

# Actuarial Valuation Report as at December 31, 2012

## Civil Service Superannuation Fund

CRA Registration No. 345827  
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## I. ACTUARY'S OPINION

This Actuarial Valuation Report (Report/Valuation) has been prepared to determine the funding requirements of the Civil Service Superannuation Fund (Fund) and present the results of the Report on a going concern and solvency test (wind-up) basis, as at December 31, 2012 (Valuation Date), and the adequacy of the contributions being paid to finance basic benefits and pay expenses. This Valuation concerns itself with the basic portion of the benefits (Basic Account) financed by the Fund as defined under the Civil Service Superannuation Act (Plan or CSSA) as at December 31, 2012. A separate report is prepared on the Superannuation Adjustment Account (Indexing Account) which is responsible for indexing of pensions on and after July 1, 1977, and separate employer reports on the portion of the benefits not financed by the Fund.

Actual going concern experience has been more favourable than expected during 2012. In the future, there will be periods when actual experience is more favourable than expected and other periods when actual experience is less favourable than expected, resulting in future gains and losses. The Fund self-insures all benefits and therefore is exposed to investment and demographic risks which must continue to be monitored in the future. Benefits may alternatively be purchased at an insurance carrier to eliminate a portion of these risks. In the future, an asset liability method that is more closely aligned with all or a portion of the liability structure may be considered. This strategy may be cost effective in an appropriate economic climate and should be reviewed on an on-going basis by the Civil Service Superannuation Board (Board).

In my opinion, for the purposes of this Report:

- The financial and the membership data (Appendix I) on which the Valuation is based are sufficient and reliable for the purpose of the Valuation. The total membership counts shown in the Report are different from the amounts reported in the General Manager's Report due to additional new entrants, retirements, disablements, terminations, and deaths following December 31, 2012 that were provided by the Board's staff.
- The benefits used in the calculations are based on the Plan as amended to December 31, 2012 (Appendix II).
- The assumptions, individually and in aggregate, and the methods which have been used in this Valuation are appropriate for the purpose of determining the financial position of the Fund and the funding requirements of the Fund on a going concern basis and on a solvency test (wind-up) basis (Appendix III).
- The value of the Fund's assets would be less than the actuarial liabilities if the Fund had been hypothetically wound up on the Valuation Date (solvency test). The solvency test is provided for information only as the Plan is exempt from the funding requirements of the solvency test pursuant to Paragraph 4.5(2)(b) of the Regulations to the Manitoba Pension Benefits Act. However, the Canadian Institute of Actuaries (CIA) requires that the wind-up disclosure calculations be performed as part of accepted actuarial practice.
- Asset and liabilities have been rounded to the nearest dollar in this Report. In the Subsequent Events section of this Report - Page 11, we nevertheless describe the uncertainty implicit in the actuarial calculations. Due to the limited scope of our engagement, other than interest discount sensitivity analysis on Page 9, an analysis of the potential range of future measurements of the Plan's financial health due to alternative actuarial assumptions, future Plan experience, or changes in legislation was not performed.
- Contribution rates in respect of future service are to be increased in a staggered manner over four years, however, no program of contribution increases has been established to eliminate the deficit in respect of past service at this time (refer to Contribution Requirements - Page 5 and Subsequent Events - Page 11).

I hereby certify that, in my opinion, the assets of the Fund, together with future investment income, and the current contribution levels, are inadequate to provide the benefits promised by the Fund, in respect of service completed up to the Valuation Date based on the actuarial assumptions and methodology used in this Report. Without the necessary contribution increases and/or favourable future experience, assets will not be sufficient to provide the benefits. Contribution increases have been recommended in the past and should be considered in the near future if the deficit persists. It is essential that the investment and demographic experience continue to be monitored to evaluate changes in the financial health of the Plan and recommend appropriate actions.

This Valuation has been prepared and this opinion has been given in accordance with accepted actuarial practice.

This Valuation is subject to approval by the appropriate regulatory authorities. It is recommended the Board continue to monitor the adequacy of the contribution rates, so that it may ensure the financial health of the Fund, and assist in meeting the increased accounting standards that are now required. The next Valuation is recommended to occur as at December 31, 2013.



Dennis Ellement, F.S.A., F.C.I.A.  
Winnipeg, Manitoba June 21, 2013

## 2. EXECUTIVE SUMMARY

GOING CONCERN VALUATION	31-Dec-2012	31-Dec-2011
Assets Available for Basic Benefits	\$ 3,322,625,000	\$ 3,103,654,000
▪ Expense Reserve	-	-
Liability for Basic Benefits		
▪ Active Participants	(1,898,514,872)	(1,926,614,048)
▪ Other Participants	(93,116,992)	(87,847,002)
▪ Pensions in Payment	(1,894,452,883)	(1,764,692,701)
▪ Adjustments:		
▫ Asset Smoothing Adjustment	(46,129,834)	185,662,640
▫ Contribution Deficiency Contingency	(25,728,351)	(65,120,655)
▫ Indexing Contingency	-	-
Surplus/(Unfunded Liability) Before Adjustments	\$ (563,459,747)	\$ (675,499,751)
Surplus/(Unfunded Liability) After Adjustments	\$ (635,317,932)	\$ (554,957,766)
Funding Ratio Before Adjustments	85.50%	82.13%
Funding Ratio After Adjustments	83.76%	85.56%

SOLVENCY TEST	31-Dec-2012	31-Dec-2011
Assets Available for Basic Benefits	\$ 3,322,625,000	\$ 3,103,654,000
▪ Expense Reserve	(16,613,000)	(15,518,000)
Liability for Basic Benefits		
▪ Active Participants	(2,460,647,229)	(2,295,161,001)
▪ Other Participants	(135,959,683)	(117,809,523)
▪ Pensions in Payment	(2,554,480,759)	(2,293,754,970)
▪ Adjustments:		
▫ Asset Smoothing Adjustment	(46,129,834)	185,662,640
▫ Contribution Deficiency Contingency	-	-
▫ Indexing Contingency	-	-
Solvency Excess/(Deficiency) Before Adjustments	\$ (1,845,075,671)	\$ (1,618,589,494)
Solvency Excess/(Deficiency) After Adjustments	\$ (1,891,205,505)	\$ (1,432,926,854)
Solvency Ratio Before Adjustments	64.18%	65.61%
Solvency Ratio After Adjustments	63.29%	69.56%

ANNUAL CONTRIBUTION REQUIREMENTS	2013 <CPPE / ≥CPPE	**	2012 <CPPE / ≥CPPE
Required Contributions for Basic Benefits			
▪ Required Contributions:			
▫ Employee Required Contributions	7.00% / 8.00%		6.25% / 7.25%
▫ Employer (Matching) Required Contributions	6.10% / 8.00%		5.35% / 7.25%
Blended Required Contributions	6.93% / 8.00%		6.20% / 7.25%
▪ Indexing Account Allocation	(0.73%) / (0.82%)		(0.66%) / (0.74%)
Total Required Contributions for Basic Benefits	6.20% / 7.18%		5.54% / 6.51%
Total Theoretical Contributions for Basic Benefits	(7.05%) / (8.17%)		(7.20%) / (8.46%)
Contribution Margin/(Deficiency) for Basic Benefits	(0.85%) / (0.99%)		(1.66%) / (1.95%)

\*\* Contribution Requirements are represented as a percentage of earnings below/above the Canada Pension Plan Earnings (CPPE).

### 3. GOING CONCERN VALUATION\*

	31-Dec-2012		31-Dec-2011	
<b>Assets Available for Basic Benefits</b> (Appendix I)		% of Liabilities		% of Liabilities
▪ Fixed Income Investments (market value)	\$ 1,473,850,000		\$ 1,260,261,000	
▪ Equity Investments (market value)	3,977,072,000		3,584,966,000	
<b>Total Investments</b>	<b>\$ 5,450,922,000</b>		<b>\$ 4,845,227,000</b>	
▪ Net Receivables/Payables (includes a Province Trust Account)	5,286,000		6,501,000	
▪ Debt due from the Province of Manitoba	1,826,000		1,826,000	
▪ Correctional Officers' Trust Account	(5,498,000)		(4,737,000)	
▪ Employer Trust Accounts	(64,666,000)		(58,334,000)	
▪ Money Purchase Accounts Plan	(25,540,000)		(21,676,000)	
▪ Province Unfunded Pension Liability Trust Accounts	(1,640,314,000)		(1,304,271,000)	
▪ Manitoba Hydro Enhanced Benefit Account	(13,037,000)		-	
<b>Net Assets Available for Benefits</b>	<b>\$ 3,708,979,000</b>		<b>\$ 3,464,536,000</b>	
▪ Superannuation Adjustment Account	(386,354,000)		(360,882,000)	
<b>Total Assets Available for Basic Benefits</b>	<b>\$ 3,322,625,000</b>		<b>\$ 3,103,654,000</b>	
▪ Expense Reserve	-		-	
<b>Actuarial Assets Available for Basic Benefits</b>	<b>\$ 3,322,625,000</b>	<b>85.50%</b>	<b>\$ 3,103,654,000</b>	<b>82.13%</b>
<b>Liabilities for Basic Benefits</b> (Appendix II, III)				
▪ Active Participants:				
▫ not eligible to retire	\$ 1,194,172,607	30.73%	\$ 1,238,190,918	32.77%
▫ eligible to retire reduced	136,988,688	3.53%	119,126,052	3.15%
▫ eligible to retire unreduced	567,353,577	14.60%	569,297,078	15.06%
	<b>\$ 1,898,514,872</b>	<b>48.86%</b>	<b>\$ 1,926,614,048</b>	<b>50.98%</b>
▪ Other Participants:				
▫ not eligible to retire	53,959,263	1.39%	48,471,924	1.28%
▫ valuation accounts payable	14,119,924	0.36%	16,702,186	0.44%
▫ eligible to retire reduced	17,481,572	0.45%	16,349,442	0.43%
▫ eligible to retire unreduced	7,556,233	0.19%	6,323,450	0.17%
	<b>\$ 93,116,992</b>	<b>2.39%</b>	<b>\$ 87,847,002</b>	<b>2.32%</b>
▪ Pensions in Payment:				
▫ retirement pensions	1,785,301,794	45.94%	1,655,401,368	43.81%
▫ survivors' pensions	109,151,089	2.81%	109,291,333	2.89%
	<b>\$ 1,894,452,883</b>	<b>48.75%</b>	<b>\$ 1,764,692,701</b>	<b>46.70%</b>
<b>Total Liabilities for Basic Benefits</b>	<b>\$ 3,886,084,747</b>	<b>100.00%</b>	<b>\$ 3,779,153,751</b>	<b>100.00%</b>
<b>Surplus/(Unfunded Liability) Before Adjustments</b>	<b>\$ (563,459,747)</b>		<b>\$ (675,499,751)</b>	
<b>Adjustments</b>				
▪ Asset Smoothing Adjustment	\$ (46,129,834)		\$ 185,662,640	
▪ Contribution Deficiency Contingency	(25,728,351)		(65,120,655)	
▪ Indexing Contingency	-		-	
	<b>\$ (71,858,185)</b>		<b>\$ 120,541,985</b>	
<b>Surplus/(Unfunded Liability) After Adjustments</b>	<b>\$ (635,317,932)</b>		<b>\$ (554,957,766)</b>	
Funding Ratio Before Adjustments	85.50%		82.13%	
Funding Ratio After Adjustments	83.76%		85.56%	
Liability % for those members that are retired or eligible to retire		67.52%		65.51%
Liability % for those members that are <u>not</u> retired or eligible to retire		32.48%		34.49%

\* The Plan is exempt from the funding requirements of the Manitoba Pension Benefits Act. No program of contribution increases has been established to eliminate the unfunded liability in respect of past service at this time. Contribution rate increases have been recommended in the past and should be considered in the near future if the unfunded liability persists.

#### 4. SOLVENCY TEST\*

	31-Dec-2012		31-Dec-2011	
<b>Assets Available for Basic Benefits</b> (Appendix I)		% of Liabilities		% of Liabilities
▪ Fixed Income Investments (market value)	\$ 1,473,850,000		\$ 1,260,261,000	
▪ Equity Investments (market value)	3,977,072,000		3,584,966,000	
Total Investments	\$ 5,450,922,000		\$ 4,845,227,000	
▪ Net Receivables/Payables (includes a Province Trust Account)	5,286,000		6,501,000	
▪ Debt due from the Province of Manitoba	1,826,000		1,826,000	
▪ Correctional Officers' Trust Account	(5,498,000)		(4,737,000)	
▪ Employer Trust Accounts	(64,666,000)		(58,334,000)	
▪ Money Purchase Accounts Plan	(25,540,000)		(21,676,000)	
▪ Province Unfunded Pension Liability Trust Accounts	(1,640,314,000)		(1,304,271,000)	
▪ Manitoba Hydro Enhanced Benefit Trust Account	(13,037,000)		-	
Net Assets Available for Benefits	\$ 3,708,979,000		\$ 3,464,536,000	
▪ Superannuation Adjustment Accounts	(386,354,000)		(360,882,000)	
<b>Total Assets Available for Basic Benefits</b>	\$ 3,322,625,000		\$ 3,103,654,000	
▪ Expense Reserve	(16,613,000)		(15,518,000)	
<b>Actuarial Assets Available for Basic Benefits</b>	\$ 3,306,012,000	64.18%	\$ 3,088,136,000	65.61%
<b>Liabilities for Basic Benefits</b> (Appendix II, III)				
▪ Active Participants:				
▫ not eligible to retire	\$ 1,514,995,881	29.41%	\$ 1,192,123,261	25.33%
▫ eligible to retire reduced	184,752,251	3.59%	198,457,873	4.22%
▫ eligible to retire unreduced	760,899,097	14.77%	904,579,867	19.22%
	\$ 2,460,647,229	47.77%	\$ 2,295,161,001	48.77%
▪ Other Participants:				
▫ not eligible to retire	86,295,393	1.68%	70,724,822	1.50%
▫ valuation accounts payable	14,119,924	0.27%	16,702,186	0.35%
▫ eligible to retire reduced	25,067,094	0.49%	22,069,168	0.47%
▫ eligible to retire unreduced	10,477,272	0.20%	8,313,347	0.18%
	\$ 135,959,683	2.64%	\$ 117,809,523	2.50%
▪ Pensions in Payment:				
▫ retirement pensions	2,414,106,874	46.86%	2,156,909,480	45.82%
▫ survivors' pensions	140,373,885	2.73%	136,845,490	2.91%
	\$ 2,554,480,759	49.59%	\$ 2,293,754,970	48.73%
<b>Total Liabilities for Basic Benefits</b>	\$ 5,151,087,671	100.00%	\$ 4,706,725,494	100.00%
<b>Solvency Excess/(Deficiency) Before Adjustments</b>	\$ (1,845,075,671)		\$ (1,618,589,494)	
<b>Adjustments</b>				
▪ Asset Smoothing Adjustment	\$ (46,129,834)		\$ 185,662,640	
▪ Contribution Deficiency Contingency	-		-	
▪ Indexing Contingency	-		-	
	\$ (46,129,834)		\$ 185,662,640	
<b>Solvency Excess/(Deficiency) After Adjustments</b>	\$ (1,891,205,505)		\$ (1,432,926,854)	
Solvency Ratio Before Adjustments	64.18%		65.61%	
Solvency Ratio After Adjustments	63.29%		69.56%	
Liability % for those members that are retired or eligible to retire		68.64%		72.82%
Liability % for those members that are <u>not</u> retired or eligible to retire		31.36%		27.18%

\* The solvency test is provided for information only as the Plan is exempt from the funding requirements of the solvency test pursuant to Paragraph 4.5(2)(b) of the Regulations to the Manitoba Pension Benefits Act. However, the Canadian Institute of Actuaries (CIA) requires that the wind up disclosure calculations be performed as part of accepted actuarial practice.

## 5. CONTRIBUTION REQUIREMENTS

The accrued benefit cost method of valuation, with salary projection, has been used in this Valuation. Under this method, the expected cost in each year after the valuation date is equal to the cost of benefits expected to be credited for service in the next year. This expected cost is expressed as a level percentage of salary each year. These percentages are commonly called the theoretical contribution rates or normal actuarial cost for basic benefits.

In the following table, we have compared the required contribution rates and the normal actuarial cost for basic benefit rates (below/above Canada Pension Plan Earnings (CPPE)) on the basis of age, sex, and salary distribution, as exists for present active participants. For this Valuation, the table below reflects a “blended or average” contribution rate increase for 2013, to recognize the staggered contribution rate increases which will occur over the next 2 years, refer to Appendix II - Page 2.

2013				2012 (average)			
< CPPE / ≥ CPPE				* < CPPE / ≥ CPPE			
Current Contributions for Basic Benefits							
▪ Employee Current Contributions:							
▫ not eligible to retire	\$ 100,503,455	7.00%	8.00%	\$ 89,653,361	6.25%	7.25%	
▫ eligible to retire	10,533,246	7.00%	8.00%	7,255,777	6.25%	7.25%	
▫ eligible to retire unreduced	16,262,470	7.00%	8.00%	15,865,903	6.25%	7.25%	
▫ indexing account allocation	(12,984,515)	(0.73%)	(0.82%)	(11,503,054)	(0.66%)	(0.74%)	
▪ Employer (Matching) Current Contributions:							
▫ not eligible to retire	9,045,275	6.10%	8.00%	6,835,097	5.35%	7.25%	
▫ eligible to retire	1,432,158	6.10%	8.00%	773,970	5.35%	7.25%	
▫ eligible to retire unreduced	981,362	6.10%	8.00%	883,536	5.35%	7.25%	
▫ indexing account allocation	(1,168,797)	(0.62%)	(0.82%)	(866,246)	(0.55%)	(0.74%)	
Total Current Contributions for Basic Benefits	\$ 124,604,654	6.20%	7.18%	\$ 108,898,344	5.54%	6.51%	
Normal Actuarial Cost for Basic Benefits							
▪ Active Participants:							
▫ not eligible to retire	\$ 104,405,242	6.58%	7.62%	\$ 106,201,965	6.79%	7.98%	
▫ eligible to retire reduced	14,933,569	8.62%	9.98%	10,958,125	8.42%	9.89%	
▫ eligible to retire unreduced	22,418,077	8.98%	10.39%	24,298,582	8.95%	10.52%	
Blended Active Participant Theoretical Rate	\$ 141,756,888	7.05%	8.17%	\$ 141,458,672	7.20%	8.46%	
▪ Other Participants	-	0.00%	0.00%	-	0.00%	0.00%	
▪ Pensions in Payment	-	0.00%	0.00%	-	0.00%	0.00%	
▪ Reserves	-	0.00%	0.00%	-	0.00%	0.00%	
Total Normal Actuarial Cost for Basic Benefits	\$ 141,756,888	7.05%	8.17%	\$ 141,458,672	7.20%	8.46%	
Contribution Margin/(Deficiency) for Basic Benefits	\$ (17,152,234)	(0.85%)	(0.99%)	\$ (32,560,328)	(1.66%)	(1.95%)	

\* Current contributions are represented as a percentage of earnings below/above the Canada Pension Plan Earnings (CPPE).

A provision for the \$17,152,234 annual contribution deficiency has been made on the Valuation Balance Sheet. This provision is equal to \$25,728,351 in anticipation of the contributions which will increase in a staggered manner over for the next 2 years.

In respect of past service, it is recommended that the Province of Manitoba, the Liaison Committee, and the Advisory Committee be informed that the current going concern deficit of \$635,317,932 could be amortized by 15 annual payments of \$70,742,532 (assumes 10.2% is allocated to the Indexing Account) which is equivalent to about 3.75% of salary over the next 15 years. Although the Plan is exempt from the regulatory going concern and solvency funding, the parties must be made aware that it may become a requirement in the future if future excess investment and/or demographic experience is not generated in the Fund.

