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January 27, 2017

BY E-MAIL

PRIVATE & CONFIDENTIAL

Ms. Cindy Veinot
Office of the Provincial Controller Division
Treasury Board Secretariat
2nd Floor, Frost Building South
7 Queen's Park Crescent
Toronto, ON M7A 1Y7

**RE: PUBLIC SERVICE PENSION PLAN
RESPONSE TO MINISTRY OF FINANCE REQUEST FOR FINANCIAL INFORMATION AS OF DECEMBER 31, 2016**

Dear Ms. Veinot:

This letter provides the information requested in Leah Myers' letter dated December 15, 2016.

Methodology and Assumptions

We prepared an actuarial valuation of the obligations under the Public Service Pension Plan ("PSPP") as of December 31, 2015 based on:

- The data provided to us as of December 31, 2015 by the Ontario Pension Board ("OPB").
- The projected benefit cost method prorated on service.
- The economic actuarial assumptions provided in Leah Myers' letter which are outlined in detail, along with the demographic assumptions, in Attachment A to this letter, and which are summarized below:

Economic Assumption	Basis 1 (per year)	Basis 2 (per year)	Basis 3 (per year)	Basis 4 (per year)
Inflation	2.00%	2.00%	2.00%	2.00%
Increase in Salaries (before promotional scale)	2.00% for 2017 to 2019 and 3.00% thereafter	2.00% for 2017 to 2019 and 3.00% thereafter	2.00% for 2017 to 2019 and 2.75% thereafter	2.00% for 2017 to 2019 and 2.75% thereafter
Investment Return				
Nominal Return	6.00%	5.75%	5.75%	5.50%
Real Return	4.00%	3.75%	3.75%	3.50%

The obligations as of December 31, 2015 have been extrapolated to December 31, 2016 based on the following:

- Estimated service cost during the period from December 31, 2015 to December 31, 2016.
- The benefit payments in 2016 provided by OPB in an e-mail dated January 23, 2017.
- The asset transfers from other plans and past service buy-backs in 2016, as provided by OPB in an email dated January 23, 2017. It has been assumed that these give rise to an obligation of an equivalent amount.

2016 Cash Flow

The 2016 cash flow items provided in OPB's e-mail of January 23, 2017 are provided below:

		(000's)
Member Contributions		
▪ Current Service	$	301,627
▪ Past Service		37,766
▪ Total	$	339,393
Employer Contributions		
▪ Current Service	$	299,990
▪ Past Service		4,636
▪ Total	$	304,626
Employer Additional Current Service Cost	$	22,398
Employer Special Payments	$	98,988
Transfers From Other Plans	$	85,442
Benefit Payments		
▪ Pension Payments	$	1,098,805
▪ Termination Payments and Transfers		145,810
Total	$	1,244,615

Reconciliation of Actuarial Present Value of Accrued Pension Benefits

For purposes of the reconciliations presented below, we were informed that "Basis 3" provided in the previous year's request was used for the previous year's reporting and this has become "Basis 1" in the current year's reporting.

The following is a reconciliation of the actuarial present value of accrued pension benefits ("accrued pension benefits") from December 31, 2015 ("Basis 3") to December 31, 2016 ("Basis 1"):

		(000's)
Accrued Pension Benefits as at December 31, 2015		**$ 23,147,334**
Increase in Accrued Pension Benefits		
▪ Interest on Accrued Pension Benefits and Service Accrual	$ 1,373,791	
▪ Benefits Accrued		
– Service Accrual (mid-year)	615,151	
– Transfer of Assets From Other Plans and Past Service Buy-Backs	127,844	
▪ Other Experience Losses	207,568	
▪ Net Impact of Change in Actual Assumptions	-	
Total Increase		$ 2,324,354
Decrease in Accrued Pension Benefits		
▪ Benefits Paid	$ 1,244,615	
Total Decrease		$ 1,244,615
Accrued Pension Benefits as at December 31, 2016		**$ 24,227,073**

The Service Accrual has been projected to 2017 based on an increase in payroll of 3.00% (the assumed rate of salary increase including promotional scale) from 2016 to 2017. On this basis, the 2017 Service Accrual would be $637,554,000.

