

# City of Boston

**Governmental Accounting Standards  
Board (GASB) Statement No. 75  
Accounting Valuation Report  
for Reporting Date June 30, 2018**

This report has been prepared at the request of the City of Boston to assist in administering the Plan. This valuation report may not otherwise be copied or reproduced in any form without the consent of the City of Boston and may only be provided to other parties in its entirety. The measurements shown in this actuarial valuation may not be applicable for other purposes.

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December 20, 2018

Ms. Sally D. Glora, City Auditor  
City of Boston  
City Hall, Room M-4  
Boston, MA 02201

Dear Ms. Glora:

We are pleased to submit this Governmental Accounting Standards Board (GASB) Statement No. 75 Accounting Valuation as of June 30, 2018. It contains the actuarial information that will need to be disclosed in order to comply with GASB 75. Except as otherwise noted, please refer to the City of Boston Actuarial Valuation and Review of Other Postemployment Benefits (OPEB) as of June 30, 2017, dated May 1, 2018, for the data, assumptions and plan of benefits underlying these calculations.

This report is based on information received from the City of Boston and vendors employed by the City of Boston. Segal Consulting does not audit the data provided. The accuracy and comprehensiveness of the data is the responsibility of those supplying the data. Segal, however, does review the data for reasonableness and consistency.

The measurements shown in this actuarial valuation may not be applicable for other purposes. Accordingly, additional determinations may be needed for other purposes, such as judging benefit security at termination of the plan, or determining short-term cash flow requirements.


Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: retiree group benefits program experience or rates of return on assets differing from that anticipated by the assumptions; changes in assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and changes in retiree group benefits program provisions or applicable law. Retiree group benefits models necessarily rely on the use of approximations and estimates, and are sensitive to changes in these approximations and estimates. Small variations in these approximations and estimates may lead to significant changes in actuarial measurements. An actuarial valuation is a measurement at a specific date – it is not a prediction of a plan's future financial condition. We have not been retained to perform an analysis of the potential range of financial measurements, except where otherwise noted.

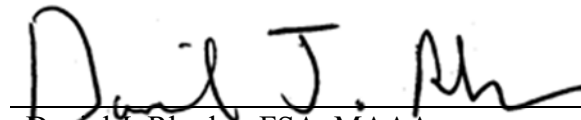
The actuarial valuation has been completed in accordance with generally accepted actuarial principles and practices. The actuarial calculations were directed under our supervision. We are members of the American Academy of Actuaries and collectively meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the information supplied in the actuarial valuation is complete and accurate. Further, in our opinion, the assumptions as approved by the City of Boston are reasonably related to the experience of and the expectations for the Plan.

We look forward to discussing this with you at your convenience.

Sincerely,

Segal Consulting, a Member of The Segal Group, Inc.

By:   
Kathleen A. Riley, FSA, MAAA, EA  
Senior Vice President and Actuary

  
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Vice President and Consulting Actuary

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# Section 1: Executive Summary

## Important Information about Actuarial Valuations

An actuarial valuation is a budgeting tool with respect to defining future uncertain obligations of a postretirement health plan. As such, it will never forecast the precise future stream of benefit payments. It is an estimated forecast – the actual cost of the plan will be determined by the benefits and expenses paid, not by the actuarial valuation.

In order to prepare a valuation, Segal Consulting (“Segal”) relies on a number of input items. These include:

