CITY OF BRISTOL
FIREFIGHTERS' BENEFIT FUND

Actuarial Valuation as of July 1, 2017
For Fiscal Year 2018-2019

Prepared by

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Certification

We have performed an actuarial valuation of the Plan as of July 1, 2017 for fiscal year 2018-2019. This report presents the results of our valuation.

The ultimate cost of a pension plan is the total amount needed to provide benefits for plan members and beneficiaries and to pay the expenses of administering the plan. Pension 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 government regulations. In addition, this report provides:

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

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In preparing this report, we relied on employee census data as of January 1, 2017 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 ERISA and the related sections of the tax code. Additional determinations may be needed for purposes other than meeting funding requirements, 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.

I further certify that, in my opinion, each actuarial assumption, method and technique used is reasonable taking into account the experience of the Plan and reasonable expectations or would, in the aggregate, result in a total contribution equivalent to that which would be determined if each such assumption, method, or technique were reasonable. 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 pension actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impact the objectivity of our work.

We 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.

Rebecca A. Sielman, FSA
Consulting Actuary

Section I - Executive Summary
A. Highlights

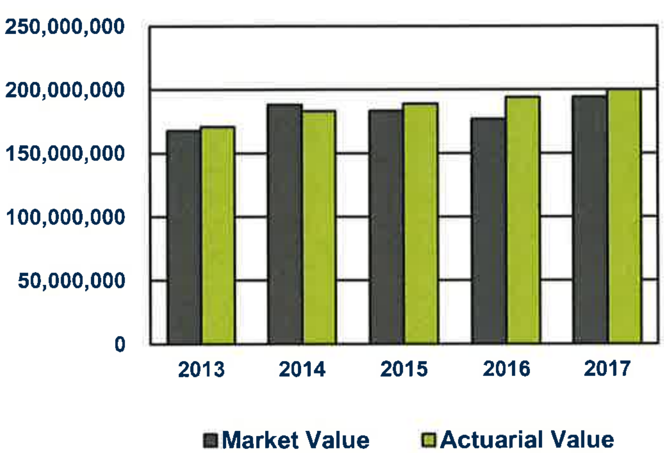
Assets

There are two different measures of the plan's assets that are used throughout this report. The **Market Value** is a snapshot of the plan's investments as of the valuation date. The **Actuarial Value** is a smoothed asset value designed to temper the volatile fluctuations in the market by recognizing investment gains or losses over four years.

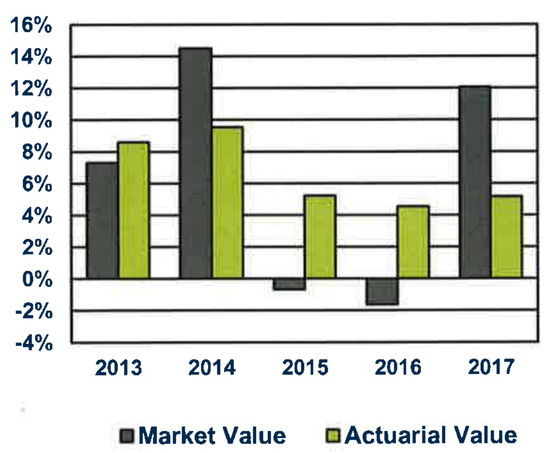
	Market	Actuarial
Value as of July 1, 2016	$176,761,155	$193,893,814
Contributions	162,246	162,246
Investment Income	21,107,399	9,935,598
Benefit Payments	(3,867,069)	(3,867,069)
Value as of July 1, 2017	194,163,731	200,124,589

For fiscal year 2017, the plan's assets earned 12.07% on a Market Value basis and 5.17% on an Actuarial Value basis. The actuarial assumption for this period was 7.40%; the result is an asset gain of $8,166,700 on a Market Value basis and a loss of $4,285,600 on an Actuarial Value basis. Historical asset values are shown in the graph below to the left; historical returns are shown in the graph below to the right.

Asset Levels



Rate of Return

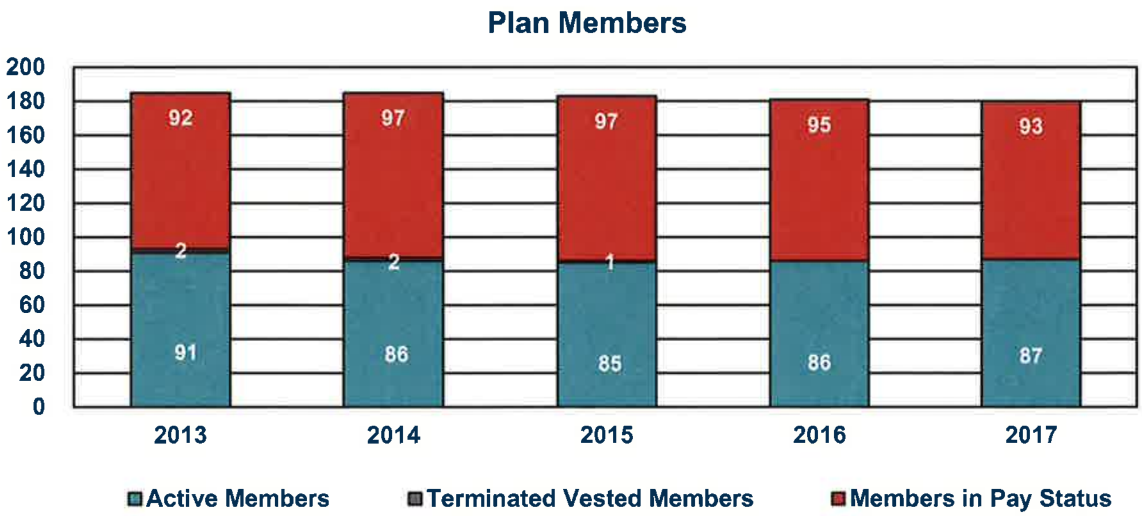


Please note that the Actuarial Value currently exceeds the Market Value by $5,960,900. This figure represents investment losses that will be gradually recognized over the next four years. This process will exert upward pressure on the City's contribution, unless there are offsetting market gains.

