

Vermont State Teachers' Retirement System

Actuarial Valuation and Review

As of June 30, 2021



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

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October 29, 2021

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

Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of June 30, 2021, of the Vermont State Teachers' Retirement System. This report summarizes the actuarial data used in the valuation, analyzes the preceding year's experience, and establishes the funding requirement for the fiscal year ending June 30, 2023.

This report was prepared in accordance with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board, 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. We have not subjected this data to any auditing procedures, but have examined the data for reasonableness and consistency with the prior year's data.

Actuarial assumptions and methods are set by the Board of Trustees, based upon recommendations made by the System's actuary. In our opinion, the actuarial assumptions as approved by the Board are reasonable, taking into account the experience of the System and reasonable long-term expectations, and represent our best estimate of the anticipated long-term experience of the System.

The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results can and almost certainly will differ, as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rates, and funding periods.

The actuarial calculations were directed under the supervision of Kathleen A. Riley, FSA, MAAA, EA and Matthew A. Strom, FSA, MAAA, EA. 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



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



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

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Actuarial Valuation Summary

Purpose and basis

This report was prepared by Segal to present a valuation of the System as of June 30, 2021, pursuant to section 1942, subsection (n), of Title 16, Chapter 55, Vermont Statutes Annotated, relating to the Vermont State Teachers' 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 System assets to cover the estimated cost of settling the System'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, 2021, for the System is provided in separate reports.

The contribution requirements presented in this report are based on:

- The benefit provisions of the System, as administered by the Board;
- The characteristics of covered active members, inactive members, and retired members and beneficiaries as of June 30, 2021, provided by the Office of the State Treasurer;
- The unaudited assets of the System as of June 30, 2021, provided by the Office of the State Treasurer;
- Economic assumptions regarding future salary increases, inflation, and investment earnings;
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc.; and
- The funding policy prescribed by State statute.

Section 1: Actuarial Valuation Summary

Valuation highlights

1. Segal strongly recommends an actuarial funding policy 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 1944, subsection (c)(4), of Title 16, Chapter 55, Vermont Statutes Annotated calls for annual payments on the unfunded actuarial accrued liability to be made over a closed period ending on June 30, 2038. Beginning on July 1, 2019 and annually thereafter, the amount of each annual payment is calculated assuming that the amortization period will remain closed and that the amortization amount will increase annually at the rate of 3% over the preceding year.
2. Actual employer contributions made during the fiscal year ending June 30, 2021, were \$134.5 million, or 101.8% of the actuarially determined contribution of \$132.1 million. In the prior fiscal year, actual employer contributions were \$126.9 million, or 100.6% of the prior year's actuarially determined contribution.
3. The actuarially determined contribution for the fiscal year ending June 30, 2022, is \$196.2 million as determined with the June 30, 2020, actuarial valuation.
4. The funded percentage (the ratio of the actuarial value of assets to actuarial accrued liability) is 52.9%, compared to the prior year's funded percentage of 51.3%. 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 58.5%, compared to 49.2% as of the prior valuation date. These measurements are not necessarily appropriate for assessing the sufficiency of System assets to cover the estimated cost of settling the System's benefit obligation or the need for or the amount of future contributions.
5. The results of this June 30, 2021, actuarial valuation are used to determine the actuarially determined contribution for the fiscal year ending June 30, 2023, and to estimate the actuarially determined contribution for the fiscal year ending June 30, 2024. The actuarially determined contribution for fiscal 2023 is \$205.2 million, an increase of \$9.0 million from fiscal year 2022. Last year's estimate of the actuarially determined contribution for fiscal 2023 is \$3.1 million less than this year's actual amount. This is due to demographic losses combined with the addition of the administrative expenses assumption, partially offset by investment gains on an actuarial basis. The estimated fiscal 2024 actuarially determined contribution is \$211.3 million. The actuarially determined contribution is equal to the System's employer normal cost, plus the amount necessary to amortize the unfunded actuarial accrued liability.
6. The unfunded actuarial accrued liability is \$1.950 billion, which is an increase of \$17.1 million since the prior valuation.
7. The rate of return on the market value of assets was 26.64% for the July 1, 2020, to June 30, 2021, plan year. The return on the actuarial value of assets was 9.87% for the same period due to the recognition of prior year's investment gains and losses. This resulted in an actuarial gain when measured against the assumed rate of return of 7.0%. We advise the Board to continue to monitor actual and anticipated investment returns relative to the assumed long-term rate of return on investments.

Section 1: Actuarial Valuation Summary

8. The actuarial value of assets is 90.5% of the market value of assets, compared to the prior year where the actuarial value of assets was 104.3% 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 gain is recognized in future years, the cost of the System is likely to increase less than expected unless the net gain is offset by future experience. The recognition of the deferred market gains of \$231.1 million will also have an impact on the future funded percentage. If the net deferred gains were recognized immediately in the actuarial value of assets, the preliminary actuarially determined contribution rate (as shown on page 27) would decrease from 28.86% to 26.14% of payroll.
9. The actuarial gain from investment experience is \$57.8 million.
10. The net experience loss from sources other than investment experience was approximately \$45.7 million, or 1.1% of the actuarial accrued liability. Of this \$45.7 million loss, \$22.6 million is due to the higher-than-expected actual 2022 COLA. The remaining \$23.1 million loss is approximately half of the non-COLA related loss of \$45.9 million from the prior year. Additional detail regarding this loss is shown in *Section 2, Other experience*.
11. This report constitutes an actuarial valuation for the purpose of determining the actuarially determined contribution under the System'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, 2021, and June 30, 2022, 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.
12. This actuarial report as of June 30, 2021, 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 System.
13. Since the actuarial valuation results are dependent on a given set of assumptions, there is a risk that emerging results may differ significantly as actual experience proves to be different from the assumptions. We have included a discussion of various risks that may affect the System in *Section 2, Risk*.

Section 1: Actuarial Valuation Summary

Summary of key valuation results

		2021	2020
Actuarially determined employer contributions:	• Actuarially determined employer contributions for fiscal 2023 (and 2022)	\$205,161,651	\$196,206,504
	• Estimated actuarially determined employer contributions for fiscal 2024 (and 2023)	211,316,499	202,092,699
Actuarial accrued liability for plan year beginning July 1:	• Retired members and beneficiaries	\$2,543,976,588	\$2,411,640,367
	• Deferred members as reported by the System	51,335,850	49,920,984
	• Inactive members as reported by the System	91,865,729	70,592,415
	• Active members	1,454,836,493	1,436,849,211
	• Total	4,142,014,660	3,969,002,977
	• Employer normal cost for plan year beginning July 1	40,915,500	37,768,479
Assets for plan year beginning July 1:	• Market value of assets (MVA)	\$2,422,793,508	\$1,951,489,882
	• Actuarial value of assets (AVA)	2,191,650,755	2,035,713,611
	• Actuarial value of assets as a percentage of market value of assets	90.46%	104.32%
Funded status for plan year beginning July 1:	• Unfunded actuarial accrued liability based on MVA	\$1,719,221,152	\$2,017,513,095
	• Funded percentage on MVA basis	58.49%	49.17%
	• Unfunded actuarial accrued liability based on AVA	\$1,950,363,905	\$1,933,289,366
	• Funded percentage on AVA basis	52.91%	51.29%
	• Remaining amortization period	17	18
Key assumptions:	• Investment return	7.00%	7.00%
	• Inflation rate	2.30%	2.30%
Demographic data for plan year beginning July 1:	• Number of retired members and beneficiaries	10,106	9,843
	• Number of deferred members as reported by the System	911	887
	• Number of inactive members as reported by the System	2,915	2,710
	• Number of active members	9,955	9,996
	• Total payroll	\$657,934,953	\$645,902,984
	• Average payroll	66,091	64,616
	• Total monthly benefits for all retired members and beneficiaries	18,591,034	17,690,605
	• Average monthly benefit for all retired members and beneficiaries	1,840	1,797

Section 1: Actuarial Valuation Summary

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 System will be determined by the actual benefits and expenses paid and the actual investment experience of the System.

In order to prepare a valuation, 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.
Member data	An actuarial valuation for a plan is based on data provided to the actuary by the State. 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.

Section 1: Actuarial Valuation Summary

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

Actuarial Valuation Results

Member data

The Actuarial Valuation and Review considers the number and demographic characteristics of covered members, including active members, deferred 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: 2012 – 2021

Year Ended June 30	Active Members	Deferred Members ¹	Retired Participants and Beneficiaries	Total Non- Actives	Ratio of Non-Actives to Actives
2012	10,262	793	7,376	8,169	0.80
2013	10,101	751	7,743	8,494	0.84
2014	9,952	740	8,086	8,826	0.89
2015	9,585	1,163	8,484	9,647	1.01
2016	9,919	747	8,763	9,510	0.96
2017	10,028	763	9,021	9,784	0.98
2018	9,892	787	9,269	10,056	1.02
2019	9,862	819	9,514	10,333	1.05
2020	9,996	887	9,843	10,730	1.07
2021	9,955	911	10,106	11,017	1.11

¹ Excludes inactive members as reported by the System.

