



Actuarial Report on

**British Columbia Municipal
Pension Plan**

Related to Valuation
as at December 31, 2009

Vancouver, B. C.
September 22, 2010

Contents

Actuarial Report Highlights.....	3
Scope of the Valuation	3
Key Changes Included in the Valuation	3
Actuarial Methods and Assumptions.....	3
Actuarial Position.....	4
Main Reasons for deterioration in Actuarial Position	5
Member and Employer Contribution Rates - Basic Non-Indexed Benefits	5
I. Scope of the Valuation	8
II. Changes in Plan	9
III. Actuarial Methods and Assumptions.....	10
IV. Results of Actuarial Valuation	15
V. Subsequent Events	30
VI. Actuarial Opinion	30
VII. Acknowledgement.....	30
Appendix A Summary of Plan and Amendments as at December 31, 2009.....	31
Appendix B Actuarial Methods and Assumptions.....	46
Appendix C Active Member Data.....	66
Appendix D Inactive Member Data	70
Appendix E Pensioner Data.....	73
Appendix F Development of Required Contribution Rates	75
Appendix G Comparative Results on Fully Indexed Basis, and with Income Tax Limits	77
Schedule G1 – Statement of Actuarial Position	78
Schedule G2 – Develop Surplus (Unfunded Actuarial Liability) on Entry-Age Basis.....	79
Schedule G3 – Current and Required Contribution Rates.....	80
Schedule G4 – Accrued Liabilities and Funded Ratio.....	82

Actuarial Report Highlights

BC Municipal Pension Plan December 31, 2009

An actuarial valuation of the Municipal Pension Plan was completed as at December 31, 2009. Its purpose was to determine the financial or actuarial position of the Plan as at December 31, 2009 and to report on the adequacy of the member and employer contribution rates.

Scope of the Valuation

The results were examined primarily for basic, non-indexed benefits. The valuation does not examine projections of the Inflation Adjustment Account and its ability to meet future indexing requirements on the current "modified-pay-as-you-go" basis; however, to illustrate the long-term costs of indexing, the results were also examined for basic and indexed benefits as if indexed benefits are to be fully funded, in advance, as for basic benefits. Results are developed both ignoring, and considering, the impact of maximum benefits permitted under the *Income Tax Act ("ITA")*. The valuation does not include the Retirement Annuity Account, which provides for additional benefits on a money-purchase basis; nor does it consider the liabilities for post-retirement group benefits provided from contributions to the Basic and Inflation Adjustment Accounts-, but it does take into account the cost of these benefits.

Key Changes Included in the Valuation

- Introduction of Group 5 effective January 1, 2010. Benefits in this Group are at a rate of 1.63 / 2.33% of highest average salary below and above the YMPE. Membership is available only to those in public safety occupations, subject to collective bargaining.
- There were no benefit changes with material financial impact.

Actuarial Methods and Assumptions

The actuarial liabilities include the value of benefits accrued by members as at December 31, 2009 as well as future benefits expected to be earned by existing members. Asset values are based on smoothed market values (limited to not more than 110%, nor less than 90%, of market value), plus projected future contributions based on current contribution rates.

The contribution rates are tested on the entry-age funding method. Under this method a long-term, entry-age rate, which would fully fund benefits for future new entrants to the Plan, is calculated. The surplus (unfunded liability) is then recalculated assuming future contributions are made at the entry-age rate (instead of the current contribution rate) and this balance is then amortized over periods of 15 or 25 years. This method is designed to maintain costs at a level percentage of payroll over an extended period.

Key long-term assumptions used include:

- Annual Investment Return - 6.50% (6.75% previous valuation)
- Annual Salary Increase - 3.75% (4.0% previous valuation), plus seniority
- Annual Indexing - 0% for basic costs, 3.00% for indexed costs (0% and 3.25% previous valuation)

Actuarial Position

The valuation indicates a deterioration in the actuarial position¹ for the Basic Account, from a surplus of \$438 million as at December 31, 2006 to an unfunded liability of \$1,024 million as at December 31, 2009.

Basic Benefits Only: (\$000's)	2009	2006
Assets	32,501,912	26,347,926
Liabilities	33,526,101	25,909,552
Surplus (Unfunded Liability)	(1,024,189)	438,374

The supplementary valuation results are:

Basic and Indexed Benefits: (\$000's)	2009	2006
Assets	37,426,608	30,718,190
Liabilities	45,447,544	35,917,341
Surplus (Unfunded Liability)	(8,020,936)	(5,199,151)

When the *ITA* maximums are recognized, the above surplus (unfunded liability) figures change modestly, to:

Benefits Limited to <i>ITA</i> Maximums (\$000's)	2009	2006
Basic benefits only	(861,040)	551,243
Basic and indexed benefits	(7,797,231)	(5,040,947)

¹ The actuarial position is calculated assuming contributions continue at the current rates.

Main Reasons for deterioration in Actuarial Position

The main reasons for deterioration in the actuarial position are:

- Investment returns lower than assumed;
- Salary increases higher than assumed;
- Change in the investment return/salary increase assumptions; and
- Change in the mortality assumptions;

Offset by

- Contribution higher than the normal cost.

Member and Employer Contribution Rates - Basic Non-Indexed Benefits

Members contribute 7.49% of salaries, less 1.5% of salaries up to the YMPE, for basic non-indexed benefits; employers contribute at different rates for each group, less amounts allocated to Medical Services Plan premiums. The employer contributions are currently on a combination of a "doubling" basis and a level basis – for the doubling portion, the pre-2003 valuation contribution rates apply when a member is below age 50 (for Groups 1 and 4 members) or age 45 (Group 2 members); at ages above these, double the rates apply. The employers' 0.99% of salaries contribution rate increase that followed the 2003 valuation is on a level basis and does not "double".

We have calculated all of the theoretical long-term costs assuming the "doubling" feature is eliminated. The current employer rates for basic non-indexed benefits are equivalent to an average of 8.42% for Groups 1 and 4, and 13.09% for Group 2, or 8.71% overall (less 1.5% of salaries up to the YMPE), on a "non-doubling", i.e. level, basis.

The *Public Sector Pension Plans Act* (i.e. the legislation governing the joint trusteeship arrangement under which the Plan operates), and the Board's funding policy, requires that the contribution rates comply with the going-concern requirements of the provincial pension standards legislation (the *PBSA*).

The long-term cost rate for future service (i.e. the entry-age normal actuarial cost) is, on average, 1.20% of salaries lower than the combined member and employer contributions. Taking into account the entry-age normal cost rates (rather than the current contribution rates), the unfunded liability is \$2.4 billion. Amortizing this as required by the *PBSA* results in a minimum required level contribution of 17.81% (integrated at 1.5%

x 2¹). After the unfunded liability is fully funded, the contribution requirements will return to the long-term normal cost rate.

The minimum required contribution rate of 17.81% (integrated at 1.5% x 2) is 1.61% higher than the current equivalent level rate of 16.20% (integrated at 1.5% x 2). Under the transition arrangements of the Joint Trust Agreement, this increase in the required contribution rate must be shared between members and employers. After dividing and rounding, the increase is 0.81% of salaries each, for a total Basic contribution rate of 17.82% integrated.

The required contribution rate for Group 5 is 3.03% of salaries higher than the required contribution rate for Group 2. Per Board policy, this extra cost is to be shared equally between members and employers. Dividing 3.03% by two and rounding results in an additional contribution requirement for Group 5 of 1.52% of salaries each and a total additional Group 5 contribution of 3.04%.

The required contribution rates for the employers are less than the theoretical requirements for Group 1 and Group 4 members and more than the requirements for Group 2 members. The Board (and the Plan partners) may wish to rebalance the rates by group so as to bring them closer to the theoretical requirements. As part of this exercise they may also wish to consider replacing the current "doubling" rates by a non-doubling, level equivalent, and to equalize the Groups 1 and 4, i.e. male/female, rates.

In summary, the required contribution rates following this valuation are:

Required Contribution Rates			
	Basic ²	IAA	Total ²
Members - level			
- Groups 1, 2, 4	8.30	1.00	9.30
- Group 5	9.82	1.42	11.24
Employers			
- Group 1	6.70/11.60	1.00 ³	7.70/12.60
- Group 4	7.20/12.60	1.00 ³	8.20/13.60
- Group 2	10.30/18.80	1.00 ³	11.30/19.80
- Group 5	11.82/20.32	1.42 ³	13.24/21.74

¹ The term "integrated" means the rates are reduced by 1.5% of salary up to the YMPE for each of the members and employers.

² Integrated.

³ Including the 0.80% that is carved out for post retirement group benefits,

The revised contribution rates comply with the requirements of the provincial pension standards legislation (i.e. the *PBSA*).

With regard to the *Income Tax Act (ITA)*, there is a requirement that individual member contributions not exceed the lesser of 9% of salaries or \$1,000 plus 70% of the pension credit, though this condition may be waived by the Minister of Finance provided members do not contribute more than half the cost of benefits. For groups 1/2/4, the required contributions are acceptable under *ITA* rules; for Group 5 the member contributions exceed the maximum 9% under the *ITA* and accordingly, a waiver from the Minister of Finance is required.

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I. Scope of the Valuation

In accordance with Article 10 of the Joint Trust Agreement (the "JTA") and on your instructions, we have completed an actuarial valuation of the Basic Account of the Municipal Pension Plan (the "Plan") as at December 31, 2009 and are pleased to submit this report thereon. The primary purpose of this valuation is to determine the financial or actuarial position of the Basic Account as at December 31, 2009 and to report on the adequacy of the member and employer contribution rates.

The main valuation focuses on the Basic Account, and does not examine projections of the Inflation Adjustment Account ("IAA") and its ability to meet future indexing requirements on the current "modified-pay-as-you-go" basis; nor does it consider the liabilities for post-retirement group benefits provided from contributions to the IAA (the non-pension benefits carved out from employer contributions to the Basic Account have been allowed for on a modified pay-as-you-go basis by treating these as an on-going addition to the administration expenses). Furthermore, it ignores the limits imposed by the *Income Tax Act* ("ITA") on benefits provided from registered pension plans - such excess benefits are paid on a current cash basis through the Supplemental Benefits Account, which is maintained at a zero balance.

We have, however, performed supplementary valuations as follows:

- for basic and indexed benefits, on the assumption that indexed benefits are to be fully funded, in advance, as for basic benefits; and
- limiting benefits to those permitted under the *ITA*; this is done both for basic benefits only, and for basic plus indexed benefits.

II. Changes in Plan

The last valuation of the Plan, prepared as at December 31, 2006 and presented in our report dated October 29, 2007, determined the actuarial position of the Plan as amended to December 2006. Since then, a number of changes have been made to the Plan. The major changes affecting its financing include:

- Introduction of Group 5 effective January 1, 2010. Benefits in this group are at a rate of 1.63 / 2.33% of highest average salary below and above the YMPE. Membership is available only to those in public safety occupations, subject to collective bargaining.
- There were no benefit changes with material financial impact.

The changes, and the main provisions of the Plan, are described in Appendix A.

III. Actuarial Methods and Assumptions

1. Financing Method and Adequacy of Contribution Rates

(a) Funding Criteria

In any pension system, the rates of member and employer contribution should be such that the present value of all future contributions at those rates

- **equals** the present value of all future benefits
- **minus** the funds on hand.

There are numerous financing methods that will satisfy this equation. At one end is the pay-as-you-go or current disbursement method; under this method, contributions are limited to those necessary to finance current benefit disbursements, so that no assets are accumulated. At the other end is the achievement of full funding within a reasonable period; this results in the accumulation of substantial assets. The general criteria we use in establishing the appropriate level of contributions to a pension plan include:

1. **benefit security** - the probability of fulfilling the current benefit promises provided in the Plan depends on a mixture of political, economic and financial factors; but, whatever the probability, it is clear that benefit security would be enhanced with a larger accumulation of assets.
2. **stability of contributions** - the financing system should result in contribution rates that are relatively stable over an extended period of time.
3. **allocation of costs** - as far as is practicable, pension costs should be allocated to the generation that incurs them; there is no assurance that future generations will assume the burdens transferred to them by prior generations.

Effective March 27, 2007, the Board adopted a formal funding policy in which it established that its overall goal for basic benefits is the long term sustainability of the fund. The funding policy further identifies benefit security as the primary objective and stability of contributions as an important secondary objective. We have taken this into account in carrying out this valuation.

(b) Indexing Treatment

The current financing provisions are described in Appendix A. Member and employer contributions are at rates set out in the Plan rules. A larger part of these contributions is allocated to the Basic Account, and a smaller portion to the IAA. The future indexing of pensions is based on funds available in the IAA, which derives its funds primarily from these allocated contributions, from excess investment earnings on pensioner liabilities in the Basic Account, and from investment earnings within the IAA itself.

In a sense, the IAA operates akin to a defined contribution or money purchase liability in that the values of indexing benefits is limited to the assets in the IAA. Future cost-of-living adjustments are not guaranteed, but are granted at the discretion of the Board, subject to the availability of funds in the IAA. The indexing adjustment may not exceed the annual increase in the Canada Consumer Price Index (CPI) as at the previous September 30. If an indexing adjustment is provided, the mechanics are such that the capitalized value of the indexing granted is transferred from the IAA to Basic, each time indexing is granted: the amount of indexing is therefore limited by the monies available in the IAA. Thus, the system will limit indexing, if necessary, so that the granting of such supplements should not create (or increase) an unfunded liability, or reduce an actuarial surplus. Accordingly, we did not consider any future indexing in determining the financial status of the Basic Account.

However, we also show supplementary results on the assumption that the assets of, and future contributions to, the Basic Account and the IAA are combined, with benefits to be fully indexed and funded in advance, as for basic benefits.

(c) Retirement Annuity Account

In considering the fund assets for valuation purposes, we excluded the Retirement Annuity Account. This account holds member voluntary contributions as well as other special agreement balances with various employers that are accumulated on a money-purchase basis and could be converted at a member's retirement into additional amounts of pension. We excluded these assets from our valuation together with corresponding actuarial liabilities, on the presumption that any pension purchases for retiring employees from time to time will have a neutral effect on the Basic Account.

(d) Basic Account Valuation - Current Financing

We determined the financial status of the Plan for the Basic Account only (i.e. ignoring the indexing granted after December 31, 2009) under the current contribution arrangement. The methods used are described in Appendix B. The valuation of the liabilities includes benefits earned to the valuation date as well as benefits expected to be earned for future service by existing members. Asset values are taken at smoothed market values (limited to not more than 110%, nor less than 90%, of market value) for existing assets; projected future contributions in respect of the existing members, at the current rates, are also included.

(e) Funding Requirements

The approach taken in this valuation (set out in the following sections) has taken into account the requirements of the Board's funding policy, as well as the requirements of the Joint Trust Agreement.

(f) Normal Cost and Amortization of Surplus or Unfunded Liability

An entry-age funding approach is used. As a first step, contributions are calculated as the level, long term percentage rate required to finance the benefits of new entrants to the Plan over their working lifetimes, so

that their projected benefits are fully secured by equivalent assets by the time they retire (the "normal cost rate" or the "entry-age rate"). Thus, to the extent actuarial assumptions are realized, the addition of new entrants to the Plan should not generate unfunded liabilities.

Next, active members in the system must be considered. The valuation assets are re-determined, assuming future contributions for existing members are now made at the entry-age rate rather than at the current rate. The resulting net financial position may be either an actuarial surplus or an unfunded actuarial liability.

The residual surplus or unfunded liability is amortized over a specified period, e.g. 25 or 15 years; contributions, expressed as a percentage of payrolls, revert to the normal cost rate after the unfunded liability or surplus has been amortized.

(g) PBSA Requirements

The *Pension Benefits Standards Act* ("*PBSA*") imposes certain minimum funding requirements on pension plans registered in British Columbia. These include the determination of a plan's financial position on a solvency basis in addition to the going-concern basis, the amortization of unfunded actuarial liabilities over a maximum of 15 years from when they are established, and special rules regarding the treatment of surplus. While the Municipal Pension Plan is one of a number of British Columbia public sector plans that are exempt from these provisions, the current joint trusteeship arrangement requires that the Plan's financing comply with the *PBSA* requirements for a going-concern valuation. This report therefore complies with the going concern valuation requirements of the *PBSA*.

(h) Test Contribution Adequacy

Under the *PBSA* going-concern requirements, the employers and the members must contribute the full normal actuarial cost (e.g. the "entry-age rate" described in (f) above). In addition, unfunded liabilities must be amortized over not more than 15 years from when they are established.