For Basis 2, Basis 3 and Basis 4, the changes in economic assumptions from Basis 1 used for the current year's reporting will impact the "Net Impact of Change in Actuarial Assumptions" line in the above reconciliation and the "Accrued Pension Benefits as of December 31, 2016". The following table shows the revised figures for each basis:

Economic Assumptions	**Net Impact of Change in Actuarial Assumptions (000's)**	**Accrued Pension Benefits as of December 31, 2016 (000's)**	**Service Accrual for 2017 (000's)**
Basis 2	$ 808,310	$ 25,035,383	$ 668,962
Basis 3	$ 707,900	$ 24,934,973	$ 660,486
Basis 4	$ 1,556,206	$ 25,783,279	$ 693,579

In the above table, the "Net Impact of Change in Actuarial Assumptions" would be an increase in the accrued benefits for all bases.

For 2017, the expected member contributions are $310,677,000.

Present Value of Future Accruals

The requirements letter included a request for the present value of future accruals for service and the present value of future required employee contributions. These have been determined, under each basis, by assuming that the estimated amounts for 2017 will increase in future years in line with increases in salaries (excluding the promotional scale). This method assumes the population remains stable over time (ie. the age and service characteristics are unchanged). The resulting future values were discounted to December 31, 2016 at the nominal investment return applicable to each basis. The following table shows the present value of future service accruals as well as the present value of future employee contributions as of December 31, 2016 for each basis:

Economic Assumptions	**Present Value of Future Service Accruals (000's)**	**Present Value of Future Employee Contributions (000's)**
Basis 1	$ 21,475,029	$ 10,464,671
Basis 2	$ 24,550,774	$ 11,401,776
Basis 3	$ 22,324,886	$ 10,501,088
Basis 4	$ 25,543,130	$ 11,441,611

Expected Average Remaining Service Lifetime

The expected average remaining service lifetime as of December 31, 2016 is 10.8 years.

Market Value of Assets

The Market Value of Asset as of December 31, 2016 will be provided under separate cover.

Changes in Actuarial Assumptions

The actuarial assumptions are summarized in Actuarial Assumptions. There are no changes to demographics assumptions.

Certifications

We hereby certify that in our opinion:

- The data provided to us by the OPB are sufficient and reliable;
- The assumptions used are appropriate for purposes of the valuation; emerging experience differing from the assumptions will result in gains or losses, which will be revealed in future valuations; and
- The methods used are appropriate for purposes of the valuation and are consistent with the applicable requirements.

The letter has been prepared, and our opinions given, in accordance with accepted actuarial practice.

If you require any additional information, please call us.

Sincerely,

Andrew M. Hamilton, FCIA, FSA

Jonathan Skan, FCIA, FSA

AHS:mg

cc: Mr. Alex Killoch, Ministry of Finance
Mr. Rob Pomykacz, Ministry of Finance
Mr. Michel Paradis, Ontario Pension Board
Mr. Roger Smithies, Treasury Board Secretariat
Mr. Allan Shapira, Aon Hewitt

Actuarial Assumptions

Economic Assumptions	**Basis 1 (per year)**	**Basis 2 (per year)**	**Basis 3 (per year)**	**Basis 4 (per year)**
Increase in Consumer Price Index	2.00%	2.00%	2.00%	2.00%
Increase in Year's Maximum Pensionable Earnings	3.00%	3.00%	2.75%	2.75%
Increase in Maximum Pension Under *Income Tax Act* (after actual increase in 2015)	3.00%	3.00%	2.75%	2.75%
Increase in Salaries (plus promotional scale below)				
2017–2019	2.00%	2.00%	2.00%	2.00%
2020 +	3.00%	3.00%	2.75%	2.75%
Investment Return				
Nominal Rate	6.00%	5.75%	5.75%	5.50%
Real Rate	4.00%	3.75%	3.75%	3.50%
Commuted Value Interest Rate	2.50%	2.50%	2.50%	2.50%

Actuarial Assumptions (continued)