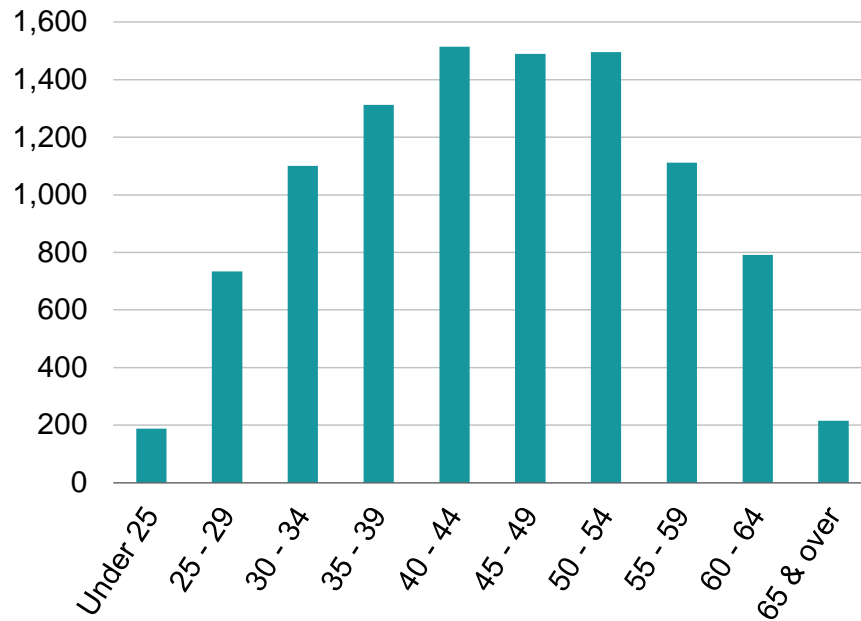
Section 2: Actuarial Valuation Results

Active members

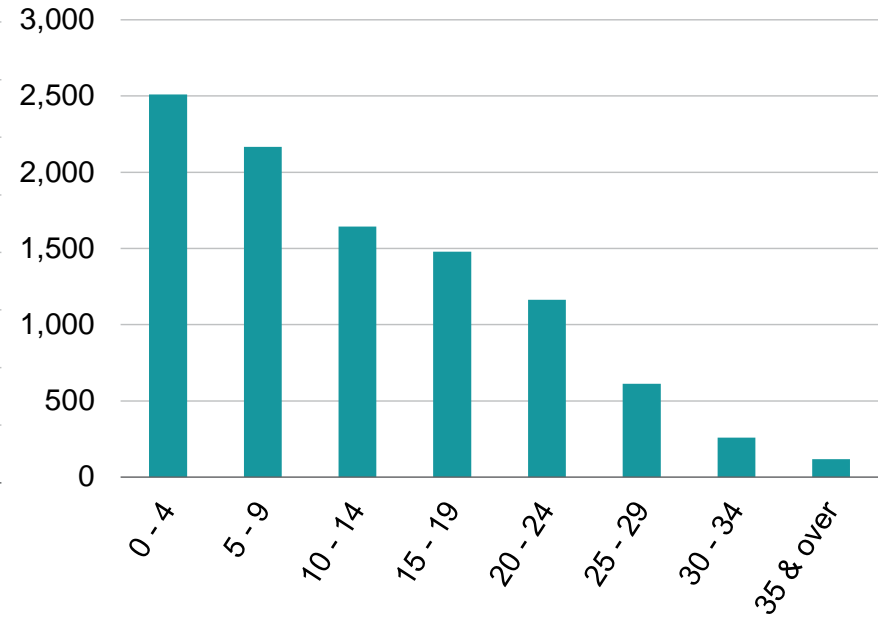
System costs are affected by the age, years of creditable service and payroll of active members. In this year's valuation, there were 9,955 active members with an average age of 45.3, average years of creditable service of 12.3 years, and average payroll of \$66,091. The 9,996 active members in the prior valuation had an average age of 45.4, average service of 12.4 years and average payroll of \$64,616.

Distribution of Active Members as of June 30, 2021

Actives by Age



Actives by Years of Service



Section 2: Actuarial Valuation Results

Inactive and deferred members

In this year's valuation, there were 2,915 inactive members as reported by the System. A member is reported as inactive if they have withdrawn from active employment within the six-year period preceding the valuation date, or if they withdrew prior to the six-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 911 deferred members as reported by the System. A member is reported as deferred if they have withdrawn from active employment prior to the six-year period preceding the valuation date and have a vested right to a deferred or immediate vested benefit.

Section 2: Actuarial Valuation Results

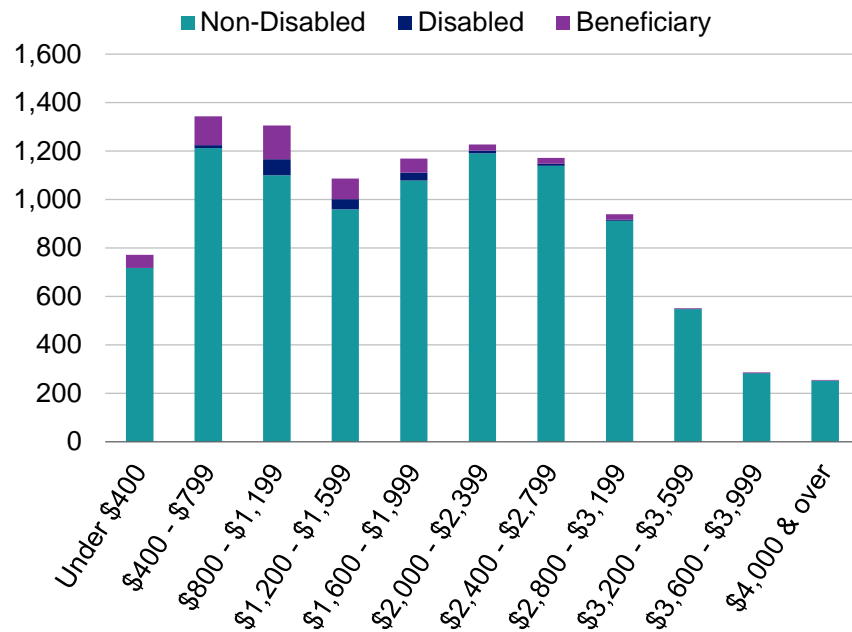
Retired members and beneficiaries

As of June 30, 2021, 9,573 retired members (including disability retirees) and 533 beneficiaries were receiving total monthly benefits of \$18,591,034. For comparison, in the previous valuation, there were 9,340 retired members and 503 beneficiaries receiving monthly benefits of \$17,690,605.

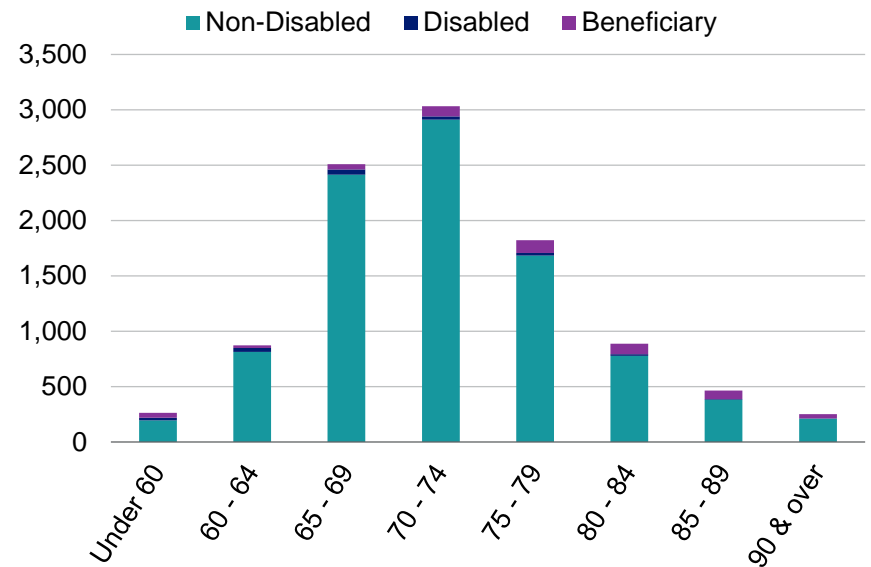
As of June 30, 2021, the average monthly benefit for retired members and beneficiaries is \$1,840, compared to \$1,797 in the previous valuation. The average age for retired members and beneficiaries is 73.0 in the current valuation, compared with 72.5 in the prior valuation.

Distribution of Pensioners as of June 30, 2021

Pensioners by Type and Monthly Amount



Pensioners by Type and Age



Section 2: Actuarial Valuation Results

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.

Member Data Statistics: 2012 – 2021

Year Ended June 30	Active Members			Retired Members*		
	Count	Average Age	Average Service	Count	Average Age	Average Monthly Amount
2012	10,262	46.9	13.1	7,014	--	\$1,482
2013	10,101	46.6	13.1	7,356	--	1,514
2014	9,952	46.5	13.2	7,674	69.7	1,547
2015	9,585	46.2	12.9	8,006	70.0	1,614
2016	9,919	45.9	12.7	8,259	70.8	1,641
2017	10,028	45.8	12.6	8,581	71.2	1,683
2018	9,892	45.7	12.6	8,809	71.7	1,726
2019	9,862	45.7	12.7	9,040	72.1	1,771
2020	9,996	45.4	12.4	9,340	72.5	1,830
2021	9,955	45.3	12.3	9,573	72.8	1,874

