

# MEMORANDUM

**To:** All pension actuaries

**From:** Steven W. Easson, Chair  
Actuarial Guidance Council  
Jared Mickall, Chair  
Committee on Pension Plan Financial Reporting

**Date:** November 3, 2020

**Subject:** **Educational Note Supplement: Guidance for Assumptions for Hypothetical Wind-Up and Solvency Valuations Update – Effective September 30, 2020, and Applicable to Valuations with Effective Dates Between September 30, 2020 and December 30, 2020**

*Document 220152*

The Committee on Pension Plan Financial Reporting (PPFRC) conducted its quarter-end review of group annuity pricing conditions as at September 30, 2020. It determined that a revision to its previous guidance regarding assumptions for hypothetical wind-up and solvency valuations is appropriate for non-indexed annuities, while no revision to its previous guidance for annuities fully indexed to the rate of change in the Consumer Price Index (CPI) is warranted for valuations with effective dates on or after September 30, 2020 (but no later than December 30, 2020).

Additional information is contained in this educational note supplement. The guidance contained in this educational note supplement has been approved by the Actuarial Guidance Council, and is consistent with the [preliminary communication](#) dated October 23, 2020 and with the [update – preliminary communication](#) dated October 30, 2020.

## **Due process**

The *Policy on Due Process for the Approval of Guidance Material Other than Standards of Practice and Research Documents* was followed in the development of these revisions.

## **Contact information**

Questions should be addressed to Jared Mickall, Chair of the PPFRC, at [jared.mickall@mercero.com](mailto:jared.mickall@mercero.com).

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## Validity of April 24, 2020 educational note

The most recent annual guidance from the PPFRC concluded that for valuations with effective dates on or after December 31, 2019 (but no later than December 30, 2020), 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 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 most recent annual guidance 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 April 24, 2020 [educational note](#) for guidance with respect to the selection of assumptions for hypothetical wind-up and solvency valuations with effective dates between December 31, 2019 and December 30, 2020.

## Guidance for non-indexed pensions

Based on the analysis provided in Appendix A, the PPFRC concluded that effective September 30, 2020, the cost of purchasing non-indexed annuities would be estimated based on the process outlined in the April 24, 2020 [educational note](#), and the following table:

<b>Annuity Duration</b>	<b>Duration based on 2.49% discount rate</b>	<b>Unadjusted CANSIM V39062* as at September 30, 2020</b>	<b>Spread above V39062</b>	<b>Discount rate as at September 30, 2020</b>
<b>Low</b>	8.9	0.99%	+130 bps	2.29%
<b>Medium</b>	11.6	0.99%	+150 bps	2.49%
<b>High</b>	14.3	0.99%	+160 bps	2.59%
<b>Mortality table:</b> 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)

## Other guidance for non-indexed pensions

### *Very low duration annuities*

The PPFRC has been monitoring actual purchases and bona fide quotes of very low duration annuities (i.e., those below the low duration indicated in the table above). As at September 30, 2020, 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*

The PPFRC believes that very high duration annuities (i.e., those above the high duration indicated in the table above) would likely include a large proportion of deferred vested members. While the higher duration, in isolation, would be expected to result in lower pricing, the PPFRC believes that this would be offset by added administrative costs and risk premiums that insurers would incur in assuming these obligations.

The PPFRC has been monitoring the spreads for groups with durations higher than the high duration listed in the table above and has recently observed that these spreads may be less than the spreads indicated at the high duration block. As at September 30, 2020, the PPFRC continues to believe that a reasonable spread for very high duration annuities is the spread at 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, 2020, 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 April 24, 2020 [educational note](#), and the following table:

<b>Unadjusted CANSIM V39057* as at September 30, 2020</b>	<b>Spread below V39057</b>	<b>Discount rate as at September 30, 2020</b>
-0.18%	- 50 bps	-0.68%
<b>Mortality table:</b> 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)

## Actual annuity pricing

The purpose of this educational note supplement 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 annual 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.

**Retroactive application**

If an actuary has already prepared a report (e.g., funding valuation report, solvency or transfer ratio report) with an effective date on or after September 30, 2020, before the publication of this guidance, the actuary would consider paragraphs 1710.36 through 1710.43 of the Standards of Practice to determine whether it is necessary to withdraw or amend the report.

