

January 31, 2013

CONFIDENTIAL

Mr. Paul Doane  
Executive Director  
St. Paul Teachers' Retirement Fund Association  
1619 Dayton Avenue, Room 309  
Saint Paul, MN 55104-6206

**Re: Projection of Contributions and Funding Status – SPTRFA**

Dear Paul:

Attached are 30-year projections of estimated funded status, required contributions, and statutory contributions under three asset return scenarios for the St. Paul Teachers' Retirement Fund Association (SPTRFA). The estimates are based on participant data, assumptions, methods, and plan provisions as of July 1, 2012 as detailed in the SPTRFA Actuarial Valuation Report as of July 1, 2012.

As required by the State of Minnesota Standards for Actuarial Work, the projections reflect three asset return scenarios. The statutory investment return assumption is a 5-year select and ultimate approach with rates of 8.0% for the period July 1, 2012 to June 30, 2017 and 8.5% thereafter. The scenarios assume future investment returns of 1.5% more than the assumed rate, the assumed rate, and 1.5% less than the assumed rate.

In two of the three scenarios, the funding ratios are expected to decline. Note that as the funding ratios decline, it will be increasingly difficult for the plan to attain the assumed investment return.

The estimates are based on the market value of assets with no smoothing of investment gains or losses. Payroll is assumed to increase 4.00% a year, consistent with the valuation assumption for total payroll growth. In all scenarios, the valuation interest rate used to discount liabilities was the single effective interest rate used in the July 1, 2012 valuation of 8.34%, which produces a similar liability stream as trending to a liability that reflects the expiration of the 5-year select period on June 30, 2017.

Normal cost is assumed to trend downward as a percent of payroll to a level ultimate rate that reflects the expiration of the 5-year select period on June 30, 2017.

Future contributions to the plan are assumed to be equal to the statutory contribution level until plan assets are depleted. If plan assets are depleted during the projection period, statutory contributions are assumed to be equal to estimated benefit payments.

Benefit payments are based on the assumptions and methods described in this letter, with adjustments applied to estimate the impact of future members hired after June 30, 2012 retiring during the 30-year projection period. To estimate this impact, we assumed total benefit payments would increase a minimum of 2% per year.

If actuarial accrued liability exceeds assets, the unfunded actuarial accrued liability is amortized using a rolling 25-year amortization period per Minnesota Statute 356.215, Subdivision 11(j).

It is our understanding that changes in benefits and contributions are being considered to address the funding deficiency in this plan; these potential changes have not been reflected herein.

### **Postretirement Benefit Increases**

A very significant assumption affecting the projected estimates is the expectation of annual increases in the benefits being paid to retirees and beneficiaries. If the plan reaches a funding ratio of 80% (*on an actuarial value of assets basis*) in the future, post-retirement increases will increase to 2.0%.

Under the 7.0% and 8.5% ultimate rate of return scenarios, the funded status of the plan is expected to deteriorate. We assumed a 1.0% postretirement benefit increase for all years for these two scenarios. If the postretirement benefit increase was assumed to be 2.0% or 2.5% instead of 1.0%, the liabilities would be significantly greater than the liabilities shown in this report.

Under the 10.0% ultimate rate of return scenario, assuming all future postretirement benefit increases equal 1.0%, the funded status of the plan *on an actuarial value of assets basis* is expected to exceed 80% before 2041. However, if at that time future postretirement increases are assumed to be 2.0%, the funded ratio would be less than 90%. Without further guidance, we cannot determine the date the postretirement increase would change to 2.0%. Different results would be obtained if our projected liabilities anticipated a switch to the 2.0% COLA at some point in the future.

### **Comments**

To the best of our knowledge and belief, the calculations were completed in accordance with the requirements of Minnesota Statutes, Section 356.215, and the requirements of the Standards for Actuarial Work established by the Legislative Commission on Pensions and Retirement.

This report should not be relied upon for any purpose other than the purpose described herein. Determinations of the financial results associated with the benefits described in this report in a manner other than the intended purpose may produce significantly different results. GRS is not responsible for the consequences of any unauthorized use.

The valuation was based upon information furnished by the St. Paul Teachers' Retirement Fund Association (SPTRFA), concerning benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries.