* Not including beneficiaries

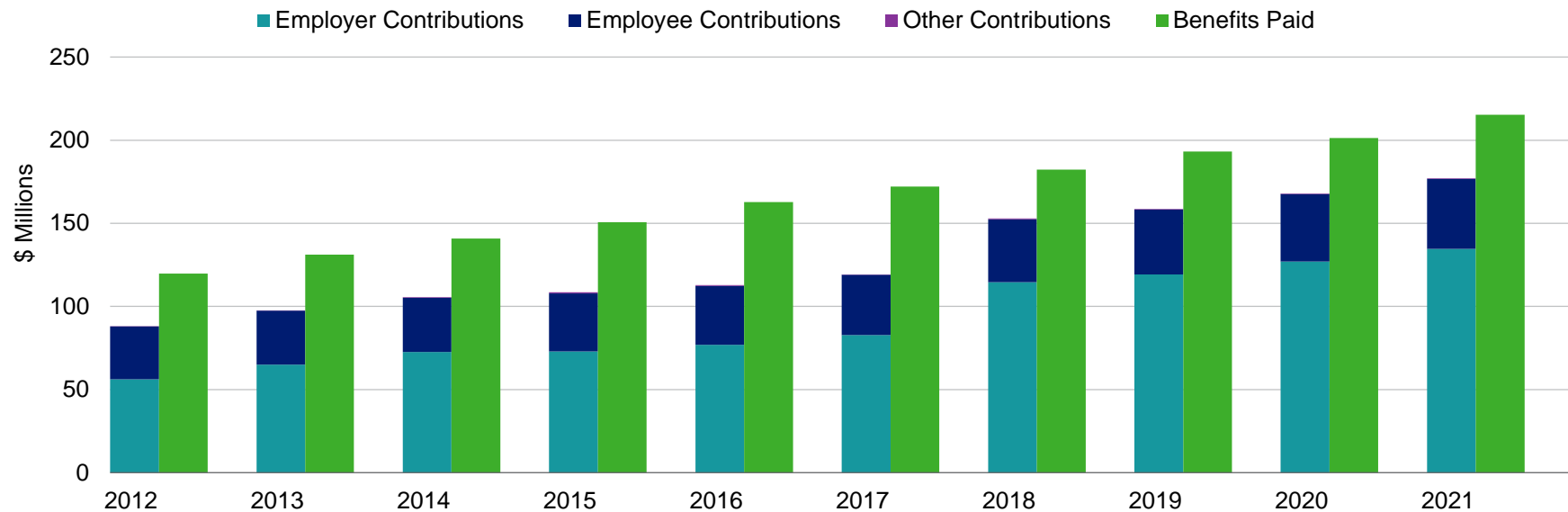
Section 2: Actuarial Valuation Results

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. Benefits have exceeded employer and member contributions for the most recent period shown. Benefits were 1.2 times employer and member contributions.

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, 2012 – 2021



Section 2: Actuarial Valuation Results

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 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, 2021

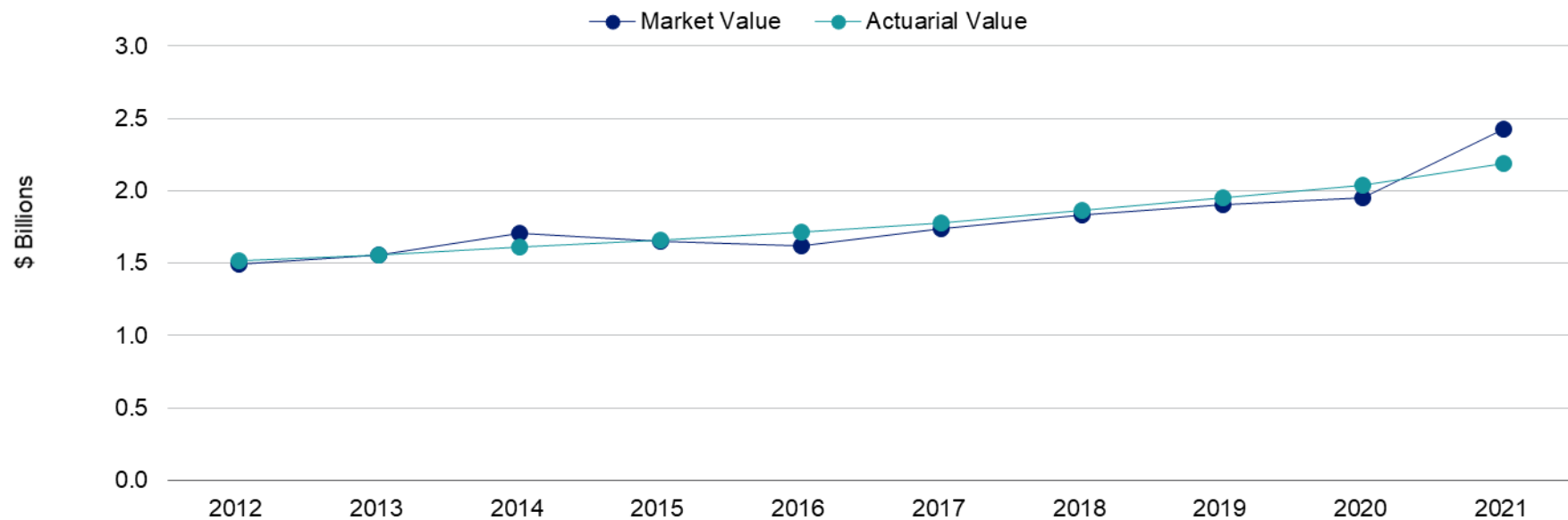
1	Actuarial value of assets, June 30, 2020		\$2,035,713,611
2	Net new money*, including expected investment income (7.00%)		98,151,456
3	Preliminary asset value: 1 + 2		2,133,865,067
4	Smoothing adjustment		
	(a) Market value, June 30, 2021	\$2,422,793,508	
	(b) Preliminary asset value	2,133,865,067	
	(c) Unrecognized appreciation	288,928,441	
	(d) Adjustment	X 20%	57,785,688
5	Actuarial value of assets, June 30, 2021: 3 + 4d		\$2,191,650,755
6	Actuarial value of assets as a percentage of market value: 5 / 4(a)		90.46%

* Net new money is comprised of contributions, interest, and dividends, less benefit payments and expenses.

Section 2: Actuarial Valuation Results

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 System'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, 2012 – 2021



Section 2: Actuarial Valuation Results

Actuarial experience

To calculate the actuarially determined contribution (ADC), 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 ADC will decrease relative to the previous year. On the other hand, the ADC 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 years' 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 gain is \$12,086,774, which includes \$57,785,688 from investment gains and \$45,698,914 in losses from all other sources. The net experience variation from individual sources other than investments was 1.1% 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, 2021

1	Net gain from investments*	\$57,785,688
2	Net loss from other experience	-45,698,914
3	Net experience gain: 1 + 2	\$12,086,774

* Details on next page

Section 2: Actuarial Valuation Results

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 26.64% for the year ended June 30, 2021.

For valuation purposes, the assumed rate of return on the actuarial value of assets for the year ended June 30, 2021, is 7.00%. The actual rate of return on an actuarial basis for the 2021 plan year was 9.87%. Since the actual return for the year was more than the assumed return, the System experienced an actuarial gain during the year ended June 30, 2021, with regard to its investments.

Investment Experience

		Year Ended June 30, 2021	
		Market Value	Actuarial Value
1	Investment income	\$514,152,415	\$198,785,933
2	Average value of assets	1,930,065,488	2,014,289,217
3	Rate of return: $1 \div 2$	26.64%	9.87%
4	Assumed rate of return	7.00%	7.00%
5	Expected investment income: 2×4	\$135,104,584	\$141,000,245
6	Actuarial gain/(loss): $1 - 5$	\$379,047,831	\$57,785,688

Section 2: Actuarial Valuation Results

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 chart below shows the rate of return on an actuarial basis compared to the actual market value investment return for the last 20 years, including averages over select time periods.

Investment Return – Actuarial Value vs. Market Value: 2002 - 2021

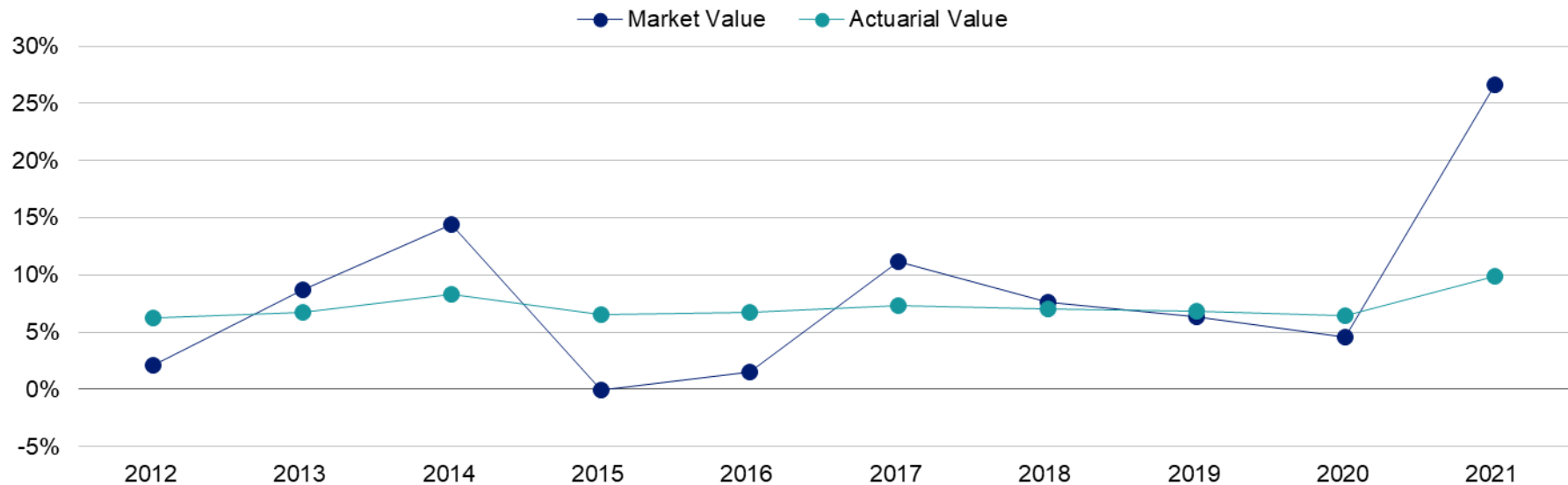
Year Ended June 30	Actuarial Value Investment Return		Market Value Investment Return		Year Ended June 30	Actuarial Value Investment Return		Market Value Investment Return		
	Amount	Percent	Amount	Percent		Amount	Percent	Amount	Percent	
2002	\$74,521,272	6.71%	-\$50,765,984	-4.50%	2012	\$91,041,364	6.25%	\$31,182,310	2.09%	
2003	73,318,724	6.34	57,742,544	5.48	2013	99,823,830	6.72	127,041,593	8.70	
2004	92,527,288	7.68	172,235,639	15.86	2014	125,880,755	8.29	219,532,643	14.44	
2005	102,130,985	8.05	120,839,819	9.83	2015	103,064,276	6.50	-1,244,071	-0.07	
2006	112,662,977	8.44	136,026,631	10.35	2016	110,878,140	6.79	24,710,920	1.52	
2007	148,468,597	10.53	250,776,668	17.74	2017	123,782,547	7.34	178,144,379	11.20	
2008	105,606,299	6.94	-103,733,250	-6.38	2018	122,579,470	7.02	129,866,264	7.61	
2009	-177,198,490	-11.23	-302,070,164	-20.49	2019	126,427,866	6.87	113,804,311	6.30	
2010	90,911,582	6.75	214,806,420	19.22	2020	123,556,188	6.40	85,703,874	4.55	
2011	129,010,590	9.32	268,197,459	20.97	2021	198,785,933	9.87	514,152,415	26.64	
							Most recent five-year average return		7.54%	11.46%
							Most recent ten-year average return		7.25%	8.47%
							Most recent 15-year average return		6.31%	7.39%
							Most recent 20-year average return		6.55%	7.41%

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

Section 2: Actuarial Valuation Results

Section 2, *Financial Information* 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, 2012 - 2021



Section 2: Actuarial Valuation Results

Administrative expenses

There was no provision for administrative expenses in the determination of the actuarially determined contribution for the year ending June 30, 2021.

