



Office of the Superintendent of  
Financial Institutions Canada

Bureau du surintendant des  
institutions financières Canada

Office of the Chief Actuary

Bureau de l'actuaire en chef



# ACTUARIAL REPORT

on the Pension Plan for the

## **PUBLIC SERVICE OF CANADA**

as at 31 March 2005

**Office of the Chief Actuary**

Office of the Superintendent of Financial Institutions Canada

16<sup>th</sup> Floor, Kent Square Building

255 Albert Street

Ottawa, Ontario

K1A 0H2

Facsimile: **613-990-9900**

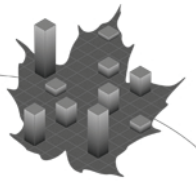
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Web site: **[www.osfi-bsif.gc.ca](http://www.osfi-bsif.gc.ca)**

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14 September 2006

The Honourable John Baird, P.C., M.P.  
President of the Treasury Board  
Ottawa, Canada  
K1A 0R5

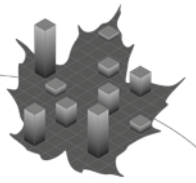
Dear Minister:

Pursuant to section 6 of the *Public Pensions Reporting Act*, I am pleased to submit the report on the actuarial review as at 31 March 2005 of the Public Service pension plan. This plan is defined by Parts I, III and IV of the *Public Service Superannuation Act*, the *Pension Benefits Division Act* and the Public Service-related benefits provided under the *Special Retirement Arrangements Act*.

Yours sincerely,

Jean-Claude Ménard, F.S.A., F.C.I.A.  
Chief Actuary



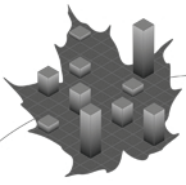


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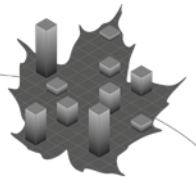


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## I. Executive Summary

### A. Introduction

The previous actuarial report on the Public Service pension plan was made as at 31 March 2002. The valuation was in respect of the plan defined by Parts I, III and IV of the *Public Service Superannuation Act* (PSSA) and by the *Pension Benefits Division Act* (PBDA). The Public Service pension plan is deemed to also include the Public Service-related benefits defined in the *Special Retirement Arrangements Act*.

In the previous actuarial report, a valuation was conducted on a solvency basis as a measure of sensitivity. For this report, the solvency valuation is replaced by two other valuations to measure the investment risks inherent to the Public Service pension plan.

### B. Purpose of Actuarial Report

This actuarial report on the Public Service pension plan was made as at 31 March 2005 pursuant to the *Public Pensions Reporting Act* (PPRA). The date of the next periodic review is 31 March 2008.

In accordance with accepted actuarial practice, the main purpose of this actuarial report is to show realistic estimates of:

- balance sheets of the pension plan as at the valuation date, i.e. the actuarial liabilities, the actuarial value of assets and the actuarial surplus or actuarial deficit of the Pension Fund;
- the annual amount to amortize over a period of years any actuarial deficit revealed as at the valuation date; and
- the projected costs of the plan for each of the next three plan years<sup>1</sup> following the valuation date.

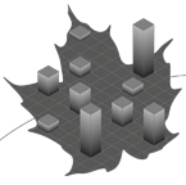
### C. Main Findings

- As at 31 March 2005, the plan had an actuarial excess of \$4,715.7 million in the Superannuation Account and an actuarial deficit of \$393.3 million in the Pension Fund. These amounts are 5.9% and 2.7% of the corresponding liabilities, respectively.
- The actuarial excess of the Superannuation Account is less than 10% of the corresponding liabilities. If the \$393.3 million Pension Fund actuarial deficit were to be amortized, after taking into consideration the special payment of \$3.5 million made on 31 March 2006, in 11<sup>2</sup> equal annual instalments beginning on 31 March 2007, the instalments including interest would be \$54.7 million.

---

<sup>1</sup> Any reference to a given *plan year* in this report should be taken as the 12-month period ending 31 March of the given year.

<sup>2</sup> The deficit is amortized over the expected average remaining service life (EARSL) for the active contributors, which is 12 years as at 31 March 2005, except that the proposed schedule is deemed to begin on 31 March 2007. Special payments are assumed to be made at the end of the plan year.



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- The plan normal cost for the 2007 plan year is 18.01% of pensionable payroll<sup>1</sup>, which is \$2,809.4 million. The normal cost is estimated to increase marginally to 18.08% and 18.15% for the following two plan years.

### **D. Retirement Compensation Arrangements (RCA) Accounts Results**

- As at 31 March 2005, the RCA No. 1 Account had an actuarial excess of \$309.3 million.
- The RCA No. 1 Account normal cost for the 2007 plan year is 0.36% of pensionable payroll, that is \$56.1 million, and is estimated to be 0.35% and 0.35% of pensionable payroll respectively for the following two plan years.
- As at 31 March 2005, the RCA No. 2 Account had an actuarial deficiency of \$71.0 million.
- If the \$71.0 million RCA No. 2 Account actuarial deficiency were to be amortized, after taking into consideration the special payment of \$10.3 million made on 31 March 2006, in 11 equal annual instalments beginning on 31 March 2007, the instalments including interest would be \$7.0 million.

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<sup>1</sup> Pensionable payroll means the aggregate of pensionable earnings of all contributors with less than 35 years of service, except for members on leave without pay.





## II. Financial Position of the Plan

### A. PSSA Valuation Results

Beginning on 1 April 2000, employer and employee contributions to the *Public Service Superannuation Act* (PSSA) plan were no longer credited to the Public Service Superannuation Account. Rather, they were deposited in the newly created Public Service Pension Fund to be invested in the financial markets. The valuation results of this section show the financial position for both PSSA financing arrangements as at 31 March 2005. A projection of the Superannuation Account is shown in Appendix 9 and a projection of the Pension Fund is shown in Appendix 10.

The following balance sheet was prepared using the assets described in Appendix 4, the data described in Appendix 5, the methodology described in Appendix 6, and the assumptions described in Appendix 7.

**Table 1 Balance Sheet**  
As at 31 March 2005 (\$ millions)

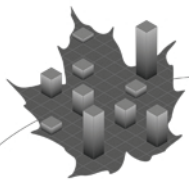
Assets	Superannuation Account	Pension Fund
Actuarial value of assets <sup>1</sup>	84,901.5	13,974.0
Excess of Actuarial Value of Assets over Actuarial Liabilities	4,715.7	-
	<b>80,185.8</b>	-
<b>Actuarial liabilities</b>		
Active contributors	35,810.3	12,958.1
Non-active contributors	162.3	45.1
Retirement pensioners (including deferreds)	36,511.3	1,227.3
Disability pensioners	1,817.2	80.3
Surviving dependents	4,983.9	32.6
Outstanding payments	41.0	23.9
Administrative expenses	859.8	- <sup>2</sup>
Total actuarial liabilities	<b>80,185.8</b>	<b>14,367.3</b>
<b>Actuarial surplus/(deficit)</b>	-	(393.3)

### B. Reconciliation of PSSA Valuation Results

This section reconciles each financial position shown in this valuation with the corresponding item of the previous valuation. The items shown in the following table are explained afterward.

<sup>1</sup> Includes the present value of future contributions in respect of elected prior service and leave without pay, which were estimated at \$400.2 million for the Superannuation Account and \$428.6 million for the Pension Fund. The Pension Fund was increased by an additional \$120.0 million which corresponds to contributions made after the valuation date by Public Service Corporations. Moreover, the actuarial value of assets for the Pension Fund corresponds to a five-year smoothed market value where the appreciation of investment gains or losses is recognized at the rate of 20% per year.

<sup>2</sup> The administrative expenses are recognized in the year they occur through the calculation of the normal cost.



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**Table 2 Reconciliation of Financial Position**  
(\$ millions)

	Superannuation Account	Pension Fund
As at 31 March 2002	9,093.2	(219.4)
Unrecognized investment losses as at 31 March 2002	-	(232.7)
Corrections (2001-2002 period)		
Methodology changes and errors corrections	(325.5)	5.4
Retroactive change in salaries	(964.1)	(126.3)
Prior service elections	(9.1)	(170.4)
Unanticipated new contributors	-	(57.6)
Over estimate of terminations (ROC or Transfer Value)	(280.1)	(76.5)
Others	84.4	(123.1)
Expected interest on initial financial position	2,043.8	(203.5)
Amounts debited on basis of actuarial valuation	(3,190.5)	7.2
Experience gains and losses	(2,780.0)	1,196.1
Change in actuarial assumptions	(865.3)	(152.6)
Change in the present value of administrative expenses	(80.2)	-
Change in the present value of prior service contributions	(220.2)	379.6
Change in the outstanding payments	2,209.4	80.0
Unrecognized investment gains as at 31 March 2005	-	(699.5)
As at 31 March 2005	4,715.7	(393.3)

### 1. Unrecognized Investment Losses as at 31 March 2002

An actuarial asset valuation method that minimizes the impact of short-term fluctuations in the market value of assets was used in the previous valuation report, causing the actuarial value of the Pension Fund assets to be \$232.7 million more than their market value.

### 2. Corrections Over the 2001-2002 Period

The itemized corrections shown in the previous table resulted in an increase in the actuarial liabilities of \$1,494.4 million and \$548.5 million respectively in both the Superannuation Account and the Pension Fund. The unanticipated retroactive salary increases impacted predominantly the Superannuation Account.

### 3. Expected Interest on Initial Financial Position

After factoring the data corrections items mentioned previously, the expected interest to 31 March 2005 on the Account actuarial excess of \$7,598.8 million as at 31 March 2002 amounted to \$2,043.8 million. After recognizing both the data corrections and the unrecognized investment losses items, the expected interest to 31 March 2005 on the Pension Fund actuarial deficit of \$1,000.6 million as at 31 March 2002 amounted to \$203.5 million. These amounts of interest were based



on the Account and Fund yields projected in the previous report for the three-year intervaluation period.

#### 4. Amounts Debited on Basis of Actuarial Valuation

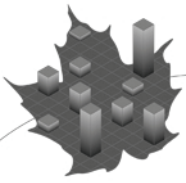
Legislative provisions grant authority to debit some excess of notional assets over actuarial liabilities from the Superannuation Account. After taking interest into account, the balance in the Account was reduced by \$3,190.5 million, following the withdrawals of \$2,240 million and \$770 million made on 31 March 2004 and 31 March 2005 respectively.

#### 5. Experience Gains and Losses

Since the previous valuation, experience losses have increased the Superannuation Account actuarial liabilities by \$2,780.0 million and have decreased the Pension Fund actuarial liabilities by \$1,196.1 million. The items (in \$ millions) are described in the following table.

	Superannuation Account	Pension Fund
Demographic assumptions (i)		
New entrants	(120.2)	(7.6)
Terminations (ROC or transfer value)	(672.7)	(378.4)
Deaths (ROC)	(30.1)	(6.5)
Retirements with an annuity	103.2	27.4
Disabilities with an annuity	(1.8)	(2.6)
Deaths with an annuity	(1.5)	0.5
Healthy pensioner deaths	(23.2)	0.5
Healthy pensioner terminations	0.4	0.1
Disabled pensioner deaths	11.6	0.0
Widow(er) deaths	6.8	0.1
Total	(727.5)	(366.5)
Cost/contributions difference (ii)	47.7	573.9
Expected/Actual disbursements (iii)	(1,639.7)	518.0
Pension indexation (iv)	(484.8)	(4.5)
YMPE increases	(66.4)	(20.8)
Economic salary increases (v)	424.1	67.6
Promotional and seniority increases (vi)	(189.2)	(26.3)
Investment earnings (vii)	206.8	519.6
Administrative expenses	(132.2)	0.0
Miscellaneous	(219.0)	(64.9)
<b>Experience gains and losses</b>	<b>(2,780.0)</b>	<b>1,196.1</b>

- (i) The net impact of the demographic experience increased the Account actuarial liabilities by \$727.5 million and the Fund actuarial liabilities by \$366.5 million. Lesser expected terminations and unanticipated new contributors with prior service elections accounted for most of the impact on the Account actuarial



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liabilities. The Fund actuarial liabilities were also impacted by lesser terminations than anticipated.

- (ii) An increase in the Account actuarial excess of \$47.7 million resulted from greater than expected prior service contributions. A decrease in the Fund actuarial deficit of \$573.9 million was the result of actual government contributions during the intervaluation period being more than the government portion of the normal cost shown in the cost certificate of the previous report. Unanticipated new prior service elections during the intervaluation period are the principle reason for the excess contributions to the Fund. These amounts include interest accumulation on the differences to 31 March 2005.
- (iii) The Account actuarial excess would have increased marginally, since benefit payments were less than anticipated during the intervaluation period, had it not been for the transfer of \$1.7 billion to the Canada Post Corporation in plan year 2003. A decrease of \$518.0 million in the Fund actuarial deficit resulted from excess transfer of liabilities from other pension plans over total transfer values to other pension plans and net benefit payments.
- (iv) The January 2004 pension benefit indexation exceeded the projected pension indexing by 1.3%, which resulted in a \$484.8 million decrease in the Account actuarial excess. The impact on the Fund actuarial deficit is marginal as few pension benefits are paid from the Fund.
- (v) Higher than expected promotional salary increases resulted in an increase of \$189.2 million in the Account actuarial liabilities and a corresponding increase of \$26.3 million in the Fund actuarial liabilities.
- (vi) The effective general economic salary increase for plan year 2003 fell short of the expected increase by 1.9% while the effective increase for plan year 2004 exceeded the projected increase by 0.8%. The combined effect of both years' increases over the expected economic increases caused a decrease of \$424.1 million in the Account actuarial liabilities while the Fund actuarial liabilities decreased by \$67.6 million.
- (vii) The rates of interest credited to the Account were in aggregate slightly higher than the corresponding projected Account yields in the previous valuation; consequently the experience gain was \$206.8 million. After some difficult times in 2001, 2002 and 2003, financial markets soared in 2004 and 2005. Consequently investment earnings were \$519.6 million more than expected.

### **6. Change in Actuarial Assumptions**

Actuarial assumptions were revised based on economic trends and demographic experience as described in Appendix 7. The impact (in \$ millions) of these revisions as at 31 March 2005 is described in the following table.



Assumption	Superannuation Account	Pension Fund
Withdrawals	(133.6)	(55.6)
Pensionable retirements	0.3	6.0
Disabled retirements	2.2	10.9
Mortality rates	(165.1)	(24.0)
Mortality improvement factors	67.8	(15.9)
Proportion married at death	55.5	9.3
Age difference between spouses	193.6	12.2
Proportion taking a deferred annuity	(3.5)	71.9
Seniority and promotional salary increases	(282.5)	(108.8)
Economic salary increases	(98.7)	(84.7)
YMPE / MPE increases	165.5	82.2
Pension indexation	1,479.5	44.2
Interest earnings	(2,016.4)	(34.9)
New interest rate on commuted value	<u>(129.9)</u>	<u>(65.4)</u>
Net impact of change	(865.3)	(152.6)

The net impact of the revision of the assumptions is largely attributable to the changes in economic assumptions. As described in Appendix 7, except for the assumed real rate of return on the Fund, all economic assumptions made in the previous valuation were revised, with the most important being as follows:

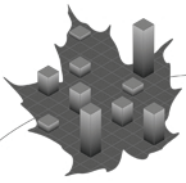
- ultimate level of inflation lowered from 2.7% to 2.5%;
- ultimate real increase in average earnings increased from 0.9% to 1.0%; and
- ultimate yield on the Account lowered from 5.7% to 5.35%.

## 7. Unrecognized Investment Gains

The same actuarial asset valuation method described in the 2002 valuation report, which role is to minimize the impact of short-term fluctuations in the market value of assets (see Appendix 6) was used for this valuation. For this valuation, the method caused the actuarial value of the Pension Fund assets to be \$699.5 million less than their market value due to unrecognized investment gains.

## 8. Change in the Outstanding Payments

The outstanding payments liabilities were substantially reduced during the intervalation period. After taking interest into account, the anticipated transfer of the \$2.2 billion Account liability to the Canada Post Corporation (CPC), was realized during plan year 2003. A total of \$1.7 billion was transfer from the Account in plan year 2003 as previously shown in the 'Expected/Actual disbursements' item of the 'Experience Gains and Losses' table.



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## C. PSSA Cost Certificate

The normal costs, assets and liabilities were computed using the assets described in Appendix 4, the data described in Appendix 5, the methodology described in Appendix 6, and the assumptions described in Appendix 7. Emerging experience, differing from the corresponding assumptions, will result in gains or losses to be revealed in subsequent reports.

This valuation reflects increases in member contribution rates, announced by the President of the Treasury Board. The increased member contribution rates, described in Appendix 2, are applied in calendar year 2006 and thereafter.

### 1. Normal Cost

The estimated value of the sum of the benefits that will accrue on behalf of the contributors and the estimated administrative expenses to be charged to the Fund for plan year 2006 is 18.01% of pensionable payroll. The following table shows the details of the normal cost for plan year 2006.

**Table 3 Normal Cost for Plan Year 2006**  
(\$ millions)

Total normal cost	2,809.4
Member required contributions	817.1
Government normal cost	1,992.3
Expected pensionable payroll	15,602.0
Total normal cost as % of expected pensionable payroll	18.01%
Ratio of government to member contributions	2.44

The following table reconciles the plan year 2006 normal cost with the plan year 2003 normal cost of the previous valuation.



**Table 4 Reconciliation of PSSA Normal Cost**  
(% of pensionable payroll)

For plan year 2003	17.25
Expected normal cost change	0.10
Change in methodology	0.03
Change in demographics	0.31
Changes in assumptions	
Withdrawals	0.10
Pensionable retirements	0.02
Disabled retirements	(0.01)
Mortality rates and mortality improvement factors	0.05
Proportion married at death and age difference between spouses	(0.03)
Proportion taking a deferred annuity	(0.14)
Seniority and promotional salary increases	0.13
Economic salary increases	0.15
YMPE / MPE increases	(0.05)
Pension indexation	(0.06)
Investment earnings	0.06
New interest rate on commuted value	0.08
Other items	0.02
For plan year 2006	18.01

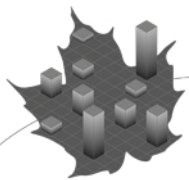
## 2. Projection of Normal Costs

The following PSSA normal costs are expressed as a dollar amount as well as a percentage of the projected pensionable payroll in each given plan year.

Plan Year	Percentage	\$ millions
2006	18.01	2,809.4
2007	18.08	2,953.8
2008	18.15	3,089.4
2009	18.18	3,227.9
2010	18.20	3,374.9
2015	18.23	4,313.3
2020	18.29	5,518.1

## 3. Allocation of Normal Costs

The foregoing projected normal costs are borne jointly by the contributors and the government. Current member contribution rates are 4% up to the Year's Maximum Pensionable Earnings (YMPE) of the Canada/Quebec Pension Plan (C/QPP) and 7.5% of salary above the YMPE. Beginning in calendar year 2006, member contribution rates on the salary up to the YMPE will increase by 0.3% per year from 4.3% in calendar year 2006 up to the ultimate level of 6.4% first attained in calendar year 2013. The member contribution rates on salary above the YMPE will also



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increase by 0.3% per year from 7.8% in calendar year 2006 to the ultimate level of 8.4% first attained in calendar year 2008.

Plan Year	Government (%)	Member (%)	Ratio
2006	12.77	5.24	2.44
2007	12.53	5.55	2.26
2008	12.27	5.88	2.09

On a calendar year basis, the normal cost starting with calendar year 2007 would be as follows:

Calendar Year	Government (%)	Members (%)	Total (%)	Total (\$ millions)
2007	12.34	5.80	18.13	3,055.5
2008	12.07	6.10	18.17	3,193.3
2009	11.86	6.33	18.19	3,338.2

#### 4. Administrative Expenses

Based upon the assumptions described in Appendix 7, the Fund administrative expenses (included in the normal costs shown above) are estimated to be as follows:

Plan Year	
2006	\$6,553,000
2007	\$8,004,000
2008	\$9,533,000

#### 5. Contributions for Prior Service Elections and Leave Without Pay

Based upon the valuation data and the assumptions described in sections B and C of Appendix 7, member and government contributions for prior service and leave without pay elections were estimated as follows:

**Table 5 Estimated Contributions for Prior Service and Leave Without Pay**  
(\$ millions)

Plan Year	Superannuation Account		Pension Fund	
	Member	Government	Member	Government
2006	40.9	37.7	105.9	210.7
2007	37.0	34.3	106.6	215.4
2008	33.3	30.9	110.7	225.1

#### 6. Special Payments

Based upon the Pension fund yields described in Appendix 7, the \$393.3 million Pension Fund actuarial deficit could be amortized over the expected average remaining service lifetime of the contributors in 11 equal annual instalments of \$54.7 million beginning on 31 March 2007.