Surpluses may be applied to reduce the contribution requirements but, with respect to the employer share of the requirements, only after a surplus margin of 5% of liabilities has been set aside, with the remaining surplus to be amortized over not less than 5 years.

Section 11.5(b) of the JTA requires the Board to use a 25 year period for the amortization of a surplus when considering its application towards benefit improvements without the prior approval of the Plan's partners, in order to provide a measure of contribution rate stability. Appendix B of the JTA also specifies a 25 year surplus amortization period when implementing the contribution and benefit changes contemplated during the transitional period.

The plan is still within the JTA transitional period. Accordingly, we have calculated theoretical contribution requirements as follows:

- Calculate the "normal cost rate" (i.e. the "entry-age rate") and the resulting surplus or unfunded liability using this rate.
- In the event of a surplus, amortize it over a 25 year period (subject, of course, to the resulting contribution being compatible with the PBSA minimum requirement), after first allowing for the cost of the transitional period benefit improvements. If the resulting amortization requirements allow the employer and member contribution rates to be rebalanced, then the benefits will be improved and contribution rates rebalanced.
- In the event of an unfunded liability, the amortization must comply with the PBSA requirements. Accordingly, we assume that additional contributions at the rates required to amortize previously identified unfunded liabilities will continue for the remainder of their 15 year amortization periods. Any remaining balance is amortized over 15 years from the current valuation date. If there has been a gain since the last valuation, i.e. the currently scheduled amortization rates are higher than required to amortize the unfunded liability over the balance of the previously established amortization periods, we apply the gain proportionally over the remaining periods. This results in a reduction in the required amortization rates, with the rates in effect for the previously established periods.

The JTA rules require any contribution rate increases to be shared equally by the Plan members and the employers. The JTA transitional arrangements require that contribution rates decreases are applied so as to equalize member and employer contribution rates at member rates in effect prior to the 2003 valuation (the employers will continue to pay the excess costs for Groups 2 and 5 members). Simultaneously, benefits must be improved in specified ways (see Appendix A). The transitional period is over once there is sufficient surplus to allow the transfer of \$500 million to the IAA and to set up a \$500 million rate stabilization reserve in the Basic Account. The intent is that once transition requirements are met, future costs will be shared equally between members and employers. Thus, we express the future cost requirements as a combined member-plus-employer amount.

(i) Eliminate "Doubling" Feature

The employer contribution rates are currently on a partly "doubling" basis. Under this method, the prescribed rate in effect prior to the contribution rate increase following the 2003 valuation applies when a member is below age 50 (for Groups 1 and 4 members) or age 45 (Groups 2 and 5 members); at ages above these, double the stated rates apply. Any increases in the employer rate following the 2003 valuation and subsequent valuations are on a level basis, i.e. the increase is the same regardless of member age. As described above, the JTA provides for rebalancing of member and employer contribution rates during a transition period, subject to the availability of surplus sufficient to provide for both the rebalancing of contribution rates and specified benefit improvements, at which time the employer "doubling" feature will be eliminated. Thus, we have calculated all of the theoretical long-term costs assuming the doubling feature is

removed. To facilitate a comparison with the current employer rates, we also show the current rates on an equivalent level, i.e. non-doubling, basis, based on the payroll distribution at the valuation date.

2. Actuarial Assumptions

The rates of investment return, salary increase, indexing, mortality, withdrawal, disability and retirement experienced by members of the fund were examined for the three year period ending on the valuation date, together with corresponding experience for earlier periods and with other assumptions affecting the valuation results. We discussed the implications of the assumptions, and changes to them, with the Board. The Board agreed that the economic assumptions should be adjusted by reducing the rate of investment return by 0.25% and reducing the rate of salary increase by 0.25%; we made some further adjustments to the demographic and other assumptions. The assumptions are described in Appendix B; the key economic assumptions are summarized below.

- Annual Investment Return - 6.50% (6.75% previous valuation)
- Annual Salary Increase - 3.75% (4.00% previous valuation), plus seniority
- Annual Indexing - 0% for basic costs, 3.0% for indexed costs (0% and 3.25% previous valuation)

Emerging experience differing from the assumptions will result in gains or losses which will be revealed in future valuations.

3. Membership Data

Data as of December 31, 2009 were prepared by the Pension Corporation. The data are described in detail in Appendix B and numerically summarized in Appendices C, D and E.

4. Benefits Excluded

We have allowed for the medical premium assistance carved out from employer contributions to the Basic Account (and paid through the Supplemental Benefits Account) on a modified pay-as-you-go basis by treating these as an on-going addition to the administration expenses. This implicitly assumes that the pay-as-you-go costs for this benefit will not change.

With respect to the indexed valuation results, we have reduced the employer contributions to the IAA to 0.2% of salaries on the assumption that 0.8% of salaries, the maximum set by the Board, will be allocated to post-retirement group benefits. We have not otherwise considered the liabilities and the financing of these benefits.

IV. Results of Actuarial Valuation

1. Basic Account - Actuarial Position on Current Contributions

Schedule 1 shows a statement of the actuarial position of the Plan as at December 31, 2009. This statement ignores liabilities for future indexed supplemental pensions granted after the valuation date, and their financing, and assumes that member and employer contribution rates for basic pensions will continue to be made at the current rates set out in the Plan rules.

SCHEDULE 1

Statement of Actuarial Position as at December 31, 2009

Present Plan - Basic Account - Non-Indexed Benefits

	(\$000's)	
Assets	2009	2006
Market Value of Basic Account	20,363,772	19,400,618
Asset Smoothing adjustment	1,050,888	(1,940,062)
Smoothed Value of Basic Account	21,414,660	17,460,556
Actuarial present values of		
▪ future member contributions at current rates	4,830,756	3,852,910
▪ future employer contributions at current rates	6,256,496	5,034,460
Total Assets	32,501,912	26,347,926
Liabilities		
Actuarial present values for		
▪ pensions being paid	8,900,555	6,821,651
▪ inactive members	1,590,832	1,222,712
▪ active members	22,579,260	17,500,068
▪ future expenses	455,454	365,121
Total Liabilities	33,526,101	25,909,552
Surplus (Unfunded Actuarial Liability)	(1,024,189)	438,374

2. Change in Actuarial Position

The statement of actuarial position included in Schedule 1 indicates a change from a surplus of \$438 million as at December 31, 2006 to an unfunded liability of \$1,024 million as at December 31, 2009. The deterioration of \$1,462 million is the net result of a number of items, the most significant negative items being the change in the investment return/salary increase assumptions, the change in the demographic assumptions and lower than assumed investment return. The negative items were offset somewhat by the contribution higher than the normal cost:

	Approximate effect on surplus (\$ millions)
1. Surplus as at December 2006	438
2. Interest on surplus	+ 95
3. Contributions in excess of normal cost	+ 383
4. Smoothed investment returns less than assumed	- 580
5. Actual salary and YMPE increases to December 31, 2009 different than assumed ¹	- 186
6. Changes in valuation assumptions and method	- 1,087
7. Other factors (a net loss) including changes in plan membership, and other differences between actuarial assumptions and actual experience during the inter-valuation period	- 87
8. Surplus (unfunded Actuarial Liability) at December 2009	(1,024)

The (\$1,087) million figure in item (6) is the net result of the following:

Assumption and method changes	(\$ millions)
▪ investment return/salary increase	- 848
▪ mortality assumptions	- 260
▪ disability assumptions	- 44
▪ retirement rates	+ 91
▪ withdrawal rates	- 18
▪ expenses and other miscellaneous	- 8
	- 1,087

The assumption changes are described in Appendix B.

¹ Three effects are at play here. Salary increases since the last valuation were higher than assumed, leading to losses. Increases in the YMPE were lower than expected, as a result relatively more of the pension was at the 2% level than at the 1.3% level, causing higher than expected liabilities and losses. The five year average salaries of members close to retirement – calculated using the assumed salary increase rate – prove to have been too low, resulting in losses as members retire.

3. Adequacy of Contribution Rates – Groups 1, 2, 4

As discussed previously in Section III, the required contribution rate consists of the normal cost plus an adjustment to amortize any surplus or unfunded liability. These components of the required contributions are discussed in more detail below.

(a) Normal Cost Rate

The average current service contribution, including contributions by the members, required to finance the basic pensions of new entrants (i.e. the normal actuarial cost) has decreased from 15.02% of salaries as at December 31, 2006 to 15.00% of salaries as at December 31, 2009. The decrease in rates is developed in Appendix F and is the net result of a number of items:

- change in the new entrant demographic profiles (cost decrease of 0.48%), offset by
- change in the investment return/salary increase assumption (cost increase of 0.35%); and
- other assumption changes and miscellaneous items (net increase of 0.11%).

(b) Amortization

As a first step in the development of the amortization requirement, the future contribution rates are assumed to be set at the level entry-age normal cost rates, i.e. at 14.81% of payroll for Groups 1 and 4, and 17.86% of payroll for Group 2 (instead of at the current 7.49% rate for members and the "doubling" rates for employers that were used in Schedule 1). The resulting surplus (unfunded liability) will differ from that shown in Schedule 1, and it is this adjusted balance that must be amortized to obtain the adjustment to the normal cost. The adjustments to the contributions and surplus (unfunded liability) figures in Schedule 1 are summarized in Schedule 2.

SCHEDULE 2 - Develop Surplus (Unfunded Actuarial Liability) on Entry-Age Basis¹

	(\$000's)	
	2009	2006
(a) Surplus (unfunded liability) on current contribution basis	(1,024,189)	438,374
(b) Present value of future contributions at:		
(i) entry-age rates	9,707,806	7,750,453
(ii) current rates	11,087,252	8,887,370
(iii) = (i) - (ii)	(1,379,446)	(1,136,917)
(c) Surplus (unfunded liability) on entry-age basis ((a) +(b)(iii))	(2,403,635)	(698,543)
(d) Present value of existing amortization requirement		
(i) 1.06% to 2018	675,242	698,543
(e) Balance of surplus (unfunded liability) to be amortized over 15 years = (c) + (d)	(1,728,393)	0

Thus, the 2009 amortization is based on an unfunded liability of \$2,403,635,000, whereas the 2006 amortization was based on an unfunded liability of \$698,543,000. The current amortization requirement of 1.06% of pay, set following the 2006 valuation and payable for 15 years from December 31, 2003, has a present value of \$675,242,000. Thus there is a balance of \$1,728,393,000 remaining to be amortized.

(c) PBSA Minimum Rate

Since the Plan has an unfunded liability, the *PBSA* funding requirements must be applied in calculating the required contribution rate. The *PBSA* requires that any previously established unfunded liabilities continue to be amortized over the remaining balance of their 15 year terms at the rate originally calculated when the unfunded liability was established. Any unfunded liability remaining after the existing amortization requirements are taken into account must be amortized over 15 years. If there is a surplus after the existing amortization requirements are taken into account, the existing amortization rates may be reduced, such that the unfunded liability is amortized over the balance of the previously established amortization terms.

The present value of the remaining amortization requirements identified in 2006, payable at a rate of 1.06% of salaries until 2018, is \$675,242,000. After taking this into account, there is a remaining unfunded liability balance of \$1,728,393,000. Amortizing this over 15 years results in an additional amortization requirement of 1.75% of salaries. Adding these two amortization requirements results in a total amortization requirement of 2.81% of salaries.

The minimum *PBSA* contribution requirement is therefore equal to the normal cost of 15.00% plus the amortization requirement of 2.81% for a total contribution rate of 17.81% of salaries (integrated).

¹ The 2006 and prior valuation reports referred to this schedule as "Schedule 3"

The current contribution rates, the contribution rates for current service (on an entry-age basis, i.e. the normal actuarial cost), the payments required to amortize the resulting surplus (unfunded liability), and the contribution rate required by the PBSA are summarized in Schedule 3. Each of these items is discussed in more detail in the ensuing pages. Any increase in contribution rates will be shared equally between members and employers. Any surplus will first be applied as set out in the transitional arrangements of the Joint Trust Agreement. After transition any further decreases will also be shared equally.

SCHEDULE 3 - Current and Required Contribution Rates for Basic Non-Indexed Benefits¹

	Based on valuation results as at December 31,	
Current contribution rates	2009 (%)	2006 (%)
Member ²	7.49	7.49
Employer - Groups 1 & 4/Group 2/average ^{2,3}	8.42/13.09/8.71	8.36/13.06/8.65
Combined member/employer ^{2,3}	15.91/20.58/16.20	15.85/20.55/16.14
Required contribution rates ⁴		
Entry-age normal cost rate - Groups 1 & 4/Group 2/average²	14.81/17.86/15.00	14.86/17.40/15.02
Amortization of unfunded actuarial liability (surplus) ⁵ - all groups		
- 25 year amortization	1.65	n/a
- 15 year amortization	2.44	n/a
- PBSA Amortization	2.81	1.06
Total required contribution rates - Groups 1 & 4/Group 2/average²		
- 25 year amortization	16.46/19.51/16.65	n/a
- 15 year amortization	17.25/20.30/17.44	n/a
- PBSA minimum rate⁴	17.62/20.67/17.81	15.92/18.46/16.08

The above results indicate a total required contribution rate of 17.81% of salaries, compared to the current rate of 16.20% of salaries, i.e. the current rate must be increased by 1.61% of salaries over its current level.

¹ The 2006 and earlier valuation reports referred to this schedule as "Schedule 2".
² Integrated and excluding contributions required for indexed supplementary pensions.
³ The current rates are shown on an equivalent "non-doubling" basis, calculated using the current payrolls (at the respective valuation dates). The actual "doubling" rates are 5.89/10.79% - Group 1, 6.39/11.79% - Group 4, 9.49/17.99% - Group 2.
⁴ Total member plus employer.
⁵ Based on the entry-age unfunded liability developed in Schedule 2 above, and not on the unfunded liability indicated in Schedule 1.

4. Adequacy of Contribution Rates – Group 5

As at the valuation date there are no members in Group 5. The adequacy of the Group 5 contribution rates is assessed using the Group 2 data profile, but taking into account the higher Group 5 benefit accrual rate. This is the same approach that was previously used in setting the Group 5 contribution rates. The additional cost of Group 5 is summarized in the table below.

Additional Required Basic Contributions for Group 5

	2009			2006
	Theoretical Cost		Additional Cost of Group 5 [(2) – (1)]	Additional Cost of Group 5
	Group 2 Benefits (1)	Group 5 Benefits (2)		
Accrual rate	1.3/2%	1.63/2.33%		
EANC ¹	17.86	20.66	2.80	2.69
Amortization	2.81	2.81	0.00	0.00
2.33% benefit amortization	0.00	0.23	0.23	0.24
Total ¹	20.67	23.70	3.03	2.93

As per Board policy, the additional costs of Group 5 are to be shared equally between the members and the employers. After dividing by two and rounding, the Group 5 contribution rates are 1.52% of pay higher each for members and employers than the corresponding rates for Group 2 participation, for a total additional contribution of 3.04%.

Based on the 2006 valuation, the additional basic cost of Group 5 had been calculated as 1.47% of pay each for a total after rounding of 2.94%. The increase in the cost is largely due to the changes in the economic and mortality assumptions.

The additional contribution to the IAA for Group 5 has previously been set at 0.84% of pay, or 0.42% each for members and employers. This rate is fixed and is not revised as part of this valuation. Thus, the total IAA contribution for Group 5 members is 1.42%. After allowing for the amount carved out of the employer IAA rate for post retirement group benefits, the net employer contribution to the IAA for Group 5 is 0.62%.

¹ Integrated.

The required contribution rate for Group 5 is the Group 2 required rate plus the additional cost of the increased benefit. Thus, in summary, the Group 5 required rates are as set out below:

Required Basic Contributions for Group 5

	Basic¹	IAA	Total¹
Member	9.82	1.42	11.24
Employer	11.82/20.32	0.62 ²	12.44/20.94

¹ Integrated.

² Net of 0.8% of salaries assumed to be allocated to the post-retirement group benefits.

5. Revised Contribution Rates

Section 10.3 of the JTA requires that the Plan's financing comply with the *PBSA* requirements for a going-concern valuation. It also indicates that a contribution rate increase in the Basic Account must be shared equally between members and employers.

As discussed above, current rates need to be increased by 1.61% of salaries. After dividing by two and rounding, the required increase is 0.81% of salaries each for the members and the employers, or a total increase of 1.62%.

The IAA contribution rates are not revised as a result of the valuation and therefore continue unchanged at their current level.

The following table summarizes the current and required contribution rates.