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 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 the valuation report. SPTRFA is solely responsible for communicating to GRS any changes required thereto.

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.

### **Professional Qualifications**

The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

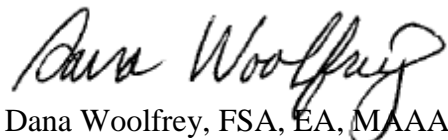
The undersigned actuaries are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. In addition, Ms. Woolfrey meets the requirements of "approved actuary" under Minnesota Statutes Section 356.215, Subdivision 1, Paragraph (c).

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge and belief the information contained in this report is accurate and fairly presents the actuarial position of the St. Paul Teachers' Retirement Fund Association as of the valuation date and was performed in accordance with the requirements of Minnesota Statutes Section 356.215, and the requirements of the Standards for Actuarial Work established by the LCPR. All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board and with applicable statutes.

Sincerely,



Bonita J. Wurst, ASA, EA, MAAA

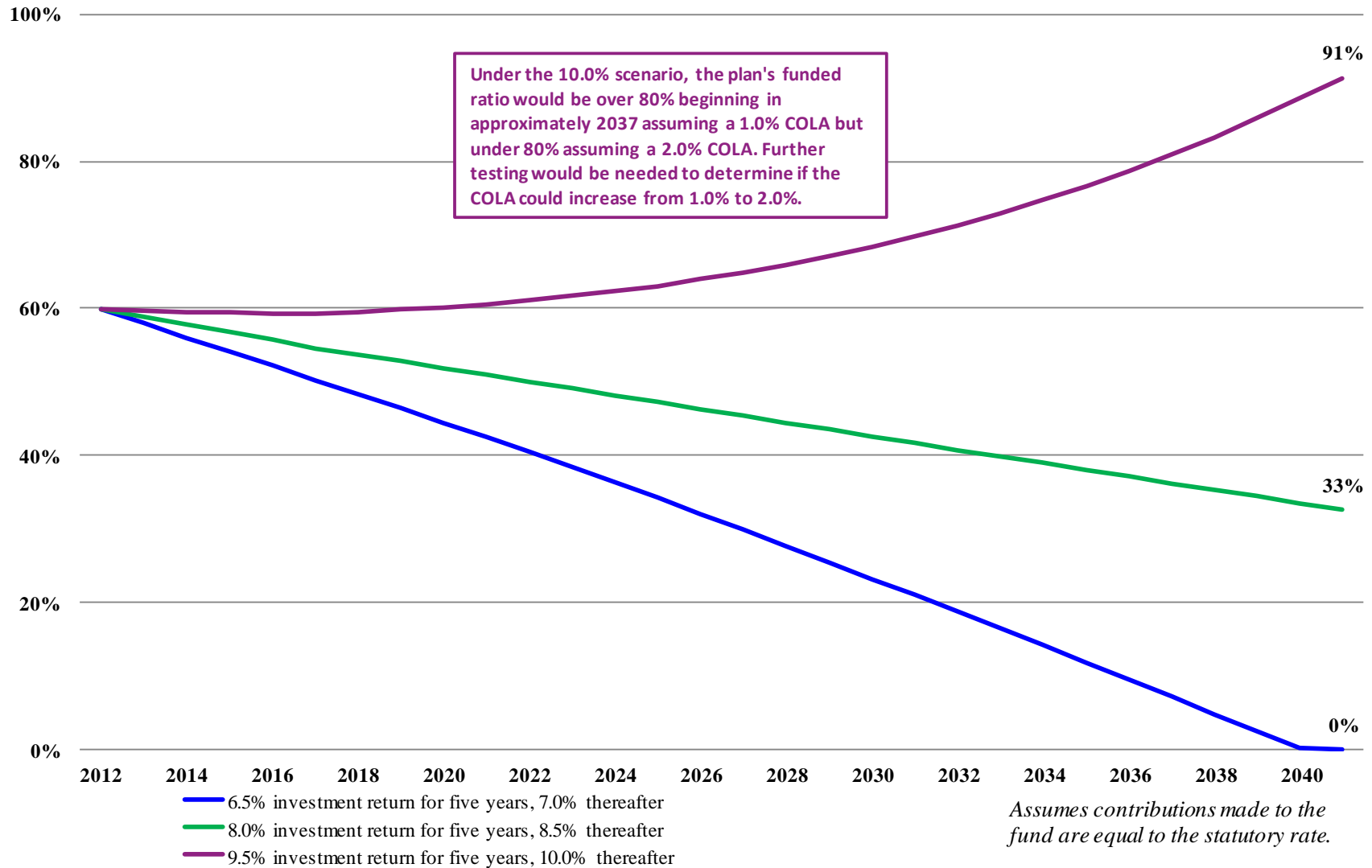


Dana Woolfrey, FSA, EA, MAAA

BJW/DW:sc  
Enclosures

This exhibit should only be viewed in conjunction with GRS' January 31, 2013 letter to SPTRFA.

## St. Paul Teachers' Retirement Fund Association Projection of Funded Status Assumes 1.0% postretirement benefit increase for all years

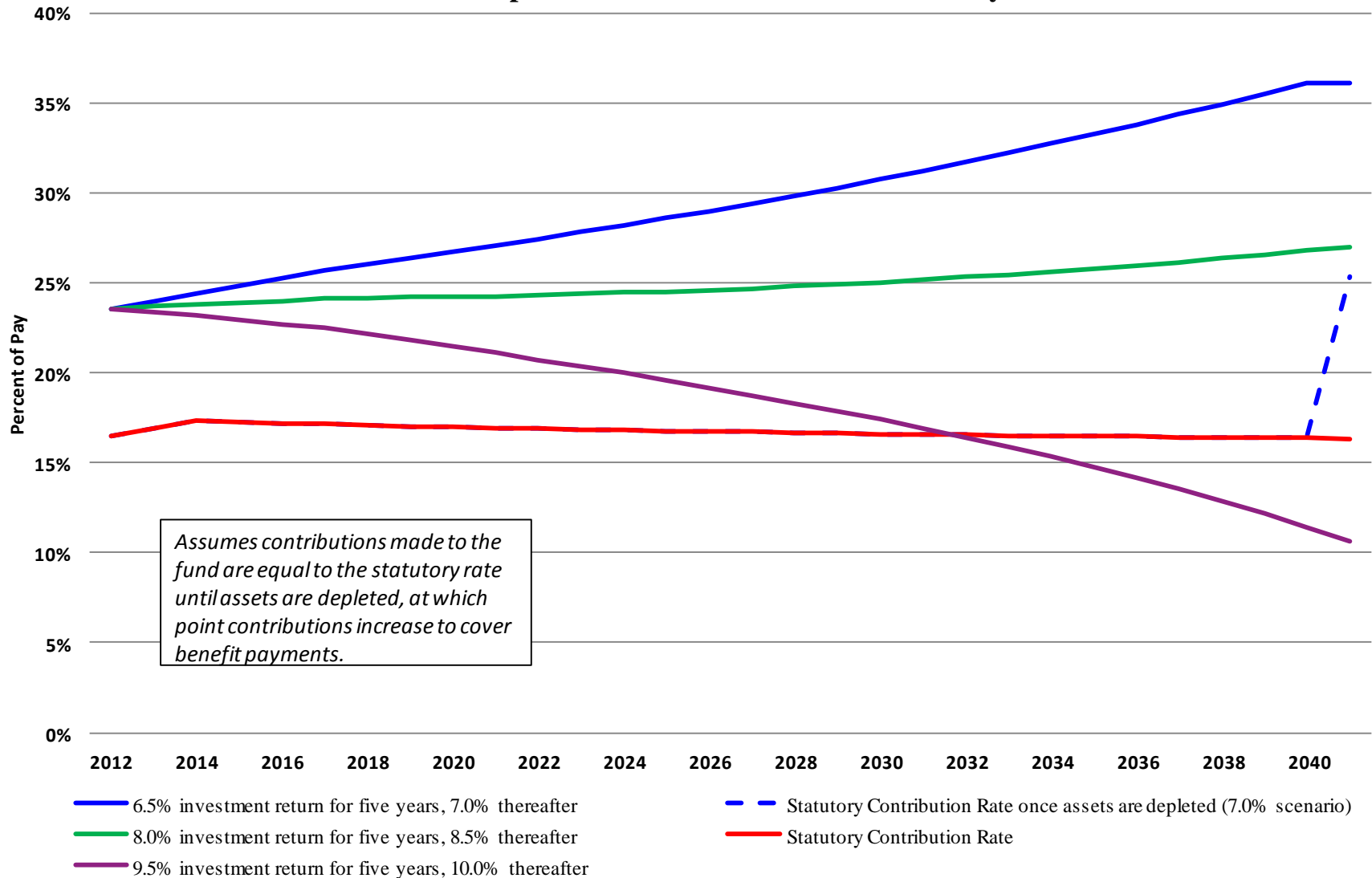


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## St. Paul Teachers' Retirement Fund Association

