

A photograph of several long, slender green leaves, possibly from a plant like an orchid, positioned vertically on the left side of the page.

Pension Plan for the Employees of Concordia University

Actuarial valuation as at
December 31, 2022
for funding purposes

Report revised on November 24, 2023

Registration numbers: Quebec #21638
Canada Revenue Agency #0281121

Table of contents

Introduction	1
Section 1 – Actuarial opinion	3
Section 2 – Going-concern funded status	7
Section 3 – Solvency and hypothetical wind-up funded status	10
Section 4 – Required contributions.....	11
Section 5 – Additional disclosures	14
Appendix A – Going-concern actuarial basis	18
Appendix B – Solvency and hypothetical wind-up actuarial basis	24
Appendix C – Assets	29
Appendix D – Membership data	35
Appendix E – Summary of plan provisions.....	49
Appendix F – Employer certification	55
Appendix G – Target Asset Allocation.....	56
Appendix H – Additional Disclosures.....	57



Introduction

This report presents the results of the actuarial valuation as at December 31, 2022 of the Pension Plan for the Employees of Concordia University ("Plan"). The Pension Committee retained the services of TELUS Health to perform this actuarial valuation. The last complete valuation that was filed with Retraite Québec and the Canada Revenue Agency was performed as at December 31, 2019.

This report was prepared for Concordia University ("Employer"), the Pension Committee, Retraite Québec and the Canada Revenue Agency for the following purposes:

- to determine the funded status of the Plan on the going-concern basis;
- to determine the funded status of the Plan on both solvency and hypothetical wind-up bases;
- to estimate the employer contributions required under the Plan during the period from this valuation date up to the next valuation in accordance with the Quebec *Supplemental Pension Plans Act*; and
- to provide the information and the actuarial opinion required by the Quebec *Supplemental Pension Plans Act* and the *Income Tax Act* (Canada).

COVID-19 pandemic

On March 11, 2020, the World Health Organization declared that COVID-19 was a pandemic. The long-term effect of the outbreak on the mortality incidence for the plan and on the economic conditions is still uncertain at this time. As a result, no adjustments to the mortality assumptions nor to any other assumptions have been made in this report with regards to any long-term impact the COVID crisis might have on the population and on the economy. The effect of the COVID-19 on the pension plan, if any, will be recognized in the gains or losses of futures reports as the experience emerges.

Changes since last valuation

The Canadian Institute of Actuaries Actuarial Standards Board ("ASB") released new Standards for Pension Commuted Values on January 24, 2020 with an effective date of December 1, 2020. The new standard has been taken into account in this report.

The ASB released revisions to the Standards for Pension Commuted Values on September 14, 2021 with an effective date of February 1, 2022. The new standard has been taken into account in this report.

The ASB released revisions to the Standards for Pension Plans on June 27, 2022 with an effective date of December 1, 2022. The new standard has been taken into account in this report.

There have been no amendments to the Plan that have an impact on the Plan's funding since the last valuation.

The solvency and hypothetical wind-up bases have been updated to reflect market conditions as at the valuation date. In addition, changes were made to the actuarial assumptions on the going-concern basis.

Subsequent events

The Employer has confirmed there are no subsequent events.

Terms of engagement

This report takes into account discussions with the Plan Administrator on the terms of engagement.

Restriction on use of this report

This report was prepared for the Pension Committee, and Concordia University. It will also be filed with Retraite Québec and the Canada Revenue Agency. Neither this report nor any of its contents may be distributed, published, made available or relied upon by any other person, without the express written permission of TELUS Health, unless and only to the extent otherwise provided by applicable law.

Section 1 – Actuarial opinion

This opinion is given with respect to the Pension Plan for the Employees of Concordia University, registration number 21638 (Quebec). We performed a valuation of the Plan as at December 31, 2022, based on the Plan provisions and data as at that date. The Employer has confirmed that, between December 31, 2022 and the date of this report, no subsequent events, modifications or extraordinary changes to the membership or the Plan that would materially affect the results of this actuarial valuation have occurred, except as indicated in this report.

We hereby certify that, in our opinion, as at December 31, 2022:

- The Plan is not fully funded on the going-concern basis. The actuarial liabilities exceeds the actuarial value of assets by \$67,161,000.
- According to the solvency test required under the Quebec *Supplemental Pension Plans Act*, the Plan is partially solvent. On the solvency basis, the actuarial liabilities exceed the value of assets by \$144,509,000.
- The Plan assets would have been less than the actuarial liabilities by \$144,509,000 if the Plan had been wound up on the valuation date.
- The degree of solvency of the Plan, as defined under the Quebec *Supplemental Pension Plans Act*, is equal to 91.1%. The Employer may have to make additional contributions if former members or their survivors transfer the commuted value of their accrued benefits out of the Plan or purchase an immediate or deferred annuity. The Plan actuary should be consulted on this matter. Based on the payment requirements under section 146 of the Quebec *Supplemental Pension Plans Act*, no amount is payable from 2023 to 2025 for transfers prior to December 31, 2022. Moreover, the payment of the benefits that are transferable under transfer agreements with other pension plans cannot have the effect of reducing the degree of solvency of the Plan.
- The minimum employer contributions are equal to the sum of the full amortization payments required for service prior to January 1, 2016 less amortization payments to be offset by the reserve; and 55% of the total contributions for service as of January 1, 2016. The total contributions for that period represent the sum of the following components: current service contributions, stabilization contributions, and amortization payments required for service as of January 1, 2016.
- The minimum employee contributions correspond to 45% of the total contributions for service as of January 1, 2016. The total contributions for that period represents the sum of the following components: current service contributions, stabilization contributions and amortization payments required for service as of January 1, 2016. Based on the results of the current actuarial valuation, employees are therefore required to contribute a minimum amount equal to 7.6% of their earnings up the YMPE and 9.1% of their earnings in excess of the YMPE.

The tables below show:

1. Employer and employees' current service, stabilization contributions and amortization payment for service as of January 1, 2016, in percentage of payroll;
2. An estimate in dollars of employer and employees' current service and stabilization contributions; and,
3. An estimate in dollars of amortization payments.

Table 1.1 – Required Current Service, Stabilization Contributions and Amortization Payment for Service as of January 1, 2016 (as % of payroll)

Plan year	Current service contribution		Stabilization contribution		Amortization payment for service as of 2016		Total contribution	
	Employees	Employer	Employees	Employer	Employees	Employer	Employees ³	Employer
2023 ¹	7.40%	9.04%	0.71%	0.87%	0.00%	0.00%	8.11%	9.91%
2024-2026 ²	7.44%	9.10%	0.69%	0.84%	0.00%	0.00%	8.13%	9.94%

1 As per the actuarial report at December 31, 2019.

2 Employee required contribution rates, current service employer contributions, stabilization provision and amortization payments established under this report take effect on January 1, 2024 which is the first day of the next Plan's fiscal year.

3 As of January 1, 2024, employees are required to contribute 7.6% of their earnings up to the YMPE and 9.1% of their earnings in excess of the YMPE. In 2023 employees are required to contribute 7.5% of their earnings up to the YMPE and 9% of their earnings in excess of the YMPE.

The employees and employer are required to contribute respectively 45% and 55% of the total contributions for service as of January 1, 2016. For the purposes of the above table, results of each component of the total contributions have been rounded to the nearest 0.01%.

Table 1.2 – Estimated Current Service and Stabilization Contributions for Service as of January 1, 2016 (in dollars)¹

Plan Year	Estimated current service contribution		Estimated stabilization contribution	
	Employees	Employer	Employees	Employer
	\$	\$	\$	\$
2023 ^{2,3}	21,655,000	26,454,000	2,078,000	2,546,000
2024-2026 ⁴	24,427,000	29,877,000	2,265,000	2,758,000

1 For year 2023 (2024 to 2026) contributions are estimated based on the 2023 (2024) pensionable earnings presented in Appendix D and take into account that part-time members are expected to accrue 0.5 years of credited service per year.

2 As per the actuarial valuation report at December 31, 2019.

3 Based on the expected payroll for 2021 from December 31, 2019 valuation increased by 2.5% per year.

4 Based on the expected payroll for 2024 from December 31, 2022 valuation increased by 2.5%.

Table 1.3 – Minimum Amortization Payments

Plan year	Amortization payments to fund deficit	Estimated Amortization payments to be offset by the reserve ²	Estimated amortization payments to be paid into the fund ^{3,4}
	\$	\$	\$
2023 ¹	9,507,000	(4,753,500)	4,753,500
2024-2026	6,114,000	(3,057,000)	3,057,000

1 As per the actuarial report at December 31, 2019.

2 Payment of a portion of the amortization payment is made by a transfer from the reserve to the general account. That portion is equal to the lesser of the reserve at that time and 50% of the amortization payment.

3 The amortization payments to be paid by the University should be calculated at the beginning of each fiscal year by the actuary based on the performance of the fund. For 2024 to 2026, the amortization payments to be paid into the fund were estimated by assuming a net return of 5.9% per year.

4 The amortization payments are paid entirely by the employer as there is no unfunded liability for service as of January 1, 2016.

The minimum amortization payments should be the dollar amounts indicated in the above table. Higher amortization payments are acceptable but, in aggregate, they cannot exceed \$144,509,000 plus interest. The Plan actuary should be consulted if the amortization payments in any year are greater than the minimum required.

These contributions conform to the eligibility requirements of the *Income Tax Act* (Canada) if contributed within the fiscal year or remitted within 120 days after the end of the fiscal year. They also conform to the Quebec *Supplemental Pension Plans Act*. This Act requires that the current service employer contribution, the amortization payments and the employee contributions be remitted to the fund monthly, on or before the last day of the month following the month to which they pertain.

The first amount payable after this report is filed with Retraite Québec shall be increased by the difference between the amounts paid and the amounts that should have been paid according to this report, taking into account, if applicable, letters of credit and interest. If the monthly amounts paid are in excess of those that should have been paid according to this report, the future employer contributions may be adjusted. In this case, the actuary should be consulted.

The actuarial assumptions and methods upon which this report has been prepared have been established to reflect the funding objectives described in the Funding Policy adopted by the Pension Committee.

In our opinion, for the purposes of this report:

- The membership data on which the valuation is based are sufficient and reliable for the purposes of the valuation.
- The assumptions are appropriate for the purposes of the valuation.
- The methods employed in the valuation are appropriate for the purposes of the valuation.

This report has been prepared, and our opinion given, in accordance with accepted actuarial practice in Canada.

The assumptions that form the going-concern basis used in this report were reasonable at the time this actuarial valuation report was prepared and contributions were determined.

