

# MERCER

Human Resource Consulting

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## Queen's University Pension Plan Member Representatives Meeting

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# Agenda

 Updated estimate of August 31, 2006 financial position for current plan

 Longer term perspective on current funding position

 Plan Change Alternatives

 Financial impact at August 31, 2006

 Long-term cost and volatility results

 Investment Policy Considerations

## Appendix

A Summary of current plan provisions

## Current Plan Prior Estimates

- Our January 31, 2006 presentation includes estimates of the possible August 31, 2006 valuation position
- Estimates were included based on two sets of assumptions

	<b>From February 29, 2004 Valuation</b>	<b>Possible Revised Assumptions</b>
Investment Return	6.5%	6.0%
Non-reduction reserve percentage	2.5%	3.5%
Estimated August 31, 2006 Deficiency	\$28.5 million	\$54.3 million



## Current Plan Assumptions at August 31, 2006

- Based on economic conditions at August 31, 2006, we plan to use a 6.25% valuation interest rate (see next page)
- We plan to maintain the non-reduction reserve level at 2.5% considering the benefit of positive returns for the last three years

## Effects of Declining Interest Rates Valuation Interest Rate\*

	September 30, 2002	February 29, 2004	December 31, 2005	August 31, 2006
Median future return (net of expenses)	7.75%	7.27%	7.07%	7.24%
Margin for adverse deviation	<u>(0.81%)</u>	<u>(0.83%)</u>	<u>(0.97%)</u>	<u>(0.91%)</u>
Maximum valuation discount rate	6.94%	6.44%	6.10%	6.33%
Long-term government of Canada bond yield	5.38%	4.98%	4.04%	4.22%

\* Mercer standard maximum, reflecting Queen's asset mix and expense level.

**Note:** The 6.5% interest rate has been used for Queen's valuations for at least ten years up to February 29, 2004

# Updated Estimates at August 31, 2006

	Assumption for Interest Rate / Non-Reduction Reserve				
	6.5% / 2.5%		6.0% / 3.5%		6.25% / 2.5%
	Prior Estimate	Current Estimate	Prior Estimate	Current Estimate	Current Estimate
Unfunded Liability (\$ Millions)	28.5	30.2	54.3	53.5	38.0
University Contribution (% of Payroll)	9.05%	9.45%	11.11%	11.05%	10.08%

- Reflects updated active membership data at August 31, 2004 and pensioner data at August 31, 2005
- Reflects actual fund returns for years ending August 31, 2004 and August 31, 2005 and estimated 8% return for year ending August 31, 2006 (actual return was 8.9%)

**Note that all projections are estimates based on assumptions and prior employee data files. Actual results may differ considerably from the projections.**

## Updated Valuation Estimates Reconciliation to Prior Estimate

	(millions)
Prior Estimate of Financial Position at Aug 31, 2006 (from Jan 31, 2006 Presentation – 6.5% valuation interest rate)	\$28.5
Change in interest rate assumption	7.8
Impact of favourable investment returns from September 1, 2005 to August 31, 2006	(1.2)
Impact of “double counting” of pre-retirement investment returns	<u>2.9</u>
Projected Valuation Position at August 31, 2006	\$38.0

# Current Plan Estimated Funding Requirements (\$ Millions / % of Payroll)

	31-Aug-06 Estimated		29-Feb-04 Actual	
Employee MP contributions	\$10.5	5.04%	\$9.6	4.99%
<b><u>University contributions</u></b>				
Money purchase contribution	\$13.2	6.33%	\$12.1	6.29%
Non-reduction reserve contribution	\$0.5	0.21%	\$0.3	0.17%
Minimum guarantee current service cost	\$3.4	1.64%	\$2.3	1.21%
Amortization of unfunded liability	<u>\$3.9</u>	<u>1.90%</u>	<u>\$1.1</u>	<u>0.57%</u>
<b>Total</b>	<b>\$21.0</b>	<b>10.08%</b>	<b>\$15.8</b>	<b>8.24%</b>

Note: Estimated impact of new valuation on annual contributions effective September 1, 2006: \$0.9 million for minimum guarantee current service cost plus \$2.8 million deficit amortization cost, total **\$3.7 million**. This reflects the impact of anticipated experience and changes in assumptions, but excludes the \$1.5 million increase due to payroll growth from 2004 to 2006.

