



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

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

Prepared by

Rebecca A. Sielman, FSA
Consulting Actuary

Yelena Pelletier, ASA
Consulting Actuary

80 Lambertson Road
Windsor, CT 06095 USA
(860) 687-2110
milliman.com

Table of Contents

	Page
CERTIFICATION	1
I EXECUTIVE SUMMARY	3
II PLAN ASSETS	
A. Summary of Fund Transactions	14
III DEVELOPMENT OF CONTRIBUTION	
A. Past Service Cost	15
B. Actuarially Determined Contribution	16
C. Long Range Forecast	17
D. History of Funded Status	18
E. History of City Contributions	19
IV MEMBERSHIP DATA	
A. Statistics of Active Membership	20
B. Distribution of Active Members	21
C. Information on Members Receiving Benefits	23
V HEALTHCARE INFORMATION	
A. Introduction	24
B. Current Premiums	25
C. Expected Healthcare Costs	26
APPENDICES	
A. Actuarial Funding Method	28
B. Actuarial Assumptions	29
C. Summary of Plan Provisions	32
D. Glossary	42

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.

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.

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 2,145 to 2,248. The number of active members increased from 1,243 to 1,275, and the number of members receiving benefits increased from 902 to 973.

The average age of active members increased from 49.8 to 49.9, and the average age of members receiving benefits stayed the same at 74.

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 information that was provided to us for this valuation.

Medical Trend Rate: We updated the pre-65 medical trend rate to 4.4% initially, grading up to 5.8% then down to 4.2% over 67 years and we updated the post-65 medical trend rate to 5.9% initially, grading to 4.2% over 55 years (prior: 7.1% 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 95% of eligible members elect coverage.

The above changes increased the liability by approximately \$20.4 million and increased the Actuarially Determined Contribution by approximately \$2.2 million.

Plan Changes

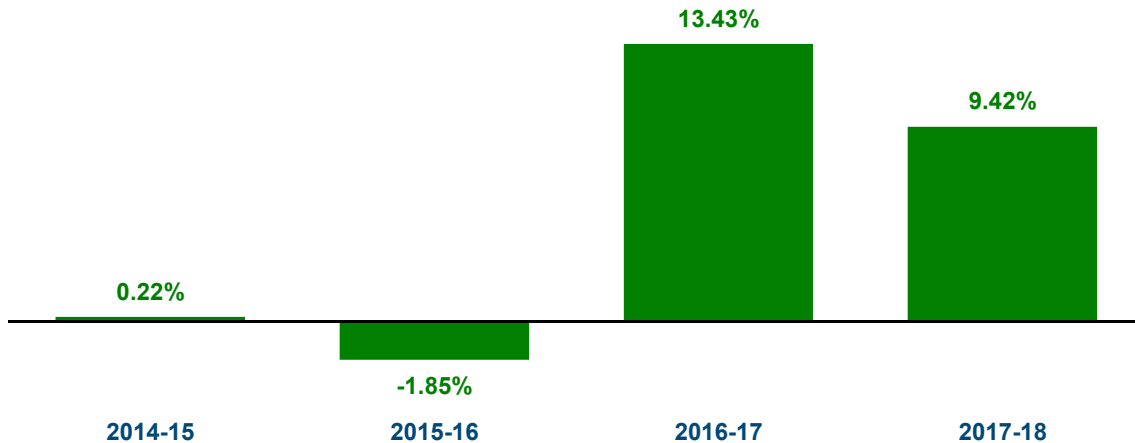
Medicare Part B reimbursement payments have been transferred to this Plan from the pension Plans. The corresponding liability has been moved from the pension Plans to this Plan. This change increased the liability by approximately \$27.9 million and increased the Actuarially Determined Contribution by approximately \$2.7 million.

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 CERF City, CERF BOE, CERF WPCA, Custodians, Fire and Police members. The asset figures shown below and throughout this report exclude the portion of the OPEB Trust that covers other Board of Education members.

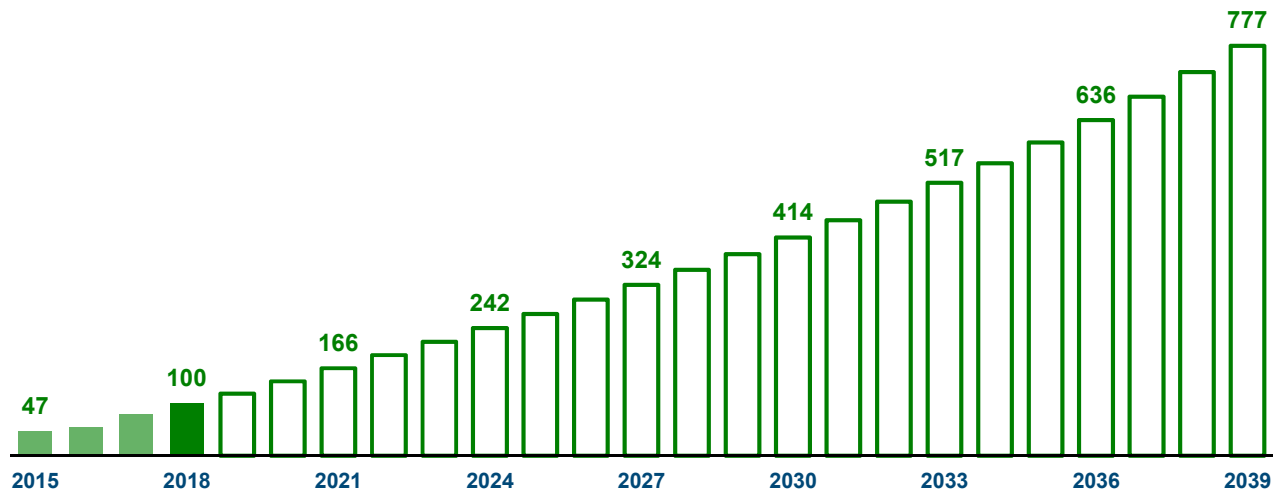
Market Value as of July 1, 2017	\$79,181,012
City Contributions and Member Contributions	25,292,665
Investment Income	8,039,128
Benefit Payments and Administrative Expenses	(12,916,348)
Market Value as of July 1, 2018	<u>99,596,457</u>

For fiscal year 2017-18, the plan's assets earned 9.42%. The actuarial assumption for this period was 7.20%; the result is an asset gain of about \$1.9 million . Historical rates of return are shown in the graph below.

