# Shared Risk Plan for CUPE Employees of New Brunswick Hospitals

*Conversion Plan and Initial Actuarial Valuation Report as at July 1, 2012*

Report prepared in October 2013

Registration number: Canada Revenue Agency #0385849

NB Superintendent of Pensions: Pending

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# Introduction

The Pension Plan for CUPE Employees of New Brunswick Hospitals ("Former CUPE Plan") was converted to the Shared Risk Plan for CUPE Employees of New Brunswick Hospitals ("CUPE SRP Plan") effective July 1, 2012, subject to approval by the New Brunswick Office of the Superintendent of Pensions ("Superintendent") and the Canada Revenue Agency ("CRA").

This report was prepared for the Board of Trustees ("Trustees"), the Superintendent and the Canada Revenue Agency for the following purposes:

> to document the results of an initial funding policy valuation, as required under sub-paragraph 100.6(2)(a)(ii) of the New Brunswick *Pension Benefits Act* ("PBA") and provide the related actuarial opinion;

> to document the Conversion Plan as required under sub-paragraph 100.6(2)(a)(i) of the PBA;

> to document the results of a going-concern actuarial valuation required under paragraph 14(1) of the Regulations to the PBA in order to determine the maximum eligible employer contribution for the CUPE SRP Plan under paragraph 147.2(2) of the *Income Tax Act (Canada)* ("ITA") and provide the related actuarial opinion; and

> to document the results of a hypothetical wind-up valuation of the CUPE SRP Plan as required under the Canadian Institute of Actuaries Standard of Practice, and provide the related actuarial opinion.

The Board of Trustees is also seeking the approval of the Superintendent for the following items, as required under the PBA and Regulation:

> approval of the funding policy established at inception as required under sub-paragraph 100.4(1)(b) of the PBA;

> approval of the investment policy established at inception as required under sub-paragraph 100.4(1)(c) of the PBA;

> approval of the risk management goals and procedures found under the funding policy and reiterated in this initial valuation report under Section 1 as part of the Conversion Plan, as required under sub-paragraph 100.4(1)(d) of the PBA;

> approval of the generational mortality table used in the funding policy valuation as required under sub-paragraph 14(7)(c)(ii) of Regulation 2012-75;

> approval of the asset liability model used, as described in Section 1 as part of the Conversion Plan, including the stochastic projection assumptions found under Appendix C, as required under paragraph 15(1) of Regulation 2012-75; and

> approval of the economic assumptions used in the asset liability model, as described under Appendix C, as required under paragraph 15(3) of Regulation 2012-75.

The Trustees for the CUPE SRP Plan retained the services of Morneau Shepell Ltd ("Morneau Shepell") to prepare this report.

The last actuarial valuation report prepared for the Former CUPE Plan and filed with the Canada Revenue Agency was performed as at January 1, 2010.

The next actuarial valuation report for the CUPE SRP Plan will be due no later than one year following the effective date of this report. However, we would recommend that it be conducted as at December 31, 2012, in order to harmonize the annual valuation date with the plan year-end date, and still be within the minimum requirement under the PBA to have annual valuations conducted.

The recommendations and opinions are given exclusively from a financial viewpoint. This valuation report does not constitute a legal opinion on the rights and duties of the Trustees or the members of the plan over the pension fund.

Actuarial valuation results are only estimates. Actuarial valuations are performed based on assumptions and methods that are in accordance with sound actuarial principles. Emerging experience differing from these assumptions will result in gains or losses, which will be revealed in future valuations.

The undersigned are available to provide supplementary information and explanation as appropriate, concerning this report.

Respectfully submitted,

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| Conrad Ferguson, FSA, FCIA | Yves Plourde, FSA, FCIA |
| Nov 25, 2013 | Nov. 12, 2013 |
| Date | Date |

# Section 1 – Conversion Plan

The Former CUPE Plan was converted to the CUPE SRP Plan effective July 1, 2012, subject to approval by the New Brunswick Office of the Superintendent of Pensions ("Superintendent").

The PBA sub-paragraph 100.6(2)(a)(i) mandates that the Conversion Plan:

- demonstrate how existing benefits under the Former CUPE Plan are converted to benefits under the CUPE SRP Plan;
- specify the base benefits and ancillary benefits under the CUPE SRP Plan;
- specify the initial contributions of the employer and the members and the automatic change allowed by the funding policy; and
- demonstrate to the satisfaction of the Superintendent that the contributions are sufficient to pay for the projected base benefits and ancillary benefits and to meet all of the risk management goals under the PBA.

### Conversion of Benefits

We provide below a table of the main benefit provisions of the Former CUPE Plan and how they are treated for purposes of the conversion to the CUPE SRP Plan. The table below deals with the benefits earned before July 1, 2012, effective date of the conversion.

**Table 1.1 - Change in Benefit Provisions for Service Prior to July 1, 2012**

| Provision | Under Former CUPE Plan | Under CUPE SRP Plan |
|---|---|---|
| Normal retirement age | Age 65 | Age 65 |
| Earliest retirement age | Age 55, with 5 years of continuous employment | Age 55, with the earlier of 5 years of continuous employment and 2 years of plan membership |
| Earliest unreduced retirement age | Age 60, with 5 years of continuous employment | Age 60, with the earlier of 5 years of continuous employment and 2 years of plan membership |
| Early retirement reduction | 0.25% per complete month that pension commences before attainment of age 60 | 0.25% per complete month that pension commences before attainment of age 60 |
| Bridge pension | $18.00 per month per year of pensionable service | $18.00 per month per year of pensionable service |

| | | |
|---|---|---|
| Lifetime pension | For pre-1997 service:<br>1.75% of the annual average of the best five (5) consecutive years of earnings up to the annual average YMPE for the same five (5) years, plus 2% of the excess of the annual average of the best five (5) consecutive years of earnings over the annual average YMPE for the same five (5) years, times pre-1997 service<br><br>For post-1996 service:<br>1.4% of the annual average of the best five (5) consecutive years of earnings up to the annual average YMPE for the same five (5) years, plus 2% of the excess of the annual average of the best five (5) consecutive years of earnings over the annual average YMPE for the same five (5) years, times post-1996 service | For pre-1997 service:<br>1.75% of the annual average of the best five (5) consecutive years of earnings at July 1, 2012, up to the annual average YMPE for the same five (5) years, plus 2% of the excess of the annual average of the best five (5) consecutive years of earnings at July 1, 2012 over the annual average YMPE for the same five (5) years, times pre-1997 service<br><br>For post-1996 service:<br>1.4% of the annual average of the best five (5) consecutive years of earnings at July 1, 2012, up to the annual average YMPE for the same five (5) years, plus 2% of the excess of the annual average of the best five (5) consecutive years of earnings at July 1, 2012 over the annual average YMPE for the same five (5) years, times post-1996 service up to July 1, 2012 |
| Maximum pension | In accordance with the provisions of the ITA | In accordance with the provisions of the ITA |
| Normal form of pension | Life, with a 5-year guarantee | Life, with a 5-year guarantee |
| Indexing of pension for retirees (including survivors and beneficiaries) and deferred vested members | Automatic annual increase of pension equal to 2.0% | No automatic indexing – Indexing after July 1, 2012 is contingent on CUPE SRP Plan performance as outlined in CUPE SRP Plan Funding Policy, subject to ITA limits |
| Indexing of active members accrued pensions | Not applicable – pension benefit is of a final average nature, there is no need to index accrued pensions while active. Increases in earnings provide implicit automatic indexing. | No automatic indexing of accrued pensions –<br>Indexing of accrued pensions after July 1, 2012 is contingent on CUPE SRP Plan performance as outlined in CUPE SRP Plan Funding Policy, subject to ITA limits |

| | | |
|---|---|---|
| Termination of Employment | With less than five years of employment:<br>▪ refund of own contributions, with interest.<br><br>With five years of employment or more:<br>▪ the accrued deferred pension, indexed prior to retirement; or<br>▪ a transfer the commuted value of the accrued deferred pension to a prescribed retirement savings arrangement as under the PBA.<br><br>As well, member contributions with interest in excess of 50% of the commuted value are refunded to the member. | With less than five years of employment and less than 2 years of plan membership:<br>▪ refund of own contributions, with interest.<br><br>With five years of employment or 2 years of plan membership:<br>▪ the accrued deferred pension subject to future contingent indexing in accordance with terms of CUPE SRP Plan; or<br>▪ a transfer of the Termination Value, as defined under the PBA, to a prescribed retirement savings arrangement under the PBA.<br><br>The Termination Value will not be less than a member's own contributions with interest. |
| Pre-retirement death | With less than five years of employment:<br>▪ refund of own contributions, with interest.<br><br>With five years of employment or more:<br>▪ payment of the commuted value of the accrued pension.<br><br>As well, member contributions with interest in excess of 50% of the commuted value are refunded. | With less than five years of employment and less than 2 years of plan membership:<br>▪ refund of own contributions, with interest.<br><br>With five years of employment or 2 years of plan membership:<br>▪ the Termination Value, as defined under the PBA.<br><br>The Termination Value will not be less than a member's own contributions with interest. |

The table below provides a summary of the benefit provisions under the CUPE SRP Plan for service on and after July 1, 2012:

**Table 1.2 - Summary of CUPE SRP Plan Benefit Provisions for Service On And After July 1, 2012**

| Provision | Under CUPE SRP Plan |
|---|---|
| Normal retirement age | Age 65 |
| Earliest retirement age | Age 55, with the earlier of 5 years of continuous service and 2 years of plan membership |
| Earliest unreduced retirement age | Age 65 |
| Early retirement reduction | 5/12% per complete month (5% per year) that pension commences before attainment of age 65 |
| Postponed retirement | Cessation of accrual and cessation of contributions at normal retirement age<br><br>Pension commencement no later than the end of the calendar year in which the member reaches age 71<br><br>Pension at normal retirement age is adjusted by 0.6% per month (7.2% per year) from normal retirement age to postponed retirement |
| Bridge pension | $18.00 per month for each year of continuous employment while a member |
| Lifetime pension | For each year of service (or part thereof), 1.4% of the Member's annual earnings up to the YMPE for the year, plus 2.0% of the excess of the Member's earnings over the YMPE for the year |
| Maximum pension | In accordance with the provisions of the ITA |
| Normal form of pension | Life, with a 5-year guarantee |
| Indexing of accrued lifetime and bridge pensions for active members, deferred vested members, and pensions in payment for retirees (including survivors and beneficiaries) | No automatic indexing - Indexing after July 1, 2012 is contingent on CUPE SRP Plan performance as outlined in CUPE SRP Plan Funding Policy, subject to ITA limits |
| Termination of Employment | With less than five years of employment and less than 2 years of plan membership:<br><br>▪ refund of own contributions, with interest.<br><br>With five years of employment or 2 years of plan membership:<br><br>▪ the accrued deferred pension subject to future contingent indexing in accordance with terms of CUPE SRP Plan; or<br>▪ a transfer of the Termination Value, as defined under the PBA, to a prescribed retirement savings arrangement under the PBA.<br><br>The Termination Value will not be less than a member's own contributions with interest. |

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|---|---|
| Pre-retirement death | With less than five years of employment and less than 2 years of plan membership:<br><br>▪ refund of own contributions, with interest.<br><br>With five years of employment or 2 years of plan membership:<br><br>▪ the Termination Value, as defined under the PBA.<br><br>The Termination Value will not be less than a member's own contributions with interest. |
| Benefit Security | The CUPE SRP Plan was constructed to achieve a high degree of benefit security but not absolute security. As a result, benefits may be reduced as part of the funding deficit recovery plan in the unlikely event that the plan's performance is such that reductions are required. |

**Base Benefits and Ancillary Benefits**

The table below identifies the various benefit provisions and whether they are part of the Base Benefit or an Ancillary Benefit, as defined under the PBA.

