Report on the Actuarial Valuation of the Canadian Union of Public Employees Employees' Pension Plan as at January 1, 2024

Registration Number 0231910

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Section 1 – Executive Summary

We are pleased to present this report which was prepared at the request of the Joint Board of Trustees (“JBT”) for the following purposes:

1. To report on the financial position of the Canadian Union of Public Employees Employees’ Pension Plan (“Plan”) as at January 1, 2024;
2. To establish the minimum and maximum contributions required for the period from January 1, 2024 until the results of the next valuation are available, for which the effective date must be no later than January 1, 2027; and
3. To provide the actuarial certifications required under the *Pension Benefits Act* (Ontario) (the “PBA”) and the *Income Tax Act* (Canada) (the “ITA”).

The intended users of this report are the JBT, the Canadian Union of Public Employees (“CUPE” or the “Employer”), the unions representing members of the Plan, the Financial Services Regulatory Authority of Ontario (“FSRA”) and Canada Revenue Agency. This report is not intended or necessarily suitable for purposes other than those listed above. Any party reviewing this report for other purposes should have their own actuary or other qualified professional assist in their review to ensure that the party understands the assumptions, results and uncertainties inherent in our estimates. This report and any opinions within may not be modified or otherwise provided, in whole or in part, to any other person or entity without the express written permission of Eckler Ltd (unless required by applicable legislation). Eckler takes no responsibility for the consequences of any other use of this report.

Terms of Engagement

For the purposes of this actuarial valuation report, the significant terms of engagement with the JBT are:

- For the going concern valuation we have used the actuarial value of the assets over a five-year period. This value of assets is adjusted for amounts in transit and amounts payable.
- An implicit margin for adverse deviations has been included in the economic assumptions for the purpose of the current valuation, as requested by the JBT. The level of margin for adverse deviation, if any, will be re-assessed at each actuarial valuation based on relevant information including the prevailing market conditions and required explicit Provision for Adverse Deviation. This margin is in addition to the explicit Provision for Adverse Deviations that has been added to the going concern liabilities and current service cost in accordance with the Regulations under the PBA.
- The JBT has confirmed that the Plan is considered open for the purposes of determining the Provision for Adverse Deviations.
- For the purpose of the present valuation, no indexation adjustments beyond January 1, 2024 have been assumed.
- The terms of our engagement are in accordance with applicable pension regulations and accepted actuarial practice in Canada.

Changes Since Previous Valuation

The last valuation of the Plan prepared and filed was as at January 1, 2023.

In accordance with the Plan provisions, ad hoc indexation adjustments were granted effective January 1, 2024. Pensions and bridge benefits in the course of payment and accrued deferred pensions were increased by 1.76% at January 1, 2024 based on valuation results.

With the exception of the hypothetical wind-up and solvency economic assumptions, there were no other changes made to the actuarial assumptions used for this valuation versus those used for the previous valuation. See Appendix B for details of the going concern assumptions used in this valuation and the rationale employed in setting these assumptions. The hypothetical wind-up and solvency economic assumptions were changed to reflect market conditions as at the valuation date in accordance with the Canadian Institute of Actuaries' (CIA's) Standards of Practice and the CIA's Explanatory Note: Guidance for Assumptions for Hypothetical Wind-up and Solvency Valuations – Effective December 31, 2023, and Applicable to Valuations with Effective Dates on or after December 31, 2023, and no later than June 29, 2024. These assumptions are summarized in Appendix C.

Reliance

We have relied on the asset information as disclosed in the audited financial statements. We have also relied on the JBT to provide all relevant data and to confirm the pertinent Plan provisions.

Summary of Results

	January 1, 2024	January 1, 2023
Going Concern Financial Position		
Going concern assets	$959,428,600	$935,604,500
Going concern liabilities	$871,970,700	$834,736,600
PfAD on actuarial liabilities	$68,885,700	$65,944,200
Going concern surplus/ (unfunded liability)	$18,572,200	$34,923,700
Going concern funded ratio (excluding PfAD)	110.0%	112.1%
PfAD	7.9%	7.9%
Hypothetical Wind-up Financial Position		
Market value of assets net of provision for expenses	$907,877,600	$861,186,600
Hypothetical wind-up liability	$995,967,100	$919,778,100
Hypothetical wind-up excess/ (deficiency)	($88,089,500)	($58,591,500)
Transfer ratio	91.2%	93.6%
Solvency Financial Position		
Adjusted solvency assets net of provision for expenses	$907,877,600	$861,186,600
Solvency liabilities	$995,967,100	$919,778,100
Solvency excess/ (deficiency)	($88,089,500)	($58,591,500)
Reduced solvency excess/ (deficiency)	$61,305,600	$79,375,200
Solvency ratio	91.2%	93.6%
Minimum Contributions in First Year Following Valuation Date		
Current service cost	$25,317,100	$23,745,800
Members' required contributions	($12,351,100)	($11,548,900)
Employer portion of current service cost excluding PfAD	$12,966,000	$12,196,900
Provision for adverse deviations	$2,000,100	$1,875,900
Total Employer portion of current service cost with PfAD	$14,966,100	$14,072,800
As a percentage of estimated covered payroll[1]	**11.75%**	**11.82%**
Additional employer contributions required to fund unfunded liability or reduced solvency deficiency	$0	$0

[1] In addition to the minimum legislated Employer contribution, additional contributions may be required to meet the minimum Employer contribution rate as specified in section 4.5(c) of the Plan text and provided it is an eligible contribution under the ITA. At the current valuation date, section 4.5(c) of the Plan text requires an Employer contribution rate of at least 13.2% of estimated covered payroll.

This report should be filed with the Financial Services Regulatory Authority of Ontario, to meet the filing requirements of the PBA and with Canada Revenue Agency, in order to ensure that contributions recommended in the report will qualify as eligible contributions for purposes of the ITA. The next actuarial valuation of the Plan should be filed with an effective date no later than January 1, 2026.

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

Respectfully submitted,

Domenic Barbiero, FSA, FCIA

Padraig O'Farrell, FIA

Section 2 – Introduction

The Canadian Union of Public Employees Employees' Pension Plan (hereinafter referred to as the "Plan") was established effective January 1, 1971. The Plan has been amended from time to time, with the most recent amendment being effective on January 1, 2018.

Our report is based on the provisions of the Plan as at the valuation date and reflects all amendments which have become effective up to that date.

Subsequent Events

We are not aware of any events that occurred between the valuation date and the date this report was completed that would have a material impact on the results of this valuation.

Valuations Included in This Report

In this report, we describe the results of three different valuations of the Plan:

- The "going concern valuation", which is used to estimate the funded position of the Plan, assuming the Plan is continued indefinitely, and to estimate the contributions currently required to be made to the Plan's fund, both to fund the cost of any benefits being earned by members for current service and, in the event there is an unfunded liability, to liquidate the amount of the unfunded liability. The going concern valuation also reflects the requirement under the PBA for the funding of a provision for adverse deviations, both on the past service liabilities and the current service cost.

- The "hypothetical wind-up valuation", which is intended to reflect the status of the Plan as if it had been wound up on the valuation date and the Plan members had been provided with the benefits specified by the Plan and the PBA. The purpose of this valuation is to show the degree of benefit security provided for all of the Plan members' accrued benefit by the current assets of the pension fund. The hypothetical wind-up valuation is not used to determine the required contributions to the Plan.

- The "solvency valuation", which is required by the Regulations under the PBA. This valuation is similar to a hypothetical wind-up valuation, except that certain adjustments may be made to assets and liabilities. The solvency valuation does affect the required contributions to the Plan. If the solvency valuation reveals that there is a "reduced solvency deficiency" (as defined in the Regulations), then additional contributions must be made to the Plan.

The difference between the hypothetical wind-up and solvency valuations for purposes of this report relates to the value of assets that are included in the valuation. In the hypothetical wind-up valuation, the only assets taken into account are the invested assets of the Plan, which are taken at their market values net of a provision for wind-up expenses. In the solvency valuation, in addition to the Plan's invested assets, net of a provision for wind-up expenses, also taken into account is the present value of all special payments that are scheduled to be made for the next five years from the valuation date, if any.