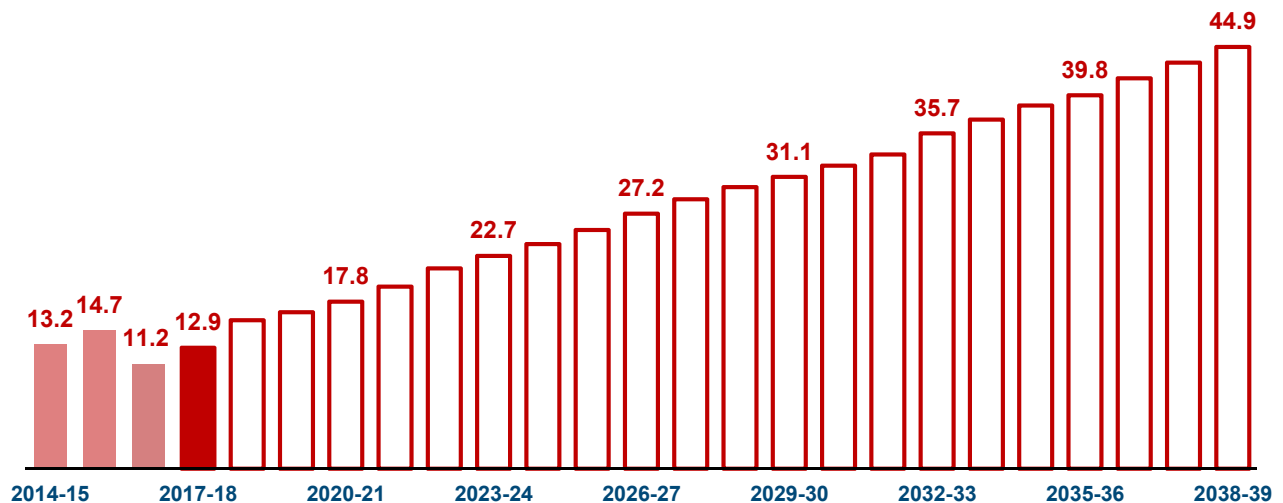


Section I - Executive Summary Assets (continued)

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.

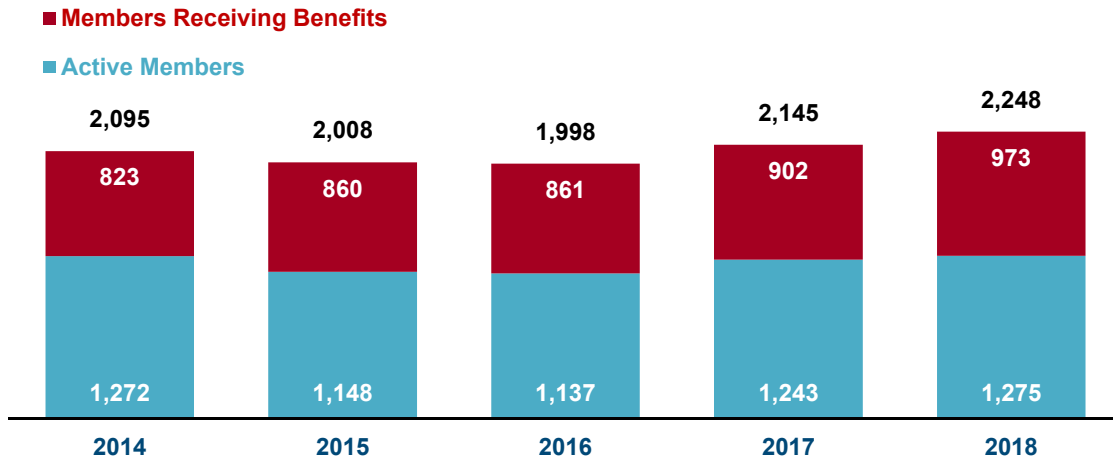


In 2017-18, the plan paid out \$12.9 million in benefits to members. Over the next 20 years, the plan is projected to pay out a total of \$582 million in benefits to members.



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.

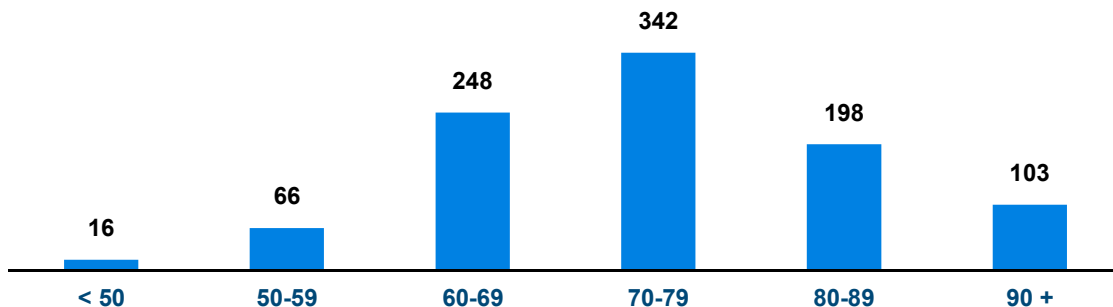


Members Receiving Benefits on July 1, 2018

CERF City	327	Average Age	74.0
CERF BOE	60		
CERF WPCA	13		
Custodians	86		
Fire	214		
Police	273		
Total	973		

As of July 1, 2018, there were 973 members receiving benefits. In addition, 366 spouses/dependents are currently receiving benefits.

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



Section I - Executive Summary Membership (continued)

Active Members on July 1, 2018

CERF City	499	Average Age	49.9
CERF BOE	84	Average Service	16.2
CERF WPCA	28		
Custodians	126		
Fire	256		
Police	282		
Total	1,275		

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

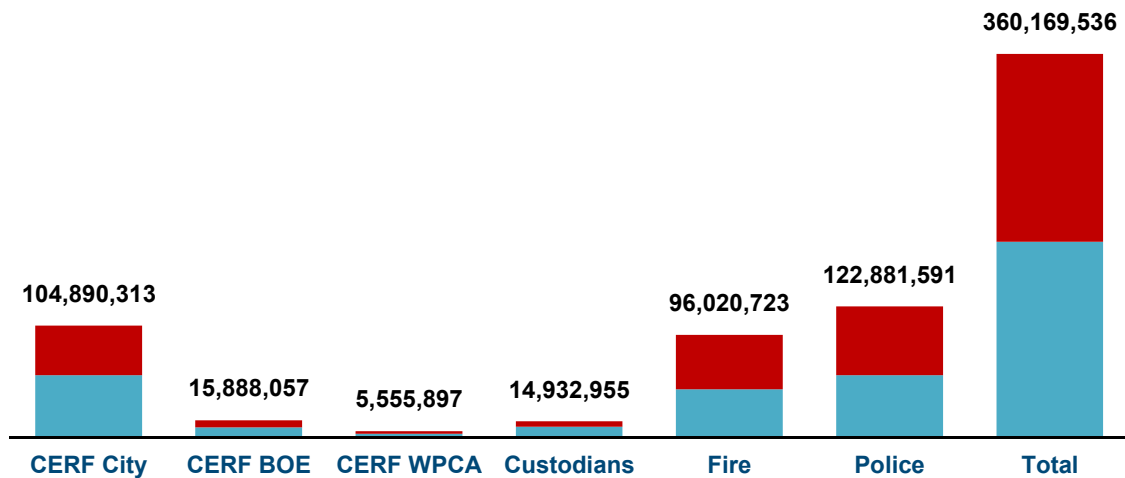
Age	Years of Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
< 25	10							10
25-29	55	9						64
30-34	42	34	14					90
35-39	30	29	38	3				100
40-44	17	20	42	34	12			125
45-49	26	21	30	56	44	2		179
50-54	17	22	24	52	54	28	24	221
55-59	11	10	25	55	31	30	51	213
60-64	9	12	26	26	22	15	47	157
65+	11	10	11	19	24	3	38	116
Total	228	167	210	245	187	78	160	1,275

