

Explanatory Report

Explanatory Report: Guidance for Assumptions for Hypothetical Wind-Up and Solvency Valuations Update – Effective September 30, 2021, and Applicable to Valuations with Effective Dates on or after September 30, 2021 and no later than December 30, 2021

Committee on Pension Plan Financial Reporting

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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.

MEMORANDUM

To: All pension actuaries

From: Steven W. Easson, Chair
Actuarial Guidance Council
Gus van Helden, Chair
Committee on Pension Plan Financial Reporting

Date: November 19, 2021

Subject: **Explanatory Report: Guidance for Assumptions for Hypothetical Wind-Up and Solvency Valuations Update – Effective September 30, 2021, and Applicable to Valuations with Effective Dates on or after September 30, 2021 and no later than December 30, 2021**

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 October 25, 2021 (Guidance for Assumptions for Hypothetical Wind-Up and Solvency Valuations Update – Effective September 30, 2021, and Applicable to Valuations with Effective Dates on or after September 30, 2021, and no later than December 30, 2021), issued as a supplement to the [educational note](#) dated March 10, 2021.

Contact information

Questions should be addressed to Gus van Helden, Chair of the PPFRC, at gus.van.helden@willistowerswatson.com.

SWE, GVH

Application of the March 10, 2021 educational note

The guidance from the PFFRC, outlined in the March 10, 2021 educational note, concluded that for valuations with effective dates on or after December 31, 2020 (but no later than December 30, 2021), 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) and, if applicable, would be adjusted to reflect adjustments for sub- or super-standard mortality. The guidance outlined in the March 10, 2021 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 10, 2021 educational note for guidance with respect to the selection of assumptions for hypothetical wind-up and solvency valuations with effective dates on or after September 30, 2021, and no later than December 30, 2021.

Guidance for non-indexed pensions

Based on the analysis provided in Appendix A, the PFFRC concluded that effective September 30, 2021, the cost of purchasing non-indexed annuities would be estimated based on the process outlined in the March 10, 2021 educational note, and the following table:

Annuity duration	Duration based on 3.12% discount rate	Unadjusted CANSIM V39062* as at September 30, 2021	Spread above V39062	Discount rate as at September 30, 2021
Low	8.6	1.92%	+100 bps	2.92%
Medium	11.1	1.92%	+120 bps	3.12%
High	13.6	1.92%	+130 bps	3.22%
Mortality table: CPM2014 combined with mortality improvement scale CPM-B with no adjustments for sub- or super-standard mortality.				

*Unadjusted average yield on Government of Canada marketable bonds with maturities over 10 years (CANSIM V39062)

Other guidance for non-indexed pensions

Very low duration annuities

As at September 30, 2021, the PPFRC continues to believe that a reasonable approach to derive the spread for very low duration annuities is to extrapolate downwards from the spreads at the low and medium durations. Other approaches may also be reasonable.

Very high duration annuities

As at September 30, 2021, the PPFRC continues to believe that a reasonable approach to derive the spread for very high duration annuities is to extrapolate downwards from the spread at the high duration, assuming that the rate of decrease in spreads from the high duration will be the same as the rate of increase in spreads from the low duration to the high duration. Other approaches may also be reasonable.

Guidance for indexed pensions

Based on the analysis provided in Appendix A, the PPFRC concluded that effective September 30, 2021, 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 10, 2021 educational note, and the following table:

Unadjusted CANSIM V39057* as at September 30, 2021	Spread below V39057	Discount rate as at September 30, 2021
0.25%	- 50 bps	-0.25%
Mortality table: CPM2014 combined with mortality improvement scale CPM-B with no adjustments for sub- or super-standard mortality.		

*Unadjusted yield on Government of Canada real-return long-term bonds (CANSIM V39057)

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 10, 2021 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.

