ECKLER

Actuarial Report on

British Columbia Municipal Pension Plan

as at December 31, 2024

Vancouver, British Columbia
September 22, 2025

Contents

Actuarial Report Highlights

We are pleased to present this report on the actuarial valuation of the Municipal Pension Plan as at December 31, 2024. The main purposes of the valuation are to determine the financial position of the Plan as at December 31, 2024, to determine the member and employer Basic contribution rates, establish the level of sustainable indexing, and identify any transfers required between the Basic Account and the Inflation Adjustment Account (IAA) and/or the Rate Stabilization Account (RSA).

Key Results – Funding Valuation

Basic Account ($ millions)	2021[1]	2024
Asset smoothing cushion	4,507	1,035
Rate Stabilization Account (RSA)	3,694	4,598
Group Contribution Rate Rebalancing Account (GCRRA)	42	45
Assets (smoothed) net of RSA and GCRRA	73,112	99,804
Liabilities	70,369	97,129
Surplus / (Unfunded Liability)	**2,743**	**2,675**
5% of net liabilities	2,466	3,232
Actions from 2024 results		
Transfer from RSA to Basic Account	n/a	1,063
Resulting surplus		3,738
Accessible Going Concern Excess	**277**	**506**
• Used to maintain the current contribution rate	277	506
• Remaining for transfer to IAA/RSA	0	n/a

Basic Contribution Rates	2024 % of salaries
Average current contribution rates	15.04
Average Required Rates	
Entry-age normal cost rates	15.59
JTA Appendix C amortization assuming transfer of $1,063m from RSA) (pre-December 31, 2019 PBSA requirements)	(0.59)
Additional Group 2/5 amortization (to 2036)[2]	0.04
***Minimum JTA Appendix C contribution rate* – Average**	**15.04**
Required Contribution Rate = Current Contribution Rate	**15.04**

[1] After transfer of excess surplus to RSA/IAA ($509m each) – see "Key Plan Changes Since the Previous Valuation" below.

[2] As part of the plan design changes effective January 1, 2022, Group 2 and Group 5 contributions include 0.5% and 0.68% of salaries respectively (equivalent to 0.04% of the Plan's total payroll) to amortize over 15 years the additional cost of the Group 2 and 5 2022 plan redesign benefit improvements which was not met from their share of surplus.

The current average contribution rate of 15.04% of salaries is below the Entry-age normal cost (EANC) rate of 15.59%. The surplus of $2,675 million is not sufficient to maintain the current average contribution rate. As a result, in line with the Joint Trust Agreement (JTA) and the Board's Funding Policy, the surplus is first used to support the lowest possible contribution rate below the EANC that is not less than the current contribution rate and then the RSA will be drawn down to the extent needed to keep the required Basic contribution rates unchanged. A Basic account surplus of $3,738 million is required to support the current contribution rate. This consists of the required cushion of 5% of the net liabilities ($3,232 million) plus $506 million of "Accessible Going Concern Excess" needed to cover the amount that the current contributions are below the EANC, amortized over 5 years. Since the Basic account surplus of $2,675 million shown in the table above is less than the amount required to stabilize the contribution rate, the surplus will be used to support the current contribution rate and, in addition, the difference of $1,063 million will be transferred from the RSA to the Basic account as at December 31, 2024.

Although no changes are required to the Plan's average contribution rate, the required contribution rates are "out of balance" in the sense that Group 1 is paying 0.01% of pay more than their theoretically correct share of the total costs, while Group 5 is paying 0.06% less. Given the requirement to share the effect of rebalancing equally between members and employers, the contribution rates for Group 1 should continue without adjustment for rebalancing (0.01%/2=0.005% which rounds to 0.00% each). In line with the Plan's funding policy, the rebalancing adjustment for Group 5 (0.06% of salaries) will be paid from the Group Contribution Rate Rebalancing Account (GCRRA), and the current Group 5 contribution rates will remain unchanged. Group 2 contribution rates do not need to be rebalanced and also remain unchanged.

The resulting contributions are summarized in the table below.

		Required Contribution Rates (%)		
	Basic	**Net IAA[1]**	**Benefit Trust**	**Total**
Members				
Group 1	7.34	1.27	0.00	8.61
Group 2	7.14	1.78	0.00	8.92
Group 5	9.08	2.04	0.00	11.12
Employers				
Group 1	7.34	1.37	0.60	9.31
Group 2	10.84	0.98	0.60	12.42
Group 5	12.79	1.28	0.60	14.67
From GCRRA				
For Group 2	0.00	0.00	0.00	0.00
For Group 5	0.06	0.00	0.00	0.06

Key Results – Sustainable Indexing Valuation

The Sustainable Indexing Valuation shows that, taking into account the assets in the Basic account and the IAA and the required contributions to both accounts shown above, and after

[1] Employer IAA contributions are shown net of the 0.6% of salaries allocated to the Municipal Retiree Benefit Trust.

transferring $1,063 million from the RSA to the Basic account, the maximum sustainable COLA, calculated in accordance with the funding policy, is 2.10% per year.

Key Plan Changes Since the Previous Valuation

There were no changes to plan benefits since the previous valuation. Plan benefits are summarized in Appendix A.

Our report on the 2021 valuation showed a Basic Account surplus of $1,018 million remaining for transfer to IAA/RSA. As required by the JTA and the funding policy, this surplus was split 50/50 between the IAA and RSA, with $509 million transferred to each as at December 31, 2021.

The Plan rules previously included a provision that any investment returns on assets held in the Basic Account in respect of pensions in pay, in excess of the assumed return in the most recent Funding Valuation, may be transferred from the Basic Account to the IAA. Such annual transfers (referred to as "Excess Investment Return Transfers") were automatic until 2022. Effective November 23, 2023, the plan rules were amended due to changes in the plan's funding policy that eliminated excess investment return transfers.

Effective September 1, 2022, the JTA was amended to provide further direction on the use of actuarial excess and directed the board to provide funding to the Municipal Retiree Benefit Trust totalling $70 million, using employer contributions that would otherwise go to the IAA.

There were no other legislative changes or changes to the Plan that were not reflected in the previous valuation that would materially impact the valuation results.

Key Long-term Assumptions

We have used the same economic assumptions as the previous valuation.

We updated demographic assumptions used for the valuation as follows:

- We made changes to the assumed rates of termination, retirement and disability to reflect our analysis of Plan experience.
- We reduced the administration expense assumption based on recent plan experience and the future projections provided by Pension Corporation.
- The assumed base rates of mortality were updated to use the latest available member-specific rates provided by Club Vita Canada, multiplied by a credibility-weighted experience adjustment factor of 102.3%;
- We added an explicit allowance for additional assumed future mortality improvements of $1.7 billion in the liabilities and an average of 0.3% of salaries in the Entry Age Normal Cost rate for the Funding Valuation, as a margin for uncertainty in the assumption for future mortality improvements. Similar allowances were added in the Sustainable Indexing and supplementary valuations.

See Appendix H for details of the assumptions used in this valuation and the rationale employed in setting these assumptions. See Section 2(2) for the impact of the changes in assumptions on the valuation results.

Main Reasons for Change in Actuarial Position

As noted above, after the transfer of $1,018 million Basic Account surplus to the RSA and IAA, the remaining Basic Account surplus was $2,743 million at December 31, 2021. The small decrease in the surplus to $2,675 million at December 31, 2024 is the net result of several offsetting factors. The most significant of these were a gain from smoothed investment returns being higher than assumed over the three years, offset by losses due to salary increases being greater than assumed, and from the addition of the allowance for additional assumed future mortality improvements. See Section 2(2) for more detail of the actuarial gains and losses since the previous valuation.

Compliance with the Income Tax Act

The fully indexed valuation, recognizing the Income Tax Act limits and including the RSA and GCRRA, shows a surplus of $1,131 million. This surplus is less than 25% of the corresponding net liability (indexed liability less the present value of the indexed entry age normal cost), so the Plan does not have an excess ITA surplus. Given that there is a surplus, but not an excess surplus, the maximum contributions to the plan may not exceed the fully indexed, income tax limited, entry-age normal cost rate of 21.33%. The current total average contribution rate of 17.71% is less than the ITA limit and is therefore acceptable under the ITA.

The ITA also requires that individual member contributions not exceed the lesser of 9% of salaries or $1,000 plus 70% of the pension credit, though these conditions may be waived by the Minister of Finance provided members do not contribute more than half of the cost of benefits. The required member contribution rate of 11.12% for Group 5 exceeds this limit, so it will be necessary to apply to the Minister for a waiver for Group 5 members. A similar exemption was required, and obtained, following the 2021 valuation.

Section 1. Scope and Overview of the Valuation

In accordance with Article 10 of the current Joint Trust Agreement (the "JTA") and on the instructions of the Municipal Pension Board of Trustees (the "Board of Trustees"), we have completed an actuarial valuation of the Basic Account and the Inflation Adjustment Account of the Municipal Pension Plan (the "Plan") as at December 31, 2024.

This report is addressed to the Board of Trustees. It is also intended to be used by the BC Financial Services Authority ("BCFSA") and Canada Revenue Agency ("CRA") to confirm compliance with the regulatory requirements. This report is not intended or necessarily suitable for other purposes.

Valuations included

We carry out several valuations to meet the primary objectives:

- Funding Valuation: To determine the financial position of the Plan as at December 31, 2024, and the resulting member and employer **Basic contribution rates.** This valuation focuses only on the Basic Account and does not examine the Inflation Adjustment Account ("IAA") and its ability to meet future indexing requirements;
- Sustainable Indexing Valuation: To determine the **level of indexing** that can be sustained in the long term, based on the financial position of the Basic Account and the Inflation Adjustment Account, and the overall level of contributions to the Plan;
- Compliance: To demonstrate compliance with the Federal **Income Tax Act** and Regulations, and to prepare certain figures required for disclosure in the Plan's financial statements. This is achieved through supplementary funding valuations as follows:
    - For basic and indexed benefits, on the assumption that indexed benefits are to be fully funded, in advance, as for basic benefits; and
    - Limiting benefits to those permitted under the ITA; this is done both for basic benefits only, and for basic plus indexed benefits, and
    - Valuing accrued benefits only.

  The valuation process also identifies any transfers required between the Basic Account and the Inflation Adjustment Account (IAA) and/or the Rate Stabilization Account (RSA): these arise by applying the requirements set out in the **Joint Trust Agreement** and the **funding policy**.

Valuation inputs

We have based the valuations on the following inputs:

- The Plan's current benefit provisions, which are summarized in Appendix A.
- Data provided by BC Pension Corporation on each individual member of the Plan, as summarized in Appendices B-E.
- Details of the Plan's assets, as summarized in Appendix F. We have taken this information from the Plan's audited financial statements, the Statement of Investment Policies and Procedures, and additional information provided to us by BCI, the Plan's investment manager.

- The Entry Age Normal actuarial cost method, as required by the Plan's funding policy and described in Appendix G. We have also provided the key valuation results using the Projected Unit Credit cost method, as these figures are required for disclosure in the Plan's financial statements.
- Assumptions for future economic variables including the level of investment returns, inflation and salary increases, and demographic variables including future rates of mortality, retirement, ill-health and termination of Plan service. The assumptions and the approach to setting them are described in Appendix H.

Plan wind-up valuation not included

The Standards of Practice issued by the Canadian Institute of Actuaries require that a valuation report "disclose the financial position of the plan if it were to be wound up on the calculation date, unless the plan does not define the benefits payable upon wind-up, in which case the actuary should include a statement to that effect".

While the Joint Trust Agreement deals with plan termination in Sections 14.4, it is our, and the Board's, opinion that the benefits on wind-up are not defined. Accordingly, we do not comment on the financial position of the plan if were to be wound up.

Funding requirements

The BC Pension Benefits Standards Act (PBSA) imposes certain minimum funding requirements on pension plans registered in British Columbia. These include the determination of a plan's financial position on a solvency basis as well as a going concern basis, the amortization of unfunded actuarial liabilities over a specified period, and special rules regarding the treatment of surplus. While the Municipal Pension Plan is one of a number of British Columbia public sector plans that are exempt from these provisions, the JTA requires that the Plan's financing comply with the PBSA requirements for a going-concern valuation as those requirements existed prior to December 31, 2019. The relevant provisions are documented in Appendix C of the JTA, and we refer to them as JTA-C.

The Board of Trustees has established a funding policy, which sets out the Board's objectives and approach in managing the funding of the plan and the granting of non-guaranteed indexing.

This report complies with the requirements of JTA-C and the funding policy.

Section 2. Results of the Funding Valuation

1. Basic Account – Actuarial Position

Schedule 1 shows the actuarial position of the funding valuation of the Plan as at December 31, 2024. These results exclude liabilities for any future indexing that may be granted after the valuation date, and assumes that contributions will be made at the current rate of 15.04% for one year, then at the basic, non-indexed, entry-age normal cost rate of 15.59%, plus the amortization amount of 0.50% for Group 2 members and 0.68% for Group 5 members currently scheduled to expire in 2036. The comparative results shown as at December 31, 2021 are after the transfer of surplus to the IAA and RSA.

Schedule 1 – Basic Account Actuarial Position as at December 31, 2024

($ millions)	2021[1]	2024
Assets		
Market Value of Basic Account including RSA and GCRRA	60,243	72,916
Asset Smoothing Adjustment	(4,507)	(1,035)
Smoothed Value of Basic Account including RSA and GCRRA	**55,736**	**71,881**
RSA	(3,694)	(4,598)
GCRRA	(42)	(45)
Smoothed Value of Basic Account net of RSA and GCRRA	**52,000**	**67,238**
Actuarial present values of future contributions at entry-age rates (current rate in first year)	21,049	32,499
PV of required amortization Group 2 and 5 members	63	67
Total Assets	**73,112**	**99,804**
Liabilities		
Actuarial present values for		
• active members	43,786	63,079
• inactive members		
deferred vested members	1,240	1,612
LTD members	1,834	2,279
other inactive members	519	62
• pensions being paid	22,379	27,562
• future expenses	611	835
• explicit allowance for additional assumed future mortality improvements	n/a	1,700
Total Liabilities	**70,369**	**97,129**
Surplus (Unfunded Liability)	**2,743**	**2,675**
Funded Ratio: Total Assets ÷ Total Liabilities	**103.9%**	**102.8%**
5% of net liabilities[2]	2,466	3,232
***JTA-C* Accessible Going Concern Excess**	**277**	**0**

[1] After applying the provisions of the JTA and funding policy

[2] Net liabilities equals total liabilities minus the value of future entry age contributions

2. Change in Actuarial Position

The statement of actuarial position included in Schedule 1 indicates a decrease of surplus from $2,743 million to $2,675 million since December 31, 2021. This change in surplus is the net result of a number of items, the most significant of these being a gain from smoothed investment returns being higher than assumed over the three years, offset by salary increases being greater than assumed, and from the addition of the explicit allowance for additional assumed future mortality improvements. A detailed reconciliation is shown in the table below.

Schedule 2 – Change in Actuarial Position

	Approximate effect on surplus ($ millions)
1. Surplus (Unfunded Liability) at December 31, 2021	**2,743**
2. Interest on Surplus	524
3. Change in new entrant profile	79
4. Excess investment return transfers	(185)
5. Contribution loss from paying less than normal cost	(223)
6. Experience gains / (losses)	
a. Smoothed investment return greater than assumed	2,766
b. Expenses lower than assumed	37
c. Salary increases higher than assumed	(2,557)
d. YMPE increases higher than assumed	28
e. Retirements later than assumed	136
f. Less terminations than assumed, plus of rehires	(149)
g. Mortality heavier than assumed	0
h. Inflation higher than assumed for LTD deferred period	(90)
i. Disability heavier than assumed	(92)
7. Gains / (losses) due to changes in valuation assumptions	
a. Disability incidence rate increased	3
b. Withdrawal rates changed	(7)
c. Retirement rates reduced	542
d. Mortality rates increased	209
e. Allowance for additional assumed future mortality improvements	(1,129)
8. Changes in data treatment (see Appendix B for details)	(176)
9. Miscellaneous	216
10. Surplus (Unfunded Liability) at December 31, 2024	**2,675**

Item 7(e) in the table above shows the impact of adding the allowance for additional assumed future mortality improvements. The net impact of $1,129 million consists of the allowance added to the actuarial liabilities of $1,700 million, less $571 million to allow for higher expected future contributions due to the allowance of an average of 0.3% of salaries added to the entry-age normal cost.

3. Normal Cost Rate

The average current service contribution required to finance the basic pensions of new entrants (i.e. the normal actuarial cost) has increased from 15.49% of salaries as at December 31, 2021 to 15.59% of salaries as at December 31, 2024. The reasons for this 0.10% increase are shown below, with the most significant being the addition of the allowance for additional assumed future mortality improvements, offset by the introduction of retirement assumptions after normal retirement age and the reductions applied prior to that age.