This actuarial valuation was performed in accordance with the going-concern and solvency standards prescribed under the Quebec *Supplemental Pension Plans Act*.

The calculations in the actuarial valuation have been prepared in accordance with subsection 147.2(2) of the *Income Tax Act* (Canada).

These recommendations and opinions are given exclusively from a financial viewpoint. This valuation report does not constitute a legal opinion on the rights and duties of the Plan administrator, the Employer or the members over the pension fund.

Actuarial valuation results are only estimates. Actuarial valuations are performed based on assumptions and methods that are in accordance with sound actuarial principles. Emerging experience differing from these assumptions may result in gains or losses, which may affect future contribution levels. These gains or losses will be revealed in future actuarial valuations.

The next actuarial valuation will have to be performed not later than as at December 31, 2025.

The undersigned are available to provide supplementary information and explanation, as appropriate, concerning this report.



Paul Winnett, FSA, FCIA



Myriam Bennhaila, FSA, FCIA

TELUS Health
1060 Robert-Bourassa Blvd
Office RC-01
Montreal, QC H3B 4V3

Revised on November 24, 2023

Section 2 – Going-concern funded status

Going-concern funded status

The funded status of the Plan on the going-concern basis is determined by comparing the actuarial value of the assets to the actuarial liabilities. The actuarial liabilities are based on the benefits earned up to the valuation date assuming the Plan continues indefinitely. Since January 1, 2016, a stabilization provision is also required to be funded.

Table 2.1 – Going-concern funded status

	December 31, 2022	December 31, 2019
	\$	\$
Actuarial value of assets ¹		
General account	1,314,397,000	1,043,619,000
Reserve - after Plan experience	160,689,000	85,006,000
Total	1,475,086,000	1,128,625,000
Actuarial liabilities		
Full-time active contributory members	622,508,000	513,077,000
Full-time active non-contributory members	7,167,000	7,018,000
Part-time active contributory members	32,630,000	26,550,000
Part-time active non-contributory members	650,000	1,000,000
Disabled members	10,508,000	7,174,000
Retired members and beneficiaries	675,113,000	570,820,000
Terminated vested members	32,550,000	18,036,000
Additional voluntary contributions	432,000	278,000
Total	1,381,558,000	1,143,953,000
Actuarial surplus (unfunded liability) - General account	(67,161,000)	(100,334,000)
Actuarial surplus (unfunded liability) - Total assets	93,528,000	(15,328,000)
Funding level - General Account	95.1%	91.2%

¹ Market value of non-insured assets adjusted for amounts payable and receivable.

The detailed reserve and general account calculations are provided in Appendix C.

Reconciliation of going-concern funded status

The table below describes the change in the Plan's going-concern funded status since the last valuation:

Table 2.2 – Reconciliation of going-concern funded status

	\$	\$
Actuarial surplus (unfunded liability) as at December 31, 2019		(100,334,000)
Expected changes in funded status		
Interest on surplus (unfunded liability)	(18,828,000)	
Amortization payments - Employer (with interest)	16,178,000	
Amortization payments - Transfer from reserve (with interest)	16,178,000	
Stabilization contributions (with interest)	15,917,000	
Total		29,445,000
Expected surplus (unfunded liability) as at December 31, 2022		(70,889,000)
Actuarial gains (losses) due to the following factors		
Investment return on actuarial value of assets	126,175,000	
Increase in pensionable earnings and YMPE	1,908,000	
Retirement	(994,000)	
Mortality	1,160,000	
Indexation	(65,762,000)	
Termination of employment	5,065,000	
Other factors	(1,893,000)	
Total		67,059,000
Changes in demographic actuarial assumptions		3,638,000
Actuarial surplus (unfunded liability) as at December 31, 2022 ¹ – before transfer to the reserve		(192,000)
Transfer of technical gain from the general account to the reserve		(66,969,000)
Actuarial surplus (unfunded liability) as at December 31, 2022 ¹ – after transfer to the reserve		(67,161,000)

Reserve

As at December 31, 2022, the value of the reserve is equal to \$93,720,000 before Plan experience and to \$160,689,000 after Plan experience. The detailed reserve calculations are provided in Appendix C.

Provision for adverse deviations

The provision for adverse deviations may be split as indicated in the following table. The different elements used to calculate the provision for adverse deviations are also illustrated.

Table 2.4 – Provision for adverse deviations

	Dec. 31, 2022
Actuarial liabilities attributable to retirees	
Retirees (R) ¹	\$817,637,000
Other members (S) ¹	\$799,125,000
Value of asset invested in fixed income (V) ¹	\$360,062,000
Duration (years)	
Retirees actuarial liabilities (d ^R) ¹	9.1
Fixed income securities (d ^M) ¹	2.7
Adjusted spread of durations (D) ¹	7.9
Provision for adverse deviations	
Retirees	\$113,038,000
Other members	\$55,939,000
Total	\$168,977,000

1 The symbols R, S, V, D, d^R and d^M correspond to the elements described in the Quebec Regulation respecting supplemental pension plans. Moreover, the element V has been calculated before the application of the limit with R.

While the provision for adverse deviation is used on a going concern basis, the *Regulation respecting the funding of pension plans of the municipal and university sectors* stipulates that this provision is calculated using financial data determined using the solvency basis. The duration of the actuarial liability attributable to retirees has been calculated on the basis of assumptions as described in Appendix B. The value of insured annuity contracts and the value of additional voluntary contributions are not included in the Table 2.4.

Section 3 – Solvency and hypothetical wind-up funded status

Solvency funded status

A solvency valuation is a hypothetical wind-up valuation prescribed by the Quebec *Supplemental Pension Plans Act*. It imposes a ceiling on what may be transferred out of the pension fund upon termination of membership. A solvency valuation may differ from the valuation required on plan wind-up.

Table 3.1 – Solvency funded status

	December 31, 2022	December 31, 2019
	\$	\$
Solvency assets		
Solvency assets ^{1,2}	1,473,102,000	1,126,792,000
Solvency liabilities		
Full-time active contributory members	694,765,000	694,916,000
Full-time active non-contributory members	7,320,000	8,955,000
Part-time active contributory members	42,441,000	35,861,000
Part-time active non-contributory members	854,000	1,453,000
Disabled members	13,358,000	12,245,000
Retired members and beneficiaries ²	818,053,000	796,146,000
Terminated vested members	40,388,000	33,921,000
Additional voluntary contributions	432,000	278,000
Total	1,617,611,000	1,583,775,000
Assets less liabilities on the solvency basis	(144,509,000)	(456,983,000)
Degree of solvency	91.1%	71.1%

1 Net of a provision for expenses equal to \$2,400,000 and adjusted for amounts payable and receivable.

2 Including insured annuity contracts established at \$416,000 at December 31, 2022 and at \$567,000 at December 31, 2019.

Hypothetical wind-up funded status

Since all benefits have been valued, if the Plan had been liquidated as at December 31, 2022 and assuming that the asset liquidation value had been equal to the market value, the hypothetical wind-up funded status would have been similar to the solvency funded status shown in table 3.1.

Degree of solvency

The degree of solvency is equal to the ratio of the assets to the liabilities on the solvency basis as indicated in table 3.1.

Section 4 – Required contributions

Current service contribution

The table below summarizes the estimated going-concern cost of pension benefits being earned in the twelve-month period after the valuation date (the normal cost plus the stabilization provision).

Table 4.1 – Current service contribution

	As at December 31, 2022 ¹		As at December 31, 2019 for year 2021 ¹	
	\$	% of payroll	\$	% of payroll
Current service contribution				
Full-time contributory members	51,345,000		45,267,000	
Part-time contributory members	2,959,000		2,842,000	
Total	54,304,000	(16.54)	48,109,000	(16.44)
Less employee contributions				
Full-time contributory members	23,105,000		20,370,000	
Part-time contributory members	1,322,000		1,285,000	
Total	24,427,000	(7.44)	21,655,000	(7.40)
Current service employer contribution				
Full-time contributory members	28,240,000		24,897,000	
Part-time contributory members	1,637,000		1,557,000	
	29,877,000	(9.10)	26,454,000	(9.04)

1 As per Plan provisions and cost-sharing arrangement between employees (45%) and the Employer (55%).

2 Based on the expected payroll for year 2024.

3 Based on the expected payroll for year 2021, as projected from December 31, 2019 valuation.

Stabilization Contribution

Since January 1, 2018, a stabilization contribution equal to 10% of the normal cost calculated without margin for adverse deviations is paid by the employer (55%) and employees (45%).

Table 4.2 – Stabilization Contributions¹

	Employees' stabilization contribution		Employer stabilization contribution		Total stabilization contribution	
	\$	% of payroll	\$	% of payroll	\$	% of payroll
Total	2,265,000	(0.69)	2,758,000	(0.84)	4,023,000	(1.53)

1 Based on the expected payroll for year 2024.

Reconciliation of current service contribution

The factors contributing to the change in the current service contribution are shown below :

Table 4.3 – Reconciliation of Current Service Contribution

	% of payroll
Current service contribution as at December 31, 2019	16.44
Demographic changes	0.13
Changes in demographic actuarial assumptions	(0.03)
Current service contribution as at December 31, 2022	16.54

Amortization payments

The amortization schedule as determined in the previous actuarial report is as follows:

Table 4.5 – Amortization payments – Previous valuations

Nature of liability	Start date	End date	Monthly amortization payment	Balance going-concern ¹
	mm-dd-yyyy	mm-dd-yyyy	\$	\$
Technical deficiency	12-31-2019	12-31-2035	792,250	86,922,000

1 Value of amortization payments discounted as at December 31, 2022 (at a discount rate of 5.9%).

Based on the funded status of the Plan shown in Section 2, the previous amortization schedule must therefore be adjusted in the manner and order set out by the Quebec Supplemental Pension Plans Act.

The minimum required contributions to finance deficiencies as of this valuation date are thus as follows:

Table 4.6 – Amortization payments – Current valuation

Nature of liability or deficiency	Start date	End date	Monthly amortization payment ¹	Balance going-concern ²
	mm-dd-yyyy	mm-dd-yyyy	\$	\$
Technical deficiency	12-31-2022	12-31-2038	792,250 in 2023 and 509,500 thereafter	67,161,000

1 One-year deferral of contribution requirements established at 12.31.2022 as permitted by legislation.

2 Value of amortization payments discounted as at December 31, 2022 (at a discount rate of 5.9%).

Please note that under the Regulation respecting the funding of pension plans of the municipal and university sectors, amortization payments in respect of solvency deficiencies are not required.

