

Actuarial Valuation Report
as at December 31, 2018

Civil Service Superannuation Fund

CRA Registration No. 345827
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I. ACTUARIES' 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, 2018 (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, 2018. 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, in total, has been less favourable than expected during 2018. 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 our 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, 2018 that were provided by the Board's staff.
- The benefits used in the calculations are based on the Plan as amended to December 31, 2018 (Appendix II).
- The assumptions 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 10, 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 8, 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 were increased by a total of 2.00% of salary (2012-2015), 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 10).

We hereby certify that, in our 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 in Canada.

This Valuation is subject to approval by the appropriate regulatory authorities. It is recommended the Board continue to monitor the inadequacy 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, 2019.



Dennis Ellement, FSA, FCIA
Winnipeg, Manitoba June 21, 2019



Brandon Ellement, FSA, FCIA

2. EXECUTIVE SUMMARY

GOING CONCERN VALUATION	31-Dec-2018	31-Dec-2017
Assets Available for Basic Benefits	\$ 4,365,522,000	\$ 4,607,211,000
▪ Expense Reserve	-	-
Liability for Basic Benefits		
▪ Active Participants	(2,106,393,392)	(2,217,857,295)
▪ Other Participants	(154,923,351)	(152,126,046)
▪ Pensions in Payment	(3,032,762,758)	(2,744,479,440)
▪ Adjustments:		
▫ Asset Smoothing Adjustment	144,147,858	(181,787,883)
▫ Contribution Deficiency Contingency	-	-
▫ Indexing Contingency	-	-
Surplus/(Unfunded Liability) Before Adjustments	\$ (928,557,501)	\$ (507,251,781)
Surplus/(Unfunded Liability) After Adjustments	\$ (784,409,643)	\$ (689,039,664)
Funding Ratio Before Adjustments	82.46%	90.08%
Funding Ratio After Adjustments	85.18%	86.53%

SOLVENCY TEST	31-Dec-2018	31-Dec-2017
Assets Available for Basic Benefits	\$ 4,365,522,000	\$ 4,607,211,000
▪ Expense Reserve	(21,828,000)	(23,036,000)
Liability for Basic Benefits		
▪ Active Participants	(2,733,750,596)	(2,895,393,541)
▪ Other Participants	(196,248,855)	(195,619,971)
▪ Pensions in Payment	(3,904,941,872)	(3,700,479,779)
▪ Adjustments:		
▫ Asset Smoothing Adjustment	-	-
▫ Contribution Deficiency Contingency	-	-
▫ Indexing Contingency	-	-
Solvency Excess/(Deficiency) Before Adjustments	\$ (2,491,247,323)	\$ (2,207,318,291)
Solvency Excess/(Deficiency) After Adjustments	\$ (2,491,247,323)	\$ (2,207,318,291)
Solvency Ratio Before Adjustments	63.55%	67.50%
Solvency Ratio After Adjustments	63.55%	67.50%

ANNUAL CONTRIBUTION REQUIREMENTS	2019 <CPPE / ≥CPPE	2018 <CPPE / ≥CPPE
Required Contributions for Basic Benefits		
▪ Required Contributions:		
▫ Employee Required Contributions	8.00% / 9.00%	8.00% / 9.00%
▫ Employer (Matching) Required Contributions	7.10% / 9.00%	7.10% / 9.00%
Blended Required Contributions	7.91% / 9.00%	7.92% / 9.00%
▪ Indexing Account Allocation	(0.84%) / (0.92%)	(0.84%) / (0.92%)
Total Required Contributions for Basic Benefits	7.07% / 8.08%	7.08% / 8.08%
Total Theoretical Contributions for Basic Benefits	(6.57%) / (7.51%)	(7.05%) / (8.04%)
Contribution Margin/(Deficiency) for Basic Benefits	0.50% / 0.57%	0.03% / 0.04%

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

3. GOING CONCERN VALUATION*

	31-Dec-2018		31-Dec-2017	
Assets Available for Basic Benefits (Appendix I)		% of Liabilities		% of Liabilities
▪ Fixed Income Investments (market value)	\$ 1,564,169,000		\$ 1,574,284,000	
▪ Equity Investments (market value)	5,635,347,000		5,987,263,000	
Total Investments	\$ 7,199,516,000		\$ 7,561,547,000	
▪ Net Receivables/Payables (incl. a Province Trust Account)	(12,790,000)		5,179,000	
▪ Debt due from the Province of Manitoba	1,826,000		1,826,000	
▪ Correctional Officers' Trust Account	(12,317,000)		(12,316,000)	
▪ Employer Trust Accounts	(100,774,000)		(101,854,000)	
▪ Money Purchase Accounts Plan	(38,842,000)		(39,520,000)	
▪ Province Unfunded Pension Liability Trust Accounts	(2,098,635,000)		(2,217,480,000)	
▪ Manitoba Hydro Enhanced Benefit Trust Account	(31,638,000)		(31,190,000)	
Net Assets Available for Benefits	\$ 4,906,346,000		\$ 5,166,192,000	
▪ Superannuation Adjustment Account	(540,824,000)		(558,981,000)	
Total Assets Available for Basic Benefits	\$ 4,365,522,000		\$ 4,607,211,000	
▪ Expense Reserve	-		-	
Actuarial Assets Available for Basic Benefits	\$ 4,365,522,000	82.46%	\$ 4,607,211,000	90.08%
Liabilities for Basic Benefits (Appendix II, III)				
▪ Active Participants:				
▪ not eligible to retire	\$ 1,270,302,800	23.98%	\$ 1,340,022,728	26.21%
▪ eligible to retire reduced	244,992,149	4.63%	269,487,583	5.27%
▪ eligible to retire unreduced	591,098,443	11.17%	608,346,984	11.89%
	\$ 2,106,393,392	39.78%	\$ 2,217,857,295	43.37%
▪ Other Participants:				
▪ not eligible to retire	66,518,206	1.26%	60,755,523	1.19%
▪ eligible to retire reduced	22,797,271	0.43%	21,362,319	0.42%
▪ eligible to retire unreduced	7,090,604	0.13%	6,391,083	0.12%
▪ valuation accounts payable	58,517,270	1.11%	63,617,121	1.24%
	\$ 154,923,351	2.93%	\$ 152,126,046	2.97%
▪ Pensions in Payment:				
▪ retirement pensions	2,877,217,052	54.35%	2,597,167,286	50.78%
▪ survivors' pensions	155,545,706	2.94%	147,312,154	2.88%
	\$ 3,032,762,758	57.29%	\$ 2,744,479,440	53.66%
Total Liabilities for Basic Benefits	\$ 5,294,079,501	100.00%	\$ 5,114,462,781	100.00%
Surplus/(Unfunded Liability) Before Adjustments	\$ (928,557,501)		\$ (507,251,781)	
Adjustments				
▪ Asset Smoothing Adjustment	\$ 144,147,858		\$ (181,787,883)	
▪ Contribution Deficiency Contingency	-		-	
▪ Indexing Contingency	-		-	
	\$ 144,147,858		\$ (181,787,883)	
Surplus/(Unfunded Liability) After Adjustments	\$ (784,409,643)		\$ (689,039,664)	
Funding Ratio Before Adjustments	82.46%		90.08%	
Funding Ratio After Adjustments	85.18%		86.53%	
Liability % for those members that are retired or eligible to retire		73.65%		71.36%
Liability % for those members that are <u>not</u> retired or eligible to retire		26.35%		28.64%

* 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-2018		31-Dec-2017	
Assets Available for Basic Benefits (Appendix I)		% of Liabilities		% of Liabilities
▪ Fixed Income Investments (market value)	\$ 1,564,169,000		\$ 1,574,284,000	
▪ Equity Investments (market value)	5,635,347,000		5,987,263,000	
Total Investments	\$ 7,199,516,000		\$ 7,561,547,000	
▪ Net Receivables/Payables (incl. a Province Trust Account)	(12,790,000)		5,179,000	
▪ Debt due from the Province of Manitoba	1,826,000		1,826,000	
▪ Correctional Officers' Trust Account	(12,317,000)		(12,316,000)	
▪ Employer Trust Accounts	(100,774,000)		(101,854,000)	
▪ Money Purchase Accounts Plan	(38,842,000)		(39,520,000)	
▪ Province Unfunded Pension Liability Trust Accounts	(2,098,635,000)		(2,217,480,000)	
▪ Manitoba Hydro Enhanced Benefit Trust Account	(31,638,000)		(31,190,000)	
Net Assets Available for Benefits	\$ 4,906,346,000		\$ 5,166,192,000	
▪ Superannuation Adjustment Account	(540,824,000)		(558,981,000)	
Total Assets Available for Basic Benefits	\$ 4,365,522,000		\$ 4,607,211,000	
▪ Expense Reserve	(21,828,000)		(23,036,000)	
Actuarial Assets Available for Basic Benefits	\$ 4,343,694,000	63.55%	\$ 4,584,175,000	67.50%
Liabilities for Basic Benefits (Appendix II, III)				
▪ Active Participants:				
▪ not eligible to retire	\$ 1,431,750,710	20.95%	\$ 1,488,284,433	21.90%
▪ eligible to retire reduced	380,342,539	5.56%	423,130,506	6.23%
▪ eligible to retire unreduced	921,657,347	13.48%	983,978,602	14.49%
	\$ 2,733,750,596	39.99%	\$ 2,895,393,541	42.62%
▪ Other Participants:				
▪ not eligible to retire	92,160,291	1.35%	88,019,233	1.30%
▪ eligible to retire reduced	34,160,401	0.50%	33,310,661	0.49%
▪ eligible to retire unreduced	11,410,893	0.17%	10,672,956	0.16%
▪ valuation accounts payable	58,517,270	0.86%	63,617,121	0.94%
	\$ 196,248,855	2.88%	\$ 195,619,971	2.89%
▪ Pensions in Payment:				
▪ retirement pensions	3,713,750,438	54.33%	3,511,889,915	51.71%
▪ survivors' pensions	191,191,434	2.80%	188,589,864	2.78%
	\$ 3,904,941,872	57.13%	\$ 3,700,479,779	54.49%
Total Liabilities for Basic Benefits	\$ 6,834,941,323	100.00%	\$ 6,791,493,291	100.00%
Solvency Excess/(Deficiency) Before Adjustments	\$ (2,491,247,323)		\$ (2,207,318,291)	
Adjustments				
▪ Asset Smoothing Adjustment	\$ -		\$ -	
▪ Contribution Deficiency Contingency	-		-	
▪ Indexing Contingency	-		-	
	\$ -		\$ -	
Solvency Excess/(Deficiency) After Adjustments	\$ (2,491,247,323)		\$ (2,207,318,291)	
Solvency Ratio Before Adjustments	63.55%		67.50%	
Solvency Ratio After Adjustments	63.55%		67.50%	
Liability % for those members that are retired or eligible to retire		76.84%		75.86%
Liability % for those members that are <u>not</u> retired or eligible to retire		23.16%		24.14%

* 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 (refer to Appendix II - Page 2).

		2019			2018		
		< CPPE / ≥ CPPE *			< CPPE / ≥ CPPE		
Current Contributions for Basic Benefits							
▪ Employee Current Contributions:							
▫ not eligible to retire	\$ 127,528,081	8.00%	9.00%	\$ 125,918,550	8.00%	9.00%	
▫ eligible to retire	16,788,185	8.00%	9.00%	16,947,082	8.00%	9.00%	
▫ eligible to retire unreduced	18,841,040	8.00%	9.00%	19,468,592	8.00%	9.00%	
▫ indexing account allocation	(16,642,045)	(0.84%)	(0.92%)	(16,558,091)	(0.84%)	(0.92%)	
▪ Employer (Matching) Current Contributions:							
▫ not eligible to retire	15,949,385	7.10%	9.00%	14,962,606	7.10%	9.00%	
▫ eligible to retire	2,632,883	7.10%	9.00%	2,491,938	7.10%	9.00%	
▫ eligible to retire unreduced	1,769,545	7.10%	9.00%	1,702,180	7.10%	9.00%	
▫ indexing account allocation	(2,075,885)	(0.72%)	(0.92%)	(1,953,986)	(0.72%)	(0.92%)	
Total Current Contributions for Basic Benefits	\$ 164,791,189	7.07%	8.08%	\$ 162,978,871	7.08%	8.08%	
Normal Actuarial Cost for Basic Benefits							
▪ Active Participants:							
▫ not eligible to retire	\$ 108,375,326	5.95%	6.80%	\$ 116,219,640	6.50%	7.42%	
▫ eligible to retire reduced	21,021,918	8.52%	9.74%	21,219,792	8.61%	9.82%	
▫ eligible to retire unreduced	23,720,249	9.06%	10.36%	24,746,990	9.22%	10.52%	
Blended Active Participant Theoretical Rate	\$ 153,117,493	6.57%	7.51%	\$ 162,186,422	7.05%	8.04%	
▪ 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	\$ 153,117,493	6.57%	7.51%	\$ 162,186,422	7.05%	8.04%	
Contribution Margin/(Deficiency) for Basic Benefits	\$ 11,673,696	0.50%	0.57%	\$ 792,449	0.03%	0.04%	

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

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 unfunded liability of \$784,409,643 could be amortized by 15 annual payments of \$86,025,209 (assumes 10.2% is allocated to the Indexing Account) which is equivalent to about 4.36% 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 if future excess investment and/or demographic experience is not generated in the Fund.

