



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

**Actuarial Valuation as of July 1, 2020
To Determine Funding for Fiscal Year 2021-22**

Prepared by

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Certification

We have performed an actuarial valuation of the Plan as of July 1, 2020 to determine funding for fiscal year 2021-22. 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.

This report may not be used for purposes other than those listed above without Milliman's prior written consent. If this report is distributed to other parties, it must be copied in its entirety, including this certification section.

Milliman's work is prepared solely for the internal business use of the City of Stamford ("City"). To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exceptions: (a) the City may provide a copy of Milliman's work, in its entirety, to the City's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit the City; and (b) the City may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law. No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

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 Reports.

The valuation results were developed using models employing standard actuarial techniques. In addition to the models described previously, Milliman has developed certain models to develop the expected long term rate of return on assets and estimate the claim costs and trend used in this analysis. We have reviewed the models, including their inputs, calculations, and outputs for consistency, reasonableness, and appropriateness to the intended purpose and in compliance with generally accepted actuarial practice and relevant actuarial standards of practice (ASOP). The models, including all input, calculations, and output may not be appropriate for any other purpose.

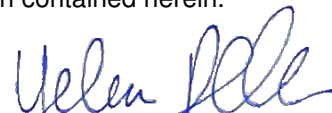
We further certify that, in our opinion, each actuarial assumption, method and technique used is reasonable taking into account the experience of the Plan and reasonable expectations. Future actuarial measurements may differ significantly from the current measurements presented in this report due to 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 are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.



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Section I - Executive Summary Changes Since the Prior Valuation

Demographic Changes

From July 1, 2019 to July 1, 2020, the overall membership decreased from 2,050 to 1,979. The number of active members decreased from 1,970 to 1,896, and the number of members receiving benefits increased from 80 to 83.

The average age of active members increased from 45.8 to 46.4, and the average age of members receiving benefits increased from 68.3 to 68.8.

Changes in Actuarial Methods and Assumptions

Given the substantial uncertainty regarding the impact of COVID-19 on plan costs, including whether the pandemic will increase or decrease costs during the term of our projections, we have chosen not to make an adjustment in the expected plan costs. It is possible that the COVID-19 pandemic could have a material impact on the projected costs.

We lowered the interest rate assumption from 7.05% to 6.95%, which increased the Accrued Liability by approximately \$212,000 million and increased the Actuarially Determined Contribution by approximately \$31,000.

Plan Changes

None.

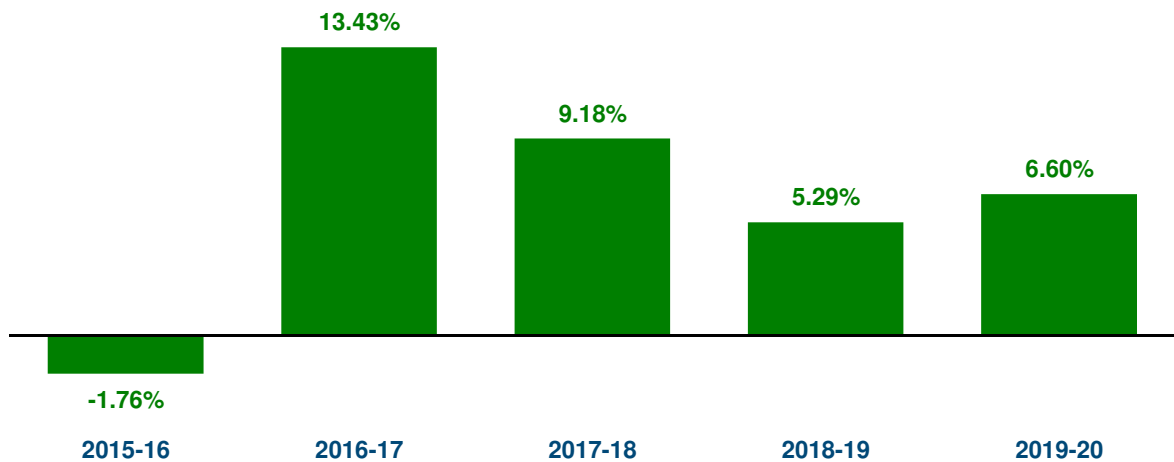
Section I - Executive Summary Assets

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, 2019	\$18,107,750*
City Contributions	831,000
Investment Income	1,197,478
Benefit Payments and Administrative Expenses	(733,795)
Market Value as of July 1, 2020	19,402,433

* The starting asset value was revised based on a revised allocation of the OPEB trust assets between the two OPEB groups. See page 14 of this report for details of the split.