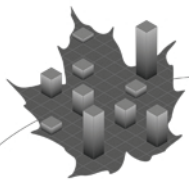


#### D. Sensitivity to Variations in Key Assumptions

The results below measure the effect on the plan year 2006 normal cost, on the actuarial excess of the Superannuation Account and on the actuarial deficit of the Pension Fund for the PSSA if the key economic assumptions are varied by one percentage point per annum from plan year 2006 onward.

Assumption(s) Varied	Normal Cost		Superannuation Account		Pension Fund	
	2006 (%)	Effect (%)	Actuarial Excess (\$ millions)	Effect (\$ millions)	Actuarial Surplus (\$ millions)	Effect (\$ millions)
Current basis	18.01	None	4,716	None	(393)	None
Investment yield						
- if 1% higher	14.48	(3.53)	14,621	9,905	2,194	2,587
- if 1% lower	22.78	4.77	(7,764)	(12,479)	(3,835)	(3,442)
Inflation						
- if 1% higher	20.43	2.42	(4,243)	(8,959)	(2,240)	(1,847)
- if 1% lower	16.03	(1.98)	12,226	7,510	1,127	1,520
Salary increases						
- if 1% higher	19.71	1.71	2,734	(1,982)	(1,533)	(1,140)
- if 1% lower	16.54	(1.46)	6,514	1,798	598	991
Inflation and salaries						
- if both are 1% higher	22.35	4.34	(6,489)	(11,204)	(3,519)	(3,126)
- if both are 1% lower	14.72	(3.29)	13,826	9,110	2,017	2,410
Investment yield, inflation and salaries						
- if all are 1% higher	17.70	(0.31)	5,699	983	(163)	230
- if all are 1% lower	18.33	0.32	3,702	(1,013)	(632)	(238)

The foregoing estimates indicate the degree to which the PSSA valuation results depend on some of the key assumptions. The differences between the results above and those shown in the valuation can also serve as a basis for approximating the effect of other numerical variations in a key assumption, to the extent that such effects are indeed linear.



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### E. RCA Valuation Results

The normal costs, assets and liabilities presented in this section were computed using the assets, data, methodology and assumptions described in Appendix 8.

#### 1. Valuation Results

**Table 6 RCA Account Balance Sheet**  
As at 31 March 2005 (\$ millions)

	RCA No. 1	RCA No. 2
<b>Assets</b>		
RCA Account	481.2	834.4
Refundable tax	449.7	827.6
Excess of assets over actuarial liabilities	<u>309.3</u>	<u>(71.0)</u>
	<b>621.6</b>	<b>1,733.0</b>
<b>Actuarial liabilities</b>		
Pensionable earnings over the tax limit		
Active contributors	331.2	-
Pensioners	40.3	-
Survivor Allowance		
Active contributors	155.0	-
Pensioners	65.3	-
Waiver of pension reduction	6.9	-
Former deputy heads	22.9	-
Early Retirement Incentive	-	<u>1,733.0</u>
<b>Total actuarial liabilities</b>	<b>621.6</b>	<b>1,733.0</b>

Since the last valuation on the RCA Account No. 1 as at 31 March 2002, the actuarial deficiency of \$485.2 million has become an actuarial excess of \$309.3 million as at 31 March 2005. The significant financial position improvement is mainly the result of the 2005 Federal Budget that raised the maximum annual pension accrual in a registered pension plan from the current \$2,000 to \$2,111 for calendar year 2006, \$2,222 for calendar year 2007, \$2,333 for calendar year 2008 and to \$2,444 for calendar year 2009.

Since the last valuation on the RCA Account No. 2 as at 31 March 2002, the actuarial deficiency of \$70.1 million has increased by \$0.9 million to reach \$71.0 million as at 31 March 2005. The \$71.0 million actuarial deficiency could be amortized after taking into consideration the special payment of \$10.3 million made on 31 March 2006, in 11 equal annual instalments of \$7.0 million beginning on 31 March 2007, based upon half the yield projected on the Superannuation Account shown in Appendix 7.

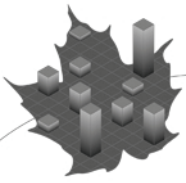


**2. Government RCA Normal Costs**

**Table 7 RCA Account Normal Costs**  
(\$ millions)

	Plan Year		
	<u>2006</u>	<u>2007</u>	<u>2008</u>
<b>Total Normal Cost</b>			
Pensionable earnings over tax limit	46.01	46.37	46.96
Survivor allowance	18.38	19.23	20.08
Deputy Head	<u>0.68</u>	<u>0.57</u>	<u>0.51</u>
Total	64.39	65.60	67.04
<b>Member Contributions</b>			
Pensionable earnings over tax limit	8.18	7.82	7.57
Deputy Head	<u>0.09</u>	<u>0.08</u>	<u>0.07</u>
Total member contributions	8.28	7.90	7.64
<b>Government Normal Cost</b>	56.11	57.70	59.39
Normal cost as % of total pensionable payroll	0.36%	0.35%	0.35%

Since the last valuation on the RCA Account as at 31 March 2002, the projected government normal cost for plan year 2006 has decreased by 0.19%, from 0.55% to 0.36%. The decrease in normal cost is mainly due to the 2005 Federal Budget.



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## III. Actuarial Opinion

In our opinion, considering that this report was prepared pursuant to the *Public Pensions Reporting Act*,

- the valuation input data on which it is based are sufficient and reliable;
- the assumptions that have been used are, in aggregate, appropriate; and
- the methodology employed is appropriate.

Based on the results of this valuation, we hereby certify that, as at 31 March 2005, the government's cost for the following three years is as follows:

**Table 8 Estimated Government Cost**

Plan Year	Normal Cost		Other Contributions <sup>1</sup>	Total Cost	
	PSSA (\$ millions)	RCA (\$ millions)	(\$ millions)	(\$ millions)	(% of pensionable payroll)
2006	1,992.2	56.1	264.6	2,312.9	14.82%
2007	2,047.4	57.7	311.4	2,416.5	14.79%
2008	2,089.1	59.4	317.7	2,466.2	14.49%

This report has been prepared, and our opinions given, in accordance with accepted actuarial practice, and particularly with the Canadian Institute of Actuaries' Consolidated Standards of Practice.

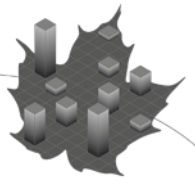
Daniel Hébert, F.S.A., F.C.I.A.  
Senior Actuary  
Public Sector Insurance and Pension Programs

Jean-Claude Ménard, F.S.A., F.C.I.A.  
Chief Actuary  
Office of the Chief Actuary

Ottawa, Canada

14 September 2006

<sup>1</sup> Includes government contributions for prior service and leave without pay elections, PSSA and RCA special payments. Fund administrative expenses are included in the normal cost.

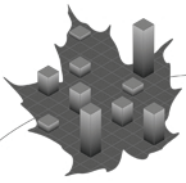


## **APPENDICES**

### **Appendix 1 – Developments Occurring After Valuation Date**

The previous valuation report was based on the plan provisions as they stood after the enactment of Bill C-78 on 14 September 1999. Plan amendments authorized by Bill C-78 that came into force in plan year 2004 were taken into account in the previous valuation.

Bill C-78 also gave authority to increase member contribution rates. The President of the Treasury Board has recently announced increases to the contribution rates for the Public Service, Canadian Forces and the Royal Canadian Mounted Police pension plans. Contribution rates will increase beginning in January 2006. These contribution rates are shown in the next section.



## Appendix 2 – Summary of Plan Provisions

The government has been providing its employees with a pension plan since 1870. Pensions for members of the Public Service are provided primarily under the *Public Service Superannuation Act* (PSSA) as enacted in 1954 and modified thereafter. Benefits are also provided to public servants under the *Special Retirement Arrangements Act*. Benefits are modified if the *Pension Benefits Division Act* is applicable.

The current plan provisions are summarized in this appendix without distinguishing between the benefits provided under the PSSA, which is a registered pension plan under the *Income Tax Act*, and those provided under retirement compensation arrangements, which differ from registered pension plans only in that taxation of contributions and investment earnings is current rather than deferred. The portion of the plan benefits in excess of the *Income Tax Act* limits for registered pension plans is provided under the retirement compensation arrangements described in Appendix 3.

The legislation shall prevail if there is a discrepancy between it and this summary.

### A. Membership

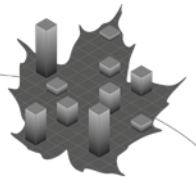
Subject to the exceptions mentioned in the next paragraph, membership in the plan is compulsory for all full-time and part-time employees working 12 or more hours per week (except those who were grandfathered as at 4 July 1994) in the Public Service. This includes all positions in any department or portion of:

- the executive government of Canada;
- the Senate and the House of Commons;
- the Library of Parliament; and
- any board, commission or corporation listed in a Schedule to the Act, as well as those designated as contributors by the President of the Treasury Board either individually or as members of a class for persons engaged as sessional employees and some others.

The main groups of persons employed in the Public Service to which the Act does not apply are:

- part-time employees working less than 12 hours per week;
- persons locally engaged outside Canada;
- employees of some Crown corporations, boards or commissions covered by their own pension plans; and
- sessional employees, and some others, unless designated as contributors by the President of the Treasury Board.

Since the previous valuation no entities have left the plan. The Canadian Wheat Board (CWB) and the Government of the Yukon Territory were expected to leave the plan but only employees of the CWB are no longer contributing to the pension plan since 1 July 2003. The assets backing up the CWB employees' accrued liabilities were not transferred out of the Superannuation Account and/or Pension Fund. For reason of simplicity, these



employees (around 500 individuals) are considered active contributors in this valuation as there should not be any impact on the financial results of this valuation.

**B. Contributions**

**1. Members**

During the first 35 years of pensionable service, members contribute according to the rates shown in the following table. After 35 years of pensionable service, members contribute only 1% of pensionable earnings.

	Calendar Year									
	2005	2006	2007	2008	2009	2010	2011	2012	2013+	
On earnings <b>up to</b> the maximum covered by the C/QPP	4.0%	4.3%	4.6%	4.9%	5.2%	5.5%	5.8%	6.1%	6.4%	
On any earnings <b>over</b> the maximum covered by the C/QPP	7.5%	7.8%	8.1%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	

**2. Government**

**a) Current Service**

The government determines its normal monthly contribution as that amount, which when combined with the required contributions by members in respect of current service, is sufficient to cover the cost, as estimated by the President of the Treasury Board, of all future benefits that have accrued in respect of pensionable service during that month.

**b) Elected Prior Service**

The government matches member contributions made to the Superannuation Account for prior service elections; however, it makes no contributions if the member is paying the double rate.

Government credits to the Pension Fund in respect of elected prior service are as described for current service; however, the government contributes only 0.75 of the member contribution if the member is paying the double rate.

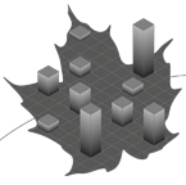
**c) Fund Administrative Expenses**

The Fund administrative expenses are included in the normal cost.

**d) Excess Notional Assets and Actuarial Surplus**

Bill C-78, which received Royal Assent on 14 September 1999, gives the government the authority to:

- debit the excess of assets over the actuarial liabilities from the Superannuation Account subject to limitations, and



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- deal with any actuarial surplus, subject to limitations, in the Pension Fund as they occur, either by reducing employee and/or employer contributions or by making withdrawals.

### e) Actuarial Deficit

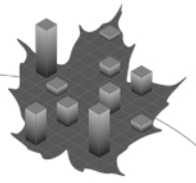
If an actuarial deficit is identified through a triennial statutory actuarial report, the Superannuation Account and/or the Pension Fund are to be credited with such annual amounts that in the opinion of the President of the Treasury Board will fully amortize the actuarial deficit over a period not exceeding 15 years.

## C. Summary Description of Benefits

The Public Service pension plan mainly aims at providing an employment earnings-related lifetime retirement pension to the eligible members of the Public Service. The plan also provides benefits to members in case of disability and to the spouse and children in case of death.

Subject to integration with the pensions paid by the Canada Pension Plan and the Québec Pension Plan, the initial rate of retirement pension is equal to 2% of the highest average of annual pensionable earnings over any period of five consecutive years, multiplied by the number of years of pensionable service not exceeding 35. Once in pay, the pension is indexed annually with the Consumer Price Index. Such indexation also applies to deferred pensions during the deferral period.





Detailed notes on the following overview are provided in the following section.

<b>Contributor's Type of Termination</b>	<b>Benefit</b>
<b>With less than two years of service<sup>1</sup></b>	Return of contributions
<b>With two or more years of service<sup>1</sup>; and</b>	
• Disability	Immediate annuity
• Death leaving no surviving spouse or eligible children	Minimum benefit
• Death leaving surviving spouse and/or eligible children	Survivor allowance(s)
• Leaving prior to age 45, except for death or disability	Deferred annuity or transfer value
• Leaving at ages 45 to 49, except for death or disability, and	
- Operational service 20 years or more	Operational service annual allowance <sup>2</sup>
- Otherwise	Deferred annuity or transfer value
• Leaving at age 50 or over, except for death or disability, and	
- Operational service 25 years or more	Operational service immediate annuity <sup>2</sup>
- Operational service between 20 and 25 years	Operational service annual allowance <sup>2</sup>
- Otherwise, but age 60 or over, or age 55 or over and service 30 years or more	Immediate annuity
- Otherwise	Deferred annuity or annual allowance
<b>Deferred and Immediate Pensioner's Type of Termination</b>	<b>Benefit</b>
• Disability before age 60 while entitled to a deferred annuity or an annual allowance	Immediate annuity while disabled
• Death leaving no eligible surviving spouse or children	Minimum benefit
• Death leaving eligible surviving spouse and/or children	Survivor allowance(s)

## D. Explanatory Notes

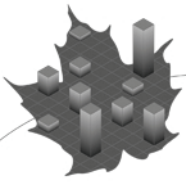
### 1. Pensionable Earnings

Pensionable earnings means the annual employment earnings (excluding overtime but including pensionable allowances such as bilingual bonuses) of a contributor.

Pensionable payroll means the aggregate pensionable earnings of all contributors with less than 35 years of pensionable service.

<sup>1</sup> Thresholds are determined using total pensionable service, including operational service.

<sup>2</sup> Based on operational service only. Additional non-operational service, if any, results in the applicable non-operational benefit (see Note 9). Air Traffic Controllers who terminate involuntarily may qualify for special benefits.



## 2. Indexation

### a) Level of Indexation Adjustments

All immediate and deferred annuities (pensions and allowances) are adjusted every January to the extent warranted by the increase, as at 30 September of the previous year, in the 12-month average Consumer Price Index. If the indicated adjustment is negative, annuities are not decreased for that year; however, the next following adjustment is diminished accordingly.

### b) First Indexation Adjustment

Indexation adjustments accrue from the end of the month in which employment terminates. The first annual adjustment following termination of employment is prorated accordingly.

### c) Commencement of Indexation Payments

The indexation portion of a retirement, disability or survivor pension normally starts being paid when the pension is put into pay. However, regarding an operational service retirement pension, indexation payments start only when the pensioner is either

- at least 55 years old, provided the sum of age and pensionable service is at least 85; or
- at least 60 years old.

This restriction does not apply to an Air Traffic Controller who resigned involuntarily.

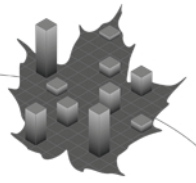
## 3. Pensionable Service and Operational Service

Pensionable service of a contributor includes any period of service in the Public Service for which the contributor has been required to contribute or has elected to contribute, if eligible to do so, and such other types of service for which the contributor has elected to make the required special contributions to the Public Service Superannuation Account or Pension Fund. Pensionable service is limited to 35 years.

Operational service means, in the case of Correctional Service Canada employees, pensionable service by employees other than those engaged in staff colleges or national or regional headquarters. In the case of Transport Canada employees, it means pensionable service that requires a valid Air Traffic Controller License or a letter of authority issued by the Department of Transport. Operational service is subject to minor restrictions (as per the regulations) not described here. A member may elect to remove the operational service designation from any period of service, which then becomes regular pensionable service.

## 4. Return of Contributions

Return of contributions means the payment of an amount equal to the accumulated current and prior service contributions paid or transferred by the member into the



Account and/or into the Fund. Interest is credited at the quarterly Fund rate each quarter on the accumulated contributions with interest as at the end of the previous quarter.

## 5. Immediate Annuity

Immediate annuity means an unreduced pension that becomes payable immediately upon a pensionable retirement or pensionable disability. The annual amount is equal to 2% of the highest average of annual pensionable earnings of the contributor over any period of five<sup>1</sup> consecutive years, multiplied by the number of years of pensionable service not exceeding 35. For contributors with periods of part-time pensionable service, earnings used in the five-year average are based on a full 37.5-hour workweek but the proportion of a full workweek resulting average is multiplied by the proportion of a full workweek averaged by the contributor over the entire period of pensionable service.

When a pensioner attains age 65 or becomes entitled to a disability pension from the Canada Pension Plan (CPP) or the Québec Pension Plan (QPP), the annual amount of pension is reduced by 0.7% of the *indexed C/QPP annual pensionable earnings*<sup>2</sup> (or, if lesser, the indexed five-year<sup>1</sup> pensionable earnings average on which the immediate annuity is based), multiplied by the *years of C/QPP pensionable service*<sup>3</sup>.

Annuities are payable in equal monthly instalments in arrears until the end of the month in which the pensioner dies or when the disabled pensioner recovers from disability. Upon the death of the pensioner, either a survivor allowance (Note 12) or a residual death benefit (Note 13) may be payable.

## 6. Deferred Annuity

Deferred annuity means an annuity that becomes payable to a former contributor upon reaching age 60. The annual amount of the annuity is described in Note 5 but is also increased (per Note 2) to reflect indexation from date of termination to the commencement of benefit payments.

The deferred annuity becomes an immediate annuity during any period of disability beginning before age 60. If the disability ceases before age 60, the immediate annuity reverts to the original deferred annuity unless the pensioner elects an annual allowance (Note 8) that is the prescribed actuarial equivalent to the deferred annuity.

## 7. Transfer Value

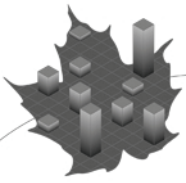
Members who, at their date of termination of pensionable service, are under age 50 and are eligible for a deferred annuity may elect to transfer the commuted value of their benefits, determined in accordance with the regulations, to

- a locked-in Registered Retirement Savings Plan of the prescribed kind; or

<sup>1</sup> If the number of years of pensionable service is less than five, then the averaging is over the entire period of pensionable service.

<sup>2</sup> *Indexed C/QPP annual pensionable earnings* means the average of the YMPE, as defined in the C/QPP, over the five calendar years leading up to and including the one in which pensionable service terminated, increased by indexation proportionate to that accrued in respect of the immediate annuity.

<sup>3</sup> *Years of C/QPP pensionable service* means the number of years of PSSA pensionable service after 1965 or after attaining age 18, whichever is later, but not exceeding 35.



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- another pension plan registered under the *Income Tax Act*; or
- a financial institution for the purchase of a locked-in immediate or deferred annuity of the prescribed kind.

### 8. Annual Allowance For Members

Annual allowance means an annuity payable immediately on retirement or upon attaining age 50, if later. The amount of the allowance is equal to the amount of the deferred annuity to which the member would otherwise be entitled, reduced by 5% of such annuity multiplied by the difference between 60 and the age when the allowance becomes payable. However, if the member is at least 50 years old at termination, and has at least 25 years of pensionable service<sup>1</sup>, then the difference is reduced (subject to the above as a maximum) to the greater of

- 55 minus the age, and
- 30 minus the number of years of pensionable service<sup>1</sup>.

The Treasury Board can waive all or part of the reduction for members who are involuntarily retired at ages 55 and over with at least ten years of Public Service employment.

When a member in receipt of an annual allowance becomes disabled before reaching age 60, the annual allowance becomes an immediate annuity adjusted in accordance with regulations to take into account the amount of any annual allowance received prior to becoming disabled.

