GRS

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January 28, 2016

CONFIDENTIAL

Mr. Dave Bergstrom
Executive Director
Minnesota State Retirement System
60 Empire Drive, Suite 300
St. Paul, MN 55103

Re: Projection of Contributions and Funding Status – State Employees Retirement Fund

Dear Dave:

Attached are 30-year projections of estimated funded status, required contributions, and statutory contributions under three asset return scenarios for the State Employees Retirement Fund (SERF). Unless noted otherwise, the estimates are based on participant data, methods and plan provisions as detailed in the State Employees Retirement Fund Actuarial Valuation Report for funding purposes as of July 1, 2015.

An experience study was completed in 2015. In the report, GRS recommended many changes to the valuation assumptions. Since the release of this report, the Society of Actuaries (SOA) published an updated mortality improvement scale, called MP-2015. Minnesota State Retirement Fund (MSRF) has expressed intent to adopt this mortality projection scale in lieu of the MP-2014 projection scale that was recommended in the experience study report. The recommended assumptions, including the MP-2015 projection scale, were used to determine the enclosed results. The recommended demographic assumptions are summarized in the *Minnesota State Employees Retirement Fund 6-Year Experience Study*, dated June 30, 2015.

As required by the State of Minnesota Standards for Actuarial Work, the projections reflect three asset return scenarios. The statutory investment return assumption is 8.0%. 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. Note that we believe the 9.5% rate of return assumption is outside of the range of reasonable expected returns for this plan. In fact, according to our most recent experience study, the probability of achieving the 8% assumption is only 37%. The study further indicates that in order to have a 50% change of achieving the assumed earnings rate, the rate would have to be lowered to 6.97%.

Note that as funding ratios decline, as they are expected to in some of the investment return scenarios shown in this letter, it will be increasingly difficult for the plan to attain the assumed investment return. Each year, a larger proportion of assets is paid out in benefits, and less capital is available to invest.

The estimates are based on the market value of assets with no smoothing of investment gains or losses. In all scenarios, the valuation interest rate used to discount liabilities was 8%. Payroll is assumed to increase approximately 3.5% a year over the long-term, consistent with the valuation assumption for total payroll growth.

The projection is an open group projection; meaning, active members projected to retire or otherwise terminate in the future are replaced with new active members so that the total active membership of the Fund remains at 49,037 members. The profile of these new members is the same as new members hired between July 1, 2010 and July 1, 2014:

- Average age at hire is 37.8
- Average salary at hire is $42,600
- Approximately 56% female, 44% male

If actuarial accrued liability exceeds assets, the unfunded actuarial accrued liability is amortized through June 30, 2041 per Minnesota Statute 356.215, Subdivision 11. As directed by MSRS, the statutory amortization date is assumed to be changed to June 30, 2071 once the current period expires in 2041. Per Minnesota Statute 356.215, Subdivision 11 (l), a negative unfunded actuarial accrued liability (i.e., when assets exceed liability) is amortized over a rolling 30-year period.

The contribution stabilizer statutes defined in Minnesota Statute 352.045 were revised in 2015 to make changes to contribution rates less prescriptive and more flexible. Based on MSRS' direction, the projection results assume level future contributions.

Post-retirement 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. Benefit recipients currently receive an annual 2.0% post-retirement benefit increase. If the plan reaches a funding ratio of 90% (based on a 2.5% post-retirement benefit increase assumption) on a market value of assets basis for two consecutive years in the future, post-retirement increases will revert to the 2.5% level.

An actuarial projection was performed to estimate when this plan is expected to attain the threshold required to pay a 2.5% post-retirement benefit increase. The projection indicated that if all assumptions are met, the threshold will not be attained and the plan is assumed to pay the 2.0% benefit increase indefinitely. This assumption is reflected in the 8.0% investment return projection scenario. The funded status of the plan is expected to deteriorate and plan assets are exhausted in approximately 75 years. We performed a similar projection for the July 1, 2015 valuation and determined the plan would begin paying a 2.5% benefit increase on January 1, 2036. The permanent delay in the 2.5% post-retirement benefit increase in the enclosed 8% investment return projection is due to the change in assumptions, primarily increased longevity under the updated mortality assumptions.