Section I - Executive Summary Accrued Liability

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

■ **Members Receiving Benefits = \$176.5 million**

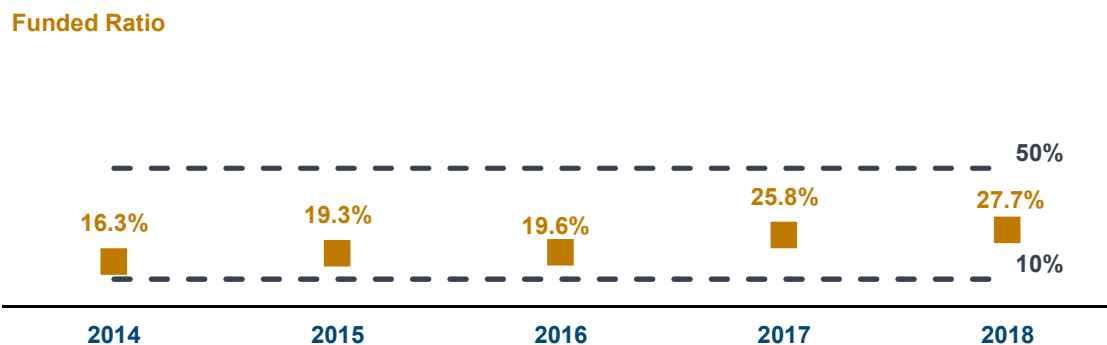
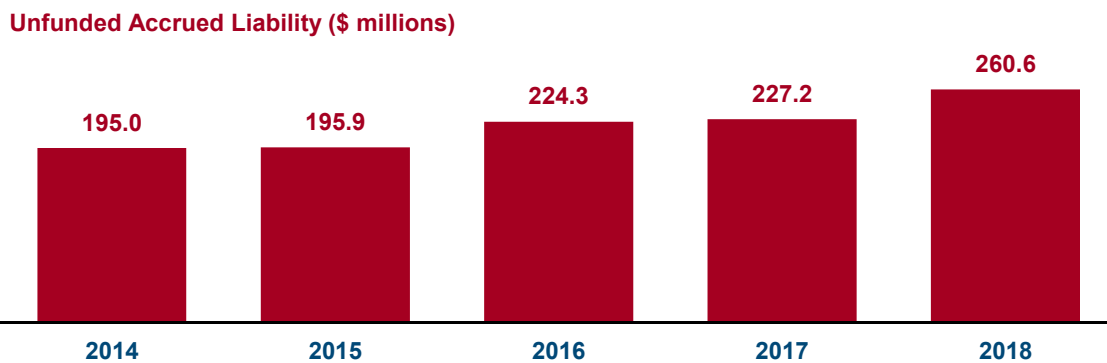
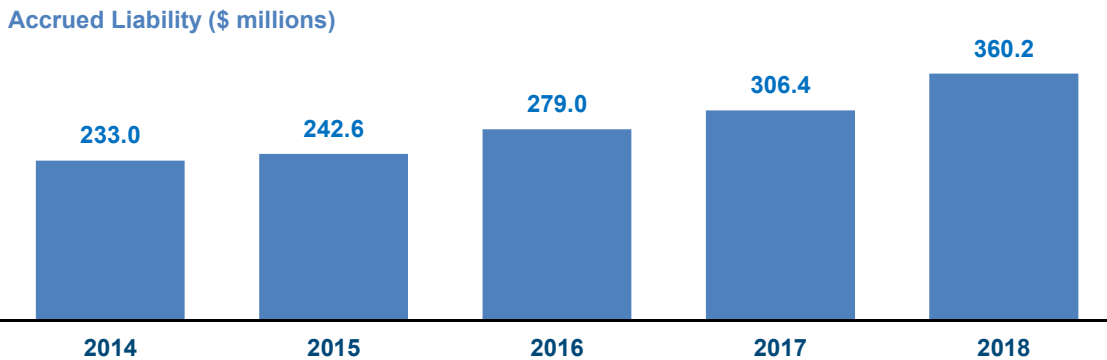
■ **Active Members = \$183.7 million**



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 \$352,709,929.

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.

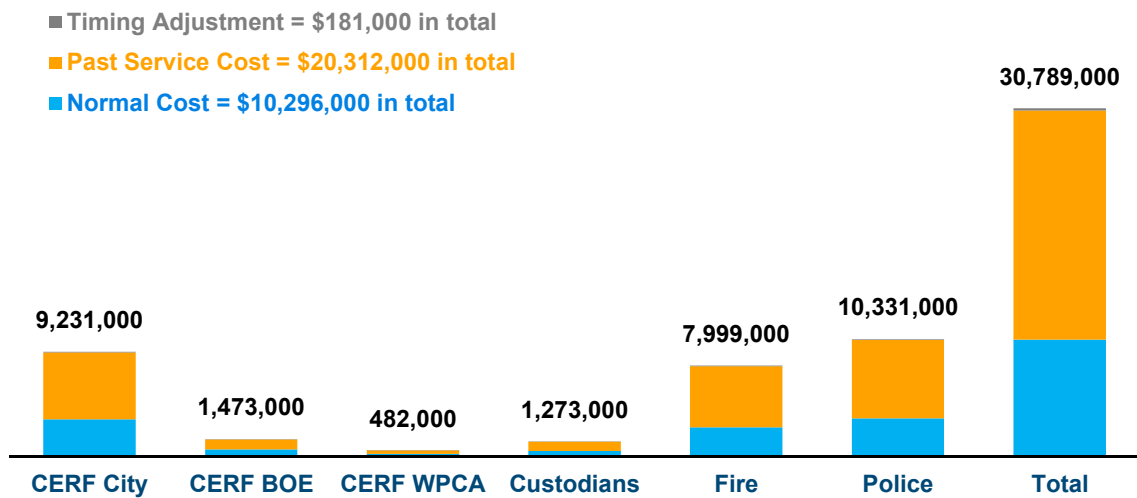


This work product was prepared solely for the City for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

