

Vermont Municipal Employees' Retirement System

**Actuarial Valuation and
Review as of June 30, 2018**

The logo for Segal Consulting is a large, dark blue, stylized shape that resembles a compass needle or a stylized 'S' with a sharp point at the bottom. It is positioned on the right side of the page, pointing towards the top right.

 Segal Consulting

This report has been prepared at the request of the Board of Trustees to assist in administering the System. The measurements shown in this actuarial valuation may not be applicable for other purposes.

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101 North Wacker Drive, Suite 500 Chicago, IL 60606-1724
T 312.984.8500 www.segalco.com

October 19, 2018

Board of Trustees
Vermont Municipal Employees' Retirement System
Montpelier, Vermont 05609

Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of June 30, 2018, of the Vermont Municipal Employees' Retirement System. This report summarizes the actuarial data used in the valuation, analyzes the preceding year's experience, and establishes the actuarially determined contribution requirement for fiscal 2019. The total actuarially determined contribution for the fiscal year beginning July 1, 2018, amounts to \$17,263,214.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist in administering the Retirement System. The census information and financial information on which our calculations were based was prepared by the Office of the State Treasurer. That assistance is gratefully acknowledged.

The actuarial calculations were directed under the supervision of Kathleen Riley and Matthew Strom. We are members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the information supplied in this actuarial valuation is complete and accurate. Further, in our opinion, the assumptions as approved by the Board are reasonably related to the experience of and the expectations for the System.

We look forward to reviewing this report and to answering any questions at the next Board meeting.

Sincerely,

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

By:

Handwritten signature of Kathleen A. Riley in blue ink.

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

Handwritten signature of Matthew A. Strom in blue ink.

Matthew A. Strom, FSA, MAAA, EA
Vice President and Consulting Actuary

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Section 1: Actuarial Valuation Summary

Purpose and Basis

This report was prepared by Segal Consulting to present a valuation of the Plan as of June 30, 2018, pursuant to section 5062 of Title 24, Chapter 125, Vermont Statutes Annotated, relating to the Vermont Municipal Employees' Retirement System. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits. The measurements shown in this actuarial valuation may not be applicable for other purposes. In particular, the measures herein are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as 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; and changes in plan provisions or applicable law.

Certain disclosure information required by GASB Statements No 67 and 68 as of June 30, 2018 for the System is provided in separate reports.

The contribution requirements presented in this report are based on:

- The benefit provisions of the Pension Plan, as administered by the Board;
- The characteristics of covered active members, inactive members, and retired members and beneficiaries as of June 30, 2018, provided by the Office of the State Treasurer;
- The unaudited assets of the Plan as of June 30, 2018, provided by the Office of the State Treasurer;
- Economic assumptions regarding future salary increases and investment earnings;
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc.; and
- The funding policy adopted by the Board of Trustees.

Valuation Highlights

1. Segal strongly recommends an actuarial funding method that targets 100% funding of the actuarial accrued liability. Generally, this implies payments that are ultimately at least enough to cover normal cost, interest on the unfunded actuarial accrued liability and the principal balance. The funding policy set in the Vermont State Pension Code meets this standard. Section 5064, subsection (c)(4), of Title 24, Chapter 1255, Vermont Statutes Annotated calls for the calculation of an accrued liability contribution rate to be calculated for each membership group, based on the actuarial assumptions and methodology adopted by the Retirement Board. Rates are determined as a percent of payroll and calculated such that the rate paid by each membership group is sufficient to fully fund that group's actuarial accrued liability by June 30, 2038.
2. Actual employer contributions made during the fiscal year ending June 30, 2018 were \$17.5 million, or 116.3% of the actuarially determined contribution. In the prior fiscal year, actual employer contributions were \$16.5 million.
3. The funded percentage (the ratio of the actuarial value of assets to actuarial accrued liability determined under the Entry Age Normal cost method) is 82.2%, compared to the prior year's funded percentage of 84.1%. This percentage is one measure of funding status and its history is a measure of funding progress. Using the market value of assets, the funded percentage is 80.7%, compared to 82.1% as of the prior valuation date. These measurements are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the System's benefit obligation or the need for or the amount of future contributions.
4. The actuarially determined contribution for the upcoming year is \$17.3 million. The contribution as a percentage of payroll increased from 5.22% of payroll to 5.67% of payroll. The actuarially determined contribution is equal to the Plan's employer normal cost, plus the amount necessary to amortize the actuarial shortfall as of June 30, 2018 over a period ending on June 30, 2038, assuming that the amortization period will remain closed and that the amortization amount will increase annually at the rate of 5% over the preceding year.
5. The 5% factor by which amortization payments are scheduled to increase is assumed to change to 3% beginning July 1, 2019. While not in statute, this mirrors the change scheduled to occur in the other Vermont systems. This means that, initially, the contribution requirements beginning with the fiscal year ending June 30, 2020 and for several years thereafter will be significantly greater than the requirement for the year ending June 30, 2019.
6. The average funding policy contribution rate for the fiscal year ending June 30, 2019, is 5.74%. Compared to the actuarially determined contribution rate of 5.67%, there is a contribution rate excess of 0.07% in aggregate. By group, Groups A has a contribution sufficiency and Group B, C and D have a contribution deficiency. Details can be found in *Section 2, Exhibit F*.
7. Pursuant to Act 165 of 2018, member and employer contribution rates will each increase 0.0125% effective fiscal 2019, 0.0125% for fiscal 2020, 0.0250% for fiscal 2021, and 0.0250% for fiscal 2022 and thereafter. A complete schedule of member and employer contribution rates can be found in *Section 4, Exhibit II*.

8. The rate of return on the market value of assets was 7.3% for the July 1, 2017 to June 30, 2018 plan year. This resulted in an actuarial loss when measured against the assumed rate of return of 7.50%. The return on the actuarial value of assets was 6.7% for the same period due to the recognition of prior year's investment gains and losses. We advise the Board to continue to monitor actual and anticipated investment returns relative to the assumed long-term rate of return on investments.
9. The actuarial value of assets is 101.8% of the market value of assets. The investment experience in the past years has only been partially recognized in the actuarial value of assets. As the deferred net loss is recognized in future years, the actuarially-determined cost of the Plan is likely to increase unless the net loss is offset by future experience. The recognition of the deferred market losses of \$12.2 million will also have an impact on the future funded percentage. If the net deferred losses were recognized immediately in the actuarial value of assets, the actuarially determined contribution rate would increase from 5.66% to about 5.92% of payroll.
10. The actuarial loss from investment experience is \$5.3 million.
11. The net experience loss from sources other than investment experience was approximately \$17.4 million, or 2.1% of the actuarial accrued liability, prior to the reflection of plan provision changes. The plan provision changes consist of an increase to all member contribution rates by 0.75% over the next four fiscal years.
12. This report constitutes an actuarial valuation for the purpose of determining the actuarially determined contribution under the Plan's funding policy and measuring the progress of that funding policy. The Net Pension Liability (NPL) and Pension Expense under Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68, for inclusion in the plan and employer's financial statements as of June 30, 2018, and June 30, 2019, will be provided separately. The actuarially determined contribution in this valuation is expected to be used as the actuarially determined contribution (ADC) for GASB financial reporting.
13. This actuarial report as of June 30, 2018, is based on financial and demographic data as of that date. Changes subsequent to that date are not reflected and will affect future actuarial costs of the Plan.

Summary of Key Valuation Results

		2018	2017
Contributions for plan year beginning July 1:	• Funding policy contribution rate	5.74%	5.56%
	• Actuarially determined employer contributions as a percent of payroll	5.67%	5.22%
	• Contribution rate excess/(shortfall)	0.07%	0.34%
Actuarial cost method measures for plan year beginning July 1:	• Actuarial shortfall to be amortized through June 30, 2038	\$206,803,659	\$178,356,608
	• Normal contribution rates for plan year beginning July 1		
	– Employee normal contribution rate	5.58%	5.38%
	– Employer normal contribution rate	1.31%	1.40%
	– Total normal contribution rate	6.89%	6.78%
Actuarial accrued liability (EAN) for plan year beginning July 1*:	• Total actuarial accrued liability	\$827,679,630	\$754,876,508
	• Employer normal cost dollars	14,910,118	13,964,241
	• Employer normal cost rate	4.90%	4.84%
Assets for plan year beginning July 1:	• Market value of assets (MVA)	\$667,848,905	\$619,510,342
	• Actuarial value of assets (AVA)	680,005,147	634,690,493
	• Actuarial value of assets as a percentage of market value of assets	101.82%	102.45%
Funded status (EAN) for plan year beginning July 1:	• Unfunded actuarial accrued liability based on MVA	\$159,830,725	\$135,366,166
	• Funded percentage on MVA basis	80.70%	82.07%
	• Unfunded actuarial accrued liability based on AVA	\$147,674,483	\$120,186,015
	• Funded percentage on AVA basis	82.16%	84.08%
	• Remaining amortization period	20	21
Key assumptions:	• Interest rate	7.50%	7.50%
	• Inflation rate	2.50%	2.50%
Demographic data for plan year beginning July 1:	• Number of retired members and beneficiaries	3,189	2,942
	• Number of deferred members as reported by the System	798	797
	• Number of inactive members as reported by the System	2,516	2,221
	• Number of active members	7,452	7,302
	• Total payroll	\$289,838,838	\$274,813,707
	• Average payroll	38,894	37,635
	• Total monthly benefits for all retired members and beneficiaries	2,569,236	2,246,997
	• Average monthly benefit for all retired members and beneficiaries	806	763

* Entry Age Normal liability and normal cost is shown for informational purposes only. The actuarial cost method used by the System is described in Section 4, Exhibit I.

Summary of Key July 1, 2018, Valuation Results by Group

	Group A	Group B	Group C	Group D	Total
Contributions:					
• Current funding policy rate	4.125%	5.625%	7.375%	9.975%	5.739%
• Actuarially determined rate	3.190%	5.743%	7.760%	11.047%	5.673%
• Excess/(shortfall)	0.935%	-0.118%	-0.385%	-1.072%	0.066%
Actuarial cost method measures:					
• Actuarial shortfall	\$34,494,781	\$108,103,597	\$44,558,132	\$19,647,149	\$206,803,659
• Normal contribution rates					
– Employee rate	2.625%	5.000%	10.125%	11.475%	5.580%
– Employer rate	0.401%	1.326%	2.463%	1.798%	1.308%
– Total rate	3.026%	6.326%	12.588%	13.273%	6.888%
Actuarial accrued liability (EAN):					
• Total actuarial accrued liability	\$171,917,952	\$418,509,275	\$184,668,732	\$52,583,671	\$827,679,630
• Employer normal cost dollars	3,272,744	8,180,243	2,728,299	728,831	14,910,118
• Employer normal cost rate	4.120%	5.203%	5.050%	5.341%	4.899%
Assets:					
• Market value of assets (MVA)	\$151,770,129	\$339,135,075	\$141,932,388	\$35,011,313	\$667,848,905
• Actuarial value of assets (AVA)	154,532,662	345,308,040	144,515,853	35,648,592	680,005,147
Funded status (EAN):					
• Unfunded liability on MVA basis	\$20,147,823	\$79,374,200	\$42,736,344	\$17,572,358	\$159,830,725
• Funded percentage on MVA basis	88.28%	81.03%	76.86%	66.58%	80.69%
• Unfunded liability on AVA basis	\$17,385,290	\$73,201,235	\$40,152,879	\$16,935,079	\$147,674,483
• Funded percentage on AVA basis	89.89%	82.51%	78.26%	67.79%	82.16%
Demographic data:					
• Retired members and beneficiaries	1,242	1,522	372	53	3,189
• Vested former members	446	316	30	6	798
• Inactive members entitled to a refund of employee contributions	1,290	1,099	109	18	2,516
• Active members	2,604	3,805	848	195	7,452
• Total payroll	\$75,655,844	\$149,729,567	\$51,458,142	\$12,995,284	\$289,838,838
• Average payroll	29,054	39,351	60,682	66,642	38,894

Important Information About Actuarial Valuations

An actuarial valuation is a budgeting tool with respect to the financing of future projected obligations of a pension plan. It is an estimated forecast – the actual long-term cost of the Plan will be determined by the actual benefits and expenses paid and the actual investment experience of the Plan.

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

Plan of benefits	Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.
Membership data	An actuarial valuation for a plan is based on data provided to the actuary by the System. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
Assets	The valuation is based on the market value of assets as of the valuation date, as provided by the System. The System uses an “actuarial value of assets” that differs from market value to gradually reflect year-to-year changes in the market value of assets in determining the contribution requirements.
Actuarial assumptions	In preparing an actuarial valuation, Segal projects the benefits to be paid to existing plan members for the rest of their lives and the lives of their beneficiaries. This projection requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each member for each year. In addition, the benefits projected to be paid for each of those events in each future year reflect actuarial assumptions as to salary increases and cost-of-living adjustments. The projected benefits are then discounted to a present value, based on the assumed rate of return that is expected to be achieved on the plan’s assets. There is a reasonable range for each assumption used in the projection and the results may vary materially based on which assumptions are selected. It is important for any user of an actuarial valuation to understand this concept. Actuarial assumptions are periodically reviewed to ensure that future valuations reflect emerging plan experience. While future changes in actuarial assumptions may have a significant impact on the reported results, that does not mean that the previous assumptions were unreasonable.

The user of Segal's actuarial valuation (or other actuarial calculations) should keep the following in mind:

- The actuarial valuation is prepared at the request of the System and Board of Trustees. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- An actuarial valuation is a measurement of the plan's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
- Actuarial results in this report are not rounded, but that does not imply precision.
- If the System is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
- Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The System should look to its other advisors for expertise in these areas.

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

Section 2: Actuarial Valuation Results

A. Membership Data

The Actuarial Valuation and Review considers the number and demographic characteristics of covered members, including active members, inactive members, retired members and beneficiaries.

This section presents a summary of significant statistical data on these member groups.

More detailed information for this valuation year and the preceding valuation can be found in *Section 3, Exhibits A and B*.