**Table 1.3 – Identification of Base and Ancillary Benefits**

| Provision | Base Benefit or Ancillary Benefit |
|---|---|
| Normal retirement age | Base Benefit |
| Early retirement reduction | As per the definition under Section 100.2 of the PBA, it is an Ancillary Benefit, becoming a Base Benefit once the member reaches eligibility for an immediate pension. |
| Postponed retirement increase | As per the definition under Section 100.2 of the PBA, it is an Ancillary Benefit, becoming a Base Benefit once the member reaches eligibility for an immediate pension. |
| Lifetime pension | Base Benefit |
| Bridge pension | As per the definition under Section 100.2 of the PBA, it is an Ancillary Benefit, becoming a Base Benefit once the member reaches eligibility for an immediate pension. |
| Normal form of pension | As per the definition under Section 100.2 of the PBA, it is an Ancillary Benefit, becoming a Base Benefit once the member reaches eligibility for an immediate pension |

| | |
|---|---|
| Indexing of accrued lifetime and bridge pensions for active members, deferred vested members, and pensions in payment for retirees (including survivors and beneficiaries) | As per the definition under Section 100.2 of the PBA, it is an Ancillary Benefit when talking about future potential increases, and a Base Benefit, once granted |

You will find below a summary of other plan provisions that are changing effective July 1, 2012:

**Table 1.4 – Summary of Other Changing Provisions**

| Provision | Before July 1, 2012 Under Former CUPE Plan | On and After July 1, 2012 Under CUPE SRP Plan |
|---|---|---|
| Eligibility | Full time only | Full time and part time employees |
| Member contributions | 6.17% of earnings | 9.0% of earnings * |
| Employer contributions | 6.17% of earnings | 10.1% of earnings * |

* Member and Employer contributions on and after July 1, 2012 are subject to change in accordance with the terms of the Funding Policy, based on the funded level of the plan and the risk management tests.

**Initial Contribution Rate and Automatic Changes**

The initial contribution rate specified in the plan documents, applicable from July 1, 2012, is at least 19.1% of earnings, with 9.0% of earnings being made by Members, and at least 10.1% of earnings being made by the Employer.

The Funding Policy provides instances under which the initial contribution rate can be modified, and instances under which contribution adjustments can be made. The relevant section of the Funding Policy is reproduced below:

**Table 1.5 – Excerpt from Funding Policy**

## INITIAL CONTRIBUTIONS

The initial total contribution rate shall not be less than 19.1% of earnings as defined in the Plan text. The initial contribution rate for members shall be 9%. These contributions are to remain the same unless altered by:

- Contribution adjustments triggered under the Funding Policy;
- An additional reduction required under the *Income Tax Act* (Canada) (the **"ITA"**) (references in this Funding Policy to the ITA shall include the regulations thereunder where the context requires);

- A permanent benefit change resulting in a contribution rate change as may be agreed by the Province and the Union and subject to the requirements of the PBA and the ITA;
- Other changes to the Plan beyond those contemplated by this Funding Policy and only if agreed to by the Province and the Union and subject to the requirements of the PBA and the ITA.

## CONTRIBUTION ADJUSTMENTS

Contribution adjustments may be made by the Board of Trustees based on the conditions set out below.

An aggregate contribution increase of up to a total of 1% of earnings can be triggered by the Board of Trustees if the open group funded ratio of the Plan, as defined by the PBA, falls below 100% for two successive year ends. The amount of the increase up to the limit of 1% shall be such that the primary risk management goal is achieved and such that the open group funded ratio is at least 105% as required by the PBA. If the primary risk management goal and 105% open group funded ratio cannot be achieved, the increase shall be 1% of earnings.

The contribution increase shall take effect no later than the first complete pay period that is within 12 months following the funding policy valuation date that triggered the need for the change (i.e. no later than 12 months after the funding policy valuation date). The contribution increase shall be removed at the end of the year in which the results of the previous funding policy valuation reveal that the open group funded ratio reaches 105% without considering the effect of the contribution increase and the primary risk management goal is met.

A reduction in contributions of up to a total of 2% of earnings can be triggered by the Board of Trustees if the conditions set forth in the funding excess utilization plan in Section VI are met. The amount of the reduction shall be such that the primary risk management goal can still be met after the reduction in contributions. The contribution reduction shall take effect no later than the first complete pay period that is within 12 months following the funding policy valuation date that triggered the need for the change (i.e. no later than 12 months after the funding policy valuation date). The reduction in contributions shall be removed when the open group funding level falls below 140% for two successive year ends.

## INCOME TAX ACT LIMIT

In the event that all actions contemplated under the funding excess utilization plan in Section VI have been implemented and the eligible contributions still exceed the limit allowed under the ITA, then the contributions shall be further reduced to the limit allowed under the ITA.

## SHARING OF CONTRIBUTIONS

The initial contribution rate of at least 19.1% is composed of 9.0% from contributing members and at least 10.1% from the Province. Contribution holidays may only be taken in the event they are required under the ITA. In the unlikely event that the ITA required a contribution holiday, the contribution holiday would apply equally to both members and the Province up to the point where no contributions are required from members (i.e., reductions in contributions of up to 18% would be shared equally between the members and the Province). If additional contribution reductions are required, then the balance of the Province's contributions would also be reduced until they reach zero.

Other than as noted above for contribution holidays, any contribution adjustment shall be shared 50/50 between the members and the employer, subject to the ITA.

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**Meeting Risk Management Goals**

The Plan was designed to achieve or exceed the risk management goals prescribed under the PBA and Regulation 2012-75. Certain procedures were developed to test whether these goals can be achieved given the contribution rules and benefits defined in the plan. These goals and procedures are described separately below, along with the results of the stochastic analysis that are relevant under the PBA as at July 1, 2012.

<u>Risk Management Goals</u>

The primary risk management goal is to achieve a 97.5% probability that base benefits will not be reduced over the 20 years following the valuation.

The goal is measured by taking into account the following funding management plans:

1. the funding deficit recovery plan except for reduction in past or future base benefits, and
2. the funding excess utilization plan excluding permanent benefit changes.

The funding deficit recovery plan and the funding excess utilization plan are described in Sections V and VI of the Funding Policy, respectively.

There are two secondary risk management goals. These are:

- On average provide contingent indexing on base benefits (all members) that are in excess of 75% of CPI over the next 20 years.
- Achieve at least a 75% probability that the ancillary benefits described in the Plan text at conversion can be provided over the next 20 years.

For the purposes of meeting these goals, base benefits include the accrual of extra service of members and any contingent indexing provided based on the financial performance represented by each scenario tested.

If as a result, through the testing process, a scenario allows for indexing in a given future year, then this contingent indexing amount becomes part of the base benefits that is to be protected.

In other words, the base benefit is dynamically adjusted based on the stochastic results for each economic scenario tested.

<u>Risk Management Procedures</u>

The risk management goals are measured using an asset liability model with future economic scenarios developed using a stochastic process.

The model was run with 2,000 alternative economic scenarios over 20 years. This exceeds the minimum requirements under the PBA of 1,000 economic scenarios.

For each of these scenarios and for each year, the financial position of the Plan is measured. For each of these measurements, a decision consistent with the funding deficit recovery plan or the funding excess utilization plan, as applicable, is modeled with the exceptions noted under the goals above. When modeling the funding deficit recovery plan actions over the 20-year period of each of the 2,000 economic scenarios, each of the five steps identified in the funding deficit recovery plan under Section V of the Funding Policy is implemented in sequence until such time as the open group funded ratio of the plan reaches 100% or higher. A "failure" is recorded (for purposes of the primary risk management goal calculation) when step 5 of the funding deficit recovery plan found in Section V of the Funding Policy is triggered (i.e. a reduction in past base benefits) at any point in the 20-year period of an economic scenario. For conservatism, our stochastic model also recorded a "failure" (for purposes of the primary risk management goal calculation) when any action beyond step 1 was required. The primary risk management measure is therefore the proportion of those 2,000 scenarios that do not lead to a base benefit reduction over a 20-year period. In order to pass the primary risk management goal, at least 1,950 of those 2,000 scenarios must not trigger a "failure" at any point over the 20-year period.

The asset liability model using a stochastic process requires that a number of important modeling assumptions be made. The main assumptions are described below:

- The economic assumptions are developed for each asset class and for key economic parameters based on a combination of past experience, current economic environment and a reasonable range of future expectations. These assumptions are reviewed annually and updated as required. They are also subject to approval by the Superintendent of Pensions (the **"Superintendent"**). These assumptions are found in Appendix C.
- The Plan's contributing member population is assumed to be stable in each year of the projection period. As such, each departure from the Plan, for any reason, is assumed to be replaced by a new entrant. The new entrant population reflects the profile of new Plan members expected in the future based on Plan experience. The profile of new entrants used for this analysis is found under Table 2.7 in Section 2 of this report.

The risk management goals were tested as at July 1, 2012, effective date of the conversion. The results of these tests combined with the results of the funding policy actuarial valuation at the same date will determine the actions the Board of Trustees are required to take, or can consider, under the terms of the Funding Policy.

The primary risk management goal must be achieved or exceeded:

- At July 1, 2012 (i.e. the Conversion Date);
- At the date a permanent benefit change as defined in the Regulations is made;
- At the date a benefit improvement as defined in the Regulations is made; or
- At the date the contribution adjustments are fully implemented.

The secondary risk management goals must be achieved or exceeded:

- At July 1, 2012 (i.e. the Conversion Date); or
- At the date a permanent benefit change as defined in the Regulations is made.

The definitions of permanent benefit change and benefit improvement are as follows:

"permanent benefit change" means a change that is intended to permanently change the formula for the calculation of the base benefits or ancillary benefits after the date of the change, including a change made in accordance with the funding excess utilization plan.

"benefit improvement" means an escalated adjustment for past periods or an increase in other ancillary benefits allowed under the funding policy.

Results of stochastic analysis as at July 1, 2012

The stochastic analysis undertaken as at July 1, 2012, took into account the main following items:

- Membership Data as at December 31, 2011 summarized in Appendix B;
- Economic and demographic assumptions as at July 1, 2012 for the funding policy valuation summarized in Section 2;
- Pension fund target asset mix as summarized in Table A.4 of Appendix A;
- Stochastic projection assumptions as summarized in Appendix C
- Risk management procedures described above;
- CUPE SRP Plan provisions, after Plan Conversion, in accordance with the Conversion Plan of Section 1, and summarized in Appendix D;
- Funding deficit recovery plan found under Section V of the CUPE SRP Plan's Funding Policy (except for reduction in past or future base benefits);
- Funding excess utilization plan found under Section V of the CUPE SRP Plan's Funding Policy (excluding permanent benefit changes).