6. ANALYSIS OF RESULTS - GOING CONCERN

Reconciliation of Financial Position

Operation of the Basic Benefits Account	Assets	Liabilities	Adjustments	Surplus / (Unfunded Liability)
■ 2018 Opening Going Concern Position: 2017 Basis	\$ 4,607,211,000	\$ 5,114,462,781	\$ (181,787,883)	\$ (689,039,664)
▫ Contributions/Benefits Accrued	144,661,000	144,048,030	-	612,970
▫ Benefit Experience & Operating Expenses Expected	(333,472,000)	(331,062,000)	-	(2,410,000)
▫ Investment Experience Net: Expected 6.00%	271,169,231	301,257,348	-	(30,088,117)
▫ Investment Experience Net: Actual -1.17% vs 6.00%	(324,047,231)	-	-	(324,047,231)
▫ Asset Smoothing Adjustment	-	-	325,935,741	325,935,741
▫ Commuted Value Gain/(Loss) Experience	-	68,245,000	-	(68,245,000)
■ 2018 Preliminary Financial Statement Projection	\$ 4,365,522,000	\$ 5,296,951,159	\$ 144,147,858	\$ (787,281,301)
▫ ITA Maximum Pensionable Salary Limit Change	-	2,555,840	-	(2,555,840)
▫ Salary Gain/(Loss) 1-Year Experience	-	(9,043,926)	-	9,043,926
▫ Demographic Retirement Gain/(Loss) 1-Year Experience	-	(651,313)	-	651,313
▫ Demographic Termination Gain/(Loss) 1-Year Experience	-	-	-	-
▫ Demographic Death Gain/(Loss) 1-Year Experience	-	(3,323,835)	-	3,323,835
▫ Methodology and Unexplained	-	1,472,987	-	(1,472,987)
■ 2018 Preliminary Going Concern Position	\$ 4,365,522,000	\$ 5,287,960,912	\$ 144,147,858	\$ (778,291,054)
▫ Change in Pension Size Mortality Adjustment	-	824,580	-	(824,580)
▫ Change in General Salary Scale	-	(59,923,040)	-	59,923,040
▫ Change in Retirement Scale	-	(94,723,254)	-	94,723,254
▫ Change in Termination Scale	-	(82,156,218)	-	82,156,218
▫ Change in Annual Interest Discount Rate from 6.00% to 5.75%	-	159,885,532	-	(159,885,532)
▫ Change in Commuted Value Elections < Age 55	-	82,210,989	-	(82,210,989)
▫ Continue CPM2014 PUBLIC Scale B	-	-	-	-
▫ Continue Demographic Assumptions	-	-	-	-
■ 2018 Closing Going Concern Position: 2018 Basis	\$ 4,365,522,000	\$ 5,294,079,501	\$ 144,147,858	\$ (784,409,643)

7. ANALYSIS OF RESULTS - SOLVENCY TEST

- The solvency test interest rate assumption for annuity purchases has increased by 0.21% from 3.02% to 3.23%. The solvency test less than 10-year interest rate assumption for cash settlements has increased by 0.60% from 2.60% to 3.20%, and the solvency test greater than 10-year interest rate assumption for cash settlements has remained at 3.40%. Overall, after reflecting experience and the assumption changes, this has resulted in an overall blended decrease in solvency liabilities.
- Pursuant to the Standards of the Canadian Institute of Actuaries, it is now required to disclose the incremental cost in the next year on a hypothetical wind-up/solvency basis. This incremental cost is estimated to be equal to \$289,425,029 as at December 31, 2018. This incremental cost in essence reflects the present value of the estimated increase in solvency liabilities in the next year plus the annual benefit payments expected to be made.

8. FUND BASIC BENEFIT LIABILITIES EMPLOYER PROFILE

Name of Employer	Code	Active Participants	Other Participants	Pensions in Payment	2018 Total	%
Non-Matching Employers						
1 Province of Manitoba Civil Service	CS	\$ 913,719,972	\$ 76,484,129	\$ 1,595,075,594	\$ 2,585,279,695	48.83%
2 Sport Manitoba	SM	192,775	13,789	403,548	610,112	0.01%
3 Venture Manitoba Tours Ltd.	VT	59,932	-	141,973	201,905	0.00%
4 Paletta & Company Hotels Ltd.	PCH	73,356	-	2,536	75,892	0.00%
5 Manitoba Hydro-Electric Board	MH	496,419,631	26,436,532	756,876,197	1,279,732,360	24.17%
6 Manitoba Public Insurance Corporation	AI/AIE	108,081,177	9,764,779	140,758,112	258,604,068	4.88%
7 MPIC - Division of Driver and Vehicle Licensing	AIL	5,631,096	56,042	6,732,605	12,419,743	0.23%
8 Red River College	RCC	83,673,288	6,044,024	71,145,701	160,863,013	3.04%
9 Manitoba Agricultural Services Corporation	AC	1,994,450	257,394	3,632,143	5,883,987	0.11%
10 Addictions Foundation of Manitoba	AF	13,581,057	1,585,654	18,589,540	33,756,251	0.64%
11 Assiniboine Community College	ACC	18,446,731	1,720,125	15,015,527	35,182,383	0.66%
12 University College of the North	KCC	18,025,075	2,026,657	12,536,586	32,588,318	0.62%
13 Legal Aid Manitoba	LA	16,067,054	612,434	12,530,389	29,209,877	0.55%
14 Manitoba Centennial Centre Corporation	CC	1,807,819	296,310	5,424,753	7,528,882	0.14%
15 Teachers' Retirement Allowances Fund Board	TR	3,470,973	63,080	2,822,538	6,356,591	0.12%
16 Communities Economic Development Fund	CE	1,110,231	129,052	1,692,882	2,932,165	0.06%
17 Manitoba Horse Racing Commission	RC	249,239	65,731	171,299	486,269	0.01%
18 Diagnostic Services Manitoba	DSM	2,792,753	672,026	2,840,843	6,305,622	0.12%
19 WRHA - Health Sciences Centre	RWA	11,476,036	1,742,142	14,679,552	27,897,730	0.53%
20 Prairie Mountain Health	PMH et al	11,227,943	872,288	26,738,818	38,839,049	0.73%
21 Interlake-Eastern Regional Health Authority	IEH et al	2,446,356	139,744	7,167,306	9,753,406	0.18%
22 Northern Health Region	NRH et al	1,706,371	85,546	2,139,194	3,931,111	0.07%
23 Southern Health-Santé Sud	SRH et al	3,821,745	185,953	8,567,891	12,575,589	0.24%
24 Manitoba Development Corporation	MDC	103,791	26,053	36,961	166,805	0.00%
25 The Workers Compensation Board of Manitoba	WC	-	-	10,692	10,692	0.00%
26 WECCO	WEC	-	-	179,912	179,912	0.00%
		\$ 1,716,178,851	\$ 129,279,484	\$ 2,705,913,092	\$ 4,551,371,427	85.97%
Matching Employers						
1 Manitoba Liquor Lotteries Corporation	LC/LF/LL	\$ 173,229,829	\$ 8,869,113	\$ 117,394,991	\$ 299,493,933	5.66%
2 Manitoba Housing Authority	HA	32,057,659	2,169,925	29,684,315	63,911,899	1.21%
3 WCFS CUPE Support Workers	CSW	13,252,807	440,063	795,593	14,488,463	0.27%
4 Manitoba Agricultural Services Corporation	MAS	14,245,949	1,281,564	6,467,177	21,994,690	0.42%
5 Manitoba Crop Insurance Corporation	CI/CIC	10,213,947	461,105	17,316,888	27,991,940	0.53%
6 Manitoba Government and General Employees' Union	EA	15,552,062	492,049	16,748,462	32,792,573	0.62%
7 Efficiency Manitoba Inc.	EM	-	-	-	-	0.00%
8 Manitoba Hydro Utilities Service	MHU	2,906,265	320,324	107,200	3,333,789	0.06%
9 Child and Family All Nations Coordinated Response Network	ANR	7,785,243	1,763,044	856,055	10,404,342	0.20%
10 The Civil Service Superannuation Board	SB	10,394,767	653,981	10,112,607	21,161,355	0.40%
11 Liquor, Gaming and Cannabis Authority of Manitoba	GC	6,701,461	439,307	2,393,006	9,533,774	0.18%
12 Travel Manitoba	TM	2,380,711	300,858	1,693,455	4,375,024	0.08%
13 Teranet Manitoba LP	TN	3,954,996	514,716	1,075,776	5,545,488	0.10%
14 Food Development Centre	FD	3,430,061	807,325	883,766	5,121,152	0.10%
15 Dairy Farmers of Manitoba	MC	2,531,346	218,615	2,994,434	5,744,395	0.11%
16 Industrial Technology Centre	IT	2,953,363	325,309	2,630,006	5,908,678	0.11%
17 Hams Marketing Services Co-Op Inc.	HM	1,365,115	282,661	4,298,859	5,946,635	0.11%
18 Research Manitoba	HRC	329,977	153,465	43,489	526,931	0.01%
19 Manitoba Film & Music	MFS	1,158,488	64,602	-	1,223,090	0.02%
20 Manitoba Pork Council	PC	986,727	69,096	1,190,062	2,245,885	0.04%
21 Manitoba Arts Council	MA	1,144,082	35,110	521,811	1,701,003	0.03%
22 Manitoba Chicken Producers Board	CB	743,030	-	613,848	1,356,878	0.03%
23 Horizon Lab Ltd.	MTR	166,903	68,047	43,635	278,585	0.01%
24 Manitoba Cattle Enhancement Council	MCE	-	164,872	-	164,872	0.00%
25 Turkey Producers Marketing Board	TB	231,827	8,554	577,795	818,176	0.02%
26 Economic Innovation and Technology Council	MR	1,010,829	473,240	4,236,766	5,720,835	0.11%
27 Manitoba Development Corporation	DFF	-	75,395	342,102	417,497	0.01%
28 Manitoba Hazardous Waste Management Corporation	HW	-	-	440,833	440,833	0.01%
29 The Manitoba Water Services Board	WS	-	-	464,121	464,121	0.01%
30 Human Resources and Employment Centres	R's/HE	556,159	92,902	2,928,976	3,578,037	0.07%
31 Manitoba Beef Commission	BC	17,597	-	437,715	455,312	0.01%
32 Local Government Districts	LG	-	-	90,491	90,491	0.00%
33 Manitoba Mineral Resources Limited	MM	-	-	37,459	37,459	0.00%
34 Manitoba Data Services	DS	-	-	256,463	256,463	0.00%
35 Money Purchase Plan Annuity	MPP	-	-	7,124,964	7,124,964	0.13%
36 No Billing (Charged to Fund)	NB	80,913,341	5,098,625	92,046,546	178,058,512	3.36%
		\$ 390,214,541	\$ 25,643,867	\$ 326,849,666	\$ 742,708,074	14.03%
31-Dec-18 Total Fund Liabilities for Basic Benefits		\$ 2,106,393,392	\$ 154,923,351	\$ 3,032,762,758	\$ 5,294,079,501	100.00%
31-Dec-17 Total Fund Liabilities for Basic Benefits		\$ 2,217,857,295	\$ 152,126,046	\$ 2,744,479,440	\$ 5,114,462,781	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, 2018.

GOING CONCERN		Decrease Real Rate ¼%		
Real Rate	3.75%	3.50%		
Inflation Rate	2.00%	2.00%		
Nominal Rate	5.75%	5.50%		
Mortality	CPM2014PUB-Scale B	CPM2014PUB-Scale B	% Change in	Estimated
Liability Category	Liability	Liability	Liability	Duration
Active Participants	\$ 2,106,393,392	\$ 2,198,631,302	4.38%	17.52
Other Participants	154,923,351	159,609,863	3.03%	12.10
Pensions in Payment	3,032,762,758	3,103,275,625	2.33%	9.30
Adjustments	(144,147,858)	(144,147,858)	-	-
Surplus/(Unfunded)	(784,409,643)	(951,846,932)	-	-
Total	\$ 4,365,522,000	\$ 4,365,522,000	3.25%	13.01
Increase/(Decrease) in Liabilities		\$ 167,437,289		

SOLVENCY TEST		Decrease Real Rate ¼%		
Cash Settlements 1st 10 years	3.20%	2.95%		
Cash Settlements thereafter	3.40%	3.15%		
Annuity Purchases	3.23%	2.98%		
Mortality	CPM2014COM-Scale B	CPM2014COM-Scale B	% Change in	Estimated
Liability Category	Liability	Liability	Liability	Duration
Active Participants	\$ 2,733,750,596	\$ 2,878,371,273	5.29%	21.16
Other Participants	196,248,855	204,513,539	4.21%	16.85
Pensions in Payment	3,904,941,872	4,014,371,626	2.80%	11.21
Adjustments	21,828,000	21,828,000	-	-
Excess/(Deficiency)	(2,491,247,323)	(2,753,562,438)	-	-
Total	\$ 4,365,522,000	\$ 4,365,522,000	3.83%	15.30
Increase/(Decrease) in Liabilities		\$ 262,315,115		

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 \$144,147,858 on the going concern Valuation Balance Sheet (please refer to Appendix III - Page 3). This reserve is a write-up of assets for this Valuation which may or may not mitigate in full, or in part, past and possible future adverse investment experience. No such adjustment was made for the solvency test.

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 no PfAD contained implicitly in the assumed rate of return of 5.75% per year (please refer to Appendix III - Page 4 for further detail). The absence of provision may or may not prove to be adequate in the future. Consideration should be given to lowering the current real rate of 3.75% per year in the future.

Salary Increase Rate

The assumed salary rate increase, before service and merit increases, has been changed from a constant 2.75% to a general salary scale which varies by year and ultimately reaching 2.50% per year in 2024 and later.

