Actuarial Report
(24th)

supplementing the Actuarial Report on the

CANADA PENSION PLAN

As at 31 December 2006

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
Canada

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13 October 2009

The Honourable James M. Flaherty, P.C., M.P.
Minister of Finance
House of Commons
Ottawa, Canada
K1A 0G5

Dear Minister:

In accordance with subsection 115(2) of the *Canada Pension Plan*, which provides that an actuarial report shall be prepared whenever a Bill is introduced in the House of Commons to amend the *Canada Pension Plan*, I am pleased to submit the 24th Actuarial Report on the Canada Pension Plan.

Yours sincerely,

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

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Executive Summary

This is the 24th Actuarial Report on the Canada Pension Plan since the inception of the Canada Pension Plan (CPP or the "Plan") in 1966. It has been prepared in compliance with subsection 115(2) of the *Canada Pension Plan*, which provides that:

> "… the Chief Actuary shall, whenever any Bill is introduced in or presented to the House of Commons to amend this Act in a manner that would in the opinion of the Chief Actuary materially affect any of the estimates contained in the most recent report under this section made by the Chief Actuary, prepare, using the same actuarial assumptions and basis as were used in that report, a report setting forth the extent to which such Bill would, if enacted by Parliament, materially affect any of the estimates contained in that report."

The most recent report made pursuant to Section 115 was the 23rd CPP Actuarial Report as at 31 December 2006, which was tabled in the House of Commons on 29 October 2007. Since the publication of the 23rd CPP Actuarial Report there have been significant changes in economic conditions, mainly related to the financial market downturn and increase in the unemployment rate. Therefore, to provide for more realistic cost estimates of the proposed amendments, this 24th CPP Actuarial Report has been prepared on the basis of the 23rd CPP Actuarial Report but with modifications to some assumptions to reflect current economic conditions. Specifically, given recent economic experience, it was deemed for the purposes of this report that assumptions relating to the assets of the Plan, future equity investment earnings on the assets, and the unemployment rate had the most impact on the projected financial status of the Plan, and as such were accordingly changed. The changes to these economic assumptions are described in section III Results of this report. The long-term financial status of the CPP as amended by Part 2 of Bill C-51 using the same actuarial assumptions and basis as were used in the 23rd CPP Actuarial Report, as required by subsection 115(2)**,** is shown in Appendix A.

Part 2 of Bill C-51, an Act to amend the *Canada Pension Plan,* amends the CPP:

- To remove the Work Cessation Test for those who opt for their retirement benefit prior to age 65. Effective 1 January 2012, individuals will be able to take their retirement benefit as early as age 60 without any work interruption or reduction in hours worked or earnings.

- To increase the General Drop-Out Provision from 15 percent to 16 percent in 2012 and to 17 percent in 2014.

- To require individuals under age 65 who receive a retirement benefit and work, as well as their employer, to make CPP contributions that will increase their retirement benefit. For individuals aged 65 to 69, contributing after starting their retirement benefit will be voluntary, but employers of those opting to participate in the Plan will be required to contribute. As under the current Plan, contributions are not permitted once reaching age 70.

- To change the pension adjustment factors such that:

    - For an individual who takes his retirement pension before age 65 (earliest at age 60), the downward pension adjustment factor is increased from 0.5% to 0.6% for each month between the start of the pension and age 65. This reduction is permanent and will be implemented gradually over a period of five years starting in 2012.

- For an individual who takes his retirement pension after the age of 65 (latest at age 70), the upward pension adjustment factor is increased from 0.5% to 0.7% for each month between age 65 and the start of the pension. This increase is permanent and will be implemented gradually over a period of three years starting in 2011.

- To require the Chief Actuary to report on the fair level of the pension adjustment factors in at least every third Actuarial Report (and more frequently, if required) starting in 2016.

Part 2 of Bill C-51 also makes some technical changes to the *Canada Pension Plan* to permit employees to obtain a refund of overpaid CPP contributions beyond the legislated four-year deadline in certain circumstances, to permit individuals to elect to pay CPP contributions up to a year following reassessed employer contribution information, and to clarify the interaction of special application provisions for CPP disability benefits with other Plan provisions along the lines of existing practice. These technical changes have no material financial implications for the Plan.

Main Findings

1. The minimum contribution rate of the amended Plan (taking into consideration current economic conditions), which is the lowest rate sufficient to financially sustain the amended Plan without further increase, is 9.84% for years 2010 and thereafter.

2. In 2012, the introduction of the working beneficiaries' provision is expected to result in 331,000 additional CPP contributors, and by 2050, result in 475,000 additional contributors, assuming that 50% of working beneficiaries aged 65 to 69 choose to contribute to the Plan.

3. By 2050, annual contributions are $3.3 billion or 1.6% higher than projected under the 23rd CPP Actuarial Report modified to account for current economic conditions.

4. By 2050, annual expenditures are $969 million or 0.4% lower than projected under the 23rd CPP Actuarial Report modified to account for current economic conditions.

5. Under a legislated contribution rate of 9.90% for 2010 and thereafter, which federal, provincial and territorial finance ministers confirmed at their May 2009 meeting, Plan assets by 2050 are $219 billion higher than projected under the 23rd CPP Actuarial Report modified to account for current economic conditions, and the asset to expenditure ratio is 5.0 or 0.9 higher than projected under the 23rd CPP Actuarial Report modified to account for current economic conditions.

6. Due to the uncertainty about future possible changes in retirement benefit uptake behaviour that would result from the proposed amendments, two sensitivity tests have been prepared. If the retirement benefit uptake rate at age 60 were to increase by 20 percentage points, the minimum contribution rate would decrease from 9.84% to 9.77%. If, instead, the retirement benefit uptake rate at age 65 were to increase by 20 percentage points, the minimum contribution rate would increase to 9.91%.

This report confirms that if the current Plan is amended as per Part 2 of Bill C-51, a legislated contribution rate of 9.90% for years 2010 and thereafter is sufficient to financially sustain the Plan over the next 75 years.

I. Introduction

This report has been prepared in compliance with subsection 115(2) of the *Canada Pension Plan*, which provides that:

> "… the Chief Actuary shall, whenever any Bill is introduced in or presented to the House of Commons to amend this Act in a manner that would in the opinion of the Chief Actuary materially affect any of the estimates contained in the most recent report under this section made by the Chief Actuary, prepare, using the same actuarial assumptions and basis as were used in that report, a report setting forth the extent to which such Bill would, if enacted by Parliament, materially affect any of the estimates contained in that report."

The most recent report made pursuant to Section 115 was the 23rd CPP Actuarial Report as at 31 December 2006, which was tabled in the House of Commons on 29 October 2007. Since the publication of the 23rd CPP Actuarial Report there have been significant changes in economic conditions, mainly related to the financial market downturn and increase in the unemployment rate. Therefore, to provide for more realistic cost estimates of the proposed amendments, this 24th CPP Actuarial Report has been prepared on the basis of the 23rd CPP Actuarial Report but with modifications to some assumptions to reflect current economic conditions. Specifically, given recent economic experience, it was deemed for the purposes of this report that assumptions relating to the assets of the Plan, future equity investment earnings on the assets, and the unemployment rate had the most impact on the projected financial status of the Plan, and as such were accordingly changed. The changes to these economic assumptions are described in section III Results of this report. The long-term financial status of the CPP as amended by Part 2 of Bill C-51 using the same actuarial assumptions and basis as were used in the 23rd CPP Actuarial Report, as required by subsection 115(2)**,** is shown in Appendix A.

