Actuarial Valuations

Presentation to the Board of Directors of PSP Investments

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Agenda

- Traditional defined benefit pension plans legislative framework
  - Private vs federal public sectors
  - Funding vs accounting
- Update on the most recently filed statutory actuarial valuation
  - Pension Plans for the Canadian Forces Regular Force and Reserve Force as at 31 March 2019

Traditional Defined Benefit Pension Plans – Legislative Framework

Private Sector Pension Plans[1]

- Provincial and federal pension legislations set minimum standards in terms of benefits and funding requirements.
  - Going Concern and Solvency valuations
- *Income Tax Act* (ITA) sets maximum standards in terms of benefits and allowed funding.
  - Maximum benefit payable
  - Maximum contributions
  - Non-permitted surplus to limit tax deferral

Federal Public Sector Pension Plans

- Public sector pension plans are subject to their respective Act
  - *Public Service Superannuation Act*
  - *Canadian Forces Superannuation Act*
  - *Royal Canadian Mounted Police Superannuation Act*
- The Acts
  - Define benefits payable
  - Reflect ITA limits
  - Set funding requirements
- The timing of actuarial valuations is prescribed in the *Public Pensions Reporting Act*

1 - Also include federal crown corporations and provincial public sectors pension plans

Purpose of Going-Concern and Solvency Actuarial Valuations is to Determine Funding Requirements

Going Concern

- Typically performed every three years
- Determine contributions
  - Employer special payments if deficit
  - Contribution holiday if non-permitted surplus
  - Determination of current service cost contributions

Solvency

- Typically performed every three years
- Determine contributions
  - Employer special payments (accelerated funding) required if assets are insufficient should the plan be terminated
- <u>There is no solvency requirement for Public Sector Pension Plans</u>

Accounting

- Performed every year
- Used for financial reporting
  - <u>Expense in income statement</u>
  - <u>Debt in balance sheet</u>

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Going-Concern Actuarial Valuation Assumes the Plan will Continue to Operate Indefinitely

- Assumptions are determined by the actuary
- Can include margins as per funding objectives
  - Implicit (included in assumptions)
  - Explicit (Provision for Adverse Deviation)
- The discount rate is typically the expected return on plan assets
- Smoothing of assets permitted
- As per the Standards of Practice of the Canadian Institute of Actuaries (CIA), actuary must certify that assumptions are appropriate for the purposes of the valuation

Solvency Valuation Assumes an Immediate Termination of the Plan and Liquidation of Assets

- Assumptions and methodology are prescribed by the legislator
  - Discount rates
  - Mortality
  - Usually refers to the Canadian Institute of Actuaries (CIA) standards
- The prescribed discount rates determination methods are based on “marked to market”
- Mortality tables are developed by the CIA

Accounting Standards Provide Guidance for Accounting Valuations

- Assuming the plan will continue to operate indefinitely
- Assumptions are management's best estimate with no margins
- The discount rate determination method is prescribed by the accounting standards
- Public sector accounting standards (PS 3250) are different than the mark to market private sector accounting standards (IFRS)

Differences between Going Concern and Accounting Valuations for Federal Public Sector Pension Plans

Going Concern

- As per funding policy, assumptions are Chief Actuary's best estimate with no margins
- Discount rate:
  - Pre April 2000 : Based on Government of Canada expected long-term bond yields
  - Post March 2000 : Expected return on plan assets
- Actuarial assumptions are reviewed at each actuarial valuation
- As per the Standards of Practice of the CIA, Chief Actuary must certify that assumptions are appropriate for the purposes of the valuation

Accounting

- Assumptions are government's best estimate with no margins
- Discount rate:
  - Pre April 2000 : Based on Government of Canada zero-coupon bond yields at valuation date
  - Post March 2000 : Expected return on plan assets

Actuarial Report

Pension Plans for the Canadian Forces

Regular Force and Reserve Force

as at 31 March 2019

Best-Estimate Economic Assumptions

- All economic assumptions are select and ultimate[1]