Filing Requirements

The last filed actuarial report was effective January 1, 2023. Under the applicable legislation, the next statutory report that needs to be filed is a report on the actuarial valuation of the Plan as at January 1, 2026. However, the JBT has decided to file this report on the actuarial valuation of the Plan as at January 1, 2024 with the Financial Services Regulatory Authority of Ontario and the Canada Revenue Agency. The report covers the period from January 1, 2024 to January 1, 2027 and is to be used by the Employer to determine its funding requirements during that period or until the next actuarial valuation is performed, if sooner. The next actuarial valuation of the Plan should be filed with an effective date no later than January 1, 2027.

Section 3 – Going Concern Valuation

Valuation Balance Sheet

The following is the going concern valuation balance sheet as at January 1, 2024 based on:

- the Plan provisions (summarized in Appendix A);
- the going concern valuation assumptions (described in Appendix B);
- the membership data (summarized in Appendix D);
- the actuarial value of assets (determined in Appendix E); and
- the provision for adverse deviations ("PfAD") equal to 7.9% (determined in Appendix F).

with comparative figures from the valuation as at January 1, 2023.

	January 1, 2024	January 1, 2023
Going Concern Assets		
Market value	$907,742,100	$859,343,100
Smoothing adjustment	$50,751,000	$73,617,900
Present value of future buyback contributions	$451,000	$334,600
Amounts receivable	$3,293,100	$4,155,500
Amounts payable	($2,808,600)	($1,846,600)
Total going concern assets	$959,428,600	$935,604,500
Going Concern Liabilities		
Active members	$331,461,200	$318,659,100
Retired members and survivors	$535,267,300	$511,119,800
Terminated vested members and outstanding payments	$5,242,200	$4,957,700
Total actuarial liabilities	$871,970,700	$834,736,600
PfAD on actuarial liabilities	$68,885,700	$65,944,200
Total going concern liabilities including PfAD	$940,856,400	$900,680,800
Going Concern Surplus/ (Unfunded Liability) before PfAD	$87,457,900	$100,867,900
Going Concern Surplus/ (Unfunded Liability) with PfAD	$18,572,200	$34,923,700
Going Concern Funded Ratio	110.0%	112.1%

The prior year credit balance was nil as at January 1, 2024 and January 1, 2023.

The going concern funded ratio is the ratio of the going concern assets excluding the present value of special payments less the prior year credit balance to the going concern liabilities excluding PfAD.

The Plan has a going concern surplus before PfAD of $87,457,900 as at January 1, 2024. As at the previous valuation date, the actuarial surplus before PfAD was $100,867,900 and there was therefore a decrease in the surplus of $13,410,000 since the prior valuation date.

The table below quantifies the various factors which had an impact on the evolution of the actuarial surplus since the prior valuation date.

Reconciliation of Going Concern Surplus	
Going Concern Surplus as at January 1, 2023 (including PfAD)	**$34,923,700**
Plus PfAD as at January 1, 2023	65,944,200
Going Concern Surplus as at January 1, 2023 (excluding PfAD)	**$100,867,900**
Interest on the actuarial surplus at prior valuation rate of 5.80% p.a.	5,850,300
Effects of January 1, 2024 indexation	(9,065,600)
Gains from contributions in excess of the current service cost	3,625,600
Expected going concern surplus as at January 1, 2023, if plan experience had coincided with actuarial assumptions	**101,278,200**
Effects of smoothed investment return different than anticipated in the actuarial basis	(8,478,800)
Effects of salary, OAS and YMPE increases different from levels anticipated in the actuarial basis	(2,201,100)
Effects of pensioners mortality experience different from assumption	327,200
Effects of early retirement experience different from assumption	(672,000)
Effects of Termination experience different than assumption	889,800
Effects of employee contributions growing at rates different than anticipated in the actuarial basis	(1,721,300)
Miscellaneous other actuarial gains (losses)	(1,964,100)
Going Concern Surplus before PfAD as at January 1, 2024	**$87,457,900**
Minus PfAD as at January 1, 2024	(68,885,700)
Going Concern Surplus after PfAD as at January 1, 2024	**$18,572,200**

Current Service Cost

The current service cost for the year 2024 (with comparative results from the prior valuation) has been determined according to the table below. Required employee contributions are negotiated and represent 9.7% of covered payroll.

For the current valuation, a provision for adverse deviations equal to 7.9% (same as for the prior valuation) must be applied to the total current service cost and is calculated at $2,000,100 in 2024 (please refer to Appendix F for additional details on the calculation of the PfAD).

	January 1, 2024	January 1, 2023
Total current service cost	$25,317,100	$23,745,800
Members' contributions	($12,351,100)	($11,548,900)
Employer portion of current service cost, excluding PfAD	$12,966,000	$12,196,900
Employer cost as a percentage of covered payroll	10.18%	10.24%
Provision for adverse deviations	$2,000,100	$1,875,900
Total Employer portion of current service cost with PfAD	**$14,966,100**	**$14,072,800**
As a percentage of covered payroll	**11.75%**	**11.82%**

The Employer current service cost expressed as a percentage of covered payroll is based on an estimated total covered payroll of $127,331,400 as at January 1, 2024. The actual dollar amount of current service cost for 2024 will depend on actual covered payroll and will vary from the estimate indicated above. Based on projected covered payroll, using the assumed salary increase assumption of 3% per annum, the Employer required contributions for current service and provision for adverse deviations are estimated at $15,415,100 for 2025 and $15,877,500 for 2026.

In addition to the Employer portion of the current service cost and applicable PfAD, additional contributions may be required by the Employer to meet the minimum Employer contribution rate as specified in section 4.5(c) of Plan text and provided it is an eligible contribution under the ITA. At the current valuation date, section 4.5(c) of the Plan text requires an Employer contribution rate of at least 13.2% of estimated covered payroll (compared to the 11.75% legislated minimum required).

Sensitivity Analysis

The following table shows the impact on the going concern liabilities as at January 1, 2024 and current service cost for 2024 of a one percentage point change in the discount rate assumption. All other assumptions were kept unchanged.

	Discount rate 1% lower	Discount rate 1% higher
Change in going concern liabilities (excluding PfAD)	$97,026,100 11.1%	($70,313,900) (8.1%)
Change in current service cost (excluding PfAD)	$5,645,000 22.3%	($2,751,400) (10.9%)

Section 4 – Hypothetical Wind-up Valuation

The purpose of the hypothetical wind-up valuation is to determine the financial position of the Plan if it were wound up on the valuation date. Accordingly, the following approach was used:

1. The Plan assets were valued at their market value.

2. The benefits valued were the pensions to which members would be entitled under applicable legislation and the Plan provisions, if the Plan were wound up on the valuation date. All Plan members become fully vested on Plan wind-up, regardless of age or service.

3. In respect of members employed in Ontario, for whom age and service add to 55 or more, the pension may start at any age at which the member would have qualified for a pension if the Plan had not been wound up and if the member had continued in employment until retirement. Thus, the pension for such a member would be subject to a reduction of 3% for each year by which the retirement age precedes the earlier of (i) the date on which the member would have attained 80 points if employment had continued until retirement and (ii) the date the member attains age 60. In the hypothetical wind-up valuation, we assumed that the pension would start at the age which produced the highest present value of the pension for all members who were assumed to elect the annuity purchase option. For all other members who elected the lump sum option, it was assumed with a probability of 50% that the pension would start at the earliest age at which the member will be entitled to an unreduced lifetime pension and with a probability of 50% the pension would start at the age which produced the highest present value of the pension.

4. The actuarial assumptions are developed in accordance with the CIA's Standard of Practice Section 3500 for determining Pension Commuted Values, and the Explanatory Note: Guidance for Assumptions for Hypothetical Wind-up and Solvency Valuations Update – Effective December 31, 2023, and Applicable to Valuations with Effective Dates on or after December 31, 2023, and no later than June 29, 2024. These assumptions are described in detail in Appendix C.