### 9. Operational Service Immediate Annuity and Annual Allowance

An operational service immediate annuity differs from an immediate annuity (Note 5) only in that it is available as early as age 50 with 25 years of operational service.

An operational service annual allowance differs from an annual allowance (Note 8) in two ways. Firstly it is available as early as age 45 with 20 years of operational service. Secondly the reduction factor is 5% multiplied by the greater of

- 50 minus the age, and
- 25 minus the years of operational service<sup>1</sup>.

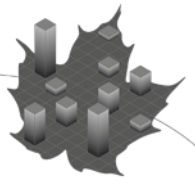
Except for Air Traffic Controllers who retire involuntarily, in which case it is based on 20 minus the years of operational service<sup>1</sup> (subject to a minimum of ten years).

The foregoing operational service-related benefits are calculated in relation to operational service only. Additional non-operational service results in the applicable non-operational benefit where any thresholds or reductions are based on total pensionable service, including operational service.

An Air Traffic Controller who involuntarily ceases to be employed in operational service may, after becoming employed in the Public Service in non-operational service,

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<sup>1</sup> For privatized members who elected not to transfer their PSSA benefits to their new employer's pension plan, service (including any operational) with the new employer is included.



choose to receive immediately as much as one-half of the operational service benefit that would have been available on termination of employment. This is known as the “income-smoothing benefit”.

## 10. Eligible Surviving Spouse

Eligible surviving spouse means the surviving spouse (includes a common-law or same-sex partner recognized under the plan) of a contributor or pensioner except if:

- the contributor or pensioner died within one year of commencement of the spousal union, unless the Treasury Board is satisfied that the health of the contributor or pensioner at the time of such commencement justified an expectation of surviving for at least one year; or
- the pensioner married after ceasing to be a contributor, unless after such marriage the pensioner either:
  - became a contributor again, or
  - made an optional survivor benefit election within 12 months following marriage to accept a reduced pension so that the new spouse would be eligible for a survivor benefit. This reduction is reversed if and when the new spouse predeceases the pensioner or the spousal union is terminated for reason other than death.

## 11. Eligible Surviving Children

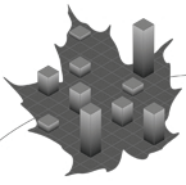
Eligible surviving children includes all children of the contributor or pensioner who are under age 18, and any child of the contributor or pensioner who is age 18 or over but under 25, in full-time attendance at a school or university, having been in such attendance substantially without interruption since he or she reached age 18 or the contributor or pensioner died, whichever occurred later.

## 12. Annual Allowance for Eligible Survivor(s)

Annual allowance means, for the eligible surviving spouse and children of a contributor or pensioner, an annuity that becomes payable immediately upon the death of that individual. The amount of the allowance is determined with reference to a basic allowance that is equal to 1% of the highest average of annual pensionable earnings of the contributor over five consecutive years, multiplied by the number of years of pensionable service not exceeding 35.

The annual allowance for a spouse is equal to the basic allowance unless the spouse became eligible as a result of an optional survivor benefit election, in which case it is equal to the percentage of the basic allowance specified by the pensioner making the election.

The annual allowance for an eligible surviving child is equal to 20% of the basic allowance, subject to a reduction if there are more than four eligible surviving children in the same family. The allowance otherwise payable to an eligible surviving child is doubled if the child is an orphan.



Survivor annual allowances are not integrated with the Canada Pension Plan or the Québec Pension Plan and are payable in equal monthly instalments in arrears until the end of the month in which the survivor dies or otherwise loses eligibility. If applicable, a residual benefit (Note 13) is payable to the estate upon the death of the last survivor.

### **13. Minimum and Residual Death Benefits**

If an active contributor or a pensioner dies leaving no eligible survivor, the lump sum normally paid is the excess of five times the basic annuity<sup>1</sup> to which the contributor would have been entitled, or the pensioner was entitled, at the time of death over all amounts (excluding indexation adjustments) already paid to the pensioner.

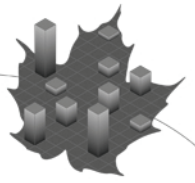
The same formula is used to determine the residual benefit payable in a lump sum upon the death of an eligible survivor, except that all amounts (excluding indexation adjustments) already paid to the survivor are also subtracted.

### **14. Division of Pension with Former Spouse**

In accordance with the *Pension Benefits Division Act*, upon the breakdown of a spousal union (including common-law), a lump sum can be transferred by court order or by mutual consent from the plan assets to the credit of the former spouse of a contributor or pensioner. The maximum transferable amount is half the value, calculated as at the transfer date, of the retirement pension accrued by the contributor or pensioner during the period of cohabitation. If the member's benefits are not vested, the maximum transferable amount corresponds to half the member's contributions made during the period subject to division, accumulated with interest at the rate applicable on a refund of contributions. The accrued benefits of the contributor or pensioner are then reduced accordingly.

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<sup>1</sup> The basic annuity is the initial amount of immediate annuity, ignoring any offsets that might be applicable (see Note 5).



### Appendix 3 – RCA Benefit Provisions

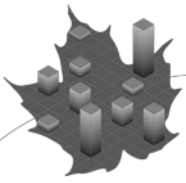
This Appendix describes the Public Service pension plan benefits funded through retirement compensation arrangements (RCA) rather than through the registered PSSA plan. As described in Appendix 2, RCAs are pension plans not subject to the benefit limitations of registered pension plans because they are taxed currently rather than on a deferred basis.

Effective 15 December 1994, RCA No. 1 was established pursuant to the *Special Retirement Arrangements Act* (SRAA) to provide all pension benefits in excess of those that may, in accordance with the *Income Tax Act* restrictions on registered pension plans, be paid from the PSSA pension plan.

Effective 1 April 1995, RCA No. 2 was established by the RCA regulations as a program for certain Public Service employees declared surplus before 1 April 1998 as part of the downsizing initiative. Participation was limited to individuals between ages 50 and 54 who met the conditions specified in the regulations. RCA No. 2 pays the difference between a pension unreduced for early retirement and the reduced pension payable from the Public Service Superannuation Account. It is funded entirely by the government.

The following benefits have been provided under RCA No. 1 since 20 November 1997, unless otherwise indicated, to the extent that they are in excess of the registered plan limit.

Benefit	Registered plan benefit limit
Waiver of pension reduction on involuntary termination, subject to <ul style="list-style-type: none"> <li>• Treasury Board approval; and,</li> <li>• minimum age 55 with 10 years service</li> </ul>	Minimum reduction is equal to 3% times the lesser of: <ul style="list-style-type: none"> <li>• 60 minus the age when the pension becomes payable,</li> <li>• 30 minus the number of years of pensionable service, and</li> <li>• 80 minus the total of the member's age and years of pensionable service, all divided by 2.</li> </ul>
Survivor allowance for service from 1 January 1992 onward (see Note 12 of Appendix 2)	<p><u>Pre-retirement death</u></p> <ul style="list-style-type: none"> <li>• Maximum spouse allowance is two-thirds of greater of A and B; and</li> <li>• Maximum aggregate dependants' allowance is the greater of A and B, where                             <ul style="list-style-type: none"> <li>A is the amount of member annuity earned to date of death, and</li> <li>B is the hypothetical amount of member annuity earned to age 65 where the average annual salary is limited to 1.5 times the average YMPE</li> </ul> </li> </ul> <p><u>Post-retirement death</u></p> The amount of spouse allowance is limited in any year to a maximum of two-thirds the retirement benefit that would have been payable to the member in that year.



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<b>Benefit</b>	<b>Registered plan benefit limit</b>
<p>Minimum lump sum death benefit (see Note 13 of Appendix 2)</p>	<p><u>Pre-retirement death</u> The amount of pre-retirement death benefit if the member has no eligible dependants is limited to the greater of the member contributions with interest and the present value of the member's accrued benefits on the day prior to death.</p> <p><u>Post-retirement death</u> If the member has no eligible dependants at retirement, then the minimum death benefit is limited to the member contributions with interest.</p>
<p>Continued benefit accrual for former deputy heads (provided since 15 December 1994 for service since then)</p>	<p>This entire benefit is outside the registered plan limit.</p> <p>Deputy heads ceasing employment under age 60 may elect to be deemed full-time employees absent from the Public Service on leave without pay up to age 60.</p>
<p>Elective service for service prior to 1 January 1990</p>	<p>The amount of lifetime retirement benefits for each such year of service is limited to two-thirds of the defined benefit limit (i.e. \$2,000 for calendar year 2005) for the year in which the lifetime retirement benefits commence to be paid.</p> <p>For years subsequent to the commencement year of lifetime retirement benefits, this amount can be adjusted to reflect increases in the Consumer Price Index.</p>
<p>Excess pensionable earnings (provided since 15 December 1994 for service since then)</p>	<p>The highest average of pensionable earnings is subject to a prescribed yearly maximum that varies by calendar year and the registered plan's benefit formula. The calendar year 2005 Maximum Pensionable Earnings was \$114,400.</p>





## Appendix 4 – Plan Assets and Rates of Return

### A. Plan Assets

#### 1. Public Service Superannuation Account

PSSA benefits earned up to 31 March 2000 are entirely financed through the Public Service Superannuation Account, which forms part of the Public Accounts of Canada.

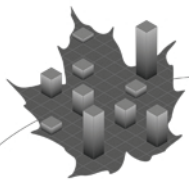
The Account was credited with all PSSA contributions made by members and the government up to 31 March 2000, as well as with prior service contributions for elections made prior to 1 April 2000 and leave without pay contributions for periods before 1 April 2000 but remitted after that date. It is charged with both the benefit payments made in respect of service earned under the Account and the allocated portion of the plan administrative expenses.

The Account is credited with interest earnings as though net cash flows were invested quarterly in 20-year Government of Canada bonds issued at prescribed interest rates and held to maturity. No formal debt instrument is issued to the Account by the government in recognition of the amounts therein. Interest earnings are credited every three months on the basis of the average yield for the same period on the combined Superannuation Accounts of the Public Service, Canadian Forces and RCMP pension plan.

**Table 9 Reconciliation of Balances in the Superannuation Account<sup>1</sup>**  
(\$ millions)

Plan year	2003	2004	2005	2003-2005
Public Accounts opening balance	80,550.4	81,857.9	82,568.9	80,550.4
<b>INCOME</b>				
Interest earnings	6,635.6	6,647.3	6,529.2	19,812.1
Employer contributions	47.6	42.4	39.9	129.9
Retired employee contributions	41.1	38.1	36.0	115.2
Employee contributions	19.2	20.7	14.9	54.8
Transfers received	10.2	4.6	1.3	16.1
Actuarial liability adjustments	0.0	(2,240.0)	(770.0)	(3,010.0)
<i>Subtotal</i>	6,753.7	4,513.1	5,851.3	17,118.1
<b>EXPENDITURES</b>				
Annuities	3,468.6	3,550.1	3,696.8	10,715.5
Pension divisions	28.0	29.7	35.9	93.6
Return of contributions	1.7	0.6	0.4	2.7
Pension transfer value payments	77.4	56.5	64.4	198.3
Transfers to other pension plans	75.3	94.9	57.7	227.9
Minimum benefits	10.4	12.7	10.3	33.4
Transfer to Canada Post Corporation	1,736.7	6.4	0.0	1,743.1
Administrative expenses	48.2	51.2	53.5	152.9
<i>Subtotal</i>	5,446.3	3,802.1	3,919.0	13,167.4
Public Accounts closing balance	81,857.8	82,568.9	84,501.2	84,501.1

<sup>1</sup> Balances and subtotals in this table may differ from the underlying figures due to rounding.



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The foregoing table shows the reconciliation of the assets in the Public Service Superannuation Account between the last valuation date and the current valuation date. Since the last valuation, the Account balance has grown by \$4.0 billion (a 4.9% increase) to reach \$84.5 billion as at 31 March 2005.

## 2. Public Service Pension Fund

Since 1 April 2000, PSSA contributions (except for prior service elections made prior to 1 April 2000) have been credited to the Public Service Pension Fund. The Fund is invested in the financial markets with a view to achieving maximum rates of return without undue risk.

The Fund has been credited with all PSSA contributions since 1 April 2000, as well as with prior service contributions in respect of elections made after 31 March 2000 and leave without pay contributions for periods after 31 March 2000. The Fund is also credited with the net investment earnings generated by its capital assets. It is charged with both the benefit payments made in respect of service earned under the Fund and the allocated portion of the plan administrative expenses.

**Table 10 Reconciliation of Balances in the Pension Fund<sup>1</sup>**  
(\$ millions)

Plan year	2003	2004	2005	2003-2005
Opening balance	4,042.6	5,874.6	10,349.1	4,042.6
INCOME				
Investment earnings	(661.3)	1,740.6	944.3	2,023.6
Employer contributions	1,868.4	1,959.2	2,061.6	5,889.2
Employee contributions	733.8	773.7	813.4	2,320.9
Retired employee contributions	4.7	7.1	10.3	22.1
Transfers received	7.8	63.8	63.2	134.8
Actuarial liability adjustments	0.0	3.5	3.5	7.0
<i>Subtotal</i>	1,953.4	4,547.9	3,896.3	10,397.6
EXPENDITURES				
Annuities	14.7	31.5	59.2	105.4
Pension divisions	0.2	0.9	2.3	3.4
Return of contributions	8.3	9.2	7.7	25.2
Pension transfer value payments	15.8	24.0	37.8	77.6
Transfers to other pension plans	0.7	2.7	3.9	7.3
Minimum benefits	0.7	1.5	1.9	4.1
Transfer to Canada Post Corporation	78.0	(2.0)	0.0	76.0
Administrative expenses	3.0	5.6	7.5	16.1
<i>Subtotal</i>	121.4	73.4	120.3	315.1
Closing balance	5,874.6	10,349.1	14,125.1	14,125.1

The foregoing table shows the reconciliation of the assets (market value) in the Public Service Pension Fund between the last valuation date and the current valuation date.

<sup>1</sup> Balances and subtotals in this table may differ from the underlying figures due to rounding.



Since the last valuation, the Fund balance has increased significantly to reach \$14.1 billion as at 31 March 2005.

### 3. Public Service RCA No. 1 Account

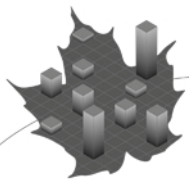
The assets are composed of the recorded balance in the Retirement Compensation Arrangements Account, which forms part of the Public Accounts of Canada, and a refundable tax. Each calendar year, a cash transfer is made to the Canada Revenue Agency (CRA) such that in total half of the assets are held by the CRA as a refundable tax.

The RCA No. 1 Account is credited with interest earnings as though net cash flows were invested quarterly in 20-year Government of Canada bonds issued at prescribed interest rates and held to maturity. No formal debt instrument is issued to the Account by the government in recognition of the amounts therein. Interest earnings are credited every three months on the basis of the average yield for the same period on the combined Superannuation Accounts of the Public Service, Canadian Forces and RCMP pension plan.

**Table 11 Reconciliation of Balances in RCA No.1 Account**  
(\$ millions)

Plan year	2003	2004	2005	2003-2005
Opening balance	310.4	356.6	416.2	310.4
INCOME				
Interest earnings	24.5	35.0	38.4	97.9
Employer contributions	210.9	183.3	87.8	482.0
Employee contributions	13.7	13.0	10.9	37.6
Retired employee contributions	0.4	0.4	0.3	1.1
Transfers	0.0	0.0	0.0	0.0
Actuarial liability adjustments	77.7	14.6	2.4	94.7
<i>Subtotal</i>	327.3	246.2	139.8	713.3
EXPENDITURES				
Annuities	1.6	2.7	4.5	8.9
Pension divisions	0.3	0.3	0.7	1.3
Return of contributions	0.0	0.0	0.0	0.1
Pension transfer value payments	0.0	0.0	0.0	0.0
Transfers to other pension plans	0.1	0.1	0.2	0.5
Minimum benefits	0.0	0.1	0.0	0.1
Transfer to Canada Post Corporation	235.8	42.1	0.9	278.7
Amount transferred to CRA	43.2	141.3	68.4	252.9
<i>Subtotal</i>	281.1	186.6	74.8	542.5
Closing Balance	356.6	416.2	481.2	481.2
Refundable tax	240.0	381.3	449.7	449.7

The foregoing table shows the reconciliation of the assets in the Public Service RCA No. 1 Account between the last valuation date and the current valuation date. Since the last valuation, the Account balance has grown by \$170.8 million (a 55.0% increase) to reach \$481.2 million as at 31 March 2005 with a total refundable tax of \$449.7 million.



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## 4. Public Service RCA No. 2 Account

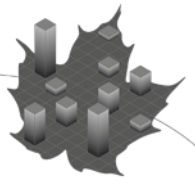
The assets are composed of the recorded balance in the Retirement Compensation Arrangements Account, which forms part of the Public Accounts of Canada, and a refundable tax. Each calendar year, a cash transfer is made to the CRA such that in total half of the assets are held by the CRA as a refundable tax.

The RCA No. 2 Account is credited with interest earnings as though net cash flows were invested quarterly in 20-year Government of Canada bonds issued at prescribed interest rates and held to maturity. No formal debt instrument is issued to the Account by the government in recognition of the amounts therein. Interest earnings are credited every three months on the basis of the average yield for the same period on the combined Superannuation Accounts of the Public Service, Canadian Forces and RCMP pension plan.

**Table 12 Reconciliation of Balances in RCA No.2 Account**  
(\$ millions)

Plan year	2003	2004	2005	2003-2005
Opening balance	833.5	832.9	835.4	833.5
INCOME				
Interest earnings	68.5	66.5	64.9	199.9
Actuarial liability adjustments	4.7	9.8	10.3	24.8
<i>Subtotal</i>	73.2	76.3	75.2	224.7
EXPENDITURES				
Annuities	74.7	75.4	77.1	227.2
Amount transferred to CRA	(1.1)	(1.6)	(0.8)	(3.5)
<i>Subtotal</i>	73.7	73.8	76.2	223.7
Closing Balance	832.9	835.4	834.4	834.4
Refundable tax	830.1	828.5	827.6	827.6

The foregoing table shows the reconciliation of the assets in the Public Service RCA No. 1 Account between the last valuation date and the current valuation date. Since the last valuation, the Account balance has grown by \$1.0 million (a 0.1% increase) to reach \$834.4 million as at 31 March 2005 with a total refundable tax of \$827.6 million.



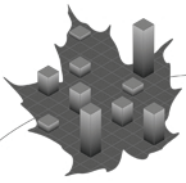
**B. Rates of Return**

The following PSSA rates of return by plan year were calculated using the foregoing entries. The Account yields are based on book values because the notional bonds are considered held to maturity. The Fund yields are based on market values to measure its actual performance. The results were computed using the dollar-weighted approach, assuming a uniform distribution of cash flows during the plan year (except for actuarial liability adjustments, which occurred on 31 March) by imputing to them one-half year of interest.

Plan Year	Superannuation Account	Pension Fund
2003	8.52%	(12.34%)
2004	8.31%	24.27%
2005	8.10%	8.25%

**C. Sources of Asset Data**

The Account and Fund entries shown in section A above were taken from the Public Accounts of Canada and the financial statements of the Public Service Investment Board, respectively. In accordance with section 8 of the *Public Pensions Reporting Act*, the Office of the Comptroller General of the Treasury Board of Canada Secretariat provided a certification of the assets of the plan as at 31 March 2005.



## Appendix 5 – Membership Data

### A. Sources of Membership Data

The valuation input data required in respect of contributors (both active and non-active), pensioners and survivors are extracted from master computer files maintained by the Superannuation Directorate of the Department of Public Works and Government Services Canada. The Compensation Systems Branch of that department is responsible for the extraction of the data.

The main valuation data file supplied by the Superannuation Directorate contained the status information on all members during the period from 31 March 2001 to 31 March 2004.

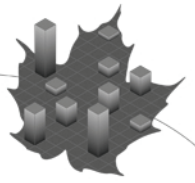
These data were projected to the 31 March 2005 valuation date generally using the demographic assumptions of the current valuation and the actual economic experience (2.0% indexation increase for pensioners and 2.26% general pay increases for contributors).

### B. Validation of Membership Data

#### 1. Status-Related Tests

The following status tests were made on the main valuation data file:

- a consistency check that a status could be established for each record of a member. The status of a member may change over time but at a given point in time it can be only one of the following: contributor, outstanding termination, pensioner, deceased leaving an eligible survivor;
- a consistency check of the changes in status of a member during the intervaluation period; e.g.
  - if a contributor record indicated that the member retired, then a pensioner record should exist; and
  - if a contributor or pensioner record indicated that the member died leaving an eligible survivor, then a corresponding survivor record should exist;
- a reconciliation between the status of members as at 31 March 2004 from the current valuation data and the status of the members as at 31 March 2001 from the previous valuation data; and
- a comparison of valuation data as at 31 March 2004 with the membership shown in the Report on the Administration of the *Public Service Superannuation Act* for the fiscal year ending 31 March 2004.



