St. Paul Teachers' Retirement Fund Association

Actuarial Valuation as of July 1, 2020

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December 16, 2020

Ms. Jill E. Schurtz, Executive Director
St. Paul Teachers' Retirement Fund Association
1619 Dayton Avenue, Room 309
St. Paul, MN 55104-6206

Dear Ms. Schurtz:

We are pleased to present the report of the actuarial valuation of the St. Paul Teachers' Retirement Fund Association ("Fund") as of July 1, 2020. This report provides, among other things, the required annual contribution rate of the Fund for the Plan Year commencing July 1, 2020 and ending on June 30, 2021, according to prescribed assumptions.

The valuation was based upon data and information through June 30, 2020 furnished by the Fund staff, concerning Retirement Fund benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. Their efforts in furnishing the materials needed are gratefully acknowledged. We checked for internal and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by the Fund.

The report has been prepared at the request of the Fund's Board of Trustees in accordance with Section 356.215 of the Minnesota Statutes as well as the Standards for Actuarial Work established by the State of Minnesota Legislative Commission on Pensions and Retirement. To the best of our knowledge, this report is complete and accurate, and has been prepared in accordance with prescribed assumptions and generally accepted actuarial principles and practices. This report is intended for use by the Fund and those determined or approved by the Fund's Board of Trustees. This report may be provided to parties other than the Fund only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

The contribution rate in this report is determined using the actuarial assumptions and methods disclosed in Section 4 of this report. This report includes risk metrics on page 10, but does not include a robust assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment.

This valuation assumed the continuing ability of the plan sponsor to make the contributions necessary to fund this plan. A determination regarding whether or not the plan sponsor is actually able to do so is outside our scope of expertise and was not performed.

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 (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of such future measurements.

This report was prepared using our proprietary valuation model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

This report does not fully reflect the recent and still developing impact of COVID-19, which is likely to influence demographic and investment experience, at least in the short term. We will continue to monitor these developments and their impact on the plan.

This report should not be relied on for any purpose other than the purpose described in this report. Determinations of financial results associated with the benefits described in this report in a manner other than the intended purpose may produce significantly different results.

Actuarial assumptions, including discount rates, mortality tables and others identified in this report, are prescribed by Minnesota Statutes Section 356.215, the Legislative Commission on Pensions and Retirement (LCPR), and the Board of Trustees. These parties are responsible for selecting the plan's funding policy, actuarial valuation methods, asset valuation methods, and assumptions. The policies, methods and assumptions used in this valuation are those that have been so prescribed and are described in the Actuarial Basis of this report. The Fund is solely responsible for communicating to GRS any changes required thereto.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. Bonita J. Wurst, James D. Anderson, and Sheryl L. Christensen are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

We will be pleased to review this report with you at your convenience.

Respectfully submitted,

Bonita J. Wurst

Bonita J. Wurst, ASA, EA, FCA, MAAA

James D. Anderson

James D. Anderson, FSA, EA, FCA, MAAA

Sheryl L. Christensen

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BJW/JDA/SLC:sc

Other Observations

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if there are no changes in benefits or contributions and all actuarial assumptions are met (including the assumption of the plan earning 7.5%), it is expected that:

(1) The normal cost of the plan is expected to remain approximately level as a percent of pay,
(2) The funded status of the plan is expected to gradually improve and is expected to be 100% funded within the next 28 years, and
(3) The unfunded liability will grow initially as a dollar amount before beginning to decline.

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the actuarial value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

(1) The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations; in other words, of transferring the obligations to an unrelated third party in an arm's length market value type transaction.

(2) The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).

(3) The measurement would produce a different result if the market value of assets were used instead of the actuarial value of assets.

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Summary of Valuation Results

This report sets forth the results of the actuarial valuation of the St. Paul Teachers' Retirement Fund Association ("Fund") as of July 1, 2020. The purposes of this valuation are:

1. To develop the Actuarially Determined Contribution (ADC) rates.
2. To compare the ADC rates with the current funding policy in place.
3. To review the funding status of the Fund.

The funding status, in basic terms, is a comparison of the Fund's liabilities to assets expressed as either an unfunded liability (i.e., the difference between the assets and liabilities) or as a ratio of assets to liabilities. This comparison can be measured in various ways. Fund liabilities are dependent on the actuarial assumptions and actuarial cost method. Fund assets can be measured at market value, book value, or some variation to smooth the fluctuations that invariably occur from year to year. The Actuarial Value of Assets is determined from market value with investment gains and losses smoothed over a five-year period.

2018 Omnibus Pension and Retirement Bill

On May 31, 2018, the 2018 Omnibus Pension and Retirement Bill was signed into law. The new law implemented significant changes in benefits, contributions, and assumptions that were first reflected in the 2018 valuation report. As a result of this legislation, this fund is now expected to achieve full funding within the next 28 years if all assumptions are achieved.

Contribution Sufficiency/(Deficiency)

The required contribution rate (as defined in Section 356 of Minnesota Statutes) decreased slightly, from 21.87% of pay as of July 1, 2019 to 21.58% of pay as of July 1, 2020. The statutory contribution rate increased from 25.09% of payroll to 25.16% of payroll. The contribution sufficiency improved from a sufficiency of 3.22% of pay as of July 1, 2019 to a sufficiency of 3.58% of pay. On a market value of assets basis, statutory contributions are sufficient by 2.44% of pay.

The contribution sufficiency referenced above is based on a current snapshot of statutory contributions as of July 1, 2020. Additional contribution increases will be phased in over the next three years, ultimately increasing the statutory contribution rate (and the contribution sufficiency) by an additional 0.87% of pay.

Assets and Liabilities

On an actuarial value of assets basis, the funding ratio increased slightly, from 63.81% at July 1, 2019, to 64.46% at July 1, 2020. Total actuarial liabilities decreased from $1,691.7 million to $1,691.2 million.

As shown in the table on the following page, on a market value of assets basis, the funding ratio decreased from 63.87% at July 1, 2019 to 61.35% at July 1, 2020.

Summary of Valuation Results

Market Value Compared to Actuarial Value of Assets

A 5-year smoothed value of assets (actuarial value of assets), used to determine both the funded status and required contribution level, reduces the volatility of the valuation results. As of July 1, 2020, the actuarial value of assets is 105.07% of market value.

The following table shows the July 1, 2020 valuation results, on both a market value and smoothed actuarial value basis:

Results as of July 1, 2020		
	Market Value of Assets	Actuarial Value of Assets
Actuarial Accrued Liability	$1,691.2 million	$1,691.2 million
Value of Assets	$1,037.6 million	$1,090.2 million
Unfunded Actuarial Accrued Liability	$ 653.6 million	$ 601.0 million
Funded Ratio	61.35%	64.46%
Statutory Contribution Rate	25.16% of pay	25.16% of pay
Required Contribution Rate	22.72% of pay	21.58% of pay
Sufficiency	2.44% of pay	3.58% of pay

Changes Reflected in the Valuation

Assumption and Method Changes

The mortality improvement scale was updated from MP-2018 to MP-2019. The impact of this change was to decrease the actuarial accrued liability by $5.6 million and increase the contribution sufficiency 0.13% of pay.

Benefit Changes

There have been no benefit changes since the prior valuation.

Summary of Valuation Results

Effects of Changes (Actuarial Value of Assets Basis)

Additional detail regarding the impact of the assumption change is summarized in the following table.

	Results as of July 1, 2020 ($000s)	
	Prior to Changes	Reflecting Assumption Changes
A. FUNDING RATIOS		
1. Accrued Liability Funding Ratio		
a. Current Assets	$ 1,090,243	$ 1,090,243
b. Actuarial Accrued Liability	1,696,837	1,691,236
c. Funding Ratio	64.25%	64.46%
2. Projected Benefit Funding Ratio		
a. Current and Expected Future Assets	$ 2,018,831	$ 2,026,327
b. Current and Expected Future Benefit Obligations	1,895,173	1,889,239
c. Funding Ratio	106.52%	107.26%
B. REQUIRED CONTRIBUTIONS - CHAPTER 356		
1. Normal Cost	8.28%	8.27%
2. Supplemental Contribution Amortization	13.15%	13.03%
3. Allowance for Administrative Expenses	0.28%	0.28%
4. Total	21.71%	21.58%

Participants

Active membership increased 0.2% during fiscal year 2020, from 3,347 to 3,353 (figures exclude members on leave of absence). Total participants receiving benefits under the Fund, including disabled retirees, beneficiaries, and alternate payees, increased 2.4% during fiscal year 2020 from 4,004 to 4,102. Total annuity expenditures for these benefits increased from $116.4 million to $117.3 million during fiscal year 2020, or 0.8%.

Asset Valuation Method

The method used to develop the Fund's Actuarial Value of Assets, as set out in the LCPR Standards for Actuarial Work, is as follows: In years when Fund assets earn above the assumed rate (i.e., experience gain) or below the assumed rate (i.e., experience loss) the gain (or loss) will be recognized over five years. This approach both removes volatility of the Fund's level of required contributions and ensures the Fund's assets will track the market value of assets.

Summary of Valuation Results

Experience Analysis

The experience analysis provides a comparison of actual experience to projected experience based on the actuarial assumptions over the past year. Overall, the Fund had an experience gain of $2.9 million. In general, salary increases were smaller than predicted under the valuation assumption and produced an actuarial gain of $8.5 million. Additionally, demographic experience resulted in an experience gain of $15.1 million.

The Fund also had an experience loss due to investments. The investment return on a market value of assets basis was 0.10% (net of fees) for the year ended June 30, 2020, less than the 7.50% assumption. However, only 20% of this asset loss was recognized in the actuarial value of assets. Investment losses from previous years were recognized this year and resulted in a loss of $20.6 million on the actuarial value of assets. The investment return on an actuarial value of assets basis was 5.55% for the year ended June 30, 2020.

The changes in unfunded actuarial accrued liabilities are shown in Table 10 in Section 3.

