

State Teachers' Retirement System of Vermont

Actuarial Valuation Report as of June 30, 2016

October 2016





October 27, 2016

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Board of Trustees
State Teachers' Retirement System of Vermont
Montpelier, Vermont 05609

Dear Board Members:

Section 1942, subsection (n), of Title 16, Chapter 55, Vermont Statutes Annotated, relating to the State Teachers' Retirement System of Vermont, provides in part that the actuary shall make annual valuations of the system.

The sixty-ninth actuarial valuation of the system, prepared as of June 30, 2016, has now been completed and the results are presented in this report, together with our recommendations in regard to contributions payable by the State. The Table of Contents, which immediately follows, outlines the material contained in this report.

On the basis of the current valuation, we recommend that a normal contribution of 1.33% of covered compensation and a payment of \$76,250,643 towards the liquidation of the unfunded accrued liability be made. Base on the reported payroll, the total contribution amounts to \$84,049,724 for the year beginning July 1, 2016. Schedule G provides the estimated contributions for the following two fiscal years.

Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the economic and 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. An analysis of the potential range of future results is beyond the scope of this valuation.

Where presented, references to "funded ratio" and "unfunded accrued liability" typically are measured on an actuarial value of assets basis. It should be noted that the same measurements using market value of assets would result in different funded ratios and unfunded accrued liabilities. Moreover, the funded ratio presented is appropriate for evaluating the need and level of future contributions but makes no assessment regarding the funded status of the plan if the plan were to settle (i.e. purchase annuities) for a portion or all of its liabilities.

The purpose of the valuation and this report is to measure funding progress in relation to the actuarial cost method and to determine employer contribution rates and amounts. Use of this report for any other purpose may not be appropriate and may result in mistaken conclusions due to failure to understand applicable assumptions, methodologies, or inapplicability of the report for that purpose. Buck will not accept any liability for any statement made about the report without prior review by Buck.

I am a Fellow of the Society of Actuaries and a Member of the American Academy of Actuaries. I meet the Qualification Standards of the Academy to render the actuarial opinions contained herein. This report has been prepared in accordance with all applicable Actuarial Standards of Practice, and I am available to answer questions concerning it.

Respectfully submitted,

David L. Driscoll

David L. Driscoll, FSA, EA, MAAA
Principal and Consulting Actuary

Table of Contents

Section

I	Summary of Principal Results.....	1
II	Member Data	2
III	Assets	4
IV	Comments on Valuation.....	5
V	Contributions Payable under the System	7
VI	Experience	8

Schedule

A	Valuation Balance Sheet.....	10
B	Outline of Actuarial Assumptions and Methods.....	12
C	Brief Summary of Principal Plan Provisions as Interpreted for Valuation Purposes	16
D	Summary Tables of Member Data as of July 1, 2016	19
E	Amortization Schedule for the Unfunded Actuarial Accrued Liability	26
F	Projected Benefit Payouts and Contributions	27
G	Projection of Contributions for Following Two Fiscal Years	28

Section I – Summary of Principal Results

For convenience of reference, the principal results of the valuation and a comparison with the preceding year's results are summarized below:

	June 30, 2016	June 30, 2015
Active members		
Vested	7,435	7,295
Non-vested	<u>2,484</u>	<u>2,290</u>
Total	9,919	9,585
Compensation	\$ 586,397,072	\$ 557,708,310
Average age	45.91 years	46.23 years
Average service	12.67 years	12.88 years
Average compensation	\$ 59,119	\$ 58,186
Retired members and beneficiaries		
Number	8,763	8,484
Annual retirement allowances	\$ 168,768,818	\$ 160,847,936
Inactive members	2,454	2,260
Terminated vested members	747	1,163
Adjusted assets for valuation	\$ 1,716,296,235	\$ 1,662,345,707
Unfunded actuarial accrued liability	\$ 1,225,727,845	\$ 1,175,029,030
Annual actuarial accrued liability contribution	\$ 76,250,643	\$ 70,792,693
Normal contribution rate	1.33%	1.39%

Comments on the results of the valuation are given in Section IV and further discussion of the contribution levels is provided in Section V.

Schedule B outlines the full set of actuarial assumptions and methods employed in the current valuation.

Schedule C outlines the benefit provisions taken into account in the valuation. There have been no changes in benefit provisions since the last valuation.

An analysis of the actuarial experience of the System during the past fiscal year is presented in Section IV of this report. Some aspects of this experience are presented in graphs included in Section VI of this report.

Schedule F shows a graph of projected benefit payments over the next ten years.

Schedule G shows projected state contributions to the System for the two following fiscal years.

Based on an analysis provided by the State Treasurer's Office, for this valuation only, the liability for inactive participants has been reduced from 350% of accumulated contributions with interest to 333% of accumulated contributions with interest, in view of the impact of the school district consolidation program on the demographics of this class of participants. This lowered the unfunded actuarial accrued liability by approximately \$6.73 million.

Section II – Member Data

Member data were furnished by the Retirement Division of the State Treasurer's Office. Buck did not audit the data, although they were reviewed for reasonableness and consistency with prior data. The results of the valuation are dependent upon the accuracy of the data.

Schedule D presents tables that summarize active members, by age and service and service pensioners, disability pensioners and beneficiaries by annual benefit levels.

The following tables provide a summary of membership of the system:

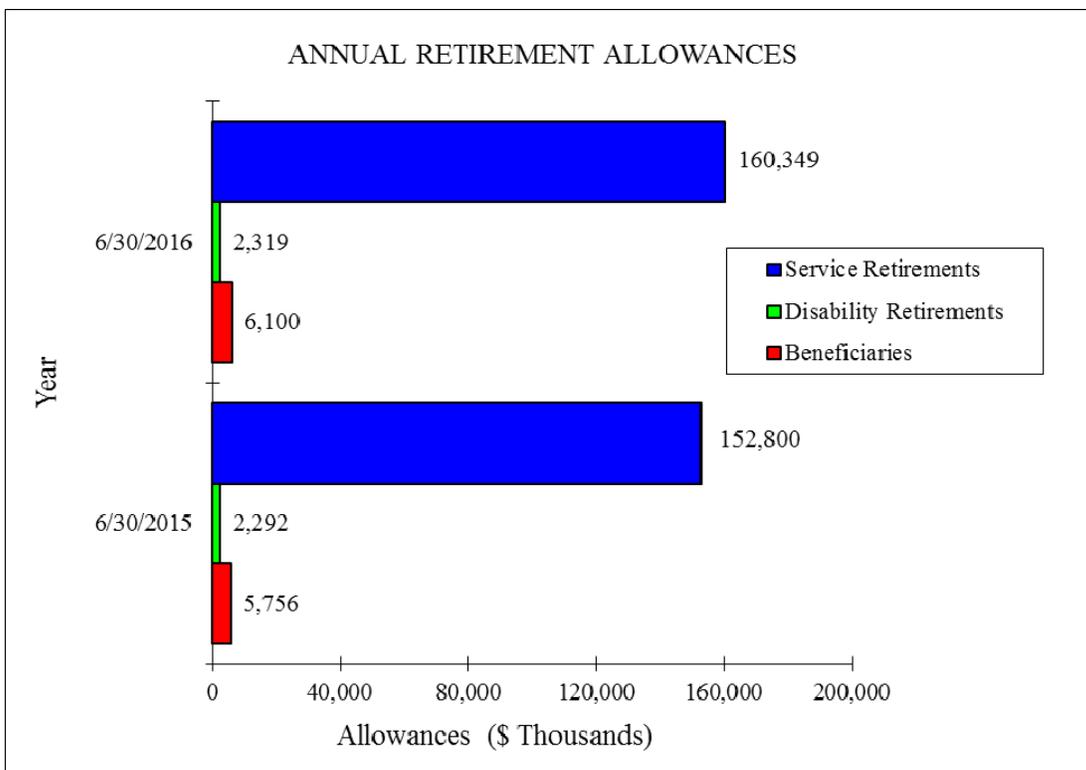
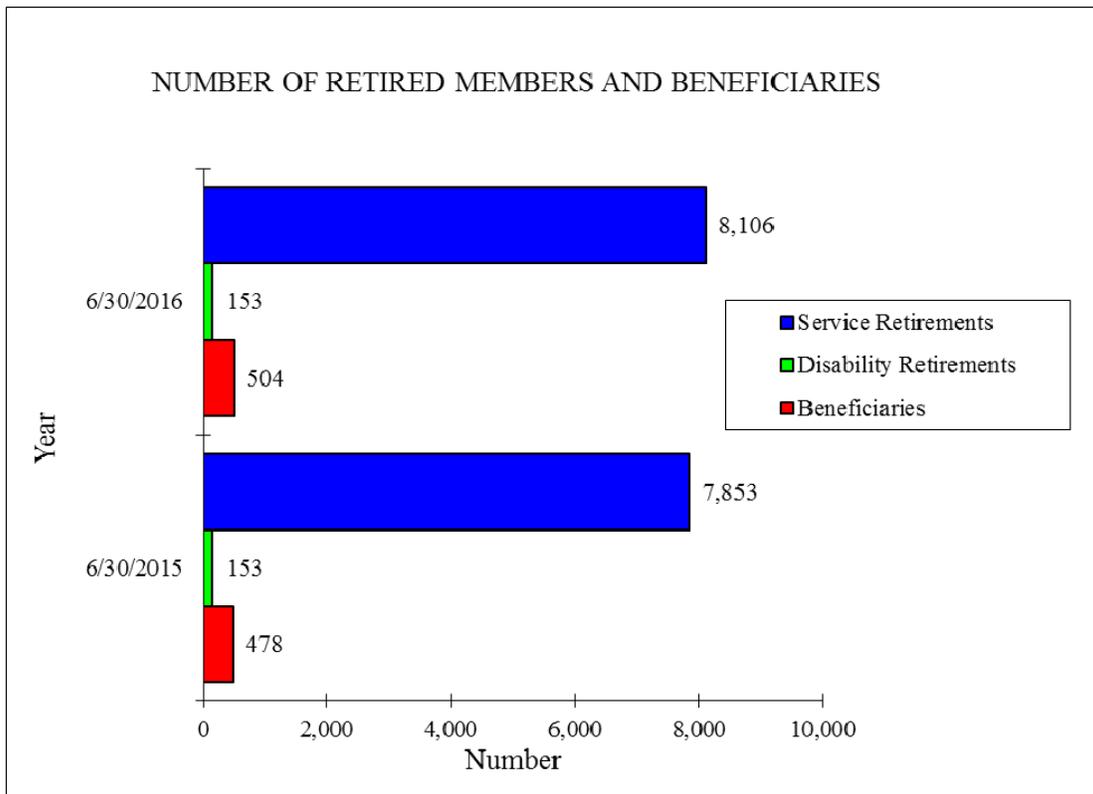
Number and Annual Allowances of Retired Members and Beneficiaries

Group	Number	Annual Allowances
Service Retirements	8,106	\$ 160,349,301
Disability Retirements	153	\$ 2,319,338
Beneficiaries of Deceased Members	<u>504</u>	<u>\$ 6,100,179</u>
Total	8,763	\$ 168,768,818

Number and Annual Compensation of Active Members

Group	Number	Annual Compensation
Group A	5	\$ 348,749
Group C	<u>9,914</u>	<u>\$ 586,048,323</u>
Total	9,919	\$ 586,397,072

Section II – Member Data (continued)



Section III – Assets

The asset values and cash flow amounts shown below were taken from reports supplied by the Office of the State Treasurer. The information contained in the reports has not yet been audited but is believed to be sufficiently accurate for purposes of this valuation.

For actuarial purposes, the assets are valued using a method that reflects the market value of assets through gradual recognition of return on assets that differ from the assumed rate of return, provided the adjusted asset value is within 20% of the market value. The following shows the development of the valuation assets.

Assets for valuation purposes, June 30, 2015		\$ 1,662,345,707
Cash flow during year (net of investment income)		
Contributions paid	\$ 112,821,300	
Benefit payouts	(162,751,410)	
Expenses	(6,997,502)	
Net		(56,927,612)
Expected investment income (7.95%)		134,727,261
Preliminary asset value		\$ 1,740,145,356
Market value, June 30, 2016	\$ 1,620,899,749	
Preliminary asset value	1,740,145,356	
Unrecognized appreciation	(119,245,607)	
Adjustment	X 20%	\$ (23,849,121)
Assets for valuation purposes, June 30, 2016		\$ 1,716,296,235

The assets for valuation purposes are 105.9% of market value.

The investment rate of return for the year ending June 30, 2016 is 6.79%, based on the adjusted asset value.

Section IV – Comments on Valuation

Schedule A of the report contains the valuation balance sheet, which shows the present and prospective assets and liabilities of the system as of June 30, 2016.

The adjusted assets of the system amount to \$1,716,296,235.

The actuarial accrued liability for current retired members, terminated vested members and beneficiaries amounted to \$1,811,169,538, and the actuarial accrued liability for current active and inactive members amounted to \$1,130,854,542, for a total actuarial accrued liability of \$2,942,024,080. Therefore, after subtracting assets of \$1,716,296,235, the unfunded actuarial accrued liability is \$1,225,727,845.

The State's contributions consist of a normal contribution and an accrued liability contribution. The accrued liability contribution represents the amount necessary to liquidate the unfunded accrued liability as of June 30, 2016, over a 23-year period from that date in installments that increase by 5% per year. Normal contributions represent the contributions needed to fund the benefits earned during the year. Under the Entry Age Normal funding method, the normal contribution as of June 30, 2016, is \$7,799,081, or 1.33% of members' compensation.

The expected unfunded actuarial accrued liability as of June 30, 2016, may be compared to the actual actuarial accrued liability to determine the gain or loss during the year. The following table presents a summary of the approximate effects of major experience factors affecting the system's unfunded actuarial accrued liability since June 30, 2015.

1. Unfunded liability, June 30, 2015	\$1,175,029,030
2. Normal Cost	33,880,724
3. Contributions	(112,821,300)
4. Interest on 1, 2 and 3	91,709,435
5. Changes in Actuarial Assumptions	0
6. Changes in System Provisions	0
7. Expected Unfunded Liability, June 30, 2016	1,187,797,889
8. Accrued Liability, June 30, 2016	2,942,024,080
9. Actuarial Value of Assets, June 30, 2016	1,716,296,235
10. Actual Unfunded Liability, 8. - 9.	1,225,727,845
11. Total gain/(loss), 7. - 10	(37,929,956)

Section IV – Comments on Valuation (continued)

Sources of Gain/(Loss)

Investment experience	(19,058,743)
Expenses (investments)	(5,022,114)
Expenses (other than investments)	(2,248,220)
Salary experience	11,832,939
COLA experience	25,808,649
New members and rehires	(572,360)
Mortality among retirees, beneficiaries and terminated vested participants	(9,048,819)
Mortality among active participants	253,013
Retirement experience	(16,650,803)
Termination experience	(27,077,535)
Disability experience	(138,601)
<u>Other (data corrections, purchased service, etc.)</u>	<u>3,992,638</u>
Total	(37,929,956)

Section V – Contributions Payable under the System

Section 1942, Subsection (n), of Title 16, Chapter 55, Vermont Statutes Annotated, relating to the State Teachers' Retirement System of Vermont, indicates that the actuary shall submit to the Board of Trustees his recommendation as to the contributions payable by the State based on annual valuations of the assets and liabilities of the system.

