Educational Note

Assumptions for Hypothetical Wind-Up and Solvency Valuations with Effective Dates Between December 31, 2010 and December 30, 2011

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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: Tyrone G. Faulds, Chair
Practice Council

Gavin Benjamin, Chair
Committee on Pension Plan Financial Reporting

Date: May 10, 2011

Subject: **Educational Note—Assumptions for Hypothetical Wind-up and Solvency Valuations with Effective Dates between December 31, 2010 and December 30, 2011**

This Educational Note provides guidance on assumptions to be used for hypothetical wind-up and solvency valuations for 2011. It confirms the initial guidance for 2011 assumptions that was provided in an announcement issued on February 16, 2011.

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

In the Educational Note provided last year, the PPFRC included additional draft guidance on the assumptions to be used for hypothetical wind-up and solvency valuations for very large plans and plans with benefits indexed to the Consumer Price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. Comments were invited from pension actuaries and other interested parties. Since last year, the Actuarial Standards Board has established a Designated Group to review and possibly revise the Practice-Specific Standards with respect to the selection of assumptions for hypothetical wind-up and solvency valuations. Due to the establishment of the Designated Group, the PPFRC has decided not to finalize the additional draft guidance at this time. Once the Designated Group has completed its review, the PPFRC will consider the need to finalize this draft guidance, including the need to update the guidance contained in this Educational Note.

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 9, 2011.

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, 2010 and prior to or on December 30, 2011. For greater clarity, this document does not provide guidance in 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 that was provided in an announcement issued on February 16, 2011.

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. Classes of plan members would typically 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

Prior to 2009, guidance regarding group annuity purchase discount rates was provided on an annual basis, based on a survey of actual purchases that occurred in the previous year. In the April 9, 2009 Educational Note, the PPFRC observed that, given the significant change in annuity pricing that occurred in 2008, it was apparent that further significant change could occur at any time. Also, it appeared that annuity pricing was exhibiting considerable volatility in early 2009. As a result, during 2009, the PPFRC adopted a new methodology to obtain more frequent data.

For the new methodology, six insurers have agreed to provide quotes quarterly, on a confidential basis, on illustrative blocks of business. The insurers that have agreed to provide this information are Desjardins Financial Security, Great-West Life, Industrial Alliance, Manulife, Standard Life and Sun Life Financial.

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 are as follows.

Large Purchase (approximately $35 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 $5 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

Using these data, the insurers indicated that they would provide realistic quotes (i.e., as though the quotes truly represent blocks of business they are bidding on) 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 is confidential).

The guidance contained in this Educational Note is partially based on quotes provided by the six insurance companies on illustrative group annuity business using pricing conditions at December 31, 2010. These data were collected on the same basis as the illustrative quotes as of December 31, 2009 (as described in the April 2010 Educational Note) and are consistent with the methodology adopted as of each quarter end in 2010. 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 2010 and early 2011 provided by certain actuarial consulting firms.

Analysis

The results of the illustrative non-indexed quotations at December 31, 2010, based on the UP94@2020 mortality table, are summarized below and compared to the previous illustrative quote information provided by the insurers as at September 30, 2010.

AVERAGE OF THE THREE MOST COMPETITIVE QUOTES (USING UP94@2020 MORTALITY TABLES)				
	Large Purchase		**Small Purchase**	
	30/09/2010	**31/12/2010**	**30/09/2010**	**31/12/2010**
Retirees				
Discount rate	4.46%	4.27%	4.29%	4.09%
Spread over CANSIM V39062	+ 1.19%	+ 0.79%	+ 1.02%	+ 0.61%
Deferred vesteds				
Discount rate	4.59%	4.23%	4.29%	3.90%
Spread over CANSIM V39062	+ 1.32%	+ 0.75%	+ 1.02%	+ 0.42%

If considered in isolation, the illustrative quotes suggest that it would be appropriate to propose that a 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 60 to 80 basis points (bps), in conjunction with the UP94@2020 mortality table.

However, the pricing information for *actual* group annuity purchases for immediate pensions during the fourth quarter of 2010 varied considerably. For the data on 12 actual purchases for immediate non-indexed pensions during the fourth quarter of 2010 that was available to the PPFRC, the average spread was 104 bps above the prevailing unadjusted yield on GoC long-term bonds (CANSIM V39062).

