CITY OF STAMFORD BOARD OF EDUCATION OTHER POST-EMPLOYMENT BENEFITS PLAN

Actuarial Valuation as of July 1, 2018
To Determine Funding for Fiscal Year 2019-20

Prepared by

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Table of Contents

Certification

We have performed an actuarial valuation of the Plan as of July 1, 2018 to determine funding for fiscal year 2019-20. This report presents the results of our valuation.

The ultimate cost of an Other Post-Employment Benefits (OPEB) plan is the total amount needed to provide benefits for plan members and beneficiaries and to pay the expenses of administering the plan. OPEB costs are met by contributions and by investment return on plan assets. The principal purpose of this report is to set forth an actuarial recommendation of the contribution, or range of contributions, which will properly fund the plan, in accordance with applicable actuarial standards of practice. In addition, this report provides:

- A valuation of plan assets and liabilities to review the year-to-year progress of funding.
- Review of plan experience since the previous valuation to ascertain whether the assumptions and methods employed for valuation purposes are reflective of actual events and remain appropriate for prospective application.
- Assessment of the relative funded position of the plan, i.e., through a comparison of plan assets and projected plan liabilities.
- Comments on any other matters which may be of assistance in the funding and operation of the plan.

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In preparing this report, we relied on employee census data and financial information as of the valuation date, furnished by the City. We performed a limited review of the data used directly in our analysis for reasonableness and consistency and have found them to be reasonably consistent and comparable with data used for other purposes. If the underlying data or information is inaccurate or incomplete, the results of our analysis may likewise be inaccurate or incomplete and our calculations may need to be revised. If there are material defects in the data, it is possible that they would be uncovered by a detailed, systematic review and comparison of the data to search for data values that are questionable or for relationships that are materially inconsistent. Such a review was beyond the scope of our assignment.

Certification

The calculations reported herein have been made on a basis consistent with our understanding of the plan provisions. Additional determinations may be needed for purposes other than determining funding amounts, such as judging benefit security at plan termination or meeting employer accounting requirements. On the basis of the foregoing, we hereby certify that, to the best of our knowledge, this report is complete and accurate and all costs and liabilities were determined in conformance with generally accepted actuarial principles and practices. Figures for periods prior to July 1, 2018 have been obtained from actuarial valuation reports prepared by Hooker & Holcombe and from the City's Comprehensive Annual Financial

We further certify that, in our opinion, each actuarial assumption, method and technique used is reasonable taking into account the experience of the Plan and reasonable expectations. Future actuarial measurements may differ significantly from the current measurements presented in this report due to factors such as, but not limited to, the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic 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 or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of the actuarial assignment, we did not perform an analysis of the potential range of such future measurement.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The undersigned is a member of the American Academy of Actuaries and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Rebecca A. Sielman, FSA
Consulting Actuary

Section I - Executive Summary
Changes Since the Prior Valuation

Demographic Changes

From July 1, 2017 to July 1, 2018, the overall membership increased from 1,977 to 2,096. The number of active members increased from 1,872 to 2,005, and the number of members receiving benefits decreased from 105 to 91.

The average age of active members stayed the same at 45.9, and the average age of members receiving benefits decreased slightly from 67.8 to 67.4.

Changes in Actuarial Methods and Assumptions

Medical age curves: We updated the age curves with respect to how claims vary by age and gender, based on our analysis of the information provided to us for this valuation.

Medical Claims Costs: We updated the expected claims costs based on our analysis of the claims experience and premium information that was provided to us for this valuation.

Medical Trend Rate: We updated the medical trend rate to 6.0% initially, grading down to 4.1% over 57 years (prior: 6.6% graded down to 4.6% over 5 years).

We lowered the interest rate assumption from 7.20% to 7.10%.

We changed the election assumption from 100% of eligible members elect coverage at retirement to 85% of Teachers and Administrators and 50% of Educational Assistants elect coverage at retirement. We also lowered the assumption with respect to the percentage of teachers that are non-Medicare eligible from 20% to 10%.

The above changes increased the liability by approximately $0.4 million and increased the Actuarially Determined Contribution by approximately $0.1 million.

Plan Changes

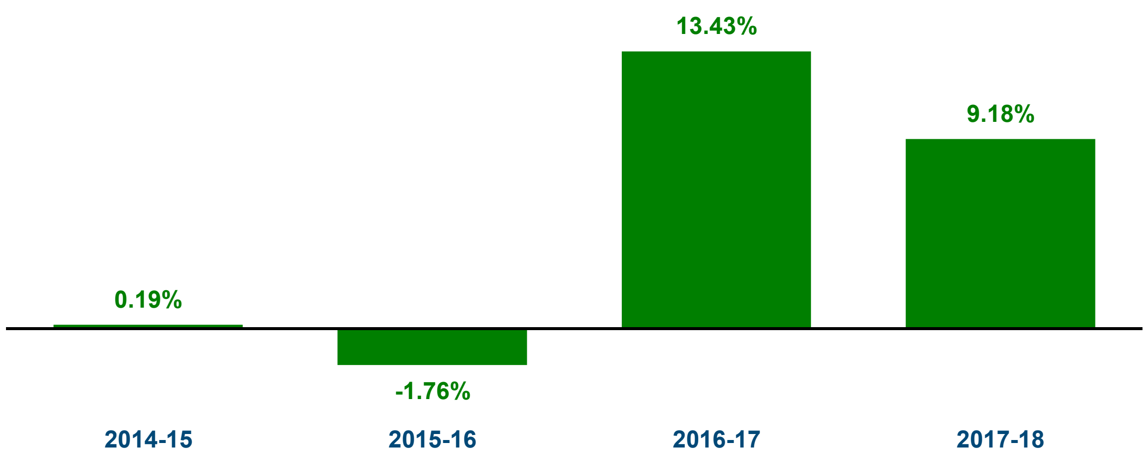
None.

Section I - Executive Summary
Assets

The City maintains an OPEB Trust for prefunding OPEB benefits that are provided to both City and Board of Education Members. This valuation pertains to the portion of the OPEB Trust that covers Board of Education members that are not in the CERF (Teachers, Administrators, and Educational Assistants). The asset figures shown below and throughout this report pertain only to the portion of the OPEB trust that is allocated to this group.

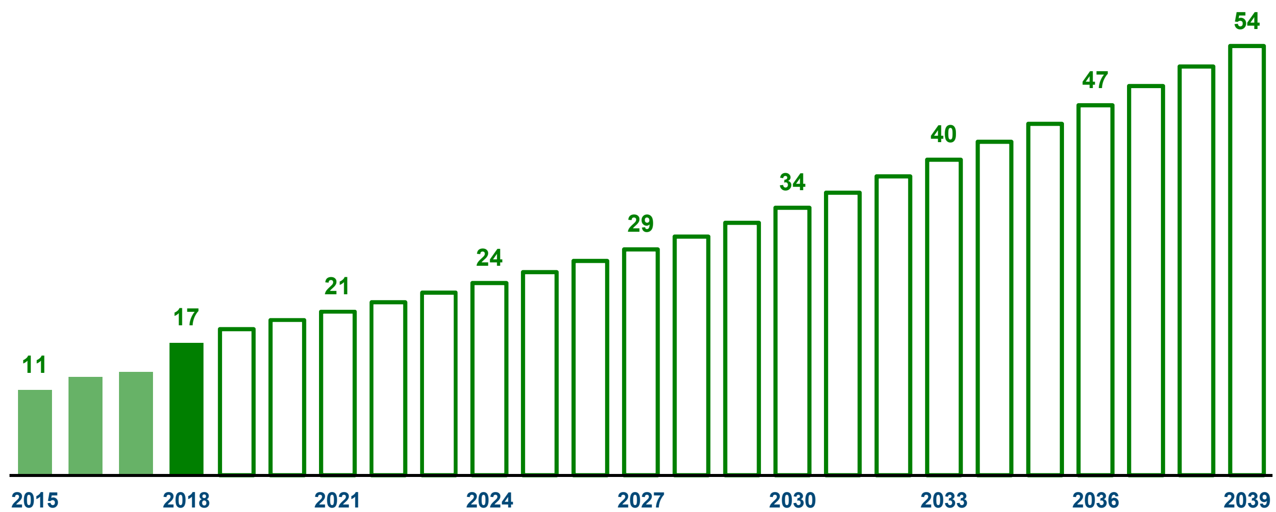
Market Value as of July 1, 2017	$12,986,000
City Contributions	3,342,000
Investment Income	1,303,154
Benefit Payments and Administrative Expenses	(910,824)
Market Value as of July 1, 2018	16,720,330

