeting the ultimate cost of the plan. A member's entitlements under a registered pension plan are generally funded during the period over which service is accrued by the member. The true cost of a pension 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 Plan 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 Plan and continue to satisfy the Board'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 deviations have been built into the going concern assumptions and methods 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 (i.e. assumptions with no such margins), then the margins built into the going concern assumptions and methods will enhance the position of the Plan.

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 both intergenerational inequities among members and unnecessary financial strain on the sponsor. To this end, the sponsor's funding policy has been referred to for guidance and only adverse events that are plausible in usual operations have been contemplated.

Appendix C: Going Concern Assumptions and Methods

Actuarial Assumptions for Going Concern Valuation

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

Summary of Actuarial Assumptions used in the Going Concern Valuation		
Valuation Date	**December 31, 2010**	**December 31, 2008**
Demographic		
Mortality rates	UP94 generational projection	UP94 generational projection
Termination rates	Varies by age	Varies by age
Retirement rates	Varies by age	Varies by age
Disability rates	Nil	Nil
Proportion with spouse	80%	80%
Spouse age	Female 4 years younger	Female 4 years younger
Economic (per annum)		
Discount rate	6.4%	6.7%
Inflation	2.4%	2.7%
Earnings in year following valuation date	4.0% increase	6.0% increase
Wage increase	4.0% for 2 years after the valuation date, 2.9% plus merit and promotion scale thereafter	6.25% for 2 years after the valuation date, 3.2% plus merit and promotion scale thereafter
YMPE and *Income Tax Act* maximum pension increase	2.9%	3.0%
Other		
Percent electing deferred pension	70%	100%
Expenses	Allowed for in discount rate	Allowed for in discount rate
Assets	Smoothed market value	Smoothed market value

Appendix C: Going Concern Assumptions and Methods

Demographic Assumptions for Going Concern Valuation

Mortality rates

Rates of mortality are used to determine the proportion of members who will survive to retirement age and the probability that pension payments will or will not be required at the point in time at which the future payments are due.

Benefits paid from the Plan 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; or
- 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, we utilized the sex-distinct 1994 Uninsured Pensioner mortality table, with mortality improvements projected on a generational basis according to scale "AA", published by the Society of Actuaries. This assumption has not been changed from the previous valuation.

The 1994 Uninsured Pension mortality table (UP-94) reflects mortality experience as of 1994 of a large sample of U.S. and Canadian pension plans. This table is commonly used for valuations where the mortality experience of a plan is not statistically significant to assess the plan's specific experience and where there is no reason to expect the plan's experience to differ significantly. Applying projection scale AA provides an allowance for improvements in mortality after 1994 and is generally considered reasonable for reflecting current mortality levels for pension plans. This assumption is considered best estimate.

Appendix C: Going Concern Assumptions and Methods

Termination rates

A member's benefit entitlement under the Plan is affected by whether or not the member terminates his/her employment prior to retirement for reasons other than death. In order to account for this impact 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.

For this going concern valuation, termination rates are assumed to be in accordance with the following age-based table. This table is based upon plan experience from the years 1988 to 1993; this assumption is unchanged from the previous valuation. The termination rates are considered to be best estimate. Selected values of the table are shown below:

Probability of Termination in the Year Following Given Age	
Age	**%**
20	9.0
30	9.0
35	7.5
40	6.0
45	3.0
50	3.0
55	0.0

By way of example, 3.0% of members age 50 are expected to terminate employment within one year of the valuation date.

Vested terminations different than assumed can result in gains or losses to the Plan depending on specific circumstances. These gains and/or losses would be revealed at the next valuation for the Plan.

Retirement rates

A member's benefit entitlement under the Plan is dependent on when the member decides to commence, or is deemed to commence, to receive a pension from the Plan (referred to as "retirement from the Plan"). The terms of the Plan determine the pension that is payable to a member on retirement from the Plan and is dependent on whether the member retires, dies or terminates from active employment. Accordingly, an assumption with respect to when a member is expected to retire from the Plan has been made.

Members receive unreduced retirement benefits depending upon their age and continuous service at retirement. Reductions-to-benefits are also based on age and continuous service.