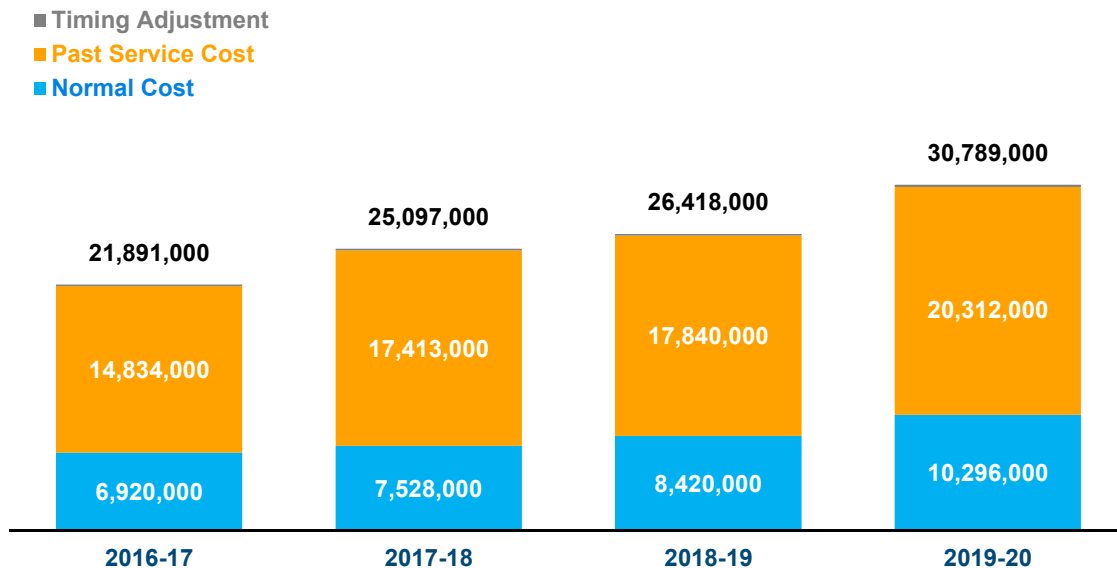
Section I - Executive Summary Actuarially Determined Contribution

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.



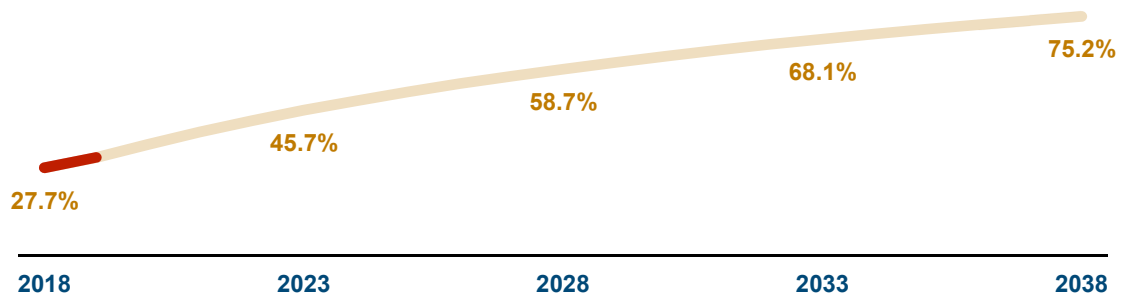
The chart below shows the Actuarially Determined Contribution for the past four fiscal years. Note that the Normal Cost is relatively consistent from year to year, whereas the Past Service Cost tends to be more volatile since it reflects the impact of asset performance.



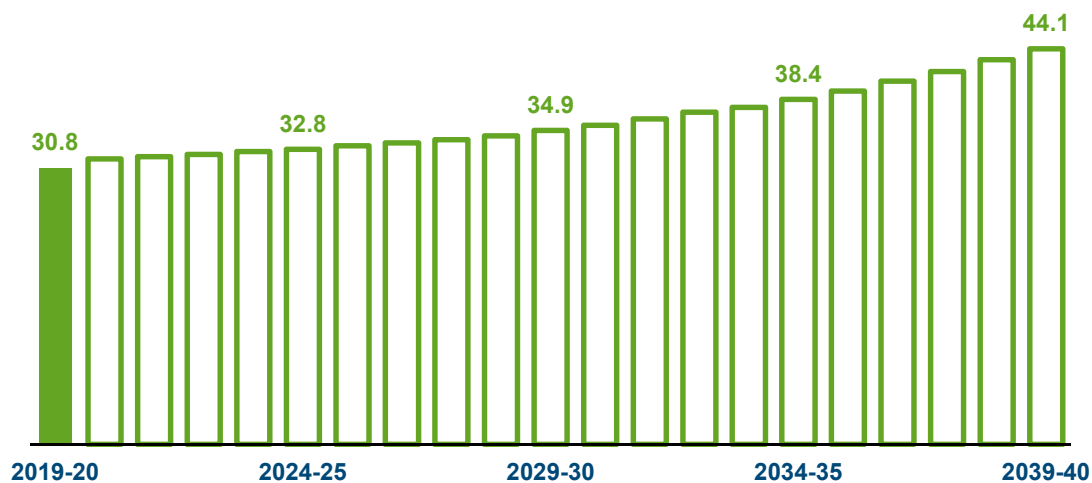
Section I - Executive Summary Long-Range Forecast

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



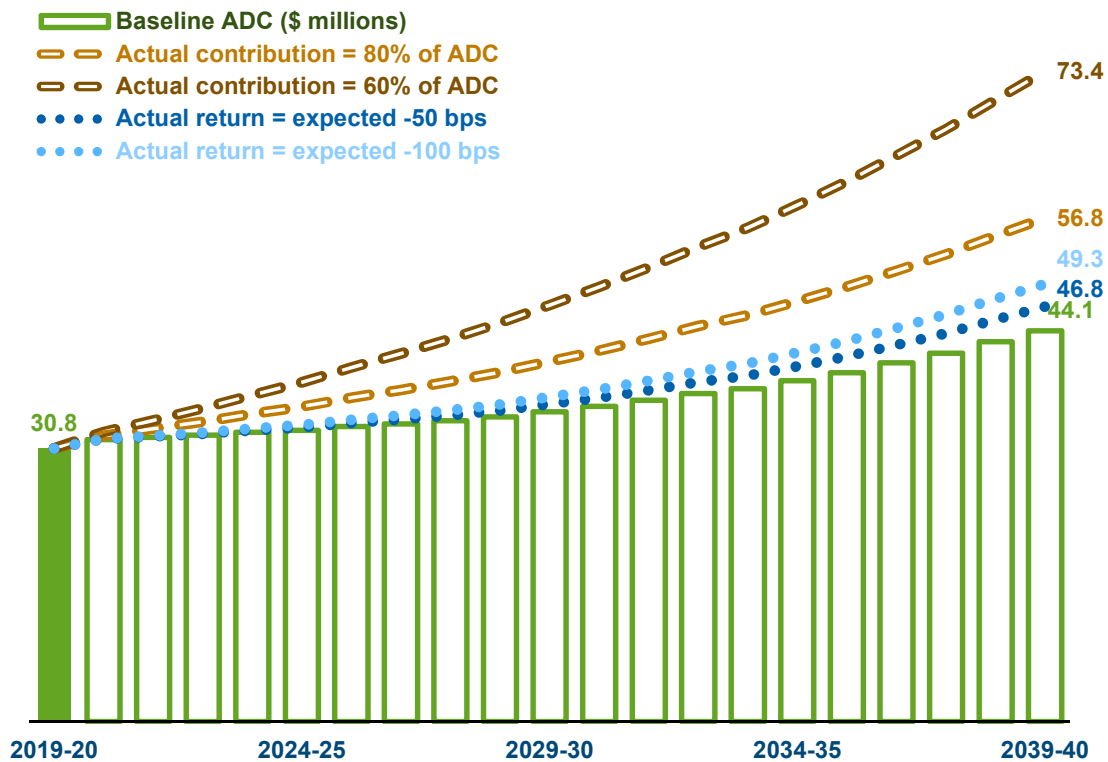
Actuarially Determined Contribution (\$ millions)