For fiscal year 2017-18, the plan's assets earned 9.18%. The actuarial assumption for this period was 7.20%; the result is an asset gain of about $0.3 million. Historical rates of return are shown in the graph below.

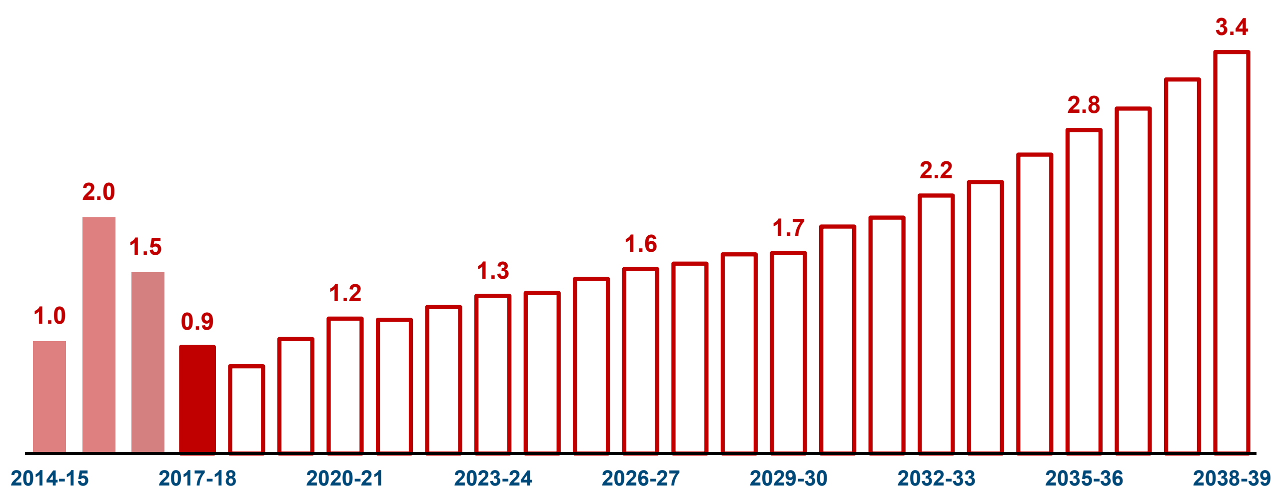


Section I - Executive Summary
Assets (continued)

The graph below shows how this year's asset values compare to where the plan's assets have been over the past several years and how they are projected to change over the next 20 years. For purposes of this projection, we have assumed that the City always contributes the Actuarially Determined Contribution and the investments always earn the assumed interest rate each year.

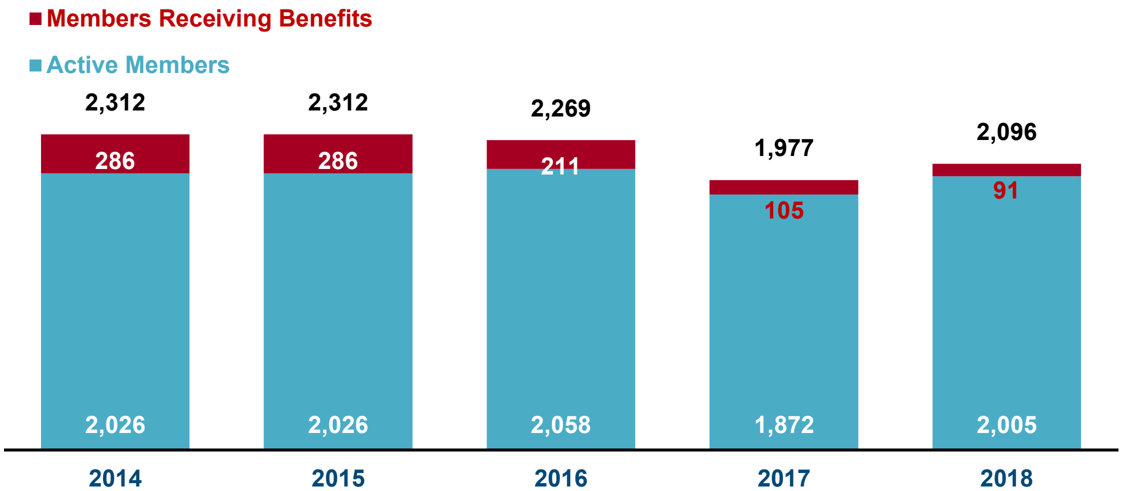


In 2017-18, the plan paid out $0.9 million in benefits to members. Over the next 20 years, the plan is projected to pay out a total of $36 million in benefits to members.



Section I - Executive Summary
Membership

There are two basic categories of plan members included in the valuation: (1) members who are receiving benefits and (2) active employees who have met the eligibility requirements for membership.

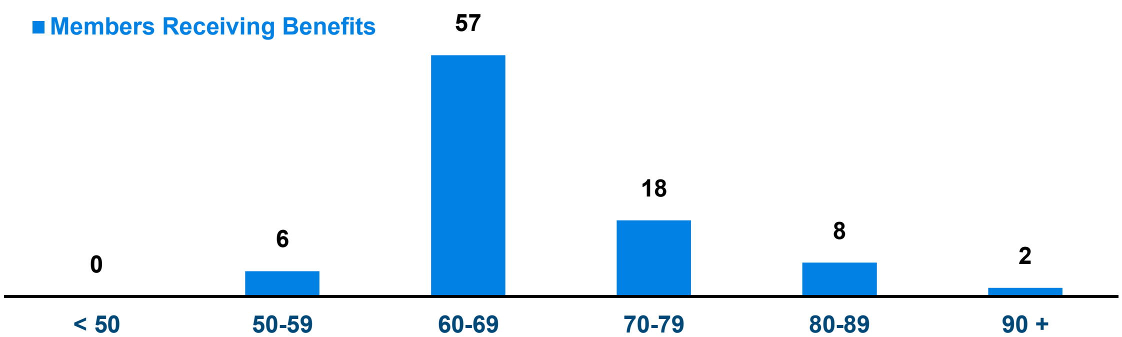


Members Receiving Benefits on July 1, 2018

Teachers	85	Average Age	67.3
Admin.	6		
Ed Assts.	0		
Total	91		

As of July 1, 2018, there were 91 members receiving benefits. In addition, 15 spouses/dependents are currently receiving benefits.