Retirement Rate

Current expected retirement rates allow for 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

The most current CPM 2014 Composite Mortality projected using Scale B (CPM2014COM-Scale B) was used for the solvency test. The CPM 2014 Public Mortality projected using Scale B (CPM2014PUB-Scale B) has been continued for the going concern calculations in this valuation.

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 Indexing Account that makes some provision for indexing of pensions in payment.

Contribution Deficiency Contingency

No provision for a contribution deficiency has been made on the going concern Valuation Balance Sheet as the contribution rates are currently in balance for future service accruals.

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.
- In respect of future service, contribution rates of employees and matching employers to the Basic Account were increased to eliminate the contribution deficiency so that future benefit accruals do not cause an unfunded liability in the Fund. A small future service contribution margin now exists but should be monitored closely, especially if a more cautious actuarial basis is adopted or if the average age of the actives increases significantly in the future.
- 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 unfunded liability of \$784,409,643 could be amortized by 15 annual payments of \$86,025,209 (assumes 10.2% is allocated to the Indexing Account) which is equivalent to about 4.36% 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.
- 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.
- A projection valuation has been presented to the Board to examine future financial outcomes for the Civil Service Superannuation Fund under a number of scenarios. It is recommended that that report be forwarded to the Province of Manitoba, the Liaison Committee, and the Advisory Committee.
- 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, 2018.

APPENDIX I

Financial & Membership Data

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

	31-Dec-2018	31-Dec-2017
Assets		
Fixed Income Investments (market value)	\$ 1,564,169,000	\$ 1,574,284,000
Equity Investments (market value)	5,635,347,000	5,987,263,000
	<u>\$ 7,199,516,000</u>	<u>\$ 7,561,547,000</u>
Net Receivables/Payables (includes a Province Trust Account) (Note 5)	(12,790,000)	5,179,000
Debt due from the Province of Manitoba (Note 1)	1,826,000	1,826,000
Correctional Officers' Trust Account (Note 2)	(12,317,000)	(12,316,000)
Employer Trust Accounts (Note 3)	(100,774,000)	(101,854,000)
Money Purchase Accounts Plan (Note 4)	(38,842,000)	(39,520,000)
The Province of Manitoba Unfunded Pension Liability Trust Account 1 & 2 (Note 5)	(2,098,635,000)	(2,217,480,000)
Manitoba Hydro Enhanced Benefit Trust Account (Note 6)	<u>(31,638,000)</u>	<u>(31,190,000)</u>
	<u>\$ 4,906,346,000</u>	<u>\$ 5,166,192,000</u>
Superannuation Adjustment Account	(540,824,000)	(558,981,000)
Total Assets Available for Basic Benefits	<u><u>\$ 4,365,522,000</u></u>	<u><u>\$ 4,607,211,000</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.

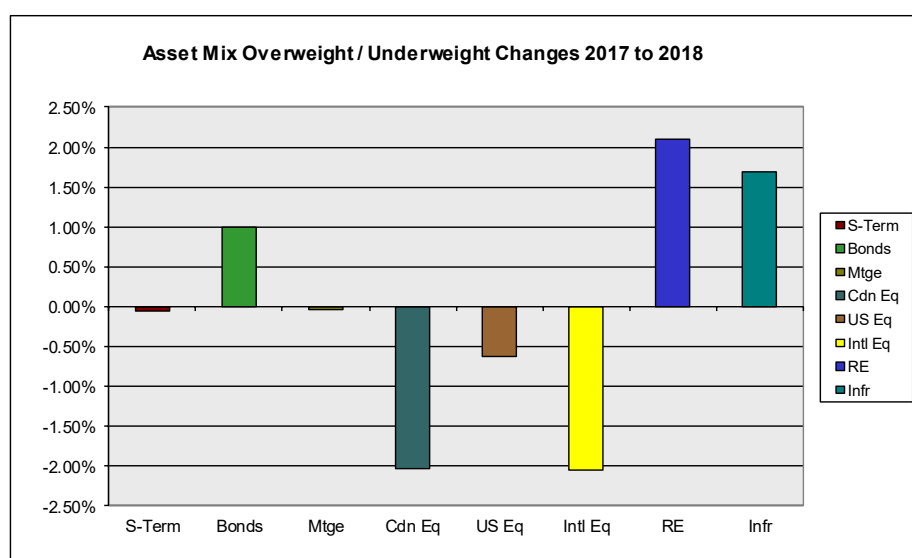
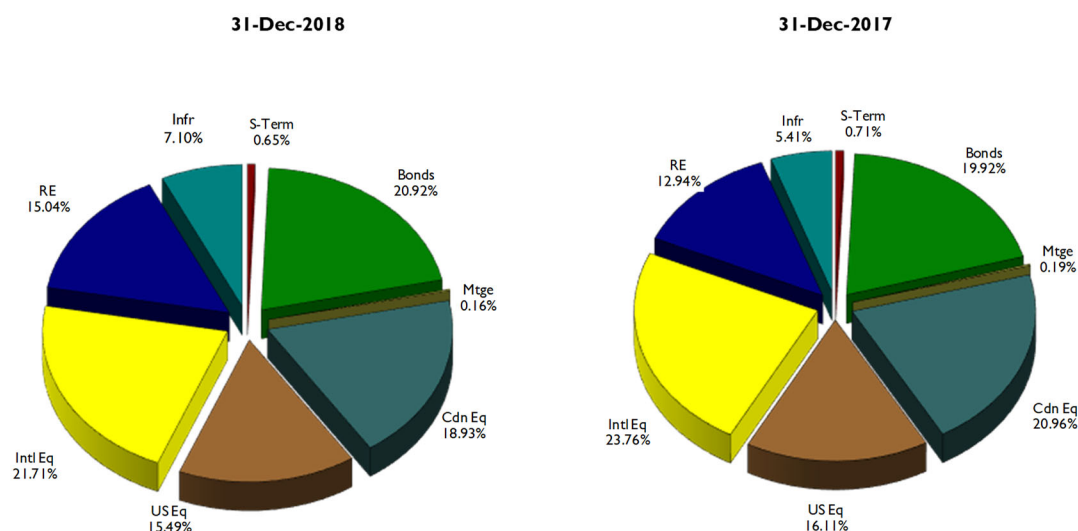
Note 5: The Province of Manitoba has established a fund for the purpose of accumulating funds for the eventual retirement of the Province of Manitoba's unfunded pension obligation. Under the terms of March 6, 2001 and March 30, 2009 agreements between the Province of Manitoba and the Board, the Province 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 cannot 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-2018		31-Dec-2017	
1. Short Term (S-Term)	\$ 46,528,000	0.65%	\$ 53,997,000	0.71%
2. Bonds and Debentures (Bonds)	1,506,066,000	20.92%	1,505,963,000	19.92%
3. Mortgages (Mtge)	11,575,000	0.16%	14,324,000	0.19%
Fixed Income	\$ 1,564,169,000	21.73%	\$ 1,574,284,000	20.82%
4. Canadian Equities (Cdn Eq) *	1,363,150,000	18.93%	1,584,924,000	20.96%
5. U.S. Equities (US Eq)	1,114,996,000	15.49%	1,217,885,000	16.11%
6. Non-North American Equities (Intl Eq)	1,563,223,000	21.71%	1,796,901,000	23.76%
7. Real Estate (RE)	1,082,695,000	15.04%	978,538,000	12.94%
8. Infrastructure (Infr)	511,283,000	7.10%	409,015,000	5.41%
Equity	\$ 5,635,347,000	78.27%	\$ 5,987,263,000	79.18%
	<u>\$ 7,199,516,000</u>	<u>100.00%</u>	<u>\$ 7,561,547,000</u>	<u>100.00%</u>

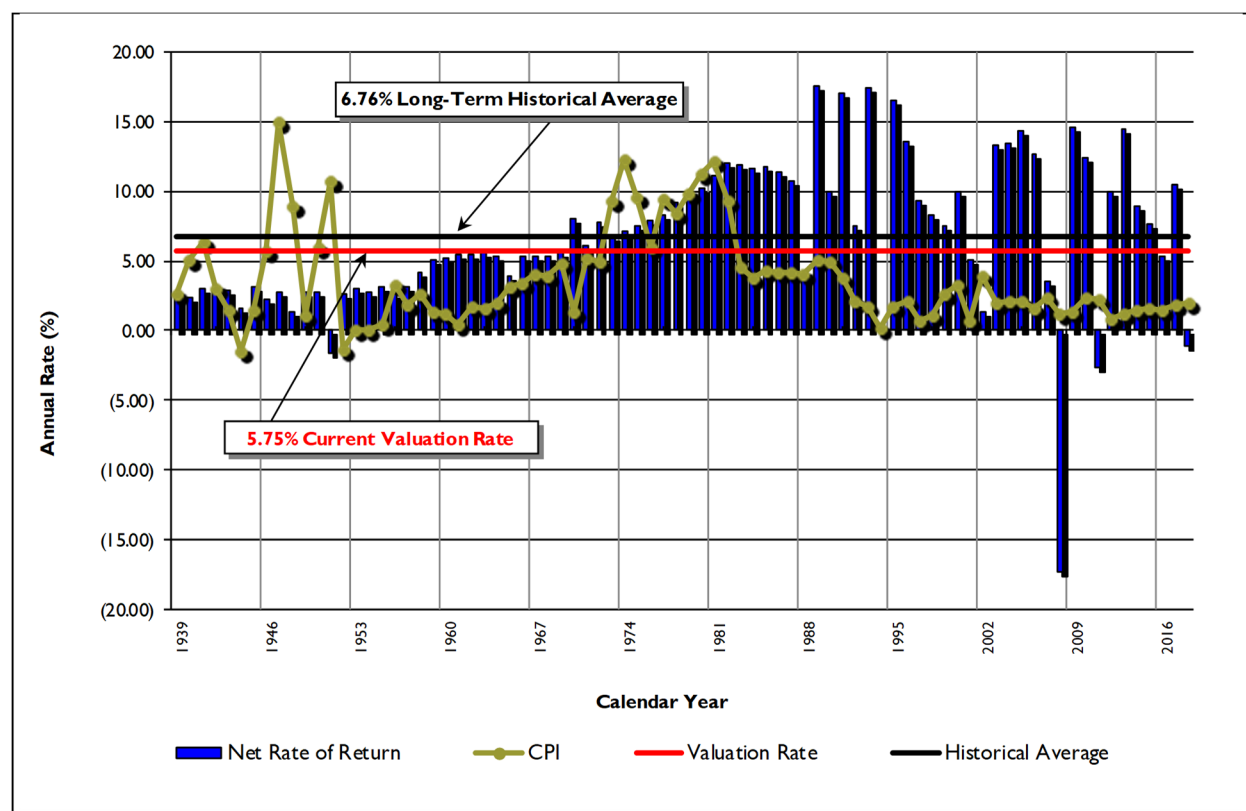
* Canadian Equities includes petroleum and natural gas, private equity and private credit.



