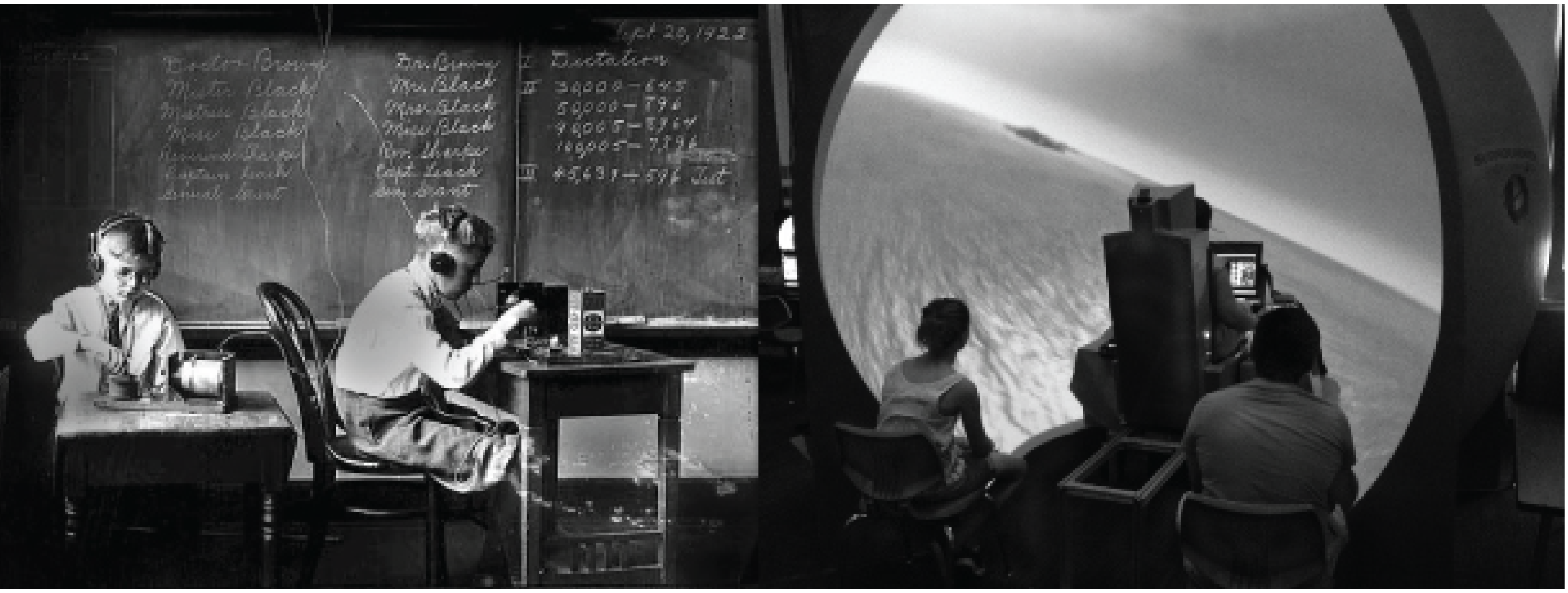
St. Paul Teachers' Retirement Fund Association

Serving the retirement needs of St. Paul Teachers since 1909



ANNUAL REPORT

FYE **2020**

Democracy depends on Education
Education depends on Teachers

ST. PAUL TEACHERS' RETIREMENT FUND ASSOCIATION

Annual Report

for the fiscal year ended June 30, 2020

St. Paul Teachers' Retirement Fund Association
1619 Dayton Avenue, Room 309
Saint Paul, Minnesota 55104-6206

Phone 651-642-2550
Fax 651-642-2553
www.sptrfa.org

Jill E. Schurtz
Executive Director

Christine MacDonald
CFO / Deputy Director

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Mission

Provide our members and their beneficiaries with retirement, survivor, and disability benefits as specified in law and the Association Articles and Bylaws.

