

St. Paul Teachers' Retirement Fund Association

Serving the retirement needs of St. Paul Teachers since 1909



ANNUAL REPORT

Democracy depends on Education
Education depends on Teachers

FYE 2019

ST. PAUL TEACHERS' RETIREMENT FUND ASSOCIATION

Annual Report

for the fiscal year ended June 30, 2019

*St. Paul Teachers' Retirement Fund Association
1619 Dayton Avenue, Room 309
Saint Paul, Minnesota 55104-6276*

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

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

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

TRUSTEES & OFFICERS

Zuki Ellis	Karen Odegard	John R. Kunz, Jr. President	1619 Dayton Avenue, Room 309
Thomas Koreltz	Stephanie Pignato	Mike McCollor Vice President	Saint Paul, MN 55104-6206
Michael McKay	Margaret Schiller	W. Matthew Bogenschultz .. Secretary	Phone (651) 642-2550
		Lori Borgeson..... Treasurer	Fax (651) 642-2553
		Jill E. Schurtz Executive Director	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, 2019, 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, security holdings, and 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 will be published on the website of the Minnesota Office of the State Auditor, <http://www.osa.state.mn.us>, in January 2020.

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 110 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,



John R. Kunz, Jr.
President



W. Matt Bogenschultz
Secretary



Lori Borgeson
Treasurer



Jill E. Schurtz
Executive Director

Independent Professional Service Providers

As of June 30, 2019

Actuary

Gabriel Roeder Smith & Company

Auditor

Minnesota Office of the State Auditor

Investment Managers

Allianz Global Investors
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

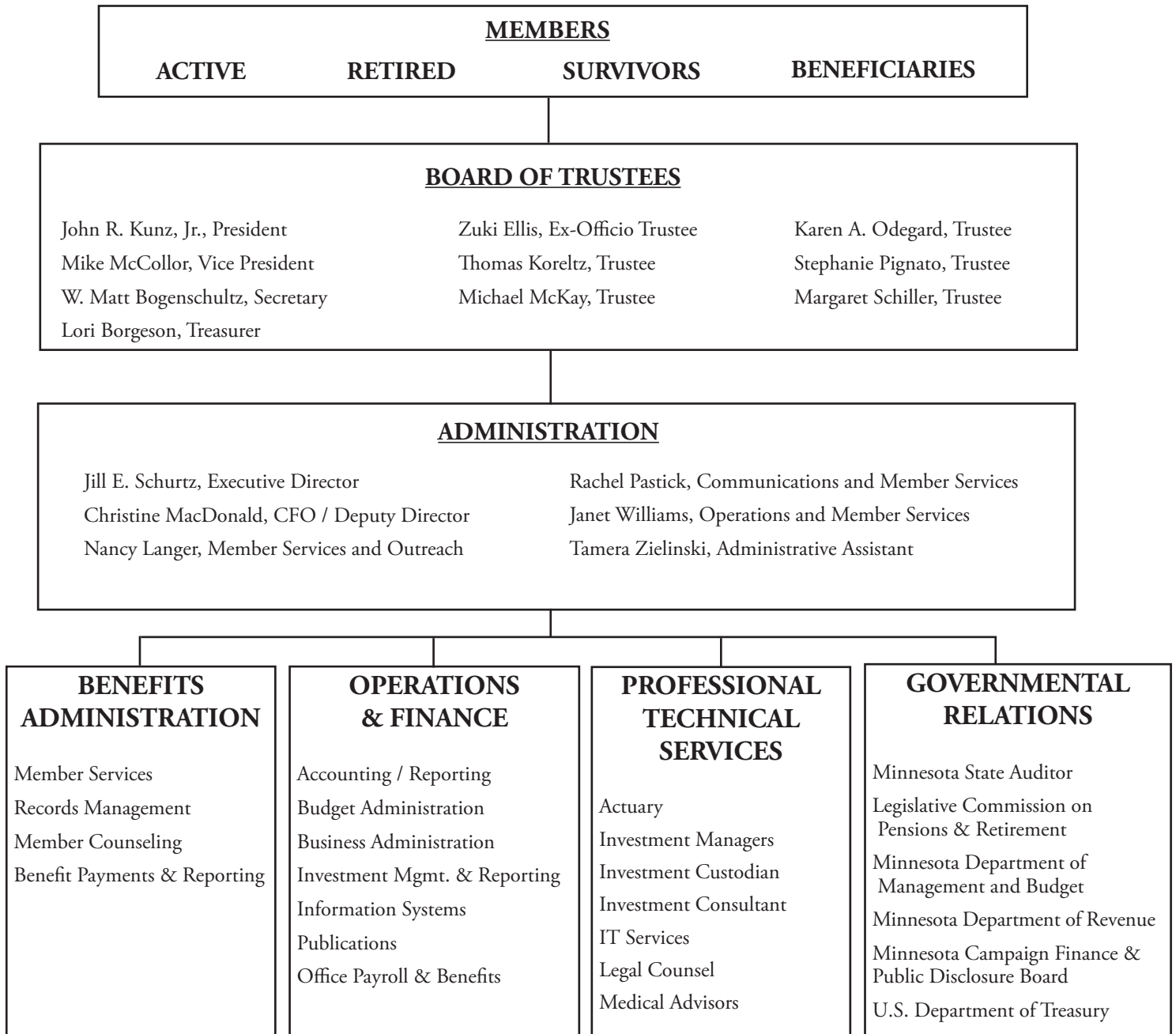
Legal Counsel

Fox Rothschild, LLC
Rice, Michels & Walther, LLP

Medical Advisors

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

Organizational Chart



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 inquiries 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.

Retirement Topics

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. For FY2019 post-retirement adjustments were decreased from 1% to 0%.

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 FY2019.

Normal Benefit	Minimum	Age	Service	Computation of Annual Benefit
Tier 1				
Unreduced	Rule of 90	60	25	} FAS x YOS x 2.0%
		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.*
<p>* 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 occurring after June 30, 2012. Augmentation was eliminated as of July 1, 2019, for the portion of benefit deferral occurring after June 30, 2019.</p>		

** Please note that effective FY2020, there are no remaining Basic Plan members in active status.

Coordinated Plan - Summary of Benefits

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 FY2019.

Normal Benefit	Minimum	Age	Service	Computation of Annual Benefit									
Tier 1													
Unreduced	Rule of 90	62	30	$(FAS \times \text{First 10 YOS} \times \text{Multiplier}^*)$ + $(FAS \times \text{YOS greater than 10} \times \text{Multiplier}^*)$									
		65	3										
		Any Age	30										
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									
				<table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">Service Prior to July 1, 2015</td> <td style="text-align: center;">First 10 YOS</td> <td style="text-align: center;">Over 10 YOS</td> </tr> <tr> <td style="text-align: center;">Service Effective July 1, 2015</td> <td style="text-align: center;">1.2%</td> <td style="text-align: center;">1.7%</td> </tr> <tr> <td style="text-align: center;">Service Effective July 1, 2015</td> <td style="text-align: center;">1.4%</td> <td style="text-align: center;">1.9%</td> </tr> </table>	Service Prior to July 1, 2015	First 10 YOS	Over 10 YOS	Service Effective July 1, 2015	1.2%	1.7%	Service Effective July 1, 2015	1.4%	1.9%
Service Prior to July 1, 2015	First 10 YOS	Over 10 YOS											
Service Effective July 1, 2015	1.2%	1.7%											
Service Effective July 1, 2015	1.4%	1.9%											

Tier 2

Unreduced	If first employed before July 1, 1989:						
	65	3	FAS x YOS x Multiplier*				
Unreduced	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							
<table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">Service Prior to July 1, 2015</td> <td style="text-align: center;">1.7%</td> </tr> <tr> <td style="text-align: center;">Service Effective July 1, 2015</td> <td style="text-align: center;">1.9%</td> </tr> </table>				Service Prior to July 1, 2015	1.7%	Service Effective July 1, 2015	1.9%
Service Prior to July 1, 2015	1.7%						
Service Effective July 1, 2015	1.9%						