MEMBER POPULATION: 2009 – 2018

As of July 1	Active Members	Deferred Members as Reported by the System*	Retired Members and Beneficiaries	Total Non-Actives	Ratio of Non-Actives to Actives
2009	6,533	554	1,538	2,092	0.32
2010	6,605	585	1,644	2,229	0.34
2011	6,475	645	1,779	2,424	0.37
2012	6,606	623	1,991	2,614	0.40
2013	6,577	652	2,146	2,798	0.43
2014	6,664	692	2,359	3,051	0.46
2015	6,685	837	2,539	3,376	0.51
2016	6,966	811	2,734	3,545	0.51
2017	7,302	797	2,942	3,739	0.51
2018	7,452	798	3,189	3,987	0.54

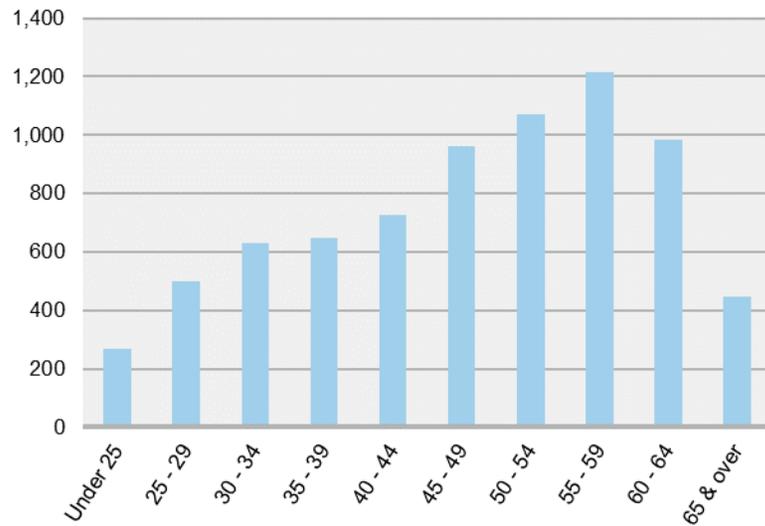
*Excludes inactive members as reported by the System

Active Members

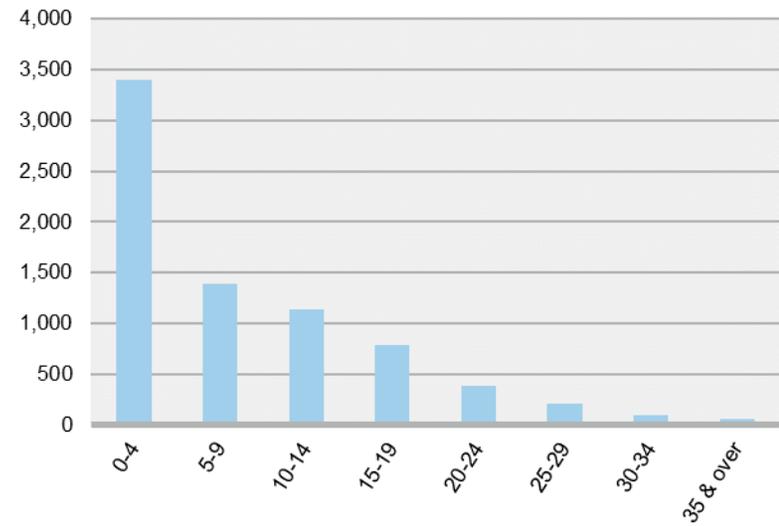
Plan costs are affected by the age, years of creditable service and payroll of active members. In this year’s valuation, there were 7,452 active members with an average age of 48.3, average years of creditable service of 8.6 years, and average payroll of \$38,894. The 7,302 active members in the prior valuation had an average age of 48.4, average service of 8.8 years and average payroll of \$37,635.

Distribution of Active Members as of July 1, 2018

BY AGE



BY YEARS OF CREDITABLE SERVICE



Inactive and Deferred Members

In this year's valuation, there were 2,516 inactive members as reported by the System. A member is reported as inactive if they have withdrawn from active employment within the three-year period preceding the valuation date, or if they withdrew prior to the three-year period preceding the valuation date, but do not have a vested right to a deferred or immediate vested benefit and have not taken a refund of their employee contributions.

In addition, there were 798 deferred members as reported by the System. A member is reported as deferred if they have withdrawn from active employment prior to the three-year period preceding the valuation date and have a vested right to a deferred or immediate vested benefit.

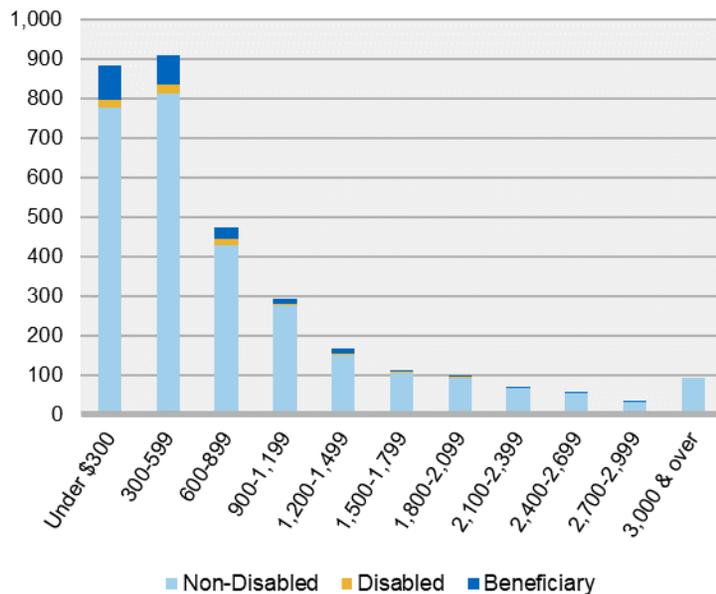
Retired Members and Beneficiaries

As of July 1, 2018, 2,962 retired members (including disability retirees) and 227 beneficiaries were receiving total monthly benefits of \$2,569,236. For comparison, in the previous valuation, there were 2,731 retired members and 211 beneficiaries receiving monthly benefits of \$2,246,997.

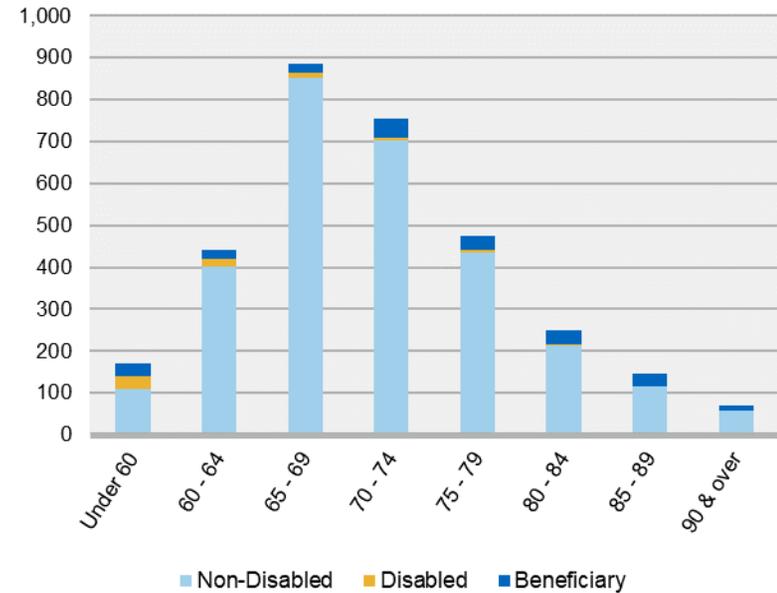
As of July 1, 2018, the average monthly benefit for retired members and beneficiaries is \$806, compared to \$763 in the previous valuation. The average age for retired members and beneficiaries is 71.4 in the current valuation, compared with 71.4 in the prior valuation.

Distribution of Pensioners as of July 1, 2018

BY TYPE AND MONTHLY AMOUNT



BY TYPE AND BY AGE



Historical Plan Population

The chart below demonstrates the progression of the active population over the last ten years. The chart also shows the growth among the retired population over the same time period.

MEMBERSHIP DATA STATISTICS: 2009 – 2018

As of July 1	Active Members			Retired Members*		
	Count	Average Age	Average Service	Count	Average Age	Average Monthly Amount
2009	6,533	47.8	7.3	1,390	--	\$569
2010	6,605	48.1	7.8	1,492	--	554
2011	6,475	48.5	8.1	1,620	--	598
2012	6,606	48.5	8.9	1,826	--	634
2013	6,577	48.8	9.1	1,982	--	659
2014	6,664	48.9	9.1	2,177	71.2	693
2015	6,685	48.7	9.1	2,329	71.3	718
2016	6,966	48.5	9.0	2,523	71.4	738
2017	7,302	48.4	8.8	2,731	71.4	773
2018	7,452	48.3	8.6	2,962	71.3	828

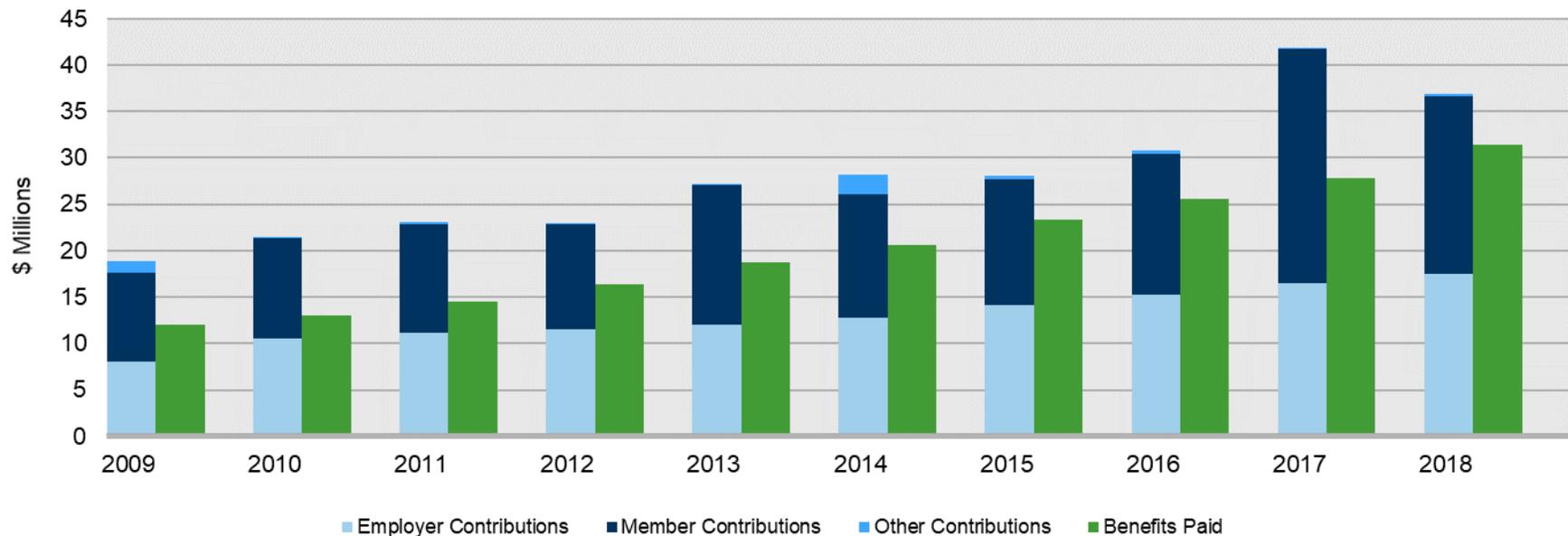
* Not including beneficiaries

B. Financial Information

Retirement plan funding anticipates that, over the long term, both contributions and investment earnings (less investment fees and administrative expenses) will be needed to cover benefit payments. Retirement plan assets change as a result of the net impact of these income and expense components.

Additional financial information, including a summary of these transactions for the valuation year, is presented in *Section 3, Exhibits C, D and E*.

COMPARISON OF CONTRIBUTIONS TO BENEFITS PAID FOR YEARS ENDED JUNE 30, 2009 – 2018



It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board has adopted an asset valuation method that gradually adjusts to market value. Under this valuation method, the full value of market fluctuation is not recognized in a single year and, as a result, the asset value and the plan costs are more stable. The asset method provides a degree of conservatism to increase the likelihood that benefits are funded. The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value.