5. The values of the pensions are not discounted for death or disability before the pension start date.

6. The Employer was assumed to continue in operation after the wind-up of the Plan.

Based on the Plan provisions in effect on January 1, 2024, the hypothetical wind-up valuation assumptions mentioned above and the membership data supplied by the Plan Administrator, the following is the hypothetical wind-up position as at January 1, 2024:

	January 1, 2024	January 1, 2023
Hypothetical Wind-up Assets		
Market value of Plan assets	907,742,100	$859,343,100
Present value of future buyback contributions	$451,000	$334,600
Amounts receivable	$3,293,100	$4,155,500
Amounts payable	($2,808,600)	($1,846,600)
Allowance for wind-up expenses	($800,000)	($800,000)
Total hypothetical wind-up assets	$907,877,600	$861,186,600
Wind-up Liabilities		
Active members	$387,165,800	$357,092,800
Retired members and survivors	$602,569,700	$557,034,200
Terminated vested members and outstanding payments	$6,231,600	$5,651,100
Total hypothetical wind-up liabilities	$995,967,100	$919,778,100
Hypothetical wind-up excess/ (deficiency)	($88,089,500)	($58,591,500)
Transfer Ratio	**91.2%**	**93.6%**

As shown above, if the Plan had been terminated on January 1, 2024, we estimated that the hypothetical wind-up liabilities would have exceeded the hypothetical wind-up assets by $88,089,500.

Hypothetical Wind-Up Valuation Sensitivity Analysis

If the wind-up discount rate changed by 1% from the assumptions described in Appendix C, and all other assumptions remained the same, the total wind-up liabilities would change as follows:

	Discount rate 1% lower	Discount rate 1% higher
Change in hypothetical wind-up liabilities	$121,570,700	($93,595,500)
	12.2%	(9.4%)

Incremental Cost

In accordance with the Canadian Institute of Actuaries' Standards of Practice, we have estimated the incremental cost of the hypothetical wind-up liabilities as at January 1, 2024. This is the expected aggregate change in hypothetical wind-up liabilities between January 1, 2024 and January 1, 2027 and it is based on the assumptions presented in Appendix C.

The incremental cost as at January 1, 2024 is $94,185,400. The incremental cost does not impact the funding requirements of the Plan under the PBA and is for information purposes only.

Section 5 – Solvency Valuation

The table below shows the solvency position of the Plan as at January 1, 2024. The calculations are based on the Plan provisions in effect on the valuation date, on the solvency valuation assumptions and methods described in Appendix C, and on the membership data supplied by the Plan Administrator.

The solvency valuation is similar to the wind-up valuation except for the adjustments to assets, as described in Section 2.

	January 1, 2024	January 1, 2023
Solvency Assets		
Market value of Plan assets	$907,742,100	$859,343,100
Present value of future buyback contributions	$451,000	$334,600
Amounts receivable	$3,293,100	$4,155,500
Amounts payable	($2,808,600)	($1,846,600)
Present value of special payments in respect of previously established solvency deficiency (asset adjustment)	$0	$0
Allowance for wind-up expenses	($800,000)	($800,000)
Total solvency assets including the asset adjustment	$907,877,600	$861,186,600
Solvency Liabilities		
Active members	$387,165,800	$357,092,800
Retired members and survivors	$602,569,700	$557,304,200
Terminated vested members and outstanding payments	$6,231,600	$5,651,100
Total solvency liabilities	$995,967,100	$919,778,100
Solvency excess/ (deficiency)	($88,089,500)	($58,591,500)
Reduced solvency excess/ (deficiency)	$61,305,600	$79,375,200
Solvency ratio	**91.2%**	**93.6%**

The Plan has a solvency deficiency of $88,089,500 at January 1, 2024 and a reduced solvency excess of $61,305,600 at January 1, 2024.

The new reduced solvency excess/ (deficiency) arising during the year is equal to the solvency assets plus the solvency asset adjustment minus 85% of the solvency liabilities minus 85% of the solvency liability adjustment minus the prior year credit balance.

The solvency ratio is the ratio of the solvency assets (before accounting for the asset adjustment) of the plan to the total solvency liabilities.

Under the current funding rules, solvency special payments are only required for plans that have a reduced solvency deficiency. Since there is a reduced solvency excess, no solvency special payments are required.

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Section 6 – Eligible Contributions

Minimum Contributions

The Plan has a going concern surplus as at January 1, 2024. In addition, as mentioned in Section 5, the Plan's solvency ratio is above 85% and there is therefore no solvency special payments required to be paid. As a result, the Employer is only required to make current service cost contributions plus the provision for adverse deviations.

The 2024 Employer current service cost has been calculated at 10.18% and the provision for adverse deviations at 1.57% of covered payroll, for a total of 11.75% of covered payroll.

If the number of actively employed members remains at the January 1, 2024 level, if the covered payroll of $127,331,400 for 2024 is to increase as per the actuarial assumptions and if no changes are made to cost sharing provisions through labour agreements, the minimum required monthly Employer contributions under the PBA for the three-year period following the valuation date would be estimated as follows:

	Annual Required Employer Contributions		
	2024 $	2025 $	2026 $
Current service cost contributions	$12,966,000	13,355,000	13,755,600
Provision for adverse deviations	$2,000,100	2,060,100	2,121,900
Total required contributions	**14,966,100**	**15,415,100**	**15,877,500**

Therefore, the Employer total required contributions for 2024 represent 11.75% of covered payroll, based on the estimated payroll of $127,331,400.

Under the current funding rules, there is available actuarial surplus for a contribution holiday if the Plan's Provision for Adverse Deviations (PfAD) is fully funded on a going concern basis, that is, the value of going concern Plan assets (excluding the amount of any letter of credit, if applicable), exceeds the Plan's going concern liabilities plus the PfAD on the Plan's going concern liabilities. In addition, the plan's transfer ratio must be at least 105%. As at January 1, 2024, the available actuarial surplus is nil.

In addition to the required Employer contributions, additional contributions may be required by the Employer to meet the minimum Employer contribution rate as specified in section 4.5(c) of Plan text and provided it is an eligible contribution under the ITA. At the current valuation date, section 4.5(c) of the Plan text requires an Employer contribution rate of at least 13.2% of estimated covered payroll (compared to the 11.75% legislated minimum required).

Maximum Contributions

At the Employer's option, the Employer may choose to fund at a higher level than the minimum requirement stated above. The maximum tax-deductible contributions the Employer could make is equal to the sum of:

1. A lump sum amount equal to the greater of the total going concern unfunded liability and the hypothetical wind-up deficiency, which was $88,089,500 as of January 1, 2024; plus

2. The current service cost contributions and PfAD as certified above for each year until the date of the next valuation.

Under the Ontario pension legislation, all contributions due to the Plan should be remitted monthly. Employee and Employer current service cost contributions are due within 30 days following the end of the relevant month.

Section 7 – Pension Benefit Guarantee Fund (“PBGF”)

For the purposes of the Regulations under the PBA, the PBGF assessment base and liabilities for the year following the valuation date are calculated as follows:

PBGF liabilities	$490,672,100	(a)
Total solvency liabilities	$995,967,100	(b)
Ontario asset ratio	49.27%	(c) = (a) ÷ (b)
Market value of assets	$908,677,600	(d)
Ontario portion of assets	$447,705,500	(e) = (c) x (d)
PBGF assessment base	$42,966,600	(f) = (a) – (e)

In accordance with the Regulations under the PBA, as the Plan’s PBGF liabilities are $10 million or greater, the following tables provide data related to the Plan’s claim exposure as of the valuation date:

	Pension in pay*	Pension not in pay*	Total
Modified PBGF liabilities in respect of Ontario plan beneficiaries who are receiving or have accrued a pension, including any bridge benefit, of $1,500 or less per month	$8,392,500	$21,924,600	$30,317,100
Modified PBGF liabilities in respect of all other Ontario plan beneficiaries calculated as if they were receiving or had accrued a pension, including any bridge benefit, of $1,500 per month	$91,029,100	$80,851,300	$171,880,400
Total modified PBGF liabilities	**$99,421,600**	**$102,775,900**	**$202,197,500**

* pension under the Plan including any bridge benefit, in respect of Ontario plan beneficiaries only.