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	1,275	1,243
Members Receiving Benefits	973	902
Total Count	2,248	2,145
Assets and Liabilities as of	July 1, 2018	July 1, 2017
Market Value of Assets	\$99,596,457	\$79,181,000
Accrued Liability for Active Members	183,713,812	147,031,000
Accrued Liability for Members Receiving Benefits	176,455,724	159,334,000
Total Accrued Liability	360,169,536	306,365,000
Unfunded Accrued Liability	260,573,079	227,184,000
Funded Ratio	27.7%	25.8%
Actuarially Determined Contribution for Fiscal Year	2019-20	2018-19
Normal Cost	\$10,296,000	\$8,420,000
Past Service Cost	20,312,000	17,840,000
Timing Adjustment	181,000	158,000
Actuarially Determined Contribution	30,789,000	26,418,000
Allocated to CERF City	\$9,231,000	\$7,726,000
Allocated to CERF BOE	1,473,000	1,235,000
Allocated to CERF WPCA	482,000	463,000
Allocated to Custodians	1,273,000	940,000
Allocated to Fire	7,999,000	6,861,000
Allocated to Police	10,331,000	9,193,000
Total	30,789,000	26,418,000

Section II - Plan 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 CERF City, CERF BOE, CERF WPCA, Custodians, Fire and Police members. 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 City 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
CERF City	\$104,890,313	\$28,942,370
CERF BOE	15,888,057	4,383,989
Custodians	14,932,955	4,120,448
Fire	96,020,723	26,494,985
Police	122,881,591	33,906,701
Total, non-WPCA City groups	354,613,639	97,848,493
CERF WPCA		1,747,964
Total for this valuation		99,596,457

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.

	CERF City	CERF BOE	CERF WPCA	Custodians	Fire	Police	Total
1. Accrued Liability							
Active Members	\$58,131,023	\$9,329,804	\$3,191,328	\$9,768,270	\$45,073,373	\$58,220,014	\$183,713,812
Terminated Members	0	0	0	0	0	0	0
Retirees	46,759,290	6,558,253	2,364,569	5,164,685	50,947,350	64,661,577	176,455,724
Disabled Retirees	0	0	0	0	0	0	0
Beneficiaries	0	0	0	0	0	0	0
Total Accrued Liability	104,890,313	15,888,057	5,555,897	14,932,955	96,020,723	122,881,591	360,169,536
2. Market Value of Assets (see Section II)	28,942,370	4,383,989	1,747,964	4,120,448	26,494,985	33,906,701	99,596,457
3. Unfunded Accrued Liability: (1) - (2)	75,947,943	11,504,068	3,807,933	10,812,507	69,525,738	88,974,890	260,573,079
4. Funded Ratio: (2) / (1)	27.6%	27.6%	31.5%	27.6%	27.6%	27.6%	27.7%
5. Amortization Period	20	20	20	20	20	20	20
6. Amortization Growth Rate	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
7. Past Service Cost: (3) amortized over (5)	5,920,138	896,741	296,828	842,834	5,419,527	6,935,588	20,311,656

Section III - Development of Contribution

B. Actuarially Determined Contribution for FY 2019-20

The Actuarially Determined Contribution is developed below.

	CERF City	CERF BOE	CERF WPCA	Custodians	Fire	Police	Total
1. Total Normal Cost	\$3,256,573	\$567,294	\$181,809	\$423,069	\$2,532,463	\$3,535,844	\$10,497,052
2. Expected Member Contributions	0	0	0	0	0	201,144	201,144
3. Expected Administrative Expenses	0	0	0	0	0	0	0
4. Net Normal Cost: (1) - (2) + (3) (see Section IIIA)	3,256,573	567,294	181,809	423,069	2,532,463	3,334,700	10,295,908
5. Past Service Cost	5,920,138	896,741	296,828	842,834	5,419,527	6,935,588	20,311,656
6. Timing Adjustment: one month of simple interest on (4) + (5)	54,296	8,662	2,832	7,490	47,049	60,766	181,095
7. Actuarially Determined Contribution for FY 2019-20: (4) + (5) + (6)	9,231,007	1,472,697	481,469	1,273,393	7,999,039	10,331,054	30,788,659
8. Actuarially Determined Contribution rounded to \$1,000	9,231,000	1,473,000	482,000	1,273,000	7,999,000	10,331,000	30,789,000

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.

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
7/1/2018	\$360,169,536	\$99,596,457	\$260,573,079	27.7%	2019-20	\$30,789,000	\$207,178	(\$16,680,642)	\$14,315,536
7/1/2019	381,546,000	117,860,000	263,686,000	30.9%	2020-21	31,806,000	213,000	(17,812,000)	14,207,000
7/1/2020	403,438,000	141,051,000	262,387,000	35.0%	2021-22	32,043,000	220,000	(19,408,000)	12,855,000
7/1/2021	426,181,000	165,778,000	260,403,000	38.9%	2022-23	32,284,000	226,000	(21,351,000)	11,159,000
7/1/2022	449,350,000	190,859,000	258,491,000	42.5%	2023-24	32,606,000	233,000	(22,691,000)	10,148,000
7/1/2023	472,537,000	215,966,000	256,571,000	45.7%	2024-25	32,843,000	240,000	(23,935,000)	9,148,000
7/1/2024	496,501,000	241,807,000	254,694,000	48.7%	2025-26	33,268,000	247,000	(25,433,000)	8,082,000
7/1/2025	521,475,000	268,448,000	253,027,000	51.5%	2026-27	33,564,000	255,000	(27,170,000)	6,649,000
7/1/2026	547,172,000	295,878,000	251,294,000	54.1%	2027-28	33,921,000	262,000	(28,721,000)	5,462,000
7/1/2027	573,463,000	323,770,000	249,693,000	56.5%	2028-29	34,359,000	270,000	(30,002,000)	4,627,000
7/1/2028	600,703,000	352,414,000	248,289,000	58.7%	2029-30	34,949,000	278,000	(31,087,000)	4,140,000
7/1/2029	629,110,000	382,227,000	246,883,000	60.8%	2030-31	35,535,000	287,000	(32,284,000)	3,538,000
7/1/2030	659,267,000	413,652,000	245,615,000	62.7%	2031-32	36,230,000	295,000	(33,497,000)	3,028,000
7/1/2031	691,075,000	446,685,000	244,390,000	64.6%	2032-33	36,988,000	304,000	(35,738,000)	1,554,000
7/1/2032	724,818,000	481,535,000	243,283,000	66.4%	2033-34	37,540,000	313,000	(37,198,000)	655,000
7/1/2033	759,540,000	517,333,000	242,207,000	68.1%	2034-35	38,422,000	323,000	(38,689,000)	56,000
7/1/2034	796,191,000	554,743,000	241,448,000	69.7%	2035-36	39,347,000	332,000	(39,805,000)	(126,000)
7/1/2035	834,945,000	594,188,000	240,757,000	71.2%	2036-37	40,444,000	342,000	(41,591,000)	(805,000)
7/1/2036	876,420,000	636,245,000	240,175,000	72.6%	2037-38	41,522,000	353,000	(43,258,000)	(1,383,000)
7/1/2037	920,251,000	680,585,000	239,666,000	74.0%	2038-39	42,840,000	363,000	(44,945,000)	(1,742,000)