DETERMINATION OF ACTUARIAL VALUE OF ASSETS FOR YEAR ENDED JUNE 30, 2018

1	Market value of assets, June 30, 2018			\$667,848,905
2	Calculation of unrecognized return	Original Amount *	Percent Deferred	Unrecognized Amount**
	(a) Year ended June 30, 2018	-\$1,103,330	80%	-\$882,664
	(b) Year ended June 30, 2017	17,171,553	60%	10,302,933
	(c) Year ended June 30, 2016	-35,999,708	40%	-14,399,884
	(d) Year ended June 30, 2015	-35,883,134	20%	-7,176,627
	(e) Year ended June 30, 2014	35,178,435	0%	0
	(f) Total unrecognized return			-\$12,156,242
3	Preliminary actuarial value: 1 – 2f			\$680,005,147
4	Adjustment to be within 20% corridor			0
5	Final actuarial value of assets as of June 30, 2018: 3 + 4			\$680,005,147
6	Actuarial value as a percentage of market value: 5 ÷ 1			101.8%
7	Amount deferred for future recognition: 1 – 5			-\$12,156,242

*Total return minus expected return on a market value basis

**Recognition at 20% per year over five years

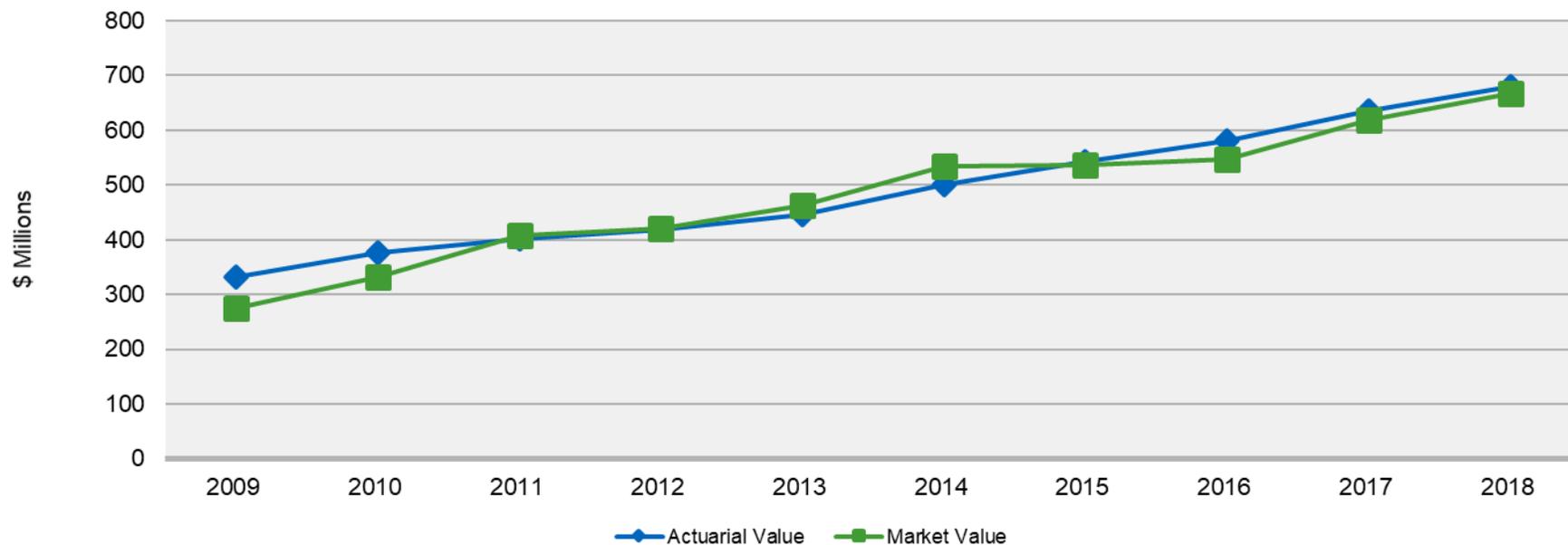
The following table presents an allocation of total valuation assets to each member group. The amounts shown for reallocation of surplus for members transferring among groups were derived by estimation of the contributions made on behalf of these members in their prior groups and accumulation of these amounts with interest at the historical rates of return calculated for the System.

ALLOCATION OF ACTUARIAL VALUE OF ASSETS AS OF JUNE 30, 2018

	Group A	Group B	Group C	Group D	Total
Valuation assets as of July 1, 2017	\$149,252,116	\$322,181,829	\$133,479,763	\$29,776,785	\$634,690,493
Contributions	9,886,468	21,514,216	9,001,712	2,041,302	42,443,698
Income	5,384,235	17,318,488	10,821,701	3,161,803	36,686,227
Benefit payments	-6,824,137	-15,244,764	-7,313,264	-1,384,207	-30,766,372
Expenses	-621,425	-1,341,433	-555,755	-123,978	-2,642,591
Net transfers	-95,546	-206,250	-85,450	-19,062	-406,308
Surplus reallocation for transferring members	-2,449,049	1,085,954	-832,854	2,195,949	0
Valuation assets as of June 30, 2018	\$154,532,662	\$345,308,040	\$144,515,853	\$35,648,592	\$680,005,147

Both the actuarial value and market value of assets are representations of the Plan’s financial status. As investment gains and losses are gradually taken into account, the actuarial value of assets tracks the market value of assets. The actuarial asset value is significant because the Plan’s liabilities are compared to these assets to determine what portion, if any, remains unfunded. Amortization of the unfunded actuarial accrued liability is an important element in determining the contribution requirement.

ACTUARIAL VALUE OF ASSETS VS. MARKET VALUE OF ASSETS AS OF JUNE 30, 2009 – 2018



C. Actuarial Experience

To calculate the actuarially determined contribution, assumptions are made about future events that affect the amount and timing of benefits to be paid and assets to be accumulated. Each year actual experience is measured against the assumptions. If overall experience is more favorable than anticipated (an actuarial gain), the contribution requirement will decrease from the previous year. On the other hand, the contribution requirement will increase if overall actuarial experience is less favorable than expected (an actuarial loss).

Taking account of experience gains or losses in one year without making a change in assumptions reflects the belief that the single year's experience was a short-term development and that, over the long term, experience will return to the original assumptions. For contribution requirements to remain stable, assumptions should approximate experience.

If assumptions are changed, the contribution requirement is adjusted to take into account a change in experience anticipated for all future years.

The net experience loss is \$22,638,173, which includes \$5,265,750 from investment losses and \$17,372,423 in losses from all other sources. The net experience variation from individual sources other than investments was 2.1% of the actuarial accrued liability. A discussion of the major components of the actuarial experience is on the following pages.

ACTUARIAL EXPERIENCE FOR YEAR ENDED JUNE 30, 2018

1	Net loss from investments*	-\$5,265,750
2	Net loss from other experience	<u>-17,372,423</u>
3	Net experience loss: 1 + 2	-\$22,638,173

* Details on next page.

Investment Experience

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the System's investment policy. The rate of return on the market value of assets was 7.32% for the year ended June 30, 2018.

For valuation purposes, the assumed rate of return on the actuarial value of assets is 7.50%. The actual rate of return on an actuarial basis for the 2018 plan year was 6.67%. Since the actual return for the year was less than the assumed return, the Plan experienced an actuarial loss during the year ended June 30, 2018 with regard to its investments.

INVESTMENT EXPERIENCE

	Year Ended June 30, 2018	
	Market Value	Actuarial Value
1 Investment income	\$45,467,607	\$42,443,698
2 Average value of assets	620,945,820	636,125,971
3 Rate of return: $1 \div 2$	7.32%	6.67%
4 Assumed rate of return	7.50%	7.50%
5 Expected investment income: 2×4	\$46,570,937	\$47,709,448
6 Actuarial gain/(loss): $1 - 5$	<u>-\$1,103,330</u>	<u>-\$5,265,750</u>

Because actuarial planning is long term, it is useful to see how the assumed investment rate of return has followed actual experience over time. The table below shows the rate of return on an actuarial basis compared to the market value investment return for the last 20 years, including averages over select time periods.

INVESTMENT RETURN – ACTUARIAL VALUE VS. MARKET VALUE: 1999 - 2018

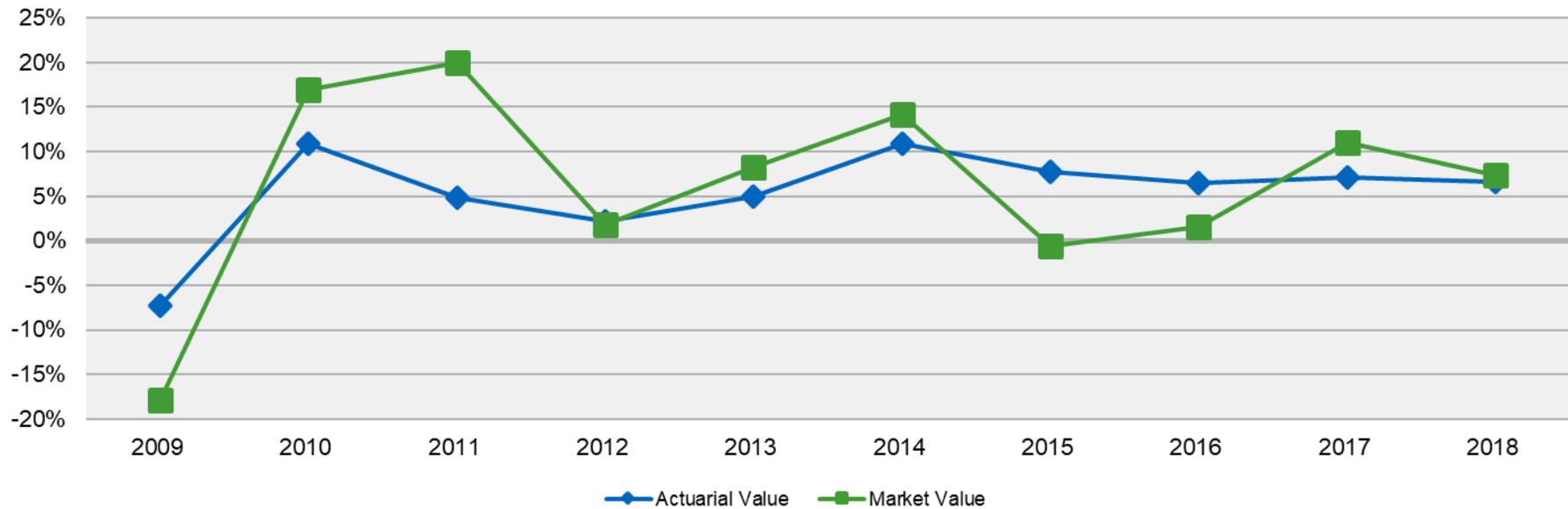
Year Ended June 30	Actuarial Value Investment Return		Market Value Investment Return		Year Ended June 30	Actuarial Value Investment Return		Market Value Investment Return	
	Amount	Percent	Amount	Percent		Amount	Percent	Amount	Percent
1999	\$19,974,567	17.28%	\$19,833,679	14.53%	2009	-\$25,653,211	-7.27%	-\$59,207,777	-17.88%
2000	19,323,381	13.80	8,347,167	5.19	2010	36,633,414	10.92	47,603,471	16.99
2001	16,228,833	10.03	282,793	0.16	2011	18,319,813	4.82	66,935,648	19.93
2002	11,545,636	6.42	-3,094,678	-1.78	2012	8,922,492	2.20	7,667,705	1.87
2003	7,138,256	3.49	2,449,864	1.33	2013	20,983,866	4.98	34,837,755	8.21
2004	2,420,328*	1.07	27,853,903	13.84	2014	48,812,262	10.87	65,829,312	14.13
2005	18,398,538	7.77	17,789,133	7.51	2015	38,990,631	7.76	-2,841,341	-0.53
2006	22,173,822	8.44	27,735,589	10.59	2016	33,518,944	6.14	6,787,237	1.26
2007	29,551,551	10.11	46,635,359	15.69	2017	41,695,777	7.10	61,111,748	11.06
2008	24,090,810	7.41	-19,625,280	-5.65	2018	42,443,698	6.67	45,467,607	7.32
							Most recent five-year average return	7.55%	6.50%
							Most recent ten-year average return	5.73%	6.10%
							Most recent 15-year average return	6.06%	6.41%
							Most recent 20-year average return	6.44%	6.03%

Note: Each year's yield is weighted by the average asset value in that year.

* Includes restart of AVA method (reset to MVA).

Subsection B described the actuarial asset valuation method that gradually recognizes fluctuations in the market value rate of return. The goal of this is to stabilize the actuarial rate of return and to produce more level pension plan costs.

MARKET AND ACTUARIAL RATES OF RETURN FOR YEARS ENDED JUNE 30, 2009 - 2018



Administrative Expenses

Administrative expenses for the year ended June 30, 2018 totaled \$1,064,034 compared to \$1,030,159 the prior year. There is currently no explicit provision for administrative expenses.

Contributions

Contributions for the year ended June 30, 2018 totaled \$36,958,010 compared to the projected amount of \$30,591,612. This resulted in a gain of \$6,605,138 for the year, with interest.

Other Experience

There are other differences between the expected and the actual experience that appear when the new valuation is compared with the projections from the previous valuation. These include:

- the extent of turnover among members,
- retirement experience (earlier or later than projected),
- mortality (more or fewer deaths than projected),
- the number of disability retirements (more or fewer than projected),
- actual COLAs paid (more or less than assumed), and
- salary increases (greater or smaller than projected).

The net loss from this other experience for the year ended June 30, 2018 amounted to \$17,372,423.

EXPERIENCE GAIN/(LOSS) DUE TO CHANGES IN DEMOGRAPHICS FOR YEAR ENDED JUNE 30, 2018

Net turnover	-\$4,430,054
Retirement	-8,275,342
Deaths among retired members and beneficiaries	407,980
Disability retirements	-627,976
Salary increases less than expected for continuing actives	753,988
COLA experience	-80,372
Miscellaneous	<u>-\$5,120,647</u>
Total	-\$17,372,423

D. Changes in the Actuarial Accrued Liability

The actuarial accrued liability under the Entry Age Normal cost method as of June 30, 2018 is \$827,679,630, an increase of \$72,803,122, or 9.64%, from the actuarial accrued liability as of the prior valuation date. The change in liability is due to interest, accumulation and payment of benefits, actuarial experience (as discussed in the previous subsection), and plan provision changes. The Entry Age Normal liability is provided for informational purposes only. The actuarial cost method used by the System is described in *Section 4, Exhibit I*.

Actuarial Assumptions

There were no changes in plan actuarial assumptions since the prior valuation. Details on actuarial assumptions and methods are in *Section 4, Exhibit I*.

Plan Provisions

The employee contribution rates have been increased according to the following schedule:

Effective Date	Fiscal Year	Group A	Group B	Group C	Group D
July 1, 2018	2019	2.625%	5.000%	10.125%	11.475%
July 1, 2019	2020	2.750%	5.125%	10.250%	11.600%
July 1, 2020	2021	3.000%	5.375%	10.500%	11.850%
July 1, 2021	2022	3.250%	5.625%	10.750%	12.100%

The changes increased the actuarial accrued liability by 0.2% and decreased the total normal cost by 2.2%. A summary of plan provisions is in *Section 4, Exhibit II*.

E. Reconciliation of Actuarial Shortfall

RECONCILIATION OF ACTUARIAL SHORTFALL FOR YEAR ENDED JUNE 30, 2018 BASED ON CURRENT FUNDING METHOD

1	Actuarial shortfall at beginning of year		\$178,356,608
2	Normal cost at beginning of year		28,441,960
3	Total contributions		-36,958,010
4	Interest		
	• For whole year on 1 + 2	\$15,509,893	
	• For half year on 3	<u>-1,385,925</u>	
	Total interest		<u>14,123,968</u>
5	Expected actuarial shortfall		\$183,964,526
6	Changes due to:		
	• (Gain)/loss	\$22,638,173	
	• Assumptions	0	
	• Funding method	0	
	• Plan provisions	<u>200,960</u>	
	Total changes		<u>22,839,133</u>
7	Actuarial shortfall at end of year		<u>\$206,803,659</u>

F. Actuarially Determined Contribution

The actuarially determined contribution is equal to the employer normal cost payment and a payment on the unfunded actuarial accrued liability. As of July 1, 2018, the actuarially determined contribution is \$17,263,214, or 5.67% of payroll.