Section I - Executive Summary
A. Highlights

Membership

There are three basic categories of plan members included in the actuarial valuation: (1) active employees who have met the eligibility requirements for membership, (2) former employees who have a vested right to benefits but have not yet started collecting, and (3) members who are receiving monthly pension benefits.



From January 1, 2016 to January 1, 2017, the overall membership decreased from 181 to 180. During this period, there was 1 new member, and 4 retirees who died, 2 with benefits continuing to a beneficiary..

Section I - Executive Summary
A. Highlights

Plan Changes

None

Changes in Actuarial Methods and Assumptions

The following assumption changes were reflected in this valuation based on recommendations resulting from the most recent experience study.

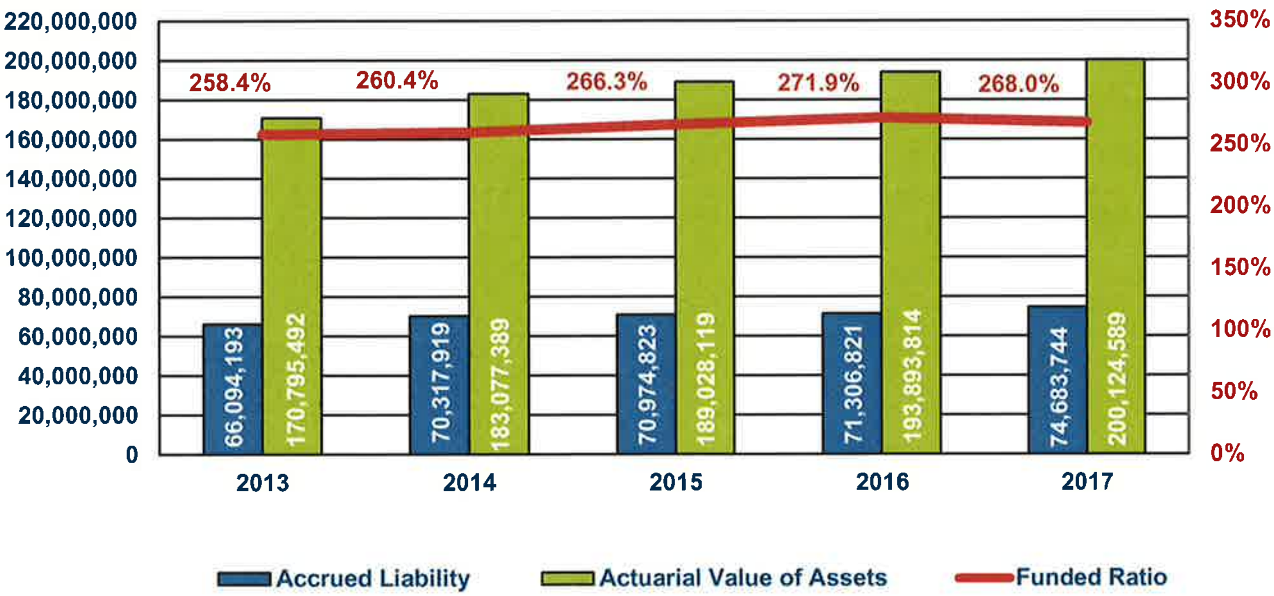
- We are phasing over 5 years a change to the interest rate assumption from 7.5% to 7.0%.
- We are phasing over 5 years a change to the generational mortality projection table from Scale AA to Scale BB.

The effect of these changes was an increase in the Unfunded Accrued Liability of $1,294,800.

Section I - Executive Summary
A. Highlights

Funded Status

The chart below shows the plan's Accrued Liability and Actuarial Value of Assets for the past several years.

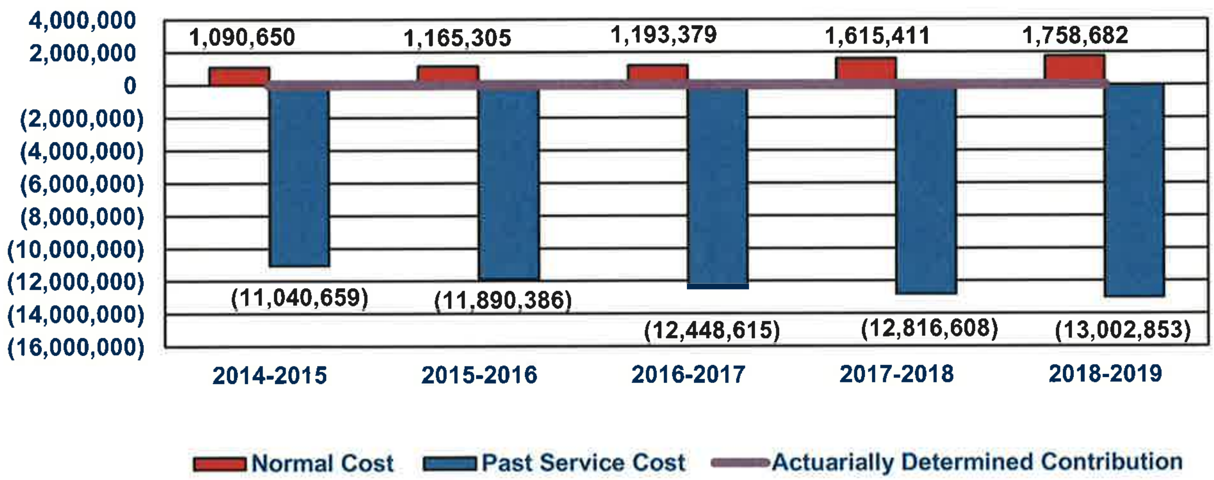


Section I - Executive Summary
A. Highlights

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 **Interest** assuming payment is made mid-year. If the plan has a sufficiently large surplus, the Past Service Cost may be large enough to cover the Normal Cost, in which case no contribution is required.

