CPP Actuarial Report and its Independent Peer Review Process
Presentation to the Public Service Pension Advisory Committee
Office of the Chief Actuary, Office of the Superintendent of Financial Institutions
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Good afternoon. Thank you for inviting me here today to talk about the Canada Pension Plan (CPP) Actuarial Report and its Independent Peer Review Process.

The mandate of the Office of the Chief Actuary (OCA) (*Slide* 2)

Let me start by saying a few words about my organization. Although the OCA is housed within the Office of the Superintendent of Financial Institutions (OSFI), it operates independently with a unique role and mandate different from OSFI's. Our primary role is to provide actuarial services to the federal and provincial governments who are Canada Pension Plan (CPP) stakeholders. The Office also conducts statutory actuarial valuations of the Old Age Security Program and pension and benefit plans covering the federal Public Service, the Canadian Forces and the RCMP. While I report to the Superintendent of Financial Institutions, I am solely responsible for the content and actuarial opinions reflected in the reports prepared by my office.

The purpose of the Actuarial Report ***(Slide 3)*** The Office of the Chief Actuary is required by law to produce an actuarial report on the Canada Pension Plan every three years. The report is one item considered by federal and provincial finance ministers when reviewing and making recommendations on the CPP. The purpose of the report is to inform Plan members of the current and projected financial status. It provides information to evaluate the financial sustainability over a long period, assuming the Act remains unchanged. This promotes a better understanding of the financial status and the factors that influence costs, contributing to an informed public discussion of the issues. Another purpose is to calculate the steady-state contribution rate, which is the lowest rate sufficient to sustain the Plan without further increase.

The consultations on assumptions ***(Slide 4)*** The Office of the Chief Actuary held seminars to get opinions from a wide range of experts in the fields of demography, economics and investments. Federal and provincial officials attended these seminars. These seminars as well as feedback from periodic independent reviews of the actuarial reports on the CPP provide my office with valuable input. Furthermore, we keep abreast of experts' views by way of Statistics Canada, the Policy and Economic Analysis Program of the University of Toronto, the Conference Board of Canada and attendance at various seminars on specialized topics. These activities are part of the ongoing process of how the Office of the Chief Actuary operates.

The demographic assumptions ***(Slide 5)*** The projections included in this report cover a long period of time- 75 years. The assumptions reflect our best judgment and are referred to as a "best-estimate". The actuarial report of the CPP involves projections of its revenues and expenditures. The revenues include both contributions and investment earnings. The projection of contributions begins with a projection of the working-age population. This requires assumptions on demographic factors such as fertility, migration and mortality.

Fertility ***(slide 6)*** The first cause of the aging population is the large decline in the fertility rate over the last three decades, relative to the baby boom generation, born between the mid-1940s to the mid-1960s. The decrease was due to changes to social, medical and economic factors. It is unlikely that fertility rates will return to historical levels in the absence of significant societal changes. It is assumed that the total fertility rate for Canada will increase slightly from its 2001 level of 1.5 to an ultimate level of 1.6 in 2016 and thereafter. An increase in fertility rates is expected because of continued trends in women giving birth to their first child at a later age.

Migration ***(slide 7)*** Net migration- the excess of immigration over emigration- is unlikely to materially reduce the continued aging of the population. Net migration to Canada has averaged 0.50% of the population over the last 30 years. Based on a continuation of these net migration levels and the expected pressure on the labour markets due to the impending retirement of the baby boom generation, an ultimate assumption of 0.54% of the population has been established for years 2020 and beyond.

Mortality ***(slide 8)*** Another element that has contributed to the aging of the population is the significant reduction in age-specific mortality rates. This can be best measured by the increase in life expectancy at age 65, which directly affects how long retirement benefits will be paid to the beneficiaries. Life expectancy at age 65 increased 24% for men between 1966 and 2001, rising from 14 to 17 years. For women, life expectancy at age 65 increased 23%, from 17 to 21 years over the same period. Life expectancies are expected to continue to increase in the future.

Canadian Aging ***(Slide 9)*** The aging of the Canadian population is most evident with persons over the age of 65. A significant increase of 170% in the size of this group is expected over the next 50 years. This means that there will be more than 10 million people over the age of 65 in the year 2050.

(Slide 10) The evolution of Canada's total population and of the so-called working age population, that is the population between 20 and 64 years, is projected to continue growing, but at a slower pace than in the past. While the average annual growth rate of the working age population surpassed that of the total population in the past 40 years

ending in 2000, it is likely that the inverse phenomenon will occur in the future. By itself, the relative stagnation of the growth rate of the working age population will put pressure on the labour market. Finally, it is forecasted that the growth in the population after 2025 will be attributed solely to net migration.