In accordance with subsection 114(4) of the *Canada Pension Plan*, the provisions of an amending Bill shall come into force:

> "…only on a day to be fixed by order of the Governor in Council, which order may not be made and shall not in any case have any force or effect unless the lieutenant governor in council of each of at least two thirds of the included provinces, having in the aggregate not less than two thirds of the population of all of the included provinces, has signified the consent of that province to the enactment."

II. Description of Part 2 of Bill C-51

In this report, Part 2 of Bill C-51 amends the *Canada Pension Plan* in respect of the following:

A. Work Cessation Test

The Work Cessation Test of the CPP requires individuals who apply to take their CPP retirement benefit early (i.e., before age 65) to either stop working or materially reduce their earnings. This requirement pertains both to the month immediately preceding and the month of benefit commencement. The month following commencement of the retirement benefit, an individual may return to work and/or earn more without affecting his/her eligibility for or amount of the benefit. However, the individual cannot contribute to the CPP on any future earnings from employment once the benefit starts being paid. There is currently no work cessation test for those who are 65 or older.

Part 2 of Bill C-51 amends the *Canada Pension Plan* by removing the Work Cessation Test effective 1 January 2012. Those who choose to work while receiving the retirement benefit will participate in the CPP and receive a post-retirement benefit according to the proposed working beneficiaries provision described below in subsection C. The removal of the Work Cessation Test does not affect existing CPP beneficiaries or those who will take their benefit before the change comes into effect.

B. General Drop-Out Provision

The CPP retirement pension amount is based on the period over which a person has worked and contributed to the Plan, as well as the salary or wages he or she has earned. Specifically, it is calculated as 25 percent of an individual’s average pensionable earnings over his/her contributory period, adjusted for increases in the average wage and exemptions for some periods of low earnings.

The contributory period is the number of months from attainment of age 18, or from 1 January 1966, if later, to the earliest of the month in which the contributor dies, the month before the one in which the retirement pension commences, and the month before the one in which the contributor reaches 70 years of age, less the number of months during which the contributor received a CPP or QPP disability benefit (including the three-month waiting period) or during which the contributor has at least one eligible child under seven years of age and had no or low earnings for that year. If, for example, an individual takes the CPP retirement pension at age 65 with no periods excluded for disability or child rearing, the contributory period is 47 years. If the same individual instead takes his/her retirement pension at age 60, the contributory period is 42 years.

The average of earnings is calculated allowing for 15 percent of months of low or nil earnings, such as, for example, pertaining to periods of unemployment, post-secondary education or illness (excluding periods relating to the disability benefit) to be dropped. This provision is administratively referred to as the “General Drop-Out Provision”.

The General Drop-Out Provision allows individuals who take their retirement benefit at age 65 up to a maximum of about seven years of low or zero earnings to be dropped from the calculation of their benefit. The disability, child-rearing and general drop-out provisions are all intended to ensure that an individual’s average pensionable earnings are not negatively affected by a certain number of years of unusually low earnings that occur in most people’s careers for various reasons.

Part 2 of Bill C-51 amends the *Canada Pension Plan* to increase the General Drop-Out Provision to 16 percent on 1 January 2012 and to 17 percent on 1 January 2014. These changes will benefit almost all CPP contributors by increasing their basic retirement pensions. It will also increase CPP disability and survivor pensions, as the calculation of these benefits is based on the retirement benefit calculation. As a result, by 2014, about eight years of low or nil earnings (one more year than currently allowed) could be dropped from the calculation of the retirement benefit for those contributors who take their benefit at age 65.

This amendment does not affect existing CPP beneficiaries or those who will take their benefit before the amendment comes into effect.

C. Working Beneficiaries

Currently, those who receive a CPP retirement pension and then return to work (i.e., working beneficiaries) do not pay CPP contributions and therefore do not continue to build their CPP pension. Virtually all other workers are required to pay CPP contributions.

Part 2 of Bill C-51 amends the *Canada Pension Plan* to require individuals under the age of 65 who receive a CPP retirement benefit and continue to work, as well as their employers, to make CPP contributions. Working beneficiaries aged 65 to 69 are not required to contribute to the Plan, but employers of those opting to do so are required to contribute. As under the current Plan, contributions are not permitted upon attaining age 70. The contributions paid provide for a post-retirement benefit that is earned at a rate of 1/40th of the maximum retirement pension ($10,905 in 2009) per year of additional contributions and is adjusted for the earnings level and age of the contributor. The resulting total pension may be greater than the maximum pension.

The contributions and earnings used to determine the post-retirement benefit will not be used to extend eligibility for death and survivor benefits, or to increase the amounts of these benefits.

This amendment will come into effect on 1 January 2012.

D. Pension Adjustment Factors

Flexible retirement provisions were introduced in the *Canada Pension Plan* on 1 January 1987 to allow individuals to start receiving an actuarially adjusted retirement pension as early as age 60 and as late as age 70. Since that date, the retirement pension is permanently adjusted downward or upward by 0.5% for each month between age 65 and the age at which the pension commences. The adjustment is required to take into account the fact that, in the case of early benefit uptake, fewer years of contributions will be made and more years of benefits will be received, and that the opposite occurs in the case of retirement benefit uptake after the normal retirement age of 65.

However, since 1987 there have been significant demographic and economic changes that have affected the level of the pension adjustment factors. As a result, the current pension adjustment factor of 0.5% per month is too generous for contributors who elect to start their retirement benefit before age 65; that is, early benefit uptake is subsidized. Conversely, the adjustment factor for contributors who elect to start their retirement benefit after age 65 is not generous enough; that is, late benefit uptake is penalized.

Part 2 of Bill C-51 amends the *Canada Pension Plan* to gradually restore the pension adjustment factors to their actuarially fair values. The pension adjustment factor will gradually increase to 0.6% per month over a period of five years starting in 2012 for contributors who take their retirement benefit before age 65, and the factor will gradually increase to 0.7% per month over a period of three years starting in 2011 for contributors who take their retirement benefit after age 65. The new pension adjustment factors will come into effect according to the following schedule:

Table 1 Schedule of New Pension Adjustment Factors

Effective date	Pre-65 Downward Monthly Adjustment Factor	Post-65 Upward Monthly Adjustment Factor
1 January 2011	0.50%	0.57%
1 January 2012	0.52%	0.64%
1 January 2013	0.54%	0.70%
1 January 2014	0.56%	0.70%
1 January 2015	0.58%	0.70%
1 January 2016	0.60%	0.70%

The ultimate downward pension adjustment factor of 0.6% per month, applicable for years 2016 and thereafter, will result in a pension that is reduced by 36% for someone who opts for his/her benefit at age 60 (compared to a reduction of 30% based on the current factor). On the other hand, the ultimate upward pension adjustment factor of 0.7% per month, applicable for years 2013 and thereafter, will result in a pension that is increased by 42% for someone who opts for his/her benefit at age 70 (compared to an increase of 30% based on the current factor).