**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, 2020 for valuations with effective dates on and after September 30, 2020, up to December 30, 2020, pending any future guidance or other evidence of change in annuity pricing.

## Appendix A – Methodology in developing guidance as at September 30, 2020

### Data

The PFFRC obtained hypothetical quotes as at September 30, 2020 from the same insurance companies on the same illustrative blocks of business used to develop the June 30, 2020 guidance and group annuity data. 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 2020, as provided by several actuarial consulting firms. The total volume of data collected during the third quarter of 2020 for buyout and buy-in group annuity purchases in Canada was just above \$0.7B. There was limited 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 2020.

### Mortality basis

The assumed mortality table and assumed future mortality improvements used to establish the discount rate guidance in this educational note supplement 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 PFFRC 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 April 24, 2020 [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, 2020	8.9	11.6	14.3

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 educational note) of 2.49% which is equal to the CANSIM V39062 yield of 0.99% at September 30, 2020 plus 150 bps. The mortality assumptions as described in the annual 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, 2020, 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, 2020.

<b>Average of the three most competitive hypothetical quotes<sup>1</sup></b>			
<b>Duration</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>
<i>September 30, 2020</i>			
<b>Discount rate</b>	2.29%	2.42%	2.46%
<b>Spread over CANSIM V39062</b>	+ 130 bps	+ 143 bps	+ 147 bps
<i>June 30, 2020</i>			
<b>Discount rate</b>	2.32%	2.51%	2.62%
<b>Spread over CANSIM V39062</b>	+ 141 bps	+ 160 bps	+ 171 bps

The spread over CANSIM V39062 based on the average of the three most competitive hypothetical quotes decreased from June 30, 2020 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, 2020, 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, 2020 and June 30, 2020, 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:

<b>Average of the most competitive hypothetical quotes<sup>1</sup></b>			
	<b>Number of hypothetical quotes in the average</b>	<b>Discount rate</b>	<b>Spread over CANSIM V39057</b>
<b>September 30, 2020</b>	3	-0.91%	- 73 bps
<b>June 30, 2020</b>	3	-0.54%	- 52 bps

Based on the average of the most competitive hypothetical quotes, the spreads below the unadjusted yield on GoC real-return long-term bonds (CANSIM V39057) for the medium-duration illustrative block increased from June 30, 2020.

<sup>1</sup> Determined in conjunction with CPM2014 combined with mortality improvement scale CPM-B with no adjustments for sub- or super-standard mortality.