Summary of Valuation Results

Sensitivity Tests

During the 2017 legislative session, the Legislative Commission on Pensions and Retirement (LCPR) enacted a new sensitivity disclosure requirement for the Fund's valuations. Per the LCPR's requirement, we have calculated the liabilities associated with the following scenarios:

1) 6.5% interest rate assumption
2) 8.5% interest rate assumption

In each case, all other assumptions were unchanged from those used to develop the final valuation results in this report. Note that we believe the 8.5% interest rate assumption would not comply with Actuarial Standards of Practice.

	Final Valuation Assumptions	Final Valuation Assumptions	
		6.5% Interest	8.5% Interest
Normal Cost Rate, % of Pay	8.3%	10.1%	7.0%
Amortization of Unfunded Accrued Liability, % of Pay	13.0%	15.6%	10.4%
Expenses (% of Pay)	0.3%	0.3%	0.3%
Total Required Contribution, % of Pay	21.6%	26.0%	17.7%
Contribution Sufficiency/(Deficiency), % of Pay	3.6 %	(0.8)%	7.5 %
Accrued Liability Funding Ratio (AVA basis)	64.5%	57.6%	71.5%
Actuarial Accrued Liability (in millions)	$1,691.2	$1,891.7	$1,525.1
Unfunded Accrued Liability (in millions)	$ 601.0	$ 801.5	$ 434.9

Summary of Valuation Results

(Dollars in Thousands)

	July 1, 2019 Valuation	July 1, 2020 Valuation
A. CONTRIBUTIONS % OF PAYROLL (Table 11)		
1. Statutory Contributions - Chapter 354A	25.09%	25.16%
2. Required Contributions - Chapter 356	21.87%	21.58%
3. Sufficiency / (Deficiency)	3.22%	3.58%
B. FUNDING RATIOS		
1. Accrued Liability Funding Ratio		
a Current Assets (Table 1)	$ 1,079,552	$ 1,090,243
b. Actuarial Accrued Liability (Table 9)	1,691,721	1,691,236
c. Funding Ratio	63.81%	64.46%
2. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	$ 2,007,715	$ 2,026,327
b. Current and Expected Future Benefit Obligations	1,884,116	1,889,239
c. Funding Ratio	106.56%	107.26%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	3,347	3,353
b. Projected Annual Earnings	$ 280,595	$ 287,501
c. Average Annual Earnings (Projected dollars)	$ 79,893	$ 82,247
d. Average Age	44.9	44.9
e. Average Service	13.1	13.1
f. Members on Leave of Absence	120	92
2. Others		
a. Service Retirements (Table 4)	3,632	3,721
b. Disability Retirements (Table 5)	25	21
c. Survivors (Table 6)	347	360
d. Deferred Retirements (Table 7)	2,489	2,491
e. Terminated Other Non-Vested (Table 7)	2,742	2,834
f. Total - Others	9,235	9,427
3. Grand Total (1.a + 1.f + 2.f)	12,702	12,872

Risks Associated with Measuring the Accrued Liability and Actuarially Determined Contribution

The determination of the accrued liability and the actuarially determined contribution requires the use of assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in the accrued liability and the actuarially determined contribution that result from the differences between actual experience and the actuarial assumptions.

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 due to changing conditions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period, or additional cost or contribution requirements based on the Plan's funded status); and changes in plan provisions or applicable law. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the plan's future financial condition include:

1. **Investment Risk** – actual investment returns may differ from the expected returns;
2. **Asset/Liability Mismatch** – changes in asset values may not match changes in liabilities, thereby altering the gap between the accrued liability and assets and consequently altering the funded status and contribution requirements;
3. **Contribution Risk** – actual contributions may differ from expected future contributions. For example, actual contributions may not be made in accordance with the plan's funding policy or material changes may occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base;
4. **Salary and Payroll Risk** – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;
5. **Longevity Risk** – members may live longer or shorter than expected and receive pensions for a period of time other than assumed;
6. **Other Demographic Risks** – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future accrued liability and contributions differing from expected.

The effects of certain trends in experience can generally be anticipated. For example, if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate, the cost of the plan can be expected to increase (or decrease). Likewise, if longevity is improving (or worsening), increases (or decreases) in cost can be anticipated.

Summary of Valuation Results

The Required Contribution rate shown on page 6 may be considered as a minimum contribution rate that complies with Minnesota Statutes and the requirements of the Standards for Actuarial work published by the LCPR. The timely receipt of the actuarially determined contributions is critical to support the financial health of the plan. Users of this report should be aware that contributions made at the actuarially determined rate do not necessarily guarantee benefit security.

PLAN MATURITY MEASURES

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Generally accepted plan maturity measures include the following. Additional maturity measures are shown on page 10.

	2019	**2020**
Ratio of the market value of assets to total payroll	4.02	3.78
Ratio of actuarial accrued liability to payroll	6.30	6.16
Ratio of actives to retirees and beneficiaries	0.9	0.8
Ratio of non-investment cash flow to market value of assets*	-4.6%	-4.7%

* *Cash flow ratio does not reflect contribution increases to be phased in over the next three years.*

RATIO OF MARKET VALUE OF ASSETS TO PAYROLL

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. For example, if the market value of assets is 2.0 times the payroll, a return on assets 5% different than assumed would equal 10% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in plan sponsor contributions as a percentage of payroll.

RATIO OF ACTUARIAL ACCRUED LIABILITY TO PAYROLL

The relationship between actuarial accrued liability and payroll is a useful indicator of the potential volatility of contributions for a fully funded plan. A funding policy that targets a funded ratio of 100% is expected to result in the ratio of assets to payroll and the ratio of liability to payroll converging over time. The ratio of liability to payroll may also be used as a measure of sensitivity of the liability itself. For example, if the actuarial accrued liability is 2.5 times the payroll, a change in liability 2% other than assumed would equal 5% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in liability (and also plan sponsor contributions) as a percentage of payroll.

Summary of Valuation Results

RATIO OF ACTIVES TO RETIREES AND BENEFICIARIES

A young plan with many active members and few retirees will have a high ratio of active to retirees. A mature open plan may have close to the same number of actives to retirees resulting in a ratio near 1.0. A very mature or closed plan may have significantly more retirees than actives resulting in a ratio below 1.0.

RATIO OF NON-INVESTMENT CASH FLOW TO MARKET VALUE OF ASSETS

A positive non-investment cash flow means contributions exceed benefits and expenses. A negative non-investment cash flow means benefits and expenses exceed contributions, and existing funds may be used to make payments. A certain amount of negative net cash flow is generally expected to occur when benefits are prefunded through a qualified trust. Large negative net cash flows as a percent of assets may indicate a very mature plan or a need for additional contributions. The cash flow ratio for this fund will improve as future contribution increases are phased in over the next five years.

ADDITIONAL RISK ASSESSMENT

Additional risk assessment is outside the scope of the annual actuarial valuation. Additional assessment may include scenario tests, sensitivity tests, stochastic modeling, stress tests, and a comparison of the present value of accrued benefits at low-risk discount rates with the actuarial accrued liability.

Summary of Valuation Results

Risk Measures Summary (Dollars in Thousands)

Valuation Date (July 1)	(1) Accrued Liabilities (AAL)	(2) Market Value of Assets	(3) Market Value Unfunded AAL (1) - (2)	(4) Valuation Payroll	(5) Market Value Funded Ratio (2) / (1)	(6) Retiree Liabilities	(7) RetLiab/ AAL (6) / (1)	(8) AAL/ Payroll (1) / (4)	(9) Assets/ Payroll (2) / (4)
2011	$1,389,875	$ 950,121	$439,754	$239,738	68.4%	$ 939,005	67.6%	579.7%	396.3%
2012	1,471,216	881,926	589,290	239,053	59.9%	979,866	66.6%	615.4%	368.9%
2013	1,467,350	933,082	534,268	247,432	63.6%	988,123	67.3%	593.0%	377.1%
2014	1,533,603	1,045,435	488,168	259,740	68.2%	1,015,617	66.2%	590.4%	402.5%
2015	1,596,770	1,014,969	581,801	263,844	63.6%	1,053,824	66.0%	605.2%	384.7%
2016	1,592,570	959,666	632,904	258,787	60.3%	1,052,827	66.1%	615.4%	370.8%
2017	1,611,208	1,032,249	578,959	264,342	64.1%	1,068,690	66.3%	609.5%	390.5%
2018	1,676,193	1,070,572	605,621	263,122	63.9%	1,129,864	67.4%	637.0%	406.9%
2019	1,691,721	1,080,544	611,177	268,614	63.9%	1,133,369	67.0%	629.8%	402.3%
2020	1,691,236	1,037,613	653,623	274,667	61.4%	1,135,360	67.1%	615.7%	377.8%

Valuation Date (July 1)	(10) Portfolio StdDev	(11) Std Dev % of Pay (9) x (10)	(12) Unfunded / Payroll (3) / (4)	(13) Non-Investment Cash Flow (NICF)	(14) NICF/ Assets (13) / (2)	(15) Market Rate of Return	(16) 5-Year Average
2011			183.4%	$(60,117)	(6.3%)	25.0%	
2012			246.5%	(64,220)	(7.3%)	(0.2%)	
2013			215.9%	(63,553)	(6.8%)	13.5%	
2014			187.9%	(55,823)	(5.3%)	18.4%	13.7%
2015			220.5%	(56,223)	(5.5%)	2.7%	11.5%
2016	13.4%	49.7%	244.6%	(56,778)	(5.9%)	0.3%	6.7%
2017	13.4%	52.3%	219.0%	(56,136)	(5.4%)	13.9%	9.5%
2018	13.7%	55.7%	230.2%	(57,563)	(5.4%)	9.8%	8.8%
2019	13.7%	55.1%	227.5%	(50,237)	(4.6%)	5.7%	6.4%
2020	13.7%	51.8%	238.0%	(48,657)	(4.7%)	0.1%	5.8%

Notes pertaining to numbered columns:

(5) The Funded ratio is the most widely known measure of a plan's financial strength, but the trend in the funded ratio is much more important than the absolute ratio. The funded ratio should trend to 100%. As it approaches 100%, it is important to re-evaluate the level of investment risk in the portfolio and potentially to re-evaluate the assumed rate of return.