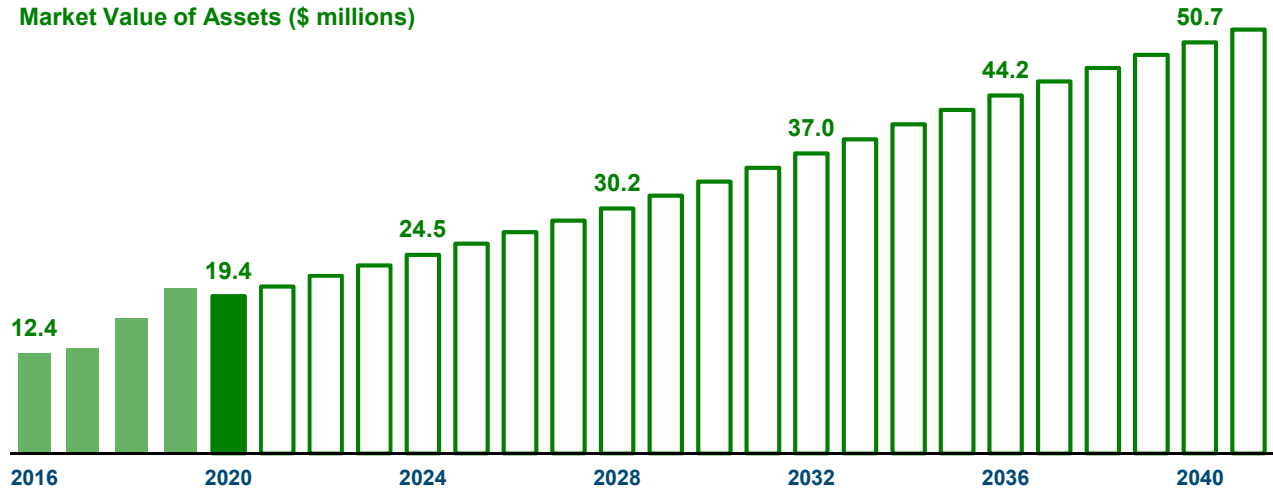
For fiscal year 2019-20, the plan's assets earned 6.60%. The actuarial assumption for this period was 7.05%; the result is an asset loss of about \$0.1 million. Historical rates of return are shown in the graph below.



Section I - Executive Summary Assets (continued)

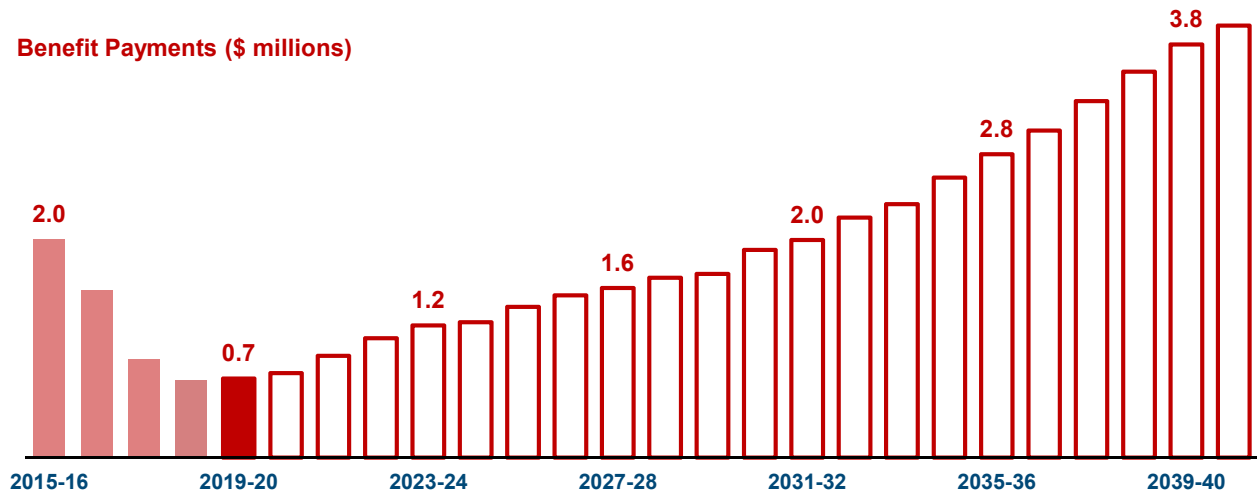
The graph below shows how this year's asset values compare to where the plan's assets have been over the past several years and how they are projected to change over the next 20 years. For purposes of this projection, we have assumed that the City always contributes the Actuarially Determined Contribution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

Market Value of Assets (\$ millions)



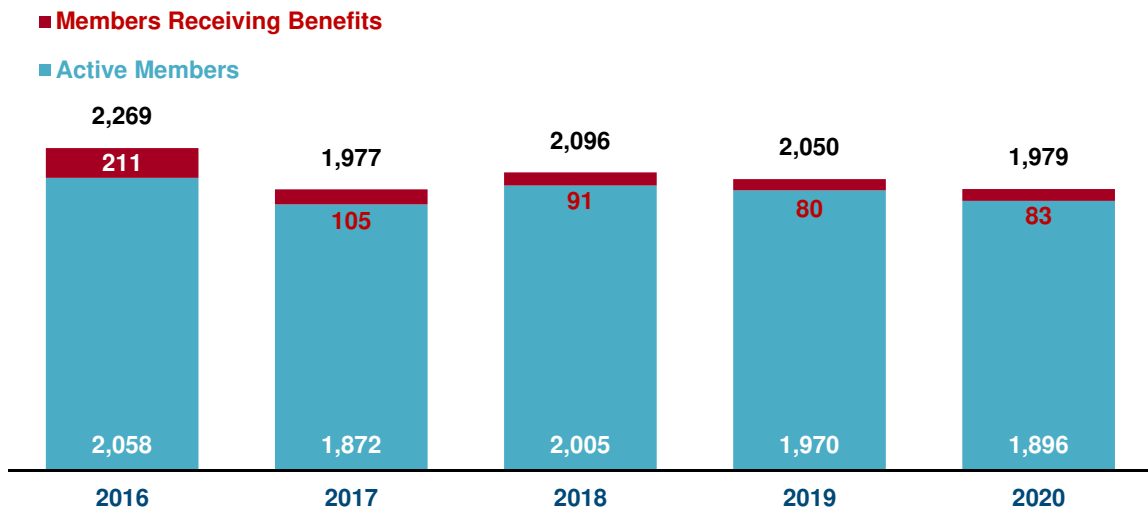
In 2019-20, the plan paid out \$0.7 million in benefits to members. Over the next 20 years, the plan is projected to pay out a total of \$45 million in benefits to members.

Benefit Payments (\$ millions)



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.