## 2. Benefit-Related Tests

Consistency tests were made to ensure that all proper information to value the member benefits based on individual statuses as at 31 March 2004 was included, by verifying that

### a) For Active Members

- the pensionable service was reasonable in relation to the attained age;
- the salary was included and, if not, imputing a salary by updating a salary rate from a previous year with an average earnings increase or failing that, using the average salary rate for that sex; and
- salaries included negotiated increases in effect and increasing the salary rates accordingly if this was not the case.

### b) For Pensioners and Survivors in Receipt of an Annuity

- the amount of the annuity, including indexation, was included; and
- the benefits were indexed up to 1 January 2004.

### c) For Outstanding Terminations

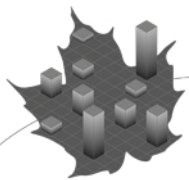
- the lump sum payment was recognized

### d) For Adjustments to Status and Benefit Data

- appropriate adjustments were made to the basic data, after consulting with the data providers, based on the omissions and discrepancies identified by the tests described herein and several additional tests.

## C. Membership Data

The following tables show the detailed reconciliation of membership data since the last valuation. Detailed membership data upon which this valuation is based are shown in Appendix 13.



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**Table 13 Reconciliation of Contributors**

	Active Full-Time		Active Part-Time		Non Active		Total
	Male	Female	Male	Female	Male	Female	
<b>As at 31 March 2001</b>	<b>112,486</b>	<b>120,913</b>	<b>1,919</b>	<b>4,626</b>	<b>617</b>	<b>1,241</b>	<b>241,802</b>
Data corrections	(106)	(4,185)	(928)	3,031	169	(10)	(2,029)
New entrants	30,869	39,350	1,527	3,789	1,575	4,432	81,542
Transfers to active	173	275	19	32	7	46	552
Cash Option							
Disability	-	-	-	-	(1)	-	(1)
Return of contribution or transfer value	(8,564)	(12,144)	(429)	(788)	(886)	(3,008)	(25,819)
Subtotal	(8,564)	(12,144)	(429)	(788)	(887)	(3,008)	(25,820)
Annuity/Annual allowance	-	-	-	-	-	-	-
Disabled	(509)	(726)	(1)	(17)	(1)	(5)	(1,259)
Deferred	(389)	(477)	(7)	(17)	(14)	(37)	(941)
Death with no eligible survivor	(82)	(109)	(2)	(1)	-	(1)	(195)
Death with survivor annual allowance(s)	(456)	(240)	(2)	(6)	(9)	(5)	(718)
Immediate annual allowance	(7,209)	(4,705)	(45)	(148)	(277)	(266)	(12,650)
Transfer	(1,819)	(2,105)	(24)	(94)	(19)	(69)	(4,130)
Benefit option not yet chosen	(1,709)	(2,002)	(53)	(148)	(6)	(30)	(3,948)
Subtotal	<u>(12,173)</u>	<u>(10,364)</u>	<u>(134)</u>	<u>(431)</u>	<u>(326)</u>	<u>(413)</u>	<u>(23,841)</u>
<b>As at 31 March 2004</b>	<b>122,685</b>	<b>133,845</b>	<b>1,974</b>	<b>10,259</b>	<b>1,155</b>	<b>2,288</b>	<b>272,206</b>
<u>Main Group</u>							
Active	112,542	120,603	1,808	9,003	1,117	2,186	247,259
On leave without pay	4,280	9,658	147	1,142	33	91	15,351
<u>Operational Service Group</u>							
Active	5,496	3,154	16	97	3	11	8,777
On leave without pay	367	430	3	17	2	-	819



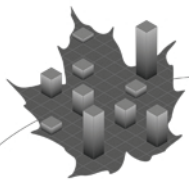


**Table 14 Reconciliation of Pensioners**

	Deferred Annuity or Deferred Annual Allowance			Disability Annuity			Immediate Annuity (IA) or Immediate Annual Allowance (AA)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<b>As at 31 March 2001</b>	<b>3,867</b>	<b>2,882</b>	<b>6,749</b>	<b>7,016</b>	<b>5,492</b>	<b>12,508</b>	<b>101,255</b>	<b>48,084</b>	<b>149,339</b>
Data corrections	(544)	(118)	(662)	(81)	(63)	(144)	1,220	739	1,959
New entrants from									
Contributor	410	531	941	511	748	1,259	7,531	5,119	12,650
Disabled annuitant	-	-	-	-	-	-	-	-	-
Deferred annuitant	-	-	-	-	-	-	61	37	98
Annuitant (IA/AA)	-	-	-	17	12	29	-	-	-
Transfer status to									
Contributor	(13)	(25)	(38)	-	-	-	(40)	(65)	(105)
Disable annuitant	-	-	-	-	-	-	(17)	(12)	(29)
Annuitant (IA/AA)	(61)	(37)	(98)	-	-	-	-	-	-
Termination with option									
Cash paid out	-	-	-	-	-	-	-	-	-
Death without beneficiaries	(1)	(1)	(2)	(435)	(341)	(776)	(4,160)	(3,250)	(7,410)
Death with beneficiaries	(19)	(9)	(28)	(558)	(95)	(653)	(6,865)	(650)	(7,515)
<b>As at 31 March 2004</b>	<b>3,639</b>	<b>3,223</b>	<b>6,862</b>	<b>6,470</b>	<b>5,753</b>	<b>12,223</b>	<b>98,985</b>	<b>50,002</b>	<b>148,987</b>

**Table 15 Reconciliation of Survivors**

	Surviving Spouses			Children and Students		
	Widows	Widowers	Total	Children	Students	Total
<b>As at 31 March 2001</b>	<b>50,316</b>	<b>3,099</b>	<b>53,415</b>	<b>1,217</b>	<b>1,218</b>	<b>2,435</b>
Data corrections	(144)	31	(113)	119	(85)	34
New survivors from current contributors	450	223	673	422	172	594
New survivors from pensioners	7,425	744	8,169	96	105	201
Surviving spouse deaths	(6,981)	(461)	(7,442)	-	-	-
Children attaining age 18 and						
Termination over coverage	-	-	-	(108)	-	(108)
Eligible as student	-	-	-	(615)	615	-
Students terminating					(868)	(868)
<b>As at 31 March 2004</b>	<b>51,066</b>	<b>3,636</b>	<b>54,702</b>	<b>1,131</b>	<b>1,157</b>	<b>2,288</b>



## Appendix 6 – PSSA Valuation Methodology

### A. Plan Assets

#### 1. Superannuation Account

The Superannuation Account assets consist essentially of the recorded balance in the Public Accounts of Canada. These assets are shown at the book value of the underlying notional bond portfolio described in Appendix 4. For consistency the liabilities are determined using the projected Account yields, shown in Appendix 7, that reflect the interest credited to the Superannuation Account.

The only other Account-related asset consists of the discounted value of future member contributions and government credits in respect of prior service elections and leave without pay service. The discounted value of the future contributions and credits was calculated using the projected Account yields.

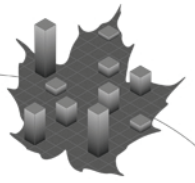
#### 2. Pension Fund

For valuation purposes, an adjusted market value method has been used to determine the actuarial value of the Pension Fund assets. Under this method, the difference between the investment returns during a given plan year and the expected investment returns for that year based on the previous report assumptions, subject to a 10% corridor, is spread over five years.

As a result the actuarial value of assets is a five-year smoothed market value where the appreciation of investment gains or losses is recognized at the rate of 20% per year. The value produced by this method is related to the market value of the assets but is more stable than the market value. The actuarial value of the assets determined under the adjusted market value method is \$13,974 million as at 31 March 2005. This value was determined as follows:

**Table 16 Actuarial Value of Pension Fund Assets**  
As at 31 March 2005 (\$ millions)

Plan Year	2001	2002	2003	2004	2005
Actual net investment return	(164.2)	99.4	(661.3)	1,740.6	944.3
Expected investment return	73.0	210.0	342.5	454.9	739.8
Investment gains (losses)	(237.2)	(110.6)	(1,003.8)	1,285.7	204.5
Less 10% corridor	0.0	0.0	(470.3)	0.0	0.0
Investment gains (losses) to be amortized	(237.2)	(110.6)	(533.5)	1,285.7	204.5
Unrecognized percentage	0%	20%	40%	60%	80%
<i>Unrecognized investment gains (losses)</i>	-	(22.1)	(213.4)	771.4	163.6
Market value as at 31 March 2005					14,124.9
<i>Plus</i>					
Present value of prior service and LWOP					428.6
Contributions of Public Service Corporations					120.0
<i>Less</i>					
Unrecognized investment gains (losses)					699.5
Actuarial value as at 31 March 2005					13,974.0



The only other Fund-related asset consists of the discounted value of future member contributions and government credits in respect of prior service elections and leave without pay contributions. The discounted value of future member contributions was calculated using the assumed yield on the Pension Fund.

## **B. Normal Costs and Liabilities**

To determine the PSSA normal costs and liabilities, the cost effect of the yearly maximum salary cap and other benefit limits under the *Income Tax Act* described in Appendix 3 were taken into account.

### **1. Normal Costs**

The projected accrued benefit actuarial cost method (also known as the projected unit credit method) was used to compute normal costs. Under this method the normal cost computed in respect of a given year corresponds to the value, discounted in accordance with the projected Fund yields shown in Appendix 7, of all future benefits considered to accrue in respect of that year's service. Consistent with this cost method, pensionable earnings are projected up to retirement using the assumed annual increases in average pensionable earnings (including seniority and promotional increases).

### **2. Liabilities**

#### **a) Contributors**

Consistent with the projected accrued benefit actuarial cost method employed to estimate normal costs, the liabilities in respect of contributors as at the valuation date correspond to the value, discounted in accordance with the projected yields on the Account or the Fund described below and shown in Appendix 7, of all future benefits accrued as at that date in respect of all previous service.

#### **b) Pensioners and Survivors**

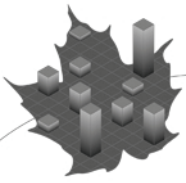
Consistent with accepted actuarial practice and standards, the liabilities as at the valuation date in respect of pensioners (including deferred annuitants) and survivors correspond to the value, using the projected yields on the Account or the Fund described in section C below and shown in Appendix 7, of all future benefits.

## **C. Projected Yields**

The projected yields (shown in Appendix 7) assumed in computing the present value of benefits accrued under the Superannuation Account (i.e. the Account liabilities) are the projected annual yields on the combined book value of the Superannuation Accounts of the Public Service, Canadian Forces, and RCMP pension plans.

The projected Account yields were determined by an iterative process involving the following:

- the combined notional bond portfolio of the three Accounts as at the valuation date;
- the assumed future new money interest rates (also shown in Appendix 7);
- the expected future benefits payable in respect of all pension entitlements accrued up to 31 March 2005;



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- the expected future contributions for prior service elections, and
- the expected future administrative expenses,

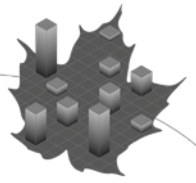
always taking into account that each quarterly interest credit to an Account is calculated as if the principal at the beginning of a quarter remains unchanged during the quarter.

The projected yields (shown in Appendix 7) assumed in computing the present value of the benefits accrued or accruing under the Pension Fund (i.e. the Fund liabilities and the normal cost) were developed on the basis of the Fund holding a diversified mixture of assets.

### **D. Membership Data**

The member data shown in Appendix 5 and Appendix 13 were provided as at 31 March 2004, which is one year earlier than the valuation date of this report. These data were accordingly projected to the 31 March 2005 valuation date generally using the demographic assumptions of the previous valuation and the actual economic experience in the one-year projection period.

The information in respect of the contributions for elected prior service and leave without pay service were provided as at 31 March 2005. Future member contributions in respect of elected prior service and leave without pay service took into account only the payment streams that were still in effect at 31 March 2005. Only payments due after 31 March 2005 were included.



## Appendix 7 – PSSA Actuarial Assumptions

The plan being sponsored by the government, the likelihood of the plan being wound-up with insufficient assets is practically nonexistent; consequently all the assumptions used in this report are best-estimate assumptions, i.e. they reflect our best judgement of the future long-term experience of the plan.

### A. Economic Assumptions

#### 1. Key Economic Assumptions

The following key economic assumptions are required for valuation purposes.

##### a) Level of Inflation

Price increases, as measured by changes in the Consumer Price Index, tend to fluctuate from year to year. Based on historical trends, the renewed commitment of the Bank of Canada and the government to keep inflation between 1% and 3% until 2006 and long-term economic forecasts, an ultimate rate of price increase of 2.5% was assumed for 2012 and thereafter. Recognizing recent experience, the rate of price increase is to increase from 1.9% for plan year 2007 to 2.5% for plan year 2012. In the previous valuation the ultimate rate of price increase was assumed to be 2.7%.

##### b) Real Increases in Average Earnings

Salary increases consist of a combination of inflation, productivity growth (i.e. real increase in average employment earnings in excess of inflation) and seniority and promotional increase. Seniority and promotion is strongly service-based and is therefore considered to be a demographic assumption rather than an economic assumption.

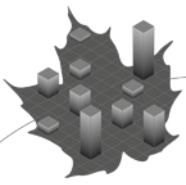
The assumed ultimate productivity rate was 1.0% per annum. This is closer to the average Canadian experience of the past 50 years (1.07% per annum) than that of the past 25 years (0.0% per annum). Real increases in average earnings were assumed to rise gradually over a 7-year select period to reach the ultimate 1.0% per annum in plan year 2013. In the previous valuation an ultimate productivity rate of 0.9% was used.

##### c) Real Rate of Return on Long-Term Government of Canada Bonds

Recognizing recent experience, the real rate of return on long-term Government of Canada bonds was assumed at 2.46% for plan year 2006, the ultimate real rate was then assumed at 2.85% per annum attained in 2015. It is based on historical trends. In the previous valuation, it was 3.0%.

##### d) Real Rate of Return on Fund

For the assets invested by the Public Sector Pension Investment Board (PSPIB), it is assumed that the real rate of return on investments will be 4.3% net of investment expenses (the ultimate level of inflation being 2.5%). The assumed long-term real



rate of return on PSPIB assets takes into account the distribution of investments by category. It is unchanged from the previous valuation.

Note that all of the real rates of return presented in this report are actually real-return differentials, i.e., the difference between the effective annual rate of return on investments and the rate of increase in prices. This differs from the technical definition of the real rate of return, which, in the case of the ultimate Fund assumption, would be 4.2% (derived from 1.068/1.025) rather than 4.3%.

For the period ending December 2004, the following table was prepared based on the Canadian Institute of Actuaries Report on Canadian Economic Statistics 1924-2004.

Period of Years Ending 2004	15	25	50
Level of Inflation	2.19%	3.79%	4.10%
Real Increases in Average Earnings <sup>1</sup>	(0.04%)	0.01%	1.07%
Real Return on Long-Term Canada Bonds <sup>1</sup>	7.98%	7.33%	2.92%
Average Real Return on Diversified Portfolios <sup>1</sup>	6.95%	6.95%	4.51% <sup>2</sup>

**2. Derived Economic Assumptions**

The following assumptions were derived from the key economic assumptions:

**a) Projected Yields on Superannuation Account**

These yields are required for the computation of present values of benefits to determine the Superannuation Account liabilities. The methodology used to determine the projected yields on the Account is described in Appendix 6.

**b) Projected Yields on Pension Fund**

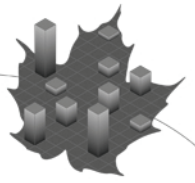
These yields are derived from the assumed future level of inflation and the real return on the Fund. These yields are required for the computation of present values of benefits to determine the Fund liabilities and the normal costs. The assumed yield of 6.3% per annum for plan year 2007 is assumed to increase gradually to 6.8% per annum by plan year 2013. The assumed yield is net of investment expenses incurred by the Pension Fund.

**c) Increase in the Year’s Maximum Pensionable Earnings (YMPE)**

The YMPE is involved in the valuation process because the plan is integrated with the Canada Pension Plan. The assumed increase in the YMPE for a given year was derived, in accordance with the *Canada Pension Plan*, to correspond to the increase in the assumed Industrial Aggregate of Average Weekly Earnings (IAAWE) over successive 12-month periods ending on 30 June. The IAAWE is deemed to include a component for seniority and promotional increases; consequently the ultimate increase in the YMPE is assumed to be 0.2% higher than the corresponding increase in average pensionable earnings.

<sup>1</sup> These real rates are calculated after the level of inflation is removed geometrically.

<sup>2</sup> This average is over the last 45 years.



**d) Maximum Pensionable Earnings**

Because the plan is integrated with the Canada Pension Plan, the tax-related maximum pensionable earnings were derived from both the maximum annual pension accrual under a registered defined benefit plan and the YMPE. The maximum annual pension accrual of \$2,000 for calendar years 2005 will increase to \$2,111 for 2006, \$2,222 for 2007, \$2,333 for 2008 and \$2,444 for 2009 in accordance with the 2005 Federal Budget; thereafter, the maximum annual pension accrual is assumed to increase in accordance with the assumed increase in the Industrial Aggregate.

**e) Increase in Pension Indexing Factor**

The year's pension indexing factor is involved in the valuation process by virtue of its role in maintaining the purchasing power of pensions. It was derived by applying the indexation formula described in Appendix 2, which relates to the assumed Consumer Price Index increases over successive 12-month periods ending on 30 September.

**f) Transfer Value Real Interest Rate**

In accordance with the Standard of Practice for Determining Pension Commuted Values, effective 1 February 2005, published by the Canadian Institute of Actuaries, the real interest rates to be used for the computation of commuted values as of a particular date are as follows:

First 10 years:  $r_7 + 0.50\%$

After 10 years:  $r_L + 0.5 \times (r_L - r_7) + 0.50\%$

Where  $r_7 = r_L \times (i_7/i_L)$

$r_L$  is the long-term real return Government of Canada bond yield,

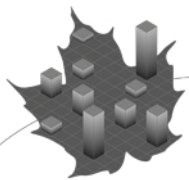
$i_L$  is the long-term Government of Canada benchmark bond yield, and

$i_7$  is the 7-year Government of Canada benchmark bond yield<sup>1</sup>.

For plan year 2006, the real rates of interest to be used for the computation of commuted values are 2.75% for the first 10 years and 3.00% after 10 years. It was derived from the assumed 2006 CPI increase and the assumed 2006 long-term Government of Canada benchmark bond yield which corresponds to the new money rate in this valuation.

In the previous valuation, transfer value real rates of interest were determined in accordance with the applicable Recommendations for the Computation of Transfer Values from Registered Pension Plans that had been effective since 1 September 1993.

<sup>1</sup> It was deemed equal to 90% of the long-term Government of Canada benchmark bond yield.