The PPFRC could not be certain of the reasons for the differences in spreads between the illustrative quotes and the actual group annuity purchases. However, from discussions with the insurers, it is possible that the pricing on actual purchases during the fourth quarter of 2010 reflected specific supply and demand conditions that existed in the group annuity market at that time.

The PPFRC concluded that it would be appropriate that some weight be given to both the illustrative data and to the actual purchase data and, therefore, 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 100 bps, in conjunction with the UP94@2020 mortality table.

It is recognized that, depending on market conditions, group annuity pricing may differ between immediate and deferred pensions. Also, it is likely that pricing becomes somewhat less favourable for very small group annuity purchases. However, given the recent trend in the illustrative quotes and the volatility that group annuity pricing has exhibited over the past two to three years, the PPFRC has concluded that, at this time, refinements to the discount rate to reflect immediate versus deferred pensions or large versus small purchases are not warranted.

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 100 bps, in conjunction with the UP94@2020 mortality table. 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, 2010, the unadjusted CANSIM V39062 rate was 3.48%. 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, 2010 and January 1, 2011 to be used in conjunction with the UP94@2020 mortality table. Prior to rounding, an applicable underlying discount rate would then be determined as 3.48% + 1.00% = 4.48%.

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 followed.

UP94 Mortality Table with Generational Projections

If the actuary is using the UP94 mortality table with generational projections, the discount rate above would be adjusted in an appropriate manner. Such an adjustment will be dependent on the membership and characteristics of the plan and, for many plans, the adjustment may result in an increase of between five to 10 basis points in the discount rate described above.

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 2010 pertains to indexed annuities. The contributing insurers did provide illustrative quote data for the sample blocks on a CPI indexed basis. However, the illustrative quotes are either qualified to the effect that the insurer would not actually transact on that basis and/or the premiums quoted are substantially higher than would be suggested by prior Educational Notes.

Nevertheless, the PPFRC has concluded that it is helpful to actuaries to provide guidance and it would be appropriate at this time that such guidance be similar to that provided in previous years, without differentials between immediate versus deferred pensions or large versus small purchases.

Accordingly, an appropriate proxy for estimating the cost of purchasing a group annuity where pensions are fully indexed to the rate of change in the CPI is the unadjusted yield on Government of Canada real return long-term bonds (CANSIM V39057) in conjunction with the UP94@2020 mortality table. As at December 31, 2010, the unadjusted CANSIM V39057 rate was 1.11%.

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 less of an 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 to settle all required plan obligations. 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 a 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 purchases would continue to apply. Accordingly, an actuary would be guided by the underlying philosophy used by insurance companies in pricing group annuities (i.e., that fixed income assets with characteristics similar to the liabilities are used to "immunize" the purchase).

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 there is credible and persistent mortality experience demonstrating pensioner mortality higher or lower than standard.

There is evidence that insurers may consider demonstrable substandard mortality experience submitted when establishing the pricing basis for specific group annuities. Insurers may also consider 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 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, 2010 before the publication of this guidance, the actuary would consider paragraph 1820.33 of the Standards of Practice, which states that a report may be invalidated if additional information becomes available about the entity as it was at the calculation date. The actuary would also consider paragraph 1520.07 of the Standards of Practice, which offers examples of events that provide additional information about an entity as it was at the calculation date. One of the examples cited in paragraph 1520.07 of the Standards of Practice is the publication of an experience study that provides information for the selection of assumptions. Finally, paragraph 1820.04 of the Standards of Practice states an actuary should withdraw or amend a report if information that invalidates it comes to hand subsequent to the report date. The actuary would consider these sections of the Standards of Practice in determining how to proceed.

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, 2010 up to December 30, 2011, 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 two to three years, it is entirely possible 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.

As previously noted, the Actuarial Standards Board has established a Designated Group to review and possibly revise the Practice-Specific Standards with respect to the selection of assumptions for hypothetical wind-up and solvency valuations. It is noted that this review may result in adjustments to future guidance.

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