On the basis of the results of the current valuation, the actuary recommends that the Board of Trustees certify the following contributions for the fiscal year commencing July 1, 2016:

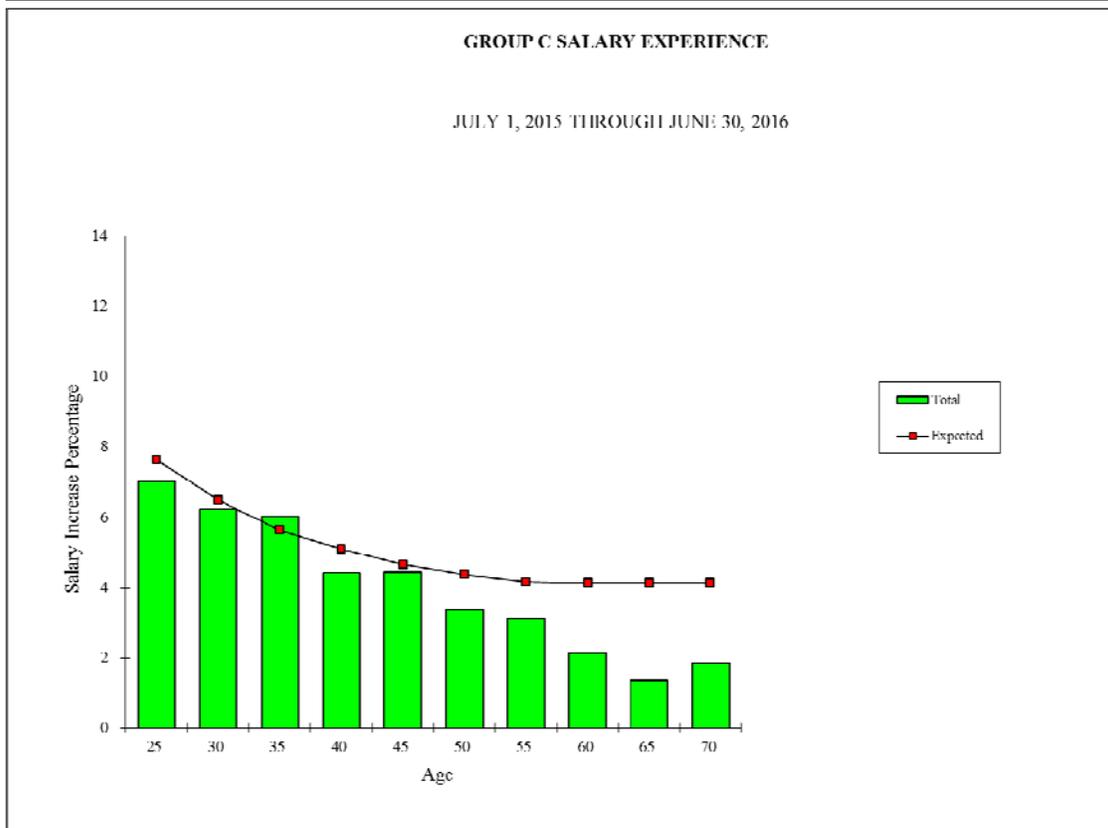
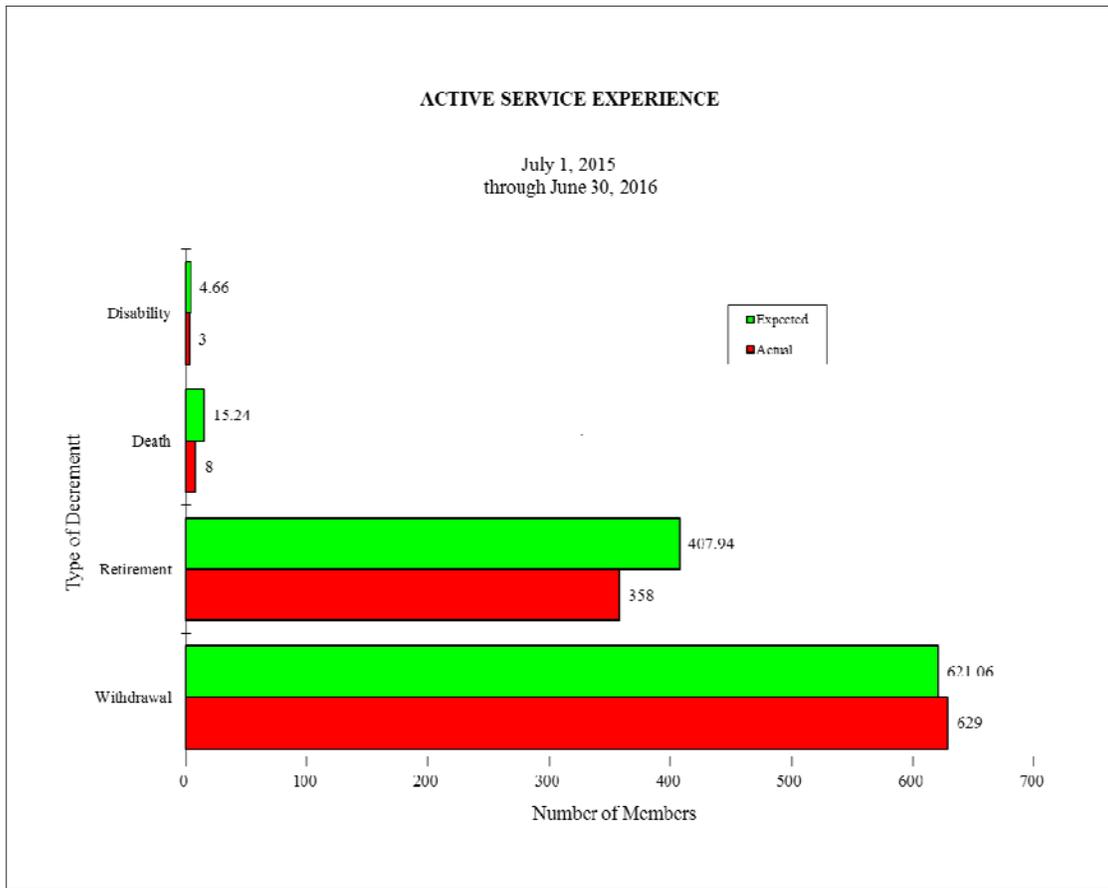
Normal contribution	\$	7,799,081
Accrued liability contribution		<u>76,250,643</u>
Total	\$	84,049,724

Section VI - Experience

Records are maintained whereby the actual experience of the system may be compared with the expected experience based on the tables adopted by the Board of Trustees. This experience is reviewed periodically, in accordance with the applicable statutes, and any change suggested by the cumulative experience of the system will be recommended to the Board.

The active service and salary experience for the latest year is summarized in graphs on the following pages.