Deferred Retirement

55	3	Annual Benefit (see above) with augmentation.*
Any Age	30	
<p>* 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 occurring after June 30, 2012. Augmentation was eliminated as of July 1, 2019, for the portion of benefit deferral occurring after June 30, 2019.</p>		

Retirement History Record

Fiscal Year Ending	Pensions Granted	Persons On Payroll	Benefits Paid (\$)	Fiscal Year Ending	Pensions Granted	Persons On Payroll	Benefits Paid (\$)
June 1910	15	13	\$ 4,860	December 1975	52	778	\$ 3,765,322
June 1931	8	125	69,024	December 1976	77	883	4,393,513
June 1932	8	130	72,961	December 1977	63	919	5,050,507
June 1933	2	126	74,190	December 1978	48	946	5,523,548
June 1934	6	127	74,120	December 1979	40	946	6,240,309
June 1935	9	131	74,001	December 1980	47	963	6,623,804
June 1936	14	135	75,864	December 1981	47	981	7,139,037
June 1937	19	151	80,747	December 1982	61	996	7,725,617
June 1938	17	160	89,709	December 1983	72	1,042	8,555,099
June 1939	11	161	93,184	December 1984	64	1,061	9,466,664
June 1939 to				January 1985 to			
December 1939	0	158	23,870	June 1985	59	1,103	5,324,727
December 1940	71	222	170,685	June 1986	66	1,134	11,267,144
December 1941	35	246	210,257	June 1987	117	1,191	12,478,180
December 1942	27	266	234,217	June 1988	70	1,210	14,690,455
December 1943	38	286	253,031	June 1989	67	1,236	15,506,957
December 1944	34	311	282,299	June 1990	67	1,270	17,382,410
December 1945	56	350	308,113	June 1991	80	1,309	18,811,677
December 1946	51	378	337,512	June 1992	83	1,357	20,509,335
December 1947	28	387	360,571	June 1993	120	1,426	22,763,806
December 1948	42	413	375,912	June 1994	92	1,469	25,044,494
December 1949	42	441	419,618	June 1995	113	1,539	26,792,534
December 1950	30	461	450,641	June 1996	119	1,595	29,446,215
December 1951	27	476	472,670	June 1997	179	1,720	32,056,967
December 1952	28	486	508,923	June 1998	129	1,789	37,852,099
December 1953	32	487	525,959	June 1999	114	1,861	41,724,751
December 1954	10	482	529,429	June 2000	144	1,964	47,121,179
December 1955	38	509	666,994	June 2001	130	2,050	53,851,893
December 1956	46	529	750,146	June 2002	127	2,136	58,738,724
December 1957	59	560	840,883	June 2003	126	2,248	63,357,052
December 1958	41	579	1,019,502	June 2004	141	2,361	67,941,921
December 1959	30	585	1,084,506	June 2005	192	2,505	72,448,201
December 1960	38	600	1,144,380	June 2006	146	2,624	78,420,222
December 1961	39	611	1,230,715	June 2007	138	2,744	82,809,201
December 1962	49	624	1,352,779	June 2008	122	2,851	88,273,233
December 1963	42	647	1,467,461	June 2009	114	2,933	92,137,480
December 1964	33	653	1,545,252	June 2010	166	3,044	95,299,300
December 1965	40	668	1,631,554	June 2011	233	3,212	97,264,937
December 1966	43	676	1,770,083	June 2012	141	3,292	101,989,143
December 1967	36	682	1,862,249	June 2013	166	3,404	103,237,869
December 1968	45	695	1,969,760	June 2014	177	3,529	105,742,221
December 1969	53	726	2,319,186	June 2015	178	3,633	108,877,858
December 1970	31	719	2,385,868	June 2016	159	3,723	111,223,711
December 1971	47	731	2,522,350	June 2017	190	3,851	112,750,820
December 1972	51	745	2,742,660	June 2018	138	3,914	115,315,754
December 1973	36	744	3,039,253	June 2019	154	4,007	116,389,114
December 1974	46	754	3,372,453				

INVESTMENTS

Investment Returns for Fiscal Year End June 30, 2019

	Assets Under Management (Market Value)	Fiscal Year Investment Performance
Domestic Equity		
Barrow, Hanley, Mewhinney & Strauss, Inc.	51,205,883	8.49%
BlackRock S&P 500	11,175,555	10.48%
Mellon Investments Corp.	38,779,788	-7.82%
Dimensional Fund Advisors, Inc.	39,721,020	-10.90%
State Board of Investments - Domestic Equity	250,955,475	9.00%
Wellington Management Company, LLP	53,067,473	16.08%
	\$ 444,905,194	
International Equity		
State Board of Investments - Int'l Equity	72,870,932	1.37%
	\$ 72,870,932	
Global Equity		
BlackRock iShares ETF	6,828,074	0.91%
Morgan Stanley Global Franchise	77,154,362	16.49%
JP Morgan Focus	212,942	
	\$ 84,195,378	
Fixed Income		
Brandywine Global Opportunistic Fixed	37,351,252	4.88%
Allianz Cash Overlay	33,117,586	4.86%
Guggenheim Core Plus	99,614,150	5.74%
	\$ 170,082,988	
Real Assets		
Securian	27,489,704	10.87%
UBS Trumbull Fund	36,673,517	0.08%
UBS Growth & Income Fund	18,477,742	11.18%
Tortoise MLP	18,318,691	1.29%
Dune Realty Partners	5,371,903	11.53%
Parametric - TIPS	9,233,302	4.15%
	\$ 115,564,859	
Private Equity		
Edgewave	11,115	
Franklin Park	55,007,522	
North Sky	5,015,626	
RWI Ventures I	226,333	
TCW LLC	6,153,448	
VIA Partners	2,732,833	
	\$ 69,146,877	16.87%
Alternatives		
Parametric Defensive Equity	30,635,524	4.89%
	\$ 30,635,524	
Opportunistic		
Entrust	16,801,538	-0.54%
	\$ 16,801,538	
Cash		
Cash - US Bank Custody	49,101,943	1.95%
Cash - US Bank Checking	10,529,964	
Parametric Cash Overlay	9,258,030	5.97%
	\$ 68,889,937	
Total Fund (net of fees)	\$ 1,073,093,227	5.73%
Total Fund Benchmark		6.80%