The Regulation respecting the funding of pension plans of the municipal and university sectors, provides that a portion of the amortization payment is via a transfer from the reserve to the general account. This portion is equal to the lesser of the reserve and 50% of technical amortization payments for 2023 to 2026. It is divided proportionally between each of the monthly payments relating to technical deficits.

For the year 2023, the annual amortization payment is \$4,753,500. It is paid entirely by the University. The remaining 50% portion of the 2023 annual amortization payments in the amount of \$4,753,500 will be covered by the reserve, as noted above.

For years 2024 to 2026, the amortization payments should be calculated at the beginning of each fiscal year by the actuary based on the performance of the fund. Assuming a net return of 5.9% per year, the annual amortization payments to be paid by the University for these years are estimated at \$3,057,000. The remaining 50% portion of these annual amortization payments estimated at \$3,057,000 per year will be covered by the reserve, as noted above.

As per Plan provisions and cost-sharing arrangement, the amortization payments for service as of January 1, 2016 will be paid by the employees (45%) and the University (55%). Since the plan is fully funded for service as of January 1, 2016 based on the current valuation and based on the previous valuation, no amortization payments are required for years 2023 to 2026.

These amortization payments are in addition to amounts required to cover the current service contribution. Higher amortization payments are acceptable but they cannot exceed the greater of the excess of the actuarial liabilities over the general account on the going-concern basis and the excess of the actuarial liabilities over the assets on a hypothetical wind-up basis, plus interest in aggregate.

Section 5 – Additional disclosures

Plausible adverse scenarios on the going-concern basis

The following table illustrates the impact of certain plausible adverse scenarios on the going-concern liabilities and corresponding funded status. The scenarios have been applied and reported on separately.

Table 5.1 – Plausible adverse scenarios impact on the going-concern basis

	December 31, 2022	Interest Rate Risk	Deterioration of asset values	Longevity risk
	\$	\$	\$	\$
Actuarial value of assets	1,475,086,000	1,517,863,000	1,365,930,000	1,475,086,000
Actuarial liabilities	1,381,558,000	1,416,226,000	1,381,558,000	1,469,551,000
Assets less liabilities on the going-concern basis (funded status)	93,528,000	101,637,000	(15,628,000)	5,535,000
Impact on funded status	—	8,109,000	(109,156,000)	(87,993,000)
Current service contribution	54,304,000	56,556,000	54,304,000	56,240,000
Increase in the current service contribution	—	2,252,000	—	1,936,000

Description of the plausible adverse scenarios

Interest rate risk

Based on the outcome with a 1 in 10 likelihood of occurrence under our economic model, yields on fixed income assets are assumed to decrease by 114 basis points immediately, leading to a 19 basis-point decrease in the discount rate.

In valuing the effect of this change on the Plan assets, the impact of the interest rate risk was restricted to the asset classes deemed to be fixed income investments, including annuity insured contracts, and results in a 9.06% increase on the market value of the affected portfolio, which translates into a 2.90% increase on the market value of the portfolio as a whole.

All other assumptions and methods used for this valuation were maintained, and no compensating adjustments were made. However, as the interest credited on employee contributions corresponds to the return expected on the value of assets, this assumption has also been changed.

Deterioration of asset values

Based on the outcome with a 1 in 10 likelihood of occurrence under our economic model, return-seeking asset values were assumed to decrease by 10.89% immediately, resulting in a 7.40% decrease on the market value of the total portfolio. No changes to going-concern actuarial liabilities and the current service contribution were considered under this scenario. All other assumptions and methods used for this valuation were maintained.

Longevity risk

To test the impact of a life expectancy increase of 5-10% for all ages over the current assumption on the going-concern actuarial liabilities and the normal cost, a 3-year setback was applied to all mortality rates. All other assumptions and methods used for this valuation were maintained.

Sensitivity analysis on the going-concern basis

The table below illustrates the effect of 1% decrease in the discount rate on the going-concern actuarial liabilities. With the exception of the discount rate, all other assumptions and methods used for this valuation.

Table 5.2 – Sensitivity of actuarial liabilities on the going-concern basis

	December 31, 2022	Discount rate 1% lower
	\$	\$
Actuarial liabilities		
Full-time active contributory members	622,508,000	733,251,000
Full-time active non-contributory members	7,167,000	8,679,000
Part-time active contributory members	32,630,000	36,383,000
Part-time active non-contributory members	650,000	752,000
Disabled members	10,508,000	12,389,000
Retired members and beneficiaries	675,113,000	732,582,000
Terminated vested members	32,550,000	39,553,000
Additional voluntary contributions	432,000	432,000
Total	1,381,558,000	1,564,021,000
Increase in actuarial liabilities		182,463,000

Sensitivity analysis of the current service contribution on the going-concern basis

The table below illustrates the effect on the current service contribution of using a discount rate 1% lower than the one used for the going-concern valuation. All other assumptions and methods, as used in this valuation, were maintained.

Table 5.3 – Sensitivity of normal cost on the going-concern basis

	As at December 31, 2022		Discount rate 1% lower	
	\$	% of payroll	\$	% of payroll
Current service contribution				
Full-time contributory members	51,345,000		62,551,000	
Part-time contributory members	2,959,000		3,605,000	
Total	54,304,000	(16.54)	66,156,000	(20.15)
Increase in normal cost			11,852,000	(3.61)

Sensitivity analysis on the solvency basis

The table below illustrates the effect on the actuarial liabilities of using discount rates 1% lower than those used for the solvency valuation. All other assumptions and methods, as used in this valuation, were maintained.

Table 5.4 – Sensitivity of actuarial liabilities on the solvency basis

	December 31, 2022	Discount rate 1% lower
	\$	\$
Actuarial liabilities		
Full-time active contributory members	694,765,000	792,925,000
Full-time active non-contributory members	7,320,000	8,683,000
Part-time active contributory members	42,441,000	47,739,000
Part-time active non-contributory members	854,000	1,004,000
Disabled members	13,358,000	15,326,000
Retired members and beneficiaries	818,053,000	899,192,000
Terminated vested members	40,388,000	49,160,000
Additional voluntary contributions	432,000	432,000
Total	1,617,611,000	1,814,461,000
Increase in actuarial liabilities		196,850,000

As the value of assets includes the value of insured contracts, with a 1% decrease in the discount rates on the solvency basis, the value of assets would also be increased by \$21,000.

Incremental cost on the solvency basis

The incremental cost on the solvency basis represents the present value of the expected aggregate change in the solvency liabilities from December 31, 2022 to December 31, 2025, adjusted for expected benefit payments in the inter-valuation period. This incremental cost is \$166,864,000 as at December 31, 2022.

Appendix A – Going-concern actuarial basis

Asset valuation method

Plan assets are allocated between the general account and the reserve. The actuarial value of assets is equal to the market value of the general account, adjusted for amounts payable and receivable, as established in Appendix C. This method is the same as the one used in the last valuation.

The actuarial value of the invested, i.e. non-insured, assets is equal to the market value. This method is the same as the one used in the last valuation.

Actuarial cost method

The actuarial liabilities and the current service contribution on the going-concern basis were calculated using the projected accrued benefit (or projected unit credit) actuarial cost method.

The actuarial liabilities are equal to the actuarial present value of benefits earned by members for services prior to the valuation date, taking into account the assumptions as indicated hereafter.

The current service contribution is equal to the actuarial present value of benefits expected to be earned by members in the year following the valuation date. Part-time members are expected to accrue 0.5 years of credited service in the year following the valuation date. The current service employer contribution is the excess of the current service contribution over employees' required contributions.

The valuation method for determining the actuarial liabilities and the current service contribution is the same as the one used in the last valuation.

We assumed that all members who have reached the retirement age assumption would retire immediately. For current service contribution calculation purposes, we did not include the actuarial present value of benefits that these members would accrue if they continued their employment in the year following the valuation date. This method is the same as the one used in the last valuation.

The disabled members are valued as active members; however, we did not assume any employee contributions on their part. This method is the same as the one used in the last valuation.

The ratio of the total current service contribution to the covered payroll for the period will tend to stabilize over time if the demographic characteristics of the active members remain stable. All other things being equal, an increase in the average age of the active members will result in an increase in this ratio.

For valuation purposes, to determine eligibility for benefits and for any other use, the age used is the age on the date of the nearest birthday. This method is the same as the one used in the last valuation.

No explicit provision for adverse deviations has been calculated for the going-concern valuation.

Actuarial assumptions

The main actuarial assumptions used in the going-concern valuation are summarized in the following table. Note that the discount rate used for purposes of establishing the stabilization contribution includes no implicit margin for adverse deviations. For comparison purposes, the assumptions used in the last valuation are also included. All rates and percentages are annualized unless otherwise noted.

Table A.1 – Going-concern actuarial assumptions

	December 31, 2022	December 31, 2019
Discount rate		
Actuarial liabilities and current service contribution	5.90%	Idem
Stabilization contribution	6.40%	6.10%
CPI inflation rate	2.00%	Idem
Interest credited on employee contributions	5.90%	Idem
Increase in pensionable earnings		
Disabled members:	2.50%	Idem
Others:	2.50%	Idem
	plus merit and promotional scale	
Merit and Promotional scale	Table A.2	Idem
Increases in maximum pensionable earnings	2.50%	Idem
Indexation of ITA maximum pension		
Amount of ITA maximum pension per year of service	2023: \$3,506.67	2020: \$3,092.22
Increase in ITA maximum pension	2.50% from 2024	2.50% from 2021
Automatic indexation	0.40% (post-retirement)	Idem
Excess interest indexation	0.00% (post-retirement)	Idem
Additional benefit (pre-age 55 indexing)	1.00% for pre-2018 service only	Idem

Table A.1 – Going-concern actuarial assumptions (continued)