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 and service increases (greater or smaller than projected).

The net loss from this other experience for the year ended June 30, 2021, amounted to \$45,698,914, which is 1.1% of the actuarial accrued liability.

Experience Gain/(Loss) Due to Changes In Experience Other than Investments for Year Ended June 30, 2021

Net turnover	-\$10,518,767
Retirement	-16,872,089
Mortality	1,761,346
Disability retirements	-560,942
Salary increases and service increases for continuing actives	9,493,027
COLA experience*	-22,593,555
Miscellaneous	-6,407,934
Total	-\$45,698,914

*COLA experience loss is due to actual 2022 COLAs being greater than expected (4.60% actual vs 2.40% expected for Group A members, 2.30% actual vs 1.35% expected for Group C members).

Section 2: Actuarial Valuation Results

Changes in the actuarial accrued liability

The actuarial accrued liability as of June 30, 2021, is \$4,124,014,660, an increase of \$173,011,683, or 4.4%, from the actuarial accrued liability as of the prior valuation date. The liability is expected to grow each year with normal cost and interest, and to decline due to benefit payments made. Additional fluctuations can occur due to actual experience that differs from expected (as discussed previously) and changes in assumptions.

Actuarial assumptions

Effective July 1, 2021, an administrative expense assumption equal to 0.40% of projected payroll was established. Details on actuarial assumptions and methods are in *Section 4, Exhibit I*.

Plan provisions

There were no changes in plan provisions since the prior valuation. A summary of plan provisions is in *Section 4, Exhibit II*.

Section 2: Actuarial Valuation Results

Development of unfunded actuarial accrued liability

Development of Unfunded Actuarial Accrued Liability for Year Ended June 30, 2021

1	Unfunded actuarial accrued liability at beginning of year		\$1,933,289,366
2	Normal cost at beginning of year		72,122,496
3	Total contributions		-177,140,108
4	Interest		
	• For whole year on 1 + 2	\$140,378,830	
	• For half year on 3	<u>-6,199,905</u>	
	Total interest		<u>134,178,925</u>
5	Expected unfunded actuarial accrued liability		\$1,962,450,679
6	Changes due to:		
	• (Gain)/loss	-\$12,086,774	
	• Assumptions	0	
	• Funding method	0	
	• Plan provisions	0	
	Total changes		<u>-12,086,774</u>
7	Unfunded actuarial accrued liability at end of year		\$1,950,363,905

Section 2: Actuarial Valuation Results

Actuarially determined contribution

The actuarially determined contribution is equal to the employer normal cost payment and a payment on the unfunded actuarial accrued liability. 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, 2021, there are 17 years remaining on this schedule.

The actuarially determined contribution for the fiscal year ending June 30, 2022, is \$196,206,504 as determined with the June 30, 2020, actuarial valuation. The results of this June 30, 2021, actuarial valuation are used to determine the actuarially determined contribution for the fiscal year ending June 30, 2023, and to estimate the actuarially determined contribution for the fiscal year ending June 30, 2024, as shown in *Section 2, Projection of actuarially determined contribution for following two fiscal years*.

The preliminary contribution requirement as of July 1, 2021, 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, and actuarial gains and losses.

Preliminary Contribution Requirement

		Year Beginning July 1			
		2021		2020	
		Amount	% of Payroll	Amount	% of Payroll
1	Total normal cost, adjusted for timing*	\$75,935,150	11.01%	\$74,604,090	11.02%
2	Administrative expenses	2,759,765	0.40%	N/A	N/A
3	Expected employee contributions	<u>-37,779,415</u>	<u>-5.48%</u>	<u>-36,835,611</u>	<u>-5.44%</u>
4	Employer normal cost: 1 + 2 + 3	\$40,915,500	5.93%	\$37,768,479	5.58%
5	Actuarial accrued liability	4,142,014,660		3,969,002,977	
6	Actuarial value of assets	<u>2,191,650,755</u>		<u>2,035,713,611</u>	
7	Unfunded actuarial accrued liability: 5 – 6	\$1,950,363,905		\$1,933,289,366	
8	Payment on unfunded actuarial accrued liability, adjusted for timing*	\$158,194,853	22.93%	\$150,629,709	22.24%
9	Preliminary contribution requirement: 4 + 8	\$199,110,353	28.86%	\$188,398,188	27.82%
10	Projected payroll	\$689,941,252		\$677,307,350	

* Contributions are assumed to be paid at the middle of the year.

Section 2: Actuarial Valuation Results

Reconciliation of actuarially determined contribution

The chart below details the changes in the preliminary contribution requirement from the prior valuation to the current year's valuation.

Reconciliation of Preliminary Contribution Requirement from July 1, 2020 to July 1, 2021

	Amount	% of Payroll
Preliminary Contribution Requirement as of July 1, 2020	\$188,398,188	27.82%
• Effect of plan amendment(s)	0	0.00%
• Effect of change in asset method	0	0.00%
• Effect of expected change in amortization payment due to payroll growth	4,518,891	0.67%
• Effect of expected change in amortization method	0	0.00%
• Effect of change in actuarial assumptions	0	0.00%
• Effect of total contributions (more)/less than actuarially determined contribution	4,037,431	0.60%
• Effect of investment (gain)/loss	-4,687,022	-0.69%
• Effect of other gains and losses on accrued liability	3,706,658	0.55%
• Effect of change in administrative expenses	2,759,765	0.40%
• Net effect of other changes, including composition and number of members, payroll*	<u>376,442</u>	<u>-0.49%</u>
Total change	\$10,712,165	1.04%
Preliminary Contribution Requirement as of July 1, 2021	199,110,353	28.86%

* The percent of payroll value includes the effect of the change in projected payroll basis.

Section 2: Actuarial Valuation Results

Amortization schedule for unfunded actuarial accrued liability – schedule of contributions required by statute

A schedule of projected future unfunded actuarial accrued liability payments, calculated as required by state statute, and projected funded percentages is shown below.

Unfunded Liability Amortization Schedule

As of July 1	Balance	Amortization Payment* (Year Following)	Funded Percentage
2021	\$1,950,363,905	\$157,304,971	52.91%
2022	1,924,171,851	163,018,686	54.74%
2023	1,890,236,041	167,909,246	56.85%
2024	1,848,865,889	172,946,524	59.02%
2025	1,799,389,226	178,134,920	61.28%
2026	1,741,082,278	183,478,967	63.62%
2027	1,673,165,918	188,983,336	66.05%
2028	1,594,801,649	194,652,836	68.57%
2029	1,505,087,305	200,492,421	71.19%
2030	1,403,052,443	206,507,194	73.92%
2031	1,287,653,412	212,702,410	76.75%
2032	1,157,768,067	219,083,482	79.70%
2033	1,012,190,116	225,655,987	82.76%
2034	849,623,057	232,425,666	85.95%
2035	668,673,692	239,398,436	89.26%
2036	467,845,183	246,580,389	92.71%
2037	245,529,608	253,977,801	96.29%
2038	0	0	100.00%

* The annual payment to amortize the unfunded actuarial liability is calculated based upon installments increasing at a rate of 3% per year.

Section 2: Actuarial Valuation Results

Projection of actuarially determined contribution for following two fiscal years

On the basis of the June 30, 2021 actuarial valuation, the employer normal cost rate is 5.93%. This rate is applied to the projected payrolls for fiscal 2023 and fiscal 2024 to determine the employer normal cost for each year. The payment on the unfunded liability is added to the employer normal cost to determine the actuarially determined contribution for the fiscal year ending June 30, 2023, and to estimate the actuarially determined contribution for the fiscal year ending June 30, 2024, as shown below. The final actuarially determined contribution for fiscal 2024 will be determined with the next valuation.

Actuarially Determined Contribution: 2023 - 2024

Fiscal Year Ended June 30	Projected Contributions				Total
	Projected Payroll*	Employer Normal Cost Rate	Employer Normal Cost**	Unfunded Liability	
2023	\$710,639,490	5.93%	\$42,142,965	\$163,018,686	\$205,161,651
2024	731,958,674	5.93%	43,407,253	167,909,246	211,316,499

* In these projections, total payroll is assumed to increase by 3% each year.

**As time goes on, more employees will contribute at 6% versus 5%, increasing the average employee contribution rate. The portion of normal cost paid by employees will increase in future years, lowering the employer's normal cost and percentage of payroll from what is shown.