Holdings by Asset Class, Security Type, and Issuer as of June 30, 2019

Asset Class / Security Type / Issuer	Cost	Market Value	Accrued Interest or Dividends	Mkt + Accrued
Cash or Equivalents				
U.S. Bank Commercial Paper Sweep & Cash	\$ 10,529,964	\$ 10,529,964	\$ -	\$ 10,529,964
Custodian Short Term Investment Pool	71,583,515	71,596,793	-	71,596,793
Subtotal - Cash or Equivalents	<u>\$ 82,113,479</u>	<u>\$ 82,126,757</u>	<u>\$ -</u>	<u>\$ 82,126,757</u>
Domestic Equity Securities				
2U Inc	\$ 361,017	\$ 162,605	\$ -	\$ 162,605
Acadia Healthcare Co Inc	380,973	242,448	-	242,448
Adtalem Global Education Inc	350,336	343,056	-	343,056
Advance Auto Parts Inc	1,591,753	1,534,464	549	1,535,012
Advanced Micro Devices Inc	327,026	706,103	-	706,103
Aerie Pharmaceuticals Inc	483,348	292,309	-	292,309
Agree Realty Corp	321,794	409,920	3,648	413,568
Air Prods Chemicals Inc	1,129,982	2,050,007	10,505	2,060,512
Alexandria Real Estate Equities Inc	703,644	910,736	6,455	917,191
Ally Financial Inc	197,406	249,408	-	249,408
American Express Co	480,549	1,065,411	-	1,065,411
American Homes 4 Rent A	415,850	454,597	935	455,532
American International Group	1,886,835	1,846,578	-	1,846,578
Andeavor Logistics Lp	734,813	506,150	-	506,150
Antero Midstream Corp	844,746	608,984	-	608,984
Anthem Inc	286,169	778,053	-	778,053
Apartment Invt Mgmt Co A	471,473	471,128	-	471,128
Aramark	1,738,331	1,680,144	-	1,680,144
Aramark	1,281,235	1,435,585	-	1,435,585
Autodesk Inc	191,395	440,319	-	440,319
Avalonbay Cmnty Inc	1,210,782	1,462,896	10,944	1,473,840
Black Knight Inc	650,507	856,476	-	856,476
Blackbaud Inc	891,765	943,216	-	943,216
Bluebird Bio Inc	822,846	776,683	-	776,683
Boston Ppty Inc	1,099,208	1,132,491	8,340	1,140,831
Bottomline Technologies Del Inc	198,588	197,664	-	197,664
Bp Midstream Partners L P	176,490	154,041	-	154,041
Bp Plc Spon A D R	1,029,805	951,302	-	951,302
Bright Horizons Family Solut	1,167,139	1,775,740	-	1,775,740
Burlington Stores Inc	1,367,768	1,531,180	-	1,531,180
Bwx Technologies Inc	1,276,214	1,152,608	-	1,152,608
Cabot Corp	516,920	406,919	-	406,919
Cabot Oil Gas Corp Cl A	599,334	573,105	-	573,105
Camden Ppty Tr Sbi	593,499	688,974	5,280	694,254
Cardinal Health Inc	437,824	315,806	3,226	319,031
Cardtronics Plc	548,642	462,582	-	462,582
Cdw Corp De	350,973	1,021,977	-	1,021,977
Centene Corp	538,744	621,152	-	621,152
Ceridian Hcm Holding Inc	394,534	547,431	-	547,431
Cheniere Energy Inc	356,288	377,160	-	377,160
Cheniere Energy Inc	361,028	415,423	-	415,423
Chevron Corporation	188,750	490,294	-	490,294
Ciena Corp	245,284	488,049	-	488,049
Cigna Corp	1,334,862	758,918	-	758,918
Clarivate Analytics Plc	304,001	315,444	-	315,444
Clearway Energy Inc C	193,661	209,266	-	209,266
Cloudera Inc	636,863	260,649	-	260,649
Coherent Inc	403,381	387,973	-	387,973
Colliers International Group	76,051	77,923	54	77,977
Comcast Corp Class A	1,604,072	1,871,905	-	1,871,905
Commvault Systems Inc	348,675	291,369	-	291,369
Coresite Realty Corp	439,555	456,419	4,835	461,254

Holdings by Asset Class, Security Type, and Issuer as of June 30, 2019

Asset Class / Security Type / Issuer	Cost	Market Value	Accrued Interest or Dividends	Mkt + Accrued
Corteva Inc	1,374,877	1,485,774	-	1,485,774
Cousins Properties Inc	110,677	112,127	-	112,127
Covanta Hldg Corp	433,049	506,172	7,066	513,238
Criteo Sa Spon A D R	534,891	343,081	-	343,081
Cubesmart	132,608	143,792	1,376	145,168
Cvs Health Corp	1,770,575	1,196,600	-	1,196,600
Darling Ingredients Inc	575,122	558,392	-	558,392
Dave Busters Entertainmen	597,696	469,128	1,739	470,867
Dcp Midstream Lp	110,161	79,051	-	79,051
Deere Co	503,085	600,864	2,756	603,620
Delek Holdco Inc	382,527	422,826	-	422,826
Delphi Technologies Plc	324,709	225,080	-	225,080
Dexcom Inc	95,338	245,138	-	245,138
Digital Realty Trust Inc	989,291	1,024,773	-	1,024,773
DocuSign Inc	709,403	744,109	-	744,109
Dollar General Corp	841,819	1,550,150	-	1,550,150
Dominion Energy Inc	1,105,955	1,261,012	-	1,261,012
Dominos Pizza Inc	491,190	694,030	-	694,030
Douglas Emmitt Inc	498,440	482,542	3,149	485,691
Douglas Emmitt Inc	470,682	517,920	3,380	521,300
Dow Inc	608,307	507,696	-	507,696
Duke Realty Corporation	799,753	989,393	-	989,393
Dupont De Nemours Inc Wi	1,185,875	1,003,536	-	1,003,536
E O G Res Inc	1,215,464	1,191,982	-	1,191,982
E Trade Financial Corp	124,409	349,084	-	349,084
Eagle Materials Inc	913,349	840,233	906	841,139
Edwards Lifesciences Corp	289,018	553,851	-	553,851
Elanco Animal Health Inc	1,471,186	1,604,114	-	1,604,114
Electronic Arts Inc	167,301	206,975	-	206,975
Energy Transfer Equity L P	2,099,164	1,720,351	-	1,720,351
Enlink Midstream Llc	267,447	283,912	-	283,912
Enterprise Products Partners	1,706,994	1,770,482	-	1,770,482
Eqm Midstream Partners Lp	1,433,041	962,228	-	962,228
Equifax Inc	594,636	818,608	-	818,608
Equifax Inc	494,186	578,827	-	578,827
Equinix Inc	1,217,018	1,610,198	-	1,610,198
Equity Lifestyle Pptys Inc	96,610	133,474	674	134,148
Equity Residential	618,820	736,424	5,505	741,929
Essex Property Trust Inc	595,055	786,459	5,253	791,713
Etsy Inc	198,610	248,610	-	248,610
Euronav Nv	383,598	401,238	-	401,238
Exelon Corporation	949,257	1,176,400	-	1,176,400
Expedia Inc	1,268,045	1,521,730	-	1,521,730
Extended Stay America Inc	755,939	717,859	-	717,859
Extra Space Storage Inc	337,127	477,450	-	477,450
F M C Corporation	353,294	383,312	1,848	385,160
First Bancorp Puerto Rico	507,171	580,660	-	580,660
First Interstate Bancsys Mt	204,384	223,638	-	223,638
First Republic Bank San Fran	548,733	674,371	-	674,371
First Solar Inc	435,740	500,153	-	500,153
First Solar Inc	320,852	388,891	-	388,891
Flex Ltd	1,261,597	780,654	-	780,654
Flir Systems Inc	75,675	76,714	-	76,714
Fluor Corp	194,160	134,423	838	135,261
Four Corners Property Trust	375,717	399,018	4,198	403,216
Gartner Inc	1,377,003	2,117,809	-	2,117,809
General Electric Co	1,912,244	973,508	927	974,435