Part 2 of Bill C-51 also amends the *Canada Pension Plan* to require the Chief Actuary to report on the actuarially fair level of the pension adjustment factors in at least every third triennial actuarial report and to report more frequently if required, starting in 2016. Finance Ministers will review these pension adjustment factors based on the assessments of the Chief Actuary and recommend whether any changes are needed.

The changes to the pension adjustment factors do not affect existing CPP retirement beneficiaries or those taking their benefit before the changes come into effect.

III. Results

This section presents the financial projections in respect of the current Plan and the amended Plan. The financial estimates are based on those of the 23rd CPP Actuarial Report as at 31 December 2006 with modifications to some assumptions to take into consideration economic conditions that have developed since the publication of that report in October 2007 so as to provide for more realistic cost estimates of the proposed amendments. The long-term financial status of the CPP as amended by Part 2 of Bill C-51 using the same actuarial assumptions and basis as were used in the 23rd CPP Actuarial Report, as required by subsection 115(2)**,** is shown in Appendix A.

A. Current Plan Prior to Amendments Adjusted for Current Economic Conditions

The projections of the 23rd CPP Actuarial Report have been adjusted to reflect the significant changes in economic conditions that have occurred since the fall of 2007. The following assumptions have been modified:

1. Assets

To reflect the actual investment experience of the CPP Investment Board since the publication of the 23rd CPP Actuarial Report in October 2007, the projected assets of the 23rd CPP Actuarial Report have been reduced by $26.5 billion as at 31 December 2008 and by another $8.2 billion as at 31 March 2009.

2. Rates of Return on Equities

During the period from 2003 to 2006 it was observed that equity returns had outperformed their historical average. It was thus anticipated that such returns would not be sustainable in the economic environment existing at the time of the preparation of the 23rd CPP Actuarial Report. Thus, equity return projections for the short term were moderated by decreasing the expected equity risk premium. In the 23rd CPP Actuarial Report, the equity risk premium was assumed to grow from 1.2% in 2009 to 2.3% by 2016.

However, as a result of the market downturn of 2008 and the first quarter of 2009, it was judged reasonable to assume that the market would recover to a certain extent, and as such, it was assumed that the equity risk premium would return to the long-term level assumed in the 23rd CPP Actuarial Report starting in 2009. For this purpose, in this report it is assumed that the equity risk premium will be 2.3% for years 2009 and thereafter, and that the real rates of return on equities of the Plan will increase accordingly. Table 2 shows the assumed real rates of return for Canadian, US and foreign equities under the 23rd CPP Actuarial Report and that same report, adjusted to reflect recent financial market experience.

Table 2 Assumed Real Rates of Return for Canadian/US/Foreign Equities

Year	23rd CPP Actuarial Report (1)	23rd CPP Actuarial Report Adjusted for Recent Financial Market Experience (2)	Difference (2)-(1)
	(%)	(%)	(%)
2009	3.5	4.6	1.1
2010	3.5	4.6	1.1
2011	3.5	4.6	1.1
2012	3.8	4.7	0.9
2013	4.1	4.8	0.7
2014	4.4	4.9	0.5
2015	4.7	5.0	0.3
2016 and over	5.1	5.1	0.0

3. Unemployment Rate

Under the 23rd CPP Actuarial Report, it was assumed that the unemployment rate for Canada would be 6.3% for years 2009 and thereafter. However, for this report, considering current economic conditions and recent unemployment statistics published by Statistics Canada, it is assumed that the unemployment rate will be 9.0% in 2009, and that it will gradually revert back to the 23rd CPP Actuarial Report assumption of 6.3% by 2015. Table 3 below shows unemployment rates under the 23rd CPP Actuarial Report and that same report, adjusted to reflect current economic conditions.

Table 3 Assumed Unemployment Rate (Canada)

Year	23rd CPP Actuarial Report	23rd CPP Actuarial Report Adjusted for Current Economic Conditions	Difference
	(%)	(%)	(%)
2009	6.3	9.0	2.7
2010	6.3	8.5	2.2
2011	6.3	8.0	1.7
2012	6.3	7.5	1.2
2013	6.3	7.0	0.7
2014	6.3	6.5	0.2
2015 and over	6.3	6.3	0.0

B. Assumptions Related to Amendments

The following section presents the various assumptions that were made to reflect the proposed amendments of Part 2 of Bill C-51:

1. Work Cessation Test

The Work Cessation Test for those who opt to take their retirement benefit prior to age 65 will be removed effective 1 January 2012. Under such circumstances, individuals will be able to take their benefit as early as age 60 without any work interruption or reduction in hours worked or earnings.

It is difficult to determine how the removal of the Work Cessation Test will impact CPP retirement benefit uptake behaviour. The removal of the test may produce upward pressure on early benefit uptake, but on the other hand, the increased reduction in the retirement benefit for those who opt for their benefit prior to age 65, as proposed by the current Bill and described in the following section, may discourage such a change in behaviour. Given these two possible opposing effects, it was assumed that there would be no change in the retirement benefit uptake rates from those assumed in the 23rd CPP Actuarial Report. However, due to the uncertainty regarding this assumption, two different scenarios are presented in section IV of this report, which deals with the uncertainty of results.

Since it is assumed that there will be no change in the number of contributors opting to take their retirement benefit early, removal of the Work Cessation Test is assumed to have no impact on benefits.

2. General Drop-Out Provision and Pension Adjustment Factors

Part 2 of Bill C-51 proposes to increase the General Drop-Out Provision from its current level of 15% to 16% in 2012 and to 17% for years 2014 and thereafter. This change would benefit virtually all CPP contributors by increasing their basic retirement pensions. It would also increase the CPP disability and survivor pensions, as the calculation of these benefits is based on the retirement benefit calculation. While the change will increase the retirement benefit of virtually all contributors, it will be particularly helpful to those whose careers suffer more work interruptions for a variety of reasons. For instance, those who pursue post-secondary studies, those who reduce their participation in the labour force to provide care for an elderly parent, or those who immigrate to Canada as adults are all more likely to find this measure especially helpful. A comparison of the current and proposed general drop-out provisions is given in Table 4.

Table 4 General Drop-Out Provision

	Current		Proposed	
Year	**%**	**Years***	**%**	**Years***
2010	15%	7.0	15%	7.0
2011	15%	7.0	15%	7.0
2012	15%	7.0	16%	7.5
2013	15%	7.0	16%	7.5
2014 and over	15%	7.0	17%	8.0

*Maximum years that could be dropped from the contributory period.

Part 2 of Bill C-51 also proposes to increase the pension adjustment factor from its current value of 0.5% per month for early and late retirement benefit uptake. The proposed pension adjustment factors were determined based on the 23rd CPP Actuarial Report projections using the steady-state contribution rate methodology as described in the study "Actuarial Adjustment Factors Study, Actuarial Study No. 2" published by the Office of the Chief Actuary in 2003[(1)] ("Actuarial Study No. 2"). Under that methodology, the exact pension adjustment factors for any given age between 60 and 70 other than 65 are determined such that the minimum contribution rate when everyone opts for their retirement benefit at age 65 remains the same as when everyone is assumed instead to opt for their retirement benefit at any other age between 60 and 70.