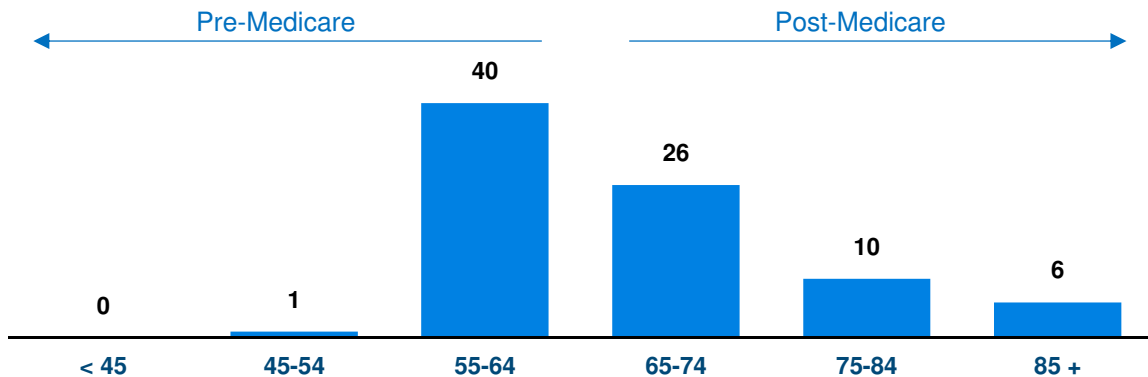


Members Receiving Benefits on July 1, 2020

Teachers	79	Average Age	68.8
Admin.	4		
Ed Assts.	0		
Total	83		

As of July 1, 2020, there were 83 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, 2020

Teachers	1,435	Average Age	46.4
Admin.	69	Average Service	13.3
Ed Assts.	392	Payroll	\$155,634,968
Total	1,896	Average Payroll	82,086

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

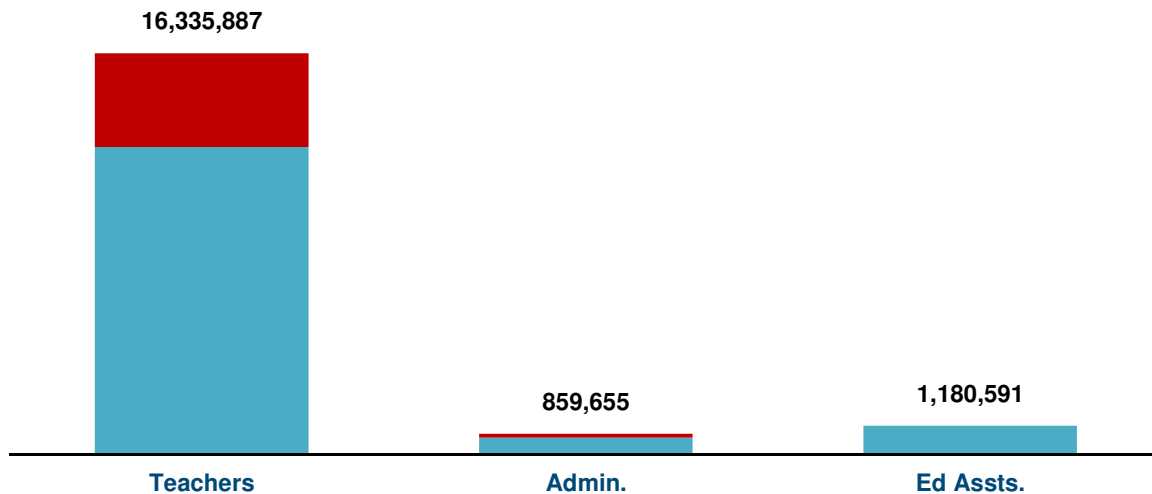
Age	Years of Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
< 25	16							16
25-29	127	31						158
30-34	82	121	32	1				236
35-39	48	57	83	50	2			240
40-44	42	37	43	96	42			260
45-49	31	38	22	56	78	18		243
50-54	29	28	36	45	50	27	7	222
55-59	19	18	31	39	46	23	32	208
60-64	10	22	20	35	37	18	36	178
65+	3	7	16	24	33	16	36	135
Total	407	359	283	346	288	102	111	1,896

Section I - Executive Summary Accrued Liability

The Accrued Liability as of July 1, 2020 equals \$18,376,133 and consists of the following pieces:

■ **Members Receiving Benefits = \$3,972,146**

■ **Active Members = \$14,403,987**



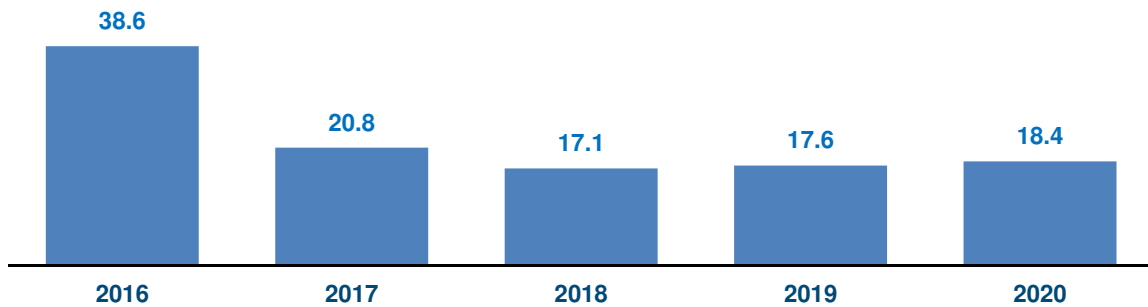
For purposes of determining the City's contribution, the Accrued Liability is measured using the Projected Unit Credit actuarial cost method. A different actuarial cost method, Entry Age Normal, is required to be used to measure liability for financial reporting purposes per GASB 74/75. As of July 1, 2020, the Entry Age Normal Accrued Liability is \$21,267,311.

