

MEMORANDUM

To: All Pension Actuaries

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

Date: June 2, 2020

Subject: **Educational Note Supplement: Guidance for Assumptions for Hypothetical Wind-Up and Solvency Valuations Update – Effective March 31, 2020, and Applicable to Valuations with Effective Dates Between March 31, 2020 and April 29, 2020 and Between April 30, 2020 and December 30, 2020**

Document 220078

The Committee on Pension Plan Financial Reporting (PPFRC) conducted its quarterly review of group annuity pricing conditions as at March 31, 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 increases in the Consumer Price Index (CPI) is appropriate for valuations with effective dates on or after March 31, 2020 (but no later than December 30, 2020).

Since March 31, 2020, there was continued volatility in the financial markets due to the COVID-19 pandemic. In particular, in April there was a significant tightening in credit spreads applicable to provincial and corporate fixed income securities, partially reversing the widening that occurred in March. As a result of this extreme volatility, the PPFRC conducted an off-cycle review of group annuity pricing conditions as at April 30, 2020. It determined that a revision to previous guidance for non-indexed annuities is appropriate for hypothetical wind-up and solvency valuations with effective dates on or after April 30, 2020 (but no later than December 30, 2020). No revision to the previous guidance for annuities fully indexed to increases in the Consumer Price Index was made.

Additional information is contained in this educational note supplement. For the period March 31, 2020 to April 29, 2020, the guidance contained in this educational note supplement is consistent with the [preliminary communication](#) dated April 16, 2020 which was approved by the Actuarial Guidance Council with the [update – preliminary communication](#) dated April 24, 2020. **For the period April 30, 2020 to December 30, 2020, the guidance contained in**

this educational note supplement is consistent with the [preliminary communication](#) dated May 14, 2020, with the exception of the durations.

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@mercer.com.

SWE, JM

Validity of April 24, 2020 Educational Note

The most recent annual guidance from the Committee on Pension Plan Financial Reporting (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 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 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 from March 31, 2020 to April 29, 2020

Based on the analysis provided in Appendix A, the PPFRC concluded that effective March 31, 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:

Annuity Duration	Duration based on 2.78% discount rate	Unadjusted CANSIM V39062* as at March 31, 2020	Spread above V39062	Discount Rate as at March 31, 2020
Low	8.7	1.18%	+150 bps	2.68%
Medium	11.4	1.18%	+160 bps	2.78%
High	13.9	1.18%	+170 bps	2.88%
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)

Guidance for Non-Indexed Pensions Effective April 30, 2020

Based on the analysis provided in Appendix B, the PPFRC concluded that effective April 30, 2020, the spreads at March 31, 2020 would be reduced by 20 bps at all durations. As such, 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:

Annuity Duration	Duration based on 2.36% discount rate	Unadjusted CANSIM V39062* as at April 30, 2020	Spread above V39062	Discount Rate as at April 30, 2020
Low	8.9	0.96%	+130 bps	2.26%
Medium	11.7	0.96%	+140 bps	2.36%
High	14.5	0.96%	+150 bps	2.46%

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

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 March 31, 2020, the PPFRC continues to believe that a reasonable approach to derive the spread for very low duration annuities continues to be 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 March 31, 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 from March 31, 2020 to April 29, 2020

Based on the analysis provided in Appendix A, the PPFRC concluded that effective March 31, 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:

Unadjusted CANSIM V39057* as at March 31, 2020	Spread below V39057	Discount Rate as at March 31, 2020
0.43%	- 70 bps	-0.27%
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)

Guidance for Indexed Pensions Effective April 30, 2020

Based on the analysis provided in Appendix B, the PPFRC concluded that effective April 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:

Unadjusted CANSIM V39057* as at April 30, 2020	Spread below V39057	Discount Rate as at April 30, 2020
0.22%	- 70 bps	-0.48%
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 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. In the current pandemic environment, pricing and credit spreads have been particularly volatile, which is responsible in part for the more significant changes in guidance than typically observed.