	December 31, 2022	December 31, 2019																		
Mortality	CPM-2014Publ Table with generational projection using improvement scale CPM-B with size adjustment factors of: Males: 1.05 Females: 0.93	CPM-2014Publ Table with generational projection using improvement scale CPM-B with size adjustment factors of: Males: 0.962 Females: 0.977																		
Termination (membership)	Termination rates per 1,000 per annum	Idem																		
	<table> <tr> <th>Age</th><th>Full-time</th><th>Part-time</th></tr> <tr> <td>25</td><td>110</td><td>200 per year</td></tr> <tr> <td>30</td><td>77</td><td>up to age 54</td></tr> <tr> <td>35</td><td>50</td><td>incl.</td></tr> <tr> <td>40</td><td>30</td><td></td></tr> <tr> <td>45 and +</td><td>0</td><td></td></tr> </table>	Age	Full-time	Part-time	25	110	200 per year	30	77	up to age 54	35	50	incl.	40	30		45 and +	0		
Age	Full-time	Part-time																		
25	110	200 per year																		
30	77	up to age 54																		
35	50	incl.																		
40	30																			
45 and +	0																			
Retirement																				
Vested members	100% at age 65	Idem																		
Active members	<table> <tr> <th>Age</th><th>Academic</th><th>Non-Academic</th></tr> <tr> <td>55</td><td>-</td><td>15%</td></tr> <tr> <td>58</td><td>10%</td><td>-</td></tr> <tr> <td>60</td><td>-</td><td>35%</td></tr> <tr> <td>62</td><td>25%</td><td>20%</td></tr> <tr> <td>65</td><td>65%</td><td>30%</td></tr> </table>	Age	Academic	Non-Academic	55	-	15%	58	10%	-	60	-	35%	62	25%	20%	65	65%	30%	
Age	Academic	Non-Academic																		
55	-	15%																		
58	10%	-																		
60	-	35%																		
62	25%	20%																		
65	65%	30%																		
Provision for administrative expenses	Implicitly recognized in the discount rate	Idem																		

Table A.2 – Merit and Promotional Scale

Academic – Full time		Academic – Part time	Non-Academic	
Age group	%	No Scale	Age group	%
33-37	2.83%		26-35	2.26%
38-42	0.85%		36-45	1.14%
43-47	2.38%		46-55	0.35%
48-52	1.44%		56-65	0.00%
53-57	0.68%			
58-62	1.30%			
63-65	2.04%			

Calculation of the value of amortization payments

The rate used to discount the value of amortization payments for the purposes of calculating the going-concern balance corresponds to the discount rate chosen for the valuation of the actuarial liabilities on the going-concern basis.

Choice of assumptions

The assumptions have been reviewed in light of current economic conditions.

Inflation rates

As stated in its monetary policy, the Bank of Canada aims to keep inflation at the 2% target, i.e. the midpoint of the 1% to 3% inflation-control target range. While inflation is currently high relative to recent experience, we continue with the view that inflation will return to and remain within historical increases in consumer prices in Canada. Therefore, taking into account the rates expected by the market, portfolio managers' expectations and the Bank of Canada policy, an expected rate of inflation of 2% has been retained. This assumption is the same as the one used in the previous valuation.

Discount rate

The elements considered in the development of the discount rate assumption for going-concern purposes are summarized in the table below:

Table A.3 – Discount rate

	%
Expected inflation	2.00
Expected real return	4.10
Value added for rebalancing and diversification effect	0.50
Administrative fees	(0.19)
Management fees	—
Discount rate (stabilization contribution) ¹	6.40
Margin for adverse deviations	(0.50)
Discount rate (actuarial liabilities and normal cost)	5.90

¹ Rounded to the nearest 0.1%

The expected real return above is based on the plan's investment policy and on the expected return per asset class. It should be noted that the return assumptions for bonds has been determined mainly (but not totally) on current market conditions while the return assumptions for equities are based more on long term expectations. You will find additional information related to the target asset allocation in the Appendix G.

Portfolio rebalancing will affect the portfolio's expected long-term return. In other words, realigning portfolio's weightings to the target determined in the investment policy from time to time will have an impact on the long-term return. The impact of portfolio rebalancing depends on its frequency, the weightings between asset classes, the level of diversification in the portfolio and the investment horizon. The expected return is also influenced by the level of diversification of the portfolio (this is independent of rebalancing). The expected impact of rebalancing and diversification on the portfolio's return (weighted average of returns of asset classes) was estimated on the basis of a log-normal distribution.

A provision has been considered in the discount rate to take into account the added value associated with active management. Note that this provision has been limited to the estimated fees corresponding to active management.

The discount rate has been adjusted to take into account fees related to asset management and plan administration as indicated in the Plan's Funding Policy. Considering the active management fees are offset by the added value provision as mentioned above, the asset management fees that have been subtracted from the discount rate are limited to passive investment management fees. Passive investment management expenses are based on average fees charged by index fund managers for each applicable asset classes obtained by survey, to which custodial fees have been added. If applicable, for alternative asset classes for which passive investment management fees are not available, and considering the low materiality of this assumption, it is assumed that the average passive investment fees of the other asset classes of the pension fund applies.

Increases in pensionable earnings and ITA maximum pensions

The 2.5% per year indicated in Table A.1 is based on an assumed inflation of 2.0% per year and an assumed productivity component of 0.5% per year. This assumption is the same as the one used in the last valuation.

Merit and Promotional Scale

This assumption was revised for the current valuation to reflect an analysis of the actual increases due to merit and promotion for each group of employees.

Automatic indexation

The assumed post-retirement automatic indexation was established at 0.40% per year (including a premium on the expected indexation). The objective of this premium is to reflect the following:

- The asymmetry in the indexation formula of $CPI - 2\%$, whereas automatic indexation in any year may not be less than 0% even if implicit inflation is less than 2%.
- Any reduction caused by the application of the maximum defined as the average annual percentage market value rate of return of the pension fund over the prior 5 calendar years less 5% is to be reinstated in a later year to the extent that the maximum formula exceeds the formula of increase in CPI less 2%.

This valuation has taken into account that an automatic indexation of 3.4% was granted as at June 1, 2023.

This assumption is the same as the one used in the previous valuation.

Excess interest indexation

For this valuation, no reserve was recognized for excess interest indexation even though the reserve for unused credits of excess interest indexation was equal to 0.5% at June 1, 2023. Based on such balance of unused credits and on the net assumed investment return on assets of 5.9% and on the inflation assumption of 2.0%, we have assumed there would be no excess interest indexation of pensions for eligible pensioners, surviving spouses and beneficiaries after June 1, 2023.

This valuation has taken into account that an excess interest indexation of 2.0% was granted as at June 1, 2023.

Mortality

In order to take into account the improvements in life expectancy substantiated by the Canadian Institute of Actuaries in its report on Canadian Pensioners Mortality (published on February 13, 2014), we used the CPM-2014Publ Mortality Table, and the CPM-B Improvement Scale, which varies by gender, age and calendar year. Adjustment factors of 1.05 and 0.93 were used for males and females, respectively.

These adjustment factors were derived from a credibility weighted combination of:

- 1) a mortality experience study using Plan data from 2012 to 2021, and
- 2) the TELUS Health Multi-Factor Mortality Model.

The TELUS Health Multi-Factor Mortality Model is used to determine best-estimate baseline mortality rates by member depending on key individual member characteristics, including age, gender, pensioner type, socio-economic status (using postal code) and pension size. The individual mortality assumptions are then converted to a Plan-level mortality adjustment factor using an equivalent-reserve method to be applied to the CPM tables.

We have assumed future mortality improvement in accordance with scale CPM-B.

The change in mortality assumption was made to better reflect plan specific mortality expected for Plan members. Adjustment factors of 0.962 and 0.977 for males and females, respectively, were used in the previous valuation.

Retirement

The retirement assumption reflects an analysis of the actual retirement age of academic and non-academic groups from 2009 to 2018. This assumption is the same as the one used in the previous valuation.

Margins and Provision for Adverse Deviations

As defined in the terms of engagement, on a going-concern basis, a margin for adverse deviations has been included in the discount rate assumption only. However, no explicit provision for adverse deviations (dollar amount) has been included. This margin was set at 0.50% to achieve greater stability in the funding of the Plan as indicated in the Plan's Funding Policy.

Appendix B – Solvency and hypothetical wind-up actuarial basis

Asset Valuation Method

The actuarial value of assets used to determine the solvency and hypothetical wind-up funded status is equal to the market value of assets including the value of insured annuity contracts, adjusted for amounts payable and receivable, minus a provision for expenses. This valuation method is the same as the one used in the last valuation.

The value of the insured annuity contracts corresponds to their associated actuarial liabilities, as described below. This method is the same as the one used in the last valuation.

Actuarial Cost Method

The value of the insured annuity contracts is equal to the actuarial present value of the benefits as set out in the contracts, calculated using the actuarial assumptions described below. This method is the same as the one used in the last valuation.

The solvency liabilities are determined using the accrued benefit (or unit credit) actuarial cost method. The solvency liabilities are equal to the actuarial present value of all benefits earned by members for services prior to the valuation date assuming the Plan is wound up on the valuation date. This method is the same as the one used in the last valuation.

For valuation purposes, the age used is the age on the date of the nearest birthday. However, to determine eligibility for benefits, the exact age was used. These methods are the same as those used in the last valuation.

Actuarial Assumptions

The main actuarial assumptions used in the solvency and hypothetical wind-up valuations correspond to those prescribed by the applicable legislation.

These assumptions are summarized in the following table. For comparison purposes, the assumptions used in the last valuation are also included. All rates and percentages are annualized unless otherwise noted.

Table B.1 – Solvency and hypothetical wind-up actuarial assumptions

	December 31, 2022	December 31, 2019
Discount rates (settlement by purchase of annuities)	4.91%	2.93%
Discount rates (settlement by transfer of values)	4.10% for 10 years; 4.50% thereafter	2.40% for 10 years; 2.50% thereafter
Indexation (settlement by purchase of annuities)	1.90%	1.30%
Indexation (settlement by transfer of values)	0.29% for 10 years; 0.29% thereafter	0.00% for 10 years; 0.00% thereafter
Additional benefits (Quebec members only - pre-age 55 indexing)	0.97% for 10 years; 0.97% thereafter	0.59% for 10 years; 0.59% thereafter
Interest credited on employee contributions	None	Idem
Increase in pensionable earnings	None	Idem
Increase in maximum pensionable earnings	None	Idem
Maximum pension		
Amount of ITA maximum pension per year of service	2023: \$3,506.67	2020: \$3,092.22
Increase in ITA maximum pension	None	Idem
Mortality	CPM-2014 Table with generational projection using improvement scale CPM-B	Idem
Termination (membership)	None	Idem
Retirement		
For members eligible to retirement	Immediate retirement	Age that maximises the value of the pension
For other members	50% at the age that maximizes the value of the pension and 50% at the unreduced retirement age	Age that maximises the value of the pension
Disability	None	Idem
Provision for expenses	\$2,400,000	\$2,400,000

Vesting of benefits

In conformity with the Quebec *Supplemental Pension Plans Act*, for every member subject to this legislation and still active as at the valuation date, we took into account benefits ancillary to any pension to which this member would have been entitled if he had retired on the day preceding the valuation date.

