Joint Colloquium of the IACA, PBSS and IAAHS Sections
of the International Actuarial Association
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Actuarial and Investment Management Issues for the CPP

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ASSOCIATION INTERNATIONALE DES ACTUAIRES-CONSEILS
INTERNATIONAL ASSOCIATION OF CONSULTING ACTUARIES
IACA

SECTION SUR LES PENSIONS, AVANTAGES SOCIAUX ET SÉCURITÉ SOCIALE DE L'AAI
IAA PENSIONS, BENEFITS AND SOCIAL SECURITY SECTION
PBSS

SECTION SANTÉ DE L'AAI
IAA HEALTH SECTION
IAAHS

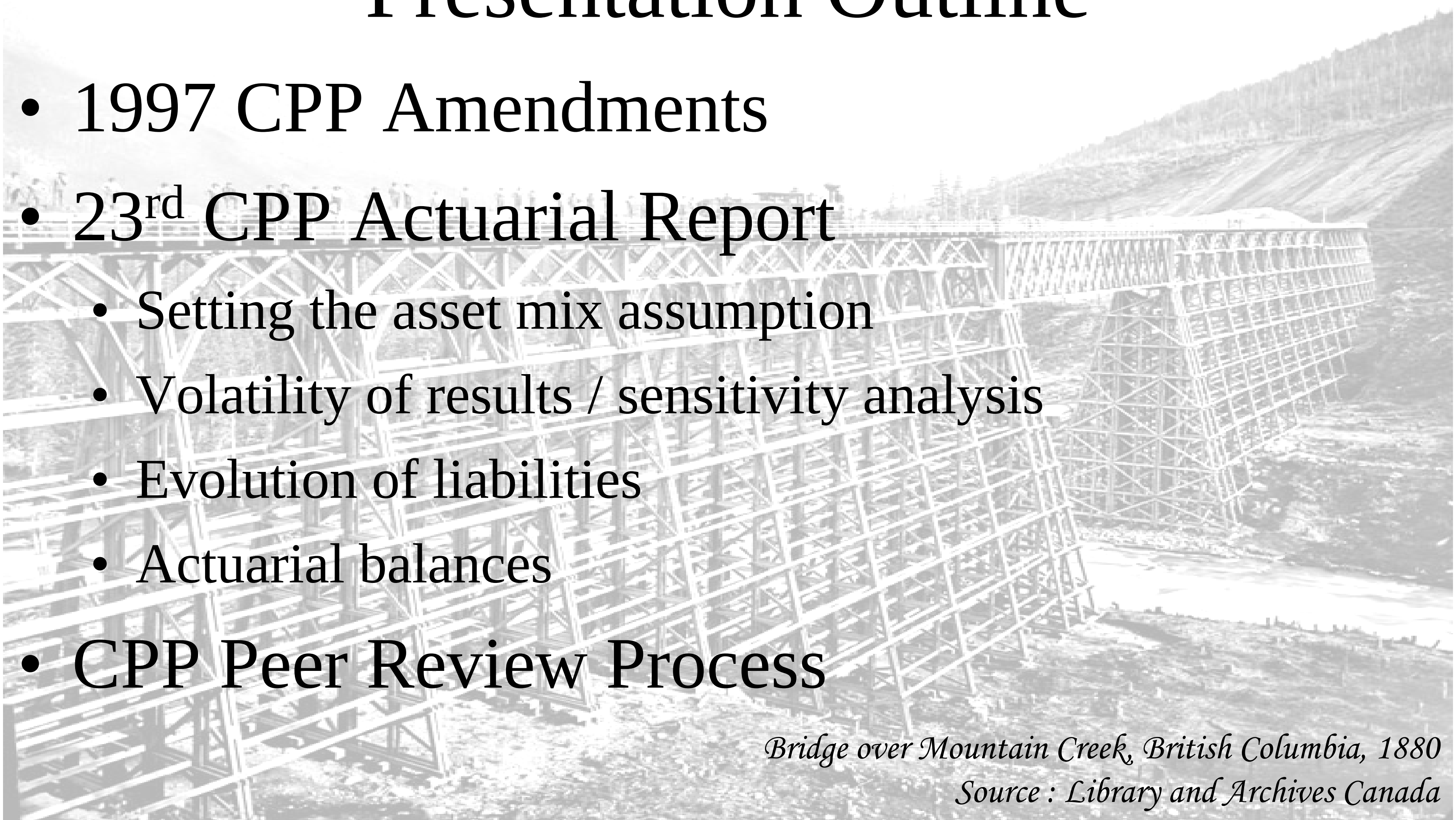
Office of the Superintendent of Financial Institutions Canada
Bureau du surintendant des institutions financières Canada