Pursuant to Section 1944, subsection (b)(2), of Title 16, Chapter 55, Vermont Statutes Annotated, if expected employee contributions were 5.00% for all Group C active members, the employer normal cost rate would be 6.41%, which would result in an employer normal cost for fiscal 2023 of \$45,523,788 and a total employer contribution requirement of \$208,542,474. For fiscal 2024, the total employer contribution requirement would be \$214,798,747.

Section 2: Actuarial Valuation Results

History of employer contributions

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

History of Employer Contributions: 2013 – 2022

Fiscal Year Ended June 30	Actuarially Determined Contribution		Actual Employer Contribution		
	Amount*	Percentage of Payroll**	Amount	Percentage of Payroll**	Percent Contributed
2013	\$60,182,755	10.51%	\$65,086,320	11.37%	108.15%
2014	68,352,825	11.66%	72,668,412	12.39%	106.31%
2015	72,857,863	12.37%	72,908,805	12.38%	100.07%
2016	76,102,909	12.84%	76,947,869	12.98%	101.11%
2017	82,659,576	14.39%	82,887,174	14.43%	100.28%
2018	88,409,437	14.64%	114,598,921	18.97%	129.62%
2019	105,640,777	16.13%	119,174,913	18.20%	112.81%
2020	126,197,389	19.30%	126,941,582	19.41%	100.59%
2021	132,141,701	19.51%	134,541,278	19.86%	101.82%
2022	196,206,504	28.44%	--	--	--

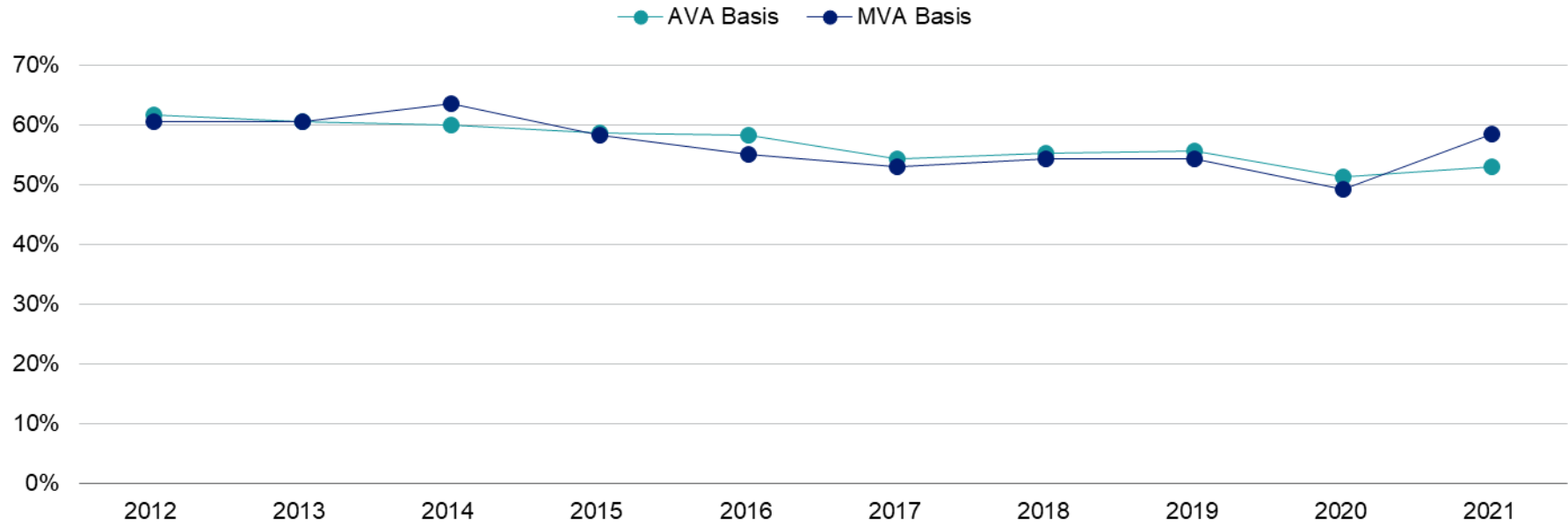
* Budgeted contribution amount from prior valuation report

** Based on expected payroll

Section 2: Actuarial Valuation Results

History of funded percentage

A history of the most recent years of funded percentage as of June 30th is shown below.



Section 2: Actuarial Valuation Results

Actuarial balance sheet

An overview of the System'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 System 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 System.

Second, this liability is compared to the assets. The "assets" for this purpose include the net amount of assets already accumulated by the System, 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, 2021	June 30, 2020
Liabilities		
• Present value of benefits for retired members and beneficiaries	\$2,543,976,588	\$2,411,640,367
• Present value of benefits for inactive former members	143,201,579	120,513,399
• Present value of benefits for active members	<u>2,252,744,554</u>	<u>2,216,322,707</u>
Total liabilities	\$4,939,922,721	\$4,748,476,473
Assets		
• Total valuation value of assets	\$2,191,650,755	\$2,035,713,611
• Present value of future contributions by members	423,798,620	411,069,057
• Present value of future employer contributions for:		
• Entry age cost	374,109,441	368,404,439
• Unfunded actuarial accrued liability	<u>1,950,363,905</u>	<u>1,933,289,366</u>
Total of current and future assets	\$4,939,922,721	\$4,748,476,473

Section 2: Actuarial Valuation Results

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.

In 2019, the Board engaged Segal to perform a detailed analysis of the potential range of the impact of risks relative to the System's future financial condition. This study included an overview of risks that affect the System and stakeholders, as well as various stochastic and deterministic modeling scenarios, primarily focusing on investment returns.

Below is a brief discussion of some of the risks that may affect the System. This discussion is focused on funding-related risks, but similar concerns may apply to risks regarding the level of expense and liabilities reported for System accounting purposes as well.

A detailed risk assessment is important for VSTRS because:

- The negative cash flow position of the System could be exacerbated by relatively small deviations from assumed future experience.
- Retired and inactive members account for more than half of the System's liabilities limiting options for reducing plan liabilities in the event of adverse experience.
- Most actuarial assumptions have been revised and updated since the last detailed risk analysis was performed.
- The risks identified below show significant potential for variability.

The following risks could significantly affect the System'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 \$242.3 million in the asset value. A 10% increase in assets would cause the unfunded liability (market value basis) to decrease from \$1.719 billion to \$1.477 billion. Likewise, a 10% decrease in the asset value, would cause the unfunded liability to increase from \$1.719 billion to \$1.961 billion.

Since the System'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 0.28%, disregarding the effects of the five-year phase-in of investment gains and losses.

Section 2: Actuarial Valuation Results

To illustrate the potential for future investment volatility, the market value rate of return over the last 14 years has ranged from a low of -20.49% to a high of 26.64%.

- **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 VSTRS, a 3% liability increase would result in an increase in the unfunded accrued liability of \$124.3 million. The unfunded accrued liability (market value of assets basis) would increase from \$1.719 billion to \$1.843 billion.

- **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 System's actual experience. Over the past 14 years:
 - The investment gain(loss) for a year (actuarial basis) has ranged from a loss of \$312.7 million to a gain of \$57.8 million.
 - The non-investment gain(loss) for a year has ranged from a loss of \$86.0 million to a gain of \$30.2 million.
- The funded percentage on the actuarial value of assets has ranged from a low of 51.29% to a high of 61.61% over the past ten years.

Section 2: Actuarial Valuation Results

- **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 0.80 to a high of 1.11. Currently the System has a non-active to active member ratio of 1.11.
- As of June 30, 2021, the retired life actuarial accrued liability represents 63% of the total actuarial accrued liability. In addition, the actuarial accrued liability for inactive members represents 3% 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 \$38.1 million more than contributions received, or 1.6% of the market value of assets. As the System matures, more cash will be needed from the investment portfolio to meet benefit payments.

Supplemental Information

Exhibit A: Table of Plan Coverage

Category	Year Ended June 30		Change From Prior Year
	2021	2020	
Active members in valuation:			
• Number	9,955	9,996	-0.4%
• Average age	45.3	45.4	-0.1
• Average years of service	12.3	12.4	-0.1
• Total payroll	\$657,934,953	\$645,902,984	1.9%
• Average payroll	66,091	64,616	2.3%
• Total active vested members	7,486	7,463	0.3%
Inactive members:			
• Number of deferreds as reported by the System	911	887	2.7%
• Number of inactives as reported by the System	2,915	2,710	7.6%
Retired members:			
• Number in pay status	9,392	9,164	2.5%
• Average age	72.9	72.5	0.4
• Average monthly benefit	\$1,881	\$1,838	2.3%
Disabled retirees:			
• Number in pay status	181	176	2.8%
• Average age	69.5	68.9	0.6
• Average monthly benefit	\$1,476	\$1,443	2.3%
Beneficiaries:			
• Number in pay status	533	503	6.0%
• Average age	75.1	74.1	1.0
• Average monthly benefit	\$1,229	\$1,188	3.5%

Section 3: Supplemental Information

Exhibit B: Reconciliation of Member Data

	Active Members	Deferred	Inactives	Disability Retirees	Retired Members	Beneficiaries	Total
Number as of July 1, 2020	9,996	887	2,710	176	9,164	503	23,436
• New members	651	N/A	141	0	8	N/A	800
• Inactives as reported by the System	-704	1	703	N/A	N/A	N/A	0
• Deferreds as reported by the System	N/A	90	-90	N/A	N/A	N/A	0
• Retirements	-322	-51	-36	N/A	409	N/A	0
• New disabilities	-4	-1	-3	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	0	-41	41	0
• Died without beneficiary	-4	0	-2	-3	-146	-14	-169
• Refund of contributions	-16	-4	-163	0	0	0	-183
• Rehire	358	-14	-344	N/A	0	N/A	0
• Certain period expired	N/A	N/A	0	0	0	-3	-3
• Data adjustments	0	3	-1	0	-2	6	6
Number as of July 1, 2021	9,955	911	2,915	181	9,392	533	23,887

