| P: 800.521.0498 | www.grsconsulting.com

January 31, 2025

CONFIDENTIAL

Ms. Erin Leonard
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 Ms. Leonard:

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. These projections, including the underlying investment return assumptions, are required by the Minnesota Standards for Actuarial Work. Unless noted otherwise, the estimates are based on participant data, assets, and plan provisions as outlined in the State Employees Retirement Fund actuarial funding valuation as of July 1, 2024.

Basis for Projections

For all enclosed projections, liabilities are determined using the statutory investment return assumption of 7.0%. As required by the Minnesota Standards for Actuarial Work, the projections reflect three asset return scenarios (7.0%, 5.5% and 8.5%). Note that we believe the 8.5% rate of return assumption is outside of the range of reasonable expected returns for this plan.

The estimates are based on the market value of assets with no smoothing of investment gains or losses. Consequently, the required contributions for the fiscal year will not match the figures based on the actuarial value of assets shown in our valuation report. Payroll is assumed to increase approximately 3.00% per 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 55,453 members. The profile of these new members is the same as new members hired between July 1, 2018 and June 30, 2023. Average salary at hire increases at the assumed payroll growth rate.

- Average age at hire is 37.8
- Average salary at hire is $60,500
- Approximately 60% female, 40% male

If actuarial accrued liability exceeds assets, the unfunded actuarial accrued liability is amortized through June 30, 2048 per Minnesota Statute 356.215, Subdivision 11. 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.

Comments

The reader should keep the following in mind when reviewing these results:

- The enclosed projections are based on assumptions as outlined in the State Employees Retirement Fund actuarial funding valuation as of July 1, 2024.
- Statutory contributions are defined in statutes as a fixed percentage of payroll plus any statutory supplemental contributions and represent the amount that is actually contributed to the plan. Required contributions are defined in statutes and the LCPR Standards for Actuarial Work and represent the amount needed to fully fund the plan by June 30, 2048 (normal cost, expenses and a payment to amortize the unfunded liability).
- Investment experience that has occurred since the measurement date is not reflected in this report.
- In the 7.0% and 8.5% investment return scenarios, surplus assets reduce the projected required contributions to amounts less than normal cost. We typically recommend the contribution be at least equal to the normal cost of the plan and suggest that plans with considerable surplus assets investigate the pros and cons of reducing the risk of the plan's investment allocation to preserve surplus assets.
- Note that as funding ratios decline, as they are expected to in one of the investment return scenarios shown in this letter, it will be increasingly difficult for the plan to attain the assumed scenario investment return. Each year, a larger proportion of assets is paid out in benefits, and less capital is available to invest.

Disclosures

The purpose of this report is to estimate the Fund's funding progress and required contribution rates over a 30-year period according to prescribed assumptions and the Minnesota Standards for Actuarial Work. 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.

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. The policies, methods and assumptions used in this valuation are those that have been so prescribed and are described in the Actuarial Basis section of the valuation report, except as noted. MSRS is solely responsible for communicating to GRS any changes required thereto.

The combined effect of the assumptions is expected to have no significant bias (i.e., not significantly optimistic or pessimistic). All actuarial assumptions and methods used in this report follow the guidance in the applicable Actuarial Standards of Practice. Additional information about the actuarial assumptions can be found in the Actuarial Basis section of the July 1, 2024 valuation report.

The contribution rates shown in this report have been determined using the actuarial assumptions and methods disclosed in the Actuarial Basis section of the July 1, 2024 valuation report. This valuation report includes risk metrics on pages 7-10, 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.

We have assessed that the contribution rate calculated under the 7.0% investment return scenario is a reasonable Actuarially Determined Employer Contribution (ADEC) and it is consistent with the plan accumulating adequate assets to make benefit payments when due.

The projections assume 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.

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. 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 MSRS.

This report was prepared using our proprietary valuation model and related software which, in our professional judgement, has the capability to provide results that are consistent with the purposes of the valuation and has no material limitations or known weaknesses. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

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

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.

Bonita J. Wurst 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.