### Estimated Contribution Rates

Assumes 1.0% postretirement benefit increases for all years



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## St. Paul Teachers' Retirement Fund Association

**Scenario: 6.5% for Five Years, 7.0% thereafter**

**Fiscal year beginning July 1**

<b>\$ in Thousands</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
<b>Contributions (% of Payroll)</b>										
Statutory - Chapter 354A	16.5%	16.9%	17.3%	17.3%	17.2%	17.1%	17.1%	17.0%	17.0%	17.0%
Required - Chapter 356	23.6%	24.0%	24.4%	24.8%	25.3%	25.7%	26.1%	26.4%	26.7%	27.1%
Sufficiency / (Deficiency)	(7.1%)	(7.1%)	(7.1%)	(7.6%)	(8.1%)	(8.6%)	(9.0%)	(9.4%)	(9.7%)	(10.1%)
<b>Contributions</b>										
Statutory - Chapter 354A	42,259	45,086	48,087	49,819	51,620	53,507	55,468	57,525	59,663	61,888
Required - Chapter 356	60,449	64,070	67,816	71,686	75,777	80,319	84,595	89,109	93,880	98,920
Sufficiency / (Deficiency)	(18,190)	(18,984)	(19,729)	(21,867)	(24,157)	(26,812)	(29,127)	(31,584)	(34,217)	(37,032)
<b>Funding Ratios</b>										
Current Assets (MVA)	881,926	873,867	864,691	854,544	842,410	828,265	816,195	802,406	787,066	769,981
Actuarial Accrued Liability (AAL)	1,471,216	1,507,025	1,542,931	1,579,007	1,615,642	1,652,935	1,691,221	1,730,752	1,771,864	1,814,570
Unfunded AAL	589,290	633,158	678,240	724,463	773,232	824,670	875,026	928,346	984,798	1,044,589
Funding Ratio	60%	58%	56%	54%	52%	50%	48%	46%	44%	42%
<b>Benefit Payments</b>										
	104,782	108,160	111,490	114,474	117,422	120,219	122,986	125,569	128,313	130,817

*Assumes 1.0% postretirement benefit increases for all years.*

*Numbers may not add due to rounding.*

*Assumes contributions made to the fund are equal to the statutory rate until assets are depleted, at which point it is assumed contributions increase to cover benefit payments.*

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## St. Paul Teachers' Retirement Fund Association

**Scenario: 6.5% for Five Years, 7.0% thereafter**

**Fiscal year beginning July 1**

<b>\$ in Thousands</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>
<b>Contributions (% of Payroll)</b>										
Statutory - Chapter 354A	16.9%	16.9%	16.8%	16.8%	16.8%	16.7%	16.7%	16.7%	16.6%	16.6%
Required - Chapter 356	27.5%	27.8%	28.2%	28.6%	29.0%	29.4%	29.9%	30.3%	30.8%	31.2%
Sufficiency / (Deficiency)	(10.6%)	(11.0%)	(11.4%)	(11.8%)	(12.3%)	(12.7%)	(13.2%)	(13.7%)	(14.2%)	(14.7%)
<b>Contributions</b>										
Statutory - Chapter 354A	64,201	66,607	69,109	71,711	74,417	77,231	80,158	83,202	86,368	89,661
Required - Chapter 356	104,256	109,901	115,873	122,199	128,894	135,986	143,496	151,452	159,886	168,827
Sufficiency / (Deficiency)	(40,055)	(43,294)	(46,764)	(50,488)	(54,477)	(58,755)	(63,338)	(68,250)	(73,518)	(79,166)
<b>Funding Ratios</b>										
Current Assets (MVA)	751,367	731,090	709,072	685,234	659,495	631,768	601,967	570,001	535,775	499,179
Actuarial Accrued Liability (AAL)	1,859,303	1,906,175	1,955,365	2,007,071	2,061,513	2,118,922	2,179,557	2,243,691	2,311,628	2,383,683
Unfunded AAL	1,107,936	1,175,085	1,246,293	1,321,837	1,402,018	1,487,154	1,577,590	1,673,690	1,775,853	1,884,504
Funding Ratio	40%	38%	36%	34%	32%	30%	28%	25%	23%	21%
<b>Benefit Payments</b>										
	133,433	136,102	138,824	141,600	144,432	147,321	150,267	153,272	156,352	159,826