(6) and (7) The ratio of Retiree liabilities to total accrued liabilities gives an indication of the maturity of the system. As the ratio increases, cash flow needs increase, and the liquidity needs of the portfolio change. A ratio on the order of 50% indicates a maturing system.

(8) and (9) The ratios of liabilities and assets to payroll gives an indication of both maturity and volatility. Many systems have ratios between 500% and 700%. Ratios significantly above that range may indicate difficulty in supporting the benefit level as a level % of payroll.

(10) and (11) The portfolio standard deviation measures the volatility of investment return. When multiplied by the ratio of assets to payroll it gives the effect of a one standard deviation asset move as a percent of payroll. This figure helps users understand the difficulty of dealing with investment volatility and the challenges volatility brings to sustainability.

(12) The ratio of unfunded liability to payroll gives an indication of the plan sponsor's ability to actually pay off the unfunded liability. A ratio above approximately 300% or 400% may indicate difficulty in discharging the unfunded liability within a reasonable time frame.

(13) and (14) The ratio of non-investment cash flow to assets is an important measure of sustainability. Negative ratios are common and expected for a maturing system. In the longer term, this ratio should be on the order of approximately -4%. A ratio that is significantly more negative than that for an extended period could be a leading indicator of potential exhaustion of assets.

(15) and (16) Investment return is probably the largest single risk that most systems face. The year by year return and the 5-year geometric average give an indicator of past performance. Of course, past performance is not a guarantee of future results and may not ever be reflective of potential future results.

SECTION 1

ASSET INFORMATION

Assets of the Plan

The market value of the plan assets decreased from $1,080.5 million as of June 30, 2019 to $1,037.6 million as of June 30, 2020. The expected return on assets using the valuation investment return rate assumption of 7.5 percent was $79.2 million. The actual plan experience showed a return on assets of $5.7 million. Twenty percent of the asset return below the expected $79.2 million is recognized as an actuarial loss in the development of the actuarial value of assets. The recognized loss from the current year, along with the portion of prior gains and losses recognized this year, results in an overall loss of $20.6 million on the actuarial value of assets.

The 2020 and 2019 asset losses as well as the 2018 and 2017 asset gains (investment returns that fell above (gain) or below (loss) the expected return – amounts shown on the next page) will be recognized incrementally over the next four years. As of July 1, 2020, there are more unrecognized asset gains than losses, and the Actuarial Value of Assets (AVA) is higher than the Market Value of Assets (MVA) by $52.6 million, or 5.1%.

Table 1 shows the composition of assets as of June 30, 2020 and the development of the actuarial value of assets as of June 30, 2020. Table 2 details the development of asset values during fiscal year 2020.

Table 1
Accounting Balance Sheet
as of June 30, 2020
(Dollars in Thousands)

			Market Value
A.	ASSETS		
	1. Cash, Equivalents, Short-Term Securities		$ 20,081
	2. Investments		
	a. Fixed Income		149,635
	b. Equity		635,049
	c. Real Assets		68,430
	d. Alternative		128,947
	e. Cash and Cash Equivalents		36,413
	3. Other Assets		2,633
B.	TOTAL ASSETS		$ 1,041,188
C.	AMOUNTS CURRENTLY PAYABLE		$ 3,575
D.	ASSETS AVAILABLE FOR BENEFITS		
	1. Member Reserves		$ 217,959
	2. Employer Reserves		819,654
	3. Total Assets Available for Benefits		$ 1,037,613
E.	TOTAL AMOUNTS CURRENTLY PAYABLE AND ASSETS AVAILABLE FOR BENEFITS		$ 1,041,188
F.	DETERMINATION OF ACTUARIAL VALUE OF ASSETS		
	1. Market Value of Assets Available for Benefits (D.3)		$ 1,037,613
	2. Unrecognized Asset Returns		
	a. June 30, 2020	$ (73,490)	
	b. June 30, 2019	(18,200)	
	c. June 30, 2018	15,610	
	d. June 30, 2017	54,191	
	3. UAR Adjustment: .80 * 2(a) + .60 * 2(b) + .40 * 2(c) + .20 * 2(d)		(52,630)
	4. Actuarial Value of Assets: (F.1 - F.3)		$ 1,090,243

DERIVATION OF OTHER ASSETS *	Market Value
Accounts Receivable	
Employer Contribution	$ 480
Employee Contribution	286
Service Purchases Receivable	59
Pensions Receivable	48
State Contributions	838
Real Estate Income Receivable	87
Interest Receivable	40
Dividend Receivable	586
Sale of Securities	209
Total Accounts Receivable	$ 2,633
Fixed Assets	-
Total Other Assets	$ 2,633

**Numbers may not add due to rounding.*

Table 2
Change(s) in Assets Available for Benefits
as of June 30, 2020
(Dollars in Thousands)

		Market Value
A.	ASSETS AVAILABLE AT BEGINNING OF PERIOD	$ 1,080,544
B.	OPERATING REVENUES	
1.	Member Contributions	$ 20,889
2.	Employer Contributions	33,861
3.	Supplemental Contributions	15,665
4.	Reemployed Annuitant Employer Contributions	278
5.	Investment Income	12,650
6.	Investment Expenses	(3,663)
7.	Net Realized Gain / (Loss)	(850)
8.	Other	0
9.	Net Change in Unrealized Gain / (Loss)	(2,411)
10.	Total Operating Revenue	$ 76,419
C.	OPERATING EXPENSES	
1.	Service Retirements	$ 105,420
2.	Disability Benefits	490
3.	Survivor Benefits	11,396
4.	Refunds	1,256
5.	Administrative Expenses	788
6.	Total Operating Expenses	$ 119,350
D.	OTHER CHANGES IN RESERVES	$ 0
E.	ASSETS AVAILABLE AT END OF PERIOD	$ 1,037,613
F.	DETERMINATION OF CURRENT YEAR UNRECOGNIZED ASSET RETURN	
1.	Average Balance	
	(a) Assets available at BOY	$ 1,080,544
	(b) Assets available at EOY	1,037,613
	(c) Average balance {[(a) + (b) - Net Investment Income] / 2}	$ 1,056,216
	{Net investment income: B.5+B.6+B.7+B.9}	
2.	Expected Return: .075 * F.1	79,216
3.	Actual Return	5,726
4.	Current Year Gross Asset Gain/(Loss): F.3 - F.2	$ (73,490)

SECTION 2

TOTAL MEMBERSHIP DATA

Table 3
Active Members as of June 30, 2020*

	Years of Service								
Age	**<5**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35+**	**ALL**
< 25	30	0	0	0	0	0	0	0	30
25-29	206	25	0	0	0	0	0	0	231
30-34	211	191	14	0	0	0	0	0	416
35-39	131	196	125	28	0	0	0	0	480
40-44	102	97	96	161	31	0	0	0	487
45-49	84	77	65	110	202	16	0	0	554
50-54	55	40	37	92	161	123	7	1	516
55-59	38	27	37	56	90	99	68	9	424
60-64	27	13	13	37	51	63	27	18	249
65+	15	4	4	5	15	3	7	5	58
ALL	899	670	391	489	550	304	109	33	3,445

AVERAGE ANNUAL EARNINGS

	Years of Service								
Age	**<5**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35+**	**ALL**
< 25	43,961	0	0	0	0	0	0	0	43,961
25-29	49,727	62,474	0	0	0	0	0	0	51,107
30-34	54,853	70,351	76,784	0	0	0	0	0	62,706
35-39	56,333	76,623	82,278	86,277	0	0	0	0	73,121
40-44	61,027	77,276	83,820	89,409	92,562	0	0	0	80,146
45-49	68,543	80,429	80,889	88,639	92,643	99,110	0	0	85,304
50-54	66,997	80,618	81,435	88,197	92,022	96,449	119,626	137,967	88,548
55-59	54,224	85,689	79,379	89,973	94,354	92,792	100,190	100,973	89,032
60-64	42,634	84,994	78,521	83,442	91,328	97,904	95,447	101,453	86,719
65+	36,552	59,365	56,021	81,730	93,718	83,605	92,147	79,466	70,990
ALL	55,555	75,502	81,481	88,363	92,644	95,573	99,747	99,097	78,302

	Earnings (IN THOUSANDS) by Years of Service								
	<5	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35 & Over**	**ALL**
ALL	49,944	50,587	31,859	43,210	50,954	29,054	10,872	3,270	269,750

** Including those on leave of absence; pay annualized for new hires.*

Table 4
Service Retirements as of June 30, 2020

Age	Years Retired <5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	ALL
<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	0	0	0	0	0	0	0	0
55-59	101	0	0	0	0	0	0	0	0	101
60-64	258	91	0	0	0	0	0	0	0	349
65-69	357	366	134	0	0	0	0	0	0	857
70-74	87	328	353	239	0	0	0	0	0	1,007
75-79	16	54	167	271	145	2	0	0	0	655
80-84	4	6	27	105	216	61	1	0	0	420
85-89	1	4	3	11	76	103	25	0	0	223
90+	0	0	1	1	5	30	48	22	2	109
ALL	824	849	685	627	442	196	74	22	2	3,721

AVERAGE ANNUAL BENEFIT

Age	Years Retired <5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	ALL
<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	0	0	0	0	0	0	0	0
55-59	25,013	0	0	0	0	0	0	0	0	25,013
60-64	24,933	23,072	0	0	0	0	0	0	0	24,447
65-69	20,203	22,674	27,095	0	0	0	0	0	0	22,336
70-74	13,390	24,441	30,819	39,380	0	0	0	0	0	29,267
75-79	20,931	16,959	24,650	32,771	31,012	25,141	0	0	0	28,695
80-84	37,315	3,647	26,807	32,957	39,696	38,085	68,640	0	0	36,481
85-89	1,327	8,310	20,244	18,990	43,462	41,053	34,030	0	0	38,954
90+	0	0	1,570	496	39,290	51,499	26,801	27,445	22,350	33,747
ALL	21,628	22,834	28,339	35,028	37,490	41,566	29,809	27,445	22,350	28,528

Total Annual Benefit (IN THOUSANDS) by Years RETIRED

	<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	ALL
ALL	17,822	19,385	19,412	21,963	16,571	8,147	2,205	604	45	106,154