Ultimate economic assumptions

	31 March 2019	31 March 2016
Assumed level of inflation	2.00%	2.00%
Real increase in pensionable earnings	0.70%	0.80%
Real increase in YMPE and MPE[2]	1.00%	1.10%
Real rate of return on the Pension Fund	4.00%	4.00%
Real rate of return on the Superannuation Account and RCA Account	2.50%	2.70%

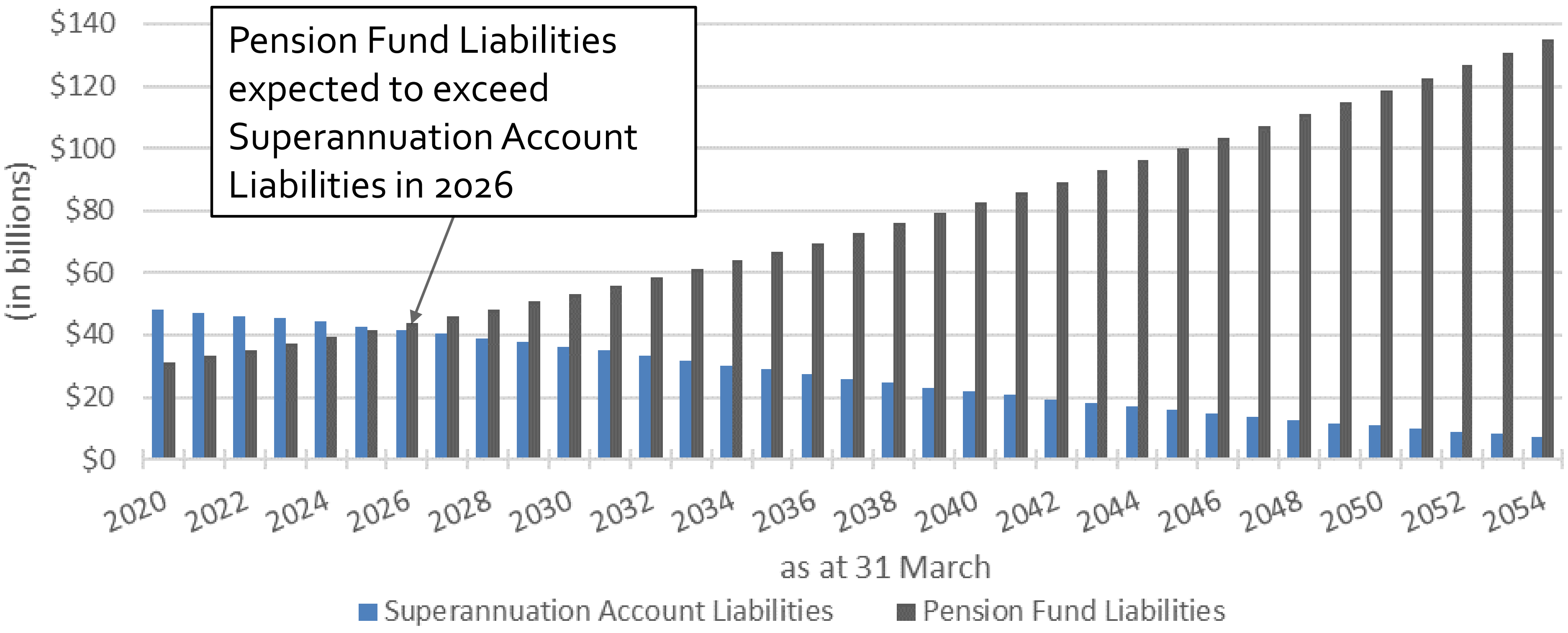
1- Initial assumptions in select period reflect current market conditions transitioning to ultimate long-term assumptions.
2- Year's Maximum Pensionable Earnings and Maximum Pensionable Earnings.

