Educational Note

Assumptions for Hypothetical Wind-up and Solvency Valuations with Effective Dates between December 31, 2011, and December 30, 2012

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Committee on Pension Plan Financial Reporting

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Members should be familiar with educational notes. Educational notes describe but do not recommend practice in illustrative situations. They do not constitute Standards of Practice and are, therefore, not binding. They are, however, intended to illustrate the application (but not necessarily the only application) of the Standards of Practice, so there should be no conflict between them. They are intended to assist actuaries in applying Standards of Practice in respect of specific matters. Responsibility for the manner of application of Standards of Practice in specific circumstances remains that of the members in the pension practice area.

Memorandum

To: All Pension Actuaries

From: Phil Rivard, Chair
Practice Council

Gavin Benjamin, Chair
Committee on Pension Plan Financial Reporting

Date: May 24, 2012

Subject: **Educational Note—Assumptions for Hypothetical Wind-up and Solvency Valuations with Effective Dates between December 31, 2011, and December 30, 2012**

This educational note provides guidance on assumptions to be used for hypothetical wind-up and solvency valuations for 2012. It confirms the initial guidance for 2012 assumptions that was provided in an announcement issued on February 6, 2012.

The Committee on Pension Plan Financial Reporting (PPFRC) would like to express its gratitude to BMO Assurance, The Co-Operators, Desjardins Financial Security, Great-West Life, Industrial Alliance, Manulife, Standard Life, and Sun Life for providing the committee with data.

In an educational note provided in 2010, the PPFRC included additional draft guidance on the assumptions to be used for hypothetical wind-up and solvency valuations for very large plans and plans with benefits indexed to the Consumer Price Index in situations where an alternative settlement method was being hypothesized. Comments were invited from pension actuaries and other interested parties. Subsequently, the Actuarial Standards Board established a designated group (DG) to review the practice-specific standards with respect to the selection of assumptions for hypothetical wind-up and solvency valuations. The DG has completed its review and concluded that significant changes to the standards are not appropriate at this time. Consequently, the PPFRC has resumed the process of developing additional guidance relating to the selection of assumptions for hypothetical wind-up and solvency valuations for very large and/or indexed plans in situations where an alternative settlement method is being hypothesized.

The PPFRC is also conducting further research regarding the pricing of indexed annuities and the effect on annuity pricing of the duration of the obligations being purchased.

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The PPFRC expects to issue additional and/or revised guidance as soon as practical following the completion of the above activities.

In accordance with the Institute’s Policy on Due Process for the Approval of Guidance Material other than Standards of Practice, this educational note has been prepared by the PPFRC and has received final approval for distribution by the Practice Council effective May 24, 2012.

As outlined in subsection 1220 of the Standards of Practice, “*The actuary should be familiar with relevant Educational Notes and other designated educational material*.” That subsection explains further that a “practice which the Educational Notes 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.” As well, “Educational Notes are intended to illustrate the application (but not necessarily the only application) of the standards, so there should be no conflict between them.”

If you have any questions or comments regarding this educational note, please contact Gavin Benjamin at his CIA Online Directory address, gavin.benjamin@towerswatson.com.

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1. INTRODUCTION

According to paragraph 3330.16 of the Standards of Practice, the assumptions used for actual and hypothetical wind-up valuations would

> in respect of benefit entitlements that are assumed to be settled by purchase of annuities, reflect single premium annuity rates,
>
> in respect of benefit entitlements that are assumed to be settled by lump sum transfer, reflect the standards in section 3500 respecting commuted values, and
>
> in respect of benefit entitlements that are assumed to be settled in some other manner, reflect the manner in which such benefits would be settled.