Section I - Executive Summary Funded Status

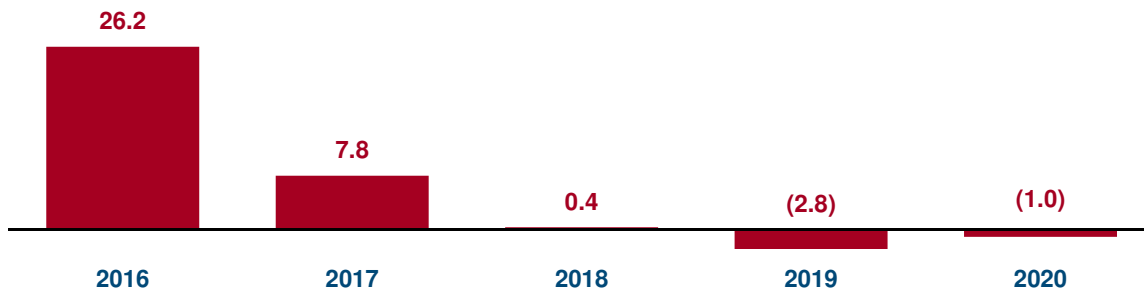
The Accrued Liability grows over time as active members earn additional benefits, and goes down over time as members receive benefits; it may also change when there are changes to the plan provisions or changes in the actuarial assumptions. The Unfunded Accrued Liability is the dollar difference between 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, plan changes and emerging evidence that fewer eligible members elect coverage at retirement.

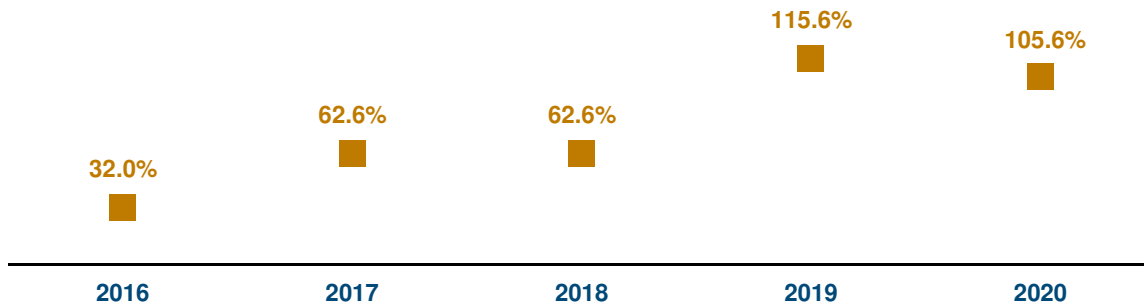
Accrued Liability (\$ millions)



Unfunded Accrued Liability (\$ millions)