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	\$99,596,457	\$360,169,536	\$260,573,079	27.7%
July 1, 2017	79,181,012	306,365,000	227,184,000	25.8%
July 1, 2016	54,664,000	279,009,000	224,345,000	19.6%
July 1, 2015	46,738,000	242,622,000	195,884,000	19.3%
July 1, 2014	38,031,000	233,041,000	195,010,000	16.3%

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

Fiscal Year	Actuarially Determined Contribution	Actual City Contribution	Contribution Deficiency (Excess)
2019-20	\$30,789,000	TBD	TBD
2018-19	26,418,000	TBD	TBD
2017-18	25,097,000	\$25,097,000	\$0
2016-17	21,891,000	21,891,000	0
2015-16	22,047,000	19,795,106	(2,251,894)

Section IV - Membership Data
A. Statistics of Active Membership

	As of July 1, 2018	As of July 1, 2017
Number of Active Members	1,275	1,243
Average Age	49.9	49.8
Average Service	16.2	16.5

Section IV - Membership Data

B. Distribution of Active Members as of July 1, 2018

CERF City

Age	Years of Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
< 25	4							4
25-29	20							20
30-34	14	10	5					29
35-39	11	10	7					28
40-44	10	7	11	11	1			40
45-49	19	12	10	16	8	1		66
50-54	9	11	9	20	17	6	8	80
55-59	7	7	13	28	8	5	20	88
60-64	7	8	18	16	11	4	14	78
65+	11	6	6	11	16	1	15	66
Total	112	71	79	102	61	17	57	499

CERF BOE

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	4	2						6
35-39	9		1					10
40-44	1	2	1	2				6
45-49	4	1		3				8
50-54	5	2	1	5		1		14
55-59	4	1		2	4	3	1	15
60-64		2	2	4	1		1	10
65+		1	2	4	3		5	15
Total	27	11	7	20	8	4	7	84

CERF WPCA

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		1						1
35-39			3					3
40-44								0
45-49								0
50-54	1	4	1			1		7
55-59		1		3	1	1		6
60-64	2		1			1		4
65+		2			1		4	7
Total	3	8	5	3	2	3	4	28

Section IV - Membership Data

B. Distribution of Active Members as of July 1, 2018

Custodians

Age	Years of Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
< 25								0
25-29		1						1
30-34		1						1
35-39	1	2	1	2				6
40-44			3	1				4
45-49		4	2	6	1			13
50-54		3	2	9	4	3	3	24
55-59		1	10	15	3	4	2	35
60-64		2	4	6	7	4	2	25
65+		1	3	3	4	2	4	17
Total	1	15	25	42	19	13	11	126

Fire

Age	Years of Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
< 25	2							2
25-29	9	3						12
30-34	8	8	3					19
35-39	5	9	13					27
40-44	4	5	14	13	1			37
45-49	1	4	8	24	12			49
50-54	1	2	7	12	12	7	8	49
55-59			2	6	11	7	16	42
60-64					2	2	14	18
65+							1	1
Total	30	31	47	55	38	16	39	256

Police

Age	Years of Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
< 25	4							4
25-29	26	5						31
30-34	16	12	6					34
35-39	4	8	13	1				26
40-44	2	6	13	7	10			38
45-49	2		10	7	23	1		43
50-54	1		4	6	21	10	5	47
55-59				1	4	10	12	27
60-64			1		1	4	16	22
65+				1			9	10
Total	55	31	47	23	59	25	42	282

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

	As of July 1, 2018	As of July 1, 2017
Members Receiving Benefits		
Number	973	902
Average Age	74.0	74.0
Spouses / dependents receiving benefits		
Number	366	575
Average Age	69.0	71.0

Distribution of Members Receiving Benefits as of July 1, 2018

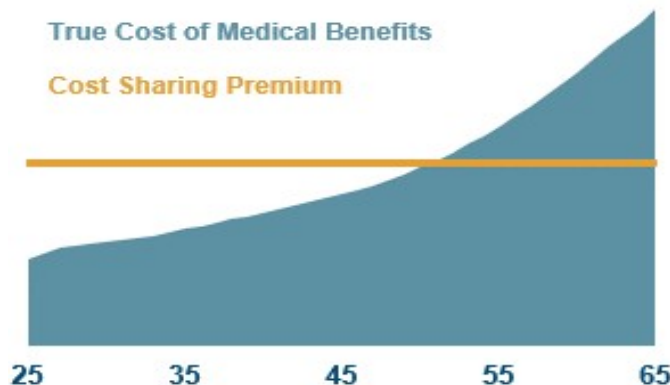
Age	Number
< 50	16
50 - 59	66
60 - 69	248
70 - 79	342
80 - 89	198
90 +	<u>103</u>
Total	973

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
Cigna Active Pre-65	\$14,248.80	\$14,392.44	7/1/2018
Cigna Active Post-65	8,588.16	8,523.12	7/1/2018
Cigna Retire Pre-65	18,804.60	18,804.72	7/1/2018
Cigna Retire Post-65	10,412.76	10,413.00	7/1/2018
IPI Retiree Post 65	7,991.04	7,991.04	7/1/2018
Aetna Retiree Post 65	5,510.52	5,510.52	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.

Cigna

Age	Employee		Spouse	
	Male	Female	Male	Female
45	0.32710	0.52550	0.32710	0.52550
50	0.43690	0.61240	0.43690	0.61240
55	0.57440	0.71320	0.57440	0.71320
60	0.74180	0.83660	0.74180	0.83660
65	1.00000	1.00000	1.00000	1.00000
70	1.15710	1.10740	1.15710	1.10740
75	1.30980	1.20840	1.30980	1.20840
80	1.41800	1.28080	1.41800	1.28080

IPI

Age	Employee		Spouse	
	Male	Female	Male	Female
65	1.00000	1.00000	1.00000	1.00000
70	1.13770	1.09540	1.13770	1.09540
75	1.26940	1.18220	1.26940	1.18220
80	1.35780	1.23910	1.35780	1.23910

Aetna - Same expected cost for all ages.