## 6. ANALYSIS OF GOING CONCERN VALUATION RESULTS

### Reconciliation of Financial Position

Operation of the Basic Benefits Account	Assets	Liabilities	Adjustments	Surplus
■ 2012 Opening Going Concern Position: 2011 Basis	\$ 3,103,654,000	\$ 3,779,153,751	\$ 120,541,985	\$ (554,957,766)
▫ Contributions/Benefits Accrued *	296,514,000	140,524,000	-	155,990,000
▫ Benefit Experience & Operating Expenses *	(381,241,000)	(191,238,000)	-	(190,003,000)
▫ Investment Experience Net: 9.92%	303,698,000	225,228,000	-	78,470,000
▫ Actuarial Adjustment Projection PfAD	-	56,117,000	-	(56,117,000)
▫ Indexing Contingency	-	-	-	-
▫ Contribution Deficiency Contingency	-	-	65,120,655	65,120,655
▫ Asset Smoothing Adjustment	-	-	(185,662,640)	(185,662,640)
■ 2012 Financial Statements Projected Position	\$ 3,322,625,000	\$ 4,009,784,751	\$ -	\$ (687,159,751)
▫ Actuarial Reserve Projection PfAD release	-	(56,117,000)	-	56,117,000
▫ ITA Maximum Pensionable Salary Limit	-	1,296,000	-	(1,296,000)
▫ Salary Loss 1-Year Experience	-	12,430,799	-	(12,430,799)
▫ Demographic Retirement Gain 1-Year Experience	-	(6,673,409)	-	6,673,409
▫ Demographic Termination Loss 1-Year Experience	-	11,155,283	-	(11,155,283)
▫ Demographic Death Loss 1-Year Experience	-	595,739	-	(595,739)
▫ Methodology & Unexplained	-	(86,387,416)	-	86,387,416
▫ Expense Contingency	-	-	-	-
▫ Contribution Deficiency Contingency	-	-	(25,728,351)	(25,728,351)
▫ Asset Smoothing Adjustment	-	-	(46,129,834)	(46,129,834)
■ 2012 Preliminary Going Concern Position	\$ 3,322,625,000	\$ 3,886,084,747	\$ (71,858,185)	\$ (635,317,932)
▫ Continue 6.00% annual interest discount rate	-	-	-	-
▫ Continue UPXGEN Mortality	-	-	-	-
▫ Continue demographic assumptions	-	-	-	-
■ 2012 Closing Going Concern Position: 2012 Basis	\$ 3,322,625,000	\$ 3,886,084,747	\$ (71,858,185)	\$ (635,317,932)

\* Contributions and Benefits on the Asset movement include both the Fund and pay-as-you-go payments whereas the adjacent Liability movement entry includes only the Fund side (about 55% of the total).

Investment experience was favourable in 2012 (9.92% > 6.00%). Salary experience was unfavourable as the active database was adjusted to better reflect full-time equivalent annual salaries where appropriate. Methodology was changed to reflect the May 31, 2010 Manitoba Pension Benefits Act change that lump-sum commuted values are to be based on ancillary benefits when and only when the full entitlement criteria have been met.

### Average Actuarial Factors

Category	Age	# Members	Fund Pension	Actuarial Factor *	Liability
<b>31-Dec-12</b>					
■ Active Participants	44.56	30,689	x 12 x \$ 571.94	x 9.0136 =	\$ 1,898,514,872
■ Other Participants	48.54	3,270	x 12 x 224.53	x 10.5688 =	93,116,992
■ Pensions in Payment	70.18	18,302	x 12 x 777.25	x 11.0980 =	1,894,452,883
Total/Average	53.78	52,261	x 12 x \$ 622.10	x 9.9608 =	\$ 3,886,084,747
<b>31-Dec-11</b>					
■ Active Participants	44.05	29,717	x 12 x \$ 552.28	x 9.7825 =	\$ 1,926,614,048
■ Other Participants	48.29	3,155	x 12 x 208.41	x 11.1334 =	87,847,002
■ Pensions in Payment	70.24	17,615	x 12 x 751.51	x 11.1089 =	1,764,692,701
Total/Average	53.20	50,487	x 12 x \$ 600.30	x 10.3912 =	\$ 3,779,153,751

\* Larger actuarial factors mean more reserves per member due to changing demographics and actuarial assumptions.



## 7. ANALYSIS OF SOLVENCY TEST RESULTS

### Reconciliation of Financial Position

Operation of the Basic Benefits Account	Assets	Liabilities	Adjustments	Excess
■ 2012 Opening Solvency Test Position: 2011 Basis	\$ 3,103,654,000	\$ 4,706,725,494	\$ 170,144,640	\$ (1,432,926,854)
▫ Contributions/Benefits Accrued *	296,514,000	175,014,815	-	121,499,185
▫ Benefit Experience & Operating Expenses *	(381,241,000)	(238,176,277)	-	(143,064,723)
▫ Investment Experience Net: 9.92%	303,698,000	154,747,292	-	148,950,708
▫ Actuarial Adjustment Projection PfAD	-	-	-	-
▫ Indexing Contingency	-	-	-	-
▫ Contribution Deficiency Contingency	-	-	-	-
▫ Asset Smoothing Adjustment	-	-	(170,144,640)	(170,144,640)
■ 2012 Projected Position	\$ 3,322,625,000	\$ 4,798,311,324	\$ -	\$ (1,475,686,324)
▫ Actuarial Reserve Projection PfAD release	-	-	-	-
▫ ITA Maximum Pensionable Salary Limit	-	1,614,096	-	(1,614,096)
▫ Salary Loss 1-Year Experience	-	84,496,516	-	(84,496,516)
▫ Demographic Retirement Gain 1-Year Experience	-	(8,311,359)	-	8,311,359
▫ Demographic Termination Loss 1-Year Experience	-	3,718,428	-	(3,718,428)
▫ Demographic Death Loss 1-Year Experience	-	741,960	-	(741,960)
▫ Methodology & Unexplained	-	(9,753,592)	-	9,753,592
▫ Expense Contingency	-	-	(16,613,000)	(16,613,000)
▫ Contribution Deficiency Contingency	-	-	-	-
▫ Asset Smoothing Adjustment	-	-	(46,129,834)	(46,129,834)
■ 2012 Preliminary Solvency Test Position	\$ 3,322,625,000	\$ 4,870,817,373	\$ (62,742,834)	\$ (1,610,935,207)
▫ Change interest discount rate 2.40%/10yrs/3.60%...	-	280,270,298	-	(280,270,298)
▫ Continue UPXGEN Mortality	-	-	-	-
▫ Continue demographic assumptions	-	-	-	-
■ 2012 Closing Solvency Test Position: 2012 Basis	\$ 3,322,625,000	\$ 5,151,087,671	\$ (62,742,834)	\$ (1,891,205,505)

\* Contributions and Benefits on the Asset movement include both the Fund and pay-as-you-go payments whereas the adjacent Liability movement entry includes only the Fund side (about 55% of the total).

Further to the comments on the prior page, solvency interest rates continue to decline resulting in a \$280,270,298 increase in liability. The salary loss on the solvency basis is larger than on the going concern basis as the nature of the solvency calculation is to anticipate no increase in salary on hypothetical wind-up.

### Average Actuarial Factors

Category	Age	# Members	Fund Pension	Actuarial Factor *	Liability
<b>31-Dec-12</b>					
■ Active Participants	44.56	30,689	x 12 x \$ 571.94	x 11.6825 =	\$ 2,460,647,229
■ Other Participants	48.54	3,270	x 12 x 224.53	x 15.4315 =	135,959,683
■ Pensions in Payment	70.18	18,302	x 12 x 777.25	x 14.9645 =	2,554,480,759
Total/Average	53.78	52,261	x 12 x \$ 622.10	x 13.2032 =	\$ 5,151,087,671
<b>31-Dec-11</b>					
■ Active Participants	44.05	29,717	x 12 x \$ 552.28	x 11.6538 =	\$ 2,295,161,001
■ Other Participants	48.29	3,155	x 12 x 208.41	x 14.9307 =	117,809,523
■ Pensions in Payment	70.24	17,615	x 12 x 751.51	x 14.4394 =	2,293,754,970
Total/Average	53.20	50,487	x 12 x \$ 600.30	x 12.9417 =	\$ 4,706,725,494

\* Larger actuarial factors mean more reserves per member due to changing demographics and actuarial assumptions.

Pursuant to the Standards of the Canadian Institute of Actuaries (CIA) it is now required to disclose the incremental cost in the next year on a hypothetical wind-up/solvency basis.

This cost is estimated to equal \$292,740,600 as at December 31, 2012. This cost in essence reflects the present value of the increase of the solvency liability in the next year plus the annual benefit payments expected to be made, assuming no change in solvency assumptions.

## 8. FUND BASIC BENEFIT LIABILITIES EMPLOYER PROFILE

Name of Employer	Code	Active Participants	Other Participants	Pensions in Payment	2012 Total	%
<b>Non-Matching Employers</b>						
1 Province of Manitoba Civil Service	CS	\$ 887,580,480	\$ 53,868,799	\$ 1,108,852,075	\$ 2,050,301,354	52.76%
2 Manitoba Hydro-Electric Board	MH	496,932,627	8,853,332	443,639,241	949,425,200	24.43%
3 Manitoba Public Insurance	AI/AIE	98,615,665	6,876,918	75,503,786	180,996,369	4.66%
4 Division of Driver and Vehicle Licensing	AIL	5,020,617	95,644	2,330,169	7,446,430	0.19%
5 Red River College	RCC	58,934,454	2,480,128	35,999,056	97,413,638	2.51%
6 Liquor Control Commission	LC	28,276,168	1,686,844	31,358,870	61,321,882	1.58%
7 Manitoba Agricultural Services Corporation	AC	2,235,714	244,094	3,321,534	5,801,342	0.15%
8 Addictions Foundation of Manitoba	AF	10,956,998	703,351	13,119,844	24,780,193	0.64%
9 Assiniboine Community College	ACC	11,911,123	1,154,013	9,111,971	22,177,107	0.57%
10 University College of The North	KCC	12,783,185	1,195,679	6,037,377	20,016,241	0.52%
11 The Legal Aid Services Society of Manitoba	LA	12,761,540	536,674	6,302,301	19,600,515	0.50%
12 Manitoba Centennial Centre Corporation	CC	2,299,686	121,422	3,684,779	6,105,887	0.16%
13 Teachers' Retirement Allowance Fund Board	TR	2,422,060	421,602	1,012,677	3,856,339	0.10%
14 Communities Economic Development Fund	CE	1,300,025	60,288	531,967	1,892,280	0.05%
15 The Council on Post-Secondary Education	UG	560,073	51,356	557,858	1,169,287	0.03%
16 Manitoba Horse Racing Commission	RC	87,819	51,099	197,535	336,453	0.01%
17 Diagnostic Services of Manitoba	DSM	1,850,761	117,131	662,764	2,630,656	0.07%
18 Regional Health Authority - Winnipeg	RWA	12,499,547	106,172	5,975,142	18,580,861	0.48%
19 Regional Health Authority - Brandon	RBH	8,544,767	128,321	8,398,996	17,072,084	0.44%
20 Regional Health Authority - Central	RCA	3,727,878	187,522	3,137,640	7,053,040	0.18%
21 Regional Health Authority - Assiniboine	ARH et al	3,914,885	73,910	2,782,020	6,770,815	0.17%
22 Regional Health Authority - Parkland	RPL	2,657,506	59,357	2,899,538	5,616,401	0.14%
23 Regional Health Authority - Interlake	RIL	2,308,003	1,890	3,303,009	5,612,902	0.14%
24 Regional Health Authority - South Eastman	RSE	1,476,588	109,147	1,008,831	2,594,566	0.07%
25 Regional Health Authority - Nor-Man	RNF/RNM	883,093	97,371	1,224,777	2,205,241	0.06%
26 Regional Health Authority - North Eastman	RNE	842,598	-	1,155,243	1,997,841	0.05%
27 Regional Health Authority - Burntwood	RBW	481,774	-	366,491	848,265	0.02%
28 Manitoba Development Corporation	MDC	105,454	6,749	-	112,203	0.00%
29 Workers' Compensation Board	WC	-	-	6,627	6,627	0.00%
30 WECCO	WEC	-	-	576,390	576,390	0.01%
		\$ 1,671,971,088	\$ 79,288,813	\$ 1,773,058,508	\$ 3,524,318,409	90.69%
<b>Matching Employers</b>						
1 Manitoba Lotteries Corporation	LF	\$ 55,660,225	2,877,897	8,422,846	66,960,968	1.72%
2 Manitoba Housing Authority	HA	23,589,898	1,039,548	18,323,861	42,953,307	1.11%
3 WCFS CUPE Support Workers	CSW	2,971,465	53,275	-	3,024,740	0.08%
4 Manitoba Agricultural Services Corporation	MAS	9,026,704	143,347	1,344,980	10,515,031	0.27%
5 Manitoba Crop Insurance Corporation	CI /CIC	13,030,863	635,689	12,140,912	25,807,464	0.66%
6 Manitoba Government and General Employees' Union	EA	10,741,257	438,205	10,392,790	21,572,252	0.56%
7 Manitoba Hydro Utilities Service	MHU	1,264,783	246,320	36,971	1,548,074	0.04%
8 Child and Family All Nations Coordinated Response Network	ANR	3,170,439	229,864	33,109	3,433,412	0.09%
9 The Civil Service Superannuation Board	SB	6,310,056	978,144	6,629,683	13,917,883	0.36%
10 Manitoba Gaming Control Commission	GC	3,776,012	19,196	969,177	4,764,385	0.12%
11 Travel Manitoba	TM	1,428,450	249,759	514,156	2,192,365	0.06%
12 Food Development Centre	FD	1,841,209	574,394	102,087	2,517,690	0.06%
13 Manitoba Floodway Authority	MFA	2,039,277	104,747	672,503	2,816,527	0.07%
14 Dairy Farmers of Manitoba	MC	1,737,333	102,624	2,541,615	4,381,572	0.11%
15 Industrial Technology Centre	IT	2,513,326	439,832	380,940	3,334,098	0.09%
16 Hams Marketing Services Co-Op Inc.	HM	1,829,118	106,470	2,823,570	4,759,158	0.12%
17 Manitoba Health Research Council	HRC	46,689	-	-	46,689	0.00%
18 Manitoba Film and Sound Recording Development Corporation	MFS	509,760	-	-	509,760	0.01%
19 Manitoba Pork Council	PC	514,414	55,878	853,472	1,423,764	0.04%
20 Manitoba Arts Council	MA	572,067	23,585	401,297	996,949	0.03%
21 Manitoba Chicken Producer Board	CB	475,672	-	148,383	624,055	0.02%
22 Sport Manitoba	SM	550,082	17,142	111,073	678,297	0.02%
23 Crown Corporations Council	CR	895,139	-	1,159,176	2,054,315	0.05%
24 Horizon Lab Ltd.	MTR	65,650	-	-	65,650	0.00%
25 Manitoba Cattle Enhancement Council	MCE	159,331	-	-	159,331	0.00%
26 Manitoba Turkey Producers	TB	155,205	6,015	558,734	719,954	0.02%
27 Paletta & Company Hotels	PCH	61,894	-	1,393	63,287	0.00%
28 Venture Manitoba Tours Ltd.	VT	300,482	-	20,984	321,466	0.01%
29 Economic Innovation and Technology Council	MR	1,062,583	970,466	3,574,344	5,607,393	0.14%
30 Manitoba Development Corporation	DFP	19,027	109,346	493,204	621,577	0.02%
31 Manitoba Hazardous Waste	HW	-	-	486,899	486,899	0.01%
32 Manitoba Water Services Board	WS	-	123,115	421,330	544,445	0.01%
33 Human Resources and Employment Centres	R's/HE	829,855	266,927	2,453,368	3,550,150	0.09%
34 Manitoba Beef Commission	BC	141,520	-	296,141	437,661	0.01%
35 Local Government Districts	LG	-	-	126,510	126,510	0.00%
36 Manitoba Mineral Resources Limited	MM	-	-	38,545	38,545	0.00%
37 Manitoba Data Services	DS	-	-	328,711	328,711	0.01%
38 Money Purchase Plan Annuity	MPP	-	-	5,456,695	5,456,695	0.14%
39 No Billing (Charged to Fund)	NB	79,253,999	4,016,394	39,134,916	122,405,309	3.15%
		\$ 226,543,784	\$ 13,828,179	\$ 121,394,375	\$ 361,766,338	9.31%
31-Dec-12 Total Fund Liabilities for Basic Benefits		\$ 1,898,514,872	\$ 93,116,992	\$ 1,894,452,883	\$ 3,886,084,747	100.00%
31-Dec-11 Total Fund Liabilities for Basic Benefits		\$ 1,926,614,048	\$ 87,847,002	\$ 1,764,692,701	\$ 3,779,153,751	100.00%

## 9. SENSITIVITY TEST (DURATION)

The impact on pension liabilities of changes in the actuarial assumptions depends largely upon the number of years over which benefits will be paid and the exact pattern of the expected benefit cash flow. The demographics of the group covered by a valuation have an impact on the resulting change in liability for a given change in an actuarial assumption. Different parts of the valuation are affected differently by a change in a specific valuation assumption. Two of the more significant assumptions are the real rate of return and the assumed inflation rate expected in the future. There are rules of thumb to estimate the effect upon liabilities of a change in the assumed real rate or assumed inflation rate. These rules of thumb can be expressed mathematically by introducing the concept of duration where:

$$\% \text{ change in liability} = - \text{duration} \times \% \text{ change in assumed rate}$$

The approximation is usually quite good for small changes in the assumed rate (we will test a negative ¼% change). For larger changes, the concept of convexity must be introduced which we will not explore in this Report. The following table summarizes the application of the above formula to the Fund data as at December 31, 2012.

GOING CONCERN		Decrease Real Rate ¼%		
Real Rate	4.00%	3.75%		
Inflation Rate	2.00%	2.00%		
Nominal Rate	6.00%	5.75%		
Mortality	UPXGEN	UPXGEN	% Change in	Estimated
Liability Category	Liability	Liability	Liability	Duration
Active Participants	\$ 1,898,514,872	\$ 1,984,782,205	4.54%	18.18
Other Participants	93,116,992	96,326,181	3.45%	13.79
Pensions in Payment	1,894,452,883	1,936,938,447	2.24%	8.97
Adjustments	71,858,185	71,858,185	-	-
Surplus/(Unfunded)	(635,317,932)	(767,280,018)	-	-
Total	\$ 3,322,625,000	\$ 3,322,625,000	3.33%	13.34
Increase/(Decrease) in Liabilities		\$ 131,962,086		

SOLVENCY TEST		Decrease Real Rate ¼%		
Cash Settlements 1st 10 years	2.40%	2.15%		
Cash Settlements thereafter	3.60%	3.35%		
Annuity Purchases	2.96%	2.71%		
Mortality	UPXGEN	UPXGEN	% Change in	Estimated
Liability Category	Liability	Liability	Liability	Duration
Active Participants	\$ 2,460,647,229	\$ 2,583,024,213	4.97%	19.89
Other Participants	135,959,683	142,012,464	4.45%	17.81
Pensions in Payment	2,554,480,759	2,626,244,064	2.81%	11.24
Adjustments	62,742,834	62,742,834	-	-
Excess/(Deficiency)	(1,891,205,505)	(2,091,398,575)	-	-
Total	\$ 3,322,625,000	\$ 3,322,625,000	3.84%	15.36
Increase/(Decrease) in Liabilities		\$ 200,193,070		

## **10. PROVISION FOR FUTURE ADVERSE DEVIATIONS (PfADs)**

The actuarial assumptions must be, individually and in aggregate, appropriate for the purpose of the Valuation. The assumptions are the sum of the actuarial best estimate plus a PfAD.

### **Asset Smoothing Adjustment**

An asset smoothing adjustment to buffer past and possible future adverse investment experience has been utilized for this Report and is equal to \$46,129,834 on the Going Concern and Solvency Test Valuation Balance Sheets (please refer to Appendix III - Page 3). This reserve is a write-down of assets for this Valuation which may or may not mitigate in full, or in part, past and possible future adverse investment experience.

### **Contingency Adjustment**

A contingency adjustment provides for the possibility of future adverse investment and/or demographic experience. There is no explicit contingency adjustment on the going concern or solvency test balance sheets.