The total members receiving benefits fall across a wide distribution of ages:



Section I - Executive Summary
Membership (continued)

Active Members on July 1, 2018

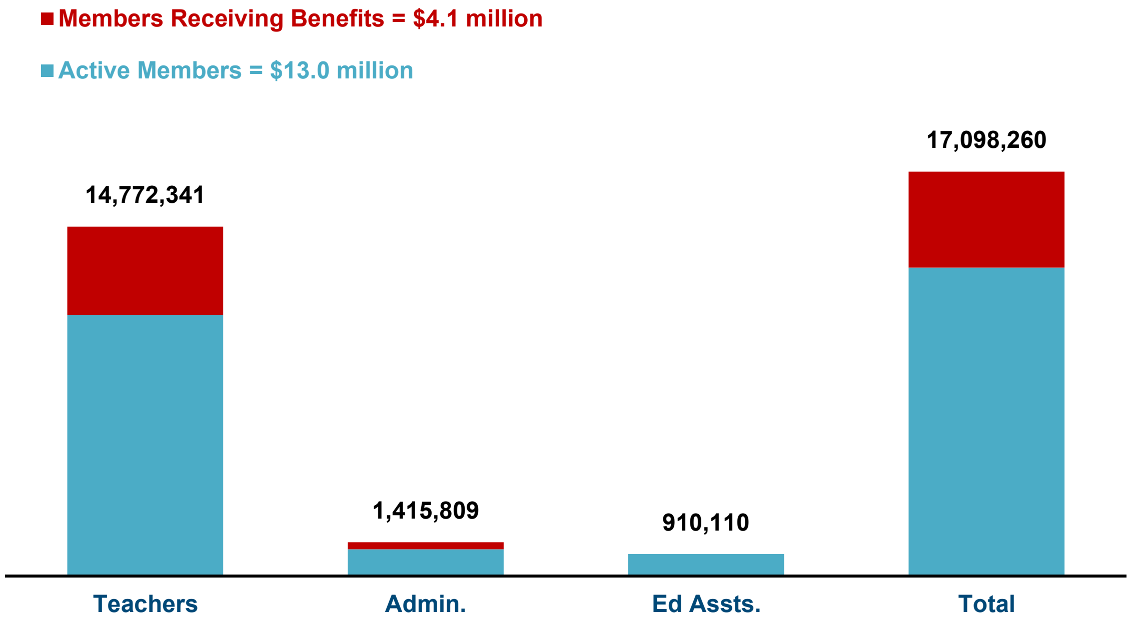
Teachers	1,523	Average Age	45.9
Admin.	73	Average Service	12.7
Ed Assts.	409	Payroll	$157,739,122
Total	2,005	Average Payroll	78,673

The table below illustrates the age and years of service of the active membership:

	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25	29							29
25-29	149	15						164
30-34	132	106	22					260
35-39	70	58	108	20	2			258
40-44	67	30	61	117	3			278
45-49	38	26	35	75	48	6		228
50-54	36	24	45	47	41	21	7	221
55-59	28	16	36	62	33	14	24	213
60-64	23	15	24	35	32	24	35	188
65+	7	12	28	40	19	22	38	166
Total	579	302	359	396	178	87	104	2,005

Section I - Executive Summary
Accrued Liability

The Accrued Liability as of July 1, 2018 consists of the following pieces:

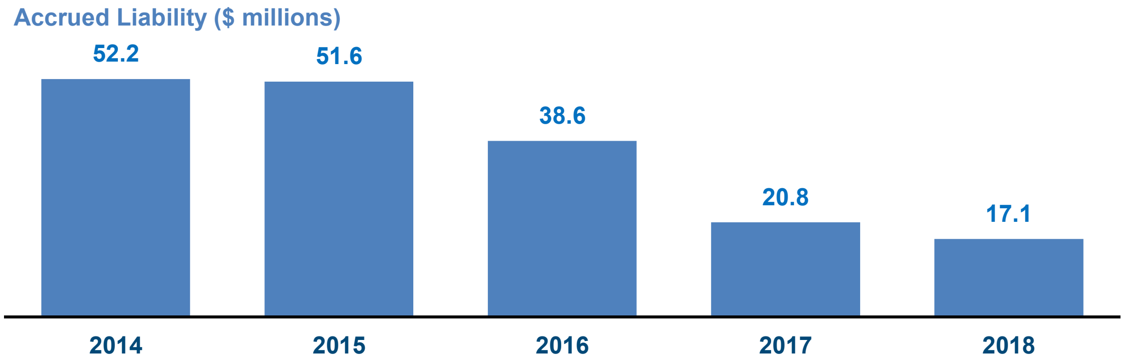


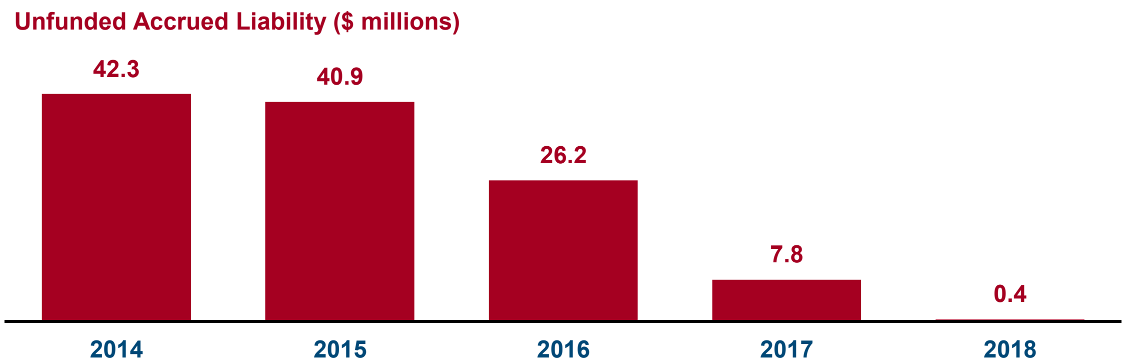
For purposes of determining the City's contribution, the Accrued Liability is measured using the Projected Unit Credit actuarial cost method. A different actuarial cost method, Entry Age Normal, is required to be used to measure liability for financial reporting purposes per GASB 67/68. As of July 1, 2018, the Entry Age Normal Accrued Liability is $19,947,916.

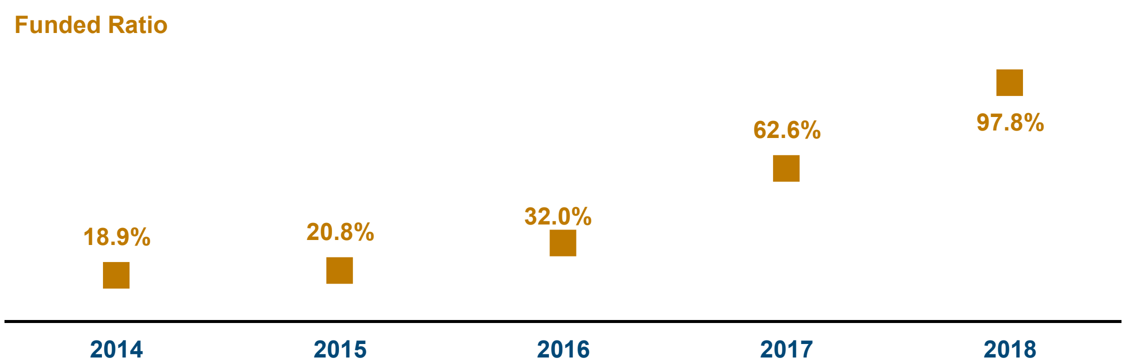
Section I - Executive Summary
Funded Status

The Accrued Liability grows over time as active members earn additional benefits, and goes down over time as members receive benefits; it may also change when there are changes to the plan provisions or changes in the actuarial assumptions. The Unfunded Accrued Liability is the dollar difference between the Accrued Liability and the Actuarial Value of Assets; the Funded Ratio is the ratio of the two.