Financial Positions of the Canadian Forces Pension Plans

Main Results of Statutory Valuation ($ billions)	Regular Force		Reserve Force	
	31 March 2019	31 March 2016	**31 March 2019**	31 March 2016
Superannuation Account				
- Recorded Balance[1]	**45.6**	45.7		
- Actuarial Liability	**48.1**	47.4		
- Actuarial Excess / (Shortfall[2])	**(2.5)**	(1.7)		
Pension Fund				
- Actuarial Value of Assets	**31.6**	22.5	**0.5**	0.5
- Actuarial Liability	**31.0**	24.1	**0.7**	0.6
- Actuarial Surplus / (Deficit[3])	**0.6**	(1.6)	**(0.2)**	(0.1)
Funded ratio	**102%**	94%	**76%**	91%
Current Service Cost (Percentage of pensionable payroll)	**27.70%**	25.86%	**18.71%**	17.48%

1- Notional account established to track contributions and benefits for service prior to 1 April 2000
2- Shortfall amounts with interest have been credited to the Superannuation Account on 31 March of the year following the filing of the report
3- Deficits are amortized by the government with 15 equal annual payments or until a new valuation reveals surplus

Evolution of Liabilities of Superannuation Account and Pension Fund over Time – Regular Force

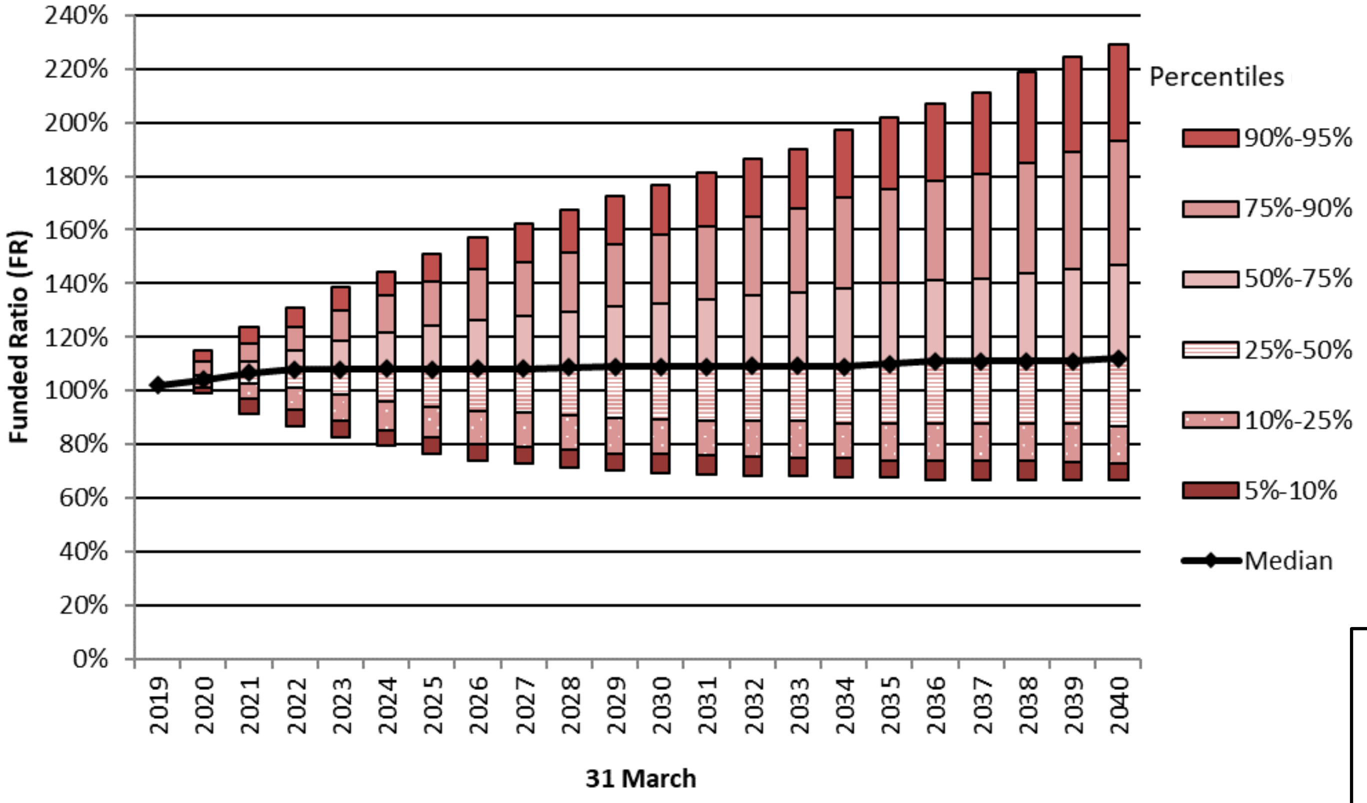


Source: Office of the Chief Actuary
Actuarial Report on the Pension Plans for the Canadian Forces as at 31 March 2019 (Regular Force)

Range of Potential Funding Ratios – Regular Force Post-2000 Service
Description of Graph on following Slide

- Chart illustrates range of funding ratios (actuarial value of assets over liabilities)
  - Liabilities based on best estimate assumptions
  - Assets returns are modeled using distribution of returns
  - Actuarial valuation done every 3 years
  - Deficits are covered by additional government contributions
  - Legislated non-permitted surplus results in full or partial government contribution holiday
    - Will result in lower contribution inflows
- Percentiles of funding ratios
  - Median expected funding ratio relatively flat (102% -109%) over projection period
  - Percentiles show the distribution of funding ratios for a given projection year
  - As the projection period increases, the dispersion of funding ratios also increases

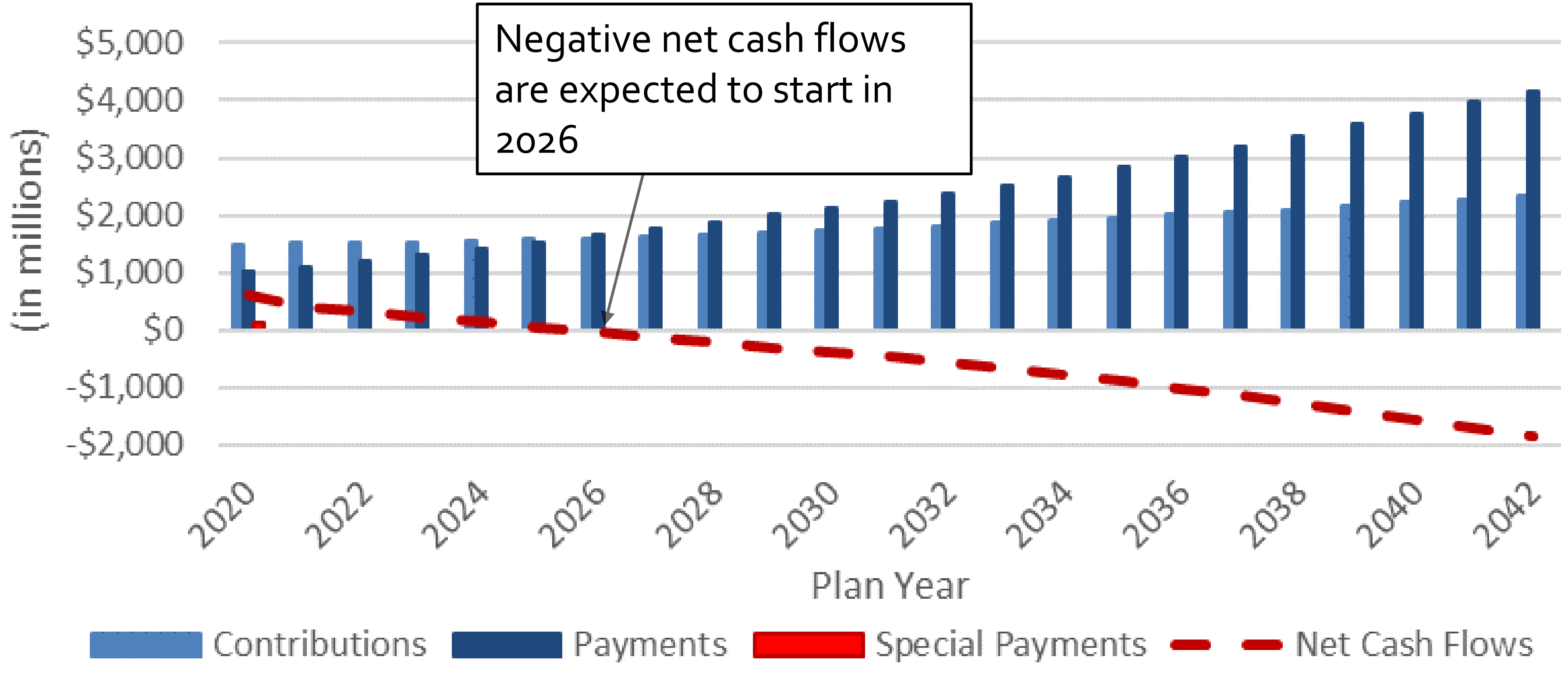
Range of Potential Funding Ratios – Regular Force Post-2000 Service