Assist our members in planning a secure retirement by providing friendly, high quality, consumer oriented service, pre-retirement education and information in a professional and cost effective manner.

Invest the assets of the fund to provide the optimum return while preserving principal by controlling portfolio risk.

SPTRFA Board of Trustees

SPTRFA Staff

Jill E. Schurtz	Executive Director
Christine MacDonald	CFO / Deputy Director
Nancy Langer	Member Services and Outreach
Rachel Pastick	Communications and Member Services
Janet Williams	Operations and Member Services
Tamera Zielinski	Administrative Assistant

St. Paul Teachers' Retirement Fund Association

1619 Dayton Avenue, Room 309
Saint Paul, MN 55104-6206
Phone (651) 642-2550
Fax (651) 642-2553
Online: www.sptrfa.org

Letter of Transmittal

Members of the Association:

The trustees and staff of the St. Paul Teachers' Retirement Fund Association (SPTRFA) present the Annual Financial Report for the fiscal year ended June 30, 2020, in accordance with the provisions of Minnesota Statutes § 356.20.

This report is intended to provide readers with sufficient information to make informed assessments about the organization's financial condition, fiscal activities, actuarial status, investment performance, and compliance with laws, regulations, bylaws and policies.

This is the complete Annual Report of the Association. This report is also available on the Fund's website at, www.sptrfa.org, or by request from the SPTRFA office.

Major sections included in this report and their content are as follows:

- **Introduction**
  Mission Statement, Board of Trustees, professional service relationships, and organizational structure.

- **Benefits**
  Summary information regarding Plan benefit options, calculation methods, and a history of annual retirements.

- **Investments**
  Fund investment returns and Fund investment advisors under contract with the Association.

- **Actuarial Valuation**
  Actuary's Certification Letter and various actuarial valuation sections that assess the Plan's long-term funded status and adequacy of revenues and describe relevant actuarial methods and assumptions.

- **Appendix A – State Auditor's Report**
  The Office of the State Auditor (OSA) audits the financial statements of the SPTRFA, and has issued an unmodified opinion on the accuracy and reliability of the information provided by the statements contained in this Report. An unmodified opinion is the most favorable level of opinion that can be rendered by the OSA. This report is available on the website of the Minnesota Office of the State Auditor, https://www.osa.state.mn.us/list.aspx?type=afs.

The SPTRFA Board and staff are responsible for the safekeeping of the Association's assets, the prudent investment of those assets, and for ensuring that benefits are calculated properly and paid timely. Administrative costs are budgeted at a level sufficient to service the needs of our members. We strive to be service providers of the first order and our administrative costs remain extremely efficient.

The Board and staff of the SPTRFA serve as fiduciaries on behalf of our members and their survivors and beneficiaries. We manage the assets entrusted to our care in concert with the Prudent Person Standard in Minn. Stat. § 356A.04, subd. 2, and as specified under Minn. Stat. § 356A.06, subd. 7.

With over 111 years of service to our members, the SPTRFA Board and staff remain committed to administering the affairs of the Association with the highest degree of diligence and efficiency.

Respectfully submitted,

Jill E. Schurtz
Executive Director

Mike McCollor President	Lori Borgeson Vice President	W. Matt Bogenschultz Secretary	Mike McKay Treasurer

Independent Professional Service Providers
As of June 30, 2020

Actuary
Gabriel Roeder Smith & Company

Auditor
Minnesota Office of the State Auditor

Investment Managers
Barrow, Hanley, Mewhinney & Strauss, LLC
BlackRock Institutional Trust Co.
Brandywine Global Investment Management, LLC
Dimensional Fund Advisors, LP
Dune Real Estate Partners
EnTrust Global
Franklin Park
Guggenheim Partners Investment Management, LLC
JPMorgan Investment Management, Inc.
Mellon Investments Corp
Morgan Stanley Investment Management, Inc.
North Sky Capital
Parametric Portfolio Associates, LLC
RWI Ventures I
Securian Asset Management, Inc.
Minnesota State Board of Investment
TCW Asset Management Co.
Tortoise Capital Advisors, LLC
UBS Realty Investors, LLC
Venture Investment Associates
Wellington Management Company, LLP

Investment Custodian
U.S. Bank

Investment Performance Consultant
Asset Consulting Group

IT Services
Sagitec
Corporate Technologies

Legal Counsel
Fox Rothschild, LLC
Rice, Michels & Walther, LLP

Medical Advisors
Dr. Ronald Vessey M.D.
Dr. David Johnson M.D.