Office of the Chief Actuary
Bureau de l'actuaire en chef

Canada

Presentation Outline

- 1997 CPP Amendments
- 23rd CPP Actuarial Report
  - Setting the asset mix assumption
  - Volatility of results / sensitivity analysis
  - Evolution of liabilities
  - Actuarial balances
- CPP Peer Review Process



Bridge over Mountain Creek, British Columbia, 1880
Source : Library and Archives Canada

Principles to Guide Federal-Provincial Decisions on the CPP

- The CPP must be affordable and sustainable for future generations. This requires fuller funding and a contribution rate no higher than the already legislated future rate.
- CPP must be invested in the best interest of plan members, and maintain a proper balance between returns and investment risk.
- Available on website at http://www.cpp-rpc.ca/princips/principe.html

CPP Steady-State Funding

Effect of the 1998 Amendments

Securing the Canada Pension Plan

- Increase the contribution rate by 65% over 6 years (1997-2003) and keep the same rate thereafter
- Moderate the future growth of benefits by 10% on a long-term basis (in 2050).
- Creation of the CPP Investment Board (www.cppib.ca)

CPP Financing

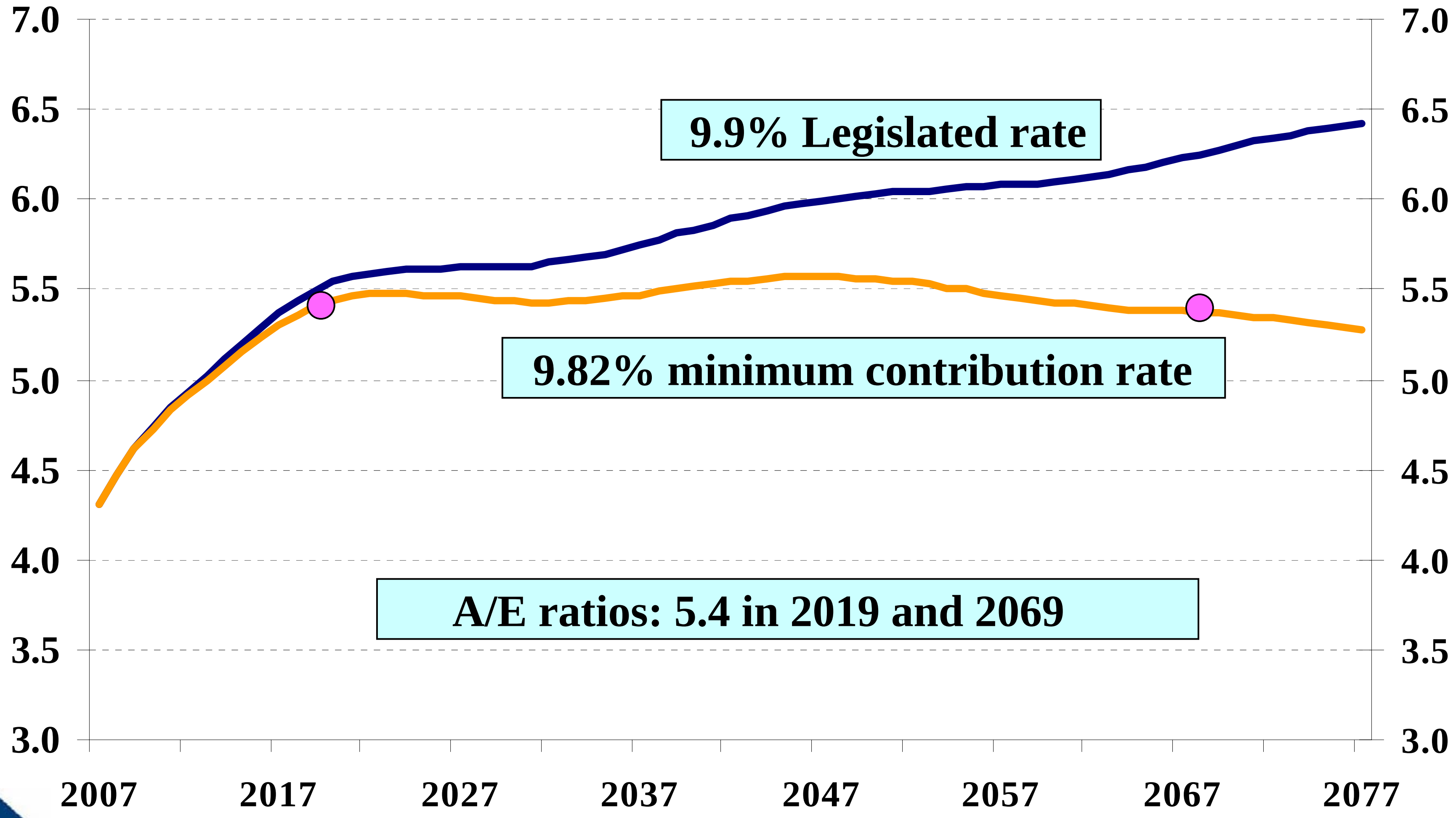
- *Steady-state funding*: replaces the original pay-as-you-go financing to build a reserve of assets equivalent over time to about five and a half years of benefit expenditures or about 25% of Plan liabilities.

- *Incremental full funding*: requires that changes to the CPP that increase benefits or add new benefits be fully funded (eg: increase in eligibility for disability benefits for long-term contributors).

CPP Financing

- The current legislated contribution rate is 9.9%.
- The minimum contribution rate is 9.82%.
- If the legislated contribution rate is <u>higher</u> than the minimum contribution rate, the funding status of the plan will increase over time.
- The higher this rate is set above the minimum rate, the faster the plan will become more funded.

Evolution of Asset/Expenditure Ratio



CPP Default Provisions

- If the minimum contribution rate is higher than the legislated contribution rate AND if finance ministers cannot reach an agreement on a solution, then:
  - Contribution rate increased by ½ of excess over three years, subject to maximum increase of 0.2% per year
  - Benefits frozen
  - At end of three years, next review performed to determine financial status of Plan.