Schedule 3 – Change in entry-age normal cost

% of salaries	Group 1	Group 2	Group 5	Groups 1 / 2 / 5 average
Entry age normal cost at 2021 valuation	**15.12**	**18.03**	**21.87**	**15.49**
Changes in demographic profile of new entrants	0.04	(0.02)	(0.03)	(0.00)
Changes in data treatment	(0.01)	0.01	0.01	(0.01)
Assumption changes:				
• Withdrawal rates changed	(0.02)	(0.07)	(0.09)	(0.02)
• Retirement rates reduced	(0.10)	(0.05)	(0.06)	(0.10)
• Disabled rates increased	0.03	0.01	0.01	0.03
• Mortality rates increased	(0.05)	(0.14)	(0.17)	(0.05)
• Administration expense allowance reduced	(0.05)	(0.05)	(0.05)	(0.05)
• Allowance for additional assumed future mortality improvements	0.30	0.35	0.35	0.30
Total change	**0.14**	**0.04**	**(0.03)**	**0.10**
Entry age normal cost at 2024 valuation	**15.26**	**18.07**	**21.84**	**15.59**

4. JTA and Funding Policy Requirements

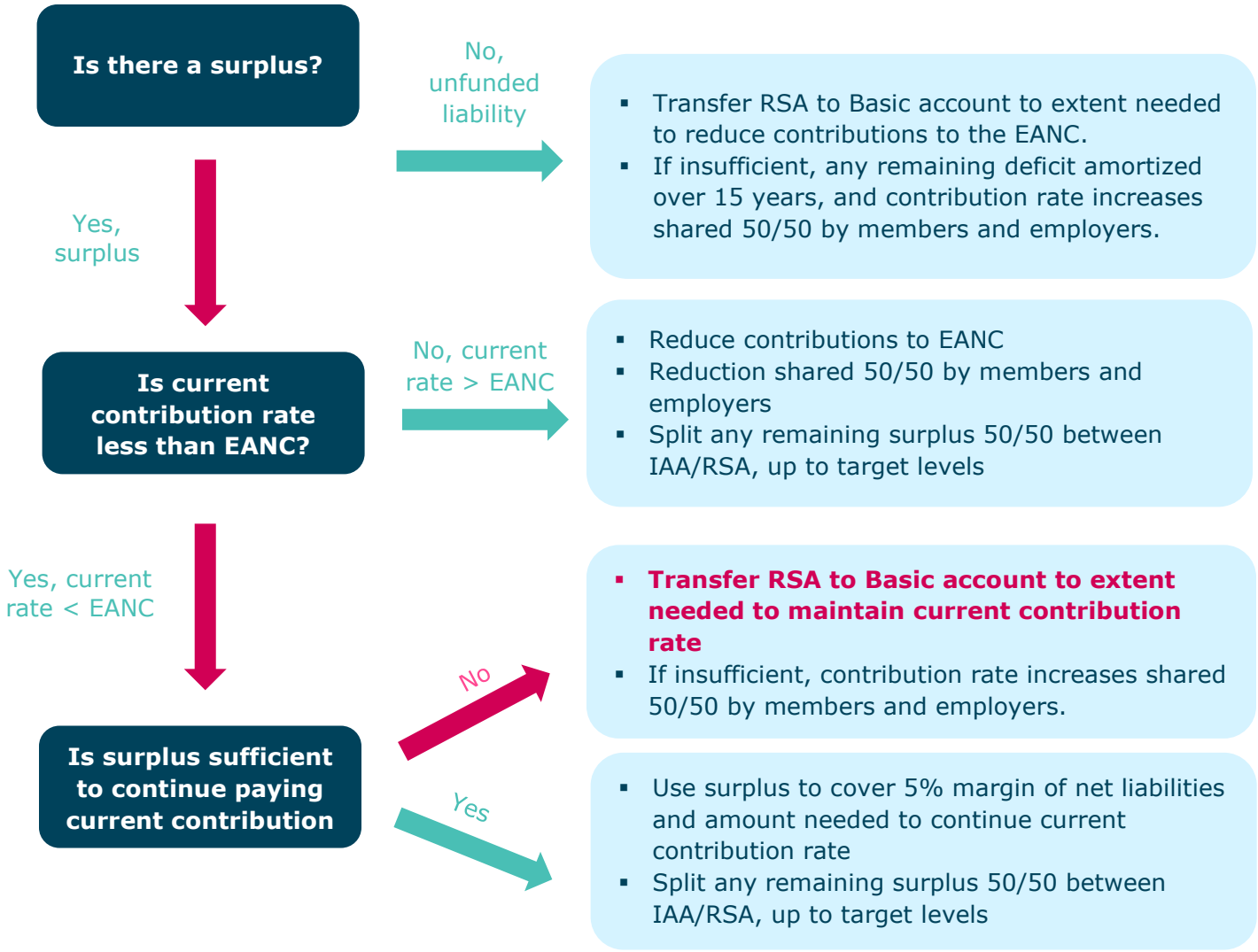
Under the JTA (including the JTA-C requirements), the employers and the members must contribute the full entry-age normal cost. In addition, unfunded liabilities must be amortized over not more than 15 years from when they are established (with a one-year time lag).

Surpluses may be applied to reduce the contribution requirements. Under the JTA-C requirements, the rate may only be reduced below the normal actuarial cost after a surplus margin of 5% of the net liability has been set aside, with the remaining surplus to be amortized over not less than 5 years.

The asset value included for the Funding Valuation excludes the assets in the Rate Stabilization Account (RSA) and Group Contribution Rate Rebalancing Account (GCRRA), which are held

notionally within the Basic Account. The RSA can be drawn down as needed to stabilize the Basic contribution rate.

The requirements of the JTA and funding policy in the treatment of surpluses and deficits in the Funding Valuation, and the resulting contribution rates are summarized in the following chart. The steps required based on the results of the Funding Valuation are highlighted in pink. For full details, please refer to the JTA and funding policy.



The Funding Valuation shows a surplus of $2,675 million. In order to maintain the current average contribution rate, an amount equal to 5% of the net liabilities ($3,232 million) has to be maintained in the Basic account and additional surplus, or Accessible Going Concern Excess, must cover the difference between:

i. The average entry-age normal cost rate (15.59% of salaries) plus the value of the Group 2 and Group 5 additional amortization (0.04% of total salaries), i.e. a total of 15.63%; and

ii. The current average contribution rate of 15.04%.

The amount of Accessible Going Concern Excess required to amortize this difference of 0.59% over 5 years is $506 million. The total surplus required to maintain the current contribution rates is therefore $3,738 million.

Since the Basic account surplus of $2,675 million shown in the table above is less than the amount required to stabilize the contribution rate, the surplus will be used to support the current contribution rate and, in addition, the difference of $1,063 million will be transferred from the RSA to the Basic account as at December 31, 2024.

Assuming this action is taken, the changes in the balance sheet position are as shown below:

Schedule 4 – Statement of Actuarial Position as at December 31, 2024 – after implementing JTA provisions

	($ millions)	
	Before implementing JTA provisions	**After implementing JTA provisions**
Assets		
Smoothed Value of Basic Fund including RSA and GCRRA	**71,881**	**71,881**
RSA	(4,598)	(4,598)
Transfer from RSA to Basic Fund	n/a	1,063
GCRRA	(45)	(45)
Smoothed Value of Fund net of RSA and GCRRA	**67,238**	**68,301**
Actuarial present values of:		
• Future contributions at entry-age rates	32,499	32,499
• Present value of existing amortization (Groups 2 and 5)	67	67
Total Assets	**99,804**	**100,867**
Liabilities		
Total Liabilities	**97,129**	**97,129**
Surplus (Unfunded Actuarial Liability)	**2,675**	**3,738**
Funded Ratio: Total Assets ÷ Total Liabilities	**102.8%**	**103.8%**
5% of net liabilities[1]	3,232	3,232
***JTA-C* Accessible Going Concern Excess**	**0**	**506**

[1] Net liabilities equals total liabilities minus the value of future entry age contributions

Amortizing the revised accessible going concern excess of $506 million over five years, commencing one year after the valuation date, results in a maximum permissible reduction of 0.59% of salaries. The table below confirms that the above use of surplus, while maintaining the contributions rates, results in contributions that comply with the JTA.

	Entry-age normal cost rates	Revised maximum permissible JTA-C amortization after allocating surplus to the RSA and IAA (all groups)	Additional amortization (to 2036)	Minimum Permissible JTA-C Contribution Rate after allocating surplus to the RSA and IAA
Average	**15.59**	**(0.59)**	**0.04**	**15.04**

5. Contribution Rate Imbalance

Whilst the current contribution rates in aggregate are sufficient, the funding policy requires us to determine whether each Group is paying their correct share of the overall required rate. To the extent that they are not, an imbalance arises, which the Board may choose to eliminate by adjusting the rates for each group, while leaving the average rate unchanged. Funds in the GCRRA are used to mitigate the impact of any contribution increases resulting from an imbalance for Groups 2 and 5. The JTA requires that any effects of contribution rate rebalancing be shared equally between members and employers.

The table below shows the theoretically required contribution rate for each group and compares it to their current contribution rates to obtain the required rebalancing adjustment. The theoretically required contribution rate is calculated as the sum of the Group's entry age normal cost, the amortization reduction to keep the overall contribution rate at its current level, and the amortization for Groups 2 and 5 as a result of the plan redesign.

Schedule 5 – Imbalance in Contribution Rates

	Group 1 %	Group 2 %	Group 5 %	Groups 1 / 2 / 5 Average %
1. Theoretical rate = normal cost less 0.59% adjustment to keep aggregate rate unchanged (plus amortization of 0.50% for Group 2 and 0.68% for Group 5)	14.67	17.98	21.93	15.04
2. Current basic contribution rates	14.68	17.98	21.87	15.04
3. Net imbalance by group = (2) - (1)	0.01	0.00	(0.06)	0.00

The above table indicates that the contribution rates for Groups 1 and 5 are "out of balance" in the sense that, while the average contribution rate is unchanged, the theoretical costs for Group 1 has decreased, while the theoretical cost for Group 5 has increased. Therefore, if the current rates are not adjusted, Group 1 will be paying more than their theoretically correct share of the total costs, while Groups 5 will be paying less.

Given the requirement in the JTA that employers and members will equally share the effects of group contribution rate rebalancing, the contribution rates for Group 1 should continue at the current rates without adjustment for rebalancing, as the net imbalance rounds to zero when shared equally (a 50/50 share of 0.01% rounds to nil adjustment each). There is no imbalance for Group 2 and hence their contribution rates should also continue without adjustment for rebalancing.

For Group 5, in the absence of the GCRRA, the required contribution rate would increase by 0.06%. The Board's funding policy states that, in such a case, then the actuary will calculate whether the balance in the GCRRA is sufficient to amortize this increase over 15 years as a percentage of the Group 5 payroll on an open group basis. The value of the additional Group 5 rebalancing contributions, amortized over 15 years as a percentage of the Group 5 payroll on an open group basis, is $6.4 million. Since this is less than the balance of $45 million in the GCRRA at December 31, 2024, the Group 5 contribution rates will not be increased for rebalancing. Annually an amount equal in value to the otherwise required percentage of payroll increase (0.06% of salaries for Group 5) will be transferred from the GCRRA to the Basic Account until the 2027 valuation, at which point the imbalance will be reassessed and required contributions from the GCRRA reassessed.

6. Resulting Contribution Rates

As discussed above, the current Basic contribution rates can be maintained, with no rebalancing at the group level, and are in line with the requirements of the JTA, including JTA-C. The IAA contribution rates are not revised as a result of the valuation and therefore continue unchanged at their current level.

The following table summarizes the current and required contribution rates.

Schedule 6 – Required Total Contribution Rates

		Current (%)		
	Basic	**Net IAA**	**Benefit Trust**	**Total**
Members				
Group 1	7.34	1.27	0.00	8.61
Group 2	7.14	1.78	0.00	8.92
Group 5	9.08	2.04	0.00	11.12
Average	7.43	1.30	0.00	8.73
Employers				
Group 1	7.34	1.37	0.60	9.31
Group 2	10.84	0.98	0.60	12.42
Group 5	12.79	1.28	0.60	14.67
Average	7.61	1.37	0.60	9.58
From GCRRA				
For Group 2	0.00	0.00	0.00	0.00
For Group 5	0.06	0.00	0.00	0.06

7. Sensitivity Analysis

The table below shows the impact of a one percentage point drop in the investment return assumption on the results of the Funding Valuation.

Schedule 7 – Funding Valuation Sensitivity Analysis

	($ millions)		
	6.00%	**5.00%**	**Increase**
Smoothed Value of Fund net of RSA and GCRRA	67,238	67,238	0
Actuarial present values of:			
Future contributions at entry-age rates	32,499	44,035	11,536
Existing amortization for Groups 2/5	67	71	4
Total Assets net of RSA and GCRRA	**99,804**	**111,344**	**11,540**
Liability for Active members	63,079	80,815	17,736
Liability for deferred members	1,612	1,914	302
Liability for LTD members	2,279	2,720	441
Liability for inactive members	62	62	0
Liability for retired members	27,562	29,958	2,396
Expenses	835	901	66
Allowance for additional assumed future mortality improvements	1,700	2,100	400
Total Liabilities	**97,129**	**118,470**	**21,341**
Unfunded liability	2,675	(7,126)	(9,801)
Transfer from RSA	1,063	4,598	3,535
Unfunded liability after applying RSA	**3,738**	**(2,528)**	**6,266**
Entry Age Normal Cost	15.59%	19.93%	4.34%
JTA-C amortization of revised (surplus)/unfunded liability	(0.59%)	1.01%	1.60%
Additional Group 2/5 amortization	0.04%	0.04%	0.00%
Required contribution rate after applying RSA	**15.04%**	**20.98%**	**5.94%**

Section 3. Supplementary Funding Valuations

We have carried out a number of supplementary funding valuations to meet disclosure requirements and to demonstrate compliance with the Income Tax Act. These are carried out using the same data, methods and assumptions as are used for the Funding Valuation, except for the differences described below. The results of these supplementary valuations are set out in Appendix I.

1. A valuation on the assumption that indexed benefits are fully funded in advance, as for basic benefits;

2. A valuation where benefits are limited to those permitted under the ITA;

3. A valuation where benefits are limited to those permitted under the ITA *and* on the assumption that indexed benefits are fully funded in advance. These results are required for testing compliance with the maximum surplus provisions of the Income Tax Act, as described in Section 4.

4. The results of the Funding Valuation are also provided based on accrued benefits only, i.e. excluding both contributions and benefits in respect of future service from the assets and liabilities. In other words, we use the Projected Unit Credit actuarial cost method rather than the Aggregate Entry Age Normal method that is used for the Funding Valuation. These figures are required for disclosure in the Plan's financial statements.

5. The results of each of the first 3 supplementary valuations are also provided on an accrued benefits basis.

For valuations where indexing is treated as guaranteed and pre-funded, we have taken into account the IAA contributions from both members and employers, excluding the employer contributions of 0.6% of salaries allocated to the Municipal Retiree Benefit Trust.

Section 4. Compliance with Income Tax Act

1. Member contributions

Under the ITA, there is a requirement that individual member contributions may not exceed the lesser of:

a) 9% of salary, or

b) $1,000 plus 70% of the member's pension credit

These conditions may be waived by the Minister of Finance provided that the contributions are "determined in a manner acceptable to the Minister and it is reasonable to expect that, on a long-term basis, the aggregate of the regular current service contributions made under the provision by all members will not exceed 1/2 of the amount that is required to fund the aggregate benefits in respect of which those contributions are made."

The required member contribution rates of 8.61% for Group 1 and 8.92% for Group 2 are below this limit, and the $1,000 plus 70% of the pension credit rule which may affect high paid members is applied by the Pension Corporation (with excess contributions going through the Supplemental Benefits Account). However, the required member contribution rate of 11.12% for Group 5 exceeds the limit, so it will be necessary to apply to the Minister for a waiver for Group 5 members. A similar exemption was required, and obtained, following the 2021 valuation.

2. Maximum surplus

Section 147.2(2) of the ITA limits employer contributions that may be made to a plan if there is a surplus that exceeds 25% of the actuarial liability. The ITA provides that the liability included in this test "may include anticipated cost-of-living and similar adjustments where the terms of a pension plan do not require that those adjustments be made but it is reasonable to expect that they will be made."

Under the sustainable indexing provisions outlined in the JTA, full indexing is provided if supported by the financial position of the plan and the committed contributions. It is therefore appropriate for the purposes of testing the ITA surplus limit to recognize the future indexing of pensions for the current Plan membership. Accordingly, the supplementary valuation results on the fully indexed basis, recognizing the income tax limits on benefits, should be considered. For the purpose of this test, the total assets should include the $4,598 million in the RSA and $45 million in the GCRRA.

The relevant figures from Appendix I are shown in the table below.