The Accrued Liability for this plan has declined significantly over the past several years due to favorable changes in the premium level, a drop in the number of post-65 retirees who are not covered by Medicare, and emerging evidence that fewer eligible members elect coverage at retirement.



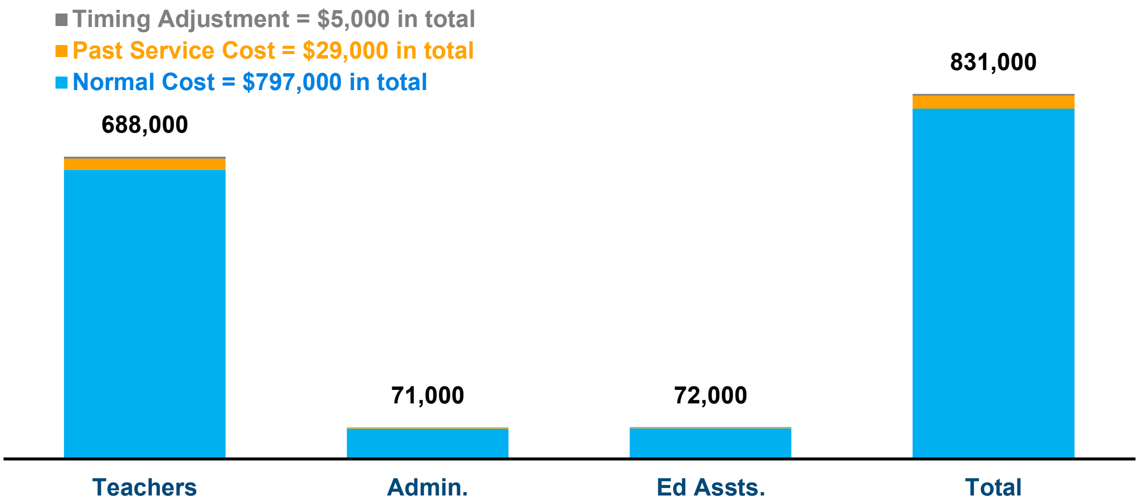




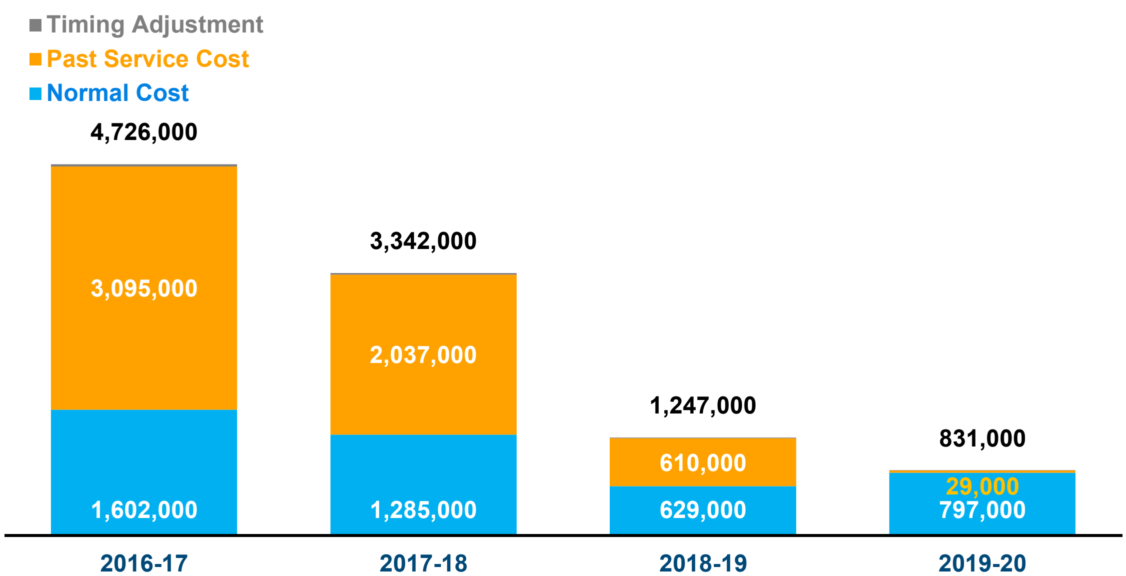
Section I - Executive Summary
Actuarially Determined Contribution

The Actuarially Determined Contribution consists of three pieces: a Normal Cost payment to fund the benefits earned each year, a Past Service Cost to gradually reduce any unfunded or surplus liability, and a Timing Adjustment to reflect the timing of the contribution relative to the valuation date.

The Actuarially Determined Contribution for fiscal year 2019-20 is shown graphically below.



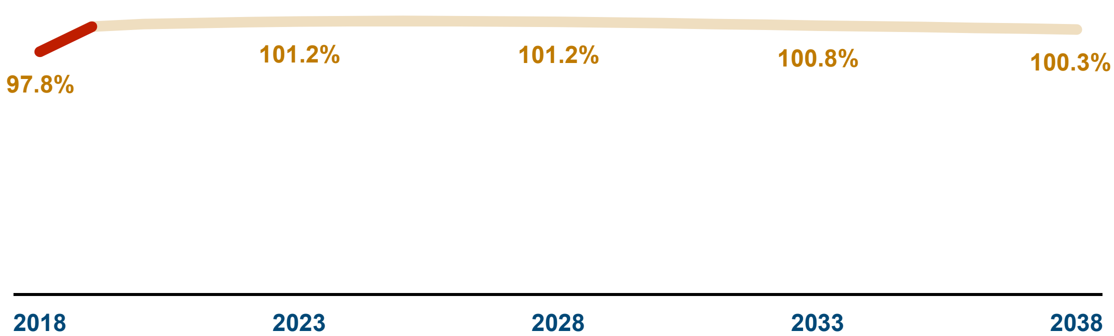
The chart below shows the Actuarially Determined Contribution for the past four fiscal years. Note that the Normal Cost is relatively consistent from year to year, whereas the Past Service Cost tends to be more volatile since it reflects the impact of asset performance and the significant drop in the Accrued Liability over the past few years.