Section VI – Experience (continued)



Schedule A: Balance Sheet Showing the Assets and Liabilities

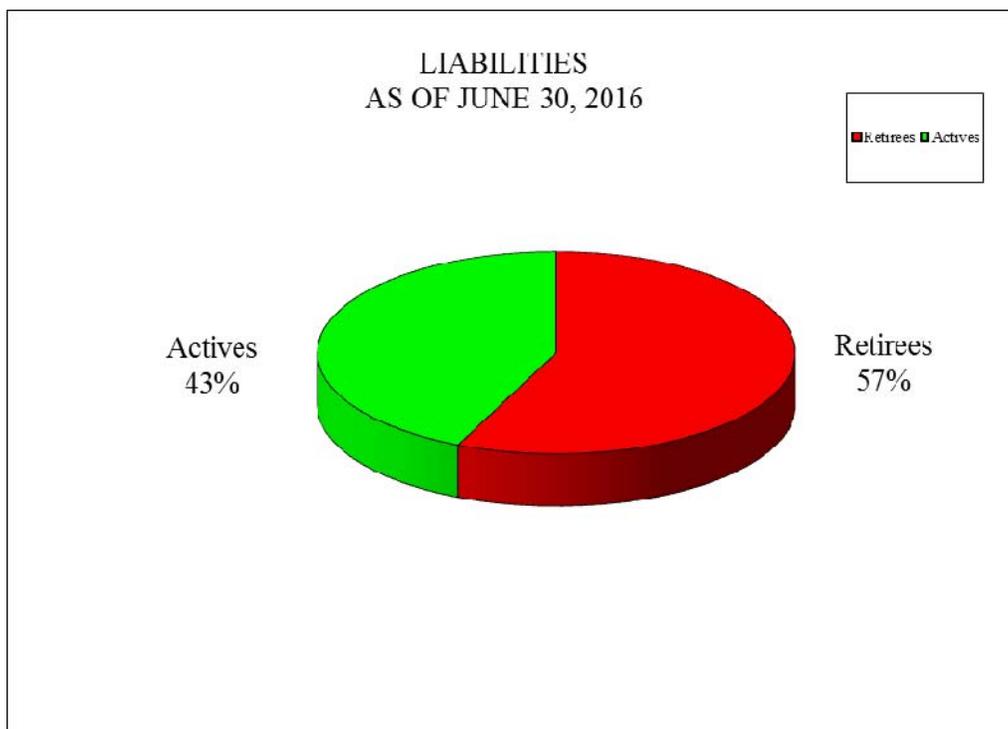
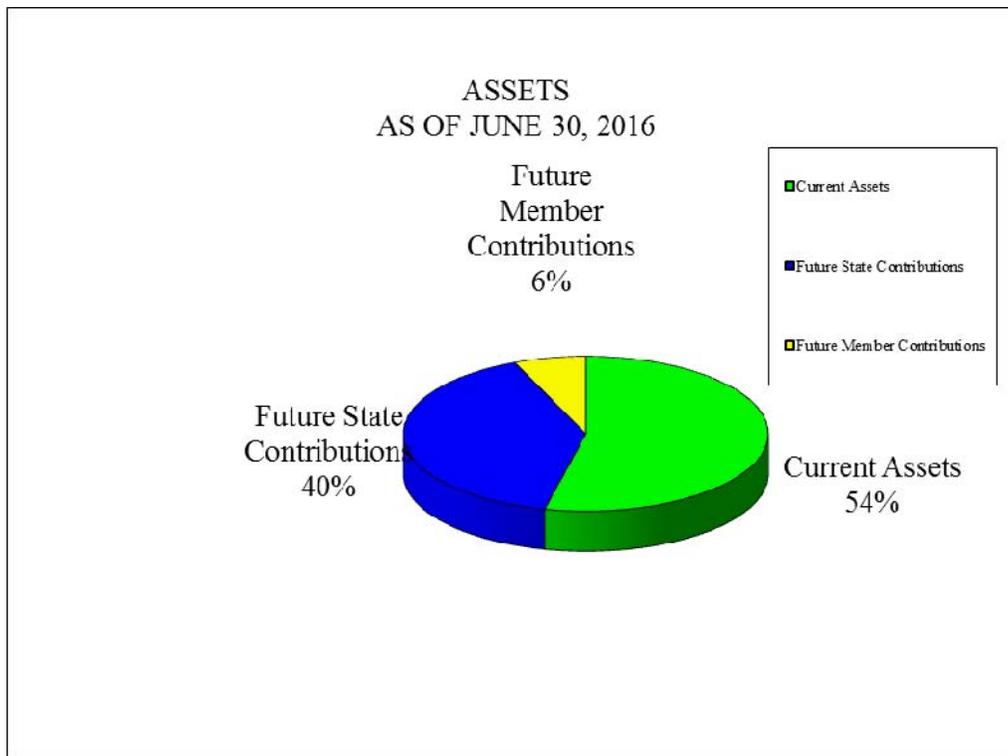
Assets

Adjusted assets of the system		\$ 1,716,296,235
Present value of prospective contributions		
Members	\$ 204,313,115	
State		
Accrued liability contributions	1,225,727,845	
Normal contributions	<u>40,376,048</u>	
Total prospective contributions		<u>\$ 1,470,417,008</u>
Total assets		<u>\$ 3,186,713,243</u>

Liabilities

Actuarial present value of benefits payable on account of present retired members, terminated vested members and beneficiaries		\$1,811,169,538
Actuarial present value of benefits expected to become payable on account of active and inactive members		<u>\$1,375,543,705</u>
Total liabilities		<u>\$3,186,713,243</u>

Schedule A: Balance Sheet Showing the Assets and Liabilities (continued)



Schedule B: Outline of Actuarial Assumptions and Methods

Please note: The actuarial assumptions used in this valuation were reviewed and either affirmed for continued use or reset on the basis of an experience study covering the period from July 1, 2010 through June 30, 2014. The findings and recommendations of the experience study are summarized in a separate report.

Interest Rate

7.95%.

Separations before Normal Retirement

Representative values of the assumed annual rates of withdrawal, vested retirement, early retirement, disability and death are as follows:

Age	Withdrawal and Vested Retirement		Disability		Death	
	Males	Females	Males	Females	Males	Females
25	21.00%	20.00%	.005%	.008%	.04%	.02%
30	12.60	14.00	.008	.008	.04	.03
35	8.40	11.30	.010	.008	.08	.05
40	6.50	9.03	.015	.010	.11	.07
45	5.80	6.30	.026	.023	.15	.11
50	5.40	5.25	.067	.070	.21	.17
55	5.40	5.04	.044	.048	.30	.25
59	5.40	5.04	.147	.071	.44	.36
60	5.40	5.04	.147	.084	.49	.39
61	5.40	5.04	.183	.101	.54	.43

Age	Reduced Early Retirement		Full Early Retirement
	Group A	Group C	Grandfathered (Group C)
50	N/A	N/A	N/A
55	6.13%	6.13%	6.13%
56	6.25	6.25	6.25
57	6.25	6.25	6.25
58	6.25	6.25	6.25
59	9.38	9.38	9.38
60	12.50	18.75	18.75
61	18.75	18.75	18.75

Schedule B: Outline of Actuarial Assumptions and Methods (continued)

Service Retirements

Occur between ages 62 (60 for Group A) and 70. The assumed rates of service retirement are as follows:

Age	Annual Rate of Retirement		
	Group A	Group C	
		Non-Grandfathered	Grandfathered
60	12.5%	17.0%	NA
61	18.8	17.0	NA
62	25.0	20.0	20.0%
63	22.0	22.0	22.0
64	22.0	22.0	22.0
65	33.0	33.0	33.0
66	33.0	33.0	33.0
67	33.0	33.0	33.0
68	22.0	22.0	22.0
69	33.0	33.0	33.0
70	100.0	100.0	100.0

Non Grandfathered participants have a 25% probability to go into service retirement if they are first eligible for service retirement on or before age 62 and 27.5% probability to go into service retirement if they are first eligible for service retirement between age 62 and age 65.

Group C, Grandfathered participants are assumed to retire at the following rates upon completion of 30 years of creditable service.

Age	Annual Rate of Retirement
49	0.00%
50	40.00
51	20.00
52	20.00
53	20.00
54	20.00
55	8.75
56	6.25
57	6.25
58	10.00
59	10.00
60	25.00
61	17.00

Schedule B: Outline of Actuarial Assumptions and Methods (continued)

Group A participants are assumed to retire at the following rates upon completion of 30 years of creditable service.