### **Assumed Rate of Return**

Currently, there is a PfAD contained implicitly in the assumed rate of return of 6.00% per year, which is estimated to equal to 1.30% (please refer to Appendix III - Page 5 for further detail). This provision may or may not prove to be adequate in the future. Consideration should be given to lowering the current real rate of 4.00% per year in the future.

### **Salary Increase Rate**

The assumed salary rate increase is equal to 2.75%.

### **Retirement Rate**

Current expected retirement rates allow for at least 10% higher retirements than the best estimate of actual retirement experience to date. Given the large number of "baby boomer" retirees expected in the near future, these rates may or may not prove to be adequate. Continued monitoring of retirement experience should occur.

### **Mortality Rate**

Current expected mortality rates provide a best estimate of actual mortality experience to date. These rates are the same as the basis on which lump-sum payments are made and reflect the increasing longevity of the membership. These rates may or may not prove to be adequate in the future. Continued monitoring of mortality experience should occur.

The most current UPI994 generational mortality table projected using Scale AA (UPXGEN) was used for the going concern and solvency test. The Canadian Institute of Actuaries is expected to introduce a new mortality standard in 2014 which will likely result in an increase in liabilities.

### **Indexing Contingency**

No provision for indexing has been made on the Going Concern Valuation Balance Sheet other than for existing deferred pensioners (1.33% per year in the deferral period). A separate report is prepared on the Superannuation Adjustment Account that makes some provision for indexing of pensions in payment.

### **Contribution Deficiency Contingency**

A provision for the \$17,152,234 annual contribution deficiency has been made on the Going Concern Valuation Balance Sheet. This provision is equal to \$25,728,351. This provision recognizes that the contribution rates to the Fund will increase by 1.00% of salary (matched by employers) in a staggered manner over the next 2 years.

Contribution rates to the Fund are scheduled to increase in the near future to eliminate the current future service contribution deficiency so that future benefit accruals do not cause further increases in the unfunded liability in the Fund.

No contribution schedule has been established to eliminate the past service deficit at this time.

## II. SUBSEQUENT EVENTS

- This Valuation does not reflect the change in the going concern or solvency test interest rates after the Valuation date, nor is it required. A valuation report is a snapshot of a plan's estimated financial condition at a particular point in time; it does not predict the pension plan's future financial condition or its ability to pay benefits in the future.

Over time, the Plan's actual cost will depend, on a number of factors, including the level of the benefits in the Plan, the number of individuals' paid benefits, the amount of Plan expenses, and the amount earned on any assets invested to pay the benefits. These amounts and other variables are uncertain and unknowable at the valuation date.

To prepare this Report, actuarial assumptions, as described in Appendix III, are used to select a single scenario from the range of possibilities. The results of that single scenario are included in this Report. However, the future is uncertain and the Plan's actual experience will differ from those assumptions; these differences may be significant or material. In addition, different assumptions or scenarios may also be within the reasonable range and results based on those assumptions would be different. Actuarial assumptions may also be changed from one valuation to the next because of changes in regulatory requirements, plan experience, changes in expectations about the future and other factors.

Because actual Plan experience will differ from the assumptions, decisions about benefit changes, investment policy, funding amounts, benefit security and/or benefit-related issues should be made only after careful consideration of alternative future financial conditions and scenarios, and not solely on the basis of a valuation report or reports.

- Changes to the Manitoba Pension Benefits Act largely effective May 31, 2010 improved the financial health of the Plan due to changes legislated in the vesting criteria needed for the early retirement privileges incorporated in lump-sum settlements on windup.
- In respect of future service, it was recommended in the last Valuation that contribution rates of employees and matching employers to the Basic Account be increased to eliminate the current contribution deficiency so that future benefit accruals do not cause an unfunded liability in the Fund. Contributions will increase by 1.00% of salary (matched by employers) in a staggered manner over the next 2 years as indicated in Appendix II - Page 2. Nevertheless, a small future service contribution deficiency may persist and should be monitored closely.
- In respect of past service, it is recommended that the Province of Manitoba, the Liaison Committee, and the Advisory Committee be informed that the current going concern deficit of \$635,317,932 could be amortized by 15 annual payments of \$70,742,532 (assumes 10.2% is allocated to the Indexing Account) which is equivalent to about 3.75% of salary over the next 15 years. Although the Plan is exempt from the regulatory going concern and solvency funding, the parties must be made aware that it may become a requirement in the future if future excess investment and/or demographic experience is not generated in the Fund.
- Based on an asset mix of 30% fixed income with an expected return of 3.00%, and 70% equity with an expected return of 9.00%, it is possible that the Fund would achieve a net average return of 7.00% per year over the next 15 years. Such an average return would produce excess investment income of 1.00% per year for 15 years above the net assumed rate of 6.00%, or 15% excess in total. This may be enough to return the 83.76% average funded ratio of the Plan to 100.0%. There are many other favourable and unfavourable scenarios that may guide the parties to act prudently.
- Any contribution increase to employees in excess of 9.00% (on a blended basis) of salary will require the approval of the Canada Revenue Agency to ensure continued tax deductibility of such employee contributions.
- The Canadian Institute of Actuaries is expected to introduce a new mortality standard in 2014 which will likely result in an increase in liabilities.
- We are not aware of any other matters or subsequent events occurring since the completion of this Report which would materially adversely affect the financial position as at December 31, 2012.

## **APPENDIX I**

### **Financial & Membership Data**

#### **I. Total Assets Available for Basic Benefits (Source: Audited Financial Statements)**

	31-Dec-2012	31-Dec-2011
<b>Assets</b>		
Fixed Income Investments (market value)	\$ 1,473,850,000	\$ 1,260,261,000
Equity Investments (market value)	3,977,072,000	3,584,966,000
	<u>\$ 5,450,922,000</u>	<u>\$ 4,845,227,000</u>
Net Receivables/Payables (includes a Province Trust Account) (Note 5)	5,286,000	6,501,000
Debt due from the Province of Manitoba (Note 1)	1,826,000	1,826,000
Correctional Officers' Trust Account (Note 2)	(5,498,000)	(4,737,000)
Employer Trust Accounts (Note 3)	(64,666,000)	(58,334,000)
Money Purchase Accounts Plan (Note 4)	(25,540,000)	(21,676,000)
The Province of Manitoba Unfunded Pension Liability Trust Account 1 & 2 (Note 5)	(1,640,314,000)	(1,304,271,000)
Manitoba Hydro Enhanced Benefit Trust Account (Note 6)	(13,037,000)	-
	<u>\$ 3,708,979,000</u>	<u>\$ 3,464,536,000</u>
Superannuation Adjustment Account	(386,354,000)	(360,882,000)
<b>Total Assets Available for Basic Benefits</b>	<u><u>\$ 3,322,625,000</u></u>	<u><u>\$ 3,103,654,000</u></u>

Note 1: Under Section 24(1) of the CSSA, the Province of Manitoba assumed an accrued liability of \$1,826,000 for its employees and pensioners as at May 1, 1939. The Province of Manitoba pays semi-annual interest at 4.00% per annum on this amount.

Note 2: Effective November 19, 1996, employees who are members of the Province of Manitoba's Corrections Component are required to contribute an additional 1.00% of pensionable earnings. These additional contributions, which are credited to this trust account, are intended to fund the additional pension benefits for eligible employees who may retire as early as age 50 with no reduction for early retirement providing age and qualifying service is equal to a total of 75 or greater.

Note 3: The Fund is responsible for providing enhanced benefits enacted in the 1992 legislation agreed to by the Employee Liaison Committee and the Employer Pension Advisory Committee. These benefits are 100% financed from the Fund's net assets available for benefits. To facilitate this funding, trust accounts were established for most employers participating in the Fund for their share of the actuarial valuation of these future benefit enhancements. Specific contributions from eligible employees are being transferred to the applicable trust account.

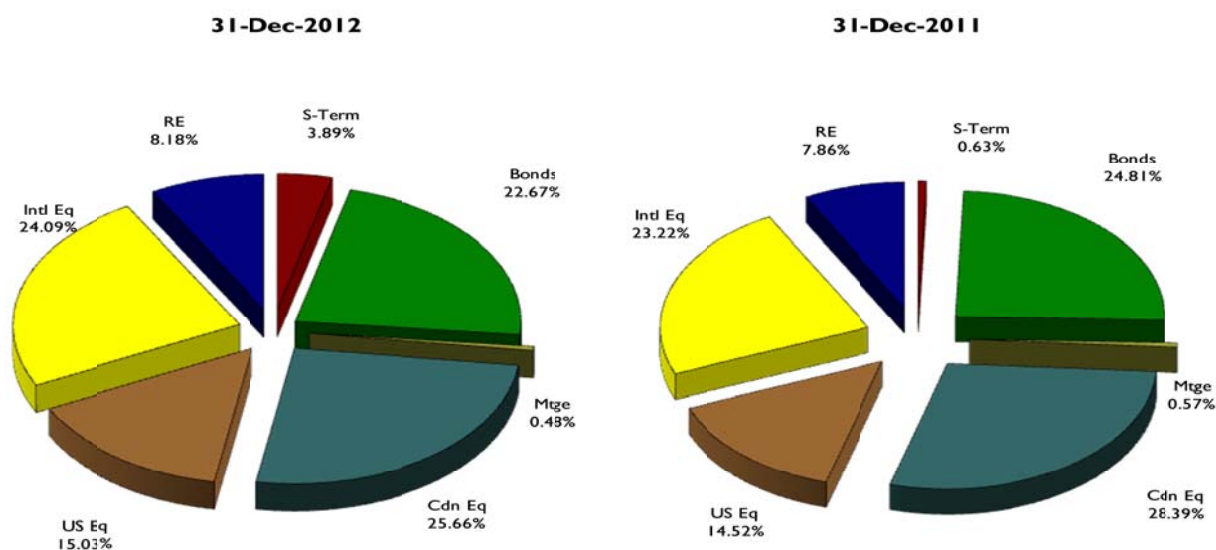
Note 4: Effective January 2, 1985, a separate Money Purchase Accounts Plan was established to enhance the portability of pensions. Contributors include employees, recipients of superannuation allowances, annuities, or pensions payable under the CSSA, or persons on whose behalf the Board is required or requested to transfer moneys to this Plan. Refunds are made upon written request by the contributor. Administrative costs are recovered by the Board.

Note 5: The Province of Manitoba has established a fund for the purpose of accumulating funds for the eventual retirement of the Province of Manitoba's unfunded pension obligation. Under the terms of March 6, 2001 and March 30, 2009 agreements between the Province of Manitoba and the Board, the Province of Manitoba established funds with the Board and the Province of Manitoba to which it is making the required payments to these funds. As well, the Province of Manitoba is making payments to this fund that are related to the Special Operating Agencies' unfunded pension liabilities. Payments received by the Board from the Province of Manitoba are held by the Board in trust for and on behalf of the Province of Manitoba and are invested by the Board on behalf of the Province of Manitoba. The payments received are not assets of the Plan and accordingly, they are accounted for by the Fund in the Unfunded Pension Liability Trust Accounts. These trust accounts earn investment income at a rate of return equal to the rate of return earned by the Fund. The Board receives an investment management fee for its services. The payments made by the Province of Manitoba to the Board do not reduce the accrued pension benefit obligations of the Fund. The Trust Agreements have been recently amended to make the trusts irrevocable. Accordingly, the assets in the Trust Accounts can not be used for any purposes other than to fund the payments of pension benefits for which the Province of Manitoba is responsible and to pay the costs and expenses that are directly attributable to the administration of the Trust Accounts. In October 2007, The Financial Administration Act was amended to allow for withdrawals from the fund to pay, or fund the payment of, pension benefits for which the Province of Manitoba is responsible.

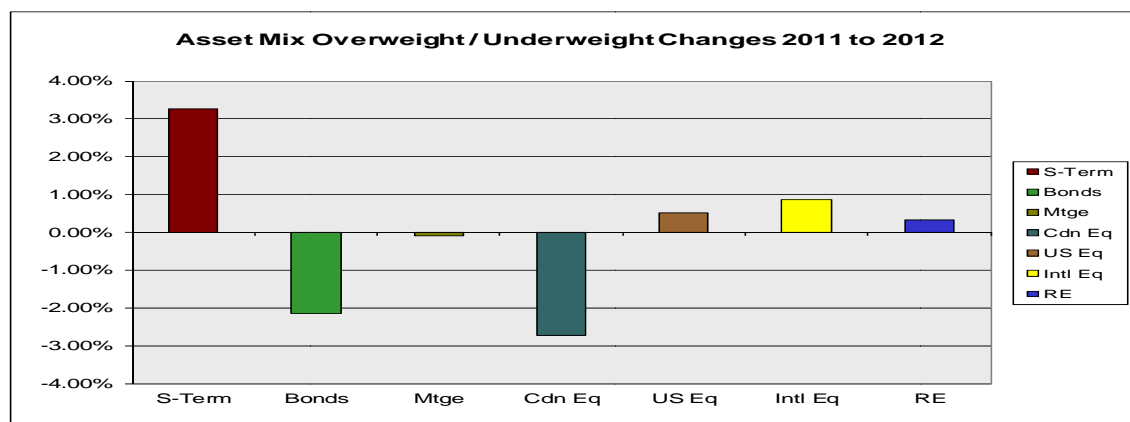
Note 6: Effective January 1, 2012, Manitoba Hydro employees with pensionable service after May 31, 2006 are eligible for an additional benefit. The Enhanced Hydro Benefit Plan enhances the formula used in calculating pension benefits from 1.6% to 1.7% of earnings up to the Canada Pension Plan average Yearly Maximum Pensionable Earnings at the time of retirement. Manitoba Hydro will fund the enhanced pension benefit through contributions to a trust account that will be used to fund the additional benefit to employees.

## 2. Asset Mix Distribution

	31-Dec-2012		31-Dec-2011	
1. Short Term (S-Term)	\$ 211,775,000	3.89%	\$ 30,313,000	0.63%
2. Bonds and Debentures (Bonds)	1,235,993,000	22.67%	1,202,267,000	24.81%
3. Mortgages (Mtge)	26,082,000	0.48%	27,681,000	0.57%
Fixed Income	\$ 1,473,850,000	27.04%	\$ 1,260,261,000	26.01%
4. Canadian Equities (Cdn Eq)	1,398,801,000	25.66%	1,375,619,000	28.39%
5. U.S. Equities (US Eq)	819,459,000	15.03%	703,690,000	14.52%
6. Non-North American Equities (Intl Eq)	1,313,153,000	24.09%	1,124,870,000	23.22%
7. Real Estate (RE)	445,659,000	8.18%	380,787,000	7.86%
Equity	\$ 3,977,072,000	72.96%	\$ 3,584,966,000	73.99%
	\$ 5,450,922,000	100.00%	\$ 4,845,227,000	100.00%



To limit the exposure to interest rate fluctuation and to obtain the best possible return at an acceptable risk, the Board amended the long-term investment asset mix policy to be 30% fixed income and 70% equity (Source: Audited Financial Statements).



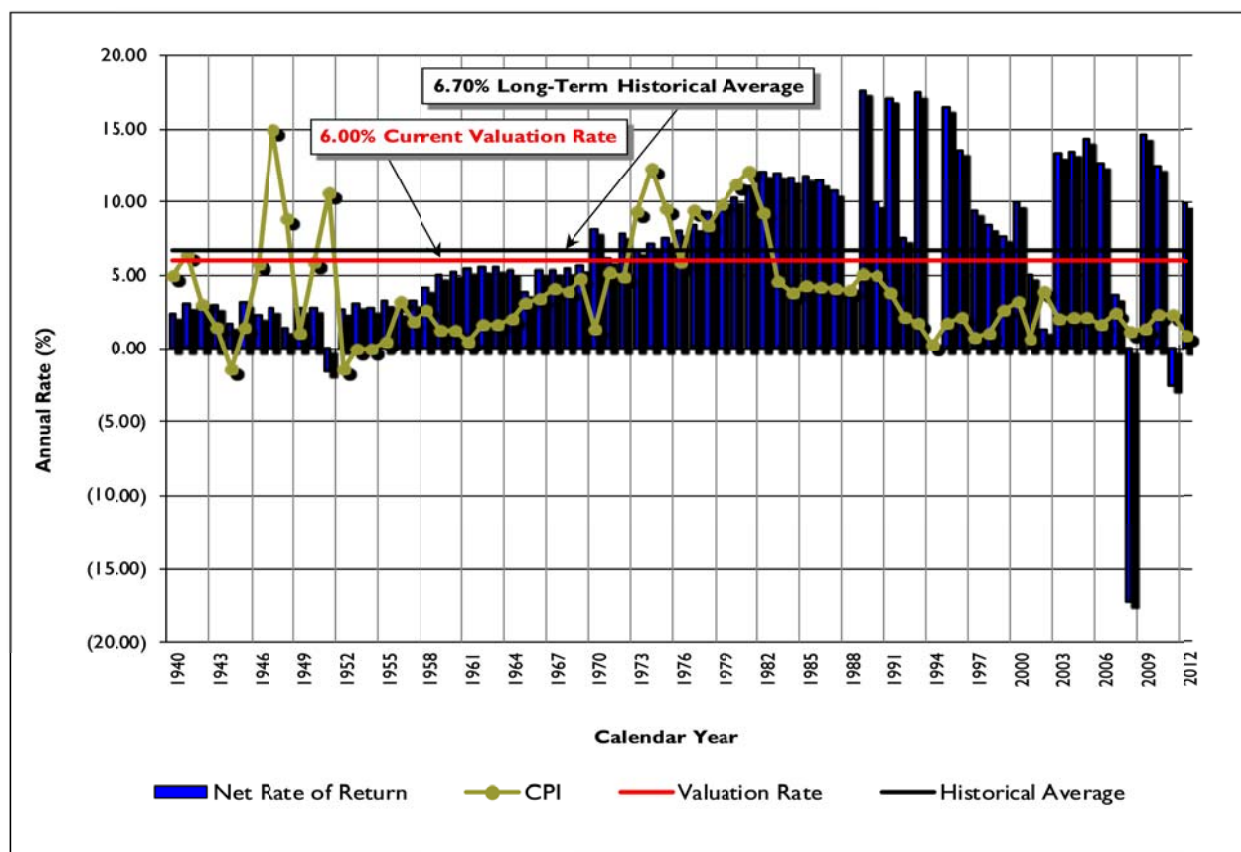
### 3. Historical Cash Flow: 74 Years (Basic Account and Indexing Account)