Schedule 8 – Pensions Limited to ITA Maximums: Maximum Surplus and Contributions Test

	($ millions)
Entry Age Basis Surplus (Unfunded Liability) net of RSA and GCRRA	(3,512)
Amount in RSA and GCRRA	4,643
Resulting Surplus for ITA test	1,131
Net liability	**84,291**
25% of Net liability	21,073
Contribution Rate	**%**
Fully Indexed Entry Age Normal Cost	21.33%

Based on the figures set out in Appendix I, the fully indexed, income tax limited, valuation shows a net liability of $84,291 million (indexed liability of $128,890 million less the present value of the indexed entry age normal cost contributions of $44,599 million), so the 25% limit is $21,073 million. The surplus on this basis, including the assets in the RSA and GCRRA, is $1,131 million. This is less than the 25% limit, so the Plan does not have an excess ITA surplus. Given that there is a surplus, but not an excess surplus, the maximum contributions to the plan may not exceed the fully indexed, income tax limited, entry-age normal cost rate of 21.33%. The current total average contribution rate of 17.71% of salaries is less than the ITA limit and therefore are acceptable under the ITA.

Section 5. Sustainable Indexing Valuation

The Sustainable Indexing Valuation is carried out to establish the maximum level of indexing that can be provided over the period until the next valuation in a manner that allows indexing to be sustained in the long term and is fair from the perspective of intergenerational equity.

The key result from the sustainable indexing valuation is the sustainable level of indexing, given the contributions that have been committed to the Plan; this is different from the Funding Valuation, which excludes the value of future indexing and is used to determine the contribution requirements.

Details of the methods used for the sustainable indexing valuation are set out in Appendix G.

1. Long Term Funding Commitment

Based on the results discussed in Section 2, the contribution requirements of the plan can be summarised as:

Long Term Funding Commitment	2024
Basic benefit normal (entry-age) actuarial cost	15.59%
IAA contributions	2.67%
Long term funding commitment	**18.26%**

2. Results

Based on the long term funding commitment above, and taking into account the assets in the Basic account (after the required transfer from the RSA) and the IAA, we have calculated that the maximum level of indexing that is sustainable in the long term is 2.10% per year. At the previous valuation, we concluded that indexing at 100% of CPI was expected to be fully sustainable.

The table below shown the balance sheet and contribution requirements based on:

i. Indexing at 100% of CPI (in line with the long-term CPI inflation assumption of 2.25%); and

ii. Indexing at the maximum sustainable rate of 2.10%

($ millions)	2024	2024
Sustainable Indexing Target	**2.25%**	**2.10%**
Assets		
Market Value of Fund	86,584	86,584
Asset Smoothing Adjustment	(1,229)	(1,229)
RSA[1]	(3,535)	(3,535)
GCRRA	(45)	(45)
Smoothed Value of Fund for Sustainable Indexing	**81,775**	**81,775**
Actuarial present values of contributions at Entry Age Normal Cost	38,661	37,905
Present value of amortization for Groups 2/5	65	65
Total Assets	**120,501**	**119,745**
Total Liabilities	**117,717**	**115,651**
Surplus / (Unfunded Liability)	**2,784**	**4,094**
Present value of Basic account amortization to maintain contributions at the current average rate	(498)	(498)
Adjusted Surplus / (Unfunded Liability)	**2,286**	**3,596**
Contribution Requirements		
Entry Age Normal Cost - based on sustainable indexing target	19.17%	18.79%
Amortization of (surplus) / unfunded liability over infinite period	(0.37%)	(0.58%)
Required contribution	**18.80%**	**18.21%**
Long term contribution commitment	**18.26%**	**18.26%**

The above results confirm that, based on indexing at 100% of CPI, i.e. allowing for indexing at the CPI assumption of 2.25% per year, the required contribution rate of 18.80% of salaries is greater than the long term contribution commitment of 18.26%. Indexing at 100% of CPI is therefore not sustainable in the long term.

The funding policy requires that the Board establish a "sustainable COLA cap", which should be a rounded down multiple of 0.05% per year.

At an indexing rate of 2.10% per year, the required contribution rate is 18.21% of salaries, which is marginally less than the long term contribution commitment of 18.26%. We therefore conclude that indexing at 2.10% per year can be sustained in the long term. We have calculated that indexing at 2.15% per year (the next multiple of 0.05%) is not sustainable.

[1] These results are presented after the required transfer of $1,063 million from the RSA.

In accordance with the funding policy, the sustainable COLA cap should be set at 2.10% for the 3 years following this valuation.

While the Board retains discretion to determine the amount of COLA granted each year subject to the limits contained in section 73 of the Plan Rules, the expectation is that the COLA approved by the Board each year shall be the lesser of the sustainable COLA cap of 2.10% and the actual increase in the CPI.

3. Comparison with previous results

Indexing at 100% of CPI was sustainable at the 2021 valuation. The position has therefore deteriorated. The factors influencing the change in the sustainable indexing position are largely similar to those for the Funding Valuation as shown in Section 2(2), with the added effect that investment gains were lower and losses from salary increases were higher on the sustainable indexing basis, because the assumptions on this basis exclude the margins that are present in the Funding Valuation, and a narrower asset smoothing limit of ±5% is applied for the sustainable indexing valuation. In addition, there was a loss as the actual COLA provided over the last three years, which totalled 12.7% was in excess of assumed rate of 2.25% per year (or 6.9% over 3 years).

The sustainable level of indexing will be re-evaluated at the next valuation and is likely to differ from the current level as a result of future experience gains or losses and any changes to the valuation assumptions at that time.

Section 6. Subsequent Events

Since the valuation date, and as of the date of this report, there has been considerable volatility in global investment markets and macroeconomic uncertainty in connection with international trade policies and tariffs. Any impact on the market value of Plan assets and the actuarial assumptions is not reflected in the valuation results and as such, the plan financial position shown in this report may be substantially different if those results were incorporated in our valuation. These effects will be revealed in future valuations.

To the best of our knowledge, there are no other material subsequent events that would affect the results and recommendations of this valuation.

Section 7. Actuarial Opinion

In our opinion,

a) the membership data on which the valuation is based are sufficient and reliable for the purposes of the valuation,

b) the assumptions are appropriate for the purposes of the valuation, and

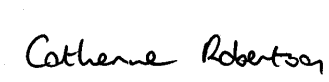
c) the methods employed in the valuation are appropriate for the purposes of the valuation.

This report has been prepared and our opinions given in accordance with accepted actuarial practice in Canada. Pursuant to the JTA and regulatory requirements, the next valuation should be completed no later than as of December 31, 2027.

Section 8. Acknowledgement

We gratefully acknowledge the generous assistance of the staff of the BC Pension Corporation in the preparation of the data and other items required for this report.

Respectfully submitted,



Catherine Robertson
Fellow of the Canadian Institute of Actuaries[1]
Fellow of the Institute and Faculty of Actuaries

Euan Reid
Fellow of the Canadian Institute of Actuaries[1]
Fellow of the Institute and Faculty of Actuaries

September 22, 2025

[1] Canadian Institute of Actuaries is the Primary Regulator

Appendix A. Summary of Plan and Amendments as at December 31, 2024

Changes to the Plan

The previous valuation was based on the provisions of the Plan as at December 31, 2021, as well as plan design changes that were effective January 1, 2022. Since then, the plan has been amended a number of times. The main changes are summarized below.

- **Spousal eligibility for pre-retirement death benefit:** Effective June 23, 2022, the plan rules were amended to ensure consistency in the calculation method for pre-retirement death benefits for all beneficiaries.
- **Use of actuarial excess and post-retirement group benefits funding:** Effective September 1, 2022, the Municipal Pension Plan Joint Trust Agreement (JTA) was amended to provide further direction on the use of actuarial excess and directed the Municipal Pension Board of Trustees (board) to provide funding to the Municipal Retiree Benefit Trust in up to three transfers totalling $70 million, using employer contributions that would otherwise go to the inflation adjustment account.
- **Municipal retiree benefit trust funding:** Effective November 17, 2022, the plan rules were amended consequential to the September 2022 JTA direction to provide funding to the Municipal Retiree Benefit Trust.
- **Removal of excess investment return transfer provision:** Effective November 23, 2023, the plan rules were amended due to changes in the plan's funding policy that eliminated excess investment return transfers.
- **Registered Retirement Income Fund (RRIF):** Effective March 31, 2024, the plan rules were amended to specify that an unlocked amount payable under the plan may be transferred to a RRIF, in addition to the existing option of an RRSP.
- **Disability benefits**: Effective June 26, 2024, the plan rules were amended to streamline medical exam requirements, define "disabled member," clarify when a disabled member is deemed retired, and update various sections to clarify and remove redundant provisions.

The Plan

The main provisions of the plan are summarized below and are provided as at December 31, 2024, except as otherwise noted. The section references are to the plan rules, except otherwise noted. The valuation is based on these provisions.

Employer and Employee Eligibility

The plan applies to employers described under section 2: a municipality, a body designated under the *College and Institute Act*, teaching universities as designated under the *University Act,* and any other body designated as an employer on terms and conditions of eligibility specified by the board or former board. The board retains the authority to set additional terms and conditions, limiting or expanding the employee enrolment requirements for individual employers. In general, plan employers include municipalities, regional districts, health and social services organizations, unions, school districts and regional colleges.

Participation is compulsory for all regular, full-time employees and for other employees who have been working in a continuous full-time capacity with the same employer for 12 months. Enrolment is optional for less than full-time employees who have completed at least 2 years of continuous employment and have earned at least 35 per cent of the Year's Maximum Pensionable Earnings (YMPE) under the Canada Pension Plan in each of two consecutive calendar years. Employees can be enrolled earlier than the plan requires or allows if the employer passes a resolution or if the terms of a collective bargaining agreement provide for it. Where an active member transfers from the service of one employer to another employer, with a break in service of less than one month, contributions must continue without interruption. [Section 3]

Effective January 1, 2019, employees are classified as follows [Section 96(1)]:

a. Group 1: all members other than police officers or firefighters, including those employees who participated in Group 4 prior to January 1, 2019 — normal retirement age is 65;

b. Group 2: police officers and firefighters other than those in Group 5 — normal retirement age is 60; and

c. Group 5: police officers and firefighters who have higher contribution and benefit accrual rates than those in Group 2 — normal retirement age is 60.

Effective January 1, 2025, Group 2 is closed to employers that were not participating in this group prior to this date.

Member Contributions

Section 5 defines the following contribution rates (effective January 1, 2022), which are deducted from a member's salary during a calendar year.

For members in Group 1:

a. 7.34 per cent of the member's salary paid into the basic account; and

b. 1.27 per cent of the member's salary paid into the inflation adjustment account (IAA).

For members in Group 2:

a. 7.14 per cent of the member's salary paid into the basic account; and

b. 1.78 per cent of the member's salary paid into the IAA.

For members in Group 5:

a. 9.08 per cent of the member's salary paid into the basic account; and

b. 2.04 per cent of the member's salary paid into the IAA.

Member contributions cease after 35 years of pensionable service have been accrued, with the exception of contributions made under certain special agreements entered into under Part 15.

Employer Contributions

Section 6 defines the following contribution rates (effective January 1, 2022), which are paid by the employer during a calendar year:

For members in Groups 1:

a. 7.34 per cent of the member's salary paid into the basic account; and

b. 1.37 per cent of the member's salary paid into the IAA.

For members in Groups 2:

a. 10.84 per cent of the member's salary paid into the basic account; and

b. 0.98 per cent of the member's salary paid into the IAA.

For members in Group 5:

a. 12.79 per cent of the member's salary paid into the basic account; and

b. 1.28 per cent of the member's salary paid into the IAA.

The above employer contributions to the IAA have been reduced by the fixed 0.6 per cent of salaries that is allocated to the Municipal Retiree Benefit Trust. From 2022–2024, a further $70 million in total of employer contributions otherwise due to the IAA were allocated to the Municipal Retiree Benefit Trust, as directed by the JTA. [Section 75]

Employer contributions cease in respect of a member's salary after the member has accrued 35 years of pensionable service, with the exception of contributions made under certain special agreements entered into under Part 15.

General Comment on Approach to Documenting Differences per Group

There are different retirement ages and service conditions for the different member Groups in the plan. The normal retirement age is 65 for members in Group 1, and 60 for members in Groups 2 and 5. In the following summaries of termination, retirement and other benefits, the various eligibility conditions and plan provisions, the age and/or service conditions are first shown for Group 1; the age and/or service conditions for Groups 2 and 5, if different, are shown in parentheses following the Group 1 conditions.

Termination Benefits

Under sections 42(1)(b) and 45, a terminating member is entitled to a deferred retirement benefit equal to the full retirement benefit (normal pension and bridge) accrued to the date of termination. The date the benefit is payable depends on the service accruals to termination – see below "Eligibility Conditions for Retirement Benefit" section.

Sections 42(1)(c) and 46 provide for the payment of a lump sum commuted value in lieu of the deferred retirement benefit, if the member is below age 55 (50), subject to the commuted value being payable on a locked-in basis.

Under certain limited conditions (small retirement benefit, non-resident status) the *Pension Benefits Standards Act* (PBSA) permits the election of a lump-sum pay-out, regardless of age, and on a non-locked-in basis.

Section 100 provides that the deferred retirement benefit of a terminating member is based on the highest average salary at termination, increased to retirement or to December 31, 1980 if

earlier, in accordance with changes in the pension index. Subsequent to 1980, the highest average salary is increased to retirement by the percentage increase granted to retirement benefits for the period between the month of termination and the month the retirement benefit becomes effective.

Section 75(3)(h) provides that the cost of the indexing described above is funded from the IAA.

Retirement Benefits: Eligibility Conditions for Retirement Benefit

Section 50 provides that an active member who terminates employment on or after September 30, 2015 is, on application, entitled to receive a retirement benefit calculated in accordance with sections 54 and 55 if the member has reached age 55 (50).

Calculation of Unreduced Retirement Benefit

Section 54 provides that the unreduced pension payable to a member is calculated as the sum of the following.

For service in Group 1:

a. 1.3 per cent of the lesser of

   i. the member's highest average salary, and

   ii. 1/12 of the YMPE for the calendar year immediately before the effective date of the retirement benefit

   multiplied by the number of years of pensionable service accrued before January 1, 2022,

b. 2 per cent of the excess of the member's highest average salary over the amount determined under paragraph (a) (ii), multiplied by the number of years of pensionable service accrued before January 1, 2022, and

c. 1.9 per cent of the member’s highest average salary multiplied by the number of years of pensionable service accrued after December 31, 2021.

For service in Group 2:

a. 1.3 per cent of the lesser of

   i. the member's highest average salary, and

   ii. 1/12 of the YMPE for the calendar year immediately before the effective date of the retirement benefit

   multiplied by the number of years of pensionable service, and

b. 2 per cent of the excess of the member's highest average salary over the amount determined under paragraph (a) (ii), multiplied by the number of years of pensionable service.

For service in Group 5:

a. 1.63 per cent of the lesser of

i. the member's highest average salary, and

ii. 1/12 of the YMPE for the calendar year immediately before the effective date of the retirement benefit

multiplied by the number of years of pensionable service accrued before January 1, 2022,

b. 2.33 per cent of the excess of the member's highest average salary over the amount determined under paragraph (a) (ii), multiplied by the number of years of pensionable service accrued before January 1, 2022, and

c. 2 per cent of the member's highest average salary multiplied by the number of years of pensionable service accrued after December 31, 2021. Note: Section 87 provides an additional retirement benefit of 0.12 per cent of the member's highest average salary multiplied by the number of years of pensionable service accrued after December 31, 2021, paid as a supplemental benefit due to *Income Tax Act* (ITA) requirements. In other words, the total benefit accrual on post-2021 service in Group 5 is 2.12 per cent.

If the member has, before April 1, 2002, purchased pensionable service for service before the date on which the plan first applied to the member's employer, and has not accrued 35 years of pensionable service after the date that the plan first applied to the employer, the percentages used in the formula referenced in paragraphs (a) and (b) above for all groups is 1.05 per cent and 1.75 per cent, respectively, for that purchased service.

In addition, the member may be entitled to a monthly bridge benefit payable until the earlier of the death of the member and the member reaching age 65 that is calculated as the sum of the following.

<u>For service in Group 1</u> (pre-2022 service only):

a. 0.7 per cent of the lesser of

i. the member's highest average salary, and

ii. 1/12 of the YMPE for the calendar year immediately before the effective date of the retirement benefit

multiplied by

b. the number of years of pensionable service accrued before January 1, 2022.

<u>For service in Group 2:</u>

a. 0.7 per cent of the lesser of

i. the member's highest average salary, and

ii. 1/12 of the YMPE for the calendar year immediately before the effective date of the retirement benefit

multiplied by

b. the number of years of pensionable service.

For service in Group 5:

a. 0.7 per cent of the lesser of

   i. the member's highest average salary, and

   ii. 1/12 of the YMPE for the calendar year immediately before the effective date of the retirement benefit

   multiplied by

b. the number of years of pensionable service accrued before January 1, 2022, and

c. 0.21 per cent of the lesser of

   i. the member's highest average salary, and

   ii. 1/12 of the YMPE for the calendar year immediately before the effective date of the retirement benefit

   multiplied by

d. the number of years of pensionable service accrued after December 31, 2021.