<b>Plan of benefits</b>	Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. For example, a plan may provide health benefits to post-65 retirees that coordinates with Medicare. If so, changes in the Medicare law or administration may change the plan’s costs without any change in the terms of the plan itself. It is important for the City of Boston to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.
<b>Participant data</b>	An actuarial valuation for a plan is based on data provided to the actuary by the plan. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is not necessary to have perfect data for an actuarial valuation: the valuation is an estimated forecast, not a prediction. The uncertainties in other factors are such that even perfect data does not produce a “perfect” result. Notwithstanding the above, it is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
<b>Assets</b>	Part of the cost of a plan will be paid from existing assets – the balance will need to come from future contributions and investment income. The valuation is based on the asset values as of the valuation date, typically reported by the City. Some plans include assets, such as private equity holdings, real estate, or hedge funds that are not subject to valuation by reference to transactions in the marketplace. A snapshot as of a single date may not be an appropriate value for determining a single year’s contribution requirement, especially in volatile markets. Plan sponsors often use an “actuarial value of assets” that differs from market value to reflect gradually year-to-year changes in the market value of assets in determining the contribution requirements.
<b>Actuarial assumptions</b>	In preparing an actuarial valuation, Segal starts by developing a forecast of the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. To determine the future costs of benefits, Segal collects claims, premiums, and enrollment data in order to establish a baseline cost for the valuation measurement, and then develops short- and long-term health care cost trend rates to project increases in costs in future years. This forecast also requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year, as well as forecasts of the plan’s benefits for each of those events. The forecasted benefits are then discounted to a present value, typically based on an estimate of the rate of return that will be achieved on the plan’s assets or, if there are no assets, a rate of return based on a yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher (or equivalent quality on another rating scale). All of these factors are uncertain and unknowable. Thus, there will be a range of reasonable assumptions, and the results may vary materially based on which assumptions the actuary selects within that range. That is, there is no right answer (except with hindsight). It is important for any user of an actuarial valuation to understand and accept this constraint. The actuarial model necessarily uses approximations and estimates that may lead to significant changes in our results but will have no impact on the actual cost of the plan. In addition, the actuarial assumptions may change over time, and while this can have a significant impact on the reported results, it does not mean that the previous assumptions or results were unreasonable or wrong.

Given the above, the user of Segal's actuarial valuation (or other actuarial calculations) needs to keep the following in mind:

- The actuarial valuation is prepared for use by the City of Boston and the Public Health Commission (PHC). It includes information for compliance with accounting standards and for the plan's auditor. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- If the City of Boston or the PHC is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
- An actuarial valuation is a measurement at a specific date – it is not a prediction of a plan's future financial condition. Accordingly, Segal did not perform an analysis of the potential range of financial measurements, except where otherwise noted. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
- Sections of this report include actuarial results that are rounded, but that does not imply precision.
- Critical events for a plan include, but are not limited to, decisions about changes in benefits and contributions. The basis for such decisions needs to consider many factors such as the risk of changes in plan enrollment, emerging claims experience, health care trend, and investment losses, not just the current valuation results.
- Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The City of Boston and the PHC should look to their other advisors for expertise in these areas.
- While Segal maintains extensive quality assurance procedures, an actuarial valuation involves complex computer models and numerous inputs. In the event that an inaccuracy is discovered after presentation of Segal's valuation, Segal may revise that valuation or make an appropriate adjustment in the next valuation.
- Segal's report shall be deemed to be final and accepted by the City of Boston and the PHC upon delivery and review. The City of Boston and the PHC should notify Segal immediately of any questions or concerns about the final content.

As Segal Consulting has no discretionary authority with respect to the management or assets of the Plan, it is not a fiduciary in its capacity as actuaries and consultants with respect to the Plan.

## Purpose

This report presents certain disclosure information for the City of Boston and the Public Health Commission (PHC) (the “Employer”) Other Postemployment Benefits (OPEB) plan as of June 30, 2018, required by Governmental Accounting Standards Board (GASB) Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*. The actuarial computations made are for purposes of fulfilling plan accounting requirements. Determinations for purposes other than meeting financial accounting requirements may be significantly different from the results reported here.

## Highlights of the Valuation

The following key findings were the result of this actuarial valuation:

- GASB 75 permits a measurement date as early as the end of the fiscal year prior to the reporting date. This June 30, 2018 report uses a measurement date of June 30, 2017. The Net OPEB Liability (NOL) measured as of June 30, 2017, was determined based upon the results of the actuarial valuation as of June 30, 2017, dated May 1, 2018, completed by Segal Consulting.
- The NOL is equal to the difference between the Total OPEB Liability (TOL) and the Plan’s Fiduciary Net Position. The Plan’s Fiduciary Net Position is equal to the market value of assets and therefore, the NOL measure is very similar to an Unfunded Actuarial Accrued Liability (UAAL) on a market value basis.
- The discount rate used for the City to determine the TOL and NOL was 6.75% as of June 30, 2016 and June 30, 2017.
- The discount rate used for the PHC to determine the TOL and NOL was 3.96% as of June 30, 2016 and 4.65% as of June 30, 2017.
- The OPEB expense for fiscal 2018 is \$211,797,506 for the City and \$12,250,032 for the PHC.