	Pension in pay*	Pension not in pay*	Total
Number of Ontario plan beneficiaries	471	557	1,028
Number of Ontario plan beneficiaries who are receiving or have accrued a pension, including any bridge benefit, of $1,500 or less per month	65	258	323

* pension under the Plan including any bridge benefit, in respect of Ontario plan beneficiaries only

	Pension in pay*		Pension accrued*	
Percentile	Monthly pension amounts (A)	PBGF liabilities related to pension less than (A)	Monthly pension amounts (B)	PBGF liabilities related to pension less than (B)
10th	$1,209	$4,886,200	$197	$876,800
20th	$2,106	$15,160,500	$418	$2,936,400
30th	$2,682	$31,465,000	$819	$7,261,300
40th	$3,241	$51,068,200	$1,209	$15,046,500
50th	$3,842	$75,880,600	$1,654	$26,577,700
60th	$4,446	$104,843,900	$2,140	$44,738,400
70th	$5,089	$138,703,200	$2,669	$68,326,400
80th	$5,666	$178,086,000	$3,535	$100,031,700
90th	$6,510	$221,659,800	$4,769	$143,312,200

* pension under the Plan including any bridge benefit, in respect of Ontario plan beneficiaries only

	Monthly amount
Amount of largest pension, including any bridge benefit in pay or accrued pension not in pay under the Plan to an Ontario plan beneficiary	$10,750

Section 8 – Transfer Ratio

The "transfer ratio" for purposes of the Regulations under the PBA is the ratio of:

1. The solvency assets at market value, minus the lesser of the prior year credit balance and the sum of the minimum contributions required under the Regulation until the next valuation date (i.e. $907,877,600) to
2. The solvency liabilities (i.e. $995,967,100).

As at January 1, 2024, the transfer ratio was determined to be 91.2%.

The Regulations under the PBA provide that, if the transfer ratio is greater than 100%, transfers of commuted values to terminating employees may be made in full, immediately. If the transfer ratio is less than 100%, the administrator can choose to do one of the following:

1. transfer a portion of the commuted value on the basis of the most recently determined transfer ratio and pay the portion held back plus interest within 5 years of the initial transfer; or
2. transfer the full commuted value after an amount equal to the portion of the transfer deficiency based on the most recently determined transfer ratio has been remitted to the plan; or
3. transfer the full commuted value if the aggregate of transfer deficiencies for all transfers, based on the applicable most recently determined transfer ratio, made since the valuation date of the most recently filed actuarial valuation report does not exceed 5% of the market value of the assets of the Plan at that time.

However, if the transfer ratio is less than 100% and the administrator knows or ought to know that since the date of the last filed valuation, the transfer ratio has fallen by 10% or more of the most recently determined transfer ratio, then no commuted values can be paid out of the Plan until approval is obtained from the Chief Executive Officer of the Financial Services Regulatory Authority of Ontario. Once given, the administrator can choose to do one of the above, or an alternative method approved by the Chief Executive Officer of the Financial Services Regulatory Authority of Ontario.

Under the Regulations, an actuarial report on a pension plan indicates “solvency concerns” if the ratio of the solvency assets to the solvency liabilities is less than 85%. If a report indicates solvency concerns, the next actuarial valuation must be performed within one year of the current valuation date. Otherwise, the next valuation is not due until three years following the current valuation date.

Since the ratio of the solvency assets to the solvency liabilities is more than 85%, an annual valuation is not required. Thus, the effective date of the next valuation must be no later than January 1, 2027.

Section 9 – Actuarial Opinion

With respect to the Canadian Union Public Employees Employees' Pension Plan forming part of the actuarial report dated August 2024 and based on a valuation of the Plan as at January 1, 2024. In our opinion, in respect of the going concern valuation, the hypothetical wind-up valuation and the solvency valuation,

(a) the membership data on which the valuations are based are sufficient and reliable for the purposes of the valuations;

(b) the assumptions are appropriate for the purposes of the valuations, and

(c) the methods employed in the valuations are appropriate for the purposes of the valuations.

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

Notwithstanding the foregoing opinion, emerging experience differing from the assumptions will result in gains or losses which will be revealed in future valuations.

This report has been prepared in a manner consistent with the recommendations for the preparation of actuarial valuation reports issued by the Canadian Institute of Actuaries.

This report has been prepared in accordance with applicable legislation.

D. B.

Domenic Barbiero
Fellow, Canadian Institute of Actuaries

Padraig O Farrell

Padraig O'Farrell
Fellow, Institute and Faculty of Actuaries

August 2024

Appendix A – Summary of Plan Provisions

This appendix describes the provisions of the Plan, including any amendments up to January 1, 2024, that had a significant effect on the results of the valuations.

Effective Date

January 1, 1971.

Eligibility

All permanent full-time and part-time employees and term employees must join the Plan from their first day of employment; full-time and part-time temporary employees are eligible under rules compliant with applicable provincial legislation.

Retirement Date

Normal retirement is at age 65; a member may, however, elect early retirement from the earlier of attainment of age 50 or completion of 25 years of credited service.

Contributions

Employees:	9.7% of earnings
Employer:	Balance of cost.

Pension at Retirement

2% of average of the best 3-year earnings, times total credited service up to a maximum of 35 years, subject to a maximum pension equal to ITA defined benefit limit multiplied by years of credited service.

On early retirement after the earlier of age 60 and the age at which the sum of age and credited service totals at least 80, the full accrued pension is payable. On early retirement after age 50 or after 25 years of service, the accrued pension is reduced by ¼ of 1% for each month by which the early retirement date precedes the earlier of age 60 or the age at which the sum of age and credited service totals at least 80.

In addition, for members retiring on or after January 1, 1996, a bridge benefit is payable from early retirement date until attainment of age 65, subject to any maximum under the applicable legislation. The annual amount of such bridge benefit is calculated as follows:

- For members who were accruing benefits under the Plan on or before December 3, 1996, the sum of OAS and CPP benefits, reduced by 3% for each year by which the early retirement date precedes age 60 and prorated if credited service is less than 10 years.
- For members who were not accruing benefits under the Plan on December 3, 1996 but were accruing benefits on December 31, 1997, the sum of OAS and CPP benefits reduced by 3% for each year by

which the early retirement date precedes age 60 and prorated if credited service accrued while an employee is less than 10 years.

- For members who were not accruing benefits on December 31, 1997 but were accruing benefits on December 31, 1999 and who retired after May 16, 2007 but before January 1, 2010, the sum of OAS and CPP benefits reduced by 3% for each year by which the early retirement date precedes age 60 and prorated if credited service accrued while an employee is less than 10 years.

- For members who were not accruing benefits under the Plan on December 31, 1999 but were accruing benefits on May 16, 2007, $8,000 reduced by 3% for each year by which the early retirement date precedes age 60 and prorated if credited service accrued while an employee is less than 10 years.

- For members who were not accruing benefits under the Plan on May 16, 2007 and who retired before October 3, 2018, $8,000 reduced by 3% for each year by which the early retirement date precedes age 60 and prorated if credited service accrued while an employee is less than 15 years.

- For members who were not accruing benefits under the Plan on May 16, 2007 and who retired on or after October 3, 2018, $8,000 reduced by 3% for each year by which the early retirement date precedes age 60 and prorated if credited service accrued while an employee is less than 10 years.

Death Benefits

Death prior to retirement – Maximum between the commuted value of the accrued pension and a refund of two times the member's required contributions with interest, subject to a minimum death benefit equal to that required under applicable provincial pension legislation.

Death after retirement – On death of a retired member who had a spouse at date of retirement, a 66 2/3% surviving spouse benefit is payable, subject to a guarantee of 60 monthly pension payments from the member's date of retirement. If the retiring member did not have a spouse at date of retirement, normal form of pension is a life pension with a guarantee of 120 monthly payments. Optional forms of payment are available at retirement, subject to actuarial adjustment.

The bridge pension post-retirement death benefits are the same as those applicable to the basic pension except that bridge payments always terminate at the time the member would have attained age 65.

Termination Benefits

All benefits accrued to date of termination are fully vested; terminating members may elect a deferred pension commencing at age 60 or a transfer of the commuted value of the accrued pension to another pension vehicle. All vested benefits, except those resulting from the purchase of service while not a temporary employee, must have been at least 50% funded by employer contributions.

Subject to any locked-in requirement under the applicable pension legislation, a terminating member may also elect a refund of his regular employee required contributions with interest.

Voluntary Contributions

Effective January 1, 1987 and January 1, 1989, a portion of the members' required contributions made by certain Plan members prior to those dates were deemed to be optional contributions.