The expected age 65 per capita claim costs, based on the factors in the table above, are:

	Employee		Spouse	
	Male	Female	Male	Female
Active Pre-65	\$25,130.99	\$22,395.35	\$22,395.35	\$25,130.99
Active Post-65	7,706.49	7,582.82	7,582.82	7,706.49
Cigna Retiree Pre-65	33,670.35	30,005.17	30,005.17	33,670.35
Cigna Retiree Post-65	8,704.94	8,565.25	8,565.25	8,704.94
IPI Post-65	6,267.59	6,062.07	6,062.07	6,267.59

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 a 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 Values 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. In addition, the assumptions for the Fire and Police groups reflect the formal experience studies performed for those groups as of the following dates: July 1, 2013 for Fire and July 1, 2008 - June 30, 2015 for Police. 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	Pre-65: 4.40% - 4.20% over 67 years (prior: 7.1% - 4.6% over 5 years) Post-65: 5.90% - 4.20% over 55 years (prior: 7.1% - 4.6% over 5 years) Rate of Increase for Part B Reimbursements: 2.60%
Turnover	Annual rates of withdrawal are as follows:

Age	Classified and WPCA Employees	Custodians and Firefighters*	Police
20	0.1060	0.0544	0.0181
25	0.0790	0.0489	0.0163
30	0.0580	0.0370	0.0123
35	0.0420	0.0235	0.0078
40	0.0310	0.0113	0.0000
45	0.0210	0.0000	0.0000
50	0.1300	0.0000	0.0000
55	0.0050	0.0000	0.0000
60	0.0000	0.0000	0.0000

* No turnover for Firefighters after age 35

Age	Classified, WPCA and Custodians	Firefighters	Police
20	0.0005	0.0005	0.0030
25	0.0005	0.0005	0.0030
30	0.0005	0.0005	0.0030
35	0.0006	0.0006	0.0036
40	0.0009	0.0009	0.0054
45	0.0018	0.0018	0.0108
50	0.0040	0.0040	0.0240
55	0.0085	0.0085	0.0510
60	0.0085*	0.0174	0.1044

* 0 for Custodians only

Appendix B - Actuarial Assumptions

Retirement

CERF & WPCA

Age	Rate
50-61	5%
62-65	100%

Police

Service	Rate
20	13%
21	11%
22	8%
23	7%
24	7%
25	7%
26	7%
27	8%
28	8%
29	8%
30	11%
31	13%
32	14%
33	13%
34	19%
35	20%
36	21%
37	17%
38	16%
39	18%
40	24%
41	24%
42	27%
43	21%
44	25%
45	22%
46	35%
47	50%

100% are assumed to retire at age 65

Appendix B - Actuarial Assumptions

Retirement

Firefighters

Service	Rate
25	4%
26	0%
27	4%
28	4%
29	4%
30	4%
31	4%
32	18%
33	11%
34	38%
35	10%
36	22%
37	0%
38	29%
39	20%
40	100%

100% are assumed to retire at age 65

Custodians

Age	Rate*
60	20%
61	5%
62	20%
63	20%
64	20%
65	20%
66	20%
67	20%
68	20%
69	20%
70+	100%

* Custodians receive a one-time rate of 50% at 25 years of service

Appendix B - Actuarial Assumptions

Mortality	CERF & WPCA RP-2000 Mortality Table with separate male and female rates, with 50% blue collar adjustment and 50% no collar adjustment, combined table for non-annuitants and annuitants, projected to the valuation date with Scale BB. This assumption does not include a margin for future improvements in longevity.
	Custodians, Police & Fire RP-2000 Mortality Table with separate male and female rates, with blue collar adjustment, combined table for non-annuitants and annuitants, projected to the valuation date with Scale BB. This assumption does not include a margin for future improvements in longevity.
Future Retiree Coverage	95% of active participants are assumed to elect coverage at retirement. (prior: 100%)
Future Dependent Coverage	60% of active participants are assumed to be married. Female spouses are assumed to be 4 years younger than male spouses.
Retiree Contribution	Some current retirees pay flat amounts with no future increases assumed. Other retirees and future retirees percentage contributions, which are assumed to increase periodically with the Medical Trend.
Medicare Coordination	For those participants who are eligible for Medicare, Medicare is assumed to remain the primary payor of medical benefits for retirees and spouses over age 65.
Medicare Plan Enrollment	Reported data was used to identify current covered retirees, spouses and surviving spouses. All active employees were assumed to elect coverage under the CIGNA Plans and be eligible for Medicare upon attainment of age 65.
Valuation of Benefits for Children	Benefits attributed to children have been excluded from this valuation as they were determined to be de minimus.

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.

Police

Eligibility Completion of 20 years of service

Cost Sharing Date of hire prior to April 11, 2016:

Age at Retirement	Pre-65 Benefits City Pays	Post-65 Benefits City Pays
Prior to 55	66.66%	66.66%
After 55	100%	100%

Date of hire after April 11, 2016:

Age at Retirement	Pre-65 Benefits City Pays	Post-65 Benefits City Pays
Prior to 55	55%	55%
55-60	55%	100%
60-65	60%	100%
After 65	N/A	100%

Medicare Part B The City reimburses retirees for their Medicare Part B premiums, in the amounts provided on the census data.

Employee Contributions Effective July 1, 2016, all active employees contribute 1% of the Top Step Patrol Rate into an OPEB Trust each payroll period. Employees are not be required to contribute after 30 years of service.

Appendix C - Summary of Plan Provisions

Fire

Eligibility

Hired prior to January 1, 1981: the completion of 20 years of service.

Hired after January 1, 1981: the later of age 48 or the completion of 20 years of service.

Cost Sharing

Retired prior to December 1, 2016:

Age at Retirement	Pre-65 Benefits Employee Pays	Post-65 Benefits Employee Pays
Prior to 55	33.33%	33.33%
After 55	\$21.66	\$21.66

Retired after December 1, 2016:

Age at Retirement	Pre-65 Benefits Employee Pays	Post-65 Benefits Employee Pays
Prior to 55	33.33%	33.33%
After 55	\$85.00	\$85.00

Disability Retirement after July 1, 2016: retiree pays \$85.00 per month.

Medicare Part B

The City reimburses retirees for their Medicare Part B premiums, in the amounts provided on the census data.

Life Insurance

\$4,000

Appendix C - Summary of Plan Provisions

CERF

Union **DEN**

Eligibility The earliest of:
 Age 50 and completion of 25 years of service
 Age 58 and completion of 15 years of service
 Age 60 and completion of 10 years of service

Employees hired after July 1, 2002 are not entitled to retiree medical benefits.

Cost Sharing Employees eligible for normal retirement prior to June 30, 2014:

Age at Retirement	Pre-65 Benefits City Pays	Post-65 Benefits City Pays
Prior to 65	66.66%	66.66%
After 65	N/A	66.66%

Employees eligible for normal retirement after June 30, 2014:

Age at Retirement	Pre-65 Benefits City Pays	Post-65 Benefits City Pays
Prior to 65	50%	50%
After 65	N/A	50%

Medicare Part B The City reimburses retirees for their Medicare Part B premiums, in the amounts provided on the census data.

Life Insurance In general, for those current and future retirees still eligible for retiree life insurance, the liability has been transferred to the CERF pension plan.

Appendix C - Summary of Plan Provisions

CERF

Union

MAA

Eligibility

The earliest of:
 The completion of 25 years of service
 Age 58 and completion of 15 years of service
 Age 60 and completion of 10 years of service

Employees hired after April 3, 2012 are not entitled to retiree medical benefits.