## Current Plan

### Longer term perspective - Why are we where we are?

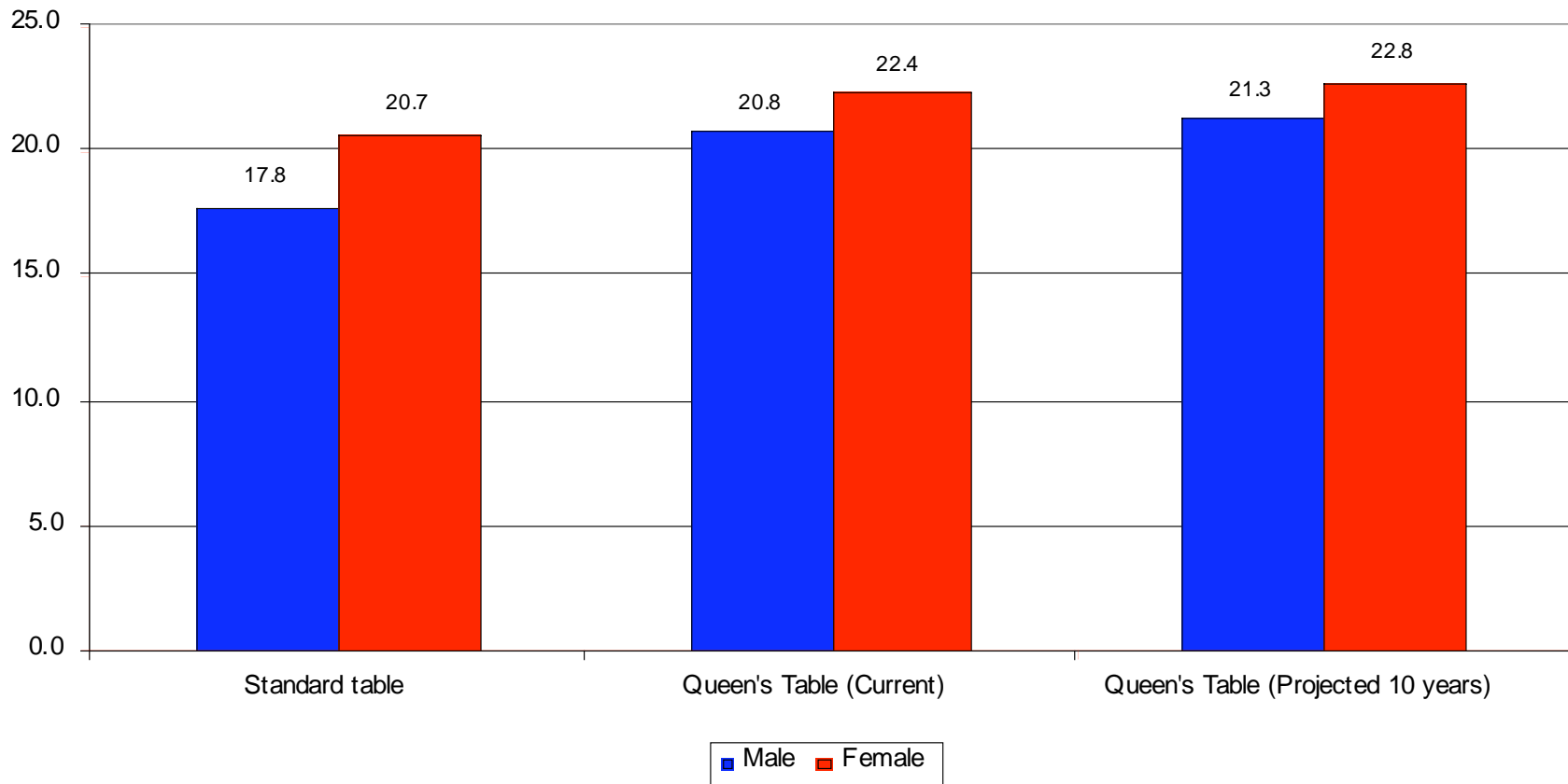
#### Mortality

- By far the largest factor in the deterioration of funded position
- Queen's pensioners exhibit mortality well below standard tables
- Increases costs to provide minimum guarantee benefits (like any defined benefit plan)
- Tables to calculate money purchase pensions have lagged emerging experience. If current tables had been used in the past, pensions would likely have been 4% to 5% lower on average
- Costs to the plan in the order of \$35 to \$45 million for current retirees
- Indications that tables may still need to be strengthened further

# Current Plan Longer term perspective - Why are we where we are?

## Mortality

### Life expectancy at age 65



## Current Plan

### Longer term perspective - Why are we where we are?

#### Non-reduction costs

- Lower investment return expectations related to lower interest rates indicate higher potential non-reduction costs
- Strengthening of reserves from 1.5% of base pension liabilities used historically to current 2.5%, increases liabilities by approximately \$7 million
- The reserve increase relates to possible future costs, actual realized non-reduction costs to date are in the area of 0.5% of pension liabilities

## Current Plan

### Longer term perspective - Why are we where we are?

#### Double counting

- When employees retire, favourable fund returns close to retirement are already reflected in the members account balances and are also included in the four year average related pension increases in the years immediately after retirement
- Increased liabilities by approximately \$3 million for current estimate vs. February 29, 2004 valuation

## Current Plan

### Longer term perspective - Why are we where we are?

#### Investment returns

- Historical fund returns have been very favourable (average 9.6% over 10 years ending August 31, 2006)