This document has been prepared by the Committee on Pension Plan Financial Reporting (PPFRC) and is intended to provide actuaries with guidance in selecting appropriate assumptions for hypothetical wind-up and solvency valuations in respect of benefit entitlements that are assumed to be settled by purchase of annuities or by lump sum transfer with effective dates on or after December 31, 2011, and prior to or on December 30, 2012. For greater clarity, this document does not provide detailed guidance on selecting appropriate assumptions for hypothetical wind-up and solvency valuations in respect of benefit entitlements that are assumed to be settled in a manner other than the purchase of annuities or lump sum transfer.

This educational note confirms the initial guidance for 2012 assumptions that was provided in an announcement issued on February 6, 2012.

2. SETTLEMENT METHODS

To comply with paragraph 3330.16 of the Standards of Practice, the actuary would make an assumption for each class of plan members as to the portion of liabilities settled by annuity purchase, commuted value transfer or other manner of settlement. Typically, classes of plan members would include at least

- active members not eligible for retirement,
- active members eligible for retirement,
- retired members and surviving spouses, and
- deferred vested members.

In determining the appropriate assumption for the method of settlement, the actuary would consider

- any legislative requirements to offer specific settlement options to various classes of members,
- the settlement provisions of the plan and, in particular, the options to be provided to members upon plan wind-up,
- the benefit provisions of the plan, for example,

where a plan has generous ancillary benefits, an election to receive a commuted value transfer may be affected by the maximum transfer limits imposed under section 8517 of the Income Tax Act (Canada) Regulations, or

where a plan has inflexible retirement options and few optional forms of payment, a member may prefer to elect a commuted value transfer to increase flexibility in payment terms,

the postulated scenario upon which the hypothetical wind-up is based,

past experience of the plan, when relevant, and

any experience from actual wind-ups of comparable plans of which the actuary may be aware.

All requirements of the Standards of Practice with respect to the development and reporting of assumptions would apply to this assumption.

3. BENEFITS ASSUMED TO BE SETTLED BY LUMP SUM TRANSFER

For hypothetical wind-up valuations, of which solvency valuations are a subset, paragraph 3240.05 of the Standards of Practice states, *"For a hypothetical wind-up valuation, the actuary should assume that the wind-up date, the calculation date and the settlement date are coincident."*

Accordingly, the wind-up liabilities for benefits expected to be settled through the payment of a lump sum transfer would be determined in accordance with section 3500 of the Standards of Practice, applying the assumptions consistent with the particular valuation date.

4. BENEFITS ASSUMED TO BE SETTLED BY PURCHASE OF NON-INDEXED GROUP ANNUITIES

Methodology

The PPFRC began collecting data from insurers on a quarterly basis in 2009. Six insurers agreed to provide quotes, on a confidential basis, on illustrative blocks of business. The insurers that agreed to provide this information are Desjardins Financial Security, Great-West Life, Industrial Alliance, Manulife, Standard Life, and Sun Life Financial. In late 2011, two additional insurers, BMO Assurance and The Co-Operators, agreed to provide quotes on the same basis.

The PPFRC prepared data for two illustrative blocks of business for non-indexed pensions that were then provided to the insurers. One illustrative block is intended to be representative of a large purchase (i.e., with a total premium greater than $15 million) and the other illustrative block is intended to be representative of a small purchase (i.e., with a total premium less than $15 million).

The characteristics of the illustrative blocks of business, as follows, are:

Large Purchase (approximately $39 million total premium)

Retirees

- Number 229
- Average age 66
- Average monthly lifetime pension $700
- Number with bridge pension payable to age 65 44
- Average monthly bridge pension $322

Deferred vested

- Number 95
- Average age 46
- Average monthly lifetime pension at age 65 $642

Small Purchase (approximately $6.4 million total premium)

Retirees

- Number 24
- Average age 66
- Average monthly lifetime pension $71[illegible]
- Number with bridge pension payable to age 65 5
- Average monthly bridge pension $412

Deferred vested

- Number 37
- Average age 46
- Average monthly lifetime pension at age 65 $678

Based on current interest rate levels and assuming that the pensions are not indexed, the durations of the illustrative blocks are as shown here.

