MEMO

OPSEU Pension Trust | Fiducie du régime de retraite du SEFPO

To: Sponsors' Technical Working Group

From: OPTrust Actuarial Services

Date: March 14, 2018

Re: OPTrust Select – Sensitivity Analysis

In addition to the Sustainability Report dated February 15, 2018, the attached exhibit summarizes the results of the sensitivity analysis that has been performed.

Numerous assumptions were made in respect of economic, demographic and other factors to estimate the sustainability of OPTrust Select. To illustrate the effect that some of these factors could have on the sustainability of OPTrust Select, we performed sensitivity analysis. Some assumptions, such as starting salary levels and full-time vs part-time workloads, will affect the amount of cash flows, but do not have a major impact on the sustainability. In comparison, age at entry, retirement age and the level of ad hoc wage upgrades and cost of living increases (COLA) to retiree pensions do have a significant impact on the sustainability analysis and have been included in the results summary.

One approach for assessing the potential impact of various factors on the sustainability of OPTrust Select is to compare the Internal Rate of Return (IRR) or "breakeven rate" under different scenarios. The IRR is the constant annual rate of investment return that would be applied to the expected contributions and benefit payments such that the accumulated contributions are equal to the present value of expected benefits. Please note that based on the analysis summarized in the Sustainability Report, the IRR is approximately 3.85% and 5.60% for the core and intended benefits, respectively.

The base results have been developed using the same assumptions that were used for the Sustainability Report (with the exception of a few simplifying assumptions that are outlined in the exhibit such as no pre-retirement mortality or terminations, etc.). Note that for simplicity, we did not reflect any further adjustment for future mortality improvements beyond CPM-B nor any potential additional value due to the 50% cost rule.

A lower IRR means a lower constant investment return (i.e., less dependent on investment returns as contributions provide for a greater share of the benefits) is required to support the level of benefits, while a higher IRR means that a higher constant investment return is required to support the level of benefits. As you can see, the results are most sensitive to age at entry and retirement age. Generally, the benefit is more likely to be paid under a lower IRR.

It is important to note that the sustainability of OPTrust Select is based on projections over a long period of time and will depend on plan demographics and investment returns which are not known at this time. Although IRR comparisons for various factors are useful, they do not show the likelihood of any particular scenario. For many of the factors, changes to the base assumptions will be revealed gradually over time which will allow the assumptions to be tweaked as needed. This is also the case for the level of ad hoc wage upgrades and COLA that are intended to be provided. As shown in the exhibit, changes to these factors can have a meaningful impact on the level of benefits as demonstrated by the significant change to the IRRs resulting from changes to the level of ad hoc wage upgrades and COLA.

Actuarial Opinion

In our opinion, for the purpose of the analysis:

- The membership data on which the calculations are based are sufficient and reliable;
- The assumptions are appropriate and have been determined in accordance with OPTrust's funding objectives; and
- The methods employed are appropriate and have been determined in accordance with OPTrust's funding objectives.

This memo has been prepared, and our opinion has been given, in accordance with accepted actuarial practice in Canada.

Limitation of Work

The information contained in this memo was prepared by the OPTrust Actuarial Services and Plan Policy Department for the exclusive use of the OPSEU Pension Plan Sponsors as part of their review of the OPTrust Select proposal. This memo should not be used for purposes other than those listed above, distributed to persons other than the intended users or relied upon by any other person without prior written consent of OPTrust.

Yours sincerely**,**

Dani Goraichy, FCIA, FSA
Vice-President
Actuarial Services and Plan Policy

Julie Belair, FCIA, FSA
Director
Actuarial Services

cc: Hugh O'Reilly, OPTrust
Tim Shortill, OPTrust

Exhibit: OPTrust Select - Internal Rate of Return (IRR) Analysis

Sensitivity Testing of Key Assumptions on New Entrant Profiles

(Generally the benefit is more likely to be paid under a lower IRR)

	Age at Entry:	**30**		**40**		**50**	
		Core	**Intended**	**Core**	**Intended**	**Core**	**Intended**
Base Scenario[2]		3.25%	5.00%	3.80%	5.60%	4.70%	6.55%
Assumption Variable:	**Alternative Assumptions:**						
1. Ad Hoc COLA							
+ 1% p.a.	3.00%	3.25%	5.40%	3.80%	6.05%	4.70%	7.15%
- 1% p.a.	1.00%		4.65%		5.15%		6.00%
2. Ad Hoc Wage Upgrades							
+ 1% p.a.	3.00%	3.25%	5.55%	3.80%	6.10%	4.70%	6.95%
- 1% p.a.	1.00%		4.50%		5.15%		6.20%
3. Salary Increases							
+ 0.75% p.a.	3.50%	3.35%	5.10%	3.85%	5.65%	4.75%	6.60%
- 0.75% p.a.	2.00%	3.15%	4.95%	3.75%	5.55%	4.65%	6.55%
4. Retirement Age							
+ 5 years	70	2.60%	4.35%	2.95%	4.75%	3.55%	5.35%
- 5 years	60	2.95%	4.50%	3.40%	4.90%	4.10%	5.55%

OPTrust Select - Key Provisions

- Required Employer/Employee Contribution Rate of 3%/3%
- Core Benefit of 0.6% x pensionable service x career average earnings
- Intended Benefit (based on funded status of OPSEU Plan) includes wage upgrades and post-retirement indexation

Notes:

[1] As outlined in our Feb. 15/2018 Sustainability Analysis Report, assuming the active members in the main plan provisions are Plan Select new entrants, the IRR is approximately 3.85% and 5.60% for the core and intended benefits, respectively.

[2] The baseline assumptions/simplifications for the IRR analysis:
- annual salary escalation of 2.75%
- no pre-retirement mortality
- post-retirement mortality: 108% of CPM2014Priv with mortality improvement scale CPM-B; unisex 25% male
- retirement at age 65
- no probability of terminating
- annual ad hoc wage upgrades and COLA of 2.0% (applies to intended benefits only)