Appendix C: Going Concern Assumptions and Methods

For this going concern valuation, the annual retirement rates are assumed to be as follows:

Probability of Retirement in the Year Following Given Age	
Age	**%**
55	10.0
56-58	5.0
59-64	10.0
65-68	75.0
69	100.0

This assumption is based on an estimate of plan experience for the years 1988 to 1993. The retirement rates are considered to be best estimate, and are unchanged from the previous valuation.

Disability rates

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. In most cases, gains would arise when a member becomes disabled. Consequently, this assumption is considered to include a margin.

Proportion of Members with a Spouse

Eighty percent of active members were assumed to have a spouse of the opposite gender at their date of death for the purposes of valuing the pre-retirement death benefit. Based on an analysis of the members' actual spousal status, this assumption provides a margin for adverse deviation. This assumption is unchanged from the previous valuation.

Appendix C: Going Concern Assumptions and Methods

Economic Assumptions for Going Concern Valuation

Discount Rate and Rate of Investment Return on Assets

An actuarial present value of, for example, 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.

In selecting the going concern investment return assumption, the following factors are typically taken into consideration:

- the Plan'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 Plan's current target asset mix, expected long-term asset class returns, and an underlying long-term inflation rate of 2.25% per annum, the invested assets of the Plan are expected to earn a gross rate of return of 7.44% per annum. 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 Plan's current target asset mix policy.

It is assumed that investment management fees will average 0.31% of assets (including 0.12% for passive management and 0.19% for active management), and that non-investment expenses charged to the pension fund will average 0.08% of assets. We have also assumed that a portion of the investment management fees (0.19%) will be offset by value added due to active management, and consequently, the rate of return on assets net of all expenses is expected to be 7.24% per annum. To provide for a margin for adverse deviation, the discount rate was assumed to be 6.4% per annum. This assumption has been set based on the premise that the Plan's current asset mix strategy remains consistent into the future. This assumption has changed from the previous valuation when a discount rate assumption of 6.7% per annum was used.

Inflation and Pension Indexation

Inflation is assumed to be 2.4% per annum and includes a margin of 0.15%. This assumption has changed from the previous valuation when an inflation assumption of 2.7% per annum was used.

The resulting pension indexation rates based on 60% of inflation are 1.44%.

Appendix C: Going Concern Assumptions and Methods

Increases in Pensionable Earnings

We have taken the 2010 annualized earnings and assumed that 2011 earnings will be 4.0% higher, and have further assumed that salaries will increase at 4.0% per annum for 2 years after the valuation date and at 2.9% per annum, plus SMP thereafter. The assumption for the first two years is based on estimated increases provided by Plan sponsors, and the assumption after two years allows for general wage increases of 0.5% above the level of inflation plus an additional amount for seniority, merit and promotion (SMP). This assumption has changed from the previous valuation where salaries were assumed to increase at 6.25% per annum for 2 years after the valuation date and at 3.2% 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, and we have also included average increases due to SMP of 1.5% per annum. Due to the nature of the funding arrangement for the pre-1992 unfunded liability we have also included a provision for estimated headcount growth of 0.75% per annum in calculating the present value of pre-1992 additional contributions from January 1, 2011 to December 31, 2043. The resulting salary increase rates that were used to determine contribution rates associated with unfunded liabilities of the plan are as follows:

Pre-1992:	4.75% for two years, and 5.15% thereafter
Post-1991:	4.00% for two years, and 4.40% thereafter.

The construction of this assumption is the same as for the previous valuation, but the underlying assumption for increases in pensionable earnings has been changed as described above. The assumed rates for average SMP and headcount growth are unchanged from the previous valuation.

YMPE and Income Tax Act Maximum Pension Limit

We assumed that the *Income Tax Act* maximum annual pension benefit per year of pensionable service will be indexed at 2.9% per annum. This assumption consists of inflation of 2.40% per annum, general wage productivity of 0.25% per annum, plus 0.25% for a margin for adverse deviation. This assumption has changed from the previous valuation when an index assumption of 3.0% per annum was used.

Appendix C: Going Concern Assumptions and Methods

Other Assumptions for Going Concern Valuation

Proportion Electing Deferred Pension

Seventy percent (70%) of vested terminated members were assumed to elect a deferred pension with remaining members choosing to transfer their benefit out of the Plan. This assumption has changed from the previous valuation where one hundred percent (100%) of vested terminated members were assumed to elect a deferred pension. This assumption is based on an estimate of Plan experience and is considered best estimate.