Similarly, under the 6.5% investment return scenario, the funded status of the plan is expected to deteriorate and plan assets are exhausted in approximately 35 years.

Under the 9.5% investment return scenario, the funded status of the plan is expected to improve. As the plan experiences greater than expected investment return each year, the assumed 2.5% benefit increase date is achieved. We performed a projection to estimate when the plan is expected to attain the threshold required to pay a 2.5% post-retirement benefit increase if future investment returns are 9.5%. This projection indicated the plan would begin paying a 2.5% benefit increase on January 1, 2025 under this investment return scenario. To approximate the acceleration of the assumed 2.5% benefit increase date from "never" to 2025, we assumed the accrued liability and normal cost would increase a proportionate amount between 2015 and 2025.

As stated earlier, we concluded in our recent experience study that the probability of exceeding the current 8% assumption over 20 years is 37% and the probability of exceeding a 7% assumption over 20 years is 50%. While not required by the State of Minnesota Standards of Actuarial Work, we performed a projection assuming a 7.0% investment return. The results were similar to the 8.0% and the 6.5% investment return scenario; the funded status of the plan deteriorates and plan assets are exhausted in approximately 40 years.

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 Minnesota State Retirement System (MSRS), 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 Board of Directors. These parties are responsible for selecting the plan's funding policy, actuarial valuation methods, asset valuation methods, and assumptions. Except where noted, 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 or the *Minnesota State Employees Retirement Fund 6-Year Experience Study*, dated June 30, 2015. MSRS 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.

Bonita J. Wurst and Brian B. Murphy 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. In addition, Mr. Murphy 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 State Employees Retirement Fund 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

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

Brian B Murphy

Brian B. Murphy, FSA, EA, MAAA, FCA

BJW/BBM:bd
Enclosures

Other Observations

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

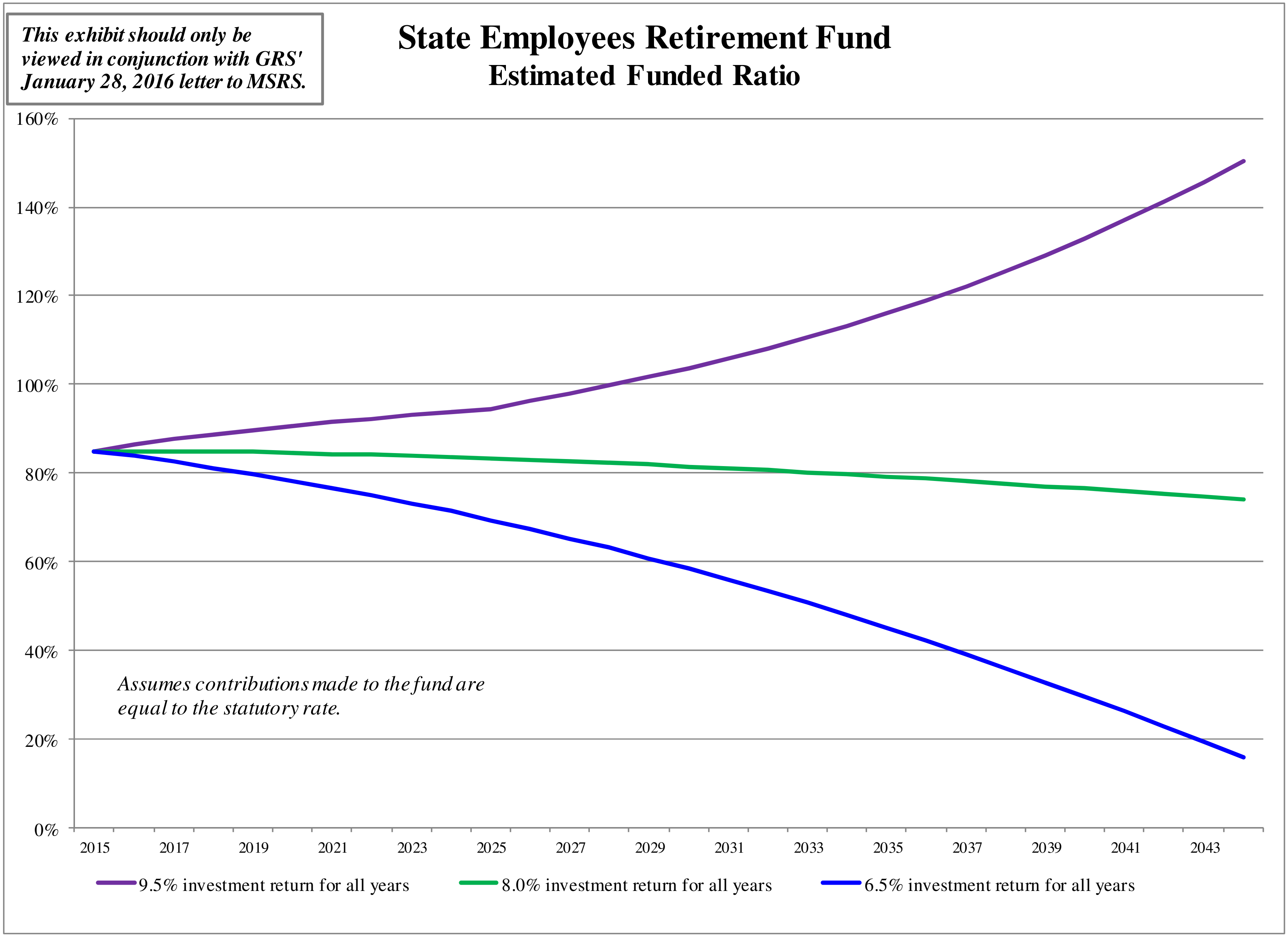
Given the plan's contribution allocation procedure, if there are no changes in benefits or contributions and all actuarial assumptions are met (including the assumption of the plan earning 8.0%), it is expected that:

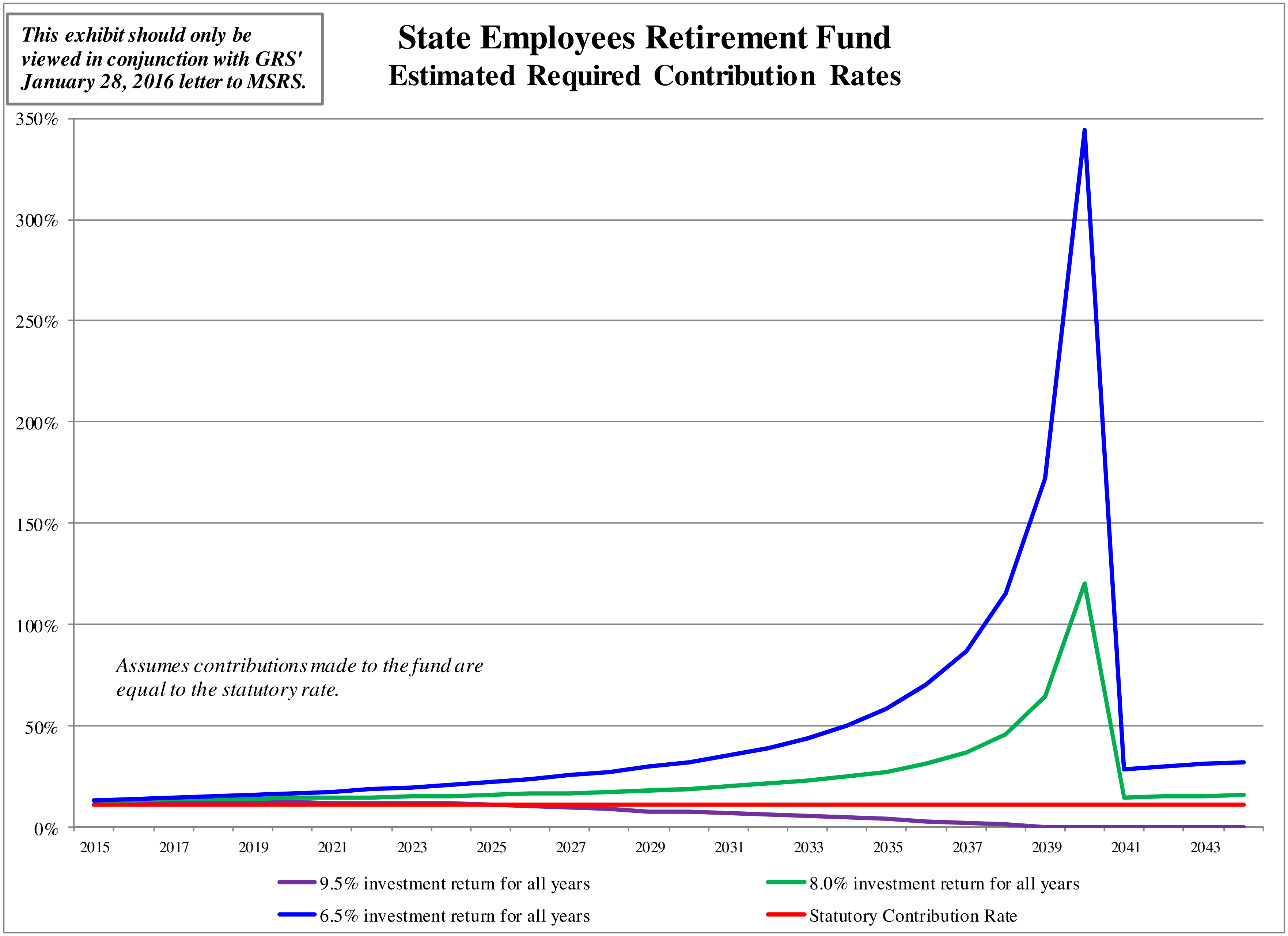
(1) The unfunded actuarial accrued liabilities on a market value of assets basis will not be fully funded by the statutory amortization date of June 30, 2041,
(2) The funded status of the plan will decrease, and
(3) The unfunded liability will grow as a dollar amount.