[1] Year**	Opening Assets	[2] Fund & Pay-as-you-go Contributions	[3] Benefits	[4] Expenses	[5] Investment Fees	[6] Investment Income	[7] Closing Assets	[8] Net Return
1939	\$ 5,022,908	\$ 452,383	\$ (117,994)	\$ (4,151)	\$ 0	\$ 123,003	\$ 5,476,149	2.37%
1940	5,476,149	462,964	(172,927)	(8,018)	0	130,602	5,888,770	2.33%
1941	5,888,770	594,089	(200,751)	(7,086)	0	181,856	6,456,878	2.99%
1942	6,456,878	455,779	(208,762)	(9,488)	0	189,072	6,883,479	2.88%
1943	6,883,479	440,959	(228,891)	(6,852)	0	203,731	7,292,426	2.92%
1944	7,292,426	441,331	(237,906)	(6,801)	0	121,812	7,610,862	1.65%
1945	7,610,862	476,802	(279,094)	(8,365)	0	243,235	8,043,440	3.16%
1946*	8,043,440	495,588	(284,104)	(6,597)	0	184,284	8,432,611	2.26%
1947	8,432,611	778,339	(328,404)	(7,869)	0	236,658	9,111,335	2.73%
1948*	9,111,335	792,068	(372,476)	(10,715)	0	(218,081)	9,302,131	1.34%
1949	9,302,131	905,065	(421,390)	(9,473)	0	262,446	10,038,779	2.75%
1950	10,038,779	994,024	(469,602)	(9,293)	0	286,002	10,839,910	2.78%
1951*	10,839,910	1,179,579	(527,278)	(12,349)	0	(179,115)	11,300,747	(1.60%)
1952*	11,300,747	1,344,962	(553,862)	(11,919)	0	(1,265,915)	10,814,013	2.60%
1953	10,814,013	1,462,734	(666,186)	(12,101)	0	341,695	11,940,155	3.05%
1954	11,940,155	1,611,842	(690,616)	(15,320)	0	341,770	13,187,831	2.76%
1955	13,187,831	1,663,647	(773,936)	(12,476)	0	434,896	14,499,962	3.19%
1956	14,499,962	1,790,935	(859,146)	(13,597)	0	384,823	15,802,977	2.57%
1957	15,802,977	2,130,165	(798,404)	(19,480)	0	523,979	17,639,237	3.18%
1958*	17,639,237	2,395,882	(917,013)	(23,360)	0	764,898	19,859,644	4.16%
1959*	19,859,644	2,661,599	(1,035,623)	(27,240)	0	1,039,120	22,497,500	5.03%
1960	22,497,500	4,144,352	(1,154,232)	(31,120)	0	1,246,736	26,703,236	5.20%
1961	26,703,236	2,927,316	(1,403,725)	(28,990)	0	1,485,022	29,682,859	5.41%
1962	29,682,859	3,196,204	(1,605,710)	(28,171)	0	1,668,806	32,913,988	5.48%
1963	32,913,988	3,558,599	(1,759,225)	(36,677)	0	1,873,563	36,550,248	5.54%
1964*	36,550,248	3,877,559	(2,219,502)	(38,149)	0	1,979,089	40,149,245	5.30%
1965*	40,149,245	3,160,279	(2,014,266)	(29,849)	0	1,570,949	42,836,358	3.86%
1966	42,836,358	3,725,529	(3,651,008)	(52,977)	0	2,274,524	45,132,426	5.31%
1967	45,132,426	4,369,950	(2,643,540)	(48,180)	0	2,449,109	49,259,765	5.33%
1968	49,259,765	5,053,832	(2,676,421)	(64,800)	0	2,701,658	54,274,034	5.36%
1969	54,274,034	5,854,684	(3,005,217)	(75,977)	0	3,091,166	60,138,690	5.55%
1970	60,138,690	6,680,379	(3,486,690)	(94,068)	0	4,980,327	68,218,638	8.07%
1971	68,218,638	7,799,868	(4,149,289)	(104,499)	0	4,261,235	76,025,953	6.09%
1972	76,025,953	9,167,547	(4,838,136)	(143,101)	0	6,082,486	86,294,749	7.79%
1973	86,294,749	10,468,999	(5,931,048)	(144,955)	0	5,923,884	96,611,629	6.69%
1974	96,611,629	13,415,988	(7,519,676)	(187,266)	0	7,034,969	109,355,644	7.07%
1975	109,355,644	17,478,089	(8,729,977)	(277,474)	0	8,459,738	126,286,020	7.45%
1976	126,286,020	21,560,004	(10,893,728)	(328,456)	0	10,454,455	147,078,295	7.95%
1977	147,078,295	25,723,575	(12,527,475)	(420,893)	0	12,779,529	172,633,031	8.33%
1978	172,633,031	28,820,421	(15,566,709)	(464,754)	(267)	16,514,075	201,935,797	9.22%
1979	201,935,797	30,972,133	(18,939,495)	(426,237)	(5,006)	20,277,643	233,814,835	9.76%
1980	233,814,835	35,610,583	(22,105,591)	(501,376)	(7,389)	24,502,748	271,313,810	10.19%
1981	271,313,810	40,077,511	(24,347,203)	(562,043)	(16,508)	30,878,819	317,344,386	11.07%
1982	317,344,386	46,310,086	(26,696,402)	(574,946)	(20,929)	39,173,814	375,536,009	11.98%
1983	375,536,009	55,246,946	(32,486,301)	(1,649,451)	(13,059)	46,079,767	442,713,911	11.93%
1984	442,713,911	55,247,692	(41,641,651)	(726,172)	(81,599)	52,113,402	507,625,583	11.58%
1985	507,625,583	60,726,998	(44,840,057)	(769,761)	(115,395)	60,619,735	583,247,103	11.74%
1986	583,247,103	66,731,516	(51,745,686)	(701,556)	(214,827)	67,587,082	664,903,632	11.41%
1987	664,903,632	74,154,000	(60,044,000)	(958,000)	(22,000)	71,783,368	749,817,000	10.69%
1988	749,817,000	82,966,000	(68,349,000)	(1,127,000)	(722,000)	30,951,000	793,536,000	4.00%
1989	793,536,000	87,444,000	(75,248,000)	(1,233,000)	(1,067,000)	141,327,000	944,759,000	17.55%
1990	944,759,000	95,317,000	(87,829,000)	(818,000)	(1,198,000)	94,997,000	1,045,228,000	9.89%
1991	1,045,228,000	104,335,000	(93,946,000)	(670,000)	(1,364,000)	180,752,000	1,234,335,000	17.08%
1992	1,234,335,000	107,405,000	(115,873,000)	(791,000)	(1,290,000)	93,632,000	1,317,418,000	7.51%
1993	1,317,418,000	114,699,000	(119,806,000)	(900,000)	(1,116,000)	230,089,000	1,540,384,000	17.42%
1994	1,540,384,000	117,886,000	(129,598,000)	(969,000)	(1,520,000)	3,382,000	1,529,565,000	0.12%
1995	1,529,565,000	121,492,000	(137,521,000)	(894,000)	(1,845,000)	252,094,000	1,762,891,000	16.45%
1996	1,762,891,000	127,112,000	(151,650,000)	(982,000)	(2,777,000)	239,112,000	1,973,706,000	13.50%
1997***	1,973,706,000	104,920,000	(546,688,000)	(736,000)	(2,117,000)	166,119,000	1,695,204,000	9.36%
1998	1,695,204,000	122,261,000	(129,544,000)	(785,000)	(1,981,000)	142,888,000	1,828,043,000	8.33%
1999	1,828,043,000	115,219,000	(135,216,000)	(712,000)	(2,398,000)	139,931,000	1,944,867,000	7.57%
2000	1,944,867,000	125,361,000	(147,650,000)	(944,000)	(2,664,000)	193,804,000	2,112,754,000	9.89%
2001	2,112,754,000	136,764,000	(156,626,000)	(845,000)	(2,164,000)	107,407,000	2,197,290,000	5.01%
2002	2,197,290,000	149,320,000	(168,974,000)	(1,037,000)	(2,490,000)	30,846,000	2,204,955,000	1.30%
2003	2,204,955,000	155,824,000	(179,152,000)	(1,274,000)	(3,142,000)	293,631,000	2,470,842,000	13.25%
2004	2,470,842,000	167,480,000	(194,500,000)	(1,283,000)	(4,019,000)	333,733,000	2,772,253,000	13.42%
2005	2,772,253,000	191,600,000	(213,939,000)	(1,478,000)	(4,312,000)	398,284,000	3,142,408,000	14.27%
2006	3,142,408,000	212,647,000	(237,555,000)	(1,540,000)	(4,035,000)	397,998,000	3,509,923,000	12.59%
2007	3,509,923,000	214,854,000	(260,704,000)	(1,482,000)	(5,459,000)	130,119,000	3,587,251,000	3.58%
2008	3,587,251,000	232,626,000	(284,319,000)	(1,265,000)	(2,152,000)	(613,093,000)	2,919,048,000	(17.28%)
2009	2,919,048,000	247,149,000	(294,503,000)	(1,484,000)	(3,409,000)	423,890,000	3,290,691,000	14.53%
2010	3,290,691,000	261,179,000	(319,276,000)	(1,461,000)	(3,743,000)	408,391,000	3,635,781,000	12.41%
2011	3,635,781,000	275,798,000	(350,744,000)	(1,485,000)	(2,370,000)	(92,444,000)	3,464,536,000	(2.64%)
2012	3,464,536,000	309,576,000	(401,978,000)	(1,623,000)	(1,928,000)	340,396,000	3,708,979,000	9.90%
		\$4,650,825,375	\$ (5,429,954,325)	\$ (37,550,448)	\$ (61,778,979)	\$ 4,582,414,469		6.70%



- \* Some numbers in 1958, 1959, and 1964 were estimated. 1946 is an 11-month "year", and 1965 is a 9-month "year". (Adjusted Book Value" 1939-1990 | Market Value: 1991-2007). In 1948, 1951 and 1952 transfers to reserves for possible future losses on account of investment principal were made, and special adjustments under the CSSA occurred.
- \*\* Years 1939 to 1945 commenced on May 1, years 1946 to 1964 commenced on April 1. Thereafter, calendar years are reported.
- \*\*\* The large decrease in assets in 1997 was due to the privatization of MTS.
- \*\*\*\* Rates of return are arithmetical and are calculated on the basis of mid-year cashflow.

The volatility in recent asset values is due to the Auditor's requirement that market values be reported. Previously, adjusted book values were used. The Valuation Balance Sheet separately reflects a smoothing asset adjustment reserve to partially mitigate or neutralize this volatility.



### Historical Cash Flow: 5 Years (Basic Account)

[1] Year	[2] Opening Assets	[3] Fund & Pay-as-you-go Contributions	[4] Benefits	[5] Expenses	[6] Investment Fees	[7] Investment Income	[8] Closing Assets	[9] Net Return
2008	\$ 3,375,344,000	\$ 222,807,000	\$ (267,126,000)	\$ (1,265,000)	\$ (2,152,000)	\$ (584,724,000)	\$ 2,742,884,000	(17.51%)
2009	2,742,884,000	236,239,000	(421,259,000)	(1,484,000)	(3,409,000)	395,170,000	2,948,141,000	14.79%
2010	2,948,141,000	250,061,000	(300,446,000)	(1,461,000)	(3,743,000)	366,759,000	3,259,311,000	12.42%
2011	3,259,311,000	263,866,000	(330,477,000)	(1,485,000)	(2,370,000)	(85,191,000)	3,103,654,000	(2.71%)
2012	3,103,654,000	296,514,000	(379,618,000)	(1,623,000)	(1,928,000)	305,626,000	3,322,625,000	9.92%
		\$ 1,269,487,000	\$ (1,698,926,000)	\$ (7,318,000)	\$ (13,602,000)	\$ 397,640,000		3.38%

#### 4. Membership Summary (records processed for liability calculations)

Category	31-Dec-2012			31-Dec-2011		
	Males	Females	Total	Males	Females	Total
Active Participants	15,581	15,108	30,689	15,099	14,618	29,717
Other Participants						
- Long-Term Disability *	42	108	150	40	108	148
- Deferred Annuities	1,388	1,632	3,020	1,297	1,602	2,899
- Transfers	60	40	100	65	43	108
	<u>1,490</u>	<u>1,780</u>	<u>3,270</u>	<u>1,402</u>	<u>1,753</u>	<u>3,155</u>
Pensions in Payment						
- Pensioners	9,090	6,392	15,482	8,833	6,002	14,835
- Survivors	328	2,492	2,820	291	2,489	2,780
	<u>9,418</u>	<u>8,884</u>	<u>18,302</u>	<u>9,124</u>	<u>8,491</u>	<u>17,615</u>
Total	<u>26,489</u>	<u>25,772</u>	<u>52,261</u>	<u>25,625</u>	<u>24,862</u>	<u>50,487</u>

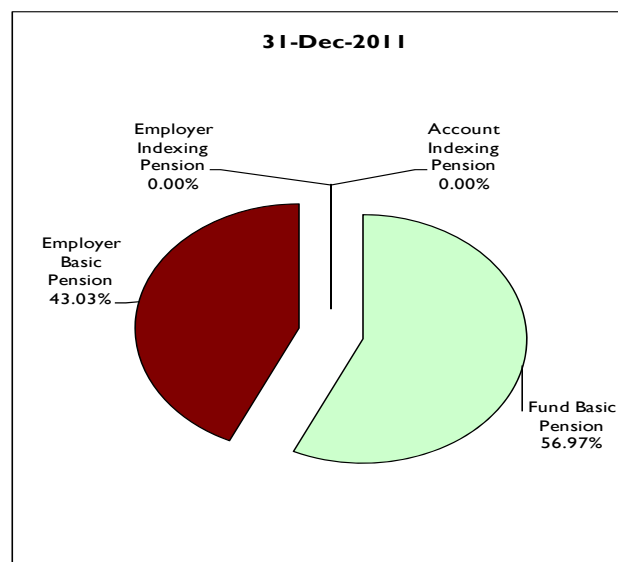
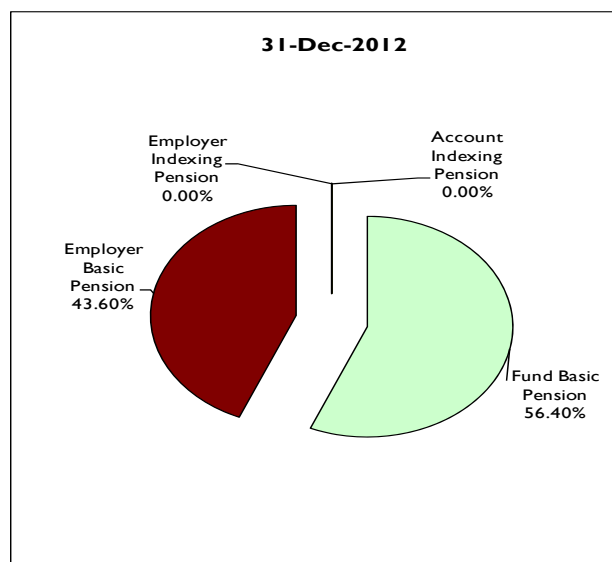
\* The LTD recipients who will receive an enhanced disability benefit (not a responsibility of the Fund) on cessation of LTD income are also reflected in the number of pensions in payment (a portion of which is the liability of the Fund).

	31-Dec-2012			31-Dec-2011		
	Number	Average Age	Fund Average Monthly Pension	Number	Average Age	Fund Average Monthly Pension
Active Participants	30,689	44.56	\$ 571.94	29,717	44.05	\$ 552.28
Other Participants	3,270	48.54	224.53	3,155	48.29	208.41
Pensions in Payment	18,302	70.18	777.25	17,615	70.24	751.51
Total	<u>52,261</u>	<u>53.78</u>	<u>\$ 622.10</u>	<u>50,487</u>	<u>53.20</u>	<u>\$ 600.30</u>

- The active participant average monthly pension which is the responsibility of the Fund has been estimated from salary and service data as these participants have not yet retired, disabled, terminated, or died and therefore have not had their pension determined explicitly by the Board. The amounts shown in the prior Report have been restated for such participants.
- The total membership counts shown in the Report are different from the amounts reported in the General Manager's Report due to additional new entrants, retirements, disablements, terminations, and deaths following December 31, 2012, that were provided by the staff of the Board.
- This Report is in respect of Fund obligations. The Fund average monthly pension has been shown above which represents approximately 55% of the total pensions paid to participants prior to reflecting indexing. Additional information is shown on the following pages that detail Fund pension amounts as well as the pension amounts payable outside the Fund by the Indexing Account and the pay-as-you-go employers. The valuation of the obligations not belonging to the Fund is reported separately.

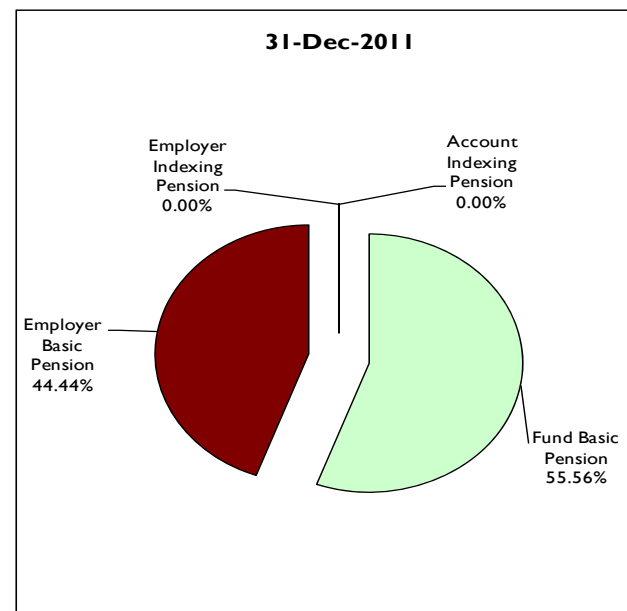
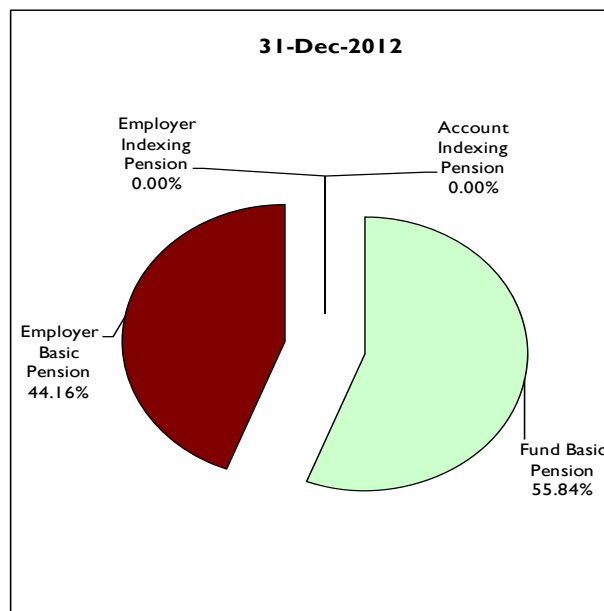
**5. Active Participants Age Profile** (This Report is in respect of Fund obligations only. Employer in the information below refers to pay-as-you-go employers. The Fund includes matching employer pension information.)

		Average Monthly Pension				
Age Band	Number	Basic Pension		Indexing		Total
		Fund	Employer	Employer	Account	
15 - 19	42	\$ 10.09	\$ 5.67	\$ -	\$ -	\$ 15.76
20 - 24	1,089	48.62	33.49	-	-	82.11
25 - 29	2,652	122.18	90.09	-	-	212.27
30 - 34	3,399	217.72	160.09	-	-	377.81
35 - 39	3,752	321.69	235.39	-	-	557.08
40 - 44	3,875	464.57	337.34	-	-	801.91
45 - 49	4,731	693.51	540.12	-	-	1,233.63
50 - 54	5,101	854.45	677.75	-	-	1,532.20
55 - 59	3,848	969.78	758.93	-	-	1,728.71
60 - 64	1,763	935.43	744.42	-	-	1,679.85
65 - 69	418	935.11	724.08	-	-	1,659.19
70 - 74	19	865.12	694.65	-	-	1,559.77
75 - 79	-	-	-	-	-	-
80 - 84	-	-	-	-	-	-
85 - 89	-	-	-	-	-	-
90 - 94	-	-	-	-	-	-
95 - 99	-	-	-	-	-	-
100 - 104	-	-	-	-	-	-
31-Dec-2012	30,689	\$ 571.94	\$ 442.22	\$ -	\$ -	\$ 1,014.16
31-Dec-2011	29,717	\$ 552.28	\$ 417.17	\$ -	\$ -	\$ 969.45



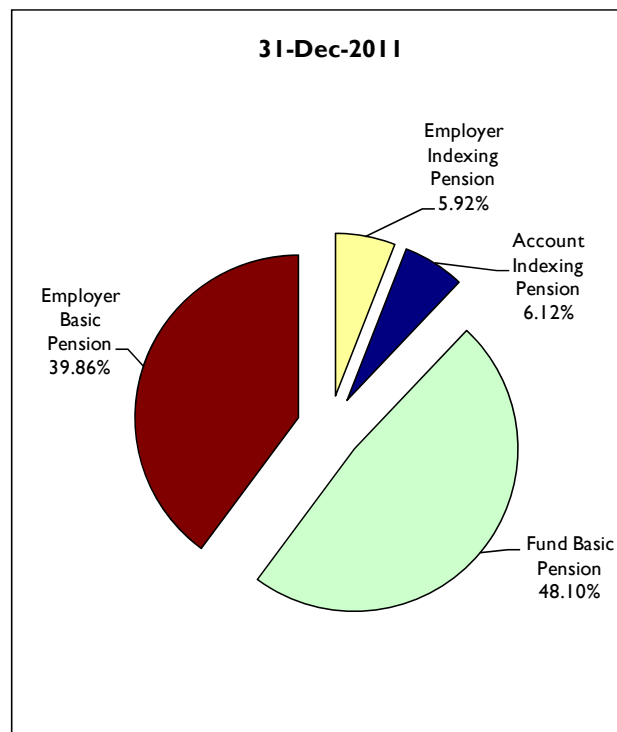
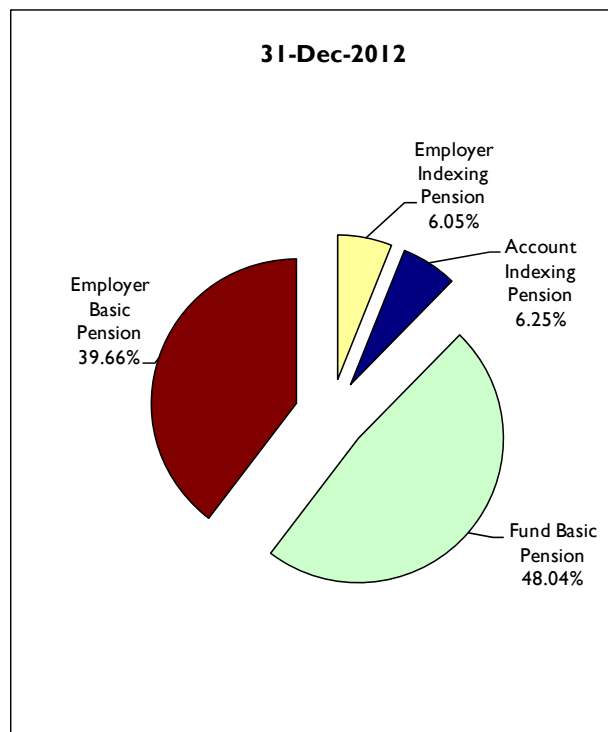
**6. Other Participants Age Profile** (This Report is in respect of Fund obligations only. Employer in the information below refers to pay-as-you-go employers. The Fund includes matching employer pension information.)