	Large Purchase	Small Purchase
Retirees	10.9	10.7
Deferred vested	24.4	24.5
Combined	13.5	17.4

Using these data, the insurers indicated that they would provide realistic quotes (i.e., as though the quotes truly represent blocks of business on which they are bidding) as of the agreed-upon dates. Based on the quotes, the PPFRC then calculated the implicit discount rate underlying each quote.

The insurers indicated that it would not be appropriate, for competitive reasons, for the PPFRC to disclose the individual discount rates underlying the insurer quotes, including the discount rate associated with the most competitive quote. Also, the insurers indicated that, in their view, it is not appropriate to rely solely on the most competitive illustrative quote for purposes of establishing group annuity purchase discount rate assumptions because the capacity at which group annuities can be transacted at the best illustrative price might be limited. For example, a particular insurer may not be transacting actual sales at a particular date, even though illustrative quotes are provided at that date, if the insurer has met its capacity limit.

After lengthy discussions, the PPFRC and the insurers agreed that, for purposes of providing guidance on group annuity purchase discount rates, it would usually be appropriate to reference the average of the discount rates for the three most competitive quotes. In reaching this conclusion, the PPFRC considers the magnitude of the spread between the illustrative quotes (which data are confidential).

The guidance contained in this educational note is partially based on quotes provided by the eight insurance companies on illustrative group annuity business using pricing conditions at December 31, 2011. These data were collected on the same basis as the illustrative quotes as of December 31, 2010 (as described in the May 2011 educational note), and are consistent with the methodology adopted as of each quarter end in 2011. Consistent with the analysis performed at previous quarter ends, the illustrative quote information was supplemented with data on the pricing of actual group annuity purchases during the fourth quarter of 2011 provided by certain actuarial consulting firms.

Analysis

The results of the illustrative non-indexed quotations at December 31, 2011, based on the UP94 generational mortality tables (with the AA improvement scale), are summarized below and compared to the previous illustrative quote information provided by the insurers as at September 30, 2011.

AVERAGE OF THE THREE MOST COMPETITIVE QUOTES (USING UP94 GENERATIONAL MORTALITY TABLES)				
	Large Purchase		**Small Purchase**	
	30/09/2011	**31/12/2011**	**30/09/2011**	**31/12/2011**
Retirees • Discount rate • Spread over CANSIM V39062	3.57% + 0.89%	3.28% + 0.87%	3.56% + 0.88%	3.36% + 0.95%
Deferred vesteds • Discount rate • Spread over CANSIM V39062	3.59% + 0.91%	3.46% + 1.05%	3.52% + 0.84%	3.50% + 1.09%

The illustrative quotes suggest that an appropriate discount rate for estimating the cost of purchasing a non-indexed group annuity for immediate pensions be determined as the unadjusted yield on Government of Canada (GoC) long-term bonds (CANSIM V39062) increased arithmetically by approximately 90 basis points (bps), in conjunction with the UP94 generational mortality tables.

The pricing information for *actual* group annuity purchases during the fourth quarter of 2011 was also considered. In particular, the data on the actual purchases of non-indexed annuities during the month of December 2011 that were available to the PPFRC produced an average spread of approximately 90 bps above the prevailing unadjusted yield on GoC long-term bonds (CANSIM series V39062).

While the illustrative quotes do indicate differences in the pricing for immediate and deferred annuities, some of the insurers provide their quotes on the basis that the immediate and deferred annuities are comingled in the same purchase. As a result, and based on both the illustrative quotes and the actual group annuity data, the PPFRC has concluded that there is not sufficient evidence at this time to differentiate the guidance on pricing of group annuities for large and small annuity purchases, and immediate and deferred annuities.