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## 3. Summary of Key and Derived Economic Assumptions

**Table 17 Economic Assumptions**  
(Percentage)<sup>1</sup>

Plan Year	Inflation		Employment Earning Increases				Interest		
	CPI Increase	Pension Indexing <sup>2</sup>	Industrial Aggregate	YMPE <sup>2</sup>	Average Pensionable Earnings <sup>2,3</sup>	Maximum Pensionable Earnings <sup>2,4</sup>	New Money Rate	Yield on Account	Yield on Fund
2006	<b>2.2</b>	<b>2.2</b>	2.7	<b>2.4</b>	<b>2.4</b>	<b>5.6</b>	4.66	7.83	6.5
2007	1.9	2.0	3.0	2.6	2.3	<b>5.3</b>	4.50	7.59	6.3
2008	2.1	2.0	3.1	2.8	2.5	<b>5.0</b>	4.54	7.36	6.3
2009	2.1	2.1	3.4	3.0	2.7	<b>4.8</b>	4.68	7.11	6.4
2010	2.3	2.2	3.4	3.2	2.9	3.2	4.82	6.90	6.5
2011	2.3	2.3	3.7	3.4	3.1	3.4	4.96	6.68	6.6
2012	2.4	2.4	3.7	3.6	3.3	3.6	5.10	6.26	6.7
2013	2.5	2.5	3.7	3.7	3.5	3.7	5.24	6.07	6.8
2014	2.5	2.5	3.7	3.7	3.5	3.7	5.28	5.92	6.8
2015	2.5	2.5	3.7	3.7	3.5	3.7	5.32	5.77	6.8
2016	2.5	2.5	3.7	3.7	3.5	3.7	5.35	5.57	6.8
2017	2.5	2.5	3.7	3.7	3.5	3.7	5.35	5.41	6.8
2018	2.5	2.5	3.7	3.7	3.5	3.7	5.35	5.30	6.8
2019	2.5	2.5	3.7	3.7	3.5	3.7	5.35	5.26	6.8
2020	2.5	2.5	3.7	3.7	3.5	3.7	5.35	5.24	6.8
2021	2.5	2.5	3.7	3.7	3.5	3.7	5.35	5.19	6.8
2022	2.5	2.5	3.7	3.7	3.5	3.7	5.35	5.17	6.8
2023	2.5	2.5	3.7	3.7	3.5	3.7	5.35	5.15	6.8
2024	2.5	2.5	3.7	3.7	3.5	3.7	5.35	5.14	6.8
2025	2.5	2.5	3.7	3.7	3.5	3.7	5.35	5.13	6.8
2026	2.5	2.5	3.7	3.7	3.5	3.7	5.35	5.15	6.8
2027	2.5	2.5	3.7	3.7	3.5	3.7	5.35	5.19	6.8
2028	2.5	2.5	3.7	3.7	3.5	3.7	5.35	5.24	6.8
2029	2.5	2.5	3.7	3.7	3.5	3.7	5.35	5.29	6.8
2030	2.5	2.5	3.7	3.7	3.5	3.7	5.35	5.33	6.8
2031	2.5	2.5	3.7	3.7	3.5	3.7	5.35	5.35	6.8
2032	2.5	2.5	3.7	3.7	3.5	3.7	5.35	5.35	6.8
2033	2.5	2.5	3.7	3.7	3.5	3.7	5.35	5.35	6.8
2034	2.5	2.5	3.7	3.7	3.5	3.7	5.35	5.35	6.8
2035	2.5	2.5	3.7	3.7	3.5	3.7	5.35	5.35	6.8
2036+	2.5	2.5	3.7	3.7	3.5	3.7	5.35	5.35	6.8

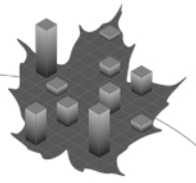
<sup>1</sup> Bold figures denote actual experience.

<sup>2</sup> Assumed to be effective as at 1 January.

<sup>3</sup> Exclusive of seniority and promotional increases.

<sup>4</sup> Calendar year 2005 Maximum Pensionable Earnings was \$114,400.





**B. Demographic Assumptions**

Except where otherwise noted all demographic assumptions were determined from the plan’s own experience, as was done in the past. Where applicable, assumptions of the previous valuation were updated to reflect the available intervaluation experience of April 2001 to March 2004. Tables 33 to 41 of Appendix 14 show the details of the demographic assumptions discussed below.

**1. Seniority and Promotional Salary Increases**

*Seniority* means length of service within a position and *promotion* means moving to a more highly-paid position. Again, as in the previous 2002 valuation report, the experience of the last three years has revealed higher salary increases than anticipated. These increases are believed to be caused by the rapidly expanding workforce of the Public Service of Canada during the last five years. It is assumed that these higher than anticipated salary increases are temporary in nature and that a return to the seniority and promotional salary increases assumption of the 2002 valuation report is the most probable scenario. Consequently, the 2002 valuation report assumption has been modified by given full credibility to experience of the last three years. For plan year 2006, the assumed rates for males were increased by roughly 17% at most durations; for females the increase was approximately 10%. The plan year 2006 assumed rates will be graded down linearly to the 2002 assumed rates over the next five years (a return to the 2002 assumption by plan year 2010).

**2. New Members**

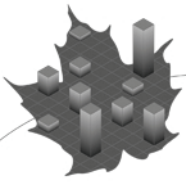
It was assumed that the distribution of new members by age, sex and initial salary rate would be the same as that of members with less than one year of service at the valuation date. Initial salary is assumed to increase in future plan years in accordance with the assumption for average earnings increase.

It was assumed that the number of new contributors would be such that the total number of plan contributors would increase as follows:

Plan Year	Increase (%)
2005	0.5%
2006	1.5%
2007	1.3%
2008-2016	0.9%
2017-2022	0.8%
2023+	0.5%

**3. Pensionable Retirement**

The rates of pensionable retirement assumed for the main group of contributors were reduced on average by 50% for selective age and service groups. The pensionable retirement rates for operational service group were changed in accordance with the experience. Although some rates have increased by 100% and others decrease by 50%, the overall financial impact was marginal.



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### 4. Disability Retirement

The disability incidence rates were significantly revised to reflect the intervaluation experience. The disability incidence rates for males are about 25% lower than assumed in the previous valuation while female incidence rates are about 20% lower.

As in the previous valuation it was assumed that 75% of future new disability pensioners would receive a C/QPP disability pension at the onset of disability, which would reduce their disability pension payable from the plan accordingly.

### 5. Withdrawal

Withdrawal means ceasing to be employed for reasons other than death or retirement with an immediate annuity or an annual allowance. The assumed rates for the main group females are on average 32% lower than those of the previous valuation; for males the decreases are on average 26% less than those of the previous valuation. The assumed rates for the operational service group are 43% higher than previously.

Approximately two-thirds of the terminating contributors with more than two years of service are assumed to elect a transfer value rather than a deferred annuity.

### 6. Mortality

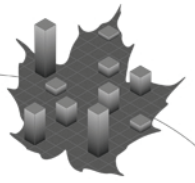
The assumed rates are either the same as or generally very close to those projected for plan year 2003 and latter in the previous valuation. The mortality improvement assumption from the actuarial report on the Canada Pension Plan as at 31 December 2003 was used for valuation purposes. The mortality improvements are higher than those used in the previous valuation. These ultimate rates of improvement were established by adjusting the results of a detailed study prepared by the Social Security Administration in the United States. The adjustments are to reflect, in part, historical differences between Canada and the United States. Rates of improvement for the period 2002 to 2006 are assumed to be equal to those experienced over the period 1991 to 2001 and then gradually reduce to their ultimate levels by 2026.

### 7. Family Composition

The family composition assumptions were retained without change from the previous valuation. Included therein are

- proportion of contributors and pensioners married at death;
- average number of children surviving a member or contributor; and
- average age of new survivors.

To determine the value of pensions payable to eligible children, the rates of pension termination were assumed to be zero prior to age 17 and 16% per annum thereafter until expiry of the benefit on the 25<sup>th</sup> birthday.



## C. Other Assumptions

### 1. Pension Benefits Division/Optional Survivor Benefit/Leave Without Pay

Pension benefits divisions have almost no effect on the valuation results because the plan liabilities are reduced on average by roughly the amount paid to the credit of the former spouse. Consequently, no future pension benefits divisions were assumed in estimating normal costs and liabilities. However, past pension benefits divisions were fully reflected in liabilities. Two other provisions, namely the optional survivor benefit and the suspension of membership while on leave without pay, were also treated like pension benefits divisions for the same reason.

### 2. Minimum Post-retirement Death Benefit

This valuation does not take into account the minimum death benefit described in Note 13 of Appendix 2 –D, in respect of deaths occurring after retirement. The resulting understatement of accrued liability and normal cost is not material because a majority of the relatively few pensioners who die in the early years of retirement do leave an eligible survivor.

### 3. Administrative Expenses

It is estimated that administrative expenses will be 0.35% of pensionable payroll, which is similar to the rate used in the previous valuation. The allocation of the expenses methodology described in the previous valuation report was maintained for this valuation. In plan year 2006, the Account is assumed to be charged with 88% of the total expenses, reducing by 2% each year thereafter.

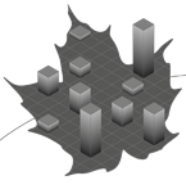
The future expenses expected to be charged to the Account have been capitalized and shown as a liability on the balance sheet whereas the expenses to the Fund have been added to the normal cost as they occur.

### 4. Funding of Elected Prior Service and Leave Without Pay Service

The assumed future government credits in respect of prior service elections and leave without pay service vary according to the rate paid by the contributor (i.e. single or double) and the vehicle (i.e. Account or Fund) into which the contributions are deposited. The government matches member contributions made to the Superannuation Account for prior service elections; however, it makes no contributions if the member is paying the double rate. Government credits to the Pension Fund in respect of elected prior service are as described for current service; however, the government contributes only 0.75 of the member contribution if the member is paying the double rate.

### 5. Outstanding Terminations

Amounts paid from 1 April 2005 onward for terminations that occurred prior to that date were estimated from historical trends and from actual payments made from 1 April 2005 onward.



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### **6. Disability Incidence Rates for Pensioners Under Age 60**

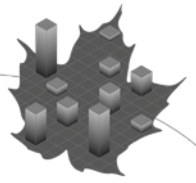
Both deferred pensioners and pensioners receiving an annual allowance while under age 60 were assumed to have a 0% disability rate. The resulting understatement of liabilities and normal costs is negligible.

### **7. Recovery Rates for Disability Pensioners**

No recoveries were assumed for disability pensioners. The resulting overstatement of liabilities and normal costs is negligible.

### **8. Sex of Surviving Spouses**

Each eligible surviving spouse is assumed to be of the opposite sex.



## Appendix 8 – RCA Valuation Methodology and Assumptions

### A. Valuation of Assets

The assets comprise the recorded balance in the Retirement Compensation Arrangements Account, which forms part of the Public Accounts of Canada, and a refundable tax. Each calendar year a cash transfer is made to the Canada Revenue Agency (CRA) such that in total half of the assets are held by the CRA as a refundable tax.

The RCA Account is not invested in marketable securities. Interest is credited every three months in accordance with the actual average yield on a book value for the same period on the combined Superannuation Accounts of the Public Service, Canadian Forces and Royal Canadian Mounted Police pension plans. The actuarial asset value is equal to the book value.

### B. Valuation of Liabilities

Described in this Appendix are the liability valuation methodologies used and any differences in demographic assumptions from those used in the PSSA valuation.

#### 1. Terminally Funded RCA Benefits

The following RCA benefits are being terminally funded (i.e. not prefunded but on an occurrence basis):

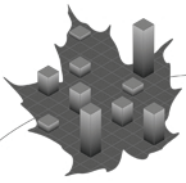
- Early Retirement Incentive (ERI) program
- pre-retirement survivor benefits
- minimum death benefit
- waiver of pension reduction on compulsory early retirement
- elective service.

Except for the now-closed ERI program, the above benefits are terminally funded because they are uncommon or of little financial significance. For example, the pre-retirement survivor benefit becomes payable only when the average salary is less than 1.4 times the YMPE. As well, the RCA minimum death benefit is expected to occur only with deaths at younger ages where the probability of death is small.

#### 2. RCA Post-retirement Survivor Benefits

The limit on the amount of spousal annual allowance that can be provided under the PSSA decreases at the same time the member's pension reduces due to the C/QPP offset, usually at age 65.

This benefit was valued conservatively by assuming the plan limit is always reduced by the C/QPP offset. The liability overstatement is minor because the probability of the former contributor dying prior to age 65 is small. (This overstatement tends to be offset by the understatement of accrued liability caused by terminally funding the pre-retirement survivor benefit.) The projected accrued benefit cost method was used to estimate the liabilities and normal costs for this RCA benefit.



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### 3. Continued Benefit Accrual for Former Deputy Heads

All former deputy heads who accrued or are accruing benefits are included. For those accruing benefits, it was assumed that they would cease to do so when first eligible for an immediate annuity.

### 4. Excess Pensionable Earnings

The projected accrued benefit cost method was used to estimate plan liabilities and normal costs for benefits in excess of the Maximum Pensionable Earnings (MPE).

The expected salary of a member at termination was based not on the seniority and promotional salary increase assumption described in Appendix 7 but on the assumed salary level the member has attained by that time. A probability distribution was developed to determine the salary level at termination, based on the current membership data. The following table shows the projected salary (in current dollars) of those assumed to retire with a salary exceeding the Maximum Pensionable Earnings of \$114,400 for calendar year 2005.

#### Assumed Future Retirement with Salary Exceeding Current MPE

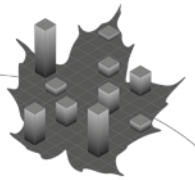
Current Salary Level		Salary (\$ thousands) at Termination				
(\$ thousands)	Current Population	115-126	126-136	136-147	147-178	178+
63-73	29,556	390	129	91	35	0
73-84	20,912	490	177	108	57	16
84-94	13,305	581	206	140	67	25
94-105	5,954	577	212	145	80	29
105-115	3,828	744	257	182	97	37
115-126	1,764	1,104	294	198	119	49
126-136	777	0	393	208	121	55
136-147	688	0	0	450	170	68
147-178	503	0	0	0	376	127
178+	275	0	0	0	0	275
Total	77,562	3,886	1,668	1,522	1,123	680

### 5. Administrative Expenses

To compute the liabilities and normal costs, no provision was made regarding the expenses incurred for the administration of the RCA. These expenses, which are not charged to the RCA Account, are borne entirely by the government and are commingled with all other government expenses.

### C. Actuarial Assumptions

The valuation economic assumptions are those described in Appendix 7 and shown in Table 17, except that the interest discount rate used to determine the present value of the RCA liabilities and normal cost is one-half of the yield projected on the combined Superannuation Accounts.



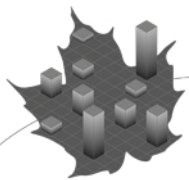
Except for the modifications described in section B and the modified withdrawal rates of the next paragraph, the demographic assumptions for the RCA valuation are those used for the PSSA valuation, described in section B of Appendix 7.

The withdrawal rates were modified for RCA purposes. For members assumed to have a higher salary level at withdrawal, the withdrawal rate was assumed to be zero for a number of years following the valuation date, as follows:

<b>Assumed Salary Level Increase Before Withdrawal</b>	<b>Number of Years Without Withdrawal</b>
0	0
1	2
2	6
3	10
4+	14

**D. Valuation Data**

The RCA pension benefits in payment were provided as at 31 March 2005. RCA benefits expected to be paid in respect of contributors and accrued spousal allowances of current retired members were all derived from the membership data described in Appendix 5 and shown in Appendix 13.



## Appendix 9 – Superannuation Account Projection

Until 31 March 2000, the PSSA was entirely financed through the Public Service Superannuation Account. The Account is now charged only with benefit payments made in respect of service earned before 1 April 2000 and administrative expenses; it is credited with prior service and leave without pay contributions made for elections made prior to 1 April 2000 and interest earnings. The legislation allows maintaining the Account balance equal to 110% of the liabilities at the end of the period.

The results of the following projection were computed using the assets described in Appendix 4, the data described in Appendix 5, the methodology described in Appendix 6, and the assumptions described in Appendix 7. The projection shows the expected development of the Superannuation Account if all assumptions are realized. Emerging experience, differing from the corresponding assumptions, will result in gains or losses to be revealed in subsequent reports.

**Table 18 Superannuation Account Projection**  
(\$ millions)

Plan Year	Beginning Account Balance	Beginning Liabilities	Beginning Actuarial Excess	Actuarial Excess Reduction <sup>1</sup>	Payments <sup>2</sup>	Interest Earnings
2006	84,901	80,186	4,716	0	4,098	6,493
2007	87,297	82,210	5,086	0	4,217	6,465
2008	89,544	84,072	5,472	0	4,376	6,430
2009	91,598	85,725	5,873	0	4,534	6,357
2010	93,422	87,131	6,290	0	4,694	6,283
2011	95,010	88,287	6,723	0	4,851	6,185
2012	96,345	89,172	7,173	0	5,002	5,881
2013	97,224	89,600	7,624	0	5,149	5,748
2014	97,824	89,736	8,087	0	5,287	5,635
2015	98,172	89,604	8,568	145	5,416	5,508
2020	93,244	84,767	8,477	613	5,880	4,735
2025	82,673	75,157	7,516	625	6,028	4,088
2030	69,078	62,798	6,280	596	5,807	3,529
2035	54,339	49,399	4,940	538	5,243	2,769
2040	39,471	35,883	3,588	450	4,399	1,996
2045	26,007	23,643	2,364	343	3,358	1,303
2050	15,279	13,890	1,389	230	2,270	757

<sup>1</sup> The actuarial excess reduction is calculated using the liabilities and Account balance at the end of the plan year.

<sup>2</sup> Include administrative expenses.





## Appendix 10 – Pension Fund Projection

Starting 1 April 2000, the PSSA is entirely financed through the PSSA Pension Fund. The Fund is credited with government and employee contributions, investment earnings and with prior service contributions for elections related to service post 31 March 2000. The Fund is charged with benefit payments made in respect of service earned after 31 March 2000 and administrative expenses.

The results of the following projection were computed using the assets described in Appendix 4, the data described in Appendix 5, the methodology described in Appendix 6, and the assumptions described in Appendix 7. The projection shows the expected development of the Pension Fund if all assumptions are realized. Emerging experience, differing from the corresponding assumptions, will result in gains or losses to be revealed in subsequent reports.

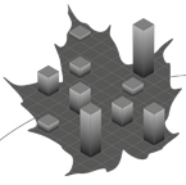
**Table 19 Pension Fund Projection<sup>1</sup>**  
(\$ millions)

Plan Year	Beginning Market Value <sup>2</sup>	Beginning Liabilities	Current Services Cost	Payments <sup>3</sup>	Investment Earnings
2006	14,367	14,367	2,803	249	1,016
2007	18,048	18,048	2,946	331	1,218
2008	22,003	22,003	3,080	428	1,468
2009	26,253	26,253	3,217	541	1,765
2010	30,831	30,831	3,362	670	2,090
2011	35,755	35,755	3,520	815	2,448
2012	41,051	41,051	3,693	979	2,840
2013	46,748	46,748	3,879	1,163	3,270
2014	52,877	52,877	4,077	1,368	3,686
2015	59,417	59,417	4,289	1,591	4,131
2020	98,853	98,853	5,476	3,057	6,803
2025	151,169	151,169	6,916	5,181	10,338
2030	218,792	218,792	8,696	8,010	14,901
2035	303,703	303,703	10,688	12,302	20,598
2040	404,585	404,585	12,994	18,048	27,343
2045	522,138	522,138	15,768	24,968	35,198
2050	658,856	658,856	19,157	33,073	44,337

<sup>1</sup> For simplicity, expected special payments were not included in the projection.

<sup>2</sup> For projection purposes, the market value used is set equal to the beginning liability. As at 31 March 2005, the corresponding market value was \$14,739.1 million. This amount includes the present value of prior service contributions of \$428.6 million and \$120.0 million of Public Service Corporations contributions made after the valuation date.

<sup>3</sup> Include administrative expenses.



## Appendix 11 – Investment Risk of a Diversified Portfolio

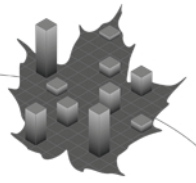
### A. Investing in Risky Assets

Since 1 April 2000, the PSSA pension plan contributions from government and employees are invested in capital markets through the PSPIB. Although the actual investment policy is appropriate, it is nonetheless useful to examine the impact of alternative investment policies on plan assets. Assets, in Appendix 11 and Appendix 12, refer solely to the post-2000 service where corresponding contributions are invested in capital markets.

A major risk a plan faces is funding risk - the risk that the assets backing the liabilities are insufficient to meet the pension obligations. If funding deficiencies or surpluses continue for an extended period of time, risk is transferred from one generation to another and may ultimately take the form of an increase or a decrease in the contribution rate.

The PSSA pension plan is inflation indexed, meaning that benefits increase in line with the CPI in order to maintain their purchasing power. From a risk point of view, the Plan's funds would be invested only in securities that exhibit high risk-free real returns in excess of the CPI. However, only the Government of Canada Long-Term Real Return Bond guarantees a risk-free inflation protected return. The yield on this bond was 1.73% as at 31 August 2005. This is well below the required real return on assets of 4.3% that is needed to sustain the plan at the current contribution rate.