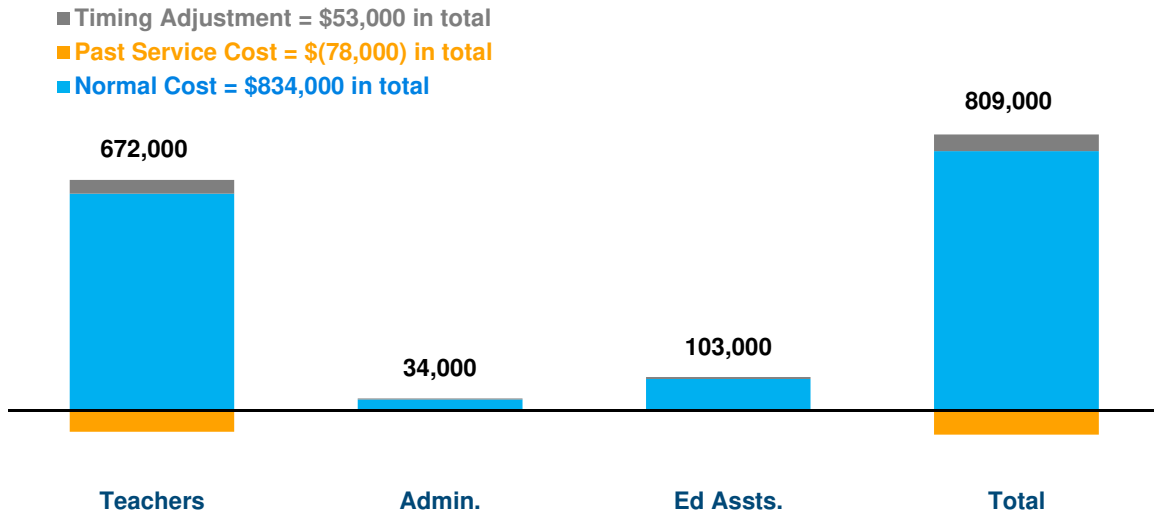
Funded Ratio



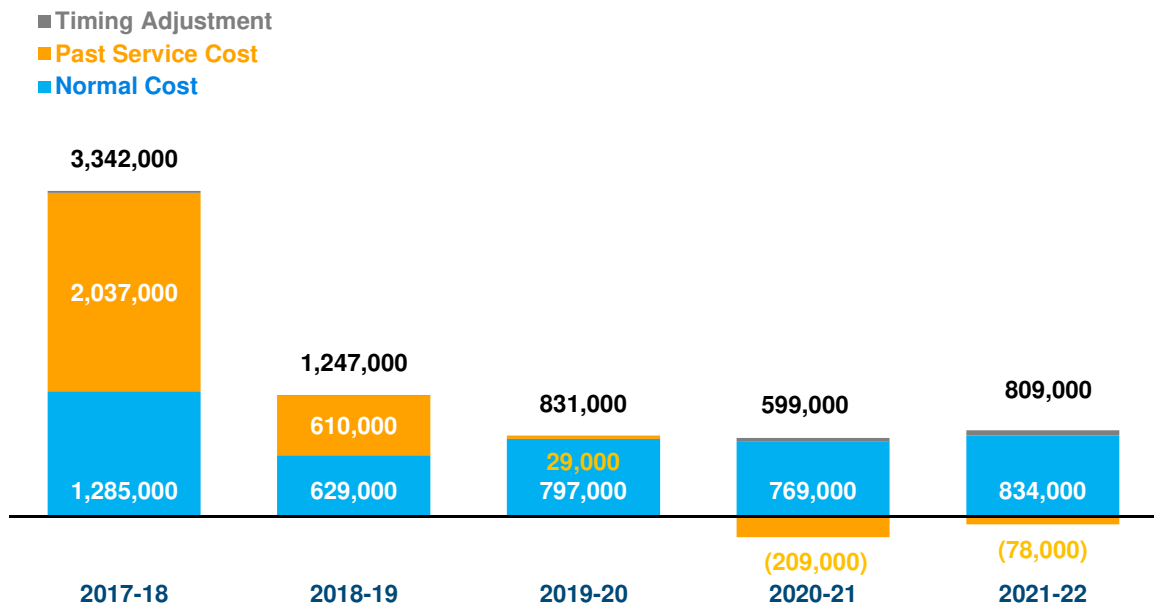
Section I - Executive Summary Actuarially Determined Contribution

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 2021-22 is shown graphically below. Note that since the plan is currently in an overfunded position, the surplus is being used to partially offset the Normal Cost.

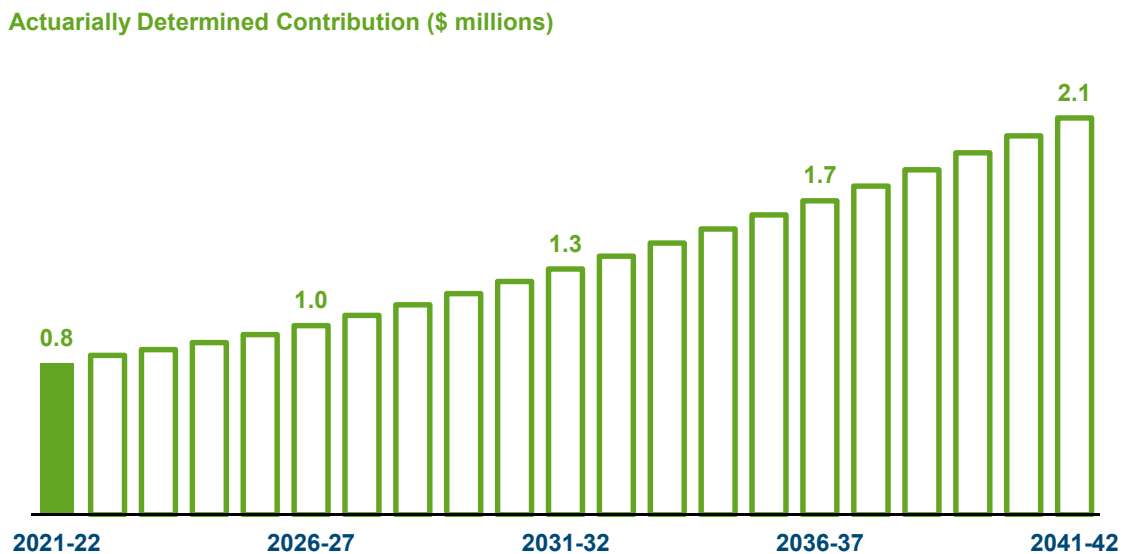
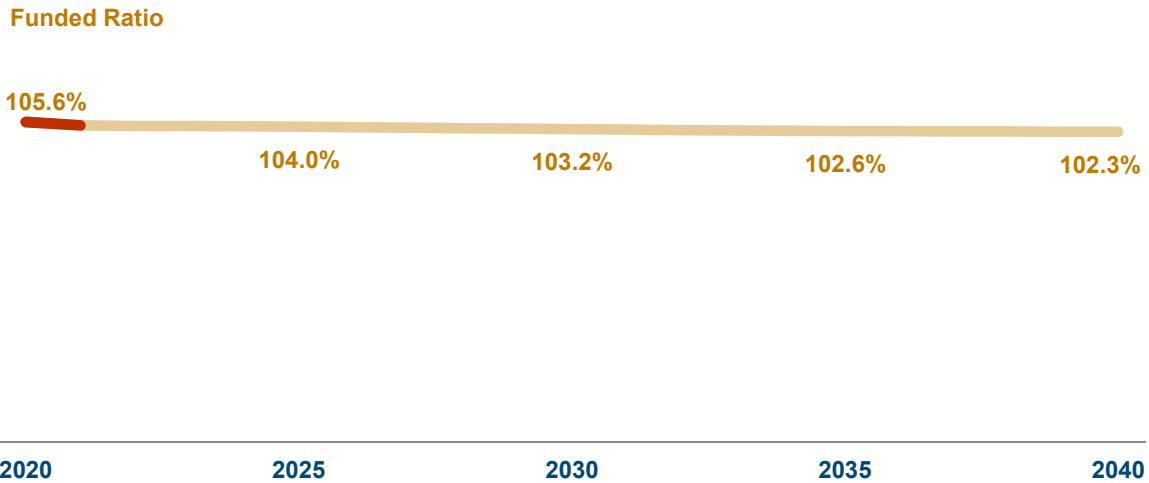