Global aging ***(Slide 11)*** When analysing global aging, it is important to identify the indicators of aging. We need to look at three elements: the extent of aging, the speed of aging, and the change in the active population. As an indicator of the speed of aging, the next chart shows the number of years expected to pass for the population aged 65 and over to move from 12% to 24% of the total population. Japan will experience this shift very quickly, in just 25 years. The absence of the United States should be mentioned since, according to their projections, it will never achieve the 24% threshold, at least not between now and 2050. We can say with relative certainty that the United States is the industrialized nation that will be least affected by the aging of its population.

Economic Assumptions ***(Slide 12)*** The main economic assumptions related to the Canada Pension Plan are the labour force participation rates, employment rates, unemployment rates and average employment earnings increases. For benefit and asset projection purposes, assumptions regarding the inflation rate and rates of return on invested assets are also required. One of the key elements underlying the economic assumptions relates to the expected labour shortage due to the aging of the population and the retirement of the baby boom generation between 2010 and 2030. Labour force growth will weaken as the working age population expands at a slower pace. Growing labour shortages, especially after 2010, are assumed to force higher real wage growth.

Participation Rates ***(Slide 13)*** Because of the aging of the population, the labour force participation rates for Canadians aged 15 and over are expected to decline from 67% in 2004 to 61% by 2030. A more useful measure of the working age population is the participation rates of those aged 15 to 69, which are expected to decline from 75% in 2004 to 73% in 2030. The narrowing of the gap between the age-specific participation rates of men and women continues but at a much slower pace than in the past.

Inflation ***(Slide 14)*** Based on historical trends, the renewed commitment of the Bank of Canada and the federal government to keep inflation between 1% and 3% until the end of 2006 and long-term economic forecasts, an ultimate rate of price increase of 2.7% has been assumed for 2015 and thereafter. Recognizing recent experience, the rate of price increase is assumed at 2% for years 2004 to 2008.

Real Wage Increases ***(Slide 15)*** Many factors have influenced the real rate of increase in average annual wages, including general productivity improvements, the move to a

service economy, variations in the average hours worked and fluctuation in the size of the workforce. Considering these factors, together with the historical trends, the expected labour shortage and various long-term economic forecasts, an ultimate real wage differential of 1.2% is assumed for 2012 and thereafter. This is based on the assumption that growing labour shortages will cause increases in real wages as a way to attract and retain qualified workers.

Real Total Earnings ***(Slide 16)*** The increase in real total earnings is composed of the increase in real wages and in earners. It is expected that, due to the labour shortage, over the long term the bulk of the increase in total earnings will come from the increase in real wages. Ultimately, real total earnings are expected to grow by 1.5% (1.2% from the real increase in earnings and 0.3% from the increase in number of earners), or 4.2% including inflation.

(Slide 17) This chart shows the evolution of the working age population of some industrialized countries. The U.S. and Canada are the only countries that could experience an increase in the working age population. Based on the belief that a shrinking and aging population may bring economic decline, GDP growth could slow significantly in Japan and Continental Europe. If the rates of labour force participation among older populations do not rise over time, every developed country could face shrinking labour markets that could significantly constrain their potential for economic growth.

Asset Mix and Real Rate of Returns ***(Slide 18)***
CPP Assets are invested in two broad categories: variable-income securities and fixed-income securities. The information shown in the most recent annual report of the CPP Investment Board is used to derive our assumption of the projected asset mix. Therefore, our projected asset mix is 65% variable and 35% fixed up until 2020, which is the period where the net cash flows are expected to be positive. It is expected that contributions will be higher than benefits paid for each year until 2021. We expect a transition period that will see a decrease in Canadian equities and an increase in marketable bonds because the annual net cash flows are expected to become negative. Our ultimate asset mix is therefore 55% variable-income securities and 45% fixed-income securities.

The real rates of return are the excess of the nominal rates of return over the inflation rates. As a result of assumptions for each asset class, the real rate of return on CPP assets is assumed to be 4.7% in the period 2004 to 2010 mainly due to the existing CPP Fund, which consists of 20-year loans to the provinces. The expected real rate of return is around 4.1% for the years thereafter.

Canada Pension Plan Funding ***(Slide 19)*** When it was introduced in 1966, the CPP was designed as a pay-as-you-go plan, with a small reserve. This meant that the benefits for one generation would be paid largely from the contributions of later generations. Continuing to finance the Plan on a pay-as-you-go basis would have meant imposing a heavy financial burden on Canadians in the workforce after 2020, which was deemed unacceptable by governments. Therefore, in 1997, the provincial and federal governments agreed to change the funding approach to a hybrid of pay-as-you-go and full funding, called steady-state funding. As a result of the consultation, the contributions were increased, the future growth of benefits was reduced and the CPP Investment Board was created to invest the funds not required by the CPP to pay current benefits.