Current and Required Contribution Rates (%)

	Current			Required		
	Basic	IAA	Total	Basic	IAA	Total
Members - level¹						
- Groups 1, 2, 4	7.49	1.00	8.49	8.30	1.00	9.30
- Group 5	8.96	1.42	10.38	9.82	1.42	11.24
Employers						
- Group 1	5.89/10.79	0.20	6.09/10.99	6.70/11.60	0.20	6.90/11.80
- Group 4	6.39/11.79	0.20	6.59/11.99	7.20/12.60	0.20	7.40/12.80
- Group 2	9.49/17.99	0.20	9.69/18.19	10.30/18.80	0.20	10.50/19.00
- Group 5	10.96/19.46	0.62	11.58/20.08	11.82/20.32	0.62	12.44/20.94

The foregoing table shows the adjustments that are needed to current rates. While these adjustments produce the required contributions on average, there are significant differences between these contribution rates and the underlying theoretical costs by employer group. These are discussed further in the following paragraphs.

The table below shows the current level (i.e. non-doubling) equivalent costs paid for Groups 1, 4 and 2, and the average across the three groups, as well as each group's share of the normal cost and amortization.

¹ Integrated.

These rates are "integrated", i.e. each of the member and employer share is reduced by 1.5% of salary up to the YMPE.

Theoretical Imbalance in Employer Contribution Rates based on Level (i.e. Non-doubling) Equivalents

	Groups 1 and 4			Group 2 %	Groups 1/4/2 Average %
	Group 1 %	Group 4 %	Combined %		
1. Theoretical rates = total normal cost plus amortization of unfunded liability	17.26	17.79	17.62	20.67	17.81
2. Rounding adjustment in rate increase	0.01	0.01	0.01	0.01	0.01
3. Rounded theoretical rates = (1) + (2)	17.27	17.80	17.63	20.68	17.82
4. less: Minimum required Members' rate	8.30	8.30	8.30	8.30	8.30
5. Employers' share of rounded theoretical rates = (3) – (4)	8.97	9.50	9.33	12.38	9.52
6. Minimum required employer rate	8.85	9.38	9.23	13.90	9.52
7. Employer imbalance by group = (6) - (5)	(0.12)	(0.12)	(0.10)	1.52	0.00

The above table indicates that the employer rates for Groups 1/4 and 2 are "out of balance" in the sense that Group 1/4 is currently paying less than its theoretical cost, while Group 2 is paying more. For example, line (7) of the table indicates that while the overall average employer rate needs no adjustment, the rate for Group 1/4 is 0.10% lower than the theoretically required rate taking into account that actual costs for Group 1/4, whereas the rate for Group 2 is 1.52% higher than the theoretically required rate for Group 2. Group 5 is excluded from this analysis, but as the rates for Group 5 are set by reference to the Group 2 rates, the imbalance shown for Group 2 applies equally to Group 5.

The Board may wish to rebalance the employer rates by group so as to bring the resulting rates closer to the theoretical requirements. This may require the consent of the Plan partners. As part of this exercise the Board (and the Plan partners) may also wish to consider replacing the current "doubling" rates by a non-doubling, level equivalent, and also to equalize the Groups 1 and 4, i.e. male/female, rates.

We would be pleased to examine alternatives with the Board.

6. Transitional Adjustments and Other Plan Changes

Since the valuation does not show a surplus on the funding basis (using entry-age normal contribution rates), the Board may not consider any of the other contribution or benefit changes contemplated during the transitional funding period under the JTA.

7. Accrued Benefits - Funded Ratio

Another index of funding some readers of the report may want to examine is the funded ratio. The funded ratio is calculated by dividing the Basic Account assets by the total liability for benefits accrued in respect of service to the valuation date. The asset/liability comparison is analogous to that in Schedule 1, except that contributions and benefits in respect of future service for existing members are excluded from the comparison. The results are shown below.

SCHEDULE 4 - Accrued Benefits - Funded Ratio at December 31, 2009¹

Present Plan - Basic Account - Non-Indexed Benefits

	(\$000's)	
	2009	2006
Fund (Basic Account): smoothed value of assets	21,414,660	17,460,556
Accrued Liabilities		
- for pensions being paid	8,900,555	6,821,651
- for inactive members	1,590,832	1,222,712
- for active members	11,893,499	9,199,393
Total Accrued Liabilities	22,384,886	17,243,756
Surplus (Unfunded Liability): for accrued service only	(970,226)	216,800
Funded Ratio: Fund ÷ Total accrued liabilities	95.7%	101.3%

The above schedule indicates that the funded ratio for accrued benefits has decreased from about 101.3% to 95.7%. This is largely for reasons similar to the items in the analysis on page 16.

¹ The 2006 and earlier valuation reports referred to this schedule as "Schedule 5".

8. Supplementary Valuations

Results analogous to those in Schedules 1 through 4 are shown in Appendix G, on the following bases:

- for basic and indexed benefits combined, on the assumption that indexed benefits are to be fully funded, in advance, as for basic benefits; and
- limiting benefits to those permitted under the Income Tax Act; this is done both for:
 - basic benefits only; and for
 - basic plus indexed benefits.

The adjustments to the assumptions are discussed in Appendix B. In the indexing calculations, we reduced the employer contributions to the IAA from 1% to 0.2% on the assumption that 0.8% of salaries would be allocated to the post-retirement group benefits.

The key results are summarized below:

(a) Indexed Benefits (no tax limits)

The 2009 unfunded liability of \$1,024,189,000 previously shown on the current contribution basis in Schedule 1 changes to an unfunded liability of \$8,020,936,000 when indexing is fully included:

	Basic Only	Basic + Indexed
<i>Funded position</i>	(\$000's)	(\$000's)
Assets on current contribution basis	32,501,912	37,426,608
Liabilities	33,526,101	45,447,544
Surplus (Unfunded Liability) on current contribution basis	(1,024,189)	(8,020,936)
Surplus (Unfunded Liability) on entry age contribution basis	(2,403,635)	(6,555,223)
<i>Contribution Rates (Integrated)</i>	%	%
Member - current	7.49	8.49
Employer - current	8.71	8.91
Total - current	16.20	17.40
Entry-age normal cost	15.00	19.94
Amortization ¹	2.81	6.65
Total - entry-age	17.81	26.59

¹ Basic amortization is as required by the PBSA, Basic + Indexed amortization is over 15 years.

If assets and liabilities are restricted to accrued service only, i.e. analogous to Schedule 4 earlier, the 2009 surplus (unfunded liability) figures change as follows:

	(\$000's)	
	Basic Only	Basic + Indexed
Assets	21,414,660	25,430,893
Liabilities	22,384,886	30,238,446
Surplus (Unfunded Liability)	(970,226)	(4,807,553)
Funded Ratio	95.7%	84.1%

(b) Benefits Limited to ITA Maximums

When the income tax limits on benefits are recognized, the above 2009 surplus (unfunded liability) figures change somewhat.

	Basic Only	Basic + Indexed
Surplus (Unfunded Liability)	(\$000's)	(\$000's)
Current Contribution Basis (i.e. Accrued + Future Service)	(861,040)	(7,797,231)
Entry Age Basis	(2,290,612)	(6,403,206)
Accrued Service Only	(866,406)	(4,665,484)
Contribution Rate	%	%
Entry Age Basis	14.93	19.85
Amortization ¹	2.65	6.50
Basic/Basic + Indexed Rate	17.58	26.35

¹ Basic amortization is as required by the PBSA, Basic + Indexed amortization is over 15 years.

9. Test Maximum Surplus and Contributions for Tax Purposes

Section 147.2(2) of the *Income Tax Act* limits employer contributions that may be made to a plan if there is a surplus and it exceeds a certain amount - the plan becomes revocable if contributions are made when such surplus exists. Since the plan has an unfunded liability on the entry-age basis, this restriction does not apply.

The tax rules also require that employer contributions not exceed the normal cost rate plus amounts necessary to amortize an unfunded liability.

Subsection (c) of Section 147.2(2) of the *Income Tax Act* also provides that the benefits taken into account for the purposes of a contribution recommendation "may include anticipated cost-of-living and similar adjustments where the terms of a pension plan do not require that those adjustments be made but it is reasonable to expect that they will be made".

Indexing at full CPI has been provided since January 1, 1982 under the present Plan terms, and for many years before that under earlier Plan provisions. As discussed earlier, indexing is currently financed on a mixture of a pay-as-you-go basis (from a matching 1% member/employer contribution for active members, less employer contributions allocated to post-retirement group benefits), an excess investment return basis (investment return in excess of the valuation assumption is transferred each year from Basic to IAA in respect of pensioner liabilities), and a "terminally-funded" basis (each year the full capitalized cost of any indexing granted is transferred from IAA to Basic). Thus, it is appropriate for purposes of testing the *ITA* 147.2(2) limits to recognize, in advance, the future indexing of pensions for the present Plan membership. On this basis, the valuation results on the fully indexed basis, recognizing the income tax limits on benefits, would apply. The relevant results are shown on the next page:

Surplus (Unfunded Liability) on fully indexed basis:	(\$000's)
▪ current contribution basis	(7,797,231)
▪ entry-age basis	(6,403,206)
Contribution Rates (integrated)	
▪ Current Member Rate	8.49%
▪ Current Employer Rate	8.91% ¹
▪ Total current Rate	17.40%¹
▪ Combined member/employer fully indexed entry-age normal cost	19.85%
▪ 15 year amortization of fully indexed entry-age unfunded liability	6.50%
▪ Fully indexed rate with 15 year amortization	26.35%
Combined member/employer (recommended)	19.02%²

Thus, on the premise that it is appropriate for the plan to recognize future indexing for the purposes of testing the *ITA* maximum surplus and contribution limits, there is a significant unfunded liability and the current and recommended contribution rates are lower than the fully indexed normal cost rate. In other words, without even considering any amortization of the unfunded liability, the required rates are acceptable under the *ITA* and contributions may be increased to 19.02%.

Under the *ITA*, there is a requirement that individual member contributions may not exceed the lesser of:

- (a) 9% of salary, or
- (b) \$1,000 plus 70% of the member's pension credit

although these conditions may be waived by the Minister of Finance provided that the contributions are "determined in a manner acceptable to the Minister and it is reasonable to expect that, on a long-term basis, the aggregate of the regular current service contributions made under the provision by all members will not exceed ½ of the amount that is required to fund the aggregate benefits in respect of which those contributions are made."

¹ Net of contributions allocated to post-retirement group benefits.

² The 19.02% recommended rate consists of 17.82% Basic, plus 1% member IAA, plus 0.2% employer IAA.

In theory, at a 9.30% integrated rate it is possible for individual contributions to Groups 1, 2, 4 to exceed the 9% threshold (the 9.30% rate is payable on earnings above the YMPE; a lower 7.80% rate is payable on earnings up to the YMPE). In practice, salaries must exceed about \$236,000 for this to occur. In addition, the "\$1,000 plus 70% of pension credit" limit applies at a much lower salary than this (about \$183,000) and the Plan is already administered taking this limit into account - we are advised that member contributions allocated to the registered pension benefits are limited to the tax-deductible threshold; excess contributions, if any, are treated as non-deductible for tax purposes and are allocated to the excess non-registered pension benefits. Thus, notwithstanding the integrated rate of 9.30%, the ITA thresholds would not be violated for members of Groups 1, 2, or 4 and hence no waiver is required.

The member contributions for Group 5 exceed 9% of pay for all members (11.24% integrated) and thus a waiver is required for these contributions. The corresponding Group 5 employer contribution rate of 16.04% (Basic contribution = 15.42% plus net IAA contribution of 0.62%) is higher than the current member rate, and, as per the Joint Trust Agreement, the employer contributions to Group 5 can never be less than the member contributions. It is therefore reasonable to conclude that the requirement that the member contributions will not exceed $\frac{1}{2}$ the amount required to fund the aggregate benefits is met.

V. Subsequent Events

To the best of our knowledge, there are no material subsequent events that would affect the results and recommendations of this valuation.

VI. Actuarial Opinion

In our opinion,

- (a) the data on which the valuation is based are sufficient and reliable for purposes of the valuation,
- (b) the assumptions used are, in aggregate, appropriate for purposes of the valuation, and
- (c) the methods employed are appropriate for the purposes of the valuation.

This report has been prepared and our opinions given in accordance with accepted actuarial practice. Pursuant to the JTA and regulatory requirements, the next valuation should be completed no later than as of December 31, 2012.

VII. Acknowledgement

We gratefully acknowledge the generous assistance of the staff of the Pension Corporation in the preparation of the data and other items required for this report.

Respectfully submitted,



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September 22, 2010

Appendix A

Summary of Plan and Amendments as at December 31, 2009

Changes to the Plan

The previous valuation was based on the provisions of the Municipal Pension Plan (Plan) as at December 31, 2006. Since then, the Plan has been amended a number of times. The main changes are summarized below.

Reinstatements

Effective April 1, 2007, section 24 was repealed. Service accrued in another BC public sector pension plan can no longer be reinstated under the Interplan Pension Transfer Agreement.

Effective April 1, 2007, sections 24.1 and 20(5) of the Plan Rules were repealed. Service transferred to another BC public sector pension plan prior to July 1, 1973, can no longer be reinstated as service in the plan if the plan member subsequently becomes an active plan member again.

Post-retirement Group Benefits

Effective August 1, 2007, the Post Retirement Group Benefit Rules were amended to reflect the provision of subsidies for extended health and dental coverage to plan members only.

Effective February 1, 2008, the Post-Retirement Group Benefit Rules were amended to establish a maximum subsidy in respect of a retired plan member's coverage under the EHB or dental plan. The amount of the subsidy is to be periodically reviewed by the Board.

Employer Eligibility

Effective November 15, 2007, the Plan Rules were amended to embed employer eligibility provisions, duties and rights in the Plan Rules.

Effective September 1, 2008, the Plan Rules were amended to clarify the continued participation of five employers previously designated as university colleges under the *College and Institutes Act*, which are now designated as special purpose teaching universities under the *University Act*, pursuant to the *University Amendment Act 2008*.

Employer Contributions

Approved November 15, 2007, retroactive to November 16, 2006, the Plan Rules were amended to restore sub-sections 6(3)-(5). These provisions allow for the approval of non-special agreement type arrangements.

This section had been repealed when Part 15 of the Plan Rules was added to house all references to special agreements (SA).

Special Agreements

Effective November 15, 2007, the Plan Rules were amended to clarify that for SAs approved on or after January 1, 2007, the benefit entitlement would be a lump sum payment of the member's SA account balance transferred to a locked-in retirement vehicle.

Employee Eligibility

Effective March 27, 2008, the definition of "employee" was amended to restrict participation in the Plan for employees who are connected or related to their employer as defined under the Income Tax Regulations of the *Income Tax Act* (Canada).

Latest Retirement Age

Effective March 27, 2008, the Plan Rules were amended to clarify that the definition of "latest retirement age" is, in respect of a member, November 30th of the calendar year in which the member attains the age prescribed under the Income Tax Regulations of the *Income Tax Act* (Canada).

Purchase of Service

Effective June 25, 2008, the Plan Rules were amended to clarify that a leave of absence or a non-contributory purchase must be applied for before the member terminates employment with the employer with whom the service occurred.

Effective June 25, 2008, the Plan Rules were amended to clarify that if a member transfers from one employer to another with a break in service of less than one month, and is within the 5 year purchase window, the member is not considered terminated for arrears purchase purposes.

Effective June 25, 2008, the Plan Rules were amended to clarify that if a member applies to purchase service (enrolment arrears, leaves of absence, reinstatements, or non-contributory periods) and does not make the required payment by the payment due date on their purchase statement, the member can only reapply to make the purchase if they are still eligible under the Plan Rules.

Effective November 18, 2009, the Plan Rules were amended to include all *Employment Standards Act* leave types.

Disability Pensions

Effective July 1, 2008, the Plan Rules were amended to re-define the term "totally and permanently disabled" and to clarify that additional service used in calculating the disability pension would be prorated for less than full-time employees.

Cost of Living Benefits

Effective March 25, 2009, the Plan Rules were amended to clarify that the authority to grant cost of living benefits rests with the Municipal Pension Board of Trustees (Board), not the plan administrative agent.

Disability and Retirement Pensions

Effective November 18, 2009, the Plan Rules were amended to clarify that the Board has discretionary authority in granting disability benefits and retroactive retirement benefits.

Introduction of Group 5

Effective January 1, 2010, the Plan Rules were amended to introduce Group 5 – a higher benefit accrual group for police officers and firefighters. Membership is available only to those in public safety occupations, subject to collective bargaining.

The Plan

The main provisions of the Plan as at December 31, 2009 are summarized below. Except as otherwise noted, the section references are to the Plan Rules. The valuation is based on these provisions.