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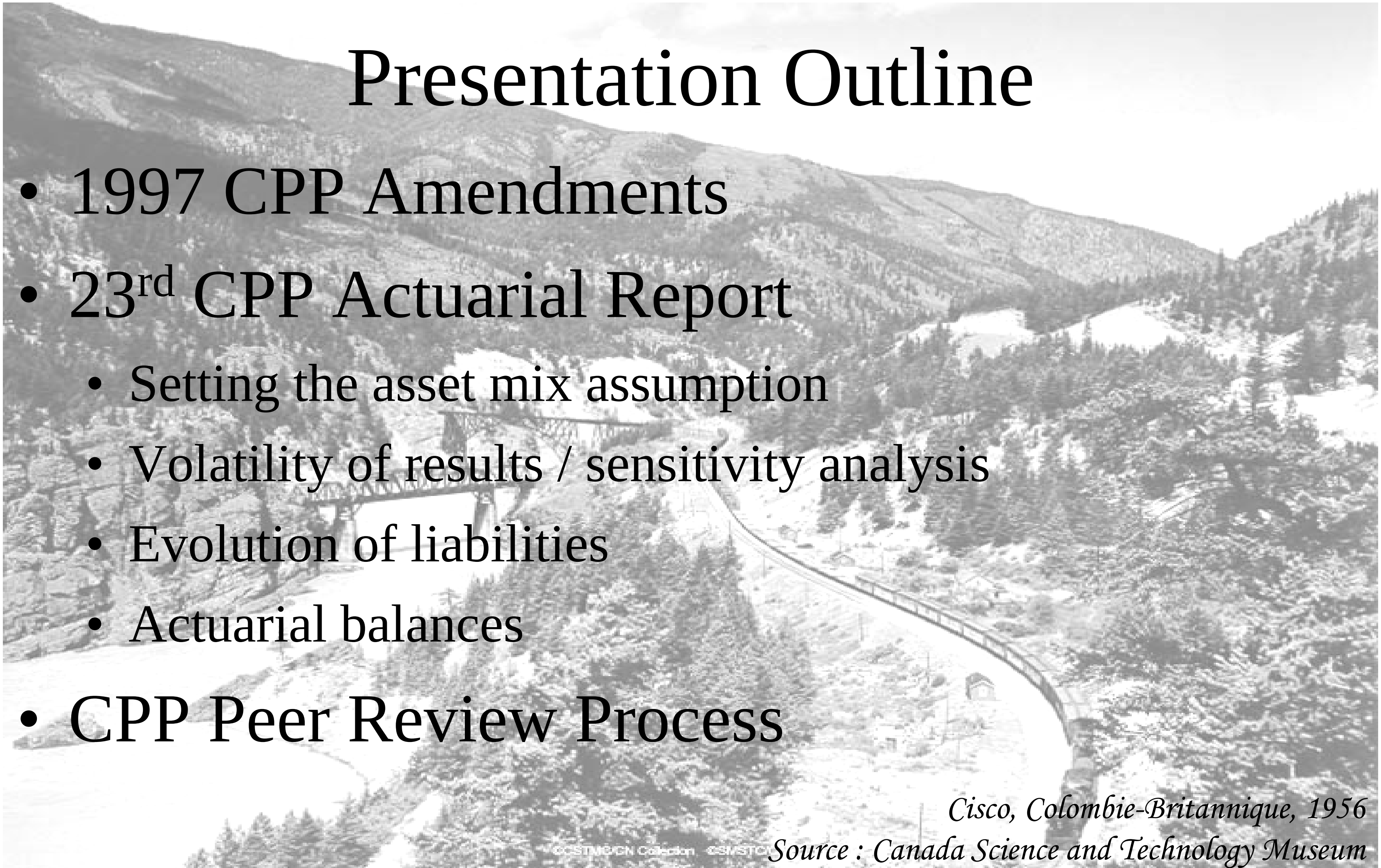


Cisco, Colombie-Britannique, 1956
Source : Canada Science and Technology Museum

Setting the Asset Mix Assumption

- CPPIB does not target specific asset allocations
  - risk allocated to investment strategies subject to risk limit
- CPPIB Reference Portfolio: relevant benchmark to compare performance of CPPIB (not a target)
- Must determine an appropriate asset mix over the 75-year projection period
  - Short-term mix similar to CPPIB Reference Portfolio
  - Long-term mix assumes a reduction of risk in the portfolio

Ultimate Asset Mix Assumption

- Investments in “riskier” assets, such as equities, are projected to decline over time
- As the ratio of active to retired members decreases, the asset mix of the portfolio must be adjusted to reflect a lower tolerance for risk
- Portfolio should be adjusted to minimize the CPP Fund’s potential for loss