Holdings by Asset Class, Security Type, and Issuer as of June 30, 2019

Asset Class / Security Type / Issuer	Cost	Market Value	Accrued Interest or Dividends	Mkt + Accrued
Global Payments Inc	725,876	1,676,561	-	1,676,561
Godaddy Inc Class A	754,359	692,521	-	692,521
Grand Canyon Education Inc	567,884	854,831	-	854,831
Green Dot Corp Cl A	690,554	521,274	-	521,274
Greensky Inc Class A	316,780	278,811	-	278,811
Guidewire Software Inc	518,560	828,477	-	828,477
Hcp Inc	699,509	857,064	-	857,064
Healthcare Trust Of Ame Cl A	488,902	480,025	-	480,025
Hexcel Corp New	903,382	1,362,504	-	1,362,504
Highwoods Properties Inc	463,653	446,040	-	446,040
Hilton Worldwide Hldgs Wi	167,559	243,079	-	243,079
Host Hotels Resorts Inc	793,837	767,244	8,422	775,666
Hunt J B Trans Svcs Inc	299,950	262,438	-	262,438
Hunt J B Trans Svcs Inc	438,080	446,629	-	446,629
Huntsman Corp	1,000,762	760,572	-	760,572
Icon Plc	663,013	911,656	-	911,656
Ihs Markit Ltd	977,078	1,636,393	-	1,636,393
Incyte Corp	924,782	942,121	-	942,121
Ingredion Inc	736,446	614,715	4,658	619,373
Invitation Homes Inc	564,720	652,212	-	652,212
Itron Inc	344,500	369,914	-	369,914
Itron Inc	321,691	307,657	-	307,657
J P Morgan Chase Co	448,494	1,248,359	-	1,248,359
Jack Henry Associates Inc	591,007	569,830	-	569,830
Jacobs Engr Group Inc	965,960	1,112,935	-	1,112,935
Jazz Pharmaceuticals Plc	885,690	937,617	-	937,617
Johnson Ctls Intl Plc	1,622,541	1,578,249	10,579	1,588,828
K B Home	508,995	592,691	-	592,691
Keysight Technologies Inc	500,787	715,426	-	715,426
Kilroy Rlty Corp	442,118	428,762	2,817	431,580
Kilroy Rlty Corp	535,903	560,956	3,686	564,642
Kinder Morgan Inc	189,377	246,029	-	246,029
Kinross Gold Corp	579,314	546,300	-	546,300
Kla Corporation	890,907	945,718	-	945,718
Knight Swift Transportation	559,383	548,395	-	548,395
Leidos Holdings Inc	252,216	322,594	-	322,594
Liberty Formula One Common Stock	751,895	779,437	-	779,437
Liberty Ppty Tr Sbi	368,038	435,348	3,567	438,915
Lincoln Elec Hldgs Inc	577,306	520,015	2,969	522,984
Louisiana Pac Corp	611,420	643,780	-	643,780
Lowes Co Inc	1,346,703	1,734,643	-	1,734,643
Macerich Co	531,649	358,343	-	358,343
Magellan Midstream Partners Lp	1,393,897	1,477,952	-	1,477,952
Marketaxess Hldgs Inc	190,302	400,168	-	400,168
Medtronic Plc	1,247,858	1,552,689	-	1,552,689
Mettler Toledo Intl Inc	502,734	713,160	-	713,160
Microchip Technology Inc	251,008	249,523	-	249,523
Microsoft Corp	200,836	1,303,833	-	1,303,833
Middleby Corp	488,913	562,477	-	562,477
Monolithic Power Systems Inc	555,754	596,889	1,522	598,411
Mplx Lp	1,552,751	1,237,866	-	1,237,866
Msci Inc	163,344	485,460	-	485,460
Mylan Nv	896,873	490,185	-	490,185
National Retail Properties Inc	175,530	222,642	-	222,642
New York Community Bancorp Inc	519,709	477,683	-	477,683
Newmont Mining Corp	289,133	331,188	-	331,188
Nexstar Broadcasting Group A	111,250	183,517	-	183,517

Holdings by Asset Class, Security Type, and Issuer as of June 30, 2019

Asset Class / Security Type / Issuer	Cost	Market Value	Accrued Interest or Dividends	Mkt + Accrued
Nielsen Holdings Plc	355,120	232,260	-	232,260
Nielsen Holdings Plc	1,327,352	859,817	-	859,817
Noble Midstream Partners Lp	143,726	153,295	-	153,295
Northern Trust Corp	1,346,713	1,343,700	6,530	1,350,230
Norwegian Cruise Line Holdings Ltd	1,151,092	1,215,041	-	1,215,041
Nuance Communications Inc	817,404	761,162	-	761,162
Nustar Energy Lp	89,745	88,694	-	88,694
O Reilly Automotive Inc	246,762	375,229	-	375,229
On Semiconductor Corporation	214,088	195,754	-	195,754
Onemain Holdings Inc	513,995	518,713	-	518,713
Oneok Inc	705,367	1,245,048	-	1,245,048
Oracle Corporation	1,151,856	1,604,161	-	1,604,161
Pan American Silver Corp	446,832	345,485	-	345,485
Parsley Energy Inc Class A	799,513	534,029	-	534,029
Pbf Energy Inc Class A	558,490	483,022	-	483,022
Pebblebrook Hotel Trust	338,321	293,072	3,952	297,024
Penn National Gaming Inc	564,008	410,199	-	410,199
Penumbra Inc	735,589	882,720	-	882,720
Perspecta Inc	286,961	293,655	663	294,318
Philip Morris Intl	641,556	1,051,752	15,268	1,067,020
Phillips 66	1,138,104	1,497,669	-	1,497,669
Phillips 66 Partners Lp	686,810	693,466	-	693,466
Physicians Realty Trust	286,144	303,456	-	303,456
Pjt Partners Inc	297,925	293,243	-	293,243
Plains All Amer Pipeline Lp	2,848,588	1,859,926	-	1,859,926
Ppl Corporation	559,430	590,647	7,093	597,741
Pra Health Sciences Inc	446,309	469,674	-	469,674
Prologis Inc	839,151	1,261,575	-	1,261,575
Public Storage Inc	508,763	595,425	-	595,425
Qts Realty Trust Inc Cl A	338,759	378,676	3,608	382,284
Qualcomm Inc	1,299,682	1,520,639	-	1,520,639
Quanta Svcs Inc	208,336	217,912	190	218,102
Rattler Midstream Partners L P	85,270	91,521	-	91,521
Realpage Inc	361,046	351,335	-	351,335
Realty Income Corp	401,747	441,408	1,450	442,858
Regency Centers Corporation	403,067	416,658	-	416,658
Roku Inc	256,042	249,548	-	249,548
Sage Therapeutics Inc	351,155	811,272	-	811,272
Sanofi A D R	717,420	802,875	-	802,875
Sba Communications Corp	935,850	1,555,668	-	1,555,668
Schlumberger Ltd	1,456,491	847,297	10,661	857,957
Scorpio Tankers Inc	275,251	269,842	-	269,842
Seattle Genetics Inc	609,279	786,848	-	786,848
Servicenow Inc	56,271	180,392	-	180,392
Shell Midstream Partners L P	717,771	545,185	-	545,185
Simon Property Group Inc	1,112,372	1,144,680	-	1,144,680
Sinclair Broadcast Group Inc A	186,014	332,291	-	332,291
Skechers U S A Inc	1,019,156	1,071,542	-	1,071,542
Skywest Inc	745,895	916,906	1,814	918,719
Sl Green Rlty Corp	150,199	136,629	1,445	138,074
Slm Corp	46,846	60,225	-	60,225
Splunk Inc	458,392	677,793	-	677,793
Ss C Technologies Holdings	1,062,324	1,370,139	-	1,370,139
Store Capital Corp	496,525	627,291	6,237	633,528
Sun Communities Inc	575,336	922,968	5,400	928,368
Sunstone Hotel Invs Inc	107,412	104,196	380	104,576
Svb Finl Group	498,235	420,882	-	420,882