(Slide 20) The steady-state funding requires that the contribution rate be set no lower than the lowest rate expected to ensure the long-term financial stability of the Plan without recourse to further rate increases. The current steady-state funding is expected to generate contributions that exceed the benefits paid out every year between 2004 and 2021. Funds not required to pay benefits are transferred to the CPP Investment Board for investment. As a result, Plan assets will cover an increasing number of years of expenditures over this period more than five years after 2020. Over time, this will create a large enough reserve to help pay the growing costs that are expected as more and more baby boomers begin to collect a retirement pension. CPP and QPP assets are projected to represent 17% of the GDP by 2020.

(Slide 21) At the time of the amendments and according to the actuarial report produced in September 1997, the steady-state contribution rate was deemed to be 9.9% in 2003 and to remain at that level for the years thereafter. As a result, the legislated contribution rate is 9.9%. Under the last actuarial report, the steady-state rate now stands at 9.8%. If the legislated contribution rate is higher than the calculated steady-state rate, the funding status of the Plan will increase over time. The higher this rate is set above the steady-state rate, the faster the Plan will become more funded as it is shown in the previous graph.

(Slide 22) On the other hand, what would happen if, in future actuarial reports, the calculated steady-state contribution rate is higher than 9.9%? The default provisions in the *Canada Pension Plan* Act may result in adjustments being made to the contribution rate and benefits in payment if the federal and provincial governments reach no agreement in response to the actuarial determination of the steady-state contribution rate. If the new steady-state rate is 10.1%, one half of the excess of the new steady-state rate over the 9.9%, that is 0.1%, will be applied to an increase in the contribution rate and the other half will be applied to non-indexation of benefits in payment in order

to keep the steady-state rate at 10.0%. In other words, the contributors and the beneficiaries would equally support the additional cost shown in the actuarial report.

Independent Peer Review Process *(Slide 23)*

In a past Federal-Provincial Review of the CPP, the ministers of Finance endorsed regular peer reviews of such reports and consultations by the Chief Actuary with experts on the assumptions to be used in actuarial reports.

Why the need for peer reviews? In my view, it is of utmost importance that the credibility of the information presented in actuarial reports be indisputable. The Office of the Chief Actuary maintains credibility by adhering strictly to professional actuarial standards. Peer reviews are conducted as part of an internal quality control process. The statutory actuarial reports are prepared by Fellows of the Canadian Institute of Actuaries and are co-signed with the Chief Actuary to enhance the internal quality control process.

Selection Process of the peer review panel *(slide 24)*

In the past, the panel was selected by OSFI. To provide greater independence, we agreed with a suggestion by the Auditor General to seek input from a foreign actuarial organization outside of the federal government. As such, we entered into an agreement with the United Kingdom Government Actuary's Department. We asked them to select the independent Canadian actuaries who will perform the peer review and to provide an opinion on the work done by the reviewers once the peer review is completed. In May 2004, we issued a call for volunteers and the final panel of three was selected from ten applicants. The panel was announced in September 2004. In my view, the independent peer review process ensures that the highest standards and international best practices are applied to our actuarial work.

As you could imagine, I am a strong advocate of independent peer review. Indeed, our actuarial work was subject to peer review several times in the past and I believe it was hugely successful in terms of lessons we learned on how to improve our actuarial methods and assumptions. It is a both a challenging and rewarding process.

Independent peer review report *(slide 25)*

The independent peer review report was released on May 9. The panel found that each of the major assumptions is reasonable. In their view, five of the nine major assumptions are near the centre of the reasonable range and four assumptions are lower or higher within the range than what they would have chosen.

(slide 26) The report confirms that the work of the Chief Actuary meets professional standards of actuarial practice and statutory requirements. The review panel found that the data are sufficient and reliable. The review panel found that the assumptions used by the Chief Actuary are, in aggregate, within the reasonable range, while a little on the conservative side of the best-estimate assumptions they would have selected. Lastly, they believe that the actuarial report was competently prepared and presents a reasonable set of results. The review resulted in twelve recommendations dealing with various aspects of the report including data, methodology, communication of results and other actuarial issues.

The Government Actuary's Department of the U.K. provided their opinion on the panel's work. It was released on May 18. This improved process establishes a precedent and will provide Canadians with the utmost confidence that the highest standards of practice, including existing international standards, are being applied.

I hope that I've been able to provide you with a greater understanding of the actuarial reporting process and would be delighted to answer any questions.

Thank you.