Respectfully submitted,

Gabriel, Roeder, Smith & Company

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

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

BJW/SLC:ah
Enclosure

Other Observations

General Implications of the 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, Chapter 356 required contributions are made, and all actuarial assumptions are met (including the assumption of the plan earning 7.00% on the actuarial value of assets, as prescribed by statutes), it is expected that:

(1) The normal cost of the plan is expected to remain approximately level as a percent of pay;
(2) The funded status of the plan is expected to gradually improve and is expected to be 100% funded within the next 24 years; and
(3) The unfunded liability is expected to grow initially as a dollar amount for 2 years (based on the current 24-year amortization period and if contributions are equal to the required contribution amount) before beginning to decline.

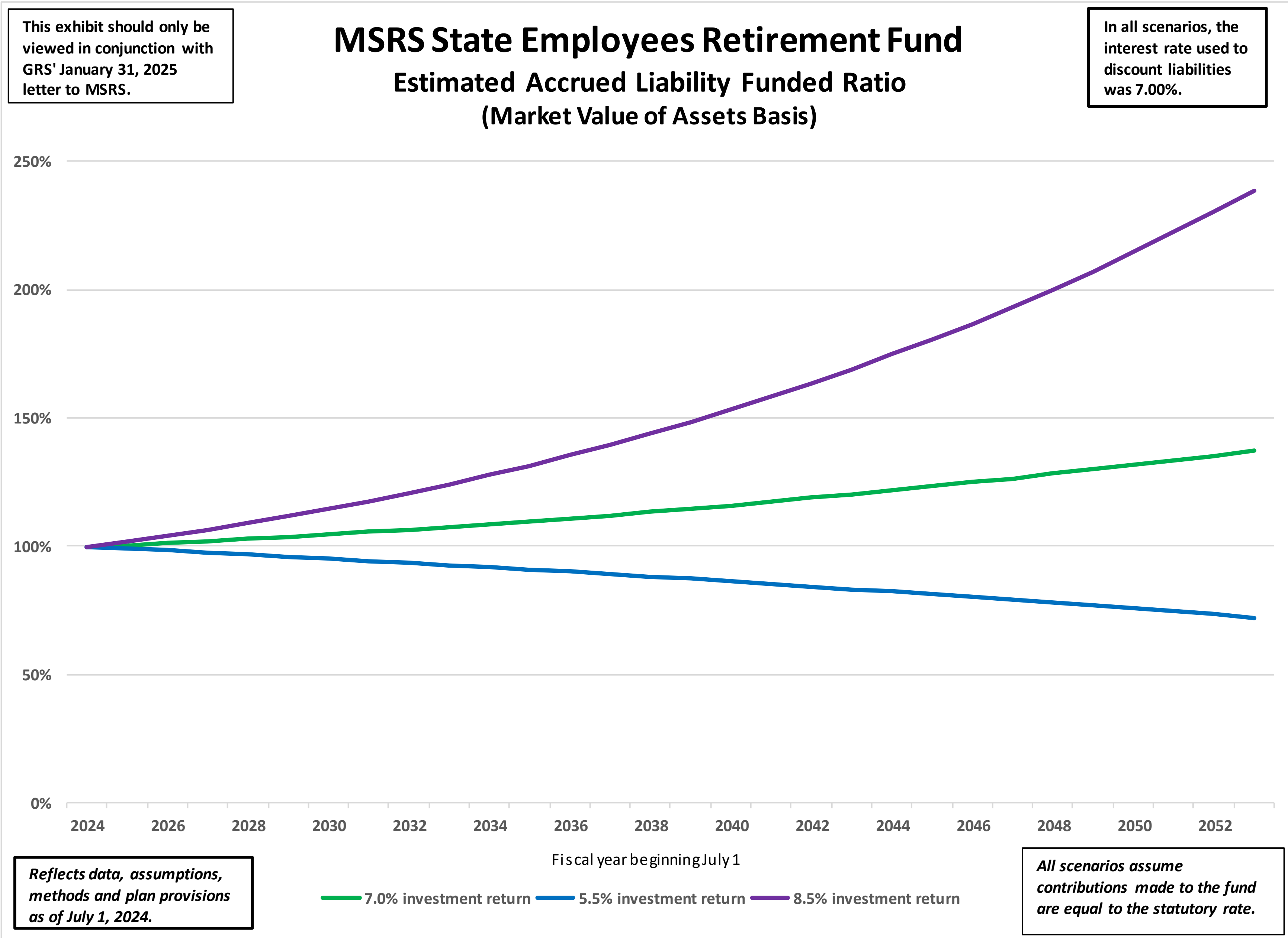
Limitations of Funded Status Measurements

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

Limitations of Project Scope

Actuarial standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entity to make required contributions to the plan when due. Such an evaluation was not within the scope of this project and is not within the actuary's domain of expertise. Consequently, the actuary performed no such evaluation.