3. Historical Cash Flow: 80 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)	\$ -	\$ 123,003	\$ 5,476,149	2.37%
1940	5,476,149	462,964	(172,927)	(8,018)	-	130,602	5,888,770	2.33%
1941	5,888,770	594,089	(200,751)	(7,086)	-	181,856	6,456,878	2.99%
1942	6,456,878	455,779	(208,762)	(9,488)	-	189,072	6,883,479	2.88%
1943	6,883,479	440,959	(228,891)	(6,852)	-	203,731	7,292,426	2.92%
1944	7,292,426	441,331	(237,906)	(6,801)	-	121,812	7,610,862	1.65%
1945	7,610,862	476,802	(279,094)	(8,365)	-	243,235	8,043,440	3.16%
1946 *	8,043,440	495,588	(284,104)	(6,597)	-	184,284	8,432,611	2.26%
1947	8,432,611	778,339	(328,404)	(7,869)	-	236,658	9,111,335	2.73%
1948 *	9,111,335	792,068	(372,476)	(10,715)	-	(218,081)	9,302,131	1.34%
1949	9,302,131	905,065	(421,390)	(9,473)	-	262,446	10,038,779	2.75%
1950	10,038,779	994,024	(469,602)	(9,293)	-	286,002	10,839,910	2.78%
1951 *	10,839,910	1,179,579	(527,278)	(12,349)	-	(179,115)	11,300,747	(1.60%)
1952 *	11,300,747	1,344,962	(553,862)	(11,919)	-	(1,265,915)	10,814,013	2.60%
1953	10,814,013	1,462,734	(666,186)	(12,101)	-	341,695	11,940,155	3.05%
1954	11,940,155	1,611,842	(690,616)	(15,320)	-	341,770	13,187,831	2.76%
1955	13,187,831	1,663,647	(773,936)	(12,476)	-	434,896	14,499,962	3.19%
1956	14,499,962	1,790,935	(859,146)	(13,597)	-	384,823	15,802,977	2.57%
1957	15,802,977	2,130,165	(798,404)	(19,480)	-	523,979	17,639,237	3.18%
1958 *	17,639,237	2,395,882	(917,013)	(23,360)	-	764,898	19,859,644	4.16%
1959 *	19,859,644	2,661,599	(1,035,623)	(27,240)	-	1,039,120	22,497,500	5.03%
1960	22,497,500	4,144,352	(1,154,232)	(31,120)	-	1,246,736	26,703,236	5.20%
1961	26,703,236	2,927,316	(1,403,725)	(28,990)	-	1,485,022	29,682,859	5.41%
1962	29,682,859	3,196,204	(1,605,710)	(28,171)	-	1,668,806	32,913,988	5.48%
1963	32,913,988	3,558,599	(1,759,225)	(36,677)	-	1,873,563	36,550,248	5.54%
1964 *	36,550,248	3,877,559	(2,219,502)	(38,149)	-	1,979,089	40,149,245	5.30%
1965 *	40,149,245	3,160,279	(2,014,266)	(29,849)	-	1,570,949	42,836,358	3.86%
1966	42,836,358	3,725,529	(3,651,008)	(52,977)	-	2,274,524	45,132,426	5.31%
1967	45,132,426	4,369,950	(2,643,540)	(48,180)	-	2,449,109	49,259,765	5.33%
1968	49,259,765	5,053,832	(2,676,421)	(64,800)	-	2,701,658	54,274,034	5.36%
1969	54,274,034	5,854,684	(3,005,217)	(75,977)	-	3,091,166	60,138,690	5.55%
1970	60,138,690	6,680,379	(3,486,690)	(94,068)	-	4,980,327	68,218,638	8.07%
1971	68,218,638	7,799,868	(4,149,289)	(104,499)	-	4,261,235	76,025,953	6.09%
1972	76,025,953	9,167,547	(4,838,136)	(143,101)	-	6,082,486	86,294,749	7.79%
1973	86,294,749	10,468,999	(5,931,048)	(144,955)	-	5,923,884	96,611,629	6.69%
1974	96,611,629	13,415,988	(7,519,676)	(187,266)	-	7,034,969	109,355,644	7.07%
1975	109,355,644	17,478,089	(8,729,977)	(277,474)	-	8,459,738	126,286,020	7.45%
1976	126,286,020	21,560,004	(10,893,728)	(328,456)	-	10,454,455	147,078,295	7.95%
1977	147,078,295	25,723,575	(12,527,475)	(420,893)	-	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)	(964,000)	(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%
2013	3,708,979,000	343,643,000	(436,905,000)	(1,696,000)	(3,236,000)	533,038,000	4,143,823,000	14.47%
2014 *****	4,143,823,000	423,880,000	(450,026,000)	(1,785,000)	(2,833,000)	371,883,000	4,484,942,000	8.94%
2015	4,484,942,000	394,059,000	(500,425,000)	(1,816,000)	(3,302,000)	339,883,000	4,713,341,000	7.60%
2016	4,713,341,000	417,161,000	(535,611,000)	(2,159,000)	(3,059,000)	250,398,000	4,840,071,000	5.32%
2017	4,840,071,000	452,684,000	(622,572,000)	(2,183,000)	(4,570,000)	502,762,000	5,166,192,000	10.48%
2018	5,166,192,000	473,798,000	(673,288,000)	(2,410,000)	(7,705,000)	(50,241,000)	4,906,346,000	(1.14%)
	\$ 7,156,050,375	\$ (8,648,781,325)	\$ (49,599,448)	\$ (86,483,979)	\$ 6,530,137,469			6.76%

- * 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.
- *****The contributions for 2014 include the entry amount for employer liability funding equal to \$59,672,000 (including indexing).



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
2014	\$ 3,712,304,000	\$ 407,383,000	\$ (435,073,000)	\$ (1,785,000)	\$ (2,833,000)	\$ 333,847,000	\$ 4,013,843,000	8.95%
2015	4,013,843,000	376,454,000	(474,589,000)	(1,816,000)	(3,302,000)	304,506,000	4,215,096,000	7.60%
2016	4,215,096,000	398,681,000	(508,215,000)	(2,159,000)	(3,059,000)	223,528,000	4,323,872,000	5.30%
2017	4,323,872,000	434,348,000	(593,505,000)	(2,183,000)	(4,570,000)	449,249,000	4,607,211,000	10.48%
2018	4,607,211,000	455,762,000	(642,163,000)	(2,410,000)	(7,705,000)	(45,173,000)	4,365,522,000	(1.17%)
		\$ 2,072,628,000	\$ (2,653,545,000)	\$ (10,353,000)	\$ (21,469,000)	\$ 1,265,957,000		6.23%

4. Membership Summary (records processed for liability calculations)

Category	31-Dec-2018			31-Dec-2017		
	Males	Females	Total	Males	Females	Total
Active Participants	14,534	14,180	28,714	15,160	14,791	29,951
Other Participants						
- Long-Term Disability *	39	105	144	35	106	141
- Deferred Annuities	1,581	1,730	3,311	1,524	1,683	3,207
- Transfers	26	15	41	33	18	51
	<u>1,646</u>	<u>1,850</u>	<u>3,496</u>	<u>1,592</u>	<u>1,807</u>	<u>3,399</u>
Pensions in Payment						
- Pensioners	10,509	8,861	19,370	10,194	8,309	18,503
- Survivors	373	2,749	3,122	365	2,721	3,086
	<u>10,882</u>	<u>11,610</u>	<u>22,492</u>	<u>10,559</u>	<u>11,030</u>	<u>21,589</u>
Total	<u>27,062</u>	<u>27,640</u>	<u>54,702</u>	<u>27,311</u>	<u>27,628</u>	<u>54,939</u>

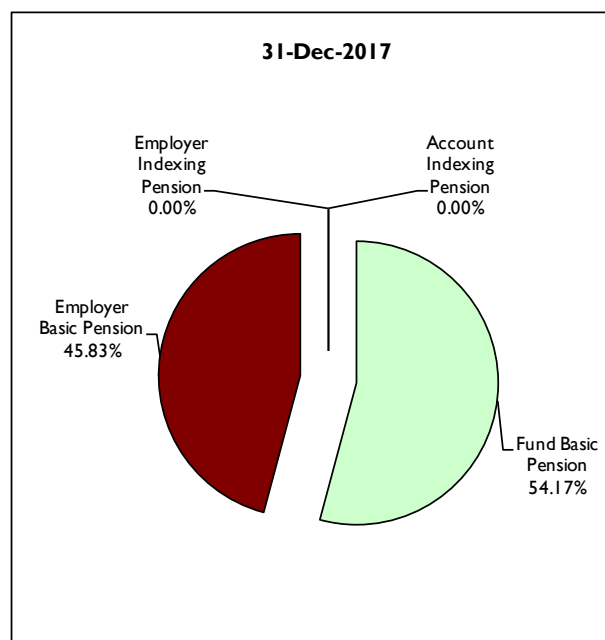
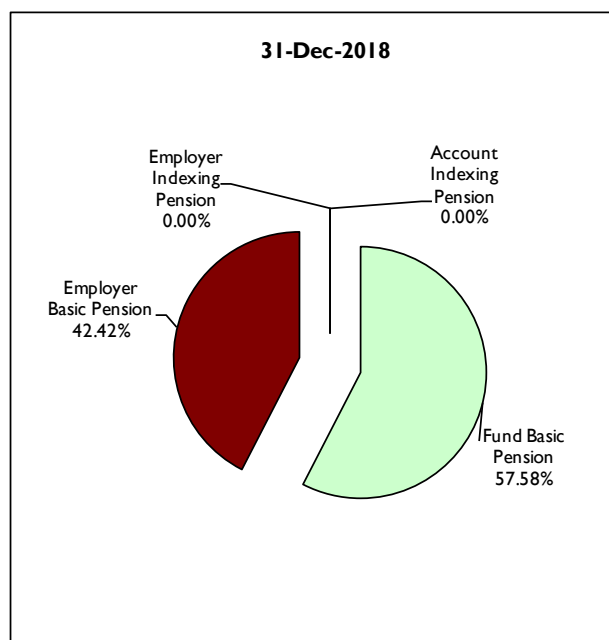
* The LTD recipients who will receive an enhanced disability benefit (not a responsibility of the Fund) on cessation of LTD income are also reflected in the number of pensions in payment.

	31-Dec-2018			31-Dec-2017		
	Number	Average Age	Fund Average Monthly Pension	Number	Average Age	Fund Average Monthly Pension
Active Participants	28,714	44.92	\$ 672.58	29,951	44.87	\$ 613.91
Other Participants	3,496	49.13	310.75	3,399	49.20	292.57
Pensions in Payment	22,492	71.11	957.07	21,589	71.05	924.32
Total	<u>54,702</u>	<u>55.96</u>	<u>\$ 766.43</u>	<u>54,939</u>	<u>55.43</u>	<u>\$ 716.01</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 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, 2018, 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 56% 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.

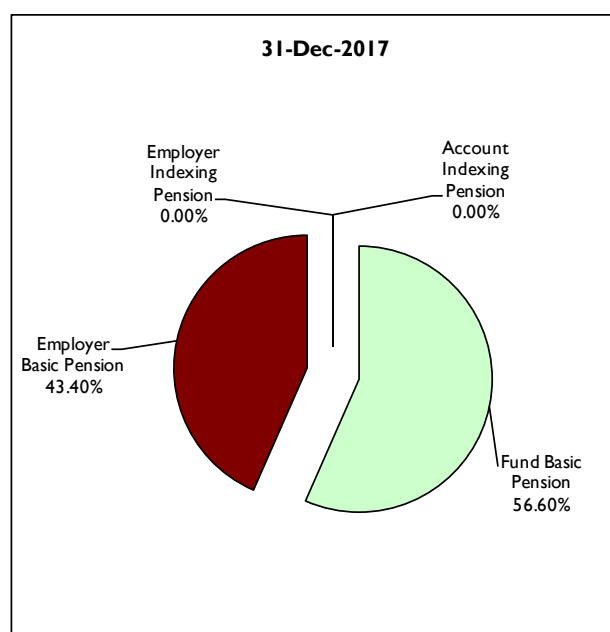
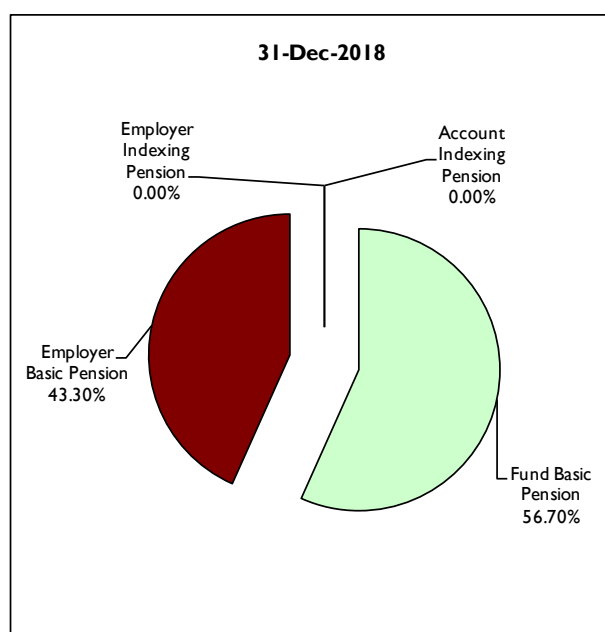
5. Active Participants Age Profile (This Report is in respect of Fund obligations only. Employer in the information below refers to pay-as-you-go employers. The Fund includes matching employer pension information.)

		Average Monthly Pension				
Age Band	Number	Basic Pension		Indexing		Total
		Fund	Employer	Employer	Account	
15 - 19	26	\$ 6.65	\$ 2.64	\$ -	\$ -	\$ 9.29
20 - 24	736	54.83	30.46	-	-	85.29
25 - 29	2,149	155.97	105.57	-	-	261.54
30 - 34	3,294	298.89	212.18	-	-	511.07
35 - 39	3,849	440.05	312.76	-	-	752.81
40 - 44	4,102	586.53	423.85	-	-	1,010.38
45 - 49	4,054	771.77	550.98	-	-	1,322.75
50 - 54	4,549	1,021.72	766.29	-	-	1,788.01
55 - 59	3,529	1,037.81	790.93	-	-	1,828.74
60 - 64	1,834	1,019.48	768.19	-	-	1,787.67
65 - 69	592	918.49	708.05	-	-	1,626.54
70 - 74	-	-	-	-	-	-
75 - 79	-	-	-	-	-	-
80 - 84	-	-	-	-	-	-
85 - 89	-	-	-	-	-	-
90 - 94	-	-	-	-	-	-
95 - 99	-	-	-	-	-	-
≥ 100	-	-	-	-	-	-
31-Dec-2018	28,714	\$ 672.58	\$ 495.56	\$ -	\$ -	\$ 1,168.14
31-Dec-2017	29,951	\$ 613.91	\$ 519.40	\$ -	\$ -	\$ 1,133.31



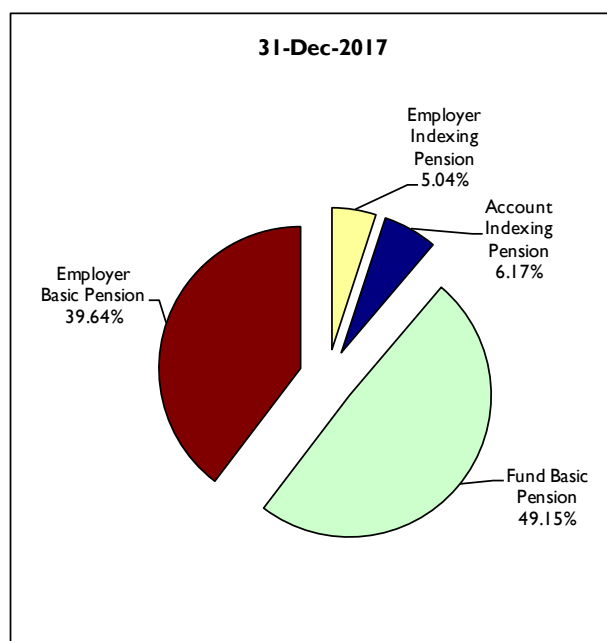
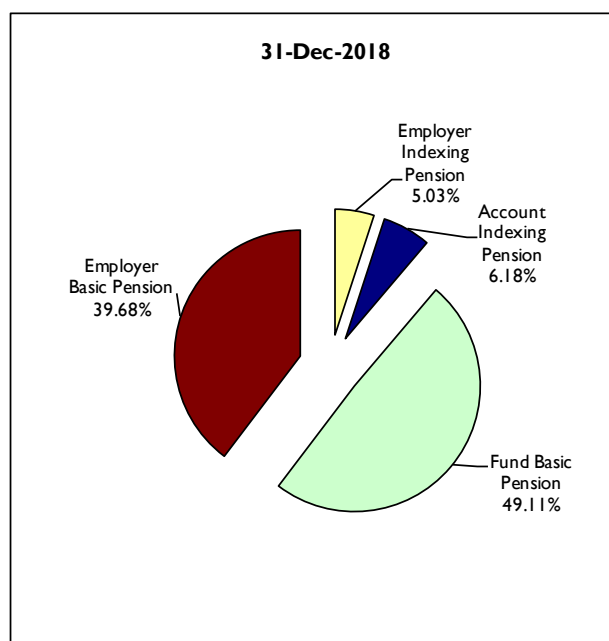
6. Other Participants Age Profile (This Report is in respect of Fund obligations only. Employer in the information below refers to pay-as-you-go employers. The Fund includes matching employer pension information.)