Age	Annual Rate of Retirement
49	0.0%
50	40.0
51	20.0
52	20.0
53	20.0
54	20.0
55	20.0
56	10.0
57	10.0
58	10.0
59	10.0
60	30.0
61	25.5

Salary Increases

Representative values of the assumed annual rates of future salary increase are as follows:

Age	Annual Rate of Salary Increase	Age	Annual Rate of Salary Increase
25	8.15%	50	4.46%
30	6.84%	55	4.22%
35	5.97%	60	4.12%
40	5.29%	65	4.12%
45	4.80%		

Deaths after Retirement

The RP-2000 Mortality Tables Projected to 2029 using Scale BB for retirees, terminated vested members and beneficiaries, the RP-2000 Disabled Life Table with projection to 2020 using Scale AA for disabled retirees. The tables used contain a margin to reflect anticipated mortality improvement after the valuation date.

Schedule B: Outline of Actuarial Assumptions and Methods (continued)

Inflation

The separately stated assumptions for investment return, salary increases and cost of living adjustments are consistent with an expected annual inflation rate of 3.00% to 3.25% per year.

Future Expenses

No provision made.

Spouse's Age

Husbands are assumed to be three years older than their wives.

Percent Married

85% of the male members and 35% of the female members are assumed to be married.

Cost-of-living Adjustments

Assumed to occur on January 1 following one year of retirement at the rate of 3% per annum for Group A members and 1.5% per annum for Group C member (beginning at age 62 for Group C members who elect reduced early retirement).

Inactive Members

A liability equal to 350% of accumulated contributions of inactive members is included in the valuation liabilities. Solely for the June 30, 2016, valuation, this percentage was reduced to 332.5% in recognition of the impact of the school district consolidation program on the demographics of the inactive population.

Actuarial Cost Method

The individual entry age normal actuarial cost method was used. For actuarial valuations prior to June 30, 2006, the entry age normal method with frozen initial liability was used.

Asset Valuation Method

The amount of the assets for valuation purposes equals the preliminary asset value plus 20% of the difference between the market and preliminary asset values. The preliminary asset value is equal to the previous year's asset value (for valuation purposes) adjusted for contributions less benefit payments and expenses and expected investment income. If necessary, a further adjustment is made to ensure that the valuation assets are within 20% of the market value.

Member Data

315 members terminated on June 30, 2016 and retired on July 1, 2016 were included with a valuation status as members receiving benefits. 536 members who were active on June 30, 2016 and terminated on July 1, 2016, were included with a valuation status as inactive. For those terminated members with at least five years of service, the system will automatically vest them six years after their termination if they do not withdraw.

Health and Medical Benefits for Retirees

Not included in this valuation.

Schedule C: Summary of Principal Plan Provisions

Effective Date

July 1, 1947.

Creditable Service

Service as a member plus purchased service.

Average Final Compensation (AFC)

Average annual compensation during highest 3 successive years.

Membership

Immediate upon employment.

Grandfathered status

Group C members who were within five years of normal retirement eligibility as defined prior to July 1, 2010, are “grandfathered”

Service Retirement Allowance

Eligibility

Group A	Age 60 or 30 years of creditable service.
Group C	Grandfathered Age 62 or 30 years of creditable service for.
	Non-Grandfathered Age 65 or age plus creditable service equal 90.

Amount of Allowance

Group A	Member annuity based on accumulated contributions plus a pension which, with member annuity, equals 1/60 of AFC times creditable service.
Group C	Grandfathered Member annuity based on accumulated contributions plus a pension which, with member annuity, equals 1/80 of AFC times creditable service prior to July 1, 1990 plus 1/60 of AFC times creditable service after July 1, 1990.
	Non-Grandfathered Member annuity based on accumulated contributions plus a pension which, with member annuity, equals 1/80 of AFC times creditable service prior to July 1, 1990 plus 1/60 of AFC times creditable service after July 1, 1990 up to 20 years of service, plus 1/50 of AFC for years of service after 20.

If member already has 20 or more years of service on June 30, 2010, the 1/50 will be applied to all service accrued after July 1, 2010.

Minimum

Group A	\$6,600 after 30 years of creditable service (pro-rata portion if less than 30 years).
Group C	N/A

Maximum

Group A	None
Group C	Grandfathered 50% of AFC up to June 30, 2010. May continue to accrue up to 53.34% of AFC with service earned after July 1, 2010.
	Non-Grandfathered 60% of AFC.

Schedule C: Summary of Principal Plan Provisions (continued)

Early Retirement Allowance

Eligibility

- Group A Age 55.
- Group C Age 55 and 5 years of creditable service.

Amount of Allowance

- Group A Actuarial equivalent of service allowance using AFC and creditable service at early retirement.
- Group C Grandfathered Accrued normal benefit reduced 6% for each year under age 62.
Non-Grandfathered Accrued normal benefit reduced by actuarial reduction from normal retirement age.

Vested Retirement Allowance

Eligibility

- Group A and C 5 years of creditable service.

Amount of Allowance

- Group A and C Commencing at age 60 calculated as a service allowance using AFC and creditable service at termination.

Disability Retirement Allowance

Eligibility

- Group A and C Total and permanent disability after 5 years of creditable service (5 years preceding retirement served in State).

Amount of Allowance

- Group A and C Calculated as a service allowance based on AFC and creditable service at disability retirement, subject to a 25% of AFC minimum.

Death Benefits

Eligibility

- Group A Age 60 or 30 years of creditable service; 10 years of creditable service if in service at death.
- Group C Age 55 and 5 years of creditable service or 10 years of creditable service.

Amount of Allowance

- Group A and C Accrued allowance paid under 100% survivorship option. If the eligibility requirements are not met or if beneficiary so elects, the member's accumulated contributions are paid to the beneficiary or estate. Certain children's benefits may also be payable.

Return of Contributions

- Group A and C If no other beneficiary is payable, a terminated member receives his accumulated contributions with interest.

Options

- Group A and C The allowance may be paid in various optional forms at the election of the member.

Schedule C: Summary of Principal Plan Provisions (continued)

Post-retirement Adjustments

Group A

On each December 31 allowances in payment for at least one year are adjusted for cost-of-living changes based on the Consumer Price Index, but not in excess of 5%.

Group C

On each December 31, allowances in payment for at least one year are adjusted for cost-of-living changes based on one-half of the increase in the Consumer Price Index, but not in excess of 5%. For members receiving a reduced early retirement allowance, the adjustment will not apply before age 62.

Contributions

Members

Group A 5.5% of earnable compensation. Contributions stop after 25 years of creditable service.

Group C 5% of earnable compensation with at least five years of service as of July 1, 2014.

6% of earnable compensation with less than five years of service as of July 1, 2014.

State

Group A and C Normal and accrued liability contributions actuarially determined to keep the system financially sound.