The actuarially fair value of the pension adjustment factors determined using the above methodology reflects that there have been significant changes in the demographic and economic environments since pension adjustments were first introduced in January 1987. The fair value of the adjustment factors also accounts for the various provisions of the Plan, including in particular the Plan's financing objectives, and the fact that in the case of early benefit uptake before age 65, fewer years of contributions are made and more years of benefits are received, and that the opposite occurs in the case of late benefit uptake after age 65.

This approach leads to pension adjustments of 64.7% at age 60 and 147.0% at age 70. These compare to the current pension adjustments of 70% and 130% at ages 60 and 70, respectively. The two pension adjustment factors that approximate the given results for the entire age range to the nearest 0.1% are 0.6% per month for those who opt for their pension prior to age 65 and 0.7% per month for those who opt for their pension after age 65. These results are consistent with the results that were presented in Actuarial Study No. 2. The results also show that the current pension adjustment factor of 0.5% per month is too generous for contributors who elect to start their retirement benefit before age 65; that is, early benefit uptake is subsidized. Conversely, the adjustment factor for contributors who elect to start their retirement benefit after age 65 is not generous enough; that is, late benefit uptake is penalized.

Part 2 of Bill C-51 proposes to gradually increase the current pension adjustment factor for early pension uptake prior to age 65 from 0.5% per month to 0.6% per month. This increase will occur over a period of five years starting in 2012. The pension adjustment factor for late pension uptake after age 65 is gradually increased also from 0.5% to 0.7% per month. This increase will occur over a period of three years starting in 2011. A comparison of the current, actuarially fair and proposed

(1) http://www.osfi-bsif.gc.ca/app/DocRepository/1/eng/oca/studies/CPP_ActuarialStudy2_e.pdf

pension adjustments by age at pension uptake is provided in Table 5. The proposed adjustments shown in Table 5 are total adjustments applied to a retirement pension at the age of uptake, based on the monthly adjustment factor effective at that time for that age (as shown in Table 1).

Table 5 Pension Adjustments by Age at Benefit Uptake

	Current	Actuarially Fair*	Proposed					
Age	**All Years**	**All Years**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016+**
60	0.700	0.647	0.700	0.688	0.676	0.664	0.652	0.640
61	0.760	0.712	0.760	0.750	0.741	0.731	0.722	0.712
62	0.820	0.776	0.820	0.813	0.806	0.798	0.791	0.784
63	0.880	0.842	0.880	0.875	0.870	0.866	0.861	0.856
64	0.940	0.917	0.940	0.938	0.935	0.933	0.930	0.928
65	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
66	1.060	1.071	1.068	1.077	1.084	1.084	1.084	1.084
67	1.120	1.161	1.137	1.154	1.168	1.168	1.168	1.168
68	1.180	1.255	1.205	1.230	1.252	1.252	1.252	1.252
69	1.240	1.358	1.274	1.307	1.336	1.336	1.336	1.336
70	1.300	1.470	1.342	1.384	1.420	1.420	1.420	1.420

*Based on the 23rd CPP Actuarial Report and steady-state contribution rate methodology as described in the study "Actuarial Adjustment Factors Study, Actuarial Study No. 2" published by the Office of the Chief Actuary in 2003.

As discussed in the previous section, it is assumed for the purposes of this report that the retirement benefit uptake rates assumption of the 23rd CPP Actuarial Report would not change due to the possible offsetting effects resulting from removal of the Work Cessation Test and the increase in the pension adjustment factors, in particular, the early retirement factors. As such, only the retirement benefit amounts and not the number of beneficiaries are projected to change based on the proposed amendments to the General Drop-Out Provision and the pension adjustment factors.

Table 6 shows that the projected maximum monthly retirement pension by age at benefit uptake is expected to grow over the adjustment factor transition period running from 2011 to 2016. Although higher downward adjustments are proposed for ages prior to 65, the maximum pension increases over the period due to the greater combined effect from the proposed increase in the general drop-out period and the annual indexing of the maximum pension in line with wages.

Table 6 Projected Maximum Monthly Retirement Pensions by Age at Benefit Uptake

Age	2011	2012	2013	2014	2015	2016+
60	669.96	675.39	681.35	688.35	696.55	705.60
61	727.38	736.25	746.87	757.80	771.34	784.98
62	784.81	798.10	812.38	827.26	845.05	864.36
63	842.23	858.96	876.89	897.75	919.84	943.74
64	899.66	920.80	942.40	967.21	993.55	1,023.12
65	957.08	981.67	1,007.92	1,036.67	1,068.33	1,102.50
66	1,022.17	1,057.26	1,092.58	1,123.75	1,158.07	1,195.11
67	1,088.20	1,132.84	1,177.25	1,210.83	1,247.81	1,287.72
68	1,153.29	1,207.45	1,261.91	1,297.91	1,337.55	1,380.33
69	1,219.32	1,283.04	1,346.58	1,384.99	1,427.29	1,472.94
70	1,284.41	1,358.63	1,431.24	1,472.07	1,517.03	1,565.55

Tables 7 and 8 below show the dollar and percentage changes, respectively, in the projected average monthly retirement benefits resulting from the proposed changes of the General Drop-Out Provision and pension adjustment factors.

Table 7 Change in Projected Average Monthly Retirement Pensions ($)(1)

	Age at Benefit Uptake													
	60		61		62		63		64		65(r)(2)		66+	
Year	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
2011	0	0	0	0	0	0	0	0	0	0	0	0	9	7
2012	(5)	(3)	(3)	(2)	(1)	0	1	2	3	3	6	5	22	17
2013	(15)	(10)	(10)	(7)	(6)	(3)	(2)	0	2	2	6	5	31	24
2014	(21)	(14)	(14)	(8)	(7)	(4)	(1)	2	5	6	10	10	36	28
2015	(31)	(22)	(21)	(14)	(12)	(8)	(4)	(1)	4	5	10	10	37	29
2016	(42)	(30)	(29)	(20)	(18)	(12)	(7)	(4)	4	4	11	10	38	31
2020	(47)	(35)	(33)	(23)	(20)	(14)	(8)	(4)	4	5	12	12	44	37
2025	(55)	(42)	(37)	(28)	(23)	(17)	(10)	(6)	5	6	14	14	52	45
2050	(140)	(113)	(95)	(76)	(60)	(47)	(25)	(16)	12	14	34	35	122	115

1 No change in retirement benefit uptake behaviour is assumed from the increased adjustment factors due to the offsetting impact of the removal of the Work Cessation Test.
2 65(r): Retirement pensions only (excluding conversions from disability pensions).