Large plans

The PPFRC has been monitoring its published guidance on capacity constraints for a single Canadian group annuity purchase. To this end, the PPFRC requested certain data from the same insurance companies that provided hypothetical quotes as at June 30, 2021, and considered a large transaction that occurred in 2020. Based on this information, the PPFRC revised the liability thresholds where a plan may have difficulty in effecting a single annuity purchase to settle its

liabilities described in the educational note issued on March 10, 2021 as of June 30, 2021 as follows:

	Non-indexed annuities	Indexed annuities
June 30, 2021, onward	\$1,000 million	\$300 million
Dec 31, 2018, to June 29, 2021	\$750 million	\$250 million
Sep 2013 to Dec 30, 2018	\$500 million	\$200 million

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 September 30, 2021, for valuations with effective dates on and after September 30, 2021, and no later than December 30, 2021, pending any future guidance or other evidence of change in annuity pricing.

Appendix A – Methodology in developing guidance as at September 30, 2021

Data

The PPFRC obtained hypothetical quotes as at September 30, 2021, from the same insurance companies on the same illustrative blocks of business used to develop the December 31, 2020, guidance outlined in the March 10, 2021 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 third quarter of 2021, as provided by several actuarial consulting firms. The total volume of data collected during the third quarter of 2021 for buyout and buy-in group annuity purchases in Canada was approximately \$3.1B. This volume of data collected for the third quarter of 2021 is higher than the typical range for the volume of data on actual annuity purchases historically provided to the PPFRC for a quarter. There was limited quantitative data obtained on actual fully indexed annuity purchases or bona fide quotations in cases where the transaction did not proceed during the third quarter of 2021. The absolute values of the spreads relative to CANSIM V39057 for this data on actual purchases were smaller than the absolute value of the spread relative to CANSIM V39057 for the average of the hypothetical quotes outlined below.

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 is the same as the data shown in Appendix A of the March 10, 2021 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 September 30, 2021	8.6	11.1	13.6

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 3.12% which is equal to the CANSIM V39062 yield of 1.92% at September 30, 2021, plus 120 bps. The mortality assumptions as outlined in the March 10, 2021 educational note were also used. Note that the durations of the three illustrative blocks will change over time as discount rates change.

The table below provides the implicit discount rates as at September 30, 2021, 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 June 30, 2021.

Average of the three most competitive hypothetical quotes			
Duration	Low	Medium	High
<i>September 30, 2021</i>			
Discount rate	2.84%	3.00%	3.08%
Spread over CANSIM V39062	+ 92 bps	+ 108 bps	+ 116 bps
<i>June 30, 2021</i>			
Discount rate	2.71%	2.89%	2.99%
Spread over CANSIM V39062	+ 94 bps	+ 112 bps	+ 122 bps

The spread over CANSIM V39062 based on the average of the three most competitive hypothetical quotes decreased slightly from June 30, 2021, for each of the illustrative blocks.

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 September 30, 2021, of which at least three indicated they may be willing to transact on their hypothetical quotes at the three durations.

The hypothetical quotations as at September 30, 2021, and June 30, 2021, for the medium-duration illustrative block where insurers indicated that they may be willing to transact on their hypothetical quotes may be summarized as follows:

Average of the most competitive hypothetical quotes			
	Number of hypothetical quotes in the average	Discount rate	Spread over CANSIM V39057 (as originally published)
September 30, 2021	3	-0.29%	- 54 bps
June 30, 2021	3	-0.42%	- 53 bps

Based on the average of the most competitive hypothetical quotes, the absolute value of the spreads relative to the unadjusted yield on Government of Canada real-return long-term bonds (CANSIM V39057) for the medium-duration illustrative block remained essentially the same from June 30, 2021.