Based on the above, the results of the stochastic analysis for the various risk management goals as at July 1, 2012 are as follows:

**Table 1.6 – Results of Stochastic Analysis for the Various Risk Management Goals**

| Risk Management Goal | Minimum Requirement under PBA | Result for CUPE SRP Plan as at July 1, 2012 |
|---|---|---|
| **Primary Goal [Regulation 7(1)] -** | | |
| There is at least a 97.5% probability that the past base benefits at the end of each year will not be reduced over a 20-year period | **97.5%** | **99.9%**<br><br>**PASSED** |
| **Secondary Goal 1 [Regulation 7(3)(a)] -**<br><br>Contingent indexing of base benefits of active members for service before the conversion date shall, on average over the next 20-year period, exceed 75% of the increase in the Consumer Price Index;<br><br>or<br><br>Contingent indexing of base benefits of retirees and deferred vested members for service rendered before the conversion date shall, on average over the next 20-year period, exceed 75% of the escalated adjustments specified in the pension plan immediately before it was converted to a shared risk plan (i.e. 2.0% per year) | We estimated that the combined impact of the Secondary Goal 1 for active members, retirees and deferred vested member represents an average indexing of 71.2% of the increase in the Consumer Price Index (CPI).<br><br>Note: This is the weighted average of 75% of CPI for active members, and 66⅔% of CPI for retirees and deferred vested members (75% of 2.0% over assumed CPI of 2.25%). | **88.3%** of the assumed increase in CPI<br><br>**PASSED** |
| **Secondary Goal 2 [Regulation 7(3)(b)] -**<br><br>The amount of ancillary benefits (other than contingent indexing) that are expected to be provided shall, on average over the next 20-year period, exceed 75% of the value of the ancillary benefits specified in the plan text | **75%** of the value of ancillary benefits will be provided | **At or above 99.9%**<br>(See Note below)<br><br>**PASSED** |

Note: The Funding Policy only provides for the reduction of one type of ancillary benefit under the Funding Deficit Recovery Plan at actions 2 and 3. This is the replacement of early retirement reductions for post conversion service under action 2, and for pre-conversion service at action 3, by a full actuarial reduction for members not yet eligible to receive an immediate pension. In order to simplify the stochastic analysis and remain conservative, every time action is required beyond step 1 (increase in contributions), it triggers a "failure" for purpose of meeting the primary risk management goal. Therefore, it is expected that on average the Secondary Goal 2 above will exceed the primary risk management result of 99.9%, well above the minimum 75% level required under the PBA.

# Section 2 – Funding Policy Valuation

An initial funding policy valuation is required under sub-paragraph 100.6(2)(a)(ii) of the New Brunswick Pension Benefits Act ("PBA"). The results of the initial funding policy valuation of the CUPE SRP Plan as at July 1, 2012, after conversion, are found below:

The initial funding policy valuation results presented in this section are based on asset information found in Appendix A, membership data found in Appendix B, and plan provisions after the conversion to a shared risk plan, as summarized under the Conversion Plan section of this report and Appendix D. The methods and assumptions used in the funding policy valuation are described later in this section.

### Funding Policy Valuation Funded Status

The funding policy valuation funded status of the CUPE SRP Plan is determined by comparing the fair market value of the assets to the funding policy actuarial liabilities. The funding policy actuarial liabilities are based on the benefits earned up to the valuation date assuming the Plan continues indefinitely.

**Table 2.1 – Funding Policy Valuation Funded Status**

| | July 1, 2012 |
|---|---|
| | $ |
| Market Value of Assets | |
| > Fair market value of assets (including receivables / payables) | $466,884,000 |
| Funding Policy Actuarial Liabilities | |
| > Active members | $379,457,000 |
| > Terminated and suspended members | 9,154,000 |
| > Retired members and beneficiaries | 330,257,000 |
| > Outstanding Refunds | 1,978,000 |
| > Commuted Value Withholding Amounts | 545,000 |
| > Total funding policy valuation actuarial liabilities | 721,392,000 |
| Funding policy valuation excess (unfunded liability) | (254,508,000) |
| Termination value funded ratio [calculated in accordance with Reg. 14(6)(e)] | 64.7% |

The termination value funded ratio is used in the calculation of the "termination value" of any individual's pension benefits at termination of employment, death, marriage breakdown, or retirement, as the case may be, in accordance with the terms of the Plan and Reg. 18(1). It is calculated in accordance with Reg. 14(6)(e).

#### Funding Policy Valuation Normal Cost and Excess Contributions

The table below provides the funding policy valuation normal cost, being the value of the pension benefits being earned in the twelve-month period after the valuation date. It compares the funding policy valuation normal cost to the level of member and employer contributions in order to determine the level of contributions being made to the Plan in excess of the funding policy valuation normal cost.

**Table 2.2 – Funding Policy Valuation Normal Cost and Excess Contributions**

| | Year Following July 1, 2012 | |
|---|---|---|
| | $ | % of payroll |
| A. Member and employer contributions | $59,878,000 | 19.10 |
| B. Funding policy valuation normal cost | $31,676,000 | 10.10 |
| C. Excess contributions (A. – B.) | $28,202,000 | 9.00 |
| Estimated payroll for year following July 1, 2012 | $313,498,000 | |

#### Determination of 15-Year Open Group Funded Ratio

The table below provides the 15-year open group funded ratio as calculated in accordance with the requirements of Reg. 14(6)(f). This ratio is used extensively by the funding policy to determine the actions to be undertaken by the Trustees under the funding policy deficit recovery plan and the funding policy excess utilization plan. The 15-year open group funded ratio is calculated as follows:

**Table 2.3 – 15-Year Open Group Funded Ratio**

| | July 1, 2012 |
|---|---|
| A. Market value of assets (including receivables / payables) | 466,884,000 |
| B. Present Value of Excess Contributions over next 15 years [calculated in accordance with Reg. 14(6)(c)] | 355,360,000 |
| C. Funding policy valuation actuarial liabilities | 721,392,000 |
| D. 15-Year Open Group Funded Ratio [(A. + B.) / C.] | 114.0% |

#### Reconciliation of Funding Policy Valuation Funded Status with Last Going-Concern Valuation

The table below describes the change in the Plan's funded status between the last going-concern valuation as at January 1, 2010 to this funding policy valuation as at July 1, 2012:

**Table 2.4 – Reconciliation of Funded Status**

| | $ | $ |
|---|---|---|
| Going-concern funding excess (unfunded liability) as at January 1, 2010 | | (199,767,000) |
| Expected changes in funded status | | |
| > Interest on funding excess (unfunded liability) | (34,611,000) | |
| > Excess contributions (shortfall) | 3,730,000 | |
| > Total | | (30,881,000) |
| Expected funding excess (unfunded liability) as at July 1, 2012 | | (230,648,000) |
| Actuarial gains (losses) due to the following factors | | |
| > Investment return on actuarial value of assets | (15,268,000) | |
| > Retirements | (10,001,000) | |
| > Salary increases | (12,779,000) | |
| > Terminations | (2,339,000) | |
| > Mortality | (2,969,000) | |
| > Total | | (43,356,000) |
| Impact of conversion to a Shared Risk Plan as at July 1, 2012 and other factors | | 19,496,000 |
| Funding policy valuation excess (unfunded liability) as at July 1, 2012 | | (254,508,000) |

### Reconciliation of Total Normal Cost

The factors contributing to the change in the total normal cost from the last going-concern valuation as at January 1, 2010 to this funding policy valuation as at July 1, 2012 are shown below:

**Table 2.5 – Reconciliation of Total Normal Cost**

| | % of payroll |
|---|---|
| Total normal cost as at January 1, 2010: | 11.6% |
| Impact of changes in demographics: | 0.4% |
| Impact of Conversion to SRP (changes in assumptions and benefits): | (1.9%) |
| Total normal cost as at July 1, 2012 (see Table 2.2 B.) | 10.1% |

## Funding Policy Actuarial Methods

### Asset Valuation Method

The assets used under the funding policy valuation are equal to the fair market value of the assets. This is a requirement of Regulation 14(6)(d).

### Actuarial Cost Method

The funding policy valuation actuarial liabilities and normal cost were calculated using the accrued benefit (or unit credit) actuarial cost method in accordance with the requirement of Regulation 14(7)(a).

The funding policy valuation actuarial liabilities are equal to the actuarial present value of benefits earned by members for services prior to the valuation date, taking into account the actuarial assumptions as indicated hereafter. For greater certainty, it does not take into account the impact of any future salary increases, and the impact of any future increases in accrued pensions due to cost-of-living adjustments as may be granted from time to time by the Trustees in accordance with the plan terms and the funding policy.

The funding policy valuation normal cost is equal to the actuarial present value of benefits expected to be earned by members in the year following the valuation date. A salary increase estimate has been made to calculate the estimated normal cost and estimated member and employer contributions for the year following the valuation date.

In this valuation, the membership data provided was as at December 31, 2011. We therefore calculated the funding policy liability as of that date and projected it forward to the valuation date of July 1, 2012 in order to obtain the actuarial liability shown in this report. The projection of liability for the six-month period used actual cash flows for the period and was adjusted to take into account the final average earnings of the members for the six-month period.

The ratio of the total normal cost to the covered payroll for the period will tend to stabilize over time if the demographic characteristics of the active and disabled members remain stable. All other things being equal, an increase in the average age of the active and disabled members will result in an increase in this ratio.

For valuation purposes, to determine eligibility for benefits and for any other use, the age used is the age on the date of the nearest birthday.

## Funding Policy Actuarial Assumptions

The main actuarial assumptions employed for the initial funding policy actuarial valuation are summarized in the following table. Emerging experience differing from these assumptions will result in gains or losses, which will be revealed in future funding policy actuarial valuations. Experience gains and losses emerging in future funding policy actuarial valuations will impact the open group funded ratio of the plan, which in turn will impact the types and timing of any actions to be taken by the Board of Trustees in accordance with the Funding Policy. All rates and percentages are annualized unless otherwise noted.

**Table 2.6 – Funding Policy Actuarial Valuation Assumptions**

| | July 1, 2012 |
|---|---|
| Discount rate | 4.50% |
| Salary increase for year following valuation (for normal cost purposes only, and inclusive of promotional increases) | 2012-2013: 0.50% (salary freeze in effect) |
| YMPE increase for year following valuation (for normal cost purposes only) | 2.50% |
| Mortality | Males: 115% of UP94 generational using enhanced projection scale AA<br><br>Females: 105% of UP94 generational using enhanced projection scale AA |

Retirement

| Retirement Age | Current Age: Under 25 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | 60+ |
|---|---|---|---|---|---|---|---|---|---|
| 55 | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 12.5% | 25% |
| 56 | 0% | 0% | 0% | 0% | 0% | 12.5% | 25% | 15% | 5% |
| 57 | 0% | 0% | 0% | 12.5% | 25% | 15% | 5% | 5% | 5% |
| 58 | 0% | 12.5% | 25% | 15% | 5% | 5% | 5% | 5% | 5% |
| 59 | 25% | 15% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| 60 | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 17.5% | 30% |
| 61 | 5% | 5% | 5% | 5% | 5% | 17.5% | 30% | 17.5% | 5% |
| 62 | 5% | 5% | 5% | 17.5% | 30% | 17.5% | 5% | 5% | 5% |
| 63 | 5% | 17.5% | 30% | 17.5% | 5% | 5% | 5% | 5% | 5% |
| 64 | 30% | 17.5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| 65 | 25% | 22.5% | 20% | 17.5% | 15% | 12.5% | 10% | 7.5% | 5% |

Termination (membership)

Sample rates of termination other than by death, disability or retirement

| Age | Male | Female |
|---|---|---|
| 20 | 7.6% | 12.6% |
| 25 | 6.6% | 9.7% |
| 30 | 5.4% | 7.5% |
| 35 | 3.4% | 5.7% |
| 40 | 2.6% | 4.1% |
| 45 | 1.8% | 2.8% |
| 50 | 0.9% | 1.4% |
| 55 | 0% | 0% |

| | |
|---|---|
| Expenses | A 5% loading is added to the total normal cost to cover non-investment administration expenses payable from the fund |

Additional assumptions are required to determine the level of future cash flows to and from the pension plan, such as member and employer contributions, normal costs, benefit payments and expenses. These cash flows are calculated on a deterministic basis for each year following the valuation date for a period of 20 years, and allows the determination of the funding policy actuarial liability and assets at each future date, as well as the determination of the present value of 15-year excess contributions in accordance with Reg. 14(6)(c). Furthermore, all this information is used in the stochastic analysis required under the risk management procedures for the plan.