Section 3: Supplemental Information

Exhibit C: Summary Statement of Income and Expenses on a Market Value Basis

	Year Ended June 30, 2021	Year Ended June 30, 2020
Net assets at market value at the beginning of the year	\$1,951,489,882	\$1,904,488,565
Contribution income:		
• Employer contributions	\$134,541,278	\$126,941,582
• Member contributions	42,199,015	40,598,283
• Less administrative expenses	<u>-2,782,425</u>	<u>-2,814,955</u>
<i>Net contribution income</i>	<i>\$173,957,868</i>	<i>\$164,724,910</i>
Net other income	\$399,815	\$408,259
Investment income:		
• Interest, dividends and other income	\$17,570,208	\$17,643,553
• Asset appreciation	496,582,207	68,060,321
• Less investment fees	<u>-1,957,965</u>	<u>-2,598,556</u>
<i>Net investment income</i>	<i>\$512,194,450</i>	<i>\$83,105,318</i>
Total income available for benefits	\$686,552,133	\$248,238,487
Less benefit payments:		
• Benefits	-\$212,698,779	-\$198,755,235
• Refunds of contributions	-2,042,368	-1,885,974
• Death claims	-507,360	-546,743
• Transfers to other pension trust funds	<u>-0</u>	<u>-49,218</u>
<i>Net benefit payments</i>	<i>-\$215,248,507</i>	<i>-\$201,237,170</i>
Change in reserve for future benefits	\$471,303,626	\$47,001,317
Net assets at market value at the end of the year	\$2,422,793,508	\$1,951,489,882

Section 3: Supplemental Information

Exhibit D: Summary Statement of Plan Assets

	June 30, 2021	June 30, 2020
Cash equivalents	\$11,797,678	\$23,670,208
Total accounts receivable	19,400,599	52,652,312
Prepaid expenses	76,010	72,007
Capital assets, net of depreciation	897,908	1,176,697
Investments:		
• Fixed income	\$110,930,797	\$130,276,831
• Equities	255,489,651	145,129,679
• Mutual and commingled funds	1,625,049,631	1,399,433,006
• Real estate and venture capital	<u>415,531,154</u>	<u>258,638,945</u>
Total investments at market value	\$2,407,001,233	\$1,933,478,461
Total assets	\$2,439,173,428	\$2,011,049,685
Total liabilities	-\$16,379,920	-\$59,559,803
Net assets at market value	\$2,422,793,508	\$1,951,489,882
Net assets at actuarial value	\$2,191,650,755	\$2,035,713,611

Section 3: Supplemental Information

Exhibit E: Development of the Fund through June 30, 2021

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
2011	\$50,268,131	\$32,062,253	\$208,107	\$261,886,312	-\$20,149,407	-\$108,758,513	\$1,520,766,932	\$1,486,698,448	97.76%
2012	56,152,011	31,827,995	85,110	24,726,665	-22,224,879	-119,713,933	1,491,619,901	1,517,410,471	101.73%
2013	65,086,320	32,343,368	292,953	120,403,032	-24,139,941	-131,254,070	1,554,351,563	1,552,924,370	99.91%
2014	72,668,413	32,558,584	410,500	212,338,194	-26,115,813	-140,846,837	1,705,364,604	1,610,285,523	94.42%
2015	72,908,805	34,863,531	830,887	-7,566,696	-2,551,845	-150,732,845	1,653,116,441	1,662,345,707	100.56%
2016	76,947,869	35,408,763	464,668	19,877,270	-2,163,853	-162,751,409	1,620,899,749	1,716,296,235	105.89%
2017	82,887,174	36,142,411	241,526	173,166,614	-2,623,838	-172,156,063	1,738,557,573	1,779,592,227	102.36%
2018	114,598,921	37,888,566	468,500	125,566,281	-2,448,365	-182,258,923	1,832,372,553	1,866,120,413	101.84%
2019	119,174,913	39,075,342	348,096	109,429,147	-2,714,661	-193,196,825	1,904,488,565	1,950,859,980	102.43%
2020	126,941,582	40,598,283	408,259	83,105,318	-2,814,955	-201,237,170	1,951,489,882	2,035,713,611	104.32%
2021	134,541,278	42,199,015	399,815	512,194,450	-2,782,425	-215,248,507	2,422,793,508	2,191,650,755	90.46%

* On a market basis, net of investment fees

** Includes depreciation and health/life insurance expenses (2014 and prior)

*** Includes "other expenses"

Section 3: Supplemental Information

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:	Actuarial Present Value of lifetime benefits to existing pensioners and beneficiaries. This sum takes account of life expectancies appropriate to the ages of the annuitants 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>

Section 3: Supplemental Information

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 System'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 intended to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

Section 3: Supplemental Information

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; <u>Mortality rates</u> - the death rates of employees and pensioners; life expectancy is based on these rates; <u>Retirement rates</u> - the rate or probability of retirement at a given age; <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; <u>Salary increase rates</u> - the rates of salary increase due to inflation and productivity growth.
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 Ratio:	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.

Section 3: Supplemental Information

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.

Actuarial Valuation Basis

Exhibit I: Actuarial Assumptions, Methods, and Models

Rationale for Assumptions:	The information and analysis used in selecting each assumption that has a significant effect on this actuarial valuation is shown in the Actuarial Experience Study dated September 24, 2020 (as prepared by Segal).	
Inflation:	2.30%	
Investment Return:	7.00%	
	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 System's target asset allocation.	
Salary Increases:	Age	Annual Rate of Salary Increase (%)
	20	10.50%
	25	9.50%
	30	6.50%
	35	5.95%
	40	5.30%
	45	4.50%
	50	4.20%
	55	3.80%
	60	3.55%
Cost-of-Living Adjustments:	Assumed to occur on January 1 following one year of retirement at the rate of 2.40% per annum for Group A members and 1.35% per annum for Group B and C members (beginning at age 62 for Group C members who elect reduced early retirement). The January 1, 2022 COLA is expected to be 4.60% for Group A and 2.30% for Groups B and C.	

Section 4: Actuarial Valuation Basis

Mortality Rates:

Pre-retirement:

- All Groups PubT-2010 Teacher Employee Amount-Weighted Table with generational projection using scale MP-2019.

Healthy Post-retirement - Retirees:

- All Groups PubT-2010 Teacher Healthy Retiree Amount-Weighted Table with generational projection using scale MP-2019.

Healthy Post-retirement - Beneficiaries:

- All Groups 109% of the Pub-2010 Contingent Survivor Amount-Weighted Table with generational projection using scale MP-2019.

Disabled Post-retirement:

- All Groups PubNS-2010 Non-Safety Disabled Retiree Amount-Weighted Mortality Table with generational projection using scale MP-2019.

The tables with the generational projection to the ages of members as of the measurement date reasonably reflect the mortality experience of the System as of the measurement date. The mortality tables were then adjusted to future years using the generational projection to reflect future mortality improvement between the measurement date and those years.

Separation from Service before Retirement (Due to Withdrawal and Disability):

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

Age	Rate (%)			
	Withdrawal		Disability	
	Male	Female	Male	Female
25	7.80%	8.30%	0.005%	0.008%
30	5.20	5.40	0.007	0.008
35	3.10	3.25	0.009	0.008
40	2.20	2.15	0.014	0.011
45	1.85	1.66	0.023	0.024
50	1.75	1.54	0.060	0.074
55	1.60	1.50	0.040	0.050
60	1.50	1.50	0.132	0.088

Section 4: Actuarial Valuation Basis

Retirement Rates:

Age	Group A		Group C Grandfathered	
	<30 Years of Service	30+ Years of Service	<30 Years of Service	30+ Years of Service
50	0.00%	40.00%	0.000%	40.00%
51	0.00%	20.00%	0.000%	20.00%
52	0.00%	20.00%	0.000%	20.00%
53	0.00%	20.00%	0.000%	20.00%
54	0.00%	20.00%	0.000%	20.00%
55	7.50%	20.00%	6.125%	10.00%
56	7.50%	10.00%	6.250%	10.00%
57	7.50%	10.00%	6.250%	10.00%
58	7.50%	10.00%	6.250%	10.00%
59	12.50%	10.00%	9.375%	15.00%
60	30.00%	100.00%	18.750%	25.00%
61	25.00%	100.00%	18.750%	17.00%
62	30.00%	100.00%	20.000%	100.00%
63	30.00%	100.00%	22.000%	100.00%
64	30.00%	100.00%	22.000%	100.00%
65	40.00%	100.00%	33.000%	100.00%
66	40.00%	100.00%	33.000%	100.00%
67	40.00%	100.00%	33.000%	100.00%
68	50.00%	100.00%	22.000%	100.00%
69	50.00%	100.00%	33.000%	100.00%
70+	100.000%	100.00%	100.000%	100.00%

Section 4: Actuarial Valuation Basis

Retirement Rates (continued):

Age	Group C Non-Grandfathered		
	Before Rule of 90	1 st Year after Rule of 90	1+ Years after Rule of 90
<56	5.00%	30.00%	20.00%
56	5.00%	30.00%	10.00%
57	5.00%	30.00%	10.00%
58	5.00%	30.00%	10.00%
59	7.50%	30.00%	15.00%
60	10.00%	30.00%	15.00%
61	15.00%	30.00%	20.00%
62	12.50%	30.00%	22.50%
63	20.00%	30.00%	22.50%
64	20.00%	30.00%	25.00%
65	40.00%	30.00%	40.00%
66	30.00%	30.00%	30.00%
67	30.00%	30.00%	30.00%
68	30.00%	30.00%	30.00%
69	30.00%	30.00%	30.00%
70+	100.00%	100.00%	100.00%

Inactive Members as Reported by the System:

Not Vested: Valuation liability equals 100% of accumulated contributions.