Settlement of benefits

In conformity with the Quebec *Supplemental Pension Plans Act*, every member for which pension is not in payment must be settled by a lump sum transfer. All other members and beneficiaries must be settled by the purchase of annuities from an insurance company. Please note that annuity contracts already insured must be valued with the assumptions used for settlement by a lump sum transfer.

Average salaries

The average salaries have been calculated as at the valuation date, using past salaries.

Termination scenario

The termination scenario used in the solvency and hypothetical wind-up valuations includes the following assumptions:

- Plan wind-up would not result from employer insolvency
- All assets could be realized at their reported market value.
- No further contribution will be made to the pension plan.
- All future expenses must be paid from the pension plan.

This approach is the not the same as the one used in the last valuation.

Margin for adverse deviations

As specified by the Standards of Practice of the Canadian Institute of Actuaries, the solvency assumptions do not include a margin for adverse deviations.

Choice of assumptions

Settlement of benefits

The assumptions used to value the members' benefits settled by a lump sum transfer are in accordance with the Plan provisions, the applicable legislation as well as the Canadian Institute of Actuaries' standards of practice for pension commuted values.

The assumptions used to value the benefits of members and beneficiaries settled by the purchase of annuities with an insurance company are in conformity with the educational note dated March 23, 2023 prepared by the Canadian Institute of Actuaries and are based on an estimate of the premium that would be required by an insurer to guarantee payment of the pensions. The duration of the liabilities expected to be settled through the purchase

of non-indexed annuities is equal to 9.1 years. As at December 31, 2022, this assumption does not vary with the duration of the liabilities.

We have assumed that the benefits would be settled through a single annuity purchase regardless of any capacity constraints within the Canadian group annuity purchase market. However, given the size of the assumed purchase, it is believed that it would not be practical to actually settle the liabilities in this manner. In case of actual wind-up, other alternatives may have to be contemplated, some of which requiring regulatory approval or even a legislative change.

Provision for fees

Allowance has been made for administrative, actuarial and legal costs which would be incurred if the Plan were to be wound up, based on sufficient and reliable data. It is assumed that the wind-up date, the calculation date and the settlement date are coincident, and as such, expenses related to investment policy reviews, investment and custodial fees are not included. Expenses related to the resolution of surplus and deficit issues are not taken into account. The amount of expenses is only an approximation and may differ significantly from real expenses incurred on plan wind-up, for example, in case of litigation, bankruptcy and eventual replacement by a third-party administrator.

Incremental cost

The incremental cost on the solvency basis is based on the actuarial method and assumptions described below.

The method used to calculate the incremental cost may be described as follows:

1. Present value of expected benefit payments between December 31, 2022 and December 31, 2025, discounted to December 31, 2022;

Plus

2. Projected solvency liabilities as at December 31, 2025, discounted to December 31, 2022;

Less

3. Solvency liabilities as at December 31, 2022.

The projected liabilities as at December 31, 2025 take into account:

- accrual of service to December 31, 2025;
- expected changes in benefits to December 31, 2025; and
- projection of pensionable earnings to December 31, 2025.

The actuarial assumptions used to calculate the incremental cost may be described as follows:

- The assumptions used to calculate the expected benefit payments in item 1. above and service accruals, projected changes in benefits and projected changes in the pensionable earnings in item 2. above correspond to those used in the going-concern valuation as at December 31, 2022.

- The assumptions used to calculate the projected solvency liabilities as at December 31, 2025 in item 2. above correspond to those used for the solvency valuation as at December 31, 2022, taking into account the method of settlement applicable to each member as at December 31, 2025.

However, we assume that the discount rates remain at the levels applicable as at December 31, 2022 and that the select period is reset as at December 31, 2025 for discount rate assumptions that are select and ultimate.

We also assume that the standards of practice for the calculation of commuted values and the guidance for estimated annuity purchase costs in effect as at December 31, 2022 remain in effect as at December 31, 2025.

- The rates used to discount items 1. and 2. above from December 31, 2022 to December 31, 2022 correspond to those used for the solvency valuation as at December 31, 2022. However, these rates are adjusted to take into account the applicable method of settlement applicable to each member as at December 31, 2025.
- The decrements and assumed new entrants between December 31, 2022 and December 31, 2025 have been ignored since the impact on the incremental cost was deemed not material. Also, we assumed that all active members who reach the retirement age assumption between December 31, 2022 and December 31, 2025 will remain in service.

Appendix C – Assets

Source of information

All information pertaining to the non-insured assets (e.g. invested) has been extracted from the financial report audited by KPMG LLP. There was no indication of any problem with the assets in the financial report.

Tests have been performed to ensure that contributions, benefits payments and investment earnings were reasonable.

Statement of non-insured net assets (market value)

The following table shows the non-insured asset allocation as at December 31, 2022. For comparison purposes, the asset allocation as at December 31, 2019 is also shown.

Table C.1 – Non-Insured Net Assets (Market Value)

	December 31, 2022	December 31, 2019
	\$	\$
Invested Assets		
Investments		
• Cash	5,779,000	4,181,000
• International equity	25,836,000	18,571,000
• Fixed income	—	—
• Pooled funds and other investments		
Money market	50,485,000	14,773,000
Equities	51,111,000	49,327,000
Exchange traded funds:		
Equity	42,290,000	39,626,000
Fixed income	28,649,000	25,501,000
Infrastructure	32,000,000	37,773,000
Other		
Tactical asset allocation	82,258,000	45,362,000
Absolute return credit	132,802,000	134,031,000
Absolute return multi strategy	226,552,000	172,658,000
Deep Value	83,366,000	77,377,000
Public real assets	65,223,000	45,259,000
Insurance linked securities	2,985,000	61,381,000
Private equity	302,796,000	137,991,000
Private debt	63,324,000	80,668,000
Private real assets	182,235,000	109,836,000
Farmland & timberland	57,372,000	40,243,000
Venture Capital	21,799,000	3,231,000
Litigation finance	1,052,000	-
Total	1,457,914,000	1,097,789,000
Other Assets		
Contributions receivable	9,693,000	6,370,000
Interest and dividends receivable	219,000	196,000
Other amounts receivable	11,750,000	34,841,000
Amounts payable	(4,490,000)	(571,000)
Advance from Concordia University	-	(10,000,000)
Total	17,172,000	30,836,000
Non insured net assets per financial statements	1,475,086,000	1,128,625,000

Changes in Non-Insured Net Assets

The following table shows changes affecting the assets during the intervaluation period, based on market values.

Table C.2 – Reconciliation

	2022	2021	2020
	\$	\$	\$
Net assets – beginning of period	1,455,968,000	1,258,668,000	1,128,625,000
Increase in assets			
Contributions			
• Employee (current service)	23,066,000	23,073,000	21,410,000
• Employee (additional voluntary contributions)	33,000	34,000	31,000
• Employee (amortization payments)	-	-	29,000
• Employee (stabilization)	2,213,000	2,211,000	2,081,000
• Employer (current service)	28,902,000	28,816,000	26,585,000
• Employer (amortization payments)	4,754,000	4,754,000	5,285,000
• Employer (transfer deficiencies)	1,223,000	788,000	1,181,000
• Employer (stabilization)	2,779,000	2,772,000	2,550,000
• Reciprocal transfers in	169,000	833,000	267,000
• Total	63,139,000	63,281,000	59,419,000
Investment income	10,091,000	18,109,000	52,570,000
Net change in fair value of investments	13,369,000	178,642,000	79,303,000
Total	86,599,000	260,032,000	191,292,000
Decrease in assets			
Benefits paid			
• Pensions in payment	59,689,000	55,779,000	54,337,000
• Reimbursements	5,118,000	4,572,000	4,443,000
• Reciprocal transfers out	229,000	348,000	459,000
• Total	65,036,000	60,699,000	59,239,000
Administration fees	2,445,000	2,033,000	2,010,000
Total	67,481,000	62,732,000	61,249,000
Net assets – end of period	1,475,086,000	1,455,968,000	1,258,668,000

Return on Non-Insured Assets

The annual rates of return achieved on non-insured assets, after investment management fees and other fees charged to the fund, are as follows:

Table C.3 – Return on Non-Insured Assets after expenses

Year	Market Value Basis
	%
2018	2.3
2019	10.5
2020	11.5
2021	15.5
2022	1.5

Reserve and General Account

Prior experience of the Plan

The value of the reserve, before plan experience, is \$93,720,000 as at December 31, 2022.

The following table describes the changes in the level of the reserve since the last valuation before plan experience:

Table C.4 – Reconciliation of the reserve before plan experience

	December 31, 2022	December 31, 2021	December 31, 2020
	\$	\$	\$
Reserve – beginning of year	97,144,000	88,904,000	85,006,000
Transfer from the reserve to general	(4,754,000)	(4,754,000)	(5,271,000)
Return net of fees	1,330,000	12,994,000	9,169,000
Reserve – end of year	93,720,000	97,144,000	88,904,000

The value of the general account as at December 31, 2022, before plan experience, is calculated as follows:

Table C.5 – General Account before Plan Experience

	December 31, 2022
	\$
Market value of non-insured assets	1,475,086,000
Reserve before Plan experience	93,720,000
General account before Plan experience	1,381,366,000

After experience of the Plan

The table below shows the calculation of the reserve as at December 31, 2022, taking into account the experience of the Plan:

Table C.6 – Reserve after Plan Experience

	\$	\$
Reserve before Plan experience as at December 31, 2022		93,720,000
Determination of technical gains (losses)		
Actuarial gains (losses) ¹	86,730,000	
– Additional contributions (to be subtracted)	(16,206,000)	
– Other gains (to be subtracted)	(3,555,000)	
Technical gains (losses)	66,969,000	
Transfer from general account to reserve		66,969,000
Reserve after Plan experience as at December 31, 2022		160,689,000

¹ General account before Plan experience (\$1,381,366,000) + Present value of remaining amortization payments (\$86,922,000) – Actuarial liabilities (\$1,381,558,000).

The value of other gains illustrated above corresponds to the amount paid under Section 146 of the *Supplemental Pension Plan Act* from 2020 to 2022 accumulated with interest.

The value of general account as at December 31, 2022, taking into account the experience of the Plan, therefore calculated as follows:

Table C.7 – General Account after Plan Experience

	December 31, 2022
	\$
Market value of non-insured assets	1,475,086,000
Reserve after Plan experience	160,689,000
General account after Plan experience	1,314,397,000

The table below shows the reserve as at January 1, 2023, taking into account the monthly payments to be offset by the transfer from the reserve during 2023.