Economic Assumptions (continued)
Promotional Scale for Increase in Salaries

All Plan Members Other Than OPP Officers		OPP Officers	
Attained Age (yrs)	**Promotional Increase**	**Completed Service (yrs)**	**Promotional Increase**
20 – 26	7.50%	1	4.00%
27	6.50%	2	3.60%
28	5.50%	3	3.20%
29	4.50%	4	2.90%
30 – 31	3.50%	5	2.60%
32	2.50%	6	2.30%
33 – 40	1.00%	7	2.00%
41 – 48	0.25%	8	1.80%
49+	0.00%	9	1.60%
		10	1.40%
		11	1.20%
		12 – 15	1.00%
		16 – 20	0.50%
		21+	0.00%

Actuarial Assumptions (continued)

Demographic Assumptions

Retirement Rates[1]

All Plan Members Other Than OPP Officers and Justices of the Peace

Age	Eligible for Unreduced Pension*	Eligible for Reduced Pension**
First Unreduced Age	40%	N/A
55	25%	4%
56	25%	4%
57	25%	4%
58	25%	4%
59	25%	7%
60	25%	7%
61	20%	7%
62	20%	7%
63	20%	7%
64	45%	15%
65	100%	N/A

* Age 60 or over with 20 or more years of pension credit or age plus pension credit totaling 90 or more.

** No reduced retirement assumed within one year of first unreduced retirement age.

[1] Retirement rates do not reflect the Factor 80 early retirement program for surplus employees in effect for specified groups

Actuarial Assumptions (continued)

Demographic Assumptions (continued)

Retirement Rates[1]

OPP Officers

Age	Eligible For Unreduced Pension*	Eligible For Reduced Pension**
First Unreduced Age	60%	N/A
50	25%	N/A
51	25%	N/A
52	25%	N/A
53	25%	N/A
54	25%	N/A
55	25%	4%
56	25%	4%
57	25%	4%
58	25%	4%
59	25%	7%
60	25%	7%
61	20%	7%
62	20%	7%
63	20%	7%
64	45%	15%
65	100%	100%

* Age 50 or over with 30 or more years of pension credit or age 60 or over with 20 or more years of pension credit or age plus pension credit totalling 90 or more.

** No reduced retirement assumed within one year of first unreduced retirement age.

[1] Retirement rates do not reflect the Factor 80 early retirement program for surplus employees in effect for specified groups

Actuarial Assumptions (continued)

Demographic Assumptions (continued)

Retirement Rates (continued)

Justices of the Peace

Age	Eligible For Unreduced Pension Before Age 65	Not Eligible For Unreduced Pension Before Age 65
First Unreduced Age	33%	33%
Ages Following First Unreduced Age up to and Including Age 65 (per year)	10%	N/A
Ages 66 to 70 (per year)	15%	15%
Age 71	100%	100%

Actuarial Assumptions (continued)

Demographic Assumptions (continued)

Withdrawal Rates

All Plan Members Other Than OPP Officers

Completed Service (yrs)	Annual Rate
<3	12%
3	10%
4	9%
5 – 6	8%
7	7%
8	6%
9 – 11	5%
12 – 13	4%
14 – 19	3%
20+	2%

OPP Officers

Completed Service (yrs)	Annual Rate
<1	6%
1 – 3	3%
4 – 5	2%
6 – 10	2%
11 – 12	2%
13 – 14	1%
15 – 20	1%
21+	1%

Actuarial Assumptions (continued)

Demographic Assumptions (continued)

Mortality Rates

CPM 2014 Private Sector Mortality Table, with rates adjusted as follows to reflect actual plan experience:

Age	% of Rates Male	Female
Less than age 70	80%	115%
Age 70 to 79	105%	115%
Age 80 to 84	110%	115%
Age 85 to 89	110%	105%
Age 90 or higher	100%	105%

Allowance for future mortality improvement projected generationally from 2014 with CPM Improvement Scale B.

Percentage With a Spouse

Non-retired Members

87% of males and 52% of females are assumed to have a spouse at retirement or death; female spouses assumed to be 3 years younger than member and male spouses assumed to be same age as member.

Retired Members

Actual marital status and spouse's birth date.