		Average Monthly Pension				Total
		Basic Pension		Indexing		
		Fund	Employer	Employer	Account	
Age Band	Number					
15 - 19	-	\$ -	\$ -	\$ -	\$ -	\$ -
20 - 24	1	105.19	84.48	-	-	189.67
25 - 29	57	163.62	115.93	-	-	279.55
30 - 34	220	199.61	129.08	-	-	328.69
35 - 39	403	268.69	185.88	-	-	454.57
40 - 44	482	313.55	221.86	-	-	535.41
45 - 49	563	362.24	261.11	-	-	623.35
50 - 54	751	435.81	358.66	-	-	794.47
55 - 59	578	240.25	207.44	-	-	447.69
60 - 64	370	242.81	178.86	-	-	421.67
65 - 69	59	192.52	158.13	-	-	350.65
70 - 74	11	200.55	98.18	-	-	298.73
75 - 79	-	-	-	-	-	-
80 - 84	1	102.92	-	-	-	102.92
85 - 89	-	-	-	-	-	-
90 - 94	-	-	-	-	-	-
95 - 99	-	-	-	-	-	-
≥ 100	-	-	-	-	-	-
31-Dec-2018	3,496	\$ 310.75	\$ 237.35	\$ -	\$ -	\$ 548.10
31-Dec-2017	3,399	\$ 292.57	\$ 224.37	\$ -	\$ -	\$ 516.94



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.)

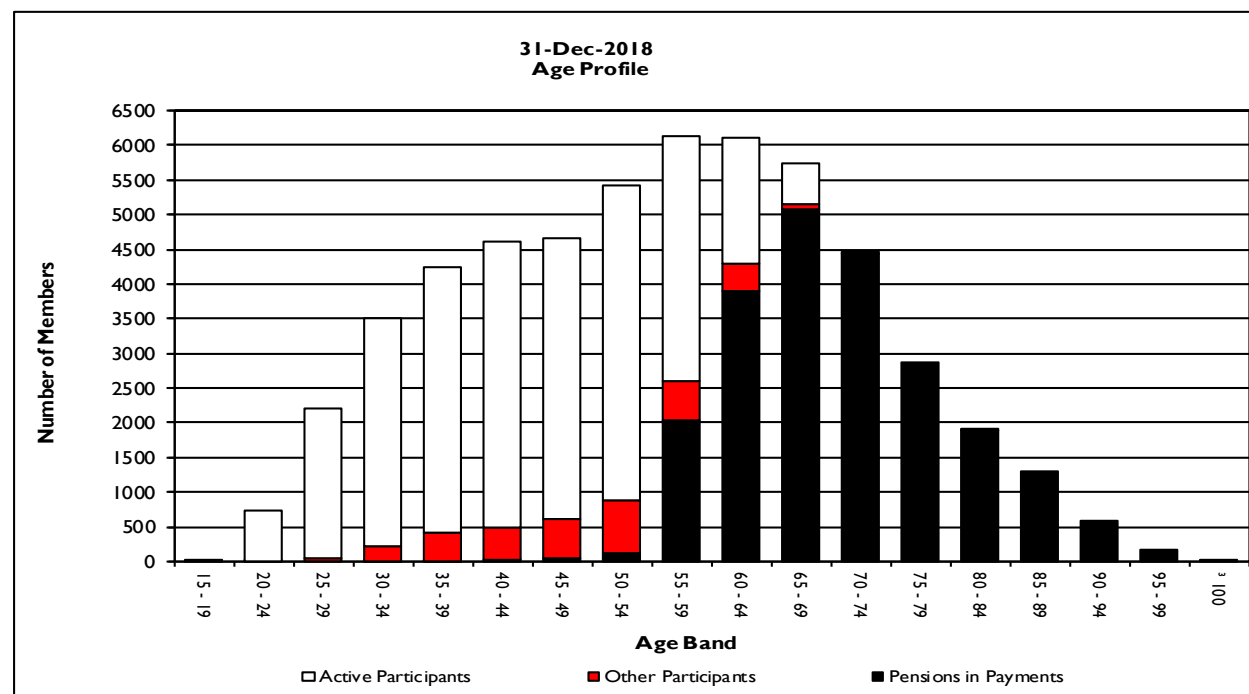
		Average Monthly Pension				
Age Band	Number	Basic Pension		Indexing		Total
		Fund	Employer	Employer	Account	
15 - 19	-	\$ -	\$ -	\$ -	\$ -	\$ -
20 - 24	-	-	-	-	-	-
25 - 29	-	-	-	-	-	-
30 - 34	2	396.97	326.22	0.76	1.00	724.94
35 - 39	4	389.57	338.94	3.59	4.33	736.42
40 - 44	19	358.86	544.48	4.17	5.75	913.25
45 - 49	40	403.34	326.89	9.98	13.16	753.36
50 - 54	121	514.36	764.26	23.93	25.56	1,328.11
55 - 59	2,025	1,400.82	1,128.47	15.60	19.71	2,564.59
60 - 64	3,912	1,269.69	997.80	41.64	54.93	2,364.05
65 - 69	5,084	1,071.75	859.53	71.58	90.41	2,093.27
70 - 74	4,436	914.81	738.68	108.52	136.51	1,898.53
75 - 79	2,867	710.71	600.73	143.01	172.52	1,626.97
80 - 84	1,893	586.96	472.50	170.01	205.33	1,434.80
85 - 89	1,300	499.82	425.96	197.48	230.43	1,353.69
90 - 94	583	440.02	354.98	214.35	253.75	1,263.10
95 - 99	180	363.75	282.75	227.00	270.16	1,143.67
≥ 100	26	303.45	322.32	282.33	258.62	1,166.72
31-Dec-2018	22,492	\$ 957.07	\$ 773.15	\$ 98.03	\$ 120.48	\$ 1,948.73
31-Dec-2017	21,589	\$ 924.32	\$ 745.53	\$ 94.73	\$ 116.09	\$ 1,880.67



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	26	\$ 6.65	\$ 2.64	\$ -	\$ -	\$ 9.29
20 - 24	737	54.90	30.53	-	-	85.43
25 - 29	2,206	156.17	105.84	-	-	262.01
30 - 34	3,516	292.73	207.05	-	-	499.78
35 - 39	4,256	423.78	300.77	0.00	0.00	724.55
40 - 44	4,603	557.01	403.20	0.02	0.02	960.24
45 - 49	4,657	719.10	514.01	0.09	0.11	1,233.31
50 - 54	5,421	929.23	709.77	0.53	0.57	1,640.10
55 - 59	6,132	1,082.51	847.40	5.15	6.51	1,941.57
60 - 64	6,116	1,132.54	879.40	26.63	35.13	2,073.70
65 - 69	5,735	1,046.88	836.68	63.46	80.15	2,027.16
70 - 74	4,447	913.05	737.10	108.25	136.17	1,894.57
75 - 79	2,867	710.71	600.73	143.01	172.52	1,626.97
80 - 84	1,894	586.71	472.25	169.92	205.22	1,434.09
85 - 89	1,300	499.82	425.96	197.48	230.43	1,353.69
90 - 94	583	440.02	354.98	214.35	253.75	1,263.10
95 - 99	180	363.75	282.75	227.00	270.16	1,143.67
≥ 100	26	303.45	322.32	282.33	258.62	1,166.72
31-Dec-2018	54,702	\$ 766.43	\$ 593.20	\$ 40.31	\$ 49.54	\$ 1,449.48
31-Dec-2017	54,939	\$ 716.01	\$ 590.00	\$ 37.22	\$ 45.62	\$ 1,388.85

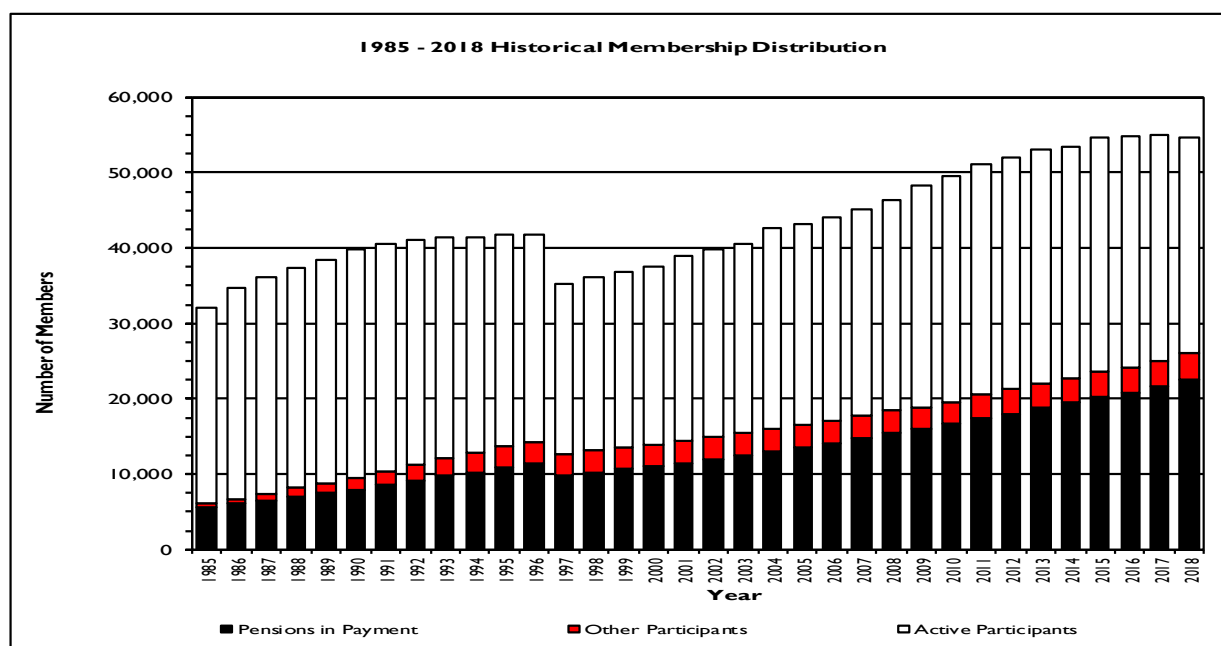
* The indexing shown above is averaged over the total membership at each age band.



9. Membership Distribution by Year (extracted from General Manager's Report, unless noted)

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
2013	30,916	3,170	34,086	16,028	2,225	663	18,916	53,002
2014	30,675	3,276	33,951	16,580	2,357	579	19,516	53,467
2015	31,065	3,338	34,403	17,199	2,413	571	20,183	54,586
2016	30,760	3,345	34,105	17,753	2,470	570	20,793	54,898
2017	29,951	3,399	33,350	18,503	2,527	559	21,589	54,939
2018	28,714	3,496	32,210	19,370	2,572	550	22,492	54,702 *

* The actual membership records processed for liability calculations is shown in the above table and will differ from the General Manager's Report due to the inclusion of members who entered or retired between the end of 2018 and the date the valuation file was sent to the actuary.