Organizational Chart

MEMBERS

ACTIVE | RETIRED | SURVIVORS | BENEFICIARIES

BOARD OF TRUSTEES

Mike McCollor, President
Lori Borgeson, Vice President
W. Matt Bogenschultz, Secretary
Michael McKay, Treasurer
Zuki Ellis, Ex-Officio Trustee
John R. Kunz, Jr., Trustee
Thomas Koreltz, Trustee
Karen A. Odegard, Trustee
Stephanie Pignato, Trustee
Margaret Schiller, Trustee

ADMINISTRATION

Jill E. Schurtz, Executive Director
Christine MacDonald, CFO / Deputy Director
Nancy Langer, Member Services and Outreach
Rachel Pastick, Communications and Member Services
Janet Williams, Operations and Member Services
Tamera Zielinski, Administrative Assistant

BENEFITS ADMINISTRATION

Member Services
Records Management
Member Counseling
Benefit Payments &
Reporting

OPERATIONS & FINANCE

Accounting / Reporting
Budget Administration
Business Administration
Investment Mgmt. & Reporting
Information Systems
Publications
Office Payroll & Benefits

PROFESSIONAL TECHNICAL SERVICES

Actuary
Investment Managers
Investment Custodian
Investment Consultant
IT Services
Legal Counsel
Medical Advisors

GOVERNMENTAL RELATIONS

Minnesota State Auditor
Legislative Commission on Pensions & Retirement
Minnesota Department of Management and Budget
Minnesota Department of Revenue
Minnesota Campaign Finance & Public Disclosure Board
U.S. Department of Treasury

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BENEFITS

Pre-Retirement Topics

Membership	SPTRFA membership is mandatory upon employment in any position requiring a license issued by the MN Professional Educator Licensing and Standards Board for employment with Saint Paul Public Schools (SPPS), St. Paul College (SPC) – if you were first employed prior to July 1, 1995, or St. Paul Charter Schools – from July 1, 1995 through June 30, 2002. Hereinafter collectively referred to as "Saint Paul Schools."
Allowable Retirement Service Credit	A full year of retirement service credit is earned after 170 days are worked during each fiscal year. Partial years are calculated based on the ratio of days worked to 170 days. No more than one year of retirement service credit is allowable during any fiscal year.
Definition of Salary	Minnesota Statutes Chapter 354A and the Association Articles and Bylaws define salary as the entire compensation upon which member contributions are required and made.
Refund of Contributions	Coordinated and Basic members who resign from St. Paul Schools may apply for a refund of employee contributions, plus applicable interest. Basic Plan members must be either under Age 55 or ineligible for a pension to receive a refund of contributions.
Repaying a Refund of Contributions	A member who received a refund may reinstate previous retirement service credit by repaying the amount refunded plus applicable interest. Such repayments may only be made after the member has accumulated at least two years of allowable retirement service credit since the last refund was taken.
Leaves of Absence	Subject to certain requirements, members may purchase retirement service credit for the following Saint Paul Schools approved leaves of absence: Sabbatical, Military, Parental, Mobility, Medical, and Family Medical.
Service Payments	Members may repay refunds or purchase SPTRFA retirement service credit by using personal savings or by transferring money from their Roth IRA or tax-sheltered retirement accounts, such as 403(b), 457, 401(k), IRAs, or from another plan qualified under 401(a).
Beneficiary	A beneficiary is the person or persons designated to receive a refund of employee contributions, plus applicable interest, upon the death of the member if no survivor or family benefit is payable. If no valid beneficiary designation form is on file for a member, a refund of contributions plus applicable interest will be paid to the member's estate.
Marriage Dissolution	Minnesota Statutes Chapter 518 covers marriage dissolutions and requires that SPTRFA receive a copy of the petition and summons, including a copy of the affidavit of service, before any information may be released. In the event that a court order requires a division of pension benefits, a judge signed copy of a decree or domestic relations order is required. All inquires are kept confidential. Any survivor benefit coverage ends at the dissolution of marriage.
Disability Benefit	Subject to certain requirements, a disability benefit is available to vested members who become totally and permanently disabled.