Highest average salary means one-twelfth of the average annual salary earned by a member during the 60 (48) months of pensionable service (not necessarily consecutive) in which the salaries were highest (or, if the member has accrued less than 60 (48) months of pensionable service, the total number of months of pensionable service). Note: For service in Groups 2 and 5, highest average salary is based on the 60 months of pensionable service in which salaries were highest if the member was not employed in Group 2 or Group 5 after December 31, 2021.

The pensionable service described in the pension and bridge benefit calculations above is limited to the first 35 years of pensionable service the member accrues. However, a member's highest average salary will consider all pensionable earnings, including earnings received after reaching 35 years of service.

A member who has made voluntary additional contributions in the past (these are no longer accepted) will be granted an increase to their pension, or a refund including interest at fund interest rates on those contributions.

Members who have contributed under a pre-2007 special agreement will be granted a retirement annuity or a lump-sum payment of the member's account balance. Members who have contributed under a post-2006 special agreement will be granted a lump-sum payment of the member's account balance.

Calculation of Reduced Retirement Benefit

Section 55 provides that a retirement benefit calculated in accordance with section 54 is reduced under the following circumstances:

For members who have less than 2 years of contributory service:

a. for service in Group 1 accrued before January 1, 2022, the retirement benefit is reduced by 3% per year that retirement age is less than 65,

b. for service in Group 1 accrued after December 31, 2021, the retirement benefit is reduced by 5.2% per year that retirement age is less than 65, and

c. for all service in Groups 2 and 5, the retirement benefit is reduced by 3% per year that retirement age is less than 60.

For members who have at least 2 years of contributory service:

a. for service in Group 1 accrued before January 1, 2022, the retirement benefit is reduced by 3% per year that

   i. retirement age is less than 60, or

   ii. retirement age plus years of contributory service is less than 90,

   whichever results in the lowest reduction,

b. for service in Group 1 accrued after December 31, 2021, the retirement benefit is reduced by 6.2% per year that retirement age is less than 60,

c. for all service in Groups 2 and 5, the retirement benefit is reduced by 3% per year that

   i. retirement age is less than 55, or

   ii. retirement age plus years of contributory service is less than 80,

   whichever results in the lowest reduction, and

d. the 3% per year described in paragraphs (a) and (c) is instead 5% per year if:

   i. the member last terminated employment prior to age 50 (45), or

   ii. the member last terminated employment on or after age 50 (45) and before age 55 (50) and has less than 10 years of contributory service.

All per year reductions listed above are prorated for fractions of a year. When contributory service is a factor in determining the reduction applied to a retirement benefit, a member's entire contributory service is considered, even when determining a reduction for service before or after a specific date.

Normal Form and Alternative Types of Pensions

Section 56 provides that a pension calculated in accordance with sections 54 and 55 is paid in the following form (normal form):

a. For service in Group 1, single life option with no guarantee period,

b. For service in Groups 2 and 5, single life option with no guarantee period if the member was not employed in Group 2 or Group 5 after December 31, 2021, and

c. For service in Groups 2 and 5, single life option with a 10-year guarantee period if the member was employed in Group 2 or Group 5 after December 31, 2021.

A member may elect to receive their pension on the single life option with no guarantee period, single life option with a guarantee period (5, 10 or 15 years), joint life and last survivor option, temporary life annuity option (equal to 25%, 50% or 100% of the maximum Old Age Security pension), or a combination of these options upon approval of the plan administrative agent. The amount of any pension granted on a form other than the normal form is calculated on an actuarially equivalent basis.

Where a member has a spouse at retirement, the member is required, as a minimum, to elect that 60 per cent of the member's pension be paid on the joint life and last survivor option, unless the spouse waives this requirement in writing or there is a written agreement or court order filed with the plan administrative agent. This option provides for a reduced amount payable to the member, continuing to the spouse on death of the member at 60 per cent of the initial reduced amount. A spouse is defined in section 96(1).

Disability Benefits

Section 60 provides that a member is entitled to a disability benefit upon application if, before reaching age 60 (55), the member is totally and permanently disabled, has completed 2 years of contributory service, is not eligible for a monthly income benefit from a group disability plan, has not accepted a lump sum payment in lieu of a continued monthly income benefit under a group disability plan, and has terminated employment.

An eligible member is entitled to receive a disability benefit calculated as the sum of the years of pensionable service accrued by the member to the date of termination of employment, and 50 per cent of the pensionable service the member would have accrued between the disability benefit effective date and age 60 (55), based on their current salary with service. This amount is pro-rated for members who work less than full-time, with both portions not reduced for immediate (i.e. early) retirement. Part 6 outlines the provisions related to disability benefits.

Sections 12(6) and 99(2) provide that if a member is receiving a benefit from an approved group disability plan, neither the member nor the employer makes contributions, and the member is not entitled to a benefit under the plan. However, the period for which the member receives such a group disability benefit is considered pensionable service, with the final retirement benefit based on the highest average salary at disablement, increased to retirement in accordance with changes in the consumer price index. An active member receiving benefits from a group disability plan continues to accrue deemed service under a group disability plan when an employer withdraws from the plan or the group disability plan loses approved status.

Pre-retirement Death Benefits

The pre-retirement death benefits for active and inactive plan members are covered in Part 7 as follows:

a. If there is no surviving spouse or a valid spousal waiver has been filed, the benefit payable to the beneficiary is an amount equal to the greater of a refund of member's contributions with interest at the refund interest rates and the full commuted value of the retirement benefit earned to the date of death. If a spousal waiver has been filed, the surviving spouse cannot be designated as beneficiary.

b. If the member has not attained age 55 (50) at the date of death, and there is a surviving spouse and a valid spousal waiver has not been filed, the spouse may elect to receive as a benefit either of the following:

    i. the greater of a refund of member's contributions with interest at the refund interest rates and the full commuted value of the retirement benefit earned to the date of death; or

    ii. an immediate pension that is actuarially equivalent to the full commuted value of the retirement benefit earned to the date of death.

c. If the member has attained age 55 (50) on the date of death, and there is a surviving spouse and a valid spousal waiver has not been filed, then the benefit payable to the spouse is an immediate pension that is actuarially equivalent to the full commuted value of the retirement benefit earned to the date of death.

If a member terminated employment under the previous vesting and locking-in rules, left contributions on deposit and dies before taking a benefit from the plan, the contributory service requirement in place at the time of termination (i.e. 10 years, 5 years or 2 years) is used to determine benefit eligibility.

Cost of Living Benefits (Indexing)

Section 73 sets out how cost of living benefits are to be administered. It provides for increases to retired members on January 1 of each year, with the benefits funded from the IAA. The portion of the indexable benefit (as defined in Section 96(1)) eligible for adjustment is the total amount of the indexable benefit, including any previous cost of living benefit, less any portion of the pension that is a result of voluntary contributions (which are no longer permitted). The maximum increase is equal to the percentage increase in the Consumer Price Index (CPI) over the 12 months ending on September 30 of the previous year.

Indexing is not guaranteed. Once granted, however, an indexing adjustment becomes part of the indexable benefit. The board annually considers all relevant factors to determine if indexing will be granted. Future indexing adjustments are granted at the discretion of the board.

Section 73 sets out additional requirements with regards to the cost of living benefit, including:

a. the same uniform percentage increase will be granted in respect of all indexable benefits eligible for adjustment;

b. the increase is prorated if the indexable benefit has not been in payment for at least 12 months;

c. the total capitalized value of all cost of living benefits granted on January 1 must not exceed the amount in the IAA on the preceding September 30; and

d. the capitalized value of all cost of living benefits granted annually is transferred from the IAA to the basic account.

The Pension Fund

Section 75 provides that the Pension Fund is divided into the following four accounts:

a. the **Basic Account**, consisting of all the assets in the fund other than assets in the IAA, the supplemental benefits account (SBA) and the retirement annuity account (RAA);

b. the **Inflation Adjustment Account**, consisting of:

   i. member contributions under section 5(1)(b) (Group 1: 1.27%; Group 2: 1.78%; Group 5: 2.04%; rates effective January 1, 2022);

   ii. the employer contributions under section 6(1)(b) (Group 1: 1.37%; Group 2: 0.98%; Group 5: 1.28%; rates effective January 1, 2022), which exclude the amounts allocated to the Municipal Retiree Benefit Trust (0.6% of salaries effective January 1, 2022);

   iii. the net investment income earned on the IAA; and

   iv. amounts transferred to the account from the RAA under section 75(5)

less:

   v. amounts transferred to the Basic Account in respect of capitalized cost of living benefits granted under section 73 and 88;

   vi. refunds to plan members in respect of the contributions made to this account under section 5(1)(b), or amounts otherwise transferred out of this account in respect of member and employer contributions allocated to this account;

   vii. amounts determined by the plan administrative agent in respect of the portions of commuted value payments or other transfers out of the plan that are attributable to cost of living adjustments;

   viii. amounts transferred to the Basic Account that are equal to the capitalized value of increases in a member's retirement benefit resulting from increases in highest average salaries under section 100; and

   ix. amounts transferred to the SBA, if any, to cover inflation protection on benefits in excess of those registrable under the *ITA*;

Further, Article 10.3 of the JTA permits the board, subject to the funding requirements in Appendix C of the JTA, to transfer portions of any actuarial surplus in the Basic Account to the IAA.

c. the **Supplemental Benefits Account**, consisting of assets required for the administration and payment of benefits that are non-registrable under the *ITA,* including amounts paid to the Municipal Retiree Benefit Trust to fund post-retirement group benefits; and

d. the **Retirement Annuity Account**, consisting of voluntary contributions made under the previous statutes, contributions made under special agreements, and investment earnings thereon, less amounts transferred to the basic account and the IAA for the retirement annuity portion of the benefits paid.

***Income Tax Act* Limits**

The *ITA* imposes certain limits on the contributions that may be made to, and the benefits that may be paid from, a registered pension plan. However, in total, the contribution requirements from, and the benefit promises to, plan members have not been altered under the plan. To this end, the SBA covers the financing and payment of benefits in excess of those registrable under the *ITA*.

The excess benefits are paid on a current cash basis, by allocating from the regular employer contributions, the amounts necessary to maintain the SBA at a zero balance. Effectively, from a plan member's perspective, it is expected that these procedures will be invisible – the total contribution and benefit obligations remain unchanged. We have ignored the implications of all such internal restructuring in completing the primary, basic account valuation. In the plan summary herein, and elsewhere in this valuation report, our references to contributions/benefits to/from the basic/IAA are inclusive of the allocations to/from the SBA; in general, the allocations to/from the SBA have not been referenced.

We have also completed supplementary valuations recognizing the income tax limits on pensions. We understand that these limits are applied only in respect of service after 1991. The maximum annual pension permitted at December 31, 2024 (before application of any early retirement reductions, where applicable) is the lesser of:

a. $3,610.00 multiplied by the years of service; and

b. 2 per cent multiplied by the years of service further multiplied by the average of the best 3 years of remuneration paid to the member.

The plan also imposes a 35 year cap on accruals at the above maximum rate. The 2025 maximum limit is $3,756.67 which is increased annually by the increase in the average industrial wage.

Refund Interest Rates

In accordance with section 96, for periods on and after January 1, 1993, and before January 1, 2004, interest credits are based on the average yields of 5 year personal fixed term chartered bank deposit rates, published in the Bank of Canada Review as CANSIM Series B14045. For periods on or after January 1, 2004, and before October 1, 2019, interest credits are based on the average yields of 5 year personal fixed term chartered bank deposit rates, published in the Bank of Canada Review as CANSIM Series V122515. For periods on or after October 1, 2019, interest credits are based on the average yields of 5 year personal fixed term chartered back deposit rates, published in the Bank of Canada Review as CANSIM Series V80691336 or its future equivalent.

Special Agreements

Under Part 15, a special agreement is an agreement entered into by the board with an employer that provides for employer and member contributions in excess of those required under sections 5 and 6, for the purpose of increasing the benefits of the members employed by the employer. Under the *ITA,* the terms of each special agreement constitute a money purchase provision. [Sections 107 and 108]

Member and employer contributions are made at the rates set in each special agreement, subject to the maximum amounts allowable under the *ITA*. The contributions are paid into the RAA and credited to the member's account for whom they are made. The member's account holds the accumulated value of the special agreement contributions made for the member, together with interest at the fund interest rates. Employer contributions immediately vest in the member for whom they are made. A special agreement may require that member and employer contributions continue to be paid after the member has accrued 35 years of pensionable service. Contributions to a special agreement must stop when the member becomes part of group 5. [Sections 109 and 110]

Under section 112, a terminating member who elects to receive a commuted value as a termination benefit must be paid a lump sum payment of the member's account balance. If the member does not elect to receive a commuted value as a termination benefit, the member's account remains within the RAA until the member becomes entitled to a retirement benefit.

Section 113 provides that if a member elects to receive a retirement benefit, the member is entitled to:

a. a lump sum payment of the member's account balance under a pre-2007 special agreement, or

b. a monthly retirement annuity converted from the member's account balance under a pre-2007 special agreement commencing at the same time and payable under the same option and conditions as the retirement benefit granted under part 5, and

c. a lump sum payment of the member’s account balance under a post-2006 special agreement.

If a member qualifies for a disability benefit, section 114 provides that the member is entitled to:

a. a lump sum payment of the member's account balance under a pre-2007 special agreement, or

b. a monthly retirement annuity commencing at age 60 (55) converted from the member's account balance under a pre-2007 special agreement and payable under the same option and conditions as the disability benefit granted under Part 6, and

c. a lump sum payment of the member's account balance under a post-2006 special agreement.

If the member elects to receive a monthly retirement annuity but dies before reaching age 60 (55) the member's beneficiary is entitled to a lump sum payment of the member's account balance under a pre-2007 special agreement. If the disability benefit continues to the member's spouse, the spouse may choose either the lump sum payment or an immediate monthly retirement annuity converted from the member's account balance under a pre-2007 special agreement.

Under section 115, if a member dies before taking a benefit from the plan, the member's beneficiary is entitled to a lump sum payment of the member's account balance. If there is a surviving spouse and he or she elects to receive a pension under Part 7, the spouse may choose either the lump sum payment or an immediate monthly retirement annuity converted from the member's account balance under a pre-2007 special agreement or a lump sum payment of the member's account balance under a post-2006 special agreement. If a refund is payable, the payment may be transferred to an RRSP as permitted by the *ITA*.

Section 117 provides that if an inactive member elects to transfer the member's contributory and pensionable service to another pension plan under a transfer agreement entered into by the board, the member must be paid a lump sum payment of the member's account balance.

A monthly retirement annuity paid under this Part is paid from the basic account as a benefit with a capitalized value equal to the member's account balance at the end of the month preceding the commencement of the annuity. When a monthly retirement annuity commences payment under this Part, the member's account balance is transferred from the RAA to the basic account and the IAA and the member's account ceases to exist.

Other Items

1. Article 3.2 of the JTA provides that all expenses incurred in the administration of the plan are to be paid from the fund.

2. A maximum of 5 years taken to raise a child may be recognized as contributory service provided the member has a record of pensionable service immediately before and after the child-rearing period(s). [Section 13]

3. Section 57 enables an employer to request the plan administrative agent to adopt a Special Retirement Incentive Plan (SRIP), whereby the age and service conditions, or the early retirement percentage reductions, or both, may be adjusted. The SRIP must stipulate the eligible members, the period it will remain open, the conditions applicable to the incentives, the additional costs to the employer, the timing of these payments to fund the SRIP and restrictions under the *ITA*.

4. Effective April 1, 2010, reciprocal transfers between the College, Municipal, Public Service and Teachers' Pension plans are made exclusively under the National Public Service Pension Transfer Agreement (NTA). This replaced the Public Sector Transfer Agreement. Under the NTA, transfers under the agreement take into account the benefits under the transferring plans and pro-rate service if the importing plan's reserve requirements are higher than those available from the exporting plan. Members may pay for any shortfall, subject to Canada Revenue Agency approval, within certain deadlines. Members can choose to leave their entitlements with their respective plans and apply for the appropriate benefits available from each plan at termination and/or retirement.

5. Effective January 1, 2016, the board established a rate stabilization account (RSA) as a notional account within the basic account that may be drawn down to avoid otherwise required increases in basic account contribution rates.

Funding Rules

These are covered in Article 10 and Appendices B and C of the JTA.

While the Plan is exempt from *PBSA* funding requirements, the JTA requires "voluntary compliance" with the *PBSA* requirements for a going-concern valuation as they existed prior to December 31, 2019 and confirmed in Appendix C of the JTA.

If an actuarial valuation indicates a requirement to increase contribution rates to the basic account, the increase must be shared equally by members and employers.