Holdings by Asset Class, Security Type, and Issuer as of June 30, 2019

Asset Class / Security Type / Issuer	Cost	Market Value	Accrued Interest or Dividends	Mkt + Accrued
Take-Two Interactive Software Inc	838,626	1,097,154	-	1,097,154
Talend Sa A D R	816,849	753,084	-	753,084
Tallgrass Energy Gp Lp	474,581	459,058	-	459,058
Targa Resources Corp	568,270	389,852	-	389,852
Taylor Morrison Home Corp A	387,796	422,742	-	422,742
Teradyne Inc	527,307	615,835	-	615,835
Teradyne Inc	367,968	450,641	-	450,641
Texas Instruments Inc	370,756	1,615,936	-	1,615,936
The Gap Inc	702,798	459,691	-	459,691
Therapeutics Md Inc	1,615,883	624,182	-	624,182
Topbuild Corp	243,252	311,674	-	311,674
Total System Services Inc	476,848	621,596	630	622,226
Transunion	505,915	1,037,300	-	1,037,300
Trinet Group Inc	83,089	288,760	-	288,760
Tyler Technologies Inc	705,697	708,546	-	708,546
Udr Inc	467,547	583,570	-	583,570
Under Armour Inc Cl A	761,662	1,058,920	-	1,058,920
United Technologies Corp	973,039	1,295,230	-	1,295,230
Unitedhealth Group Inc	735,109	736,178	-	736,178
Universal Health Svcs B	497,808	568,761	-	568,761
Us Bancorp	1,468,112	1,518,133	10,720	1,528,852
Us Concrete Inc	956,086	705,548	-	705,548
Vail Resorts Inc	779,872	971,949	7,665	979,614
Valero Energy Corp	765,398	815,521	-	815,521
Ventas Inc	578,329	639,824	7,419	647,243
Vici Pptys Inc	766,329	764,788	9,085	773,873
Voya Financial Inc	448,855	466,456	-	466,456
Wabtec Corp	757,680	744,295	-	744,295
Wayfair Inc Class A	217,916	430,700	-	430,700
Weingarten Rlty InvtS	314,975	304,362	-	304,362
Wellcare Health Plans Inc	366,571	404,799	-	404,799
Wells Fargo Co	718,648	1,216,219	-	1,216,219
Welltower Inc	714,143	864,218	-	864,218
Werner Enterprises Inc	509,779	513,846	-	513,846
Wesco Aircraft Holdings Inc	345,645	328,205	-	328,205
Western Midstream Partners L	1,545,305	1,292,678	-	1,292,678
Williams Cos Inc	1,344,096	1,208,860	-	1,208,860
Workday Inc	199,596	401,703	-	401,703
Zogenix Inc	484,288	490,366	-	490,366
Subtotal - Domestic Equity	\$ 169,393,355	\$ 186,156,948	\$ 232,815	\$ 186,389,762
Domestic Equity Commingled Accounts				
BlackRock S&P	\$ 7,161,275	\$ 11,175,555	\$ -	\$ 11,175,555
Dimensional Fund Advisors	7,599,988	39,721,020	-	39,721,020
SBI Domestic Index Stock	145,379,565	250,955,475	-	250,955,475
Subtotal - Domestic Equity Commingled	\$ 160,140,828	\$ 301,852,050	\$ -	\$ 301,852,050
International Equity Commingled Accounts				
JPMorgan Global Focus	\$ 124,072	\$ 212,942	\$ -	\$ 212,942
SBI - International	61,197,293	72,870,932	-	72,870,932
Subtotal - International Equity Commingled	\$ 61,321,365	\$ 73,083,874	\$ -	\$ 73,083,874
International Equity Mutual Funds				
BlackRock iShares ETF	\$ 7,687,367	\$ 6,763,383	\$ -	\$ 6,763,383
Morgan Stanley Ins Glb Fra I	50,292,851	77,154,362	-	77,154,362
Subtotal - Int'l Equity Mutual Fund	\$ 57,980,218	\$ 83,917,745	\$ -	\$ 83,917,745
Fixed Income Commingled Accounts				
Allianz Global Investors	\$ 26,000,000	\$ 33,117,586		\$ 33,117,586
Brandywine Global Opportunistic Fi	32,626,112	37,351,252		37,351,252
Subtotal - Fixed Income Commingled	\$ 58,626,112	\$ 70,468,838	\$ -	\$ 70,468,838

Holdings by Asset Class, Security Type, and Issuer as of June 30, 2019

Asset Class / Security Type / Issuer	Cost	Market Value	Accrued Interest or Dividends	Mkt + Accrued
Fixed Income Securities				
Aaset 2018 3 Ltd 4.460% 12/15/38	\$ 937,635	\$ 937,635	\$ 1,858.60	\$ 939,494
Aaset_14-1-Ar 0.00001% 1/15/43	1,709,505	1,697,367	-	1,697,367
Acis Clo Ltd 5.15829% 5/01/27	995,000	999,868	8,740	1,008,608
Actavis Funding 3.85163% 3/12/20	206,594	206,308	417	206,725
Aercap Ireland Cap 4.250% 7/01/20	151,686	152,207	3,188	155,394
Alexandria Real 2.750% 1/15/20	209,431	210,088	2,663	212,751
Ameren Corp 2.700% 11/15/20	109,779	110,359	380	110,738
American Equity Int 5.000% 6/15/27	337,384	341,558	740	342,298
American Tower Corp 2.800% 6/01/20	249,170	250,570	583	251,153
Analog Devices Inc 2.950% 1/21/21	30,066	30,273	415	30,688
Anchorage Credit 3.500% 2/15/35	1,000,000	971,274	13,222	984,496
Anchorage Credit 16.21596% 7/28/30	1,000,000	992,199	7,525	999,724
Angel Oak Mortgage 2.708% 11/25/47	383,302	383,260	865	384,125
Anthem Inc 2.500% 11/21/20	100,089	100,199	278	100,477
Anz New Zealand Mtn 2.850% 8/06/20	199,400	201,228	2,296	203,524
Assurant Inc 3.94566% 3/26/21	250,000	250,018	137	250,155
Axis Specialty 5.875% 6/01/20	206,240	206,194	979	207,173
Barclays Bank Mtn 3.1498% 10/31/19	550,000	550,215	48	550,263
Bcap Llc Trust 3.00436% 3/26/36	97,052	103,710	33	103,743
Bear Stearns 5.156% 9/15/27	354,047	351,509	802	352,311
Broadcom Crp Caymn 2.375% 1/15/20	198,448	199,652	2,190	201,842
Ca Inc 5.375% 12/01/19	197,776	196,732	873	197,605
Cal Funding Ltd 3.960% 2/25/43	866,397	893,109	572	893,681
Capital Automotive 3.904% 10/15/44	597,651	603,229	1,037	604,266
Capital One 2.500% 5/12/20	248,305	250,260	851	251,111
Capital One 3.25943% 5/12/20	10,038	10,042	47	10,088
Capmark Military 5.74606% 2/10/52	706,008	754,280	2,358	756,638
Capmark Military 7.97602% 7/10/55	896,678	1,288,079	3,801	1,291,881
Carlyle Global 3.3258% 4/27/27	1,003,623	997,989	6,071	1,004,060
Cascade Funding 2.800% 6/25/69	499,880	500,000	117	500,117
Catamaran Clo Ltd 5.61256% 10/18/26	750,000	750,202	8,834	759,036
Cerberus Onshore 5.18371% 1/15/28	1,000,000	994,932	10,966	1,005,898
Cfcre Commercial 1.19411% 1/10/48	462,772	328,248	5,800	334,049
Chesterfield 4.500% 12/15/34	288,000	289,394	576	289,970
Cit Mortgage Loan 3.5533% 10/25/37	1,086,971	1,103,628	700	1,104,328
Citigroup Commerci 1.94111% 4/10/49	489,096	353,738	6,083	359,821
City National Corp 5.250% 9/15/20	103,117	103,523	1,546	105,069
Coca Cola Femsa 4.625% 2/15/20	202,886	202,450	3,494	205,944
Comm Mortgage Trust 3.4244% 3/10/31	508,134	520,620	1,427	522,047
Constellation Brands 2.250% 11/06/20	296,221	299,358	1,031	300,389
Cred Suis Gp Fun Ltd 2.750% 3/26/20	249,115	250,390	1,814	252,204
Credit Suisse 2.90438% 11/30/37	541,587	616,891	1,413	618,304
Deutsche Telekom Int 2.225% 1/17/20	248,450	249,355	2,534	251,889
Diamond Head 3.810% 7/14/28	254,779	255,578	459	256,037
Discover Bank 3.100% 6/04/20	249,695	251,208	581	251,789
Dryden Senior Loan 0.00001% 4/15/27	974,283	913,946	0	913,946
Erp Operating Lp 4.750% 7/15/20	50,976	50,858	106	50,964
Exelon Corp 2.850% 6/15/20	146,599	147,466	186	147,652
F H L M C Mltcl 1.36764% 11/25/55	1,084,789	1,049,260	1,992	1,051,253
F H L M C Mltcl Mt 2.16307% 6/25/57	829,263	851,518	1,500	853,018
F H L M C Mltcl Mtg 3.000% 10/25/27	1,001,624	1,032,440	2,500	1,034,940
F H L M C Mltcl Mtg 3.019% 6/25/27	875,458	875,322	2,138	877,460
F H L M C Mltcl Mtg 3.450% 1/25/28	1,002,749	1,070,940	2,875	1,073,815
F H L M C Mltcl Mtg 3.600% 2/25/28	1,011,469	1,080,160	3,000	1,083,160
F H L M C Mltcl Mtg 3.920% 6/25/28	1,029,009	1,102,580	3,267	1,105,847
F H L M C Mltcl Mtg 2.6174% 7/25/56	724,349	902,727	2,233	904,961
F H L M C Strip 3/15/31	2,014,448	2,391,456	-	2,391,456
F H L M C Strip 7/15/32	183,102	215,850	-	215,850