Basic Plan Retirement Options	Basic Plan members receive a formula benefit payable for life. An automatic spousal survivor benefit is also provided. This survivor benefit coverage does not cause a reduction in the member's benefit, but does terminate at any dissolution of marriage.
Coordinated Plan Retirement Options	At the time of retirement, Coordinated Plan members select one of the five benefit annuity options below:
C1 Member Life Only	Monthly benefit payable for life to the member, with nothing payable after the member's death.
C2 Guaranteed Refund	Reduced monthly benefit payable for life to the member. In exchange for the member's benefit reduction, after the member's death, SPTRFA pays a refund to a designated beneficiary. The refund is equal to the difference between SPTRFA pre-retirement member contributions less cumulative SPTRFA post-retirement benefits paid to the member prior to death.
C3 15-Year Certain	Reduced monthly benefit payable for life to the member. In exchange for the member's benefit reduction, SPTRFA continues monthly payments to a beneficiary if the member's death occurs within 15 years after retirement. Beneficiary payments end after the balance of the 15 years of SPTRFA benefit payments (member and beneficiary combined) is fulfilled.
C4 100% Joint & Survivor	Reduced monthly benefit payable for life to the member. In exchange for the member's benefit reduction, after the member's death, the member's spouse receives the same monthly benefit for life. If the spouse predeceases the member, the member's benefit would bounceback to the full, unreduced benefit amount payable under the C1 option. Survivor benefit coverage ends at any dissolution of marriage.
C5 50% Joint & Survivor	Reduced monthly benefit payable for life to the member. In exchange for the member's benefit reduction, after the member's death, the member's spouse receives 50% of the member's benefit as a monthly benefit for life. If the spouse predeceases the member, the member's benefit would bounceback to the full, unreduced benefit amount payable under the C1 option. Survivor benefit coverage ends at any dissolution of marriage.

Post-Retirement Topics

Post-Retirement SPPS Reemployment

If a retired member is reemployed by SPPS prior to Age 65, their SPTRFA monthly benefits will be reduced if the retired member earns more than $46,000 from SPPS in any calendar year. The following year's pension will be reduced by one dollar for every three dollars in SPPS earnings over $46,000, with the amount of the reduction forfeited to SPTRFA. After age 65, retired members have no SPPS re-employment earnings limitation. Retired members can work for any other employer without a reduction in their SPTRFA pension benefits.

90 Day Period of Separation

Newly retired members must have a complete and continuous 90 day separation from Saint Paul Schools employment in any form. Importantly, "employment" for this purpose includes "any service provided to Saint Paul Schools directly, as an independent contractor, or as an employee of an independent contractor."

Post-Retirement Adjustment

Post-retirement adjustments are determined annually under Minnesota statutes, which may be amended from time to time. Post-retirement adjustments for FY 2020 were set at 0% under the 2018 Omnibus Pension Bill. That amount is scheduled to increase to 1.0% for FY 2021 onward.

The postretirement benefit increase applies to each eligible member on January 1 of each year. Members in retirement payment status for at least one full year will receive the full increase noted above. Members in retirement payment status after January 1st but on or before July 1st of the preceding year will receive one-half of the full increase.