**Table 2.7 – Additional Funding Policy Actuarial Valuation Assumptions For Purpose of Calculating Future Year Cash Flows and Actuarial Liability**

| | | | July 1, 2012 |
|---|---|---|---|
| New entrants | | | Each active member is replaced at termination, death or retirement by a new entrant (with no net increase in the active membership of the plan) |
| Distribution of new entrants and salary at entry: | Age | Distribution | Average Salary at Entry |
| | 26 | 33.3% | 36,000 |
| | 36 | 33.3% | 36,000 |
| | 46 | 33.3% | 36,000 |
| Inflation | | | 2.25% |
| Salary increases | | Year | Rate |
| | | 2012 | 0.50% |
| | | 2013 | 0.50% |
| | | 2014 and after | 2.75% |
| YMPE increases | | | 2.50% |

### Rationale for Material Actuarial Assumptions

The assumptions have been reviewed in light of current economic and demographic conditions, and the adoption of the shared risk plan model under the New Brunswick Pension Benefits Act.

Inflation

Given the historical increases in consumer prices in Canada, the rates expected by the market, the portfolio managers' expectation, the Bank of Canada policy and the long-term forecasts of the Conference Board of Canada, Morneau Shepell believes that the expected long-term rate of inflation should be between 2.00% and 2.75%.

Consistent with this range, we have used an inflation assumption of 2.25% per annum.

Discount Rate Development

The elements considered in the development of the discount rate assumption for purposes of the funding policy valuation are summarized in the table below.

**Table 2.8 – Development of Funding Policy Valuation Discount Rate**

| | % |
|---|---|
| Expected long-term nominal return based on the results of our stochastic analysis (using long-term target asset mix, and including impact of rebalancing and diversification) | 6.60 |
| Value added for active management (not exceeding the additional fees paid for active management [active management fees estimated at 0.25%] over passive management [passive management fees estimated at 0.10%]) | 0.15 |
| Assumed margin for adverse deviation (originally set to achieve at least a 90% chance of exceeding the discount rate over the next 20 years) | (2.00) |
| Expected investment related expenses paid from the fund | (0.25) |
| Discount rate | 4.50 |

The expected long-term nominal return by asset class is provided in Appendix C. The target asset mix has been modified since the effective date of the valuation to reflect changes that are being implemented as a result of the adoption of the shared risk plan model. It should be noted that the return assumptions for bonds has been determined mainly on current market conditions while the return assumptions for equities and alternative investments are based more on long-term expectations.

Investment Expenses

The allowance for investment management expenses paid from the fund as built into the discount rate is 0.25% of assets based on recent Plan history and our expectation for future investment expenses.

Rate of Salary Increase

Over the long term past, general salary increases have been 0.5% to 1.5% in excess of inflationary increases. In past valuations of this plan we have used salary increase assumptions which were 0.5% higher than the inflation assumptions. However, for the 2000 valuation of the Former CUPE Plan, the Board of Trustees presented us with historical data that indicated that for the group of employees covered by the Plan, salary increases (excluding merit and promotion increases) have lagged inflation by approximately 0.5 percentage points per annum on average over the previous 20 years.

With regard to merit and promotional increases the promotional scale for this group does not provide for much movement to higher earnings levels over a career. Data from valuations performed over the same 20-year period as referred to above indicate that merit and promotional increases for this employee group account at most for 0.5% per annum increases in salary.

Based on the historical trends for this group we have assumed that long-term future salary increases will equal 2.75% per annum. This is 0.5% higher than the previous valuation.

However, a salary freeze has been in place and was incorporated in our assumptions. For purposes of the valuation, we assumed it would take effect in 2012 and 2013.

The resulting regular rates of salary increase are presented below.

| Year | Salary Increase Assumption |
|---|---|
| 2012 | 0.50% |
| 2013 | 0.50% |
| 2014+ | 2.75% |

Mortality

We have used UP94 with a full generational scale as both the CIA (through its commuted value standards) and Morneau Shepell's Chief Actuary indicate that a generational table is preferred. Industry evidence from the New Brunswick Pension Task Force was presented suggesting a different mortality basis was required which both reflected generational mortality improvements and did so at a higher rate than what is assumed in the traditional AA Scale. This industry information was developed from other public service pension plans and was deemed to be credible and applicable to the demographics of this plan when adjusted to reflect past Plan experience of a shorter life expectancy among the group than typically observed in the general population. As a result, the mortality assumption has been revised to use the UP-94 Mortality Table with full generational mortality improvement using an "enhanced NB Projection Scale AA" developed by the New Brunswick Pension Task Force but with a 115% scalar adjustment for males and a 105% scalar adjustment for females to all mortality rates. The improvements made to Scale AA at various ages are as follows:

**Table 2.09 – Improvements to Scale AA**

| | Females | Males |
|---|---|---|
| Under 55 | 250% | 125% |
| 55 - 59 | 250% | 130% |
| 60 - 64 | 300% | 140% |
| 65 - 69 | 250% | 150% |
| 70 - 74 | 200% | 150% |
| 75 - 79 | 200% | 135% |
| 80 - 84 | 150% | 135% |
| Over 84 | 125% | 125% |

The mortality rates, including the improvements to Scale AA described above, results in the following life expectancies for females and males.

**Table 2.10 - Life expectancy for Females and Males**

| Females | Life expectancy by Age in Year... | | | | |
|---|---|---|---|---|---|
| Age | 2012 | 2017 | 2022 | 2027 | 2032 |
| 55 | 32.4 | 32.8 | 33.1 | 33.5 | 33.8 |
| 60 | 27.4 | 27.7 | 28.1 | 28.5 | 28.8 |
| 65 | 22.6 | 23.0 | 23.3 | 23.7 | 24.0 |
| 70 | 18.3 | 18.6 | 18.9 | 19.2 | 19.5 |
| 75 | 14.2 | 14.5 | 14.7 | 15.0 | 15.2 |
| 80 | 10.5 | 10.7 | 10.9 | 11.1 | 11.2 |
| **Males** | **Life expectancy by Age in Year...** | | | | |
| **Age** | **2012** | **2017** | **2022** | **2027** | **2032** |
| 55 | 29.1 | 29.7 | 30.3 | 30.9 | 31.4 |
| 60 | 24.1 | 24.7 | 25.3 | 25.8 | 26.3 |
| 65 | 19.5 | 20.1 | 20.6 | 21.1 | 21.5 |
| 70 | 15.3 | 15.8 | 16.2 | 16.7 | 17.1 |
| 75 | 11.5 | 11.9 | 12.2 | 12.5 | 12.8 |
| 80 | 8.3 | 8.5 | 8.7 | 9.0 | 9.2 |

The enhanced projection scale was developed before the recently published mortality study released in draft form by the Canadian Institute of Actuaries. We will continue to monitor this assumption for reasonableness and in light of the recently published mortality study by the Canadian Institute of Actuaries.

Termination

We have used the same termination rates as used in the previous valuation. We will continue to monitor this assumption for reasonableness.

Rate of Increase in YMPE

In the previous valuation we assumed that the YMPE would increase at the same rate as the long term salary increase assumption. We have continued to assume this in the present valuation. As a result, we have used a rate of 2.5% per annum for all years. The YMPE is not affected by the salary increase considerations specific to this group of plan members. The YMPE is automatically updated to its revised base level at each valuation date.

Retirement

Given the changing early retirement subsidies for service after the Conversion Date, we estimate that Plan members will slowly start to delay retirement as we move away from the Conversion Date. As a result, we adopted retirement assumptions that vary depending on the member's current age. A younger member at the valuation date will be expected to retire later on average than an older worker at the same date. We will continue to monitor this assumption for reasonableness.

**Opinion on Funding Policy Valuation**

In our opinion, for the purposes of the funding policy valuation section of the report:

> The membership data on which the valuation is based are sufficient and reliable for the purposes of the valuation.

> The assumptions are appropriate for the purposes of the valuation.

> The methods employed in the valuation are appropriate for the purposes of the valuation; including an adjustment to the actuarial liability and normal cost to take into account the difference in the effective date of the membership data provided and the effective date of the valuation.

This funding policy valuation report has been prepared, and our opinions given, in accordance with accepted actuarial practice in Canada.

The assumptions used under the funding policy valuation of this report were reasonable and consistent with the objectives of the plan at the time this actuarial valuation report was prepared.

Respectfully submitted,

Conrad Ferguson, FSA, FCIA

Nov 25, 2013

Date

Yves Plourde, FSA, FCIA

Nov, 12, 2013

Date

# Section 3 – Going-Concern Valuation

The going-concern actuarial valuation is conducted in accordance with paragraph 14(1) of the Regulations to the New Brunswick *Pension Benefits Act* ("PBA") in order to determine the maximum eligible employer contribution for the CUPE SRP Plan under paragraph 147.2(2) of the *Income Tax Act (Canada)* ("ITA") and provide the required actuarial opinion.

The going-concern actuarial valuation results presented in this section are based on asset information found in Appendix A, membership data found in Appendix B, and plan provisions after the conversion to a shared risk plan, as summarized under the Conversion Plan section of this report and Appendix D. The methods and assumptions used in the going-concern valuation are described later in this section.

### Going-Concern Funded Status

The funded status of the Plan on the going-concern basis is determined by comparing the actuarial value of the assets to the actuarial liabilities. The actuarial liabilities are based on the benefits earned up to the valuation date assuming the Plan continues indefinitely. It also has a provision for future cost-of-living adjustments to be provided by the Trustees in accordance with the plan terms and the funding policy. Such a provision is acceptable under paragraph 147.2(2)(c) of the ITA.