Employer and Employee Eligibility

The Plan applies to employers described under section 2 of the Plan Rules: a municipality, a body designated under the *College and Institute Act*, teaching universities as designated under the *University Act*, and any other body designated as an employer on terms and conditions of eligibility specified by the Board or former Board. The Board retains the authority to set additional terms and conditions limiting or expanding the employee enrolment requirements applying to the individual employer. In general, Plan employers include municipalities, regional districts, health services organizations, school districts and regional colleges.

Participation is compulsory for all regular, full-time employees and for other employees who have been working in a continuous full-time capacity with the same employer for 12 months. Enrolment is optional for less than full-time employees who have completed at least two years of continuous employment and have earned at least 35% of the Year's Maximum Pensionable Earnings (YMPE) under the Canada Pension Plan in each of two consecutive calendar years. Employees can be enrolled earlier than the Plan requires if the employer passes a resolution or if the terms of a collective bargaining agreement provide for it. Where an active member transfers from the service of one employer to another employer, with a break in service of less than one month, contributions must continue without interruption. [Section 3]

Employees are classified as follows:

- (a) Group 1 if male, other than a police officer or firefighter, whose normal retirement age is 65;
- (b) Group 2 if a police officer or firefighter, whose normal retirement age is 60;

- (c) Group 3 if a female whose last contribution to the fund prior to April 1, 1971 was made as a Group 3 member and who, with the approval of her employer, had elected to remain in Group 3 before November 30, 1971, whose normal retirement age is 60;
- (d) Group 4 if a female, other than a Group 2 or 3 member, whose normal retirement age is 65; or
- (e) Group 5 if a police officer or firefighter, who has a higher benefit accrual rate and whose normal retirement age is 60. [Section 96(1)].

Member Contributions

Section 5 defines the following contributions (effective July 1, 2005), which are deducted from a member's salary during a calendar year.

For members in Groups 1, 2, 3, and 4:

- (a) 5.99% of that part of the member's salary that does not exceed the YMPE (paid into the Basic Account);
- (b) 7.49% of the member's salary which is in excess of the YMPE (paid into the Basic Account); and
- (c) 1% of the member's entire salary (paid into the Inflation Adjustment Account).

For members in Group 5 (effective January 1, 2010):

- (a) 7.46% of that part of the member's salary that does not exceed the YMPE (paid into the Basic Account);
- (b) 8.96% of the member's salary which is in excess of the YMPE (paid into the Basic Account); and
- (c) 1.42% of the member's entire salary (paid into the Inflation Adjustment Account).

Member contributions cease after 35 years of pensionable service have been accrued, with the exception of contributions made under certain SAs entered into under Part 15.

Employer Contributions

Section 6 requires every employer to contribute the following amounts during a calendar year:

- (a) for Group 1 members who have not reached age 50, 4.39% of that part of the cumulative salary that does not exceed the YMPE, and 5.89% of that part of the cumulative salary which is in excess of the YMPE; for Group 1 members who have reached age 50, 9.29% of that part of the cumulative salary that does not exceed the YMPE, and 10.79% of that part of the cumulative salary in excess of the YMPE (paid into the Basic Account);
- (b) for Group 2 members who have not reached age 45, 7.99% of that part of the cumulative salary that does not exceed the YMPE, and 9.49% of that part of the cumulative salary which is in excess of the

- YMPE; for Group 2 members who have reached age 45, 16.49% of that part of the cumulative salary that does not exceed the YMPE, and 17.99% of that part of the cumulative salary which is in excess of the YMPE (paid into the Basic Account);
- (c) for Group 3 members who have not reached age 45, 5.09% of that part of the cumulative salary that does not exceed the YMPE, and 6.59% of that part of the cumulative salary which is in excess of the YMPE; for Group 3 members who have reached age 45, 10.69% of that part of the cumulative salary that does not exceed the YMPE, and 12.19% of that part of the cumulative salary which is in excess of the YMPE (paid into the Basic Account);
- (d) for Group 4 members who have not reached age 50, 4.89% of that part of the cumulative salary that does not exceed the YMPE, and 6.39% of that part of the cumulative salary which is in excess of the YMPE; for Group 4 members who have reached age 50, 10.29% of that part of the cumulative salary which does not exceed the YMPE, and 11.79% of that part of the cumulative salary which is in excess of the YMPE (paid into the Basic Account);
- (e) for Group 5 members who have not reached age 45, 9.46% of that part of the cumulative salary that does not exceed the YMPE, and 10.96% of that part of the cumulative salary which is in excess of the YMPE; for Group 5 members who have reached age 45, 17.96% of that part of the cumulative salary which does not exceed the YMPE, and 19.46% of that part of the cumulative salary which is in excess of the YMPE (paid into the Basic Account);
- (f) 1% of the member's salary (paid into the Inflation Adjustment Account) for Groups 1, 2, 3 and 4 members; and
- (g) 1.42% of the member's salary (paid into the Inflation Adjustment Account) for Group 5 members.

These contributions are reduced by amounts allocated to post-retirement Group benefits [Section 75].

Employer contributions cease in respect of a member's salary after the member has accrued 35 years of pensionable service, with the exception of contributions made under certain SAs entered into under Part 15.

Termination Benefits

Sections 42(1)(a) and 44 provide for the payment of the member contributions plus interest should the member terminate employment under age 60 (55) with less than 2 years of contributory service. In accordance with section 96, for periods on and after January 1, 1993, interest credits are based on the average yields of 5 year personal fixed term chartered bank deposit rates, published in the Bank of Canada Review as CANSIM Series V122515.

Under sections 42(1) (b) and 45, a terminating member is entitled to a deferred pension equal to the full normal pension accrued to the date of termination. The date the benefit is payable depends on the service accruals to termination – see below "Eligibility Conditions for Pension" section.

Sections 42(1)(c) and 46 provide for the payment of a lump sum commuted value in lieu of the deferred pension, if the member is below age 55 (50), subject to the commuted value being payable on a locked-in basis. Under certain limited conditions (small pensions, or small commuted values) the *Pension Benefits Standards Act* (PBSA) permits the election of a lump-sum payout, regardless of age, and on a non-locked-in basis.

Section 100 provides that the deferred vested pension of a terminating member is based on the highest average salary at termination, increased to retirement or to December 31, 1980 if earlier, in accordance with changes in the pension index. Subsequent to 1980, the highest average salary is increased to retirement by the percentage increase granted to pensions for the period between the month of termination and the month the pension becomes effective.

Section 75(3)(h) provides that the cost of the indexing described above is funded from the Inflation Adjustment Account.

Retirement Benefits: Eligibility Conditions for Pension

There are different retirement ages for the five different member Groups in the Plan. The normal retirement age is 65 for members in Groups 1 and 4, and 60 for members in Groups 2, 3 and 5. In the following summary of the various eligibility conditions and Plan provisions, the age and/or service conditions are first shown for Groups 1 and 4; the age and/or service conditions for Groups 2, 3 and 5, if different, are shown in parentheses following the Groups 1 and 4 conditions.

Section 50 provides that an active member who terminates employment is entitled, upon application, to an unreduced pension calculated under section 54, if the member has:

- (a) attained age 55 (50) and the sum of the member's age plus years of contributory service is 90 (80) or more; or
- (b) attained age 60 (55) with at least 2 years of contributory service; or
- (c) attained age 65 (60).

Section 51(a) provides for a reduced pension calculated under section 55(1) if the terminating member has attained age 55 (50) and completed at least 2 years of contributory service.

Section 51(b) provides for a reduced pension calculated under section 55(2) if the terminating member has attained age 60 (55) but has not completed 2 years of contributory service.

Section 13 provides that, under certain conditions, the contributory service requirements mentioned above can include service during certain periods of child rearing (5 year maximum).

Calculation of Unreduced Pension

Section 54 provides that the unreduced lifetime monthly pension payable to a member terminating employment on or after April 1, 2000 in the form of a single life annuity without a guarantee period is calculated as the sum of the following:

- (a) 2% of the member's highest average salary multiplied by the number of years of pensionable service accrued before January 1, 1966,
- (b) 1.3% of the lesser of
 - (i) the member's highest average salary, and
 - (ii) 1/12 of the YMPE for the calendar year immediately before the effective date of the pension multiplied by the number of years of pensionable service accrued on and after January 1, 1966 not exceeding 35 years, and
- (c) 2% of the excess of the member's highest average salary over the amount determined under paragraph (b) (ii), multiplied by the number of year's of pensionable service accrued on and after January 1, 1966 not exceeding 35 years.

For the purposes of the above calculation, in respect to any period of pensionable service for which contributions have been made at the rate applicable for Group 5, the percentages referenced in paragraphs (b) and (c) above are 1.63% and 2.33% respectively.

If the member has, before April 1, 2002, purchased pensionable service for service before the date on which the Plan first applied to the member's employer, and has not accrued 35 years of pensionable service after the date that the Plan first applied to the employer, the percentages used in the formula referenced in paragraphs (a) and (b) above for that purchased service are 1.75% and 1.05% respectively.

In addition, the member is entitled to a bridge benefit payable until the earlier of the death of the member or the member reaching age 65 that is:

- (a) 0.7% of the lesser of
 - (i) the member's highest average salary, and
 - (ii) 1/12 of the YMPE for the calendar year immediately before the effective date of the pension multiplied by
- (b) the number of years of pensionable service on and after January 1, 1966 not exceeding 35 years.

Highest average salary means one-twelfth of the average annual salary earned by a member during the 60 months of pensionable service (not necessarily consecutive) in which the salaries were highest (or, if the

member has accrued less than 60 months of pensionable service, the total number of months of pensionable service).

A member who has made voluntary additional contributions in the past - these are no longer accepted - will be granted an increase to their pension or a refund. Members who have contributed under a pre-2007 SA will be granted a retirement annuity or a lump-sum payment of the member's account balance. Members who have contributed under a post-2006 SA will be granted a lump-sum payment of the member's account balance.

Calculation of Reduced Pension

Where a reduced pension is payable under section 51 to members aged between 55 (50) and 60 (55) who have 2 or more years of contributory service, section 55 provides that the lifetime pension and bridge benefit, described above, are each reduced by a percentage equal to 3% for each year by which the member's age is less than the earlier of age 60 (55) or the age at which the member's age plus years of contributory service total 90 (80) (subsection 55(1)), prorated for fractions of a year.

Where a reduced pension is payable under section 51 to members aged 60 (55) or over who do not have 2 years of contributory service, section 55 provides that the lifetime and temporary pensions, described above, are each reduced by a percentage equal to 3% for each year by which the member's age is less than 65 years of age (subsection 55(2)), prorated for fractions of a year.

If employment terminates under age 50 (45), or between 50 (45) and 55 (50) with less than 10 years of contributory service, the 3% (per year) early retirement reduction factor referred to above is increased to 5% (per year) (subsection 55(3)).

Alternative Types of Pensions

Section 56 provides that a pension may be granted on the single life option with no guarantee period (normal form), single life option with a guarantee period (5, 10 or 15 years), joint life and last survivor option, temporary life annuity option, or a combination of these options upon approval of the plan administrative agent. The amount of any pension granted on a form other than the normal form is calculated on an actuarially equivalent basis.

Where a member has a spouse at retirement, the member is required, as a minimum, to elect that 60% of the member's basic pension be paid on the joint life and last survivor option, unless the spouse waives this requirement in writing or there is a written agreement or court order made under Part 5 or 6 of the *Family Relations Act* that is filed with the plan administrative agent. This option provides for a reduced amount payable to the member, continuing to the spouse on death of the member at 60% of the initial reduced amount. A spouse is as defined in section 96(2).

Disability Benefits

Section 60 provides that a member is entitled, upon application, to a disability pension if the member, before reaching age 60 (55), is totally and permanently disabled, has completed 2 years of contributory service, is not eligible for a monthly income benefit from a group disability plan, has not accepted a lump sum payment in lieu of a continued monthly income benefit under a group disability plan, and has terminated employment. An eligible member is entitled to receive a lifetime pension calculated as the sum of the accrued pension based on the actual service to the date of termination of employment, and 50% of the pension the member would have accrued between the pension effective date and age 60 (55) based on their current salary with service, pro-rated for members who work less than full-time, with both portions not reduced for immediate (i.e. early) retirement. Part 6 outlines the application process for a disability pension.

Sections 12(6) and 99(2) provide that if a member is receiving a monthly income benefit from an approved group disability plan, the member and employer do not make contributions and the member is not entitled to a pension under the Plan, but the period for which the member receives such group disability income benefit is considered pensionable service, with the final pension based on the highest average salary at disablement increased to retirement in accordance with changes in the consumer price index.

Pre-retirement Death Benefits

The pre-retirement death benefits for active and inactive Plan members are covered in Part 7 as follows:

- (a) on death before age 60 (55) with less than 2 years of contributory service, the death benefit is a payment of the member's contributions with interest;
- (b) on death before age 55 (50) with 2 or more years of contributory service, without a spouse, the benefit is the full commuted value of the regular pension earned to the date of death (but not less than the value of member contributions with interest). If there is a surviving spouse, then the spouse may choose either the foregoing value or an immediate pension actuarially equivalent to the commuted value and payable as if the member had chosen a 100 per cent joint life and last survivor option;
- (c) on death after age 55 (50) with 2 or more years of contributory service (or after age 60 (55) with less than 2 years of contributory service), without a surviving spouse, the benefit is also equal to the full commuted value of the regular pension earned to the date of death (but not less than the value of member contributions with interest). If there is a surviving spouse, then the benefit is an immediate pension to the spouse, calculated as though the member had retired immediately prior to death, with the pension reduced for early retirement as applicable and then converted to a 100% joint life and last survivor option.

If a member terminated employment under the previous vesting and locking-in rules, left contributions on deposit and dies before taking a benefit from the Plan, the service requirement in place at the time of

termination (i.e. 10 years or 5 years) is used in place of 2 years of contributory service to determine benefit eligibility.

Cost of Living Benefits (Indexing)

Section 73 sets out how cost of living benefits are to be administered. It provides for increases to retired members on January 1 of each year, with the benefits funded from the Inflation Adjustment Account. The portion of the pension eligible for adjustment is the total amount of the pension, including any previous cost of living benefit, less any portion of the pension that is a result of voluntary contributions (which are no longer permitted). The maximum increase is equal to the percentage increase in the Consumer Price Index (CPI) over the 12 months ending on September 30 of the previous year.

Section 73 sets out additional requirements with regards to the cost of living benefit, including:

- (a) the same uniform percentage increase will be granted in respect of all pensions eligible for adjustment;
- (b) the increase is prorated if the pension has not been in payment for at least 12 months;
- (c) the total capitalized value of all cost of living benefits granted on January 1 must not exceed the amount in the Inflation Adjustment Account on the preceding September 30; and
- (d) the capitalized value of all cost of living benefits granted annually is transferred from the Inflation Adjustment Account to the Basic Account.

The Pension Fund

Section 75 provides that the Pension Fund is divided into the following four accounts:

- (a) the **Basic Account**, consisting of all the assets in the fund other than assets in the Inflation Adjustment Account, the Supplemental Benefits Account and the Retirement Annuity Account;
- (b) the **Inflation Adjustment Account**, consisting of:
 - (i) the 1% contribution by each of the members under section 5(1)(c);
 - (ii) the matching employer contributions under section 6(1)(c) less amounts allocated for the payment of post-retirement group benefit entitlements;
 - (iii) the net investment income earned on the Inflation Adjustment Account;
 - (iv) the income, as determined by the plan administrative agent, that is earned on fund assets held in the Basic Account in respect of pensions being paid and that is in excess of the investment return anticipated in the most recent actuarial valuation; and
 - (v) amounts transferred to the account from the Retirement Annuity Account under section 75(5)

less:

- (vi) amounts transferred to the Basic Account in respect of capitalized cost of living benefits granted under section 73 and 88;
- (vii) refunds to Plan members in respect of the 1% contribution made to this account under section 5(1)(c), or amounts otherwise transferred out of this account in respect of member and employer contributions allocated to this account;
- (viii) amounts determined by the plan administrative agent in respect of the portions of commuted value payments or other transfers out of the Plan that are attributable to cost of living adjustments;
- (ix) amounts transferred to the Basic Account that are equal to the capitalized value of increases in deferred pensions resulting from increases in highest average salaries under section 100; and
- (x) amounts transferred to the Supplemental Benefits Account to cover inflation protection on benefits in excess of those registrable under the *Income Tax Act*;

(Article 10.3 of the Joint Trust Agreement also permits the Board, subject to the transitional funding arrangements, to transfer portions of any actuarial surplus in the Basic Account to the Inflation Adjustment Account.)