Expenses

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

We have assumed that all expenses are taken into account in the net investment return. This assumption is unchanged from the previous valuation.

Appendix C: Going Concern Assumptions and Methods

METHODS FOR GOING CONCERN VALUATION

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 (also known as the projected unit credit method) prorated by service was used to determine the actuarial liabilities and the normal actuarial cost under the Plan. This method is unchanged from the previous valuation.

Under this method, the actuarial liability at December 31, 2010 is determined as the lump sum required to provide the projected pension benefit for pensionable service earned to that date. The normal actuarial cost for the Plan is the amount required to fund the projected benefits accruing and to be earned in the year following the valuation date.

With respect to service after the valuation date, the actuarial present value of benefits for service in the year following the valuation date (i.e. the normal actuarial cost) is expressed as a percentage of the actuarial present value of participating payroll for that year. The current service 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 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 payroll. As new entrants join the Plan, replacing older members who terminate, the total cost for the Plan is expected to remain relatively stable. This is particularly true as long as the average age of the active plan members remains relatively stable.

Appendix C: Going Concern Assumptions and Methods

In the event of future adverse experience, contributions in addition to the current service cost calculated under the projected unit credit actuarial cost method may be required to ensure that the Plan assets are adequate to provide for the benefits. Conversely, favourable experience may generate excess assets 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.

Appendix D: Solvency Assumptions and Methods

Actuarial Assumptions for Solvency Valuation

The *Employment Pension Plans Act* of Alberta requires that the Plan's financial position at the valuation date be assessed under the premise that the Plan is terminated and wound up on the valuation date. The Plan's liabilities calculated under this premise (known as the solvency basis) are determined using assumptions and methods prescribed by the relevant pension standards legislation. If the Plan's liabilities under the solvency basis exceed the assets of the Plan then additional contributions would be required.

The following summarizes the prescribed assumptions and methods that comprise the solvency basis for the Plan at the valuation date. While the solvency valuation has been performed using assumptions prescribed by the relevant pension standards legislation, such legislation requires judgement to be exercised in setting certain assumptions, especially as it relates to determining:

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

Consequently, if the Plan was terminated on the valuation date, the solvency liabilities may be different than the actual Plan liabilities. Such differences may be primarily attributed to:

- differences between the actual and assumed proportion of benefits being settled by annuity purchase and lump sum benefits; 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

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

Summary of Actuarial Assumptions used in the Solvency Valuation		
Valuation Date	**December 31, 2010**	**December 31, 2008**
Demographic		
Benefit settlement option	Annuity purchase basis – all members receiving pension, or entitled to retire and commence an immediate pension, and 30% of active members not eligible to retire Transfer value basis – all other members	Annuity purchase basis – all members receiving pension, or entitled to retire and commence an immediate pension Transfer value basis – all other members
Mortality rates	UP94 @ 2020	UP94 @ 2015 for benefits settled by an annuity purchase UP94 @ 2020 for benefits settled by a lump sum transfer
Termination rates	100% on valuation date	100% on valuation date
Retirement rates	100% immediate retirement if at least age 55 at employment termination; otherwise 100% at age 55	100% immediate retirement if at least age 55 at employment termination; otherwise 100% at age 55
Disability rates	Nil	Nil
Economic (per annum)		
Discount rate – Transfer value basis	2.3% for 10 years and 3.3% thereafter	3.4% for 10 years and 4.5% thereafter
Discount rate – Annuity purchase basis	2.04%	4.02%
Wage and *Income Tax Act* maximum pension increase	Nil	Nil
Other		
Wind-up expenses	$2.6 million	$2.6 million
Assets	Market value	Market value

Appendix D: Solvency Assumptions and Methods

Benefit Settlement Option

The following members are assumed to have their benefit entitlement settled by way of annuity purchase on Plan termination:

- all members receiving a monthly pension at the valuation date; and
- all other members who are entitled to retire and commence an immediate pension on the valuation date, and
- 30% of active members entitled to a deferred pension.

All other members are assumed to have their benefit entitlement settled by way of a lump sum transfer.