Appendix B of the JTA previously stated funding objectives for the use of actuarial excess during a "transitional period" since the plan entered joint trusteeship. The transitional objectives were either achieved or replaced through the 2022 Plan design changes and the application of the actuarial excess from the 2018 valuation. Therefore, the Municipal Pension Plan Partners amended Appendix B of the JTA on February 8, 2021, to implement the following funding arrangement for the use of future actuarial excess:

a. First, retire any unfunded liabilities and then ensure the plan is funded at the entry age normal cost; surplus can also be used to maintain the current contribution rate where it is lower than the EANC.

b. Then, split any remaining excess equally between the IAA and RSA

    i. When the IAA has sufficient funds to provide full sustainable indexing without a cap, or the RSA has reached the targeted funding level, the share that would otherwise go to either the IAA or the RSA will go to the other account until both targets are met.

Further, a group contribution rate rebalancing account was established in the basic account using a portion of the actuarial excess from the 2018 valuation to provide rate stability for Groups 2 and 5 when group contribution rate rebalancing is required per the board's funding policy.

Appendix B. Membership Data

1. Data received from BC Pension Corporation

Data as of December 31, 2024 were prepared by the BC Pension Corporation and the membership counts received are as follows:

	Pension Corp. Data
Active Members	262,729
Long Term Disability	10,378
Terminated Vested	53,668
Inactive	12,509
Leave of absence	65
Limited Data	168
Pensioners	133,487
Total Membership	**473,004**

The data also included 52,564 active member terminations and 8,704 pensioner terminations during the period January 1, 2022 to December 31, 2024. The Pension Corporation advised us that the data supplied are generally proper, complete and in accordance with specifications, unless otherwise noted.

2. Data Validation

Where possible, we compared totals with corresponding details in the Plan's audited Annual Reports. We also subjected the 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;
- A member's date of birth did not change;
- A member joined the plan or commenced pension at a reasonable age;
- Accrued service increased by a reasonable amount (e.g. no more than 36 months since the last valuation and no more than 12 months in the valuation year);
- The salary level and the salary increase from the previous valuation was within a reasonable range;
- Pensions in pay increased by a reasonable amount (e.g. in line with the indexation since the last valuation); and
- We examined the additions to and deletions from each of the data files (i.e., the files for active employees, pensioners and terminated members) since the previous valuation to determine whether all Plan members were accounted for in this valuation, to check for duplicate records and to confirm pension amounts.

There were a number of discrepancies recorded during our examination of the data and we sought clarification of these from the Pension Corporation. Where necessary, we modified the data, our assumptions, or both, to compensate for these discrepancies.

3. Treatment of Member Data

Active Members

The active member data includes a number of individuals who work less than full time. For the purposes of calculating liabilities and normal actuarial costs, we treated all members as if they were full-time employees after the valuation date; however, in calculating any amortization costs as a percentage of total future payrolls, we reduced the total payroll base by 10% to reflect the part-time employment, based on an analysis of payroll data (the same adjustment was applied at the previous valuation).

The active member data included 8,835 members for whom we were not provided salary data for the year before the valuation date. It also included 356 members with inappropriate salary data (350 members with very low earnings and 6 members with very high salaries, that appeared to have been extrapolated from inappropriately short periods of service or an inappropriate increase from the prior year). For these members, we set their salaries equal to the average salaries for active members of the same normal retirement age, age and gender.

The active member data also included 3,079 members whose most recent contribution to the plan was before January 2022; i.e. more than 3 years before the valuation date. We have included these individuals as active members in the membership count, but valued their liabilities assuming they terminated service immediately after the valuation date.

In the previous valuation, we made a number of additional adjustments to the data we received for the 11,098 active members who had no salary or service reported for the year ending December 31, 2021, or with a last-contribution-date prior to December 2021. We excluded them from the active member base, and included them with the inactive data as follows:

- We treated members who had at least 3 years of service, contributions after 2019 and basic employee contributions with interest balances of at least $1,500, as if they were would be reactivated on January 1, 2022 (we set their salaries equal to the average salaries for active members in the same age-group category);
- We held a liability equal to twice the basic employee contributions with interest balance for the remaining members.

Based on the high percentage of these members who have returned to active membership in recent valuations, we have simplified the approach for this valuation as described above, to assume all remain active, with a portion terminating immediately after the valuation date. The impact of this change is to increase both the liabilities and the assets in respect of future contributions.

Leaves of Absence

We calculated the liability for 65 members on a leave of absence on the assumption that these members became active members again immediately after the valuation date.

Members on Long-Term Disability

The liability for the 10,378 members on long-term disability was calculated as if these individuals would ultimately collect deferred vested pensions starting at age 63 for Group 1 and age 57 for Groups 2 and 5. The deferred pensions valued allow for service accrued to the valuation date plus 80% of service projected to the assumed retirement date (maximum 35 years), and the actual salaries indexed to the valuation date. This implicitly allows for a 20% possibility of recoveries from disability, with a simplifying assumption for recovery that the future active liability would be offset by the future contributions. For the 9 members missing actual salaries and 6 members with very low salaries, we used the average salaries for active members of the same normal retirement age, age and gender.

In the previous valuation, we set the liability for members on long-term disability equal to 80% of the liability with deferred pensions on the basis of 100% of service projected to retirement date plus 20% of the liability as if these members would again become contributing members of the plan. The impact of change in method allowing for recovery is not material.

In the previous valuation, there were 256 members on long-term disability who had missing, invalid or inconsistent detail (mostly missing salaries), and we held a liability for these members of twice their basic employee contributions with interest balance. There were no members missing such details (other than salaries) in this valuation.

Terminated Members

For 272 members who were those with missing, invalid or inconsistent detail, or whose accrued pension equalled zero, we included a liability equal to twice their basic employee contributions with interest balance. The other 53,396 terminated members were valued on the assumption that they would receive vested pensions. The same approach was used in the previous valuation.

Inactive Members

We calculated liabilities for 12,509 members on the assumption that they would take immediate refunds and we held a liability equal to twice their basic employee contributions with interest balances. The same approach was used in the previous valuation, except that we treated one member with an interest balance of at least $1,500 who returned work after the valuation date similar to other active members.

Members with Limited Data

With respect to the 168 non-retired members with limited data, we held a liability equal to twice their basic employee contributions with interest balance. The same approach was used in the previous valuation.

Pensioners

Of the total pensioner data, there were 171 members excluded from the valuation because they died prior to the valuation date with no outstanding guaranteed pensions due or they were in receipt of a remaining guarantee only which rounded to zero months remaining, and hence their liability is zero.

Appendix C. Active Member Data as at December 31, 2024

Age group[1]		Active members December 31, 2024			New entrants Jan 1, 2022 to Dec 31, 2024 and still active Dec 31, 2024	
	Number	Average annualized earnings valued $	Average Pre 2022 service (years)	Average Post 2021 service (years)	Number	Average annualized earnings valued $
Group 1 (males – normal retirement age = 65)						
24 & below	1,701	62,045	0.0	0.8	2,638	64,576
25-29	5,630	71,494	0.3	1.4	3,242	73,030
30-34	8,031	80,616	1.3	1.9	2,944	78,790
35-39	8,862	87,380	2.7	2.1	2,382	81,234
40-44	8,849	90,343	4.4	2.3	1,825	79,682
45-49	8,088	91,445	6.3	2.4	1,350	79,243
50-54	8,117	91,764	8.4	2.5	1,027	79,524
55-59	7,437	90,475	10.5	2.5	790	79,181
60-64	5,720	86,427	11.1	2.6	406	71,395
65 & over	2,744	79,359	11.0	2.5	117	63,585
Total	**65,179**	**85,898**	**5.6**	**2.2**	**16,721**	**75,691**
Group 1 (females – normal retirement age = 65)						
24 & below	4,307	65,481	0.0	0.8	7,080	68,807
25-29	17,887	74,975	0.4	1.4	8,496	73,416
30-34	24,572	81,961	1.5	1.7	6,389	74,857
35-39	26,252	85,464	2.9	1.8	5,408	73,597
40-44	25,971	85,284	4.3	2.0	4,408	70,897
45-49	24,532	83,467	5.5	2.1	3,391	69,608
50-54	23,570	82,399	7.3	2.3	2,644	67,865
55-59	20,960	80,406	9.3	2.4	1,750	65,833
60-64	14,676	76,586	10.1	2.4	903	62,982
65 & over	6,249	73,637	10.7	2.3	214	57,219
Total	**188,976**	**81,253**	**5.0**	**2.0**	**40,683**	**71,270**
Total Group 1	**254,155**	**82,444**	**5.2**	**2.0**	**57,404**	**72,558**

[1] Age nearest birthday at December 31, 2024 for actives and at entry for new entrants.

Age group[1]		Active members December 31, 2024	
	Number	Average annualized earnings valued $	Average service (years)
Group 2 (males & females [2]– normal retirement age = 60)			
29 & below	12	72,028	0.8
30-34	19	78,533	1.6
35-39	36	80,543	3.1
40-44	29	101,937	6.1
45-49	34	98,828	6.1
50-54	42	116,433	10.3
55-59	33	120,864	8.1
60 & over	23	104,444	9.5
Total Group 2	**228**	**100,234**	**6.4**

[1] Age nearest birthday at December 31, 2024 for actives and at entry for new entrants.

[2] Combined 200 males and 28 females due to privacy reasons.

Age group[1]	Active members December 31, 2024					New entrants Jan 1, 2022 to Dec 31, 2024 and still active Dec 31, 2024 Group 2 and Group 5 combined	
	Number	Average annualized earnings valued $	Average Pre 2022 service (years) with 2% benefit rate	Average Pre 2022 service (years) with 2.33% benefit rate	Average Post 2021 service (years)	Number	Average annualized earnings valued $
Group 5 (males – normal retirement age = 60)							
24 & below	79	81,686	0.0	0.0	1.0	212	86,881
25-29	616	96,775	0.0	0.4	1.8	517	92,521
30-34	1,114	107,922	0.1	1.7	2.4	354	93,946
35-39	1,244	115,610	0.6	4.3	2.6	173	95,086
40-44	1,256	125,441	2.6	6.7	2.8	69	98,012
45-49	1,069	139,306	6.3	8.2	2.9	31	114,168
50-54	1,169	146,870	9.7	8.3	2.9	23	132,693
55-59	577	152,893	11.4	8.3	2.9	10	118,796
60 & over	87	154,018	10.7	8.1	2.7	3	119,027
Total	**7,211**	**126,181**	**4.1**	**5.5**	**2.6**	**1,392**	**94,007**
Group 5 (females – normal retirement age = 60)							
24 & below	30	82,934	0.0	0.0	1.1	63	86,882
25-29	165	95,979	0.0	0.4	1.9	122	92,893
30-34	258	109,345	0.1	2.1	2.3	64	95,330
35-39	200	119,377	0.4	4.3	2.5	30	93,645
40-44	170	121,880	2.5	6.2	2.7	16	94,123
45-49	163	135,257	5.1	8.0	2.9	3	103,824
50-54	147	145,171	7.5	8.0	2.9	4	90,158
55-59	60	146,772	9.1	8.8	2.9	3	107,409
60 & over	7	129,648	8.0	7.9	2.2	0	0
Total	**1,200**	**120,193**	**2.6**	**4.6**	**2.5**	**305**	**92,516**
Total Group 5	**8,411**	**125,327**	**3.9**	**5.4**	**2.6**	**1,697**	**93,739**

The average age of the 262,794 active members is 44.2.

[1] Age nearest birthday at December 31, 2024 for actives and at entry for new entrants.

The table below shows a comparison of the December 31, 2024 active membership with the December 31, 2021 active membership, both based on the active data treatment changes made for this valuation (and as if they had applied for the 2021 valuation), along with the active membership valued as of 2021.

	Group 1 Males	Group 1 Females	Group 2	Group 5
At December 31, 2021				
Number	50,974	147,560	364	7,412
Proportion of total	24.7%	71.5%	0.2%	3.6%
Average age (at 12.31)	45.8	44.7	44.9	42.3
Average service	8.9	7.7	11.2	13.1
Average salary	$75,597	$69,302	$99,557	$109,240
At December 31, 2021 (2024 data treatment)				
Number	52,999	156,627	370	7,460
Proportion of total	24.4%	72.0%	0.2%	3.4%
Average age (at 12.31)	45.7	44.5	44.9	42.3
Average service	8.8	7.5	11.0	13.1
Average salary	$75,426	$69,226	$99,400	$109,250
At December 31, 2024				
Number	65,179	188,976	228	8,411
Proportion of total	24.8%	71.9%	0.1%	3.2%
Average age (at 12.31)	44.7	44.1	46.4	41.5
Average service	7.8	7.0	6.4	11.9
Average salary	$85,898	$81,253	$100,234	$125,327
Change 2021 to 2024 (2024 data treatment)				
Number	+23.0%	+20.7%	-38.4%	+12.7%
Proportion of total	+0.4%	-0.1%	-0.1%	-0.2%
Average age	-1.0 years	-0.4 years	+1.5 years	-0.8 years
Average service	-1.0 years	-0.5 years	-4.6 years	-1.2 years
Average salary	+13.9%	+17.4%	+0.8%	+14.7%

The above comparison shows an increase in the number of Group 1 and Group 5 membership, and a decrease in the number of Group 2 membership during the 3 year inter-valuation period. This is in addition to the increase attributable to the change in treatment of data for active members who did not make a contribution to the Plan in the month before the valuation date, as described in Appendix B. The proportion of males to females has increased for Group 1. The average age has decreased for Group 1 and Group 5 and increased for Group 2. The average

service has decreased for all groups. The increase in average salary is higher for females in Group 1. These age and service comparisons do not materially change if we compare the active membership valued for the previous valuation against those valued for this valuation. There is an overall small reduction in the average age and service as a result of the amended data treatment for both males and females in Group 1, but this alone has a limited impact on the entry age normal cost given the plan provisions for unreduced and reduced retirement

In calculating the entry age normal cost we assume that future new entrants will join the plan at ages and with salaries that are the same as recent new entrants (defined for this plan as members who joined the plan in the last three years). For this purpose new employer members have only been included in the new entrant profile based on their original hire date by the new employer and not based on the date they joined the Municipal Plan. This ensures that the entry age normal cost is not inappropriately increased by treating long serving new employer members as new entrants.

A comparison of the new entrant subset used at December 31, 2024 with that used at December 31, 2021 in determining the entry-age normal costs is included in the table below, again based on the active data treatment changes made for this valuation (and as if they had applied for the 2021 valuation), along with the active new entrant profile valued as of 2021.

	Group 1 Males	Group 1 Females	Groups 2/5
At December 31, 2021			
Number	9,655	26,249	1,012
Proportion of total	26.2%	71.1%	2.7%
Average age at entry	36.7	35.1	31.3
Average salary	69,451	62,760	84,229
At December 31, 2021 (2024 data treatment)			
Number	9,981	27,426	1,018
Proportion of total	26.0%	71.4%	2.6%
Average age at entry	36.7	35.1	31.3
Average salary	69,184	62,722	84,250
At December 31, 2024			
Number	16,721	40,683	1,697
Proportion of total	28.3%	68.8%	2.9%
Average age at entry	36.3	35.9	31.0
Average salary	75,691	71,270	93,739
Change 2021 to 2024 (2024 data treatment)			
Number	+67.5%	+48.3%	+66.7%
Proportion of total	+2.3%	-2.6%	+0.3%
Average age	-0.5 year	+ 0.8 year	- 0.3 year
Average salary	+9.4%	+13.6%	+11.3%

The number of new entrants has increased markedly for all groups, with a more significant increase for Group 1 males than for Group 1 females. The proportion of males to females has therefore increased in Group 1. The average age of new entrants has increased slightly for Group 1 females and decreased slightly for Group 1 males and Groups 2/5. The increase in average salary for new entrants is very similar to the increase in average salary for the actives for all groups. These age and salary comparisons do not materially change if we compare the new entrant subset valued for the previous valuation against those valued for this valuation.

Appendix D: Inactive Member Data as at December 31, 2024

1. Members on Long-Term Disability

Age group[1]	Males		Females	
	Number	Average annual deferred pensions[2]	Number	Average annual deferred pensions[2]
29 & below	13	38,476	118	39,600
30-34	32	37,094	226	38,326
35-39	77	36,633	490	36,063
40-44	117	34,043	747	35,157
45-49	164	31,789	986	30,541
50-54	281	29,831	1,366	25,962
55-59	353	25,489	1,952	23,062
60 & over	622	21,834	2,834	18,886
Total	**1,659**	**26,923**	**8,719**	**25,391**

	Number	Average age	Average annual deferred pensions[2]
Total males & females	**10,378**	**53.6**	**25,636**

	Number	Average age	Average pensionable service	Average salary	Expected average remaining service life
Active and LTD Combined	**273,172**	**44.5**	**7.6**	**83,368**	**11.1**

[1] Age nearest birthday at December 31, 2024.

[2] Basic lifetime portions assumed payable from age 63; males include 40 Group 2/5 members and females include 25 Group 2/5 members with pensions assumed to commence from age 57; additional temporary pensions are payable to age 65.