Table 8 Change in Projected Average Monthly Retirement Pensions (%)[(1)]

	Age at Benefit Uptake													
	60		61		62		63		64		65(r) [(2)]		66+	
Year	**Males**	**Females**	**Males**	**Females**	**Males**	**Females**	**Males**	**Females**	**Males**	**Females**	**Males**	**Females**	**Males**	**Females**
2011	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.1
2012	(1.0)	(0.8)	(0.6)	(0.4)	(0.2)	0.0	0.1	0.4	0.5	0.7	0.8	0.9	4.8	5.1
2013	(2.7)	(2.5)	(1.7)	(1.5)	(0.9)	(0.7)	(0.3)	0.0	0.3	0.5	0.8	0.9	6.4	6.8
2014	(3.7)	(3.4)	(2.3)	(1.8)	(1.1)	(0.8)	(0.1)	0.3	0.8	1.2	1.4	1.7	7.2	7.7
2015	(5.4)	(5.1)	(3.4)	(3.0)	(1.8)	(1.5)	(0.6)	(0.2)	0.7	1.0	1.4	1.7	7.3	7.8
2016	(7.1)	(6.8)	(4.5)	(4.1)	(2.6)	(2.3)	(1.0)	(0.6)	0.5	0.9	1.4	1.7	7.4	7.9
2020	(7.1)	(6.8)	(4.5)	(4.1)	(2.6)	(2.3)	(1.0)	(0.6)	0.5	0.8	1.4	1.7	7.5	8.1
2025	(7.1)	(6.9)	(4.5)	(4.2)	(2.6)	(2.4)	(1.0)	(0.7)	0.5	0.8	1.4	1.6	7.5	8.1
2050	(7.1)	(6.9)	(4.5)	(4.2)	(2.6)	(2.4)	(1.0)	(0.8)	0.5	0.8	1.4	1.6	7.5	8.1

[1] No change in retirement benefit uptake behaviour is assumed from the increased adjustment factors due to the offsetting impact of the removal of the Work Cessation Test

[2] 65(r): Retirement pensions only (excluding conversions from disability pensions).

3. Working Beneficiaries

Under the amendments of Part 2 of Bill C-51, individuals younger than age 65 who receive the CPP retirement benefit and work, as well as their employers, are required to make CPP contributions. Contributing to the Plan is voluntary for retirement beneficiaries aged 65 to 69 who continue to work, but employers of those opting to continue to contribute to the CPP are required to contribute also. Contributions to the Plan are not permitted upon attaining age 70. Contributions from working beneficiaries will be applied toward providing a post-retirement benefit with the result that the total pension received could exceed the maximum pension. The post-retirement benefit is earned at a rate of 1/40th of the maximum pension amount for each year of additional contributions post-benefit uptake and is adjusted for the earnings level and age of the beneficiary. This change will come into effect on 1 January 2012.

To estimate the cost impact of the proposed working beneficiaries' provision, it is first necessary to project the number and proportions of working beneficiaries by age and sex. To project these figures, the most recent databases of the Office of the Chief Actuary, acquired from the Canada Revenue Agency and Human Resources and Skills Development Canada, providing records of earnings, tax returns and benefit data of CPP beneficiaries were used. The number and proportions of working beneficiaries by age and sex derived from these data for the year 2005 are shown in Table 9. The proportions of working beneficiaries by age and sex observed for the year 2005 are assumed to apply for years 2012 and thereafter in order to project the number of working CPP retirement beneficiaries.

Table 9 Number and Proportions of Working Beneficiaries (2005)

Age Group	Number of Beneficiaries (uptake prior to 2005 and benefit paid throughout 2005)		
	Males	**Females**	**Both**
60-64	201,030	215,490	416,520
65-69	397,919	374,434	772,353
70+	893,063	896,431	1,789,494
All Ages	**1,492,012**	**1,486,355**	**2,978,367**

Age Group	Number of Working Beneficiaries (Earnings above the Year's Basic Exemption in 2005)		
	Males	**Females**	**Both**
60-64	63,508	42,158	105,666
65-69	83,298	46,403	129,701
70+	63,300	30,739	94,039
All Ages	**210,106**	**119,300**	**329,406**

Age Group	Proportions of Working Beneficiaries in 2005		
	Males	**Females**	**Both**
60-64	31.6%	19.6%	25.4%
65-69	20.9%	12.4%	16.8%
70+	7.1%	3.4%	5.3%
All Ages	14.1%	8.0%	11.1%

Since contributing to the Plan is voluntary for beneficiaries aged 65 to 69 who also work, the number and proportions of working beneficiaries who contribute are projected assuming a 50 percent participation rate (i.e., 50% of working beneficiaries aged 65 to 69) and a 100 percent participation rate (i.e., all working beneficiaries contribute, both pre- and post-65) as shown in Table 10. In 2012, under the assumption that all working beneficiaries participate, it is projected that there would be 444 thousand working beneficiaries (217 thousand working beneficiaries under age 65 and 227 thousand working beneficiaries aged 65 to 69). Under the assumption that only 50% of working beneficiaries aged 65 to 69 will continue to participate in the Plan, it is projected that there would be a total of 331 thousand such beneficiaries in 2012. By 2050, the number of working beneficiaries is projected to be 662 thousand if all such individuals participate (289 thousand working beneficiaries under age 65 and 373 thousand working beneficiaries aged 65 to 69) and 475 thousand if only 50% of those aged 65 to 69 participate.

Table 10 Projected Number of Working Beneficiaries Contributing to the CPP

Year	Assuming All Working Beneficiaries Aged 65 to 69 Participate		Assuming Only 50% of Working Beneficiaries Aged 65 to 69 Participate	
	Number	Increase in Contributors Compared to 23rd CPP Actuarial Report	Number	Increase in Contributors Compared to 23rd CPP Actuarial Report
	(‘000)	(%)	(‘000)	(%)
2012	444	3.5	331	2.6
2013	464	3.6	342	2.7
2014	481	3.7	354	2.7
2015	498	3.8	365	2.8
2020	564	4.2	413	3.1
2025	619	4.5	448	3.3
2030	612	4.3	431	3.1
2050	662	4.3	475	3.1

In order to project the additional contributions that will result from working beneficiaries, an assumption is required with respect to their average contributory earnings (i.e., average earnings between the Year’s Basic Exemption (YBE) and Year’s Maximum Pensionable Earnings (YMPE) on which contributions are made). Based on data pertaining to tax return information for the year 2005, the average contributory earnings of working beneficiaries aged 60 to 64 are about 40% to 45% lower than those assumed for non-working beneficiaries of the same age under the 23rd CPP Actuarial Report and are about the same as assumed for non-working beneficiaries in that report for ages 65 to 69, as shown in Table 11.

Table 11 Average Contributory Earnings (2005)

Age Group	Males: Non-Working Beneficiaries 23rd CPP Actuarial Report	Males: Working Beneficiaries CRA* Data	Males: Ratio	Females: Non-Working Beneficiaries 23rd CPP Actuarial Report	Females: Working Beneficiaries CRA* Data	Females: Ratio
	($)	($)		($)	($)	
60-64	26,849	16,206	0.60	22,281	11,939	0.54
65-69	18,547	18,769	1.01	14,669	14,682	1.00

* Canada Revenue Agency

For this report, contributory earnings of working beneficiaries for years 2012 and thereafter are assumed to correspond to those of non-working beneficiaries as per the 23rd CPP Actuarial Report adjusted by the ratio of working to non-working contributory earnings as given in Table 11.

Table 12 shows the projected additional contributions resulting from working beneficiaries assuming 100 percent participation and 50 percent participation in the Plan for those aged 65 to 69. In 2012, the additional contributions from working beneficiaries are projected to be about $799 million or 2.0% higher than under the 23rd CPP Actuarial Report if 100% participation is assumed and $576 million or 1.5% higher than under the 23rd CPP Actuarial Report if 50% participation is assumed for those aged 65 to 69. By 2050, projected contributions from working beneficiaries would be $4.6 billion and $3.3 billion if 100% and 50% participation are assumed, respectively, for those aged 65 to 69.