In the following chart, we show the TOL and NOL as of June 30, 2018 for the City and PHC, determined based upon the results of the actuarial valuation as of June 30, 2017 adjusted forward using standard actuarial techniques. The discount rate used for the City was 6.75% and the discount rate used for the PHC was 4.90%.

	City	PHC
Total OPEB Liability	\$2,874,860,498	\$135,568,177
Plan Fiduciary Net Position	520,629,094	20,606,418
Net OPEB Liability	2,354,231,404	114,961,759
Plan Fiduciary Net Position as a percentage of the Total OPEB Liability	18.11%	15.20%



## Section 2: Valuation Results – Total City (Boston Public Schools and All Other City Departments)

### Exhibit 1 – General Information

At June 30, 2017, City of Boston plan membership consisted of the following:

	June 30, 2017
Retired members of beneficiaries currently receiving benefits	14,863
Active members	<u>14,186</u>
Total	<u>29,049</u>

We have assumed other general information about the Plan will be provided by the City's auditors.

## Exhibit 2 – Net OPEB Liability

The components of the net OPEB liability of the City of Boston are as follows:

	June 30, 2017	June 30, 2016
Total OPEB Liability	\$2,741,146,067	\$2,618,023,496
Plan Fiduciary Net Position	452,986,251	365,834,686
Net OPEB Liability	2,288,159,816	2,252,188,810
Plan Fiduciary Net Position as a percentage of the Total OPEB Liability*	16.53%	13.97%

\* These funded percentages are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligation or the need for or the amount of future contributions.

*Actuarial assumptions.* The total OPEB liability as of June 30, 2017 was measured by an actuarial valuation as of June 30, 2017 using the following actuarial assumptions, applied to all periods included in the measurement, unless otherwise specified:

### Actuarial Assumptions:

<b>Inflation:</b>	3.25%				
<b>Salary increases:</b>	Rate per year (%)				
			BRS Excluding Teachers		
	Years of Service	Teachers	Group 1	Group 2	Group 4
	0	7.50	4.00	4.25	4.50
	1	7.10	4.00	4.25	4.50
	2	7.00	4.00	4.25	4.50
	3	6.90	4.00	4.25	4.50
	4	6.80	4.00	4.25	4.50
	5	6.70	4.00	4.25	4.50
	6	6.60	4.00	4.25	4.50
	7	6.50	4.00	4.25	4.50
	8	6.30	4.00	4.25	4.50

	9	6.10	4.00	4.25	4.50
	10	5.90	4.00	4.25	4.50
	11	5.70	4.00	4.25	4.50
	12	5.20	4.00	4.25	4.50
	13	4.70	4.00	4.25	4.50
	14	4.35	4.00	4.25	4.50
	15-16	4.20	4.00	4.25	4.50
	17-19	4.10	4.00	4.25	4.50
	20 and later	4.00	4.00	4.25	4.50
<b>Discount rate:</b>	6.75%				
<b>Investment rate of return:</b>	6.75%				
<b>Health care trend rates:</b>	<p>Medical and Prescription Drug: 7.0% decreasing by 0.5% for 5 years to an ultimate level of 4.5%</p> <p>Medicare Part B Premium: 4.5%</p> <p>Contributions: Retiree contributions are expected to increase with medical trend</p>				
<b>Mortality rates:</b>	<p>Pre-Retirement (Non-Teachers): RP-2014 Blue Collar Employee Mortality Table projected generationally with Scale MP-2017 set forward 1 year for females</p> <p>Healthy (Non-Teachers): RP-2014 Blue Collar Annuitant Mortality Table projected generationally with Scale MP-2017 set forward 1 year for females</p> <p>Disabled (Non-Teachers): RP-2014 Blue Collar Annuitant Mortality Table projected generationally with Scale MP-2017 set forward 1 year</p> <p>Pre-Retirement (Teachers): RP-2014 White Collar Employee Mortality Table projected generationally with Scale MP-2016</p> <p>Healthy (Teachers): RP-2014 White Collar Healthy Annuitant Mortality Table projected generationally with Scale MP-2016</p> <p>Disabled (Teachers): RP-2014 Healthy Annuitant Mortality Table set forward 4 years projected generationally with Scale BB2D from 2014</p>				