Table C.8 – Reserve as at January 1, 2023

	\$
Reserve after plan experience as at December 31, 2022	160,689,000
Transfer from the reserve to general account at January 1, 2023	4,753,500
Reserve as at January 1, 2023	155,935,500

Appendix D – Membership data

Description of membership data

Our valuation is based on data provided to us by Concordia University and was compiled as at December 31, 2022. We have taken the following steps to review the data to ensure sufficiency and reliability:

- the records of each member were reconciled with the data of the previous valuation, and the results of this reconciliation were submitted to the employer;
- the contributions and pensions paid since the last valuation shown in the financial report of the auditor were compared with the equivalent values drawn from the data;
- a reconciliation was performed in order to follow the changes in the number of active members, retirees and vested members;
- basic data checks were performed to ensure that age, salary and service data were reasonable for the purposes of the valuation.

Summary of Membership Data

The following tables were prepared using data provided by Concordia University regarding its active members, retirees and former members.

These tables show the following:

- D.1 - Summary of Full-Time Active Academic Members
- D.2 - Summary of Full-Time Active Non-Academic Members
- D.3 - Summary of Part-Time Active Academic Members
- D.4 - Summary of Part-Time Active Non-Academic Members
- D.5 - Summary of Disabled and Vested Members
- D.6 - Summary of Pensioners, Surviving Spouses and Beneficiaries
- D.7 - Changes in Plan membership
- D.8 - Distribution of Full-Time Contributory Active Members According to Age and Pensionable Service as at December 31, 2022
- D.9 - Distribution of Full-Time Non-Contributory and Non-Participating Active Members According to Age and Pensionable Service as at December 31, 2022
- D.10 - Distribution of Part-Time Contributory Active Members According to Age and Pensionable Service as at December 31, 2022
- D.11 - Distribution of Part-Time Non-Contributory and Non-Participating Active According to Age and Pensionable Service as at December 31, 2022

D.12 - Distribution of Disabled Members According to Age and Average Deemed Salary as at December 31, 2022

D.13 - Distribution of Inactive Members According to Age and Average Annual Pension as at December 31, 2022

Summary of membership data

The following tables were prepared using data provided by Concordia University regarding its active members, retirees and former members.

Table D.1 – Summary of Full-Time Active Academic Members

	December 31, 2022	December 31, 2019
Contributory		
Number	989	946
Average pensionable earnings ¹	\$136,700	\$128,300
Average age	50.3	49.2
Average credited service	12.6	12.0
Average contributions accumulated with interest	\$111,045,900	\$69,842,600
Opt-Out and Non-Participating²		
Number	22	40
Average pensionable earnings ¹	\$137,900	\$125,500
Average age	47.4	45.0
Average credited service	8.1	7.0
Accumulated contributions with interest	\$516,600	\$741,900
Total		
Number	1,011	986
Average pensionable earnings ¹	\$136,700	\$128,200
Average age	50.2	49.0
Average credited service	12.5	11.8
Accumulated contributions with interest	\$111,562,500	\$70,584,500

1 The salary rate used is the salary rate at the valuation date projected one-year forward.

2 Non-participating members are members who have suspended their participation in the Plan.

Table D.2 – Summary of Full-Time Active Non-Academic Members

	December 31, 2022	December 31, 2019
Contributory		
Number	1,799	1,687
Average pensionable earnings ¹	\$88,300	\$81,400
Average age	46.6	46.5
Average credited service	11.3	11.7
Average contributions accumulated with interest	\$104,677,500	\$69,418,400
Opt-Out and Non-Participating²		
Number	46	49
Average pensionable earnings ¹	\$88,900	\$77,100
Average age	46.6	44.5
Average credited service	8.8	7.1
Accumulated contributions with interest	\$927,600	\$184,100
Total		
Number	1,845	1,736
Average pensionable earnings ¹	\$88,300	\$81,300
Average age	46.6	46.4
Average credited service	11.2	11.6
Accumulated contributions with interest	\$105,605,100	\$69,602,500

1 The salary rate used is the salary rate at the valuation date projected one-year forward.

2 Non-participating members are members who have suspended their participation in the Plan.

Table D.3 – Summary of Part-Time Active Academic Members

	December 31, 2022	December 31, 2019
Contributory		
Number	403	519
Average pensionable earnings ¹	\$71,900	\$67,100
Average age	52.8	51.5
Average credited service	5.9	5.6
Average contributions accumulated with interest	\$8,849,200	\$6,559,600
Opt-Out and Non-Participating²		
Number	24	60
Average pensionable earnings ¹	\$72,900	\$64,300
Average age	50.3	45.7
Average credited service	3.0	2.8
Accumulated contributions with interest	\$37,300	\$92,100
Total		
Number	427	579
Average pensionable earnings ¹	\$72,000	\$66,800
Average age	52.7	50.9
Average credited service	5.7	5.3
Accumulated contributions with interest	\$8,886,500	\$6,651,700

1 The salary rate used is the salary rate at the valuation date.

2 Non-participating members are members who have suspended their participation in the Plan.

Table D.4 – Summary of Part-Time Active Non-Academic Members

	December 31, 2022	December 31, 2019
Contributory		
Number	495	418
Average pensionable earnings ¹	\$47,900	\$46,000
Average age	38.0	36.7
Average credited service	2.3	2.1
Average contributions accumulated with interest	\$3,757,300	\$1,686,700
Opt-Out and Non-Participating²		
Number	20	72
Average pensionable earnings ¹	\$50,600	\$48,100
Average age	45.8	38.6
Average credited service	3.1	1.8
Accumulated contributions with interest	\$7,400	\$7,300
Total		
Number	515	490
Average pensionable earnings ¹	\$48,000	\$46,300
Average age	38.3	37.0
Average credited service	2.3	2.1
Accumulated contributions with interest	\$3,764,700	\$1,694,000

1 The salary rate used is the salary rate at the valuation date.

2 Non-participating members are members who have suspended their participation in the Plan.

Table D.5 – Summary of Disabled and Vested Members

	December 31, 2022	December 31, 2019
Disabled Members		
Number	49	44
Average pensionable earnings ¹	\$84,800	\$72,000
Average age	53.9	51.4
Average credited service	19.5	18.4
Accumulated contributions with interest	\$2,978,500	\$1,628,800
Vested Members		
Number ²	1,119	842
Average annual pension ³	\$3,300	\$2,300
Average age	46.9	47.5

1 Pensionable earnings as at the valuation date.

2 Including 328 members with outstanding payment as at December 31, 2022 and 249 members with outstanding payments as at December 31, 2019.

3 Only including members with a vested pension.

Table D.6 – Summary of Pensioners, Surviving Spouses, and Beneficiaries

	December 31, 2022	December 31, 2019
Pensioners		
Number	2,258	2,080
Average annual pension ¹	\$1,100	\$24,300
Average age	74.3	73.3
Surviving Spouses and Beneficiaries		
Number	174	138
Average annual pension ¹	\$28,000	\$24,900
Average age	78,8	78,2

1 Including bridging benefits.

Table D.7 – Changes in Plan Membership

	Academic	Non-Academic	LTD	Vested	Pensioners and Beneficiaries	Total
Total at December 31, 2019	1,565	2,226	44	842	2,218	6,895
Deferred members return to active service	1	8	-	(9)	-	-
Adjustment	-	-	-	-	-	-
New entrants	287	738	-	206	-	1,231
Actives to LTD	(2)	(24)	26	-	-	-
LTD to Actives	2	11	(13)	-	-	-
Academic to Staff	(41)	41	-	-	-	-
Staff to Academic	16	(16)	-	-	-	-
Terminations:						
Vested pension	(154)	(197)	(1)	352	-	-
Transfers/Refunds	(107)	(265)	(2)	(218)	-	(592)
Pending	-	-	-	-	-	-
Retirement	(123)	(152)	(3)	(51)	329	-
Deaths:						
Without beneficiary	(4)	(9)	(2)	(3)	(103)	(121)
With beneficiary	(2)	(1)	-	-	3	-
End of guarantee/Death of beneficiary	-	-	-	-	(15)	(15)
Total at December 31, 2022	1,438	2,360	49	1,119	2,432	7,398

Table D.8 – Distribution of Full-Time Contributory Active Members According to Age and Pensionable Service as at December 31, 2022

Years of service		Age										Total
		20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65 and +	
0-4	Number	3	68	167	195	177	107	60	52	20	3	852
	Avg.Sal.	58,909	64,334	80,065	89,733	93,312	89,459	105,089	106,528	110,205	98,914	89,031
5-9	Number		8	40	122	124	85	58	44	29	6	516
	Avg.Sal.		65,508	74,425	97,927	107,368	107,651	109,139	107,522	108,868	107,034	102,272
10-14	Number			6	45	74	102	87	43	39	21	417
	Avg.Sal.			70,087	82,596	102,442	107,710	110,392	116,757	104,133	135,412	106,077
15-19	Number				8	45	92	121	70	35	16	387
	Avg.Sal.				88,569	95,965	125,748	126,518	121,237	119,843	129,781	120,574
20-24	Number					7	62	96	92	55	27	339
	Avg.Sal.					87,368	95,344	126,493	125,858	129,755	137,386	121,213
25-29	Number						3	21	34	37	22	117
	Avg.Sal.						96,328	92,908	117,406	134,224	136,753	121,425
30-34	Number							8	43	27	24	102
	Avg.Sal.							109,777	95,899	119,320	162,735	118,913
35-39	Number								5	16	20	41
	Avg.Sal.								76,475	112,247	175,196	138,591
40 and +	Number									4	13	17
	Avg.Sal.									72,502	89,307	85,353
Total	Number	3	76	213	370	427	451	451	383	262	152	2,788
	Avg.Sal.	58,909	64,457	78,724	91,542	99,158	105,273	116,454	114,502	118,425	139,129	105,482

Average age: 47.9

Average number of years of service: 11.8

Notes:

- The age is computed at the nearest birthday.
- Years of service means the number of credited service for pension plan purposes, fractional parts being rounded to the nearest integer.
- The salary used is the salary rate at the valuation date projected one-year forward.