Indexation of Benefits

Pensions in course of payment have been indexed in the past on an ad hoc basis. Under current plan provisions, indexation adjustments have become payable at the beginning of 2006, 2007 and 2008 to compensate for full CPI increase in the preceding year. In addition, indexation adjustments have become payable at the beginning of 2009 and 2010 to compensate for 50% of CPI increases in the preceding year.

Indexation adjustments effective on or after January 1, 2011 are subject to certain conditions with respect to the financial status of the Plan. Pursuant to Amendment No. 78, indexation adjustments for the years 2010-2017 were paid on January 1, 2018. Indexation has also been applied as follows:

- 100% of CPI in 2018, paid on January 1, 2019;
- 88% of CPI in 2019, paid on January 1, 2020;
- 91% of CPI in 2020, paid on January 1, 2021;
- 96% of CPI in 2021, paid on January 1, 2022;
- 70.1% of CPI in 2022, paid on January 1, 2023;
- and 51.8% of CPI in 2023, paid on January 1, 2024.

For the purpose of the present valuation, no indexation adjustments beyond January 1, 2024 have been assumed.

Appendix B – Actuarial Assumptions and Methods – Going Concern Basis

	January 1, 2024	January 1, 2023
Discount rate:	5.80% per annum, net of all expenses that are paid from the assets of the Plan.	Same
Salary Increase:	3% per annum	Same
Increases in YMPE:	3% per annum from the 2024 level of $68,500.	3% per annum from the 2023 level of $66,600.
Expense	Discount rate includes an allowance of 0.65% for administration and investment expenses	Same
ITA Benefit Maximum	$3,610.00 in 2024 and increasing by 3% per annum thereafter.	$3,506.67 in 2023 and increasing by 3% per annum thereafter.
Mortality:	Private Sector Canadian Pensioners’ Mortality Table, without size adjustment factor, projected from 2004 using Improvement Scale MI-2017	Same
Disability:	None	Same
Retirement:	See Table below	Same
Turnover:	See Table below	Same
Survivors' benefits:	85% of active members assumed to be married at retirement; female spouses assumed to be three years younger than male spouses	Same

Retirement: Following retirement rates are assumed, based on points (age + service):

Points	Rate	Points	Rate
64	0%	77	11.0%
65	1.0%	78	15.0%
66	1.5%	79	20.0%
67	2.0%	80	25.0%
68	2.5%	81	23.0%
69	3.0%	82	22.0%
70	4.0%	83 – 85	20.0%
71	5.0%	86	21.0%
72	6.0%	87	23.0%
73 – 75	7.0%	88 – 99	25.0%
76	8.0%	100	100%

Turnover: Termination rates are based on service. Sample rates are as follows:

Years of service	Termination Rate
0	0.036
5	0.019
10	0.007
15	0.003
20	-

Actuarial Cost Method

As with the previous valuation, we have used the projected unit credit actuarial cost method to determine the going concern liabilities of the Plan and the Employer's current service cost in respect of the Plan. Under this method, the actuarial liabilities consist of the present value of pensions in payment and vested deferred benefits for terminated members, plus that portion of the future benefits expected to be paid to present members which are related to their credited service up to the valuation date. Amounts of pension are determined based on each member's projected final average earnings. If the value of these actuarial liabilities plus the PfAD exceeds the actuarial value of the assets (determined as described below), the excess is defined as the unfunded actuarial liability and is funded by fixed special payments over a specified period or periods.

The total current service cost for the year following the valuation date is the present value of benefits accrued by Plan members with respect to their service in that year.

The characteristics of this actuarial cost method are that it matches year-by-year costs of benefits expected to be accrued by the Plan members each year to the contributions required for those years and since it results in a pattern of progressively increasing costs for an individual employee as that employee ages, it may also result in progressively increasing costs for the Plan as a whole if the average age profile of the Plan membership increases from year to year.

Asset Valuation Method

As with the previous valuation, we have used a smoothing method to determine the value of the assets recognized for valuation purposes. Under this smoothing method, the asset value is determined as the average of the current market value as at January 1, 2024 and the four prior years adjusted market values, where the adjusted market value of a prior year is determined by accumulating the prior year's market value to the valuation date, such accumulation being made at the valuation interest rate and taking into account the net cash-flow during the accumulation period. Appendix E presents the details of the determination of the smoothed value of assets as at January 1, 2024.

The objective of the asset valuation method is to moderate the volatility of contribution rates by deferring the recognition of investment gains and losses over the short-term.

Benefits Valued

The benefits valued were those in effect at the valuation date. A summary of the Plan provisions is provided in Appendix A. The valuation does not make any provision for future changes in Plan provisions and no provisions are included in liabilities for indexation adjustments after January 1, 2024.

Rationale

Economic Assumptions

We have used the same economic assumptions as those used at the prior valuation as at January 1, 2023.

The selection of the economic assumptions (i.e. those related to interest rates and inflation) for this valuation was based on reasonable expectations for the relationships between key economic variables over the long term, as well as the expected impact of those economic variables on the investment performance of the pension fund given the fund's Statement of Investment Policies and Procedures ("SIP&P").

To determine the going concern discount rate, our model determined expected long-term capital market returns, standard deviations and correlations for each major asset class noted in Appendix E (universe bonds, Canadian equities, global equities, etc.). These long-term expectations are determined using a stochastic model which projects rates of inflation, bond yields and asset class returns for 5,000 paths over a long-term projection horizon. Based on the plan's target asset mix, and assuming annual rebalancing, the simulated going concern discount rate is determined as the annualized median return over the projection horizon.

We have assumed that there will be no added-value returns from the active management strategy employed in excess of the associated additional investment management fees. The SIP&P effective October 1, 2023 is as follows:

Asset class	Target asset mix
Cash and Equivalents	2.0%
Fixed Income	32.0%
Canadian Equities	21.0%
Foreign Equities	30.0%
Real Estate Investments	15.0%
Total	**100%**

Based on the terms of engagement, an implicit margin for adverse deviations has been included in the economic assumptions for the purpose of the current valuation, as requested by the JBT. The level of margin for adverse deviation, if any, will be re-assessed at each actuarial valuation based on relevant information including the prevailing market conditions and required explicit Provision for Adverse Deviation. This margin is in addition to the explicit Provision for Adverse Deviations that has been added to the going concern liabilities and current service cost in accordance with the Regulations under the PBA.

Based on the methodology described above, the going concern discount rate assumption has been developed as follows:

	Discount rate
Simulated gross investment return	6.55%
Provision for administration and passive investment expenses	(0.35%)
Provision for active investment expenses	(0.30%)
Estimated net investment return rate before margin	5.90%
Margin for adverse deviations	(0.10%)
Discount rate assumption	**5.80%**

The assumed level of administration and investment expenses is based on the average of the expenses paid from the fund over the last three calendar years, the increasing size of Plan assets under active management and the recent addition of specialized managers.

Because the assumptions are intended to represent expected economic conditions over long periods of time, covering several decades, it is anticipated that the assumptions will be changed relatively infrequently, and that any change in the assumptions will be justified by new economic conditions that are likely to persist over the long term, rather than by short-term fluctuations in the financial markets, as well as the underlying objectives adopted by the JBT for the funding of the Plan's benefits.

For salary increases, we have reflected negotiated salary increases pursuant to collective bargaining agreements and have assumed that salaries will increase at a rate of 3% per annum after that (i.e. the real economic growth in salary would be 1% above the assumed price inflation rate of 2% per annum). The long-term rate of 3% per annum for salary increases is in line with the findings of the most recent salary experience review performed over the period 2006-2015. The increases in the yearly maximum pensionable earnings ("YMPE") and the Income Tax Benefit limit after 2024 were assumed to be at the same rate of 3% per annum.

In our view, the economic assumptions used for the going concern valuation remain within an acceptable range that would be considered by actuaries to be appropriate for the current circumstances of the Plan.

Demographic Assumptions

Some demographic assumptions used for this valuation and prior valuations were based mainly on standard population tables instead of the Plan's experience, due to the limited statistical volume of data available. For mortality, we have used the Canadian Pensioners' Mortality ("CPM") Table for the private sector, without size adjustment factor, projected from base year 2004 with Improvement Scale MI-2017. This table is expected to be commonly used for valuations of pension plans where the amount of data relating to actual mortality experience of the specific Plan is of limited statistical significance and there is no reason to believe mortality experience for the Plan will differ significantly from that of other plans. With regards to the improvement scale, in December 2017, the CIA released the "Educational Note – Second Revision: Selection of Mortality Assumptions for Pension Plan Actuarial Valuations" containing mortality improvement scales based on experience studies conducted by the CIA and expert opinions. The report recommends a two-dimensional mortality enhancement scale, the MI-2017, developed in 2017 using general population data from 1967 to 2015. Considering the most recent data and study made available, and in absence of any additional credible information under the Plan, we have used the newly published Improvement Scale MI-2017 for the present valuation.