Table 5
Disability Retirements as of June 30, 2020*

	Years Disabled									
Age	**<5**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & Over**	**ALL**
<45	0	1	0	0	0	0	0	0	0	1
45-49	1	0	0	0	0	0	0	0	0	1
50-54	1	2	0	0	0	0	0	0	0	3
55-59	3	4	2	0	0	0	0	0	0	9
60-64	2	3	0	1	1	0	0	0	0	7
65-69	0	0	0	0	0	0	0	0	0	0
70-74	0	0	0	0	0	0	0	0	0	0
75-79	0	0	0	0	0	0	0	0	0	0
80-84	0	0	0	0	0	0	0	0	0	0
85-89	0	0	0	0	0	0	0	0	0	0
90+	0	0	0	0	0	0	0	0	0	0
ALL	7	10	2	1	1	0	0	0	0	21

AVERAGE ANNUAL BENEFIT

	Years Disabled									
Age	**<5**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & Over**	**ALL**
<45	0	3,525	0	0	0	0	0	0	0	3,525
45-49	7,491	0	0	0	0	0	0	0	0	7,491
50-54	5,796	25,049	0	0	0	0	0	0	0	18,631
55-59	25,261	20,984	13,279	0	0	0	0	0	0	20,698
60-64	19,595	13,959	0	25,166	5,750	0	0	0	0	15,998
65-69	0	0	0	0	0	0	0	0	0	0
70-74	0	0	0	0	0	0	0	0	0	0
75-79	0	0	0	0	0	0	0	0	0	0
80-84	0	0	0	0	0	0	0	0	0	0
85-89	0	0	0	0	0	0	0	0	0	0
90+	0	0	0	0	0	0	0	0	0	0
ALL	18,323	17,944	13,279	25,166	5,750	0	0	0	0	17,389

	Total Annual Benefit (IN THOUSANDS) by Years DISABLED									
	<5	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & Over**	**ALL**
ALL	128	179	27	25	6	0	0	0	0	365

** Disability benefits convert to normal retirement benefits at normal retirement age (which occurs between ages 65 and 66).*

Table 6
Survivors as of June 30, 2020

Age	Years Since Member Death <5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	ALL
<45	0	0	0	0	0	0	0	0	0	0
45-49	1	0	0	0	0	0	0	0	0	1
50-54	4	0	1	0	0	0	0	0	0	5
55-59	5	1	0	1	0	0	0	0	0	7
60-64	3	2	3	0	0	0	0	0	0	8
65-69	8	5	2	1	1	0	0	0	0	17
70-74	17	7	3	8	0	0	1	0	0	36
75-79	23	3	3	12	13	1	2	0	0	57
80-84	23	3	0	4	12	13	3	0	0	58
85-89	28	7	0	0	6	24	10	1	1	77
90+	21	6	0	0	0	12	23	24	8	94
ALL	133	34	12	26	32	50	39	25	9	360

AVERAGE ANNUAL BENEFIT

Age	Years Since Member Death <5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	ALL
<45	0	0	0	0	0	0	0	0	0	0
45-49	16,094	0	0	0	0	0	0	0	0	16,094
50-54	7,323	0	547	0	0	0	0	0	0	5,968
55-59	4,019	1,959	0	708	0	0	0	0	0	3,252
60-64	30,446	21,975	6,961	0	0	0	0	0	0	19,521
65-69	22,066	25,136	13,644	10,115	14,292	0	0	0	0	20,817
70-74	25,223	31,567	50,371	24,114	0	0	22,205	0	0	28,222
75-79	22,742	33,499	32,400	21,825	33,557	18,981	29,665	0	0	26,267
80-84	26,240	54,458	0	28,826	25,951	35,618	21,904	0	0	29,696
85-89	35,424	51,458	0	0	53,529	47,318	27,647	12,412	17,801	40,462
90+	46,246	41,582	0	0	0	49,717	37,428	30,103	25,871	38,378
ALL	28,961	37,239	24,753	22,344	33,848	44,285	32,937	29,395	24,974	32,048

	Total Annual Benefit (IN THOUSANDS) by Years Since Member Death <5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	ALL
ALL	3,852	1,266	297	581	1,083	2,214	1,285	735	225	11,538

Table 7
Reconciliation of Members
as of June 30, 2020

	Active Participants	Leave of Absence	Vested Terminated	Other Non-Vested	Retired Participants	Disableds	Survivors and Beneficiaries	Alternate Payees[2]	Total
A. Number as of June 30, 2019	3,347	120	2,489	2,742	3,591	24	338	51	12,702
B. Additions	314	4	123	246	171	4	35	1	898
C. Deletions									
1. Retirements	(86)	(3)	(80)						(169)
2. Disability	(1)		(3)						(4)
3. Died with Beneficiary	(1)	(2)	(3)	(7)	(30)	(2)			(45)
4. Died without Beneficiary				(6)	(59)		(22)		(87)
5. Terminated - Deferred	(107)	(14)							(121)
6. Terminated - Not Vested	(158)	(1)							(159)
7. Refunds	(9)	(1)	(27)	(109)					(146)
8. Rehired as Active	99	(56)	(24)	(19)					-
9. Leave of Absence	(45)	45							-
10. Repayment of Refund									-
11. Expired Benefits									-
12. Disability to Retirement					6	(6)			-
D. Data Adjustments[1]			16	(13)					3
E. Total on June 30, 2020	3,353	92	2,491	2,834	3,679	20	351	52	12,872

[1] *Includes members not valued in prior valuation who repaid refunds or otherwise restored prior service.*

[2] *Includes alternate payees of retired participants (42), disabled participants (1), and survivors (9).*

SECTION 3

FUNDING STATUS

Table 8
Actuarial Balance Sheet
as of July 1, 2020
(Dollars in Thousands)

A.	CURRENT ASSETS (TABLE 1; Line F.4)	$	1,090,243
B.	EXPECTED FUTURE ASSETS		
	1. Present Value of Expected Future Statutory Supplemental Contributions*	$	738,081
	2. Present Value of Future Normal Costs		198,003
	3. Total Expected Future Assets	$	936,084
C.	TOTAL CURRENT AND EXPECTED FUTURE ASSETS	$	2,026,327
D.	TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS	$	1,889,239
E.	CURRENT AND FUTURE UNFUNDED ACTUARIAL LIABILITY (D - C)	$	(137,088)

* *Includes the effect of scheduled employee and employer contribution increases and supplemental state contributions.*

Table 9
Determination of Unfunded Actuarial Accrued Liability (UAAL) and Supplemental Contribution Rate as of July 1, 2020 (Dollars in Thousands)

	Actuarial Present Value of Projected Benefits	Actuarial Present Value of Future Normal Costs	Actuarial Accrued Liability
A. DETERMINATION OF ACTUARIAL ACCRUED LIABILITY (AAL)			
1. Active Members*			
a. Retirement Benefits	$ 593,865	$ 126,235	$ 467,630
b. Disability Benefits	$ 14,985	$ 4,706	$ 10,279
c. Surviving Spouse and Child Benefits	$ 6,474	$ 1,801	$ 4,673
d. Vested Withdrawals	$ 42,936	$ 48,753	$ (5,817)
e. Refund Liability Due to Death or Withdrawal	$ 2,500	$ 16,508	$ (14,008)
f. Total	$ 660,760	$ 198,003	$ 462,757
2. Deferred Retirements	$ 90,812	$ 0	$ 90,812
3. Former Members without Vested Rights	$ 2,307	$ 0	$ 2,307
4. Annuitants	$ 1,135,360	$ 0	$ 1,135,360
5. Total	$ 1,889,239	$ 198,003	$ 1,691,236
B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)			
1. Actuarial Accrued Liability (A.5)			$ 1,691,236
2. Current Assets (Table 1; Line F.4)			$ 1,090,243
3. Unfunded Actuarial Accrued Liability (B.1 - B.2)			$ 600,993
C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE**			
1. Present Value of Future Payrolls Through the Amortization Date of June 30, 2048***			$ 4,611,756
2. Supplemental Contribution Rate (B.3 / C.1)			13.03%

* *Includes members on leave of absence.*

** *The amortization of the unfunded actuarial accrued liability (UAAL) using the current amortization method results in initial payments less than the "interest only" payment on the UAAL. Payments less than the interest only amount will result in the UAAL increasing for an initial period of time.*

****Calculated using 7.5% annual investment return rate.*

Table 10
Changes in Unfunded Actuarial Accrued Liability (UAAL) as of July 1, 2020
(Dollars in Thousands)

A.	UAAL AT BEGINNING OF YEAR	$	612,169
B.	CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING		
	1. Normal Cost and Expenses	$	23,908
	2. Contributions	$	(70,693)
	3. Interest	$	44,158
	4. Total	$	(2,627)
C.	EXPECTED UAAL AT END OF YEAR (A + B.4)	$	609,542
D.	INCREASE / (DECREASE) DUE TO ACTUARIAL LOSSES / (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED		
	1. Age and Service Retirements	$	4,121
	2. Disability Retirements		(142)
	3. Death-in-Service Benefits		(178)
	4. Withdrawals		(5,610)
	5. Salary Increases		(8,506)
	6. Investment Income		20,612
	7. Mortality of Annuitants		(1,975)
	8. Other Items		(11,270)
	9. Total	$	(2,948)
E.	UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTIONS (C + D.9)	$	606,594
F.	CHANGE IN UAAL DUE TO PLAN AMENDMENTS		-
G.	CHANGE IN UAAL DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS		(5,601)
H.	UAAL AT END OF YEAR (E + F + G)	$	600,993

Table 11
Determination of Contribution Sufficiency
as of July 1, 2020
(Dollars in Thousands)