# Exhibit 3 – Determination of Discount Rate and Investment Rate of Return

## Development of Long-Term Rate

The long-term expected rate of return on OPEB plan investments was determined using a building block method in which best estimate ranges of expected future rates of return (expected returns, net of investment expense and inflation) are developed for each major asset class. These returns are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation and subtracting expected investment expenses and a risk margin. The target allocation as of June 30, 2017 and projected arithmetic real rates of return for each major asset class, after deducting inflation, but before investment expenses, used in the derivation of the long-term expected investment rate of return assumption are summarized below:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Domestic equity	30%	6.44%
International developed markets equity	12%	7.40%
International emerging markets equity	3%	9.42%
Core fixed income	33%	2.02%
High Yield Fixed Income	0%	4.43%
Real Estate	0%	5.00%
Commodities	0%	4.43%
Hedge fund, GTAA, Risk parity	22%	3.75%
Private equity	<u>0%</u>	10.47%
Total	100%	

Nature of Assets: The assets are in an irrevocable OPEB Trust and the majority are invested with BNY Mellon.

## Exhibit 4 – Schedule of Changes in the Net OPEB Liability

	Total OPEB Liability (a)	Plan Fiduciary Net Position (b)	Net OPEB Liability (a)-(b)
Balance at June 30, 2016	\$2,618,023,496	\$365,834,686	\$2,252,188,810
Changes for the year:			
• Service cost	\$65,146,466	\$0	\$65,146,466
• Interest	177,157,288	0	177,157,288
• Differences between expected and actual experience	-1,717,714	0	-1,717,714
• Contributions - employer	0	157,463,469	-157,463,469
• Contributions - employee	0	0	0
• Net investment income	0	47,157,222	-47,157,222
• Benefit payments	-117,463,469	-117,463,469	0
• Administrative expenses	<u>0</u>	<u>-5,657</u>	<u>5,657</u>
Net changes	\$123,122,571	\$87,151,565	\$35,971,006
Balances at June 30, 2017	\$2,741,146,067	\$452,986,251	\$2,288,159,816

### Notes to Schedule:

**Changes in Assumptions:** None.

**Changes in Plan Provisions:** None.

# Exhibit 5 – Sensitivity

## Sensitivity of the net OPEB liability to changes in the discount rate

The following presents the net OPEB liability well as what the net OPEB liability would be if it were calculated using a discount rate that is 1-percentage-point lower or 1-percentage-point higher than the current rate.

	1% Decrease	Current Discount Rate	1% Increase
Net OPEB liability as of June 30, 2017	\$2,675,343,334	\$2,288,159,816	\$1,970,659,583

## Sensitivity of the net OPEB liability to changes in the healthcare cost trend rates

The following presents the net OPEB liability as well as what the net OPEB liability would be if it were calculated using healthcare cost trend rates that are 1-percentage-point lower or 1-percentage point higher than the current rates.

	1% Decrease	Current Trend Rates	1% Increase
Net OPEB liability as of June 30, 2017	\$1,939,951,651	\$2,288,159,816	\$2,723,121,353

## Exhibit 6 – Schedule of Contributions – Last Ten Years

	Year End June 30,									
	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Actuarially determined contribution	\$167,787,497									
Contributions in relation to the actuarially determined contribution	<u>157,463,469</u>									
Contribution deficiency (excess)	\$10,324,028									
Covered-employee payroll	N/A									
Contributions as a percentage of covered-employee payroll	N/A									(Historical information prior to implementation of GASB 74/75 is not required)

Note: Please enter covered payroll for fiscal 2017.