Contribution levels for the current year and the past several fiscal years are shown below.



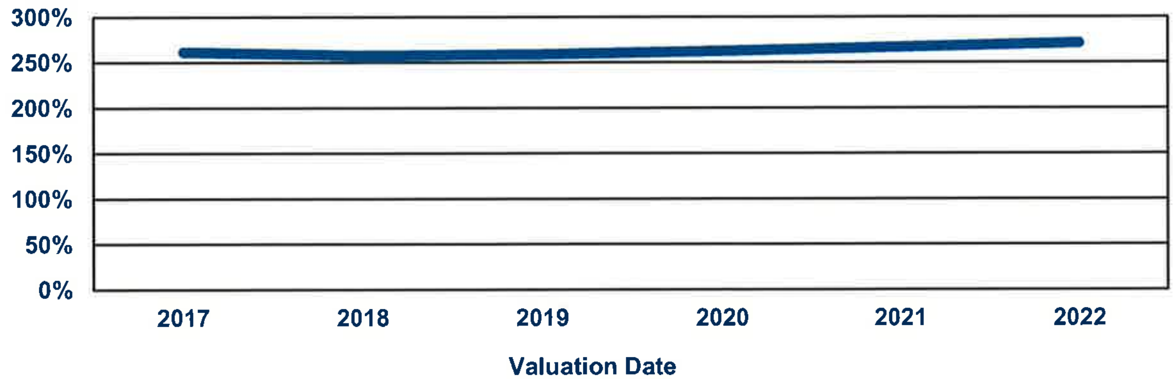
The City's contribution has remained at zero since the last valuation, reflecting the overfunded status of the plan. The plan's overfunded status fully subsidizes the Normal Cost.

Section I - Executive Summary
A. Highlights

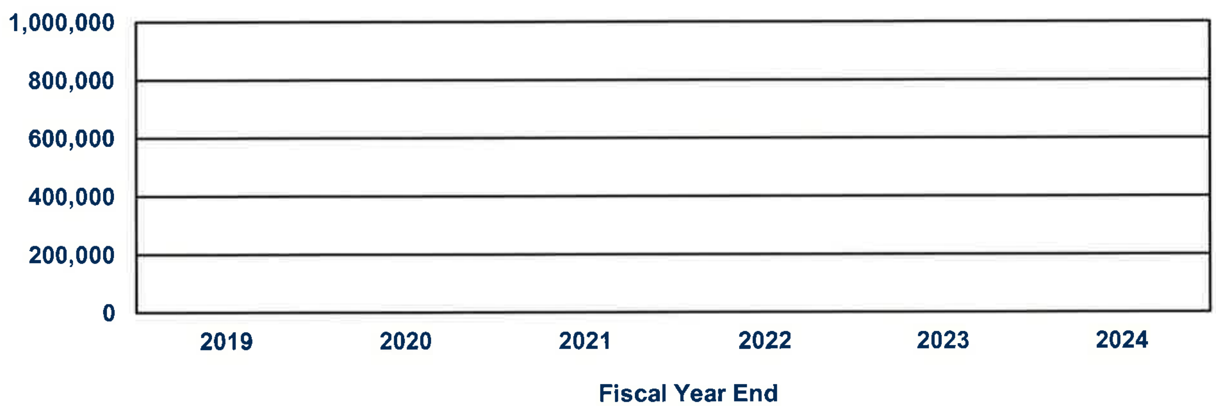
Long Range Forecast

We expect the valuation results for the next several years to follow the patterns illustrated below:

Funded Ratio



Actuarially Determined Contribution



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
B. Summary of Principal Results

Membership	January 1, 2016	January 1, 2017
Active Members	86	87
Terminated Vested Members	0	0
Members in Pay Status	95	93
Base Payroll as of Valuation Date	$5,771,179	$5,997,926
Assets and Liabilities	**July 1, 2016**	**July 1, 2017**
Market Value of Assets	$176,761,155	$194,163,731
Actuarial Value of Assets	193,893,814	200,124,589
Accrued Liability for Active Members	$26,418,506	$31,052,146
Accrued Liability for Terminated Vested Members	0	0
Accrued Liability for Members in Pay Status	44,888,315	43,631,598
Total Accrued Liability	71,306,821	74,683,744
Unfunded Accrued Liability / (Surplus)	(122,586,993)	(125,440,845)
Funded Ratio	271.9%	268.0%
Actuarially Determined Contribution for Fiscal Year	**2017-2018**	**2018-2019**
Normal Cost	$1,615,411	$1,758,682
Past Service Cost / (Credit)	(12,816,608)	(13,002,853)
Actuarially Determined Contribution	(11,201,197)	(11,244,171)
Actuarially Determined Contribution, not less than 0	0	0
Estimated Base Payroll for Fiscal Year	$6,021,648	$6,759,663
Actuarially Determined Contribution as a Percent of Base Payroll	0.00%	0.00%