This exhibit should only be viewed in conjunction with GRS' January 31, 2025 letter to MSRS.
MSRS State Employees Retirement Fund
Estimated Accrued Liability Funded Ratio
(Market Value of Assets Basis)
In all scenarios, the interest rate used to discount liabilities was 7.00%.
250%
200%
150%
100%
50%
0%
2024
2026
2028
2030
2032
2034
2036
2038
2040
2042
2044
2046
2048
2050
2052
Fiscal year beginning July 1
7.0% investment return
5.5% investment return
8.5% investment return
Reflects data, assumptions, methods and plan provisions as of July 1, 2024.
All scenarios assume contributions made to the fund are equal to the statutory rate.

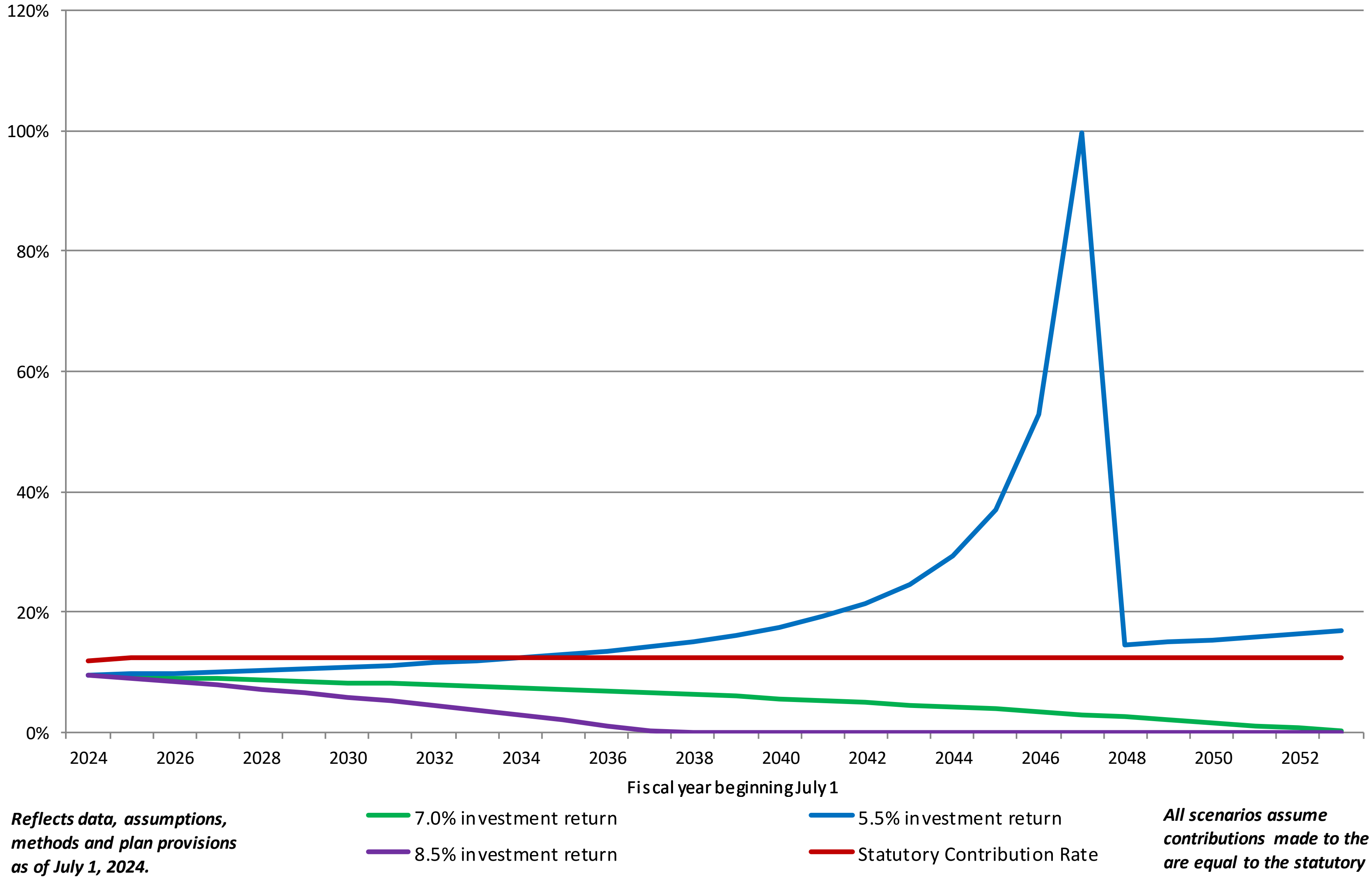
This exhibit should only be viewed in conjunction with GRS' January 31, 2025 letter to MSRS.