	Percent-of-Payroll		Dollar Amount
A. STATUTORY CONTRIBUTIONS - CHAPTER 354A			
1. Employee Contributions	7.50%	$	21,563
2. Employer Contributions			
a. Regular	8.38%		24,093
b. Additional	3.84%		11,040
3. Supplemental Contribution			
a. 1996 Legislation	0.29%		838
b. 1997 Legislation	0.98%		2,827
c. 2014 Legislation	2.43%		7,000
d. 2018 Legislation	1.74%		5,000
4. Total	25.16%	$	72,361
B. REQUIRED CONTRIBUTIONS - CHAPTER 356			
1. Normal Cost			
a. Retirement Benefits	5.45%	$	15,669
b. Disability Benefits	0.19%		546
c. Surviving Spouse and Child Benefits	0.07%		201
d. Vested Withdrawals	1.90%		5,463
e. Refund Liability Due to Death or Withdrawal	0.66%		1,898
f. Total	8.27%	$	23,777
2. Supplemental Contribution Amortization	13.03%		37,461
3. Allowance for Administrative Expenses	0.28%		805
4. Total	21.58%	$	62,043
C. CONTRIBUTION SUFFICIENCY / (DEFICIENCY) (A.4 - B.4)	3.58%		10,318
Projected Annual Payroll for Fiscal Year Beginning on the Valuation Date (determined by increasing reported pay for each member by one full year of assumed pay increase, according to the actuarial salary scale, as prescribed by the LCPR Standards for Actuarial Work):		$	287,501

SECTION 4

ACTUARIAL METHODS AND ASSUMPTIONS

Table 12
Actuarial Methods and Assumptions
as of July 1, 2020

I. ACTUARIAL COST METHOD

An Actuarial Cost Method is a set of techniques used by the actuary to develop contribution levels under a retirement plan. The Actuarial Cost Method used in this valuation for all purposes is the Entry Age Actuarial Cost Method. Under this Method, a Normal Cost is developed by amortizing the actuarial value of benefits expected to be received by each active participant (as a level percentage of pay) over the total working lifetime of that participant, from hire to termination. Years of Service for valuation purposes was provided by the Retirement Fund. Age as of the valuation date was calculated based on the dates of birth provided by the Retirement Fund. Entry Age for valuation purposes was calculated as the age on the valuation date minus the years of service on the valuation date.

To the extent that current assets and future Normal Costs do not support participants' expected future benefits, an Unfunded Actuarial Accrued liability (“UAAL”) develops. The UAAL is amortized over the closed statutory amortization period ending June 30, 2048 using level percent-of-payroll assuming payroll increases of 3.00% per annum. The total contribution developed under this method is the sum of the Normal Cost and the payment toward the UAAL.

II. CURRENT ACTUARIAL ASSUMPTIONS

Assumptions are based on an experience study for the five-year period of July 1, 2011 to June 30, 2016, as well as a legislated change to the investment return assumption effective July 1, 2018. Note that the significant plan changes effective July 1, 2018 may ultimately result in behavior changes not anticipated in the actuarial assumptions.

A. Demographic Assumptions

Mortality:

1. Healthy and Disabled Annuitant Mortality:
    a. Male: RP-2014 Healthy Annuitant Mortality Table for males adjusted for white collar and projected with Scale MP-2019 from 2006
    b. Female: RP-2014 Healthy Annuitant Mortality Table for females adjusted for white collar and projected with Scale MP-2019 from 2006, set back 2 years
2. Employee Mortality:
    a. Male: RP-2014 Employee Mortality Table for males adjusted for white collar and projected with Scale MP-2019 from 2006
    b. Female: RP-2014 Employee Mortality Table for females adjusted for white collar and projected with Scale MP-2019 from 2006

Table 12
Actuarial Methods and Assumptions
as of July 1, 2020

Deaths Expressed as the Number of Occurrences per 10,000:

Age in 2020	Post-Retirement Mortality Male	Female
55	40	26
56	42	27
57	45	29
58	48	32
59	52	34
60	56	37
61	60	39
62	65	43
63	70	47
64	76	52
65	82	57
66	89	62
67	97	68
68	106	74
69	116	81
70	128	88
71	142	97
72	158	107
73	176	119
74	196	132
75	219	147
76	245	164
77	274	183
78	308	204
79	346	229
80	390	257
81	440	289
82	497	325
83	563	367
84	638	414
85	724	468
86	821	529
87	930	599
88	1,053	678
89	1,190	768
90	1,342	869
91	1,503	981
92	1,672	1,107
93	1,843	1,245
94	2,016	1,392

Table 12
Actuarial Methods and Assumptions
as of July 1, 2020

Deaths Expressed as the Number of Occurrences per 10,000:

Age in 2020	Pre-Retirement Mortality Male	Female
25	4	2
26	4	2
27	4	2
28	4	2
29	4	2
30	5	2
31	5	3
32	5	3
33	5	3
34	5	3
35	5	3
36	5	3
37	6	4
38	6	4
39	6	4
40	6	4
41	6	5
42	6	5
43	7	5
44	7	6
45	8	6
46	8	6
47	9	7
48	10	8
49	11	8
50	12	9
51	14	10
52	15	11
53	16	12
54	18	14
55	20	15
56	22	17
57	25	18
58	28	20
59	31	22
60	35	24
61	40	25
62	45	27
63	50	29
64	56	31

Table 12
Actuarial Methods and Assumptions
as of July 1, 2020

Rates of Disability:

Disability Expressed as the Number of Occurrences per 10,000:

Age	Disability	Age	Disability
20	1	45	4
21	1	46	4
22	1	47	4
23	1	48	4
24	1	49	4
25	1	50	9
26	1	51	9
27	1	52	9
28	1	53	9
29	1	54	9
30	2	55	17
31	2	56	17
32	2	57	17
33	2	58	17
34	2	59	17
35	2	60	35
36	2	61	35
37	2	62	35
38	2	63	35
39	2	64	35
40	3		
41	3		
42	3		
43	3		
44	3		

Table 12
Actuarial Methods and Assumptions
as of July 1, 2020

Rates of Termination:

Year	Number of Terminations per 1,000 Active Members: Male	Female
1	400	400
2	260	220
3	160	150
4	110	120
5	80	100
6	50	85
7	48	70
8	45	55
9	43	45
10	40	40
11	38	38
12	35	35
13	33	30
14	30	25
15 & Over	25	20

Rates of Retirement:

Retirements Expressed as the Number of Occurrences per 10,000:

Age	Male Coordinated Members Eligible for Rule of 90 Provision	Female Coordinated Members Eligible for Rule of 90 Provision	Male Coordinated Members Not Eligible for Rule of 90 Provision	Female Coordinated Members Not Eligible for Rule of 90 Provision
55	2,500	2,500	900	500
56	2,500	2,500	700	500
57	2,500	2,500	700	500
58	2,500	2,500	700	600
59	2,500	3,000	700	600
60	2,500	3,000	1,200	900
61	2,500	3,000	1,200	1,100
62	4,500	3,000	2,500	2,000
63	3,500	3,000	2,800	2,300
64	2,500	3,000	2,800	2,600
65	10,000	10,000	3,000*	4,500*
66	10,000	10,000	3,000	4,300
67	10,000	10,000	3,500	3,800
68	10,000	10,000	4,000	3,800
69	10,000	10,000	4,500	3,000
70 & Over	10,000	10,000	10,000	10,000

**2,800 for male members and 3,000 for female members hired after June 30, 1989 with a Normal Retirement Age equal to 66.*

Table 12
Actuarial Methods and Assumptions
as of July 1, 2020

B. Economic Assumptions

Investment Return Rate: 7.50%

Price Inflation: 2.50% per year

Wage Inflation: 3.00% per year

Future Salary Increases: Service-based rates shown below:

Annual Salary Increases

Year	Ultimate Rate of Annual Salary Increases	Year	Ultimate Rate of Annual Salary Increases
1	9.00%	21	3.40%
2	8.00%	22	3.20%
3	7.00%	23 & Over	3.00
4	6.80%		
5	6.60%		
6	6.40%		
7	6.20%		
8	6.00%		
9	5.75%		
10	5.50%		
11	5.25%		
12	5.00%		
13	4.75%		
14	4.50%		
15	4.25%		
16	4.00%		
17	3.90%		
18	3.80%		
19	3.70%		
20	3.60%		

Asset Value: The assets are valued based on a five-year moving average of expected and market values (five-year average actuarial value). At the end of each plan year, an average asset value is calculated as the average of the market asset value at the beginning and end of the fiscal year net of investment income for the fiscal year. The investment gain or (loss) is taken as the excess of actual investment income over the expected investment income based on the average asset value as calculated above. The investment gain or (loss) is recognized over five years at 20% per year. The asset value is the sum of the market asset value plus the scheduled recognition of investment gains or (losses) during the current and the preceding four fiscal years.

Table 12
Actuarial Methods and Assumptions
as of July 1, 2020

C. Other Assumptions

Marital Status:	It is assumed that 75% of male members and 60% of female members have an eligible spouse. The male spouse is assumed to be two years older than the female spouse. Married members are assumed to have two dependent children.
Deferred Benefit Commencement:	Basic Plan members who terminate vested are assumed to commence benefits at age 61. Coordinated Plan members are assumed to commence benefits at age 62. If the member is already past the assumed deferral age, the member is assumed to commence benefits one year from the valuation date.
Administrative Expenses:	Prior year administrative expenses (excluding investment expenses) are expressed as a percentage-of-payroll and then applied to current projected payroll.
Refund of Contributions:	All employees withdrawing after becoming eligible for a deferred benefit take the larger of their contributions accumulated with interest or the value of their deferred benefit. Account balances for deferred members accumulate interest until the assumed benefit commencement date and are discounted back to the valuation date.
Allowance for Combined Service Annuity:	20.0% load on liabilities for former, vested members. 9.0% load on liabilities for former, non-vested members.
Missing Salary and Salary Minimums:	Active members with reported salaries of $100 or less were assumed to have the average non-zero active salary. Active members with salaries less than those reported at the prior valuation date are valued using their prior salary amount. Active members who have been hired within one year of the valuation date have had their pay annualized by dividing by months of service credited, not to exceed the average non-zero active salary. For members on leave of absence at valuation date who were not on leave at the prior valuation date, the prior year's valuation pay was used.
Missing Data for Deferred Vested Members:	Deferred vested members without a reported benefit and without salary information were assumed to have a final average salary of $40,000.
Decrement Timing:	Retirement and Termination: end of valuation year – consistent with retirements and terminations occurring at the end of the school year. Death and Disability: middle of valuation year.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
Service Credit Accruals:	It is assumed that members accrue one year of service credit per year. Exact fractional service is used to determine the amount of benefit payable.