Basic Plan - Summary of Benefits *

Vested members of the Basic Plan are eligible to receive a lifetime monthly pension based on the member's Final Average Salary (**FAS**), Years of Service (**YOS**) and a Percentage Multiplier.

The following chart provides an overview of the Tier 1 and Tier 2 retirement benefits in effect for eligible Basic Plan members during FY2020.

Normal Benefit	Minimum Age	Minimum Service	Computation of Annual Benefit
Tier 1			
Unreduced	Rule of 90		FAS x YOS x 2.0%
	60	25	
	65	5	
Reduced	55	5	Reduced for early retirement by 0.25% for each month a member's age is under 65.
	55	25	Reduced for early retirement by 0.25% for each month a member's age is under 60.
Tier 2			
Unreduced	65	5	FAS x YOS x 2.5%
Reduced	55	5	Formula reduced for early retirement by the use of actuarial tables.
Deferred Retirement			
	55	5	Annual Benefit (see above) with augmentation.*

*Augmented by 3% per year from date of resignation to January 1 after reaching Age 55, then 5% per year thereafter, if first hired prior to July 1, 2006.
Augmented by 2.5% for all years if first hired on or after July 1, 2006.
Augmentation for all members, regardless of hire date, changed to 2% as of July 1, 2012 for the portion of benefit deferral occuring after June 30, 2012.
Augmentation was eliminated as of July 1, 2019, for the portion of benefit deferral occurring after June 30, 2019.

* Please note that effective July 1, 2020, there are no remaining Basic Plan members in active status.

Vested members of the Coordinated Plan are eligible to receive a lifetime monthly pension based on the member's Final Average Salary (**FAS**), Years of Service (**YOS**) and a Percentage Multiplier. Members first hired after June 30, 1989 are only eligible for Tier 2 benefits.

The following chart provides an overview of the Tier 1 and Tier 2 retirement benefits in effect for eligible Coordinated Plan members during FY2020.

Normal Benefit	Minimum Age	Minimum Service	Computation of Annual Benefit
Tier 1			
Unreduced	Rule of 90		(FAS x First 10 YOS x Multiplier*) + (FAS x YOS greater than 10 x Multiplier*)
	62	30	
	65	3	
Reduced	55	3	Reduced for early retirement by 0.25% for each month a member's age is under 65.
	Any Age	30	Reduced for early retirement by 0.25% for each month a member's age is under 62.

*Tier 1 Multipliers	First 10 YOS	Over 10 YOS
Service Prior to July 1, 2015	1.2%	1.7%
Service Effective July 1, 2015	1.4%	1.9%

Normal Benefit	Minimum Age	Minimum Service	Computation of Annual Benefit
Tier 2			
Unreduced	If first employed before July 1, 1989:		
	65	3	FAS x YOS x Multiplier**
	If first employed on or after July 1, 1989:		
	66	3	FAS x YOS x Multiplier**
Reduced	55	3	Reduced for early retirement by the use of actuarial tables.

**Tier 2 Multipliers		
	Service Prior to July 1, 2015	1.7%
	Service Effective July 1, 2015	1.9%

Deferred Retirement

Age	Service	Computation of Annual Benefit
55	3	Annual Benefit (see above) with augmentation.***
Any Age	30	

*** Augmented by 3% per year from date of resignation to January 1 after reaching Age 55, then 5% per year thereafter, if first hired prior to July 1, 2006.

Augmented by 2.5% for all years if first hired on or after July 1, 2006.

Augmentation for all members, regardless of hire date, changed to 2% as of July 1, 2012 for the portion of benefit deferral occuring after June 30, 2012.

Augmentation was eliminated as of July 1, 2019, for the portion of benefit deferral occurring after June 30, 2019.