MSRS State Employees Retirement Fund

Estimated Required Contribution Rates

(% of Pay, Market Value of Assets Basis)

In all scenarios, the interest rate used to discount liabilities was 7.00%.



Reflects data, assumptions, methods and plan provisions as of July 1, 2024.

All scenarios assume contributions made to the fund are equal to the statutory rate.

This exhibit should only be viewed in conjunction with GRS' January 31, 2025 letter to MSRS.

State Employees Retirement Fund

Scenario: 7.0% Investment Return for All Years

Fiscal Year Beginning July 1

$ in Thousands	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Contributions (% of Payroll)										
Statutory - Chapter 352	11.75%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%
Required - Chapter 356 (MVA)	9.37%	9.22%	9.03%	8.84%	8.65%	8.45%	8.24%	8.02%	7.79%	7.56%
Sufficiency / (Deficiency)	2.38%	3.03%	3.22%	3.41%	3.60%	3.80%	4.01%	4.23%	4.46%	4.69%
Contributions										
Statutory - Chapter 352	$ 505,729	$ 542,733	$ 562,645	$ 581,340	$ 600,218	$ 619,381	$ 638,917	$ 658,865	$ 679,178	$ 699,854
Required - Chapter 356 (MVA)	403,889	408,389	414,641	419,608	423,787	427,202	429,796	431,502	432,170	431,705
Sufficiency / (Deficiency)	101,840	134,343	148,004	161,732	176,430	192,179	209,121	227,362	247,008	268,149
Funding Ratios										
Current Assets (MVA)	$18,138,356	$18,788,931	$19,472,416	$20,170,738	$20,892,407	$21,640,989	$22,420,391	$23,234,051	$24,085,649	$24,980,262
Actuarial Accrued Liability (AAL)	18,171,621	18,712,832	19,253,569	19,791,679	20,336,649	20,890,916	21,457,124	22,037,287	22,633,530	23,249,272
Unfunded AAL	33,265	(76,100)	(218,847)	(379,060)	(555,757)	(750,073)	(963,267)	(1,196,764)	(1,452,120)	(1,730,990)
Funding Ratio	99.8%	100.4%	101.1%	101.9%	102.7%	103.6%	104.5%	105.4%	106.4%	107.5%
Benefit Payments	$ 1,090,560	$ 1,139,376	$ 1,190,674	$ 1,233,569	$ 1,274,774	$ 1,314,303	$ 1,352,959	$ 1,390,776	$ 1,426,611	$ 1,461,056
Ratio of Assets to Benefit Payments	16.63	16.49	16.35	16.35	16.39	16.47	16.57	16.71	16.88	17.10

Numbers may not add due to rounding.

The interest rate used to discount liabilities was 7.0%.

This exhibit should only be viewed in conjunction with GRS' January 31, 2025 letter to MSRS.