		Average Monthly Pension				
Age Band	Number	Basic Pension		Indexing		Total
		Fund	Employer	Employer	Account	
15 - 19	-	\$ -	\$ -	\$ -	\$ -	\$ -
20 - 24	21	17.05	12.98	-	-	30.03
25 - 29	98	61.86	38.24	-	-	100.10
30 - 34	182	123.69	79.15	-	-	202.84
35 - 39	286	158.66	115.12	-	-	273.78
40 - 44	405	225.80	167.01	-	-	392.81
45 - 49	613	242.51	187.41	-	-	429.92
50 - 54	871	291.03	244.46	-	-	535.49
55 - 59	509	214.08	180.18	-	-	394.26
60 - 64	249	208.42	150.88	-	-	359.30
65 - 69	33	159.58	135.61	-	-	295.19
70 - 74	2	48.97	41.28	-	-	90.25
75 - 79	1	97.27	-	-	-	97.27
80 - 84	-	-	-	-	-	-
85 - 89	-	-	-	-	-	-
90 - 94	-	-	-	-	-	-
95 - 99	-	-	-	-	-	-
100 - 104	-	-	-	-	-	-
31-Dec-2012	3,270	\$ 224.53	\$ 177.56	\$ -	\$ -	\$ 402.09
31-Dec-2011	3,155	\$ 208.41	\$ 166.70	\$ -	\$ -	\$ 375.11



**7. Pensions in Payment Age Profile** (This Report is in respect of Fund obligations only. Employer in the information below refers to pay-as-you-go employers. The Fund includes matching employer pension information.)

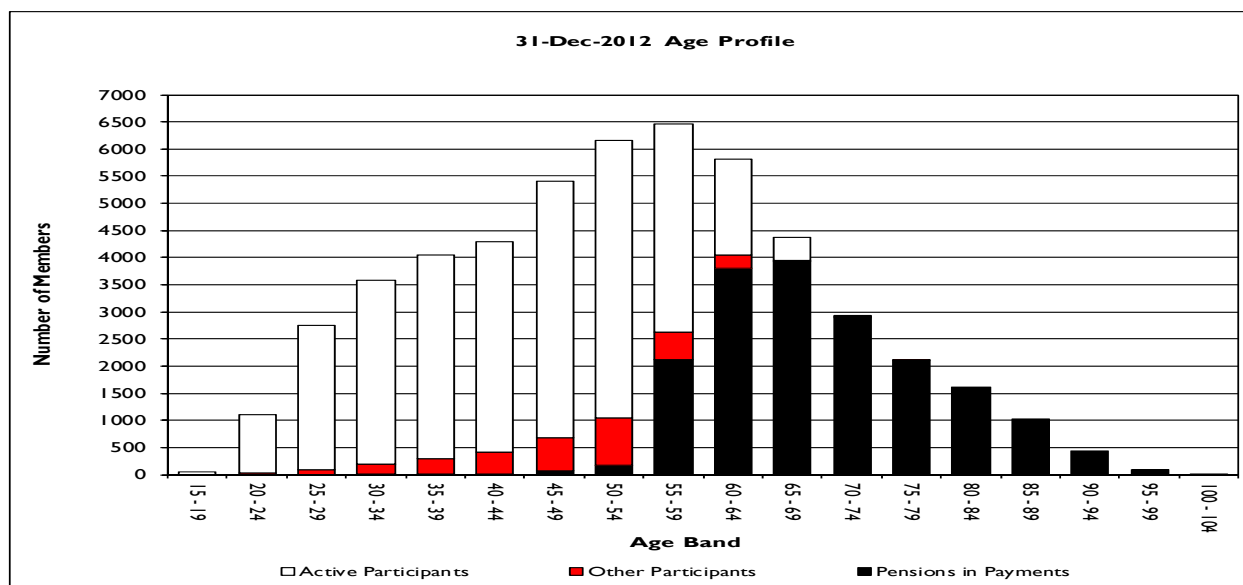
		Average Monthly Pension				
Age Band	Number	Basic Pension		Indexing		Total
		Fund	Employer	Employer	Account	
15 - 19	-	\$ -	\$ -	\$ -	\$ -	\$ -
20 - 24	-	-	-	-	-	-
25 - 29	-	-	-	-	-	-
30 - 34	1	122.23	92.74	8.55	8.54	232.06
35 - 39	5	168.05	138.19	8.20	8.19	322.63
40 - 44	19	202.10	150.67	9.91	10.67	373.35
45 - 49	65	373.26	319.28	19.40	20.04	731.98
50 - 54	178	458.28	603.35	23.89	19.79	1,105.31
55 - 59	2,115	1,111.25	915.76	21.25	21.55	2,069.81
60 - 64	3,801	1,032.62	855.21	49.07	50.92	1,987.82
65 - 69	3,923	853.63	695.79	82.55	85.23	1,717.20
70 - 74	2,900	691.03	568.70	118.13	121.42	1,499.28
75 - 79	2,110	554.39	442.18	146.76	153.26	1,296.59
80 - 84	1,618	473.05	403.27	171.50	176.50	1,224.32
85 - 89	1,034	387.75	319.34	183.13	194.14	1,084.36
90 - 94	428	298.56	260.80	208.48	210.95	978.79
95 - 99	99	221.72	195.09	198.16	201.01	815.98
100 - 104	6	102.19	96.73	188.74	183.98	571.64
31-Dec-2012	18,302	\$ 777.25	\$ 641.75	\$ 97.81	\$ 101.17	\$ 1,617.98
31-Dec-2011	17,615	\$ 751.51	\$ 622.80	\$ 92.44	\$ 95.57	\$ 1,562.32



**8. Total Membership Age Profile** (This Report is in respect of Fund obligations only. Employer in the information below refers to pay-as-you-go employers. The Fund includes matching employer pension information.)

		Average Monthly Pension				
Age Band	Number	Basic Pension		Indexing *		Total
		Fund	Employer	Employer	Account	
15 - 19	42	\$ 10.09	\$ 5.67	\$ -	\$ -	\$ 15.76
20 - 24	1,110	48.02	33.10	-	-	81.12
25 - 29	2,750	120.03	88.24	-	-	208.27
30 - 34	3,582	212.92	155.96	-	-	368.88
35 - 39	4,043	309.97	226.76	0.01	0.01	536.75
40 - 44	4,299	440.92	320.47	0.04	0.05	761.48
45 - 49	5,409	638.55	497.49	0.23	0.24	1,136.52
50 - 54	6,150	763.19	614.23	0.69	0.57	1,378.68
55 - 59	6,472	956.58	764.66	6.94	7.04	1,735.23
60 - 64	5,813	967.84	791.44	32.09	33.30	1,824.66
65 - 69	4,374	856.18	694.27	74.04	76.44	1,700.93
70 - 74	2,921	691.72	569.16	117.28	120.55	1,498.71
75 - 79	2,111	554.17	441.97	146.69	153.19	1,296.02
80 - 84	1,618	473.05	403.27	171.50	176.50	1,224.32
85 - 89	1,034	387.75	319.34	183.13	194.14	1,084.36
90 - 94	428	298.56	260.80	208.48	210.95	978.79
95 - 99	99	221.72	195.09	198.16	201.01	815.98
100 - 104	6	102.19	96.73	188.74	183.98	571.64
31-Dec-2012	52,261	\$ 622.10	\$495.54	\$ 34.25	\$ 35.43	\$ 1,187.32
31-Dec-2011	50,487	\$ 600.30	\$473.26	\$ 32.25	\$ 33.34	\$ 1,139.15

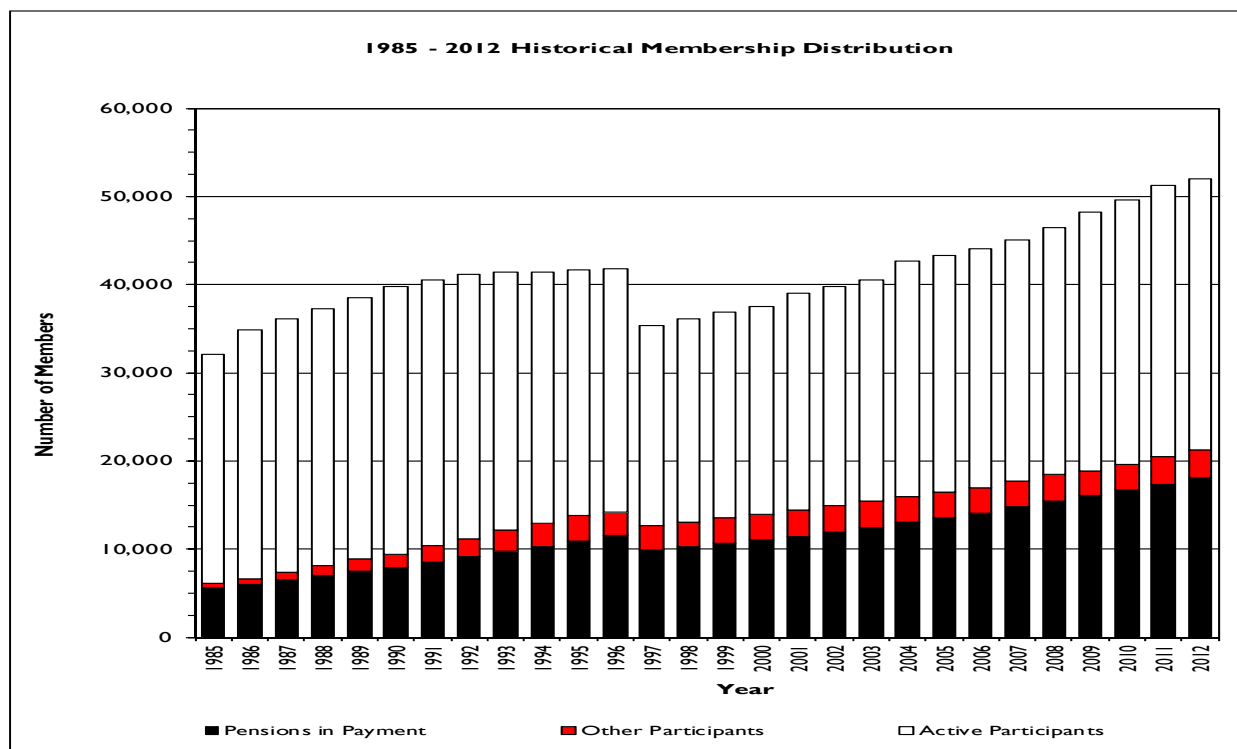
\* The indexing shown above is averaged over the total membership at each age band.



## 9. Membership Distribution by Year (extracted from General Manager's Report)

Year	Participants			Pensions in Payment				Grand Total
	Actives	Other	Total	Pensioners	Beneficiaries	Spouses	Total	
1985	26,027	454	26,481	4,830	456	355	5,641	32,122
1986	28,182	568	28,750	5,191	489	370	6,050	34,800
1987	28,832	794	29,626	5,614	529	398	6,541	36,167
1988	29,107	1,153	30,260	6,003	597	423	7,023	37,283
1989	29,665	1,370	31,035	6,368	663	444	7,475	38,510
1990	30,350	1,562	31,912	6,670	719	482	7,871	39,783
1991	30,106	1,864	31,970	7,254	798	514	8,566	40,536
1992	29,921	2,058	31,979	7,739	870	545	9,154	41,133
1993	29,209	2,344	31,553	8,356	930	542	9,828	41,381
1994	28,544	2,608	31,152	8,679	1,031	558	10,268	41,420
1995	27,952	2,885	30,837	9,165	1,113	591	10,869	41,706
1996	27,629	2,705	30,334	9,690	1,188	604	11,482	41,816
1997	22,658	2,774	25,432	8,308	1,060	528	9,896	35,328
1998	22,980	2,842	25,822	8,573	1,160	533	10,266	36,088
1999	23,350	2,827	26,177	8,883	1,279	535	10,697	36,874
2000	23,575	2,933	26,508	9,096	1,313	590	10,999	37,507
2001	24,640	2,961	27,601	9,446	1,438	549	11,433	39,034
2002	24,885	2,982	27,867	9,874	1,509	542	11,925	39,792
2003	25,136	2,996	28,132	10,322	1,587	545	12,454	40,586
2004	26,659	2,952	29,611	10,772	1,674	553	12,999	42,610
2005	26,792	2,958	29,750	11,225	1,747	556	13,528	43,278
2006	27,112	2,893	30,005	11,704	1,829	568	14,101	44,106
2007	27,403	2,893	30,296	12,354	1,886	572	14,812	45,108
2008	27,978	3,024	31,002	12,908	1,961	581	15,450	46,452
2009	29,353	2,857	32,210	13,429	2,007	587	16,023	48,233
2010	29,983	2,901	32,884	14,011	1,992	658	16,661	49,545
2011	30,659	3,155	33,814	14,632	2,061	677	17,370	51,184
2012	30,693	3,270	33,963	15,253	2,110	665	18,028	51,991 *

\* The 52,261 membership records processed for liability calculations is greater than the 51,991 shown in the above table largely due to the inclusion of members who entered or retired between the end of 2012 and the date the valuation file was sent to the actuary.



## 10. Reconciliation

### Participant Reconciliation (extracted from General Manager's Report)

Year	Jan. 1	Entered*	Withdrew	Retired	Disabled	Died	Dec. 31
1985	25,673	2,271	(908)	(468)	(28)	(59)	26,481
1986	26,481	3,857	(1,028)	(489)	(29)	(42)	28,750
1987	28,750	2,787	(1,272)	(541)	(52)	(46)	29,626
1988	29,626	2,655	(1,387)	(536)	(52)	(46)	30,260
1989	30,260	2,710	(1,307)	(528)	(49)	(51)	31,035
1990	31,035	2,718	(1,273)	(470)	(50)	(48)	31,912
1991	31,912	2,311	(1,389)	(768)	(42)	(54)	31,970
1992	31,970	1,844	(1,125)	(640)	(31)	(39)	31,979
1993	31,979	1,739	(1,296)	(808)	(31)	(30)	31,553
1994	31,553	1,438	(1,189)	(575)	(32)	(43)	31,152
1995	31,152	1,675	(1,324)	(569)	(30)	(67)	30,837
1996	30,837	2,353	(1,992)	(763)	(54)	(47)	30,334
1997	30,334	(3,272)	(1,082)	(478)	(41)	(29)	25,432
1998	25,432	2,155	(1,182)	(494)	(47)	(42)	25,822
1999	25,822	2,040	(991)	(585)	(52)	(57)	26,177
2000	26,177	2,024	(1,105)	(505)	(48)	(35)	26,508
2001	26,508	2,803	(1,017)	(598)	(35)	(60)	27,601
2002	27,601	2,068	(1,016)	(683)	(56)	(47)	27,867
2003	27,867	1,993	(909)	(710)	(68)	(41)	28,132
2004	28,132	3,196	(858)	(751)	(60)	(48)	29,611
2005	29,611	2,074	(1,060)	(755)	(63)	(57)	29,750
2006	29,750	2,388	(1,251)	(777)	(63)	(42)	30,005
2007	30,005	2,538	(1,172)	(948)	(65)	(62)	30,296
2008	30,296	3,126	(1,408)	(906)	(53)	(53)	31,002
2009	31,002	3,415	(1,243)	(841)	(72)	(51)	32,210
2010	32,210	2,860	(1,171)	(907)	(61)	(47)	32,884
2011	32,884	3,050	(1,033)	(965)	(68)	(54)	33,814
2012	33,814	2,954	(1,764)	(933)	(55)	(53)	33,963
		<u>63,770</u>	<u>(33,752)</u>	<u>(18,991)</u>	<u>(1,387)</u>	<u>(1,350)</u>	

### Pensioner (excludes survivors) Reconciliation (extracted from General Manager's Report)

Year	Jan. 1	Other*	Retired	Disabled	Died	Dec. 31
1985	4,519	-	468	28	(185)	4,830
1986	4,830	1	489	29	(158)	5,191
1987	5,191	-	541	52	(170)	5,614
1988	5,614	(6)	536	52	(193)	6,003
1989	6,003	(9)	528	49	(203)	6,368
1990	6,368	(18)	470	50	(200)	6,670
1991	6,670	5	768	42	(231)	7,254
1992	7,254	34	640	31	(220)	7,739
1993	7,739	12	808	31	(234)	8,356
1994	8,356	-	575	32	(284)	8,679
1995	8,679	142	569	30	(255)	9,165
1996	9,165	-	763	54	(292)	9,690
1997	9,690	(1,649)	478	41	(252)	8,308
1998	8,308	16	494	47	(292)	8,573
1999	8,573	-	585	52	(327)	8,883
2000	8,883	(20)	505	48	(320)	9,096
2001	9,096	(1)	598	35	(282)	9,446
2002	9,446	(8)	683	56	(303)	9,874
2003	9,874	(24)	710	68	(306)	10,322
2004	10,322	(24)	751	60	(337)	10,772
2005	10,772	(29)	755	63	(336)	11,225
2006	11,225	(28)	777	63	(333)	11,704
2007	11,704	(23)	948	65	(340)	12,354
2008	12,354	(25)	906	53	(380)	12,908
2009	12,908	(38)	841	72	(354)	13,429
2010	13,429	(16)	907	61	(370)	14,011
2011	14,011	(16)	965	68	(396)	14,632
2012	14,632	(17)	933	55	(350)	15,253
		<u>(1,741)</u>	<u>18,991</u>	<u>1,387</u>	<u>(7,903)</u>	

\* This category reflects other adjustments. For example, in 1997, this category reflects the privatization of MTS.

\*\* The actual number of participants and pensioners processed for liability calculations is different from the amount shown in the above table, largely due to the inclusion of members who entered or retired between the end of 2012 and the date the valuation file was sent to the actuary.