- (c) the **Supplemental Benefits Account**, consisting of assets required for the administration and payment of benefits that are non-registrable under the *Income Tax Act*, including post- retirement group benefits; and
- (d) the **Retirement Annuity Account**, consisting of voluntary contributions made under the previous statutes, contributions made under SAs, and investment earnings thereon, less amounts transferred to the Basic Account and the Inflation Adjustment Account for the retirement annuity portion of the benefits paid.

Income Tax Act Limits

The *Income Tax Act* imposes certain limits on the contributions that may be made to, and the benefits that may be paid from, a registered pension plan. However, in total, the contribution requirements from, and the benefit promises to, Plan members have not been altered under the Plan. To this end, the Supplemental Benefits Account covers the financing and payment of benefits in excess of those registrable under the *Income Tax Act*. The excess benefits are paid on a current cash basis, by allocating from the regular employer contributions, the amounts necessary to maintain the Supplemental Benefits Account at a zero balance. Effectively, from a Plan member's perspective, it is expected that these procedures will be invisible – the total contribution and benefit obligations remain unchanged. We have ignored the implications of all such internal restructuring in completing the primary, Basic Account valuation. In the Plan summary herein, and elsewhere in this valuation report, our references to contributions/benefits to/from the Basic/Inflation

Adjustment Accounts are inclusive of the allocations to/from the Supplemental Benefits Account; in general, the allocations to/from the Supplemental Benefits Account have not been referenced.

We have also completed supplementary valuations recognizing the income tax limits on pensions. We understand that these limits are applied only in respect of service after 1991. The maximum annual pension permitted at December 31, 2009 (before application of any early retirement reductions, where applicable) is the lesser of:

- (i) \$2,444 multiplied by the years of service; and
- (ii) 2% multiplied by the years of service further multiplied by the average of the best 3 years of remuneration paid to the member.

The Plan also imposes a 35 year cap on accruals at the above maximum rate. The 2010 maximum limit is \$2,494. Thereafter the limit will be increased annually by the increase in the average industrial wage.

Special Agreements

Under Part 15, a SA is an agreement entered into by the Board with an employer which provides for employer and member contributions in excess of those required under sections (5) and (6) for the purpose of increasing the benefits of the members employed by the employer. Under the *Income Tax Act* the terms of each SA constitute a money purchase provision. [Sections 107 and 108]

Member and employer contributions are made at the rates set in each SA, subject to the maximum amounts allowable under the *Income Tax Act*. The contributions are paid into the Retirement Annuity Account and credited to the member's account for whom they are made. The member's account holds the accumulated value of the SA contributions made for the member, together with interest at the fund interest rates. Employer contributions immediately vest in the member for whom they are made. An SA may require that member and employer contributions continue to be paid after the member has accrued 35 years of pensionable service. [Sections 109 and 110]

Under section 112, a terminating member who elects to receive a refund or commuted value as a termination benefit must be paid a lump sum payment of the member's account balance. If the member does not elect to receive a refund or commuted value as a termination benefit, the member's account remains within the Retirement Annuity Account until the member becomes entitled to a retirement benefit.

Section 113 provides that if a member elects to receive a pension as a retirement benefit, the member is entitled to:

- (a) a lump sum payment of the member's account balance under a pre-2007 SA, or

- (b) a monthly retirement annuity converted from the member's account balance under a pre-2007 SA commencing at the same time and payable under the same option and conditions as the pension granted under part 5, and
- (c) a lump sum payment of the member's account balance under a post-2006 SA.

If a member qualifies for a disability pension, section 114 provides that the member is entitled to:

- (a) a lump sum payment of the member's account balance under a pre-2007 SA, or
- (b) a monthly retirement annuity commencing at age 60 (55) converted from the member's account balance under a pre-2007 SA and payable under the same option and conditions as the pension granted under Part 6, and
- (c) a lump sum payment of the member's account balance under a post-2006 SA.

If the member elects to receive a monthly retirement annuity but dies before reaching age 60 (55) the member's beneficiary is entitled to a lump sum payment of the member's account balance under a pre-2007 SA. If the disability pension continues to the member's spouse, the spouse may choose either the lump sum payment or an immediate monthly retirement annuity converted from the member's account balance under a pre-2007 SA.

Under section 115, if a member dies before taking a benefit from the Plan, the member's beneficiary is entitled to a lump sum payment of the member's account balance. If there is a surviving spouse and he or she elects to receive a pension under Part 7, the spouse may choose either the lump sum payment or an immediate monthly retirement annuity converted from the member's account balance under a pre-2007 SA or a lump sum payment of the member's account balance under a post-2006 SA.

Section 117 provides that if an inactive member elects to transfer the member's contributory and pensionable service to another pension plan under a transfer agreement entered into by the Board, the member must be paid a lump sum payment of the member's account balance.

A monthly retirement annuity paid under this Part is paid from the Basic Account as a lifetime pension with a capitalized value equal to the member's account balance at the end of the month preceding the commencement of the annuity. When a monthly retirement annuity commences payment under this Part, the member's account balance is transferred from the Retirement Annuity Account to the Basic Account and the Inflation Adjustment Account and the member's account ceases to exist.

Other Items

1. Article 3.2 of the Joint Trust Agreement provides that all expenses incurred in the administration of the Plan are to be paid from the fund.
2. A maximum of 5 years taken to raise a child may be recognized in establishing eligibility for a pension provided the member has a record of pensionable service immediately before and after the child-rearing period(s). [Section 13]
3. Section 57 enables an employer to request the plan administrative agent to adopt a Special Retirement Incentive Plan (SRIP), whereby the age and service conditions, or the early retirement percentage reductions, or both, may be adjusted. The SRIP must stipulate the eligible members, the period it will remain open, the conditions applicable to the incentives, the additional costs to the employer, the timing of these payments to fund the SRIP and restrictions under the *Income Tax Act*.
4. In 2004, the four public sector plans in BC entered into the BC Public Sector Transfer Agreement. This agreement replaced the Interplan Pension Transfer Agreement and "bilateral" agreement with the College Pension Plan. Transfers under the agreement take into account the benefits under the transferring plans and pro-rate service if the importing plan's reserve requirements are higher than those available from the exporting plan. Members may pay for any shortfall, subject to CRA approval, within certain deadlines. Members can choose to leave their entitlements with their respective plans and apply for the appropriate benefits available from each plan at termination and/or retirement.

Funding and Transitional Rules

These are covered in Article 10 and Appendix B of the Joint Trust Agreement.

Plan funding must comply with the *PBSA* requirements for a going-concern valuation. Further, if an actuarial valuation indicates a requirement to increase contribution rates to the Basic Account, the increase must be shared equally by members and employers.

The use of emerging surpluses is also limited during a transition period to achieve the following objectives, in the following order:

- (a) First, eliminate any unfunded liabilities that existed at a prior valuation;
- (b) Next, simultaneously
 - (i) rebalance member and employer contribution rates to the Basic Account, such that
 - (A) the current doubling feature is removed,
 - (B) the employer rates for Groups 1 and 4 members are set equal to the 5.0/6.5% rate for members, and

- (C) the employer rates for Groups 2 and 3 members are also set equal to the foregoing 5.0/6.5% rate plus the differential in the normal cost rates for Groups 2 and 3 vs. that for Groups 1 and 4, as indicated by the actuarial valuation from time to time; and
- (ii) (A) improve the normal form of pension from a single life without guarantee to a single life with a ten-year guarantee, and
- (B) change the benefit formula from 1.3/2.0% to 1.35/2.0%,
for those who are active members at the date (and active members that join after the date) the improvements are implemented.

The surplus needed for this must be sufficient to stabilize the revised contribution rates on an open group basis, for a 25 year period.

- (c) After (a) and (b) are achieved, 50% of any additional or emerging surpluses will be allocated to a contribution rate stabilization reserve and the other 50% transferred to the IAA, until an aggregate total of one billion dollars has been so allocated.

The transitional period ends when the foregoing objectives have been achieved.

Appendix B

Actuarial Methods and Assumptions

The significant actuarial assumptions are summarized below.

Investment Return	6.5% per annum (6.75% previous valuation)
General ("across-the-board") Salary Increases	3.75% per annum (4.0% previous valuation)
Seniority Salary Increases	Annual percentages varying by age and sex
Pension Indexing	<p>Future indexing of pensions and deferred pensions ignored, as will be covered by Inflation Adjustment Account</p> <p>Future indexing (by inflation) of wage base for disability accruals assumed to be a charge to the Basic Account and to be 3.0% per annum (3.25% previous valuation)</p> <p>Indexing to date is capitalized and forms part of pension liability</p>
Asset Values	Assets carried at smoothed market values, with the smoothed value restricted to a range of 90% to 110% of the market value
Costing Method	Contributions are based on an entry-age funding approach

More detail with respect to the above, detail with respect to other assumptions, and comparisons with assumptions and approaches in the previous valuation follow.

1. Actuarial Methods

The methodology used to calculate the valuation liabilities was as follows:

The liability for current pensioners and active members was calculated by projecting the benefit payments to be made to those persons and to their eligible spouses using the actuarial assumptions described below and then discounting these projected payments to the valuation date at the investment return assumption.

The liability for members currently receiving benefits from a long-term disability plan was calculated partly as if they would continue to earn service credits and ultimately receive a pension from the Plan, and partly as if they would again become contributing members of the Plan.

The liability for the inactive group (including those entitled to deferred vested pensions) was calculated on the assumption that a proportion (based on present working status, contribution balance, length of credited

service and date of last contribution) would again become contributing members of the Plan, and a further proportion (based on similar, but different, criteria) would collect deferred vested pensions.

The liability for the remaining inactive members was generally set equal to their accumulated refund values (in some cases, depending on the member's status, we held twice the refund value).

The valuation assets consist of:

- (i) the Basic Account; and
- (ii) the present value of future member and employer contributions at the current rates, for the closed active group, for the basic non-indexed benefits.

The unfunded actuarial liability is equal to the excess of the valuation liabilities over the valuation assets. If the assets exceed the liabilities, then the difference between them gives rise to an actuarial surplus.

We calculated the required member/employer contribution rate for current service in accordance with the entry-age actuarial cost method, based on the data for those members who joined the plan in the last three years prior to the valuation date (previously we used the data for those who had less than one year of contributory service at the valuation date) and the actuarial assumptions described below. This method produces the level rate of the member/employer contributions sufficient to provide the benefits for the average future new entrants to the plan. The cost so determined is also referred to as the normal actuarial cost and is calculated on an aggregate basis for all entrants as a level percentage of payroll.

In the case of Group 5, which was only open to new entrants effective January 1, 2010 and therefore has no new members prior to the valuation date, we have used the new entrant profile of Group 2 in calculating the Group 5 normal cost.

An unfunded actuarial liability/surplus¹ was also calculated on the basis of these normal actuarial costs. This calculated unfunded actuarial liability differs somewhat from that determined on the basis of the current member/employer contributions (by assuming that future contributions would be made at the normal cost rate instead of the current member/employer level/"doubling" rates). Additional payments in excess of these normal actuarial costs, required to finance this unfunded liability, were then determined, as a percentage of payroll, as follows:

- (1) if the result is an unfunded liability, we assume that additional contributions at the rates required to amortize previously unfunded liabilities will continue for the remainder of their 15 year terms, and we amortize any balance of the unfunded liability over the 15 year period commencing January 1, 2010².

¹ The discussions in this report regarding amortization apply equally to unfunded liabilities and to surpluses; in the former case, the amortization component results in an additional requirement to the normal cost rate, whereas in the latter case it results in a reduction to that rate.

² We use an unadjusted 15 year rolling amortization period for the supplementary indexed valuation.

If there has been a gain since the last valuation, i.e. the currently scheduled amortization rates are higher than required to amortize the unfunded liability over the balance of the previously established amortization periods, we apply the gain proportionally over the remaining periods, and

- (2) if the result is a surplus, we assume it is fully amortized over the 25 or 15 year periods commencing January 1, 2010.

In calculating the required contribution rate for Group 5, allowance needs to be made for the fact that initially members will transfer from Group 2 and will therefore enter the group at an age that is older than the assumed entry age. As a result, the value of the future contributions will be less than the value of the future benefits to be earned and there will be an initial unfunded liability. This unfunded liability is taken into account in calculating the Group 5 contribution rate and is amortized over 15 years from the valuation date.

As has been done since the 2000 valuation, we report the required costs on a level basis, as opposed to a "doubling" basis.

The required contributions under each approach are equal to the sum of the normal actuarial cost and the amount required to finance the unfunded actuarial liability.

The actuarial procedures followed are substantially the same as those in the previous valuation.

2. Treatment of Member and Pensioner Data

Data as of December 31, 2009 were prepared by the Pension Corporation for 155,873 active members, 60,152 pensioners, 6,975 members receiving benefits from a long-term disability plan, 16,973 terminated members eligible for a vested pension, 13,277 other inactive members (including 21 on leave of absence) plus a further 235 non-retired individuals with very limited data, 27,664 active member terminations and 4,850 pensioner terminations during the period January 1, 2007 to December 31, 2009. The Pension Corporation advised us that the data supplied are generally proper, complete and in accordance with specifications, unless otherwise noted.

Where possible, we compared totals with corresponding details in the Plan's audited Annual Reports, and also spot-checked individual items against the data recorded for the previous valuation. We also conducted a number of edits on the data to test for internal consistency and overall appropriateness for our valuation. There were a number of discrepancies recorded during our examination of the data and we sought clarification of these from the Pension Corporation. Where necessary, we modified the data, our assumptions, or both, to compensate for these discrepancies.

The active member data includes a number of individuals who work less than full time. For the purposes of calculating liabilities and normal actuarial costs, we treated all members as if they were full-time employees

after the valuation date; however, in calculating the amortization costs as a percentage of total future payrolls, we reduced the total payroll base by 9% to reflect the part-time employment (the same 9% adjustment was applied at the previous valuation).

The active member data included 5,075 persons who had no salary or service reported for 2009, or who were not making contributions at December 31, 2009. We excluded them from the active member base, but have included them with the inactive group. For 1,383 of them (those with at least 3 years of service, contributions after 2007 and a refund balance of at least \$1,500), we held a liability calculated as if they were would be reactivated on January 1, 2010 (we set their salaries equal to the average salaries for active members in the same age-group category). For 1,746 persons (those with a refund balance of at least \$1,500 and 2 or more years of service, but not eligible to be reactivated) we held a liability equal to twice the refund balance. For the remaining 1,946 persons (i.e. those with a refund balance of less than \$1,500 or less than 2 years of service), we held the refund balance.

Salary details were inappropriate (missing, very low, or very high) for a further 238 active members. We assumed that these 238 members had the same average earnings as for other actives in the same age-group category.

There were 695 female members in the active data for Groups 2 and 3. Group 3 has been closed to new entrants since November 30, 1971, and we determined that 4 of the 695 females had at least 38 years of credited service (as a proxy to the Group 3 subset). As in 2006, we did not separate the Group 3 actives, and simply left them with the Group 2 females. We did, however, continue to value the Group 2 females separately from the males, and show a combined figure for the Group 2 members.

The liability for the 6,623 members on long-term disability was calculated in two steps. We first calculated a liability as if these individuals would ultimately collect deferred vested pensions starting at age 62 for Groups 1 and 4 (unchanged from 2006) and age 57(unchanged from 2006) for Group 2 with deferred pensions on the basis of service projected to retirement date (maximum 35 years) and the actual salaries indexed to the valuation date (where the actual salary detail shown for those members was inappropriate, we used the average salaries for active members in the same age-group category). We also calculated a liability as if these members would again become contributing members of the plan. In order to allow for the possibility of recoveries from disability we set the liability equal to 70% (65% in 2006) of the former figure plus 30% (35% in 2006) of the latter figure. A similar approach was used in the previous valuation.

We divided the 16,973 terminated members entitled to a vested pension into two classes:

- (i) those with missing, invalid or inconsistent detail, or whose accumulated accounts were less than \$1,500, and
- (ii) all other inactive members.

The liability for the first group was held as twice their accumulated accounts. For the second group, we calculated liabilities on the assumption that 100% of these members would receive vested pensions.

In the previous valuation, we reactivated those currently working in the B.C. family of plans. In this valuation, the members currently working in the B.C. family of plans are treated as normal deferred vested members because of most of these members are now only eligible to transfer under the Public Sector Transfer Agreement, and the salary in the BC family of plans is thus no longer relevant to the amount to be transferred.