With respect to the retirement assumption, the early retirement table has been derived from a review of the actual experience observed under the Plan over recent years. Such study was performed in 2007 and updated in 2010; the rates of early retirement are related to the sum of age and credited service, as the review of the actual experience under the Plan indicated that this parameter was that having the most significant impact on the actual early retirement experience. The rates used for the present valuation are identical to those used in the prior valuation.

For termination of employment prior to retirement, the rates were developed based on standard termination tables; a review of actual experience observed under the Plan over recent years indicated that the standard rates used are in line with the termination patterns observed under the Plan.

Appendix C – Actuarial Assumptions and Methods – Hypothetical Wind-up and Solvency Bases

	January 1, 2024	January 1, 2023
Interest (Hypothetical Wind-up and Solvency Basis):	4.55% per annum for annuity purchases (based on a duration of liabilities of 11.1). 4.10% per annum for 10 years and 4.20% per annum thereafter for lump sum transfers.	4.91% per annum for annuity purchases (based on a duration of liabilities of 11.3). 4.30% per annum for 10 years and 4.70% per annum thereafter for lump sum transfers.
Increases in Pensionable Earnings:	None	Same
YMPE:	$68,500 for 2024; no future increase in YMPE.	$66,600 for 2023; no future increase in YMPE.
ITA Benefit Maximum:	$3,610.00 per year of pensionable service.	$3,506.67 per year of pensionable service.
Mortality:	2014 Combined Sector Canadian Pensioners' Mortality Table, without size adjustment factor, and Improvement Scale B. • Annuity purchases: Sex-distinct basis. • Lump sum transfers for Quebec members: Sex-distinct basis. • Lump sum transfers for all other members: Unisex basis with 40% male ratio.	Same
Disability:	None	Same
Retirement:	Annuity Settlements: • Age producing the highest lump sum value of the vested pension. Transfer settlements: • 50% at the age that maximizes the lump sum value of pension; and • 50% at the earliest age the pension is payable without reduction.	Same

Turnover:	None	Same
Marital Status:	85% of members are married, with male spouse 3 years older than female spouse.	Same
Allowance for wind-up expenses:	$800,000.	Same
Value of assets:	Assets are recognized at market value for wind-up and solvency valuations.	Same
Assumption on settlement option at plan termination:	**Percentage electing transfers** Pensioners: 0% Active and terminated members • Quebec members: 100% • Other members ▪ Eligible for retirement: 50% ▪ Not eligible for retiremen: 75%	Same

Actuarial Cost Method

As with the prior valuation, we valued the termination benefits payable under the Plan or the PBA, if different. Under this valuation, the actuarial liabilities consist of the present value of pensions in payment and vested deferred benefits for terminated members, plus the accrued benefits that would have been paid to present members in the event of a plan wind-up and which are related to their credited service up to the valuation date. Amounts of pension for active members are determined based on each member's final average earnings at the valuation date.

For the solvency and wind-up valuations, the economic assumptions were changed to reflect market conditions at January 1, 2024 and statutory requirements thereon. We made no provisions for adverse deviation in these valuations as these assumption bases are stipulated by regulation and reflect market conditions at the valuation date.

Asset Valuation Method

As with the previous valuation, we used the market value of assets for the hypothetical wind-up and solvency valuations, adjusting for amounts in transit and amounts payable.

Benefits Valued

The benefits valued were those in effect at the valuation date. A summary of the Plan provisions is provided in Appendix A. The valuation does not make any provision for future changes in Plan provisions and no provisions are included in liabilities for indexation adjustments after January 1, 2024.

Incremental Cost

The incremental cost is the present value, at the valuation date, of the expected aggregate change in the hypothetical wind-up liability between the valuation date and the next valuation date. It also reflects expected benefit payments between the valuation date and the calculation date.

The incremental cost under the hypothetical wind-up basis was determined as the sum of (a) and (b) minus (c) below:

a) the projected hypothetical wind-up liability at the next valuation date for those members at the current valuation date, allowing for service accruals and increase in earnings between the current valuation date and the next valuation date. No adjustment was made for new entrants and decrements between the two valuation dates. The resulting projected hypothetical wind-up liability was then discounted to the current valuation date;

b) the present value of the benefit payments expected to be paid between current valuation date and the next valuation date, discounted to the current valuation date;

c) the hypothetical wind-up liability as at the current valuation date.

For purposes of calculating the hypothetical wind-up incremental cost, the expected decrements, as well as the expected benefit payments between the current valuation date and the next valuation date, were determined using the going concern demographic assumptions. The projected hypothetical wind-up liability at the next valuation date was determined using the same method and assumptions as disclosed in Appendix C of this report. In particular, we have assumed that the discount rates will remain the same throughout the projection period and the Standards of Practice for determining commuted value rates in effect at the valuation date will remain unchanged, as will the current educational guidance on the estimation of annuity purchase costs.

Appendix D – Membership Data

The valuation was based on data compiled as of the valuation date, January 1, 2024, supplied to us by the Plan Administrator. This data is summarized in this Appendix.

We subjected this data to a number of tests of reasonableness and consistency, including the following:

- a member's (and partner's as applicable) age is within a reasonable range;
- all dates remained unchanged from the data used in the previous actuarial valuation of the Plan:
- accrued pensions changed by a reasonable amount;
- the form of pension payment did not change (other than resulting from the death of a retired member); and
- we examined the additions to and deletions from each of the data files (i.e. files for active employees, pensioners and terminated members entitled to a deferred vested pension) since the previous valuation date to determine whether all Plan members were accounted for in this valuation, to check for duplicate records and to confirm pension amounts.

All of our tests had satisfactory results or the data was corrected. However, the tests may not have captured all deficiencies in the data. We have also relied on the Plan administrator's certification on the quality of the data.

RECONCILIATION OF MEMBERSHIP DATA

	Active Members	Terminated Vested Members	Retired Members
Number on January 1, 2023	**949**	**80**	**989**
New entrants	100	-	-
Reinstated as active from terminated vested	4	(4)	-
Benefit paid out	(8)	(7)	-
Termination vested	(8)	8	-
Death paid out / Pending Payment	(9)	7	-
Retirements	(41)	(1)	42
Death of pensioners	-	-	(19)
Pensioners credit split	-	-	-
New beneficiaries	-	-	6
Number on January 1, 2024 [1]	**987**	**83**	**1,018**

[1] In addition, there are 44 new active members as at January 1, 2024 included for current service cost calculation purposes.

Summary Of Membership Data

	January 1, 2024	January 1, 2023
Active Members		
▪ Number	987	949
▪ Average age	48.8	48.9
▪ Average service	11.2	11.6
▪ Average capped salary rate (1) (2) (3)	$123,744	$119,011
Deferred Vested Members/Pending		
▪ Number	83	80
▪ Average age	47.6	47.3
▪ Average monthly pension (4)	$507	$426
Retired Members		
▪ Number	1,018	989
▪ Average age	70.8	70.3
▪ Average monthly pension (4) (including bridge benefit)	$3,891	$3,808
▪ Average monthly lifetime pension	$3,667	$3,565
▪ Average monthly bridge pension	$946	$995

1) Average capped salary rates shown are as at the beginning of each year and include all components considered as pensionable salary.

2) Average capped salary rates as at January 1, 2023 reflects rates paid as at that date and provided by the Administrative Agent.

3) Average salary rates as at January 1, 2024 reflects rates paid as at that date plus an annual increase of 3.00% for members without a collective agreement in force, i.e. the long-term salary increase assumption under the current actuarial basis.

4) The average monthly pension amounts shown in the above table include indexation adjustments at January 1.