Guidance for Non-indexed Pensions

Based on the analysis described above, the PPFRC has concluded that an appropriate discount rate for estimating the cost of purchasing a non-indexed group annuity would be determined as the unadjusted yield on GoC long-term bonds (CANSIM V39062) increased arithmetically by 90 bps, in conjunction with the UP94 generational mortality tables. This guidance applies to both immediate and deferred pensions and also applies regardless of the overall size of a group annuity purchase.

Example

As at December 31, 2011, the unadjusted CANSIM V39062 rate was 2.41%. This rate would form the basis for developing an appropriate underlying discount rate for valuations of non-indexed group annuities with effective dates of December 31, 2011, and January 1, 2012, to be used in conjunction with the UP94 generational mortality tables. Prior to rounding, an applicable underlying discount rate would then be determined as 2.41% + 0.90% = 3.31%.

Each actuary would use discretion in determining whether to round discount rates to the nearest multiple of five, 10, or 25 basis points. Consistency in the application of such rounding would be maintained.

5. INDEXED PENSIONS

As in prior years, data regarding the pricing of annuities indexed to the Consumer Price Index (CPI) are extremely limited. None of the data obtained regarding actual annuity purchases during the fourth quarter of 2011 pertain to indexed annuities. In most cases, the contributing insurers did provide illustrative quote data for the sample blocks on a CPI-indexed basis. It may be noted that the premiums quoted for the illustrative quotes on this and prior occasions are substantially higher than the guidance provided by prior educational notes.

The PPFRC intends to conduct further research in 2012 regarding the pricing of indexed annuities. The analysis will include confirmation as to whether the insurers would be willing to actually transact on the basis reflected in the illustrative annuity quotes. This research may result in the revision of future guidance for estimating the cost of purchasing indexed annuities.

Accordingly, an acceptable proxy for estimating the cost of purchasing a group annuity where pensions are fully indexed to the rate of change in the CPI would be the unadjusted yield on GoC real-return long-term bonds (CANSIM series V39057) in conjunction with the UP94 generational mortality tables. This guidance applies to both immediate and deferred pensions and also applies regardless of the overall size of a group annuity purchase. As at December 31, 2011, the unadjusted CANSIM V39057 rate was 0.45%.

In situations where pensions are partially indexed, indexed to a measure other than the CPI, or contain a deferred component, the actuary would make appropriate provisions for such situations consistent with the guidance provided in this educational note and other relevant educational notes.

6. INDIVIDUAL ANNUITY PRICING

The PPFRC observes that, particularly during a period of capital market turbulence, the pricing of individual and group annuities can differ for reasons such as:

- there is a greater risk of anti-selection for individual annuities,
- the size of the average monthly pension is usually larger for individual annuities,
- individual annuities may have less complex ancillary features,
- the ability to find appropriate fixed-income investments to back the annuity obligation may be a lesser issue for individual annuities due to the relatively small premium size, particularly during a period in which many fixed-income instruments are highly illiquid, and
- the group annuity pricing is underwritten at the time of the quote, while individual annuity pricing for a particular quote may be "automated".

As a result of these factors, the pricing of individual and group annuities can differ significantly, as occurred in late 2008 and early 2009. Where an actuary considers that a plan's hypothetical wind-up or solvency obligations could be settled by the purchase of individual annuities, yields based on relevant individual annuity quotations could be reflected in establishing the annuity purchase discount rate assumption.

7. LARGE PLANS

As noted in prior educational notes, due to capacity constraints within the Canadian group annuity market, it is possible that large plans would not be able to purchase annuities upon plan wind-up. While the capacity of the group annuity market is not clearly known, it is the PPFRC's understanding that during the past few years total transactions in the Canadian group annuity market were less than $1.5 billion annually. Also, as discussed above, the availability of CPI-indexed annuities of any size may be severely limited.

It may be possible to market a large annuity as a series of smaller annuities over a reasonable period of time, thereby enabling a plan with greater annuity liabilities to access the annuity market anyway. However, this approach may not be suitable, or even possible, in every instance. For example, it may not be possible to settle groups representing annuity liabilities exceeding approximately $500 million over a reasonable period of time, even through a series of smaller annuities. Further, large plans with inflationary increases tied to an external index (i.e., CPI related) would likely have difficulty in settling liabilities successfully through a group annuity purchase.