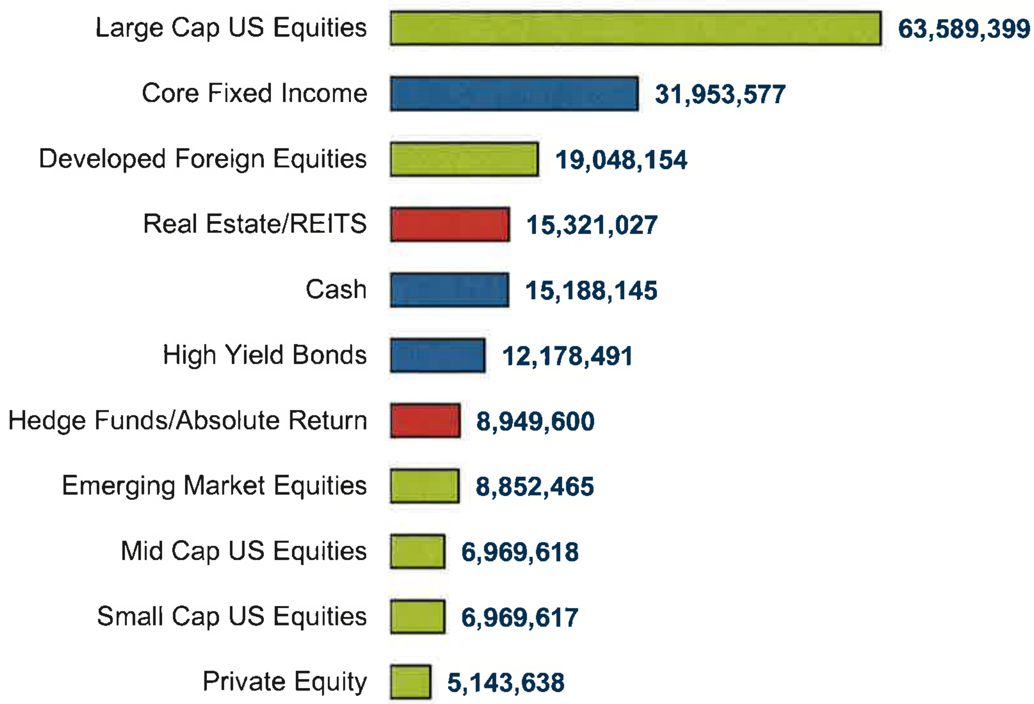
Section II - Plan Assets
A. Summary of Fund Transactions

Market Value as of July 1, 2016	$176,761,155
Employer Contributions	0
Employee Contributions	162,246
Benefit Payments	(3,867,069)
Interest and Dividends	2,315,010
Unrealized Gains/(Losses)	22,526,545
Realized Gains/(Losses)	(2,452,020)
Expenses	(1,282,136)
Market Value as of July 1, 2017	194,163,731
Approximate Rate of Return	12.07%

Note: 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.

Section II - Plan Assets
B. Asset Allocation

This table shows the allocation of assets as of July 1, 2017. Equity investments are shown in green, fixed income investments are shown in blue, and other types of investments are shown in red.



Section II - Plan Assets
C. Development of Actuarial Value of Assets

In order to minimize the impact of market fluctuations on the contribution level, we use an Actuarial Value of Assets that recognizes gains and losses over a four year period. The Actuarial Value of Assets as of July 1, 2017 is determined below.

1.	Expected Market Value of Assets:	
	a. Market Value of Assets as of July 1, 2016	$176,761,155
	b. Employer and Employee Contributions	162,246
	c. Benefit Payments	(3,867,069)
	d. Expected Investment Return Based on 7.40% Interest	12,940,742
	e. Expected Market Value of Assets as of July 1, 2017	185,997,074
2.	Actual Market Value of Assets as of July 1, 2017	194,163,731
3.	Market Value (Gain)/Loss: (1e) - (2)	(8,166,657)
4.	Delayed Recognition of Market (Gains)/Losses:	

Plan Year End	(Gain)/Loss	Percent Not Recognized	Amount Not Recognized	
06/30/2017	($8,166,657)	75%	($6,124,993)	
06/30/2016	16,554,734	50%	8,277,367	
06/30/2015	15,233,936	25%	3,808,484	
				5,960,858

5.	Preliminary Actuarial Value as of July 1, 2017: (2) + (4)		200,124,589
6.	Corridor Limit:	80% of Market Value	155,330,985
		120% of Market Value	232,996,477
7.	Final Actuarial Value as of July 1, 2017: (5) constrained by (6)		200,124,589
8.	Approximate Rate of Return on Actuarial Value		5.17%
9.	Actuarial Value (Gain)/Loss		4,285,567

Section III - Development of Contribution
A. Past Service Cost

For determining the Past Service Cost, the Unfunded Accrued Liability is amortized as a level dollar amount over a period of 20 years.

		July 1, 2016	July 1, 2017
1.	Accrued Liability		
	Active Members	$26,418,506	$31,052,146
	Terminated Vested Members	0	0
	Terminated Non-Vested Members Due Refund	0	0
	Retired Members	41,284,058	39,829,230
	Beneficiaries of Deceased Members	3,604,257	3,802,368
	Total	71,306,821	74,683,744
2.	Actuarial Value of Assets (see Section II C)	193,893,814	200,124,589
3.	Unfunded Accrued Liability / (Surplus): (1) - (2)	(122,586,993)	(125,440,845)
4.	Funded Ratio: (2) / (1)	271.9%	268.0%
5.	Amortization Period	20	20
6.	Past Service Cost / (Credit): (3) amortized over (5)	(11,933,527)	(12,118,223)
7.	Interest on (6) to Following Fiscal Year	(883,081)	(884,630)
8.	Past Service Cost/(Credit) for Following Fiscal Year	(12,816,608)	(13,002,853)

Section III - Development of Contribution
B. Actuarially Determined Contribution

	Fiscal Year 2017-2018	Fiscal Year 2018-2019
1. Total Normal Cost	$1,562,649	$1,703,037
2. Expected Employee Contributions	162,177	175,513
3. City Normal Cost: (1) - (2)	1,400,472	1,527,524
4. City Normal Cost at End of Year	1,504,107	1,639,033
5. City Normal Cost at End of Fiscal Year	1,615,411	1,758,682
6. Past Service Cost at End of Fiscal Year (see Section III A)	(12,816,608)	(13,002,853)
7. Preliminary Actuarially Determined Contribution at End of Fiscal Year: (5) + (6)	(11,201,197)	(11,244,171)
8. Actuarially Determined Contribution at End of Fiscal Year not less than 0	0	0
9. Estimated Base Payroll for Fiscal Year	6,021,648	6,759,663
10. City Normal Cost as a % of Payroll: (5) / (9)	26.8%	26.0%
11. Actuarially Determined Contribution at End of Fiscal Year as a % of Payroll: (8) / (9)	0.0%	0.0%

Section III - Development of Contribution
C. Changes in Unfunded Accrued Liability/Surplus