**Table 3.1 – Going-concern Funded Status**

| | July 1, 2012 | January 1, 2010 |
|---|---|---|
| | $ | $ |
| Actuarial value of assets | | |
| > Market value (including receivables / payables) | 466,884,000 | 422,608,400 |
| Actuarial liabilities | | |
| > Active members | 552,827,000 | 330,891,900 |
| > Terminated and suspended members | 10,542,000 | 8,785,800 |
| > Retired members and beneficiaries | 402,739,000 | 281,785,600 |
| > Outstanding Refunds and withholding amounts | 2,526,000 | 912,700 |
| > Total | 968,634,000 | 622,376,000 |
| Going-concern funding excess (unfunded liability) | (501,750,000) | (199,767,600) |
| Going-concern funded ratio | 48.2% | 67.9% |

### Sensitivity Analysis on the Going-Concern Basis

The Standards of the Canadian Institute of Actuaries require valuation reports to disclose the sensitivity of the liabilities to changes in the discount rate assumption. The table below illustrates the effect of 1% decrease in the discount rate on the going-concern actuarial liabilities. With the exception of the discount rate, all other assumptions and methods used for this valuation were maintained.

**Table 3.2 – Sensitivity of Actuarial Liabilities on the Going-concern Basis**

| | July 1, 2012 | Discount rate 1% lower |
|---|---|---|
| | $ | $ |
| Actuarial liabilities | | |
| > Active members | 552,827,000 | 680,561,000 |
| > Terminated vested members | 10,542,000 | 11,480,000 |
| > Retired members and beneficiaries | 402,739,000 | 446,903,000 |
| > Outstanding Refunds and withholding amounts | 2,526,000 | 2,518,000 |
| > Total | 968,634,000 | 1,141,462,000 |
| Increase in actuarial liabilities | | 172,828,000 |

### Going-Concern Residual Normal Cost

The table below summarizes the estimated going-concern residual normal cost of pension benefits being earned in the twelve-month period after the valuation date (the normal cost).

**Table 3.3 – Going-Concern Residual Normal Cost**

| | As at July 1, 2012 | | As at January 1, 2010 | |
|---|---|---|---|---|
| | $ | % of payroll | $ | % of payroll |
| Total Normal Cost | $50,154,000 | 16.00 | 26,938,000 | 11.63 |
| Less Member contributions | ($28,215,000) | (9.0) | (14,293,000) | (6.17) |
| Residual Normal Cost | $21,939,000 | 7.0 | 12,645,000 | 5.46 |
| Total Annualized Payroll | $313,498,000 | | $231,656,000 | |

### Sensitivity Analysis on the Going-Concern Residual Normal Cost

The table below illustrates the effect on the residual normal cost of using a discount rate 1% lower than the one used for the going-concern valuation. All other assumptions and methods, as used in this valuation, were maintained.

**Table 3.4 – Sensitivity of going-concern residual normal cost**

| | As at July 1, 2012 | | Discount rate 1% lower | |
|---|---|---|---|---|
| | $ | % of payroll | $ | % of payroll |
| Total normal cost | $50,154,000 | 16.00 | $65,049,000 | 20.75 |
| Less Member contributions | ($28,215,000) | (9.0) | ($28,215,000) | (9.0) |
| Residual Normal Cost | $21,939,000 | 7.0 | $36,834,000 | 11.75 |
| Increase in residual normal cost | | | $14,895,000 | 4.75 |

### Maximum Eligible Employer Contribution under the Income Tax Act

The maximum eligible employer contribution in accordance with the ITA is equal to the residual normal cost, plus the greater of the going-concern unfunded liability and the hypothetical wind-up deficiency. Under a shared risk plan, the hypothetical wind-up liability will typically be nil. However, the anti-avoidance rule under Section 16 of Regulation 2012-75 may be triggered if a wind-up occurs in the first five years following the conversion of the shared risk plan. For purposes of calculating the maximum eligible employer contribution, we have ignored the hypothetical wind-up deficiency that could exist for the first five years after conversion.

On the basis of the methods and assumptions in this report, the maximum eligible employer contribution for the year following July 1, 2012 is equal to $523,689,000 (representing $21,939,000 of residual normal cost and $501,750,000 of going-concern unfunded liability).

When spreading the going-concern unfunded liability over the next three years (period for which this going-concern valuation is valid under the PBA), the maximum eligible employer contribution for the three years following July 1, 2012 (ignoring interest and salary increases) would be as follows:

**Table 3.5 – Maximum Eligible Employer Contributions Spread Over Three Years**

| Year Following... | Going-Concern Unfunded Liability | Residual Normal Cost | Total | |
|---|---|---|---|---|
| | $ | $ | $ | % of payroll |
| July 1, 2012 | 167,250,000 | 21,939,000 | 189,189,000 | 60.3% |
| July 1, 2013 | 167,250,000 | 21,939,000 | 189,189,000 | 60.3% |
| July 1, 2014 | 167,250,000 | 21,939,000 | 189,189,000 | 60.3% |

Based on the above, the employer contribution requirements under the terms of the Plan of 10.1% of payroll are eligible contributions under the ITA. Furthermore, should employer contributions be increased to 10.6% of payroll as would be required under the Funding Policy if the 15-year open group funded ratio of the plan dropped below 100% for two years in a row, those higher employer contributions would also be eligible contributions under the ITA up to the date of the next going-concern valuation scheduled no later than July 1, 2015.

### Going-concern Valuation Actuarial Methods

The asset valuation method and the actuarial cost method under the going-concern valuation are identical to the asset valuation method and the actuarial cost method under the funding policy valuation. The going-concern valuation assumptions are also identical, except for the discount rate and the addition of a provision for future cost-of-living adjustments.

### Discount rate

In order to balance the need to fund intended benefits in a secure and responsible manner, while recognizing the necessity for CRA to monitor the impact of over-conservatism in assumptions, we developed a methodology to select an appropriate discount rate which we believe will balance those concerns. The discount rate selected is determined by using the nominal investment return expected from the long-term asset mix of the CUPE SRP Plan over the next 20 years at its 67th percentile, minus 1.0% (to account for inclusion of any margins for adverse deviation and any and all expenses to be paid from the fund). This leads to a net discount rate of 4.85% per year.

### Assumed contingent indexing on accrued pensions and pensions in payment

A provision for future cost-of-living adjustments on the amount of the accrued pensions of active members, and terminated deferred vested members, and on the amounts of current and future pension payments is made. This provision satisfies the requirements of section 147.2(2)(c) of the ITA.

The funding policy clearly states that the benefit intention (benefit target) is a benefit based on a best 5 year average earnings formula with a fixed 2% annual indexing after retirement; the same as existed prior to the conversion. While this is by no means a guaranteed outcome, the contributions have been set at a level that there is a high likelihood of achieving these benefit intentions (or targets).

As a result, and in accordance with the PBA, we have conducted the going concern valuation based on these benefit intentions, which would provide for indexing of accrued pensions before assumed retirement at 2.75% per year (similar to the long-term salary increase assumption in our funding policy valuation), and indexing of pensions after retirement of 2.25% per year (reflecting the inflation assumption in our funding policy valuation).

### Other going-concern actuarial assumptions

All other assumptions in our going-concern valuation are identical to the assumptions used under the funding policy actuarial valuation detailed in Table 2.6 of Section 2 of this report, and the rationale for the choice of those assumptions also applies for the going-concern valuation.

The additional assumptions detailed in Table 2.7 of Section 2 are not required under the going-concern actuarial valuation, and therefore do not apply.

Emerging experience differing from these assumptions will result in gains or losses, which will be revealed in future going-concern actuarial valuations.

**Opinion on Going-concern Valuation**

In our opinion, for the purposes of the going-concern valuation section of the report:

> The membership data on which the valuation is based are sufficient and reliable for the purposes of the valuation.

> The assumptions are appropriate for the purposes of the valuation.

> The methods employed in the valuation are appropriate for the purposes of the valuation; including an adjustment to the actuarial liability and normal cost to take into account the difference in the effective date of the membership data provided and the effective date of the valuation.

This going-concern valuation report has been prepared, and our opinions given, in accordance with accepted actuarial practice in Canada.

The assumptions used under the going-concern valuation of this report were reasonable at the time this actuarial valuation report was prepared.

Respectfully submitted,

Conrad Ferguson, FSA, FCIA

Nov 25, 2013

Date

Yves Plourde, FSA, FCIA

Nov. 12, 2013

Date

# Section 4 –Hypothetical Wind-up Valuation

A hypothetical wind-up valuation assumes that the Plan is wound-up on the valuation date and member's benefit entitlements are calculated as of that date. Although this type of valuation is not required under Part 2 of the New Brunswick Pension Benefits Act for a Shared Risk Plan, the Standards of Practice of the Canadian Institute of Actuaries require that actuarial valuation reports provide information with respect to hypothetical wind-up situations.

Section 16(3) of the Regulations 2012-75 under the *Pension Benefits Act* prescribes that if a shared risk plan is wound-up by the persons who established the plan within 5 years of its conversion date, the conversion of the plan is void and the plan has to be wound-up as a defined benefit plan under Part 1 of the PBA.

In conducting the hypothetical wind-up valuation as at July 1, 2012, we therefore made the assumption that the conversion would be void, and that the plan would be wound-up as at July 1, 2012 in accordance with rules found under Part 1 of the PBA.

We have valued the wind-up liability using discount rates consistent with the requirements of the NB PBA for plan wind-ups under Part 1. The PBA requires that benefits paid out to each member upon wind-up be not less than the cost to purchase an annuity for that member. Accordingly, we have followed the Canadian Institute of Actuaries' recommendations for the estimated cost of fully indexed annuity purchases as at July 1, 2012.

### Hypothetical Wind-Up Funded Status

The hypothetical wind-up funded status under the scenario postulated above, including the results of the last hypothetical wind-up valuation, is as follows:

**Table 4.1 – Hypothetical Wind-Up Funded Status**

| | July 1, 2012 | January 1, 2010 |
|---|---|---|
| | $ | $ |
| Assets | | |
| > Market value of assets | $466,884,000 | 422,608,400 |
| > Provision for expenses | (1,500,000) | (1,500,000) |
| > Total | 465,384,000 | 421,108,400 |
| Hypothetical wind-up liabilities | | |
| > Active members | 843,274,000 | 528,554,000 |
| > Terminated and suspended members | 7,111,000 | 10,497,400 |
| > Retired members and beneficiaries | 468,148,000 | 347,961,900 |
| > Outstanding refunds and withholding amounts | 2,516,000 | 914,600 |
| > Total | 1,321,049,000 | 887,927,900 |
| Assets less liabilities on the hypothetical wind-up basis | (855,665,000) | (466,819,500) |

The hypothetical wind-up funded status is presented for information purposes. There is no requirement under the PBA to fund the hypothetical wind-up deficit of the CUPE SRP Plan while it is not in a wind-up state.

### Sensitivity Analysis on the Hypothetical Wind-up Basis

The Standards of Practice of the Canadian Institute of Actuaries require valuation reports to disclose the sensitivity of the liabilities to changes in the discount rate assumption. The table below illustrates the effect on the actuarial liabilities of using discount rates 1% lower than those used for the hypothetical wind-up valuation. All other assumptions and methods, as used in this valuation, were maintained.