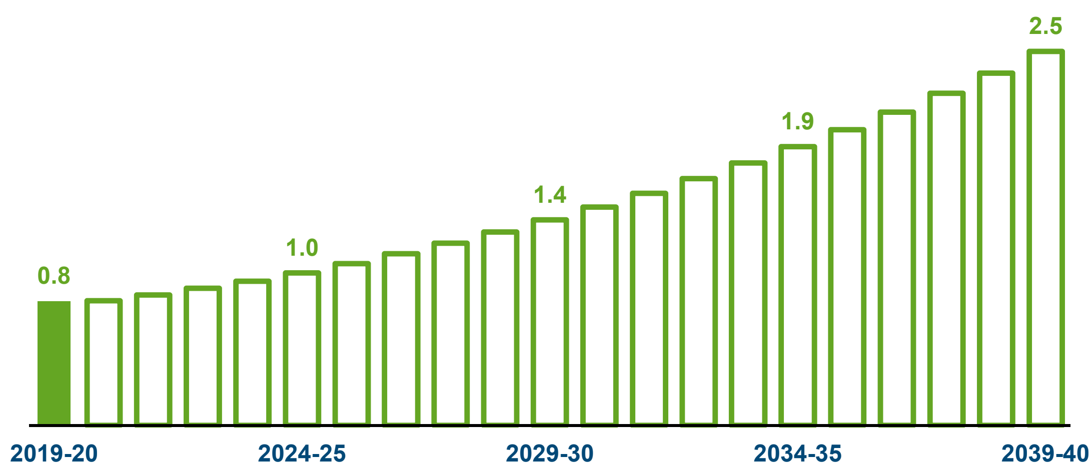
Section I - Executive Summary
Long-Range Forecast

If the City pays the Actuarially Determined Contribution each year, the investments earn exactly the assumed interest rate each year, and there are no changes in the plan provisions or in the actuarial methods and assumptions, then we project the following changes in the plan's funded status and the long-range contribution levels:

Funded Ratio



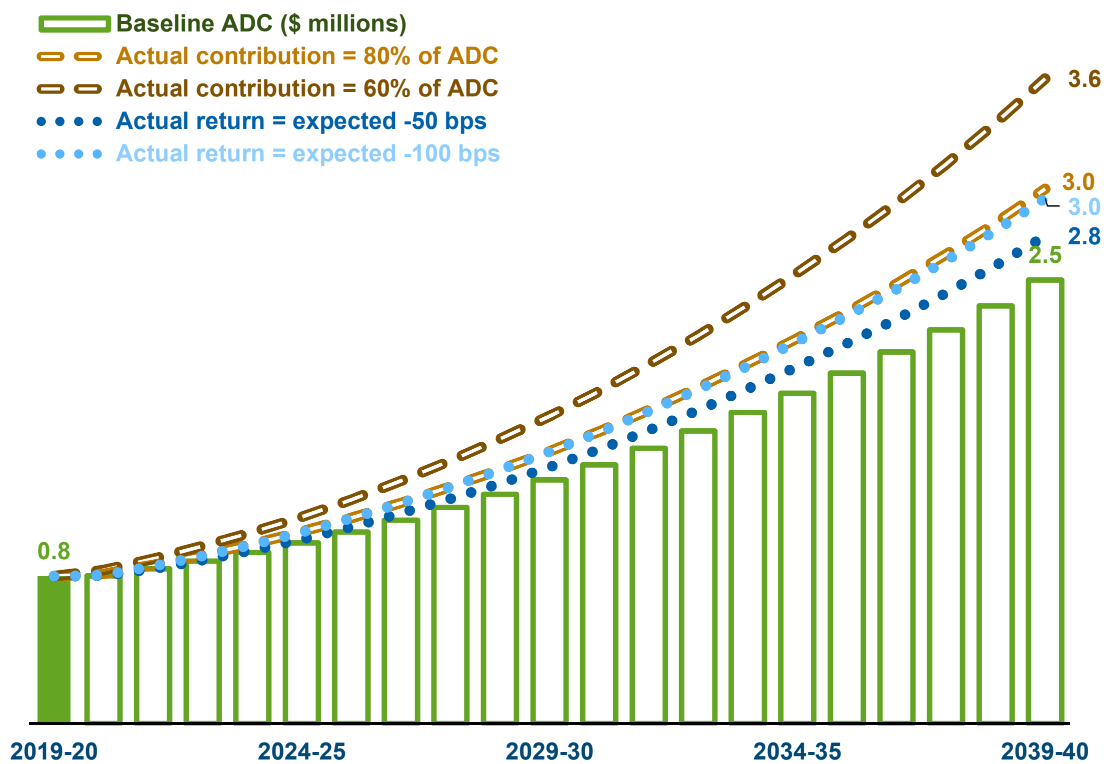
Actuarially Determined Contribution ($ millions)



To the extent that there are future investment or liability gains or losses, changes in the actuarial assumptions or methods, or plan changes, the actual valuation results will differ from these forecasts. Please see Section III C for more details of the long range forecast.

Section I - Executive Summary
Long-Range Forecast (continued)

Benefits are paid for through a combination of contributions from the City and from employees, and from investment income. If the City pays less than the Actuarially Determined Contribution each year, or if the investments persistently earn less than the assumed interest rate, then the plan's funded status would suffer, and to compensate, the City's contribution levels would be pushed higher. The risks of underfunding and underearning are illustrated in the hypothetical scenarios below:



The scenarios illustrated above are based on deterministic projections that assume emerging plan experience always exactly matches the actuarial assumptions; in particular that actual asset returns will be constant in every year of the projection period. Variation in asset returns, contribution amounts, and many other factors may have a significant impact on the long-term financial health of the plan, the liquidity constraints on plan assets, and the City's future contribution levels. Stochastic projections could be prepared that would enable the City to understand the potential range of future results based on the expected variability in asset returns and other factors. Such analysis was beyond the scope of this engagement.

Section I - Executive Summary
Summary of Principal Results

Membership as of	July 1, 2018	July 1, 2017
Active Members	2,005	1,872
Members Receiving Benefits	91	105
Total Count	2,096	1,977
Payroll	$157,739,122	$146,057,314

Assets and Liabilities as of	July 1, 2018	July 1, 2017
Market Value of Assets	$16,720,330	$12,986,000
Accrued Liabiilty for Active Members	13,046,846	12,091,000
Accrued Liabiilty for Members Receiving Benefits	4,051,414	8,660,000
Total Accrued Liability	17,098,260	20,751,000
Unfunded Accrued Liability	377,930	7,765,000
Funded Ratio	97.8%	62.6%

Actuarially Determined Contribution for Fiscal Year	2019-20	2018-19
Normal Cost	$797,000	$629,000
Past Service Cost	29,000	610,000
Timing Adjustment	5,000	8,000
Actuarially Determined Contribution	831,000	1,247,000
Allocated to Teachers	$688,000	$1,060,000
Allocated to Admin.	71,000	91,000
Allocated to Ed Assts.	72,000	96,000
Total	831,000	1,247,000

Section II - Plan Assets
A. Summary of Fund Transactions

The City maintains an OPEB Trust for prefunding OPEB benefits that are provided to both City and Board of Education Members. This valuation pertains to the portion of the OPEB Trust that covers Board of Education members not covered by the CERF (Teachers, Administrators, and Educational Assistants). OPEB Trust assets are allocated first to WPCA based on the GASB 75 total OPEB liability as of the prior fiscal year end. The remaining OPEB Trust assets are then allocated to the remainder of the City groups and to the Board of Education based on their respective Accrued Liabilities; the Board of Education assets are then allocated further to the respective groups included in this valuation in proportion to each group's Accrued Liability.

	WPCA	Non-WPCA City Groups	Board of Education	Entire OPEB Trust
Market Value on July 1, 2017	$1,259,080	$77,921,932	$12,986,000	$92,167,012
City Contributions	488,000	24,609,000	3,342,000	28,439,000
Member Contributions	0	195,665	0	195,665
Net Investment Income	208,673	7,830,455	1,303,154	9,342,282
Benefit Payments	(207,517)	(12,691,921)	(909,632)	(13,809,070)
Administrative Expenses	(272)	(16,638)	(1,192)	(18,102)
Market Value on July 1, 2018	1,747,964	97,848,493	16,720,330	116,316,787
Approximate Rate of Return *				9.38%

The rate shown here is not the dollar or time weighted investment yield rate which measures investment performance. It is an approximate net return assuming all activity occurred on average midway through the fiscal year.