### Notes to Schedule:

Methods and assumptions used to establish “actuarially determined contribution”:

<b>Valuation date:</b>	Actuarially determined contribution for fiscal year ending June 30, 2017 was determined with the June 30, 2015 actuarial valuation.
<b>Actuarial cost method:</b>	Projected Unit Credit Method
<b>Amortization method:</b>	Payments increasing at 4.5% per year
<b>Remaining amortization period:</b>	30 years open
<b>Asset valuation method:</b>	Market value
<b>Investment rate of return:</b>	7.0%
<b>Inflation:</b>	4.5%
<b>Health care cost trend rates:</b>	Non-Medicare Plans: 7.0% decreasing by 0.5% for 4 years to an ultimate level of 5.0% Medicare Plans: 8.0% decreasing by 0.5% for 6 years to an ultimate level of 5.0% Medicare Part B Premium: 5.0% Contributions: Retiree contributions are expected to increase with medical trend

**Mortality rates:**

Pre-Retirement (Non-Teachers): RP-2000 Employee Mortality Table projected generationally using Scale BB2D from 2009

Healthy (Non-Teachers): RP-2000 Healthy Annuitant Mortality Tables projected generationally using Scale BB2D from 2009

Disabled (Non-Teachers): RP-2000 Healthy Annuitant Mortality Table projected generationally with Scale BB2D from 2015

Pre-Retirement (Teachers): RP-2014 Employee Mortality Table projected generationally with Scale BB2D from 2014

Healthy (Teachers): RP-2014 Healthy Annuitant Mortality Table projected generationally with Scale BB2D from 2014

Disabled (Teachers): RP-2014 Healthy Annuitant Mortality Table projected generationally with Scale BB2D from 2014 set forward 4 years



## Exhibit 7 – OPEB Expense and Deferred Outflows/Inflows of Resources Related to OPEB

A. OPEB expense for the year ended June 30, 2018		
• Service cost		\$65,146,466
• Interest		177,157,288
• Contributions – employee		0
• Projected earnings on OPEB Trust investments		-26,043,841
• Administrative expenses		5,657
• Recognized portion of current-period difference between expected and actual experience		-245,388
• Recognized portion of current-period difference between projected and actual earnings on OPEB plan investments		-4,222,676
• Recognized portion of current year period assumption change		0
• Recognized portion of current year period plan change		0
• Recognition of deferred outflows of resources		0
• Recognition of deferred inflows of resources		0
• OPEB expense for fiscal year ended June 30, 2018		\$211,797,506
B. Deferred outflows/inflows of resources related to OPEBs		
	Deferred Outflows of Resources	Deferred Inflows of Resources
• Differences between expected and actual experience	\$0	\$1,472,326
• Changes of assumptions	0	0
• Changes of benefit terms	0	0
• Net difference between projected and actual earnings on OPEB Trust investments	0	16,890,705
• Total	\$0	\$18,363,031
C. Projected recognition of deferred outflows/(inflows)		
	Year Ended June 30,	Recognition
	2019	-\$4,468,064
	2020	-4,468,064
	2021	-4,468,064
	2022	-4,468,065
	2023	-245,388
	2024	-245,386
	Thereafter	0

Note: Average expected remaining service lives as of June 30, 2017 is 7 years.



## Section 3: Valuation Results – Public Health Commission

### Exhibit 1 – General Information

At June 30, 2017, Public Health Commission’s plan membership consisted of the following:

	June 30, 2017
Retired members of beneficiaries currently receiving benefits	251
Active members	<u>904</u>
Total	1,155

We have assumed other general information about the Plan will be provided by the Public Health Commission’s auditors.