Vested: Valuation liability based on accrued benefit and assumed to retire as follows:

- Group A and Group C-NGF: 10% of members are assumed to retire from Early Retirement Age for each year until Normal Retirement Age, then 100% of members are assumed to retire at their Normal Retirement Age.
- Group C-GF: 50% of members are assumed to retire from age 62-69, then 100% at age 70.

Deferred Members as Reported by the System:

Valuation liability based on accrued benefit and assumed to retire as follows:

- Group A and Group C-NGF: 10% of members are assumed to retire from Early Retirement Age for each year until Normal Retirement Age, then 100% of members are assumed to retire at their Normal Retirement Age.
- Group C-GF: 50% of members are assumed to retire from age 62-69, then 100% at age 70.

Section 4: Actuarial Valuation Basis

Future Administrative Expenses:	0.40% of projected payroll.
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 35% of female members are assumed to be married.
Age of Spouse:	Females three years younger than males.
Benefit Elections:	All members are assumed to elect the single life annuity option.
Actuarial Value of Assets:	The amount of the assets for valuation purposes equals the preliminary asset value plus 20% of the difference between 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 plus expected investment income. If necessary, a further adjustment is made to ensure that the valuation assets are within 20% of the market value.
Actuarial Cost Method:	Entry Age Actuarial Cost Method. Entry Age is the age at date of employment or, if date is unknown, current age minus years of service. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are allocated by salary, with Normal Cost determined using the plan of benefits applicable to each member.
Modeling:	Segal valuation results are based on proprietary actuarial modeling software. The actuarial valuation models generate a comprehensive set of liability and cost calculations that are presented to meet regulatory, legislative and client requirements. Deterministic cost projections are based on a proprietary forecasting model. Our Actuarial Technology and Systems unit, comprised of both actuaries and programmers, is responsible for the initial development and maintenance of these models. The models have a modular structure that allows for a high degree of accuracy, flexibility and user control. The client team programs the assumptions and the plan provisions, validates the models, and reviews test lives and results, under the direction of the supervising actuary.
Justification for Changes in Actuarial Assumptions:	Effective July 1, 2021, an administrative expenses assumption equal to 0.40% of projected payroll was established.

Section 4: Actuarial Valuation Basis

Exhibit II: Summary of Plan Provisions

This exhibit summarizes the major provisions of the System 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, 1947.				
Creditable Service:	Service as a member plus purchased service.				
Average Final Compensation (AFC):	<ul style="list-style-type: none"> Average annual compensation during highest 3 consecutive years. 				
Grandfathered Status:	<ul style="list-style-type: none"> Group C members who were within five years of normal retirement eligibility as defined prior to July 1, 2010, are “grandfathered”. 				
Normal Retirement - Eligibility:	<ul style="list-style-type: none"> Group A Age 60 or 30 years of creditable service. Group C <table border="0"> <tr> <td>Grandfathered</td> <td>Age 62 or 30 years of creditable service</td> </tr> <tr> <td>Non-grandfathered</td> <td>Age 65 or age plus creditable service equal to 90.</td> </tr> </table> 	Grandfathered	Age 62 or 30 years of creditable service	Non-grandfathered	Age 65 or age plus creditable service equal to 90.
Grandfathered	Age 62 or 30 years of creditable service				
Non-grandfathered	Age 65 or age plus creditable service equal to 90.				
Normal Retirement - Amount:	<ul style="list-style-type: none"> Group A Member annuity based on accumulated contributions plus a pension, which, with member annuity, equals 1/60th of AFC times creditable service. Group C <table border="0"> <tr> <td>Grandfathered</td> <td>Member annuity based on accumulated contributions plus a pension, which, with member annuity, equals 1/80th of AFC times creditable service prior to July 1, 1990, plus 1/60th of AFC times creditable service after July 1, 1990.</td> </tr> <tr> <td>Non-grandfathered</td> <td>Member annuity based on accumulated contributions plus a pension, which, with member annuity, equals 1/80th of AFC times creditable service prior to July 1, 1990, plus 1/60th of AFC times creditable service after July 1, 1990 up to 20 years of service, plus 1/50th of AFC for years of service after 20. If a member already has 20 or more years of service on June 30, 2010, the 1/50th will be applied to all service accrued after July 1, 2010.</td> </tr> </table> <p>Minimum benefit applicable to Group A of \$6,600 after 30 years of creditable service (pro-rata for service less than 30 years).</p> <p>Maximum benefit applicable to Group C: Grandfathered maximum benefit is 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 maximum benefit is 60% of AFC.</p>	Grandfathered	Member annuity based on accumulated contributions plus a pension, which, with member annuity, equals 1/80 th of AFC times creditable service prior to July 1, 1990, plus 1/60 th 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 th of AFC times creditable service prior to July 1, 1990, plus 1/60 th of AFC times creditable service after July 1, 1990 up to 20 years of service, plus 1/50 th of AFC for years of service after 20. If a member already has 20 or more years of service on June 30, 2010, the 1/50 th will be applied to all service accrued after July 1, 2010.
Grandfathered	Member annuity based on accumulated contributions plus a pension, which, with member annuity, equals 1/80 th of AFC times creditable service prior to July 1, 1990, plus 1/60 th 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 th of AFC times creditable service prior to July 1, 1990, plus 1/60 th of AFC times creditable service after July 1, 1990 up to 20 years of service, plus 1/50 th of AFC for years of service after 20. If a member already has 20 or more years of service on June 30, 2010, the 1/50 th will be applied to all service accrued after July 1, 2010.				
Early Retirement – Eligibility:	<ul style="list-style-type: none"> Group A Age 55. Group C Age 55 with 5 years of creditable service. 				

Section 4: Actuarial Valuation Basis

Early Retirement – Amount:	<ul style="list-style-type: none"> Group A Actuarial equivalent of normal retirement allowance using AFC and creditable service at early retirement. Group C Grandfathered Accrued normal benefit reduced 6% for each year prior to age 62. Non-grandfathered Accrued normal benefit reduced by actuarial reduction from normal retirement age.
Vesting:	<ul style="list-style-type: none"> All groups – 5 years of creditable service. Allowance beginning at age 60 calculated as a normal retirement allowance based on AFC and creditable service at termination.
Disability Retirement - Eligibility:	All groups – Total and permanent disability after 5 years of creditable service (5 years preceding retirement served in State).
Disability Retirement - Amount:	All groups – Calculated as a service allowance based on AFC and creditable service at disability retirement, subject to a 25% of AFC minimum.
Death Benefit - Eligibility:	<ul style="list-style-type: none"> 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.
Death Benefit - Amount:	All groups – 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.
Post-Retirement Adjustments:	<ul style="list-style-type: none"> Group A Allowances in payment for at least one year increased on each January 1 by the percentage increase in Consumer Price Index, but not more than 5%. Groups B & C Same, but increase is based on half of the Consumer Price Index increase. For members receiving a reduced early retirement allowance, the adjustment will not apply before age 62.
Refund of Contributions:	If no other beneficiary is payable, a terminated member receives his accumulated contributions with interest.
Member Contribution Rates:	<ul style="list-style-type: none"> 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.
Changes in Plan Provisions:	There have been no changes in plan provisions since the last valuation.

Additional Summary Tables of Member Data

Table 1: Members in Active Service as of June 30, 2021 by Age, Years of Service, and Average Payroll – All Employee Groups

Age	Years of Service								
	Total	0-4	5-9	10-14	15 - 19	20 - 24	25 - 29	30 - 34	35 & over
Under 25	189	189	--	--	--	--	--	--	--
	\$41,005	\$41,005	--	--	--	--	--	--	--
25 - 29	734	564	170	--	--	--	--	--	--
	\$48,002	\$46,875	\$51,741	--	--	--	--	--	--
30 - 34	1,102	464	535	103	--	--	--	--	--
	\$54,597	\$50,616	\$56,424	\$63,040	--	--	--	--	--
35 - 39	1,314	340	463	420	91	--	--	--	--
	\$61,007	\$53,338	\$60,449	\$65,725	\$70,723	--	--	--	--
40 - 44	1,516	337	325	388	375	91	--	--	--
	\$66,507	\$53,790	\$63,942	\$69,208	\$74,223	\$79,442	--	--	--
45 - 49	1,488	229	257	229	361	355	57	--	--
	\$71,164	\$55,900	\$62,553	\$71,133	\$76,624	\$79,386	\$85,651	--	--
50 - 54	1,494	176	200	228	261	311	264	54	--
	\$74,490	\$60,531	\$66,188	\$70,225	\$77,661	\$79,363	\$83,208	\$82,735	--
55 - 59	1,115	109	108	150	205	211	186	131	15
	\$75,289	\$59,564	\$64,878	\$70,803	\$74,573	\$78,933	\$84,538	\$83,319	\$83,103
60 - 64	789	75	85	100	151	160	88	79	51
	\$72,983	\$60,165	\$61,060	\$68,013	\$70,760	\$78,318	\$84,132	\$79,973	\$81,221
65 & over	214	28	24	26	34	36	18	12	36
	\$70,502	\$50,516	\$60,109	\$65,452	\$69,580	\$76,785	\$76,895	\$84,809	\$83,247
Total	9,955	2,511	2,167	1,644	1,478	1,164	613	276	102
	\$66,091	\$51,696	\$60,316	\$68,354	\$74,789	\$79,075	\$83,786	\$82,312	\$82,213

Section 5: Additional Summary Tables of Member Data

Table 2: Summary of Retired Members and Beneficiary Data by Benefit Amount – All Teachers