1.	Unfunded Accrued Liability / (Surplus) as of July 1, 2016	($122,586,993)
2.	Total Normal Cost as of July 1, 2016	1,562,649
3.	Interest on (1) and (2)	(8,955,801)
4.	Contributions for the 2016-2017 Fiscal Year	162,246
5.	Interest on (4) assuming mid-year payment	5,896
6.	Expected Unfunded Accrued Liability / (Surplus) as of June 30, 2017: (1) + (2) + (3) - (4) - (5)	(130,148,287)
7.	Asset (Gain) / Loss (see Section II C)	4,285,567
8.	Liability (Gain) / Loss	(872,918)
9.	Actual Unfunded Accrued Liability / (Surplus) as of July 1, 2017 before any changes: (6) + (7) + (8)	(126,735,638)
10.	Change in Unfunded Accrued Liability / (Surplus) as of July 1, 2017 due to assumption changes	1,294,793
11.	Change in Unfunded Accrued Liability / (Surplus) as of July 1, 2017 due to plan changes	0
12.	Final Unfunded Accrued Liability / (Surplus) as of July 1, 2017 after changes: (9) + (10) + (11)	(125,440,845)

Section III - Development of Contribution
D. Summary of Experience During Year

The principal sources of the net actuarial loss of approximately $3,413,000 are as follows:

	Gains	Losses
Investment Income		$4,286,000
Salary Increase		894,000
Mortality and Other Sources		261,000
New Entrants		12,000
Pension Escalation	1,278,000	
Disability	382,000	
Retirements and Deferred Retirements	380,000	
Totals	2,040,000	5,453,000
Net Actuarial Loss During Year		3,413,000

While the fund earned 12.07% on a Market Value basis, the recognition of investment losses from the two prior years resulted in a return of just 5.17% on an Actuarial Value basis. The actuarial assumption during the 2016-17 year was 7.40%; the result is an actuarial asset loss of $4,286,000.

The expected rates of pension escalation were 3.50%, 2.50% and 2.25% for pre-July 1, 1999, post-June 30, 1999 and post-June 30, 2003 retirees, respectively. Since retirees did not receive a pension escalation, the result is an actuarial gain of $1,278,000.

The average rate of salary increase during the year was 3.15% higher than expected, resulting in an actuarial loss.

There was 1 new entrant who produced a loss of approximately $12,000.

There were no retirements during the year, and there are a number of active members who continue to work beyond their normal retirement ages. This resulted in an actuarial gain. Similarly, there were no disability retirements during the year, causing an actuarial gain.

Section III - Development of Contribution
E. Long Range Forecast

This forecast is based on the results of the July 1, 2017 actuarial valuation and assumes that the City will pay the Actuarially Determined Contribution each year, the assets will return the assumed interest rate on a market value basis each year, and there are no future changes in the actuarial methods or assumptions or in the plan provisions. Actual results at each point in time will yield different values, reflecting the actual experience of the plan membership and assets.

		Values as of the Valuation Date					Cash Flows Projected to the Following Fiscal Year			
Valuation Date	Interest Rate	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio	Fiscal Year Ending	City Contributions	Employee Contributions	Benefit Payments	Net Cash Flows
7/1/2017	7.30%	$74,683,744	$200,124,589	($125,440,845)	268.0%	2019	$0	$191,136	($4,240,805)	($4,049,669)
7/1/2018	7.20%	78,141,000	204,414,000	(126,273,000)	261.6%	2020	0	204,000	(4,446,000)	(4,242,000)
7/1/2019	7.10%	82,538,000	212,835,000	(130,297,000)	257.9%	2021	0	201,000	(4,707,000)	(4,506,000)
7/1/2020	7.00%	87,128,000	225,740,000	(138,612,000)	259.1%	2022	0	210,000	(4,941,000)	(4,731,000)
7/1/2021	7.00%	90,129,000	236,878,000	(146,749,000)	262.8%	2023	0	217,000	(5,228,000)	(5,011,000)
7/1/2022	7.00%	93,144,000	248,563,000	(155,419,000)	266.9%	2024	0	230,000	(5,455,000)	(5,225,000)
7/1/2023	7.00%	96,020,000	260,776,000	(164,756,000)	271.6%	2025	0	239,000	(5,672,000)	(5,433,000)
7/1/2024	7.00%	99,007,000	273,622,000	(174,615,000)	276.4%	2026	0	250,000	(5,851,000)	(5,601,000)
7/1/2025	7.00%	102,031,000	287,152,000	(185,121,000)	281.4%	2027	0	252,000	(6,011,000)	(5,759,000)
7/1/2026	7.00%	105,190,000	301,455,000	(196,265,000)	286.6%	2028	0	253,000	(6,225,000)	(5,972,000)
7/1/2027	7.00%	108,404,000	316,597,000	(208,193,000)	292.1%	2029	0	262,000	(6,378,000)	(6,116,000)
7/1/2028	7.00%	111,590,000	332,578,000	(220,988,000)	298.0%	2030	0	252,000	(6,549,000)	(6,297,000)
7/1/2029	7.00%	114,963,000	349,528,000	(234,565,000)	304.0%	2031	0	244,000	(6,777,000)	(6,533,000)
7/1/2030	7.00%	118,398,000	367,477,000	(249,079,000)	310.4%	2032	0	243,000	(7,093,000)	(6,850,000)
7/1/2031	7.00%	121,768,000	386,438,000	(264,670,000)	317.4%	2033	0	253,000	(7,381,000)	(7,128,000)
7/1/2032	7.00%	124,986,000	406,399,000	(281,413,000)	325.2%	2034	0	264,000	(7,633,000)	(7,369,000)
7/1/2033	7.00%	128,182,000	427,469,000	(299,287,000)	333.5%	2035	0	279,000	(7,866,000)	(7,587,000)
7/1/2034	7.00%	131,443,000	449,765,000	(318,322,000)	342.2%	2036	0	286,000	(8,090,000)	(7,804,000)
7/1/2035	7.00%	134,775,000	473,396,000	(338,621,000)	351.2%	2037	0	285,000	(8,277,000)	(7,992,000)
7/1/2036	7.00%	138,150,000	498,456,000	(360,306,000)	360.8%	2038	0	295,000	(8,495,000)	(8,200,000)