We divided the 13,277 other inactive members into three classes:

- (i) those with a refund balance of at least \$1,500, and who are on leave of absence or who have returned to work after the valuation date,
- (ii) those with missing, invalid or inconsistent detail, or whose accumulated accounts were less than \$1,500, or who had less than 3 complete years of service, or who did not contribute in 2008 or 2009, or who were known to have taken a refund after the valuation date, and
- (iii) all other inactive members.

We calculated liabilities on the assumption that the first and third groups would be reactivated on January 1, 2010, with assumed average salaries equal to the average salaries for active members in the same age-group category, and that the second group would take immediate refunds. For those in the second group with a refund balance of at least \$1,500 and 2 or more years of service, but who were not eligible (under our criteria) to be reactivated we held a liability equal to twice the refund balance. For the remaining persons in the second group (i.e. those with a refund balance of less than \$1,500 or less than 2 years of service), we held the refund balance. In the previous valuation, we held the refund balance for everyone in the second group.

With respect to the 235 remaining non-retired members with limited data, we held a liability equal to their refund balances.

Of the total non-pensioner data, there were 7 active, 352 long-term disability and 706 vested members excluded from the valuation because of missing, invalid or inconsistent detail. Liabilities of twice their refund balances were held for these members. Two defective pensioner records were excluded from the valuation.

The data from the Pension Corporation and our treatment of this data is summarised below. Further details on the active member data, the new entrant groups on which our entry-age costs are based, the inactive member data and the pensioner data are summarized in Appendices C, D and E.

	Valuation Treatment								
	Pension Corp. Data	Defective pensioner record	Pensioners	Active Members	Long Term Disability	Vested	Re-activate	Refund CWI ¹	Refund 2 x CWI
Pensioners	60,152	2	60,150						
Active Members	155,873			150,791			1,383	1,946	1,753
Long Term Disability	6,975				6,623				352
Terminated Vested	16,973					16,267			706
Inactive members	13,277						57	12,366	854
Limited data	235								235
Total membership	253,485	2	60,150	150,791	6,623	16,267	1,440	14,312	3,900

¹ CWI = contributions with interest

3. Actuarial Assumptions

Investment return and general salary increase rates

Our actuarial costing method involves projecting future benefit disbursements and contribution and investment income. In such projections, the most significant assumptions are those in respect of the future rates of return to be earned by the fund and future general salary increases (which are across-the-board increases applying to employees regardless of service, rank or position).

(a) Relationship to excess interest threshold

The investment return assumption is also significant for another reason. Since 1980, the provisions of the plan relating to the indexing of pensions provide that the income to be credited to the Inflation Adjustment Account in respect of pensions being paid is determined by reference to the amount in excess of the investment return anticipated in the most recent actuarial valuation. An increase in the investment return assumption without a corresponding change in the related valuation economic assumptions (such as general salary increases and post-retirement indexing) would have at least two effects:

- (i) it would reduce the amount of excess investment return allocated to the IAA, and hence reduce the potential for future indexing; and
- (ii) it would reduce the costs of the basic non-indexed plan, provided benefit levels are not changed.

A reduction in the investment return assumption would have the opposite effects. In this context, consistency in the assumptions, from one valuation to the next, takes on added significance.

The previous valuation used a long-term investment return assumption of 6.75% per annum. As noted earlier, this also becomes the threshold rate used to determine excess investment return transfers to the IAA during the post-retirement period; effectively, this is the same as saying that the Basic Account will only earn a rate of 6.75% per annum during the post-retirement period.

(b) Actual returns and asset mix

We have calculated market value returns on the total fund (i.e. Basic plus IAA), including non-invested assets (i.e. receivables, net of payables), net of investment-related expenses, and assuming that all cash flows occur at mid year, as 4.4% for 2007, -12.5% for 2008 and 10.7% for 2009. At December 31, 2009, approximately 54% of the total portfolio was invested in equities (including private placements), a further 14% in real estate, and the balance of 32% in fixed income.

(c) Expected returns

After examining the net average investment return earned by the fund's investments, the yield on investments made in recent years, the likely future trend of investment returns in general, the investment practices, and the provisions of this Plan - e.g. the allocation of excess investment income to the Inflation Adjustment Account - we have concluded that a reasonable best estimate of the long term investment return on the plan's assets is 6.75%. We also concluded that a reasonable best estimate of the real return on the assets, i.e., the investment return in excess of inflation, is 4%.

In setting the valuation assumptions, it is necessary to reduce these expected returns by a margin, so that the resulting liabilities have a suitable provision for adverse deviations. Following discussions with the Board regarding the appropriate adjustments to the best estimate assumptions and taking into account the requirements of the Board's funding policy, for the purposes of this valuation we decreased our long-term investment return assumption to 6.5% per annum. We also continued with our previous valuation assumption for the real return of 3.5%. In other words, there is a margin of 0.25% on the investment return assumption, and a margin of 0.5% on the real return assumption relative to the best estimate assumptions discussed above.

(d) Real return and salary relationships - derive salary assumption

The 6.75% investment return assumption used in the 2006 valuation was viewed as consisting of a real return component of about 3.5% per annum plus a long-term underlying inflation assumption of about 3.25% per annum. Continuing with the same real return component of 3.5% and apply it to the new 6.5% investment return assumption, we get a revised long-term underlying inflation assumption of 3.0% per annum (i.e. 6.5% - 3.5%). This can also be viewed as a best estimate of future inflation of 2.75% (derived from the best estimate nominal return assumption of 6.75% less the best estimate real return assumption of 4%), plus a margin for adverse deviations of 0.25%.

The general salary increase assumption used in the 2006 valuation was 4.0% per annum. This was viewed as consisting of the (then) underlying inflation assumption of 3.25% per annum, plus a real salary increase component of 0.75% per annum. When the real salary increase component of 0.75% per annum is added to the revised underlying inflation assumption of 3.0%, we get a revised general salary increase assumption of 3.75%.

The impact of these assumptions on the valuation result is discussed further below.

(e) Impact of investment return and salary assumptions on valuation

During the **post-retirement period**, the investment return assumption is critical as this is the discount rate for the Basic Account post-retirement liabilities. It also sets the excess investment return threshold which puts a ceiling on the amounts these liabilities can earn. For example, if the threshold is 6.5%, then, if the long-term returns exceed 6.5% on average, all of the excess will be transferred to the IAA, i.e. the Basic Account will only retain 6.5%.

During the **pre-retirement period**, it is the relationship, i.e. the net difference, between the investment return and general salary increase assumptions that is the key, rather than their absolute levels - projected benefits increase each year by the salary assumption and are then discounted by the investment assumption, i.e. the net result is that the liabilities are effectively being discounted by the net difference between the two assumptions. For example, the long-term assumptions we have used in this valuation (i.e. 6.5% investment return, 3.75% salary, 3.0% underlying inflation) would produce results similar to those using assumptions of 6.75% investment return and 4.0% salary, with 3.25% underlying inflation; or 7% investment return and 4.25% salary, with 3.5% underlying inflation, etc. Thus, the underlying inflation assumption is not material to the result.

(f) Summary of interrelationships

The 2009 and 2006 annual investment return and general salary increase assumptions, and their underlying economic interrelationships, are summarized below.

	2009 valuation	2006 valuation
1. Investment return = excess investment return threshold	6.5%	6.75%
2. Real return rate	3.5%	3.5%
3. Implied underlying inflation = 1 - 2	3.0%	3.25%
4. Real salary increase	0.75%	0.75%
5. General salary increase = 3 + 4	3.75%	4.00%

(g) Actual vs. expected salaries; adjust data salaries

The 2009 valuation data indicates that average annual earnings increased by about 11.3% from mid-2006 to mid-2009 (i.e. about 3.6% per annum), as compared with an expected increase of about 12.5% (i.e. about 4.0% per annum) on the basis of the assumptions used in the 2006 valuation.

The input data salaries provided to us for this valuation were the actual earnings during 2009. We took them without further adjustment as being equal to the salary rates on the valuation date (this may slightly understate the actual salary rates at the valuation date). Thereafter, the assumed rates of salary increase are applied continuously during each future year.

(h) YMPE increase

We also assumed that the YMPE under the Canada Pension Plan would increase at the general salary increase rate of 3.75% per year from its 2010 level of \$47,200, both for the regular valuation and for the purposes of computing the entry-age costs. In the previous valuation we assumed that the YMPE would increase at the rate of 4.0% per year from its 2007 level of \$43,700.

Pension indexing - basic valuation

Indexing supplements on and after January 1, 1982 are on an annual basis and are limited to those amounts that can be appropriately financed by the balances available in the Inflation Adjustment Account. Thus we do not need to allow for future indexing in our calculations as the costs of this indexing are currently fixed at 1% of salaries to be paid by each of the members and the employers, less amounts paid for post-retirement group benefits for pensioners. With respect to indexed supplements granted through December 31, 2009, the present values have been included in the actuarial liabilities for pensions in the course of payment and thus form part of the determination of the recommended contribution.

As in the previous valuation, we ignored the future pre-retirement escalation that applies to vested pensions, since the cost of this "indexing" is also charged to the Inflation Adjustment Account.

With regard to the vested pensions of members who have terminated employment, the amounts of deferred pensions quoted to us include indexing during the deferred period to date. We understand that amounts to be transferred to the Basic Account from the Inflation Adjustment Account to finance this indexing do not occur until retirement (theoretically, such transfers should be made on an annual basis as the indexing occurs, so as to reduce the inter-generational transfer of the costs of such indexing). We have adjusted the deferred pension amounts to remove this indexing, so that the Basic Account Liability is aligned with the allocation of assets between the Basic and IAA accounts. A similar approach was used in the previous valuation.

The indexing of salaries before retirement in the case of members on long-term disability is, on the other hand, a charge to the Basic Account rather than to the Inflation Adjustment Account. Accordingly, in valuing the deferred pensions for those currently on long-term disability, we have made an allowance for this by applying an escalation assumption (at the full underlying inflation assumption) of 3.0% per annum during the deferral period to retirement.

Asset values

The fund's annual reports record assets on a market value basis. As in the previous valuations, we have continued to apply a five year smoothing technique to these assets: we believe a smoothing approach is appropriate as it cushions the actuarial valuation results against the dramatic swings in market value which can occur. After discussion with the Board in 2006, it was agreed that an additional constraint on the smoothed value of assets is appropriate, and that the funding policy be modified to provide that, during the Joint Trust Agreement transitional period, the smoothed value is restricted to a range of 90% to 110% of market value. This constraint was introduced in the 2006 valuation, and we have continued to apply it in the current valuation.

To obtain the unconstrained smoothed value, we first determine the actual return on the basis of market values during the year (taking into account the timing of non-investment related cashflows i.e. the net contributions minus benefits and non-investment expenses). We then determine an assumed return for the year at a rate equal to the assumed underlying real return rate plus the year-over-year change in the consumer price index. The difference between the two returns is then spread over a five year period, recognizing one-fifth of it in each of the current and four succeeding years. This approach effectively spreads the difference between (a) the total investment return (including both realized and unrealized capital changes) and (b) a hypothetical return based on a long-term real return rate, over a five year period.

The smoothed value is then restricted to a range of 90% to 110% of market value, if necessary.

The application of this approach to the total fund yields the following results:

Total Fund Smoothing

	2007	2008	2009
1. Dec-over-Dec increase in CPI	2.40%	1.20%	1.30%
2. Base return = (1) + 3.5%	5.90%	4.70%	4.80%
Year-end asset values - \$000's			
3. Market value	24,978,721	21,972,786	24,489,749
4. Smoothed value with no limit applied to smoothing	23,424,369	24,573,002	25,753,561
5. Smoothed value with limit on smoothing	23,424,369	24,170,065	25,753,561
6. Ratio of (5) ÷ (3)	0.938	1.100	1.052
Annual returns			
7. Market value	4.4%	-12.5%	10.7%
8. Smoothed value with no limit applied to smoothing	11.1%	4.4%	4.2%
9. Smoothed value with limit on smoothing	8.7%	2.7%	5.9%

Using the relationship between the market and adjusted values shown in line 5 above, and applying this relationship to the Basic Account and Inflation Adjustment Account balances we get:

Year end asset values - \$000's

Basic Account	2007	2008	2009
10. Market value	20,391,212	18,058,554	20,363,772
11. Smoothed value with limit on smoothing	19,122,327	19,864,409	21,414,660
12. Ratio of (11) ÷ (10)	0.938	1.100	1.052
Retirement Annuity Account			
13. Market value	339,417	285,767	306,834
14. Smoothed value with limit applied to smoothing	318,296	314,344	322,668
15. Ratio of (14) ÷ (13)	0.938	1.100	1.052
Inflation Adjustment Account			
16. Market value	4,248,092	3,628,465	3,819,143
17. Smoothed value with limit applied to smoothing	3,983,746	3,991,312	4,016,233
18. Ratio of (17) ÷ (16)	0.938	1.100	1.052

Mortality

- (a) For active members we assumed 80% for males and 80% for females of the respective rates in the 1994 Group Annuity Mortality Table. The previous valuation used 85% for males and 85% for females of the respective rates in the 1994 Group Annuity Mortality Table.
- (b) For members retired on account of disability we used 80% for males and 80% for females of the mortality rates (applicable in 1997) for similar retirees used for the valuation of the Canadian Public Service Superannuation Plan as at March 31, 1996 (that valuation applies mortality improvement factors, on a dynamic basis, to certain base rates). The corresponding assumption in the previous valuation was 85% for males and 85% for females, applied to the same underlying table.
- (c) For other retired members, the beneficiaries and spouses of former members, and for active members after retirement, we used 80% for males and 80% for females of the rates of the 1994 Group Annuity Mortality Table. The previous valuation used 85% for males and 85% for females of the respective rates in the 1994 Group Annuity Mortality Table.

Withdrawal

We examined the rates of withdrawal for reasons other than death, retirement or disability over the period January 1, 2007 to December 31, 2009 and compared this with the experience observed and the rates used for previous valuations. We have made modest changes to the withdrawal rates used for the previous valuation, by adopting the following multiples of those rates.

Multiples applied to 2006 Rates

	In the first 3 years of service			After 3 years of service
	1 st year	2 nd year	3 rd year	
Group 1	100%	100%	100%	105%
Group 2	105%	100%	100%	100%
Group 4	95%	95%	95%	95%

Sample withdrawal rates are shown in the following tables.

A. Withdrawal Rates Applicable in the First 3 Years of Service
(these include terminations from all sources, i.e. including death, disability and retirement)

Age at entry	2009 valuation			2006 valuation		
	1 st year	2 nd year	3 rd year	1 st year	2 nd year	3 rd year
Group 1						
20	.155	.143	.119	.155	.143	.119
30	.103	.106	.090	.103	.106	.090
40	.074	.069	.056	.074	.069	.056
50	.067	.056	.041	.067	.056	.041
Group 2						
20	.026	.022	.021	.025	.022	.021
30	.019	.014	.012	.018	.014	.012
40	.009	.007	.007	.009	.007	.007
Group 4						
20	.135	.142	.126	.142	.149	.133
30	.114	.124	.091	.120	.131	.096
40	.065	.063	.056	.068	.066	.059
50	.065	.063	.043	.068	.066	.045

B. Withdrawal Rates Applicable After 3 Years of Service

Attained age	2009 Valuation			2006 Valuation		
	Group 1	Group 2	Group 4	Group 1	Group 2	Group 4
23	.078	.014	.121	.074	.014	.127
33	.045	.008	.052	.043	.008	.055
43	.024	.005	.031	.023	.005	.033
53	.014	-	.019	.013	-	.020

The withdrawal rates we have used cut off at 10 years below the normal retirement age for each group.

Disability

The Plan provides for either the payment of a disability pension from the Plan or, for members receiving long-term disability benefits, the continued accrual of pension benefits. We examined the combined experience of members going on disability pensions and on long-term disability and continued with the rates used in the previous valuation. Since most members receive continuing disability service credits rather than an immediate pension, we have continued to value the disability cost for active members as a deferred pension (indexed before retirement) with continued accrual of service, rather than as an immediate pension. Based on an examination of those now retired who had, prior to retirement, been in receipt of disability service credits, we assumed that the deferred pensions would commence at age 62 (or, immediately, for those older than age 62) for Groups 1 and 4, and at age 57 for Groups 2 and 5. The same age 62 and 57 assumptions were made in the 2006 valuation.

Sample disability rates are shown in the following table. No direct allowance is made for the possibility of an individual recovering from disability prior to retirement - the rates used have been reduced from the observed disability incidence to implicitly allow for such recoveries.