The statute governing the System specifies the funding policy used to calculate the actuarially determined contribution based on a closed amortization period ending on June 30, 2038. As of July 1, 2018, there are 20 years remaining on this schedule.

The contribution requirement as of July 1, 2018 is based on the data previously described, the actuarial assumptions and Plan provisions described in *Section 4*, including all changes affecting future costs adopted at the time of the actuarial valuation, actuarial gains and losses, and changes in the actuarial assumptions.

ACTUARIALLY DETERMINED CONTRIBUTION

		Year Beginning July 1	
		2018	
		Amount	% of Payroll
1	Present value of future benefits	\$1,048,271,952	
2	Actuarial value of assets	<u>-680,005,147</u>	
3	Total present value of future contributions: 1 - 2	\$368,266,805	
4	Present value of future member contributions	<u>141,353,394</u>	
5	Present value of future employer contributions: 3 - 4	\$226,913,411	
6	Present value of future employer normal contributions	<u>20,109,752</u>	
7	Actuarial shortfall to be amortized: 5 - 6	<u>\$206,803,659</u>	
8	Total normal cost, adjusted for timing*	\$20,961,835	6.89%
9	Projected member contributions	<u>16,982,479</u>	<u>5.58%</u>
10	Employer normal cost: 8 - 9	\$3,979,356	1.31%
11	Payment on actuarial shortfall, adjusted for timing*	<u>13,283,858</u>	<u>4.36%</u>
12	Total recommended employer contribution: 10 + 11	<u>\$17,263,214</u>	<u>5.67%</u>
13	Projected payroll for the upcoming fiscal year	\$304,330,780	

*Actuarially determined contributions are assumed to be paid at the middle of the year.

Actuarially Determined Contribution by Group

The following table shows a comparison of the Actuarially Determined Contribution to the current funding policy rates, by group.

ACTUARIALLY DETERMINED CONTRIBUTION BY GROUP

	Group A	Group B	Group C	Group D	Total
1. Normal contributions					
a. Member	2.625%	5.000%	10.125%	11.475%	5.580%
b. Employer	<u>0.401%</u>	<u>1.326%</u>	<u>2.463%</u>	<u>1.798%</u>	<u>1.308%</u>
c. Total	3.026%	6.326%	12.588%	13.273%	3.026%
2. Payment on actuarial shortfall through June 30, 2038	2.789%	4.417%	5.297%	9.249%	4.365%
3. Actuarially determined contribution: 1b + 2	3.190%	5.743%	7.760%	11.047%	5.673%
4. Current funding policy contribution rate	4.125%	5.625%	7.375%	9.975%	5.739%
5. Contribution excess/(shortfall): 4 - 3	0.935%	-0.118%	-0.385%	-1.072%	0.066%

We recommend that the Board set future contribution rates between the rates specified in items 3 and 4 in the table above. We note that, as discussed in the highlights, the 5% factor by which amortization payments are scheduled to increase is set to change to 3% beginning July 1, 2019. While not in statute, this mirrors the change scheduled to occur in the other Vermont systems. This means that, initially, the contribution requirements beginning with the fiscal year ending June 30, 2020 and for several years thereafter will be significantly greater than the requirement for the year ending June 30, 2019. These increased requirements will be mitigated by the scheduled increases in contribution rates over the following three years.

The difference between the current funding policy rates and the actuarially determined contribution rate is 0.066% of payroll in the aggregate. Projected payroll for fiscal 2019 is \$304,330,780. The product of 0.066% and the projected payroll, or \$200,858, is less than the non-investment expenses incurred by the System in fiscal year 2018 of \$1,064,034.

G. Amortization Schedule for Actuarial Shortfall

A schedule of projected future actuarial shortfall payments is shown below.

ACTUARIAL SHORTFALL AMORTIZATION SCHEDULE

As of June 30	Balance	Amortization Payment (Year Following)
2018	\$206,803,659	\$13,283,858
2019	208,540,937	16,271,816*
2020	207,310,529	16,759,971
2021	205,481,711	17,262,770
2022	202,994,419	17,780,653
2023	199,783,628	18,314,072
2024	195,778,965	18,863,494
2025	190,904,300	19,429,399
2026	185,077,293	20,012,281
2027	178,208,915	20,612,650
2028	170,202,934	21,231,029
2029	160,955,354	21,867,960
2030	150,353,822	22,523,999
2031	138,276,979	23,199,719
2032	124,593,772	23,895,710
2033	109,162,706	24,612,582
2034	91,831,041	25,350,959
2035	72,433,935	26,111,488
2036	50,793,513	26,894,833
2037	26,717,870	27,701,678
2038	0	0

* Beginning July 1, 2019 and each year thereafter, mirroring the change set to occur in the other Vermont systems, the annual payment to amortize the actuarial shortfall will be calculated based upon installments increasing at a rate of 3% per year instead of 5%.

H. History of Employer Contributions

A history of the most recent years of employer contributions is shown below.

HISTORY OF EMPLOYER CONTRIBUTIONS: 2010 – 2019

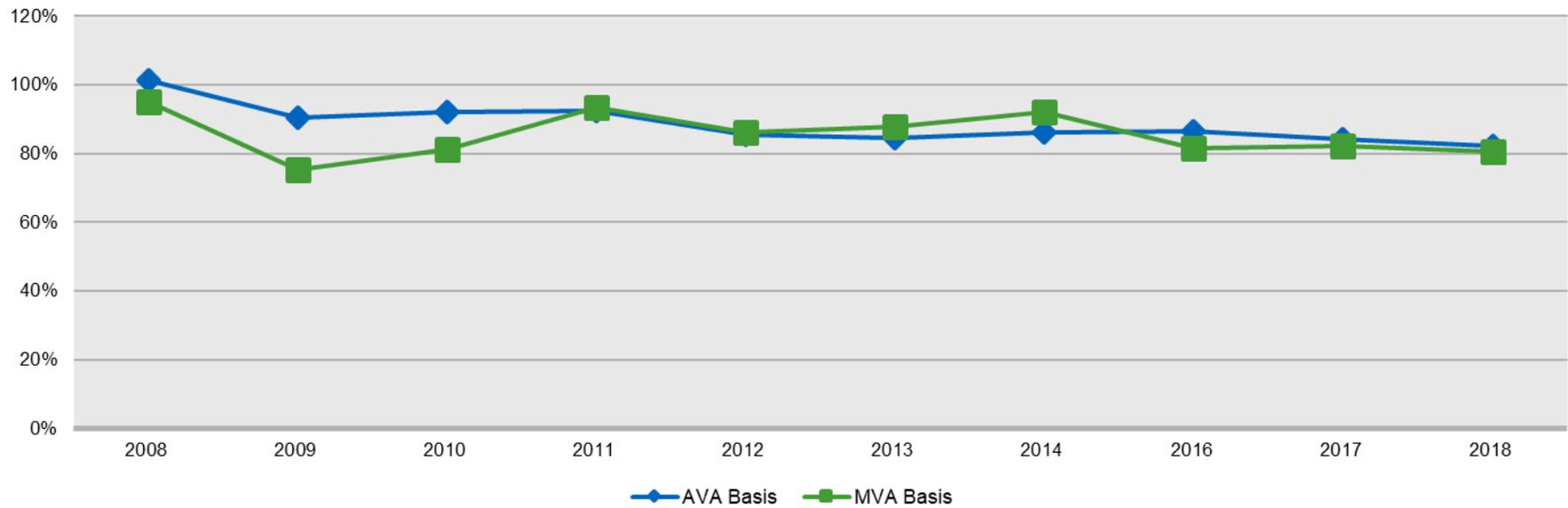
Fiscal Year Ended June 30	Actuarially Determined Employer Contribution		Actual Employer Contribution		Percent Contributed
	Amount	Percentage of Payroll*	Amount	Percentage of Payroll*	
2010	\$8,124,338	4.04%	\$10,592,919	5.27%	130.39%
2011	8,415,993	3.96%	11,117,363	5.23%	132.10%
2012	8,224,579	3.81%	11,532,230	5.34%	140.22%
2013	10,704,263	4.74%	12,014,186	5.32%	112.24%
2014	11,638,928	5.03%	12,805,737	5.53%	110.03%
2015	11,956,121	4.93%	14,136,067	5.83%	118.23%
2016**	15,235,742	N/A	15,235,742	N/A	100.00%
2017	12,895,672	4.64%	16,481,881	5.56%	127.81%
2018	15,066,601	5.22%	17,519,690	6.07%	116.28%
2019	17,263,214	5.67%	--	--	--

*Based on expected payroll

**While no formal actuarial valuation was produced for the fiscal year ended June 30, 2015, contribution rates for the year were developed by the actuary.

I. History of Funded Percentage

A history of the most recent years of funded percentage as of July 1st is shown below.



*No formal actuarial valuation was produced for the fiscal year ended June 30, 2015. Therefore, no funded percentage is shown as of July 1, 2015.

J. Actuarial Balance Sheet

An overview of the Plan’s funding is provided by an Actuarial Balance Sheet, which compares the total liabilities (current and future) to the total assets (current and future). The liabilities are calculated by determining the amount and timing of all future payments that will be made by the Plan for current members. These payments are discounted at the valuation interest rate to the date of the valuation, thereby determining the present value of all benefits, referred to as the “liability” of the Plan.

Second, this liability is compared to the assets. The “assets” for this purpose include the net amount of assets already accumulated by the Plan, the present value of future member contributions, the present value of future employer normal cost contributions, and the present value of future employer amortization payments for the unfunded actuarial accrued liability.

ACTUARIAL BALANCE SHEET

	Year Ended	
	June 30, 2018	June 30, 2017
Liabilities		
• Present value of benefits for retired members and beneficiaries	\$331,196,804	\$286,934,411
• Present value of benefits for inactive former members	52,688,858	47,985,334
• Present value of benefits for active members	<u>664,386,290</u>	<u>635,940,458</u>
Total liabilities	\$1,048,271,952	\$970,860,203
Assets		
• Total valuation value of assets	\$680,005,147	\$634,690,493
• Present value of future contributions by members	141,353,394	125,366,979
• Present value of future employer contributions for:		
» Employer normal contributions	20,109,752	32,446,123
» Actuarial shortfall	<u>206,803,659</u>	<u>178,356,608</u>
Total of current and future assets	<u>\$1,048,271,952</u>	<u>\$970,860,203</u>

K. Risk

The actuarial valuation results depend on a single set of assumptions; however, there is a risk that emerging results may differ significantly as actual experience proves to be different than projected from the current assumptions.

We have not been engaged to perform a detailed analysis of the potential range of the impact of risks relative to the Plan's future financial condition, but have included a brief discussion of some of the risks that may affect the Plan. This discussion is focused on funding-related risks, but similar concerns may apply to risks regarding the level of expense and liabilities reported for Plan accounting purposes as well.

A more detailed assessment of the risks could provide a better understanding of the risks inherent in the Plan. This assessment may include scenario testing, sensitivity testing, stress testing, and stochastic modeling.

A detailed risk assessment could be important for VMERS because:

- The current positive cash flow position of the Plan could be reversed by relatively small deviations from assumed future experience or simply as the result of the ongoing maturity of the plan over time.
- Investment volatility could affect plan sustainability and require increased contributions from members and/or employers.
- The risks identified below show significant potential for variability.

The following risks could significantly affect the Plan's future condition:

- **Investment Risk** (the risk that returns will be different than expected)

If the prior year's investment performance resulted in a market value of assets that is 10% different than the current value, it would result in a change of \$66.8 million in the asset value. A 10% increase in assets would cause the unfunded liability (market value basis) to decrease from \$219.0 million to \$152.2 million. Likewise, a 10% decrease in the asset value would cause the unfunded liability to increase from \$219.0 million to \$285.8 million.

Since the Plan's assets are much larger than contributions, investment performance may create volatility in the actuarially determined contribution requirements. For example, for each 1% difference in actual return, the actuarially determined contribution would increase or decrease by 0.20% of payroll, disregarding the effects of the five-year phase-in of investment gains and losses.

To illustrate the potential for future investment volatility, the market value rate of return over the last 20 years has ranged from a low of -17.88% to a high of 19.93%.

➤ **Longevity Risk** (the risk that mortality experience will be different than expected)

The actuarial valuation includes an expectation of future improvement in life expectancy. Emerging plan experience that does not match these expectations will result in either an increase or decrease in the actuarially determined contribution.

The current mortality assumptions represent our best estimate of the mortality rates for this plan; however, a 10% reduction in the assumed mortality rates results in an increase in the liabilities of roughly 3% for most plans. For VMERS, a 3% liability increase would result in an increase in the unfunded accrued liability of \$24.8 million. The unfunded accrued liability (market value of assets basis) would increase from \$219.0 million to \$243.8 million.

➤ **Demographic Risk** (the risk that member experience will be different than assumed)

Examples of this risk include:

- Actual retirements occurring earlier or later than assumed. The value of retirement plan benefits is sensitive to the rate of benefit accruals and any early retirement subsidies that apply.
- More or less active member turnover than assumed.
- Salary increases more or less than assumed.

➤ **Actual Experience**

- Past experience can help demonstrate the sensitivity of key results to the Plan's actual experience. Over the past ten years:
 - » The investment gain(loss) for a year (actuarial basis) has ranged from a loss of \$9.9 million to a gain of \$19.2 million.
 - » The non-investment gain(loss) for a year has ranged from a loss of \$17.3 million to a gain of \$7.2 million.
- The funded percentage on the actuarial value of assets has ranged from a low of 82.2% to a high of 101.5% over the past ten years.