*Assumes 1.0% postretirement benefit increases for all years.*

*Numbers may not add due to rounding.*

*Assumes contributions made to the fund are equal to the statutory rate until assets are depleted, at which point it is assumed contributions increase to cover benefit payments.*

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## St. Paul Teachers' Retirement Fund Association

**Scenario: 6.5% for Five Years, 7.0% thereafter**

**Fiscal year beginning July 1**

<b>\$ in Thousands</b>	<b>2032</b>	<b>2033</b>	<b>2034</b>	<b>2035</b>	<b>2036</b>	<b>2037</b>	<b>2038</b>	<b>2039</b>	<b>2040</b>	<b>2041</b>
<b>Contributions (% of Payroll)</b>										
Statutory - Chapter 354A	16.6%	16.5%	16.5%	16.5%	16.5%	16.4%	16.4%	16.4%	16.4%	25.3%
Required - Chapter 356	31.7%	32.2%	32.7%	33.3%	33.8%	34.4%	35.0%	35.6%	36.2%	36.2%
Sufficiency / (Deficiency)	(15.2%)	(15.7%)	(16.2%)	(16.8%)	(17.4%)	(17.9%)	(18.5%)	(19.2%)	(19.8%)	(10.8%)
<b>Contributions</b>										
Statutory - Chapter 354A	93,085	96,646	100,349	104,201	108,207	112,373	116,705	121,211	125,898	202,613
Required - Chapter 356	178,306	188,357	199,018	210,326	222,322	235,053	248,564	262,907	278,135	289,236
Sufficiency / (Deficiency)	(85,221)	(91,711)	(98,669)	(106,125)	(114,115)	(122,680)	(131,859)	(141,696)	(152,237)	(86,623)
<b>Funding Ratios</b>										
Current Assets (MVA)	459,766	417,016	370,525	320,157	265,566	206,497	142,703	74,220	1,256	-
Actuarial Accrued Liability (AAL)	2,459,865	2,540,136	2,624,608	2,713,694	2,807,636	2,906,810	3,011,646	3,122,907	3,241,586	3,368,304
Unfunded AAL	2,000,099	2,123,120	2,254,083	2,393,537	2,542,070	2,700,313	2,868,943	3,048,687	3,240,330	3,368,304
Funding Ratio	19%	16%	14%	12%	9%	7%	5%	2%	0%	0%
<b>Benefit Payments</b>	163,743	167,956	172,189	176,639	181,201	185,856	190,319	194,435	198,640	202,613

*Assumes 1.0% postretirement benefit increases for all years.*

*Numbers may not add due to rounding.*

*Assumes contributions made to the fund are equal to the statutory rate until assets are depleted, at which point it is assumed contributions increase to cover benefit payments.*



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## St. Paul Teachers' Retirement Fund Association