By investing solely in risk-free real return bonds, all funding risk could be eliminated with an excessive cost and then at the detriment of current and future active members, who will have to contribute more unless benefits were decreased. If the PSPIB were to switch from the current portfolio of fixed and variable income securities to a portfolio that consists of only long-term Government of Canada bonds, the normal cost of the Plan would have to increase substantially in order to maintain the current funding status or benefits would have to be reduced. Neither of these is a desirable option. The following table shows the impact that various asset mixes would have on the normal cost and the funding ratio. Portfolio #1 is invested in long-term real return federal bonds only and its rate of return corresponds to the bond yield as at August 2005. Portfolio #2 is invested in long-term federal bonds assuming the ultimate assumption is attained in 2015. Both portfolio #1 and #2 do not result in feasible scenarios due to their prohibitive cost. Bonds in portfolios #3 to #6 are an actively managed bond mix and their respective rates of return are long-term ultimate assumptions used for 2015 and years thereafter.



**Table 20 Investment Policy Impact on Plan Funding**

	Asset Mix		Ultimate Real Rate of Return	Plan Funded Ratio as at 31 March 2005	Required Normal Cost to Maintain Full Funding
	Fixed Income	Variable Income			
Portfolio #1	100%	0%	1.73%	56%	32.76%
Portfolio #2	100%	0%	2.85%	72%	24.85%
Portfolio #3	100%	0%	3.40%	83%	21.50%
Portfolio #4	75%	25%	3.70%	86%	20.48%
Portfolio #5	50%	50%	4.00%	92%	19.19%
Actual Investment Policy	30%	70%	4.30%	97%	18.01%
Portfolio #6	0%	100%	4.70%	105%	16.59%

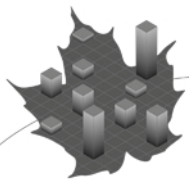
The Government created the PSPIB to invest the Plans’ contributions in excess of benefits with the purpose of maximizing investment returns without undue risk. The normal cost is then less than it would have been if the investment policy has been restricted to long-term government bonds. Diversifying the portfolio into a mix of fixed and variable income securities accomplishes this. Thus, the Plan undertakes some risks in order to increase the probability of achieving the long-term investment target of CPI + 4.3%.

Funding risk can be reduced by investing in securities that offer a higher rate of return than risk-free real return bonds, but that also have a higher degree of risk or volatility. That is, funds can be invested in a mix of investments, such as equities and bonds, with the expected rate of return equal to the plan’s funding requirements. By investing in riskier assets, investors hope to realize the equity risk premium as their reward for taking on additional risk. An equity risk premium is the difference between the expected return on the risky asset (equity) and the expected return on a risk-free asset, such as the Government of Canada Long-Term Real Return Bond mentioned above.

Of course, these higher returns are expected and not guaranteed, creating the very real possibility that the market will perform differently than expected and liabilities will grow at a faster or slower rate than investments for an extended period of time. This is known as market risk. Since investing solely in risk-free real return bonds will not produce a return sufficient to maintain the Plan at status quo, it is necessary to take market risk in order to increase the probability of earning a sufficient return. Even if investment returns materialize as expected, other assumptions may not, causing liabilities to grow at a different rate than the assets. An example of this is if salaries increase at a higher rate than expected. The amount of risk that the plan sponsor is willing to take depends on many factors, including the current funding status and economic outlook, among other things.

**B. Impact on Pension Fund of Investing in Riskier Assets**

This section highlights in dollar value the impact of active asset management as opposed to investing in risk-free bonds only. The following table shows the impact of investment decisions on the plan assets. Specifically, the table shows in lines (A) to (D) the



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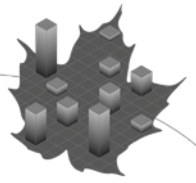
hypothetical value of the fund and of the investment earnings had the fund been invested entirely in long-term Government of Canada bonds throughout its life. Those figures are compared to the actual PSPIB results – lines (E) to (I) – to obtain the net value of the decision to invest in capital markets, in lines (J) and (K).

Even though investment earnings may not be positive each and every year, one can reasonably expect investment earnings above the risk-free rate to be positive in the long-term due to investment decisions, such as asset allocation in line (F) and active management in line (G). The cumulative net impact of investment decisions – line (K) in 2005 – being positive, it shows that over the last five years, it was more profitable for the plan to invest some funds in equities than investing solely in risk-free bonds.

**Table 21 Impact of Investment Decision on Plan Assets**  
As at 31 March 2005 (\$ millions)

	Pension Fund				
	2001	2002	2003	2004	2005
<b>Hypothetical Risk-Free Portfolio</b>					
<b>(100% Government Long-Term Bonds)</b>					
Fictitious Value of Assets, beginning of year (A)	-	2,109.4	4,350.8	7,159.4	10,339.1
Net Contributions Less Disbursements (B)	2,050.1	2,057.3	2,493.3	2,733.9	2,831.5
Return on Risk-Free Portfolio (C)	59.3	184.1	315.4	445.7	594.7
Fictitious Value of Assets, end of year (D) = (A)+(B)+(C)	2,109.4	4,350.8	7,159.4	10,339.1	13,765.2
<b>Risky Assets Portfolio (PSPIB Actual Figures)</b>					
Market Value of Assets, beginning of year (E)	-	1,885.9	4,042.7	5,874.7	10,349.2
Net Contributions Less Disbursements (B)	2,050.1	2,057.3	2,493.3	2,733.9	2,831.5
Return on Risky Assets Portfolio					
Selecting Fund's Actual Asset Allocation Policy (F)	(162.3)	103.5	(626.1)	1,668.2	845.4
Active Management (over the benchmark) (G)	(1.9)	(4.0)	(35.2)	72.4	98.9
Total Return on Risky Assets Portfolio (H) = (F)+(G)	(164.2)	99.5	(661.3)	1,740.6	944.3
Market Value of Assets, end of year (I) = (E)+(B)+(H)	1,885.9	4,042.7	5,874.7	10,349.2	14,125.0
<b>Net Impact of Investment Decisions</b>					
Annual (J) = (H)-(C)	(223.5)	(84.6)	(976.7)	1,294.9	349.6
Cumulative (K) = (I)-(D)	(223.5)	(308.1)	(1,284.7)	10.1	359.8
<b>Investment Actuarial Gains and Losses</b>					
Expected Investment Earnings <sup>1</sup> (L)	73.0	210.0	342.5	454.9	739.8
Total Return on Risky Assets Portfolio (H)	(164.2)	99.5	(661.3)	1,740.6	944.3
Gains/Losses					
Annual (M) = (H)-(L)	(237.2)	(110.5)	(1,003.8)	1,285.7	204.5
Cumulative (N) = (N) <sub>prior year</sub> + (M)	(237.2)	(347.7)	(1,351.5)	(65.8)	138.7

<sup>1</sup> In 2005, the \$739.8 million is based on an expected nominal return of 6.3% (4.3% real plus 2% CPI).



## Appendix 12 – Financial Economics Valuation Methodology and Assumptions

The 2000 to 2003 equity market debacle left many defined benefit pension plan in a deficit position. Finance professionals, including actuaries, now reassess the appropriateness of the traditional actuarial approach for funding. The financial economics (FE) approach received some publicity in the finance and actuarial literature. The purpose of this appendix is to describe the main principles of the FE approach and to show how much it would cost to implement it for the PSSA pension plan. As stated in Appendix 11, it refers solely to contributions invested in capital markets for the post-2000 service.

### A. Traditional Actuarial Approach

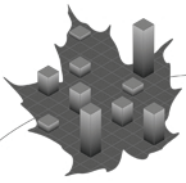
The valuation approach used in this report and by most actuaries is the traditional actuarial approach. It involves discounting the estimated future benefit payments using a valuation rate that reflects the expected rate of return on the plan's assets that are backing liabilities. In determining the appropriate valuation interest rate, consideration is given to the expected future real rates of return of each individual asset class and the evolution of the future asset mix. The valuation rate anticipates a positive equity risk premium over the long-term. The traditional approach recognizes that the capital markets are highly variable in the short-term but less variable over a longer time horizon. The focus of the traditional actuarial approach is to report a best estimate of pension liabilities and costs, with a particular emphasis on achieving a smooth pattern of contribution rates over the long term.

Over the last few years, some actuaries have expressed dissatisfaction with the traditional method mainly due to the use of a positive equity risk premium and a judgementally selected valuation rate that does not reflect the true value and nature of the liabilities. They have recommended adopting some of the principles of the financial economics approach. The next section describes, as an informative purpose, the fundamentals of the financial economic theory and its impact on pension funding. An illustration of what the normal cost of the PSSA pension plan would be with the financial economics valuation approach is shown in the following section. However, the traditional approach is considered to be the most appropriate method for funding public sector pension plans for the following reasons:

- it takes into account a positive equity risk premium,
- it focuses more on a smooth funding pattern than on liabilities,
- it incorporates future salary increases,
- it smoothes the volatile market value of assets, and
- there are no financial instruments available to properly apply the financial economic approach.

### B. Financial Economics Approach

The Financial Economics approach begins from the contention that pension plan liabilities are obligations that possess characteristics similar to bonds. This approach is described in actuarial literature as having five key principles which are described below.



## 1. Key Principles

### a) **One dollar of bonds has the same value as one dollar of equities**

In current actuarial practice, plans sponsors anticipate an equity risk premium on investments without explicitly recognizing the risk that is being incurred. This principle contends that the present value (PV) of an expected cash flow must reflect both the expected return and risk. The PV of the equity risk is negative and it exactly offsets the PV of the expected future equity premium.

### b) **A liability is measured by the value of a replicating portfolio whose cash flows match the liability in amount, timing, and probability of payment**

Liabilities should be valued using discount rates tied to bond yields of appropriate quality and duration, rather than using a discount rate that reflects the expected return of assets backing the liabilities, as is the current practice. Thus, the current practice understates the true market value of the liabilities since a higher discount rate is used. Using a replicating bond portfolio to determine the appropriate valuation interest rate is not subjective, since it does not require judgement on the part of the actuary or plan sponsor.

### c) **A fair trade of a marketed security must occur at market value**

Smoothing techniques used in current actuarial practice create arbitrage opportunities. Also, the true volatility of pension accounting costs is disguised by smoothing asset and liability gains and losses over several years. For both funding and accounting purposes, the assets should be valued at market and continuously marked to market.

### d) **All parties involved in financial transactions are entitled to full and complete current information on the market price of the relevant assets and liabilities**

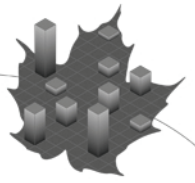
Financial disclosures must be based on current market values of assets and liabilities. Although mark-to-market measures would increase the year-to-year volatility of pension accounting costs, stakeholders or taxpayers in the case of public sector pension plans would be given a more realistic picture of pension performance.

### e) **Risks are borne and rewards are earned by individuals and not by institutions**

The pension promise is a transaction between principals – the company's shareholders and plan members – with executives, union representatives, regulators, board members, and the company itself simply acting as agents of these principals' interests. In the case of public pensions, such as the Public Sector Pension Plans, risks are borne by taxpayers and not by the Government. In general, it is assumed that the Government, acting as a representative of taxpayers, takes a long-term view of what is best for the Plans. This may be at the expense or benefit of taxpayers.

## 2. Implications for Pension Plans that Implement Financial Economics

The financial economics approach focuses on plan liabilities and not on annual cost or the smoothness of contribution rates over time, which are important in the traditional approach. FE ignores the future risk/reward expectations inherent in risky investments,



such as equities. Instead, this approach recommends valuing pension liabilities with a reference portfolio composed entirely of bonds with properties similar to the plan's liabilities. No judgment from the actuary of the plan sponsor would be required to determine the valuation interest rate. If the theory of financial economics was implemented to value defined benefit pension plans, then one could expect higher pension costs than under the traditional methodology and a pattern of contributions that varies substantially as interest rates rise and fall and the shape of the yield curve changes.

The emphasis in financial economics is placed on current values, as determined by the market, and not on historical values or best estimates of future conditions. There is no smoothing of assets in financial economics. If the plan is fully funded and invested in a reference portfolio that matches the accrued liabilities, the only further funding required will be the normal cost. In other words if interest rates fall, the normal cost would increase substantially but no further contributions would be required to fund the accrued liabilities that are already matched by the replicated bond portfolio. Following this logic, future salary increases and possible future benefit improvements are not considered in the liabilities valuation and will be funded by the normal cost once they are realized.

With the FE approach, the plan is viewed as an integral part of the employer's financial structure. It allows the employer to consider its pension plan from a shareholders' point of view: taking less risk through its pension plan will allow it to take more risk in its operations and then increase returns for its shareholders. FE is then more appropriate as an accounting valuation (to reflect the market value of the liabilities) than as a funding valuation. Nonetheless, FE could also be useful in a public pension plan environment if governments would prefer reducing risk in their pension plans by paying more and therefore reducing the spending in other initiatives.

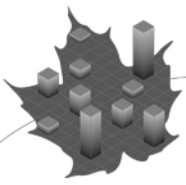
### **3. Hypothetical PSSA Pension Plan Normal Cost with Financial Economics Approach**

As an illustrative purpose, the following normal cost and liabilities are calculated as if the valuation approach were dictated by financial economics principles. However, there are some practical problems developing the reference portfolio because few bonds are available in the market with terms longer than 30 years. The long-term rate over 10 to 30 years is then used as an approximation of the longer-term rates over 30 to 80 years. The reference portfolio valuation rate corresponds to the long-term real return Government of Canada Bond Yield plus fifty basis points<sup>1</sup>, which results in a slightly lower interest rate than the one used for the computation of commuted values described in Appendix 7.

The reference portfolio is an attempt to properly value the liabilities and not a recommended asset mix policy. It allows measuring the liabilities without regard to the expected return of the invested assets. The results of the following projection were computed using the assets described in Appendix 4, the data described in Appendix 5, the methodology described in Appendix 6, and the assumptions described in Appendix 7

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<sup>1</sup> To reflect that the reference portfolio could be invested in highly secure bonds other than federal bonds. As an example, provincial bonds yield has been historically higher than the Government of Canada Bond Yield by 40 basis points.



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with the exceptions that there is no seniority and promotional increases and no general economic increase.

**Table 22 Normal Cost with Financial Economic Approach**

Plan Year	Financial Economics				Funding Ratio (%)	Real Discount Rate	
	Normal Cost	(% of Pensionable Payroll)	Liabilities at the Beginning of the Year (\$ millions)	Assets (\$ millions)		First 10 Years (%)	After 10 Years (%)
	(\$ millions)						
2003	2,664	20.1	4,288	4,083	95	3.74	4.28
2004	2,861	19.8	7,104	5,875	83	3.11	3.55
2005	3,839	24.9	10,193	10,349	102	3.20	3.65
2006	3,548	22.7	17,819	14,772	83	2.71	3.08
2007	3,725	22.8	22,064	18,956	86	2.75	3.13
2008	3,862	22.7	26,574	23,388	88	2.79	3.17
2009	4,003	22.5	31,348	28,068	90	2.82	3.21
2010	4,140	22.3	36,419	33,030	91	2.86	3.25
2015	5,148	21.8	67,161	62,983	94	3.04	3.46

Note that the normal costs and liabilities shown in the table above were based on the 2002 valuation assumptions for plan years 2003 to 2005 and on the 2005 valuation assumptions for plan years 2006 to 2015. The assumptions used do not reflect the volatility of interest rates that might occur if the financial economics approach was chosen. For example, in the past ten years long-term real interest rates have varied from 1.5% to 5.0%. Such variations in real interest rates would have a significant impact on the normal costs from one year to the other. Under such an environment the active member of one year can be obligated to pay twice the amount paid in the prior year.

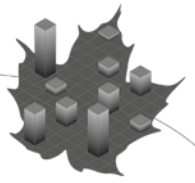
With the financial economics approach, the actuarial deficit, which is based on current low yield long-term bonds, would be much higher but with less investment risk for government and plan members.

#### 4. Actuarial Issues with Financial Economics

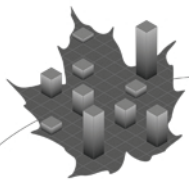
The financial economics approach is based on the belief that pension liabilities are similar to debt and that they can be modeled accurately using a debt model. However, if this is done, future benefits will be underestimated, which will lead to a plan being underfunded. When these costs are actually realized in the future, benefits will increase retroactively and will have to be paid by the current generation, causing inequity among generations.

Rather than the smooth funding pattern that has emerged with the traditional method, the financial economics method is likely to produce a funding pattern that increases initially and then decreases over time if actuarial gains emerge. This will lead to intergenerational inequity as the current generation of taxpayers and/or members will





pay more than future generations. Proponents of traditional actuarial valuation see some flaws in the financial economics approach. First of all, duration in the debt model is incorrect since pension obligations in an ongoing plan could last as long as 90 years into the future for a current member or their beneficiary. No debt instrument exists with a term that long. Also, pension payments are not determined in advance due to variations over time of inflation, salary increases, retirement rates, death, disability, and many other factors. Benefit payments vary much more than debt. Finally, the main concern of the plan sponsor is the normal cost and not the liabilities, making the liability model and its results less significant to the sponsor.



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## Appendix 13 – Detailed Information on Membership Data

**Table 23 Male Contributors (Main Group)**  
Number and Average Annual Pensionable Earnings<sup>1</sup> as at 31 March 2004

Age <sup>2</sup>	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35+	All Years of Service <sup>2</sup>
<25	2,190	\$17							2,207
	\$32,069	\$53,214							\$32,824
25-29	7,068	922	6						7,996
	\$39,026	\$48,820	\$56,863						\$43,211
30-34	6,486	3,048	810	22					10,366
	\$41,452	\$49,393	\$56,796	\$59,107					\$48,126
35-39	4,932	2,883	3,963	1,290	62				13,130
	\$42,864	\$50,745	\$53,920	\$60,729	\$56,303				\$51,039
40-44	4,586	2,485	4,139	4,186	2,584	178			18,158
	\$45,779	\$49,681	\$59,195	\$58,030	\$57,979	\$60,808			\$53,939
45-49	3,366	1,956	2,834	3,438	5,492	3,628	283		20,997
	\$43,471	\$51,814	\$58,229	\$64,128	\$60,457	\$59,957	\$61,265		\$55,723
50-54	2,354	1,307	1,969	2,339	3,675	6,479	4,251	192	22,566
	\$45,665	\$51,660	\$58,487	\$61,971	\$62,176	\$64,885	\$66,740	\$75,982	\$58,351
55-59	1,459	802	1,395	1,474	1,972	2,941	3,222	521	13,786
	\$48,037	\$51,569	\$57,141	\$61,889	\$67,298	\$74,353	\$78,920	\$77,189	\$62,886
60-64	475	344	495	587	663	742	744	273	4,323
	\$48,391	\$60,483	\$56,049	\$64,569	\$68,378	\$77,499	\$89,123	\$84,767	\$67,548
>65	98	82	100	116	111	119	117	78	821
	\$55,607	\$64,340	\$60,189	\$65,604	\$70,564	\$83,230	\$78,651	\$87,728	\$70,336
All Ages	33,014	13,846	15,711	13,452	14,559	14,087	8,617	1,064	114,350
	\$43,674	\$52,703	\$57,406	\$62,044	\$63,478	\$70,275	\$77,022	\$82,757	\$57,996

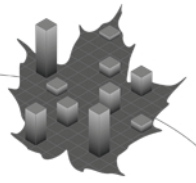
	<u>31 March 2004</u>	<u>31 March 2001</u>
Average age <sup>2</sup> :	44.7 years	44.3 years
Average pensionable service <sup>2</sup> :	13.8 years	14.1 years
Annualized pensionable payroll <sup>3</sup> :	\$7,271,586,631	\$5,841,284,041
Total PBDA <sup>4</sup> indexed reduction to basic annuity:	\$8,249,364	\$9,079,288
Total PBDA <sup>4</sup> indexed reduction adjustment:	\$1,877,687	\$2,014,358

<sup>1</sup> As defined in Note 1 of Appendix 2-D.

<sup>2</sup> Expressed in completed years calculated at the beginning of the plan year.

<sup>3</sup> The aggregate pensionable earnings of all contributors with less than 35 years of pensionable service.

<sup>4</sup> PBDA means the *Pension Benefits Division Act*.