Limitations of Funded Status Measurements

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

(1) The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations; in other words, of transferring the obligations to a unrelated third party in an arm's length market value type transaction.
(2) The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).
(3) The measurement would produce a different result if the actuarial value of assets were used instead of the market value of assets.


This exhibit should only be viewed in conjunction with GRS' January 28, 2016 letter to MSRS.
State Employees Retirement Fund
Estimated Funded Ratio
160%
140%
120%
100%
80%
60%
40%
20%
0%
2015
2017
2019
2021
2023
2025
2027
2029
2031
2033
2035
2037
2039
2041
2043
Assumes contributions made to the fund are equal to the statutory rate.
9.5% investment return for all years
8.0% investment return for all years
6.5% investment return for all years



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State Employees Retirement Fund
Estimated Required Contribution Rates
350%
300%
250%
200%
150%
100%
50%
0%
Assumes contributions made to the fund are equal to the statutory rate.
2015
2017
2019
2021
2023
2025
2027
2029
2031
2033
2035
2037
2039
2041
2043
9.5% investment return for all years
8.0% investment return for all years
6.5% investment return for all years
Statutory Contribution Rate

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State Employees Retirement Fund

Scenario: 6.5% for All Years

Fiscal Year Beginning July 1

$ in Thousands	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Contributions (% of Payroll)										
Statutory - Chapter 352	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%
Required - Chapter 356 (MVA)	13.4%	13.9%	14.6%	15.2%	16.0%	16.8%	17.7%	18.7%	19.7%	20.9%
Sufficiency / (Deficiency)	(2.4)%	(2.9)%	(3.6)%	(4.2)%	(5.0)%	(5.8)%	(6.7)%	(7.7)%	(8.7)%	(9.9)%
Contributions										
Statutory - Chapter 352	302,069	312,105	321,101	330,466	340,611	351,151	362,144	373,625	385,656	398,231
Required - Chapter 356 (MVA)	368,757	394,893	424,637	457,820	494,719	535,798	581,750	633,329	691,405	757,090
Sufficiency / (Deficiency)	(66,688)	(82,788)	(103,536)	(127,354)	(154,108)	(184,647)	(219,606)	(259,704)	(305,749)	(358,859)
Funding Ratios										
Current Assets (MVA)	11,638,319	11,947,396	12,229,799	12,480,312	12,699,802	12,884,644	13,035,389	13,149,591	13,228,460	13,270,151
Actuarial Accrued Liability (AAL)	13,687,977	14,257,357	14,821,506	15,377,809	15,928,918	16,472,315	17,010,062	17,541,348	18,069,131	18,593,394
Unfunded AAL	2,049,658	2,309,961	2,591,707	2,897,497	3,229,116	3,587,671	3,974,673	4,391,757	4,840,671	5,323,243
Funding Ratio	85%	84%	83%	81%	80%	78%	77%	75%	73%	71%
Benefit Payments	726,337	781,365	838,755	893,656	950,873	1,005,756	1,061,302	1,113,849	1,166,493	1,217,307