## II. Membership Distribution by Employer

Name of Employer		Code	Active Participants	Other Participants	Pensions in Payment	2012 Total
<b>Non-Matching Employers</b>						
1	Province of Manitoba Civil Service	CS	15,463	2,148	11,616	29,227
2	Manitoba Hydro - Electric Board	MH	6,006	244	3,004	9,254
3	Manitoba Public Insurance	AI/AIE	1,834	173	593	2,600
4	Division of Driver and Vehicle Licencing	AIL	143	6	94	243
5	Red River College	RCC	1,380	126	515	2,021
6	Liquor Control Commission	LC	723	70	382	1,175
7	Manitoba Agricultural Services Corporation	AC	-	9	30	39
8	Addictions Foundation of Manitoba	AF	331	37	177	545
9	Assiniboine Community College	ACC	322	41	129	492
10	University College of The North	KCC	316	57	87	460
11	The Legal Aid Services Society of Manitoba	LA	157	15	41	213
12	Manitoba Centennial Centre Corporation	CC	52	7	71	130
13	Teachers' Retirement Allowance Fund Board	TR	32	7	10	49
14	Communities Economic Development Fund	CE	14	2	8	24
15	The Council on Post-Secondary Education	UG	12	2	11	25
16	Manitoba Horse Racing Commission	RC	1	1	5	7
17	Diagnostic Services of Manitoba	DSM	82	3	45	130
18	Regional Health Authority - Winnipeg	RWA	153	15	139	307
19	Regional Health Authority - Brandon	RBH	117	11	188	316
20	Regional Health Authority - Central	RCA	34	5	57	96
21	Regional Health Authority - Assiniboine	ARH et al	28	1	49	78
22	Regional Health Authority - Parkland	RPL	27	6	46	79
23	Regional Health Authority - Interlake	RIL	25	1	58	84
24	Regional Health Authority - South Eastman	RSE	16	1	18	35
25	Regional Health Authority - Nor-Man	RNF/RNM	13	6	15	34
26	Regional Health Authority - North Eastman	RNE	8	-	20	28
27	Regional Health Authority - Burntwood	RBW	6	2	11	19
28	Manitoba Development Corporation	MDC	-	-	-	-
29	Workers' Compensation Board	WC	-	-	1	1
30	WECO	WEC	-	-	48	48
			27,295	2,996	17,468	47,759
<b>Matching Employers</b>						
1	Manitoba Lotteries Corporation	LF	1,609	83	72	1,764
2	Manitoba Housing Authority	HA	464	37	203	704
3	WCFS CUPE Support Workers	CSW	364	1	-	365
4	Manitoba Agricultural Services Corporation	MAS	163	7	25	195
5	Manitoba Crop Insurance Corporation	CI/CIC	139	23	139	301
6	Manitoba Government and General Employees' Un	EA	87	7	41	135
7	Manitoba Hydro Utilities Services	MHU	63	13	1	77
8	Child and Family All Nations Coordinated Respons	ANR	148	16	1	165
9	The Civil Service Superannuation Board	SB	51	12	23	86
10	Manitoba Gaming Control Commission	GC	52	2	15	69
11	Travel Manitoba	TM	32	7	11	50
12	Food Development Centre	FD	39	9	2	50
13	Manitoba Floodway Authority	MFA	57	3	9	69
14	Dairy Farmers of Manitoba	MC	20	4	14	38
15	Industrial Technology Centre	IT	20	7	7	34
16	Hams Marketing Services Co-Op Inc.	HM	16	3	19	38
17	Manitoba Health Research Council	HRC	6	-	-	6
18	Manitoba Film and Sound Recording Development	MFS	10	-	-	10
19	Manitoba Pork Council	PC	9	2	6	17
20	Manitoba Arts Council	MA	13	1	4	18
21	Manitoba Chicken Producer Board	CB	6	-	1	7
22	Sport Manitoba	SM	3	1	2	6
23	Crown Corporations Council	CR	5	-	5	10
24	Horizon Lab Ltd.	MTR	6	-	-	6
25	Manitoba Cattle Enhancement Council	MCE	3	-	-	3
26	Manitoba Turkey Producers	TB	3	1	5	9
27	Paletta & Company Hotels	PCH	3	-	1	4
28	Venture Manitoba Tours Ltd.	VT	3	-	2	5
29	Economic Innovation and Technology Council	MR	-	16	36	52
30	Manitoba Development Corporation	DFP	-	2	7	9
31	Manitoba Hazardous Waste	HW	-	-	3	3
32	Manitoba Water Services Board	WS	-	2	12	14
33	Human Resources and Employment Centres	R's/HE	-	7	12	19
34	Manitoba Beef Commission	BC	-	-	1	1
35	Local Government Districts	LG	-	-	2	2
36	Manitoba Mineral Resources Limited	MM	-	-	1	1
37	Manitoba Data Services	DS	-	3	2	5
38	Money Purchase Plan Annuity	MPP	-	-	150	150
39	No Billing (Charged to Fund)	NB	-	5	-	5
			3,394	274	834	4,502
31-Dec-2012 Total Membership			30,689	3,270	18,302	52,261
31-Dec-2011 Total Membership			29,717	3,155	17,615	50,487

## 12. Data Checks (Source: Staff of the Civil Service Superannuation Board)

- Active Participants: An electronic file which provided information for each active participant as at December 31, 2012. Details of the information provided included: employer code, social insurance number, employee number, sex, date of birth, date of entry into the Fund, full-time annual salary at December 31, 2012, salary rate at December 31, 2012, the proportion of 2012 worked, qualifying service, required employee contributions and total interest on these contributions accumulated to the valuation date. Any reductions in pension as a result of marriage break-up cases, which have been processed, were also provided. We had available copies of prior Actuarial Reports on the financial position of the Fund.

The file was checked for missing information. Salary experience was unfavourable as the active database was adjusted to better reflect full-time equivalent annual salaries where appropriate.

- Pensions in Payment: An electronic file which provided information for each pensioner as at December 31, 2012. Details of the information provided included: employer code, name, social insurance number, sex, date of birth, date of commencement of pension, type of pension, and amount of monthly pension. For each pensioner, the portion of the pension charged to the Fund, now and in the future, was also provided. Similar information was provided for each beneficiary or potential beneficiary.

The pensioner information was provided in 56,142 separate records (trailers) in respect of the 18,302 pensions in payment, which gave details on the pension payable from various sources.

Billing Type	Number	Basic Pension		Indexing	
		Fund	Employer	Employer	Account
A	98	\$ 141.63	\$ 2,987.39	\$ 3,101.40	\$ 12.50
B	39,726	14,234,280.11	11,353,067.82	1,756,496.46	1,835,779.20
C	2,874	(52,014.61)	(51,901.90)	-	-
D	2	89.74	-	-	-
E	43	-	454.17	-	-
F	2,302	41,853.53	29,001.89	1,458.93	1,758.41
H	-	-	-	-	-
I	676	72,333.96	31,464.58	-	-
J	2,912	48,477.30	22,239.09	3,869.52	7,696.66
K	39	-	115,758.28	7,185.24	-
L	951	502.46	173,855.92	-	-
M	13	-	825.12	45.87	-
N	404	-	179,569.43	12,104.91	-
O	4,684	(144,601.86)	(142,386.18)	-	-
P	1,298	23,869.37	9,093.95	3,608.77	6,445.33
Q	2	-	1.85	0.51	-
U	2	223.76	220.56	-	-
W	84	-	265.65	409.57	-
X	26	-	18,994.75	1,818.08	-
Y	6	-	1,811.96	-	-
	<u>56,142</u>	<u>\$ 14,225,155.39</u>	<u>\$ 11,745,324.33</u>	<u>\$ 1,790,099.26</u>	<u>\$ 1,851,692.10</u>
Average Monthly Pension		\$777.25	\$641.75	\$97.81	\$101.17

- The General Manager's and Chief Investment Officer's Reports for 2012. This Report included detailed lists of investments held and financial statements of the Fund, including balance sheets, and income and expenditure statements.
- The Annual Report of the Superannuation Board for 2012.
- A copy of the CSSA, with amendments, to December 31, 2012. The 2007 surplus transfer to the Indexing Account has now occurred.
- An electronic file containing the billing percentages to be used to allocate payments and liabilities amongst the participating employers pursuant to subsection 22(11) of the CSSA.

## DATA CERTIFICATE


with respect to

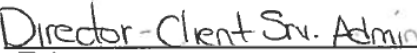
**The Civil Service Superannuation Fund**

forming part of

**The Actuarial Valuation Report as at December 31, 2012**

I hereby certify that, to the best of my knowledge and belief, the data on which the valuation is based is a complete and accurate representation of all persons at the valuation date who are entitled to benefits or will become entitled to benefits under the terms of the Civil Service Superannuation Act (CSSA). It is appropriate to value the benefits of these persons in accordance with the provisions of the CSSA at the valuation date.

  
Signed \_\_\_\_\_

  
Title \_\_\_\_\_

  
Date \_\_\_\_\_

## **A P P E N D I X   I I**

### **Summary of the Plan**

The calculations in this Report are based on the Civil Service Superannuation Act (CSSA) as amended to the valuation date. The Civil Service Superannuation Board (Board) is responsible for administering the CSSA. The Fund is a contributory defined benefit final pay pension plan that covers eligible employees of the Province of Manitoba and its participating Agencies. The following is a brief summary of the benefits as they existed at the valuation date. For a more complete description of the benefits, reference should be made to the CSSA.

#### **I.      Effective Date:**

The Board and Fund were established under the CSSA in May, 1939.

#### **2.      Recent Changes:**

Contribution rates to the Plan are now scheduled to increase over a four year period until the contribution rates are 2% higher than they were previously. The increased contributions are not intended to provide increased pension benefits, but are necessary to fund existing benefits in the future.

Effective May 31, 2010, the Manitoba Pension Benefits Act was amended to provide immediate vesting (previously 2 years of service required) which has been reflected in this Valuation. Other changes dealing with the payment of commuted values, interest credits, marriage breakups, etc. are not expected to have a material cost to the Plan.

Effective January 1, 2001, the employee contribution rate will be 6.0% of pensionable earnings up to Canada Pension Plan (CPP) maximum pensionable earnings and 7.0% of pensionable earnings above the CPP maximum each year. On pensionable earnings up to the CPP maximum, the matching employer contribution rate remains the same at 5.1%.

Effective September 1, 2000, the CSSA was amended to provide benefit improvements. The most significant benefit improvement was to amend the pension formula to increase the pension benefits payable effective September 1, 2000 from 1.4% to 1.6% of average earnings below the average CPP maximum. There were also changes to buy back provisions respecting pensionable service as well as to other administrative matters. The cost of these benefit improvements will be funded by the Fund and by an increase in employee contribution rates.

Employer Billings: Effective January 1, 1998, pursuant to subsection 22(11) of the CSSA, employer funding for employees of more than one non-matching Agency shall be on a pro-rata basis in accordance with the portion of the amount paid or transferred to the employee in respect of which no employer matching contributions were made effective for events on or after January 1, 1998.

Correctional Officers Rule of 75: Effective November 19, 1996, employees who are members of the Province of Manitoba's Corrections Component are required to contribute an additional 1.00% of pensionable earnings. These additional contributions, which are credited to the Correctional Officers' Trust Account, are intended to fund the additional pension benefits for eligible employees who may retire as early as age 50 with no reduction for early retirement providing age and qualifying service are equal to a total of 75 or greater.

### 3. Eligibility:

Each full-time employee of the Province of Manitoba or an Agency immediately begins to participate in the Fund.

Each part-time, temporary or term employee must become a participant upon completing 2 consecutive years of employment in which salary exceeds 25% of the Year's Maximum Pensionable Earnings as defined in the Interpretation Section of the Canada Pension Plan. Any such employee has the option to participate in the Fund any time after employment commences.

### 4. Contributions:

The Fund is financed by contributions required to be made by employees who are participants in the Fund and by participating employers.

A contribution rate change to the Plan to increase the rates by 2.00% of salary (matched by employers) is to be graded into the Fund in the next 4 years.

The rates of required contributions for employees who are participants in the Fund are scheduled as follows:

For pay periods ending:	Contribution rate on salary up to CPP earnings	Contribution rate on salary over CPP earnings
before July 1, 2012	6.00%	7.00%
on or after July 1, 2012 but before 2013	6.50%	7.50%
in 2013	7.00%	8.00%
in 2014	7.50%	8.50%
after 2014	8.00%	9.00%

In accordance with the CSSA, 10.2% of the contributions are allocated to the Indexing Account.

Some of the participating employers are "matching" the contributions made by their employees. The remaining employers are financing their portion of benefits on a pay-as-you-go basis. Correctional Officers are required to contribute an additional 1.00% of salary.

### 5. Pension Formula:

The lifetime pension formula equals:

- 2.00% of a member's best 5-year average pensionable earnings multiplied by pensionable service, minus
- .4% of the average Canada Pension Plan's earnings for the same period multiplied by pensionable service since January 1, 1966.

The lifetime pension is subject to an overall maximum of 70% of the average earnings. Some pensions for members retiring prior to age 60 are subject to an early retirement reduction.

## **6. Retirement:**

A participant receives an unreduced pension if such a participant retires on the last day of the calendar year in which the member attains age 71; on or after age 65 with one year of qualifying service; on or after age 60 with 10 years of qualifying service; or on or after age 55 if age plus qualifying service is equal to 80.

A participant is eligible to receive a reduced pension if such a participant retires on or after age 55 having completed 10 years of qualifying service. The 10-year service requirement has been eliminated after May 31, 2010.

Eligible members of the Province of Manitoba's Corrections Component may retire as early as age 50 if their age plus qualifying service total 75 or more.

The pension is paid for as long as a retired participant lives. If the participant dies before the total of the pension payments is at least equal to the participant's contributions with interest, the excess amount of these contributions over the pension payments made is paid to the participant's beneficiary or estate, whichever is applicable.

If the participant has a spouse at the date of retirement, a joint annuity is payable during the lives of the participant and the spouse. This annuity is reduced by one-third on the death of the participant. This annuity is reduced so that it is actuarially equivalent in value to the pension that would otherwise be payable. This form of payment is also guaranteed so that the total payments are at least equal to the participant's contributions with interest.

This form of payment can be waived if the spouse signs the appropriate waiver form.

## **7. Termination:**

Pension entitlements are protected (vested) for participants immediately (previously 2 or more years of qualifying service required). These entitlements are portable and may be transferred to another pension plan or to a suitable locked-in vehicle. Calculation of a commuted value of pension in respect of service is performed at the time of termination, death, or retirement. A test is made to ensure that the participant's required contributions plus interest (less 10.2% allocated to the Indexing Account) provide no more than 50% of the benefit in respect of eligible service. This test may cause an additional benefit to be paid for such eligible service.

## **8. Disability:**

A participant who has 10 or more years of qualifying service, has not reached age 60 and suffers from a disability may apply for a disability allowance.

If the disability is total and permanent, the participant qualifies immediately for an allowance calculated as a normal retirement pension.

Average annual salaries are determined at the date of disablement.

## **9. Death:**

If a participant dies prior to retirement and has not 10 completed years of qualifying service, the death benefits are equal to the commuted value of the participant's accrued pension. This amount may be paid as an annuity if there is a surviving spouse.

If a participant dies prior to retirement and has completed 10 years of qualifying service, the participant's spouse receives an annuity equal to 60% of the participant's accrued pension. The value of the spouse's annuity must be at least equal to the commuted value of the participant's accrued pension.

If a participant dies prior to retirement and has completed 10 years of qualifying service but there is no surviving spouse, the value of the death benefit must be at least equal to the commuted value of the participant's accrued pension.

If there is no spouse, the commuted value benefit will be paid to the estate. If the participant dies prior to retirement and does not have a spouse, the death benefit is at least the commuted value of the participant's accrued pension.

## **10. Indexing:**

Post-retirement: Increases to pensions in payment of up to 2/3 of the change in the Consumer Price Index (CPI) are granted if there is a sufficient amount available in the Indexing Account and there is an increase in the cost of living. A separate report has been prepared on the Indexing Account. Such amounts are not charged to the basic part of the Fund.

Pre-retirement: Increases to deferred annuities of up to 2/3 of the change in CPI are prefunded on the Valuation Balance Sheet between the date of termination and date of pension commencement. Such amounts are charged to the basic part of the Fund.

## **11. Valuation Process:**

For each event and resulting benefit in the actuarial valuation, we examine the eligibility criteria, benefit amount and maturity value in order to determine the value of that benefit. A description of these items follows:

- Eligibility - benefits usually depend on some combination of attained age and years of qualifying service recognized in the CSSA.
- Benefit Amount - pensions are based on the number of years of pensionable service and the average of the best 5 years' pensionable earnings.
- Maturity Value - a lump-sum cash settlement and/or a pension. If the benefit is a pension, the normal form of payout is life refunding if single. If married, the normal form of payout is joint-life, reducing to 2/3 on the participant's death (actuarially equivalent to life refunding). Other optional forms of payout are available with different death benefits.

Vested and locked-in pensions can be commuted and transferred to a suitable locked-in vehicle.

## APPENDIX III

### Actuarial Assumptions

#### A. Going Concern

Actuarial Assumptions and Methods	31-Dec-2012	31-Dec-2011
1. Actuarial Cost Method		
▪ accrued benefit cost method (ABCM)	ABCM with salary projection	same
▪ contribution deficiency contingency	\$25,728,351	\$65,120,655
▪ funding methodology	excludes pay-as-you-go	same
2. Asset Valuation Method		
▪ accrued assets	market value	same
▪ asset smoothing adjustment	\$46,129,834 write-down	\$185,662,640 write-up
3. Expenses		
▪ explicit valuation balance sheet reserve	none	same
▪ explicit contribution rate allowance	none	same
▪ implicit assumed rate of return MER	0.20%	same
4. Assumed Rate of Return		
▪ inflation rate	2.00%	same
▪ real rate	<u>4.00%</u>	<u>same</u>
total nominal rate	6.00%	same
5. Assumed Salary Increase Rate		
▪ inflation rate	2.00%	same
▪ real rate	0.75%	same
▪ service, merit, & promotion (SMP) - average	<u>1.00%</u>	<u>same</u>
total nominal rate	3.75%	same
▪ vacation pay allowance (currently 45 days)	3.45%	same
6. Indexing		
▪ if retired or eligible to retire	none	same
▪ existing deferreds during deferral period	1.33%	same
▪ indexing reserve	none	same
7. Annual Employee Contributions Interest Credit	4.00%	same
8. Annual Rate of Increase in CPP Earnings Maximum	2.75%	same
9. Rate of CRA Maximum Pension Increase	2013: \$2,697 increased at 2.75% thereafter	2012: \$2,647 same
10. Retirement Rates		
▪ if retired	immediate	same
▪ otherwise	vary by age & sex	same
11. Termination Rates	vary by age & sex	same
12. Disability Rates	vary by age & sex	same
13. Mortality Rates		
▪ pre-retirement	UPI 994 - Generational Mortality Projected Using Scale AA 90%(male) / 71%(female) -5/+3 or exact, if available sex distinct	same
▪ post-retirement		same
▪ spousal proportion (generally)		same
▪ spousal ages		same
▪ unisex weightings		same



## I. Actuarial Cost Method

The actuarial cost method for the 2012 Valuation continues to be the accrued benefit cost method (ABCM) with salary projection. ABCM anticipates that the current service cost with interest, when added to the opening liabilities, will be sufficient to finance the liabilities at the end of the next year, after reflecting expected retirements, terminations, disablements, and deaths. This method of valuation is used by approximately 90% of defined benefit pension plans in funding their benefit promises. This method is however more sensitive to an aging demographic active population and will result in increasingly higher current service cost as the population ages. The ABCM method is the preferred method used in the accounting profession for reporting financial obligations of pension plans.

A contribution deficiency reserve of \$25,728,351 has been held on the going concern Valuation Balance Sheet to allow for the annual expected contribution deficiency in the next 2 years.