It is very difficult to predict how the benefits of members in receipt of a pension would be settled for large plans with, effectively, no access to group annuity markets. In the absence of any practical experience, the actuary would make a reasonable hypothesis for the manner in which the benefits may be settled. In making such hypothesis, the actuary would consider relevant legislative requirements and regulatory guidance. Based on this hypothesis, the actuary would then develop appropriate assumptions.

Note that, in most circumstances where a plan wind-up is hypothesized, the principles underlying the determination of annuity prices would continue to apply. For example, if it is hypothesized that liabilities are to be settled through an establishment of a replicating portfolio, an actuary would be guided by the underlying philosophy used by insurance companies in pricing group annuities (i.e., that high-quality fixed-income assets with characteristics similar to the liabilities are used to "immunize" the purchase, with further adjustments for expenses and possibly margins for adverse deviations).

8. MORTALITY

Whether or not the actuary is considering a settlement mechanism other than the purchase of annuities, the mortality experience of pensioners can be a factor in developing an appropriate basis. The determinant is whether future pensioner mortality would be expected to be materially higher or lower than average either due to credible and persistent experience or to occupational or demographic factors.

There is evidence that insurers may consider demonstrable substandard mortality experience submitted when establishing the pricing basis for specific group annuities. Insurers also increasingly appear to be considering occupational or pension size data in establishing mortality assumptions for specific group annuities.

The actuary would consider an adjustment to regular annuity purchase assumptions where there is demonstrated substandard or superstandard mortality or where an insurer might be expected to assume significantly shorter or longer than normal longevity based on occupational or demographic factors. In such cases, the actuary would be expected to make provisions for future improvements in mortality in a manner consistent with the mortality improvements inherent in the assumed annuity purchase basis.

9. WIND-UP EXPENSES

Unless the actuary is satisfied that the expenses of wind-up are not to be charged to the pension fund, the actuary would make an assumption regarding these expenses and the assumption would be explicit. Expenses normally include such items as fees related to preparation of the actuarial wind-up report, fees imposed by a pension supervisory authority, legal fees, costs related to the purchase of annuities, and administrative costs related to the settlement of benefits. Actuaries may refer to the educational note [Expenses in Funding Valuations for Pension Plans] for further guidance.

10. RETROACTIVE APPLICATION

If an actuary has already prepared a funding valuation report with an effective date on or after December 31, 2011, before the publication of this guidance, the actuary would consider paragraphs 1820.33 through 1820.36 of the Standards of Practice to determine whether it is necessary to withdraw or amend the report.

11. FUTURE GUIDANCE

The PPFRC intends to continue monitoring group annuity pricing on a quarterly basis. Actuaries may use the spreads indicated above for valuations with effective dates on and after December 31, 2011, up to December 30, 2012, pending any further guidance or other evidence of change in annuity pricing.

Given the volatility in group annuity pricing which has occurred in the past few years, it is entirely possible that revised guidance could become necessary during the year and, if that occurs, there will necessarily be some delay (such as 60 to 90 days) between the effective date of data collection and the publication of revised guidance. When reporting results of a valuation, within a period of 60 to 90 days of the effective date of the valuation, the actuary may wish to alert users of the report to the possibility that revisions could be needed in the event of new guidance being published.

Moreover, actuaries may wish to be mindful of the volatility in group annuity prices when communicating advice related to future hypothetical wind-up and solvency valuations.

The PPFRC is currently developing guidance and/or conducting research with respect to alternative settlement methods, the pricing of indexed annuities, and the effect of liability duration on annuity pricing.

Responsibility for the manner of application of Pension-specific Standards of Practice in specific circumstances remains that of the member in the pension practice area.