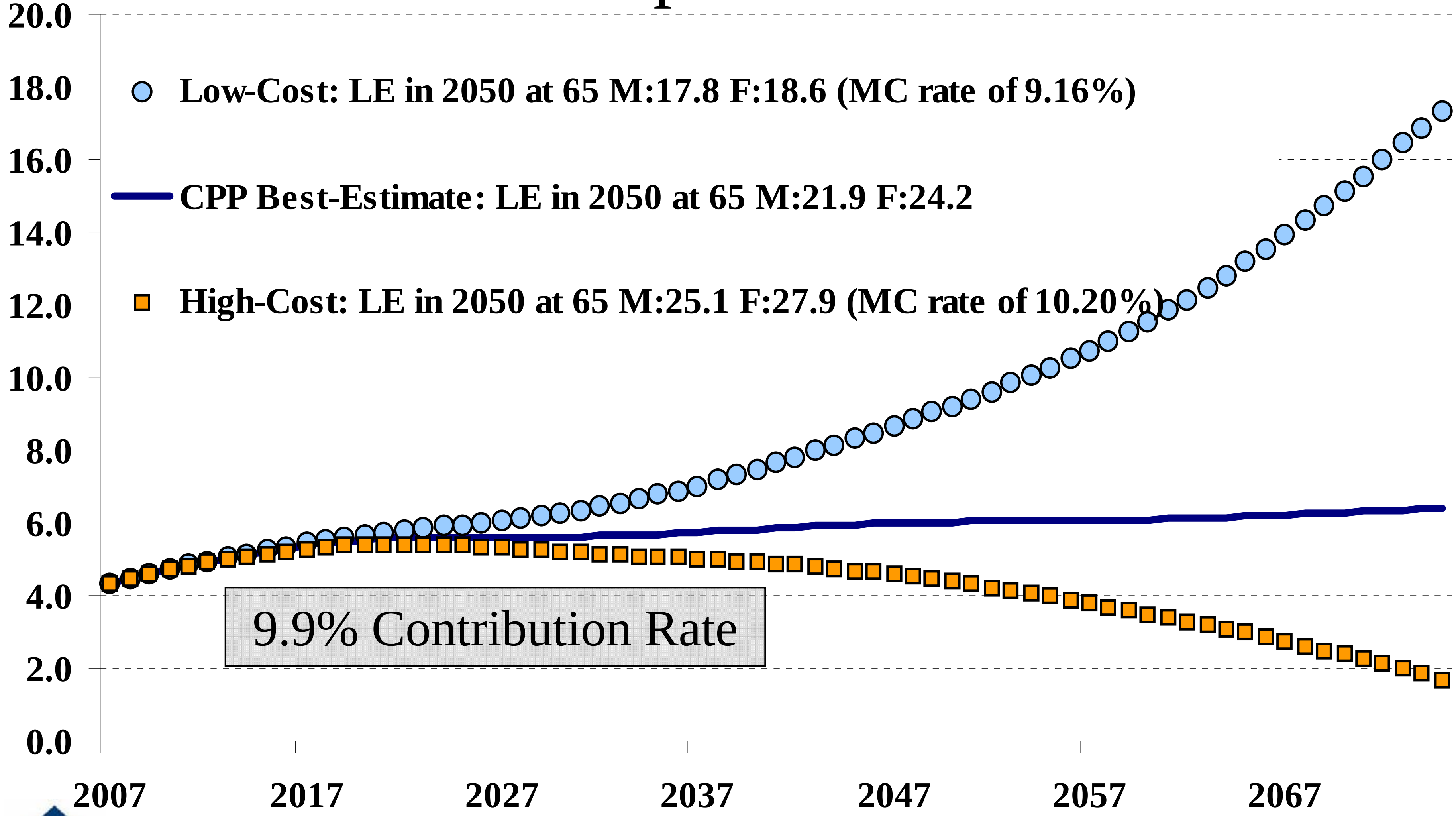
Evolution of CPP Asset Mix

	Fixed Income	Equities	Inflation-Sensitive
2007	28%	65%	7%
2010	30%	60%	10%
2015	30%	60%	10%
2020	35%	55%	10%
2025	40%	50%	10%