- Potential minimum guarantee costs have remained at moderate levels in spite of mortality table changes
- For several years up to 2004, no contributions were made to the plan for minimum guarantee benefits
- More recent reduced investment return expectations suggest a lower valuation interest rate, increasing potential minimum guarantee costs
- Favourable returns in respect of retirees are fully utilized to provide increases in pensions



# Plan Change Alternatives

- Examined the impact of plan change proposals on the estimated financial position of the plan at August 31, 2006 based on consistent assumptions
  - March 2005 Proposal
  - Various alternative scenarios
- Estimates assume for illustration purposes that plan changes become effective September 1, 2006
- Current plan provisions are summarized in Appendix A

# Plan Design Alternatives

- March 2005 Proposal
  1. Increase of 0.5% of salary in Employee and University money purchase contributions
  2. Limit on covered earnings for future service minimum guarantee pensions at 2 x YMPE (\$87,400 for 2007)
  3. Modifications to annuitization and indexing provisions for future retirees to moderate potential non-reduction costs
    - Indexation based on 6-year vs. 4-year average fund returns over 6%
    - Average return calculated on a geometric average basis
    - Initial pension calculations to reflect year-to-date return in the year of retirement
    - “Back-filling” of investment returns in years prior to retirement for purposes of determining indexation amount at a 7% rate in place of actual rate



# Plan Design Alternatives

- Scenario A – same as March 2005 Proposal except:
  1. Limit on covered earnings for future service minimum guarantee pensions at \$100,000, indexed to increases in faculty salary scale
  2. Modified annuity conversion and indexation provisions (see page 18)



# Plan Design Alternatives

- Scenario B – same as Scenario A except:
  1. Limit on covered earnings for future service minimum guarantee pensions at 2 x YMPE (\$87,400 for 2007)