Section IV - Accounting Information
A. Notes to Required Supplementary Information

The information presented in Section IV has been determined as part of the actuarial valuations at the dates indicated. Additional information as of the latest actuarial valuation follows:

Valuation Date	July 1, 2017
Actuarial Cost Method	Entry Age Normal
Amortization Method	Level dollar amount
Amortization Period	Open 20 years
Asset Valuation Method	4 Year Smoothed Market Value
Actuarial Assumptions	
Investment Rate of Return	7.30%
Projected Salary Increases	Age based scale
Inflation	2.70%
Cost-of-Living Adjustments	Pre-July 1, 1999 retirees: 3.50% Retirees between July 1, 1999 and June 30, 2003: 2.50% Post June 30, 2003 retirees: 2.25%

Section IV - Accounting Information
B. Historical Schedule of Funding Progress

Actuarial Valuation Date	For Fiscal Year	(1) Actuarial Value of Assets	(2) Actuarial Accrued Liability (AAL)	(3) Unfunded AAL (UAAL) (2) - (1)	(4) Funded Ratio (1) / (2)	(5) Covered Payroll	(6) UAAL as a Percentage of Covered Payroll (3) / (5)
07/01/2010	2011-2012	$157,353,517	$62,505,685	($94,847,832)	251.7%	$5,454,496	-1738.9%
07/01/2011	2012-2013	159,246,668	66,073,132	(93,173,536)	241.0%	5,521,112	-1687.6%
07/01/2012	2013-2014	160,794,226	65,874,533	(94,919,693)	244.1%	5,582,242	-1700.4%
07/01/2013	2014-2015	170,795,492	66,094,193	(104,701,299)	258.4%	5,556,190	-1884.4%
07/01/2014	2015-2016	183,077,389	70,317,919	(112,759,470)	260.4%	5,556,190	-2029.4%
07/01/2015	2016-2017	189,028,119	70,974,823	(118,053,296)	266.3%	5,542,914	-2129.8%
07/01/2016	2017-2018	193,893,814	71,306,821	(122,586,993)	271.9%	5,771,179	-2124.1%
07/01/2017	2018-2019	200,124,589	74,683,744	(125,440,845)	268.0%	5,997,926	-2091.4%

Section IV - Accounting Information
C. Schedule of Employer Contributions

Fiscal Year Ending June 30	(1) Actuarially Determined Contribution	(2) Contribution in Relation to the Actuarially Determined Contribution	(3) Contribution Deficiency/ (Excess) (1) - (2)	(4) Covered Payroll	(5) Contribution as a Percentage of Covered Payroll (2) / (4)
2010	$0	$0	$0	$5,219,480	0.00%
2011	0	0	0	5,297,689	0.00%
2012	0	0	0	5,274,545	0.00%
2013	0	0	0	5,454,496	0.00%
2014	0	0	0	5,521,112	0.00%
2015	0	0	0	5,582,242	0.00%
2016	0	0	0	5,556,190	0.00%
2017	0	0	0	5,542,914	0.00%
2018	0	TBD	TBD	5,771,179	TBD
2019	0	TBD	TBD	5,997,926	TBD

Section IV - Accounting Information
D. Accrued and Vested Benefits

The actuarially computed Value of Accrued Benefits represents the present value of (a) the benefits based on earnings and service to date expected to become payable at future dates to present employees, (b) the benefits expected to become payable to former employees who have terminated service with vested rights or who have become inactive, and (c) the benefits currently payable to retired participants and beneficiaries.

		As of July 1, 2016	As of July 1, 2017
1.	Value of Vested Benefits		
	Active Members	$18,575,965	$21,498,264
	Terminated Vested Members	0	0
	Terminated Non-Vested Due Refund	0	0
	Retired Members	41,284,058	39,829,230
	Beneficiaries of Deceased Members	3,604,257	3,802,368
	Total Value of Vested Benefits	63,464,280	65,129,862
2.	Value of Non-Vested Benefits	6,553,529	6,715,453
3.	Total Value of Accrued Benefits: (1) + (2)	70,017,809	71,845,315
4.	Market Value of Assets	176,761,155	194,163,731
5.	Vested Funded Ratio: (4) / (1)	278.5%	298.1%
6.	Accrued Funded Ratio: (4) / (3)	252.5%	270.3%

Section IV - Accounting Information
E. Statement of Changes in Accrued Plan Benefits

Increase/(Decrease) during the 2016-2017 plan year attributable to:

Increase for interest due to the decrease in the discount period	$5,040,790
Benefits Accumulated/(Forfeited)	(616,790)
Benefit Payments	(3,867,069)
Plan Amendments	0
Changes in Actuarial Assumptions	1,270,575
Net Increase/(Decrease)	1,827,506

Value of Accrued Plan Benefits:

July 1, 2017	$71,845,315
July 1, 2016	70,017,809
Net Increase/(Decrease)	1,827,506

Section V - Membership Data
A. Reconciliation of Membership from Prior Valuation

Details of the changes in the Plan membership since the last valuation are shown below. Additional details on the Plan membership are provided in the remainder of Section V.