The chart below shows the Actuarially Determined Contribution for the past five fiscal years. Note that the Normal Cost is relatively consistent from year to year, whereas the Past Service Cost tends to be more volatile since it reflects the impact of asset performance and the significant drop in the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



Section I - Executive Summary Long-Range Forecast

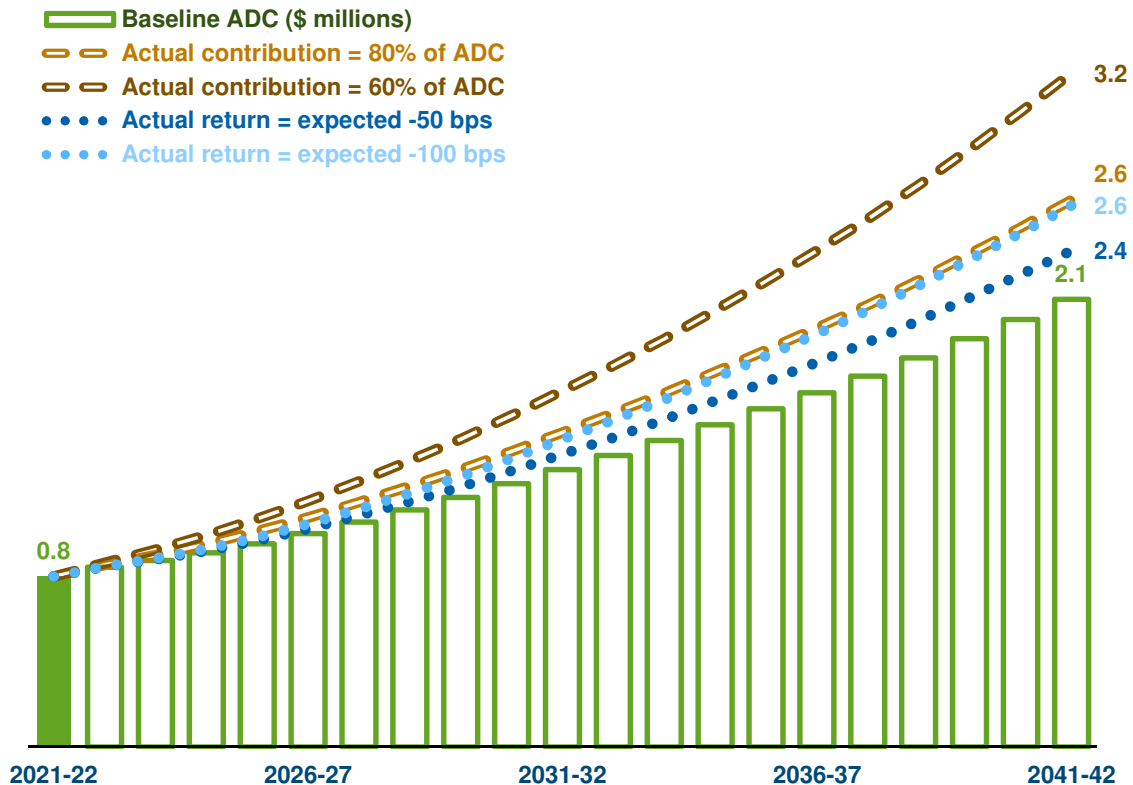
If the City pays the Actuarially Determined Contribution each year, the investments earn exactly the assumed interest rate each year, and there are no changes in the plan provisions or in the actuarial methods and assumptions, then we project the following changes in the plan's funded status and the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



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, 2020	July 1, 2019
Active Members	1,896	1,970
Members Receiving Benefits	83	80
Total Count	1,979	2,050
 Payroll	 \$155,634,968	 \$155,990,574
Assets and Liabilities as of	July 1, 2020	July 1, 2019
Market Value of Assets	\$19,402,433	\$20,387,951
Accrued Liability for Active Members	14,403,987	13,192,709
Accrued Liability for Members Receiving Benefits	3,972,146	4,443,877
Total Accrued Liability	18,376,133	17,636,586
Unfunded Accrued Liability	(1,026,300)	(2,751,365)
Funded Ratio	105.6%	115.6%
Actuarially Determined Contribution for Fiscal Year	2021-22	2020-21
Normal Cost	\$834,000	\$769,000
Past Service Cost	(78,000)	(209,000)
Timing Adjustment	53,000	39,000
Actuarially Determined Contribution	809,000	599,000
Allocated to Teachers	\$672,000	\$491,000
Allocated to Admin.	34,000	21,000
Allocated to Ed Assts.	103,000	87,000
Total	809,000	599,000

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 GASB 75 total OPEB liability as of the prior fiscal year end; 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, 2019*	\$2,120,199	\$119,258,856	\$18,107,750	\$139,486,805
City Contributions	482,000	30,307,000	831,000	31,620,000
Member Contributions	0	182,924	0	182,924
Net Investment Income	71,298	9,312,046	1,197,478	10,580,822
Benefit Payments	(207,966)	(13,208,216)	(731,194)	(14,147,376)
Administrative Expenses	(740)	(46,981)	(2,601)	(50,322)

* The asset allocation as of July 1, 2019 between the non-WPCA City groups and the Board of Education was revised after the July 1, 2019 valuation report was issued.