# Modifications to Money Purchase Annuity and Indexing Arrangement (Scenario A and B)

- Establish pensions using lesser of market interest rate (based on long-term bond index yields), or 6%
- Maintain current indexing formula for 4-year average returns over 6% and no reduction
- Provide additional indexing as supported by 4-year average returns over the base rate and up to 6%, adjusted for mortality experience, with no reduction still guaranteed
- Minimum guarantee formula pension would be indexed based on current indexation formula only and tracked separately with pension payable equal to greater of Minimum Guarantee and Money Purchase pensions
- Geometric average used for all purposes
- Incorporate “back-fill” to avoid double counting of returns as in prior proposals

**Note:** Employees retain the right to transfer their entitlement out of the plan at retirement

# Modifications to Money Purchase Annuity and Indexing Arrangement (Scenario A and B)

## Example\*

Pensions At Retirement: Minimum Guarantee \$20,000, Money Purchase current plan \$21,000, Money Purchase new plan \$18,300

Annual PENSION AMOUNTS PAYABLE				
Year	Current Plan Terms	Modified Amounts and Indexing		
		Minimum Guarantee	MP	Payable
0	\$21,000	\$20,000	\$18,300	\$20,000
1	21,200	20,200	18,800	20,200
2	21,400	20,400	19,200	20,400
3	21,600	20,600	19,700	20,600
4	21,900	20,800	20,200	20,800
5	22,100	21,000	20,700	21,000
6	22,300	21,200	21,200	21,200
7	22,500	21,400	21,800	21,800
8	22,700	21,700	22,300	22,300
9	23,000	21,900	22,900	22,900
10	23,200	22,100	23,400	23,400
15	24,400	23,200	26,500	26,500
20	25,600	24,400	30,000	30,000

\* 7% future returns assumed

# Plan Design Alternatives

## ■ Scenario C

1. Increase of 1.0% of salary in Employee and University money purchase contributions
2. Lower limit on covered earnings for future service minimum guarantee pensions at \$65,000, indexed with YMPE
3. Removal of non-reduction reserve for future service
4. Modifications to indexing provisions for future retirees to moderate potential non-reduction costs
  - Average return calculated on a geometric average basis
  - Initial pension calculations to reflect year-to-date return in the year of retirement
  - “Back-filling” of investment returns in years prior to retirement for purposes of determining indexation amount at a 7% rate in place of actual rate



# Plan Design Alternatives

- Money Purchase Scenario
  1. University money purchase contributions of 8.5% of pay
  2. Minimum guarantee eliminated for future service
  3. No self-annuitization of money purchase pensions (for future service)
  4. No change in benefits for past service

# Plan Design Alternatives

## Estimated Financial Impact at August 31, 2006 (\$ Millions)

	Current Plan	March 2005 Proposal	Scenario A	Scenario B	Scenario C	Money Purchase Scenario
Unfunded Liability	\$38	\$20	\$25	\$21	\$14	\$20
University Contributions						
- Estimated 2006/2007	\$21.0	\$18.3	\$19.6	\$18.9	\$17.5	\$19.9
- Rate (% of payroll)	10.08%	8.81%	9.43%	9.08%	8.43%	9.54%
Estimated annual impact of new valuation plus plan changes	\$3.7	\$1.0	\$2.3	\$1.6	\$0.2	\$2.6

**Note that all projections are estimates based on assumptions and prior employee data files. Actual results may differ considerably from the projections.**

# Plan Design Alternatives

## Long-term cost analysis

- Long-term University cost expressed as a percentage of payroll
- Cost determined as present value of projected future benefits for all current members (retirees and employees) less present value of projected future employee contributions less value of current plan assets spread as a percentage of projected salaries
- Costs shown based on various percentiles for pension fund returns