Table 12 Projected Contributions from Working Beneficiaries

Year	Assuming All Working Beneficiaries Aged 65 to 69 Participate		Assuming Only 50% of Working Beneficiaries aged 65 to 69 Participate	
	Contributions	Increase in Contributions Compared to 23rd CPP Actuarial Report	Contributions	Increase in Contributions Compared to 23rd CPP Actuarial Report
	($ million)	(%)	($ million)	(%)
2012	799	2.0	576	1.5
2013	863	2.1	616	1.5
2014	924	2.2	658	1.5
2015	988	2.2	703	1.6
2020	1,342	2.4	956	1.7
2025	1,769	2.6	1,252	1.8
2030	2,094	2.4	1,444	1.7
2050	4,596	2.3	3,258	1.6

The additional contributions from working beneficiaries generate a fully indexed post-retirement benefit of 1/40th of the maximum retirement benefit for each year of work post-retirement benefit uptake, adjusted to account for the beneficiary's earnings level and age. The 1/40th factor represents an average annual accrual rate for the retirement benefit when considering an individual who starts his/her contributory period at age 18 and receives a retirement benefit at age 65, after a contributory period of 40 years (47 years less the 15% general drop-out of 7 years).

The amount of the initial monthly post-retirement benefit, calculated on January 1st following the year of contributions, is determined by multiplying the 1/40th factor by the ratio of the working beneficiary's pensionable earnings to the YMPE of the year of contributions and by the maximum retirement pension at age 65 for the year the post-retirement benefit will start. This amount is then further adjusted by the pension adjustment factor at the age of the beneficiary on January 1st of the year the post-retirement benefit starts. The total retirement benefit including the post-retirement benefit could exceed the maximum retirement pension. The initial amount of the post-retirement benefit is then fully indexed in accordance with inflation on January 1st of each subsequent year. The contributions from working beneficiaries are not considered in determining eligibility for or the amounts of any death or survivor benefits.

As an example, for an individual who takes his/her retirement benefit at age 60 on 1 January 2012 and works throughout that year with annual pensionable earnings of $30,000, the initial monthly post-retirement benefit as at 1 January 2013 is projected to be:

$$\frac{[\text{PE (2012) / YMPE (2012)] x 1/40 x 25\% x MPEA (2013) x AAF (1 January 2013)}}{12} = \$11.29$$

where:

PE (2012) = Pensionable Earnings for year 2012 = $30,000
YMPE (2012) = Projected Year's Maximum Pensionable Earnings for year 2012 = $49,600
MPEA (2013) = Projected Maximum Pensionable Earnings Average for year 2013 = $48,380
AAF (1 January 2013) = Actuarial Adjustment Factor at age on 1 January 2013 = 0.7408

The methodology used to project the future increase in total retirement benefits is based on the expected real internal rates of return for working beneficiaries. An analysis of working beneficiaries' data for the year 2005, assuming one year of additional contributions and the resulting fully indexed post-retirement benefit, yields a real internal rate of return of 2.8% for males aged 60 to 64. For females, the internal rate of return is 4.2% for those aged 60 to 64. Annual percentage increases in retirement benefits are then derived such as to closely match the above real internal rates of return benchmarks by age and sex. Table 13 below shows the assumed annual percentage increases in retirement benefits by age and sex that would result from the post-retirement benefit for the years 2012, 2032 and thereafter, taking into account the proposed increases in the general drop-out period and pension adjustment factors. The annual increases for the years between 2012 and 2032 are assumed to grow linearly.

Table 13 Assumed Annual Increases in Retirement Benefit

	Ages 60-64		Ages 65-69	
	2012	**2032+**	**2012**	**2032+**
Males	2.05%	2.10%	2.20%	2.50%
Females	2.45%	2.25%	2.90%	2.75%

Table 14 next shows the additional retirement benefit expenditures that would result from the introduction of the working beneficiaries' provision. There is no impact on expenditures in 2012, since post-retirement benefits will only start being payable in 2013. In 2013, post-retirement benefits paid are expected to be $62 million, representing an increase in retirement expenditures of 0.2% if all working beneficiaries participate, and $44 million or an increase of 0.1% in retirement expenditures if 50% participation is assumed for those aged 65 to 69. By 2050, post-retirement benefit expenditures are expected to be $5.4 billion, representing an increase of 2.4% in retirement expenditures if all beneficiaries participate, and $3.8 billion or 1.7% if only 50% participation is assumed for those aged 65 to 69.

Table 14 Projected Post-Retirement Benefit Expenditures*

	Assuming All Working Beneficiaries Aged 65 to 69 Participate		Assuming 50% of Working Beneficiaries Aged 65 to 69 Participate	
Year	**Amount**	**Increase in Retirement Expenditures**	**Amount**	**Increase in Retirement Expenditures**
	($ million)	%	($ million)	%
2012	0	0.0	0	0.0
2013	62	0.2	44	0.1
2014	129	0.3	91	0.2
2015	202	0.5	142	0.3
2020	647	1.1	449	0.8
2025	1,232	1.7	852	1.2
2030	1,945	2.1	1,338	1.4
2050	5,440	2.4	3,772	1.7

* Taking into account the proposed increases in the general drop-out period and pension adjustment factors.

Due to the uncertainty about the number of working beneficiaries who will opt to participate after age 65, it is assumed for the purposes of this report that 50% of working beneficiaries aged 65 to 69 will continue to contribute to the Plan. This assumption does not have a material impact on the CPP minimum contribution rate.

The following Tables 15, 16 and 17 compare the various components of the projected financial status of the amended Plan with the current Plan based on the economic assumptions of the 23rd CPP Actuarial Report, adjusted to reflect current economic conditions, and under the current legislated rate of 9.90% for years 2010 and thereafter.

C. Financial Projections of the Amended Plan

The financial status of the amended Plan in comparison with the current Plan, taking into account current economic conditions and under a contribution rate of 9.90%, is expected to be as follows:

- By 2050, contributions are $3.3 billion or 1.6% higher than projected under the current Plan.

- By 2050, expenditures are $969 million or 0.4% lower than projected under the current Plan.

- The pay-as-you-go rate increases steadily over the projection period but remains at or below the pay-as-you-go rate projected under the current Plan. By 2050, the pay-as-you-go rate is about 11.0% or 0.2 percentage points lower than under the current Plan. The pay-as-you-go rate is the rate that would need to be paid if there were no assets, and is equal to expenditures expressed as a percentage of contributory earnings in a given year.

- By 2050, assets are $219 billion or 23% higher than projected under the current Plan.

- By 2050, the asset to expenditure ratio would be 5.0 or 0.9 higher than the asset to expenditure ratio projected under the current Plan. The asset to expenditure ratio of a given year is the ratio of assets of that year to the expenditures of the following year.