Schedule D: Summary Tables of Member Data

Table 1: Number and Annual Compensation of Active Members Distributed by Age and Service

Age	0 - 4		5 - 9		10 - 14		15 - 19		20 - 24	
	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary
< 20	0	0	0	0	0	0	0	0	0	0
20-24	160	5,698,229	0	0	0	0	0	0	0	0
25-29	662	27,226,897	127	6,081,196	0	0	0	0	0	0
30-34	510	22,770,253	461	23,320,643	101	5,687,880	0	0	0	0
35-39	354	16,091,028	428	23,097,109	414	24,986,694	92	5,991,339	0	0
40-44	271	12,335,943	260	14,709,454	379	23,896,602	370	24,671,453	60	4,345,095
45-49	211	10,356,855	258	14,559,847	300	19,334,253	330	22,592,083	273	19,751,784
50-54	135	6,264,096	184	10,562,287	231	14,366,937	242	16,579,064	221	16,366,730
55-59	105	4,789,372	146	8,329,543	213	13,095,399	253	16,918,966	193	13,761,198
60-64	51	2,720,175	86	5,074,273	122	7,226,927	201	13,233,064	141	9,815,296
65-69	20	888,222	29	1,638,763	28	1,891,266	39	2,551,034	33	2,428,549
70 ≥	5	159,543	4	137,369	7	436,860	2	100,775	0	0
Total	2,484	109,300,613	1,983	107,510,484	1,795	110,922,818	1,529	102,637,777	921	66,468,651

Age	25 - 29		30 - 34		35 - 39		40 & Up		Total	
	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary
< 20	0	0	0	0	0	0	0	0	0	0
20-24	0	0	0	0	0	0	0	0	160	5,698,229
25-29	0	0	0	0	0	0	0	0	789	33,308,093
30-34	0	0	0	0	0	0	0	0	1,072	51,778,775
35-39	0	0	0	0	0	0	0	0	1,288	70,166,170
40-44	0	0	0	0	0	0	0	0	1,340	79,958,547
45-49	57	4,223,509	1	82,792	0	0	0	0	1,430	90,901,123
50-54	200	14,881,262	57	4,029,696	0	0	0	0	1,270	83,050,072
55-59	214	15,688,737	188	13,790,224	38	2,886,414	0	0	1,350	89,259,852
60-64	146	10,710,458	99	7,404,489	91	6,930,209	13	930,973	950	64,045,864
65-69	28	2,043,044	16	1,187,441	19	1,630,287	26	2,093,092	238	16,351,698
70 ≥	6	407,354	1	76,516	2	173,547	5	386,685	32	1,878,649
Total	651	47,954,365	362	26,571,158	150	11,620,457	44	3,410,750	9,919	586,397,072

Schedule D: Summary Tables of Member Data (continued)

Table 2: Number and Annual Compensation of Active Members Distributed by Age and Service Group A

Age	0 - 4		5 - 9		10 - 14		15 - 19		20 - 24	
	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary
≤ 20	0	0	0	0	0	0	0	0	0	0
20-24	0	0	0	0	0	0	0	0	0	0
25-29	0	0	0	0	0	0	0	0	0	0
30-34	0	0	0	0	0	0	0	0	0	0
35-39	0	0	0	0	0	0	0	0	0	0
40-44	0	0	0	0	0	0	0	0	0	0
45-49	0	0	0	0	0	0	0	0	0	0
50-54	0	0	0	0	0	0	0	0	0	0
55-59	0	0	0	0	0	0	0	0	0	0
60-64	0	0	0	0	0	0	0	0	0	0
65-69	0	0	0	0	0	0	0	0	0	0
70 ≥	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0

Age	25 - 29		30 - 34		35 - 39		40 & Up		Total	
	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary
≤ 20	0	0	0	0	0	0	0	0	0	0
20-24	0	0	0	0	0	0	0	0	0	0
25-29	0	0	0	0	0	0	0	0	0	0
30-34	0	0	0	0	0	0	0	0	0	0
35-39	0	0	0	0	0	0	0	0	0	0
40-44	0	0	0	0	0	0	0	0	0	0
45-49	0	0	0	0	0	0	0	0	0	0
50-54	0	0	0	0	0	0	0	0	0	0
55-59	0	0	1	56,528	1	75,364	0	0	2	131,892
60-64	0	0	0	0	3	216,857	0	0	3	216,857
65-69	0	0	0	0	0	0	0	0	0	0
70 ≥	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	56,528	4	292,221	0	0	5	348,749

Schedule D: Summary Tables of Member Data (continued)

Table 3: Number and Annual Compensation of Active Members Distributed by Age and Service Group C

Age	0 - 4		5 - 9		10 - 14		15 - 19		20 - 24	
	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary
≤ 20	0	0	0	0	0	0	0	0	0	0
20-24	160	5,698,229	0	0	0	0	0	0	0	0
25-29	662	27,226,897	127	6,081,196	0	0	0	0	0	0
30-34	510	22,770,253	461	23,320,643	101	5,687,880	0	0	0	0
35-39	354	16,091,028	428	23,097,109	414	24,986,694	92	5,991,339	0	0
40-44	271	12,335,943	260	14,709,454	379	23,896,602	370	24,671,453	60	4,345,095
45-49	211	10,356,855	258	14,559,847	300	19,334,253	330	22,592,083	273	19,751,784
50-54	135	6,264,096	184	10,562,287	231	14,366,937	242	16,579,064	221	16,366,730
55-59	105	4,789,372	146	8,329,543	213	13,095,399	253	16,918,966	193	13,761,198
60-64	51	2,720,175	86	5,074,273	122	7,226,927	201	13,233,064	141	9,815,296
65-69	20	888,222	29	1,638,763	28	1,891,266	39	2,551,034	33	2,428,549
70 ≥	5	159,543	4	137,369	7	436,860	2	100,775	0	0
Total	2,484	109,300,613	1,983	107,510,484	1,795	110,922,818	1,529	102,637,777	921	66,468,651

Age	25 - 29		30 - 34		35 - 39		40 & Up		Total	
	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary
≤ 20	0	0	0	0	0	0	0	0	0	0
20-24	0	0	0	0	0	0	0	0	160	5,698,229
25-29	0	0	0	0	0	0	0	0	789	33,308,093
30-34	0	0	0	0	0	0	0	0	1,072	51,778,775
35-39	0	0	0	0	0	0	0	0	1,288	70,166,170
40-44	0	0	0	0	0	0	0	0	1,340	79,958,547
45-49	57	4,223,509	1	82,792	0	0	0	0	1,430	90,901,123
50-54	200	14,881,262	57	4,029,696	0	0	0	0	1,270	83,050,072
55-59	214	15,688,737	187	13,733,696	37	2,811,050	0	0	1,348	89,127,960
60-64	146	10,710,458	99	7,404,489	88	6,713,352	13	930,973	947	63,829,007
65-69	28	2,043,044	16	1,187,441	19	1,630,287	26	2,093,092	238	16,351,698
70 ≥	6	407,354	1	76,516	2	173,547	5	386,685	32	1,878,649
Total	651	47,954,365	361	26,514,630	146	11,328,236	44	3,410,750	9,914	586,048,323

Schedule D: Summary Tables of Member Data (continued)