State Employees Retirement Fund

Scenario: 7.0% Investment Return for All Years

Fiscal Year Beginning July 1

$ in Thousands	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**	**2043**
Contributions (% of Payroll)										
Statutory - Chapter 352	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%
Required - Chapter 356 (MVA)	7.31%	7.05%	6.78%	6.49%	6.20%	5.89%	5.57%	5.24%	4.90%	4.54%
Sufficiency / (Deficiency)	4.94%	5.20%	5.47%	5.76%	6.05%	6.36%	6.68%	7.01%	7.35%	7.71%
Contributions										
Statutory - Chapter 352	$ 720,878	$ 742,376	$ 764,470	$ 787,080	$ 810,189	$ 833,743	$ 857,724	$ 882,247	$ 907,380	$ 933,038
Required - Chapter 356 (MVA)	429,988	427,026	422,824	417,189	409,984	401,052	390,249	377,524	362,763	345,720
Sufficiency / (Deficiency)	290,890	315,350	341,646	369,891	400,205	432,691	467,474	504,723	544,617	587,317
Funding Ratios										
Current Assets (MVA)	$25,922,706	$26,917,181	$27,967,725	$29,079,924	$30,260,277	$31,514,946	$32,849,797	$34,268,330	$35,775,909	$37,377,877
Actuarial Accrued Liability (AAL)	23,887,558	24,550,675	25,240,576	25,960,583	26,714,848	27,507,026	28,340,379	29,215,643	30,135,157	31,101,018
Unfunded AAL	(2,035,148)	(2,366,505)	(2,727,149)	(3,119,341)	(3,545,428)	(4,007,920)	(4,509,418)	(5,052,687)	(5,640,753)	(6,276,859)
Funding Ratio	108.5%	109.6%	110.8%	112.0%	113.3%	114.6%	115.9%	117.3%	118.7%	120.2%
Benefit Payments	$ 1,495,017	$ 1,529,056	$ 1,562,074	$ 1,593,482	$ 1,624,034	$ 1,654,379	$ 1,687,180	$ 1,720,988	$ 1,756,250	$ 1,793,280
Ratio of Assets to Benefit Payments	17.34	17.60	17.90	18.25	18.63	19.05	19.47	19.91	20.37	20.84

Numbers may not add due to rounding.

The interest rate used to discount liabilities was 7.0%.

This exhibit should only be viewed in conjunction with GRS' January 31, 2025 letter to MSRS.

State Employees Retirement Fund

Scenario: 7.0% Investment Return for All Years

Fiscal Year Beginning July 1

$ in Thousands	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053
Contributions (% of Payroll)										
Statutory - Chapter 352	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%
Required - Chapter 356 (MVA)	4.17%	3.78%	3.38%	2.96%	2.52%	2.07%	1.61%	1.12%	0.62%	0.10%
Sufficiency / (Deficiency)	8.08%	8.47%	8.87%	9.29%	9.73%	10.18%	10.64%	11.13%	11.63%	12.15%
Contributions										
Statutory - Chapter 352	$ 959,252	$ 986,085	$ 1,013,666	$ 1,042,064	$ 1,071,330	$ 1,101,481	$ 1,132,671	$ 1,164,946	$ 1,198,361	$ 1,232,974
Required - Chapter 356 (MVA)	326,242	304,168	279,374	251,650	220,771	186,465	148,539	106,682	60,575	9,871
Sufficiency / (Deficiency)	633,011	681,917	734,292	790,414	850,559	915,015	984,132	1,058,264	1,137,786	1,223,103
Funding Ratios										
Current Assets (MVA)	$39,079,540	$40,885,204	$42,798,580	$44,824,104	$46,967,054	$49,232,822	$51,626,556	$54,154,383	$56,822,516	$59,638,362
Actuarial Accrued Liability (AAL)	32,115,154	33,178,222	34,290,000	35,450,654	36,660,869	37,921,113	39,231,262	40,591,715	42,002,542	43,464,547
Unfunded AAL	(6,964,386)	(7,706,982)	(8,508,580)	(9,373,450)	(10,306,185)	(11,311,709)	(12,395,293)	(13,562,667)	(14,819,973)	(16,173,816)
Funding Ratio	121.7%	123.2%	124.8%	126.4%	128.1%	129.8%	131.6%	133.4%	135.3%	137.2%
Benefit Payments	$ 1,833,435	$ 1,877,642	$ 1,925,576	$ 1,976,791	$ 2,031,587	$ 2,090,576	$ 2,153,313	$ 2,220,175	$ 2,290,480	$ 2,364,095
Ratio of Assets to Benefit Payments	21.31	21.77	22.23	22.68	23.12	23.55	23.98	24.39	24.81	25.23

Numbers may not add due to rounding.

The interest rate used to discount liabilities was 7.0%.

This exhibit should only be viewed in conjunction with GRS' January 31, 2025 letter to MSRS.