2. Terminated Members Assumed Electing Vested Pensions

Age group[1]	Males			Females		
	Average annual vested pensions			Average annual vested pensions		
	Number	Initial[2]($)	Offset at age 65($)	Number	Initial[2]($)	Offset at age 65($)
20-29	1,260	1,214	125	3,134	1,143	120
30-34	2,019	2,371	485	5,260	2,083	450
35-39	2,324	3,830	898	5,736	3,256	823
40-44	2,315	5,824	1,372	5,514	4,608	1,198
45-49	2,031	7,012	1,657	4,833	5,531	1,422
50-54	2,063	8,696	2,035	4,995	6,633	1,726
55-59	1,709	8,524	2,019	3,974	6,911	1,807
60 & over	1,878	6,319	1,118	4,351	5,382	1,024
Total	**15,599**	**5,598**	**1,251**	**37,797**	**4,481**	**1,090**

	Number	Average age	Average annual vested pension - Initial	Average annual vested pension - Offset at age 65
Total males & females	**53,396**	**44.8**	**4,807**	**1,137**

3. Remaining Inactive Members

	Number	Total Member contributions with interest
Value at 2 x contribution with interest	12,949	$31,215,172

[1] Age nearest birthday at December 31, 2024.

[2] These pensions are assumed to commence at age 60 (55) (or immediately if over age 60 (55)) for members with more than two years of pensionable service and age 65 (60) for members with less than 2 years of pensionable service.

Appendix E. Pensioner Data as at December 31, 2024

1. Former Contributors

Age group[1]	Number of pensioners[2]	Annual Pensions ($000's)[3]				
		Single life	Joint life & survivor	Joint life & survivor with guarantee	Single life with guarantee	Temporary life
Male pensioners						
Less than 50	3	18	49	0	0	0
50-55	104	73	1,853	3,196	982	1,392
55-59	1,589	555	20,405	22,120	9,900	18,546
60-64	5,281	5,699	69,601	47,791	32,106	64,251
65-69	8,480	24,174	116,883	41,031	38,449	8,572
70-74	8,301	46,588	122,705	17,662	24,942	0
75-79	6,061	51,116	92,898	4,609	8,112	0
80-84	3,074	33,055	47,054	81	861	0
85-89	1,548	21,061	17,004	0	0	0
90-94	630	8,830	4,350	0	0	0
95 & over	175	2,897	656	0	0	0
Total	**35,246**	**194,066**	**493,458**	**136,490**	**115,352**	**92,761**
Female pensioners						
Less than 50	13	0	17	0	135	9
50-54	101	132	514	838	1,382	599
55-59	2,934	1,075	15,135	11,443	16,788	23,788
60-64	12,225	13,387	69,548	44,038	76,246	109,978
65-69	21,853	65,783	114,059	51,371	122,517	15,050
70-74	21,627	138,065	103,216	24,620	78,935	0
75-79	15,514	154,729	57,983	3,275	21,563	0
80-84	8,481	98,138	23,003	116	1,786	0
85-89	4,047	48,035	5,345	0	2	0
90-94	1,629	17,982	717	0	0	0
95 & over	504	4,980	54	0	0	0
Total	**88,928**	**542,306**	**389,591**	**135,701**	**319,354**	**149,424**
Grand Total	**124,174**	**736,372**	**883,049**	**272,191**	**434,706**	**242,185**

[1] Age nearest birthday at December 31, 2024.

[2] These numbers include only those who were formerly contributors to the plan as well as pre-retirement limited members (i.e. divorced spouses with a pension interest). Member in the 65-69 group are either over age 64.5 and round up to this group, or are limited members where the temporary bridge benefit ceases at the date the original member reaches age 65 and, as a result, it is possible to have a bridge pension payable past the recipient reaching age 65.

[3] Including supplements to January 1, 2024.

Supplemental pensions included in the above amounts are as follows:

Supplemental Pensions included	**3,443**	**10,690**	**3,465**	**2,554**	**0**

Average age of the 124,174 pensioners is 71.8.

2. Beneficiaries

Age group[1]	Number of beneficiaries[2]	Annual Pensions ($000's)[3]	
		Single life	Single life with guarantee
Male beneficiaries			
Less than 50	48	237	0
50-54	41	385	15
55-59	83	970	13
60-64	227	2,337	263
65-69	345	3,803	588
70-74	536	5,969	582
75-79	607	6,914	311
80-84	502	5,594	184
85-89	358	3,642	0
90-94	144	1,326	0
95 & over	45	463	0
Total	**2,936**	**31,640**	**1,956**
Female beneficiaries			
Less than 50	57	547	21
50-54	82	1,065	45
55-59	162	2,555	221
60-64	344	5,282	726
65-69	617	10,935	627
70-74	832	16,305	456
75-79	1,046	21,717	115
80-84	988	18,745	0
85-89	798	14,510	0
90-94	573	10,176	0
95 & over	263	4,318	0
Total	**5,762**	**106,155**	**2,211**
Remaining guarantees	**444**	**0**	**6,519**
Grand Total	**9,142**	**137,795**	**10,686**

[1] Age nearest birthday at December 31, 2024.

[2] These numbers include spouses (or estates) currently receiving benefits where the former contributor is deceased.

[3] Including supplements to January 1, 2024.

Supplemental pensions included in the above amounts are as follows:

Supplemental Pensions included	**482**	**0**

Average age of the 8,698 beneficiaries (excluding those in receipt of remaining guarantees) is 77.0.

	Number	Average age	Average annual life pension
Total Pensioners & Beneficiaries	132,872	72.1	18,324

Appendix F. Plan Assets

1. Structure of Plan assets

The fund's annual reports record assets on a market value basis. We relied on these annual reports for the asset values used for the years ending December 31, 2021 to December 31, 2024 (draft for 2024).

As described in Appendix A, the assets are split into four separate accounts:

i. The **Basic account** holds the majority of Plan assets, and is used to pay Basic defined benefits. The Basic account includes two notional sub-funds:

   a. The **Rate Stabilization Account** (RSA), which was established following the 2015 valuation and can be drawn down as needed to stabilize the contribution rate.

   b. The **Group Contribution Rate Rebalancing Account** (GCRRA), which was established following the 2018 valuation, and can be used to mitigate the impact of contribution rate increases to Group 5 and Group 2 arising as the result of the need to rebalance contribution rates between the groups in the plan.

   Assets held notionally in the RSA and the GCRRA are excluded from the Funding and Sustainable Indexing valuations. Interest is applied annually based on the one-year smoothed return.

ii. The **Inflation Adjustment Account** (IAA), which holds funds for the purpose of providing non-guaranteed cost-of-living increases. The IAA operates on a defined-contribution basis, since contributions are fixed at levels specified in the Plan Rules and the value of indexing benefits is limited to the assets in the IAA. Whenever a cost-of-living increase is granted, the capitalized value of the increase in members' benefits is transferred from the IAA to Basic Account. Any increases granted should therefore not create (or increase) a Basic account unfunded liability, or reduce a Basic account actuarial surplus. The IAA is excluded from the Funding Valuation of the Basic Account, but included in the Sustainable Indexing valuation.

iii. The **Retirement Annuity Account** (RAA) holds member voluntary contributions, as well as other balances in respect of special agreements with various employers that are accumulated on a money purchase basis and may be converted at a member's retirement into additional amounts of pension. Assets in the RAA are excluded the from the Funding and Sustainable Indexing valuations, on the assumption that any pension purchases for retiring employees from time to time will have a neutral effect on Plan funding.

iv. The **Supplemental Benefits Account** (SBA), consisting of assets required for the administration and payment of benefits that are non-registrable under the ITA. Non registrable benefits are paid on a current cash basis and the SBA is maintained at zero balance, so the SBA is excluded from the valuation.

2. Asset allocation

The same asset allocation applies to the fund as a whole, with no distinction between the four sub-accounts. The actual asset allocation at December 31, 2024 is summarized in the table below, alongside the long-term asset mix set out in the Plan's Statement of Investment Policies and Procedures.

Asset Class	Actual Assets ($m)	Actual Asset Mix (%)	Long-term Asset Mix (%)
Short Term	1,674	1.9%	2.0%
Government Bonds	24,500	28.2%	22.0%
Corporate Bonds			6.0%
Private Debt	6,724	7.7%	9.0%
Mortgages	3,045	3.5%	3.5%
Total Fixed Income	**35,943**	**41.3%**	**42.5%**
Canadian Equities	2,026	2.3%	2.2%
Global Equities	16,457	18.9%	15.4%
Emerging Markets	4,972	5.7%	4.4%
Private Equity	13,016	15.0%	16.0%
Total Equity	**36,471**	**42.0%**	**38.0%**
Real Estate	13,755	15.8%	19.5%
Infrastructure and Renewable Resources	11,995	13.8%	15.0%
Total Real Assets	**25,750**	**29.6%**	**34.5%**
Leverage[1]	(11,238)	(12.9%)	(15.0%)
Total Portfolio	**86,926**	**100.0%**	**100.0%**
Receivables and directly held derivatives	752		
Payables and directly held derivatives	(752)		
Total Market Value	**86,926**		

[1] At December 31, 2024, leverage consisted of bond repurchase agreements and unsecured debt. Net of leverage, the bond allocation at that date was $13,262m (15.3%). This compares to the long-term asset mix for bonds net of leverage of 13%.

3. Asset smoothing

As in the previous valuation, and in accordance with the funding policy, we applied a five year smoothing technique to these assets. We believe a smoothing approach is appropriate as it cushions the actuarial valuation results against dramatic swings in market value that can occur.

To obtain the unconstrained smoothed value, we first determine the actual return on the basis of market values during the year (taking into account the timing of non-investment related cashflows, i.e. the net contributions minus benefits and non-investment expenses). We then determine an assumed return for the year at a rate equal to the assumed underlying real return rate plus the year-over-year change in the consumer price index. The difference between these two returns is then spread over a five year period, recognizing one-fifth of it in each of the current and four succeeding years. This approach effectively spreads the difference between (a) the total investment return (including both realized and unrealized capital changes) and (b) a hypothetical return based on a long-term real return rate, over a five year period.

a) Funding Valuation Assets

For the Funding Valuation, the smoothed value of assets is then restricted to a range of 92% to 108% of market value, if necessary (the same range was applied in the previous valuation). This means that in periods of significant market decline (growth) the smoothed value does not become too large (low) relative to the market value - effectively the constraint accelerates recognition of very poor (strong) market returns and allows the contribution rate to more appropriately reflect the actual returns earned by the plan.

The application of this approach to the total fund yields the following results:

Total Fund Smoothing

Target Return	2021	2022	2023	2024
1. Dec-over-Dec increase in CPI	4.8%	6.3%	3.4%	1.8%
2. Base return = (1) + 3.5%	8.3%	9.8%	6.9%	5.3%
$ millions				
3. Market value	74,165	71,551	77,017	86,926
4. Smoothed value	68,662	75,525	80,735	85,692
5. Ratio of (4) ÷ (3)	0.926	1.056	1.048	0.986
6. Market value	11.6%	-3.3%	7.5%	12.5%
7. Smoothed value	12.3%	10.2%	6.8%	5.8%

The annualized market value rate of return since the previous valuation is 5.4%.

Using the relationship between the market and adjusted values shown in line 5 above, and applying this relationship to the market values of the Basic Account, Inflation Adjustment Account and Retirement Annuity Account balances as reported in the annual reports, we get:

Year-end asset values – $ millions

Basic Account including RSA and GCRRA	2021[1]	2022	2023	2024
1. Market value	60,752	58,056	63,920	72,916
2. Smoothed value	56,245	61,280	67,005	71,881
3. Ratio of (9) ÷ (8)	0.926	1.056	1.048	0.986
Retirement Annuity Account				
4. Market value	396	369	357	342
5. Smoothed value	366	390	375	338
6. Ratio of (12) ÷ (11)	0.926	1.056	1.048	0.986
Inflation Adjustment Account				
7. Market value	13,017	13,126	12,740	13,667
8. Smoothed value	12,051	13,855	13,354	13,473
9. Ratio of (15) ÷ (14)	0.926	1.056	1.048	0.986
RSA				
10. Market Value and Smoothed Value	3,185	4,071	4,347	4,598
GCRRA				
11. Market Value and Smoothed Value	42	44	45	45
Basic Account excluding RSA and GCRRA				
12. Market value	57,525	53,941	59,528	68,273
13. Smoothed value	53,018	57,165	62,613	67,238

The Basic Account market value includes contributions receivable of $101 million.

b) Sustainable Indexing Valuation Assets

As mentioned previously, a primary reason for using a sustainable indexing approach is to improve intergenerational equity. Intergenerational equity would be best served by using best estimate assumptions and not smoothing the assets. However, an important secondary objective is to attempt to stabilise the indexing target over time. This secondary objective is aided by smoothing the assets. In discussion with the Board, it was concluded that using a best estimate of investment return and inflation assumptions together with a low smoothing limit would provide a suitable balance between these two objectives. Accordingly, and as required by the funding policy, in our assessment we have used the five year smoothed value of assets, restricted to a range of 95% to 105% of the market value of assets. This lower constraint applied as at December 31, 2021 where the smoothed assets for the sustainable indexing purposes were capped at 95% of market value.

[1] Prior to the transfer from the Basic Account of surplus assets to the IAA and RSA of $509m each.

Sustainable indexing asset values – $ millions

Basic and IAA assets including RSA and GCRRA	2021	2022	2023	2024
1. Market value	73,679	71,182	76,659	86,584
2. Smoothed value	70,081	74,741	80,360	85,355
3. Ratio of (5) ÷ (4)	0.950	1.050	1.048	0.986
RSA				
4. Market Value and Smoothed Value	3,185	4,071	4,347	4,598
GCRRA				
5. Market Value and Smoothed Value	42	44	45	45
Basic and IAA assets excluding RSA and GCRRA				
6. Market value	70,452	67,067	72,267	81,941
7. Smoothed value	66,854	70,626	75,968	80,712

Appendix G. Actuarial Methods

The actuarial methods we have used are described below; these are substantially the same as those used for the previous valuation.

1. Funding Valuation

The plan has been valued on a going concern basis, which assumes that the plan will continue to operate indefinitely. The basis is used to estimate the funded position of the Plan, and to determine the contributions required to be made to the Plan's fund.

As required by the funding policy, we have used an Entry Age Normal actuarial cost method. Under this approach, the actuarial liabilities are calculated as follows:

- The liability for current pensioners, deferred vested and active members was calculated by projecting the benefit payments to be made to those persons and to their eligible spouses using the actuarial assumptions described in Appendix H and then discounting those projected payments to the valuation date at the investment return assumption. For active members, the projected payments include allowance for pensionable service accrued after the valuation date.

- The liability for members currently receiving benefits from a long term disability plan was calculated as if they would continue to earn service credits and ultimately receive a pension from the Plan, but only a portion of their future service was recognized which allows for an implicit possibility of recovery.

- The liability for the remaining inactive members was calculated as twice their accumulated refund values.

The required contribution rate is calculated over the working life of new entrants to the Plan (expressed as a level % of salaries), based on the data for those members who joined the plan in the last three years prior to the valuation date[1]. This rate is referred to in the JTA and throughout this report as the entry age normal cost of the Plan, or EANC.

Group 2 is very small (0.1% of the total active population), does not have enough new entrants to base the normal cost on, and was closed to new entrants effective January 1, 2025. We have therefore used the combined Group 2 and Group 5 new entrant profile in calculating the Group 5 normal cost. We then have calculated the Group 2 normal cost by applying the same percentage change as observed in the Group 5 normal cost since the last valuation to the Group 2 2021 normal cost. The impact on the Plan of this simplification will be negligible.

The valuation assets consist of:

i. The assets held in the Basic Account, calculated on a smoothed basis as described in Appendix F and net of the RSA and GCRRA; and

[1] For this purpose, members of employers who joined the plan in the last three years are included as new entrants based on their date of hire by the employer, not based on their date of joining the plan. This is to ensure that the new entrant profile is representative of what we expect for future new entrants and not distorted by a large group joining the plan mid-career.

ii. The present value of future contributions at the entry-age normal cost rates (with the first year's contributions at the current rate), for the closed active group, for the basic non-indexed benefits.

iii. The present value of any existing amortization requirements established at previous valuations.

The funded position, including the present value of any previously established unfunded liability amortization requirements, is then considered. If the assets exceed the liabilities, then the difference between them gives rise to an actuarial surplus. If the liabilities exceed the assets, then there is an unfunded liability. Adjustments to the normal cost, sufficient to amortize the surplus or unfunded liability were then determined in accordance with the Joint Trust Agreement and the Board's funding policy. The required contributions are the sum of the normal actuarial cost and the amount required to amortize the unfunded actuarial liability/surplus.

Effective January 1, 2022, the required Basic account contributions for Group 2 and Group 5 include 0.5% and 0.68% of salaries respectively to amortize over 15 years the additional cost of the Group 2 and 5 2022 plan redesign benefit improvements which was not met from their share of surplus.