Numbers may not add due to rounding.

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State Employees Retirement Fund

Scenario: 6.5% for All Years

Fiscal Year Beginning July 1

$ in Thousands	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Contributions (% of Payroll)										
Statutory - Chapter 352	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%
Required - Chapter 356 (MVA)	22.2%	23.7%	25.4%	27.4%	29.6%	32.3%	35.5%	39.3%	44.1%	50.3%
Sufficiency / (Deficiency)	(11.2)%	(12.7)%	(14.4)%	(16.4)%	(18.6)%	(21.3)%	(24.5)%	(28.3)%	(33.1)%	(39.3)%
Contributions										
Statutory - Chapter 352	411,354	425,037	439,255	454,049	469,386	485,233	501,642	518,617	536,189	554,349
Required - Chapter 356 (MVA)	831,783	917,245	1,015,769	1,130,279	1,264,726	1,424,579	1,617,474	1,854,384	2,151,798	2,535,667
Sufficiency / (Deficiency)	(420,429)	(492,208)	(576,514)	(676,230)	(795,340)	(939,346)	(1,115,832)	(1,335,767)	(1,615,609)	(1,981,318)
Funding Ratios										
Current Assets (MVA)	13,274,679	13,240,924	13,168,499	13,057,565	12,907,862	12,718,195	12,488,068	12,216,098	11,901,492	11,542,541
Actuarial Accrued Liability (AAL)	19,116,116	19,638,293	20,161,810	20,689,304	21,223,151	21,764,998	22,317,471	22,882,538	23,462,985	24,060,947
Unfunded AAL	5,841,437	6,397,369	6,993,311	7,631,739	8,315,289	9,046,803	9,829,403	10,666,440	11,561,493	12,518,406
Funding Ratio	69%	67%	65%	63%	61%	58%	56%	53%	51%	48%
Benefit Payments	1,267,400	1,316,000	1,362,529	1,407,444	1,451,603	1,494,221	1,536,176	1,576,813	1,617,002	1,657,172

Numbers may not add due to rounding.

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State Employees Retirement Fund

Scenario: 6.5% for All Years

Fiscal Year Beginning July 1

$ in Thousands	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Contributions (% of Payroll)										
Statutory - Chapter 352	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%
Required - Chapter 356 (MVA)	58.5%	70.0%	87.2%	115.7%	172.8%	343.9%	28.6%	29.8%	31.0%	32.4%
Sufficiency / (Deficiency)	(47.5)%	(59.0)%	(76.2)%	(104.7)%	(161.8)%	(332.9)%	(17.6)%	(18.8)%	(20.0)%	(21.4)%
Contributions										
Statutory - Chapter 352	573,142	592,566	612,695	633,507	655,027	677,270	700,273	724,078	748,742	774,281
Required - Chapter 356 (MVA)	3,049,185	3,770,196	4,854,246	6,664,342	10,289,555	21,175,288	1,818,808	1,958,471	2,111,173	2,278,520
Sufficiency / (Deficiency)	(2,476,043)	(3,177,630)	(4,241,551)	(6,030,835)	(9,634,528)	(20,498,018)	(1,118,535)	(1,234,393)	(1,362,431)	(1,504,239)
Funding Ratios										
Current Assets (MVA)	11,136,971	10,682,154	10,175,863	9,616,694	9,003,250	8,333,081	7,601,940	6,805,337	5,939,051	4,998,344
Actuarial Accrued Liability (AAL)	24,678,282	25,316,780	25,978,975	26,668,528	27,389,507	28,145,340	28,938,108	29,770,083	30,644,281	31,563,677
Unfunded AAL	13,541,311	14,634,626	15,803,112	17,051,834	18,386,257	19,812,259	21,336,168	22,964,746	24,705,230	26,565,333
Funding Ratio	45%	42%	39%	36%	33%	30%	26%	23%	19%	16%
Benefit Payments	1,697,565	1,737,628	1,776,493	1,814,045	1,851,241	1,889,679	1,929,366	1,969,797	2,011,263	2,054,973

