



**Canadian
Institute
of Actuaries**

**Institut
canadien
des actuaires**

EXPLANATORY REPORT

Guidance for Assumptions for Hypothetical Wind-Up and Solvency Valuations Update – Effective March 31, 2023, and Applicable to Valuations with Effective Dates on or after March 31, 2023, and no later than June 29, 2024

May 29, 2023

Guidance for Assumptions for Hypothetical Wind-Up and Solvency Valuations Update – Effective March 31, 2023, and Applicable to Valuations with Effective Dates on or after March 31, 2023, and no later than June 29, 2024

Committee on Pension Plan Financial Reporting

Document 223106

Ce document est disponible en français.

The actuary should be familiar with relevant other guidance. They expand or update the guidance provided in an educational note. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application of the Standards of Practice, so there should be no conflict between them. The actuary should note however that a practice that the other guidance describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members. As standards of practice evolve, other guidance may not reference the most current version of the Standards of Practice; and as such, the actuary should cross-reference with current Standards. To assist the actuary, the CIA website contains an up-to-date reference document of impending changes to update other guidance.

Contents

- Preamble 4
- 1. Application of the March 23, 2023, educational note 4
- 2. Guidance for non-indexed pensions 5
- 3. Guidance for indexed pensions..... 5
- 4. Actual annuity pricing 5
- 5. Additional comments 5
- Appendix A – Methodology in developing guidance as at March 31, 2023 6
- Appendix B – Summary and links for historical guidance 8

Preamble

The Committee on Pension Plan Financial Reporting (PPFRC) is issuing this explanatory report to provide members with additional information and details on the analysis done for the guidance outlined in the [educational note supplement](#) dated May 1, 2023, (*Guidance for Assumptions for Hypothetical Wind-Up and Solvency Valuations Update – Effective March 31, 2023, and Applicable to Valuations with Effective Dates on or after March 31, 2023, and no later than June 29, 2024*) issued as a supplement to the [educational note](#) dated March 23, 2023.

Responsibility of the actuary

The actuary should be familiar with relevant other guidance. They expand or update the guidance provided in an educational note. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application of the Standards of Practice, so there should be no conflict between them. The actuary should note however that a practice that the other guidance describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members. As standards of practice evolve, other guidance may not reference the most current version of the Standards of Practice; and as such, the actuary should cross-reference with current Standards. To assist the actuary, the CIA website contains an up-to-date reference document of impending changes to update other guidance.

Your feedback

Questions or comments regarding this explanatory report may be directed to the [chair of the PPFRC](#).

1. Application of the March 23, 2023, educational note

The guidance from the PPFRC, outlined in the March 23, 2023, educational note, concluded that for valuations with effective dates on or after December 31, 2022, (but no later than June 29, 2024) an appropriate discount rate for estimating the cost of purchasing a non-indexed group annuity would be determined as the unadjusted average yield on Government of Canada (GoC) marketable bonds with maturities over 10 years (CANSIM series V39062) increased arithmetically by a spread determined based on the duration of the liabilities. For estimating the cost of purchasing a group annuity where pensions are fully indexed to the rate of change in the consumer price index (CPI), the discount rate would be determined as the unadjusted yield on GoC real-return long-term bonds (CANSIM series V39057) increased arithmetically by a fixed spread. The discount rates are to be used in conjunction with the 2014 Canadian Pensioners' Mortality Table (CPM2014) combined with mortality improvement scale CPM Improvement Scale B (CPM-B). If applicable, the mortality assumption would be adjusted to reflect adjustments for sub- or super-standard mortality. The guidance outlined in the March 23, 2023, educational note was based on hypothetical quotes provided by insurance companies on illustrative blocks of business, supplemented by data from certain actuarial consulting firms on actual group annuity purchases and bona fide quotations.

Except as noted below, actuaries would continue to reference the March 23, 2023, educational note for guidance with respect to the selection of assumptions for hypothetical wind-up and solvency valuations with effective dates on or after March 31, 2023, and no later than June 29, 2024.