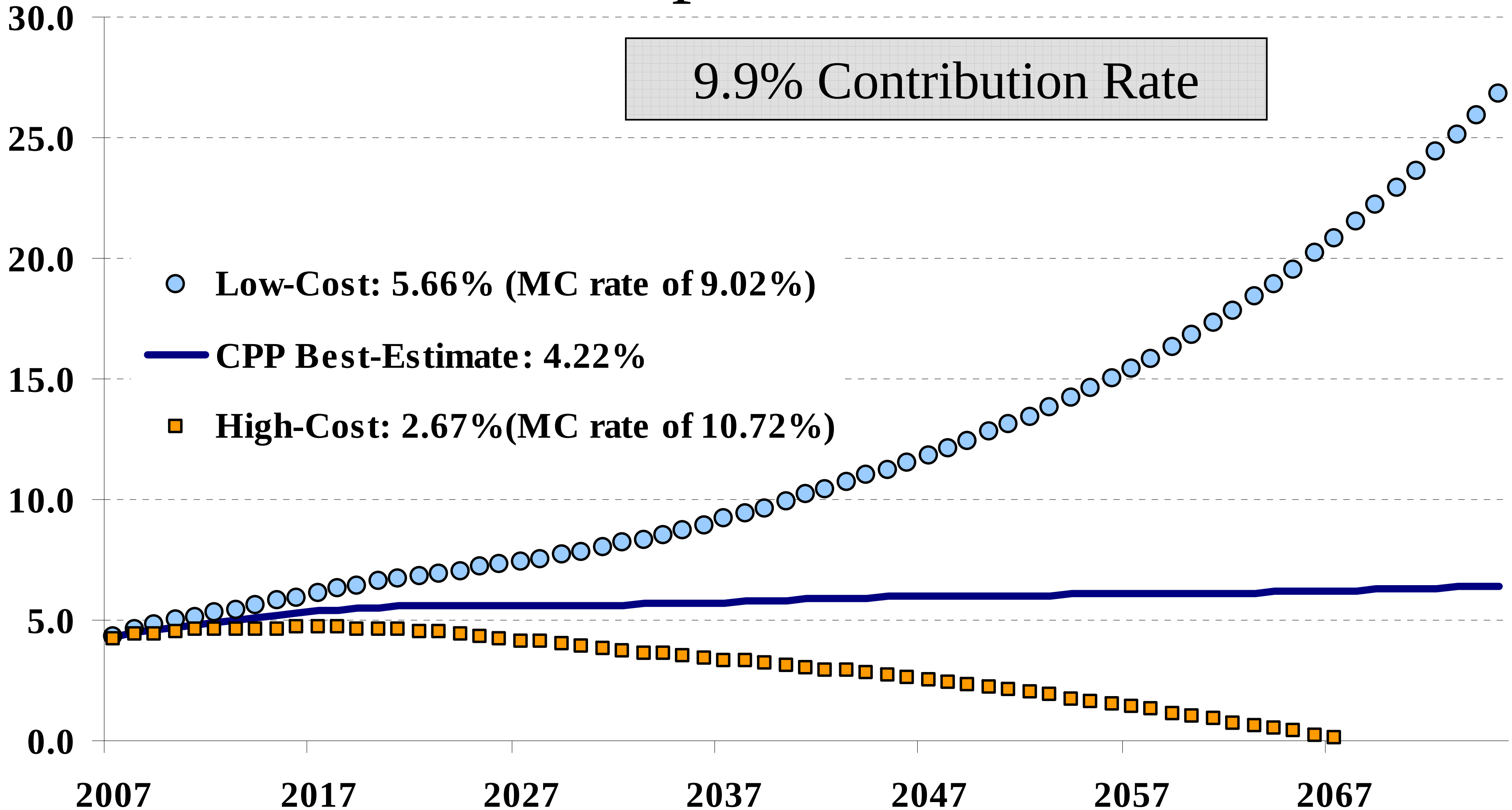
Stochastic Modeling in CPP #23

- Recommendation from CPP #21 review panel
- Incorporate stochastic modeling in determination of alternative assumptions for sensitivity analysis
  - Project probability distribution of potential outcomes
  - High cost and low cost assumptions
- Objective is to measure the impact of alternative assumptions on the financial status of the Plan