The contribution rates have to comply with the going concern funding requirements of the PBSA, as those requirements existed prior to December 31, 2019. This means that if there is an unfunded liability, it must be amortized over 15 years from one year after the date it is established as described above. If there is a surplus, the contribution rate may not be less than the normal cost, reduced by the rate that amortizes the surplus in excess of 5% of net liabilities over not less than 5 years.

2. Indexing Treatment

Under the Plan terms, future cost-of-living adjustments to pensions in pay and to deferred pensions are not guaranteed, but are granted at the discretion of the Board, subject to the availability of funds in the IAA. Accordingly, we do not include any provision for future indexing in the Funding Valuation.

When cost of living increases are granted to pensions in pay, the capitalized value of the indexing granted is transferred from the IAA to Basic Account, and the increase becomes part of each member's guaranteed Basic benefit. The granting of any indexing should not create (or increase) a Basic account unfunded liability, or reduce a Basic account actuarial surplus. All indexing granted to pensions in pay up to the valuation date is included in the Funding Valuation.

Although future indexing is excluded from the Funding Valuation, we show in Appendix I supplementary results on the assumption that the assets of, and future contributions to, the Basic Account and the IAA are combined, with benefits to be fully indexed and funded in advance, as for basic benefits. We increased the pensions in pay by 1.6% to cover the actual January 1, 2025 indexing increase.

For members who have terminated employment, we were supplied with deferred pension amounts both including and excluding indexing during the deferred period to date. We understand that transfers from the Inflation Adjustment Account to finance this indexing do not occur until retirement (theoretically, such transfers should be made on an annual basis as the indexing occurs, so as to reduce the inter-generational transfer of the costs of such indexing).

We have therefore used the deferred pension amounts without indexing so that the Basic Account liability is aligned with the allocation of assets between the Basic and IAA accounts.

The indexing of salaries before retirement in the case of members on long-term disability is, on the other hand, a charge to the Basic Account rather than to the Inflation Adjustment Account. Accordingly, in valuing the deferred pensions for those currently on long-term disability, we have made an allowance for this by applying an escalation assumption at the full underlying inflation assumption of 2.50% per annum during the deferral period to retirement.

3. Sustainable Indexing Valuation

The key result from the sustainable indexing valuation is the sustainable level of indexing, given the contributions that have been committed to the Plan; this is different from the Funding Valuation, which excludes the value of future indexing and is used to determine the contribution requirements.

As for the Funding Valuation, the sustainable indexing valuation is based on the entry age normal actuarial cost method. We start by calculating the long-term contribution rate that is required to fund the benefits (including indexing at the target rate) over the lifetime of a typical new entrant, assuming the Plan has neither a surplus nor an unfunded liability.

Next, we need to calculate how this long-term contribution rate should be adjusted to reflect the funded position of the Plan. The assets, consisting of the current funds of both the Basic Account (net of the RSA and GCRRA) and the Inflation Adjustment Account, plus the value of future contributions at this entry age rate, are compared to the liabilities (including the provision for indexing at the target rate). Subtracting the liabilities from the assets gives rise to a surplus or unfunded liability. We amortize this surplus or unfunded liability (in certain cases, adjusted as described below) over an infinite period to obtain the level long-term contribution that is required to support indexing at the target level.

For the target level of indexing to be sustainable, this long-term contribution requirement must not exceed the long-term contributions that are committed to be paid into the plan, while from an intergenerational equity perspective, we require the long-term commitment and long-term requirement to be equal.

The calculation of the long-term contribution commitment can be complicated when the members and employers are paying amortization amounts into the plan for a temporary period. We therefore defined the long-term contribution commitment as the normal cost of the current Basic benefits, plus the fixed IAA contributions. Effectively, these are the amounts that the members and employers can expect to pay in the absence of any unfunded liabilities or surplus.

Any Funding Valuation amortization requirements are excluded from the long-term contribution commitment, as these amounts are only payable for a limited period of time. Instead, the effect of these amortization amounts, if any, is allowed for by including their present value as an adjustment to the unfunded liability; the unfunded liability calculated in the Sustainable Indexing Valuation is thus reduced by the present value of any Funding Valuation required amortization amounts.

4. Income Tax Act Maximum Pension Rule

As noted earlier, we have not applied the maximum pension rules in the Funding Valuation. We have applied them, as described below, when doing the supplementary valuations with benefits limited to the *ITA* maximums.

The maximum annual pension currently permitted under the income tax rules is the lesser of:

i. $3,756.67 in 2025 multiplied by the years of service; and

ii. 2% multiplied by the years of service further multiplied by the average of the best 3 years of remuneration paid to the member.

While the Plan applies the ITA limits only in respect of service after 1991, we have, for ease of calculation, assumed that this limit applies on all service; this assumption does not affect the future normal costs, but the accrued liabilities will be slightly understated. The Plan also imposes a 35 year cap on accruals at the above maximum rate, which we have applied.

For an individual in this Plan to be currently affected by the $3,756.67 maximum the final average salary must be very high. While current salaries are not such as to cause many problems, the salaries projected in the future through application of the assumed salary increase rates outlined above are such that some individuals would be limited. However, under the income tax rules, the flat $3,756.67 limit is automatically indexed each year after 2025 in accordance with increases in the average wage. Accordingly, we have applied a 3.25% per annum increase to the $3,756.67 limit after 2025. (At the previous valuation, the corresponding dollar limit was $3,420.00 for 2022, and the same increase rate of 3.25% was applied after 2022 to allow for the scheduled indexing.)

As with the previous valuation, in the tax-limited results, we valued the deferred vested pensions not yet in pay, in full, as provided to us, i.e. we were unable to carve out any "excess" portions. Supplemental pensions in pay were carved out.

Appendix H. Actuarial Assumptions

The most significant actuarial assumptions are summarized below. The assumptions used for the previous valuation, if different, are shown in brackets. Further details of the assumptions and the underlying rationale are set out in the remainder of this appendix.

	Funding Valuation	Sustainable Indexing Valuation
Investment Return	6.00% per annum	6.25% per annum
CPI Increases	2.50% per annum	2.25% per annum
General Salary Increases	3.25% per annum	3.00% per annum
Seniority Salary Increases	Annual percentages varying by age and sex	Same as funding valuation
YMPE increases	3.25% per annum	3.00% per annum
Mortality pre-retirement	No allowance	Same as funding valuation
Mortality post-retirement		
- Base tables	Club Vita Canada's CV22 VitaCurves multiplied by a 102.3% credibility-weighted experience adjustment factor *(2021: CV21 without adjustment)*	Same as funding valuation
- Improvements	CPM-B improvement scale	Same as funding valuation
- Explicit allowance for additional assumed future mortality improvements	$1.7 billion added to liabilities and an average of 0.3% of salaries added to EANC *(2021: no allowance)*	$3.0 billion added to liabilities and an average of 0.55% of salaries added to EANC for funding valuation *(2021: no allowance)*
Withdrawal	Annual percentages varying by group, age and sex *(minor changes made to rates used for 2021 valuation)*	Same as funding valuation
Disability	Annual percentages varying by group, age and sex *(slight increase to rates used for 2021 valuation)*	Same as funding valuation
Retirement		
- From active service	Annual percentages varying by group, age and sex, with an allowance for retirement after normal retirement age *(minor*	Same as funding valuation

	Funding Valuation	Sustainable Indexing Valuation
	changes made to rates below normal retirement age used for 2021 valuation, no allowance for retirement after normal retirement age for 2021 valuation)	
- From LTD	Age 63 for Group 1, age 57 for groups 2 and 5	Same as funding valuation
- From inactive status	Age 60 for Group 1, age 55 for groups 2 and 5	Same as funding valuation
Active Population	No future growth or decline	Same as funding valuation
Expenses	0.40% added to liabilities, 0.40% of payroll added to EANC and expected future contributions included in asset value *(2021: 0.45%)*	Same as funding valuation
Recognition of Child-Rearing Periods for Pension Eligibility	Contributory service (used for determining pension eligibility but not amount) increased by 2 years for female members	Same as funding valuation

1. Summary of Interrelationships – Funding Valuation

The annual investment return and general salary increase assumptions, and their underlying economic interrelationships, are summarized below. These assumptions are unchanged from the previous valuation.

Assumptions (%)		2024			2021
		Best Est.	Margin	Valn.	Valn.
1	Nominal Investment Return	6.25	(0.25)	6.00	6.00
2	Inflation	2.25	0.25	2.50	2.50
3	Real Investment Return (1) – (2)	4.00	(0.50)	3.50	3.50
4	Real Salary Growth	0.50	0.25	0.75	0.75
5	Nominal Salary Growth (2) + (4)	2.75	0.50	3.25	3.25
	Resulting Net Rates				
6	Pre-retirement (1) – (5)			2.75	2.75
7	Post-retirement (1)			6.00	6.00

2. Investment return

We determined the allowance for future investment returns, or discount rate, based on expected long-term capital market returns, standard deviations and correlations for each major asset class noted in Appendix F. 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 (30 year) 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.

In setting the Funding Valuation assumptions, it is necessary to reduce the expected returns by a margin, so that the resulting liabilities have a suitable provision for adverse deviations. Following discussions with the Board and taking into account the requirements of the Board's funding policy, we included a margin of 0.25% in the discount rate for the Funding Valuation. As the sustainable indexing target is not guaranteed, and the primary objective of the sustainable indexing approach is to improve intergenerational equity, it is not appropriate to include margins in the sustainable indexing basis.

The following table shows the development of the discount rate assumption:

Discount Rate	2021	2024
Weighted average return	6.36%	6.24%
Diversification and rebalancing effect	0.25%	0.25%
Passive investment management fees	(0.21%)	(0.29%)
Active investment management fees	(0.70%)	(0.59%)
Value added from active management	0.70%	0.59%
Effect of transition from current strategy over 5 years	(0.05%)	n/a
Rounding	(0.10%)	0.05%
Best estimate discount rate (used for sustainable indexing valuation)	**6.25%**	**6.25%**
Margin for adverse deviation	(0.25%)	(0.25%)
Discount return with margin (used for Funding Valuation)	**6.00%**	**6.00%**

As can be seen from the above table, the same discount rates were used in the 2021 and 2024 valuations (6.00% for the Funding Valuation; 6.25% for the sustainable indexing valuation).

The total investment expense allowance of 0.88% and the allowance for passive investment management fees of 0.29% shown in the table above were derived from estimates provided by BCI. The allowance for additional fees for active management (and our allowance for the value added from active management) is calculated as the difference between these two figures. For the purposes of establishing the discount rates, we have assumed that there will be no added-value returns from employing an active management strategy in excess of the associated additional investment management fees.

As shown in Appendix F, the long-term asset mix adds to 115% due to the ability to use up to 15% leverage. In our view, it is unlikely that all future market conditions will make it attractive to apply full 15% leverage, and hence we have reflected a 10% use of leverage in our discount rate determination and have adjusted the asset mix accordingly in determining the discount rate. A similar adjustment was made in the last valuation.

3. CPI Increases

We have based our assumed CPI inflation rate on our estimate of future inflation considering the Bank of Canada's inflation control target of 1% to 3% per year and the output of the same stochastic model as was used to determine the discount rate. For the sustainable indexing valuation, we use a best estimate assumption of 2.25% pa. For the Funding Valuation we add a margin for adverse deviations of 0.25%, giving an assumed rate of CPI inflation of 2.50% pa. The same assumptions were used for the 2021 valuation.

4. General Salary Increases

We assumed that the general, or "across the board" rate of future salary increases would be 0.75% above the rate of CPI inflation. The same assumption was used for the 2021 valuation.

The 2024 valuation data indicates that average annual earnings increased by about 16.2% from mid-2021 to mid-2024 (i.e. about 5.1% per annum), as compared with an expected increase of about 10.1% (i.e. about 3.25% per annum) on the basis of the assumptions used in the 2021 valuation.

The input data salaries provided to us for this valuation were the annualized earnings during fiscal 2024. We took them without further adjustment as being equal to the salary rates on the valuation date (this may slightly understate the actual salary rates at the valuation date). Thereafter, the assumed rates of salary increase are applied annually.

5. Seniority Salary Increases

Individual members are assumed to receive additional salary increases to reflect increasing seniority, recognition of merit and promotion.

We examined the seniority salary scales based on the earnings history of the active members during the 3 year period ended December 31, 2024, compared these with the experience observed and rates used in the previous valuation and concluded no changes to this assumption were warranted.

The annual seniority increases are assumed to reduce with age. Sample seniority increase assumptions at key ages are shown below. The assumptions represent the assumed seniority increase in the next year.

Sample Seniority Earnings Rates

Age	2021 and 2024 valuations			
	Group 1 Males	Group 1 Females	Group 2 & 5 Males	Group 2 & 5 Females
25	.019	.022	.026	.034
35	.014	.011	.011	.008
45	.005	.007	.009	.002
55	.002	.003	.008	.001
60	.000	.001	.000	.000
65	.000	.000	n/a	n/a

6. YMPE Increase

We assumed that the YMPE under the Canada Pension Plan would increase at the general salary increase rate (Funding Valuation = 3.25% per year, Sustainable Indexing Valuation = 3.00%) from its 2025 level of $71,300. In the previous valuation we assumed that the YMPE would increase at the same rates from its 2022 level of $64,900.

7. Mortality

The assumed incidence of mortality both before and after retirement was based on Club Vita Canada's CV22 VitaCurves multiplied by a 102.3% credibility-weighted experience adjustment factor, with generational projection using the CPM-B improvement scale.

VitaCurves are baseline mortality rates that vary by member based on their individual longevity characteristics and have been developed using a generalized linear modelling framework. (More details on the methodology can be found in the Canadian Institute of Actuaries member's paper: Key Factors for Explaining Differences in Canadian Pensioner Baseline Mortality.) The CV22 VitaCurves have been calibrated based on Club Vita Canada's longevity dataset for the years 2018-2020 and thus an appropriate base year in 2019. Improvements in baseline mortality from 2019 to the calendar year of determination are projected based on each member's year of birth.

Club Vita Canada's longevity dataset is composed of a subset of Canadian registered pension plans across Canada, and includes plans covering a range of industries in both the private and public sector. Club Vita Canada's CV22 VitaCurves have been developed based on longevity experience consisting of 2.5 million exposure years and 65 thousand deaths over 2018-2020, and vary by the following longevity factors:

- Gender;
- Pensioner type – pensioner or surviving spouse;
- Disability status at retirement for pensioners – disabled or non-disabled pensioner;
- Postal code-based lifestyle/longevity group – five groups for each of males and females;
- Affluence as measured by pension amount or earnings – there are four pension bands for males and three pension bands for females and four earnings bands for males and females;

- Occupation type – currently or formerly employed in a blue or white collar occupation; and
- Pension form at retirement for pensioners – single life or joint life.

Given that the availability of longevity factors varies by plan, and also by members within a plan, the CV22 VitaCurves are calibrated based on different combinations of the factors outlined above, resulting in over 1,000 baseline mortality tables. The best VitaCurve is assigned to each individual member based on the longevity factors available for that member. Plan experience is then considered and this led to the application of a credibility-weighted experience adjustment factor of 102.3% to the Club Vita Canada's CV22 VitaCurves.

For pensioners who retired on account of disability, for members currently on long-term disability and for those assumed to become disabled in future, the assumed rates of mortality were based on an aggregate VitaCurve with the same credibility-weighted experience adjustment factor of 102.3% for disabled pensioners, with generational projection using the CPM-B improvement scale.

For deferred vested pensions, mortality was ignored during the deferral period before retirement. The same assumption was made for the previous valuation.

Given the considerable uncertainty in the future trajectory of mortality rates following the COVID-19 pandemic and research recently published by the Canadian Institute of Actuaries that suggests a range of higher long-term rates of improvement than has been included in the past as well as a new improvement scale, we have added an explicit allowance for additional assumed future mortality improvements of $1.7 billion in the liabilities and an average of 0.30% of salaries in the entry-age normal cost on the funding basis and $3.0 billion / 0.55% of salaries on the sustainable indexing basis with full indexing. The allowances on other bases (e.g. fully indexed basis) have been calculating by pro-rating based on the corresponding liabilities and normal costs, and rounding to the nearest $0.1 billion / 0.05% of salaries. This is broadly equivalent to the impact of adopting the new, recently released Canadian mortality improvement scale, within the range of suggested long-term improvements.

In the previous valuation, the assumed rates of mortality were based on Club Vita Canada's CV21 VitaCurves, also projected using CPM-B improvement scale but with no additional allowance added. Plan experience suggested that no credibility adjustment factor was required.

8. Withdrawal

We examined the rates of withdrawal for reasons other than death, retirement or disability over the period January 1, 2022 to December 31, 2024 and compared this with the experience observed and the rates used for previous valuations. In general, the observed rates for Group 1 are slightly lower than assumed in previous valuations for the first three years of service and slightly higher than assumed for males thereafter, while the observed rates for Groups 2 and 5 are higher than assumed in previous valuations. As a result, we have made modest changes to the withdrawal rates used for the previous valuation for Group 1 and increased the withdrawal rates used for the previous valuation for Groups 2 and 5, by adopting the following multiples of those rates.