Market Value on July 1, 2020	2,464,791	145,805,629	19,402,433	167,672,853
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Approximate Rate of Return	7.14%
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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, 2020 assets to groups in proportion to Accrued Liability

	Accrued Liability	Allocated Assets
Teachers	\$16,335,887	\$17,248,240
Administrators	859,655	907,666
Educational Assistants	1,180,591	1,246,527
Total	18,376,133	19,402,433

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	\$12,522,620	\$700,776	\$1,180,591	\$14,403,987
Terminated Members	0	0	0	0
Members Receiving Benefits	3,521,499	158,879	0	3,680,378
Disabled Retirees	0	0	0	0
Beneficiaries Receiving Benefits	291,768	0	0	291,768
Total Accrued Liability	16,335,887	859,655	1,180,591	18,376,133
2. Market Value of Assets (See Section II)	17,248,240	907,666	1,246,527	19,402,433
3. Unfunded Accrued Liability: (1) - (2)	(912,353)	(48,011)	(65,936)	(1,026,300)
4. Funded Ratio: (2) / (1)	105.6%	105.6%	105.6%	105.6%
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)	(68,953)	(3,629)	(4,983)	(77,565)

Section III - Development of Contribution
B. Actuarially Determined Contribution for FY 2021-22

	Teachers	Admin.	Ed Assts.	Total
1. Normal Cost	\$697,262	\$35,713	\$100,919	\$833,894
2. Past Service Cost (see Section IIIA)	(68,953)	(3,629)	(4,983)	(77,565)
3. Timing Adjustment: one year of simple interest on (1) + (2)	43,667	2,230	6,668	52,565
4. Preliminary City Contribution: (1) + (2) + (3)	671,976	34,314	102,604	808,894
5. Actuarially Determined Contribution rounded to \$1000	672,000	34,000	103,000	809,000

Section III - Development of Contribution

C. Long Range Forecast

This forecast is based on the results of the July 1, 2020 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. For purposes of this forecast the amortization period declines to 1 year to illustrate the progress of the plan towards becoming fully funded; in actual practice the amortization period will not be less than 10 years in order to shield the City from contribution volatility. Actual results at each point in time will yield different values, reflecting the actual experience of the plan membership and assets.

Valuation Date	Values as of the Valuation Date				Fiscal Year	Cash Flows Projected to the Following Fiscal Year			
	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio		City Contributions	Member Contributions	Benefit Payments	Net Cash Flows
07/01/2020	\$18,376,133	\$19,402,433	(\$1,026,300)	105.6%	2021-22	\$809,000	\$0	(\$940,496)	(\$131,496)
07/01/2021	19,712,000	20,586,000	(874,000)	104.4%	2022-23	853,000	0	(1,103,000)	(250,000)
07/01/2022	21,008,000	21,909,000	(901,000)	104.3%	2023-24	885,000	0	(1,220,000)	(335,000)
07/01/2023	22,262,000	23,204,000	(942,000)	104.2%	2024-25	922,000	0	(1,250,000)	(328,000)
07/01/2024	23,528,000	24,502,000	(974,000)	104.1%	2025-26	965,000	0	(1,393,000)	(428,000)
07/01/2025	24,898,000	25,898,000	(1,000,000)	104.0%	2026-27	1,013,000	0	(1,499,000)	(486,000)
07/01/2026	26,272,000	27,289,000	(1,017,000)	103.9%	2027-28	1,068,000	0	(1,568,000)	(500,000)
07/01/2027	27,693,000	28,720,000	(1,027,000)	103.7%	2028-29	1,125,000	0	(1,661,000)	(536,000)
07/01/2028	29,199,000	30,236,000	(1,037,000)	103.6%	2029-30	1,184,000	0	(1,696,000)	(512,000)
07/01/2029	30,777,000	31,823,000	(1,046,000)	103.4%	2030-31	1,250,000	0	(1,917,000)	(667,000)
07/01/2030	32,499,000	33,548,000	(1,049,000)	103.2%	2031-32	1,317,000	0	(2,008,000)	(691,000)
07/01/2031	34,183,000	35,233,000	(1,050,000)	103.1%	2032-33	1,384,000	0	(2,215,000)	(831,000)
07/01/2032	35,956,000	37,013,000	(1,057,000)	102.9%	2033-34	1,455,000	0	(2,341,000)	(886,000)
07/01/2033	37,711,000	38,775,000	(1,064,000)	102.8%	2034-35	1,530,000	0	(2,586,000)	(1,056,000)
07/01/2034	39,534,000	40,605,000	(1,071,000)	102.7%	2035-36	1,606,000	0	(2,800,000)	(1,194,000)
07/01/2035	41,308,000	42,389,000	(1,081,000)	102.6%	2036-37	1,682,000	0	(3,020,000)	(1,338,000)
07/01/2036	43,060,000	44,157,000	(1,097,000)	102.5%	2037-38	1,761,000	0	(3,292,000)	(1,531,000)
07/01/2037	44,788,000	45,901,000	(1,113,000)	102.5%	2038-39	1,847,000	0	(3,564,000)	(1,717,000)
07/01/2038	46,443,000	47,570,000	(1,127,000)	102.4%	2039-40	1,938,000	0	(3,814,000)	(1,876,000)
07/01/2039	48,024,000	49,166,000	(1,142,000)	102.4%	2040-41	2,030,000	0	(3,987,000)	(1,957,000)

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, 2020	\$19,402,433	\$18,376,133	(\$1,026,300)	105.6%
July 1, 2019	20,387,951	17,636,586	(2,751,365)	115.6%
July 1, 2018	16,720,330	17,098,260	377,930	62.6%
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%

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

Fiscal Year	Actuarially Determined Contribution	Actual City Contribution	Contribution (Deficiency) Excess
2021-22	\$809,000	TBD	TBD
2020-21	599,000	TBD	TBD
2019-20	831,000	\$831,000	0
2018-19	1,247,000	3,422,000	2,175,000
2017-18	3,342,000	3,342,000	0
2016-17	4,726,000	4,726,000	0

Section IV - Membership Data
A. Statistics of Active Membership

	As of July 1, 2020	As of July 1, 2019
Number of Active Members	1,896	1,970
Average Age	46.4	45.8
Average Service	13.3	12.6

Section IV - Membership Data

B. Distribution of Active Members as of July 1, 2020

Teachers

Age	Years of Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
< 25	9							9
25-29	104	21						125
30-34	73	110	27					210
35-39	35	49	73	41	1			199
40-44	28	24	31	90	38			211
45-49	18	25	19	49	62	16		189
50-54	17	18	20	32	41	23	3	154
55-59	9	9	21	25	31	20	25	140
60-64	4	10	14	26	21	13	26	114
65+	2	5	6	17	20	11	23	84
Total	299	271	211	280	214	83	77	1,435

Admin.