Table 4: Summary of Retired Member and Beneficiary Data by Level of Attained Age

All Teachers

Allowance Level	Service Pensioners		Disability Pensioners		Beneficiaries	
	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
0 - 500	3	\$ 853	-	\$ -	-	\$ -
501 -1,000	12	9,683	-	-	-	-
1,001 – 1,500	26	32,570	-	-	2	2,628
1,501 – 2,000	49	88,204	-	-	10	17,539
2,001 – 2,500	81	183,766	-	-	13	29,356
2,501 – 3,000	119	328,178	-	-	11	30,148
3,001 – 3,500	119	388,438	-	-	7	23,061
3,501 – 4,000	120	450,752	-	-	10	37,105
4,001 – 4,500	152	644,950	-	-	18	75,875
4,501 – 5,000	138	656,051	-	-	10	47,400
5,001 – 5,500	155	810,996	-	-	7	36,305
5,501 – 6,000	127	725,691	-	-	16	91,589
6,001 – 6,500	130	811,428	-	-	17	106,528
6,501 – 7,000	148	1,000,065	1	6,757	20	134,445
7,001 – 7,500	121	879,425	2	14,466	15	108,819
7,501 – 8,000	118	914,209	2	15,576	10	78,055
8,001 – 8,500	113	933,164	1	8,032	17	139,920
8,501 – 9,000	104	910,864	4	34,840	17	148,689
9,001 – 9,500	134	1,240,298	5	46,035	24	222,271
9,501 – 10,000	110	1,074,119	8	77,753	7	68,262
10,001 – 10,500	107	1,095,956	7	71,408	18	185,176
10,501 – 11,000	120	1,289,952	13	140,369	17	183,431
11,001 – 11,500	132	1,485,214	5	56,676	15	168,746
11,501 – 12,000	111	1,302,540	9	105,551	12	140,477
12,001 – 12,500	104	1,274,826	2	24,558	20	244,979
12,501 – 13,000	76	970,654	5	63,724	16	203,487
13,001 – 13,500	95	1,257,361	8	105,893	10	132,967
13,501 – 14,000	82	1,129,379	8	109,200	11	151,929
14,001 – 14,500	89	1,266,956	5	71,397	5	71,327
14,501 – 15,000	91	1,341,491	5	74,030	7	103,007
15,001 – 15,500	103	1,570,033	6	91,578	8	121,697
15,501 – 16,000	105	1,651,692	3	47,151	11	172,237
16,001 – 16,500	95	1,543,914	4	65,164	9	147,538
16,501 – 17,000	97	1,624,682	3	50,084	10	167,418
17,001 – 17,500	102	1,759,683	4	69,350	6	104,035
17,501 – 18,000	104	1,849,202	4	71,503	9	160,014
18,001 – 18,500	94	1,714,786	3	55,303	9	163,924
18,501 – 19,000	94	1,760,610	2	37,670	5	93,755
19,001 – 19,500	111	2,134,723	1	19,341	3	57,901
19,501 – 20,000	104	2,051,719	6	117,771	4	78,840
20,001 – 20,501	101	2,046,587	2	40,055	6	120,791

Schedule D: Summary Tables of Member Data (continued)

Table 4: Summary of Retired Member and Beneficiary Data by Level of Attained Age (continued)

All Teachers (continued)

Allowance Level	Service Pensioners		Disability Pensioners		Beneficiaries	
	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
20,501 – 21,000	132	2,741,411	1	20,919	4	83,030
21,001 – 21,500	116	2,467,224	3	63,813	5	106,249
21,501 – 22,000	131	2,849,468	4	87,142	4	87,718
22,001 – 22,500	123	2,736,813	4	89,302	6	133,124
22,501 – 23,000	137	3,116,809	1	22,676	1	22,897
23,001 – 23,500	145	3,368,313	2	46,561	-	-
23,501 – 24,000	116	2,755,441	-	-	2	47,644
24,001 – 24,500	131	3,176,868	1	24,465	3	72,815
24,501 – 25,000	111	2,745,479	-	-	1	24,760
25,001 – 25,500	113	2,854,672	-	-	1	25,360
25,501 – 26,000	119	3,064,344	-	-	3	77,225
26,001 – 26,500	135	3,543,978	1	26,416	-	-
26,501 – 27,000	120	3,211,481	-	-	-	-
27,001 – 27,500	114	3,107,773	1	27,090	6	163,192
27,501 – 28,000	126	3,494,579	-	-	1	27,975
28,001 – 28,500	119	3,362,730	2	56,241	4	113,106
28,501 – 29,000	126	3,621,562	-	-	-	-
29,001 – 29,500	108	3,158,125	-	-	1	29,327
29,501 – 30,000	105	3,124,386	-	-	2	59,786
30,001 – 30,500	87	2,629,223	1	30,374	-	-
30,501 – 31,000	98	3,014,112	1	30,856	1	30,966
31,001 – 31,500	96	3,001,610	-	-	1	31,095
31,501 – 32,000	88	2,794,625	-	-	2	63,913
32,001 – 32,500	92	2,968,920	-	-	-	-
32,501 – 33,000	76	2,489,728	1	32,937	-	-
33,001 – 33,500	72	2,395,296	-	-	1	33,115
33,501 – 34,000	76	2,564,006	1	33,507	1	33,591
34,001 – 34,500	77	2,637,892	-	-	3	102,927
34,501 – 35,000	65	2,258,400	-	-	1	34,623
35,001 – 35,500	55	1,940,697	-	-	2	70,400
35,501 – 36,000	51	1,824,518	1	35,804	2	71,850
36,001 – 36,500	52	1,882,794	-	-	1	36,338
36,501 – 37,000	59	2,166,847	-	-	-	-
37,001 – 37,500	41	1,525,895	-	-	-	-
37,501 – 38,000	48	1,811,659	-	-	-	-
38,001 – 38,500	37	1,413,704	-	-	-	-
38,501 – 39,000	37	1,432,274	-	-	-	-
39,001 – 39,500	32	1,255,486	-	-	-	-
39,501 – 40,000	16	636,037	-	-	-	-
Over 40,000	328	14,998,458	-	-	3	145,482
Total	8,106	160,349,301	153	2,319,338	504	6,100,179

Schedule D: Summary Tables of Member Data (continued)

Table 5: Age/Service Distribution with Average Allowance

Service Pensioners

Age	0 - 4		5 - 9		10 - 14		15 - 19		20 - 24	
	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary
< 45	0	0	0	0	0	0	0	0	0	0
45-49	0	0	0	0	0	0	0	0	0	0
50-54	2	41,419	0	0	0	0	0	0	0	0
55-59	43	28,951	2	7,369	16	5,386	10	8,923	14	12,760
60-64	170	28,119	91	5,397	163	6,868	153	12,061	152	17,709
65-69	101	23,163	183	5,398	416	7,713	349	13,600	364	19,586
70-74	27	9,500	88	5,771	294	7,367	236	11,620	261	17,341
75-79	18	3,027	35	5,835	143	6,923	135	10,436	156	14,675
80-84	17	2,226	23	5,709	75	6,669	69	10,741	74	13,985
85-89	7	3,300	17	4,129	46	5,684	53	8,972	55	11,519
90-94	10	3,331	7	3,553	28	5,045	22	6,974	18	11,024
95 ≥	2	2,259	5	5,321	5	6,981	11	8,659	7	8,769
Total	397	22,310	451	5,452	1,186	7,174	1,038	11,847	1,101	17,024

Age	25 - 29		30 - 34		35 - 39		40 & Up		Total	
	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary
< 45	0	0	0	0	0	0	0	0	0	0
45-49	0	0	0	0	0	0	0	0	0	0
50-54	0	0	10	31,565	1	40,167	0	0	13	33,743
55-59	0	0	120	32,097	5	42,273	0	0	210	27,032
60-64	68	29,616	504	30,691	141	36,037	13	35,467	1,455	23,335
65-69	241	26,053	824	28,761	235	34,364	61	36,011	2,774	21,147
70-74	155	22,332	513	25,720	146	31,969	35	32,512	1,755	18,610
75-79	98	20,126	203	24,744	82	29,789	16	33,439	886	16,840
80-84	70	15,454	119	21,714	56	25,088	15	33,240	518	15,472
85-89	31	14,884	61	19,975	37	22,646	6	27,936	313	13,256
90-94	12	14,040	25	18,974	5	17,177	6	19,824	133	10,518
95 ≥	9	10,919	8	13,414	2	24,275	0	0	49	9,730
Total	684	22,714	2,387	27,623	710	32,248	152	33,657	8,106	19,782

Schedule D: Summary Tables of Member Data (continued)

Table 6: Age/Service Distribution with Average Allowance (continued)