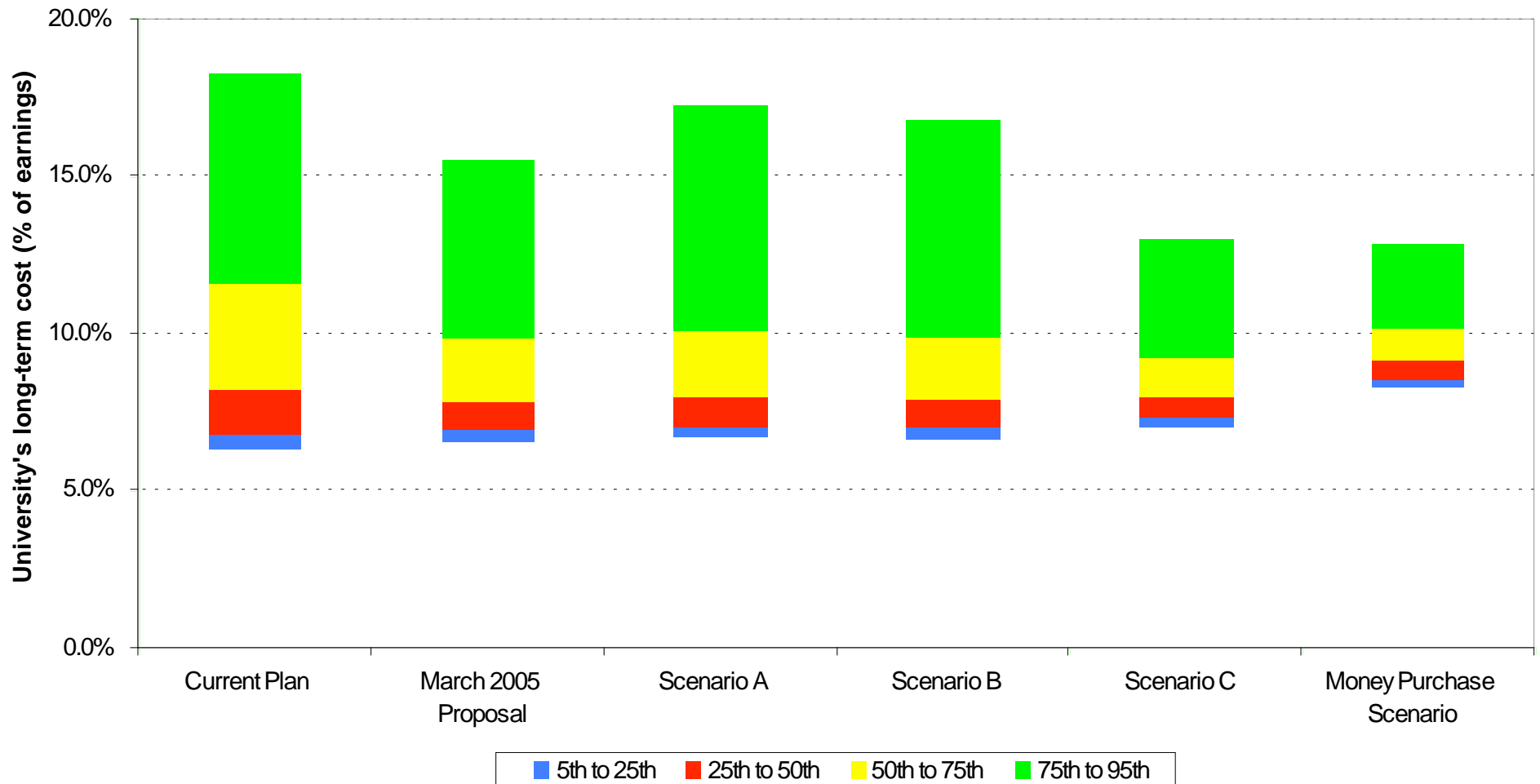
<u>Percentile</u>	<u>Future pension fund returns</u>
5th	4.25%
25th	6.00%
50th	7.25%
75th	8.50%
95th	10.50%

- Long-term interest rates assumed to remain at current level throughout the projection period