Discount Rates

The discount rate assumed to apply to benefits that are settled by way of annuity purchase is 2.04% per annum. This discount rate assumption is representative of the rate that, together with the UP-94@2020 Mortality Table, approximates annuity purchase rates at the valuation date for pensions indexed at 60% of increases to the consumer price index, in accordance with guidance provided by the Canadian Institute of Actuaries for solvency valuations as at the valuation date.

The discount rate assumed to apply to benefits that are settled by way of lump sum transfer is 2.3% per annum for 10 years and 3.3% per annum thereafter, in accordance with accepted actuarial practice as at the valuation date for pensions indexed at 60% inflation.

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 UP-94@2020 Mortality Table. This mortality assumption is representative of the mortality table that, together with the discount rate assumption of 2.04%, 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.

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 the UP-94@2020 Mortality Table in accordance with accepted actuarial practice as at the valuation date.

Termination Rates

All active members are assumed to terminate with full vesting on the valuation date and subsequently retire from the plan in accordance with the retirement age assumption described below.

Retirement Rates

We assumed all active members age 55 or older retire immediately and receive a pension in accordance with

Appendix D: Solvency Assumptions and Methods

the terms of the Plan and the member's age and continuous service. All other Plan members are assumed to retire at age 55.

Wages and* Income Tax Act *Maximum Pension Limit Increases

The solvency valuation was based on earnings up to December 31, 2010.

Expenses

It was assumed that the windup expenses, if the Plan were terminated, would be $2.6 million. These expenses have been treated as a reduction to assets in accordance with the *Employment Pension Plans Act* of Alberta and accepted actuarial practice.

In determining an assumption for windup expenses we have assumed that the windup is uncontested and that the Plan sponsors are solvent on the windup date. The assumed windup expenses are considered to be an estimate of the expenses payable from Plan assets with respect to actuarial, administration, and legal services associated with the termination of the Plan. We have not included a provision for additional expenses associated with the plan termination being contested, nor have we included transaction fees associated with the liquidation of assets or any reduction in asset values due to liquidation.

Methods for Solvency Valuation

The solvency liabilities have been calculated as the actuarial present value of the benefits prescribed to be valued under the *Employment Pension Plans Act*. These prescribed benefits are those benefits to which a member would be entitled if the Plan 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 Plan termination on the valuation date.

For purposes of the solvency valuation, assets have been valued at market value with adjustments for in-transit items at the valuation date as shown in the Plan's financial statement, and reduced for windup expenses 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 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 new information.

Appendix D: Solvency Assumptions and Methods

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:
  - 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 discount rates remain at the levels applicable at time 0, that the select period is reset at time t for discount 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 Plan Provisions

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.

Eligibility

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

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.

Vesting

Benefits for all service are vested for members who terminate employment on or after January 1, 2001 and have accumulated at least 2 years of Continuous Plan Membership. Members who terminated employment before January 1, 2001 were vested with five years of pensionable service.

Pensionable Service

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

Pensionable Salary

Pensionable salary is defined as 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. For 2011 the maximum defined benefit under the *Income Tax Act* Regulations is $2,552.22 and pensionable salary is limited to $127,611 for service in 1992 and 1993, and $142,101 for post 1993 service.

Credited Interest

Prior to 1994, participants' contributions were accumulated at the rate of 4% per annum, compounded semi-annually. Effective January 1, 1994, the rate of interest credited to participants' contributions was

Appendix E: Summary of Plan Provisions

changed to the average yield of five-year personal fixed term chartered bank deposits (CANSIM series B14045) over the most recent 12-month period, calculated as of the first day of the calendar year.

Retirement Dates

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

A vested member may elect early retirement effective the first day of any month after attaining age 55. Upon early retirement, a member may receive a reduced pension as described later in this Appendix.

Normal Retirement Pension

Upon normal retirement, a member will receive an annual lifetime benefit calculated as follows:

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 Pension

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.

Appendix E: Summary of Plan Provisions

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.

Pre-Retirement Death Benefit

In the event of the death of a non-vested member before retirement the member's spouse or beneficiary will receive a refund of the member's contributions with interest.

For service prior to January 1, 1994, in the event of the death of a vested member before retirement:

(a) 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.

(b) if the member does not have a spouse, 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.

For service after December 31, 1993, in the event of the death of a vested member before retirement:

(a)
- 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.