Numbers may not add due to rounding.

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State Employees Retirement Fund

Scenario: 8.0% for All Years

Fiscal Year Beginning July 1

$ in Thousands	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Contributions (% of Payroll)										
Statutory - Chapter 352	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%
Required - Chapter 356 (MVA)	13.4%	13.5%	13.7%	13.9%	14.1%	14.4%	14.6%	14.9%	15.2%	15.6%
Sufficiency / (Deficiency)	(2.4)%	(2.5)%	(2.7)%	(2.9)%	(3.1)%	(3.4)%	(3.6)%	(3.9)%	(4.2)%	(4.6)%
Contributions										
Statutory - Chapter 352	302,069	312,105	321,101	330,466	340,611	351,151	362,144	373,625	385,656	398,231
Required - Chapter 356 (MVA)	368,757	383,527	400,151	418,218	437,729	458,807	481,745	506,805	534,258	564,470
Sufficiency / (Deficiency)	(66,688)	(71,422)	(79,050)	(87,752)	(97,118)	(107,656)	(119,601)	(133,180)	(148,602)	(166,239)
Funding Ratios										
Current Assets (MVA)	11,638,319	12,118,721	12,590,452	13,049,309	13,497,225	13,931,704	14,354,495	14,764,431	15,164,095	15,553,121
Actuarial Accrued Liability (AAL)	13,687,977	14,257,357	14,821,506	15,377,809	15,928,918	16,472,315	17,010,062	17,541,348	18,069,131	18,593,394
Unfunded AAL	2,049,658	2,138,636	2,231,054	2,328,500	2,431,693	2,540,611	2,655,567	2,776,917	2,905,036	3,040,273
Funding Ratio	85%	85%	85%	85%	85%	85%	84%	84%	84%	84%
Benefit Payments	726,337	781,365	838,755	893,656	950,873	1,005,756	1,061,302	1,113,849	1,166,493	1,217,307

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State Employees Retirement Fund

Scenario: 8.0% for All Years

Fiscal Year Beginning July 1

$ in Thousands	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Contributions (% of Payroll)										
Statutory - Chapter 352	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%
Required - Chapter 356 (MVA)	16.0%	16.4%	17.0%	17.6%	18.2%	19.1%	20.1%	21.3%	22.8%	24.8%
Sufficiency / (Deficiency)	(5.0)%	(5.4)%	(6.0)%	(6.6)%	(7.2)%	(8.1)%	(9.1)%	(10.3)%	(11.8)%	(13.8)%
Contributions										
Statutory - Chapter 352	411,354	425,037	439,255	454,049	469,386	485,233	501,642	518,617	536,189	554,349
Required - Chapter 356 (MVA)	597,907	635,144	676,948	724,240	778,299	840,941	914,688	1,003,114	1,111,607	1,248,667
Sufficiency / (Deficiency)	(186,553)	(210,107)	(237,693)	(270,191)	(308,913)	(355,708)	(413,046)	(484,497)	(575,418)	(694,318)
Funding Ratios										
Current Assets (MVA)	15,933,106	16,304,632	16,669,141	17,028,762	17,385,365	17,740,044	18,094,761	18,450,776	18,810,133	19,174,169
Actuarial Accrued Liability (AAL)	19,116,116	19,638,293	20,161,810	20,689,304	21,223,151	21,764,998	22,317,471	22,882,538	23,462,985	24,060,947
Unfunded AAL	3,183,010	3,333,661	3,492,669	3,660,542	3,837,786	4,024,954	4,222,710	4,431,762	4,652,852	4,886,778
Funding Ratio	83%	83%	83%	82%	82%	82%	81%	81%	80%	80%
Benefit Payments	1,267,400	1,316,000	1,362,529	1,407,444	1,451,603	1,494,221	1,536,176	1,576,813	1,617,002	1,657,172

Numbers may not add due to rounding.