The Fund consists of the accumulation of those contributions and other payments that were made during the period of employment of the present members. This accumulation will be used to finance a portion or all of the benefits which these members have been promised under the CSSA. The portion of the benefits so financed includes:

- 100% of the pensions and other benefits to be paid to employees for service if employed by an employer who matched the contributions made by employees,
- 50% of the pensions to be paid to those employees who are employed by an employer who is not matching employee contributions,
- 50% of the commuted value of pensions or benefits generated as a result of all service,
- 100% of the value of the excess contributions paid by employees as a result of service on or after January 1, 1985,
- the value of employee contributions transferred under reciprocal agreements,
- a specified portion of each pension currently being paid, excluding that part of the pension which is charged to the Indexing Account, plus
- notwithstanding the above cost sharing, the Fund is responsible for 100% of the .2% benefit formula improvement, which was effective September 1, 2000.

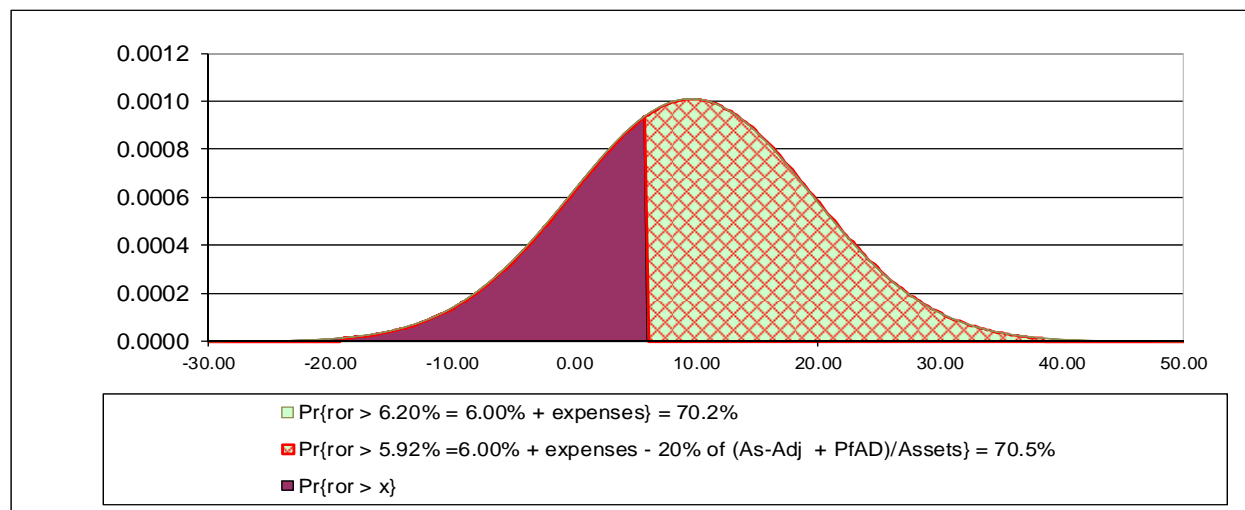
The remainder of the benefits is financed by the Province of Manitoba and its Agencies on a pay-as-you-go-basis (non-matching) or is withdrawn out of amounts set aside in accounts established within the Fund for this purpose. This actuarial valuation relates to the benefits which accrued during employment and the assets and contributions available to finance these benefits. The portion of the benefits to be financed by the Province of Manitoba and its Agencies by payments to the Fund is not considered to be a liability of the Fund.

Pursuant to CSSA subsection 22(1), employer funding for employees of more than one non-matching Agency shall be on a pro rata basis in accordance with the portion of the amount paid or transferred to the employee in respect of which no employer matching contributions were made effective for events on or after January 1, 1998.

## 2. Asset Valuation Method

Calendar Year	Net Investment Income	Rate of Return		Investment Gain/ (Loss)	Asset Smoothing Adjustment	
		Net	Assumed		Proportion	Amount
2008	\$ (586,876,000)	(17.51%)	6.50%	\$ (804,734,024)	0.00%	\$ -
2009	391,761,000	14.79%	6.50%	219,587,471	20.00%	43,917,494
2010	363,016,000	12.42%	6.00%	187,645,952	40.00%	75,058,381
2011	(87,561,000)	(2.71%)	6.00%	(281,422,993)	60.00%	(168,853,796)
2012	303,698,000	9.92%	6.00%	120,009,694	80.00%	96,007,755
Calculated Asset Smoothing Adjustment: Preliminary						\$ 46,129,834
Minimum Asset Smoothing Adjustment (-10.00% of assets): Min						(332,262,500)
Maximum Asset Smoothing Adjustment (+10.00% of assets): Max						332,262,500
As-Adj						46,129,834
Provision for future Adverse Deviation: PfAD						-
Final Asset Smoothing Adjustment 31-Dec-2012: As-Adj+PfAD						\$ 46,129,834

### Estimated Probability of Achieving the Required Asset Return \*



### 50-Year Rate of Return (ror) History \*

Year	Rate	Year	Rate	Year	Rate	Year	Rate
1963	14.72	1976	12.25	1989	16.73	2002	-6.42
1964	15.95	1977	11.75	1990	-6.61	2003	13.34
1965	7.19	1978	20.35	1991	15.97	2004	9.79
1966	-5.03	1979	15.78	1992	4.69	2005	12.56
1967	14.63	1980	21.74	1993	22.91	2006	14.78
1968	11.80	1981	-0.88	1994	1.81	2007	2.63
1969	-3.17	1982	16.77	1995	17.55	2008	-13.32
1970	2.10	1983	20.89	1996	15.86	2009	11.31
1971	13.24	1984	9.48	1997	16.19	2010	9.55
1972	19.96	1985	32.81	1998	16.35	2011	1.73
1973	-0.99	1986	24.64	1999	14.26	2012	9.01
1974	-12.23	1987	7.35	2000	3.25		
1975	20.81	1988	11.96	2001	-5.24		

\*SIPP Asset Mix Assumed to be Invested in Historical Indices

### 3. Expenses

- Valuation Balance Sheet Reserve

No explicit expense reserve has been held on the going concern Valuation Balance Sheet, but \$16,613,000 has been held in the Solvency Test.

- Contribution Rate Allowance

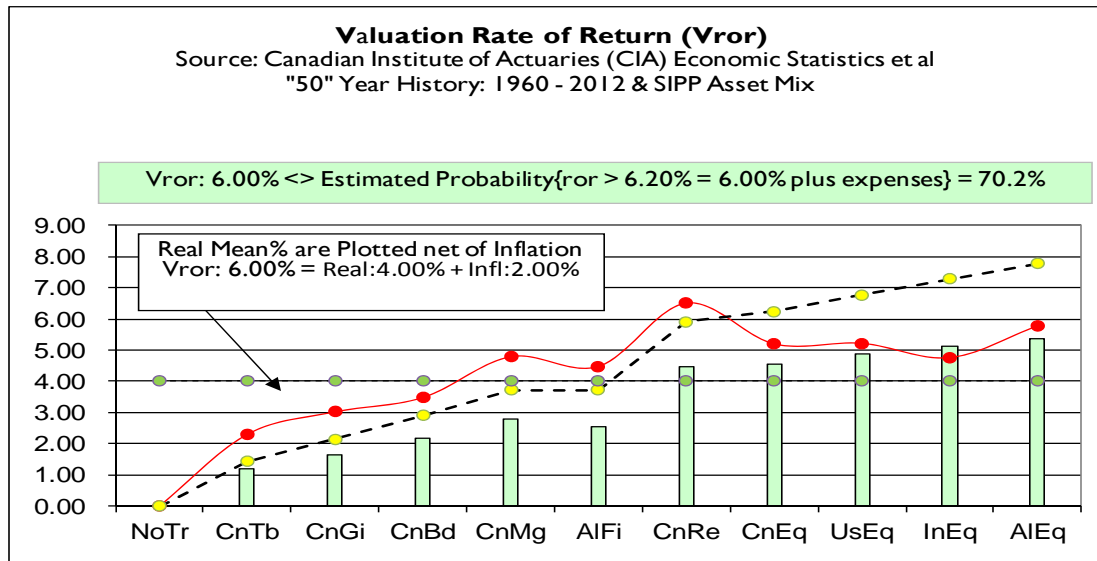
No explicit expense allowance has been made in the development of the normal actuarial cost of basic benefits.

- Assumed Rate of Return MER

An implicit management expense rate (MER) has been held in the development of the nominal assumed rate of return found as shown below and on the following page.

2012 Expense	Amount	Assets Under Management	MER
Investment	\$ 1,928,000	\$ 3,322,625,000	0.058%
Administration	1,623,000	3,322,625,000	0.049%
Provision for future Adverse Deviation (PfAD)			0.093%
Total			0.200%

#### 4. Assumed Rate of Return



Asset Class	Long-Term SIPP Asset Mix%	50-Year Historical Real StDev%	50-Year Historical Real Mean%	Active Management Rebalancing & Currency%	Best Estimate Real Mean%	Investment & Operating Fees%	PfAD%	Valuation Vror Real Mean%
NoTr	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CnTb	1.00	2.95	2.30	-0.88	1.42	-0.03	-0.21	1.18
CnGi	-	5.40	3.02	-0.88	2.14	-0.07	-0.41	1.66
CnBd	29.00	8.34	3.48	-0.58	2.90	-0.10	-0.62	2.18
CnMg	-	5.89	4.79	-1.06	3.73	-0.13	-0.82	2.78
AIFi	-	11.05	4.48	-0.75	3.73	-0.16	-1.03	2.54
CnRe	10.00	8.04	6.51	-0.60	5.91	-0.20	-1.24	4.47
CnEq	24.00	15.97	5.20	1.04	6.24	-0.23	-1.44	4.57
UsEq	15.00	16.44	5.22	1.55	6.77	-0.26	-1.65	4.86
InEq	21.00	19.83	4.76	2.53	7.29	-0.29	-1.86	5.14
AIEq	-	18.97	5.78	1.99	7.77	-0.33	-2.06	5.38
Real	100.00	9.83	5.25	0.24	5.49	-0.20	-1.30	4.00
Rounding et al			0.18	-0.18	0.00			
Infl		3.18	4.17	-2.17	2.00	0.00	0.00	2.00
Vror		9.87	9.60	-2.11	7.49	-0.20	-1.30	6.00

NoTr Not Traded

CnTb	Cash	VI22541 91-day T-Bills: 1934-2012	CIA-T1B
CnGi	Guaranteed Investments	VI22526: 5-year GICs: 1965-2012 & VI22485: 1960-1964	CIA-T3C&T4C
CnBd	Canadian Bonds	VI22558 (5%)&VI22485 (15%)&VI22486 (35%)&VI22487 (45%): 1952-2012	CIA-T4C
CnMg	Canadian Mortgages	VI22497 5-year conventional mortgages: 1952-2012	CIA-T3C
AIFi	Alternative Fixed Income	CnBd: 1952-2012 adjusted to increase mean 1.00% last 50 years	CIA-T4C
CnRe	Real Estate	ICREIM/IPD: 1973-2012 & S&PTSX:1960-1972 less 1.00%	CIA-T1B&T7
CnEq	Canadian Equity	S&PTSX: 1924-2012	CIA-T1B
UsEq	United States Equity	S&P500(C\$): 1938-2012	CIA-T1B
InEq	International Equity	EAFE:1970-2012 & S&P500(C\$):1960-1969	CIA-T1B&EAFE
AIEq	Alternative Equity	UsEq: 1952-2012 adjusted to increase mean 1.00% last 50 years	CIA-T1B

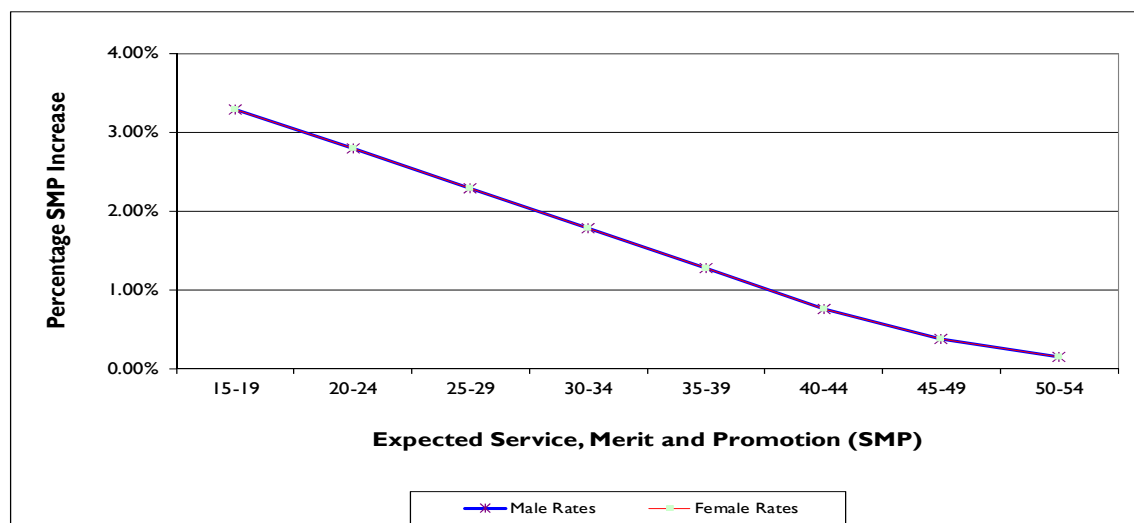
## 5. Assumed Salary Increase Rate

The 2011 general salary increase rate (SINR = inflation plus productivity) has been continued at 2.75% per year as noted below and the service merit and promotional rates (SMP) are also continued for the 2012 Report. The expected SINR exceeds the recent actual SINR (prior to any full-time equivalent annual salary adjustments) and as a result provides a reasonable best estimate of Plan experience plus a possible provision for future adverse deviation (PfAD). In addition, SMP rates start at age 16, are unisex, and reach 0.00% at age 55.

Salary Increase Rate Components	2011 Report	50-Year Average	25-Year Average	2012 Report
Inflation (source CIA Economic Statistics)	2.00%	4.17%	2.25%	2.00%
Productivity (source CIA Economic Statistics)	0.75%	0.95%	0.42%	0.75%
General Salary Increase Rate (SINR)	2.75%	5.12%	2.67%	2.75%
SMP (varies by age as shown in chart below)	1.00%	1.00%	1.00%	1.00%
Total salary increase rate *	3.75%	6.12%	3.67%	3.75%

\*To allow for the fact that up to 50 days vacation pay may be used to enhance the best 5 years of salary used in the pension calculation, we have increased liabilities by 3.45% (also 3.45% in 2010) which is based on 45 days of vacation being used ( $3.45\% = 45/261 * 1/5$ ). In future, it may be necessary to increase this allowance.

Males					Females				
Age	Active Employees	Average Service	Average Salary	Expected SMP Rates	Age	Active Employees	Average Service	Average Salary	Expected SMP Rates
15-19	11	0.48	33,561	3.29%	15-19	9	0.28	31,797	3.29%
20-24	536	1.56	42,845	2.79%	20-24	391	1.26	39,054	2.79%
25-29	1,374	3.18	52,603	2.29%	25-29	1,176	2.74	48,594	2.29%
30-34	1,647	5.06	59,719	1.78%	30-34	1,701	4.13	53,775	1.78%
35-39	1,828	6.78	63,576	1.28%	35-39	1,864	5.88	57,354	1.28%
40-44	1,978	9.22	66,567	0.76%	40-44	1,885	8.02	60,043	0.76%
45-49	2,276	13.93	70,022	0.38%	45-49	2,322	12.17	61,091	0.38%
50-54	2,497	17.29	69,605	0.15%	50-54	2,635	16.42	60,944	0.15%
55-59	1,997	20.06	70,021	0.00%	55-59	2,038	17.51	60,492	0.00%
60-64	1,109	19.06	69,444	0.00%	60-64	880	16.40	61,497	0.00%
>=65	328	17.90	72,949	0.00%	>=65	207	14.39	57,373	0.00%
31-Dec-12	15,581	11.95	65,195	1.01%	31-Dec-12	15,108	10.69	57,981	1.01%
31-Dec-11	15,099	12.14	62,346	1.00%	31-Dec-11	14,618	10.77	55,372	1.00%
2012 FTE Salary Increase				4.57%	2012 FTE Salary Increase				4.71%
2013 Expected SINR +1.00%				3.75%	2013 Expected SINR +1.00%				3.75%



## **6. Indexing**

- If retired or eligible to retire

No allowance for post-retirement indexing in this Valuation of the basic benefits. Separately, a report is prepared on the Indexing Account and separate reports for each of the pay-as-you-go employers which allows for some post-retirement indexing.

- Existing deferred pensions during deferral period.

For the 2012 Report, the existing terminated employees who have elected a deferred pension in the Fund continue to have indexation of their otherwise static pension by 2/3rds of the increase in inflation, equal to 1.33% for this Valuation.

## **7. Annual Employee Contributions Interest Credit**

The annual employee contribution interest credit is equal to 4.00% for the 2012 Report. This rate is based on 5-year personal fixed term deposits (CANSIM V122515, effective May 31, 2010) and generally assumed to be 2.00% lower than the nominal assumed rate of return, currently equal to 6.00%.

## **8. Annual Rate of Increase in CPP Earnings Maximum**

The annual rate of increase in the CPP Earnings Maximum is equal to 2.75% for the 2012 Report. The rate continues to be based on the general salary increase rates (SINR = inflation plus productivity) found in this Report.

## **9. Rate of CRA Maximum Pension Increase**

The rate of increase in the CRA Maximum Pension is equal to 2.75% for the 2012 Report. The rate continues to be based on the general salary increase rates (SINR = inflation plus productivity) found in this Report, after the stipulated rate for 2012 encoded in the Income Tax Act, has occurred.

## 10. Retirement Rates

The 2011 retirement rates are continued for the 2012 Report. The expected retirements exceed the recent actual retirements and as a result, they may provide a reasonable best estimate of Plan experience plus a provision for future adverse deviation (PfAD). There is some concern that the number of retirements may increase substantially in the next 3 years. Rates start at age 55, vary by sex, and reach 100.00% at age 65.

Males				Females			
Age	Participants Exposed	Expected Retirements	Expected Rates	Age	Participants Exposed	Expected Retirements	Expected Rates
15-49	10,379	-	0.00%	15-49	10,151	-	0.00%
50-54	2,878	-	0.00%	50-54	3,113	-	0.00%
55	513	127.53	24.86%	55	604	147.92	24.49%
56	514	59.16	11.51%	56	508	42.72	8.41%
57	438	46.82	10.69%	57	453	41.31	9.12%
58	401	44.79	11.17%	58	421	38.73	9.20%
59	355	45.44	12.80%	59	376	37.34	9.93%
60	349	94.58	27.10%	60	309	66.28	21.45%
61	288	44.70	15.52%	61	249	35.41	14.22%
62	245	42.88	17.50%	62	186	28.59	15.37%
63	196	35.50	18.11%	63	168	29.77	17.72%
64	161	52.86	32.83%	64	115	37.17	32.32%
>=65	354	347.00	98.02%	>=65	235	227.00	96.60%
	17,071	941.26			16,888	732.24	

2010	Actual Male & Female Retirements	907
2011	Actual Male & Female Retirements	965
2012	Actual Male & Female Retirements	933
2013	Expected Male & Female Retirements	1,673.50

2011 QARRATE

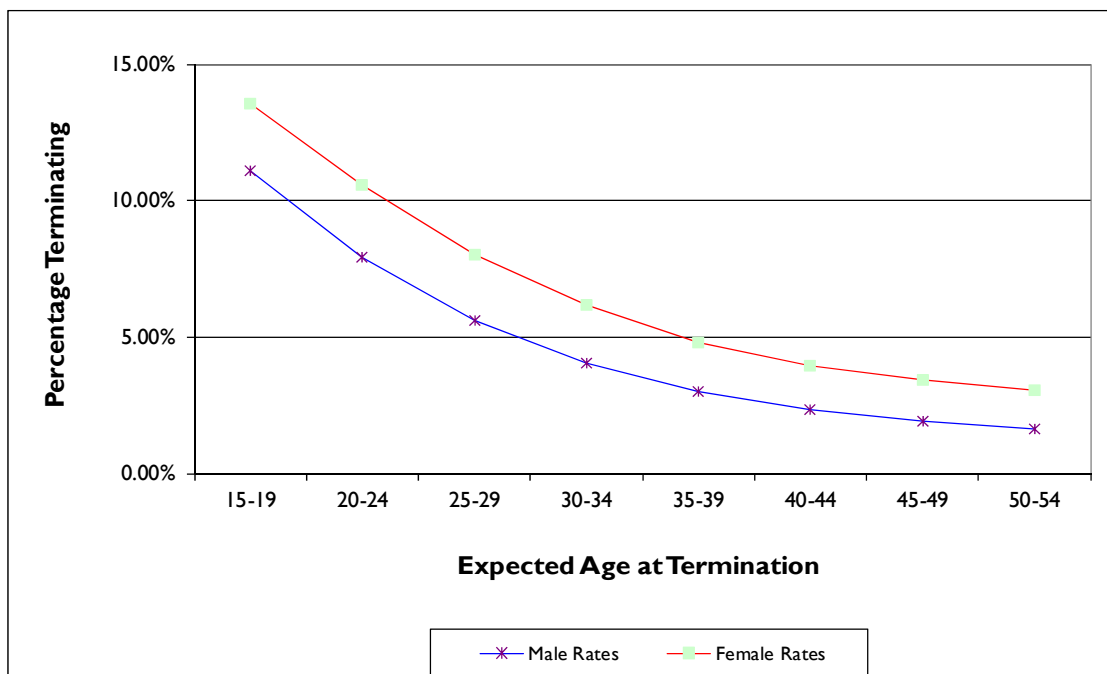


## II. Termination Rates

The 2011 termination rates are continued for the 2012 Report. The expected terminations are less than recent actual terminations, which in turn mean that more participants are assumed to continue in the work force and eventually retire, and as a result, they provide a reasonable best estimate of Plan experience plus a provision for future adverse deviation (PfAD). Rates start at age 16, vary by sex, and reach 0.00% at age 55.