## Exhibit 2 – Net OPEB Liability

The components of the net OPEB liability of the Public Health Commission are as follows:

	June 30, 2017	June 30, 2016
Total OPEB Liability	\$129,401,119	\$132,574,782
Plan Fiduciary Net Position	17,275,875	13,246,616
Net OPEB Liability	112,120,244	119,328,166
Plan Fiduciary Net Position as a percentage of the Total OPEB Liability*	13.35%	9.99%

\* These funded percentages are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligation or the need for or the amount of future contributions.

*Actuarial assumptions.* The total OPEB liability as of June 30, 2017 was measured by an actuarial valuation as of June 30, 2017 using the following actuarial assumptions, applied to all periods included in the measurement, unless otherwise specified:

### Actuarial Assumptions:

<b>Inflation:</b>	3.25%
<b>Salary increases:</b>	4.0% per year for Group 1 employees and 4.5% per year for Group 4 employees
<b>Discount rate:</b>	3.96% as of June 30, 2016 and 4.65% as of June 30, 2017
<b>Investment rate of return:</b>	6.75%
<b>Health care trend rates:</b>	Medical and Prescription Drug: 7.0% decreasing by 0.5% for 5 years to an ultimate level of 4.5% Medicare Part B Premium: 4.5% Contributions: Retiree contributions are expected to increase with medical trend
<b>Mortality rates:</b>	Pre-Retirement: RP-2014 Blue Collar Employee Mortality Table projected generationally with Scale MP-2017 set forward 1 year for females Healthy: RP-2014 Blue Collar Annuitant Mortality Table projected generationally with Scale MP-2017 set forward 1 year for females Disabled: RP-2014 Blue Collar Annuitant Mortality Table projected generationally with Scale MP-2017 set forward 1 year

## Exhibit 3 – Determination of Discount Rate and Investment Rate of Return

### Development of Long-Term Rate

The long-term expected rate of return on OPEB plan investments was determined using a building block method in which best estimate ranges of expected future rates of return (expected returns, net of investment expense and inflation) are developed for each major asset class. These returns are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation and subtracting expected investment expenses and a risk margin. The target allocation as of June 30, 2017 and projected arithmetic real rates of return for each major asset class, after deducting inflation, but before investment expenses, used in the derivation of the long-term expected investment rate of return assumption are summarized below:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Domestic equity	30%	6.44%
International developed markets equity	12%	7.40%
International emerging markets equity	3%	9.42%
Core fixed income	33%	2.02%
High Yield Fixed Income	0%	4.43%
Real Estate	0%	5.00%
Commodities	0%	4.43%
Hedge fund, GTAA, Risk parity	22%	3.75%
Private equity	<u>0%</u>	10.47%
Total	100%	

Nature of Assets: The assets are in an irrevocable OPEB Trust and the majority are invested with BNY Mellon.

## Exhibit 4 – Schedule of Changes in the Net OPEB Liability

	Total OPEB Liability (a)	Plan Fiduciary Net Position (b)	Net OPEB Liability (a)-(b)
Balance at June 30, 2016	\$132,574,782	\$13,246,616	\$119,328,166
Changes for the year:			
• Service cost	\$9,111,061	\$0	\$9,111,061
• Interest	5,564,493	0	5,564,493
• Differences between expected and actual experience	-33,618	0	-33,618
• Changes in assumptions	-15,489,609	0	-15,489,609
• Contributions - employer	0	4,575,990	-4,575,990
• Contributions - employee	0	0	0
• Net investment income	0	1,779,259	-1,779,259
• Benefit payments	-2,325,990	-2,325,990	0
• Administrative expenses	<u>0</u>	<u>0</u>	<u>0</u>
Net changes	-\$3,173,663	\$4,029,259	-\$7,202,922
Balances at June 30, 2017	\$129,401,119	\$17,275,875	\$112,125,244

### Notes to Schedule:

**Changes in Assumptions:** The discount rate was increased from 3.96% as of June 30, 2016 to 4.65% as of June 30, 2017.

**Changes in Plan Provisions:** None.

# Exhibit 5 – Sensitivity

## Sensitivity of the net OPEB liability to changes in the discount rate

The following presents the net OPEB liability well as what the net OPEB liability would be if it were calculated using a discount rate that is 1-percentage-point lower or 1-percentage-point higher than the current rate.