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State Employees Retirement Fund

Scenario: 8.0% for All Years

Fiscal Year Beginning July 1

$ in Thousands	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Contributions (% of Payroll)										
Statutory - Chapter 352	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%
Required - Chapter 356 (MVA)	27.4%	31.1%	36.7%	46.0%	64.6%	120.4%	15.0%	15.2%	15.5%	15.7%
Sufficiency / (Deficiency)	(16.4)%	(20.1)%	(25.7)%	(35.0)%	(53.6)%	(109.4)%	(4.0)%	(4.2)%	(4.5)%	(4.7)%
Contributions										
Statutory - Chapter 352	573,142	592,566	612,695	633,507	655,027	677,270	700,273	724,078	748,742	774,281
Required - Chapter 356 (MVA)	1,428,391	1,676,241	2,042,994	2,647,167	3,844,331	7,412,325	952,922	1,000,904	1,052,428	1,107,918
Sufficiency / (Deficiency)	(855,249)	(1,083,675)	(1,430,299)	(2,013,660)	(3,189,304)	(6,735,055)	(252,649)	(276,826)	(303,686)	(333,637)
Funding Ratios										
Current Assets (MVA)	19,543,871	19,920,099	20,304,354	20,699,236	21,107,649	21,531,762	21,972,266	22,429,943	22,906,199	23,402,313
Actuarial Accrued Liability (AAL)	24,678,282	25,316,780	25,978,975	26,668,528	27,389,507	28,145,340	28,938,108	29,770,083	30,644,281	31,563,677
Unfunded AAL	5,134,411	5,396,681	5,674,621	5,969,292	6,281,858	6,613,578	6,965,842	7,340,140	7,738,082	8,161,364
Funding Ratio	79%	79%	78%	78%	77%	77%	76%	75%	75%	74%
Benefit Payments	1,697,565	1,737,628	1,776,493	1,814,045	1,851,241	1,889,679	1,929,366	1,969,797	2,011,263	2,054,973

Numbers may not add due to rounding.

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State Employees Retirement Fund

Scenario: 9.5% for All Years

Fiscal Year Beginning July 1

$ in Thousands	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Contributions (% of Payroll)										
Statutory - Chapter 352	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%
Required - Chapter 356 (MVA)	13.4%	13.1%	12.9%	12.7%	12.5%	12.3%	12.2%	12.0%	11.8%	11.7%
Sufficiency / (Deficiency)	(2.4)%	(2.1)%	(1.9)%	(1.7)%	(1.5)%	(1.3)%	(1.2)%	(1.0)%	(0.8)%	(0.7)%
Contributions										
Statutory - Chapter 352	302,069	312,105	321,101	330,466	340,611	351,151	362,144	373,625	385,656	398,231
Required - Chapter 356 (MVA)	368,757	372,179	376,193	381,073	386,642	392,995	399,916	407,373	415,007	422,624
Sufficiency / (Deficiency)	(66,688)	(60,074)	(55,092)	(50,607)	(46,031)	(41,844)	(37,772)	(33,748)	(29,351)	(24,393)
Funding Ratios										
Current Assets (MVA)	11,638,319	12,290,046	12,956,243	13,634,753	14,329,727	15,041,099	15,773,270	16,527,981	17,311,014	18,125,515
Actuarial Accrued Liability (AAL)	13,687,977	14,223,545	14,780,069	15,358,368	15,959,294	16,583,732	17,232,603	17,906,862	18,607,503	19,335,557
Unfunded AAL	2,049,658	1,933,499	1,823,826	1,723,615	1,629,567	1,542,633	1,459,333	1,378,881	1,296,489	1,210,042
Funding Ratio	85%	86%	88%	89%	90%	91%	92%	92%	93%	94%
Benefit Payments	726,337	781,365	838,755	893,656	950,873	1,005,756	1,061,302	1,113,849	1,166,493	1,217,307

Numbers may not add due to rounding.