10. Reconciliation

■ Participant Reconciliation (extracted from General Manager's Report, unless noted)

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	2,950	(1,764)	(933)	(55)	(53)	33,959
2013	33,959	2,869	(1,730)	(898)	(58)	(56)	34,086
2014	34,086	2,595	(1,680)	(936)	(54)	(60)	33,951
2015	33,951	3,327	(1,784)	(977)	(56)	(58)	34,403
2016	34,403	2,469	(1,728)	(955)	(47)	(37)	34,105
2017	34,105	2,415	(1,984)	(1,068)	(63)	(55)	33,350
2018	33,350	2,237	(1,955)	(1,308)	(54)	(60)	32,210 ***
		<u>79,678</u>	<u>(44,613)</u>	<u>(25,133)</u>	<u>(1,719)</u>	<u>(1,676)</u>	

■ Pensioner (excludes survivors) Reconciliation (extracted from General Manager's Report, unless noted)

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
2013	15,253	243	898	58	(424)	16,028
2014	16,028	8	936	54	(446)	16,580
2015	16,580	14	977	56	(428)	17,199
2016	17,199	(47)	955	47	(401)	17,753
2017	17,753	54	1,068	63	(435)	18,503
2018	18,503	(31)	1,308	54	(464)	19,370 ***
		<u>(1,500)</u>	<u>25,133</u>	<u>1,719</u>	<u>(10,501)</u>	

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

** The actual membership records processed for liability calculations is shown in the above table and will differ from the General Manager's Report due to the inclusion of members who entered or retired between the end of 2018 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	2018 Total
Non-Matching Employers					
1 Province of Manitoba Civil Service	CS	13,800	2,096	13,558	29,454
2 Sport Manitoba	SM	1	1	4	6
3 Venture Manitoba Tours Ltd.	VT	-	-	4	4
4 Paletta & Company Hotels Ltd.	PCH	2	-	1	3
5 Manitoba Hydro-Electric Board	MH	5,244	345	3,930	9,519
6 Manitoba Public Insurance Corporation	AI/AIE	1,789	203	861	2,853
7 MPIC - Division of Driver and Vehicle Licensing	AIL	72	5	152	229
8 Red River College	RCC	1,533	171	782	2,486
9 Manitoba Agricultural Services Corporation	AC	-	5	29	34
10 Addictions Foundation of Manitoba	AF	319	54	217	590
11 Assiniboine Community College	ACC	342	53	182	577
12 University College of the North	KCC	310	66	143	519
13 Legal Aid Manitoba	LA	133	17	69	219
14 Manitoba Centennial Centre Corporation	CC	52	3	79	134
15 Teachers' Retirement Allowances Fund Board	TR	37	4	18	59
16 Communities Economic Development Fund	CE	8	2	13	23
17 Manitoba Horse Racing Commission	RC	3	2	5	10
18 Diagnostic Services Manitoba	DSM	41	4	80	125
19 WRHA - Health Sciences Centre	RWA	75	13	196	284
20 Prairie Mountain Health	PMH et al	73	14	357	444
21 Interlake-Eastern Regional Health Authority	IEH et al	13	2	93	108
22 Northern Health Region	NRH et al	12	6	32	50
23 Southern Health-Santé Sud	SRH et al	18	3	99	120
24 Manitoba Development Corporation	MDC	-	-	-	-
25 The Workers Compensation Board of Manitoba	WC	-	-	1	1
26 WECO	WEC	-	-	23	23
		<u>23,877</u>	<u>3,069</u>	<u>20,928</u>	<u>47,874</u>
Matching Employers					
1 Manitoba Liquor Lotteries Corporation	LC/LF/LL	2,828	190	593	3,611
2 Manitoba Housing Authority	HA	477	50	250	777
3 WCFS CUPE Support Workers	CSW	511	11	20	542
4 Manitoba Agricultural Services Corporation	MAS	152	11	59	222
5 Manitoba Crop Insurance Corporation	CI/CIC	102	17	134	253
6 Manitoba Government and General Employees' Union	EA	104	7	56	167
7 Efficiency Manitoba Inc.	EM	2	-	-	2
8 Manitoba Hydro Utilities Service	MHU	75	20	1	96
9 Child and Family All Nations Coordinated Response Network	ANR	167	40	15	222
10 The Civil Service Superannuation Board	SB	58	9	29	96
11 Liquor, Gaming and Cannabis Authority of Manitoba	GC	85	9	24	118
12 Travel Manitoba	TM	31	8	20	59
13 Teranet Manitoba LP	TN	107	2	24	133
14 Food Development Centre	FD	42	12	6	60
15 Dairy Farmers of Manitoba	MC	20	4	16	40
16 Industrial Technology Centre	IT	13	6	14	33
17 Hams Marketing Services Co-Op Inc.	HM	10	5	17	32
18 Research Manitoba	HRC	8	2	1	11
19 Manitoba Film & Music	MFS	10	1	-	11
20 Manitoba Pork Council	PC	8	2	8	18
21 Manitoba Arts Council	MA	12	1	6	19
22 Manitoba Chicken Producers Board	CB	7	-	2	9
23 Horizon Lab Ltd.	MTR	6	2	1	9
24 Manitoba Cattle Enhancement Council	MCE	-	2	-	2
25 Turkey Producers Marketing Board	TB	2	1	5	8
26 Economic Innovation and Technology Council	MR	-	10	42	52
27 Manitoba Development Corporation	DFP	-	1	5	6
28 Manitoba Hazardous Waste Management Corporation	HVV	-	-	3	3
29 The Manitoba Water Services Board	WS	-	-	12	12
30 Human Resources and Employment Centres	R's/HE	-	4	13	17
31 Manitoba Beef Commission	BC	-	-	1	1
32 Local Government Districts	LG	-	-	2	2
33 Manitoba Mineral Resources Limited	MM	-	-	1	1
34 Manitoba Data Services	DS	-	-	1	1
35 Money Purchase Plan Annuity	MPP	-	-	183	183
36 No Billing (Charged to Fund)	NB	-	-	-	-
		<u>4,837</u>	<u>427</u>	<u>1,564</u>	<u>6,828</u>
31-Dec-2018 Total Membership		<u>28,714</u>	<u>3,496</u>	<u>22,492</u>	<u>54,702</u>
31-Dec-2017 Total Membership		<u>29,951</u>	<u>3,399</u>	<u>21,589</u>	<u>54,939</u>

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, 2018. 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, 2018, salary rate at December 31, 2018, the proportion of 2018 worked, qualifying service, required employee contributions and total interest on these contributions accumulated to the valuation date. In addition, average monthly pension at the valuation date, including retroactive salary increases, was provided, split between onside, LTD and other offside amounts. 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 Valuation Reports on the financial position of the Fund.

The file was checked for missing information and illogical information.

- Pensions in Payment: An electronic file which provided information for each pensioner as at December 31, 2018. 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 70,294 separate records (trailers) in respect of the 22,492 pensions in payment, which gave details on the pension payable from various sources.

Billing Type	Number	Basic Pension		Indexing	
		Fund	Employer	Employer	Account
A	153	\$ 1,927	\$ 6,279	\$ 5,871	\$ 233
B	51,109	21,492,665	16,579,018	2,144,160	2,692,072
C	3,304	(66,012)	(57,763)	-	-
E	49	-	630	-	-
F	2,107	60,782	43,368	1,560	2,216
H	2,153	-	60,187	-	-
I	781	90,775	30,515	-	-
J	2,782	62,436	22,734	5,059	10,270
K	50	-	187,158	14,523	-
L	1,240	258	270,242	-	-
M	16	-	1,373	32	-
N	513	-	332,144	27,107	-
O	5,099	(132,290)	(128,593)	-	-
P	833	15,212	5,965	2,767	5,063
Q	2	-	2	1	-
U	4	715	510	-	-
W	55	20	187	296	30
X	35	-	27,442	3,549	-
Y	9	-	8,387	-	-
	70,294	\$ 21,526,488	\$ 17,389,786	\$ 2,204,924	\$ 2,709,884

Average Monthly Pension	\$957.07	\$773.15	\$98.03	\$120.48
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- The General Manager's and Chief Investment Officer's Reports for 2018. 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 2018.
- A copy of the CSSA, with amendments, to December 31, 2018.
- 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, 2018

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

Director - Client Services
Title

June 20, 2019
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:

In 2014, Manitoba Liquor Control Commission, after its amalgamation with Manitoba Lotteries Corporation, became a matching employer and paid to the Fund its unfunded employer benefit obligations.

Contribution rates to the Plan were increased over a four year period (2012 – 2015) 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.

Recently, a contribution rate was changed to the Plan to increase the rates by 2.00% of salary (matched by employers).

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.

A P P E N D I X I I I

Actuarial Assumptions

A. Going Concern

<i>Actuarial Assumptions and Methods</i>	<i>31-Dec-2018</i>	<i>31-Dec-2017</i>
1. Actuarial Cost Method		
▪ accrued benefit cost method (ABCM)	ABCM with salary projection	same
▪ contribution deficiency contingency	nil	same
▪ funding methodology	excludes pay-as-you-go	same
2. Asset Valuation Method		
▪ accrued assets	market value	same
▪ asset smoothing adjustment	\$144,147,858 write-up	\$181,787,883 write-down
3. Expenses		
▪ explicit valuation balance sheet reserve	none	same
▪ explicit contribution rate allowance	none	same
▪ implicit assumed rate of return MER	0.24%	0.15%
4. Assumed Rate of Return		
▪ inflation rate	2.00%	2.00%
▪ real rate	<u>3.75%</u>	<u>4.00%</u>
total nominal rate	5.75%	6.00%
5. Assumed Salary Increase Rate	< 2024 / ≥ 2024	
▪ inflation rate	vary by year / 2.50%	2.00%
▪ real rate	vary by year / 0.50%	0.75%
▪ service, merit, & promotion (SMP) - average	<u>1.00%</u>	<u>1.00%</u>
total nominal rate - average	vary by year / 3.50%	3.75%
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	2.50%	2.75%
9. Rate of CRA Maximum Pension Increase	2018: \$2,944.44 2019: \$3,025.56 increased at 2.50% thereafter	2017: \$2,914.44 2018: \$2,944.44 increased at 2.75% thereafter
10. Retirement Rates		
▪ if retired	immediate	same
▪ otherwise	2018 rates: vary by age & sex	2017 rates: vary by age & sex
11. Termination Rates	2018 rates: vary by age & sex (50% CV elections reflected)	2017 rates: vary by age & sex
12. Disability Rates	vary by age & sex	same
13. Mortality Rates		
▪ pre-retirement	CPM 2014 Public Mortality Projected Using Scale B 90%(male) / 71%(female) -5/+3 or exact, if available sex distinct 64% males/36% females	same
▪ post-retirement		same
▪ spousal proportion (generally)		same
▪ spousal ages		same
▪ unisex weightings		same
- if retired or eligible to retire		same
- otherwise		same

I. Actuarial Cost Method

The actuarial cost method for the 2018 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 an 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.

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 0.2% 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 Smoothing Adjustment

Calendar Year	Net Investment Income	Rate of Return		Investment Gain/ (Loss)	Asset Smoothing Adjustment	
		Net	Assumed		Proportion	Amount
2014	\$ 331,014,000	8.95%	6.00%	\$ 109,105,173	0.00%	\$ -
2015	301,204,000	7.60%	6.00%	63,411,368	20.00%	12,682,274
2016	220,469,000	5.30%	6.00%	(29,118,547)	40.00%	(11,647,419)
2017	444,679,000	10.48%	6.00%	190,091,786	60.00%	114,055,072
2018	(52,878,000)	(1.17%)	6.00%	(324,047,231)	80.00%	(259,237,785)
Calculated Asset Smoothing Adjustment: Preliminary						\$ (144,147,858)
Minimum Asset Smoothing Adjustment (-10.00% of assets): Min						(436,552,200)
Maximum Asset Smoothing Adjustment (+10.00% of assets): Max						436,552,200
As-Adj						(144,147,858)
Provision for future Adverse Deviation: PfAD						-
Final Asset Smoothing Adjustment 31-Dec-2018: As-Adj+PfAD						\$ (144,147,858)

3. Expenses

Valuation Balance Sheet Reserve

No explicit expense reserve has been held on the going concern Valuation Balance Sheet, but \$21,828,000 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.

2018 Expense	Amount	Assets Under	
		Management	MER
Investment	\$ 7,705,000	\$ 4,365,522,000	0.18%
Administration	2,410,000	4,365,522,000	0.06%
Provision for future Adverse Deviation (PfAD)			0.00%
Total			0.24%

4. Development of the Going Concern Discount Rate

The discount rate assumption is 5.75% per year.

The overall expected return (“best estimate”) is 6.76%, which is based on an inflation rate of 2.00%, resulting in a real rate of return on the pension fund assets of 4.76% per year. This best estimate rate of return was developed using best estimate returns for each major asset class in which the pension fund is invested and then using a building block approach, based on the Plan’s investment policy, to develop an overall best estimate rate of return for the entire pension fund. Any additional gains from rebalancing and diversification have been included.

Inflation	2.00%
Real Rate of Return (portfolio policy mix)	4.76%
Overall expected return	6.76%
Expenses	
Investing	(0.18%)
Operating	(0.06%)
Additional returns due to active management	0.05%
Rebalancing and Diversification	0.40%
Expected interest on deficit and expected CV losses	(1.22%)
Margin for adverse deviations	0.00%
Discount Rate	5.75%

Given the absence of margin for adverse deviations, consideration should be given to lowering the discount rate in the near future. For this valuation, the 5.75% assumed rate of return should be viewed as a best estimate with no margin for adverse deviations.

The previous valuation used a discount rate of 6.00%.

5. Assumed Salary Increase Rate

The 2018 general salary increase rate (SINR = inflation plus productivity) has been updated to a table of rates that vary by year. The previous valuation used 2.75% per year as noted below. The service merit and promotional rates (SMP) are continued for the 2018 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	2017 Report	50-Year Average	25-Year Average	2018 Report
Inflation (source CIA Economic Statistics)	2.00%	4.00%	1.75%	vary by year
Productivity (source CIA Economic Statistics)	0.75%	0.72%	0.41%	vary by year
General Salary Increase Rate (SINR)	2.75%	4.72%	2.16%	vary by year
SMP (varies by age as shown in chart below)	1.00%	1.00%	1.00%	1.00%
Total Salary Increase Rate *	3.75%	5.72%	3.16%	vary by year

*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 to reflect this effect in part. In future, it may be necessary to increase this allowance.