**Scenario: 8.0% for five years, 8.5% thereafter**

**Fiscal year beginning July 1**

<b>\$ in Thousands</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
<b>Contributions (% of Payroll)</b>										
Statutory - Chapter 354A	16.5%	16.9%	17.3%	17.3%	17.2%	17.1%	17.1%	17.0%	17.0%	17.0%
Required - Chapter 356	23.6%	23.7%	23.8%	23.9%	24.0%	24.2%	24.2%	24.2%	24.3%	24.3%
Sufficiency / (Deficiency)	(7.1%)	(6.8%)	(6.5%)	(6.6%)	(6.8%)	(7.0%)	(7.1%)	(7.2%)	(7.3%)	(7.3%)
<b>Contributions</b>										
Statutory - Chapter 354A	42,259	45,086	48,087	49,819	51,620	53,507	55,468	57,525	59,663	61,888
Required - Chapter 356	60,449	63,239	66,089	68,994	72,045	75,458	78,530	81,750	85,131	88,679
Sufficiency / (Deficiency)	(18,190)	(18,153)	(18,002)	(19,175)	(20,425)	(21,951)	(23,062)	(24,225)	(25,468)	(26,791)
<b>Funding Ratios</b>										
Current Assets (MVA)	881,926	886,621	891,094	895,548	899,021	901,540	907,614	913,325	918,931	924,338
Actuarial Accrued Liability (AAL)	1,471,216	1,507,025	1,542,931	1,579,007	1,615,642	1,652,935	1,691,221	1,730,752	1,771,864	1,814,570
Unfunded AAL	589,290	620,404	651,837	683,459	716,621	751,395	783,607	817,427	852,933	890,232
Funding Ratio	60%	59%	58%	57%	56%	55%	54%	53%	52%	51%
<b>Benefit Payments</b>										
	104,782	108,160	111,490	114,474	117,422	120,219	122,986	125,569	128,313	130,817

*Assumes 1.0% postretirement benefit increases for all years.*

*Numbers may not add due to rounding.*

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## St. Paul Teachers' Retirement Fund Association

Scenario: 8.0% for five years, 8.5% thereafter

Fiscal year beginning July 1

\$ in Thousands	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
<b>Contributions (% of Payroll)</b>										
Statutory - Chapter 354A	16.9%	16.9%	16.8%	16.8%	16.8%	16.7%	16.7%	16.7%	16.6%	16.6%
Required - Chapter 356	24.3%	24.4%	24.5%	24.5%	24.6%	24.7%	24.8%	24.9%	25.1%	25.2%
Sufficiency / (Deficiency)	(7.4%)	(7.5%)	(7.6%)	(7.8%)	(7.9%)	(8.0%)	(8.1%)	(8.3%)	(8.4%)	(8.6%)
<b>Contributions</b>										
Statutory - Chapter 354A	64,201	66,607	69,109	71,711	74,417	77,231	80,158	83,202	86,368	89,661
Required - Chapter 356	92,413	96,338	100,465	104,811	109,382	114,194	119,258	124,591	130,210	136,131
Sufficiency / (Deficiency)	(28,212)	(29,731)	(31,356)	(33,100)	(34,965)	(36,963)	(39,100)	(41,389)	(43,842)	(46,470)
<b>Funding Ratios</b>										
Current Assets (MVA)	929,869	935,506	941,300	947,305	953,586	960,215	967,272	974,848	983,048	991,969
Actuarial Accrued Liability (AAL)	1,859,303	1,906,175	1,955,365	2,007,071	2,061,513	2,118,922	2,179,557	2,243,691	2,311,628	2,383,683
Unfunded AAL	929,434	970,669	1,014,065	1,059,766	1,107,927	1,158,707	1,212,285	1,268,843	1,328,580	1,391,714
Funding Ratio	50%	49%	48%	47%	46%	45%	44%	43%	43%	42%
<b>Benefit Payments</b>	133,433	136,102	138,824	141,600	144,432	147,321	150,267	153,272	156,352	159,826

*Assumes 1.0% postretirement benefit increases for all years.*

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## St. Paul Teachers' Retirement Fund Association