## 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	Mortality table <sup>2</sup>	Non-indexed immediate and deferred <i>Duration<sup>3</sup>: 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
Sep 30, 2020	CPM2014Proj	8.9: + 130 bps	11.6: + 150 bps	14.3: + 160 bps	- 50 bps
<a href="#">Jun 30, 2020</a>	CPM2014Proj	8.8: + 140 bps	11.6: + 160 bps	14.3: + 170 bps	- 50 bps
<a href="#">Apr 30, 2020</a>	CPM2014Proj	8.9: + 130 bps	11.7: + 140 bps	14.5: + 150 bps	- 70 bps
<a href="#">Mar 31, 2020</a>	CPM2014Proj	8.7: + 150 bps	11.4: + 160 bps	13.9: + 170 bps	- 70 bps
<a href="#">Dec 31, 2019</a>	CPM2014Proj	8.6: + 110 bps	11.2: + 120 bps	13.7: + 120 bps	- 70 bps
<a href="#">Sep 30, 2019</a>	CPM2014Proj	8.7: + 120 bps	11.3: + 130 bps	13.9: + 130 bps	- 70 bps
<a href="#">Jun 30, 2019</a>	CPM2014Proj	8.7: + 100 bps	11.4: + 110 bps	14.0: + 110 bps	- 70 bps
<a href="#">Mar 31, 2019</a>	CPM2014Proj	8.6: + 100 bps	11.2: + 110 bps	13.8: + 110 bps	- 70 bps
<a href="#">Dec 31, 2018</a>	CPM2014Proj	8.5: + 100 bps	11.0: + 110 bps	13.4: + 110 bps	- 70 bps
<a href="#">Sep 30, 2018</a>	CPM2014Proj	8.4: + 80 bps	10.9: + 90 bps	13.3: + 90 bps	- 80 bps
<a href="#">Jun 30, 2018</a>	CPM2014Proj	8.5: + 80 bps	11.1: + 90 bps	13.5: + 90 bps	- 70 bps
<a href="#">Mar 31, 2018</a>	CPM2014Proj	8.5: + 70 bps	11.1: + 80 bps	13.6: + 90 bps	- 70 bps
<a href="#">Dec 31, 2017</a>	CPM2014Proj	8.6: + 70 bps	11.1: + 80 bps	13.6: + 90 bps	- 70 bps
<a href="#">Sep 30, 2017</a>	CPM2014Proj	8.5: + 60 bps	11.1: + 70 bps	13.5: + 80 bps	- 70 bps
<a href="#">Jun 30, 2017</a>	CPM2014Proj	8.6: + 60 bps	11.2: + 80 bps	13.8: + 90 bps	- 70 bps
<a href="#">Mar 31, 2017</a>	CPM2014Proj	8.5: + 70 bps	11.0: + 100 bps	13.5: + 110 bps	- 60 bps
<a href="#">Dec 31, 2016</a>	CPM2014Proj	8.5: + 70 bps	11.0: + 90 bps	13.5: + 100 bps	- 60 bps
<a href="#">Sep 30, 2016</a>	CPM2014Proj	8.7: + 80 bps	11.4: + 110 bps	14.0: + 120 bps	- 70 bps
<a href="#">Jun 30, 2016</a>	CPM2014Proj	8.6: + 90 bps	11.3: + 120 bps	13.8: + 130 bps	- 70 bps
<a href="#">Mar 31, 2016</a>	CPM2014Proj	8.5: + 90 bps	11.1: + 120 bps	13.6: + 130 bps	- 70 bps
<a href="#">Dec 31, 2015</a>	CPM2014Proj	8.5: + 60 bps	11.1: + 100 bps	13.6: + 110 bps	- 70 bps
<a href="#">Sep 30, 2015</a>	CPM2014Proj	8.4: + 80 bps	11.0: + 110 bps	13.4: + 120 bps	- 70 bps
<a href="#">Jun 30, 2015</a>	UP94Proj	8.3: - 20 bps	10.9: + 30 bps	13.6: + 60 bps	- 120 bps
<a href="#">Mar 31, 2015</a>	UP94Proj	8.5: + 0 bps	11.3: + 30 bps	14.0: + 60 bps	- 120 bps
<a href="#">Dec 31, 2014</a>	UP94Proj	8.2: + 0 bps	10.9: + 30 bps	13.5: + 60 bps	- 120 bps
<a href="#">Sep 30, 2014</a>	UP94Proj	8.1: + 0 bps	10.6: + 30 bps	13.2: + 50 bps	- 120 bps
<a href="#">Jun 30, 2014</a>	UP94Proj	8.0: + 0 bps	10.5: + 40 bps	12.9: + 60 bps	- 110 bps
<a href="#">Mar 31, 2014</a>	UP94Proj	7.7: + 50 bps	10.1: + 80 bps	12.3: + 100 bps	- 100 bps
<a href="#">Dec 31, 2013</a>	UP94Proj	7.6: + 50 bps	9.9: + 70 bps	12.1: + 80 bps	- 110 bps
<a href="#">Sep 30, 2013</a>	UP94Proj	7.6: + 60 bps	9.9: + 80 bps	12.2: + 90 bps	- 100 bps
<a href="#">Jun 30, 2013</a>	UP94Proj	7.8: + 40 bps	10.2: + 60 bps	12.5: + 70 bps	- 120 bps

<sup>2</sup> “CPM2014Proj”: 2014 Canadian Pensioners’ Mortality Table (CPM2014), combined with mortality improvement scale CPM Improvement Scale B (CPM-B) with no adjustments for sub- or super-standard mortality; “UP94Proj”: UP94 mortality table, combined with mortality improvement scale AA on fully generational basis.

<sup>3</sup> Duration is to be determined for the portion of the liabilities assumed to be settled through the purchase of annuities, based on the medium duration discount rate.