Holdings by Asset Class, Security Type, and Issuer as of June 30, 2019

Asset Class / Security Type / Issuer	Cost	Market Value	Accrued Interest or Dividends	Mkt + Accrued
F N M A Strip 1/15/30	391,557	461,832	-	461,832
F N M A Strip 5/15/30	305,270	341,532	-	341,532
F N M A #An0285 1.950% 11/01/20	249,141	249,240	406	249,646
F N M A #An3292 2.860% 9/01/29	553,094	565,593	1,311	566,903
F N M A #An6349 2.990% 9/01/29	500,313	517,675	1,246	518,921
F N M A #An7049 3.050% 10/01/29	505,625	520,290	1,271	521,561
F N M A #An7843 3.180% 12/01/29	506,458	521,903	1,315	523,219
F N M A #An8031 3.030% 2/01/30	1,000,625	1,038,060	2,525	1,040,585
F N M A #An8173 3.230% 1/01/30	1,000,059	1,035,473	2,634	1,038,107
F N M A #An8193 3.170% 1/01/30	1,377,449	1,475,950	3,698	1,479,648
F N M A #An8194 3.220% 1/01/30	1,088,355	1,161,622	2,952	1,164,574
F N M A #An8721 3.580% 4/01/33	978,593	1,048,623	2,933	1,051,556
F N M A #BI2513 3.330% 5/01/34	1,006,914	1,051,840	2,775	1,054,615
F N M A Gtd Remic 2.980% 8/25/29	1,002,204	1,021,830	2,483	1,024,313
F N M A Strip 7/15/37	789,735	880,560	-	880,560
Fdf Limited 4.285% 5/12/31	999,000	1,002,122	5,594	1,007,716
Fidelity National 3.625% 10/15/20	201,708	202,954	1,531	204,485
Florida Gas Trns 5.450% 7/15/20	205,822	205,200	5,026	210,226
Four Times Square Tr 5.401% 12/13/28	974,747	974,506	3,103	977,609
Ge Wmc Mortgage 2.9504% 12/25/35	613,043	612,034	280	612,314
Golub Capital 3.86513% 2/05/31	650,000	640,219	3,978	644,197
Gsaa Home Equity 3.09761% 6/25/35	1,078,875	1,217,760	574	1,218,334
Halfmoon Parent 2.93241% 3/17/20	14,990	15,012	17	15,029
Halfmoon Parent Inc 3.200% 9/17/20	170,231	171,571	1,572	173,142
Harris Corporation 2.700% 4/27/20	199,022	200,206	960	201,166
Humana Inc 2.500% 12/15/20	24,975	25,013	28	25,041
Ingersoll Rand 2.625% 5/01/20	250,183	250,135	1,094	251,229
Jefferies Group 8.500% 7/15/19	204,798	200,422	7,839	208,261
Juniper Networks Inc 3.300% 6/15/20	200,438	201,176	293	201,469
Kraft Heinz Foods Co 2.800% 7/02/20	99,648	100,111	1,392	101,503
Lancer Fin Spv Ltd 7.850% 12/10/16	235,027	23	47,681	47,704
Marriott 3.375% 10/15/20	120,878	121,052	855	121,907
Marriott 3.29626% 12/01/20	40,184	40,153	110	40,263
Molex Electronics 2.878% 4/15/20	199,264	200,098	1,215	201,313
Molson Coors 2.250% 3/15/20	49,718	49,877	331	50,208
Mondelez 3.000% 5/07/20	269,992	271,094	1,215	272,309
Morgan Stanley 5.500% 7/24/20	232,484	232,254	5,397	237,651
Mountain Hawk Clo 3.44941% 7/20/24	699,107	698,226	5,007	703,233
Mountain View Clo 10.30347% 10/15/26	919,511	915,152	1,374	916,526
N Star Real Estate 2.58975% 2/01/41	207,026	213,937	506	214,443
Newmont Mining Corp 5.125% 10/01/19	202,250	201,184	2,563	203,747
Newport Mesa Ca	234,342	270,006	-	270,006
Nextera Energy 3.05875% 9/28/20	240,000	239,765	61	239,826
Oak Hill Credit 4.76309% 10/20/25	950,356	875,100	-	875,100
Oneok Partners Lp 3.800% 3/15/20	201,364	201,378	2,238	203,616
Quest Diagnostics 2.500% 3/30/20	199,616	199,748	1,264	201,012
Raspro Trust 3.24175% 3/23/24	613,451	618,606	4,364	622,970
Republic Services 5.500% 9/15/19	241,493	241,339	3,887	245,226
Reynolds American 3.250% 6/12/20	270,093	271,833	463	272,296
Rolls Royce Plc 2.375% 10/14/20	249,643	249,613	1,270	250,882
S P Global Inc 3.300% 8/14/20	100,403	101,046	1,256	102,302
Station Place 0.00001% 9/24/19	300,000	300,000	174	300,174
Station Place 3.09224% 4/24/21	150,000	150,000	90	150,090
Station Place 3.15604% 7/24/21	500,000	500,000	-	500,000
Station Place 3.25724% 9/24/19	1,000,000	1,000,000	629	1,000,629
Store Master Funding 3.960% 10/20/46	950,926	975,244	1,151	976,395
Store Master Funding 4.170% 4/20/45	489,329	503,464	624	504,088
Synchrony Bank 3.12304% 3/30/20	350,728	350,301	3,011	353,312
Sysco Corporation 2.600% 10/01/20	9,939	10,034	65	10,099
T V A 5.375% 4/01/56	399,188	485,255	4,434	489,689

Holdings by Asset Class, Security Type, and Issuer as of June 30, 2019

Asset Class / Security Type / Issuer	Cost	Market Value	Accrued Interest or Dividends	Mkt + Accrued
Taco Bell Funding 4.970% 5/25/46	621,130	633,755	2,993	636,748
Telefonica Emis 5.134% 4/27/20	20,442	20,409	183	20,591
Textainer Marine 3.720% 5/20/42	803,963	815,133	914	816,047
The Bancorp 3.69417% 1/15/33	1,000,000	999,840	1,620	1,001,460
Towd Point 3.000% 1/25/58	289,314	292,552	724	293,276
Towd Point Mortgage 2.750% 10/25/57	547,153	564,588	1,284	565,872
Treman Park Clo 7.74053% 4/20/27	472,755	435,619	-	435,619
Turbine Engine 5.125% 12/13/48	399,896	394,014	915	394,929
Tva 4.250% 9/15/65	507,115	629,595	6,257	635,852
U S Treasury Bd 2.875% 5/15/49	2,215,807	2,238,954	7,663	2,246,618
U S Treasury I P S 0.125% 1/15/22	2,485,244	2,491,117	1,446	2,492,563
U S Treasury I P S 0.125% 7/15/24	1,547,220	1,554,547	891	1,555,437
U S Treasury I P S 1.000% 2/15/48	357,134	392,377	1,390	393,767
U S Treasury I P S 1.375% 1/15/20	1,942,356	1,934,661	12,299	1,946,960
U S Treasury I P S 1.375% 2/15/44	787,354	801,188	3,647	804,835
U S Treasury I P S 2.125% 2/15/40	404,630	438,618	2,737	441,355
U S Treasury I P S 2.375% 1/15/27	2,607,550	2,670,661	25,334	2,695,994
U S Treasury I P S 3.875% 4/15/29	665,274	657,358	4,004	661,362
U S Treasury Nt 2.375% 2/29/24	4,169,930	4,258,742	32,881	4,291,622
U S Treasury Nt 2.375% 3/15/22	7,097,316	7,192,253	49,254	7,241,506
U S Treasury Nt 2.875% 11/30/23	2,916,881	2,955,050	6,867	2,961,917
Ubs Ag London 3.1745% 6/08/20	230,761	230,892	466	231,359
Ventas Realty Lp Cap 2.700% 4/01/20	-	-	1,350	1,350
Venture Cdo Ltd 3.39078% 2/28/26	960,918	957,851	19,278	977,129
Vmc Finance Llc 3.145% 4/15/35	496,690	493,421	710	494,131
Vulcan Materials 3.21088% 6/15/20	29,967	30,003	43	30,046
Wells Fargo 2.632% 5/15/48	299,074	299,619	658	300,277
Wells Fargo 1.67153% 1/15/59	670,302	441,214	9,302	450,516
Wells Fargo Coml 1.14499% 12/17/49	356,277	253,291	2,514	255,805
Willis Engine Secur 5.500% 9/15/37	290,167	300,587	711	301,298
Wind River Clo Ltd 0.00001% 1/15/26	1,000,000	1,000,000	-	1,000,000
Yamana Gold Inc 4.950% 7/15/24	339,739	372,023	8,057	380,080
Zimmer Holdings Inc 2.700% 4/01/20	239,483	240,300	1,620	241,920
Subtotal - Fixed Income	\$ 96,501,145	\$ 98,379,917	\$ 488,215	\$ 98,868,133
Real Estate Commingled Fund				
UBS Trumbull Property Fund	\$ 23,101,190	\$ 36,673,517	\$ -	\$ 36,673,517
UBS Growth & Income Fund	10,166,836	18,477,742	-	18,477,742
Dune Real Estate Partners	3,173,792	5,371,903	-	5,371,903
Subtotal - Real Estate Commingled	\$ 36,441,818	\$ 60,523,162	\$ -	# \$ 60,523,162
Private Equity				
Edgewave	\$ 11,115	\$ 11,115	\$ -	\$ 11,115
Franklin Park Private Equity Fund	44,692,878	55,007,522	-	55,007,522
North Sky - PEP IV Fund	4,080,051	5,015,626	-	5,015,626
RWI Group - Ventures I Capital Ltd Ptnr	225,613	226,333	-	226,333
VIA Fund III	2,264,770	2,732,830	-	2,732,830
Subtotal - Private Equity	\$ 51,274,427	\$ 62,993,426	\$ -	\$ 62,993,426
Private Equity / Alternative				
TCW	\$ 5,684,217	\$ 6,153,448	\$ -	\$ 6,153,448
Parametric Def Eq Fund	24,000,000	30,635,524	-	30,635,524
Subtotal - Private Equity / Alternative	\$ 29,684,217	\$ 36,788,972	\$ -	\$ 36,788,972
Opportunistic				
Entrust	\$ 14,413,577	\$ 16,801,538	\$ -	\$ 16,801,538
Subtotal - Opportunistic	\$ 14,413,577	\$ 16,801,538	\$ -	\$ 16,801,538
TOTAL FUND	\$ 817,890,541	\$ 1,073,093,227	\$ 721,030	\$ 1,073,814,257

