

## *Educational Note*

# Alternative Settlement Methods for Hypothetical Wind-Up and Solvency Valuations

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.*

## Memorandum

**To:** All Pension Actuaries

**From:** Bruce Langstroth, Chair  
Practice Council  
Manuel Monteiro, Chair  
Committee on Pension Plan Financial Reporting

**Date:** September 18, 2013

**Subject:** **Educational Note – Alternative Settlement Methods for Hypothetical Wind-Up and Solvency Valuations**

The Actuarial Standards Board published [Final Standards: Revisions to the Practice-Specific Standards for Pension Plans](#) (Part 3000) on September 18, 2013. The revisions clarify the application of the Standards of Practice for hypothetical wind-up and solvency valuations in situations where it may not be practical to purchase annuities (for very large plans or plans where benefits are indexed based on the Consumer Price Index (CPI)) or where alternative settlement methods are permitted by law, regulatory policy, or guidelines.

The Committee on Pension Plan Financial Reporting (PPFRC) has prepared this educational note to provide guidance to actuaries who decide to use alternative settlement methods for hypothetical wind-up and solvency valuations.

A [draft educational note](#) on the same subject was issued on December 14, 2012. Comments were received from three consulting firms, two individual actuaries, and the Canadian Association of Pension Supervisory Authorities (CAPSA). Several changes have been incorporated in the final educational note, considering the comments received. A summary of the most substantive comments received and the PPFRC’s response is provided below:

<i>Comment</i>	<i>PPFRC response</i>
All the consulting firms were supportive of permitting alternative settlement methods to be used in hypothetical wind-up and solvency valuations. CAPSA indicated individual regulators may restrict some or all of the methods. One individual actuary disagreed with the overall approach and suggested that a simpler standard approach would be preferable.	The PPFRC would welcome further regulatory guidance on alternative settlement methods.  The ASB has already considered a simpler, standard approach to perform hypothetical wind-up and solvency valuations, but decided against the approach based on strong opposition from most stakeholders.

<i>Comment</i>	<i>PPFRC response</i>
One consulting firm felt that the proposed disclosure requirements were too demanding.	The PPFRC recognizes that the proposed disclosure requirements are significant, and has introduced some flexibility in the technical disclosure requirements in response to the comments. However, the PPFRC believes that comprehensive disclosure is critical to ensure that all stakeholders understand the implications of the use of alternative settlement methods.
CAPSA believes that an actuary should only be permitted to use an alternative settlement method if the regulator has confirmed in advance that the method is acceptable.	The PPFRC believes that in practice, most actuaries would discuss alternative settlement methods with the regulator prior to filing a report. However, the PPFRC did not want to restrict the ability of an actuary to use a reasonable alternative settlement method in cases where the regulator provides no guidance or confirmation.
Two consulting firms and CAPSA suggested that additional guidance on what would be considered a “high probability that the benefit promises will ultimately be met” under the replicating portfolio approach be provided.	The PPFRC considers this to be a public policy issue that will evolve over time based on actual practice and as regulators and legislators issue guidance. Consequently, the PPFRC is of the view that it would be inappropriate to provide more specific guidance at this time.
One consulting firm and two individual actuaries questioned the merits of the “series of annuities” approach and questioned how it could result in a different answer than single purchase.	The PPFRC acknowledges that this approach is unlikely to produce significantly different results than a single annuity purchase. However, this alternative settlement approach is quite likely to occur in practice if a large plan were to wind up. Consequently, the educational note would be incomplete without acknowledging this approach. We note that the results could be different from a single annuity purchase if the yield on the residual assets differs from the implicit yield used to estimate the cost of purchasing annuities.
One consulting firm disagreed with the need to consider providing a lump sum amount greater than an amount determined in accordance with the commuted value standard under the mandatory lump sum approach.	The PPFRC believes that it is reasonable for an actuary to at least consider whether the member should be compensated for their loss of choice in how they receive their entitlement and/or additional risk incurred.

<i>Comment</i>	<i>PPFRC response</i>
Under the modification of plan terms approach, one consulting firm believes that the level of fixed indexing substituted for Consumer Price Index indexing should be based on the best estimate of future inflation.	The PPFRC believes that it is reasonable for an actuary to at least consider whether members should be compensated for taking on inflation risk.