Table 15 Financial Status of Amended Plan*

Year	Contribution Rate	Contributions	Expenditures	Net Cash Flow	Investment Earnings	Assets at 31 Dec.	Asset/ Expenditure Ratio
	(%)	($ million)	($ million)	($ million)	($ million)	($ million)	
2009	9.90	34,287	30,752	3,535	(596)	114,162	3.51
2010	9.90	35,773	32,480	3,293	7,231	124,687	3.64
2011	9.90	37,399	34,268	3,131	7,664	135,482	3.75
2012	9.90	39,633	36,158	3,475	8,483	147,440	3.86
2013	9.90	41,481	38,243	3,238	9,477	160,155	3.96
2014	9.90	43,533	40,436	3,097	10,589	173,840	4.06
2015	9.90	45,608	42,770	2,838	11,815	188,494	4.17
2016	9.90	47,697	45,242	2,455	13,167	204,116	4.26
2017	9.90	49,953	47,872	2,081	14,197	220,394	4.35
2018	9.90	52,235	50,661	1,574	15,252	237,220	4.43
2019	9.90	54,605	53,605	1,000	16,332	254,552	4.49
2020	9.90	57,057	56,720	337	17,429	272,318	4.54
2021	9.90	59,587	60,000	(413)	18,551	290,456	4.58
2022	9.90	62,194	63,426	(1,232)	19,683	308,907	4.61
2023	9.90	64,887	67,021	(2,134)	20,837	327,610	4.63
2024	9.90	67,694	70,775	(3,081)	22,003	346,533	4.64
2025	9.90	70,618	74,659	(4,041)	23,174	365,665	4.65
2030	9.90	87,501	95,580	(8,079)	29,655	467,701	4.67
2035	9.90	108,360	119,247	(10,887)	37,351	588,822	4.73
2040	9.90	134,293	147,148	(12,855)	47,173	743,706	4.83
2045	9.90	165,456	181,988	(16,532)	59,753	941,948	4.96
2050	9.90	202,710	225,867	(23,157)	75,202	1,184,525	5.02
2075	9.90	566,170	639,475	(73,305)	219,152	3,449,527	5.17

* 23rd CPP Actuarial Report basis adjusted to reflect current economic conditions, 9.90% contribution rate.

Table 16 Pay-As-You-Go Rates, Contributions, and Expenditures*

	Pay-As-You-Go Rate			Contributions ($ million)			Expenditures ($ million)		
	Current Plan	**Amended Plan**	**Change**	**Current Plan**	**Amended Plan**	**Change**	**Current Plan**	**Amended Plan**	**Change**
2009	8.88	8.88	0.00	34,287	34,287	0	30,752	30,752	0
2010	8.99	8.99	0.00	35,773	35,773	0	32,480	32,480	0
2011	9.07	9.07	0.00	37,399	37,399	0	34,268	34,268	0
2012	9.17	9.03	(0.13)	39,057	39,633	576	36,157	36,158	1
2013	9.26	9.13	(0.13)	40,865	41,481	616	38,206	38,243	37
2014	9.32	9.20	(0.13)	42,875	43,533	658	40,371	40,436	65
2015	9.41	9.28	(0.13)	44,905	45,608	703	42,685	42,770	85
2020	10.00	9.84	(0.16)	56,101	57,057	956	56,672	56,720	48
2025	10.66	10.47	(0.19)	69,366	70,618	1,252	74,666	74,659	(7)
2050	11.26	11.03	(0.23)	199,452	202,710	3,258	226,836	225,867	(969)

* 23rd CPP Actuarial Report basis adjusted to reflect current economic conditions, 9.90% contribution rate.

Table 17 Investment Earnings, Assets and Asset/Expenditure Ratios*

	Investment Earnings ($ million)			Assets ($ million)			Assets/Expenditure Ratios		
	Current Plan	**Amended Plan**	**Change**	**Current Plan**	**Amended Plan**	**Change**	**Current Plan**	**Amended Plan**	**Change**
2009	(596)	(596)	0	114,162	114,162	0	3.51	3.51	0.00
2010	7,231	7,231	0	124,687	124,687	0	3.64	3.64	0.00
2011	7,664	7,664	0	135,482	135,482	0	3.75	3.75	0.00
2012	8,462	8,483	21	146,844	147,440	596	3.84	3.86	0.02
2013	9,417	9,477	60	158,920	160,155	1,235	3.94	3.96	0.02
2014	10,486	10,589	103	171,909	173,840	1,931	4.03	4.06	0.03
2015	11,661	11,815	154	185,790	188,494	2,704	4.11	4.17	0.06
2020	16,914	17,429	515	263,912	272,318	8,406	4.40	4.54	0.14
2025	22,051	23,174	1,123	347,387	365,665	18,278	4.42	4.65	0.23
2050	61,516	75,202	13,686	965,499	1,184,525	219,026	4.08	5.02	0.94

* 23rd CPP Actuarial Report basis adjusted to reflect current economic conditions, 9.90% contribution rate.

D. Financial Projections of Amended Plan – Minimum Contribution Rate of 9.84%

The minimum contribution rate for the amended Plan, taking into account current economic conditions, has been evaluated to be 9.84% for years 2010 and thereafter. Table 18 presents the projected financial status of the amended Plan, accounting for current economic conditions, under the minimum contribution rate of 9.84%.

Table 18 Financial Status of Amended Plan – Minimum Contribution Rate of 9.84%*

Year	Contribution Rate	Contributions	Expenditures	Net Cash Flow	Investment Earnings	Assets at 31 Dec.	Asset/ Expenditure Ratio
	(%)	($ million)	($ million)	($ million)	($ million)	($ million)	
2009	9.90	34,287	30,752	3,535	(596)	114,162	3.51
2010	9.84	35,557	32,480	3,077	7,223	124,462	3.63
2011	9.84	37,172	34,268	2,904	7,643	135,009	3.73
2012	9.84	39,393	36,158	3,235	8,445	146,689	3.84
2013	9.84	41,230	38,243	2,987	9,420	159,096	3.93
2014	9.84	43,269	40,436	2,833	10,510	172,439	4.03
2015	9.84	45,332	42,770	2,562	11,710	186,710	4.13
2020	9.84	56,711	56,720	(9)	17,158	267,948	4.47
2025	9.84	70,190	74,659	(4,469)	22,654	357,266	4.54
2050	9.84	201,481	225,867	(24,386)	69,845	1,098,967	4.66

* 23rd CPP Actuarial Report basis adjusted to reflect current economic conditions, 9.84% minimum contribution rate.

Under the actuarial assumptions of the 23rd CPP Actuarial Report, with no adjustments made for current economic conditions, the present value of the projected net cash flows (contributions less expenditures) under the amended Plan is greater than under the current Plan. As such, the full funding provision of paragraph 113.1(4)(d) does not apply. Detailed information is provided in Appendix B.

IV. Uncertainty of Results

This actuarial report on the Canada Pension Plan is based on the projection of its revenues and expenditures over a long period of time. The information required by statute, which is presented in section III Results of this report, has been derived using best-estimate assumptions regarding future demographic and economic trends. Both the length of the projection period and the number of assumptions required ensure that actual future experience will not develop precisely in accordance with the best-estimate assumptions. For this purpose, sensitivity tests have been performed relating to removal of the Work Cessation Test as described below. All assumptions will be re-examined in the next triennial actuarial valuation of the CPP, taking into consideration both experience as it develops and a reassessment of the long-term view of the Plan.