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 March 31, 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 April 30, 2020 for valuations with effective dates on and after April 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 March 31, 2020

Data

The PFFRC obtained hypothetical quotes as at March 31, 2020 from the same insurance companies on the same illustrative blocks of business used to develop the previous 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 first quarter of 2020, as provided by several actuarial consulting firms. Most of the pricing was prior to the increase in credit spreads. The total volume of data collected during the first quarter of 2020 for buyout and buy-in group annuity purchases in Canada was less than \$0.3B. There was no quantitative data obtained on actual fully indexed annuity purchases or bona fide quotations in cases where the transaction did not proceed during the first 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 is as 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 March 31, 2020	8.7	11.4	13.9

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 2.78% which is equal to the CANSIM V39062 yield of 1.18% at March 31, 2020 plus 160 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 March 31, 2020, underlying the average of the three¹ most competitive hypothetical quotes, determined in conjunction with CPM2014 combined with mortality improvement scale CPM-B with no mortality adjustments, and the

¹ For March 31, 2020, one insurer who indicated very limited capacity had a hypothetical quote that was one of the most competitive hypothetical quotes at each duration. For the purpose of the March 31, 2020 guidance, at each duration, this insurer's hypothetical quote was assigned a 50% weight and the fourth most competitive hypothetical quote was assigned a 50% weight.

spread of these implicit discount rates over the CANSIM V39062 yield. Comparable information is also shown as at December 31, 2019.

Average of the Three Most Competitive Hypothetical Quotes²			
Duration	Low	Medium	High
<i>March 31, 2020</i>			
Discount rate	2.68%	2.80%	2.88%
Spread over CANSIM V39062	+ 150 bps	+ 162 bps	+ 170 bps
<i>December 31, 2019</i>			
Discount rate	2.78%	2.85%	2.85%
Spread over CANSIM V39062	+ 102 bps	+ 109 bps	+ 109 bps

The spread over CANSIM V39062 based on the average of the three most competitive hypothetical quotes increased during the quarter 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 March 31, 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 March 31, 2020 and December 31, 2019, 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 Quotes²			
	Number of hypothetical quotes in the average	Discount rate	Spread over CANSIM V39057
March 31, 2020	3	-0.34%	- 77 bps
December 31, 2019	3	-0.28%	- 69 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 decreased during the quarter.

² Determined in conjunction with CPM2014 combined with mortality improvement scale CPM-B with no adjustments for sub- or super-standard mortality.

Appendix B – Methodology in Developing Guidance as at April 30, 2020

Data

The PPFRC began collecting data from insurers on a quarterly basis in 2009. However, due to market volatility caused by the COVID-19 pandemic, an off-cycle review was conducted as at April 30, 2020. The PPFRC obtained hypothetical quotes as at April 30, 2020 from five of the same insurance companies on the same illustrative blocks of business used to develop the previous guidance and group annuity data.

Consistent with the analysis performed previously at 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 April 2020, as provided by several actuarial consulting firms. The total volume of data collected during April 2020 for buyout and buy-in group annuity purchases in Canada was approximately \$0.1B. There was no quantitative data obtained on actual fully indexed annuity purchases or bona fide quotations in cases where the transaction did not proceed during April 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 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 as 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 April 30, 2020	8.9	11.7	14.5

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 2.36% which is equal to the CANSIM V39062 yield of 0.96% at April 30, 2020 plus 140 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 April 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 March 31, 2020.

Average of the Three Most Competitive Hypothetical Quotes³			
Duration	Low	Medium	High
<i>April 30, 2020</i>			
Discount rate	2.10%	2.30%	2.42%
Spread over CANSIM V39062	+ 114 bps	+ 134 bps	+ 146 bps
<i>March 31, 2020</i>			
Discount rate	2.68%	2.80%	2.88%
Spread over CANSIM V39062	+ 150 bps	+ 162 bps	+ 170 bps

The spread over CANSIM V39062 based on the average of the three most competitive hypothetical quotes decreased during April 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 April 30, 2020, of which at least three indicated they may be willing to transact on their hypothetical quotes at the three durations.

The hypothetical quotes for the medium-duration illustrative block as at April 30, 2020 and March 31, 2020, are summarized as follows:

Average of the Most Competitive Hypothetical Quotes³			
	Number of hypothetical quotes in the average	Discount rate	Spread over CANSIM V39057
April 30, 2020	3	-0.39%	- 61 bps
March 31, 2020	3	-0.34%	- 77 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 during April 2020.

³ Determined in conjunction with CPM2014 combined with mortality improvement scale CPM-B with no adjustments for sub- or super-standard mortality.

Appendix C – 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 ⁴	Non-indexed Immediate and Deferred <i>Duration⁵: 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
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

⁴ "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.

⁵ 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.