**Table 4.2 – Sensitivity of Actuarial Liabilities on the Hypothetical Wind-up Basis**

| | July 1, 2012 | Discount rates 1% lower |
|---|---|---|
| | $ | $ |
| Actuarial liabilities | | |
| > Active members | 843,274,000 | 1,030,416,000 |
| > Terminated and suspended members | 7,111,000 | 8,485,000 |
| > Retired members and beneficiaries | 468,148,000 | 523,445,000 |
| > Outstanding refunds and withholding amounts | 2,516,000 | 2,510,000 |
| > Total | 1,321,049,000 | 1,564,856,000 |
| Increase in actuarial liabilities | | 243,807,000 |

### Incremental Cost on the Hypothetical Wind-up Basis

The incremental cost on the hypothetical wind-up basis represents the present value of the expected aggregate change in the actuarial liabilities from July 1, 2012 to July 1, 2013, adjusted for expected benefit payments in the inter-valuation period. This incremental cost is estimated to be $81,241,000 as at July 1, 2012.

### Hypothetical Wind-up Asset Valuation Method

Wind-up assets are equal to the market value of assets less and allowance for wind-up expenses. This valuation method is the same as the one used in the last valuation.

### Hypothetical Wind-up Actuarial Cost Method

The hypothetical wind-up liabilities are determined using the accrued benefit (or unit credit) actuarial cost method. The hypothetical wind-up liabilities are equal to the actuarial present value of all benefits earned by members for services prior to the valuation date assuming the Plan is wound up on the valuation date. This method is the same as the one used in the last valuation.

In this valuation, the membership data provided was as at December 31, 2011. We therefore calculated the liability as of that date and projected it forward to the valuation date of July 1, 2012 in order to obtain the actuarial liability shown in this report. The projection of liability used the same methodology as the one used to calculate the incremental cost, but applied to the period from December 31, 2011 to July 1, 2012 (six-month period) and using actual benefit payments for the period.

For valuation purposes, to determine eligibility for benefits and for any other uses, the age used is the age on the date of the nearest birthday. This method is the same as the one used in the last valuation.

### Hypothetical Wind-up Actuarial Assumptions

The main actuarial assumptions used in the hypothetical wind-up valuation correspond to those prescribed by the PBA.

Although the Former CUPE Plan was not subject to the PBA before it was converted to the CUPE SRP Plan, in the absence of specific direction to the contrary in the Former CUPE Plan, we have valued the hypothetical wind-up liability using discount rates consistent with the requirements of the PBA if the Plan were to be wound up. The PBA requires that benefits paid out to each member upon wind-up be not less than the cost to purchase an annuity for that member. Accordingly, we have followed the Canadian Institute of Actuaries' recommendations for the estimated cost of fully indexing annuity purchases as at July 1, 2012.

The primary actuarial assumptions employed for the wind-up actuarial valuation are summarized in the following table. All rates and percentages are annualized unless otherwise noted. The rates in brackets represent the estimate annuity purchase rates for indexed annuities after taking into account the escalation of pension provided by the Plan.

**Table 4.3 – Hypothetical Wind-Up Actuarial Assumptions**

| | July 1, 2012 | January 1, 2010 |
|---|---|---|
| Interest rate | | |
| > Interest rate for active members and deferred vested members under 55 | 3.05% (1.03% net) | 4.49% (2.44% net) |
| > Interest rate for retired members and those 55 and over | 3.05% (1.03% net) | 4.49% (2.44% net) |
| Salary increases | None | None |
| Mortality | UP-94 generational using Scale AA | UP-94 projected to 2020 |
| Termination (membership) | None | None |
| Wind-up expenses | $1,500,000 | $1,500,000 |
| Retirement | Age that maximizes the value of the pension | Age that maximizes the value of the pension |

Allowance has been made for administrative, actuarial and legal costs which would be incurred if the Plan were to be wound up in full or in part. No allowance has been made for costs which may be incurred in respect of resolving surplus issues on Plan wind up or the costs in respect of assets which cannot be readily realized.

The Canadian Institute of Actuaries (CIA) collects data annually from insurance companies and annually determines interest rates suitable for estimating the cost of single premium group annuities in hypothetical wind-up valuations. For pensioners and for active members and deferred vested members eligible for immediate retirement at the valuation date, the interest rate used in the present hypothetical wind-up valuation is an estimate of the rate that would be used by insurance companies in pricing single premium group annuities for annuitants already retired, based on the suggested rates for such annuitants published by the CIA.

The discount rate used for active members and deferred vested members not eligible for immediate retirement is the rate used for pensioners without adjustment, as suggested by the CIA as an appropriate estimate of the cost of deferred annuities based on their survey data from insurance companies.

Emerging experience differing from these assumptions will result in gains or losses, which will be revealed in future hypothetical wind-up actuarial valuations.

### Termination scenario

The termination scenario used in the hypothetical wind-up valuation includes the following assumptions:

> Plan wind-up would not result from employer insolvency.

> All assets could be realized at their reported market value.

> CUPE SRP Plan conversion would be void and the pension plan would be wound-up under Part 1 of the PBA.

### Margin for adverse deviations

As specified by the Standards of Practice of the Canadian Institute of Actuaries, the hypothetical wind-up assumptions do not include a margin for adverse deviations.

### Provision for fees

Allowance has been made for administrative, actuarial and legal costs which would be incurred if the Plan were to be wound up, based on sufficient and reliable data. It is assumed that the wind-up date, the calculation date and the settlement date are coincident, and as such, expenses related to investment policy reviews, investment and custodial fees are not included. Expenses related to the resolution of surplus and deficit issues are not taken into account. The amount of expenses is only an approximation and may differ significantly from real expenses incurred on plan wind-up, for example, in case of litigation, bankruptcy and eventual replacement by a third-party administrator.

### Hypothetical Wind-up Incremental Cost

The method used to calculate the hypothetical wind-up incremental cost may be described as follows:

1. Present value of expected benefit payments between July 1, 2012 and July 1, 2013, discounted to July 1, 2012;

Plus

2. Projected hypothetical wind-up liabilities as at July 1, 2013, discounted to July 1, 2012;

Less

3. Hypothetical wind-up liabilities as at July 1, 2012.

**Opinion on Hypothetical Wind-up Valuation**

In our opinion, for the purposes of the hypothetical wind-up valuation section of the report:

> The membership data on which the valuation is based are sufficient and reliable for the purposes of the valuation.

> The assumptions are appropriate for the purposes of the valuation.

> The methods employed in the valuation are appropriate for the purposes of the valuation; including an adjustment to the actuarial liability to take into account the difference in the effective date of the membership data provided and the effective date of the valuation.

This hypothetical wind-up valuation report has been prepared, and our opinions given, in accordance with accepted actuarial practice in Canada.

The assumptions used under the hypothetical wind-up valuation of this report were reasonable at the time this actuarial valuation report was prepared.

Respectfully submitted,

| | |
|---|---|
| Conrad Ferguson, FSA, FCIA | Yves Plourde, FSA, FCIA |
| NOV 25, 2013 | Nov. 12, 2013 |
| Date | Date |

# Appendix A – Assets

### Description of Plan Assets

The assets of the plan are invested in a trust fund, and RBC Investor Services is the custodian for the assets of the pension fund.

### Statement of Market Value

The following table shows the asset mix as at June 30, 2012 and, for comparison, the mix as at January 1, 2010 extracted from the Plan's prior actuarial valuation:

**Table A.1 – Assets at Market Value**

| | June 30, 2012 | January 1, 2010 |
|---|---|---|
| Invested assets | | |
| > Canadian Equities | $117,656,172 | $107,943,602 |
| > Foreign Equities | 150,952,025 | 128,807,388 |
| > Fixed Income | 177,230,790 | 174,349,463 |
| > Short Term | 17,404,972 | 7,696,301 |
| > Net amount receivable | 3,639,919 | 3,811,660 |
| Total assets | $466,883,878 | $422,608,414 |

### Changes to Plan Assets

The following table shows changes to the Plan assets held by RBC Investor Services (the custodian) during the inter-valuation period, based on market values. The reconciliation from January 1, 2010 to December 31, 2011 is based on the unaudited financial statements issued by the Office of Human Resources, while the reconciliation from January 1, 2012 to June 30, 2012 is based off the monthly financial reports produced by RBC Investor Services and adjusted for payables and receivables recognized in months following June 2012.

**Table A.2 – Reconciliation**

| | 2010 | 2011 | 2012 (to June 30) |
|---|---|---|---|
| Assets at beginning of year | 422,608,414 | $458,450,857 | $452,012,989 |
| Receipts | | | |
| > Contributions | 26,854,657 | 28,958,255 | 14,810,736 |
| > Investment income plus realized and unrealized capital appreciation and depreciation | 40,927,630 | (103,674) | 18,969,882 |
| Total receipts | 67,782,287 | 28,854,581 | 33,780,618 |
| Disbursements | | | |
| > Pensions paid and refunds | 29,657,300 | 32,927,937 | 17,685,567 |
| > Expenses (fees) | 2,282,544 | 2,364,512 | 1,224,162 |
| Total disbursements | 31,939,844 | 35,292,449 | 18,909,729 |
| Assets at end of year | $458,450,857 | $452,012,989 | $466,883,878 |

### Return on Assets

The Plan assets earned the following rates of return, net of investment management fees and other expenses charged to the fund, based on our calculations which assume cash flow occurred in the middle of the period:

**Table A.3 – Net Investment Return**

| Year | Rate of Return |
|---|---|
| | % |
| 2010 | 9.45% |
| 2011 | (0.29%) |
| 2012 (six months – not annualized) | 3.35% |

### Actuarial Value of Assets

We have used the market value of assets (including receivables / payables) without adjustment. The actuarial value of assets as at July 1, 2012 was $466,883,878.

### Target Asset Mix under Shared Risk Plan

The statement of investment policy and goals for the CUPE SRP Plan, as modified by the Board of Trustees in order to ensure among other things that the risk management goals under the PBA could be met, provides for the following long term target asset mix.

**Table A.4 – Target Asset Mix**

| Asset classes | Target |
|---|---|
| > Fixed Income – Domestic Universe Bonds (DUB) | 10.0% |
| > Fixed Income – Domestic Long-term Bonds (DLB) | 30.0% |
| > Fixed Income – US High Yield Bonds (USHY) | 7.5% |
| > Fixed Income – Global Government Bonds (GGB) | 7.5% |
| > Canadian Equities (DE) | 10.0% |
| > Foreign Equities (FE) | 15.0% |
| > Real Estate (RE) | 10.0% |
| > Infrastructure (I) | 10.0% |
| Total | 100.0% |

This target asset mix was used to determine the discount rate assumption under the plan, and to conduct the stochastic analysis required under the PBA to assess the various risk management goals.

# Appendix B – Membership Data

### Description of Membership Data

Data on Plan membership was obtained from the PIBA pension system maintained by the Pension and Employee Benefits Division of the Office of Human Resources. The data was provided as at December 31, 2011.

The data was matched and reconciled with the data provided for the previous valuation as at January 1, 2010. Basic data checks were performed to ensure that age, salary and service data were reasonable for the purposes of the valuation and to ensure that the data was accurate, complete and consistent with previous data.

Finally, we have taken the following additional steps to review data for accuracy, completeness and consistency purposes:

> A reconciliation of data was performed in order to follow the changes concerning some of the active members, retirees and vested members.

> Basic data checks were performed to ensure that age, salary and service data were reasonable for the purposes of the valuation.

The effective date of the conversion to a shared risk plan is July 1, 2012, and therefore the initial actuarial valuations' effective date is also as at July 1, 2012. The actuarial valuation results obtained using December 31, 2011 data was therefore projected forward for 6 months, using actual cash flows obtained from financial statements for the six-month period, in order to provide July 1, 2012 results throughout the report. This treatment is noted in the actuarial method section of every type of actuarial valuation conducted in this report.