**Table 24 Female Contributors (Main Group)**  
Number and Average Annual Pensionable Earnings<sup>1</sup> as at 31 March 2004

Age <sup>2</sup>	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35+	All Years of Service <sup>2</sup>
<25	3,316	\$30							3,346
	\$30,124	\$38,943							\$31,006
25-29	10,086	1,246	5						11,337
	\$38,323	\$44,322	\$55,568						\$41,323
30-34	8,125	3,614	1,380	87					13,206
	\$41,337	\$47,889	\$45,819	\$53,524					\$45,534
35-39	6,266	3,255	4,835	2,276	174				16,806
	\$41,866	\$47,799	\$50,052	\$46,383	\$50,448				\$46,736
40-44	6,008	3,289	4,485	4,741	4,316	528			23,367
	\$39,935	\$43,815	\$49,326	\$51,266	\$49,308	\$53,992			\$47,099
45-49	4,571	2,902	3,696	3,545	5,294	4,951	680		25,639
	\$39,182	\$43,378	\$47,057	\$50,659	\$50,973	\$48,480	\$57,014		\$47,094
50-54	2,855	2,031	2,885	2,864	3,250	4,218	3,587	279	21,969
	\$38,430	\$41,058	\$43,598	\$46,964	\$49,223	\$52,890	\$50,642	\$51,621	\$46,190
55-59	1,326	1,070	1,642	1,773	1,963	1,540	1,072	305	10,691
	\$37,093	\$38,970	\$42,279	\$43,798	\$45,569	\$51,389	\$59,737	\$54,948	\$45,583
60-64	364	300	491	528	559	337	175	67	2,821
	\$37,270	\$36,579	\$38,472	\$43,007	\$43,715	\$53,105	\$53,098	\$52,386	\$43,567
>65	58	53	64	71	78	61	20	19	424
	\$41,606	\$47,743	\$46,145	\$44,523	\$45,501	\$51,571	\$56,854	\$57,100	\$47,848
All Ages	42,975	17,790	19,483	15,885	15,634	11,635	5,534	670	129,606
	\$38,308	\$43,210	\$45,494	\$47,146	\$47,859	\$51,571	\$54,654	\$53,992	\$45,521

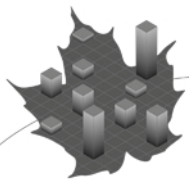
	<u>31 March 2004</u>	<u>31 March 2001</u>
Average age <sup>2</sup> :	42.9 years	42.2 years
Average pensionable service <sup>2</sup> :	12.0 years	11.6 years
Annualized pensionable payroll <sup>3</sup> :	\$6,864,606,484	\$5,231,051,541
Total PBDA <sup>4</sup> indexed reduction to basic annuity:	\$1,031,620	\$920,166
Total PBDA <sup>4</sup> indexed reduction adjustment:	\$304,536	\$269,984

<sup>1</sup> As defined in Note 1 of Appendix 2-D.

<sup>2</sup> Expressed in completed years calculated at the beginning of the plan year.

<sup>3</sup> The aggregate pensionable earnings of all contributors with less than 35 years of pensionable service.

<sup>4</sup> PBDA means the *Pension Benefits Division Act*.



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**Table 25 Male Contributors (Operational Service Group)**  
Number and Average Annual Pensionable Earnings<sup>1</sup> as at 31 March 2004

Age <sup>2</sup>	0-4	5-9	10-14	15-19	20-24	25-29	30-34	All Years of Service
<25	83							83
	\$39,077							\$39,077
25-29	519	70						589
	\$41,415	\$50,882						\$44,085
30-34	579	409	57					1,045
	\$41,815	\$55,216	\$54,612					\$49,209
35-39	214	300	230	136	1			881
	\$46,297	\$54,676	\$56,588	\$58,028	\$57,365			\$53,843
40-44	9	96	187	325	114	11		742
	\$44,710	\$54,014	\$56,699	\$59,175	\$57,497	\$58,538		\$56,189
45-49	2	3	75	227	329	309	13	958
	\$47,317	\$53,120	\$57,928	\$58,312	\$60,361	\$58,813	\$68,726	\$58,814
50-54	1		5	86	184	363	184	823
	\$55,115		\$59,095	\$57,780	\$60,695	\$61,456	\$61,447	\$60,369
55-59		1	1	4	58	172	114	350
		\$52,750	\$54,860	\$59,811	\$59,298	\$61,386	\$65,339	\$61,967
60-64			1	1		17	21	40
			\$56,916	\$56,577		\$61,649	\$63,076	\$62,026
>65					1			1
					\$74,881			\$74,881
All Ages	1,407	879	556	779	687	872	332	5,512
	\$42,586	\$54,098	\$56,714	\$58,454	\$59,734	\$60,674	\$63,813	\$55,855

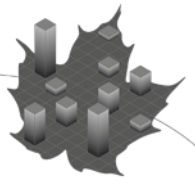
	31 March 2004	31 March 2001
Average age <sup>2</sup> :	40.9 years	40.0 years
Average pensionable service <sup>2</sup> :	14.2 years	13.6 years
Annualized pensionable payroll <sup>3</sup> :	\$302,260,228	\$275,424,471
Total PBDA <sup>4</sup> indexed reduction to basic annuity:	\$507,056	\$570,827
Total PBDA <sup>4</sup> indexed reduction adjustment:	\$135,570	\$157,803

<sup>1</sup> As defined in Note 1 of Appendix 2-D.

<sup>2</sup> Expressed in completed years calculated at the beginning of the plan year.

<sup>3</sup> The aggregate pensionable earnings of all contributors with less than 35 years of pensionable service.

<sup>4</sup> PBDA means the *Pension Benefits Division Act*.



**Table 26 Female Contributors (Operational Service Group)**  
Number and Average Annual Pensionable Earnings<sup>1</sup> as at 31 March 2004

Age <sup>2</sup>	0-4	5-9	10-14	15-19	20-24	25-29	30-34	All Years of Service
<25	88							88
	\$40,850							\$40,850
25-29	430	82						512
	\$45,097	\$48,246						\$46,095
30-34	353	364	64					781
	\$45,838	\$51,016	\$46,383					\$48,053
35-39	142	212	183	82	3			622
	\$45,871	\$52,090	\$53,419	\$51,875	\$67,376			\$51,343
40-44	3	80	138	212	113	7		553
	\$42,735	\$53,019	\$53,325	\$53,863	\$54,633	\$47,513		\$53,348
45-49	1	3	71	129	112	81	4	401
	\$54,860	\$58,693	\$48,279	\$56,672	\$62,485	\$51,806	\$47,450	\$55,432
50-54		1	4	54	80	54	29	222
		\$50,721	\$44,256	\$54,639	\$61,823	\$62,642	\$48,654	\$57,230
55-59	1		4	1	34	19	2	61
	\$37,965		\$51,093	\$37,377	\$56,916	\$57,881	\$44,888	\$54,822
60-64					4	3	3	10
					\$49,199	\$64,201	\$72,239	\$61,589
>65				1				1
				\$39,733				\$39,733
All Ages	1,018	742	464	479	346	164	38	3,251
	\$44,830	\$51,599	\$50,943	\$54,111	\$59,228	\$57,032	\$51,298	\$52,497

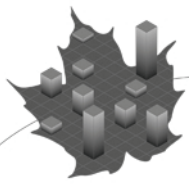
	<u>31 March 2004</u>	<u>31 March 2001</u>
Average age <sup>2</sup> :	37.4 years	36.2 years
Average pensionable service <sup>2</sup> :	10.5 years	9.3 years
Annualized pensionable payroll <sup>3</sup> :	\$174,135,700	\$141,965,819
Total PBDA <sup>4</sup> indexed reduction to basic annuity:	\$15,753	\$13,514
Total PBDA <sup>4</sup> indexed reduction adjustment:	\$4,805	\$4,211

<sup>1</sup> As defined in Note 1 of Appendix 2-D.

<sup>2</sup> Expressed in completed years calculated at the beginning of the plan year.

<sup>3</sup> The aggregate pensionable earnings of all contributors with less than 35 years of pensionable service.

<sup>4</sup> PBDA means the *Pension Benefits Division Act*.



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**Table 27 Contributors on Leave Without Pay and Non-active Contributors**  
Number and Average Annual Pensionable Earnings<sup>1</sup> as at 31 March 2004

Age <sup>2</sup>	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35+	All Years of Service <sup>2</sup>
<25	262	2							264
	\$35,948	\$45,582							\$36,096
25-29	1,500	270	1						1,771
	\$41,099	\$47,029	\$37,365						\$42,732
30-34	1,629	1,031	280	13					2,953
	\$42,973	\$50,778	\$50,291	\$49,218					\$47,516
35-39	866	782	873	252	8				2,781
	\$44,810	\$51,283	\$53,762	\$51,615	\$44,848				\$50,189
40-44	604	465	560	468	272	21			2,390
	\$40,341	\$46,327	\$50,805	\$53,616	\$52,340	\$54,391			\$48,678
45-49	420	312	381	336	394	282	23		2,148
	\$38,270	\$45,511	\$49,304	\$53,521	\$53,546	\$50,769	\$62,195		\$48,737
50-54	274	228	252	252	311	390	241	12	1,960
	\$36,944	\$40,464	\$48,353	\$50,638	\$54,502	\$56,498	\$56,945	\$56,121	\$48,966
55-59	180	136	201	166	206	193	133	13	1,228
	\$38,004	\$45,555	\$50,796	\$50,687	\$54,220	\$59,516	\$67,236	\$59,389	\$52,124
60-64	67	77	88	83	81	78	22	6	502
	\$37,392	\$42,670	\$45,766	\$44,722	\$51,732	\$62,636	\$68,846	\$69,784	\$49,384
>65	22	11	7	5		2			47
	\$35,478	\$38,462	\$41,876	\$46,408		\$59,258			\$39,660
All Ages	5,824	3,314	2,643	1,575	1,272	966	419	31	16,044
	\$40,106	\$46,875	\$50,242	\$51,328	\$53,305	\$56,738	\$62,939	\$61,035	\$48,621

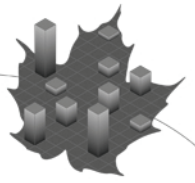
	<u>31 March 2004</u>	<u>31 March 2001</u>
Average age <sup>2</sup> :	41.0 years	41.5 years
Average pensionable service <sup>2</sup> :	10.0 years	10.3 years
Annualized pensionable payroll <sup>3</sup> :	\$824,920,363	\$514,405,351
Total PBDA <sup>4</sup> indexed reduction to basic annuity:	\$339,714	\$314,696
Total PBDA <sup>4</sup> indexed reduction adjustment:	\$84,430	\$72,910

<sup>1</sup> As defined in Note 1 of Appendix 2-D.

<sup>2</sup> Expressed in completed years calculated at the beginning of the plan year.

<sup>3</sup> The aggregate pensionable earnings of all contributors with less than 35 years of pensionable service.

<sup>4</sup> PBDA means the *Pension Benefits Division Act*.



**Table 28 Male Retirement Pensioners**

Number, Average Annual Pension<sup>1</sup> and Average Annual Allowance<sup>2</sup> as at 31 March 2004

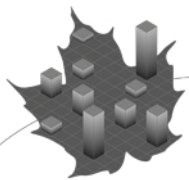
Age <sup>3</sup>	Number (#)	Pension	Spouse Allowance	Spouse Allowance for Service Since 1992	RCA No. 1					RCA No. 2	
					Maximum Earnings Limit on Service Since 1994			Waiver of Pension Reduction		Early Retirement Incentive	
					#	Pension	Spouse Allowance	#	Pension	#	Pension
<25	4	\$1,125	\$866	\$0	0	\$0	\$0	0	\$0	0	\$0
25-29	42	2,127	1,228	0	0	0	0	0	0	0	0
30-34	178	3,008	1,748	0	0	0	0	0	0	0	0
35-39	287	4,402	2,636	5	0	0	0	0	0	0	0
40-44	382	6,882	4,095	5	2	7,022	3,511	0	0	0	0
45-49	617	10,152	6,293	17	7	3,709	1,855	0	0	0	0
50-54	1,885	16,658	11,477	145	31	3,278	1,947	0	0	1	6,797
55-59	12,335	20,509	15,670	194	364	2,793	1,476	52	1,107	4,343	8,294
60-64	17,318	22,903	15,720	161	455	2,636	1,337	151	714	2,488	5,495
65-69	17,801	22,745	14,642	109	216	1,679	843	9	167	4	1,853
70-74	17,329	21,508	13,508	50	60	1,194	597	0	0	0	0
75-79	14,592	21,438	12,970	7	10	642	321	0	0	0	0
80-84	12,850	21,397	12,422	0	0	0	0	0	0	0	0
85-89	5,337	20,658	11,518	0	0	0	0	0	0	0	0
90-94	1,442	20,090	10,862	0	0	0	0	0	0	0	0
95-99	215	17,818	9,340	0	0	0	0	0	0	0	0
100-104	1	13,679	6,840	0	0	0	0	0	0	0	0
All Ages	102,615	\$21,443	\$13,805	\$82	1,145	\$2,444	\$1,264	212	\$787	6,836	\$7,271

	31 March 2004	31 March 2001
Average age last birthday	69.9 years	69.0 years
Average age last birthday at retirement	57.0 years	58.5 years
<u>Total annual pensions payable from</u>		
PS Superannuation Account	\$2,378.8 million	\$2,176.2 million
PS Pension Fund	\$26.7 million	\$1.6 million
RCA No. 1 Account	\$3.0 million	\$0.9 million
RCA No. 2 Account	\$49.7 million	\$47.0 million

<sup>1</sup> Include deferred annuity to age 60, annual allowance adjustments, PBDA reductions and C/QPP offsets whether or not they are in effect at the valuation date.

<sup>2</sup> The average amounts of spouse allowance are contingent on there being an eligible spouse.

<sup>3</sup> Expressed in completed years calculated at the beginning of the plan year.



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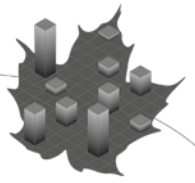
**Table 29 Female Retirement Pensioners**  
Number, Average Annual Pension<sup>1</sup> and Average Annual Allowance<sup>2</sup> as at 31 March 2004

Age <sup>3</sup>	Number (#)	Pension	Spouse Allowance	RCA No. 1						RCA No. 2	
				Spouse Allowance on Service Since 1992	Maximum Earnings Limit on Service Since 1994			Waiver of Pension Reduction		Early Retirement Incentive	
					#	Pension	Spouse Allowance	#	Pension	#	Pension
<25	2	\$1,497	\$1,125	\$0	0	\$0	\$0	0	\$0	0	\$0
25-29	71	1,787	1,068	0	0	0	0	0	0	0	0
30-34	198	2,645	1,587	5	0	0	0	0	0	0	0
35-39	275	4,081	2,535	8	0	0	0	0	0	0	0
40-44	497	5,872	3,734	7	2	382	191	0	0	0	0
45-49	718	8,004	5,253	15	2	632	316	0	0	1	7,364
50-54	1,656	10,764	8,724	226	20	1,716	990	0	0	0	0
55-59	7,418	12,251	10,791	336	85	3,488	1,804	31	912	2,756	7,091
60-64	8,975	12,164	9,469	313	54	4,052	2,032	180	696	1,527	4,916
65-69	8,722	11,842	8,515	228	16	2,864	1,432	7	66	3	1,494
70-74	7,556	11,267	7,918	108	3	4,158	2,079	0	0	0	0
75-79	6,929	11,239	7,587	17	0	0	0	0	0	0	0
80-84	5,750	11,296	7,224	1	0	0	0	0	0	0	0
85-89	3,003	11,000	6,541	0	0	0	0	0	0	0	0
90-94	1,156	11,431	6,401	0	0	0	0	0	0	0	0
95-99	265	10,021	5,379	0	0	0	0	0	0	0	0
100-104	30	7,036	3,606	0	0	0	0	0	0	0	0
105-110	4	4,048	2,024	0	0	0	0	0	0	0	0
All Ages	53,221	\$11,437	\$8,323	\$162	182	\$3,351	\$1,720	218	\$707	4,287	\$6,312

	31 March 2004	31 March 2001
Average age last birthday	68.9 years	68.4 years
Average age last birthday at retirement	56.4 years	58.6 years
<u>Total annual pensions payable from</u>		
PS Superannuation Account	\$690.8 million	\$572.3 million
PS Pension Fund	\$15.6 million	\$0.9 million
RCA No. 1 Account	\$0.8 million	\$0.2 million
RCA No. 2 Account	\$27.1 million	\$25.6 million

<sup>1</sup> Include deferred annuity to age 60, annual allowance adjustments, PBDA reductions and C/QPP offsets whether or not they are in effect at the valuation date.  
<sup>2</sup> The average amounts of spouse allowance are contingent on there being an eligible spouse.  
<sup>3</sup> Expressed in completed years calculated at the beginning of the plan year.





**Table 30 Male Disability Pensioners**  
Number, Average Annual Pension<sup>1</sup> and Average Annual Allowance<sup>2</sup> as at 31 March 2004

<u>Age<sup>3</sup></u>	<u>Number</u>	<u>Pension</u>	<u>Spouse Allowance</u>	RCA No. 1			
				<u>Spouse Allowance on Service Since 1992</u>	<u>Maximum Earnings Limit on Service Since 1994</u>		
					<u>Number</u>	<u>Pension</u>	<u>Spouse Allowance</u>
30-34	1	\$2,490	\$1,769	\$294	0	\$0	\$0
35-39	29	5,600	3,843	490	0	0	0
40-44	85	6,819	4,737	394	0	0	0
45-49	304	9,390	6,562	421	1	49	25
50-54	761	12,248	8,539	394	0	0	0
55-59	1,006	13,311	9,192	289	1	225	113
60-64	983	13,240	9,032	169	0	0	0
65-69	1,040	13,775	9,153	55	0	0	0
70-74	894	12,401	8,114	3	0	0	0
75-79	696	12,856	7,865	0	0	0	0
80-84	504	13,714	7,829	0	0	0	0
85-89	144	12,086	6,667	0	0	0	0
90-94	22	13,898	7,339	0	0	0	0
95-99	1	2,903	1,452	0	0	0	0
All Ages	6,470	\$12,774	\$8,416	\$153	2	\$137	\$69

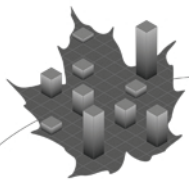
  

	<u>31 March 2004</u>	<u>31 March 2001</u>
Average age last birthday	65.0 years	64.2 years
Average age last birthday at disability	50.7 years	50.9 years
<u>Total annual pensions payable from</u>		
PS Superannuation Account	\$105.7 million	\$84.5 million
PS Pension Fund	\$1.3 million	\$0.1 million
RCA Account	\$0.2 million	\$0.0 million

<sup>1</sup> Include deferred annuity to age 60, annual allowance adjustments, PBDA reductions and C/QPP offsets whether or not they are in effect at the valuation date.

<sup>2</sup> The average amounts of spouse allowance are contingent on there being an eligible spouse.

<sup>3</sup> Expressed in completed years calculated at the beginning of the plan year.



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**Table 31 Female Disability Pensioners**  
Number, Average Annual Pension<sup>1</sup> and Average Annual Allowance<sup>2</sup> as at 31 March 2004

Age <sup>3</sup>	Number	Pension	Spouse Allowance	Spouse on Service Since 1992	RCA No. 1		
					Maximum Earnings Limit		
					on Service Since 1994		
					Number	Pension	Spouse Allowance
30-34	7	\$4,448	\$2,994	\$514	0	\$0	\$0
35-39	62	5,524	3,777	612	0	0	0
40-44	215	7,502	5,236	534	0	0	0
45-49	580	8,888	6,256	470	0	0	0
50-54	868	10,320	7,252	442	1	1,847	924
55-59	921	10,095	7,120	380	1	1,697	849
60-64	828	9,392	6,617	238	0	0	0
65-69	768	8,683	6,095	85	0	0	0
70-74	576	8,444	5,829	4	0	0	0
75-79	405	8,667	5,520	0	0	0	0
80-84	309	9,170	5,392	0	0	0	0
85-89	160	8,827	5,017	0	0	0	0
90-94	46	9,482	4,976	0	0	0	0
95-99	8	13,507	6,754	0	0	0	0
All Ages	5,753	\$9,214	\$6,321	\$248	2	\$1,772	\$886

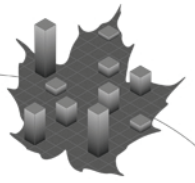
  

	31 March 2004	31 March 2001
Average age last birthday	61.9 years	61.6 years
Average age last birthday at disability	49.3 years	49.5 years
<u>Total annual pensions payable from</u>		
PS Superannuation Account	\$70.7 million	\$46.7 million
PS Pension Fund	\$2.0 million	\$0.1 million
RCA Account	\$0.2 million	\$0.0 million

<sup>1</sup> Include deferred annuity to age 60, annual allowance adjustments, PBDA reductions and C/QPP offsets whether or not they are in effect at the valuation date.