General Salary Increase Rates Table

Year	Rates
2019	0.63%
2020	0.00%
2021	0.56%
2022	0.94%
2023	2.13%
>= 2024	2.50%

Males - 2018 Rates					Females - 2018 Rates				
Age	Active Employees	Average Service	Average Salary	Expected SMP Rates	Age	Active Employees	Average Service	Average Salary	Expected SMP Rates
15-19	13	0.21	34,331	3.41%	15-19	13	0.19	30,617	3.41%
20-24	409	1.58	44,322	3.21%	20-24	327	1.20	41,928	3.21%
25-29	1,075	3.88	58,741	2.70%	25-29	1,074	2.98	52,892	2.70%
30-34	1,712	6.31	67,599	2.20%	30-34	1,582	4.98	59,492	2.20%
35-39	1,926	8.08	71,912	1.68%	35-39	1,923	6.97	64,303	1.68%
40-44	2,033	10.29	75,096	1.20%	40-44	2,069	8.84	66,314	1.20%
45-49	2,107	12.42	76,895	0.84%	45-49	1,947	11.16	69,474	0.84%
50-54	2,249	16.58	79,536	0.42%	50-54	2,300	14.85	69,282	0.42%
55-59	1,752	17.15	76,452	0.00%	55-59	1,777	16.29	67,564	0.00%
60-64	913	17.04	74,503	0.00%	60-64	921	16.20	64,941	0.00%
>=65	345	14.92	71,507	0.00%	>=65	247	15.88	65,164	0.00%
31-Dec-18	14,534	11.44	72,668	1.00%	31-Dec-18	14,180	10.33	64,646	1.00%

6. Indexing

- If retired or eligible to retire

No allowance for post-retirement indexing of the basic benefits in this Valuation. 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 2018 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 2018 Report. This rate is based on 5-year personal fixed term deposits (CANSIM V122515, effective May 31, 2010) and generally assumed to be approximately 2.00% lower than the nominal assumed rate of return, currently equal to 5.75%.

8. Annual Rate of Increase in CPP Earnings Maximum

The annual rate of increase in the CPP Earnings Maximum is equal to 2.50% for the 2018 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 2.50% for the 2018 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 2018 encoded in the Income Tax Act, has occurred.

10. Retirement Rates

The 2018 retirement rates have been updated from the 2017 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 future. Rates start at age 55, vary by sex, and reach 100.00% at age 65.

Males - 2018 Rates				Females - 2018 Rates			
Age	Participants Exposed	Expected Retirements	Expected Rates	Age	Participants Exposed	Expected Retirements	Expected Rates
15-49	9,886	-	0.00%	15-49	9,550	-	0.00%
50-54	2,531	-	0.00%	50-54	2,705	-	0.00%
55	536	75.04	14.00%	55	543	86.88	16.00%
56	456	36.48	8.00%	56	484	43.56	9.00%
57	377	33.93	9.00%	57	446	40.14	9.00%
58	389	31.12	8.00%	58	403	32.24	8.00%
59	370	29.60	8.00%	59	363	29.04	8.00%
60	324	48.60	15.00%	60	275	44.00	16.00%
61	265	31.80	12.00%	61	287	31.57	11.00%
62	233	27.96	12.00%	62	244	26.84	11.00%
63	197	21.67	11.00%	63	197	29.55	15.00%
64	170	22.10	13.00%	64	184	25.76	14.00%
>=65	446	446.00	100.00%	>=65	349	349.00	100.00%
16,180				16,030			
804.30				738.58			

		In-Year	2018 Exposure
2016	Actual Male & Female Retirements	955	901.94
2017	Actual Male & Female Retirements	1,068	1,031.49
2018	Actual Male & Female Retirements	1,308	1,308.00
2019	Expected Total Retirements	2018 QAR RATE =>	1,542.88 USED
2019	Expected Total Retirements	110% * 2018 QAR RATE =>	1,697.17 TESTED

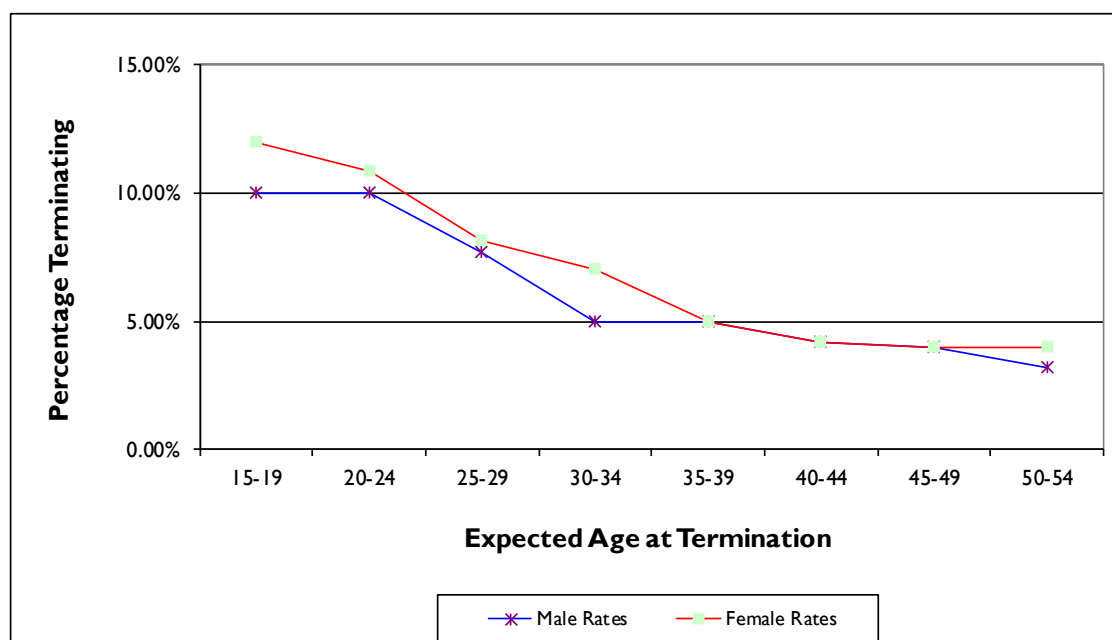


II. Termination Rates

The 2018 termination rates have been updated from the 2017 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 - 2018 Rates				Females - 2018 Rates			
Age	Participants Exposed	Expected Terminations	Expected Rates	Age	Participants Exposed	Expected Terminations	Expected Rates
15-19	7	0.70	10.00%	15-19	9	1.08	12.00%
20-24	353	35.30	10.00%	20-24	269	29.26	10.88%
25-29	1,012	77.94	7.70%	25-29	1,013	82.36	8.13%
30-34	1,769	88.45	5.00%	30-34	1,652	115.64	7.00%
35-39	2,125	106.25	5.00%	35-39	2,063	103.15	5.00%
40-44	2,266	95.22	4.20%	40-44	2,334	98.10	4.20%
45-49	2,354	94.16	4.00%	45-49	2,210	88.40	4.00%
50-54	2,531	80.44	3.18%	50-54	2,705	108.20	4.00%
55-59	2,128	-	0.00%	55-59	2,239	-	0.00%
60-64	1,189	-	0.00%	60-64	1,187	-	0.00%
>=65	446	-	0.00%	>=65	349	-	0.00%
16,180		578.46		16,030		626.19	

		In-Year	2018 Exposure
2016	Actual Male & Female Terminations	1,728	1,631.99
2017	Actual Male & Female Terminations	1,984	1,916.18
2018	Actual Male & Female Terminations	1,955	1,955.00
2019	Expected Total Terminations	2018 QAW RATE =>	1,204.65 USED
2019	Expected Total Terminations	110% * 2018 QAW RATE =>	1,325.12 TESTED

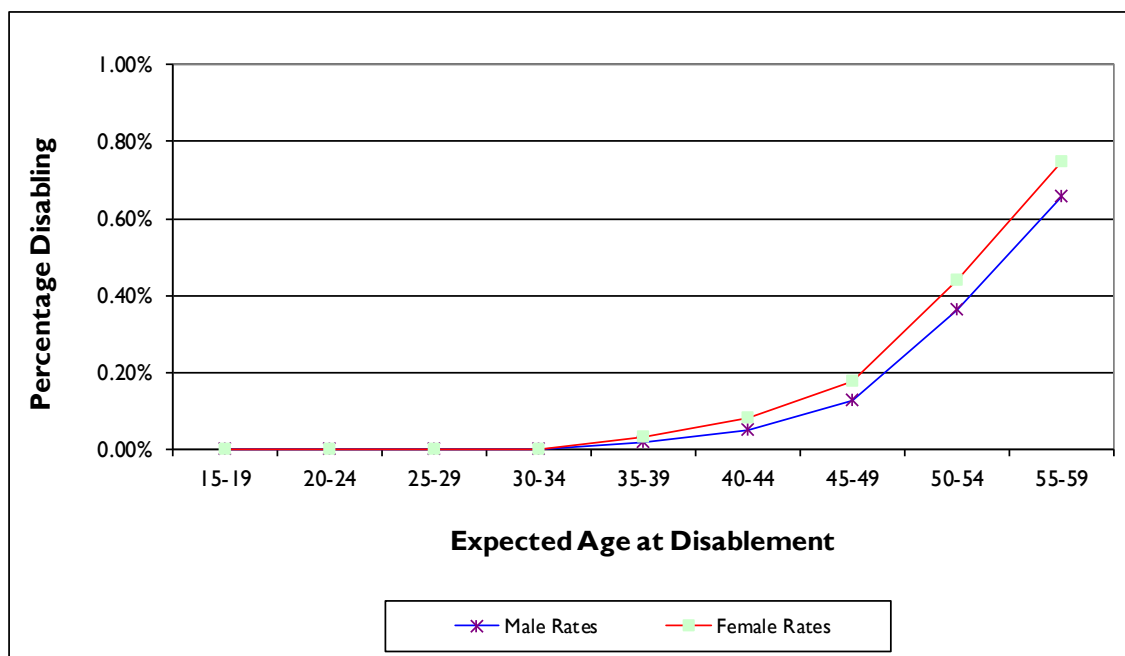


12. Disability Rates

The 2017 disability rates are continued for the 2018 Report. The expected disablements are greater than the recent actual disablements, 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 35, vary by sex, and reach 0.00% at age 60.

Males - 2018 Rates				Females - 2018 Rates			
Age	Participants Exposed	Expected Disablements	Expected Rates	Age	Participants Exposed	Expected Disablements	Expected Rates
15-19	7	-	0.00%	15-19	9	-	0.00%
20-24	353	-	0.00%	20-24	269	-	0.00%
25-29	1,012	-	0.00%	25-29	1,013	-	0.00%
30-34	1,769	-	0.00%	30-34	1,652	-	0.00%
35-39	2,125	0.46	0.02%	35-39	2,063	0.72	0.03%
40-44	2,266	1.19	0.05%	40-44	2,334	1.97	0.08%
45-49	2,354	3.06	0.13%	45-49	2,210	3.89	0.18%
50-54	2,531	9.15	0.36%	50-54	2,705	11.90	0.44%
55-59	2,128	13.93	0.65%	55-59	2,239	16.75	0.75%
60-64	1,189	-	0.00%	60-64	1,187	-	0.00%
>=65	446	-	0.00%	>=65	349	-	0.00%
16,180		27.79		16,030		35.23	

		In-Year	2018 Exposure
2016	Actual Male & Female Disablements	47	44.39
2017	Actual Male & Female Disablements	63	60.85
2018	Actual Male & Female Disablements	54	54.00
2019	Expected Total Disablements	2018 QAI RATE =>	63.02 USED
2019	Expected Total Disablements	110% * 2018 QAI RATE =>	69.32 TESTED



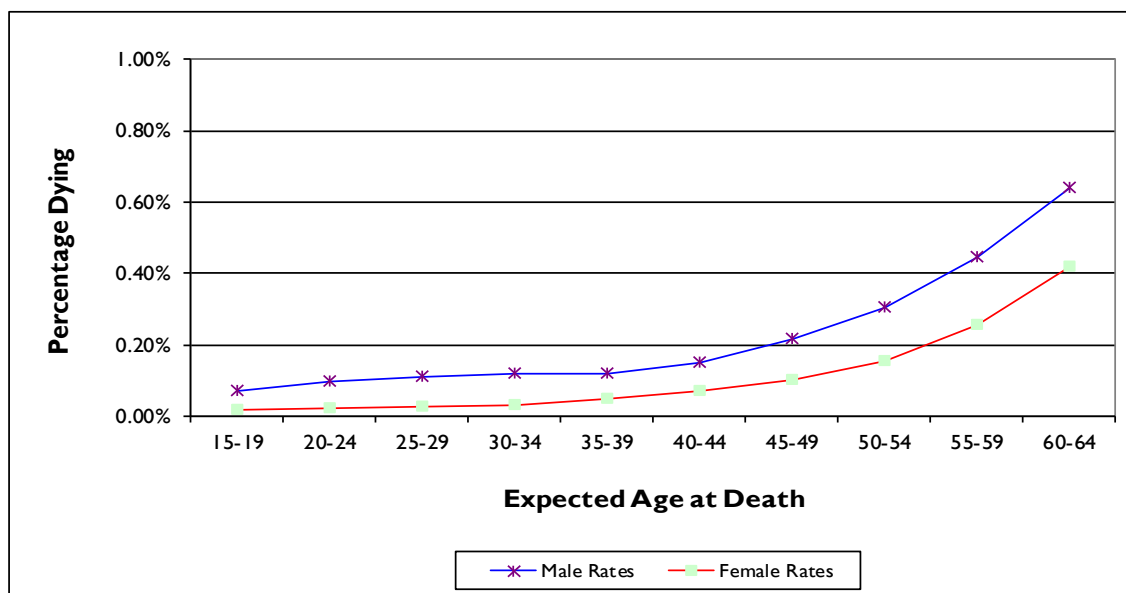
13. Death Rates - Pre-Retirement

The pre-retirement death rates CPM2014PUB-Scale B have been continued for the 2018 Report. The expected death rates are greater than the recent actual pre-retirement deaths, however they are consistent with the more dominant mortality used for post-retirement 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 to be prescribed on the basis of the CPM2014COM-Scale B 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 - 2018 Rates				Females - 2018 Rates			
Age	Participants Exposed	Expected Deaths	Expected Rates	Age	Participants Exposed	Expected Deaths	Expected Rates
15-19	7	0.01	0.07%	15-19	9	0.00	0.02%
20-24	353	0.34	0.10%	20-24	269	0.06	0.02%
25-29	1,012	1.14	0.11%	25-29	1,013	0.27	0.03%
30-34	1,769	2.10	0.12%	30-34	1,652	0.57	0.03%
35-39	2,125	2.57	0.12%	35-39	2,063	1.02	0.05%
40-44	2,266	3.46	0.15%	40-44	2,334	1.64	0.07%
45-49	2,354	5.10	0.22%	45-49	2,210	2.24	0.10%
50-54	2,531	7.76	0.31%	50-54	2,705	4.25	0.16%
55-59	2,128	9.49	0.45%	55-59	2,239	5.74	0.26%
60-64	1,189	7.58	0.64%	60-64	1,187	4.96	0.42%
>=65	446	4.30	0.97%	>=65	349	2.34	0.67%
	16,180	43.86			16,030	23.08	