ACTUARIAL SECTION

November 21, 2019

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, 2019. This report provides, among other things, the required annual contribution rate of the Fund for the Plan Year commencing July 1, 2019 and ending on June 30, 2020, according to prescribed assumptions.

The valuation was based upon data and information through June 30, 2019 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.

Ms. Jill E. Schurtz
St. Paul Teachers' Retirement Fund Association
November 21, 2019
Page 2

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 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, ASA, EA, FCA, MAAA



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



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

Summary of Valuation Results

(Dollars in Thousands)

	July 1, 2018 Valuation	July 1, 2019 Valuation
A. CONTRIBUTIONS % OF PAYROLL (Table 11)		
1. Statutory Contributions - Chapter 354A	24.23%	25.09%
2. Required Contributions - Chapter 356	21.54%	21.87%
3. Sufficiency / (Deficiency)	2.69%	3.22%
B. FUNDING RATIOS		
1. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$ 1,067,675	\$ 1,079,552
b. Actuarial Accrued Liability (Table 9)	1,676,193	1,691,721
c. Funding Ratio	63.70%	63.81%
2. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$ 2,004,176	\$ 2,007,715
b. Current and Expected Future Benefit Obligations	1,869,580	1,884,116
c. Funding Ratio	107.20%	106.56%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	3,445	3,347
b. Projected Annual Earnings	\$ 281,782	\$ 280,595
c. Average Annual Earnings (Projected dollars)	\$ 77,704	\$ 79,893
d. Average Age	44.8	44.9
e. Average Service	12.7	13.1
f. Members on Leave of Absence	132	120
2. Others		
a. Service Retirements (Table 4)	3,547	3,632
b. Disability Retirements (Table 5)	25	25
c. Survivors (Table 6)	342	347
d. Deferred Retirements (Table 7)	2,031	2,489
e. Terminated Other Non-Vested (Table 7)	3,014	2,742
f. Total - Others	8,959	9,235
3. Grand Total (1.a + 1.f + 2.f)	12,536	12,702

Accounting Balance Sheet

as of June 30, 2019

(Dollars in Thousands)

	Market Value
A. ASSETS	
1. Cash, Equivalents, Short-Term Securities	\$ 6,460
2. Investments	
a. Fixed Income	177,333
b. Equity	627,520
c. Real Assets	69,529
d. Alternative	115,852
e. Cash and Cash Equivalents	82,859
3. Other Assets	3,594
B. TOTAL ASSETS	\$ 1,083,147
C. AMOUNTS CURRENTLY PAYABLE	\$ 2,603
D. ASSETS AVAILABLE FOR BENEFITS	
1. Member Reserves	\$ 210,364
2. Employer Reserves	870,180
3. Total Assets Available for Benefits	\$ 1,080,544
E. TOTAL AMOUNTS CURRENTLY PAYABLE AND ASSETS AVAILABLE FOR BENEFITS	\$ 1,083,147
F. DETERMINATION OF ACTUARIAL VALUE OF ASSETS	
1. Market Value of Assets Available for Benefits (D.3)	\$ 1,080,544
2. Unrecognized Asset Returns	
a. June 30, 2019	\$ (18,200)
b. June 30, 2018	15,610
c. June 30, 2017	54,191
d. June 30, 2016	(77,451)
3. UAR Adjustment: $.80 * 2(a) + .60 * 2(b) + .40 * 2(c) + .20 * 2(d)$	992
4. Actuarial Value of Assets: (F.1 - F.3)	\$ 1,079,552

	Market Value
DERIVATION OF OTHER ASSETS *	
Accounts Receivable	
Employer Contribution	\$ 559
Employee Contribution	291
Service Purchases Receivable	196
Pensions Receivable	35
State Contributions	838
Real Estate Income Receivable	111
Commission Recapture Receivable	1
Interest Receivable	168
Dividend Receivable	571
Misc. Receivable	-
Escrow Funds Receivable	-
Sale of Securities	807
Total Accounts Receivable	\$ 3,577
Fixed Assets	17
Total Other Assets	\$ 3,594

**Numbers may not add due to rounding.*

Change(s) in Assets Available for Benefits as of June 30, 2019 (Dollars in Thousands)

	Market Value
A. ASSETS AVAILABLE AT BEGINNING OF PERIOD	\$ 1,070,572
B. OPERATING REVENUES	
1. Member Contributions	\$ 20,626
2. Employer Contributions	30,919
3. Supplemental Contributions	15,665
4. Reemployed Annuitant Employer Contributions	397
5. Investment Income	14,167
6. Investment Expenses	(4,876)
7. Net Realized Gain / (Loss)	52,527
8. Other	0
9. Net Change in Unrealized Gain / (Loss)	(1,609)
10. Total Operating Revenue	\$ 127,816
C. OPERATING EXPENSES	
1. Service Retirements	\$ 104,517
2. Disability Benefits	431
3. Survivor Benefits	11,431
4. Refunds	701
5. Administrative Expenses	764
6. Total Operating Expenses	\$ 117,844
D. OTHER CHANGES IN RESERVES	\$ 0
E. ASSETS AVAILABLE AT END OF PERIOD	\$ 1,080,544
F. DETERMINATION OF CURRENT YEAR UNRECOGNIZED ASSET RETURN	
1. Average Balance	
(a) Assets available at BOY	\$ 1,070,572
(b) Assets available at EOY	1,080,544
(c) Average balance $\{[(a) + (b) - \text{Net Investment Income}] / 2\}$	\$ 1,045,454
{Net investment income: B.5+B.6+B.7+B.9}	
2. Expected Return: $.075 * F.1$	78,409
3. Actual Return	60,209
4. Current Year Gross Asset Gain/(Loss): $F.3 - F.2$	\$ (18,200)

Actuarial Balance Sheet as of July 1, 2019 (Dollars in Thousands)