	1% Decrease	Current Discount Rate	1% Increase
Net OPEB liability as of June 30, 2017	\$135,409,121	\$112,125,244	\$93,500,731

## Sensitivity of the net OPEB liability to changes in the healthcare cost trend rates

The following presents the net OPEB liability as well as what the net OPEB liability would be if it were calculated using healthcare cost trend rates that are 1-percentage-point lower or 1-percentage point higher than the current rates.

	1% Decrease	Current Trend Rates	1% Increase
Net OPEB liability as of June 30, 2017	\$90,171,538	\$112,125,244	\$140,846,841

## Exhibit 6 – Schedule of Contributions – Last Ten Years

	Year End June 30,									
	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Actuarially determined contribution	\$10,624,187									
Contributions in relation to the actuarially determined contribution	<u>4,575,990</u>									
Contribution deficiency (excess)	\$6,048,197									
Covered-employee payroll	N/A									
Contributions as a percentage of covered-employee payroll	N/A									(Historical information prior to implementation of GASB 74/75 is not required)

Note: Please enter covered payroll for fiscal 2017.

### Notes to Schedule:

Methods and assumptions used to establish “actuarially determined contribution”:

<b>Valuation date:</b>	Actuarially determined contribution for fiscal year ending June 30, 2017 was determined with the June 30, 2015 actuarial valuation.
<b>Actuarial cost method:</b>	Projected Unit Credit Method
<b>Amortization method:</b>	Payments increasing at 4.5% per year
<b>Remaining amortization period:</b>	30 years open
<b>Asset valuation method:</b>	Market value
<b>Investment rate of return:</b>	5.5%
<b>Inflation:</b>	4.5%
<b>Health care cost trend rates:</b>	Non-Medicare Plans: 7.0% decreasing by 0.5% for 4 years to an ultimate level of 5.0% Medicare Plans: 8.0% decreasing by 0.5% for 6 years to an ultimate level of 5.0% Medicare Part B Premium: 5.0% Contributions: Retiree contributions are expected to increase with medical trend
<b>Mortality rates:</b>	Pre-Retirement: RP-2000 Employee Mortality Table projected generationally using Scale BB2D from 2009 Healthy: RP-2000 Healthy Annuitant Mortality Tables projected generationally using Scale BB2D from 2009 Disabled: RP-2000 Healthy Annuitant Mortality Table projected generationally with Scale BB2D from 2015



## Exhibit 7 – OPEB Expense and Deferred Outflows/Inflows of Resources Related to OPEB

A. OPEB expense for the year ended June 30, 2018		
• Service cost		\$9,111,061
• Interest		5,564,493
• Contributions – employee		0
• Projected earnings on OPEB Trust investments		-970,084
• Administrative expenses		0
• Recognized portion of current-period difference between expected and actual experience		-2,802
• Recognized portion of current-period difference between projected and actual earnings on OPEB plan investments		-161,835
• Recognized portion of current year period assumption change		-1,290,801
• Recognized portion of current year period plan change		0
• Recognition of deferred outflows of resources		0
• Recognition of deferred inflows of resources		0
• OPEB expense for fiscal year ended June 30, 2018		\$12,250,032
B. Deferred outflows/inflows of resources related to OPEBs		
	Deferred Outflows of Resources	Deferred Inflows of Resources
• Differences between expected and actual experience	\$0	\$30,816
• Changes of assumptions	0	14,198,808
• Changes of benefit terms	0	0
• Net difference between projected and actual earnings on OPEB Trust investments	0	647,340
• Total	\$0	\$14,876,964
C. Projected recognition of deferred outflows/(inflows)		
	Year Ended June 30,	Recognition
	2019	-\$1,455,438
	2020	-1,455,438
	2021	-1,455,438
	2022	-1,455,438
	2023	-1,293,603
	2024	-1,293,603
	Thereafter	-6,468,006

Note: Average expected remaining service lives as of June 30, 2017 is 12 years.