		In-Year	2018 Exposure
2016	Actual Male & Female Deaths	37	34.94
2017	Actual Male & Female Deaths	55	53.12
2018	Actual Male & Female Deaths	60	60.00
2019	Expected Total Deaths	CPM2014PUB SCALE B =>	66.94 USED



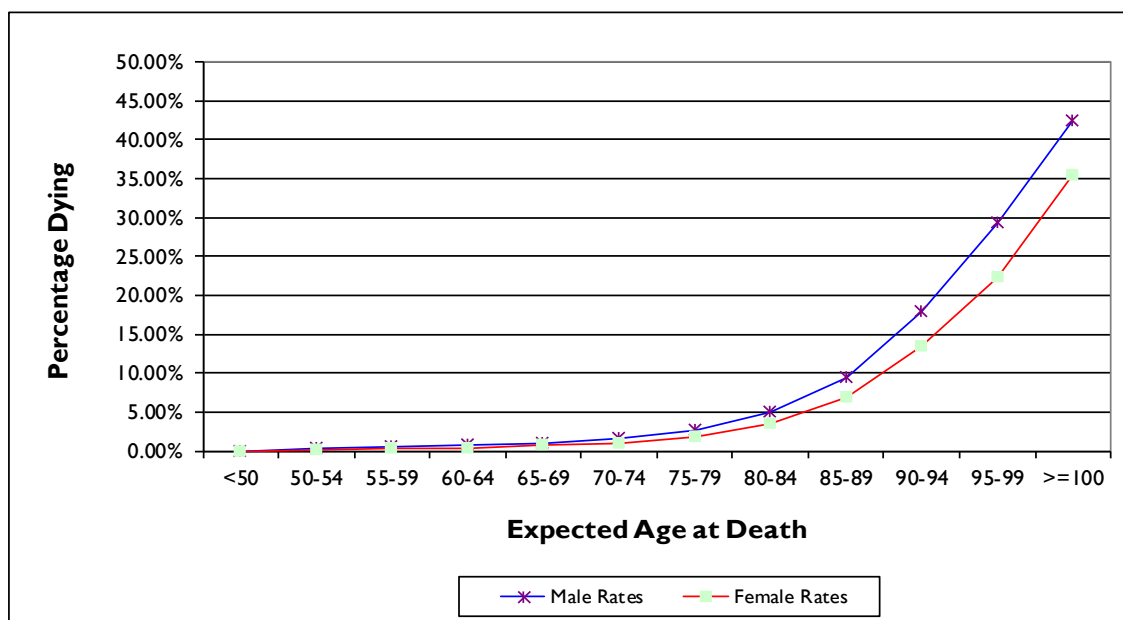
14. Death Rates - Post-Retirement

The post-retirement death rates CPM2014PUB-Scale B have been continued for the 2018 Report. The expected death rates are less 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 to be prescribed on the basis of the CPM2014COM-Scale B at the valuation date.

Exact spousal status and spouse age were 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) - 2018 Rates				Females (excludes Survivors) - 2018 Rates			
Age	Pensioners Exposed	Expected Deaths	Expected Rates	Age	Pensioners Exposed	Expected Deaths	Expected Rates
<50	10	-	0.00%	<50	33	-	0.00%
50-54	29	0.09	0.31%	50-54	48	0.08	0.17%
55-59	737	3.47	0.47%	55-59	923	2.54	0.28%
60-64	1,649	11.00	0.67%	60-64	1,837	7.97	0.43%
65-69	2,447	23.55	0.96%	65-69	2,224	15.13	0.68%
70-74	2,385	36.08	1.51%	70-74	1,689	17.95	1.06%
75-79	1,467	39.09	2.66%	75-79	996	18.70	1.88%
80-84	923	46.73	5.06%	80-84	545	19.29	3.54%
85-89	558	53.18	9.53%	85-89	363	25.01	6.89%
90-94	233	41.55	17.83%	90-94	146	19.58	13.41%
95-99	60	17.57	29.28%	95-99	52	11.65	22.40%
>=100	11	4.66	42.36%	>=100	5	1.77	35.40%
	10,509	276.97			8,861	139.67	

		In-Year	2018 Exposure
2016	Actual Male & Female Deaths	401	437.52
2017	Actual Male & Female Deaths	435	455.38
2018	Actual Male & Female Deaths	464	464.00
2019	Expected Total Deaths	CPM2014PUB SCALE B =>	416.64 USED



B. Solvency Test*

Actuarial Assumptions and Methods	31-Dec-2018			31-Dec-2017		
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	nil			same		
▪ asset smoothing reserve						
3. Expenses	.50% of assets (\$21,828,000)			.50% of assets (\$23,036,000)		
▪ 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><10 Yrs</u>	<u>>10 Yrs</u>	<u>Purchases</u>	<u><10 Yrs</u>	<u>>10 Yrs</u>
▪ inflation rate	2.45%	1.47%	1.60%	2.45%	1.25%	1.80%
▪ real rate	0.78%	1.73%	1.80%	0.57%	1.35%	1.60%
total nominal rate	<u>3.23%</u>	<u>3.20%</u>	<u>3.40%</u>	<u>3.02%</u>	<u>2.60%</u>	<u>3.40%</u>
5. Assumed Salary Increase Rate						
▪ inflation rate	none			same		
▪ real rate	none			same		
▪ service, merit & promotion (SMP) -average	none			same		
total nominal rate	none			same		
6. Indexing						
▪ 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	2019: \$3,025.56 Indexed at 0.00% thereafter			2018: \$2,944.44 same		
10. Retirement Age						
▪ if retired or eligible to retire	immediate			same		
▪ otherwise	first age possible			same		
11. Termination Rates	commuted value			same		
12. Disability Rates	commuted value			same		
13. Mortality Rates						
▪ pre-retirement	none			same		
▪ post-retirement	CPM 2014 Composite Mortality			same		
	Projected Using Scale B					
▪ spousal proportion (generally)	90%(male) / 71%(female)			same		
▪ spousal ages	-5/+3 or exact, if available			same		
▪ unisex weightings						
- if retired or eligible to retire	sex distinct			same		
- otherwise	64% males/36% females			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 Annuity Purchase Rate - Non-Indexed

On March 18, 2019, the Canadian Institute of Actuaries (CIA) released an Educational Note “Assumptions for Hypothetical Wind-Up and Solvency Valuations with Effective Dates between December 31, 2018 and December 30, 2019” outlining how to determine the annuity purchase rate to be used for solvency valuations as at December 31, 2018. The cost of purchasing non-indexed annuities would be estimated based on the following process:

Determine the duration of the portion of the liabilities assumed to be settled through the purchase of annuities, based on a discount rate of 3.23% (CANSIM V39062 plus 110 bps at December 31, 2018).

Liabilities were calculated for the members who were retired as at December 31, 2018 using a discount rate of 3.23% and 3.24% to determine the duration.

Using these liabilities, duration was determined to be 10.95 for this group of members retired. To determine the spread above the unadjusted CANSIM V39062, we interpolated using the following table:

Illustrative Block	Duration based on 3.23% discount rate	Spread above unadjusted CANSIM V39062
Low Duration	8.5	+ 100 bps
Medium Duration	11.0	+ 110 bps
High Duration	13.4	+ 110 bps

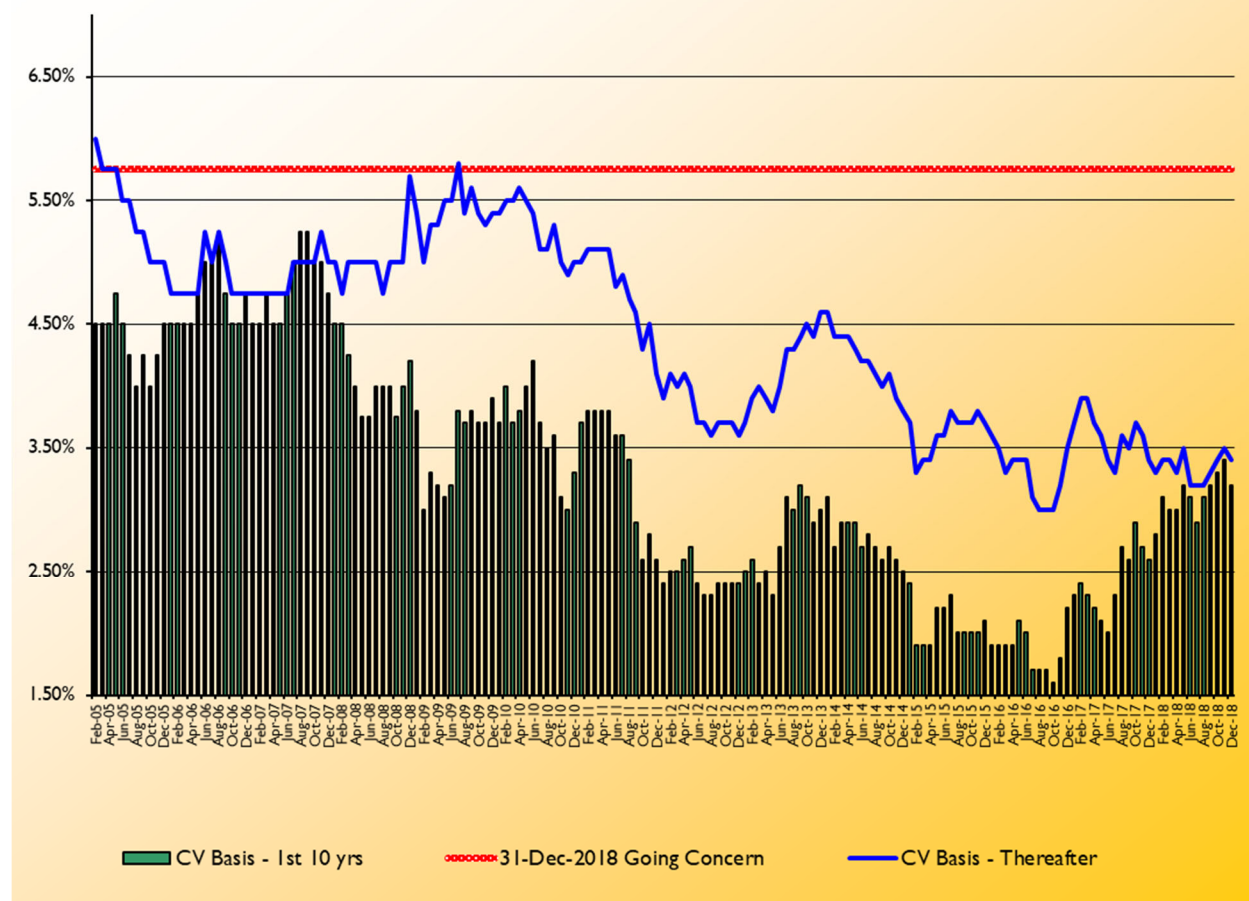
The spread calculated was 1.10%. Therefore, the CANSIM V39062 as December 31, 2018 (2.13%) plus the spread (1.10%) is equal to the Annuity Purchase Rate of 3.23%.

Development of the Cash Settlement Rate - Non-Indexed

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 Canadian Institute of Actuaries (CIA) standards. Effective for events commencing in October, 2015, the CIA standards utilize the CPM2014COM-Scale B, 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 VI22542 NOVEMBER, 2018 RATE (i_7) =	2.28%	n/a
CANSIM VI22544 NOVEMBER, 2018 RATE (i_L) =	2.41%	n/a
First 10 Years: = $i_7 + 0.90\%$ =	3.18%	3.20%
After 10 Years: = $i_L + 0.50 * (i_L - i_7) + 0.90\%$ =	3.38%	3.40%

Non-Indexed CV Rate Methodology



Benefit security at a reasonable cost



Airport Executive Centre
503 – 1780 Wellington Avenue
Winnipeg, Manitoba
Canada R3H 1B3

P: 204.954.7300
TF: 888.840.1045
F: 204.954.7310
contact.us@ellement.ca
www.ellement.ca