➤ **Maturity Measures**

The risk associated with a pension plan increases as it becomes more mature, meaning that the actives represent a smaller portion of the liabilities of the plan. When this happens, there is a greater risk that fluctuations in the experience of the non-active members or of the assets of the plan can result in large swings in the contribution requirements.

- Over the past ten years, the ratio of non-active members to active members has increased from a low of 0.32 to a high of 0.54. Currently the Plan has a non-active to active member ratio of 0.54.

- As of July 1, 2018, the retired life actuarial accrued liability represents 40% of the total actuarial accrued liability. In addition, the actuarial accrued liability for inactive vested members represents 6% of the total. The higher the non-active actuarial accrued liability is as a percent of the total liability, the greater the danger of volatility in results.
- For the prior year, benefits paid were \$5.5 million less than contributions received, or 0.8% of the market value of assets. As the Plan matures and benefits paid exceed contributions received, cash will be needed from the investment portfolio to meet benefit payments.

Section 3: Supplemental Information

EXHIBIT A – TABLE OF PLAN COVERAGE

Category	As of July 1		Change From Prior Year
	2018	2017	
Active members in valuation:			
• Number	7,452	7,302	2.1%
• Average age	48.3	48.4	-0.1
• Average years of creditable service	8.6	8.8	-0.2
• Total payroll	\$289,838,838	\$274,813,707	5.5%
• Average payroll	38,894	37,635	3.4%
• Total active vested members	4,051	4,113	-1.5%
Inactive members:			
• Number of deferreds as reported by the System	798	797	0.1%
• Number of inactives as reported by the System	2,516	2,221	13.3%
Beneficiaries with rights to a deferred benefit	0	0	0.0%
Retired members:			
• Number in pay status	2,888	2,664	8.4%
• Average age	71.6	71.3	0.3
• Average monthly benefit	\$831	\$773	7.5%
Disability Retirees:			
• Number in pay status	74	67	10.4%
• Average age	62.4	63.4	-1.0
• Average monthly benefit	\$716	\$661	8.3%
Beneficiaries:			
• Number in pay status	227	211	7.6%
• Average age	73.0	73.1	-0.1
• Average monthly benefit	\$516	\$478	7.9%

EXHIBIT B – RECONCILIATION OF MEMBERSHIP DATA

	Active Members	Deferreds	Inactives	Disability Retirees	Retired Members	Beneficiaries	Total
Number as of July 1, 2017	7,302	797	2,221	67	2,664	211	13,262
• New Members	1,128	N/A	241	1	8	4	1382
• Inactives as reported by the System	-729	0	729	N/A	N/A	N/A	0
• Deferreds as reported by the System	0	70	-70	N/A	N/A	N/A	0
• Retirements	-205	-43	-33	N/A	281	N/A	0
• New disabilities	-4	0	-4	8	0	N/A	0
• Return to work from disability	0	N/A	N/A	0	N/A	N/A	0
• Died with beneficiary	0	0	0	-1	-20	21	0
• Died without beneficiary	-4	-4	-2	-2	-45	-9	-66
• Lump sum cash-outs	-132	-7	-485	0	0	0	-624
• Rehire	96	-14	-82	N/A	N/A	N/A	0
• Certain period expired	N/A	N/A	0	0	0	0	0
• Data adjustments	0	-1	1	1	0	0	1
Number as of July 1, 2018	7,452	798	2,516	74	2,888	227	13,955

EXHIBIT C – SUMMARY STATEMENT OF INCOME AND EXPENSES ON A MARKET VALUE BASIS

	Year Ended June 30, 2018	Year Ended June 30, 2017
Net assets at market value at the beginning of the year	\$619,510,342	\$547,015,113
Contribution income:		
• Employer contributions	\$17,519,690	\$16,481,881
• Member contributions	19,166,537	25,210,413
• Less administrative expenses	<u>-1,064,034</u>	<u>-1,030,159</u>
<i>Net contribution income</i>	\$35,622,193	\$40,662,135
Net other income	\$271,783	\$149,556
Investment income:		
• Interest, dividends and other income	\$8,714,980	\$9,168,650
• Asset appreciation	36,752,627	51,943,098
• Less investment fees	<u>-1,578,557</u>	<u>-1,624,820</u>
<i>Net investment income</i>	<u>\$43,889,050</u>	<u>\$59,486,928</u>
Total income available for benefits	\$79,783,026	\$100,298,619
Less benefit payments:		
• Benefits	-\$28,480,667	-\$24,915,886
• Refunds of contributions	-2,124,414	-1,858,831
• Death claims	-161,291	-259,827
• Transfers to other pension trust funds	<u>-678,091</u>	<u>-768,846</u>
<i>Net benefit payments</i>	-\$31,444,463	-\$27,803,390
Change in reserve for future benefits	\$48,338,563	\$72,495,229
Net assets at market value at the end of the year	\$667,848,905	\$619,510,342

EXHIBIT D – SUMMARY STATEMENT OF PLAN ASSETS

	June 30 , 2018	June 30, 2017
Cash equivalents	\$4,984,955	\$17,975,440
Total accounts receivable	37,792,972	45,215,227
Prepaid expenses	24,381	21,000
Capital assets, net of depreciation	665,325	796,487
Investments:		
• Fixed Income	\$101,724,707	\$94,195,542
• Equities	98,406,516	115,460,190
• Private partnership	0	53,911,454
• Mutual and commingled funds	406,576,249	324,479,956
• Real estate and venture capital	<u>52,299,692</u>	<u>11,298,712</u>
Total investments at market value	\$659,007,164	\$599,345,854
Total assets	\$702,474,797	\$663,354,008
Total liabilities	-\$34,625,892	-\$43,843,666
Net assets at market value	\$667,848,905	\$619,510,342
Net assets at actuarial value	\$680,005,147	\$634,690,493

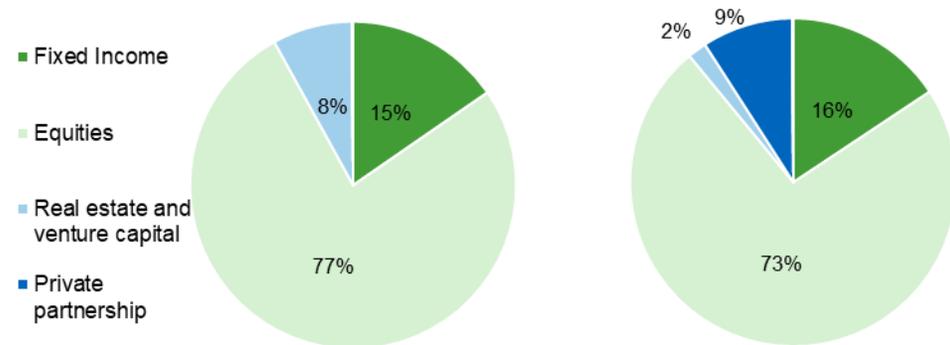


EXHIBIT E – DEVELOPMENT OF THE FUND THROUGH JUNE 30, 2018

Year Ended June 30	Employer Contributions	Member Contributions	Net Other Income	Net Investment Return*	Admin. Expenses	Benefit Payments**	Market Value of Assets at Year-End	Actuarial Value of Assets at Year-End	Actuarial Value as a Percent of Market Value
2007							\$276,172,429	\$331,406,915	120.00%
2008	\$0	\$9,906,709	\$124,132	-\$19,472,654	-\$623,619	-\$10,714,939	327,060,102	348,740,022	106.63%
2009	8,008,862	9,557,973	1,321,919	-56,937,342	-798,458	-12,040,627	276,172,429	331,406,915	120.00%
2010	10,592,919	10,711,600	203,549	47,598,096	-393,947	-12,996,194	331,888,452	376,152,881	113.34%
2011	11,117,363	11,702,728	266,425	66,957,781	-569,603	-14,461,590	406,901,556	402,550,150	98.93%
2012	11,532,230	11,337,926	118,191	7,661,464	-672,851	-16,338,446	420,540,070	417,443,451	99.26%
2013	12,014,186	15,060,665	170,381	34,838,507	-749,447	-18,687,932	463,186,430	446,235,922	96.34%
2014	12,805,737	13,233,728	2,142,868	64,346,116	-588,022	-20,601,380	534,525,477	500,557,919	93.65%
2015	14,136,067	13,587,975	384,009	-2,358,518	-1,056,094	-23,315,174	535,903,742	543,768,156	101.47%
2016	15,235,742	15,226,948	351,434	6,776,933	-890,802	-25,588,884	547,015,114	581,611,235	106.32%
2017	16,481,881	25,210,413	149,556	59,486,928	-1,030,159	-27,803,390	619,510,342	634,690,493	102.45%
2018	17,519,690	19,166,537	271,783	43,889,050	-1,064,034	-31,444,463	667,848,905	680,005,147	101.82%

* On a market basis, net of investment fees

** Includes "transfers to other pension trust funds"

EXHIBIT F – DEFINITION OF PENSION TERMS

The following list defines certain technical terms for the convenience of the reader:

Actuarial Accrued Liability for Actives:	The equivalent of the accumulated normal costs allocated to the years before the valuation date.
Actuarial Accrued Liability for Pensioners:	The single-sum value of lifetime benefits to existing pensioners. This sum takes into account life expectancies appropriate to the ages of the pensioners and the interest that the sum is expected to earn before it is entirely paid out in benefits.
Actuarial Cost Method:	A procedure allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability that are used to determine the actuarially determined contribution.
Actuarial Gain or Loss:	A measure of the difference between actual experience and expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge that may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., assets earn more than projected, salary increases are less than assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results yield actuarial liabilities that are larger than projected. Actuarial gains will shorten the time required for funding the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.
Actuarially Equivalent:	Of equal actuarial present value, determined as of a given date and based on a given set of Actuarial Assumptions.
Actuarial Present Value (APV):	<p>The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. Each such amount or series of amounts is:</p> <p>Adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.)</p> <p>Multiplied by the probability of the occurrence of an event (such as survival, death, disability, withdrawal, etc.) on which the payment is conditioned, and</p> <p>Discounted according to an assumed rate (or rates) of return to reflect the time value of money.</p>

Actuarial Present Value of Future Plan Benefits:	The Actuarial Present Value of benefit amounts expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age, anticipated future compensation, and future service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.
Actuarial Valuation:	The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial Valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB, such as the Actuarially Determined Contribution (ADC) and the Net Pension Liability (NPL).
Actuarial Value of Assets (AVA):	The value of the Fund's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly plans use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded percentage and the ADC.
Actuarially Determined:	Values that have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.
Actuarially Determined Contribution (ADC):	The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation, determined under the Plan's funding policy. The ADC consists of the Employer Normal Cost and the Amortization Payment.
Amortization Method:	A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization Payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.
Amortization Payment:	The portion of the pension plan contribution, or ADC, that is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.
Assumptions or Actuarial Assumptions:	The estimates upon which the cost of the Fund is calculated, including: <u>Investment return</u> - the rate of investment yield that the Fund will earn over the long-term future;

	<p><u>Mortality rates</u> - the death rates of employees and pensioners; life expectancy is based on these rates;</p> <p><u>Retirement rates</u> - the rate or probability of retirement at a given age;</p> <p><u>Withdrawal rates</u> - the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement;</p> <p><u>Salary increase rates</u> - the rates of salary increase due to inflation and productivity growth.</p>
Closed Amortization Period:	A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example, if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Open Amortization Period.
Decrements:	Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or withdrawal.
Defined Benefit Plan:	A retirement plan in which benefits are defined by a formula applied to the member's compensation and/or years of service.
Defined Contribution Plan:	A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.
Employer Normal Cost:	The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions.
Experience Study:	A periodic review and analysis of the actual experience of the Fund that may lead to a revision of one or more Actuarial Assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.
Funded Percentage:	The ratio of the Actuarial Value of Assets (AVA) to the Actuarial Accrued Liability (AAL). Plans sometimes calculate a market funded percentage, using the market value of assets (MVA), rather than the AVA.
GASB 67 and GASB 68:	Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68. These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 68 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 67 sets the rules for the systems themselves.
Investment Return:	The rate of earnings of the Fund from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the

	fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.
Net Pension Liability (NPL):	The Net Pension Liability is equal to the Total Pension Liability minus the Plan Fiduciary Net Position.
Normal Cost:	That portion of the Actuarial Present Value of pension plan benefits and expenses allocated to a valuation year by the Actuarial Cost Method. Any payment with respect to an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits that are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated.
Open Amortization Period:	An open amortization period is one that is used to determine the Amortization Payment, but which does not change over time. If the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period with level percentage of payroll is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never decrease, but will become smaller each year, in relation to covered payroll, if the Actuarial Assumptions are realized.
Plan Fiduciary Net Position:	Market value of assets.
Total Pension Liability (TPL):	The actuarial accrued liability under the entry age normal cost method and based on the blended discount rate as described in GASB 67 and 68.
Unfunded Actuarial Accrued Liability (UAAL):	The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative, in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.
Valuation Date or Actuarial Valuation Date:	The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.

Section 4: Actuarial Valuation Basis

EXHIBIT I – ACTUARIAL ASSUMPTIONS AND ACTUARIAL COST METHOD

Rationale for Assumptions:	The information and analysis used in selecting each assumption (except for economic assumptions and mortality tables) that has a significant effect on this actuarial valuation is shown in the Actuarial Experience Study dated July 27, 2015 (as prepared by Buck Consultants). Economic assumptions, including inflation, investment return, and assumed cost-of-living adjustment increases were studied and adopted by the Board on July 13, 2017. Mortality table assumptions were studied and adopted by the Board on September 25, 2017. The next Actuarial Experience study will be performed in 2020 for the July 1, 2021 valuation.
Inflation:	2.50%.
Investment Return:	7.50%. The investment return assumption is a long-term estimate derived from historical data, current and recent market expectations, and professional judgment. As part of the analysis, a building block approach was used that reflects inflation expectations and anticipated risk premiums for each of the portfolio's asset classes, as well as the Plan's target asset allocation.
Salary Increases:	5.00% per year.
Cost-of-Living Adjustments:	Assumed to occur on January 1 following one year of retirement at the rate of 1.15% per annum for Group A members and 1.30% per annum for Groups B, C and D members (beginning at Normal Retirement eligibility age for members who elect reduced early retirement, at age 62 for members of Groups A, B, and D who receive a disability retirement benefit, and at age 55 for members of Group C who receive a disability retirement benefit). The January 1, 2019 COLA is assumed to be 1.30% for all groups.
Mortality Rates:	<p><i>Death in Active Service:</i></p> <ul style="list-style-type: none"> • Groups A/B/C 98% of RP-2006 tables, blended 60% Blue Collar Employee and 40% Healthy Employee, with generational projection using Scale SSA-2017. • Group D 100% of RP-2006 Blue Collar Employee with generational projection using Scale SSA-2017. <p><i>Healthy Post-retirement:</i></p> <ul style="list-style-type: none"> • Groups A/B/C 98% of RP-2006 tables, blended 60% Blue Collar Annuitant and 40% Healthy Annuitant with generational projection using Scale SSA-2017.