Active Membership Distribution by Age and Years of Credited Service with Average Salary Rate at January 1, 2024

Males

Age at 1/1/2024	0-4	5-9	10-14	15-19	20-24	25-29	30 & over	Total
20-24								
25-29	2	1						3
	115,288	*						*
30-34	10	3						13
	132,399	138,192						133,736
35-39	21	8	7					36
	130,860	134,617	128,214					131,180
40-44	21	19	18	4	2			64
	129,375	133,982	140,606	128,319	135,953			134,041
45-49	20	17	16	15	4			72
	137,163	134,066	141,581	137,533	145,868			137,974
50-54	9	11	8	15	10	2		55
	125,819	132,594	140,813	141,944	137,820	151,177		136,857
55-59	8	5	9	7	19	5	2	55
	140,720	136,351	139,018	143,636	140,098	141,687	69,529	137,700
60-64	2	6	8	7	14	2	3	42
	148,340	140,773	144,089	140,037	144,949	180,500	152,873	145,790
65-69	1	1		1	2	2		7
	*	*		*	146,232	139,059		140,738
70+				2	1		1	4
				122,248	*		*	130,453
Total	94	71	66	51	52	11	6	351
	*	*	139,759	*	*	149,992	*	136,961

Average age: 49.3

Average credited service: 11.3 years

Females

Age at 1/1/2024	0-4	5-9	10-14	15-19	20-24	25-29	30 & over	Total
20-24	2							2
	115,288							115,288
25-29	16	1						17
	97,393	*						*
30-34	19	20	1					40
	122,380	108,579	*					*
35-39	30	17	16	2				65
	119,472	122,127	114,377	119,097				116,285
40-44	31	23	22	9	6			91
	122,085	117,577	115,798	126,078	124,858			120,003
45-49	18	24	22	15	17	1		97
	114,114	133,064	124,678	124,442	106,129	*		*
50-54	16	29	34	29	16	8		132
	113,580	113,845	116,891	127,889	106,683	103,699		116,200
55-59	18	20	16	20	29	15	2	120
	111,375	114,736	116,001	120,182	114,751	129,873	81,163	116,644
60-64	3	8	9	12	12	5	3	52
	137,054	96,662	107,777	115,026	118,764	113,315	127,759	113,650
65-69	2	3	6	3	5	1		20
	108,519	99,783	99,461	99,272	115,987	*		103,408
Total	155	145	126	90	85	30	5	636
	116,046	*	*	120,556	112,861	*	109,121	116,450

Average age: 48.5

Average credited service: 11.2 years

All Active Members

Age at 1/1/2024	0-4	5-9	10-14	15-19	20-24	25-29	30 & over	Total
20-24	2							2
	115,288							115,288
25-29	18	2						20
	99,381	110,002						100,443
30-34	29	23	1					53
	125,835	112,442	*					*
35-39	51	25	23	2				101
	124,161	119,324	118,588	119,097				121,594
40-44	52	42	40	13	8			155
	125,029	124,998	126,961	126,768	127,631			125,799
45-49	38	41	38	30	21	1		169
	126,245	133,479	131,795	130,987	113,698	*		*
50-54	25	40	42	44	26	10		187
	117,986	119,001	121,448	132,680	118,659	113,195		122,276
55-59	26	25	25	27	48	20	4	175
	120,404	119,059	124,287	126,262	124,784	132,827	75,346	123,262
60-64	5	14	17	19	26	7	6	94
	141,569	115,567	124,865	124,241	132,864	132,511	140,316	128,011
65-69	3	4	6	4	7	3		27
	118,367	109,402	99,461	109,019	124,629	118,460		113,086
70+				2	1		1	4
				122,248	*		*	130,453
Total	249	216	192	141	137	41	11	987
	*	121,777	*	*	*	*	*	123,744

Average age: 48.8

Average credited service: 11.2 years

Terminated Vested Members

Males

Age Group	Number	Average Monthly Pension
		$
30-34	1	*
35-39	3	416
40-44	7	779
45-49	4	163
50-54	8	1083
55-59	2	97
60-64	-	-
>65	1	*
Total	**26**	**631**

Average age: 47.9

Females

Age Group	Number	Average Monthly Pension
		$
30-34	5	342
35-39	8	272
40-44	13	452
45-49	9	657
50-54	4	1032
55-59	10	321
60-64	4	251
>65	4	110
Total	**57**	**445**

Average age: 44.0

All Terminated Vested Members

Age Group	Number	Average Monthly Pension
		$
30-34	6	331
35-39	11	320
40-44	20	567
45-49	13	505
50-54	12	1066
55-59	12	280
60-64	4	251
>65	5	98
Total	**83**	**507**

Average age: 47.6

Retired Members (including surviving spouses)

Males

Age Group	Number	Average Monthly Pension*
		$
<50	--	--
50-54	-	-
55-59	11	4,321
60-64	58	5,094
65-69	87	4,562
70-74	82	4,337
75-79	73	4,335
80-84	42	4,038
85-89	19	3,326
>90	6	3,296
Total	**378**	**4,403**

*Include bridging benefit

Average age: 72.0

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Females

Age Group	Number	Average Monthly Pension*
		$
<50	--	--
50-54	3	2,455
55-59	42	4,399
60-64	118	4,451
65-69	150	4,013
70-74	157	3,291
75-79	99	2,939
80-84	43	2,600
85-89	20	1,955
>90	8	2,401
Total	**640**	**3,589**

*Include bridging benefit

Average age: 70.1

All Retirees

Age Group	Number	Average Monthly Pension*
		$
<50	--	--
50-54	3	2,455
55-59	53	4,383
60-64	176	4,663
65-69	237	4,215
70-74	239	3,650
75-79	172	3,531
80-84	85	3,310
85-89	39	2,623
>90	14	2,784
Total	**1,018**	**3,891**

*Include bridging benefit

Average age: 70.8

Appendix E – Plan Assets

Reconciliation of Assets

The asset data used in the valuation were compiled as at December 31, 2023. Assets of the Plan are invested through RBC Investor and Treasury Services and managed by independent investment management firms. We have relied on the custodial statements provided by RBC Investor and Treasury Services and the audited financial statements for the fund prepared by KPMG LLP Chartered Accountants for the December 31, 2023 year end.

The following is a reconciliation of the pension fund assets from January 1, 2023 to December 31, 2023.

	Jan. 1, 2023 to Dec. 31, 2023
Market value as at beginning of year	$**861,541,500**
Employer contributions	$16,017,400
Member contributions	$11,693,700
Transfer from other Plans	$2,524,500
Investment income	$73,741,000
Benefit payments – pensions	($46,003,200)
Benefit payments – lump sum	($5,465,100)
Fees and expenses	($5,823,200)
Total assets available for benefits	**$908,226,600**
Present value of future buyback contributions	$451,000
Total market value as at end of year	**$908,677,600**
Net rate of return for each period	8.0%

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Summary of Asset Allocation as December 31, 2023

Classification	Assets at Market Value	% of Total Invested Assets	Target % Asset Allocation
Cash and Equivalents	$3,294,500	0.4%	2.0%
Fixed Income	$260,544,600	28.9%	32.0%
Canadian Equities*	$218,947,100	24.3%	21.0%
Foreign Equities	$279,119,200	30.9%	30.0%
Canadian Real Estate	$79,794,400	8.8%	9.0%
Global Real Estate	$60,254,500	6.7%	6.0%
Total Invested Assets	$901,954,300	100.0%	100.0%
Other Assets/(Liabilities)	$6,272,300		
Total Assets Available for Benefits	$908,226,600		

* Include Canadian Small Cap Equities with a target asset allocation of 6.0%.

Development of Smoothed Asset Value

Adjusted Market Value (AMV) Beginning From:

	1/1/2020	1/1/2021	1/1/2022	1/1/2023	1/1/2024
Assumed Interest Rate:	5.85%	5.70%	5.80%	5.80%	5.80%
AMV as at January 1, 2020:	820,299,329				
Net Contributions	12,909,023				
Investment Income	48,365,100				
AMV as at January 1, 2021:	881,573,452	865,681,636			
Net Contributions	(13,038,440)	(13,038,440)			
Investment Income	49,878,091	48,972,258			
AMV as at January 1, 2022:	918,413,103	901,615,454	947,725,475		
Net Contributions	(13,002,201)	(13,002,201)	(13,002,201)		
Investment Income	52,890,896	51,916,633	54,591,014		
AMV as at January 1, 2023:	958,301,798	940,529,886	989,314,288	859,470,222	
Net Contributions	(19,329,410)	(19,329,410)	(19,329,410)	(19,329,410)	
Investment Income	55,020,951	53,990,180	56,819,676	49,288,720	
AMV as at January 1, 2024:	993,993,339	975,190,656	1,026,804,554	889,429,532	907,915,723
Actuarial Value of Assets as at January 1, 2024 before payments in transit:					958,666,761
Resulting Actuarial Adjustment:					50,571,038

The smoothing calculation is based on asset values published by RBC in their unaudited custodial asset statements. This approach is unchanged from prior valuations.