Retirement History Record

Fiscal Year Ending	Pensions Granted	Persons On Payroll	Benefits Paid ($)
June 1910	15	13	$ 4,860
June 1931	8	125	69,024
June 1932	8	130	72,961
June 1933	2	126	74,190
June 1934	6	127	74,120
June 1935	9	131	74,001
June 1936	14	135	75,864
June 1937	19	151	80,747
June 1938	17	160	89,709
June 1939	11	161	93,184
June 1939 to			
December 1939	0	158	23,870
December 1940	71	222	170,685
December 1941	35	246	210,257
December 1942	27	266	234,217
December 1943	38	286	253,031
December 1944	34	311	282,299
December 1945	56	350	308,113
December 1946	51	378	337,512
December 1947	28	387	360,571
December 1948	42	413	375,912
December 1949	42	441	419,618
December 1950	30	461	450,641
December 1951	27	476	472,670
December 1952	28	486	508,923
December 1953	32	487	525,959
December 1954	10	482	529,429
December 1955	38	509	666,994
December 1956	46	529	750,146
December 1957	59	560	840,883
December 1958	41	579	1,019,502
December 1959	30	585	1,084,506
December 1960	38	600	1,144,380
December 1961	39	611	1,230,715
December 1962	49	624	1,352,779
December 1963	42	647	1,467,461
December 1964	33	653	1,545,252
December 1965	40	668	1,631,554
December 1966	43	676	1,770,083
December 1967	36	682	1,862,249
December 1968	45	695	1,969,760
December 1969	53	726	2,319,186
December 1970	31	719	2,385,868
December 1971	47	731	2,522,350
December 1972	51	745	2,742,660
December 1973	36	744	3,039,253
December 1974	46	754	3,372,453

Fiscal Year Ending	Pensions Granted	Persons On Payroll	Benefits Paid ($)
December 1975	52	778	$ 3,765,322
December 1976	77	883	4,393,513
December 1977	63	919	5,050,507
December 1978	48	946	5,523,548
December 1979	40	946	6,240,309
December 1980	47	963	6,623,804
December 1981	47	981	7,139,037
December 1982	61	996	7,725,617
December 1983	72	1,042	8,555,099
December 1984	64	1,061	9,466,664
January 1985 to			
June 1985	59	1,103	5,324,727
June 1986	66	1,134	11,267,144
June 1987	117	1,191	12,478,180
June 1988	70	1,210	14,690,455
June 1989	67	1,236	15,506,957
June 1990	67	1,270	17,382,410
June 1991	80	1,309	18,811,677
June 1992	83	1,357	20,509,335
June 1993	120	1,426	22,763,806
June 1994	92	1,469	25,044,494
June 1995	113	1,539	26,792,534
June 1996	119	1,595	29,446,215
June 1997	179	1,720	32,056,967
June 1998	129	1,789	37,852,099
June 1999	114	1,861	41,724,751
June 2000	144	1,964	47,121,179
June 2001	130	2,050	53,851,893
June 2002	127	2,136	58,738,724
June 2003	126	2,248	63,357,052
June 2004	141	2,361	67,941.921
June 2005	192	2,505	72,448,201
June 2006	146	2,624	78,420,222
June 2007	138	2,744	82,809,201
June 2008	122	2,851	88,273,233
June 2009	114	2,933	92,137,480
June 2010	166	3,044	95,299,300
June 2011	233	3,212	97,264,937
June 2012	141	3,292	101,989,143
June 2013	166	3,404	103,237,869
June 2014	177	3,529	105,742,221
June 2015	178	3,633	108,877,858
June 2016	159	3,723	111,223,711
June 2017	190	3,851	112,750,820
June 2018	138	3,914	115,315,754
June 2019	154	4,007	116,389,114
June 2020	175	4,102	117,305,464