Table D.9 – Distribution of Full-Time Non-Contributory and Non-Participating Active Members According to Age and Pensionable Service as at December 31, 2022

Years of service		Age									Total	
		20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64		65 and +
0-4	Number			4	6	7	5		2	1		25
	Avg.Sal.			82,885	111,485	87,462	82,440					97,453
5-9	Number			1	3	5	3	3	3			18
	Avg.Sal.				74,727	100,115	115,240	121,824	113,481			103,485
10-14	Number				1	3	4	3	1	2		14
	Avg.Sal.					121,641	146,158	119,509				117,171
15-19	Number						2	4		1		7
	Avg.Sal.							128,126				121,299
20-24	Number						1					1
	Avg.Sal.											
25-29	Number									1		1
	Avg.Sal.											
30-34	Number									1		1
	Avg.Sal.											
35-39	Number									1		1
	Avg.Sal.											
40 and +	Number											
	Avg.Sal.											
Total	Number			5	10	15	15	10	6	7		68
	Avg.Sal.					98,516	105,757	123,650	136,694	88,075		104,734

Average age: 46.9

Average number of years of service: 8.6

Notes:

- The age is computed at the nearest birthday.
- Years of service means the number of credited service for pension plan purposes, fractional parts being rounded to the nearest integer.
- The salary used is the salary rate at the valuation date projected one-year forward.

Table D.10 – Distribution of Part-Time Contributory Active Members According to Age and Pensionable Service as at December 31, 2022.

Years of service		Age										Total
		20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65 and +	
0-4	Number	19	92	136	114	88	64	49	41	27	23	653
	Avg.Sal.	38,284	42,016	53,161	52,836	54,255	63,912	64,931	70,811	65,384	63,845	55,175
5-9	Number			2	7	10	21	19	28	21	23	131
	Avg.Sal.				42,726	70,331	65,904	71,058	71,238	69,754	70,205	68,020
10-14	Number				1	6	8	5	21	13	10	64
	Avg.Sal.					60,343	71,152	72,443	67,410	72,551	71,270	69,305
15-19	Number					1	2	3	5	8	7	26
	Avg.Sal.							51,095	68,685	65,679	72,243	66,815
20-24	Number							1	5	3	3	12
	Avg.Sal.								70,097	69,779	72,910	70,955
25-29	Number								4	2	4	10
	Avg.Sal.								54,059		72,326	64,197
30-34	Number							1				1
	Avg.Sal.											
35-39	Number									1		1
	Avg.Sal.											
40 and +	Number											
	Avg.Sal.											
Total	Number	19	92	138	122	105	95	78	104	75	70	898
	Avg.Sal.	38,284	42,016	53,114			65,053	66,221	69,458	67,746	68,708	58,672

Average age: 44.6

Average number of years of service: 3.9

Notes:

- The age is computed at the nearest birthday.
- Years of service means the number of credited service for pension plan purposes, fractional parts being rounded to the nearest integer.
- The salary used is the salary rate as of January 1, 2023, as per salary rates applicable to part-time salary categories in 2023.

Table D.11 – Distribution of Part-Time Non-Contributory and Non-Participating Members According to Age and Pensionable Service as at December 31, 2022.

Years of service		Age										Total
		20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65 and +	
0-4	Number			5	6	7	4	3	5	2	1	33
	Avg.Sal.			48,041	64,337	65,562	70,413	60,732	70,912			63,205
5-9	Number				2		1	2	1	1	3	10
	Avg.Sal.										46,137	60,282
10-14	Number											
	Avg.Sal.											
15-19	Number											
	Avg.Sal.											
20-24	Number									1		1
	Avg.Sal.											
25-29	Number											
	Avg.Sal.											
30-34	Number											
	Avg.Sal.											
35-39	Number											
	Avg.Sal.											
40 and +	Number											
	Avg.Sal.											
Total	Number			5	8	7	5	5	6	4	4	44
	Avg.Sal.			48,041	61,910	65,562		63,724				

Average age: 48.2

Average number of years of service: 3.1

Notes:

- The age is computed at the nearest birthday.
- Years of service means the number of credited service for pension plan purposes, fractional parts being rounded to the nearest integer.
- The salary used is the salary rate as of January 1, 2023, as per salary rates applicable to part-time salary categories in 2023.

Table D.12 – Distribution of Disabled Members According to Age and Average Deemed Salary as at December 31, 2022

Age	Number	Average Deemed Salary ¹
		\$
20-24	—	—
25-29	—	—
30-34	1	*
35-39	0	—
40-44	8	82,607
45-49	7	94,296
50-54	8	91,260
55-59	7	63,366
60-64	14	75,812
65+	4	54,657
Total	49	*

¹ Pensionable earnings as at January 1, 2023.

Note:

- The age is computed at the nearest birthday.

Table D.13 – Distribution of Inactive Members According to Age and Average Annual Pension as at December 31, 2022

Age	Vested Members ¹		Pensioners, Surviving Spouses and Beneficiaries			
	Number	Average Annual Pension at Age 65	Number	Average Annual Lifetime Pension	Number	Average Annual Temporary Pension
		\$		\$		\$
20-24	1					
25-29	16	20				
30-34	38	378				
35-39	81	1,383				
40-44	117	2,710	1			
45-49	139	3,809				
50-54	113	5,168	1			
55-59	127	5,310	57	28,756	53	6,130
60-64	100	2,822	199	25,907	186	5,855
65-69	39	1,380	398	23,141	25	5,640
70-74	15	1,805	621	24,684	3	6,149
75-79	5	1,320	533	27,794	4	20,826
80-84			314	30,042		
85-89			190	26,805		
90+			118	34,759		
Total	791	*	2,432	26,409	271	6,169

1 Excluding 328 members with outstanding payments.

Note:

- The age is computed at the exact age.

Appendix E – Summary of plan provisions

Introduction

This valuation is based on the Plan provisions in effect as of January 1, 2018, which are summarized below. This is not intended as a complete description of the Plan. No modification has been made to the plan provisions since the last actuarial valuation.

Eligibility

All regular full-time employees of the University who were members of the prior Plans (Sir George Williams and Loyola) became members of the new Plan on the effective date (January 1, 1977).

All other regular full-time employees are required to join the Plan from their date of employment.

From June 1, 1990, each employee who is not a regular full-time employee shall become a member of the Plan on January 1 following the calendar year in which such employee meets qualification requirements (minimum of 700 hours of work or remuneration of 35% of Year's Maximum Pensionable Earnings "YMPE").

Member Contributions

Effective January 1, 2018:

Members' contributions are required to accrue pension credits, unless the member is exempted to make the required contributions pursuant to a specific provision of the Plan.

Active members as at December 31, 2017 received a one-time option not to contribute to the Plan as of January 1, 2018. Members who decided not to contribute to the Plan will have the option to begin paying contributions and to accrue pension credits again on each January 1st thereafter.

Cost-sharing provisions effective January 1, 2018:

Total Plan costs are to be shared in the proportion of 45% by the employees and 55% by the Employer. Total Plan costs consist of the following elements:

- Normal cost;
- Newly required stabilization contribution, equal to 10% of the normal cost calculated without margin for adverse deviations;
- The cost of any deficit related to the service after December 31, 2015 that may arise in the future.

Pursuant to this cost-sharing provision, members are required to contribute 7.5% of their earnings up to the YMPE and 9% of their earnings in excess of the YMPE.

Prior to 2018:

An employee was allowed to elect whether or not to contribute to the Plan when joining the Plan. At every anniversary of the Plan, the Member would have been allowed to exercise his option to continue, suspend or start contributing to the Plan.

Members, who elected to contribute to the Plan, contribute 3.5% of their earnings up to the YMPE and 5% of their earnings in excess of the YMPE. Effective January 1, 1996, the rate of 3.5% would be increased to 4.5% and the rate of 5% would be increased to 6% for a calendar year if the actuarial valuation of the Plan conducted as of the beginning of the prior calendar year on the basis of the 3.5%/5% members contributions and unchanged non-contributory pension credits, results in the minimum total required contribution of the University for current service and past service exceeding 7% of the earnings of members for such year.

Effective January 1, 2001, the rate of interest to be credited on employee contribution will be the fund's average rate of return over the last two calendar years, net of administration and investment fees.

Retirement Dates

Normal Retirement Date

The Normal Retirement Date is the first day of the month coincident with or next following the date on which the Member attains age 65.

Early Retirement Date

The Plan permits employees to retire early within the 10-year period preceding the normal retirement date.

Postponed Retirement Date

An active member may postpone retirement beyond the normal retirement date until the 1st of December of the year in which age 71 is attained.

Retirement Benefits

Normal Retirement

Each Member of the Plan is provided with an annual pension equal to the sum of:

For service prior to January 1, 1977, the product of:

- 2% of final average earnings (i.e. average earnings during the period of 36 consecutive months of active service which produces the highest such average) less (for credited service after 1/1/1966) 0.5% of this average up to the average YMPE (i.e. average YMPE during the averaging period used to determine the final average earnings); and
- the aggregate of the number of years of participation in the prior Sir George Williams Plan, and the number of years of participation in the prior Loyola Plan;

plus, if applicable, the product of:

- 1.1% of final average earnings less 0.25% of this average up to final average YMPE; and
- the number of years of non-contributory credited service prior to January 1, 1977.

For service after January 1, 1977, the product of:

- 2% of final average earnings less 0.5% of this average up to the average YMPE; and
- the number of years of participation after January 1, 1977, during which the Member was a contributor;
plus the product of:
- 1.1% of final average earnings less 0.25% of this average up to final average YMPE; and
- the number of years of participation after January 1, 1977, during which the Member was not a contributor;
- except that the rate of 1.1% in paragraph ii) above would be reduced to 1% for a calendar year if the actuarial valuation of the Plan conducted as of the beginning of the prior calendar year on the basis of the 3.5%/5% members contributions and unchanged non-contributory pension credits, results in the minimum total required contribution of the University for current service and past service exceeding 7% of the earnings of members for such year.

A Member's pension shall be at least equal to the sum of the pension provided by the Member's accumulated contributions plus the pension to which he would have been entitled if he had made no required contributions.

Maximum Pension

The total annual lifetime pension payable from the Plan upon retirement, death or termination of employment cannot exceed the lesser of:

- 2% of the average of the best three consecutive years of total compensation paid to the member by the University, multiplied by total credited service; and
- \$1,722.22, or such greater amount prescribed for this purpose by the Income Tax Act, multiplied by the member's total credited service.

In no event shall the total pension and bridging benefits payable from the Plan exceed the maximum amounts defined in the Income Tax Act.

Early Retirement Pension

Benefits are determined as for normal retirement (without the 0.5%, and 0.25% reductions, for payments prior to attainment of age 65) and are reduced by 1/6% for each month preceding the normal retirement date.

However, if a Member has 10 years of service and retires from active service, the pension will not be reduced. For service prior to 2018, the years of service refer to employment service. For service as of 2018, the years of service refer to "Unreduced Early Retirement Service". Unreduced Early Retirement Service is the period recognized as Credited Service except that for members who are not a full-time, it is determined in the same manner as for full-time employees.