**Note: these estimates involve many assumptions and approximations. Actual future experience will differ from any of the scenarios illustrated.**

# Plan Design Alternatives

## Long-term analysis – range of costs



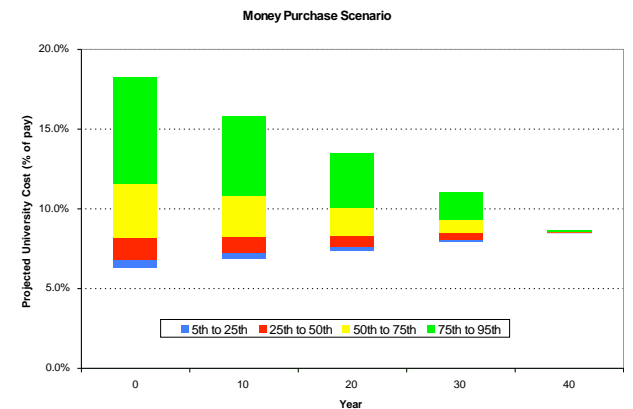
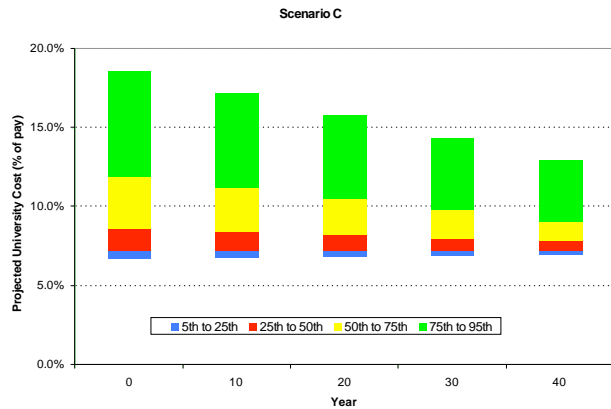
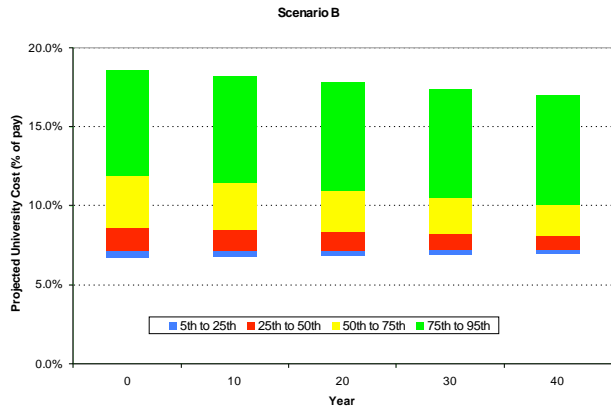
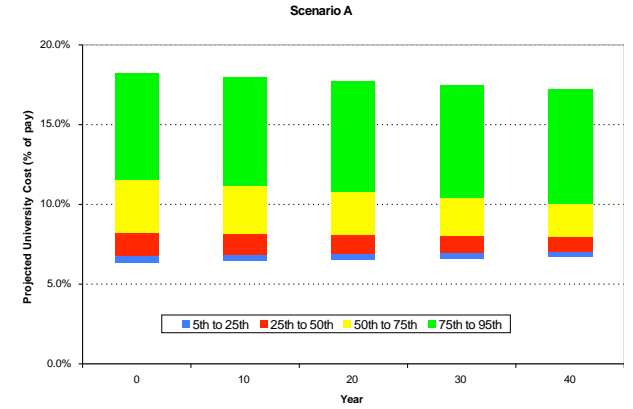
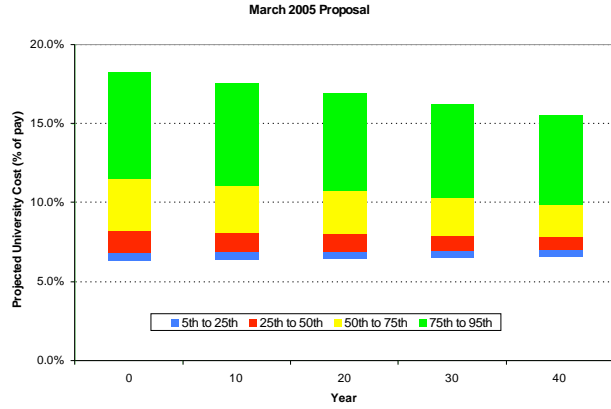
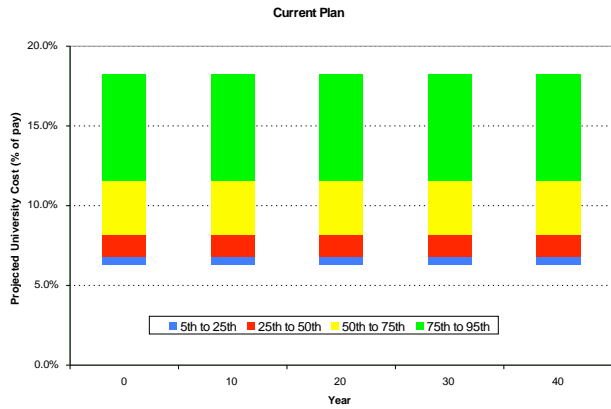
# Plan Design Alternatives