Table 12
Actuarial Methods and Assumptions
as of July 1, 2020

Supplemental Contributions:	1996 legislation provides for a variable amortization aid contribution paid annually on July 15. We assumed the annual amortization aid contribution will equal $838,000, which was the actual contribution for the most recent fiscal year. Additionally, annual supplemental contributions equal to $14,827,000 are scheduled to be paid each October 1. The contributions described herein will continue until the plan is 100% funded or until June 30, 2048, whichever occurs earlier.
Projected Annual Payroll Calculation:	The census data as of July 1, 2020 reflects retirements and terminations occurring during the months of May and June; however, it does not necessarily reflect the replacements hired to fill their positions who may have hire dates in August and September. We assumed that May and June retirements are replaced by members coming in at the B.A. entry salary level of $47,271; the Projected Annual Payroll for the fiscal year ending June 30, 2021 includes this replacement salary amount.
Changes in Actuarial Methods and Assumptions Since the Prior Valuation:	The mortality improvement scale was updated from MP-2018 to MP-2019.

SECTION 5

BASIC PLAN

Table 3A
Basic Active Members as of June 30, 2020

There are no remaining Basic Active Members.

Table 4A
Basic Service Retirements as of June 30, 2020

Age	Years Retired <5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	ALL
<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	0	0	0	0	0	0	0	0
55-59	0	0	0	0	0	0	0	0	0	0
60-64	0	2	0	0	0	0	0	0	0	2
65-69	5	50	47	0	0	0	0	0	0	102
70-74	7	47	155	186	0	0	0	0	0	395
75-79	3	7	41	176	117	1	0	0	0	345
80-84	1	1	3	49	174	53	1	0	0	282
85-89	0	0	0	2	53	90	25	0	0	170
90+	0	0	0	0	4	23	42	22	2	93
ALL	16	107	246	413	348	167	68	22	2	1,389

AVERAGE ANNUAL BENEFIT

Age	Years Retired <5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	ALL
<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	0	0	0	0	0	0	0	0
55-59	0	0	0	0	0	0	0	0	0	0
60-64	0	32,358	0	0	0	0	0	0	0	32,358
65-69	30,764	39,691	45,515	0	0	0	0	0	0	41,937
70-74	37,066	51,224	46,226	45,342	0	0	0	0	0	46,242
75-79	68,769	23,980	44,691	41,892	36,226	29,235	0	0	0	40,137
80-84	133,589	5,528	85,237	50,208	45,904	41,913	68,640	0	0	46,568
85-89	0	0	0	56,077	55,479	44,726	34,030	0	0	46,639
90+	0	0	0	0	46,206	60,288	29,910	27,445	22,350	37,378
ALL	47,074	43,273	46,310	44,501	44,112	45,884	31,994	27,445	22,350	43,911

Total Annual Benefit (IN THOUSANDS) by Years RETIRED

	<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	ALL
ALL	753	4,630	11,392	18,379	15,351	7,663	2,175	604	45	60,992

Table 5A
Basic Disability Retirements as of June 30, 2020*

There are no remaining Basic Disability Retirees.

Table 6A
Basic Survivors as of June 30, 2020

Age	Years Since Member Death <5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	ALL
<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	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	1	0	0	0	0	1
70-74	8	3	2	5	0	0	1	0	0	19
75-79	12	3	1	7	13	1	2	0	0	39
80-84	20	3	0	2	11	13	3	0	0	52
85-89	26	7	0	0	5	23	10	1	1	73
90+	21	6	0	0	0	10	23	24	8	92
ALL	87	22	3	14	30	47	39	25	9	276

AVERAGE ANNUAL BENEFIT

Age	Years Since Member Death <5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	ALL
<45										
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	14,292	0	0	0	0	14,292
70-74	37,514	56,149	66,745	25,514	0	0	22,205	0	0	39,570
75-79	39,999	33,499	65,810	24,211	33,557	18,981	29,665	0	0	34,111
80-84	28,402	54,458	0	49,664	26,124	35,618	21,904	0	0	31,670
85-89	37,680	51,458	0	0	61,249	48,617	27,647	12,412	17,801	42,069
90+	46,246	41,582	0	0	0	55,557	37,428	30,103	25,871	38,766
ALL	37,920	47,365	66,433	28,312	34,805	45,868	32,937	29,395	24,974	37,612

	Total Annual Benefit (IN THOUSANDS) by Years Since Member Death <5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	ALL
ALL	3,299	1,042	199	396	1,044	2,156	1,285	735	225	10,381

Table 11A
Basic Determination of Contribution Sufficiency
as of July 1, 2020
(Dollars in Thousands)

There are no remaining Basic Active Members.

Summary of Benefit Provisions for Basic Members as of July 1, 2020

PARTICIPANTS

Professional Educators first employed prior to July 1, 1978 by schools in the City of St. Paul or St. Paul College whose position requires a license from the Minnesota Professional Educator Licensing and Standards Board, who are not covered under the Social Security Act.

As of July 1, 2020, there are no remaining active Basic Members.

ACCREDITED SERVICE

Service which has been verified and accredited by the Association for the purpose of determining contributions and benefits (may include service earned while working outside of St. Paul Public Schools, previous St. Paul service, military service and governmental service).

ALLOWABLE ST. PAUL SERVICE

Service earned as a licensed educator in the St. Paul Public Schools, in the St. Paul College, or as an employee of the Association. Also includes service credited after receipt of payment as required, for licensed educators on leave.

SALARY

Total compensation earned during a school year (July 1 to June 30) excluding lump sum payments for unused leave at termination and employer-paid insurance coverage.

Summary of Benefit Provisions for Basic Members as of July 1, 2020

AVERAGE SALARY

Average of the highest 5 years of salary during the last 10 years of St. Paul service while making contributions.

NORMAL RETIREMENT BENEFIT

Eligibility

Attainment of age 65 and 5 years of Accredited Service.

Benefit

2.50 percent of Average Salary for each year of Accredited Service.

EARLY RETIREMENT BENEFIT

Eligibility

Attainment of age 55 and 5 years of Accredited Service.

Benefit

The greater of the following benefits:

- 2.00 percent of Average Salary per year of Accredited Service, subject to a maximum of 40 years with a 0.25 percent reduction for each month the member is under age 65. If the member has 25 years of Accredited Service, the reduction is taken from age 60, therefore no reduction is required if the member is age 60 or older. No reduction is taken if age plus years of Accredited Service totals at least 90.
- 2.50 percent of Average Salary per year of Accredited Service, subject to a maximum of 40 years, reduced for each month the member is under age 65 using linear interpolation of the table listed below. The ultimate factors for retirements on or after July 1, 2024 will be phased in over a 60-month period starting July 1, 2019.

UNDER AGE 62 OR LESS THAN 30 YEARS OF SERVICE

Age at Retirement	RETIREMENTS PRIOR TO JULY 1, 2019	RETIREMENTS ON OR AFTER JULY 1, 2024	AGE 62 OR OLDER WITH 30 YEARS OF SERVICE
55	0.5376	0.4200	
56	0.5745	0.4600	
57	0.6092	0.5000	
58	0.6419	0.5400	
59	0.6726	0.5800	
60	0.7354	0.6500	
61	0.7947	0.7200	
62	0.8507	0.7900	0.8831
63	0.9035	0.8600	0.9246
64	0.9533	0.9300	0.9635
65	1.0000	1.0000	1.0000

Summary of Benefit Provisions for Basic Members as of July 1, 2020

DISABILITY RETIREMENT BENEFIT

Eligibility

Total and permanent disablement before attaining age 65 and 5 years of Accredited Service.

Benefit

If the member is under age 65, 75 percent of the member's annual contract salary less any Social Security and Workers' Compensation benefits payable until age 65. At age 65, a normal retirement benefit is calculated using the projected service and average salary as if the member had continued to teach in their position held at the time of disability. Members age 65 or older at time of disability receive a normal retirement benefit.

DEFERRED RETIREMENT BENEFIT

Eligibility

5 years of Accredited Service.

Benefit

Benefit computed under law in effect at termination and payable as a normal or early retirement benefit. For members hired on or before June 30, 2006, the benefit is augmented at 3.00 percent compounded annually from the 1st of the month following termination until the January 1st after turning age 55 and then augmented at 5.00 percent compounded annually from that date to July 1, 2012. For members hired after June 30, 2006, the benefit is augmented at 2.50 percent compounded annually from the 1st of the month following termination to July 1, 2012. Augmentation for all members, regardless of hire date, changed to 2.00 percent as of July 1, 2012 for the portion of benefit deferral which occurs after June 30, 2012 to June 30, 2019. After June 30, 2019, benefits are not augmented.

PRE-RETIREMENT SURVIVOR BENEFIT (Family Benefit)

Eligibility

Active member with five years of Accredited Service.

Benefit

- Children's Benefit: 25 percent of the maximum Bachelor of Arts salary for the year in which the member died for each eligible child up to a maximum of two. Benefits are paid until the child attains age 18, or 22 for full-time students.
- Spousal Benefit: 15 percent of the maximum Bachelor of Arts salary for an eligible spouse who has legal custody of an eligible child. Spousal benefits cease when the spouse remarries, dies, or elects the regular survivor benefit. Electing the regular survivor benefit does not disqualify the child from receiving the family benefit.

Summary of Benefit Provisions for Basic Members as of July 1, 2020

SURVIVOR BENEFIT (Active or Retired Member)

Eligibility

Active member or retired member with five years of Accredited Service. A surviving spouse must have been married to the member for three years at the earlier of death or retirement.

Benefit

Retirement benefit earned at the time of death or retirement, whichever is earlier, reduced by the use of 100 percent joint survivorship tables, based on the ages of the member and survivor at the time of retirement.

REFUND OF CONTRIBUTIONS

Eligibility

Termination or death where no annuity is payable.

Benefit

Member contributions with 6.00 percent interest accrued through June 30, 2011, 4.00 percent interest accrued through June 30, 2018, and 3.00 percent interest thereafter.