	Active	Term. Vested	Due Refund	Retirees	Beneficiaries	Total
Count as of January 1, 2016	86	0	0	76	19	181
Terminated, not vested	-	-	-	-	-	0
Terminated, benefits due	-	-	-	-	-	0
Retired	-	-	-	-	-	0
Died, with beneficiary			-	(2)	2	0
Died, no beneficiary	-	-	-	(2)	-	(2)
New member	1	-	-	-	-	1
New beneficiary	-	-	-	-	-	0
Lump sum paid	-	-	-	-	-	0
Rehired	-	-	-	-	-	0
New QDRO	-	-	-	-	-	0
Correction	-	-	-	-	-	0
Count as of January 1, 2017	87	0	0	72	21	180

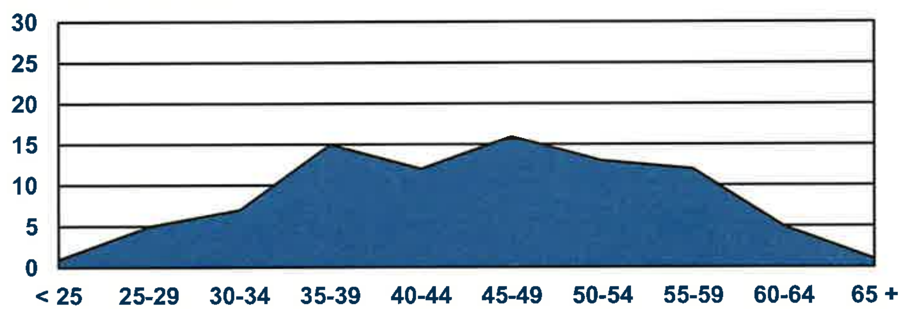
Section V - Membership Data
B. Statistics of Membership

	As of January 1, 2016	As of January 1, 2017
Active Members		
Number	86	87
Average Age	44.0	45.0
Average Service	15.2	17.0
Total Annual Compensation	$5,894,806	$6,367,553
Average Annual Compensation	68,544	73,190
Terminated Vested Members		
Number	0	0
Total Annual Benefit	$0	$0
Average Annual Benefit	0	0
Average Age	0.0	0.0
Retired Members		
Number	74	70
Total Annual Benefit	3,538,552	3,389,203
Average Annual Benefit	47,818	48,417
Average Age	70.3	70.5
Disabled Members		
Number	2	2
Total Annual Benefit	64,498	64,498
Average Annual Benefit	32,249	32,249
Average Age	76.5	77.5
Beneficiaries of Deceased Members		
Number	19	21
Total Annual Benefit	$361,422	$401,014
Average Annual Benefit	19,022	19,096
Average Age	74.0	75.9

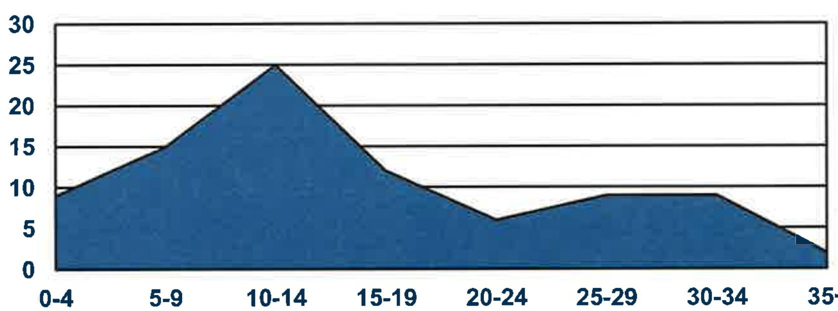
Section V - Membership Data
C. Distribution of Active Members as of January 1, 2017

	Years of Service								
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35+	Total
< 25	1	0	0	0	0	0	0	0	1
25-29	5	0	0	0	0	0	0	0	5
30-34	2	5	0	0	0	0	0	0	7
35-39	0	7	8	0	0	0	0	0	15
40-44	0	1	9	2	0	0	0	0	12
45-49	0	1	6	6	3	0	0	0	16
50-54	0	1	1	3	3	3	2	0	13
55-59	1	0	0	0	0	5	5	1	12
60-64	0	0	1	1	0	0	2	1	5
65 +	0	0	0	0	0	1	0	0	1
Total	9	15	25	12	6	9	9	2	87

Distribution By Age



Distribution by Years of Service



Section V - Membership Data

D. Distribution of Inactive Members as of January 1, 2017

	Age	Number	Annual Benefits
Terminated Vested Members	< 30	0	$0
	30 - 39	0	0
	40 - 49	0	0
	50 - 59	0	0
	60 - 64	0	0
	65 +	0	0
	Total	0	0
Retired Members	< 50	1	$44,016
	50 - 59	5	232,008
	60 - 69	29	1,552,020
	70 - 79	23	1,075,193
	80 - 89	10	438,620
	90 +	2	47,346
	Total	70	3,389,203
Disabled Retirees	< 50	0	$0
	50 - 59	0	0
	60 - 69	0	0
	70 - 79	2	64,498
	80 - 89	0	0
	90 +	0	0
	Total	2	64,498
Beneficiaries	< 50	0	$0
	50 - 59	1	20,015
	60 - 69	6	109,010
	70 - 79	6	112,875
	80 - 89	5	100,054
	90 +	3	59,060
	Total	21	401,014

Appendix A - Actuarial Funding Method

The actuarial funding method used in the valuation of this Plan is the **Entry Age Normal Cost Method**. Recommended annual contributions until the accrued liability is completely funded will consist of three pieces: Normal Cost plus a payment towards the Unfunded Accrued Liability plus interest to adjust for the lag between the valuation date and the start of the fiscal year.

The **Normal Cost** is determined by calculating the present value of future benefits for present active Members that will become payable as the result of death, disability, retirement or termination. This cost is then spread as a level percentage of earnings from entry age to termination as an Active Member. If Normal Costs had been paid at this level for all prior years, a fund would have accumulated. Because this fund represents the portion of benefits that would have been funded to date, it is termed the **Accrued Liability**. In fact, it is calculated by adding the present value of benefits for Retired Members and Terminated Vested Members to the present value of benefits for Active Members and subtracting the present value of future Normal Cost contributions.

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 liability for the plan 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 dollar amount with an amortization period of 20 years.

The **Actuarial Value of Assets** is determined by recognizing asset gains and losses over four years. The resulting value is constrained to within +/- 20% of the market value of assets.