## Long-term analysis

- Long-term cost can be broken down into three groups:
  - Current pensioners
  - Past service benefits for current employees
  - Future service benefits for current employees
- We then assess the range of residual costs (beyond the current pension fund assets) as a percentage of payroll for current pensioners, past service benefits for current employees and future service benefits for current employees
- Since the proposed plan changes do not affect retirees and affect the past service benefits of employees less than the future service benefits, we then estimate how the range of overall plan costs may change over time

# Plan Design Alternatives

## Expected development of costs over time





# Investment Policy Considerations

- A Pension Sub-Committee has examined alternative investment strategies as a means to enhance pension fund returns while reducing the volatility of those returns
- In particular, the Sub-Committee examined in some depth portable alpha and hedge fund strategies but concluded that there is insufficient evidence that the level of returns indicated by providers can be consistently realized and the high level of fees associated with these strategies
- The Sub-Committee has recently shifted \$50 million from Canadian equities to global equities for greater diversification

# Conclusion

- Pension plan costs are increasing due to:
  - Increasing longevity of pensioners
  - Lower interest rates and potential lower future investment returns
- There is no magic bullet solution to reduce pension plan costs and the risk of even higher costs without moderating the plan benefits

## Pension Plan Provisions

- Money Purchase Provision

- Contributions as % of salary

	<u>Up to YMPE*</u>	<u>Over YMPE*</u>
Employee	4.5%	6.0%
University	6.0%	7.0%

- Additional University contribution of 1.5% of employee and University contributions for “non-reduction”
- Accumulation of contributions at pension fund rate of return
- Pension at retirement is the amount purchased from the plan by accumulated contributions based on actuarial factors

\* Year’s Maximum Pensionable Earnings under Canada Pension Plan

## Pension Plan Provisions

- Defined Benefit Provision “Minimum Guarantee”

- Minimum formula pension at retirement

$$1.4\% \times FAE^* \text{ up to average YMPE}$$

+

$$1.8\% \times FAE \text{ over average YMPE}$$

per year of credited service

- Contributions for amounts in excess of money purchase pensions payable by University based on actuarial valuations

\* FAE = four year final average earnings

## Pension Plan Provisions

- Post-Retirement Pension Increases
  - Annual adjustments based on 4-year average fund earnings over 6%
  - If 4-year average fund earnings are less than 6%, pensions are held at prior level (non-reduction guarantee)
  - Reserve is maintained to provide for the non-reduction guarantee