Appendix F – Provision for Adverse Deviations

In accordance with Section 11.2 of the Regulations, the Plan's Provision for Adverse Deviations (PfAD) to be applied to the going concern liabilities and current service cost, has been determined as outlined in this Appendix. For the purpose of determining the PfAD, this Plan is not classified as a closed plan as defined in the Regulations.

PfAD = A + B + C

Where:

"A" = Fixed Component = 4% (for open plan) and 5% for (closed plan)

Therefore, A = 4%

"B" = First Variable Component = Asset Mix Component

This component is based on the plan's target asset allocation to non-fixed income assets.

Classification	Target Allocation
Cash	2.0%
Bonds	32.0%
Real Estate, Infrastructure, Mortgages	15.0%
Return seeking assets (e.g. equities, other alternative assets classes)	51.0%

Assets allocated to Non-Fixed Income Securities	=	Return seeking assets + 50% x Real Estate, Infrastructure and Mortgage Assets
	=	51.0% + 0.50 X 15.0%
	=	58.5%

Target allocation for Non-Fixed Income Assets	PfAD – Closed Plan	PfAD – Open Plan
0%	0%	0%
20%	2%	1%
40%	4%	2%
50%	5%	3%
60%	7%	4%
70%	11%	6%
80%	15%	8%
100%	23%	12%

Therefore, B = 3.85%

"C" is the greater of zero, and a value relative the plan's benchmark discount rate calculated in accordance with the Regulations

F = Value of the plan's going concern liabilities as of the valuation date, determined using a discount rate that is 1% less than the discount rate used in this report

G = Value of the plan's going concern liabilities as of the valuation date

Duration of the going concern liabilities = (F – G) / (G x 0.01) = 11.1

H = benchmark yield on long-term bonds issued by the Government of Canada for the valuation date, as determined by CANSIM V39056 = 3.02%

J = combined target asset allocation for fixed income assets = 41.5%

K = combined target asset allocation for non-fixed income assets = 100% – J = 58.5%

E = Benchmark Discount Rate (BDR)
= 0.5% + H + (1.5% x J) + (5% x K)
= 0.5% + 3.02% + (1.5% x 41.5%) + (5% x 58.5%)
= 7.07%

D = Best Estimate Discount Rate = 6.25%

C = Duration x Max (0, D – E) = 11.1 x Max (0, 6.25% - 7.07%) = 0%

Therefore, the total PfAD for the Plan is = A + B + C = 4% + 3.85% + 0% = 7.85% rounded to 7.9%

Appendix G – Plausible Adverse Scenarios

A plausible adverse scenario is considered to be one that will occur in the short term (immediately to one year) with a likelihood of occurring between 1 in 10 and 1 in 20 based on the opinion of the actuary. The purpose of the following scenarios is to illustrate the impact on the Plan's financial position of the following adverse but plausible assumptions relative to the best estimate assumptions selected for the Plan's going concern valuation. The purpose of disclosing these results is to demonstrate the sensitivity of the funded status and annual current service cost between January 1, 2024 and the next valuation date to certain key risk factors affecting the Plan. The results of the scenarios selected are shown in the table below, with a description of each scenario following.

	Going Concern Results at Jan.1, 2024	Plausible Adverse Scenario Results at January 1, 2024		
		Interest Rate Risk	Deterioration of Asset Values	Longevity Risk
	$	$		
Total going concern assets	959,428,600	962,848,900	935,609,000	959,428,600
Total going concern liabilities	871,970,700	905,693,900	871,970,700	884,273,700
PfAD on actuarial liabilities	68,885,700	71,549,800	68,885,700	69,857,600
Total going concern liabilities plus PfAD	940,856,400	977,243,700	940,856,400	954,131,300
Going concern excess (unfunded liability)	18,572,200	(14,394,800)	(5,247,400)	5,297,300
Current service cost including PfAD	27,317,200	29,264,400	27,317,200	27,545,100
Change in going concern liabilities plus PfAD		36,387,300		13,274,900
Change in current service cost including PfAD		1,947,200		227,900
% Change in going concern liabilities plus PfAD		3.87%		1.41%
% Change in current service cost incl. PfAD		7.13%		0.83%
Discount rate	5.80%	5.42%	5.80%	5.80%
PfAD	7.9%	7.9%	7.9%	7.9%
Adjusted market value of assets	908,677,600	928,006,900	788,817,900	908,677,600

Interest Rate Risk

This scenario illustrates the sensitivity of the funded status of the Plan and current service cost to an immediate change in the market interest rates underlying fixed income investments.

In order to assess the impact of a decrease in interest rates of a magnitude consistent with a 1 in 10 likelihood of occurring, we have used the same stochastic model that is used to determine the going concern discount rate (see Appendix B). The stochastic model is based on 5,000 simulations of projected financial variables, including long-term yields on fixed income investments and asset class returns. Our long-term best estimates for these variables, and the going concern discount rate are based on the median values over these 5,000 simulations.

To determine the sensitivity to interest rate risk, and the resulting impact on Plan assets and liabilities, we have:

- considered the hypothetical going concern discount rate over the 500 trials where fixed income yields are lowest at the one-year horizon,
- determined the decrease in median long-term fixed income yields over the 500 trials where fixed income yields are the lowest at the one-year horizon.

As such, under the interest rate risk scenario, the going concern discount rate is decreased by 38 basis points as of January 1, 2024.

With respect to the impact on fixed income assets, the scenario results in a decrease in long-term yields on fixed income investments of 0.80%

Based on the estimated duration of the Plan assets, liabilities and the current service cost, we have then determined the estimated change to the Plan's funded status under the interest rate risk scenario.

Deterioration of Asset Values

This scenario illustrates the sensitivity of the funded status of the Plan to short-term shock which causes a reduction in the market value of assets, with no change to the liabilities of the Plan. This scenario is assumed not to impact the current expectation of the long-term rate of return, and consequently, the going concern discount rate.

In order to assess the impact of a decrease in asset values of a magnitude consistent with a 1 in 10 likelihood of occurring, we have used the same stochastic model that is used to determine the going concern discount rate (see Appendix B). The stochastic model is based on 5,000 simulations of projected financial variables, including long-term yields on fixed income investments and asset class returns.

To determine the sensitivity to a deterioration in asset values, based on the Plan's target asset mix, we have:

- determined the decrease in median investment returns over the 500 trials where investment returns are the lowest at the one-year horizon.

As such, under the deterioration of asset values scenario, the market value of assets is decreased by 13.2% as of January 1, 2024. Since the asset valuation method for the going concern valuation is smoothed asset value, the going concern assets is decreased by 2.5% as of January 1, 2024.

Longevity Risk

This scenario illustrates the sensitivity of the funded status of the Plan to pension plan members living longer than expected. The impact of this scenario was determined using a one-year age setback to the mortality table used for the going concern valuation as of January 1, 2024, that is, a more conservative mortality assumption than currently employed.

Certificate of Administrator

With regards to the January 1, 2024 actuarial report for the Canadian Union of Public Employees Employees' Pension Plan, I hereby certify that, to the best of my knowledge and belief:

- A copy of the official Plan document and all amendments made to January 1, 2024, were provided to the actuary;
- The membership data provided to the actuary includes a complete and accurate description of every person who is entitled to benefits under the terms of the Plan for service up to January 1, 2024;
- The asset data provided or made available to the actuary is complete and accurate;
- The Plan has been determined to be an open plan as defined in Section 11.2(1) of Regulation 909 of the PBA; and
- All events subsequent to January 1, 2024 that may have an impact on the valuation have been communicated to the actuary.

08/28/2024
Date

Signature

Administrative Officer- Pension
Title