**Scenario: 8.0% for five years, 8.5% thereafter**

**Fiscal year beginning July 1**

<b>\$ in Thousands</b>	<b>2032</b>	<b>2033</b>	<b>2034</b>	<b>2035</b>	<b>2036</b>	<b>2037</b>	<b>2038</b>	<b>2039</b>	<b>2040</b>	<b>2041</b>
<b>Contributions (% of Payroll)</b>										
Statutory - Chapter 354A	16.6%	16.5%	16.5%	16.5%	16.5%	16.4%	16.4%	16.4%	16.4%	16.4%
Required - Chapter 356	25.3%	25.5%	25.6%	25.8%	26.0%	26.2%	26.4%	26.6%	26.8%	27.0%
Sufficiency / (Deficiency)	(8.8%)	(9.0%)	(9.1%)	(9.3%)	(9.5%)	(9.8%)	(10.0%)	(10.2%)	(10.4%)	(10.7%)
<b>Contributions</b>										
Statutory - Chapter 354A	93,085	96,646	100,349	104,201	108,207	112,373	116,705	121,211	125,898	130,771
Required - Chapter 356	142,370	148,945	155,877	163,186	170,894	179,026	187,607	196,664	206,225	216,321
Sufficiency / (Deficiency)	(49,285)	(52,299)	(55,528)	(58,985)	(62,687)	(66,653)	(70,902)	(75,453)	(80,327)	(85,550)
<b>Funding Ratios</b>										
Current Assets (MVA)	1,001,393	1,011,034	1,020,741	1,030,647	1,040,692	1,050,929	1,061,442	1,072,624	1,085,071	1,098,983
Actuarial Accrued Liability (AAL)	2,459,865	2,540,136	2,624,608	2,713,694	2,807,636	2,906,810	3,011,646	3,122,907	3,241,586	3,368,304
Unfunded AAL	1,458,472	1,529,102	1,603,867	1,683,047	1,766,944	1,855,881	1,950,204	2,050,283	2,156,515	2,269,321
Funding Ratio	41%	40%	39%	38%	37%	36%	35%	34%	33%	33%
<b>Benefit Payments</b>										
	163,743	167,956	172,189	176,639	181,201	185,856	190,319	194,435	198,640	202,613

*Assumes 1.0% postretirement benefit increases for all years.*

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## St. Paul Teachers' Retirement Fund Association

Scenario: 9.5% for Five Years, 10.0% thereafter

Fiscal year beginning July 1

\$ in Thousands	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Contributions (% of Payroll)</b>										
Statutory - Chapter 354A	16.5%	16.9%	17.3%	17.3%	17.2%	17.1%	17.1%	17.0%	17.0%	17.0%
Required - Chapter 356	23.6%	23.4%	23.2%	23.0%	22.7%	22.5%	22.2%	21.8%	21.5%	21.1%
Sufficiency / (Deficiency)	(7.1%)	(6.5%)	(5.9%)	(5.7%)	(5.5%)	(5.4%)	(5.1%)	(4.8%)	(4.5%)	(4.2%)
<b>Contributions</b>										
Statutory - Chapter 354A	42,259	45,086	48,087	49,819	51,620	53,507	55,468	57,525	59,663	61,888
Required - Chapter 356	60,449	62,408	64,337	66,222	68,144	70,298	71,990	73,687	75,387	77,081
Sufficiency / (Deficiency)	(18,190)	(17,322)	(16,250)	(16,403)	(16,524)	(16,791)	(16,522)	(16,162)	(15,724)	(15,193)
<b>Funding Ratios</b>										
Current Assets (MVA)	881,926	899,375	917,880	937,763	958,187	979,313	1,006,179	1,034,847	1,065,787	1,099,141
Actuarial Accrued Liability (AAL)	1,471,216	1,507,025	1,542,931	1,579,007	1,615,642	1,652,935	1,691,221	1,730,752	1,771,864	1,814,570
Unfunded AAL	589,290	607,650	625,051	641,244	657,455	673,622	685,042	695,905	706,077	715,429
Funding Ratio	60%	60%	59%	59%	59%	59%	59%	60%	60%	61%
<b>Benefit Payments</b>										
	104,782	108,160	111,490	114,474	117,422	120,219	122,986	125,569	128,313	130,817

*Assumes 1.0% postretirement benefit increases for all years.*

*Numbers may not add due to rounding.*

*The plan's funded ratio could be over 80% assuming a 1.0% COLA but under 90% assuming a 2.0% COLA on an actuarial value of assets basis toward the end of the projection period. Further guidance would be needed to determine when the COLA could increase from 1.0% to 2.0%.*

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January 31, 2013 letter to SPTRFA**