This exhibit should only be viewed in conjunction with GRS' January 28, 2016 letter to MSRS.

State Employees Retirement Fund

Scenario: 9.5% for All Years

Fiscal Year Beginning July 1

$ in Thousands	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Contributions (% of Payroll)										
Statutory - Chapter 352	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%
Required - Chapter 356 (MVA)	11.5%	10.7%	9.9%	9.0%	7.9%	7.7%	7.0%	6.3%	5.5%	4.7%
Sufficiency / (Deficiency)	(0.5)%	0.3%	1.1%	2.1%	3.1%	3.4%	4.0%	4.7%	5.5%	6.3%
Contributions										
Statutory - Chapter 352	411,354	425,037	439,255	454,049	469,386	485,233	501,642	518,617	536,189	554,349
Required - Chapter 356 (MVA)	429,795	412,129	394,303	369,376	335,237	337,372	317,883	295,038	268,464	237,774
Sufficiency / (Deficiency)	(18,441)	12,908	44,952	84,673	134,149	147,861	183,759	223,579	267,725	316,575
Funding Ratios										
Current Assets (MVA)	18,976,942	19,867,136	20,798,901	21,778,791	22,813,568	23,909,732	25,075,163	26,317,557	27,646,137	29,069,938
Actuarial Accrued Liability (AAL)	20,092,098	20,623,922	21,219,173	21,819,896	22,428,471	23,046,628	23,677,057	24,321,631	24,983,287	25,663,945
Unfunded AAL	1,115,156	756,786	420,272	41,105	(385,097)	(863,104)	(1,398,106)	(1,995,926)	(2,662,850)	(3,405,993)
Funding Ratio	94%	96%	98%	100%	102%	104%	106%	108%	111%	113%
Benefit Payments	1,270,245	1,324,566	1,376,918	1,427,739	1,477,858	1,526,517	1,574,656	1,621,519	1,668,153	1,714,871

Numbers may not add due to rounding.

This exhibit should only be viewed in conjunction with GRS' January 28, 2016 letter to MSRS.

State Employees Retirement Fund

Scenario: 9.5% for All Years

Fiscal Year Beginning July 1

$ in Thousands	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Contributions (% of Payroll)										
Statutory - Chapter 352	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%
Required - Chapter 356 (MVA)	3.9%	3.0%	2.1%	1.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Sufficiency / (Deficiency)	7.1%	8.0%	8.9%	9.9%	10.9%	11.0%	11.0%	11.0%	11.0%	11.0%
Contributions										
Statutory - Chapter 352	573,142	592,566	612,695	633,507	655,027	677,270	700,273	724,078	748,742	774,281
Required - Chapter 356 (MVA)	202,496	162,191	116,279	64,148	5,135	-	-	-	-	-
Sufficiency / (Deficiency)	370,646	430,375	496,416	569,359	649,892	677,270	700,273	724,078	748,742	774,281
Funding Ratios										
Current Assets (MVA)	30,598,515	32,242,033	34,012,310	35,923,248	37,990,140	40,228,760	42,654,750	45,285,185	48,139,483	51,238,604
Actuarial Accrued Liability (AAL)	26,365,471	27,089,499	27,838,582	28,616,345	29,426,784	30,273,200	31,157,602	32,082,038	33,049,505	34,062,847
Unfunded AAL	(4,233,044)	(5,152,534)	(6,173,728)	(7,306,903)	(8,563,356)	(9,955,560)	(11,497,148)	(13,203,147)	(15,089,978)	(17,175,757)
Funding Ratio	116%	119%	122%	126%	129%	133%	137%	141%	146%	150%
Benefit Payments	1,762,001	1,808,885	1,854,679	1,899,290	1,943,675	1,989,402	2,036,560	2,084,498	2,133,564	2,184,941

Numbers may not add due to rounding.