Age	2009 valuation			2006 valuation		
	Group 1	Group 2	Group 4	Group 1	Group 2	Group 4
25	.0003	.0001	.0002	.0003	.0001	.0001
35	.0004	.0002	.0014	.0005	.0003	.0014
45	.0022	.0010	.0045	.0019	.0010	.0043
55	.0059	.0029	.0125	.0057	.0030	.0125

The rates used for this valuation are 135% for Group 1, 195% for Group 4 and 65% for Groups 2 and 5 of the respective rates used for the valuation of the Canadian Public Service Superannuation Plan as at March 31, 2005. The 2006 valuation used multiples of 85% for Group 1, 140% for Group 4 and 45% for Group 2 applied to the rates used in the Canadian Public Service Superannuation Plan as at December 31, 1999.

Retirement

We examined the 2007-2009 retirement experience and compared this with the experience observed in our previous analyses of the retirement rates and with the rates used in the previous valuation. In general, the actual experience is reasonably consistent with the assumption used in the previous valuation; in some cases, actual experience was higher, and in others it was lower. We gave partial recognition to the observed experience by adopting modest changes to the rates previously used for retirement.

We reduced the rates of retirement for both unreduced and reduced pension slightly for Groups 1 and 4. The rates of retirement for unreduced pension were changed slightly for Group 3.

The rates used in this and the previous valuation, are as follows:

Normal Retirement Age = 65

Age	Service	2009 valuation		2006 valuation	
		Group 1	Group 4	Group 1	Group 4
For unreduced retirement pensions					
55-59	rule-of-90	.62	.50	.65	.50
60	10	.45	.47	.45	.47
61	10	.23	.25	.25	.25
62	10	.23	.25	.25	.25
63	10	.24	.25	.26	.25
64	10	.31	.34	.34	.35
65	0	1.00	1.00	1.00	1.00
For reduced early retirement					
55-59	at least 10 years, but age plus service add to less than 80	.05	.08	.05	.09
55-59	age plus service add to at least 80	.11	.14	.13	.16

Normal Retirement Age = 60

Age	Service	2009 valuation		2006 valuation	
		Group 2		Group 2	
For unreduced retirement pensions					
50-54	rule-of-80	.18		.20	
55	10	.28		.28	
56	10	.27		.27	
57	10	.30		.28	
58	10	.33		.33	
59	10	.45		.43	
60	0	1.00		1.00	
For reduced early retirement					
50-54	at least 10 years, but age plus service add to less than 75	.06		.06	
50-54	age plus service add to at least 75	.09		.09	

Even though pensions (unreduced and reduced) are available with less than 10 years of service, we have continued to apply the retirement rates before age 65 (60) only to those with 10 or more years of service, on the assumption that those with fewer than 10 years would not retire until the normal retirement age.

Seniority salary scales

Seniority salary increases are in addition to the general salary increases and are intended to reflect increasing seniority, recognition of merit and promotion. We examined the seniority salary scales based both on the earnings history of the active members during the 3 year period ended December 31, 2009 and on the graduated average salaries of the active members as of December 31, 2009, and compared these with the experience observed and rates used in the previous valuation. Based on these investigations we decided to continue with the previous salary scales. Sample earnings rates expressed as a proportion of earnings at the normal retirement age are as follows:

Age	This (& previous) valuation			
	Group 1	Group 2 males	Group 2 females	Group 4
25	.731	.659	.766	.723
35	.866	.794	.946	.852
45	.952	.880	.988	.934
55	.992	.960	.997	.987

Proportion of eligible terminating members electing a vested pension

Locking-in of vested pensions occurs after 2 years of service, in respect of all service credits. We have therefore valued all vested terminations as vested pensions. The same assumption was made in the previous valuation.

The balance of the terminating members (i.e., those not vested) are assumed to elect a refund of contributions with interest.

Proportions of members married at death

As in the previous valuation, we assumed that 90% of members would be married at death and that the husband's age would exceed the wife's age by 3 years.

Growth of active Municipal population

We assumed in all the actuarial projections that there would be no future growth or decline in the Municipal population. The same assumption was made in the previous valuation.

Expenses

Administration expenses are paid out of the Municipal fund. Medical premium assistance for pensioners is carved out of the incoming employer Basic Account contributions, and is paid through the Supplemental Benefits Account. We have treated these as an on-going addition to the administration expense. The sum of these two amounts was 0.55%, 0.56% and 0.55% of salaries for 2007, 2008 and 2009 respectively. Therefore, we continued with the expense provision of 0.60% of payroll used in the previous valuation, as part of the normal actuarial costs in the determination of the required contribution rates under the entry-age funding method. We also included a provision for the present value of expenses in the statement of actuarial position. The same approach was used in the previous valuation.

It should be noted that these procedures do not properly value the liabilities for post-retirement group benefits, i.e. medical premium assistance for pensioners, allocated from contributions made to the Basic Account; they merely include a provision for these costs on a pay-as-you-go basis, over the future working lifetime of the closed active membership.

As before, the investment management fees are excluded from our analysis above and from the expense provision we have made on the presumption that these are implicitly included in the long-term investment return assumption, which is assumed to be net of such charges.

Other items

- (1) We continued with the interest assumption used for accumulation and **refunds** of member contributions to be 1.5% less than the valuation interest assumption, i.e. at 5.0% per annum. This allows for the *PBSA*-related practice whereby the refund interest rate is set equal to an average of 5-year bank-term-deposit rates (which are assumed to be 1.5% less than fund earnings).
- (2) **Recognition of child-rearing periods for pension eligibility:** We continued to assume that this would only affect female members, and that, on average, it would increase the member's contributory service (which is used for determining pension eligibility) by 2 years; there would, of course, be no increase to the member's pensionable service (which is used for determining pension amounts). The impact of this would be to reduce the eligibility requirement for unreduced pensions between ages 55 and 59, from a rule-of-90 to a rule-of-88 (Group 4; for Groups 2 and 3 females, at ages 50 to 54, to a rule-of-78), and we assumed that there would be no impact on the eligibility assumptions made for other benefits. The same assumption was made in the previous valuation.

Plan termination

The Standards of Practice issued by the Canadian Institute of Actuaries require that a valuation report "disclose the financial position of the plan if it were to be wound up on the calculation date, unless the plan

does not define the benefits payable upon wind-up, in which case the actuary should include a statement to that effect".

Schedule A of the Public Sector Pension Plans Act, which sets out the governing framework under joint trusteeship does not address wind-up, and neither do the plan rules, therefore the benefits on wind-up are not defined. Accordingly, we no longer comment on the financial position of the plan if were to be wound up as we have done in previous valuations.

Fully indexed valuations - assumption changes

We made the following changes to the assumptions when doing the fully indexed valuations:

- We combined the assets in the Basic and Inflation Adjustment Accounts, using a smoothed asset value of \$25,430,893,000;
- We applied an indexing assumption equal to the full assumed underlying inflation rate, i.e. 3.0% per annum. This indexing rate was applied both to pensions after retirement and during the pre-retirement period in the case of deferred vested pensions and disability salary accruals. No additional loading for pensions in pay since there was no indexing increase at January 1, 2010. For active members, our program applies the indexing on a continuous basis after retirement; for existing pensioners and deferred vesteds, the indexing is applied annually, in arrears; and
- We combined the contribution rates to Basic and IAA, i.e. we assumed a total member contribution rate of $7.49\% + 1\% = 8.49\%$, integrated with the CPP (i.e. reduced by 1.5% of salaries below the YMPE). The employer contributions of 1% to the IAA were reduced to 0.2% to account for the carve-out of the non-pension (EHB and Dental) benefits. The 0.8% carve-out was based on the Board's funding policy that no more than 80% of the employers' IAA contributions would be available to pay for post-retirement group benefits and projections of the future cost of these benefits prepared for the Board which indicated that, at the current benefit levels, the cost will exceed the available contribution by 2015. A similar approach was used in the previous valuation.

Maximum pension rule - assumption changes

As noted earlier, we have not applied these rules when doing the primary Basic and Basic-plus-Indexed valuations. We have applied them, as described below, when doing the supplementary valuations with benefits limited to the *ITA* maximums.

The maximum annual pension currently permitted (in 2010) under the income tax rules is the lesser of:

- (i) \$2,494 multiplied by the years of service; and
- (ii) 2% multiplied by the years of service further multiplied by the average of the best 3 years of remuneration paid to the member.

While the Plan applies the *ITA* limits only in respect of service after 1991, we have, for ease of calculation, assumed that this limit applies on all service; this assumption does not affect the future normal costs, but the accrued liabilities will be slightly understated. The Plan also imposes a 35 year cap on accruals at the above maximum rate, which we have applied. For an individual in this Plan to be currently affected by the \$2,494 maximum the final average salary must be very high and while current salaries are not such as to cause many problems the salaries projected in the future through application of the assumed salary increase rates outlined above are such that some individuals would be limited. However, under the income tax rules, the flat \$2,494 limit is automatically indexed each year after 2010 in accordance with increases in the average wage. Accordingly, we have applied a 3.75% per annum increase to the \$2,494 limit after 2010. (At the previous valuation the corresponding dollar limit was \$2,222 in 2007, and was scheduled to increase to \$2,333 in 2008, \$2,444 in 2009, and after 2009 was assumed to increase by the average wage increase of 4.0%.)

It should also be noted that, in the tax-limited results, we valued the existing pensions in payment, and the deferred vested pensions, in full, as provided to us, i.e. we were unable to carve out any "excess" portions; these should be minimal anyway since the limits only affect those benefits earned after 1991.

Appendix C

Active Member Data

Age group ¹	Active members December 31, 2009 ²			New entrants in 2009	
	Number	Average annual earnings ³ \$	Average service (years)	Number	Average annual earnings ³ \$
Group 1 (males - normal retirement age = 65)					
15-19	5	38,253	0.4	10	42,532
20-24	540	47,243	1.0	285	47,792
25-29	2,038	52,780	2.0	478	50,559
30-34	3,110	56,970	3.3	458	52,425
35-39	4,132	60,419	5.1	417	56,910
40-44	5,002	61,792	7.8	371	57,450
45-49	6,562	61,768	10.8	309	55,743
50-54	6,946	62,976	14.1	227	57,955
55-59	5,504	65,062	16.0	128	57,650
60 & over	3,127	65,075	14.6	73	56,981
Total	36,966	61,503	10.2	2,756	54,132
Group 4 (females - normal retirement age = 65)					
15-19	8	38,652	0.3	17	42,561
20-24	1,879	46,859	0.9	1,051	48,021
25-29	7,845	52,628	1.8	1,871	50,499
30-34	10,055	56,055	3.1	1,271	51,527
35-39	11,733	57,063	4.5	1,186	50,659
40-44	14,091	55,865	6.4	1,062	49,367
45-49	18,559	54,904	8.4	913	48,057
50-54	19,697	55,411	10.6	612	48,329
55-59	15,588	56,241	12.4	344	49,510
60 & over	7,768	55,326	12.3	118	51,352
Total	107,223	55,384	7.9	8,445	49,760
Total Groups 1 & 4	144,189	56,953	8.5	11,201	50,836

¹ Age nearest birthday at December 31, 2009 for actives and at entry for new entrants.

² 7 actives excluded because of invalid data; 5,075 actives included with inactive data.

³ Actual earnings in 2009 for those employed all year and annualized for others. Very low or very high earnings figures were replaced by the average earnings in the same age-group category.

Age group ¹	Active members December 31, 2009 ²			New entrants Jan-1-07 to Dec-31-09 and still active Dec-31-09	
	Number	Average annual earnings ³ \$	Average service (years)	Number	Average annual earnings ³ \$
Group 2 (males - normal retirement age = 60)⁴					
20-24	63	56,608	1.1	44	53,683
25-29	482	64,296	2.5	84	55,313
30-34	812	72,481	4.9	48	55,123
35-39	1,166	76,791	8.0	31	58,778
40-44	1,075	81,912	12.2	13	64,144
45-49	1,040	88,837	18.0	8	71,802
50-54	887	96,250	23.8	3	108,915
55 & over	382	99,313	27.1	2	56,696
Total males	5,907	82,395	13.2	233	57,188
Group 2 (females - normal retirement age = 60)⁴					
20-24	12	57,201	1.4	4	56,034
25-29	72	62,404	2.6	10	55,311
30-34	138	73,001	5.0	6	60,357
35-39	151	78,386	8.4	4	54,620
40-44	162	81,492	11.5	3	55,128
45-49	98	85,139	15.5	2	48,409
50-54	46	85,503	18.9	1	51,294
55 & over	16	73,904	24.8	-	-
Total females	695	77,339	9.8	30	55,712
Total Group 2	6,602	81,863	12.8	263	57,020
Total – All groups	150,791	58,043	8.7	11,464	50,978

¹ Age nearest birthday at December 31, 2009 for actives and at entry for new entrants.

² 7 actives excluded because of invalid data; 5,075 actives included with inactive data.

³ Actual earnings in 2009 for those employed all year and annualized for others. Very low or very high earnings figures were replaced by the average earnings in the same age-group category.

⁴ Group 2 data is separated into males and females; female subset includes 3 members with 35 or more years of service who are likely in group 3.

A comparison of the December 31, 2009 active membership with the December 31, 2006 active membership is as follows:

	Group 1	Group 4	Group 2
At December 31, 2009			
- Number	36,966	107,223	6,602
- Proportion of total	24.5%	71.1%	4.4%
- Average age (at 12.31)	46.2	45.4	41.3
- Average service	10.2	7.9	12.8
- Average salary	\$61,503	\$55,384	\$81,863
At December 31, 2006			
- Number	33,449	95,257	6,142
- Proportion of total	24.8%	70.6%	4.6%
- Average age (at 12.31)	46.1	45.5	41.2
- Average service	10.6	7.9	13.2
- Average salary	\$54,559	\$50,051	\$71,195
Change 2006 to 2009			
- Number	+10.5%	+12.6%	+7.5%
- Proportion of total	-0.3%	+0.5%	-0.2%
- Average age	+0.1 years	-0.1 years	+0.1 years
- Average service	-0.4 years	no change	-0.4 years
- Average salary	+12.7%	+10.7%	+15.0%

The above comparison indicates an increase in the covered membership during the three year inter-valuation period, particularly for Groups 1 and 4. The proportion of females continues to increase. The average ages continue to increase for Groups 1 and 2, notwithstanding the increase in the covered membership; the average service has decreased for Groups 1 and 2.

A comparison of the new entrant subset used at December 31, 2009 with that used at December 31, 2006 in determining the entry-age normal costs, is as follows:

	Group 1	Group 4	Group 2
At December 31, 2009			
- Number	2,756	8,445	263
- Proportion of total	24.0%	73.7%	2.3%
- Average age at entry	37.5	36.1	30.7
- Average salary	\$54,132	\$49,760	\$57,020
At December 31, 2006			
- Number	3,419	12,709	224
- Proportion of total	20.9%	77.7%	1.4%
- Average age at entry	39.5	40.3	30.3
- Average salary	\$47,422	\$43,568	\$48,887
Change 2006 to 2009			
- Number	-19.4%	-33.6%	+17.4%
- Proportion of total	+3.1%	-4.0%	+0.9%
- Average age	-2.0 years	-4.2 years	+0.4 years
- Average salary	+14.1%	+14.2%	+16.6%

There is a decrease in the number of new entrants in 2009 compared to 2006 for Groups 1 and 4. Group 2 has an increased number of entrants, and a much higher average salary than in 2006. The average age of Groups 1 and 4 new entrants has decreased.

Appendix D

Inactive Member Data

1. Inactive Members Assumed Reactivated on Valuation Date

Age group ¹	Group 1 (males)			Group 4 (females)		
	Number	Average annual earnings ²	Average service (years)	Number	Average annual earnings ²	Average service (years)
20-24	1	46,450	1.5	1	48,526	0.5
25-29	4	53,710	3.9	36	52,891	2.4
30-34	25	56,916	3.7	134	56,160	3.8
35-39	42	60,442	5.0	169	57,084	5.1
40-44	53	61,766	7.5	173	55,874	6.6
45-49	57	61,709	10.4	199	54,922	7.4
50-54	55	63,042	11.4	220	55,355	8.9
55-59	33	64,991	12.6	128	56,258	9.9
60 & over	27	65,469	14.0	60	55,191	10.5
Total	297	61,931	9.2	1,120	55,725	7.1

Age group ¹	Group 2 (males)			Group 2 (females)		
	Number	Average annual earnings ²	Average service (years)	Number	Average annual earnings ²	Average service (years)
20-24	1	53,585	1.0	-	-	-
25-29	2	64,831	2.5	-	-	-
30-34	-	-	-	2	72,199	5.5
35-39	3	77,116	10.2	4	77,047	8.8
40-44	-	-	-	2	82,983	10.8
45-49	4	89,405	19.8	-	-	-
50-54	2	95,982	16.0	1	90,611	9.9
55 & over	2	97,815	24.0	-	-	-
Total	14	82,844	14.0	9	78,796	8.6

	Number	Average annual earnings ²	Average service
Total - All Groups	1,440	\$57,413	7.6 years

¹ Age nearest birthday at December 31, 2009.