REEMPLOYED ANNUITANTS

The School District shall make the regular employer contribution and additional employer contribution, plus a supplemental contribution equal to 2.5% of salary, on behalf of any retired member who is reemployed by the School District. Reemployed annuitants do not accrue additional benefits.

NORMAL FORM OF RETIREMENT BENEFITS

Unreduced annuity payments made until the death of the member, with a 100 percent Joint & Survivor adjusted pension payable to the surviving beneficiary.

BENEFIT INCREASES

2020:	0.00 percent
2021 and thereafter:	1.00 percent

For retirements on and after July 1, 2024, the first benefit increase is delayed until the retiree reaches Normal Retirement Age (not applicable to Rule of 90 retirees, Rule of 62/30 retirees, disability benefit recipients, or survivors).

Summary of Benefit Provisions for Basic Members as of July 1, 2020

CHANGES IN PLAN PROVISIONS

There have been no changes in plan provisions since the prior valuation.

SECTION 6

COORDINATED PLAN

Table 3B
Coordinated Active Members as of June 30, 2020*

All remaining active members are Coordinated. Please refer to the table on page 14 for active member statistics.

Table 4B
Coordinated Service Retirements as of June 30, 2020

	Years Retired									
Age	**<5**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & Over**	**ALL**
<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	0	0	0	0	0	0	0	0
55-59	101	0	0	0	0	0	0	0	0	101
60-64	258	89	0	0	0	0	0	0	0	347
65-69	352	316	87	0	0	0	0	0	0	755
70-74	80	281	198	53	0	0	0	0	0	612
75-79	13	47	126	95	28	1	0	0	0	310
80-84	3	5	24	56	42	8	0	0	0	138
85-89	1	4	3	9	23	13	0	0	0	53
90+	0	0	1	1	1	7	6	0	0	16
ALL	808	742	439	214	94	29	6	0	0	2,332

AVERAGE ANNUAL BENEFIT

	Years Retired									
Age	**<5**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & Over**	**ALL**
<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	0	0	0	0	0	0	0	0
55-59	25,013	0	0	0	0	0	0	0	0	25,013
60-64	24,933	22,863	0	0	0	0	0	0	0	24,402
65-69	20,053	19,981	17,145	0	0	0	0	0	0	19,688
70-74	11,318	19,961	18,758	18,451	0	0	0	0	0	18,311
75-79	9,891	15,914	18,129	15,877	9,224	21,047	0	0	0	15,962
80-84	5,224	3,271	19,503	17,864	13,977	12,731	0	0	0	15,865
85-89	1,327	8,310	20,244	10,748	15,772	15,619	0	0	0	14,299
90+	0	0	1,570	496	11,627	22,620	5,040	0	0	12,642
ALL	21,125	19,886	18,269	16,747	12,975	16,699	5,040	0	0	19,366

	Total Annual Benefit (IN THOUSANDS) by Years RETIRED									
	<5	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & Over**	**ALL**
ALL	17,069	14,755	8,020	3,584	1,220	484	30	0	0	45,162

Table 5B
Coordinated Disability Retirements as of June 30, 2020*

All remaining disability retirements are Coordinated. Please refer to the table on page 16 for disability retirement statistics.

Table 6B
Coordinated Survivors as of June 30, 2020

Age	Years Since Member Death <5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	ALL
<45	0	0	0	0	0	0	0	0	0	0
45-49	1	0	0	0	0	0	0	0	0	1
50-54	4	0	1	0	0	0	0	0	0	5
55-59	5	1	0	1	0	0	0	0	0	7
60-64	3	2	3	0	0	0	0	0	0	8
65-69	8	5	2	1	0	0	0	0	0	16
70-74	9	4	1	3	0	0	0	0	0	17
75-79	11	0	2	5	0	0	0	0	0	18
80-84	3	0	0	2	1	0	0	0	0	6
85-89	2	0	0	0	1	1	0	0	0	4
90+	0	0	0	0	0	2	0	0	0	2
ALL	46	12	9	12	2	3	0	0	0	84

AVERAGE ANNUAL BENEFIT

Age	Years Since Member Death <5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	ALL
<45	0	0	0	0	0	0	0	0	0	0
45-49	16,094	0	0	0	0	0	0	0	0	16,094
50-54	7,323	0	547	0	0	0	0	0	0	5,968
55-59	4,019	1,959	0	708	0	0	0	0	0	3,252
60-64	30,446	21,975	6,961	0	0	0	0	0	0	19,521
65-69	22,066	25,135	13,644	10,115	0	0	0	0	0	21,225
70-74	14,298	13,130	17,625	21,784	0	0	0	0	0	15,540
75-79	3,916	0	15,695	18,485	0	0	0	0	0	9,272
80-84	11,827	0	0	7,988	24,046	0	0	0	0	12,584
85-89	6,087	0	0	0	14,930	17,432	0	0	0	11,134
90+	0	0	0	0	0	20,517	0	0	0	20,517
ALL	12,016	18,675	10,859	15,381	19,488	19,489	0	0	0	13,769

	Total Annual Benefit (IN THOUSANDS) by Years Since Member Death <5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	ALL
ALL	553	224	98	185	39	58	0	0	0	1,157

Table 11B
Coordinated Determination of Contribution Sufficiency
as of July 1, 2020
(Dollars in Thousands)

All remaining active members are Coordinated. Please refer to the contribution calculations on page 22 for Normal Cost and payroll of active members.

Summary of Benefit Provisions for Coordinated Members as of July 1, 2020

STATUTORY CONTRIBUTIONS

Statutory contribution rates for members and their employers are shown as a percent-of-pay below.

Contribution after June 30,	Member	Employer Regular	Employer Additional
2019	7.50%	8.170%	3.84%
2020	7.50%	8.380%	3.84%
2021	7.50%	8.590%	3.84%
2022	7.75%	8.800%	3.84%
2023	7.75%	9.000%	3.84%

SUPPLEMENTAL CONTRIBUTIONS

1996 legislation provides for a variable amortization aid contribution paid annually on July 15. The actual contribution during the past fiscal year was $838,000.

Annual supplemental contributions of $14,827,000 will be contributed by the State of Minnesota each October 1. The contributions will continue until the plan is 100% funded or until June 30, 2048, whichever occurs earlier.

PARTICIPANTS

Professional educators in the public schools of the City of St. Paul, excluding charter schools, whose position requires a license from the Minnesota Professional Educator Licensing and Standards Board, and who are covered under the Social Security Act and make contributions to the St. Paul Teachers' Retirement Fund Association, are covered under the Coordinated Plan.

ALLOWABLE SERVICE

Service earned as a licensed educator in the St. Paul Public Schools, in the St. Paul College, or in certain charter schools, or as an employee of the Association. Also includes service credited after receipt of payment as required, for licensed educators on leave. Service is granted on a proportional basis for part-time teachers.

Summary of Benefit Provisions for Coordinated Members as of July 1, 2020

SALARY

Total compensation excluding lump sum payments for unused leave at termination and employer-paid insurance coverage.

AVERAGE SALARY

Average of the highest five successive years of salary while making contributions. In cases where the Allowable Service is less than five years, Average Salary is based on the Allowable Service years.

NORMAL RETIREMENT BENEFIT

Eligibility

Three years of Allowable Service. The eligibility age is 65 for those hired before July 1, 1989 and the earlier of eligibility for full Social Security retirement benefits to a maximum of age 66 for those hired on or after July 1, 1989. A Proportionate Retirement Annuity is available at Normal Retirement Age with one year of Allowable Service.

Benefit

1.70 percent of Average Salary for each year of Allowable Service rendered before July 1, 2015 and 1.90 percent of Average Salary for each year of Allowable Service rendered after June 30, 2015.

Summary of Benefit Provisions for Coordinated Members as of July 1, 2020

EARLY RETIREMENT BENEFIT

Eligibility

Attainment of age 55 and 3 years of Allowable Service.

Benefit

Members hired before July 1, 1989 are eligible for the greater of the following benefits. Members hired after July 1, 1989 are eligible for the benefits shown in item (b):

a) For the first 10 years of Allowable Service, 1.20 percent of Average Salary for each year of Allowable Service rendered prior to July 1, 2015, plus 1.40 percent of Average Salary for each year of Allowable Service rendered after June 30, 2015. Additionally, for each subsequent year of Allowable Service in excess of 10 years, 1.70 percent of Average Salary for each year rendered prior to July 1, 2015, plus 1.90 percent of Average Salary for each year rendered after June 30, 2015. There is a reduction of 0.25 percent for each month the member is under age 65, or under age 62 with 30 years of Allowable Service. No reduction applies if the age plus years of service totals at least 90.

b) 1.70 percent of Average Salary per year of Allowable Service rendered before July 1, 2015 and 1.90 percent of Average Salary for each year of service rendered after June 30, 2015 reduced for each month the member is under the Normal Retirement Age using linear interpolation of the factors in the tables listed below. The ultimate factors for retirements on or after July 1, 2024 will be phased in over a sixty-month period starting July 1, 2019.

	UNDER AGE 62 OR LESS THAN 30 YEARS OF SERVICE					
	RETIREMENTS PRIOR TO JULY 1, 2019		RETIREMENTS ON OR AFTER JULY 1, 2024		AGE 62 OR OLDER WITH 30 YEARS OF SERVICE	
Normal Retirement Age:	**65**	**66**	**65**	**66**	**65**	**66**
Age at Retirement						
55	0.5376	0.4592	0.4200	0.3500		
56	0.5745	0.4992	0.4600	0.3900		
57	0.6092	0.5370	0.5000	0.4300		
58	0.6419	0.5726	0.5400	0.4700		
59	0.6726	0.6062	0.5800	0.5100		
60	0.7354	0.6726	0.6500	0.5800		
61	0.7947	0.7354	0.7200	0.6500		
62	0.8507	0.7947	0.7900	0.7200	0.8831	0.8389
63	0.9035	0.8507	0.8600	0.7900	0.9246	0.8831
64	0.9533	0.9035	0.9300	0.8600	0.9635	0.9246
65	1.0000	0.9533	1.0000	0.9300	1.0000	0.9635
66		1.0000		1.0000		1.0000

Summary of Benefit Provisions for Coordinated Members as of July 1, 2020

DISABILITY RETIREMENT BENEFIT

Eligibility

Total and permanent disablement and three years of Allowable Service with service earned within the current fiscal year and at least two years of Allowable Service since the last interruption in service.