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INVESTMENTS

Investment Returns for Fiscal Year End June 30, 2020

	Assets Under Management (Market Value)	Fiscal Year Investment Performance
Domestic Equity		
Barrow, Hanley, Mewhinney & Strauss, Inc.	47,103,214	-8.04%
BlackRock S&P 500	12,014,641	7.52%
Mellon Investments Corp.	32,215,485	-3.83%
Dimensional Fund Advisors, Inc.	27,625,112	-19.46%
State Board of Investments - Domestic Equity	267,864,974	6.76%
Wellington Management Company, LLP	59,859,390	13.36%
	446,682,816	
International Equity		
State Board of Investments - Int'l Equity		-3.92%
	74,465,610	
Global Equity		
BlackRock iShares ETF	6,572,077	-4.23%
Morgan Stanley Global Franchise	83,165,433	8.78%
JP Morgan Focus	121,878	
	89,859,388	
Fixed Income		
Brandywine Global Opportunistic Fixed	31,008,496	0.45%
Guggenheim Core Plus	106,232,040	9.09%
Vanguard Short Term Bond Index	5,027,180	
	142,267,716	
Real Assets		
Securian	27,494,689	-5.24%
UBS Trumbull Fund	34,722,001	-1.43%
UBS Growth & Income Fund	17,849,176	-0.49%
Tortoise MLP	9,573,706	-36.07%
Private Real Estate - Dune III and Dune IV	5,977,764	-7.20%
Parametric - TIPS	9,964,203	7.85%
	105,581,540	
Private Equity		
Go Secure Edgewage (GSEW)	86,980	
Franklin Park	79,268,294	
North Sky	3,686,283	
RWI Ventures I	66,976	
TCW LLC	5,344,061	
VIA Partners	3,149,748	
	91,602,341	10.04%
Alternatives		
Parametric Defensive Equity	30,193,308	-1.32%
	30,193,308	
Opportunistic		
Entrust	7,151,832	-31.80%
	7,151,832	
Cash		
Cash - US Bank Custody	21,453,872	1.33%
Parametric Cash Overlay	9,216,412	3.41%
	30,670,285	
Total Fund (net of fees)	**1,018,474,835**	**0.10%**
Total Fund Benchmark		**3.55%**
Cash - US Bank Checking	13,185,314	
Total Investable Assets	**1,031,660,149**	

ACTUARIAL SECTION

800.521.0498 | P: 248.799.9000 | www.grsconsulting.com

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.

Ms. Jill E. Schurtz
St. Paul Teachers' Retirement Fund Association
December 16, 2020
Page 2

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 Christensen

Sheryl L. Christensen, ASA, EA, FCA, MAAA

BJW/JDA/SLC:sc

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

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.*

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)

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.*

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.*

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

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

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

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	Post-Retirement Mortality 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

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	Pre-Retirement Mortality 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

Actuarial Methods and Assumptions as of July 1, 2020

Rates of Disability:

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

Age	Disability
20	1
21	1
22	1
23	1
24	1
25	1
26	1
27	1
28	1
29	1
30	2
31	2
32	2
33	2
34	2
35	2
36	2
37	2
38	2
39	2
40	3
41	3
42	3
43	3
44	3

Age	Disability
45	4
46	4
47	4
48	4
49	4
50	9
51	9
52	9
53	9
54	9
55	17
56	17
57	17
58	17
59	17
60	35
61	35
62	35
63	35
64	35

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.*

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.

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.

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.

APPENDIX – *State Auditor's Report*

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STATE OF MINNESOTA

Office of the State Auditor

Julie Blaha
State Auditor

The Office of the State Auditor (OSA) audits the financial statements of the SPTRFA, and has issued an unmodified opinion on the accuracy and reliability of the information provided by the statements contained in this Report. An unmodified opinion is the most favorable level of opinion that can be rendered by the OSA. This report is available on the website of the Minnesota Office of the State Auditor, https://www.osa.state.mn.us/list.aspx?type=afs.

ST. PAUL TEACHERS' RETIREMENT FUND ASSOCIATION
ST. PAUL, MINNESOTA

FOR THE YEAR ENDED JUNE 30, 2020

St. Paul Teachers' Retirement Fund Association
1619 Dayton Avenue, Room 309
St. Paul, MN 55104-6206