(b) if the member does not have a spouse, 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.

Post-Retirement Death Benefit

For service after December 31, 1993, 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.

For service prior to January 1, 1994, the normal form of pension is payable for life and guaranteed for 15 years in any event.

Appendix E: Summary of Plan Provisions

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

Benefit on Termination of Service

In the event of a non-vested member's termination for reasons other than death or retirement the member will receive a refund of the member's contributions with interest.

For service prior to January 1, 1994, in the event of a vested member's termination for reasons other than death or retirement:

(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.

For service after December 31, 1993, in the event of a vested member's termination for reasons other than death or retirement:

(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.

Disability Benefits

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.

Cost-of-Living Increases

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

Appendix F: Legislative Requirements

The *Income Tax Act*

Employer contributions to registered pension plans are deductible in a fiscal year provided the contributions are made in that fiscal year or within 120 days of the end of that fiscal year and the contributions are eligible contributions. Employer contributions are eligible contributions provided they are made pursuant to a recommendation by an actuary, in whose opinion the contributions are required to be made so that the plan has sufficient assets to pay the benefits of the plan and, subject to approval in writing by the Minister of National Revenue. Section 147.2(3) of the *Income Tax Act* requires that where a person is seeking the Minister's approval of a recommendation made by an actuary, the actuarial valuation report must be filed with the Minister.

Section 147.2(2)(d) of the *Income Tax Act* relates to allowable plan surplus. Any surplus in excess of that allowable amount must be used to reduce the plan sponsor's contributions. The maximum allowable surplus is equal to 25% of actuarial liabilities.

The maximum amount that an employer is permitted to contribute is equal to the following:

1. the employer's current service cost in respect of service accruing after the valuation date; plus
2. the lump sum amount to eliminate any deficiencies that exist at the valuation date; less
3. any excess surplus as permitted.

The maximum amount of member current service contributions in accordance with section 8503(4)(a) of the *Income Tax Regulations* is the lesser of the following:

1. 9% of earnings; and
2. $1,000 plus 70% of the member's pension adjustment.

Since the member contribution rates determined in this report exceed 9% of earnings, we will apply for a waiver from the Minister in accordance with section 8503(5) of the *Income Tax Regulations.*

Appendix F: Legislative Requirements

The Alberta *Employment Pension Plans Act*

The Alberta *Employment Pension Plans Act* requires certain minimum contributions to be made in order to continue a plan as a registered pension plan. These are the sum of the following:

1. the normal actuarial cost (current service cost) for the plan year; plus
2. the special payments to amortize any going concern unfunded liability over a period of, at most, 15 years; plus
3. the special payments to amortize any solvency deficiency over a period of, at most, five years.

Item 3 does not apply to the Plan.

A going concern unfunded liability is a deficiency in the plan which existed on the effective date of the plan for benefits credited for service prior to that date or on a review date as a result of a plan amendment or the experience under the plan.

A solvency deficiency is an unfunded liability determined in a solvency valuation of the plan as at a review date.

An experience gain may be applied to reduce or eliminate previously established going concern unfunded liabilities or solvency deficiencies. An experience gain not so applied may be used to meet normal actuarial cost requirements.

Employer contributions, in respect of the normal actuarial cost, are due no less frequently than monthly within 30 days after the end of the month for which the contributions are payable. Employer special payments must also be made no less frequently than in equal monthly instalments throughout the plan year.

Appendix G: Administrator Certification

With respect to the *Universities Academic Pension Plan*, I hereby certify that, to the best of my knowledge and belief:

a) the Plan asset data provided for the purpose of the December 31, 2010 actuarial valuation and summarized in Appendix A of the actuarial report is accurate and complete and is in accordance with our records;

b) the membership data provided for the purpose of the December 31, 2010 actuarial valuation and summarized in Appendix B of the actuarial report is accurate and complete and is in accordance with our records as the employer of the Plan members concerned;

c) the summary of the Plan provisions contained in Appendix E of the December 31, 2010 actuarial report is a complete and accurate summary of the terms of the Plan for the purpose of this valuation; and

d) the actuary has been notified of all relevant subsequent events.

DAVE SCHNORE
Name (print)

DIRECTOR, FINANCE AND ADMINISTRATION
Title

Signature

DECEMBER 6, 2011
Date