Allocation of July 1, 2018 assets to groups in proportion to Accrued Liability:

	Accrued Liability	Allocated Assets
Teachers	$14,772,341	$14,445,822
Administrators	1,415,809	1,384,515
Educational Assistants	910,110	889,993
Total for this valuation	17,098,260	16,720,330

Section III - Development of Contribution
A. Past Service Cost

In determining the Past Service Cost, the Unfunded Accrued Liability is amortized as a level percent over 20 years on an open basis.

		Teachers	Admin.	Ed Assts.	Total
1.	Accrued Liability				
	Active Members	$11,019,117	$1,117,619	$910,110	$13,046,846
	Terminated Members	0	0	0	0
	Members Receiving Benefits	3,378,744	298,190	0	3,676,934
	Disabled Retirees	0	0	0	0
	Beneficiaries Receiving Benefits	374,480	0	0	374,480
	Total Accrued Liability	14,772,341	1,415,809	910,110	17,098,260
2.	Market Value of Assets (See Section II)	14,445,822	1,384,515	889,993	16,720,330
3.	Unfunded Accrued Liability: (1) - (2)	326,519	31,294	20,117	377,930
4.	Funded Ratio: (2) / (1)	97.8%	97.8%	97.8%	97.8%
5.	Amortization Period	20	20	20	20
6.	Amortization Growth Rate	2.00%	2.00%	2.00%	2.00%
7.	Past Service Cost: (3) amortized over (5)	25,452	2,439	1,568	29,459

Section III - Development of Contribution
B. Actuarially Determined Contribution for FY 2019-20

		Teachers	Admin.	Ed Assts.	Total
1.	Normal Cost	$658,165	$68,541	$69,884	$796,590
2.	Past Service Cost (see Section IIIA)	25,452	2,439	1,568	29,459
3.	Timing Adjustment: one month of simple interest on (1) + (2)	4,045	420	423	4,888
4.	Preliminary City Contribution: (1) + (2) + (3)	687,662	71,400	71,875	830,937
5.	Actuarially Determined Contribution rounded to $1000	688,000	71,000	72,000	831,000

Section III - Development of Contribution
C. Long Range Forecast

This forecast is based on the results of the July 1, 2018 actuarial valuation and assumes that the City will pay the Actuarially Determined Contribution each year, the assets will return the assumed interest rate on a market value basis each year, and there are no future changes in the actuarial methods or assumptions or in the plan provisions. Actual results at each point in time will yield different values, reflecting the actual experience of the plan membership and assets.

	Values as of the Valuation Date					Cash Flows Projected to the Following Fiscal Year			
Valuation Date	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio	Fiscal Year	City Contributions	Member Contributions	Benefit Payments	Net Cash Flows
7/1/2018	$17,098,260	$16,720,330	$377,930	97.8%	2019-20	$831,000	$0	($976,496)	($145,496)
7/1/2019	18,311,000	18,429,000	(118,000)	100.6%	2020-21	834,000	0	(1,151,000)	(317,000)
7/1/2020	19,405,000	19,586,000	(181,000)	100.9%	2021-22	873,000	0	(1,141,000)	(268,000)
7/1/2021	20,433,000	20,649,000	(216,000)	101.1%	2022-23	917,000	0	(1,250,000)	(333,000)
7/1/2022	21,588,000	21,837,000	(249,000)	101.2%	2023-24	965,000	0	(1,344,000)	(379,000)
7/1/2023	22,760,000	23,042,000	(282,000)	101.2%	2024-25	1,019,000	0	(1,368,000)	(349,000)
7/1/2024	23,980,000	24,286,000	(306,000)	101.3%	2025-26	1,081,000	0	(1,490,000)	(409,000)
7/1/2025	25,324,000	25,649,000	(325,000)	101.3%	2026-27	1,148,000	0	(1,574,000)	(426,000)
7/1/2026	26,709,000	27,047,000	(338,000)	101.3%	2027-28	1,219,000	0	(1,621,000)	(402,000)
7/1/2027	28,182,000	28,526,000	(344,000)	101.2%	2028-29	1,294,000	0	(1,699,000)	(405,000)
7/1/2028	29,783,000	30,135,000	(352,000)	101.2%	2029-30	1,374,000	0	(1,709,000)	(335,000)
7/1/2029	31,501,000	31,856,000	(355,000)	101.1%	2030-31	1,460,000	0	(1,937,000)	(477,000)
7/1/2030	33,420,000	33,770,000	(350,000)	101.0%	2031-32	1,553,000	0	(2,013,000)	(460,000)
7/1/2031	35,334,000	35,673,000	(339,000)	101.0%	2032-33	1,651,000	0	(2,202,000)	(551,000)
7/1/2032	37,407,000	37,730,000	(323,000)	100.9%	2033-34	1,755,000	0	(2,315,000)	(560,000)
7/1/2033	39,533,000	39,839,000	(306,000)	100.8%	2034-35	1,864,000	0	(2,550,000)	(686,000)
7/1/2034	41,802,000	42,087,000	(285,000)	100.7%	2035-36	1,977,000	0	(2,760,000)	(783,000)
7/1/2035	44,101,000	44,365,000	(264,000)	100.6%	2036-37	2,096,000	0	(2,943,000)	(847,000)
7/1/2036	46,466,000	46,704,000	(238,000)	100.5%	2037-38	2,222,000	0	(3,193,000)	(971,000)
7/1/2037	48,934,000	49,143,000	(209,000)	100.4%	2038-39	2,357,000	0	(3,425,000)	(1,068,000)

Section III - Development of Contribution
D. History of Funded Status

Valuation Date	Actuarial Value of Assets	Accrued Liability	Unfunded Accrued Liability	Funded Ratio
July 1, 2018	$16,720,330	$17,098,260	$377,930	97.8%
July 1, 2017	12,986,000	20,751,000	7,765,000	62.6%
July 1, 2016	12,375,000	38,620,000	26,245,000	32.0%
July 1, 2015	10,742,000	51,617,000	40,875,000	20.8%
July 1, 2014	9,840,000	52,174,000	42,334,000	18.9%

Section III - Development of Contribution
E. History of City Contributions

Fiscal Year	Actuarially Determined Contribution	Actual City Contribution	Contribution Deficiency (Excess)
2019-20	$831,000	TBD	TBD
2018-19	1,247,000	TBD	TBD
2017-18	3,342,000	$3,342,000	$0
2016-17	4,726,000	4,726,000	0
2015-16	5,031,000	1,837,800	(3,193,200)

Section IV - Membership Data
A. Statistics of Active Membership

	As of July 1, 2018	As of July 1, 2017
Number of Active Members	2,005	1,872
Average Age	45.9	45.9
Average Service	12.7	12.6

Section IV - Membership Data
B. Distribution of Active Members as of July 1, 2018

Teachers

	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25	21							21
25-29	117	8						125
30-34	116	97	15					228
35-39	50	50	97	15	2			214
40-44	43	22	51	107	1			224
45-49	25	17	28	60	41	5		176
50-54	24	16	27	30	36	16	6	155
55-59	17	8	22	45	22	8	21	143
60-64	9	7	17	21	23	19	30	126
65+	6	8	18	31	12	14	22	111
Total	428	233	275	309	137	62	79	1,523

Admin.