Appendix B - Actuarial Assumptions

Each of the assumptions used in this valuation was set based on a formal study of the plan's experience for the period July 1, 2011 through June 30, 2015 which reflected industry standard published tables and data, the particular characteristics of the plan, relevant information from the plan sponsor or other sources about future expectations, and our professional judgment regarding future plan experience. We believe the assumptions are reasonable for the contingencies they are measuring, and are not anticipated to produce significant cumulative actuarial gains or losses over the measurement period.

Interest Rate

7.3% (Prior: 7.4%) This assumption will decline by 0.1% until it reaches 7.0%.

Salary Scale

Salaries are assumed to increase at the following rates:

Age	Current Rate	Prior Rate
25 and below	7.00%	8.00%
30	5.00%	5.75%
35	4.00%	4.50%
40	3.75%	4.00%
45	3.50%	3.75%
50 and above	3.25%	3.50%

Expenses

None.

Mortality

Current: RP-2000 Mortality Table for Employees and Healthy Annuitants with generational projection 40% phase-in from Scale AA to BB. The projection scale will continue to be phased in by 20% each year. This assumption includes a margin for mortality improvements beyond the valuation date.

Prior: RP-2000 Mortality Table for Employees and Healthy Annuitants with generational projection 20% phase-in from Scale AA to BB.

Pre-Retirement Disability

1985 Pension Disability Table (DP-85) Class 4. 100% of disabilities are assumed to be service-connected.

Percent Married

80% of active members are assumed to have an eligible spouse.

Age of Spouse

The female spouse is assumed to be three years younger than the male spouse.

Appendix B - Actuarial Assumptions

Turnover

Rates according to the following table:

Age	Current Rate	Prior Rate
20	5%	0%
25	5%	0%
30	2%	0%
35 and above	0%	0%

Retirement

Members who have satisfied normal retirement eligibility are assumed to retire according to the following rates:

Age	Current Rate	Prior Rate
49	10%	0%
50-54	5%	10%
55-56	10%	15%
57-59	15%	15%
60	50%	50%
61	70%	50%
62-64	40%	50%
65+	100%	100%

Annuity Election

85% of active members are assumed to elect a 50% Joint & Survivor Annuity and 15% of active members are assumed to elect Life Annuity.

Pension Escalation

Pre-July 1, 1999 retirees: 3.25% per year.

Retirees between July 1, 1999 and June 30, 2003: 2.50% per year.

Post-June 30, 2003 retirees: 2.25% per year.

Compensated Absences

The Actuarial Accrued Liability and Normal Cost have been increased by 11.0% for active members in order to reflect an explicit assumption regarding compensated absences.

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	A member of the Fire Department.
Compensation	The annual rate of base salary for a member's rank and step as set in the applicable collective bargaining agreement, if any. This will include ¼ of a member's unused sick leave paid out at the time of retirement, if applicable.
Credited Service	Years and months of continuous service.
Normal Form of Annuity	Life Annuity.
Normal Retirement Date	All members after the attainment of age 65. Any member after 25 years of continuous service as a regular fireman, by the request of the member and with the approval of the Trustees. Any regular member after 20 years of continuous service and attainment of age 65, by the request of the member. Note: All members of the regular Fire Department shall be retired on the day following attainment of age 65.
Normal Retirement Benefit	A pension for life at 70% of Compensation paid to the member in the year prior to his retirement, adjusted for escalation.
Disability Retirement Benefit	If any member becomes permanently disqualified for active duty through age or physical disabilities incurred in the discharge of duties, the member may be transferred to the "Veteran Reserve" at the rate of 70% of Compensation at the time of transfer. Such transfer may be revoked and the member returned to active duty if the disability is removed. If permanently disqualified from performing all fire duties, the member may be permanently retired at 70% of Compensation. If any member with at least 10 years of service who becomes disqualified for active duty due to a disability not incurred in the performance of duties, he shall be retired at a rate equal to 28% for the first 10 years plus 2.8% for each additional year, thereafter, subject to a maximum of 70% of Compensation.

Appendix C - Summary of Plan Provisions

Pre-Retirement Spouse's Death Benefit

In case of a service-connected death of a member, the surviving spouse shall receive annually a sum equal to 70% of Compensation until death or remarriage, with continuation to any children under age 18, share and share alike, or to any dependent if no surviving spouse or children exist. Worker's Compensation payments are deducted from amounts hereunder.

In case of the death of a member with at least 10 years of regular service, or of a retired member or a member placed on the "Veteran Reserve" at 70% of Compensation, one-half of the benefit that would have been payable to the member on retirement or, if a retired member, one-half of the benefit being paid to the member at time of death, shall be paid to the surviving spouse until death or remarriage.

Vesting

Effective July 1, 2003, a member terminating after at least 10 years of Credited Service as a regular firefighter, provided the member elects to leave all accumulated contributions in the retirement fund, is entitled to a vested deferred pension, to commence at the earliest normal retirement age. The vested deferred pension is based on 2.8% of Compensation per year of Credited Service completed prior to separation from employment. Such percentage shall be applied at the time of separation and the resulting allowance shall not be increased thereafter for any reason. This section shall not apply in the case of a discharge for just cause which is not reversed upon appeal or a resignation by a member who has been informed he is under investigation for an offense which constitutes just cause for discharge and from which the member is not exonerated. For purposes of this section, Compensation excludes sick leave payout as it is not applicable.

Member Contributions

Active members contribute 3.75% of Compensation on a pre-tax (Section 414(h)(2)) basis. Contributions cease upon the completion of 25 years of Credited Service.

Members' contributions are returnable on termination or death if active, or after retirement (less any benefits paid), provided in each case that no death benefits are otherwise payable.

Prior Service Purchase

Members' dates of participation are adjusted to reflect periods purchased.

Pension Escalation

Benefits increase as active members' salaries increase.

Pension Escalation Limit

Pre-July 1, 1999 retirees: no limit.

Retirees between July 1, 1999 and June 30, 2003: 2.50% per year.

Post-June 30, 2003 retirees: 2.25% per year.