Males				Females			
Age	Participants Exposed	Expected Terminations	Expected Rates	Age	Participants Exposed	Expected Terminations	Expected Rates
15-19	11	1.22	11.09%	15-19	9	1.22	13.56%
20-24	547	43.43	7.94%	20-24	399	42.25	10.59%
25-29	1,420	79.38	5.59%	25-29	1,220	97.76	8.01%
30-34	1,739	70.73	4.07%	30-34	1,773	109.09	6.15%
35-39	1,952	58.57	3.00%	35-39	2,031	97.83	4.82%
40-44	2,167	50.94	2.35%	40-44	2,071	82.12	3.97%
45-49	2,543	48.19	1.90%	45-49	2,648	91.42	3.45%
50-54	2,878	46.67	1.62%	50-54	3,113	95.58	3.07%
55-59	2,221	-	0.00%	55-59	2,362	-	0.00%
60-64	1,239	-	0.00%	60-64	1,027	-	0.00%
>=65	354	-	0.00%	>=65	235	-	0.00%
17,071		399.13		16,888		617.27	

2010	Actual Male & Female Terminations	1,171	
2011	Actual Male & Female Terminations	1,033	
2012	Actual Male & Female Terminations	1,764	
2013	Expected Male & Female Terminations	1,016.40	2011 QAWRATE



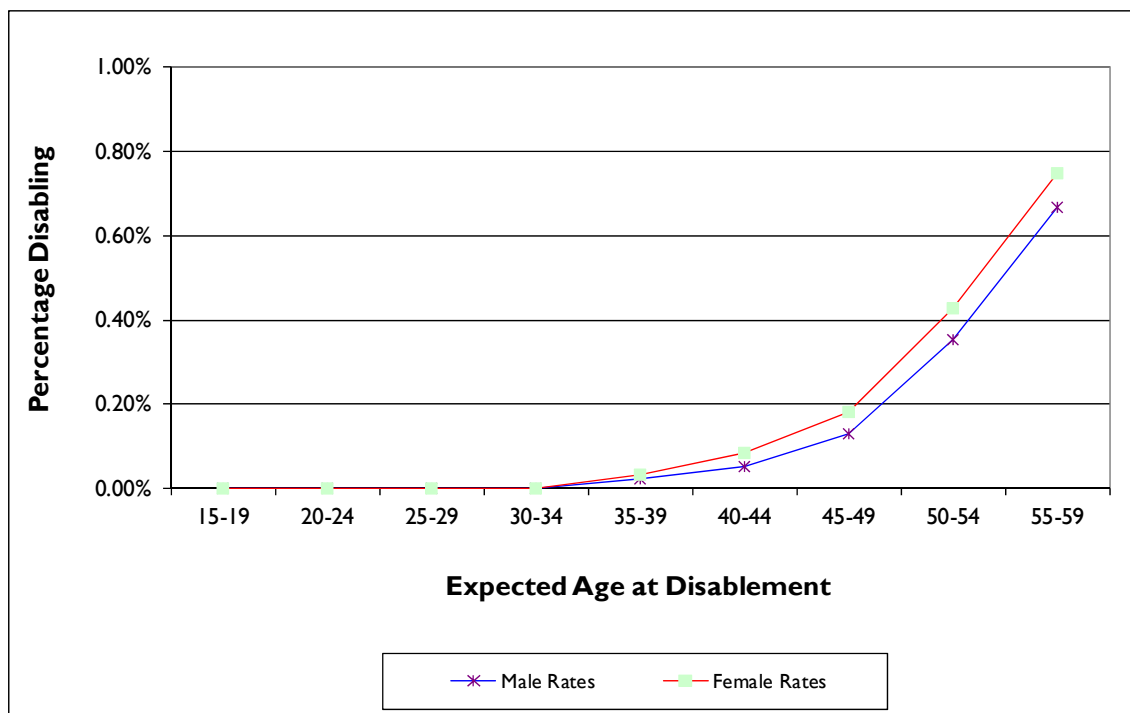


## 12. Disability Rates

The 2011 disability rates are continued for the 2012 Report. The expected disablements are close to the recent actual disablements, and as a result, they provide a reasonable best estimate of Plan experience. Rates start at age 35, vary by sex, and reach 0.00% at age 60.

Males				Females			
Age	Participants Exposed	Expected Disablements	Expected Rates	Age	Participants Exposed	Expected Disablements	Expected Rates
15-19	11	-	0.00%	15-19	9	-	0.00%
20-24	547	-	0.00%	20-24	399	-	0.00%
25-29	1,420	-	0.00%	25-29	1,220	-	0.00%
30-34	1,739	-	0.00%	30-34	1,773	-	0.00%
35-39	1,952	0.43	0.02%	35-39	2,031	0.70	0.03%
40-44	2,167	1.13	0.05%	40-44	2,071	1.77	0.09%
45-49	2,543	3.31	0.13%	45-49	2,648	4.82	0.18%
50-54	2,878	10.21	0.35%	50-54	3,113	13.37	0.43%
55-59	2,221	14.82	0.67%	55-59	2,362	17.65	0.75%
60-64	1,239	-	0.00%	60-64	1,027	-	0.00%
>=65	354	-	0.00%	>=65	235	-	0.00%
17,071		29.90		16,888		38.31	

2010	Actual Male & Female Disablements	61	
2011	Actual Male & Female Disablements	68	
2012	Actual Male & Female Disablements	55	
2013	Expected Male & Female Disablements	68.21	2011 QAIRATE



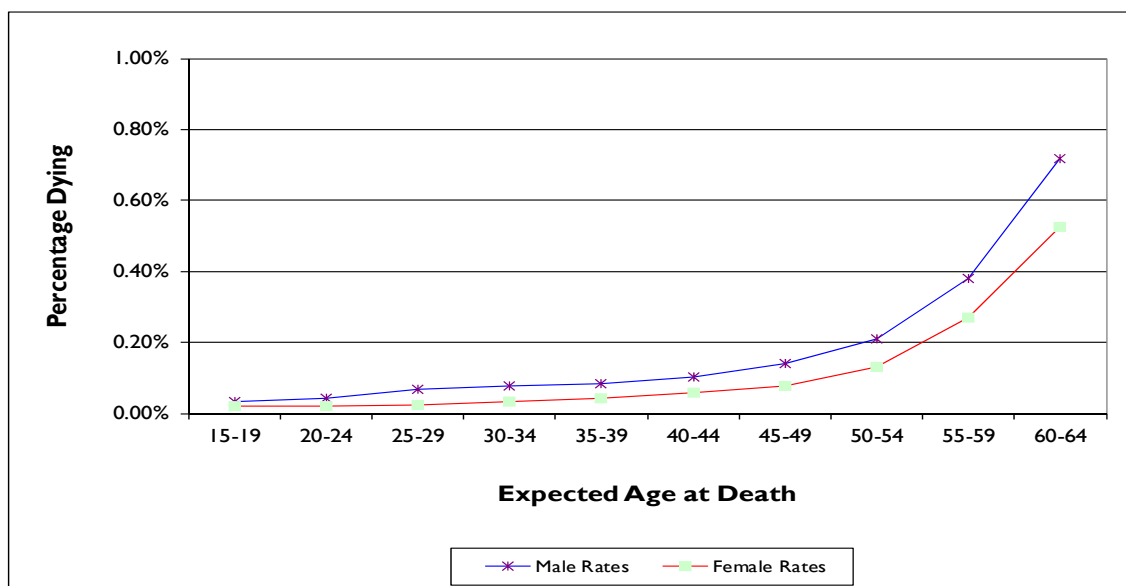
### 13. Death Rates - Pre-Retirement

The 2011 pre-retirement death rates (UPXGEN) have been used for the 2012 Report. The expected death rates are closer to the recent actual pre-retirement deaths, and as a result, they provide a reasonable best estimate of Plan experience. Rates start at age 16, vary by sex, and reach 0.00% at age 65. We note that lump-sum commuted value payouts are prescribed also on the basis of the UPXGEN mortality table at the valuation date.

Spousal status was assumed where required in calculating pre-retirement death benefits, generally 90% males and 71% females assumed to have a spouse at the higher ages and lower proportions at the younger ages. Spouse age difference was assumed generally to be minus 5 if a male participant and plus 3 if a female participant. All liabilities were valued on a sex distinct basis.

Males				Females			
Age	Participants Exposed	Expected Deaths	Expected Rates	Age	Participants Exposed	Expected Deaths	Expected Rates
15-19	11	0.00	0.03%	15-19	9	0.00	0.02%
20-24	547	0.23	0.04%	20-24	399	0.08	0.02%
25-29	1,420	0.95	0.07%	25-29	1,220	0.29	0.02%
30-34	1,739	1.37	0.08%	30-34	1,773	0.60	0.03%
35-39	1,952	1.65	0.08%	35-39	2,031	0.87	0.04%
40-44	2,167	2.25	0.10%	40-44	2,071	1.24	0.06%
45-49	2,543	3.56	0.14%	45-49	2,648	2.04	0.08%
50-54	2,878	6.02	0.21%	50-54	3,113	4.08	0.13%
55-59	2,221	8.44	0.38%	55-59	2,362	6.36	0.27%
60-64	1,239	8.88	0.72%	60-64	1,027	5.40	0.53%
>=65	354	4.61	1.30%	>=65	235	2.32	0.99%
	17,071	37.97			16,888	23.30	

2010	Actual Male & Female Deaths	47
2011	Actual Male & Female Deaths	54
2012	Actual Male & Female Deaths	53
2013	Expected Male & Female Deaths	61.26 UPXGEN



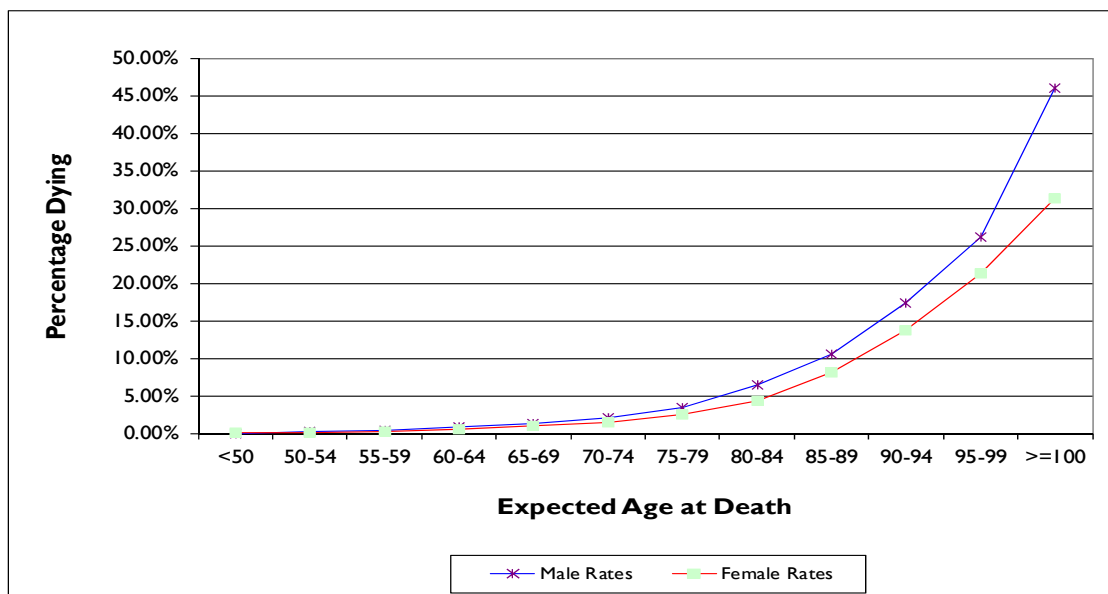
## 14. Death Rates - Post-Retirement

The 2011 post-retirement death rates (UPXGEN) have been used for the 2012 Report. The expected death rates are lower than the recent actual post-retirement deaths, and as a result, they provide a reasonable best estimate of Plan experience plus a provision for future adverse deviation (PfAD). Rates start at age 16, vary by sex, and reach 100.00% at age 115. We note that lump-sum commuted value payouts are prescribed on the basis of the UPXGEN mortality table at the valuation date.

Exact spousal status and spouse age was used for those pension options that were joint or for survivor pensions in payment. All liabilities were valued on a sex distinct basis.

Males (excludes Survivors)				Females (excludes Survivors)			
Age	Pensioners Exposed	Expected Deaths	Expected Rates	Age	Pensioners Exposed	Expected Deaths	Expected Rates
<50	11	-	0.00%	<50	26	0.01	0.04%
50-54	31	0.07	0.23%	50-54	51	0.06	0.12%
55-59	838	3.57	0.43%	55-59	888	2.65	0.30%
60-64	1,848	14.23	0.77%	60-64	1,558	8.85	0.57%
65-69	2,221	29.77	1.34%	65-69	1,422	14.03	0.99%
70-74	1,556	32.03	2.06%	70-74	1,002	15.14	1.51%
75-79	1,122	39.07	3.48%	75-79	593	14.85	2.50%
80-84	775	49.35	6.37%	80-84	449	19.37	4.31%
85-89	485	50.86	10.49%	85-89	256	20.63	8.06%
90-94	170	29.61	17.42%	90-94	108	14.80	13.70%
95-99	33	8.62	26.12%	95-99	35	7.43	21.23%
>=100	-	-	46.00%	>=100	4	1.25	31.25%
	9,090	257.18			6,392	119.07	

2010	Actual Male & Female Deaths	370
2011	Actual Male & Female Deaths	396
2012	Actual Male & Female Deaths	350
2013	Expected Male & Female Deaths	376.25 UPXGEN



## B. Solvency Test\*

Actuarial Assumptions and Methods	31-Dec-2012			31-Dec-2011		
1. Actuarial Cost Method	ABCM with no salary projection			same		
▪ accrued benefit cost method (ABCM)	none			same		
▪ contribution deficiency contingency	excludes pay-as-you-go			same		
▪ funding methodology						
2. Asset Valuation Method	market value			same		
▪ accrued assets	none			same		
▪ asset smoothing reserve						
3. Expenses	.50% of assets (\$16,613,000)			.50% of assets (\$15,518,000)		
▪ explicit valuation balance sheet reserve	none			same		
▪ explicit contribution rate allowance	none			same		
▪ implicit assumed rate of return MER						
4. Assumed Rate of Return	Annuity	<u>Cash Settlements</u>		Annuity	<u>Cash Settlements</u>	
	<u>Purchases</u>	<u>&lt;10 Yrs</u>	<u>&gt;10 Yrs</u>	<u>Purchases</u>	<u>&lt;10 Yrs</u>	<u>&gt;10 Yrs</u>
▪ inflation rate	1.24%	1.24%	2.30%	1.31%	1.31%	2.44%
▪ real rate	<u>1.72%</u>	<u>1.16%</u>	<u>1.30%</u>	<u>2.00%</u>	<u>1.29%</u>	<u>1.66%</u>
total nominal rate	<u>2.96%</u>	<u>2.40%</u>	<u>3.60%</u>	<u>3.31%</u>	<u>2.60%</u>	<u>4.10%</u>
5. Assumed Salary Increase Rate	none			same		
▪ inflation rate	none			same		
▪ real rate	none			same		
▪ service, merit & promotion (SMP) -average	none			same		
total nominal rate	none			same		
▪ vacation pay allowance (currently 45 days)	3.45%			same		
6. Indexing	none			same		
▪ if retired or eligible to retire	none			same		
▪ existing deferreds during deferral period	none			same		
▪ indexing reserve	none			same		
7. Annual Employee Contributions Interest Credit	none			same		
8. Annual Rate of Increase in CPP Earnings Maximum	none			same		
9. Rate of CRA Maximum Pension Increase	2013: \$2,697 Indexed at 0.00% thereafter			2012: \$2,647 Indexed at 0.00% thereafter		
10. Retirement Age	immediate			same		
▪ if retired or eligible to retire	first age possible			same		
▪ otherwise						
11. Termination Rates	commuted value			same		
12. Disability Rates	commuted value			same		
13. Mortality Rates	none			same		
▪ pre-retirement	UPI994 - Generational			same		
▪ post-retirement	Mortality Projected Using Scale AA					
▪ spousal proportion (generally)	exact if available			same		
▪ spousal ages	-5/+3 or exact, if available			same		
▪ unisex weightings	unisex if not eligible to retire			same		

\* The Plan is exempt from the funding requirements of the solvency test pursuant to Paragraph 4.5(2)(b) of the Regulations to the Manitoba Pension Benefits Act. However, it is a requirement of the Canadian Institute of Actuaries to report the wind-up position.

## Development of the Solvency Test Rate of Return - Non-Indexed

### ■ If Retired or Eligible to Retire (Purchase of Annuities)

The solvency discount rate for annuities is based on the studies made by the Canadian Institute of Actuaries (CIA). The most recent study has found that the appropriate annuity interest rate to be used in performing solvency Valuations with effective dates as at December 31, 2012 is determined by the following table at the Valuation date in conjunction with the mortality table UPI994 generational mortality table projected using Scale AA.

Annuity Purchase Formula	Solvency Spot Rate	Solvency Used Rate
CANSIM V39062 31-Dec-2012 RATE + 0.90%	2.26%	2.96%

### ■ Otherwise (Cash Settlements)

The discount rates for cash settlements in the solvency Valuation are based on the same rates that are used for the commuted value calculations including the 1-month lag as required by the CIA standards. Effective for events commencing in February, 2011, the CIA standards utilize the 1994 Uninsured Pensioner Mortality Table (UPI994) generational mortality table projected using Scale AA, and the dual interest rates, one applicable to the first 10 years and the other applicable thereafter. These rates are based on the following CANSIM series and formulas:

Lump Sum Formula	Solvency Spot Rate	Solvency Used Rate
CANSIM V122542 NOVEMBER, 2012 RATE ( $i_7$ ) =	1.46%	n/a
CANSIM V122544 NOVEMBER, 2012 RATE ( $i_L$ ) =	2.30%	n/a
First 10 Years: = $i_7 + 0.90\%$ =	2.36%	2.40%
After 10 Years: = $i_L + 0.50 * (i_L - i_7) + 0.90\%$ =	3.62%	3.60%