Allowance Level	Service Pensioners		Disability Pensioners		Beneficiaries	
	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
0 – 500	7	\$899	0	\$0	1	\$352
501 – 1,000	7	5,264	0	0	1	752
1,001 – 1,500	25	31,728	0	0	2	2,660
1,501 – 2,000	32	57,135	0	0	5	8,738
2,001 – 2,500	76	172,761	0	0	8	17,545
2,501 – 3,000	103	285,849	0	0	11	29,692
3,001 – 3,500	115	371,931	0	0	7	23,275
3,501 – 4,000	124	464,804	0	0	6	23,004
4,001 – 4,500	139	593,176	0	0	10	42,385
4,501 – 5,000	135	639,177	0	0	11	53,244
5,001 – 5,500	150	786,499	0	0	11	59,095
5,501 – 6,000	150	863,362	0	0	9	52,529
6,001 – 6,500	121	756,115	0	0	10	62,716
6,501 – 7,000	131	884,589	0	0	10	67,496
7,001 – 7,500	139	1,006,798	2	14,507	15	108,184
7,501 – 8,000	107	830,500	1	7,865	12	93,085
8,001 – 8,500	110	907,006	3	24,886	16	132,919
8,501 – 9,000	124	1,084,792	0	0	8	70,239
9,001 – 9,500	107	991,503	3	27,660	19	177,015
9,501 – 10,000	139	1,354,512	5	48,525	20	195,442
10,001 – 10,500	121	1,243,296	6	61,516	13	133,286
10,501 – 11,000	96	1,031,476	8	86,158	15	162,261
11,001 – 11,500	125	1,406,072	10	113,726	18	202,499
11,501 – 12,000	138	1,623,145	6	70,731	13	152,785
12,001 – 12,500	121	1,480,000	10	122,861	14	171,956
12,501 – 13,000	120	1,531,224	5	63,942	14	178,345
13,001 – 13,500	90	1,191,493	3	39,791	18	237,833
13,501 – 14,000	102	1,405,171	6	82,564	9	123,250
14,001 – 14,500	94	1,340,029	10	142,591	9	128,078
14,501 – 15,000	101	1,491,282	5	73,872	10	147,506

Section 5: Additional Summary Tables of Member Data

Table 2: Summary of Retired Members and Beneficiary Data by Benefit Amount – All Teachers (continued)

Allowance Level	Service Pensioners		Disability Pensioners		Beneficiaries	
	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
15,001 – 15,500	95	\$1,448,972	4	\$61,448	8	\$122,642
15,501 – 16,000	99	1,558,752	5	79,065	9	141,210
16,001 – 16,500	100	1,627,451	5	81,593	9	146,818
16,501 – 17,000	88	1,473,206	6	100,647	7	116,653
17,001 – 17,500	102	1,759,112	3	51,668	14	242,171
17,501 – 18,000	107	1,899,716	6	106,183	7	124,191
18,001 – 18,500	97	1,770,017	3	55,017	7	127,384
18,501 – 19,000	103	1,931,603	4	75,057	8	150,061
19,001 – 19,500	109	2,096,221	4	77,417	8	154,145
19,501 – 20,000	107	2,111,086	2	39,708	7	138,407
20,001 – 20,500	98	1,985,528	1	20,388	6	120,910
20,501 – 21,000	106	2,198,931	6	124,248	7	144,954
21,001 – 21,500	91	1,934,591	3	63,375	9	191,014
21,501 – 22,000	111	2,413,234	3	65,184	7	153,030
22,001 – 22,500	113	2,512,275	4	88,892	6	133,524
22,501 – 23,000	126	2,864,239	3	68,520	4	91,034
23,001 – 23,500	124	2,879,767	4	93,019	6	138,974
23,501 – 24,000	143	3,400,519	4	95,462	1	23,699
24,001 – 24,500	152	3,688,676	1	24,353	2	48,504
24,501 – 25,000	127	3,143,351	1	24,729	0	0
25,001 – 25,500	117	2,953,215	0	0	3	75,854
25,501 – 26,000	134	3,450,296	1	25,789	1	25,516
26,001 – 26,500	99	2,597,341	3	78,937	5	130,865
26,501 – 27,000	124	3,317,909	1	26,536	3	80,585
27,001 – 27,500	123	3,348,885	0	0	3	82,010
27,501 – 28,000	126	3,494,000	3	83,284	1	27,573
28,001 – 28,500	126	3,559,380	1	28,353	3	84,714
28,501 – 29,000	117	3,365,570	0	0	6	172,312
29,001 – 29,500	143	4,180,322	0	0	2	58,967
29,501 – 30,000	122	3,628,231	2	59,286	7	209,029

Section 5: Additional Summary Tables of Member Data

Table 2: Summary of Retired Members and Beneficiary Data by Benefit Amount – All Teachers (continued)

Allowance Level	Service Pensioners		Disability Pensioners		Beneficiaries	
	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
30,001 – 30,500	135	\$4,083,384	3	\$90,672	3	\$91,344
30,501 – 31,000	114	3,504,558	0	0	0	0
31,001 – 31,500	111	3,468,541	0	0	2	62,890
31,501 – 32,000	114	3,618,283	1	31,980	0	0
32,001 – 32,500	106	3,417,903	1	32,260	1	32,038
32,501 – 33,000	110	3,602,719	1	32,526	3	98,116
33,001 – 33,500	104	3,455,084	0	0	4	132,894
33,501 – 34,000	114	3,848,034	1	33,554	2	67,373
34,001 – 34,500	110	3,764,159	0	0	3	103,093
34,501 – 35,000	99	3,442,545	2	69,280	2	69,409
35,001 – 35,500	107	3,772,196	1	35,154	2	70,614
35,501 – 36,000	112	4,002,696	1	35,807	2	71,718
36,001 – 36,500	97	3,516,565	0	0	3	109,154
36,501 – 37,000	78	2,865,834	0	0	0	0
37,001 – 37,500	81	3,017,279	0	0	1	37,208
37,501 – 38,000	82	3,097,134	1	37,742	4	151,419
38,001 – 38,500	65	2,483,930	0	0	3	114,630
38,501 – 39,000	76	2,943,048	0	0	0	0
39,001 – 39,500	74	2,903,358	0	0	0	0
39,501 – 40,000	63	2,505,420	0	0	0	0
Over 40,000	862	40,291,971	3	127,851	7	330,795
Total	9,392	\$212,028,624	181	\$3,206,178	533	\$7,857,609

Section 5: Additional Summary Tables of Member Data

Table 3A: Inactive Membership as of June 30, 2021 by Age, Years of Service, and Average Annual Allowance – Service Pensioners

Age	Years of Service at Retirement								
	Total	0-4	5-9	10-14	15 - 19	20 - 24	25 - 29	30 - 34	35 & over
Under 60	197	4	4	10	21	9	7	124	18
	\$33,750	\$6,813	\$4,850	\$5,183	\$11,111	\$11,344	\$14,965	\$42,749	\$44,949
60 - 64	815	7	20	63	77	84	112	344	108
	\$30,364	\$17,159	\$4,350	\$7,442	\$12,674	\$18,890	\$35,060	\$38,116	\$41,383
65 - 69	2416	31	194	302	331	332	264	672	290
	\$24,588	\$9,787	\$6,132	\$8,891	\$15,320	\$21,503	\$33,590	\$33,934	\$39,118
70 - 74	2910	31	209	434	390	406	275	849	316
	\$22,478	\$5,539	\$6,041	\$8,382	\$14,932	\$21,289	\$28,195	\$30,893	\$37,629
75 - 79	1683	32	83	288	226	247	150	514	143
	\$19,600	\$5,745	\$6,098	\$7,909	\$12,155	\$18,243	\$23,979	\$27,653	\$34,655
80 - 84	781	19	30	132	119	134	86	190	71
	\$17,696	\$4,317	\$6,102	\$7,342	\$11,189	\$15,715	\$21,708	\$26,199	\$32,453
85 - 89	382	16	18	56	54	49	50	92	47
	\$16,338	\$2,198	\$5,611	\$7,276	\$11,853	\$14,679	\$16,292	\$23,060	\$29,831
90 & over	208	6	12	31	35	41	20	45	18
	\$13,314	\$2,147	\$3,719	\$5,796	\$9,961	\$12,001	\$14,512	\$20,740	\$25,994
Total	9392	146	570	1316	1253	1302	964	2830	1011
	\$22,575	\$6,414	\$5,953	\$8,114	\$13,704	\$19,427	\$28,238	\$31,693	\$37,234

Section 5: Additional Summary Tables of Member Data

Table 3B: Inactive Membership as of June 30, 2021 by Age, Years of Service, and Average Annual Allowance – Disability Pensioners

Age	Years of Service at Retirement								
	Total	0-4	5-9	10-14	15 - 19	20 - 24	25 - 29	30 - 34	35 & over
Under 60	23	--	3	4	5	6	5	--	--
	\$20,975	--	\$13,604	\$14,194	\$16,791	\$21,512	\$34,363	--	--
60 - 64	36	--	4	5	7	16	4	--	--
	\$21,314	--	\$12,483	\$15,626	\$19,267	\$25,140	\$25,531	--	--
65 - 69	47	--	8	16	13	8	2	--	--
	\$16,356	--	\$12,054	\$13,406	\$13,593	\$26,717	\$33,670	--	--
70 - 74	29	--	4	5	5	9	6	--	--
	\$16,986	--	\$13,761	\$11,530	\$17,160	\$17,127	\$23,328	--	--
75 - 79	23	--	3	7	3	5	5	--	--
	\$16,142	--	\$14,265	\$14,530	\$12,654	\$15,905	\$21,853	--	--
80 - 84	14	--	--	2	5	4	3	--	--
	\$14,679	--	--	\$9,947	\$12,157	\$13,000	\$24,277	--	--
85 - 89	5	--	--	--	1	1	3	--	--
	\$14,449	--	--	--	\$20,918	\$9,335	\$13,998	--	--
90 & over	4	--	--	--	2	1	--	1	--
	\$11,528	--	--	--	\$12,500	\$7,865	--	\$13,248	--
Total	181	--	22	39	41	50	28	1	--
	\$17,714	--	\$12,955	\$13,555	\$15,268	\$20,958	\$25,190	\$13,248	--

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