State Employees Retirement Fund

Scenario: 5.5% Investment Return for All Years

Fiscal Year Beginning July 1

$ in Thousands	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Contributions (% of Payroll)										
Statutory - Chapter 352	11.75%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%
Required - Chapter 356 (MVA)	9.37%	9.60%	9.81%	10.04%	10.29%	10.56%	10.85%	11.18%	11.54%	11.95%
Sufficiency / (Deficiency)	2.38%	2.65%	2.44%	2.21%	1.96%	1.69%	1.40%	1.07%	0.71%	0.30%
Contributions										
Statutory - Chapter 352	$ 505,729	$ 542,733	$ 562,645	$ 581,340	$ 600,218	$ 619,381	$ 638,917	$ 658,865	$ 679,178	$ 699,854
Required - Chapter 356 (MVA)	403,889	425,444	450,382	476,295	503,982	533,807	566,124	601,360	639,968	682,609
Sufficiency / (Deficiency)	101,840	117,288	112,263	105,045	96,236	85,574	72,793	57,505	39,210	17,245
Funding Ratios										
Current Assets (MVA)	$18,138,356	$18,521,342	$18,912,854	$19,293,131	$19,668,971	$20,042,052	$20,414,227	$20,786,719	$21,160,817	$21,539,014
Actuarial Accrued Liability (AAL)	18,171,621	18,712,832	19,253,569	19,791,679	20,336,649	20,890,916	21,457,124	22,037,287	22,633,530	23,249,272
Unfunded AAL	33,265	191,489	340,715	498,548	667,678	848,865	1,042,897	1,250,569	1,472,712	1,710,258
Funding Ratio	99.8%	99.0%	98.2%	97.5%	96.7%	95.9%	95.1%	94.3%	93.5%	92.6%
Benefit Payments	$ 1,090,560	$ 1,139,376	$ 1,190,674	$ 1,233,569	$ 1,274,774	$ 1,314,303	$ 1,352,959	$ 1,390,776	$ 1,426,611	$ 1,461,056
Ratio of Assets to Benefit Payments	16.63	16.26	15.88	15.64	15.43	15.25	15.09	14.95	14.83	14.74

Numbers may not add due to rounding.

The interest rate used to discount liabilities was 7.0%.

This exhibit should only be viewed in conjunction with GRS' January 31, 2025 letter to MSRS.

State Employees Retirement Fund

Scenario: 5.5% Investment Return for All Years

Fiscal Year Beginning July 1

$ in Thousands	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Contributions (% of Payroll)										
Statutory - Chapter 352	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%
Required - Chapter 356 (MVA)	12.41%	12.93%	13.54%	14.26%	15.11%	16.16%	17.46%	19.14%	21.38%	24.51%
Sufficiency / (Deficiency)	(0.16)%	(0.68)%	(1.29)%	(2.01)%	(2.86)%	(3.91)%	(5.21)%	(6.89)%	(9.13)%	(12.26)%
Contributions										
Statutory - Chapter 352	$ 720,878	$ 742,376	$ 764,470	$ 787,080	$ 810,189	$ 833,743	$ 857,724	$ 882,247	$ 907,380	$ 933,038
Required - Chapter 356 (MVA)	730,115	783,719	845,033	916,022	999,543	1,099,716	1,222,769	1,378,597	1,583,562	1,866,956
Sufficiency / (Deficiency)	(9,237)	(41,343)	(80,563)	(128,942)	(189,354)	(265,972)	(365,046)	(496,351)	(676,182)	(933,918)
Funding Ratios										
Current Assets (MVA)	$21,923,327	$22,314,938	$22,714,643	$23,124,533	$23,547,338	$23,985,149	$24,439,450	$24,909,051	$25,394,303	$25,895,183
Actuarial Accrued Liability (AAL)	23,887,558	24,550,675	25,240,576	25,960,583	26,714,848	27,507,026	28,340,379	29,215,643	30,135,157	31,101,018
Unfunded AAL	1,964,230	2,235,737	2,525,933	2,836,049	3,167,510	3,521,877	3,900,929	4,306,591	4,740,854	5,205,835
Funding Ratio	91.8%	90.9%	90.0%	89.1%	88.1%	87.2%	86.2%	85.3%	84.3%	83.3%
Benefit Payments	$ 1,495,017	$ 1,529,056	$ 1,562,074	$ 1,593,482	$ 1,624,034	$ 1,654,379	$ 1,687,180	$ 1,720,988	$ 1,756,250	$ 1,793,280
Ratio of Assets to Benefit Payments	14.66	14.59	14.54	14.51	14.50	14.50	14.49	14.47	14.46	14.44

Numbers may not add due to rounding.