## St. Paul Teachers' Retirement Fund Association

Scenario: 9.5% for Five Years, 10.0% thereafter

Fiscal year beginning July 1

\$ in Thousands	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
<b>Contributions (% of Payroll)</b>										
Statutory - Chapter 354A	16.9%	16.9%	16.8%	16.8%	16.8%	16.7%	16.7%	16.7%	16.6%	16.6%
Required - Chapter 356	20.8%	20.4%	20.0%	19.6%	19.2%	18.8%	18.3%	17.9%	17.4%	17.0%
Sufficiency / (Deficiency)	(3.8%)	(3.5%)	(3.2%)	(2.8%)	(2.4%)	(2.1%)	(1.7%)	(1.2%)	(0.8%)	(0.4%)
<b>Contributions</b>										
Statutory - Chapter 354A	64,201	66,607	69,109	71,711	74,417	77,231	80,158	83,202	86,368	89,661
Required - Chapter 356	78,770	80,441	82,083	83,688	85,240	86,724	88,121	89,413	90,580	91,595
Sufficiency / (Deficiency)	(14,569)	(13,834)	(12,974)	(11,977)	(10,823)	(9,493)	(7,963)	(6,211)	(4,212)	(1,934)
<b>Funding Ratios</b>										
Current Assets (MVA)	1,135,491	1,175,111	1,218,367	1,265,666	1,317,458	1,374,242	1,436,569	1,505,048	1,580,352	1,663,213
Actuarial Accrued Liability (AAL)	1,859,303	1,906,175	1,955,365	2,007,071	2,061,513	2,118,922	2,179,557	2,243,691	2,311,628	2,383,683
Unfunded AAL	723,812	731,064	736,998	741,405	744,055	744,680	742,988	738,643	731,276	720,470
Funding Ratio	61%	62%	62%	63%	64%	65%	66%	67%	68%	70%
<b>Benefit Payments</b>										
	133,433	136,102	138,824	141,600	144,432	147,321	150,267	153,272	156,352	159,826

*Assumes 1.0% postretirement benefit increases for all years.*

*Numbers may not add due to rounding.*

*The plan's funded ratio could be over 80% assuming a 1.0% COLA but under 90% assuming a 2.0% COLA on an actuarial value of assets basis toward the end of the projection period. Further guidance would be needed to determine when the COLA could increase from 1.0% to 2.0%.*

**This exhibit should only be  
viewed in conjunction with GRS'  
January 31, 2013 letter to SPTRFA**

## St. Paul Teachers' Retirement Fund Association

Scenario: 9.5% for Five Years, 10.0% thereafter

Fiscal year beginning July 1

\$ in Thousands	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
<b>Contributions (% of Payroll)</b>										
Statutory - Chapter 354A	16.6%	16.5%	16.5%	16.5%	16.5%	16.4%	16.4%	16.4%	16.4%	16.4%
Required - Chapter 356	16.5%	15.9%	15.4%	14.8%	14.2%	13.6%	12.9%	12.2%	11.4%	10.6%
Sufficiency / (Deficiency)	0.1%	0.6%	1.1%	1.7%	2.3%	2.9%	3.5%	4.2%	5.0%	5.7%
<b>Contributions</b>										
Statutory - Chapter 354A	93,085	96,646	100,349	104,201	108,207	112,373	116,705	121,211	125,898	130,771
Required - Chapter 356	92,429	93,050	93,422	93,506	93,257	92,627	91,561	89,994	87,859	85,074
Sufficiency / (Deficiency)	656	3,596	6,927	10,695	14,950	19,746	25,144	31,217	38,039	45,697
<b>Funding Ratios</b>										
Current Assets (MVA)	1,754,102	1,853,492	1,962,062	2,080,858	2,210,826	2,353,124	2,509,054	2,680,349	2,869,092	3,077,118
Actuarial Accrued Liability (AAL)	2,459,865	2,540,136	2,624,608	2,713,694	2,807,636	2,906,810	3,011,646	3,122,907	3,241,586	3,368,304
Unfunded AAL	705,763	686,644	662,546	632,836	596,810	553,686	502,592	442,558	372,494	291,186
Funding Ratio	71%	73%	75%	77%	79%	81%	83%	86%	89%	91%
<b>Benefit Payments</b>	163,743	167,956	172,189	176,639	181,201	185,856	190,319	194,435	198,640	202,613

*Assumes 1.0% postretirement benefit increases for all years.*

*Numbers may not add due to rounding.*

*The plan's funded ratio could be over 80% assuming a 1.0% COLA but under 90% assuming a 2.0% COLA on an actuarial value of assets basis toward the end of the projection period. Further guidance would be needed to determine when the COLA could increase from 1.0% to 2.0%.*