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 on September 12, 2013. 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.”

Questions regarding this educational note should be addressed to Manuel Monteiro at his CIA Online Directory address, [manuel.monteiro@mercer.com](mailto:manuel.monteiro@mercer.com).

BL, MM

## ALTERNATIVE SETTLEMENT METHODS FOR HYPOTHETICAL WIND-UP AND SOLVENCY VALUATIONS

Due to capacity constraints within the Canadian group annuity purchase market, pension plans with very large liabilities may have difficulty purchasing a single group annuity to settle their immediate and deferred pension liabilities in the event of a plan wind-up.

It is believed that groups with non-indexed annuity liabilities exceeding approximately \$500 million may have difficulty in effecting a single annuity purchase to settle their liabilities. Capacity constraints to purchase annuities that are partially or fully indexed to the CPI are significantly more acute. It is believed that groups with indexed annuity liabilities exceeding approximately \$200 million may have difficulty in settling their liabilities through a single annuity purchase. While the above thresholds reasonably reflect the PPFRC's understanding of the current Canadian group annuity market, we note that annuity transactions that were significantly larger than these thresholds have occurred in both the United States and United Kingdom in the last few years. It is possible that these thresholds will increase in the future if similar transactions occur in Canada. However, even if these thresholds do increase, the pricing associated with very large group annuity purchases is unknown at this time.

It is difficult to predict how the benefits of members who are entitled to an immediate or deferred pension would be settled in the event of an actual wind-up for plans with liabilities significantly above the thresholds noted above. Notwithstanding this fact, paragraph 3240.05.1 of the Standards of Practice states that:

*For a hypothetical wind-up valuation, the actuary may assume that benefits would be settled by the purchase of annuities regardless of any limitation of capacity in the market for group annuity contracts.*

Thus, in performing a hypothetical wind-up or solvency valuation of such a plan the actuary may assume that the benefits would be settled through a single annuity purchase, even if such a purchase would not be practical. If choosing to follow this approach, the actuary would estimate the theoretical cost of purchasing the annuity by applying the prevailing guidance with respect to annuity purchase pricing, as published by the PPFRC, calculated as if there were no capacity constraints. In this situation, the actuary would disclose the practical difficulties associated with actually settling liabilities in this manner.

Alternatively, in performing a hypothetical wind-up or solvency valuation of such a plan, the actuary may make a reasonable hypothesis for the manner in which the benefits may be settled, which would be consistent with the postulated wind-up scenario. Such a hypothesis may contemplate an exercise of regulatory discretion or change in legislation to permit the settlement of benefits in an alternative manner. In making such a hypothesis, the actuary would consider relevant legislative requirements, regulatory guidance, and applicable precedents (e.g., an exercise of regulatory discretion or enacting of special legislation under similar circumstances). For greater certainty, the actuary would only contemplate an alternative settlement method if such method and the assumptions used are permissible under legislation, or if the actuary has reason to believe that it would likely be acceptable to the regulator, even if such method may require a change to legislation upon actual wind-up.

Paragraph 3260.18.1 of the Standards of Practice states that:

When describing the assumptions for methods of settlement for a hypothetical wind-up or solvency valuation, the actuary would describe any related limitations. For example:

- If the settlement method assumes that annuities would be purchased but it might not be possible to purchase annuities on actual wind-up of the plan due to capacity limitations; or
- If the settlement method assumes the exercise of regulatory discretion, a change in law, or a plan amendment for which there is no specific authority.

If an alternative settlement method is contemplated, the actuary would:

- Provide a clear description of the applicable legislative requirements and/or regulatory policies for settling benefits upon wind-up;
- Provide a detailed description of the hypothesis for the method in which benefits would be settled and the rationale for using this method;
- Note the existence of any permissive regulatory policy, relevant precedents, or discussions with the regulators if the alternative settlement method is not expressly permitted under legislation;
- Acknowledge any conflicts with legislative requirements for settling benefits on wind-up;
- Provide comments on changes to the nature of member entitlements, if any, as a result of the alternative settlement method; and
- Discuss the implications of the alternative settlement method on the benefit security of members, relative to a single annuity purchase.