The interest rate used to discount liabilities was 7.0%.

This exhibit should only be viewed in conjunction with GRS' January 31, 2025 letter to MSRS.

State Employees Retirement Fund

Scenario: 5.5% Investment Return for All Years

Fiscal Year Beginning July 1

$ in Thousands	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053
Contributions (% of Payroll)										
Statutory - Chapter 352	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%
Required - Chapter 356 (MVA)	29.21%	37.05%	52.72%	99.74%	14.49%	14.90%	15.33%	15.80%	16.31%	16.85%
Sufficiency / (Deficiency)	(16.96)%	(24.80)%	(40.47)%	(87.49)%	(2.24)%	(2.65)%	(3.08)%	(3.55)%	(4.06)%	(4.60)%
Contributions										
Statutory - Chapter 352	$ 959,252	$ 986,085	$ 1,013,666	$ 1,042,064	$ 1,071,330	$ 1,101,481	$ 1,132,671	$ 1,164,946	$ 1,198,361	$ 1,232,974
Required - Chapter 356 (MVA)	2,287,551	2,982,442	4,362,841	8,484,294	1,267,438	1,339,643	1,417,878	1,502,803	1,595,197	1,695,950
Sufficiency / (Deficiency)	(1,328,299)	(1,996,356)	(3,349,174)	(7,442,230)	(196,108)	(238,162)	(285,207)	(337,857)	(396,835)	(462,976)
Funding Ratios										
Current Assets (MVA)	$26,411,258	$26,940,712	$27,480,737	$28,028,832	$28,582,890	$29,140,428	$29,698,214	$30,253,454	$30,802,856	$31,343,701
Actuarial Accrued Liability (AAL)	32,115,154	33,178,222	34,290,000	35,450,654	36,660,869	37,921,113	39,231,262	40,591,715	42,002,542	43,464,547
Unfunded AAL	5,703,896	6,237,510	6,809,263	7,421,822	8,077,980	8,780,685	9,533,048	10,338,261	11,199,687	12,120,845
Funding Ratio	82.2%	81.2%	80.1%	79.1%	78.0%	76.8%	75.7%	74.5%	73.3%	72.1%
Benefit Payments	$ 1,833,435	$ 1,877,642	$ 1,925,576	$ 1,976,791	$ 2,031,587	$ 2,090,576	$ 2,153,313	$ 2,220,175	$ 2,290,480	$ 2,364,095
Ratio of Assets to Benefit Payments	14.41	14.35	14.27	14.18	14.07	13.94	13.79	13.63	13.45	13.26

Numbers may not add due to rounding.

The interest rate used to discount liabilities was 7.0%.

This exhibit should only be viewed in conjunction with GRS' January 31, 2025 letter to MSRS.