2. Guidance for non-indexed pensions

Based on the analysis provided in Appendix A, the PPFRC concluded that, effective March 31, 2023, the cost of purchasing non-indexed annuities would be estimated based on the process outlined in the March 23, 2023, educational note and the following table:

Annuity duration	Duration based on 4.63% discount rate	Unadjusted CANSIM V39062* as at March 31, 2023	Spread above V39062	Discount rate as at March 31, 2023
Low	7.8	3.03%	+160 bps	4.63%
Medium	9.9	3.03%	+160 bps	4.63%
High	12.0	3.03%	+160 bps	4.63%
Mortality table: CPM2014 combined with mortality improvement scale CPM-B with no adjustments for sub- or super-standard mortality.				

*Unadjusted average yield on GoC marketable bonds with maturities over 10 years (CANSIM V39062).

3. Guidance for indexed pensions

Based on the analysis provided in Appendix A, the PPFRC concluded that, effective March 31, 2023, the cost of purchasing a group annuity where pensions are fully indexed to the rate of change in the CPI would be estimated based on the process outlined in the March 23, 2023, educational note and the following table:

Unadjusted CANSIM V39057* as at March 31, 2023	Spread below V39057	Discount rate as at March 31, 2023
1.34%	-20 bps	1.14%
Mortality table: CPM2014 combined with mortality improvement scale CPM-B with no adjustments for sub- or super-standard mortality.		

*Unadjusted yield on GoC real-return long-term bonds (CANSIM V39057).

4. Actual annuity pricing

The purpose of this explanatory report is to provide actuaries with guidance related to establishing assumptions for hypothetical wind-up and solvency valuations. The pricing for an actual group annuity purchase depends on many factors, as outlined in the March 23, 2023, educational note, with the result that the actual price may differ from the guidance provided herein. Spreads versus GoC long-term bonds for group annuity pricing can be volatile, of which actuaries may wish to be mindful when communicating advice related to future hypothetical wind-up and solvency valuations.

5. Additional comments

The PPFRC intends to continue monitoring group annuity pricing on a quarterly basis. Actuaries may use the spreads indicated above for non-indexed and indexed pensions effective March 31, 2023, for

valuations with effective dates on and after March 31, 2023, and no later than June 29, 2024, pending any future guidance or other evidence of change in annuity pricing.

Appendix A – Methodology in developing guidance as at March 31, 2023

Data

The PPFRC requested hypothetical quotes as at March 31, 2023, from the same insurance companies on the same illustrative blocks of business used to develop the December 31, 2022, guidance outlined in the March 23, 2023, educational note. Consistent with the analysis performed at previous quarter ends, the hypothetical quote information was supplemented with data on the pricing of actual group annuity purchases and bona fide quotations in cases where the transaction did not proceed during the first quarter of 2023, as provided by several actuarial consulting firms. The total volume of data collected during the first quarter of 2023 for buyout and buy-in group annuity purchases in Canada was approximately \$0.5B. There were limited quantitative data obtained on actual indexed annuity purchases or bona fide quotations in cases where the transaction did not proceed during the first quarter of 2023.

Mortality basis

The assumed mortality table and assumed future mortality improvements used to establish the discount rate guidance in this explanatory report are the CPM2014 combined with mortality improvement scale CPM-B with no mortality adjustments, irrespective of the basis used by insurers when submitting quotes.

Analysis – non-indexed annuities

In establishing the guidance, the PPFRC has given weight to the hypothetical quotes and to the data collected on actual annuity purchases and bona fide quotations. Summary data in respect of the three central non-indexed illustrative blocks are the same as the data shown in Appendix A of the March 23, 2023, educational note, with the exception of the durations.

The durations of the three central illustrative blocks are as follows:

Duration	Low	Medium	High
Duration at March 31, 2023	7.8	9.9	12.0

For the purpose of this guidance, the durations of the illustrative blocks shown above were determined using the discount rate guidance for the illustrative block with medium duration (as described in this explanatory report) of 4.63% which is equal to the CANSIM V39062 yield of 3.03% at March 31, 2023, plus 160 bps. The mortality assumptions as outlined in the March 23, 2023, educational note were also used. Note that the durations of the illustrative blocks will change over time as discount rates change.