Any differences between the above projection and the use of actual July 1, 2012 data was deemed immaterial for the purposes of the actuarial valuations.

### Summary of Membership Data

The following tables were prepared using data provided by the Pension and Employee Benefits Division regarding its active members, retirees and former members. Tables B.4 and B.5 reflect pensioner indexing awarded at January 1, 2012 and are therefore presented as at January 1, 2012.

These tables show the following:

B.1 Summary of Membership Data
B.2 Changes in Plan Membership
B.3 Age/Service Distribution for Active Members as at December 31, 2011
B.4 Summary of Part-time Membership Data as at July 1, 2012
B.5 Distribution of Retirees by Age Groups as at January 1, 2012
B.6 Distribution of Deferred Pensioners by Age Groups as at January 1, 2012
B.7 Distribution of Suspended Members by Age Groups as at December 31, 2011

**Table B.1**
**Summary of Membership Data**

| | | December 31, 2011 | January 1, 2010 |
|---|---|---|---|
| Active members[1] | Number | 6,684 | 6,441 |
| | Total covered payroll[3] | $265,045,000 | $241,159,176 |
| | Average salary | $39,654 | $37,441 |
| | Average age | 45.2 years | 44.9 years |
| | Average credited service | 9.3 years | 9.1 years |
| Deferred vested members | Number | 46 | 59 |
| | Average annual lifetime pension | $5,720 | $5,139 |
| | Average annual bridge benefit[2] | $2,464 | $2,520 |
| | Average age | 51.7 years | 51.5 years |
| Retirees | Number | 2,874 | 2,623 |
| | Average annual lifetime pension | $8,932 | $8,282 |
| | Average annual bridge benefit[2] | $5,299 | $5,216 |
| | Average age | 69.3 years | 69.1 years |
| Suspended members | Number | 281 | 229 |
| | Average accumulated contributions with interest | $8,593 | $9,315 |
| | Average age | 45.7 years | 46.2 years |

[1] *Includes all active members, members on a leave of absence and members who have signed an intra-provincial agreement with another provincial pension plan but excludes part-timers who entered the plan July 1, 2012.*

[2] *Average for those entitled to or receiving a bridging benefit.*

[3] *Annualized full-time equivalent salary for all active members at December 31, 2011, excluding part-timers who entered the plan July 1, 2012. This figure differs from the payroll used for valuation purposes where an aggregate work percentage of 94% was assumed in the total payroll calculation and certain sub-statuses like intra-provincial transfers are excluded from the total payroll.*

**Table B.2 – Changes in Plan Membership**

| | Active Members | Deferred Vested Members | Suspended Members | Retirees | Total |
|---|---|---|---|---|---|
| Members at January 1, 2010 | 6,441 | 59 | 229 | 2,623 | 9,352 |
| New members | 804 | | | | 804 |
| Retirements | (315) | (20) | (13) | 348 | - |
| Returned to active status | 6 | | (6) | | - |
| Terminations: | | | | | |
| > with refunds or transfers out | (149) | (1) | (16) | | (166) |
| > with deferred pensions | (7) | 8 | (1) | | - |
| > with suspended status | (88) | | 88 | | - |
| Deaths: | | | | | |
| > with no continuing benefits | (7) | | | (94) | (101) |
| > with survivors | (1) | | | (6) | (7) |
| New survivor pensions | | | | 7 | 7 |
| Guarantee periods expired | | | | (4) | (4) |
| Data adjustments | | | | | |
| Members at December 31, 2011 | 6,684 | 46 | 281 | 2,874 | 9,885 |

## Table B.3 – Age/Service Distribution for Active Members as at December 31, 2011

| Years of Service | | Under 24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | 60 and Over | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 - 4 | Num. | 165 | 445 | 511 | 504 | 364 | 417 | 304 | 204 | 71 | 2,985 |
| | Tot. Sal. | 6,768,488 | 17,935,712 | 20,605,702 | 20,233,527 | 14,596,741 | 16,641,980 | 12,018,597 | 8,241,898 | 2,727,025 | 119,769,669 |
| | Avg. Sal. | 41,021 | 40,305 | 40,324 | 40,146 | 40,101 | 39,909 | 39,535 | 40,401 | 38,409 | 40,124 |
| 5 - 9 | Num. | | 52 | 172 | 204 | 227 | 287 | 281 | 188 | 91 | 1,502 |
| | Tot. Sal. | | 2,078,961 | 6,839,073 | 8,167,295 | 8,899,622 | 11,266,350 | 11,088,363 | 7,299,425 | 3,528,410 | 59,167,499 |
| | Avg. Sal. | | 39,980 | 39,762 | 40,036 | 39,205 | 39,256 | 39,460 | 38,827 | 38,774 | 39,392 |
| 10 - 14 | Num. | | | 18 | 71 | 113 | 174 | 205 | 146 | 54 | 781 |
| | Tot. Sal. | | | 730,939 | 2,864,209 | 4,529,739 | 6,779,977 | 7,961,535 | 5,728,540 | 2,012,911 | 30,607,848 |
| | Avg. Sal. | | | 40,608 | 40,341 | 40,086 | 38,965 | 38,837 | 39,237 | 37,276 | 39,191 |
| 15 - 19 | Num. | | | | 8 | 44 | 98 | 91 | 79 | 28 | 348 |
| | Tot. Sal. | | | | 312,869 | 1,744,699 | 3,892,243 | 3,520,924 | 3,096,486 | 1,104,285 | 13,671,506 |
| | Avg. Sal. | | | | 39,109 | 39,652 | 39,717 | 38,691 | 39,196 | 39,439 | 39,286 |
| 20 - 24 | Num. | | | | 1 | 30 | 172 | 198 | 107 | 34 | 542 |
| | Tot. Sal. | | | | * | 1,188,615 | 6,718,295 | 7,656,376 | 4,226,696 | 1,336,865 | 21,160,385 |
| | Avg. Sal. | | | | * | 39,621 | 39,060 | 38,669 | 39,502 | 39,320 | 39,041 |
| 25 - 29 | Num. | | | | | | 57 | 194 | 72 | 17 | 340 |
| | Tot. Sal. | | | | | | 2,221,563 | 7,565,158 | 2,798,462 | 663,061 | 13,248,244 |
| | Avg. Sal. | | | | | | 38,975 | 38,996 | 38,868 | 39,004 | 38,965 |
| 30 and over | Num. | | | | | | | 40 | 120 | 26 | 186 |
| | Tot. Sal. | | | | | | | 1,626,749 | 4,752,179 | 1,040,828 | 7,419,756 |
| | Avg. Sal. | | | | | | | 40,669 | 39,601 | 40,032 | 39,891 |
| **Total number** | | 165 | 497 | 701 | 788 | 778 | 1,205 | 1,313 | 916 | 321 | 6,684 |
| **Total salaries** | | **6,768,488** | **20,014,673** | **28,175,714** | **31,611,437** | **30,959,416** | **47,520,409** | **51,437,703** | **36,143,685** | **12,413,384** | **265,044,908** |
| **Average of salaries** | | **41,021** | **40,271** | **40,194** | **40,116** | **39,794** | **39,436** | **39,176** | **39,458** | **38,671** | **39,654** |

*Average age: 45.2*

*Average number of years of service: 9.3*

*Notes: The age is computed at the nearest birthday.*

*Years of service means the number of years credited for pension plan purposes, fractional parts being rounded to the nearest integer.*

*The salary used is the estimated salary rate as of January 1, 2012.*

*Membership for active members is composed of 1,912 males and 4,772 females.*

On the Conversion Date, eligible part-time members of the Pension Plan for Part-Time and Seasonal Employees of the Province of New Brunswick ceased to participate in that plan and joined the CUPE SRP Plan for service on and after July 1, 2012. Pension and Employee Benefits Division provided the following information with respect to those members. This data is used in the projection of future cash flows to and from the pension plan, such as member and employer contributions, normal costs, benefit payments and expenses over the next 20 years in order to determine the open group funded ratio under the funding policy actuarial valuation. It is also used in the stochastic analysis required under the risk management procedures for the plan.

**Table B.4 – Summary of Part-time Membership Data as at July 1, 2012**

| | | July 1, 2012 |
|---|---|---|
| Part-time Members | Number | 2,461 |
| | Total payroll for following year | $69,868,000 |
| | Average salary | $28,390 |
| | Average age | 41.4 |

**Table B.5 – Distribution of Retirees by Age Groups as at January 1, 2012**

| Age Group | Number | Total Annual Payments | |
|---|---|---|---|
| | | Lifetime | Bridge |
| Under 60 | 365 | 4,035,232 | 1,891,974 |
| 60-64 | 698 | 7,149,789 | 3,592,359 |
| 65-69 | 669 | 6,207,571 | - |
| 70-74 | 422 | 3,668,447 | - |
| 75-79 | 313 | 2,203,606 | - |
| 80-84 | 225 | 1,409,117 | - |
| 85 and over | 182 | 995,945 | - |
| Total | 2,874 | 25,669,707 | 5,484,333 |

*Average age: 69.3*

*Notes:*

*Age groups are based on exact age.*

*Years of retirement means the number of years since retirement, fractional parts being rounded to the nearest integer.*

*The pension used is the pension payable as at January 1, 2012*

*Membership for pensioners is composed of 608 males and 2,266 females.*

In addition, there are payments continuing to be made to 16 beneficiaries under remaining guarantees after pensioners' deaths for a total of $122,816 annually.

**Table B.6 – Distribution of Deferred Pensioners by Age Groups as at January 1, 2012**

| Age Group | Number | Total Annual Payments | |
|---|---|---|---|
| | | Lifetime | Bridge |
| Under 40 | 3 | 7,105 | 3,936 |
| 40-45 | 5 | 14,765 | 8,679 |
| 45-49 | 8 | 38,758 | 17,685 |
| 50-54 | 20 | 126,019 | 51,655 |
| 55-59 | 4 | 25,891 | 10,161 |
| 60 and over | 6 | 50,590 | 8,921 |
| Total | 46 | 263,129 | 101,036 |

*Average age: 51.7 years*

*Notes:*

*Age groups are based on exact age.*

*The pension used is the pension payable as at January 1, 2012.*

*Membership for deferred pensioners is composed of 11 males and 35 females.*

**Table B.7 – Distribution of Suspended Members by Age Groups as at December 31, 2011**

| Age Group | Number | Average Total Contributions plus Interest | Average Pensionable Service |
|---|---|---|---|
| Under 25 | 5 | 2,298 | 1.0 |
| 25-29 | 21 | 2,751 | 1.2 |
| 30-34 | 25 | 5,584 | 2.6 |
| 35-39 | 33 | 4,841 | 2.4 |
| 40-44 | 41 | 7,981 | 4.0 |
| 45-49 | 50 | 7,971 | 4.1 |
| 50-54 | 46 | 12,390 | 5.9 |
| 55-59 | 33 | 11,522 | 5.0 |
| 60 and Over | 27 | 12,791 | 5.7 |
| Total | 281 | 8,593 | 4.0 |

*Average age: 45.7 years*

*Notes:*

*Age groups are based on exact age.*

*Membership for suspended members is composed of 103 males and 178 females.*

# Appendix C – Stochastic Projection Assumptions

Our assumptions for stochastic analysis are built each year using Conference Board of Canada (CBoC) forecasts, internal research, inflation expectations and by surveying the asset manager universe. This ensures we are not using inputs that are out of touch with broader expectations. We strive for a moderate level of conservatism in our assumptions, as high expectations can lead to biased results, understating the true risk level of plans.