Multiples applied to 2021 Rates

	In the first 3 years of service			After 3 years of service
	1st year	2nd year	3rd year	
Group 1 males	95%	95%	100%	105%
Group 1 females	95%	95%	95%	100%
Group 2 & 5	120%	120%	120%	120%

Sample withdrawal rates are shown in the following tables.

A. Withdrawal Rates Applicable in the First 3 Years of Service (These include terminations from disability)

Age at entry	2021 valuation			2024 valuation		
	1st year	2nd year	3rd year	1st year	2nd year	3rd year
Group 1 Males						
20	.155	.143	.119	.147	0.136	0.119
30	.103	.106	.090	.098	0.101	0.090
40	.074	.069	.056	.070	0.066	0.056
50	.067	.056	.041	.064	0.053	0.041
Group 1 Females						
20	.122	.116	.108	.116	0.110	0.103
30	.103	.101	.078	.098	0.096	0.074
40	.059	.051	.048	.056	0.048	0.046
50	.059	.051	.037	.056	0.048	0.035
Group 2 & 5						
20	.026	.022	.019	.031	.026	.023
30	.019	.014	.011	.023	0.017	0.013
40	.009	.007	.006	.011	.008	.008

B. Withdrawal Rates Applicable after 3 Years of Service

Attained age	2021 valuation			2024 valuation		
	Group 1 Males	Group 1 Females	Group 2 & 5	Group 1 Males	Group 1 Females	Group 2 & 5
23	.095	.115	.014	.100	.115	.017
33	.054	.049	.008	.057	.049	.010
43	.028	.029	.005	.029	.029	.006
53	.018	.018	-	.019	.018	-

The withdrawal rates we have used do not extend past 10 years below the normal retirement age for each group.

As explained in Appendix B, the 3,079 active members whose last contribution to the Plan was before January 1, 2022 are assumed to withdraw immediately after the valuation date.

9. Disability

The Plan provides for either the payment of a disability pension from the Plan or, for members receiving long term disability benefits, the continued accrual of pension benefits. We examined the combined experience of members going on disability pensions and on long term disability and compared this with the experience observed and the rates used for previous valuations. In general, the observed rates are higher than assumed in previous valuations. As a result, we have increased the disability rates used for the previous valuation. The rates used for this valuation are 170% for Group 1 males, 175% for Group 1 females and 75% for Groups 2 and 5 of the respective rates used for the valuation of the Pension Plan for the Public Service of Canada as at March 31, 2020. The 2021 valuation applied lower adjustments (160% for Group 1 males, 155% for Group 1 females and 70% for Groups 2 and 5) to the rates used for the 2020 valuation of the Pension Plan for the Public Service of Canada.

Since most members receive continuing disability service credits rather than an immediate pension, we have continued to value the disability cost for active members as a deferred pension (indexed before retirement) with continued accrual of service, rather than as an immediate pension. Based on an examination of those now retired who had, prior to retirement, been in receipt of disability service credits, we assumed that the deferred pensions would commence at age 63 for Group 1 and at age 57 for Groups 2 and 5 (or immediately, for those older than these ages). The same commencement age was assumed in the 2021 valuation.

Sample disability rates are shown in the following table. No direct allowance is made for the possibility of an individual recovering from disability prior to retirement.

Sample Disability Rates

Age	2021 valuation			2024 valuation		
	Group 1 Males	Group 1 Females	Group 2 & 5	Group 1 Males	Group 1 Females	Group 2 & 5
25	.0002	.0001	.0001	.0002	.0001	.0001
35	.0006	.0014	.0003	.0006	.0015	.0003
45	.0023	.0043	.0010	.0025	.0048	.0011
55	.0065	.0110	.0028	.0069	.0124	.0030

10. Retirement

We examined the 2021-2024 retirement experience of members retiring from active service and compared this with the experience observed in our previous analyses of the retirement rates and with the rates used in the previous valuation. In general, the actual experience show fewer retirements than were indicated on the basis of the rates used in the previous valuation, indicating that members are generally retiring later than assumed. We continue to see increasing numbers of members retiring after normal retirement age. We gave partial recognition to the observed experience by slightly decreasing most of the assumed retirement rates below normal retirement age, and by introducing an allowance for some members retiring after normal retirement age.

The rates used in this and the previous valuation, are as follows:

Retirement Rates from Active Service

Normal Retirement Age = 65

Age	Service	2021 valuation		2024 valuation	
		Males	Females	Males	Females
55-59	at least 10 years, but age plus service add to less than 80	.03	.06	.03	.04
55-59	age plus service add to at least 80	.09	.10	.09	.08
55-59	rule-of-90	.50	.45	.41	.33
60	10	.32	.39	.25	.29
61	10	.18	.20	.15	.17
62	10	.18	.20	.15	.17
63	10	.18	.20	.15	.16
64	10	.21	.22	.18	.20
65	0	1.00	1.00	.50	.50
66	0	1.00	1.00	.50	.50
67	0	1.00	1.00	.50	.50
68	0	1.00	1.00	1.00	1.00

Normal Retirement Age = 60

Age	Service	2021 valuation	2024 valuation
		Group 2 and 5	Group 2 and 5
50-54	at least 10 years, but age plus service add to less than 75	.03	.03
50-54	age plus service add to at least 75	.06	.06
50-54	rule-of-80	.24	.28
55	10	.22	.22
56	10	.20	.20
57	10	.26	.26
58	10	.25	.25
59	10	.53	.53
60	0	1.00	.50
61	0	1.00	.50
62	0	1.00	.50
63	0	1.00	1.00

Even though pensions are available with less than 10 years of service, we have continued to apply the retirement rates before age 65 (60) only to those with 10 or more years of service, on the assumption that those with fewer than 10 years would not retire before the normal retirement age. Adding an assumption allowing for retirement with less than 10 years based on observed experience would not have a material impact on the results.

11. Proportions of Members Married at Death

We assumed that current deferred vested members and members terminating service in the future will retire at age 60 for Group 1 (55 for Groups 2 and 5), or immediately if older than 60 for Group 1 (55 for Groups 2 and 5), except for the current vested members with less than two years of contributory service, who were assumed to retirement at normal retirement age. The same assumptions were used for the 2021 valuation. Given the pre-retirement death benefit, we value a commuted value on pre-retirement death for all members. As the benefit is the same regardless of marital status, the proportions of members assumed to be married at death are irrelevant.

12. Active Population

We assumed in all the actuarial projections that there would be no future growth or decline in the Municipal population. The same assumption was made in the previous valuation.

13. Payroll for Amortization

The data provided was the annualized salary at the valuation year. We examined the experience of members working part time and assumed that the total payroll is 90% of annualized salary from the valuation data. The same adjustment was used in the previous valuation. The total payroll, capped at 35 years of service, was assumed to be $19,101 million for amortization purposes. This amount is calculated based on the data received, and is not adjusted by the resetting of salaries for actives missing salary information as described in Appendix B.

14. Expenses

Administration expenses are paid out of the Municipal fund. These amounts totaled 0.40%, 0.38% and 0.37% of salaries for 2022, 2023 and 2024 respectively. The projected expenses provided by the Pension Corporation for the next three years anticipated that the administration expenses will continue at a similar rate. Therefore, we reduced the expense provision to 0.40% of payroll from 0.45% of payroll used in the previous valuation, as part of the normal actuarial costs in the determination of the required contribution rates under the entry-age funding method. This provision represents the average projected expenses, expressed as a percentage of projected payroll, over the next valuation period. We also include a provision for the present value of expenses in the statement of actuarial position. The same methodology was used in the previous valuation. Based on the projected payroll of $19,101 million, the estimated expenses for 2025 are $76 million.

As before, the investment management fees are excluded from our analysis above and from the expense provision we have made as they are reflected in the long-term investment return assumption.

15. Recognition of Child-Rearing Periods for Pension Eligibility

We continued to assume that this would only affect female members, and that, on average, it would increase the member's contributory service (which is used for determining pension eligibility) by 2 years; there would, of course, be no increase to the member's pensionable service (which is used for determining pension amounts). The impact of this would be to reduce the eligibility requirement for unreduced pensions between ages 55 and 59, from a rule-of-90 to a rule-of-88 (Group 1 females for service earned prior to 2022; for Groups 2 and 5 females, at ages 50 to 54, to a rule-of-78 for all service), and we assumed that there would be no impact on the eligibility assumptions made for other benefits. The same assumption was made in the previous valuation.

Appendix I. Supplementary Funding Valuation Results

The schedules below set out the results of the supplementary funding valuations described in Section 3, which are carried out to meet disclosure requirements and to demonstrate compliance with the Income Tax Act. These results are shown prior to the actions required by the JTA and funding policy.

Statement of Actuarial Position as at December 31, 2024 ($ millions)

	Without Tax Limits		With Tax Limits	
	Basic Only	**Basic + Indexed**	**Basic Only**	**Basic + Indexed**
Assets				
Market value of Fund net of RSA and GCRRA	68,273	81,941	68,273	81,941
Asset smoothing adjustment	(1,035)	(1,229)	(1,035)	(1,229)
Smoothed value of Fund net of RSA and GCRRA	**67,238**	**80,712**	**67,238**	**80,712**
Present values of:				
– Future contributions at entry-age rates	32,499	45,421	31,938	44,599
– Existing amortization for Groups 2 and 5 to 2036[1]	67	67	67	67
Total Assets	**99,804**	**126,200**	**99,243**	**125,378**
Actuarial present values for:				
– active members	63,079	85,118	62,463	84,305
– inactive members	3,953	5,960	3,953	5,960
– pensions being paid	27,562	34,796	27,322	34,490
– future expenses	835	835	835	835
– allowance for additional assumed future mortality improvements	1,700	3,300	1,700	3,300
Total Liabilities	**97,129**	**130,009**	**96,273**	**128,890**
Surplus (Unfunded Liability)	**2,675**	**(3,809)**	**2,970**	**(3,512)**
Accessible Going Concern Excess	**0**	**0**	**0**	**0**
RSA	4,598	4,598	4,598	4,598
GCRRA	45	45	45	45
Surplus / (Unfunded Liability) including RSA and GCRRA	**7,318**	**834**	**7,613**	**1,131**

[1] 0.50% for Group 2, 0.68% for Group 5.

Current and Required Contribution Rates – December 31, 2024

Basic only

		Without Tax Limits			With Tax Limits		
	Current contribution rates	**Member**	**Employer**	**Total**	**Member**	**Employer**	**Total**
1	Group 1	7.34	7.34	14.68	7.34	7.34	14.68
2	Group 2	7.14	10.84	17.98	7.14	10.84	17.98
3	Group 5	9.08	12.79	21.87	9.08	12.79	21.87
4	**Average**	**7.43**	**7.61**	**15.04**	**7.43**	**7.61**	**15.04**
	Entry-age normal cost rates						
5	Group 1			15.26			15.02
6	Group 2			18.07			18.00
7	Group 5			21.84			20.58
8	**Entry-age normal cost - Average**			**15.59**			**15.30**
	Amortization of unfunded actuarial liability (surplus)						
9	Maximum permissible JTA-C amortization (all groups)			0.00			0.00
10	Additional Group 2 amortization (to 2036)			0.50			0.50
11	Additional Group 5 amortization (to 2036)			0.68			0.68
	Minimum Permissible JTA-C Contribution Rate[1]						
12	Group 1 (= 5+9)			15.26			15.02
13	Group 2 (= 6+9+10)			18.57			18.50
14	Group 5 (= 7+9+11)			22.52			21.26
15	***Minimum permissible JTA-C* rate – Average**			**15.63**			**15.33**

[1] The total contribution rate to the plan needs to comply with the *JTA-C* requirements. JTA-C does not apply at the group level.

Basic + Indexed

		Without Tax Limits			With Tax Limits		
	Current contribution rates	**Member**	**Employer**	**Total**	**Member**	**Employer**	**Total**
1	Group 1	8.61	8.71	17.32	8.61	8.71	17.32
2	Group 2	8.92	11.82	20.74	8.92	11.82	20.74
3	Group 5	11.12	14.07	25.19	11.12	14.07	25.19
4	**Average**	**8.73**	**8.98**	**17.71**	**8.73**	**8.98**	**17.71**
	Entry-age normal cost rates						
5	Group 1			21.31			20.99
6	Group 2			24.47			24.35
7	Group 5			29.53			27.83
8	**Entry-age normal cost - Average**			**21.71**			**21.33**
	Amortization of unfunded actuarial liability (surplus)						
9	Maximum permissible JTA-C amortization (all groups)			1.60			1.48
10	Additional Group 2 amortization (to 2036)			0.50			0.50
11	Additional Group 5 amortization (to 2036)			0.68			0.68
	Minimum Permissible JTA-C Contribution Rate						
12	Group 1 (= 5+9)			22.91			22.47
13	Group 2 (= 6+9+10)			26.57			26.33
14	Group 5 (= 7+9+11)			31.81			29.99
15	***Minimum permissible JTA-C* rate – Average**			**23.36**			**22.84**

Accrued Liabilities and Funded Ratio – December 31, 2024

($ millions)	Without Tax Limits		With Tax Limits	
	Basic Only	Basic + Indexed	Basic Only	Basic + Indexed
Assets – smoothed	**71,881**	**85,355**	**71,881**	**85,355**
– active members	28,268	37,854	28,021	37,530
– inactive members	3,953	5,960	3,953	5,960
– pensions being paid	27,562	34,796	27,322	34,490
– mortality allowance	1,100	2,100	1,100	2,100
Total Accrued Liabilities	**60,883**	**80,710**	**60,396**	**80,080**
Surplus (Unfunded Actuarial Liability)	**10,998**	**4,645**	**11,485**	**5,275**
Funded Ratio – Fund ÷ Total Accrued Liabilities	**118.1%**	**105.8%**	**119.0%**	**106.6%**
Assets in RSA and GCRRA	(4,643)	(4,643)	(4,643)	(4,643)
Adjusted surplus (unfunded liability) net of RSA and GCRRA	**6,355**	**2**	**6,842**	**632**
Normal cost rate (Projected Unit Credit method)	**15.94%**	**22.15%**	**15.73%**	**21.88%**

Accrued Liabilities and Normal Cost Sensitivity Analysis

The table below shows the impact of a one percentage point drop in the investment return assumption on the results of the valuation on an accrued benefits basis (the first column of supplementary results in the table above).

Basic Only without Tax Limits	($ millions)		
	6.00%	5.00%	Increase
Assets – smoothed value	71,881	71,881	0
Total Accrued Liabilities	60,883	70,189	9,306
Surplus (Unfunded Actuarial Liability)	10,998	1,692	(9,306)
Normal Actuarial Cost	15.94%	20.28%	4.34%

Appendix J. Plausible Adverse Scenarios

The following analysis does not impact the funding requirements of the Plan and is for information purposes only and to meet disclosure requirements. In practice, the Board generally considers additional factors and analysis when monitoring plan risks.

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 key valuation results 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.

	Basic Account Results at Dec 31, 2024	Plausible Adverse Scenario Results at Dec 31, 2024		
		Interest Rate Risk	Deterioration of Asset Values	Longevity Risk
Basic Account ($ millions)				
Smoothed Value of Fund	71,881	72,164	70,424	71,881
Less RSA and GCRRA	(4,643)	(4,661)	(4,549)	(4,643)
Actuarial present values of future contributions at entry-age rates	32,499	35,152	32,499	33,008
PV of existing amortization for Groups 2 and 5 to 2036[1]	67	68	67	67
Total Assets	**99,804**	**102,723**	**98,441**	**100,313**
Total Liabilities	**97,129**	**102,164**	**97,130**	**98,910**
Surplus / (unfunded liability)	**2,675**	**559**	**1,311**	**1,403**
Funded Ratio: Total Assets ÷ Total Liabilities	103%	101%	101%	101%
Entry-age normal cost rates	**15.59%**	**16.61%**	**15.59%**	**15.83%**
Discount rate	6.00%	5.74%	6.00%	6.00%
Adjusted market value of assets (including RSA and GCRRA)	72,916	74,332	65,625	72,916

[1] 0.50% for Group 2, 0.68% for Group 5.

Interest Rate Risk

This scenario illustrates the sensitivity of the key Basic Account valuation results 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, and
- 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 0.26% to 5.74% as of December 31, 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 0.82%.

Based on the estimated duration of the Plan assets, liabilities and the entry age normal cost rate, we have then determined the estimated change to the Plan's key valuation results 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 actuarial value of assets (smoothed assets) is decreased by 2.03% as of December 31, 2024. Note that market value of assets is

assumed to decrease by 10.00%; the use of smoothed assets decreases the immediate effect of the asset shock.

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 by assuming that mortality rates are 90% of those in the mortality table used for the going concern valuation as of December 31, 2024, that is, a more conservative mortality assumption than currently employed.