² Assumed same earnings as for active members in same age-group category, except for members currently working in B.C. family of plans, where actual earnings used.

2. Members on Long-Term Disability with Projected Deferred Pensions

Age group ¹	Males		Females	
	Number	Average annual deferred pensions ²	Number	Average annual deferred pensions ²
20-24	-	-	3	17,903
25-29	6	23,456	37	22,432
30-34	13	19,314	95	23,278
35-39	32	20,824	191	22,156
40-44	76	19,494	391	19,722
45-49	147	18,980	704	18,284
50-54	224	19,234	1,222	15,758
55-59	306	16,814	1,549	14,352
60 & over	288	15,020	1,339	12,215
Total	1,092	17,499	5,531	15,504

3. Other Inactive Members Entitled to Vested Pensions and Not Assumed Reactivated

Age group ¹	Males			Females		
	Average annual vested pensions			Average annual vested pensions		
	Number	Initial ³	Offset at age 65	Number	Initial ³	Offset at age 65
25-29	97	2,137	711	263	2,181	688
30-34	316	3,323	994	824	2,753	845
35-39	599	4,755	1,385	1,540	3,723	1,122
40-44	899	6,487	1,808	1,953	5,190	1,496
45-49	1,037	7,876	2,179	2,373	6,330	1,810
50-54	1,029	9,971	2,653	2,461	7,799	2,178
55-59	570	10,860	2,530	1,446	7,648	2,068
60 & over	262	8,699	1,872	598	5,832	1,597
Total	4,809	7,660	2,030	11,458	5,889	1,669

¹ Age nearest birthday at December 31, 2009.

² Basic lifetime portions assumed payable from age 62; males include 21 Group 2 members and females include 6 Group 2 members with pensions commencing from age 57; additional temporary pensions are payable to age 65.

³ These pensions are assumed to commence at the first age at which the member is entitled to an unreduced pension, i.e. at various ages between 55 and 65.

4. Remaining Inactive Members

Number	Member contributions with interest
18,212 ¹	\$73,865,976

¹ Includes 7 active, 352 disabled and 706 vested members, with invalid data.

Appendix E

Pensioner Data

1. Former Contributors

Age group ¹	Number of pensioners ²	Annual Pensions (\$000's) ³				
		Single life	Joint life & survivor	Joint life & survivor with guarantee	Single life with guarantee	Temporary life
Male pensioners						
Less than 50	14	105	124	0	0	0
50-54	183	119	3,114	919	2,492	1,588
55-59	1,898	2,110	21,630	7,299	18,313	16,934
60-64	3,968	7,758	42,325	11,979	29,562	33,849
65-69	3,962	10,912	38,663	7,357	20,546	3,147
70-74	3,082	16,507	26,634	1,686	8,714	0
75-79	2,497	18,136	17,792	85	1,547	0
80-84	1,799	14,969	11,012	0	61	0
85-89	938	10,070	5,509	0	0	0
90 & over	357	4,344	1,473	0	0	0
Total	18,698	85,030	168,277	29,325	81,234	55,518
Female pensioners						
Less than 50	27	183	137	10	36	14
50-54	71	194	333	20	415	151
55-59	3,182	1,376	9,795	2,106	20,442	18,312
60-64	8,601	12,373	22,721	4,782	58,545	51,856
65-69	9,560	32,588	21,869	3,947	44,964	5,426
70-74	6,296	38,660	10,904	1,129	10,835	0
75-79	4,038	27,839	4,843	9	1,696	0
80-84	2,405	16,826	1,844	0	49	0
85-89	1,136	9,715	501	0	0	0
90 & over	544	5,361	116	0	0	0
Total	35,860	145,114	73,063	12,004	136,982	75,760
Grand Total	54,558	230,144	241,340	41,329	218,216	131,278

¹ Age nearest birthday at December 31, 2009.

² These numbers include only those who were formerly contributors to the plan.

³ Including supplements to January 1, 2009.

2. Beneficiaries

Age group ¹	Number of beneficiaries ²	Annual Pensions (\$000's) ³	
		Single life	Temporary life
Male beneficiaries			
Less than 50	39	293	-
50-54	34	218	-
55-59	84	660	-
60-64	150	1,364	11
65-69	176	1,535	-
70-74	176	1,453	2
75-79	162	1,202	-
80-84	123	807	-
85-89	67	450	-
90 & over	14	83	-
Total	1,025	8,067	13
Female beneficiaries			
Less than 50	56	653	-
50-54	108	1,708	-
55-59	173	2,765	-
60-64	288	4,620	33
65-69	369	5,244	5
70-74	473	6,512	-
75-79	699	8,678	-
80-84	841	10,239	-
85-89	653	8,280	-
90 & over	429	5,639	-
Total	4,089	54,338	38
Remaining guarantees	478	5,356	-
Grand Total	5,592	67,761	51

¹ Age nearest birthday at December 31, 2009.

² These numbers include spouses (or estates) currently receiving benefits where the former contributor is deceased.

³ Including supplements to January 1, 2009.

Appendix F

Development of Required Contribution Rates

All of the cost figures shown herein are integrated and on a level, i.e. "non-doubling" basis and are combined member/employer rates.

Normal ("entry-age") actuarial cost portion	2009 %	2006 %
- Group 1 (males)	14.45	14.24
- Group 4 (females)	14.98	15.06
- Groups 1/4 combined	14.81	14.86
- Group 2 (males and females combined)	17.86	17.40
- Group 5	20.66	20.09
- Groups 1/4/2 average	15.00	15.02

The change in the normal actuarial cost from 2006 to 2009 can be traced as follows:

	Groups 1 and 4			Group 2	Group 5	Groups 1/4/2/5 average
	Group 1 %	Group 4 %	Combined %	%	%	%
Normal cost at 2006 valuation	14.24	15.06	14.86	17.40	20.09	15.02
Data changes	(0.14)	(0.58)	(0.50)	(0.05)	(0.06)	(0.48)
Assumption changes:						
• investment return/salary increase	0.32	0.36	0.34	0.42	0.52	0.35
• withdrawal rates	(0.04)	0.07	0.04	0.00	0.00	0.04
• retirement rates	(0.05)	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)
• pre-retirement mortality	0.01	0.01	0.00	0.00	0.00	0.00
• post-retirement disabled mortality	0.01	0.01	0.02	0.00	0.00	0.02
• post-retirement mortality	0.10	0.07	0.08	0.11	0.13	0.08
Total change	0.21	(0.08)	(0.05)	0.46	0.57	(0.02)
Normal cost at 2009 valuation	14.45	14.98	14.81	17.86	20.66	15.00

Calculation of Required Contribution Rate

	2009	2006
A. Normal (entry-age) actuarial cost	15.00%	15.02%
B. Unfunded actuarial liability on entry-age basis (\$000's)	(\$2,403,635)	(\$698,543)
C. Present value of existing amortization requirements (\$000's)		
(i) 1.06% to 2018	675,242	698,543
D. Balance of unfunded liability to be amortized over 15 years (\$000's) (= B + C)	(1,728,393)	0
E. 15 year amortization of balance of unfunded actuarial liability	1.75%	0%
F. Total PBSA amortization requirement		
(i) to 2018	1.06	1.06
(ii) to 2024	1.75	n/a
Total PBSA amortization	2.81	1.06
G. Total PBSA required contribution rate	17.81	16.08

The percentages are applied to members' total earnings and are integrated (i.e. reduced by 1.5% on members' salary up to the YMPE for each of the members and the employers, for a 3.0% total reduction).

Appendix G

Comparative Results on Fully Indexed Basis, and with Income Tax Limits

The results herein are analogous to those contained in Schedules 1 through 4 in the body of the report. For ease of comparison, we have repeated the 2009 Basic Account results; selected 2006 comparisons are also shown. The results are included for:

- Basic (i.e. non-indexed) benefits only, no tax limits;
- Basic plus Indexed, no tax limits;
- Basic only, with tax limits; and
- Basic plus Indexed, with tax limits

Schedule G1 – Statement of Actuarial Position as at December 31, 2009

Present Plan - (\$000's)

	No Tax Limits		With Tax Limits	
	Basic Only	Basic + Indexed	Basic Only	Basic + Indexed
Assets				
Fund - market value	20,363,772	24,182,915	20,363,772	24,182,915
Asset smoothing adjustment	1,050,888	1,247,978	1,050,888	1,247,978
Fund - actuarial value	21,414,660	25,430,893	21,414,660	25,430,893
Actuarial present values of				
- future member contributions	4,830,756	5,587,809	4,830,756	5,587,809
- future employer contributions	6,256,496	6,407,906	6,256,496	6,407,906
Total Assets	32,501,912	37,426,608	32,501,912	37,426,608
Liabilities				
Actuarial present values for				
- pensions being paid	8,900,555	11,605,814	8,900,555	11,605,814
- inactive members	1,590,832	2,269,730	1,590,818	2,269,710
- active members	22,579,260	31,116,546	22,416,125	30,892,861
- future expenses	455,454	455,454	455,454	455,454
Total Liabilities	33,526,101	45,447,544	33,362,952	45,223,839
Surplus (Unfunded Actuarial Liability)	(1,024,189)	(8,020,936)	(861,040)	(7,797,231)
Selected 2006 Comparisons				
Total Assets	26,347,926	30,718,190	26,347,926	30,718,190
Total Liabilities	25,909,552	35,917,341	25,796,683	35,759,137
Surplus (Unfunded Actuarial Liability)	438,374	(5,199,151)	551,243	(5,040,947)

Schedule G2 – Develop Surplus (Unfunded Actuarial Liability) on Entry-Age Basis – December 31, 2009

Present Plan - (\$000's)

	No Tax Limits		With Tax Limits	
	Basic only	Basic + Indexed	Basic only	Basic + Indexed
(a) Surplus (unfunded liability) on current contribution basis	(1,024,189)	(8,020,936)	(861,040)	(7,797,231)
(b) Present value of future contributions at				
(i) entry-age rates ¹	9,707,806	13,461,428	9,657,680	13,389,740
(ii) current rates	11,087,252	11,995,715	11,087,252	11,995,715
(iii) = (i) – (ii)	(1,379,446)	1,465,713	(1,429,572)	1,394,025
(c) Surplus (unfunded liability) on entry-age basis, = (a) + (b)	(2,403,635)	(6,555,223)	(2,290,612)	(6,403,206)
(d) Present values of existing amortization requirement				
(i) to 2018 - rate	1.06%	n/a	0.91%	n/a
- amount	675,242	n/a	579,688	n/a
Selected 2006 Comparisons				
Surplus (unfunded liability)				
- on current contribution basis	438,374	(5,199,151)	551,243	(5,040,947)
- on entry-age basis ("level")	(698,543)	(4,002,897)	(597,353)	(3,861,981)

¹ All figures are level, i.e. "non-doubling" future contribution basis.

Schedule G3 – Current and Required Contribution Rates – December 31, 2009

	No Tax Limits		With Tax Limits	
	Basic only %	Basic + Indexed %	Basic only %	Basic + Indexed %
Current contribution rates^{1, 2, 3}				
▪ Member - Groups 1, 2, 4	7.49	8.49	7.49	8.49
▪ Member - Group 5	8.96	10.38	8.96	10.38
▪ Employer - Groups 1 & 4	8.42	8.62	8.42	8.62
▪ Employer - Group 2	13.09	13.29	13.09	13.29
▪ Employer - Group 5	14.56	15.18	14.56	15.18
▪ Employer - Average	8.71	8.91	8.71	8.91
▪ Total - Groups 1 & 4	15.91	17.11	15.91	17.11
▪ Total - Group 2	20.58	21.78	20.58	21.78
▪ Total - Group 5	23.52	25.56	23.52	25.56
▪ Total - Average	16.20	17.40	/ 16.20	17.40
Theoretical contribution rates^{1, 4}				
▪ Entry-age normal cost - Groups 1 & 4	14.81	19.70	14.74	19.60
▪ Entry age normal cost - Group 2	17.86	23.65	17.84	23.62
▪ Entry age normal cost - Group 5	20.66	27.61	20.62	27.56
▪ Entry age normal cost - Average	15.00	19.94	14.93	19.85
Amortization of unfunded actuarial liability (surplus) - all Groups				
▪ 15 year amortization	2.44	6.65	2.32	6.50
▪ PBSA amortization (9 years)	1.06	n/a	0.91	n/a
▪ PBSA amortization (15 years)	1.75	n/a	1.74	n/a
▪ PBSA Total amortization	2.81	n/a	2.65	n/a
▪ Additional Group 5 amortization	0.23	0.31	0.24	0.31
Total contribution rate - average¹				
15 year amortization	17.44	26.59	17.25	26.35
Required Rate - PBSA amortization	17.81	n/a	17.58	n/a

¹ Less 1.5% of salary up to the YMPE (for each of the members and the employers).

² Non-indexed costs ignore IAA contributions; indexed costs include IAA contributions, at 1.0% for members and 0.2% for Groups 1, 2, 4 and 0.62% (net of EHB, Dental) for employers (2006 - at 0.2% net of MSP, EHB, Dental).

³ The current rates are shown on an equivalent "non-doubling" basis, based on current payrolls.

⁴ Total member plus employer. For 2001 onwards, any increase in contribution rates from current levels are shared equally between members and employers. Once member and employer rates are rebalanced after the transitional period, decreases will also be shared equally.

Schedule G3 – Current and Required Contribution Rates – December 31, 2009 - (continued)

	No Tax Limits		With Tax Limits	
	Basic only %	Basic + Indexed %	Basic only %	Basic + Indexed %
Selected 2006 Comparisons^{1, 2, 3}				
Member rate - Groups 1, 2, 4	7.49	8.49	7.49	8.49
Employer rate - Groups 1 & 4	8.36	8.56	8.36	8.56
Employer rate - Group 2	13.06	13.26	13.06	13.26
Employer rate - Average	8.65	8.85	8.65	8.85
Total rates - Groups 1 & 4	15.85	17.05	15.85	17.05
Total rates - Group 2	20.55	21.75	20.55	21.75
Total rates - Average	16.14	17.34	16.14	17.34
Total normal cost rate - Groups 1 & 4	14.86	19.84	14.84	19.81
Total normal cost rate - Group 2	17.40	23.21	17.39	23.20
Total normal cost rate - Average	15.02	20.05	15.00	20.02
15 year amortization ⁴	0.88	5.05	0.75	4.87
PBSA amortization (12 years)⁴	1.06	n/a	0.91	n/a
Total contribution rate - average¹				
15 year amortization	15.90	25.10	15.75	24.89
Required Rate - PBSA amortization	16.08	n/a	15.91	n/a

¹ Less 1.5% of salary up to the YMPE (for each of the members and the employers).

² Non-indexed costs ignore IAA contributions; indexed costs include IAA contributions, at 1.0% for members and 0.2% for Groups 1, 2, 4 and 0.62% (net of EHB, Dental) for employers (2006 - at 0.2% net of MSP, EHB, Dental).

³ The current rates are shown on an equivalent "non-doubling" basis, based on current payrolls.

⁴ Not integrated.

Schedule G4 – Accrued Liabilities and Funded Ratio – December 31, 2009

Present Plan - (\$000's)

	No Tax Limits		With Tax Limits	
	Basic Only	Basic + Indexed	Basic Only	Basic + Indexed
Fund – smoothed value	21,414,660	25,430,893	21,414,660	25,430,893
Accrued Liabilities				
- for pensions being paid	8,900,555	11,605,814	8,900,555	11,605,814
- for inactive members	1,590,832	2,269,730	1,590,818	2,269,710
- for active members	11,893,499	16,362,902	11,789,693	16,220,853
Total Accrued Liabilities	22,384,886	30,238,446	22,281,066	30,096,377
Surplus (Unfunded Actuarial Liability)	(970,226)	(4,807,553)	(866,406)	(4,665,484)
Funded Ratio Fund ÷ Total accrued liabilities	95.7%	84.1%	96.1%	84.5%
Selected 2006 Comparisons				
Assets	17,460,556	21,102,319	17,460,556	21,102,319
Total Liabilities	17,243,756	23,893,328	17,176,609	23,799,299
Surplus (Unfunded Actuarial Liability)	216,800	(2,791,009)	283,947	(2,696,980)
Funded Ratio	101.3%	88.3%	101.7%	88.7%