Stochastic projection assumptions are updated annually by Morneau Shepell Asset and Risk Management with an anchor date of December 31st and a time horizon of up to 25 years. A multi-stage process is used to set the economic assumptions. First, a long term inflation rate assumption is selected based primarily on the current Bank of Canada Monetary Policy. Volatility for inflation is based on historical data since the early 1990's when the current monetary policy was introduced. Market implied inflation is used as an indicator of the market expectation for long term trends for inflation. Secondly, historical and current bond data is used to determine the long term interest rates for key bond indices. It is assumed that current yields will revert to the projected long term rates over a projected period. Volatility assumptions are based on historical data modified to reflect current low yield rates. Expected return levels and standard deviations for Canadian bond indices are generated in a stochastic simulation approach.

The next stage is to determine nominal equity return assumptions. The process uses multiple sources including our inflation assumptions, historical data, GDP and other economic data, growth forecasts and dividend information. An equity risk premium is assumed by asset class. Standard deviations and correlations of equity returns are mainly derived from historical data. Purchasing power parity is assumed in setting foreign equity return assumptions. Historical data is used to measure the return and volatility spreads between small-cap and large-cap equities. Alternative asset classes are primarily based on historical data but adjusted by factors specific for each asset class.

The following expected return and volatility by asset class was used as at July 1, 2012:

**Table C.1 – Expected Return over 20 Years and Volatility (standard deviation) by Asset Class**

| | Expected Return | Volatility (standard deviation) |
|---|---|---|
| Inflation | 2.25% | 1.0% |
| Asset classes | | |
| > Fixed Income – Domestic Universe Bonds (DUB) | 3.30% | 5.2% |
| > Fixed Income – Domestic Long-term Bonds (DLB) | 3.90% | 9.0% |
| > Fixed Income – US High Yield Bonds (USHY) | 6.40% | 10.9% |
| > Fixed Income – Global Government Bonds (GGB) | 4.55% | 5.6% |
| > Canadian Equities (DE) | 7.40% | 17.4% |
| > Foreign Equities (FE) | 7.55% | 15.3% |
| > Real Estate (RE) | 6.00% | 12.3% |
| > Infrastructure (I) | 6.40% | 14.0% |

For every year in the 20-year projection, expenses of 10 basis points to reflect the cost of passive management is deducted from the expected return (the additional cost of active management is expected to be achieved in addition to the expected returns shown above and therefore are not included in the analysis). For the payment of non-investment related expenses, the normal cost has been increased by 5.0% (representing about 0.5% of payroll), and that amount is used for non-investment expenses in our stochastic analysis.

The following correlation among the various asset classes identified in TableC.1 was also used as at July 1, 2012:

**Table C.2 – Correlation Among Asset Classes**

| | DUB | DLB | USHY | GGB | DE | FE | RE | I |
|---|---|---|---|---|---|---|---|---|
| DUB | 1.00 | 0.85 | -0.18 | -0.24 | 0.45 | 0.30 | 0.10 | 0.25 |
| DLB | | 1.00 | 0.03 | 0.04 | 0.17 | -0.01 | 0.15 | 0.18 |
| USHY | | | 1.00 | 0.63 | -0.28 | -0.24 | -0.06 | -0.22 |
| GGB | | | | 1.00 | -0.36 | -0.31 | -0.08 | -0.29 |
| DE | | | | | 1.00 | 0.71 | -0.06 | 0.31 |
| FE | | | | | | 1.00 | -0.13 | -0.04 |
| RE | | | | | | | 1.00 | 0.01 |
| I | | | | | | | | 1.00 |

Using a Monte Carlo simulation technique, the expected returns, volatility and correlation of the various asset classes shown above are used to model 2,000 series of alternative economic scenarios over 20-year periods. This provides at least 40,000 observations from which to measure whether the risk management goals have been achieved.

This exceeds the minimum requirements under the PBA of 1,000 series of economic scenarios.

For each of these scenarios and for each year, the financial position of the CUPE SRP Plan is measured on a funding policy basis. For the purpose of the stochastic analysis, the margin for adverse deviation in the discount rate is modified in each future period in the projection such that the resulting discount rate remains fixed at 4.5% per year throughout the projection period. The discount rate of 4.5% per year is used to project the funding policy liability and determine the present value of excess contributions throughout the projection period. The projection of the liability and future cash flows under the stochastic analysis uses the same demographic assumptions as used for the calculation of the funding policy liability, as required under Regulation 15(2)(c).

The risk management procedures are described in Section 1 of this report.

# Appendix D – Summary of Plan Provisions

The following is a brief summary of the main provisions of the Shared Risk Plan for CUPE Employees of New Brunswick Hospitals ("CUPE SRP Plan") effective July 1, 2012. For an authoritative statement of the precise provisions of the CUPE SRP Plan, reference must be made to the official CUPE SRP Plan documents.

### Introduction

The Pension Plan for CUPE Employees of New Brunswick Hospitals ("Former CUPE Plan") became effective on January 1, 1975. The Former CUPE Plan was amended at various times throughout its history.

Effective July 1, 2012, the Former CUPE Plan is being converted to the CUPE SRP Plan. The administration of the CUPE SRP Plan continues to be the responsibility of an independent Board of Trustees.

### Eligibility and Participation

Each Member of the Former CUPE Plan joins the CUPE SRP Plan on July 1, 2012. Active members of the Pension Plan for Part-Time and Seasonal Employees of the Province of New Brunswick who are eligible to join the CUPE SRP Plan cease active membership in the said plan and are required to join the CUPE SRP Plan as of July 1, 2012.

Each employee who commences full-time employment on or after July 1, 2012 is required to join the Plan from the first day of the month coincident with or next following the date of employment.

### Required Contributions

Effective July 1, 2012, each member is required to contribute 9.0% of earnings. Participating employers contribute at least 10.1% of earnings from the same date.

Contribution rates are subject to change in accordance with triggers found under the Funding Policy for the CUPE SRP Plan.

### Normal Retirement

The normal retirement date is the first day of the month coincident with or next following the sixty-fifth birthday.

A member's annual normal retirement pension is equal to the sum of:

(A) In respect of service before January 1, 1997, the product of:

(i) the number of years of the member's pensionable service before January 1, 1997, and

(ii) 1.75% of the annual average of the best five (5) consecutive years of earnings at July 1, 2012, up to the annual average YMPE for the same five (5) years, plus 2% of the excess of the annual average of the best five (5) consecutive years of earnings at July 1, 2012 over the annual average YMPE for the same five (5) years;

*and*

(B) In respect of service from January 1, 1997 to July 1, 2012, the product of:

(i) the number of years of the member's pensionable service during that period, and

(ii) 1.4% of the annual average of the best five (5) consecutive years of earnings at July 1, 2012, up to the annual average YMPE for the same five (5) years, plus 2% of the excess of the annual average of the best five (5) consecutive years of earnings at July 1, 2012 over the annual average YMPE for the same five (5) years;

*and*

(C) In respect of service from July 1, 2012, the sum of (i) and (ii) for each calendar year (or portion thereof):

(i) 1.4% of the Member's annualized earnings for the calendar year, up to the YMPE for the calendar year; and

(ii) 2.0% of the portion of the Member's annualized earnings for the calendar year that are in excess of the YMPE for the calendar year.

Pensions accrued above are subject to cost-of-living adjustments, before and after retirement, every January 1st following July 1, 2012, subject to approval by the Board of Trustees, and in accordance with the trigger requirements found under the Funding Policy for the CUPE SRP Plan.

**Normal, Automatic and Optional Forms of Pension**

The normal form of pension is a pension payable in equal monthly instalments commencing on the member's pension commencement date and continuing thereafter during the lifetime of the member or for sixty months, whichever is the longer.

For a member with a spouse or common-law partner, the automatic form of pension is a joint and survivor pension which is payable in equal monthly instalments for the life of the member and payable to the member's spouse or common-law partner after the member's death at 60% of the amount paid to the member. Such automatic form of pension is actuarially equivalent to the normal form of pension.

Optional forms of pension are also available on an actuarially equivalent basis.

### Early Retirement and Bridge Benefit

Early retirement is permitted on or after age 55 if the member has at least 5 years of employment or 2 years of plan membership.

On early retirement, a bridge benefit of $18.00 per month per year of pensionable service is payable in addition to the lifetime pension found under "Normal Retirement". The bridge benefit is payable to age 65 or to the death of the member, if earlier.

The portions of the lifetime pension and bridge benefit accrued for service before July 1, 2012 are unreduced if the pension and bridge commence to be paid at age 60 or later. If such pension and bridge commence to be paid before age 60, they are each reduced by 1/4% per month (3% per year) that the pension and bridge commencement date precedes age 60.

The portions of the lifetime pension and bridge benefit accrued for service on and after July 1, 2012 are reduced by 5/12% per month (5% per year) that the pension and bridge commencement date precedes age 65.

### Benefits on Termination of Employment

If a member terminates employment prior to completing five years of continuous employment and prior to completing two years of plan membership, the member is entitled to a refund of the total amount of his/her contributions to the plan, with interest.

If a member terminates employment before age 55 but after completing at least five years of continuous employment or two years of plan membership, the member may elect to receive:

(i) a deferred lifetime pension payable from normal retirement date equal to the accrued pension to which the member is entitled as at his/her date of termination in accordance with the formula specified above for the normal retirement pension; or

(ii) to transfer the termination value of the deferred lifetime pension calculated in accordance with the PBA, to a registered retirement savings arrangement as allowed under the PBA.

Members electing a deferred lifetime pension will also be entitled to retire early in accordance with the "Early Retirement" section, and will also be eligible for a bridge benefit.

### Death Benefits

If a member dies prior to completing five years of continuous employment and prior to completing two years of plan membership, the benefit payable is a refund of the member's own contributions to the plan, with interest.

If the member dies after completing at least five years of continuous employment or two years of plan membership, but before pension commencement, the death benefit payable is the termination value of the deferred pension determined in accordance with the PBA.

In the event of death after pension commencement, the benefit payable is determined in accordance with the form of pension selected by the member at retirement.

# Appendix E – Plan Administrator Confirmation Certificate

With respect to the Initial Actuarial Valuation Report of the Shared Risk Plan for CUPE Employees of New Brunswick Hospitals as at July 1, 2012, I hereby confirm that to the best of my knowledge:

> the data regarding Plan members and beneficiaries provided to Morneau Shepell as at December 31, 2011 constitutes a complete and accurate description of the information contained in our files;

> copies of the official plan text and funding policy of the CUPE SRP Plan and all amendments to date were provided to Morneau Shepell; and

> there are no subsequent events or any extraordinary changes to the plan membership from December 31, 2011 to July 1, 2012, which would materially affect the results.

**The CUPE SRP Plan Board of Trustees**

_Signature_

Name: Renée Lifwest / David Matthews

Title: Chairperson / Vice-Chairperson

Date: 18 November 2013