The actuary would also disclose the liabilities determined under the prevailing guidance with respect to annuity purchase pricing, as published by the PPFRC, calculated on the basis that there were no capacity constraints.

Possible alternative settlement approaches that may be considered include:

1. The purchase of a series of annuities over a period of a few years;
2. The establishment of a replicating portfolio in trust to provide for the payment of pension benefits over an extended period of time;
3. Lump sum payments to plan beneficiaries; or
4. An assumed modification to the terms of the benefit promise (e.g., substituting fixed rate increases for benefits indexed to CPI increases).

Other settlement approaches, including combinations or variations of the above approaches, may be appropriate in certain situations.

The rationale for using an alternative settlement approach to determine hypothetical wind-up and/or solvency liabilities would be to estimate the cost of settling benefits in a realistic manner. The use of an alternative settlement approach may result in liabilities and/or funding requirements being either higher or lower than those produced by assuming the benefits could be settled through a single annuity purchase (based on the prevailing guidance issued by the PPFRC and assuming no capacity constraints).

Considerations associated with each of the four approaches described above are noted below.

## 1. Purchase of a Series of Annuities

For plans with liabilities that are less than five times the capacity thresholds noted above, it may be reasonable to assume that the liabilities would be settled through a series of annuity purchases over a period of five years or less.

In calculating the estimated cost of settling the liabilities in this manner, the actuary would assume that the same proportion of each member's benefit entitlement would be settled through each annuity purchase. The actuary would reflect the fact that, in the interim, the plan would continue to pay the portion of the pension benefits that have not been settled.

In calculating the estimated cost of the initial annuity purchase, the actuary would apply the prevailing guidance with respect to annuity purchase pricing, as published by the PPFRC, calculated on the basis that there were no capacity constraints.

In calculating the estimated cost of annuity purchases in subsequent years, the actuary would consider making adjustments to the discount rate underlying the annuity purchase price to reflect the expected development of the relevant yield curve(s) implied by the forward interest rate(s).

The actuary would make an appropriate provision for the investment-related and administration-related expenses that would be expected to be incurred up to and including the time of the final annuity purchase.

The liability would be determined as the present value of the series of annuity premiums, and pension payments expected to be paid from the pension fund. The present value would typically be determined based on yields on high-quality, zero-coupon, fixed-income securities with terms that match the expected timing of the annuity purchases and partial pension payments. The expenses associated with this settlement method would be reflected by making an explicit allowance for expenses and/or by using a net discount rate.

The liability resulting from assuming that benefits would be settled through a purchase of a series of annuities would typically be similar to the liability that would result if it were assumed that benefits were settled through the purchase of a single annuity, based on the prevailing guidance issued by the PPFRC and assuming no capacity constraints.

## 2. Establishment of a Replicating Portfolio

An alternative approach to settling benefits may be the establishment of a portfolio of assets that produces cash flows that match the expected benefit payments to plan members.

Paragraph 3240.17 of the Standards of Practice states that:

The actuary may assume settlement by means of a replicating investment portfolio if permitted by law or any regulatory policy or guideline, or where it is anticipated that annuities could not be purchased due to group annuity capacity limitations. The assumed replicating portfolio would provide for an appropriate level of security for the pension benefits covered.

In developing the expected benefit cash flows, the actuary would:

- Reflect plan-specific mortality experience (or, reflect the experience of groups with similar characteristics such as occupation, demographics and pension size);

- Make an appropriate allowance for future mortality improvements on a fully generational basis; and
- Make reasonable best-estimate assumptions regarding the exercise of any remaining options by the plan members (e.g., with respect to the timing of commencement of pensions).

In considering the portfolio of assets that would need to be established, the actuary would assume that the primary asset class used is investment-grade fixed-income investments, including a substantial allocation to high-quality fixed-income investments. Since the timing of some benefit cash flows are likely to extend beyond the maturity of available fixed-income investments, the actuary would need to consider how additional fixed-income investments to match these later cash flows would be obtained through re-investing cash flows from the portfolio in the future. The actuary would make reasonable assumptions regarding the level of expenses that would be associated with establishing and maintaining such a portfolio and administering the ongoing payment of benefits.