Benefit

Calculated as a normal retirement benefit payable for life without reduction for early commencement. At normal retirement age, the benefit converts from a disability benefit to a retirement benefit. The disability benefit is reduced by any Workers' Compensation benefits payable.

DEFERRED RETIREMENT BENEFIT

Eligibility

Three years of Allowable Service.

Benefit

Benefit computed under law in effect at termination and payable as a normal or early retirement benefit. For members hired on or before June 30, 2006, the benefit is augmented at 3.00 percent compounded annually from the 1st of the month following termination until the January 1st after turning age 55 and then augmented at 5.00 percent compounded annually from that date to July 1, 2012. For members hired after June 30, 2006, the benefit is augmented at 2.50 percent compounded annually from the 1st of the month following termination to July 1, 2012. Augmentation for all members, regardless of hire date, changed to 2.00 percent as of July 1, 2012 for the portion of benefit deferral which occurs after June 30, 2012 to June 30, 2019. After June 30, 2019, benefits are not augmented.

SURVIVOR BENEFIT (Active Members)

Eligibility

Active member with three years of Allowable service. A surviving spouse is defined as the person legally married to the member at the time of death. If none, a dependent child who is the legal child of the member, who is less than 20 years of age and unmarried.

Benefit

Retirement benefit earned at the time of death with choices for either a reduced for 100 percent joint survivorship, or 5-, 10-, 15-, or 20-year term certain. The benefit is available immediately upon application. Actuarial reductions assuming 2.5 percent augmentation for the calculation of the survivorship portion of a 100 percent joint and survivor benefit are actuarially determined based on the member's and survivor's ages at the death of the member.

Early retirement reductions apply to the survivor benefit based on the member's age when deceased. If the deceased member had not yet attained age 55 at time of death, the additional early retirement reduction from age 55 to the age of the member at death applies at only one-half of the actuarial rate.

Summary of Benefit Provisions for Coordinated Members as of July 1, 2020

REFUND OF CONTRIBUTIONS

Eligibility

Termination or death where no annuity is payable or a refund of contributions is chosen in lieu of an annuity.

Benefit

Member contributions with 6.00 percent interest accrued through June 30, 2011, 4.00 percent interest accrued through June 30, 2018, and 3.00 percent interest thereafter.

REEMPLOYED ANNUITANTS

The School District shall make the regular employer contribution and additional employer contribution, plus a supplemental contribution equal to 2.5 percent of salary, on behalf of any retired member who is reemployed by the School District. Reemployed annuitants do not accrue additional benefits.

NORMAL FORM OF RETIREMENT BENEFITS

Straight life annuity. Actuarially equivalent options are available to provide post-retirement beneficiary or survivor benefits.

BENEFIT INCREASES

2020:	0.00 percent
2021 and thereafter:	1.00 percent

For retirements on and after July 1, 2024, the first benefit increase is delayed until the retiree reaches Normal Retirement Age (not applicable to Rule of 90 retirees, Rule of 62/30 retirees, disability benefit recipients, or survivors).

CHANGES IN PLAN PROVISIONS

There have been no changes in plan provisions since the prior valuation.

SECTION 7

ADDITIONAL DISCLOSURES

Table 14
Additional Disclosures – Schedule of Funding Progress
(Dollars in Thousands)

Actuarial Valuation Date	Actuarial Value of Assets (A)	Actuarial Accrued Liability (B)	Unfunded AAL (UAAL) (B)-(A)	Funded Ratio (A)/(B)	Actual Covered Payroll (Previous FY) (C)	UAAL as % of Covered Payroll ((B)-(A))/(C)
07/01/97	$ 556,406	$ 805,066	$ 248,660	69.11%	$ 151,363	164.28%
07/01/98	625,053	861,584	236,531	72.55%	168,564	140.32%
07/01/99	704,233	938,847	234,614	75.01%	178,254	131.62%
07/01/00	801,823	998,253	196,430	80.32%	187,950	104.51%
07/01/01	869,045	1,060,931	191,886	81.91%	202,915	94.56%
07/01/02	899,572	1,141,300	241,728	78.82%	201,456	119.99%
07/01/03	898,760	1,189,361	290,601	75.57%	205,655	141.31%
07/01/04	898,860	1,251,460	352,600	71.82%	221,685	159.05%
07/01/05	905,292	1,299,832	394,540	69.65%	223,762	176.32%
07/01/06	938,919	1,346,072	407,153	69.75%	226,351	179.88%
07/01/07	1,015,722	1,380,151	364,429	73.59%	229,172	159.02%
07/01/08	1,075,951	1,432,040	356,089	75.13%	235,993	150.89%
07/01/09	1,049,954	1,454,314	404,360	72.20%	243,166	166.29%
07/01/10	1,001,444	1,471,630	470,185	68.05%	239,996	195.91%
07/01/11	972,718	1,389,875	417,157	69.99%	239,738	174.01%
07/01/12	911,930	1,471,216	559,286	61.98%	239,053	233.96%
07/01/13	886,296	1,467,350	581,054	60.40%	247,432	234.83%
07/01/14	947,972	1,533,603	585,631	61.81%	259,740	225.47%
07/01/15	999,736	1,596,770	597,034	62.61%	263,844	226.28%
07/01/16	1,007,360	1,592,570	585,210	63.25%	258,787	226.14%
07/01/17	1,038,467	1,611,208	572,741	64.45%	264,342	216.67%
07/01/18	1,067,675	1,676,193	608,518	63.70%	263,122	231.27%
07/01/19	1,079,552	1,691,721	612,169	63.81%	268,614	227.90%
07/01/20	1,090,243	1,691,236	600,993	64.46%	274,667	218.81%

Table 15
Additional Disclosures – Schedule of Employer Contributions
(Dollars in Thousands)

Year Ended June 30	Actuarially Required Contribution Rate (A)	Actual Covered Payroll (B)	Actual Member Contributions (C)	Annual Required Contributions (D) = [(A)*(B)]-(C)	Actual Employer Contributions [1] (E)	Percentage Contributed (E) / (D)
1998	20.35%	$ 168,564	$ 11,057	$ 23,246	$ 21,702	93.36%
1999	18.82%	178,254	11,649	21,898	21,066	96.20
2000	18.09%	187,950	13,184	20,816	22,622	108.68
2001	16.57%	202,915	13,170	20,453	23,569	115.23
2002	15.81%	201,456	14,468	17,382	24,216	139.32
2003	18.56% [2]	205,655	14,222	23,948	23,370	97.59
2004	20.36%	221,685	14,308	30,827	23,771	77.11
2005	21.59%	223,762	13,587	34,723	23,833	68.64
2006	23.78%	226,351	13,453	40,373	24,015	59.48
2007	24.55%	229,172	13,438	42,823	24,117	56.32
2008	23.40%	235,993	13,642	41,580	24,285	58.40
2009	17.63%	243,166	13,864	29,007	24,844	85.65
2010	18.40%	239,996	13,832	30,328	25,126	82.85
2011	19.84%	239,738	13,745	33,819	25,090	74.19
2012	18.37%	239,053	14,117	29,797	25,109	84.27
2013	22.87%	247,432	15,164	41,424	26,445	63.84
2014	22.13%	259,740	16,564	40,916	35,197	86.02
2015	21.94%	263,844	17,567	40,320	36,711	91.05
2016	22.26%	258,787	18,538	39,068	37,228	95.29
2017	22.44%	264,342	20,146	39,172	38,350	97.90
2018	22.16%	263,122	20,112	38,196	39,209	102.65
2019	21.54%	268,614	20,626	37,233	46,981	126.18
2020	21.87%	274,667	20,889	39,181	49,804	127.11

[1] *Includes contributions from other sources (if applicable).*

[2] *Actuarially Required Contribution Rate prior to change in Actuarial Assumptions is 16.19%.*

Table 16
Additional Disclosures – Development of the Fund
(Dollars in Thousands)

Year Ended June 30	Employer Contributions	Employee Contributions	Supplemental Contributions*	Actuarial Net Investment Return	Administrative Expenses	Benefit Payments	Actuarial Value of Assets EOY
2007	$ 19,666	$ 13,438	$ 4,451	$ 124,214	$ 696	$ 84,271	$ 1,015,722
2008	20,775	13,642	3,509	112,804	691	89,810	1,075,951
2009	21,501	13,864	3,343	28,924	605	93,024	1,049,954
2010	21,018	13,832	4,108	9,496	602	96,362	1,001,444
2011	21,013	13,745	4,077	31,391	722	98,230	972,718
2012	21,452	14,117	3,658	3,447	736	102,726	911,930
2013	22,780	15,164	3,665	37,919	751	104,411	886,296
2014	24,532	16,564	10,665	117,499	739	106,845	947,972
2015	25,505	17,567	11,206	107,987	748	109,753	999,736
2016	26,433	18,538	10,795	64,402	749	111,795	1,007,360
2017	27,543	20,146	10,807	87,243	889	113,743	1,038,467
2018	28,199	20,112	11,010	86,771	786	116,098	1,067,675
2019	30,919	20,626	16,062	62,114	764	117,080	1,079,552
2020	33,861	20,889	15,943	59,348	788	118,562	1,090,243

** Includes employer contributions for reemployed annuitants.*

Table 17
Additional Disclosures – Supplementary Information

Valuation Date	July 1, 2020
Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percent of Pay, Closed, Assuming Three Percent Payroll Growth
Amortization Period	Closed Period ending June 30, 2048
Asset Valuation Method	5-Year Smoothed Market
Actuarial Assumptions:	
Investment rate of return	7.50 percent
Projected salary increases	3.00 percent - 9.00 percent; service based
Plan Membership:	
Active Members	3,445
Retirees and Beneficiaries	4,102
Terminated Vested Members	2,491
Other Non-Vested Terminated Members	2,834
Total	12,872