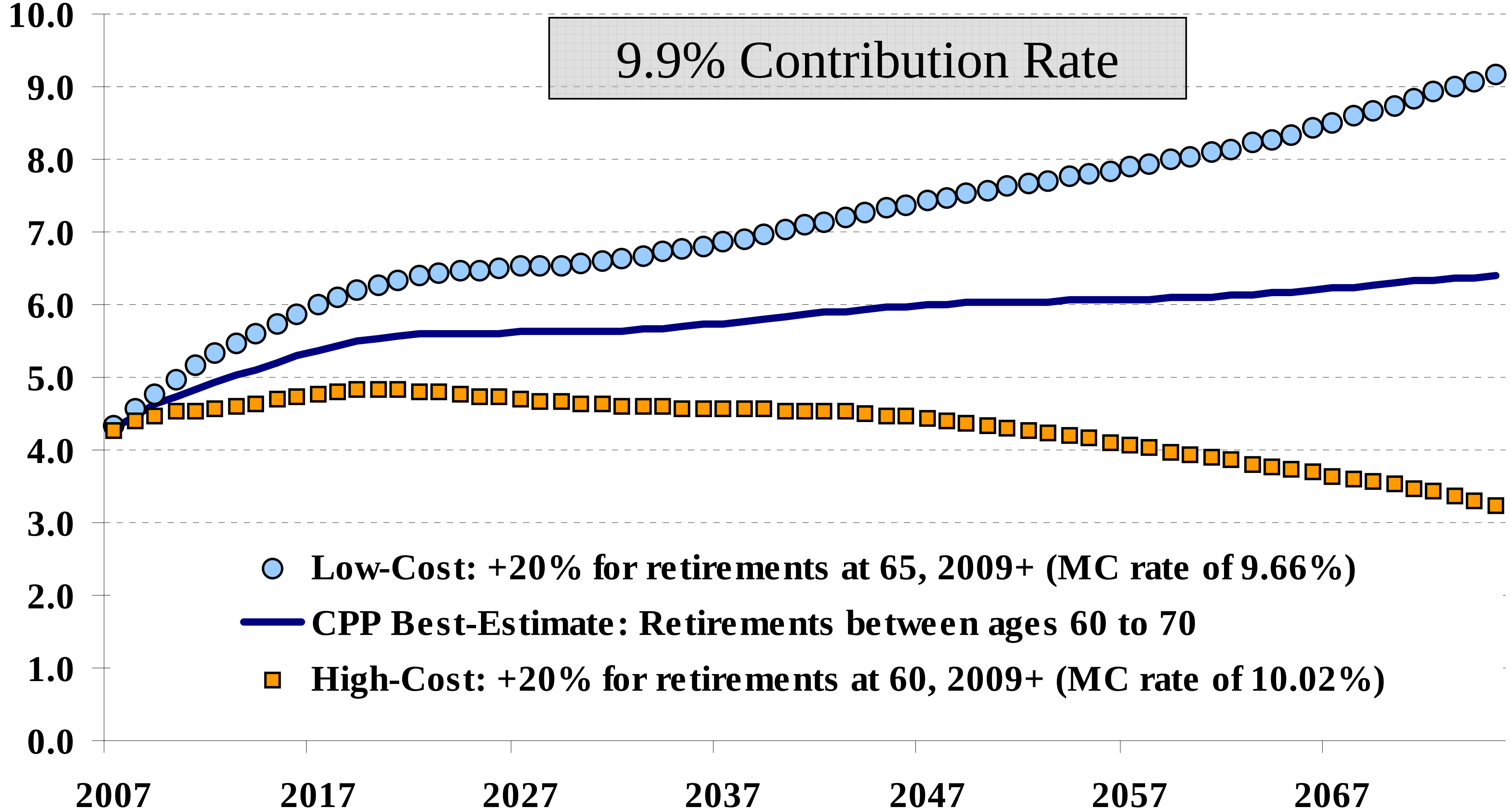
Sensitivity Test – Life Expectancy Asset/Expenditure Ratio