A. CURRENT ASSETS (TABLE 1; Line F.4)	\$	1,079,552
B. EXPECTED FUTURE ASSETS		
1. Present Value of Expected Future Statutory Supplemental Contributions*	\$	735,768
2. Present Value of Future Normal Costs		192,395
3. Total Expected Future Assets	\$	<u>928,163</u>
C. TOTAL CURRENT AND EXPECTED FUTURE ASSETS	\$	<u>2,007,715</u>
D. TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS	\$	<u>1,884,116</u>
E. CURRENT AND FUTURE UNFUNDED ACTUARIAL LIABILITY (D - C)	\$	(123,599)

* 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, 2019 (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	\$ 593,230	\$ 122,381	\$ 470,849
b. Disability Benefits	\$ 14,612	\$ 4,556	\$ 10,056
c. Surviving Spouse and Child Benefits	\$ 6,214	\$ 1,714	\$ 4,500
d. Vested Withdrawals	\$ 41,969	\$ 47,597	\$ (5,628)
e. Refund Liability Due to Death or Withdrawal	\$ 2,283	\$ 16,147	\$ (13,864)
f. Total	\$ 658,308	\$ 192,395	\$ 465,913
2. Deferred Retirements	\$ 90,327	\$ 0	\$ 90,327
3. Former Members without Vested Rights	\$ 2,112	\$ 0	\$ 2,112
4. Annuitants	\$ 1,133,369	\$ 0	\$ 1,133,369
5. Total	\$ 1,884,116	\$ 192,395	\$ 1,691,721
B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)			
1. Actuarial Accrued Liability (A.5)			\$ 1,691,721
2. Current Assets (Table 1; Line F.4)			\$ 1,079,552
3. Unfunded Actuarial Accrued Liability (B.1 - B.2)			\$ 612,169
C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE**			
1. Present Value of Future Payrolls Through the Amortization Date of June 30, 2048***			\$ 4,582,500
2. Supplemental Contribution Rate (B.3 / C.1)			13.36%

* 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, 2019 (Dollars in Thousands)

A. UAAL AT BEGINNING OF YEAR	\$	608,518
B. CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING		
1. Normal Cost and Expenses	\$	24,043
2. Contributions	\$	(67,607)
3. Interest	\$	44,005
4. Total	\$	<u>441</u>
C. EXPECTED UAAL AT END OF YEAR (A + B.4)	\$	608,959
D. INCREASE / (DECREASE) DUE TO ACTUARIAL LOSSES / (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED		
1. Age and Service Retirements	\$	4,347
2. Disability Retirements		(137)
3. Death-in-Service Benefits		139
4. Withdrawals		(7,365)
5. Salary Increases		(8,185)
6. Investment Income		16,870
7. Mortality of Annuitants		(4,423)
8. Other Items		5,001
9. Total	\$	<u>6,247</u>
E. UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTIONS (C + D.9)	\$	615,206
F. CHANGE IN UAAL DUE TO PLAN AMENDMENTS		-
G. CHANGE IN UAAL DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS		(3,037)
H. UAAL AT END OF YEAR (E + F + G)	\$	<u><u>612,169</u></u>

Determination of Contribution Sufficiency as of July 1, 2019 (Dollars in Thousands)

	Percent-of- Payroll	Dollar Amount
A. STATUTORY CONTRIBUTIONS - CHAPTER 354A		
1. Employee Contributions	7.50%	\$ 21,045
2. Employer Contributions		
a. Regular	8.17%	22,925
b. Additional	3.84%	10,775
3. Supplemental Contribution		
a. 1996 Legislation	0.30%	838
b. 1997 Legislation	1.01%	2,827
c. 2014 Legislation	2.49%	7,000
d. 2018 Legislation	1.78%	5,000
4. Total	25.09%	\$ 70,410
B. REQUIRED CONTRIBUTIONS - CHAPTER 356		
1. Normal Cost		
a. Retirement Benefits	5.42%	\$ 15,208
b. Disability Benefits	0.19%	533
c. Surviving Spouse and Child Benefits	0.07%	196
d. Vested Withdrawals	1.90%	5,331
e. Refund Liability Due to Death or Withdrawal	0.66%	1,852
f. Total	8.24%	\$ 23,120
2. Supplemental Contribution Amortization	13.36%	37,487
3. Allowance for Administrative Expenses	0.27%	758
4. Total	21.87%	\$ 61,365
C. CONTRIBUTION SUFFICIENCY / (DEFICIENCY) (A.4 - B.4)	3.22%	9,045
Projected Annual Payroll for Fiscal Year Beginning on the Valuation Date (determined according to requirements of the LCPR Standards for Actuarial Work):		
		\$ 280,595

Actuarial Methods and Assumptions as of July 1, 2019

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-2018 from 2006
- b. Female: RP-2014 Healthy Annuitant Mortality Table for females adjusted for white collar and projected with Scale MP-2018 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-2018 from 2006
- b. Female: RP-2014 Employee Mortality Table for females adjusted for white collar and projected with Scale MP-2018 from 2006

Actuarial Methods and Assumptions as of July 1, 2019

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

<u>Age in 2019</u>	Post-Retirement Mortality	
	<u>Male</u>	<u>Female</u>
55	40	26
56	42	27
57	45	29
58	48	31
59	52	34
60	56	36
61	60	39
62	65	42
63	70	47
64	75	52
65	82	57
66	89	62
67	97	68
68	106	74
69	117	81
70	129	89
71	143	98
72	159	108
73	177	119
74	197	132
75	220	147
76	245	164
77	274	183
78	308	204
79	345	229
80	388	257
81	438	288
82	495	324
83	560	366
84	634	412

Actuarial Methods and Assumptions as of July 1, 2019

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

Age in <u>2019</u>	Pre-Retirement Mortality	
	<u>Male</u>	<u>Female</u>
30	4	2
31	4	2
32	4	3
33	5	3
34	5	3
35	5	3
36	5	3
37	5	3
38	5	4
39	5	4
40	5	4
41	6	4
42	6	5
43	6	5
44	7	5
45	7	6
46	8	6
47	9	7
48	10	8
49	11	8
50	12	9
51	13	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

Actuarial Methods and Assumptions as of July 1, 2019

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		

Actuarial Methods and Assumptions as of July 1, 2019

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	Basic Members Eligible for Rule of 90 Provision	Basic Members Not Eligible for Rule of 90 Provision	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	5,000	800	2,500	2,500	900	500
56	5,000	1,300	2,500	2,500	700	500
57	4,000	1,300	2,500	2,500	700	500
58	4,000	1,800	2,500	2,500	700	600
59	3,500	1,800	2,500	3,000	700	600
60	3,500	2,000	2,500	3,000	1,200	900
61	3,500	2,000	2,500	3,000	1,200	1,100
62	3,500	4,000	4,500	3,000	2,500	2,000
63	3,500	4,000	3,500	3,000	2,800	2,300
64	4,000	4,000	2,500	3,000	2,800	2,600
65	5,000	5,000	3,000	4,500	3,000*	4,500*
66	3,000	5,000	3,000	4,300	3,000	4,300
67	3,000	5,000	3,500	3,800	3,500	3,800
68	3,000	5,000	4,000	3,800	4,000	3,800
69	3,000	5,000	4,500	3,000	4,500	3,000
70 & Over	10,000	10,000	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, 2019

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 actuarial value of assets is smoothed by using a five-year average market value.

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.

Actuarial Methods and Assumptions as of July 1, 2019

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. Benefits for 1,378 deferred members were set equal to the benefit provided in 2018 increased 2% for one year of augmentation.
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, 2019

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.

Projected Annual
Payroll Calculation:

The contributions described herein will continue until the plan is 100% funded or until June 30, 2048, whichever occurs earlier.

The census data as of July 1, 2019 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 \$45,659; the Projected Annual Payroll for the fiscal year ending June 30, 2020 includes this replacement salary amount.

Changes in Actuarial
Methods and Assumptions
Since the Prior Valuation:

The mortality improvement scale was updated from MP-2017 to MP-2018.

APPENDIX – *State Auditor’s Report*

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 will be published on the website of the Minnesota Office of the State Auditor, <http://www.osa.state.mn.us>, in January 2020.

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

FOR THE YEAR ENDED JUNE 30, 2019

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