- Group D RP-2006 Blue Collar Annuitant with generational projection using Scale SSA-2017.

Disabled Post-retirement:

- All Groups RP-2006 Disabled Mortality Table with generational projection using Scale SSA-2017.

The tables with the generational projection to the ages of members as of the measurement date reasonably reflect the mortality experience of the Plan as of the measurement date.

The mortality rates were based on historical and current demographic data, adjusted to reflect health characteristics of the various industries and estimated future experience and professional judgment. As part of the analysis, a comparison was made between the actual amount of deaths by benefit amount and the projected amount based on the prior assumption over the five-year period ending June 30, 2016. The mortality tables were then adjusted to future years using a generational projection with Scale SSA-2017 to reflect future mortality improvement.

Please note, the description of the mortality table has been changed to be consistent with revised nomenclature related to unprojected rates of mortality used in the RP-2014 series of mortality tables.

Withdrawal from Service before Retirement:

Assumed annual rates of withdrawal are as follows:

Service	Rate (%)		
	Male	Female	
	All Ages	Ages 25-34	Other Ages
0	22.5%	45.0%	30.0%
1	16.2	33.0	22.0
2	13.5	27.0	18.0
3	12.2	22.5	15.0
4	10.8	18.0	12.0
5	9.0	15.0	10.0
6	8.1	13.5	9.0
7	7.2	12.0	8.0
8	7.2	9.0	6.0
9	6.3	9.0	6.0
10+	3.6	7.5	5.0

Disability Incidence:

Representative values of the assumed annual rates of disability incidence are as follows:

Age	Rate (%) ¹	
	Male	Female
25	0.0100%	0.0050%
30	0.0130	0.0065
35	0.0170	0.0085
40	0.0300	0.0150
45	0.0500	0.0250
50	0.0900	0.0450
55	0.1800	0.0900
60	0.3150	0.1575
65	0.3150	0.1575

¹ Disability rates stop after age 55 with 5 or more years of service for Group B, C and D members and after age 55 with 35 or more years of service for Group A members.

Retirement Rates:

Age	Retirement Group A				
	Male	Female	Age	Male	Female
55	3.0%	4.9%	63	21.0%	22.5%
56	7.5	7.7	64	21.0	25.0
57	5.0	7.0	65	56.0	25.0
58	5.0	4.9	66	15.0	20.0
59	7.2	7.0	67	20.0	30.0
60	7.2	4.9	68	20.0	20.0
61	12.0	10.5	69	20.0	20.0
62	28.0	10.5	70	100.0	100.0

Age	Retirement Group B				
	Male	Female	Age	Male	Female
55	4.9%	4.9%	63	24.0%	14.0%
56	4.9	4.9	64	18.0	14.0
57	4.9	8.4	65	48.0	28.0
58	4.9	8.4	66	30.0	18.0
59	4.9	4.9	67	30.0	14.0
60	4.9	8.4	68	30.0	14.0
61	14.0	10.5	69	30.0	14.0
62	36.0	17.5	70	100.0	100.0

Age	Retirement Group C				
	Male	Female	Age	Male	Female
55	30.0%	0.0%	63	10.0%	20.0%
56	10.0	5.0	64	20.0	20.0
57	5.0	5.0	65	35.0	35.0
58	20.0	25.0	66	35.0	35.0
59	20.0	5.0	67	35.0	35.0
60	10.0	5.0	68	35.0	35.0
61	10.0	5.0	69	35.0	35.0
62	40.0	5.0	70	100.0	100.0

Age	Retirement Group D				
	<20 Years of Service	20+ Years of Service	Age	<20 Years of Service	20+ Years of Service
50	0.0%	40.0%	58	10.0%	10.0%
51	0.0	35.0	59	10.0	10.0
52	0.0	30.0	60	15.0	15.0
53	0.0	25.0	61	10.0	10.0
54	0.0	20.0	62	25.0	25.0
55	15.0	15.0	63	25.0	25.0
56	10.0	10.0	64	25.0	25.0
57	10.0	10.0	65	100.0	100.0

Rates shown are for members with 5 or more years of service (unless otherwise indicated). For members with less than 5 years of service, 0% is assumed.

The retirement rates were based on historical and current demographic data, adjusted to reflect conditions of the various industries, and estimated future experience and professional judgment. As part of the analysis, a comparison was made between the actual number of retirements by age and the projected number based on the prior assumption over the four-year period ending June 30, 2014.

Inactive Members as Reported by the System:

Valuation liability equals 200% of accumulated contributions.

Deferred Members as Reported by the System:

Assumed to retire at their Normal Retirement Age with a deferred vested benefit.

Future Administrative Expenses:

An expense adjustment based on actual expenses for the previous year is reflected in the development of recommended employer contribution levels.

Unknown Data for Members:

Same as those exhibited by members with similar known characteristics. If not specified, Members are assumed to be male.

Percent Married:	85% of male members and 50% of female members are assumed to be married.
Age of Spouse:	Females three years younger than males.
Benefit Elections:	<ul style="list-style-type: none"> • Non-Group D All members are assumed to elect the single life annuity option. • Group D Single members are assumed to elect single life annuity. Married members are assumed to elect the 70% joint & survivor option
Actuarial Value of Assets:	A smoothing method is used, under which the value of assets for actuarial purposes equals market value less a five-year phase-in of the differences between actual and assumed investment return. The value of assets for actuarial purposes may not differ from market value of assets by more than 20%.
Actuarial Cost Method:	Projected Benefit Cost Method. Normal contribution rates for each Group are equal to rates from the prior year, adjusted for increases or decreases in rates due to assumption changes or plan provision changes. An actuarial shortfall is determined as the present value of future employer contributions (equal to PVB, minus AVA, minus present value of future member contributions) minus the present value of future employer normal contributions. The actuarial shortfall is amortized in installments increasing by 5% per year. The actuarial determined contribution is equal to the employer's portion of Normal Cost (total normal contribution, less expected member contributions for the upcoming year), plus actuarial shortfall amortization payment.
Changes in Actuarial Assumptions:	<ul style="list-style-type: none"> • There have been no changes in actuarial assumptions since the last valuation.

EXHIBIT II – SUMMARY OF PLAN PROVISIONS

This exhibit summarizes the major provisions of the Plan included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions.

Effective Date:	July 1, 1975.
Creditable Service:	Service as a member plus purchased service.
Membership:	Full time employees of participating municipalities. Municipality elects coverage under Groups A, B, C or D provisions.
Average Final Compensation (AFC):	<ul style="list-style-type: none"> • Group A Average annual compensation during highest 5 consecutive years. • Groups B/C Average annual compensation during highest 3 consecutive years. • Group D Average annual compensation during highest 2 consecutive years.
Normal Retirement – Eligibility:	<ul style="list-style-type: none"> • Group A Earlier of age 65 with 5 years of service or age 55 with 35 years of service. • Group B Earlier of age 62 with 5 years of service or age 55 with 30 years of service. • Groups C/D Age 55 with 5 years of service.
Normal Retirement – Amount:	<ul style="list-style-type: none"> • Group A 1.4% of AFC times service. • Group B 1.7% of AFC times service as a Group B member plus percentage earned as a Group A member times AFC. • Group C 2.5% of AFC times service as a Group C member plus percentage earned as a Group A or B member times AFC. • Group D 2.5% of AFC times service as a Group D member plus percentage earned as a Group A, B or C member times AFC. <p>Maximum benefit is 60% of AFC for Groups A and B and 50% of AFC for Groups C and D. The above amounts include the portion of the allowance provided by member contributions.</p>
Early Retirement – Eligibility:	<ul style="list-style-type: none"> • Groups A/B Age 55 with 5 years of service. • Group C None. • Group D Age 50 with 20 years of service.
Early Retirement – Amount:	Normal retirement allowance based on service and AFC at early retirement, reduced by 6% for each year commencement precedes Normal Retirement Age for Group A and B members; payable without reduction to Group D members.
Vesting:	<ul style="list-style-type: none"> • All groups – 5 years of service.

	<ul style="list-style-type: none"> • Allowance beginning at normal retirement age based on AFC and service at termination. The AFC is to be adjusted annually by one-half of the percentage change in the Consumer Price Index, subject to the limits on “Post-Retirement Adjustments” described below.
Disability Retirement – Eligibility:	<ul style="list-style-type: none"> • All groups – 5 years of service and disability as determined by Retirement Board.
Disability Retirement – Amount:	<ul style="list-style-type: none"> • All groups – Immediate allowance based on AFC and service to date of disability. Children’s benefit of 10% of AFC payable to up to three minor children (or children up to age 23 if enrolled in full-time studies) of a disabled Group D member.
Death Benefit – Eligibility:	<ul style="list-style-type: none"> • All groups – Death after 5 years of service.
Death Benefit – Amount:	<ul style="list-style-type: none"> • Groups A/B/C Reduced early retirement allowance under 100% survivor option commencing immediately or, if greater, survivor’s benefit under disability allowance computed as of date of death. • Group D 70% of the unreduced accrued benefit, plus children’s benefit.
Post-Retirement Adjustments:	<ul style="list-style-type: none"> • Group A Allowances in pay status for at least one year increased on each January 1 by one-half of the percentage increase in Consumer Price Index, but not more than 2%. If receiving an Early Retirement benefit, no increases until after reaching attaining Normal Retirement eligibility. If receiving a Disability Retirement benefit, no increases until after attaining age 62. • Groups B/C/D Allowances in payment for at least one year increased on each January 1 by one-half of the percentage increase in Consumer Price Index, but not more than 3%. If receiving an Early Retirement benefit, no increases until after reaching attaining Normal Retirement eligibility. If receiving a Disability Retirement benefit, no increases until after attaining age 62 (age 55 for Group C).
Retirement Stipend:	\$25 per month payable at the option of the Retirement Board.
Optional Benefit and Death after Retirement:	<ul style="list-style-type: none"> • Groups A/B/C A lifetime allowance or actuarially equivalent 50% or 100% joint and survivor allowance with refund of contribution guarantee. • Group D A lifetime allowance or 70% contingent annuitant option with no reduction.
Refund of Contributions:	Upon termination, if the member so elects, or if no other benefit is payable, the member’s accumulated contributions with interest are refunded.

Member Contribution Rates:	<ul style="list-style-type: none"> • Group A 2.625% effective July 1, 2018; 2.750% effective July 1, 2019; 3.000% effective July 1, 2020; 3.325% effective July 1, 2021 and thereafter. • Group B 5.000% effective July 1, 2018; 5.125% effective July 1, 2019; 5.375% effective July 1, 2020; 5.625% effective July 1, 2021 and thereafter. • Group C 10.125% effective July 1, 2018; 10.250% effective July 1, 2019; 10.500% effective July 1, 2020; 10.750% effective July 1, 2021 and thereafter. • Group D 11.475% effective July 1, 2018; 11.600% effective July 1, 2019; 11.850% effective July 1, 2020; 12.100% effective July 1, 2021 and thereafter. 																														
Employer Contribution Rates:	<ul style="list-style-type: none"> • Group A 4.125% effective July 1, 2018; 4.250% effective July 1, 2019; 4.500% effective July 1, 2020; 4.750% effective July 1, 2021 and thereafter. • Group B 5.625% effective July 1, 2018; 5.750% effective July 1, 2019; 6.000% effective July 1, 2020; 6.250% effective July 1, 2021 and thereafter. • Group C 7.375% effective July 1, 2018; 7.500% effective July 1, 2019; 7.750% effective July 1, 2020; 8.000% effective July 1, 2021 and thereafter. • Group D 9.975% effective July 1, 2018; 10.100% effective July 1, 2019; 10.350% effective July 1, 2020; 10.600% effective July 1, 2021 and thereafter. 																														
Changes in Plan Provisions:	<p>The employee contribution rates have been increased according to the following schedule:</p> <table border="1"> <thead> <tr> <th>Effective Date</th> <th>Fiscal Year</th> <th>Group A</th> <th>Group B</th> <th>Group C</th> <th>Group D</th> </tr> </thead> <tbody> <tr> <td>July 1, 2018</td> <td>2019</td> <td>2.625%</td> <td>5.000%</td> <td>10.125%</td> <td>11.475%</td> </tr> <tr> <td>July 1, 2019</td> <td>2020</td> <td>2.750%</td> <td>5.125%</td> <td>10.250%</td> <td>11.600%</td> </tr> <tr> <td>July 1, 2020</td> <td>2021</td> <td>3.000%</td> <td>5.375%</td> <td>10.500%</td> <td>11.850%</td> </tr> <tr> <td>July 1, 2021</td> <td>2022</td> <td>3.250%</td> <td>5.625%</td> <td>10.750%</td> <td>12.100%</td> </tr> </tbody> </table>	Effective Date	Fiscal Year	Group A	Group B	Group C	Group D	July 1, 2018	2019	2.625%	5.000%	10.125%	11.475%	July 1, 2019	2020	2.750%	5.125%	10.250%	11.600%	July 1, 2020	2021	3.000%	5.375%	10.500%	11.850%	July 1, 2021	2022	3.250%	5.625%	10.750%	12.100%
Effective Date	Fiscal Year	Group A	Group B	Group C	Group D																										
July 1, 2018	2019	2.625%	5.000%	10.125%	11.475%																										
July 1, 2019	2020	2.750%	5.125%	10.250%	11.600%																										
July 1, 2020	2021	3.000%	5.375%	10.500%	11.850%																										
July 1, 2021	2022	3.250%	5.625%	10.750%	12.100%																										