The table below provides the implicit discount rates as at March 31, 2023, underlying the average of the three most competitive hypothetical quotes, determined in conjunction with CPM2014 combined with mortality improvement scale CPM-B with no mortality adjustments, and the spread of these implicit discount rates over the CANSIM V39062 yield. Comparable information is also shown as at December 31, 2022.

Average of the three most competitive hypothetical quotes			
Duration	Low	Medium	High
<i>March 31, 2023</i>			
Discount rate	4.63%	4.53%	4.63%
Spread over CANSIM V39062	+ 160 bps	+ 150 bps	+ 160 bps
<i>December 31, 2022</i>			
Discount rate	4.81%	4.77%	4.81%
Spread over CANSIM V39062	+ 150 bps	+ 146 bps	+ 150 bps

The spread over CANSIM V39062, based on the average of the three most competitive hypothetical quotes, increased somewhat for each of the illustrative blocks from December 31, 2022.

Analysis – fully CPI-indexed annuities

A subset of the contributing insurers also provided hypothetical quotes for the illustrative blocks on a CPI-indexed basis as of March 31, 2023, of which at least two indicated they may be willing to transact on their hypothetical quotes at the three durations.

Information on pricing was considered from the insurers willing to transact. To ensure confidentiality, the information for this explanatory report has been suppressed:

Average of the most competitive hypothetical quotes			
	Number of hypothetical quotes in the average	Discount rate	Spread over CANSIM V39057
March 31, 2023	--	--	--
December 31, 2022	--	--	--

Based on the average of the most competitive hypothetical quotes, the absolute value of the spreads relative to the unadjusted yield on GoC real-return long-term bonds (CANSIM V39057) for the medium-duration illustrative block increased from December 31, 2022.

While there is some indication that the pricing of CPI-indexed annuities may also vary by duration, the PPFRC has concluded that there are insufficient data at this stage to introduce this level of refinement. Consequently, the guidance contained herein is applicable to CPI-indexed annuities regardless of their duration.

The quantitative data obtained on actual fully indexed annuity purchases and bona fide quotations in cases where the transaction did not proceed during the first quarter of 2023 were limited.

In developing the guidance, the PPFRC considered all of the information received.

Appendix B – Summary and links for historical guidance

The following is a summary of the historical guidance issued by the PFFRC. The summary is provided for reference, and actuaries are directed to refer to the respective published educational note or educational note supplement.