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/ explanatory report (supplement)	Mortality table	Non-indexed immediate and deferred			Fully CPI-indexed
		Low duration	Medium duration	High	All durations
Sep 30, 2021	CPM2014Proj	8.6: + 100 bps	11.1: + 120 bps	13.6: + 130 bps	- 50 bps
Jun 30, 2021	CPM2014Proj	8.6: + 100 bps	11.2: + 120 bps	13.7: + 130 bps	- 50 bps
Mar 31, 2021	CPM2014Proj	8.5: + 100 bps	11.1: + 120 bps	13.6: + 130 bps	- 50 bps
Dec 31, 2020	CPM2014Proj	8.9: + 120 bps	11.6: + 140 bps	14.3: + 150 bps	- 50 bps
Sep 30, 2020	CPM2014Proj	8.9: + 130 bps	11.6: + 150 bps	14.3: + 160 bps	- 50 bps
Jun 30, 2020	CPM2014Proj	8.8: + 140 bps	11.6: + 160 bps	14.3: + 170 bps	- 50 bps
Apr 30, 2020	CPM2014Proj	8.9: + 130 bps	11.7: + 140 bps	14.5: + 150 bps	- 70 bps
Mar 31, 2020	CPM2014Proj	8.7: + 150 bps	11.4: + 160 bps	13.9: + 170 bps	- 70 bps
Dec 31, 2019	CPM2014Proj	8.6: + 110 bps	11.2: + 120 bps	13.7: + 120 bps	- 70 bps
Sep 30, 2019	CPM2014Proj	8.7: + 120 bps	11.3: + 130 bps	13.9: + 130 bps	- 70 bps
Jun 30, 2019	CPM2014Proj	8.7: + 100 bps	11.4: + 110 bps	14.0: + 110 bps	- 70 bps
Mar 31, 2019	CPM2014Proj	8.6: + 100 bps	11.2: + 110 bps	13.8: + 110 bps	- 70 bps
Dec 31, 2018	CPM2014Proj	8.5: + 100 bps	11.0: + 110 bps	13.4: + 110 bps	- 70 bps
Sep 30, 2018	CPM2014Proj	8.4: + 80 bps	10.9: + 90 bps	13.3: + 90 bps	- 80 bps
Jun 30, 2018	CPM2014Proj	8.5: + 80 bps	11.1: + 90 bps	13.5: + 90 bps	- 70 bps
Mar 31, 2018	CPM2014Proj	8.5: + 70 bps	11.1: + 80 bps	13.6: + 90 bps	- 70 bps
Dec 31, 2017	CPM2014Proj	8.6: + 70 bps	11.1: + 80 bps	13.6: + 90 bps	- 70 bps
Sep 30, 2017	CPM2014Proj	8.5: + 60 bps	11.1: + 70 bps	13.5: + 80 bps	- 70 bps
Jun 30, 2017	CPM2014Proj	8.6: + 60 bps	11.2: + 80 bps	13.8: + 90 bps	- 70 bps
Mar 31, 2017	CPM2014Proj	8.5: + 70 bps	11.0: + 100 bps	13.5: + 110 bps	- 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 bps	- 70 bps
Jun 30, 2016	CPM2014Proj	8.6: + 90 bps	11.3: + 120 bps	13.8: + 130 bps	- 70 bps
Mar 31, 2016	CPM2014Proj	8.5: + 90 bps	11.1: + 120 bps	13.6: + 130 bps	- 70 bps
Dec 31, 2015	CPM2014Proj	8.5: + 60 bps	11.1: + 100 bps	13.6: + 110 bps	- 70 bps
Sep 30, 2015	CPM2014Proj	8.4: + 80 bps	11.0: + 110 bps	13.4: + 120 bps	- 70 bps
Jun 30, 2015	UP94Proj	8.3: - 20 bps	10.9: + 30 bps	13.6: + 60 bps	- 120 bps
Mar 31, 2015	UP94Proj	8.5: + 0 bps	11.3: + 30 bps	14.0: + 60 bps	- 120 bps
Dec 31, 2014	UP94Proj	8.2: + 0 bps	10.9: + 30 bps	13.5: + 60 bps	- 120 bps
Sep 30, 2014	UP94Proj	8.1: + 0 bps	10.6: + 30 bps	13.2: + 50 bps	- 120 bps
Jun 30, 2014	UP94Proj	8.0: + 0 bps	10.5: + 40 bps	12.9: + 60 bps	- 110 bps
Mar 31, 2014	UP94Proj	7.7: + 50 bps	10.1: + 80 bps	12.3: + 100 bps	- 100 bps
Dec 31, 2013	UP94Proj	7.6: + 50 bps	9.9: + 70 bps	12.1: + 80 bps	- 110 bps
Sep 30, 2013	UP94Proj	7.6: + 60 bps	9.9: + 80 bps	12.2: + 90 bps	- 100 bps
Jun 30, 2013	UP94Proj	7.8: + 40 bps	10.2: + 60 bps	12.5: + 70 bps	- 120 bps