Under the replicating portfolio approach, there would typically be no recourse to additional funding from the plan sponsor or any other entity if the initial assets set aside prove to be insufficient to provide the benefits. Consequently, the actuary would include a margin for adverse deviations to ensure a high probability that the benefit promises will ultimately be met. The margin would include provisions for contingencies such as, but not necessarily limited to, longevity experience, inflation experience, asset defaults and/or downgrades, and reinvestment risk due to cash flow mismatches.

In the absence of legislative requirements or an applicable regulatory policy, the actuary would make an assumption regarding the size of the margin that the regulator would likely require in an actual wind-up scenario, considering any precedents or indications from regulators. The actuary would provide meaningful disclosures regarding the benefit security implications of the settlement method based on either stochastic modelling or stress testing. The actuary provide at least one of the following two disclosures:

- A quantification of the probability of all the benefit promises being met based on the size of the selected margin and the assumed distribution of outcomes; or
- The effect of adverse experience, with respect to each material assumption, on benefit security. The material assumptions would generally include longevity, inflation, asset defaults/downgrades, and reinvestment rates. For example, a meaningful disclosure may be whether the asset portfolio would be sufficient to pay all the benefits if the life expectancy of members was one year higher than assumed, with all other experience being exactly in accordance with the valuation assumptions.

The actuary would discuss the effect of the approach on the benefits promised to plan members, the risks associated with this settlement method, and any intergenerational differences in the level of security.

### **3. Lump Sum Payments to Members**

Under this approach, the actuary would assume that all members would be *required* to receive a lump sum payment in lieu of their entitlement to a deferred or immediate periodic pension.

The lump sum approach alters the nature of the benefit entitlement and transfers all the investment risk and longevity risk from the pension plan to the plan members.

The actuary would consider whether the mandatory lump sum amounts would be higher than the minimum commuted values provided for under section 3500 of the Standards of Practice in order to compensate members for the transfer of risk. Alternatively, the actuary may consider the possibility of providing for a lump sum amount sufficient for each member to purchase an individual annuity without substantial loss of the original entitlement.

The actuary would discuss the effect of the approach on the benefits promised to plan members, particularly the change in the nature of their benefit entitlements (e.g., the potential immediate disruption to the monthly pensions being paid to retired members), the transfer of risk to the members, and the tax consequences of receiving a lump sum. The actuary would provide an indication of the level of benefit loss, if any, members may experience if they were to use the lump sum amount to purchase an individual annuity.

A variation of this alternative is that some or all members may be given the option to receive a lump sum payment in lieu of their entitlement to a deferred or immediate periodic pension when such option would otherwise not be available. The actuary would make an appropriate assumption about the proportion of members electing such an option. Under this method, the actuary would consider whether the options provided to the members result in additional liabilities due to anti-selection, and would make appropriate allowances.

#### **4. Assuming Modifications to Benefit Terms**

Paragraphs 3240.18 and 3240.19 of the Standards of Practice state that:

The actuary may incorporate assumptions as to the exercise of regulatory discretion, a change in law, or a plan amendment which would be required to enable a practical settlement of benefits. When making such assumptions, the actuary would consider any relevant regulatory policy, guidance, or precedent.

For example, for a plan where pensions are indexed with the Consumer Price Index and where it is impractical to purchase annuities indexed with the Consumer Price Index, the actuary may assume that annuities would be purchased with indexing at a fixed percentage rate of comparable value to indexing in accordance with the plan provisions.

Under this approach, certain plan terms are altered in order to allow for the settlement of benefits through an annuity purchase. For example, while it may not be possible to purchase a group annuity covering liabilities of \$300 million related to pensions indexed to the CPI at a reasonable price, it is likely possible to purchase a group annuity of this size that covers pensions indexed at a fixed rate. This variation of the plan terms may be expressly permissible under legislation, or could occur through the exercise of regulatory discretion or legislative change.

Where such a modification of plan terms is contemplated, the actuary would discuss the effect of the modification on plan members. Where plan members would be exposed to additional risk as a result of the assumed modifications, it may be appropriate to contemplate some compensation being paid to plan members for this additional risk. For example, if CPI-linked indexation is being replaced by a fixed annual percentage increase, plan members would be exposed to the risk of inflation. In this situation, it may be appropriate to assume that the fixed increase percentage would be higher than the best estimate of future inflation levels.