Educational note/ supplement/ explanatory report	Mortality table	Non-indexed immediate and deferred <i>Duration: Spread relative to unadjusted CANSIM V39062</i>			Fully CPI-indexed <i>Spread relative to unadjusted CANSIM V39057</i>
		Low duration	Medium duration	High duration	All durations
Mar 31, 2023	CPM2014Proj	7.8: + 160 bps	9.9: + 160 bps	12.0: + 160	- 20 bps
Dec 31, 2022	CPM2014Proj	7.7: + 160 bps	9.7: + 160 bps	11.7: + 160	- 20 bps
Sep 30, 2022	CPM2014Proj	7.8: + 140 bps	9.9: + 150 bps	11.9: + 150	- 40 bps
Jun 30, 2022	CPM2014Proj	7.8: + 130 bps	9.9: + 150 bps	11.9: + 150	- 60 bps
Mar 31, 2022	CPM2014Proj	8.2: + 120 bps	10.5: + 140 bps	12.8: + 140	- 40 bps
Dec 31, 2021	CPM2014Proj	8.7: + 100 bps	11.3: + 120 bps	13.9: + 120	- 40 bps
Sep 30, 2021	CPM2014Proj	8.6: + 100 bps	11.1: + 120 bps	13.6: + 130	- 50 bps
Jun 30, 2021	CPM2014Proj	8.6: + 100 bps	11.2: + 120 bps	13.7: + 130	- 50 bps
Mar 31, 2021	CPM2014Proj	8.5: + 100 bps	11.1: + 120 bps	13.6: + 130	- 50 bps
Dec 31, 2020	CPM2014Proj	8.9: + 120 bps	11.6: + 140 bps	14.3: + 150	- 50 bps
Sep 30, 2020	CPM2014Proj	8.9: + 130 bps	11.6: + 150 bps	14.3: + 160	- 50 bps
Jun 30, 2020	CPM2014Proj	8.8: + 140 bps	11.6: + 160 bps	14.3: + 170	- 50 bps
Apr 30, 2020	CPM2014Proj	8.9: + 130 bps	11.7: + 140 bps	14.5: + 150	- 70 bps
Mar 31, 2020	CPM2014Proj	8.7: + 150 bps	11.4: + 160 bps	13.9: + 170	- 70 bps
Dec 31, 2019	CPM2014Proj	8.6: + 110 bps	11.2: + 120 bps	13.7: + 120	- 70 bps
Sep 30, 2019	CPM2014Proj	8.7: + 120 bps	11.3: + 130 bps	13.9: + 130	- 70 bps
Jun 30, 2019	CPM2014Proj	8.7: + 100 bps	11.4: + 110 bps	14.0: + 110	- 70 bps
Mar 31, 2019	CPM2014Proj	8.6: + 100 bps	11.2: + 110 bps	13.8: + 110	- 70 bps
Dec 31, 2018	CPM2014Proj	8.5: + 100 bps	11.0: + 110 bps	13.4: + 110	- 70 bps
Sep 30, 2018	CPM2014Proj	8.4: + 80 bps	10.9: + 90 bps	13.3: + 90	- 80 bps
Jun 30, 2018	CPM2014Proj	8.5: + 80 bps	11.1: + 90 bps	13.5: + 90	- 70 bps
Mar 31, 2018	CPM2014Proj	8.5: + 70 bps	11.1: + 80 bps	13.6: + 90	- 70 bps
Dec 31, 2017	CPM2014Proj	8.6: + 70 bps	11.1: + 80 bps	13.6: + 90	- 70 bps
Sep 30, 2017	CPM2014Proj	8.5: + 60 bps	11.1: + 70 bps	13.5: + 80	- 70 bps
Jun 30, 2017	CPM2014Proj	8.6: + 60 bps	11.2: + 80 bps	13.8: + 90	- 70 bps
Mar 31, 2017	CPM2014Proj	8.5: + 70 bps	11.0: + 100 bps	13.5: + 110	- 60 bps
Dec 31, 2016	CPM2014Proj	8.5: + 70 bps	11.0: + 90 bps	13.5: + 100 bps	- 60 bps
Sep 30, 2016	CPM2014Proj	8.7: + 80 bps	11.4: + 110 bps	14.0: + 120	- 70 bps
Jun 30, 2016	CPM2014Proj	8.6: + 90 bps	11.3: + 120 bps	13.8: + 130	- 70 bps
Mar 31, 2016	CPM2014Proj	8.5: + 90 bps	11.1: + 120 bps	13.6: + 130	- 70 bps
Dec 31, 2015	CPM2014Proj	8.5: + 60 bps	11.1: + 100 bps	13.6: + 110	- 70 bps
Sep 30, 2015	CPM2014Proj	8.4: + 80 bps	11.0: + 110 bps	13.4: + 120	- 70 bps
Jun 30, 2015	UP94Proj	8.3: - 20 bps	10.9: + 30 bps	13.6: + 60	- 120 bps

Mar 31, 2015	UP94Proj	8.5: + 0 bps	11.3: + 30 bps	14.0: + 60	- 120 bps
Dec 31, 2014	UP94Proj	8.2: + 0 bps	10.9: + 30 bps	13.5: + 60	- 120 bps
Sep 30, 2014	UP94Proj	8.1: + 0 bps	10.6: + 30 bps	13.2: + 50	- 120 bps
Jun 30, 2014	UP94Proj	8.0: + 0 bps	10.5: + 40 bps	12.9: + 60	- 110 bps



© 2023 Canadian Institute of Actuaries

Canadian Institute of Actuaries

360 Albert Street, Suite 1740

Ottawa, ON K1R 7X7

613-236-8196

head.office@cia-ica.ca

cia-ica.ca

seeingbeyondrisk.ca



The Canadian Institute of Actuaries (CIA) is the qualifying and governing body of the actuarial profession in Canada. We develop and uphold rigorous standards, share our risk management expertise and advance actuarial science to improve lives in Canada and around the world. Our more than 6,000 members apply their knowledge of math, statistics, data analytics and business in providing services and advice of the highest quality to help Canadian people and organizations face the future with confidence.