Disability Pensioners

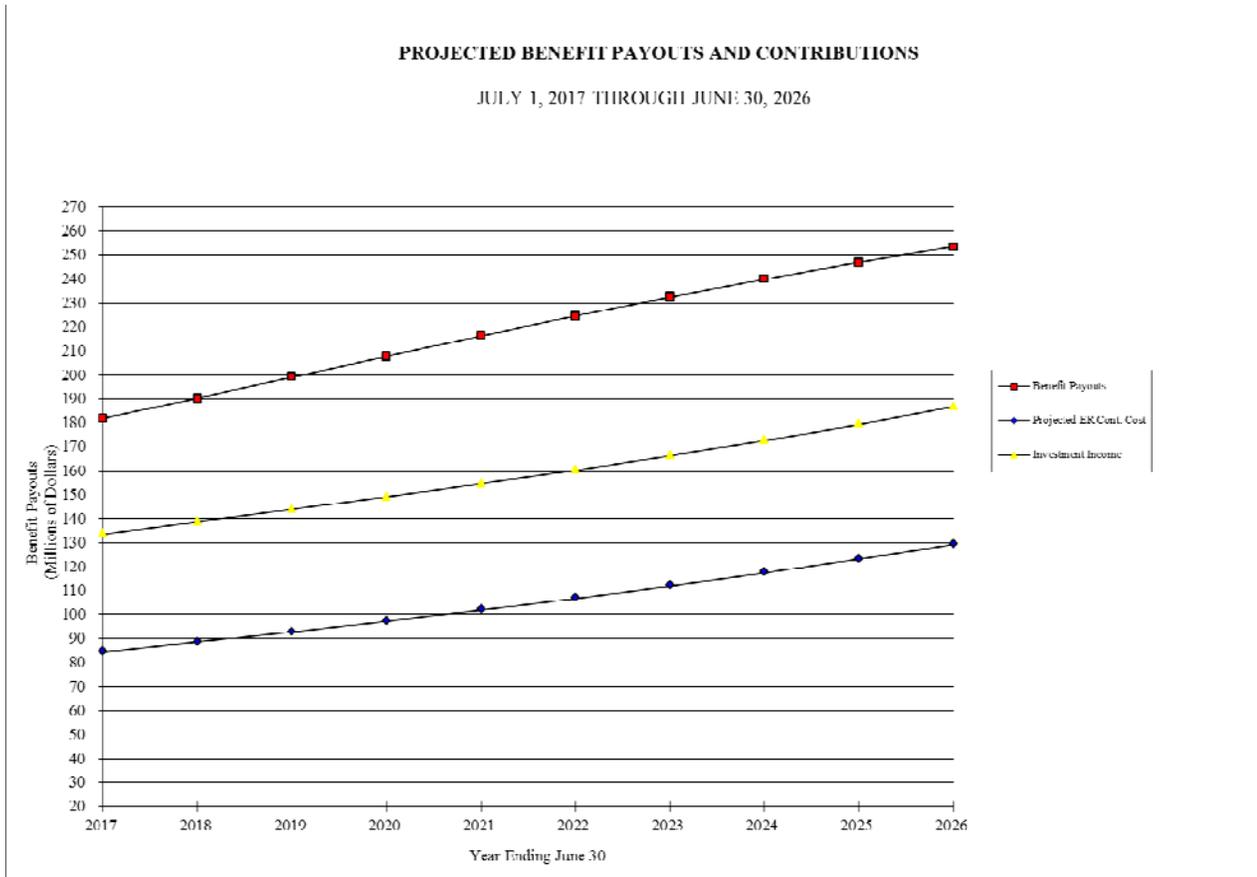
Age	0 - 4		5 - 9		10 - 14		15 - 19		20 - 24	
	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary
≤ 45	0	0	0	0	0	0	0	0	0	0
45-49	0	0	1	10,955	0	0	0	0	1	12,554
50-54	0	0	1	11,739	2	11,969	1	16,413	2	14,790
55-59	1	17,158	2	10,403	3	13,711	1	17,850	4	22,294
60-64	1	27,090	5	10,632	15	12,530	11	12,615	7	24,419
65-69	0	0	4	13,055	7	10,874	7	16,485	10	16,760
70-74	0	0	3	13,532	9	12,697	3	12,004	7	15,430
75-79	0	0	0	0	2	9,437	5	11,533	5	12,552
80-84	0	0	0	0	0	0	2	15,213	1	8,855
85-89	0	0	0	0	0	0	2	14,258	1	7,461
90-94	0	0	0	0	1	9,541	1	7,890	0	0
95 ≥	0	0	0	0	0	0	0	0	0	0
Total	2	22,124	16	11,842	39	12,098	33	13,604	38	17,288

Age	25 - 29		30 - 34		35 - 39		40 & Up		Total	
	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary
≤ 45	0	0	0	0	0	0	0	0	0	0
45-49	0	0	0	0	0	0	0	0	2	11,755
50-54	0	0	0	0	0	0	0	0	6	13,612
55-59	3	23,472	0	0	0	0	0	0	14	18,324
60-64	0	0	0	0	0	0	0	0	39	14,818
65-69	6	22,053	0	0	0	0	0	0	34	15,990
70-74	6	20,253	1	30,374	0	0	0	0	29	15,544
75-79	3	23,030	1	16,341	0	0	0	0	16	14,046
80-84	3	13,279	0	0	0	0	0	0	6	13,186
85-89	1	15,457	0	0	0	0	0	0	4	12,859
90-94	0	0	1	12,568	0	0	0	0	3	10,000
95 ≥	0	0	0	0	0	0	0	0	0	0
Total	22	20,393	3	19,761	0	0	0	0	153	15,159

Schedule E: Amortization Schedule for the Unfunded Actuarial Accrued Liability

Date	Balance	Contribution (Year Following)
6/30/2016	1,225,727,845	76,250,643
6/30/2017	1,243,949,561	80,063,176
6/30/2018	1,259,658,720	84,066,334
6/30/2019	1,272,457,517	88,269,651
6/30/2020	1,281,906,614	92,683,134
6/30/2021	1,287,521,351	97,317,290
6/30/2022	1,288,767,617	102,183,155
6/30/2023	1,285,057,378	107,292,312
6/30/2024	1,275,743,811	112,656,928
6/30/2025	1,260,116,034	118,289,774
6/30/2026	1,237,393,379	124,204,263
6/30/2027	1,206,719,178	130,414,476
6/30/2028	1,167,154,030	136,935,200
6/30/2029	1,117,668,486	143,781,960
6/30/2030	1,057,135,127	150,971,058
6/30/2031	984,319,966	158,519,611
6/30/2032	897,873,129	166,445,592
6/30/2033	796,318,755	174,767,871
6/30/2034	678,044,044	183,506,265
6/30/2035	541,287,391	192,681,578
6/30/2036	384,125,526	202,315,657
6/30/2037	204,459,582	212,431,440
6/30/2038	(0)	

Schedule F: Projected Benefit Payouts and Contributions for the Period July 1, 2017 through June 30, 2026



Schedule G: Projection of Contributions for Following Two Fiscal Years

On the basis of the June 30, 2016, actuarial valuation, the recommended contribution for the fiscal year ending June 30, 2017, is \$84,049,724, based on the following:

Payroll	\$586,397,072
Normal rate	1.33%
Accrued liability contribution	\$76,250,643

On this basis, the projected contributions for the following two fiscal years are as follows:

Fiscal Year	Projected Payroll	Normal Rate	Contributions		
			Normal	Accrued Liability	Total
2018	\$ 603,988,984	1.33%	\$8,346,261	\$80,063,176	\$88,409,437
2019	622,108,654	1.33%	8,596,649	84,066,334	92,662,983

In these projections, we assumed that total payroll would increase by 3.0% each year.