Age	Years of Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
< 25								0
25-29								0
30-34								0
35-39	2	2	3	2				9
40-44	1	3	2	2				8
45-49	1	2		4	10	2		19
50-54	1	3		2	2	3	1	12
55-59	2	1	1			1	4	9
60-64			1	1	2	1	2	7
65+				1		1	3	5
Total	7	11	7	12	14	8	10	69

Ed Assts.

Age	Years of Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
< 25	7							7
25-29	23	10						33
30-34	9	11	5	1				26
35-39	11	6	7	7	1			32
40-44	13	10	10	4	4			41
45-49	12	11	3	3	6			35
50-54	11	7	16	11	7	1	3	56
55-59	8	8	9	14	15	2	3	59
60-64	6	12	5	8	14	4	8	57
65+	1	2	10	6	13	4	10	46
Total	101	77	65	54	60	11	24	392

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

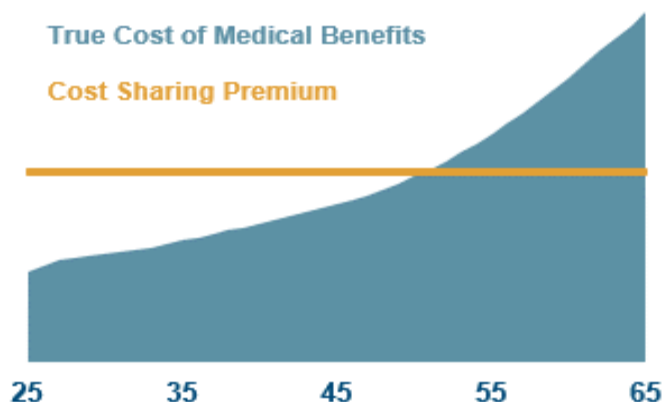
	As of July 1, 2020	As of July 1, 2019
Members Receiving Benefits		
Number	83	80
Average Age	68.8	68.2
Spouses/Dependents Receiving Benefits		
Number	13	15
Average Age	61.4	61.9
 Members Receiving Benefits as of July, 1, 2020		
	Age	Number
	< 50	0
	50 - 59	6
	60 - 69	47
	70 - 79	21
	80 - 89	7
	90 +	2
	Total	83

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 - Healthcare Information

B. Current Premiums

The annual State Plan premiums are shown below.

State Plan	Employee	Spouse	Effective Date
Active Member	\$12,118.92	\$13,880.88	07/01/2020
Pre-65 Retiree	15,160.92	17,405.40	07/01/2020
Post-65 NME Retiree	27,060.48	31,700.76	07/01/2020
Blended Premium(for cost share)	\$11,933.76	\$13,711.92	07/01/2020

Section V - Healthcare Information

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.

Age	Employee		Spouse	
	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
\$22,189.99	\$21,080.62	\$22,189.99	\$21,080.62

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 6.95% (prior: 7.05%)

Inflation 2.60%

Amortization Growth Rate 2.00%

Salary Scale 2.60%

Medical Trend 5.3% - 4.1% over 55 years

Mortality **Teachers and Administrators[#]:** For healthy retirees and beneficiaries, the RPH-2014 White Collar Mortality table with employee and annuitant rates blended from ages 50 to 80 projected to the year 2020 using the BB improvement scale and further adjusted to grade in increases (5% for females and 8% for males) to rates over age 80. This assumption does not include a margin for mortality improvement beyond the valuation date.

Educational Assistants: PubG-2010 Mortality Table with generational projection per the Ultimate MP-2019 scale, with employee rates before benefit commencement and healthy or disabled annuitant rates after benefit commencement. This assumption includes a margin for improvements in longevity beyond the valuation date.

Appendix B - Actuarial Assumptions

Turnover

Teachers and Administrators[#]: 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%

Educational Assistants: Rates based on age:

Age	Rate
20	5.44%
25	4.89%
30	3.70%
35	2.35%
40	1.13%
45+	0.00%

Appendix B - Actuarial Assumptions

Retirement

Teachers and Administrators[#]: Rates are based on age, eligibility for pension benefits, and gender:

Age	Unreduced		Proratable		Reduced	
	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%		

Educational Assistants: Assumed rates of retirement after the completion of 10 years of service:

Age	Rate
60	20%
61	5%
62-69	20%
70	100%

An additional 50% probability of retirement is assumed in the year the member completes 25 years of service.

Appendix B - Actuarial Assumptions

Disability

Teachers and Administrators[#]: 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%

Educational Assistants: Rates based on age:

Age	Rate
20	0.05%
25	0.05%
30	0.05%
35	0.06%
40	0.09%
45	0.18%
50	0.40%
55	0.85%
60	0.00%

All disabilities are assumed to be non-service related.

- 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
- Future Dependent Coverage** 50% of active participants are assumed to be married. Female spouses are assumed to be 4 years younger than male spouses.
- Future Post-65 Coverage** 90% of current active Teachers hired prior to April 1, 1986 and pre-65 retired Teachers are assumed to be Medicare-eligible
- 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, 2018 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

Effective July 1, 2019, retirees pay 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 74/75) 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.