Sensitivity Test – Real Rate of Return
Asset/Expenditure Ratio



Sensitivity Test –Retirement Rates Asset/Expenditure Ratio



Balance Sheet Under Various Rates of Return

As at 31 December 2006

	100% Risk-Free Bond Portfolio	Best-Estimate 55/45 Equity/Bond Portfolio	100% Equity Portfolio
Expected Real Return (%)	2.8	4.2	4.9
Assets ($B)	113.6	113.6	113.6
Liability ($B)	919.8	733.5	675.9
Unfunded Liability ($B)	806.2	619.9	562.3
Funded Ratio (%)	12.3	15.5	16.8
Current Service Cost(%)	8.6	5.9	5.0
Minimum Contribution Rate (%)	10.64	9.82	9.42

Actuarial Balance

- A positive actuarial balance indicates that estimated income (assets and contributions) is more than sufficient to meet estimated CPP expenditures for the period as a whole; negative actuarial balance indicates the opposite.

- Comparative measure with OASDI

- Expressed as a dollar value or percentage of contributory earnings

Actuarial Balances Over Various Periods

	Period	Assets (A)	Income (I)	Expenditures (E)	Actuarial Balance (A)+(I)-(E)
		($B)	($B)	($B)	($B)
CPP:	**2007-2031**	114	584	593	105
	2007-2056	114	917	960	70
	2007-2081	114	1,100	1,167	47*
OASDI:	**2007-2031**	2,048	15,354	16,727	675
	2007-2056	2,048	26,543	31,085	(2,494)
	2007-2081	2,048	34,113	41,237	(5,076)**

* Equal to 0.42% of the present value of contributory earnings in the period

** Equal to 1.95% of the present value of contributory earnings in the period

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Canadian troops, Canal-du-Nord, 1918
Source : Library and Archives Canada

Strengthening the Accountability in 1997

- Federal and provincial governments took meaningful steps to strengthen the transparency and accountability of actuarial reporting. They endorsed plans:
  - to review the CPP every three years, instead of every five years as before. Therefore, frequency of actuarial reporting was increased to once every three years with a further requirement to produce the report within one year of the valuation date;
  - to consult regularly with experts on assumptions to be used in actuarial reports;
  - to establish regular peer reviews of future actuarial reports on the CPP;
  - to supply actuarial information to Canadians in a timely manner.

CPP has been peer reviewed four times since 1998

- Role of the Auditor General and Selection Process
- Overseeing of the Peer Review by GAD
- Terms of Reference
  - Is the professional **experience** of the Chief Actuary and his staff adequate for carrying out the work required?
  - Does the work comply with professional **standards of practice** and statutory requirements?
  - Did the Chief Actuary have access to the **information** required?
  - Were the actuarial **methods and assumptions** used reasonable?
  - Does the actuarial report fairly **communicate** the results?

Peer Review of CPP#23

- The independent Review Panel confirmed that:
  - the staff is competent and qualified to carry out the work required;
  - the work complies with all relevant professional standards of practice and statutory requirements;
  - the Chief Actuary had access to the data and he completed relevant tests on the data as might be expected;
  - actuarial methods and assumptions are reasonable;
  - assumptions are, in the aggregate, reasonable, but towards the high-cost side of the reasonable range;
  - the report fairly communicates the results;
- and made twelve recommendations on data, methodology, assumptions, communications of results and other actuarial issues.

March 2008

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Thank you

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