Section 5: Additional Summary Tables of Member Data

**TABLE 1A – MEMBERS IN ACTIVE SERVICE AS OF JUNE 30, 2018
BY AGE, YEARS OF CREDITABLE SERVICE, AND AVERAGE PAYROLL**

All Employee Groups

Age	Years of Creditable Service								
	Total	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35 & over
Under 25	269	264	5	--	--	--	--	--	--
	\$25,250	\$24,827	\$47,594	--	--	--	--	--	--
25 - 29	499	444	54	1	--	--	--	--	--
	\$33,515	\$31,648	\$48,367	\$60,383	--	--	--	--	--
30 - 34	628	449	134	44	1	--	--	--	--
	\$37,932	\$32,461	\$51,459	\$52,483	\$41,804	--	--	--	--
35 - 39	650	385	154	85	26	--	--	--	--
	\$38,631	\$31,941	\$43,368	\$55,168	\$55,584	--	--	--	--
40 - 44	727	388	154	116	57	12	--	--	--
	\$40,228	\$31,908	\$45,492	\$52,106	\$54,506	\$59,031	--	--	--
45 - 49	962	419	194	188	102	42	14	3	--
	\$40,304	\$31,888	\$43,786	\$47,689	\$45,042	\$57,855	\$53,504	\$59,335	--
50 - 54	1,072	357	229	215	134	80	35	19	3
	\$41,689	\$33,272	\$41,563	\$44,823	\$42,413	\$54,870	\$65,517	\$56,522	\$72,436
55 - 59	1,213	329	222	211	236	118	57	25	15
	\$40,141	\$33,479	\$42,724	\$41,664	\$37,969	\$44,516	\$48,135	\$58,967	\$64,592
60 - 64	982	250	173	199	150	84	71	30	25
	\$39,980	\$34,654	\$39,712	\$39,868	\$36,797	\$42,737	\$45,517	\$57,111	\$69,548
65 & over	450	116	73	72	78	45	36	18	12
	\$37,181	\$29,698	\$34,614	\$38,389	\$37,769	\$38,547	\$42,936	\$48,733	\$74,349
Total	7,452	3,401	1,392	1,131	784	381	213	95	55
	\$38,894	\$31,820	\$43,336	\$45,265	\$41,196	\$47,520	\$49,593	\$55,964	\$69,401

**TABLE 1B – MEMBERS IN ACTIVE SERVICE AS OF JUNE 30, 2018
BY AGE, YEARS OF CREDITABLE SERVICE, AND AVERAGE PAYROLL**

Group A

Age	Years of Creditable Service								
	Total	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35 & over
Under 25	88	87	1	--	--	--	--	--	--
	\$19,105	\$18,918	\$35,441	--	--	--	--	--	--
25 - 29	160	150	9	1	--	--	--	--	--
	\$21,076	\$20,728	\$22,496	\$60,383	--	--	--	--	--
30 - 34	180	148	24	8	--	--	--	--	--
	\$25,687	\$24,481	\$31,941	\$29,234	--	--	--	--	--
35 - 39	219	139	51	23	6	--	--	--	--
	\$26,883	\$24,049	\$32,216	\$33,647	\$21,283	--	--	--	--
40 - 44	237	141	48	29	16	3	--	--	--
	\$29,714	\$27,194	\$32,168	\$31,826	\$38,233	\$43,063	--	--	--
45 - 49	319	148	71	57	29	8	6	--	--
	\$29,519	\$26,598	\$30,148	\$31,228	\$33,888	\$39,103	\$44,025	--	--
50 - 54	377	130	79	74	57	19	9	8	1
	\$30,747	\$25,904	\$33,921	\$29,985	\$30,853	\$36,512	\$49,937	\$46,370	\$52,809
55 - 59	434	108	84	82	93	37	24	3	3
	\$31,522	\$25,920	\$35,755	\$32,021	\$30,463	\$34,632	\$33,725	\$62,933	\$46,553
60 - 64	402	100	71	90	66	29	27	15	4
	\$31,494	\$28,471	\$29,984	\$31,777	\$29,237	\$36,327	\$33,265	\$43,340	\$73,296
65 & over	188	50	33	27	39	13	15	6	5
	\$30,316	\$24,390	\$29,101	\$30,600	\$32,007	\$26,969	\$39,713	\$36,451	\$56,026
Total	2,604	1,201	471	391	306	109	81	32	13
	\$29,054	\$24,750	\$32,069	\$31,462	\$31,019	\$35,057	\$37,245	\$44,643	\$58,906

**TABLE 1C – MEMBERS IN ACTIVE SERVICE AS OF JUNE 30, 2018
BY AGE, YEARS OF CREDITABLE SERVICE, AND AVERAGE PAYROLL**

Group B

Age	Years of Creditable Service								
	Total	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35 & over
Under 25	141	137	4	--	--	--	--	--	--
	\$24,051	\$23,275	\$50,632	--	--	--	--	--	--
25 - 29	236	211	25	--	--	--	--	--	--
	\$33,539	\$32,738	\$40,297	--	--	--	--	--	--
30 - 34	291	216	57	17	1	--	--	--	--
	\$35,289	\$30,867	\$49,166	\$44,572	\$41,804	--	--	--	--
35 - 39	325	205	73	35	12	--	--	--	--
	\$38,416	\$32,992	\$42,913	\$53,325	\$60,239	--	--	--	--
40 - 44	351	202	71	50	21	7	--	--	--
	\$38,299	\$31,798	\$44,097	\$49,971	\$46,372	\$59,532	--	--	--
45 - 49	499	229	94	85	57	24	7	3	--
	\$39,512	\$30,589	\$48,575	\$43,851	\$44,043	\$55,475	\$56,905	\$59,335	--
50 - 54	559	200	118	106	58	48	18	9	2
	\$42,919	\$35,626	\$42,111	\$45,174	\$44,300	\$55,045	\$66,285	\$59,959	\$82,250
55 - 59	672	193	123	109	121	66	30	20	10
	\$41,491	\$34,321	\$45,999	\$43,391	\$38,056	\$42,569	\$54,646	\$55,971	\$69,747
60 - 64	498	133	88	89	77	46	35	14	16
	\$43,009	\$37,368	\$44,632	\$43,007	\$39,542	\$43,385	\$47,296	\$69,400	\$64,124
65 & over	233	61	36	41	34	25	20	10	6
	\$39,558	\$31,499	\$38,240	\$40,258	\$38,712	\$41,897	\$44,336	\$55,635	\$76,930
Total	3,805	1,787	689	532	381	216	110	56	34
	\$39,351	\$32,230	\$44,664	\$44,824	\$41,428	\$47,421	\$52,481	\$60,089	\$69,104

**TABLE 1D – MEMBERS IN ACTIVE SERVICE AS OF JUNE 30, 2018
BY AGE, YEARS OF CREDITABLE SERVICE, AND AVERAGE PAYROLL**

Group C

Age	Years of Creditable Service								
	Total	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35 & over
Under 25	27	27	--	--	--	--	--	--	--
	\$44,933	\$44,933	--	--	--	--	--	--	--
25 - 29	82	64	18	--	--	--	--	--	--
	\$53,860	\$49,024	\$71,058	--	--	--	--	--	--
30 - 34	124	69	41	14	--	--	--	--	--
	\$56,972	\$50,631	\$64,055	\$67,485	--	--	--	--	--
35 - 39	78	33	23	19	3	--	--	--	--
	\$61,278	\$50,758	\$61,551	\$77,554	\$71,805	--	--	--	--
40 - 44	102	42	27	23	9	1	--	--	--
	\$59,566	\$47,184	\$65,306	\$68,640	\$73,252	\$92,814	--	--	--
45 - 49	112	34	25	35	11	6	1	--	--
	\$65,390	\$56,777	\$61,609	\$74,322	\$65,112	\$74,824	\$86,569	--	--
50 - 54	119	26	29	29	17	8	8	2	--
	\$64,497	\$49,592	\$57,831	\$74,211	\$69,153	\$70,887	\$81,317	\$81,666	--
55 - 59	97	27	14	17	20	14	1	2	2
	\$64,344	\$56,944	\$52,291	\$69,192	\$67,053	\$75,208	\$103,853	\$82,977	\$65,873
60 - 64	78	17	13	19	7	9	8	--	5
	\$62,219	\$49,785	\$57,654	\$60,919	\$77,871	\$60,077	\$74,305	--	\$83,908
65 & over	29	5	4	4	5	7	1	2	1
	\$62,590	\$60,808	\$47,462	\$71,813	\$76,296	\$48,088	\$63,266	\$51,068	\$150,479
Total	848	344	194	160	72	45	19	6	8
	\$60,682	\$50,607	\$61,716	\$71,071	\$69,919	\$67,535	\$78,877	\$71,904	\$87,720

**TABLE 1E – MEMBERS IN ACTIVE SERVICE AS OF JUNE 30, 2018
BY AGE, YEARS OF CREDITABLE SERVICE, AND AVERAGE PAYROLL**

Group D

Age	Years of Creditable Service								
	Total	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35 & over
Under 25	13	13	--	--	--	--	--	--	--
	\$38,972	\$38,972	--	--	--	--	--	--	--
25 - 29	21	19	2	--	--	--	--	--	--
	\$48,575	\$47,221	\$61,440	--	--	--	--	--	--
30 - 34	33	16	12	5	--	--	--	--	--
	\$56,492	\$49,442	\$58,356	\$74,576	--	--	--	--	--
35 - 39	28	8	7	8	5	--	--	--	--
	\$69,932	\$64,511	\$69,618	\$71,936	\$75,841	--	--	--	--
40 - 44	37	3	8	14	11	1	--	--	--
	\$72,554	\$47,080	\$70,945	\$74,575	\$78,364	\$69,646	--	--	--
45 - 49	32	8	4	11	5	4	--	--	--
	\$72,358	\$61,166	\$61,914	\$77,901	\$76,963	\$84,190	--	--	--
50 - 54	17	1	3	6	2	5	--	--	--
	\$84,209	\$95,950	\$63,959	\$79,563	\$89,871	\$97,319	--	--	--
55 - 59	10	1	1	3	2	1	2	--	--
	\$88,642	\$53,673	\$91,349	\$86,493	\$90,913	\$109,027	\$95,531	--	--
60 - 64	4	--	1	1	--	--	1	1	--
	\$82,073	--	\$64,226	\$88,699	--	--	\$83,744	\$91,622	--
65 & over	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--
Total	195	69	38	48	25	11	3	1	--
	\$66,642	\$50,597	\$65,083	\$76,560	\$79,504	\$91,094	\$91,602	\$91,622	--

TABLE 2A – SUMMARY OF RETIRED MEMBER AND BENEFICIARY DATA BY ATTAINED AGE

All Employee Groups

Age	Service Pensioners		Disability Pensioners		Beneficiaries	
	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
≤ 35	0	\$0	0	\$0	5	\$27,911
36	0	0	0	0	1	1,830
37	0	0	0	0	0	0
38	0	0	0	0	0	0
39	0	0	1	8,269	0	0
40	0	0	0	0	0	0
41	0	0	2	20,610	0	0
42	0	0	0	0	1	1,038
43	0	0	0	0	0	0
44	0	0	0	0	2	2,732
45	0	0	0	0	0	0
46	0	0	2	23,362	0	0
47	0	0	1	31,848	0	0
48	0	0	0	0	1	5,322
49	0	0	2	15,027	0	0
50	1	58,537	1	12,282	1	4,895
51	0	0	1	9,263	2	11,461
52	1	9,529	4	37,979	1	10,780
53	1	33,723	4	58,478	1	3,268
54	4	90,869	0	0	2	40,605
55	18	300,716	2	4,210	0	0
56	17	313,754	1	5,191	5	26,458
57	17	379,936	1	3,090	3	33,296
58	20	481,466	3	28,014	3	6,787
59	32	625,341	4	35,756	2	17,435
60	32	588,756	2	6,719	4	25,607
61	47	854,548	3	7,199	5	47,185
62	79	1,206,635	5	45,670	3	25,764
63	112	1,418,851	0	0	4	13,336
64	132	1,772,727	8	100,524	4	35,880
65	147	1,392,706	4	62,441	3	10,125

TABLE 2A – SUMMARY OF RETIRED MEMBER AND BENEFICIARY DATA BY ATTAINED AGE

All Employee Groups (Continued)

Age	Service Pensioners		Disability Pensioners		Beneficiaries	
	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
66	170	\$1,832,696	1	\$3,667	2	\$17,696
67	176	1,745,761	3	16,764	8	60,792
68	163	1,579,105	3	11,934	5	37,240
69	195	1,767,164	1	13,413	5	59,232
70	172	1,614,130	1	4,091	12	72,688
71	161	1,407,528	1	12,584	9	63,437
72	129	1,224,320	1	2,751	9	61,112
73	139	1,142,461	2	15,854	11	61,189
74	101	868,224	2	12,187	6	31,129
75	107	966,235	0	0	6	21,244
76	101	776,136	1	1,976	6	21,756
77	86	691,425	1	2,473	3	7,623
78	74	688,617	1	4,382	8	51,063
79	68	510,774	1	4,571	11	64,242
80	50	317,470	1	3,462	10	75,172
81	57	424,211	2	6,975	4	58,850
82	42	318,409	0	0	4	17,126
83	38	276,421	0	0	6	27,061
84	25	174,905	1	2,387	9	52,035
85	27	162,258	0	0	8	42,856
86	23	124,914	0	0	7	17,920
87	34	190,099	0	0	6	52,718
88	19	84,732	0	0	6	32,652
89	12	81,840	0	0	3	15,849
90	17	84,637	0	0	4	10,712
91	7	39,807	0	0	1	2,256
92	11	52,936	0	0	1	1,297
93	6	48,794	0	0	1	1,964
94	4	22,436	0	0	2	12,987
≥ 95	14	43,576	0	0	1	1,708
Total	2,888	\$28,790,112	74	\$635,401	227	\$1,405,320