Cost Sharing

Employees eligible for normal retirement prior to June 30, 2014:

Age at Retirement	Pre-65 Benefits City Pays	Post-65 Benefits City Pays
Prior to 65	66.66%	66.66%
After 65	N/A	66.66%

Employees eligible for normal retirement after June 30, 2014:

Age at Retirement	Pre-65 Benefits City Pays	Post-65 Benefits City Pays
Prior to 65	50%	50%
After 65	N/A	50%

Medicare Part B

The City reimburses retirees for their Medicare Part B premiums, in the amounts provided on the census data.

Life Insurance

In general, for those current and future retirees still eligible for retiree life insurance, the liability has been transferred to the CERF pension plan.

Appendix C - Summary of Plan Provisions

CERF

Union

NUR

Eligibility

The earliest of:
 Age 50 and completion of 25 years of service
 Age 58 and completion of 15 years of service
 Age 60 and completion of 10 years of service

Employees hired after June 30, 2012 are not entitled to retiree medical benefits.

Cost Sharing

Employees eligible for normal retirement prior to June 30, 2014:

Age at Retirement	Pre-65 Benefits City Pays	Post-65 Benefits City Pays
Prior to 65	66.66%	66.66%
After 65	N/A	66.66%

Employees eligible for normal retirement after June 30, 2014:

Age at Retirement	Pre-65 Benefits City Pays	Post-65 Benefits City Pays
Prior to 65	50%	50%
After 65	N/A	50%

Medicare Part B

The City reimburses retirees for their Medicare Part B premiums, in the amounts provided on the census data.

Life Insurance

In general, for those current and future retirees still eligible for retiree life insurance, the liability has been transferred to the CERF pension plan.

Appendix C - Summary of Plan Provisions

CERF

Union **TEA (IUOE-WPCA)**

Eligibility The earliest of:
 Age 50 and completion of 25 years of service
 Age 58 and completion of 15 years of service
 Age 60 and completion of 10 years of service

Employees hired after July 1, 2011 are not entitled to post-65 retiree medical benefits.

Cost Sharing Employees eligible for normal retirement prior to June 30, 2014:

Age at Retirement	Pre-65 Benefits City Pays	Post-65 Benefits City Pays
Prior to 65	66.66%	33.33%
After 65	N/A	33.33%

Employees eligible for normal retirement after June 30, 2014:

Age at Retirement	Pre-65 Benefits City Pays	Post-65 Benefits City Pays
Prior to 65	50%*	33.33%
After 65	N/A	33.33%

*The City pays 50% when age at retirement is 64 and 2% less for each year under age 64. However, the City pays 50% regardless of age if the employee retires as a result of an involuntary layoff.

Medicare Part B The City reimburses retirees for their Medicare Part B premiums, in the amounts provided on the census data.

Life Insurance In general, for those current and future retirees still eligible for retiree life insurance, the liability has been transferred to the CERF pension plan.

Appendix C - Summary of Plan Provisions

CERF

Union **UE (IUOE Operations)**

Eligibility The earliest of:
 Age 50 and completion of 25 years of service
 Age 58 and completion of 15 years of service and date of hire prior to July 1, 2012
 Age 60 and completion of 10 years of service

Employees hired after July 1, 2012 are not entitled to post-65 retiree medical benefits.

Cost Sharing Employees eligible for normal retirement prior to June 30, 2015:

Age at Retirement	Pre-65 Benefits City Pays	Post-65 Benefits City Pays
Prior to 65	66.66%	33.33%
After 65	N/A	33.33%

Employees eligible for normal retirement after June 30, 2015:

Age at Retirement	Pre-65 Benefits City Pays	Post-65 Benefits City Pays
Prior to 65	50%	33.33%
After 65	N/A	33.33%

Medicare Part B The City reimburses retirees for their Medicare Part B premiums, in the amounts provided on the census data.

Life Insurance In general, for those current and future retirees still eligible for retiree life insurance, the liability has been transferred to the CERF pension plan.

Appendix C - Summary of Plan Provisions

CERF

Union

LAW

Eligibility

The earliest of:
 Age 50 and completion of 25 years of service
 Age 58 and completion of 15 years of service
 Age 60 and completion of 10 years of service

Employees hired after June 30, 2012 are not entitled to retiree medical benefits.

Cost Sharing

Employees eligible for normal retirement prior to June 30, 2014:

Age at Retirement	Pre-65 Benefits City Pays	Post-65 Benefits City Pays
Prior to 65	66.66%*	66.66%
After 65	N/A	66.66%

*Effective July 1, 2014, the City pays 50%

Employees eligible for normal retirement after June 30, 2014:

Age at Retirement	Pre-65 Benefits City Pays	Post-65 Benefits City Pays
Prior to 65	50%	50%
After 65	N/A	50%

Medicare Part B

The City reimburses retirees for their Medicare Part B premiums, in the amounts provided on the census data.

Life Insurance

In general, for those current and future retirees still eligible for retiree life insurance, the liability has been transferred to the CERF pension plan.

Appendix C - Summary of Plan Provisions

CERF

Union **UAW**

Eligibility The earliest of:
 Age 50 and completion of 25 years of service
 Age 58 and completion of 15 years of service and non-grandfathered UAW before January 1, 2015
 Age 60 and completion of 10 years of service

Cost Sharing Employees eligible for normal retirement prior to December 31, 2014:

Age at Retirement	Pre-65 Benefits City Pays	Post-65 Benefits City Pays
Prior to 65	66.66%	66.66%
After 65	N/A	66.66%

Employees eligible for normal retirement after December 31, 2014:

Retired prior to July 1, 2015:

Age at Retirement	Pre-65 Benefits City Pays	Post-65 Benefits City Pays
Prior to 65	50%	66.66%
After 65	N/A	66.66%

Retired after July 1, 2015:

Age at Retirement	Pre-65 Benefits City Pays	Post-65 Benefits City Pays
Prior to 65	50%*	66.66%
After 65	N/A	66.66%

*The City pays 50% when age at retirement is 64 and 2% less for each year under age 64. However, the City pays 50% regardless of age if the employee retires as a result of an involuntary layoff.

Medicare Part B The City reimburses retirees for their Medicare Part B premiums, in the amounts provided on the census data.

Life Insurance In general, for those current and future retirees still eligible for retiree life insurance, the liability has been transferred to the CERF pension plan.

Appendix C - Summary of Plan Provisions

Custodians

Eligibility The earlier of:
 The completion of 25 years of service
 Age 60 and completion of 10 years of service

Employees hired after June 30, 2012 are not entitled to retiree medical benefits.

Cost Sharing Retired prior to July 1, 2011:

Age at Retirement	Pre-65 Benefits City Pays	Post-65 Benefits City Pays
Prior to 65	66.66%	33.33%
After 65	N/A	33.33%

Retired after July 1, 2011:

Age at Retirement	Pre-65 Benefits City Pays	Post-65 Benefits City Pays
Prior to 65	50%	0%
After 65	N/A	0%

Medicare Part B The City reimburses retirees for their Medicare Part B premiums, in the amounts provided on the census data.

Life Insurance \$6,000

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.