The annual lifetime pension related to post-1991 credited service shall be reduced by 0.25% for each month by which payment of the pension precedes the earlier of attainment of age 60 and the month when the sum of the age and the years of service with the University would have equalled 80 if service had continued.

Postponed Retirement Pension

Where a Member postpones his retirement, he may elect to continue to accrue benefits until his actual retirement at which time his pension will be no less than the minimum required by law.

In certain circumstances, pension benefits can commence, in whole or in part, prior to the Member's actual retirement.

Automatic Indexation

Effective June 1, 1995, the Plan is amended to increase pensions in payment each June 1st at a rate equal to the percentage in the Consumer Price Index (CPI) over the 12-month period ending on the previous January 1st, less 2%, subject to a maximum increase equal to the average annual percentage market value rate of return of the pension fund over the prior 5 calendar years less 5%. However, any reduction caused by the application of this maximum is to be reinstated in a later year to the extent that the maximum formula exceeds the formula of increase in CPI less 2%.

Excess Interest Indexation

Effective June 1, 1998, and on each June 1st thereafter, excess interest indexation, when applicable, will be provided for all eligible Members in receipt of a pension. The excess interest indexation is equal to the average "net real rate of return" of the pension fund investments over the past two years, less 5%, plus any carry forward from the preceding year. The "net real rate of return" is the actual rate of return minus inflation and fees.

Survivor Benefits

Death before Retirement

Prior to early retirement eligibility

In respect of service accrued before January 1, 1990:

The Member's beneficiary or estate receives the actuarial equivalent of the Member's accrued pension benefit payable from Normal Retirement Date to which the Member was entitled on the day prior to the date of his death.

In respect of service accrued on and after January 1, 1990:

The Member's spouse or beneficiary receives the actuarial equivalent of a life annuity guaranteed 10 years of the accrued pension benefit and of the accrued bridging benefit payable from age 55.

After reaching early retirement eligibility

In respect of service accrued before January 1, 1990:

A Member who dies before retiring, is deemed for death benefit purposes, to have retired just before dying and his beneficiary receives a lump sum payment equal to the commuted value of 120 monthly instalments of the pension.

In respect of service accrued on and after January 1, 1990:

The Member's spouse or beneficiary receives the actuarial equivalent of a life annuity guaranteed 10 years of the accrued pension benefit and of the accrued bridging benefit payable from the date of the Member's death.

Death after Retirement

Pension benefits are payable for the lifetime of the pensioner with a minimum guarantee of 120 monthly payments.

If the Member has a spouse, the pension is automatically reduced to provide a 60% survivor pension to the spouse unless waived by the spouse.

If the Member has elected an optional form of pension, the death benefit is revised accordingly.

Vesting and Termination Benefit

Any pension earned during service is vested.

The deferred pension accrued by the Member for credited service between December 31, 2000 and December 31, 2017, shall be adjusted annually between the date the Member terminates active membership and the date the Member attains age 55, to account for pre-retirement indexation. Such annual pre-retirement indexation shall be equal to 50% of the increase in the CPI, subject to a minimum of 0% and a maximum of 2%.

A Member, who ceases to participate to the Plan prior to early retirement eligibility, is entitled to transfer to another eligible recipient pension Plan the lump sum value of this benefits.

A Member's total deferred pension shall be at least equal to the sum of the deferred annuity provided by the Member's accumulated contributions plus the deferred annuity to which he would have been entitled if he had made no required contributions.

The Member's entitlement for a member who ceases to participate to the Plan prior to early retirement eligibility is a pension payable from Normal Retirement Date.

Excess Contributions

For the purpose of the application of the 50% rule (excess contributions), the stabilization contributions and the amortization payments for the deficit related to the service after December 31, 2015 that may arise in the future are not taken into account.

The normal cost contributions, the stabilization contributions and the amortization payments for deficit related to the service after December 31, 2015 that may arise in the future, with accrued interest, and reduced by the amount of the excess contributions under the 50% rule may not be used to pay more than 100% of the value of the member's pension benefit accrued after January 1, 1990. The excess, if any, shall also be considered as excess contributions.

Appendix F – Employer certification

With respect to the actuarial valuation report of Pension Plan for the Employees of Concordia University as at December 31, 2022, we hereby confirm that to the best of our knowledge:

- This report was prepared in accordance with the terms of engagement provided to TELUS Health, in particular with the requirement to include a margin for adverse deviation of 0.50% in the going-concern valuation interest rate;
- the contributions have been paid to the fund in conformity with the previous actuarial report;
- the data regarding Plan members and beneficiaries provided to TELUS Health constitutes a complete and accurate description of the information contained in our files;
- the data regarding Plan assets provided to TELUS Health are complete and accurate;
- the copy of the most recent Statement of Investment Policies and Procedures of the Plan was provided to TELUS Health;
- copies of the official text of the Plan and all amendments to date were provided to TELUS Health and the summary of Plan provisions contained in this report adequately reflects the Plan provisions for the purposes of this actuarial valuation;
- there are no subsequent events nor any extraordinary changes to the membership other than those listed in this actuarial report on the Plan, which would materially affect the results.

Pension committee of the Pension Plan for the Employees of Concordia University

DocuSigned by:

51DEE6E2AAD541E...

Signature

MARC GAUTHIER

Name (printed)

PRINCIPAL ADMINISTRATOR

Title

September 26, 2023 | 8:29 AM EDT

Date

Appendix G – Target Asset Allocation

	Target Allocation	Minimum Allocation	Maximum Allocation
Liquid Assets	94.0%	80.0%	100.0%
Capital Preservation	49.0%	30.0%	70.0%
Cash and Cash	1.5%		
Tactical Asset	23.0%		
Absolute return	24.5%		
Credit	9.5%		
Multi-Strategy	15.0%		
Growth	15.0%	5.0%	25.0%
Deep Value Equity	8.0%		
Private Equity Proxy	0.0%		
Global Infrastructure /Real Estate (Public)	7.0%		
Diversification	30.0%	20.0%	40.0%
Real Estate (Private)	7.5%		
Private Debt	8.5%		
Minority interests in	5.0%		
Insurance-Linked	5.0%		
To be determined	4.0%		
Illiquid Asset	6.0%	0.0%	20.0%
Capital Preservation	0.0%	0.0%	20.0%
Growth	6.0%	0.0%	20.0%
Private equity	6.0%		
Diversification	0.0%	0.0%	20.0%
Total	100.0%		

Additional constraints

	Target Allocation	Minimum Allocation	Maximum Allocation
Liquid Assets	21.0%	10.0%	30.0%

Appendix H – Additional Disclosures

Article 10 of the USPP Law provides that the total contributions for service subsequent to December 31, 2015 must be assumed by the employer and the active members. The total contributions to be taken into consideration are the current service contribution, the amortization payment relating to any unfunded actuarial liability determined for service subsequent to December 31, 2015 and the stabilization contribution.

As per Plan provisions and cost-sharing arrangement effective January 1, 2020, any deficit related to service after December 31, 2015 that may arise in the future will be shared in proportion of 45% by the employees and 55% by the University.

The purpose of Appendix H is to provide information regarding the unfunded actuarial liability separately for service prior to January 1, 2016 and service as of January 1, 2016 in order to determine the required amortization contributions to be paid into the Plan.

Going-Concern Funded Status per Period of Service

The following table shows the going-concern funded status per period of service as at December 31, 2022.

Table H.1 – Going-Concern Funded Status per Period of Service

	Service prior to January 1, 2016	Service as of January 1, 2016	Total
	\$	\$	\$
Actuarial value of assets			
General Account (market value)	936,031,000	378,366,000	1,314,397,000
Reserve - after Plan experience	129,083,000	31,606,000	160,689,000
Total	1,065,114,000	409,972,000	1,475,086,000
Actuarial liabilities	1,021,272,000	360,286,000	1,381,558,000
Actuarial surplus (unfunded liability) – General account	(85,241,000)	18,080,000	(67,161,000)

Table H.2 – Reserve after Plan Experience per Period of Service

	Service prior to January 1, 2016	Service as of January 1, 2016	Total
	\$	\$	\$
Reserve before Plan experience as at December 31, 2022	91,587,000	2,133,000	93,720,000
Determination of technical gains (losses)			
Actuarial gains (losses)	39,177,000 ¹	47,553,000 ²	86,730,000
– Additional contributions (to be subtracted)	—	(16,206,000)	(16,206,000)
– Other gains (to be subtracted)	(2,919,000)	(636,000)	(3,555,000)
Technical gains (losses)	36,258,000	30,711,000	66,969,000
Transfer from general account to reserve ³	37,496,000	29,473,000	66,969,000
Reserve after Plan experience as at December 31, 2022	129,083,000	31,606,000	160,689,000

1 General account before Plan experience (\$973,527,000) + Present value of remaining amortization payments (\$86,922,000) – Actuarial liabilities (\$1,021,272,000).

2 General account before Plan experience (\$407,839,000) + Present value of remaining amortization payments (\$0) – Actuarial liabilities (\$360,286,000).

3 For service as of January 1, 2016, the reserve after experience is limited to proportion of the PAD allocated to that component (\$31,606,000). The excess, \$1,238,000 (\$30,711,000 - \$29,473,000) was reallocated to the component for service prior to January 1, 2016.

Table H.3 – Amortization Payment Allocated in Proportion to Deficit per Period of Service

	Service prior to January 1, 2016	Service as of January 1, 2016	Total
Proportion of the deficit per period of service (A)	100.0%	0.0%	100.0%
Total amortization payments for years 2024-2026 payable by the University and the employees (B)			\$3,057,000
Allocation per period of service (A x B)	\$3,057,000	—	\$3,057,000
Portion payable by the University (100% for service prior Jan. 1, 2016 / 55% for service as of Jan. 1, 2016)	\$3,057,000	—	\$3,057,000
Portion payable by the participants (45% for service as of Jan. 1, 2016)	—	—	—

About TELUS Health

TELUS Health is a world leader in healthcare solutions, offering clinical, actuarial and administrative services in more than 160 countries, as well as innovative digital solutions that contribute to people's physical, mental and financial health and well-being.

Over the past decades, our retirement and benefits solutions have contributed to the financial health of thousands of organizations and their employees. Through the unified strength of TELUS Health, our experienced teams strive to provide innovative, sustainable and flexible solutions to meet the retirement and benefits needs of customers across North America.

For more information please visit:
www.telushealth.com.