Due to the uncertainty of how the removal of the Work Cessation Test will affect behaviour with respect to retirement benefit uptake rates, two sensitivity tests have been prepared assuming two different rates other than the best-estimate assumption. Under the best-estimate assumption, no change in benefit uptake rates is assumed from the removal of the Work Cessation Test due to the possible offsetting effect of the increase in the pension adjustment factors, especially for ages less than 65. As alternatives, the two sensitivity tests show the impacts of increasing the uptake rates at either age 60 or 65 by 20 percentage points. Table 19 summarizes the resulting minimum contribution rates and pay-as-you-go contribution rates under each of the scenarios. In addition, the table presents the first year that expenditures exceed contributions.

Table 19 Sensitivity Tests – Retirement Benefit Uptake Rates

Assumptions	Scenario	Minimum Contribution Rate	First Year Expenditures Exceed Contributions	Pay-As-You-Go Rates		
				2025	2050	2075
Amended Plan, reflecting current economic conditions	Best-Estimate	9.84%	2020	10.47	11.03	11.18
Amended Plan, reflecting current economic conditions and retirement uptake rates changed	Uptake rate at age 60 increased by 20 percentage points	9.77%	2018	10.60	10.78	10.88
	Uptake rate at age 65 increased by 20 percentage points	9.91%	2023	10.33	11.28	11.47

V. Conclusion

The actuarial projections of the financial status of the Canada Pension Plan presented in this report reveal that if the Plan is amended as per Part 2 of Bill C-51 and if current economic conditions are taken into consideration, the minimum contribution rate required to financially sustain the Plan would be 9.84% for years 2010 and thereafter.

This report also confirms that if the current Plan is amended, with current economic conditions taken into consideration, a legislated contribution rate of 9.90% for years 2010 and thereafter would be sufficient to financially sustain the Plan. Assets would accumulate to $188 billion or 4.2 times annual expenditures by 2015, and to $1,185 billion or 5.0 times annual expenditures by 2050.

VI. Acknowledgements

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VII. Actuarial Opinion

In our opinion, considering that this 24th CPP Actuarial Report was prepared pursuant to the *Canada Pension Plan*:

- the data on which this report is based are sufficient and reliable;
- the methodology employed is appropriate and consistent with sound actuarial principles; and
- the assumptions used are, individually and in aggregate, reasonable and appropriate.

Based on the results of this valuation, we thereby certify that the minimum contribution rate to finance the Canada Pension Plan without further increase is 9.84% for years 2010 and thereafter.

This report has been prepared, and our opinions given, in accordance with both accepted actuarial practice in Canada, in particular, the General Standards of Practice of the Canadian Institute of Actuaries, and the Guidelines of Actuarial Practice for Social Security Programs of the International Actuarial Association.

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Ottawa, Canada
13 October 2009

Appendix A – Financial Projections of Amended Plan (Unadjusted 23rd Report)

The following Tables 20 and 21 compare the various components of the projected financial status of the amended Plan with the current Plan, without taking into account current economic conditions, under the current legislated contribution rate of 9.90% for years 2010 and thereafter. Under the 23rd CPP Actuarial Report assumption basis, not accounting for current economic conditions, the minimum contribution rate of the amended Plan is 9.65% for years 2010 and thereafter.

Table 20 Pay-As-You-Go Rates, Contributions, and Expenditures (Unadjusted 23rd Report)*

	Pay-As-You-Go Rate			Contributions			Expenditures		
	Current Plan	Amended Plan	Change	Current Plan	Amended Plan	Change	Current Plan	Amended Plan	Change
				($ million)			($ million)		
2009	8.63	8.63	0.00	35,313	35,313	0	30,773	30,773	0
2010	8.78	8.78	0.00	36,660	36,660	0	32,504	32,504	0
2011	8.90	8.90	0.00	38,138	38,138	0	34,299	34,299	0
2012	9.04	8.91	(0.13)	39,633	40,210	577	36,195	36,196	1
2013	9.18	9.05	(0.13)	41,264	41,880	616	38,249	38,285	36
2014	9.29	9.17	(0.13)	43,050	43,709	659	40,414	40,479	65
2015	9.41	9.28	(0.13)	44,963	45,666	703	42,729	42,814	85
2020	10.01	9.85	(0.16)	56,101	57,057	956	56,731	56,779	48
2025	10.67	10.48	(0.19)	69,366	70,618	1,252	74,756	74,752	(4)
2050	11.29	11.06	(0.23)	199,452	202,710	3,258	227,357	226,391	(966)

* 23rd CPP Actuarial Report basis not adjusted for current economic conditions, 9.90% contribution rate.

Table 21 Investment Earnings, Assets and Asset/Expenditure Ratios (Unadjusted 23rd Report)*

	Investment Earnings			Assets			Assets/Expenditure Ratios		
	Current Plan	Amended Plan	Change	Current Plan	Amended Plan	Change	Current Plan	Amended Plan	Change
	($ million)			($ million)					
2009	7,856	7,856	0	150,104	150,104	0	4.62	4.62	0.00
2010	8,351	8,351	0	162,611	162,611	0	4.74	4.74	0.00
2011	8,838	8,838	0	175,288	175,288	0	4.84	4.84	0.00
2012	9,953	9,972	19	188,680	189,274	594	4.93	4.94	0.01
2013	11,269	11,324	55	202,963	204,194	1,231	5.02	5.04	0.02
2014	12,746	12,844	98	218,345	220,267	1,922	5.11	5.14	0.03
2015	14,386	14,536	150	234,965	237,655	2,690	5.20	5.25	0.05
2020	21,300	21,814	514	332,360	340,747	8,387	5.54	5.67	0.13
2025	28,031	29,151	1,120	441,987	460,234	18,247	5.61	5.84	0.23
2050	90,885	104,542	13,657	1,431,573	1,650,134	218,561	6.03	6.98	0.95

* 23rd CPP Actuarial Report basis not adjusted for current economic conditions, 9.90% contribution rate.

Appendix B – Full Funding Provision

The projections of the net cash flows (contributions less expenditures) of the current and amended Plans under the 23rd CPP Actuarial Report basis, not adjusted for changes in the economic environment, are shown in Table 22. Since the amended Plan results in additional net cash flows compared to the current Plan and thus a positive present value of those amounts, the full funding provision of paragraph 113.1(4)(d) of the *Canada Pension Plan* does not apply, and the proposed amendments are thus assumed to be financed under the steady-state financing approach.

Table 22 Present Value of Change in Net Cash Flows due to Amendments*

Year	Current Plan Net Cash Flows	Amended Plan Net Cash Flows	Change in Net Cash flows
	($ million)	($ million)	($ million)
2011	3,839	3,839	0
2012	3,438	4,014	576
2013	3,015	3,595	580
2014	2,636	3,230	594
2015	2,234	2,852	618
2020	(630)	278	908
2025	(5,390)	(4,134)	1,256
2050	(27,905)	(23,681)	4,224
2075	(84,422)	(73,591)	10,831
Present value as at 1/1/2010 of the change in net cash flows over the projection period			**26,718**

*23rd CPP Actuarial Report basis not adjusted for current economic conditions, 9.90% contribution rate.