TABLE 2B – SUMMARY OF RETIRED MEMBER AND BENEFICIARY DATA BY ATTAINED AGE

Group A

Age	Service Pensioners		Disability Pensioners		Beneficiaries	
	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
≤ 35	0	\$0	0	\$0	1	\$4,796
36	0	0	0	0	0	0
37	0	0	0	0	0	0
38	0	0	0	0	0	0
39	0	0	0	0	0	0
40	0	0	0	0	0	0
41	0	0	0	0	0	0
42	0	0	0	0	0	0
43	0	0	0	0	0	0
44	0	0	0	0	1	1,705
45	0	0	0	0	0	0
46	0	0	0	0	0	0
47	0	0	0	0	0	0
48	0	0	0	0	0	0
49	0	0	1	7,704	0	0
50	0	0	0	0	0	0
51	0	0	0	0	0	0
52	0	0	1	2,089	0	0
53	0	0	0	0	1	3,268
54	0	0	0	0	0	0
55	4	19,003	2	4,210	0	0
56	0	0	1	5,191	2	4,002
57	1	3,002	1	3,090	0	0
58	1	1,134	2	16,343	2	2,954
59	5	41,295	2	18,337	0	0
60	7	55,223	1	2,535	2	3,128
61	8	34,095	1	300	2	10,802
62	18	151,320	0	0	1	1,746
63	25	151,147	0	0	2	4,873
64	34	333,446	2	10,451	1	3,007
65	59	291,831	1	7,730	2	3,606

TABLE 2B – SUMMARY OF RETIRED MEMBER AND BENEFICIARY DATA BY ATTAINED AGE

Group A (Continued)

Age	Service Pensioners		Disability Pensioners		Beneficiaries	
	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
66	69	\$424,379	0	\$0	0	\$0
67	72	357,221	1	2,039	5	17,001
68	64	361,472	2	5,776	0	0
69	93	489,638	1	13,413	1	26,296
70	74	401,606	1	4,091	3	6,441
71	81	446,806	1	12,584	2	18,408
72	58	369,116	0	0	3	19,935
73	67	373,982	1	6,835	6	31,334
74	40	200,534	1	5,608	1	3,719
75	39	258,683	0	0	3	6,882
76	41	234,076	0	0	3	6,320
77	35	166,955	0	0	1	3,622
78	31	206,354	0	0	4	13,919
79	31	174,401	1	4,571	5	18,093
80	19	61,067	1	3,462	4	12,726
81	20	107,831	2	6,975	1	3,054
82	13	54,929	0	0	0	0
83	20	102,488	0	0	4	15,328
84	8	67,308	1	2,387	2	5,961
85	15	70,636	0	0	1	2,222
86	10	42,386	0	0	4	9,766
87	16	48,047	0	0	1	4,500
88	12	45,848	0	0	2	8,610
89	6	34,615	0	0	1	3,142
90	8	32,840	0	0	4	10,712
91	4	20,266	0	0	1	2,256
92	4	8,241	0	0	1	1,297
93	4	36,325	0	0	1	1,964
94	3	13,353	0	0	1	9,296
≥ 95	12	39,468	0	0	1	1,708
Total	1,131	\$6,332,367	28	\$145,718	83	\$308,401

TABLE 2C – SUMMARY OF RETIRED MEMBER AND BENEFICIARY DATA BY ATTAINED AGE

Group B

Age	Service Pensioners		Disability Pensioners		Beneficiaries	
	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
≤ 35	0	\$0	0	\$0	2	\$9,991
36	0	0	0	0	1	1,830
37	0	0	0	0	0	0
38	0	0	0	0	0	0
39	0	0	0	0	0	0
40	0	0	0	0	0	0
41	0	0	1	4,461	0	0
42	0	0	0	0	1	1,038
43	0	0	0	0	0	0
44	0	0	0	0	1	1,027
45	0	0	0	0	0	0
46	0	0	1	19,969	0	0
47	0	0	0	0	0	0
48	0	0	0	0	1	5,322
49	0	0	1	7,323	0	0
50	0	0	0	0	1	4,895
51	0	0	0	0	2	11,461
52	0	0	2	29,522	1	10,780
53	0	0	1	3,424	0	0
54	0	0	0	0	2	40,605
55	2	6,897	0	0	0	0
56	3	34,794	0	0	3	22,456
57	5	86,245	0	0	3	33,296
58	6	154,031	1	11,671	1	3,833
59	9	91,305	1	10,121	1	1,578
60	10	134,638	1	4,184	2	22,479
61	17	264,792	1	4,785	2	21,988
62	46	563,614	5	45,670	1	6,696
63	67	704,796	0	0	2	8,463
64	73	868,818	3	21,391	1	22,121
65	74	847,143	3	54,711	1	6,519

TABLE 2C – SUMMARY OF RETIRED MEMBER AND BENEFICIARY DATA BY ATTAINED AGE

Group B (Continued)

Age	Service Pensioners		Disability Pensioners		Beneficiaries	
	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
66	82	\$1,032,723	1	\$3,667	0	\$0
67	93	1,101,828	2	14,725	3	43,791
68	82	903,141	1	6,158	4	26,447
69	82	841,714	0	0	3	27,237
70	79	833,942	0	0	9	66,247
71	67	663,227	0	0	5	21,522
72	60	649,185	1	2,751	6	41,176
73	59	528,660	1	9,019	4	24,478
74	52	554,440	1	6,579	4	23,762
75	53	420,597	0	0	2	11,226
76	50	418,781	1	1,976	3	15,436
77	41	357,926	1	2,473	2	4,000
78	34	339,228	1	4,382	3	20,538
79	29	251,188	0	0	5	40,295
80	30	249,974	0	0	5	49,193
81	32	276,156	0	0	3	55,796
82	25	212,481	0	0	3	13,461
83	15	113,809	0	0	2	11,733
84	16	97,642	0	0	6	37,078
85	11	84,684	0	0	7	40,634
86	12	76,195	0	0	3	8,154
87	17	140,420	0	0	5	48,217
88	6	34,690	0	0	3	19,121
89	6	47,225	0	0	2	12,707
90	9	51,797	0	0	0	0
91	3	19,541	0	0	0	0
92	7	44,695	0	0	0	0
93	2	12,469	0	0	0	0
94	1	9,083	0	0	1	3,691
≥ 95	2	4,107	0	0	0	0
Total	1,369	\$14,128,624	31	\$268,961	122	\$902,320

TABLE 2D – SUMMARY OF RETIRED MEMBER AND BENEFICIARY DATA BY ATTAINED AGE

Group C

Age	Service Pensioners		Disability Pensioners		Beneficiaries	
	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
≤ 35	0	\$0	0	\$0	0	\$0
36	0	0	0	0	0	0
37	0	0	0	0	0	0
38	0	0	0	0	0	0
39	0	0	1	8,269	0	0
40	0	0	0	0	0	0
41	0	0	1	16,149	0	0
42	0	0	0	0	0	0
43	0	0	0	0	0	0
44	0	0	0	0	0	0
45	0	0	0	0	0	0
46	0	0	1	3,393	0	0
47	0	0	0	0	0	0
48	0	0	0	0	0	0
49	0	0	0	0	0	0
50	0	0	1	12,282	0	0
51	0	0	1	9,263	0	0
52	1	9,529	1	6,369	0	0
53	0	0	2	28,257	0	0
54	2	23,418	0	0	0	0
55	5	132,402	0	0	0	0
56	8	158,532	0	0	0	0
57	8	195,369	0	0	0	0
58	10	227,092	0	0	0	0
59	13	358,174	1	7,298	1	15,857
60	12	290,729	0	0	0	0
61	18	436,981	0	0	1	14,395
62	13	406,717	0	0	1	17,322
63	18	454,360	0	0	0	0
64	23	519,296	2	51,200	2	10,752
65	13	229,691	0	0	0	0

TABLE 2D – SUMMARY OF RETIRED MEMBER AND BENEFICIARY DATA BY ATTAINED AGE

Group C (Continued)

Age	Service Pensioners		Disability Pensioners		Beneficiaries	
	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
66	18	\$346,560	0	\$0	2	\$17,696
67	10	223,412	0	0	0	0
68	17	314,492	0	0	1	10,793
69	20	435,812	0	0	1	5,698
70	18	325,047	0	0	0	0
71	13	297,495	0	0	2	23,508
72	10	191,317	0	0	0	0
73	12	224,133	0	0	1	5,377
74	9	113,249	0	0	1	3,648
75	15	286,955	0	0	1	3,136
76	10	123,279	0	0	0	0
77	10	166,545	0	0	0	0
78	9	143,035	0	0	1	16,606
79	8	85,185	0	0	1	5,854
80	1	6,428	0	0	1	13,253
81	5	40,224	0	0	0	0
82	4	50,999	0	0	1	3,664
83	3	60,124	0	0	0	0
84	1	9,955	0	0	1	8,996
85	1	6,938	0	0	0	0
86	1	6,332	0	0	0	0
87	1	1,632	0	0	0	0
88	1	4,194	0	0	1	4,921
89	0	0	0	0	0	0
90	0	0	0	0	0	0
91	0	0	0	0	0	0
92	0	0	0	0	0	0
93	0	0	0	0	0	0
94	0	0	0	0	0	0
≥ 95	0	0	0	0	0	0
Total	341	\$6,905,632	11	\$142,480	20	\$181,475

TABLE 2E – SUMMARY OF RETIRED MEMBER AND BENEFICIARY DATA BY ATTAINED AGE

Group D

Age	Service Pensioners		Disability Pensioners		Beneficiaries	
	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
≤ 35	0	\$0	0	\$0	2	\$13,124
36	0	0	0	0	0	0
37	0	0	0	0	0	0
38	0	0	0	0	0	0
39	0	0	0	0	0	0
40	0	0	0	0	0	0
41	0	0	0	0	0	0
42	0	0	0	0	0	0
43	0	0	0	0	0	0
44	0	0	0	0	0	0
45	0	0	0	0	0	0
46	0	0	0	0	0	0
47	0	0	1	31,848	0	0
48	0	0	0	0	0	0
49	0	0	0	0	0	0
50	1	58,537	0	0	0	0
51	0	0	0	0	0	0
52	0	0	0	0	0	0
53	1	33,723	1	26,797	0	0
54	2	67,451	0	0	0	0
55	7	142,413	0	0	0	0
56	6	120,428	0	0	0	0
57	3	95,320	0	0	0	0
58	3	99,208	0	0	0	0
59	5	134,568	0	0	0	0
60	3	108,166	0	0	0	0
61	4	118,680	1	2,114	0	0
62	2	84,984	0	0	0	0
63	2	108,547	0	0	0	0
64	2	51,168	1	17,483	0	0
65	1	24,041	0	0	0	0

TABLE 2E – SUMMARY OF RETIRED MEMBER AND BENEFICIARY DATA BY ATTAINED AGE

Group D (Continued)

Age	Service Pensioners		Disability Pensioners		Beneficiaries	
	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
66	1	\$29,034	0	\$0	0	\$0
67	1	63,300	0	0	0	0
68	0	0	0	0	0	0
69	0	0	0	0	0	0
70	1	53,534	0	0	0	0
71	0	0	0	0	0	0
72	1	14,701	0	0	0	0
73	1	15,686	0	0	0	0
74	0	0	0	0	0	0
75	0	0	0	0	0	0
76	0	0	0	0	0	0
77	0	0	0	0	0	0
78	0	0	0	0	0	0
79	0	0	0	0	0	0
80	0	0	0	0	0	0
81	0	0	0	0	0	0
82	0	0	0	0	0	0
83	0	0	0	0	0	0
84	0	0	0	0	0	0
85	0	0	0	0	0	0
86	0	0	0	0	0	0
87	0	0	0	0	0	0
88	0	0	0	0	0	0
89	0	0	0	0	0	0
90	0	0	0	0	0	0
91	0	0	0	0	0	0
92	0	0	0	0	0	0
93	0	0	0	0	0	0
94	0	0	0	0	0	0
≥ 95	0	0	0	0	0	0
Total	47	\$1,423,489	4	\$78,242	2	\$13,124

TABLE 3 – SUMMARY OF RETIRED MEMBER AND BENEFICIARY DATA BY YEAR OF RETIREMENT

All Employee Groups

Year of Retirement	Number	Annual Allowance	Average Annual Allowance
≤ 1970	0	\$0	\$0
1971	0	0	0
1972	0	0	0
1973	0	0	0
1974	0	0	0
1975	0	0	0
1976	0	0	0
1977	0	0	0
1978	0	0	0
1979	0	0	0
1980	0	0	0
1981	1	1,705	1,705
1982	0	0	0
1983	1	816	816
1984	2	5,275	2,637
1985	1	984	984
1986	3	6,039	2,013
1987	3	12,990	4,330
1988	1	2,577	2,577
1989	5	15,267	3,053
1990	6	28,167	4,695
1991	12	65,089	5,424
1992	18	66,488	3,694
1993	17	77,792	4,576
1994	20	105,768	5,288
1995	26	144,204	5,546
1996	39	253,476	6,499
1997	28	162,284	5,796
1998	35	212,811	6,080
1999	43	257,601	5,991
2000	42	288,009	6,857

TABLE 3 – SUMMARY OF RETIRED MEMBER AND BENEFICIARY DATA BY YEAR OF RETIREMENT

All Employee Groups (continued)

Year of Retirement	Number	Annual Allowance	Average Annual Allowance
2001	49	\$348,072	\$7,104
2002	77	579,073	7,520
2003	76	523,501	6,888
2004	79	686,809	8,694
2005	91	738,084	8,111
2006	89	835,029	9,382
2007	135	1,114,980	8,259
2008	116	1,031,521	8,892
2009	130	1,038,211	7,986
2010	157	1,510,215	9,619
2011	182	1,931,874	10,615
2012	191	1,923,984	10,073
2013	209	2,349,836	11,243
2014	252	2,487,528	9,871
2015	248	2,623,099	10,577
2016	242	2,446,740	10,110
2017	331	4,068,780	12,292
2018	197	2,649,459	13,449
Total	3,189	\$30,830,833	\$9,668

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