	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25								0
25-29								0
30-34	1	1						2
35-39	3	1	3	1				8
40-44	5	3	1	4				13
45-49		3	2	8	5	1		19
50-54	2	2		3	1	1	1	10
55-59	2		2	1	1	2	1	9
60-64		1		1	1		2	5
65+			2			1	4	7
Total	13	11	10	18	8	5	8	73

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	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25	8							8
25-29	32	7						39
30-34	15	8	7					30
35-39	17	7	8	4				36
40-44	19	5	9	6	2			41
45-49	13	6	5	7	2			33
50-54	10	6	18	14	4	4		56
55-59	9	8	12	16	10	4	2	61
60-64	14	7	7	13	8	5	3	57
65+	1	4	8	9	7	7	12	48
Total	138	58	74	69	33	20	17	409

Section IV - Membership Data
C. Information on Members Receiving Benefits

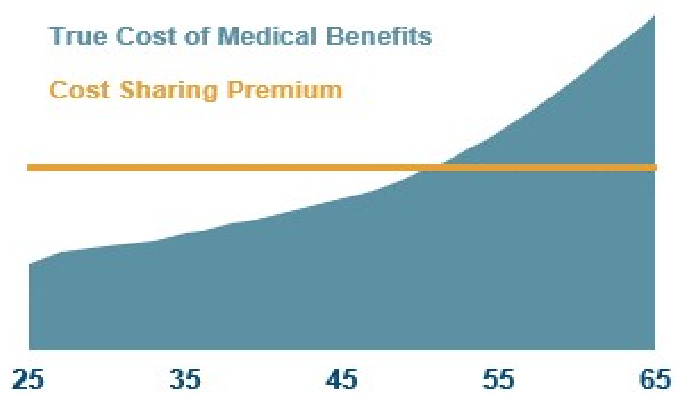
	As of July 1, 2018	As of July 1, 2017
Members Receiving Benefits		
Number	91	105
Average Age	67.3	67.8
Spouses/Dependents Receiving Benefits		
Number	15	N/A
Average Age	61.9	N/A

Members Receiving Benefits as of July, 1, 2018	Age	Number
	< 50	0
	50 - 59	6
	60 - 69	57
	70 - 79	18
	80 - 89	8
	90 +	2
	Total	91

Section V - Healthcare Information
A. Introduction

In many cases, the cost sharing premium is lower than the true cost of providing the medical benefits, for two reasons:

- The cost sharing premium is usually a fixed amount such as a COBRA premium that does not take into account the age of the retiree and his/her dependents. Since medical costs generally increase with age, the cost sharing premium is often lower than the true cost of the medical benefits:



- The cost sharing premium is usually a blended rate that takes into account the cost of medical benefits for active employees as well as retirees. Medical costs are generally higher for retirees than for active employees of the same age. This means that, again, the cost sharing premium is often lower than the true cost of the medical benefits.

Because of these two factors, a retiree who is paying 100% of the cost sharing premium is most likely not paying 100% of the true cost of the medical benefits. This situation is known as an "implicit rate subsidy." GASB 74 and 75 require the plan sponsor to measure the liability for this subsidy; that is, the difference between the true cost of the medical benefits and the cost sharing premiums paid by the retiree. To do this, our valuation consists of several steps:

First, we calculate the liability for the true cost of medical benefits expected to be received by retirees and their dependents. This liability is based on factors developed by Milliman's health actuaries that reflect how the cost of medical benefits varies by age and gender, as well as the other assumptions discussed on the prior page. We term this amount the "gross liability."

Next, we calculate the liability for the future premiums expected to be paid by the retiree for their own and their dependents' coverage. This liability is based on the current premium rates without adjustment for age or gender. It also is based on the terms of the Other Post-Employment Benefits program – different retirees pay different percentages based on their union, date of retirement, age at retirement, and other factors. We term this amount the "offset liability."

Finally, the net liability for the City is calculated as the difference between the gross liability and the offset liability.

Section V - Morbidity
B. Current Premiums

The annual medical premiums are shown below.

Medical Plan	Employee	Spouse	Effective Date
State Plan Premium	$10,295.40	$11,736.84	7/1/2018

Section V - Morbidity
C. Expected Healthcare Costs

Milliman's Health Cost Guidelines were used to develop the expected true cost of health care benefits by age. Representative health care cost factors are shown below.

	Employee		Spouse	
Age	**Male**	**Female**	**Male**	**Female**
45	0.35370	0.53310	0.35370	0.53410
50	0.47240	0.62130	0.47240	0.62150
55	0.62120	0.72350	0.62120	0.72350
60	0.80220	0.84870	0.80220	0.84870
64	0.96260	0.96850	0.96260	0.96850
65	1.00000	1.00000	1.00000	1.00000
66	1.03880	1.03250	1.03880	1.03250
70	1.20970	1.17340	1.20970	1.17340
75	1.43510	1.36210	1.43510	1.36210
80	1.64460	1.54190	1.64460	1.54190

The expected age 65 per capita claim costs, adjusted by the table above, are:

Employee		Spouse	
Male	**Female**	**Male**	**Female**
$18,943.15	$17,996.10	$17,996.10	$18,343.15

Appendix A - Actuarial Funding Method

The actuarial funding method used in the valuation of this Plan is known as the Projected Unit Credit Method. The Actuarially Determined Contribution consists of three pieces: Normal Cost plus a Past Service Cost payment to gradually eliminate the Unfunded Accrued Liability plus Timing Adjustment to reflect the timing of the contribution relative to the valuation date.

Under this cost method a projected retirement benefit at assumed retirement age is computed for each member. The Normal Cost for each member is computed as the present value of the pro-rata portion of the member's projected benefit which is accrued or earned during the plan year being valued. The normal cost of the plan is the total of the individually computed normal costs for all members. The Accrued Liability at any point in time for an active member is the present value of that portion of the projected benefit which has been accrued up to the valuation date. For members receiving benefits or entitled to a deferred benefit, the accrued liability is equal to the present value of their future benefit payments. The accrued liability for the plan is the total of individually computed accrued liability amounts for all members.

The funding cost of the Plan is derived by making certain specific assumptions as to rates of interest, mortality, turnover, etc. which are assumed to hold for many years into the future. Since actual experience may differ somewhat from the assumptions, the costs determined by the valuation must be regarded as estimates of the true costs of the Plan.

The Unfunded Accrued Liability is the excess of the Accrued Liability over the assets which have been accumulated for the plan. This Unfunded Accrued Liability is amortized as a level percent over 20 years on an open basis.

The Actuarial Value of Assets is equal to the Market Value of Assets.

The long-range forecasts included in this report have been developed by assuming that members will terminate, retire, become disabled, and die according to the actuarial assumptions with respect to these causes of decrement, and that pay increases, cost of living adjustments, and so forth will likewise occur according to the actuarial assumptions. For those unions whose new employees are eligible to participate in this plan, members who are projected to leave active employment are assumed to be replaced by new active members with the same age, service, gender, and pay characteristics as those hired in the past few years.

Appendix B - Actuarial Assumptions

Each of the assumptions used in this valuation was set based on industry standard published tables and data, the particular characteristics of the plan, relevant information from the plan sponsor or other sources about future expectations, and our professional judgment regarding future plan experience. We believe the assumptions are reasonable for the contingencies they are measuring, and are not anticipated to produce significant cumulative actuarial gains or losses over the measurement period.