<sup>2</sup> The average amounts of spouse allowance are contingent on there being an eligible spouse.

<sup>3</sup> Expressed in completed years calculated at the beginning of the plan year.



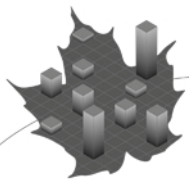
**Table 32 Surviving Spouses**  
Number and Average Annual Allowance as at 31 March 2004

Age <sup>1</sup>	Number		Allowance	RCA No. 1			
	Widow	Widower		Allowance on Service Since 1992		Maximum Earnings Limit on Service Since 1994	
				Number	Allowance	Number	Allowance
25-29	2	1	\$5,877	0	\$0	0	\$0
30-34	20	9	4,271	1	128	0	0
35-39	60	22	5,078	3	277	0	0
40-44	242	74	6,651	13	183	0	0
45-49	598	160	7,598	52	201	0	0
50-54	1,112	244	9,141	113	202	0	0
55-59	1,820	339	10,309	226	189	3	509
60-64	2,620	368	10,554	331	154	0	0
65-69	3,984	459	10,281	346	125	3	226
70-74	6,847	536	10,041	360	103	0	0
75-79	10,604	574	9,974	118	94	0	0
80-84	12,133	545	9,684	29	88	0	0
85-89	7,144	244	9,365	4	70	0	0
90-94	2,939	70	8,629	0	-	0	0
95-99	737	7	7,904	0	-	0	0
100-104	147	1	5,874	0	-	0	0
105-110	26	1	7,146	0	-	0	0
>110	13	0	4,866	0	-	0	0
All Ages	51,048	3,654	\$9,704	1,596	\$141	6	\$368

	31 March 2004	31 March 2001
Male average age last	69.3 years	68.4 years
Female average age last	76.8 years	75.7 years
<u>Total annual allowances payable from</u>		
PS Superannuation Account	\$529.8 million	\$458.9 million
PS Pension Fund	\$1.0 million	\$0.1 million
RCA Account	\$0.2 million	\$0.2 million

<sup>1</sup> Expressed in completed years calculated at the beginning of the plan year.



# ACTUARIAL REPORT

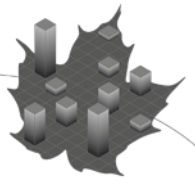
Pension Plan for the PUBLIC SERVICE OF CANADA  
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## Appendix 14 – Detailed Demographic Assumptions

**Table 33 Assumed Seniority and Promotional Salary Increases**  
By plan year (percentage)

Service <sup>1</sup>	Male					Female				
	2006	2007	2008	2009	2010+	2006	2007	2008	2009	2010+
0	5.63	5.72	5.82	5.91	6.00	6.24	6.18	6.12	6.06	6.00
1	5.14	5.15	5.17	5.18	5.20	5.24	5.23	5.22	5.21	5.20
2	4.70	4.65	4.60	4.55	4.50	4.50	4.50	4.50	4.50	4.50
3	4.32	4.21	4.11	4.00	3.90	3.95	3.94	3.93	3.91	3.90
4	3.98	3.86	3.74	3.62	3.50	3.55	3.54	3.52	3.51	3.50
5	3.68	3.56	3.44	3.32	3.20	3.24	3.23	3.22	3.21	3.20
6	3.42	3.29	3.16	3.03	2.90	3.01	2.99	2.96	2.93	2.90
7	3.19	3.06	2.92	2.79	2.65	2.83	2.80	2.77	2.73	2.70
8	2.98	2.84	2.69	2.55	2.40	2.69	2.64	2.59	2.55	2.50
9	2.80	2.63	2.47	2.31	2.15	2.56	2.50	2.43	2.37	2.30
10	2.62	2.45	2.29	2.12	1.95	2.45	2.36	2.28	2.19	2.10
11	2.46	2.30	2.13	1.97	1.80	2.35	2.27	2.18	2.09	2.00
12	2.32	2.15	1.99	1.82	1.65	2.27	2.18	2.08	1.99	1.90
13	2.19	2.02	1.85	1.67	1.50	2.18	2.09	1.99	1.90	1.80
14	2.07	1.92	1.76	1.61	1.45	2.11	2.01	1.90	1.80	1.70
15	1.97	1.82	1.68	1.54	1.40	2.04	1.94	1.85	1.75	1.65
16	1.87	1.74	1.61	1.48	1.35	1.98	1.88	1.79	1.69	1.60
17	1.79	1.67	1.55	1.42	1.30	1.92	1.83	1.73	1.64	1.55
18	1.73	1.61	1.49	1.37	1.25	1.86	1.77	1.68	1.59	1.50
19	1.67	1.55	1.43	1.32	1.20	1.81	1.72	1.63	1.54	1.45
20	1.62	1.50	1.38	1.27	1.15	1.77	1.67	1.58	1.49	1.40
21	1.57	1.45	1.34	1.22	1.10	1.72	1.63	1.54	1.44	1.35
22	1.53	1.41	1.29	1.17	1.05	1.68	1.59	1.49	1.40	1.30
23	1.50	1.37	1.25	1.12	1.00	1.64	1.55	1.45	1.35	1.25
24	1.47	1.34	1.21	1.08	0.95	1.61	1.51	1.41	1.30	1.20
25	1.43	1.30	1.17	1.03	0.90	1.58	1.47	1.36	1.26	1.15
26	1.40	1.27	1.15	1.02	0.90	1.54	1.43	1.32	1.21	1.10
27	1.36	1.25	1.13	1.02	0.90	1.51	1.39	1.28	1.16	1.05
28	1.33	1.22	1.11	1.01	0.90	1.47	1.36	1.26	1.16	1.05
29	1.29	1.19	1.09	1.00	0.90	1.43	1.34	1.24	1.15	1.05
30	1.25	1.16	1.07	0.99	0.90	1.39	1.30	1.22	1.13	1.05
31	1.21	1.13	1.05	0.98	0.90	1.35	1.27	1.20	1.12	1.05
32	1.17	1.10	1.03	0.97	0.90	1.30	1.24	1.18	1.11	1.05
33	1.13	1.07	1.01	0.96	0.90	1.25	1.20	1.15	1.10	1.05
34	1.09	1.04	0.99	0.95	0.90	1.21	1.17	1.13	1.09	1.05
35+	1.09	1.04	0.99	0.95	0.90	1.21	1.17	1.13	1.09	1.05

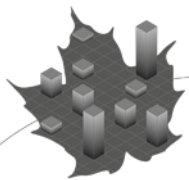
<sup>1</sup> Expressed in completed years calculated at the beginning of the plan year.



**Table 34 Assumed Rates of Withdrawal Prior to Age 50**  
(per 1,000 individuals)

<u>Service</u> <sup>1</sup>	<u>Main Group</u>		<u>Operational</u> <u>Service Group</u>
	<u>Male</u>	<u>Female</u>	<u>Male/Female</u>
0	234	248	81
1	95	96	47
2	72	68	36
3	59	52	29
4	50	46	25
5	39	38	24
6	37	33	23
7	32	29	22
8	28	26	21
9	24	23	20
10	20	21	19
11	19	18	18
12	14	17	16
13	14	16	16
14	13	15	16
15	13	15	16
16	13	15	16
17	13	15	16
18	13	15	16
19+	13	13	15

<sup>1</sup> Expressed in completed years calculated at the beginning of the plan year.



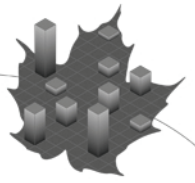
# ACTUARIAL REPORT

Pension Plan for the **PUBLIC SERVICE OF CANADA**  
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**Table 35 Assumed Rates of Retirement - Main Group**  
(per 1,000 individuals)

Age <sup>1</sup>	Male Members												
	Years of Service												
	1-3	4-8	9-13	14-18	19-23	24-28	29	30	31	32	33	34	35+
49	45	20	15	10	10	10	15	20	20	25	25	45	35
50	45	20	15	10	10	10	20	20	20	25	30	55	35
51	45	20	15	10	10	15	25	25	25	30	35	65	45
52	45	20	15	10	10	15	30	30	30	35	50	75	75
53	45	20	15	10	10	20	40	45	45	45	60	95	95
54	90	40	30	20	10	20	250	250	260	300	330	590	540
55	110	60	30	30	10	20	230	230	240	260	290	540	450
56	110	60	30	30	15	20	230	230	230	250	290	500	400
57	140	80	40	30	15	20	230	230	230	250	290	500	400
58	140	80	40	40	20	20	230	230	230	250	290	500	400
59	190	190	190	190	190	290	380	380	380	330	320	550	450
60	190	190	190	190	190	260	310	310	310	290	290	500	400
61	170	170	170	170	190	240	280	280	280	280	280	400	400
62	190	190	190	190	220	250	290	310	330	330	330	500	400
63	210	210	210	210	230	270	320	320	320	320	320	500	400
64	470	470	470	470	570	570	570	570	610	610	610	650	550
65	360	360	360	360	410	410	450	450	450	450	450	600	450
66	360	360	360	360	360	360	450	450	450	450	450	600	450
67	360	360	360	360	360	360	450	450	450	450	450	600	450
68	360	360	360	360	360	360	450	450	450	450	450	600	450
69	360	360	360	360	360	360	450	450	450	450	450	600	450
Age <sup>1</sup>	Female Members												
	Years of Service												
	1-3	4-8	9-13	14-18	19-23	24-28	29	30	31	32	33	34	35+
49	90	20	15	15	15	20	25	30	30	30	30	45	35
50	50	20	15	15	15	20	25	30	30	35	35	50	40
51	50	20	15	15	15	20	25	30	30	35	35	55	45
52	50	20	15	15	15	20	30	35	35	35	35	60	50
53	55	20	15	15	15	25	35	35	35	40	40	85	65
54	110	40	30	30	30	25	270	270	270	270	270	570	470
55	120	50	40	40	50	30	260	260	260	260	210	480	350
56	120	50	40	40	50	35	250	250	250	250	220	480	350
57	130	50	40	40	50	35	230	230	230	230	230	480	350
58	130	50	50	50	50	45	290	290	290	290	240	480	350
59	130	130	180	220	260	320	350	350	350	350	270	600	350
60	140	140	180	220	260	300	300	300	300	300	300	550	350
61	140	140	180	220	260	300	300	300	300	300	300	550	350
62	140	140	180	220	260	300	300	300	300	300	300	550	320
63	140	140	180	230	260	300	300	300	300	300	300	550	320
64	450	450	550	550	550	550	550	550	550	650	650	650	500
65	370	370	370	370	370	370	450	450	450	450	450	550	450
66	270	270	320	320	320	320	320	370	370	370	370	550	400
67	270	270	320	320	320	320	320	370	370	370	370	550	400
68	270	270	320	320	320	320	320	370	370	370	370	550	400
69	270	270	320	320	320	320	320	370	370	370	370	550	400

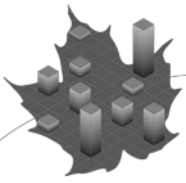
<sup>1</sup> Expressed in completed years calculated at the beginning of the plan year.



**Table 36 Assumed Rates of Retirement - Operational Service Group**  
(per 1,000 individuals)

Age <sup>1</sup>	Years of Service												
	<u>1-3</u>	<u>4-8</u>	<u>9-13</u>	<u>14-18</u>	<u>19-23</u>	<u>24-28</u>	<u>29</u>	<u>30</u>	<u>31</u>	<u>32</u>	<u>33</u>	<u>34</u>	<u>35+</u>
44	n/a	n/a	n/a	n/a	6	54	72	72	72	72	72	190	170
45	n/a	n/a	n/a	n/a	6	54	72	72	72	72	72	190	170
46	n/a	n/a	n/a	n/a	6	54	72	72	72	72	72	190	170
47	n/a	n/a	n/a	n/a	6	54	72	72	72	72	72	190	170
48	n/a	n/a	n/a	n/a	6	54	72	72	72	72	72	190	170
49	36	22	19	16	15	70	90	90	90	90	90	190	170
50	36	22	19	16	15	70	90	90	90	90	90	190	170
51	36	22	19	16	15	70	90	90	90	90	90	190	170
52	36	22	19	16	15	80	120	120	120	120	120	190	170
53	36	22	19	16	15	100	150	150	150	150	150	255	185
54	40	30	24	19	19	125	240	240	240	240	240	650	550
55	45	35	29	23	23	131	288	288	288	288	288	650	550
56	45	35	29	23	23	144	288	288	288	288	288	650	550
57	55	40	32	26	26	153	288	288	288	288	288	650	550
58	55	40	32	26	26	167	288	288	288	288	288	650	550
59	190	190	210	210	210	310	410	410	410	370	350	600	500
60	190	190	210	210	210	310	350	350	370	340	320	550	450
61	180	180	180	180	220	280	310	310	310	310	310	500	410
62	200	200	200	200	240	280	340	340	380	380	380	500	410
63	250	250	250	250	270	310	350	350	370	370	370	600	480
64	500	500	500	500	600	600	600	600	650	650	650	700	600
65	400	400	400	400	450	450	500	500	500	500	500	650	480
66	400	400	400	400	400	400	500	500	500	500	500	650	480
67	400	400	400	400	400	400	500	500	500	500	500	650	480
68	400	400	400	400	400	400	500	500	500	500	500	650	480
69	400	400	400	400	400	400	500	500	500	500	500	650	480

<sup>1</sup> Expressed in completed years calculated at the beginning of the plan year.



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**Table 37 Assumed Rates of Pensionable Disability**  
(per 1,000 individuals)

<u>Age<sup>1</sup></u>	<u>Male</u>	<u>Female</u>
to 25	0.3	0.1
26	0.3	0.2
27	0.3	0.2
28	0.3	0.3
29	0.3	0.3
30	0.3	0.4
31	0.3	0.5
32	0.3	0.5
33	0.3	0.6
34	0.4	0.7
35	0.5	0.9
36	0.7	1.0
37	0.9	1.2
38	1.0	1.4
39	1.1	1.5
40	1.2	1.7
41	1.3	1.8
42	1.4	2.0
43	1.5	2.1
44	1.7	2.4
45	1.9	2.6
46	2.0	2.9
47	2.1	3.2
48	2.6	3.7
49	3.0	4.1
50	3.4	4.5
51	3.8	5.0
52	4.3	5.5
53	4.7	6.1
54	5.1	6.8
55	5.7	7.6
56	6.4	8.4
57	7.2	9.3
58	8.1	10.2

<sup>1</sup> Expressed in completed years calculated at the beginning of the plan year.

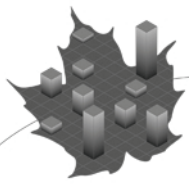




**Table 38 Assumed Mortality Rates**  
Plan year 2006 (per 1,000 individuals)

Age <sup>1</sup>	Members and Retirement Pensioners		Disability Pensioners		Surviving Spouses	
	Male	Female	Male	Female	Male	Female
20	0.3	0.2	3.0	6.2	0.9	0.3
25	0.4	0.3	5.9	6.9	1.0	0.4
30	0.7	0.4	9.1	7.4	1.1	0.5
35	0.9	0.4	12.2	7.8	1.4	0.7
40	1.1	0.6	14.0	8.1	1.7	1.0
45	1.4	1.1	16.5	8.8	2.4	1.4
50	2.1	1.5	20.2	9.3	3.7	2.1
55	3.5	2.4	21.9	12.3	6.4	3.2
60	6.6	4.4	25.6	14.2	11.2	5.7
65	13.2	8.4	34.9	19.8	18.0	9.8
70	22.6	13.6	53.6	29.1	28.0	15.0
75	39.7	22.7	73.5	43.3	45.0	25.2
80	68.4	42.4	106.2	67.6	73.7	42.9
85	109.7	76.9	150.0	110.5	116.2	74.9
90	168.2	127.3	208.5	178.9	176.5	125.6
95	251.8	192.2	315.5	281.3	255.2	208.5
100	351.4	315.4	476.3	441.9	353.8	317.2
105	500.0	500.0	500.0	500.0	500.0	500.0
110	500.0	500.0	500.0	500.0	500.0	500.0
115	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0

<sup>1</sup> Expressed in completed years calculated at the beginning of the plan year.



# ACTUARIAL REPORT

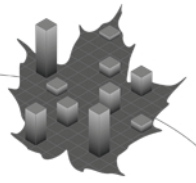
Pension Plan for the **PUBLIC SERVICE OF CANADA**  
as at 31 March 2005

**Table 39 Assumed Longevity Improvement Factors**  
After plan year 2006

Age <sup>2</sup>	Annual Percentage of Mortality Reduction <sup>1</sup> (%)			
	Male		Female	
	<u>2007</u>	<u>2028+</u>	<u>2007</u>	<u>2028+</u>
20	2.80	0.80	1.50	0.70
25	3.40	0.80	1.95	0.70
30	3.70	0.80	1.80	0.70
35	3.35	0.80	1.35	0.70
40	2.65	0.80	0.95	0.70
45	2.10	0.71	1.35	0.61
50	2.30	0.65	1.60	0.55
55	2.65	0.65	1.65	0.55
60	2.75	0.65	1.75	0.55
65	2.60	0.56	1.45	0.52
70	2.20	0.50	1.10	0.50
75	1.85	0.50	1.15	0.50
80	1.30	0.50	0.95	0.50
85	0.55	0.44	0.30	0.44
90	0.10	0.40	0.00	0.40
95	0.00	0.40	0.00	0.40
100	0.00	0.31	0.00	0.31
105	0.00	0.25	0.00	0.25
110+	0.00	0.00	0.00	0.25

<sup>1</sup> The mortality rate reduction applicable during any plan year within the 21-year select period is found by linear interpolation between the figures for plan years 2006 and 2027.

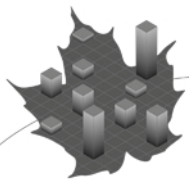
<sup>2</sup> Expressed in completed years calculated at the beginning of the plan year.



**Table 40 Assumptions for Survivor Allowance to Spouse**  
Probability a member will have an eligible spouse at death  
(per 1,000 member deaths)

<u>Age of Deceased Member<sup>1</sup></u>	<u>Sex of Deceased Member</u>			
	<u>Male</u>		<u>Female</u>	
	<u>Number</u>	<u>Age Difference Between Spouses</u>	<u>Number</u>	<u>Age Difference Between Spouses</u>
20	306	0	140	1
25	550	0	350	1
30	655	0	480	1
35	729	0	520	2
40	771	(1)	520	3
45	790	(1)	520	2
50	800	(2)	510	3
55	806	(2)	500	3
60	803	(3)	470	3
65	784	(3)	420	2
70	742	(3)	360	0
75	686	(3)	290	1
80	616	(3)	210	(1)
85	513	(4)	130	(3)
90	391	(6)	70	(4)
95	274	(7)	30	(6)
100	175	(9)	10	(6)

<sup>1</sup> Expressed in completed years calculated at the beginning of the plan year.



# ACTUARIAL REPORT

Pension Plan for the **PUBLIC SERVICE OF CANADA**  
as at 31 March 2005

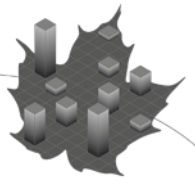
**Table 41 Assumptions for Survivor Allowances to Children**  
(per 1,000 member deaths)

Age of Member at Death <sup>1</sup>	Average Number of Children (according to sex of member)		Average Age of Children (according to sex of member)	
	Male	Female	Male	Female
20	72	2	0	1
25	271	438	2	1
30	670	702	5	5
35	925	794	8	10
40	1,020	726	11	13
45	927	538	14	16
50	665	311	16	17
55	358	129	17	18
60	136	28	18	19
65	36	0	19	0
70	11	0	21	0
75	6	0	23	0
80	0	0	0	0

**Assumed Proportions of Children  
Remaining Eligible (on account of school attendance) for Allowances  
Throughout the Following Year  
(per 1,000 children)**

<u>Age<sup>1</sup></u>	<u>Proportion</u>
under 17	1,000
17 to 23	840
24 and over	0

<sup>1</sup> Expressed in completed years calculated at the beginning of the plan year.



## **Appendix 15 – Acknowledgements**

The Office of the Comptroller General of the Treasury Board of Canada Secretariat provided a certification of the assets of the plan as at 31 March 2005.

The Superannuation Directorate of the Department of Public Works and Government Services Canada provided the data on plan members.

The co-operation and able assistance received from the above-mentioned data providers deserve to be acknowledged.

The following individuals assisted in the preparation of this report:

François Boulé  
Wan-Yi Huang  
Monique Denner