Non-permitted surplus would result in lower contributions inflow

Source: Office of the Chief Actuary
Actuarial Report on the Pension Plans for the Canadian Forces as at 31 March 2019 (Regular Force)

Evolution of Cash Flows of the Fund over Time – Regular Force



Source: Office of the Chief Actuary
Actuarial Report on the Pension Plans for the Canadian Forces as at 31 March 2019 (Regular Force)

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Conclusion

The major difference in funding requirements between private and federal public sector pension plans is that solvency valuations are not required

The statutory and accounting actuarial valuations are used for different purposes and performed on different bases

- Contribution requirements vs. financial reporting

There is currently a surplus in the CF Pension Plan Regular Force

The plan is maturing

THANK YOU!

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APPENDICES

Solvency Valuations

- Assumptions are prescribed by the legislator
- The discount rates are based on the Canadian Institute of Actuaries (CIA) standards
- Current trend: replacing solvency funding with enhanced going-concern funding
  - Quebec – 2016
  - Ontario – 2018 (85% threshold)
  - British Columbia – 2019 (85% threshold)
  - Manitoba – 2020 (85% threshold)
- Municipalities and other public sector employers are not subject to the same risks as the private sector
  - Lower risk of insolvency
  - Many public sector plan sponsors have been exempted from solvency funding for many years
- The Federal Public Sector Pension Plans are not required to perform solvency valuations

Federal Public Sector Pension Plans - Funding

- Governed by the *Public Pensions Reporting Act* and the *Funding Policy for the Public Sector Pension Plans*
- Current service cost contributions
  - Member contributions must not exceed 50% of the total current service cost
  - Member contribution rates for the Public Service pension plan are set by the Treasury Board on the recommendation of the President of the Treasury Board
    - For the Canadian Forces – Regular Force and the Royal Canadian Mounted Police pension plans, they are set by the Treasury Board on the joint recommendation of the President of the Treasury Board and the Ministers of National Defence and Public Safety and Emergency Preparedness, respectively
  - The contribution rates are based on actuarial advice provided by the Chief Actuary

Federal Public Sector Pension Plans - Funding

- Deficit payments
  - The timing and amount of special payments made by the government will be determined by the President of the Treasury Board[1]
  - The normal operating practice will be to amortize a deficit to the Fund in equal annual special payments over 15 years.
  - Non-permitted surplus is reached when assets are equal to 125% of liabilities
    - Employer contributions must stop and employee contributions may be reduced

1 - A deficit in the Canadian Forces Reserve Force pension plan will be amortized in equal annual special payments over a period of 15 years, as prescribed in the Reserve Force Pension Plan Regulations.
2- Except for the Canadian Forces Reserve Force pension plan where the non-permitted surplus is set at 110% of liabilities

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