Interest Rate 7.10% (prior: 7.20%)

Inflation 2.60%

Amortization Growth Rate 2.00%

Salary Scale 2.60%

Medical Trend 6.0% - 4.1% over 57 years (prior : 7.1% - 4.6% over 5 years)

Mortality RP-2000 Mortality Table with separate male and female rates, with no collar adjustment, combined table for non-annuitants and annuitants, projected to valuation date with Scale BB.

Turnover# Rates based on gender and length of service for first ten years and gender and age thereafter:

Service	Male	Female
0-1	14.00%	12.00%
1-2	11.00%	10.50%
2-3	8.00%	8.75%
3-4	6.50%	7.50%
4-5	4.50%	6.75%
5-6	3.50%	6.00%
6-7	3.00%	5.25%
7-8	2.75%	4.75%
8-9	2.50%	4.25%
9-10	2.50%	4.00%

After first ten years of service:

Age	Male	Female
25-34	1.50%	4.00%
35	1.50%	3.50%
40	1.50%	2.30%
45	1.59%	1.50%
50	2.04%	2.00%
55	3.44%	2.50%
59+	4.00%	2.90%

Appendix B - Actuarial Assumptions

Disability#

Rates based on age and gender:

Age	Male	Female
25	0.05%	0.05%
30	0.04%	0.04%
35	0.04%	0.04%
40	0.05%	0.07%
45	0.14%	0.12%
50	0.47%	0.26%
55	0.86%	0.44%
60+	1.00%	0.50%

Retirement#

Rates are based on age, eligibility for pension benefits, and gender:

	Unreduced		Proratable		Reduced	
Age	Male	Female	Male	Female	Male	Female
50	27.50%	27.50%			1.00%	1.00%
51	27.50%	27.50%			1.00%	1.25%
52	27.50%	27.50%			1.00%	1.75%
53	27.50%	27.50%			2.00%	2.25%
54	27.50%	27.50%			3.00%	2.75%
55	38.50%	27.50%			4.00%	4.75%
56	38.50%	27.50%			6.00%	6.25%
57	38.50%	27.50%			7.00%	6.75%
58	38.50%	27.50%			8.00%	7.25%
59	38.50%	27.50%			11.00%	8.50%
60	22.00%	27.50%	6.00%	5.50%		
61	25.30%	27.50%	6.00%	6.50%		
62	25.30%	27.50%	9.00%	7.50%		
63	27.50%	27.50%	11.00%	7.50%		
64	27.50%	27.50%	10.00%	8.00%		
65	36.30%	32.50%	13.00%	12.50%		
66-67	27.50%	32.50%	20.00%	12.50%		
68	27.50%	32.50%	20.00%	12.00%		
69	27.50%	32.50%	30.00%	14.50%		
70-73	100.00%	32.50%	30.00%	14.50%		
74-79	100.00%	32.50%	30.00%	18.00%		
80	100.00%	100.00%	100.00%	100.00%		

Future Retiree Coverage

85% of active Teachers and Administrators are assumed to elect coverage at retirement. 50% of active Educational Assistants are assumed to elect coverage at retirement (prior: 100% assumed to elect coverage).

Future Dependent Coverage

50% of active participants are assumed to be married. Female spouses are assumed to be 4 years younger than male spouses.

Appendix B - Actuarial Assumptions

Future Post-65 Coverage

90% of current active and pre-65 retired Teachers are assumed to be Medicare-eligible (prior: 80%)

Valuation of Dental Benefits

It is assumed that there is no implicit rate subsidy associated with these benefits.

Valuation of benefits for Children

Benefits attributed to children have been excluded from this valuation as they were determined to be de minimus.

Certain actuarial demographic assumptions for Teachers and Administrators are based on the assumptions used in the June 30, 2016 valuation of the Connecticut State Teachers' Retirement System.

Appendix C - Summary of Plan Provisions

This exhibit summarizes the major provisions of the Plan. It is not intended to be, nor should it be interpreted as a complete statement of all plan provisions. All eligibility requirements and benefit amounts shall be determined in strict accordance with the plan document itself. To the extent that this summary does not accurately reflect the plan provisions, then the results of this valuation may not be accurate.

Eligibility

Retiree medical and dental coverage for Teachers, Administrators, and Educational Assistants. Coverage is available at the earliest of:

Age 50 with 25 years of service
Age 55 with 20 years of service
Age 60 with 10 years of service

Cost Sharing

Teachers

The Board pays 50% of the premium for the earlier of 3 consecutive years or until age 65 for members who meet all of the criteria below. Members pay the full premium thereafter.

Hired prior to July 1, 2010
Attained age 45 with 15 years of service as of July 1, 2016
Attained 70 points (age plus service) as of July 1, 2016

Members who do not meet the criteria above pay the full premium.

Administrators

The Board pays the full premium until age 65 if the member has attained 15 years of service and 70 points. Effective July 1, 2013 the Board pays 50% of the premium until age 65. After age 65, the retiree pays the full premium.

Administrators also receive, at no cost to the retiree, life insurance coverage for deaths prior to age 65 equal to 2 times their compensation.

Educational Assistants

Retirees pay the full premium.

Appendix D - Glossary

Actuarial Cost Method - This is a procedure for determining the Actuarial Present Value of Benefits and allocating it to time periods to produce the Actuarial Accrued Liability and the Normal Cost.

Accrued Liability - This is the portion of the Actuarial Present Value of Benefits attributable to periods prior to the valuation date by the Actuarial Cost Method (i.e., that portion not provided by future Normal Costs).

Actuarial Assumptions - With any valuation of future benefits, assumptions of anticipated future events are required. If actual events differ from the assumptions made, the actual cost of the plan will vary as well. Some examples of key assumptions include the interest rate, salary scale, and rates of mortality, turnover and retirement.

Actuarial Present Value of Benefits - This is the present value, as of the valuation date, of future payments for benefits and expenses under the Plan, where each payment is: a) multiplied by the probability of the event occurring on which the payment is conditioned, such as the probability of survival, death, disability, termination of employment, etc.; and b) discounted at the assumed interest rate.

Actuarial Value of Assets - This is the value of cash, investments and other property belonging to the plan, typically adjusted to recognize investment gains or losses over a period of years to dampen the impact of market volatility on the Actuarially Determined Contribution.

Actuarially Determined Contribution ("ADC") - This is the employer's periodic contributions to a defined benefit plan, calculated in accordance with actuarial standards of practice.

Attribution Period - The period of an employee's service to which the expected benefit obligation for that employee is assigned. The beginning of the attribution period is the employee's date of hire and costs are spread across all employment.

Interest Rate - This is the long-term expected rate of return on any investments set aside to pay for the benefits. In a financial reporting context (e.g., GASB 68) this is termed the Discount Rate.

Normal Cost - This is the portion of the Actuarial Present Value of Benefits allocated to a valuation year by the Actuarial Cost Method.

Past Service Cost - This is a catch-up payment to fund the Unfunded Accrued Liability over time (generally 10 to 30 years). A closed amortization period is a specific number of years counted from one date and reducing to zero with the passage of time; an open amortization period is one that begins again or is recalculated at each valuation date. Also known as the Amortization Payment.

Return on Plan Assets - This is the actual investment return on plan assets during the fiscal year.

Unfunded Accrued Liability - This is the excess of the Accrued Liability over the Actuarial Value of Assets.