State Employees Retirement Fund

Scenario: 8.5% Investment Return for All Years

Fiscal Year Beginning July 1

$ in Thousands	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Contributions (% of Payroll)										
Statutory - Chapter 352	11.75%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%
Required - Chapter 356 (MVA)	9.37%	8.87%	8.32%	7.76%	7.16%	6.54%	5.89%	5.19%	4.47%	3.70%
Sufficiency / (Deficiency)	2.38%	3.38%	3.93%	4.49%	5.09%	5.71%	6.36%	7.06%	7.78%	8.55%
Contributions										
Statutory - Chapter 352	$ 505,729	$ 542,733	$ 562,645	$ 581,340	$ 600,218	$ 619,381	$ 638,917	$ 658,865	$ 679,178	$ 699,854
Required - Chapter 356 (MVA)	403,889	393,155	382,326	368,192	351,059	330,744	306,962	279,392	247,608	211,214
Sufficiency / (Deficiency)	101,840	149,578	180,319	213,148	249,158	288,637	331,955	379,472	431,569	488,641
Funding Ratios										
Current Assets (MVA)	$18,138,356	$19,056,521	$20,040,007	$21,073,843	$22,169,834	$23,335,211	$24,577,907	$25,905,785	$27,327,378	$28,853,087
Actuarial Accrued Liability (AAL)	18,171,621	18,712,832	19,253,569	19,791,679	20,336,649	20,890,916	21,457,124	22,037,287	22,633,530	23,249,272
Unfunded AAL	33,265	(343,689)	(786,438)	(1,282,164)	(1,833,185)	(2,444,295)	(3,120,783)	(3,868,498)	(4,693,848)	(5,603,815)
Funding Ratio	99.8%	101.8%	104.1%	106.5%	109.0%	111.7%	114.5%	117.6%	120.7%	124.1%
Benefit Payments	$ 1,090,560	$ 1,139,376	$ 1,190,674	$ 1,233,569	$ 1,274,774	$ 1,314,303	$ 1,352,959	$ 1,390,776	$ 1,426,611	$ 1,461,056
Ratio of Assets to Benefit Payments	16.63	16.73	16.83	17.08	17.39	17.75	18.17	18.63	19.16	19.75

Numbers may not add due to rounding.

The interest rate used to discount liabilities was 7.0%.

This exhibit should only be viewed in conjunction with GRS' January 31, 2025 letter to MSRS.

State Employees Retirement Fund

Scenario: 8.5% Investment Return for All Years

Fiscal Year Beginning July 1

$ in Thousands	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**	**2043**
Contributions (% of Payroll)										
Statutory - Chapter 352	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%
Required - Chapter 356 (MVA)	2.88%	2.03%	1.12%	0.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sufficiency / (Deficiency)	9.37%	10.22%	11.13%	12.08%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%
Contributions										
Statutory - Chapter 352	$ 720,878	$ 742,376	$ 764,470	$ 787,080	$ 810,189	$ 833,743	$ 857,724	$ 882,247	$ 907,380	$ 933,038
Required - Chapter 356 (MVA)	169,754	122,873	70,175	11,029	-	-	-	-	-	-
Sufficiency / (Deficiency)	551,124	619,503	694,295	776,051	810,189	833,743	857,724	882,247	907,380	933,038
Funding Ratios										
Current Assets (MVA)	$30,493,583	$32,259,480	$34,161,837	$36,213,924	$38,430,668	$40,827,467	$43,420,294	$46,223,683	$49,255,033	$52,532,827
Actuarial Accrued Liability (AAL)	23,887,558	24,550,675	25,240,576	25,960,583	26,714,848	27,507,026	28,340,379	29,215,643	30,135,157	31,101,018
Unfunded AAL	(6,606,026)	(7,708,805)	(8,921,261)	(10,253,341)	(11,715,820)	(13,320,441)	(15,079,915)	(17,008,040)	(19,119,877)	(21,431,809)
Funding Ratio	127.7%	131.4%	135.3%	139.5%	143.9%	148.4%	153.2%	158.2%	163.5%	168.9%
Benefit Payments	$ 1,495,017	$ 1,529,056	$ 1,562,074	$ 1,593,482	$ 1,624,034	$ 1,654,379	$ 1,687,180	$ 1,720,988	$ 1,756,250	$ 1,793,280
Ratio of Assets to Benefit Payments	20.40	21.10	21.87	22.73	23.66	24.68	25.74	26.86	28.05	29.29

Numbers may not add due to rounding.

The interest rate used to discount liabilities was 7.0%.

This exhibit should only be viewed in conjunction with GRS' January 31, 2025 letter to MSRS.

State Employees Retirement Fund

Scenario: 8.5% Investment Return for All Years

Fiscal Year Beginning July 1

$ in Thousands	**2044**	**2045**	**2046**	**2047**	**2048**	**2049**	**2050**	**2051**	**2052**	**2053**
Contributions (% of Payroll)										
Statutory - Chapter 352	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%
Required - Chapter 356 (MVA)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sufficiency / (Deficiency)	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%
Contributions										
Statutory - Chapter 352	$ 959,252	$ 986,085	$ 1,013,666	$ 1,042,064	$ 1,071,330	$ 1,101,481	$ 1,132,671	$ 1,164,946	$ 1,198,361	$ 1,232,974
Required - Chapter 356 (MVA)	-	-	-	-	-	-	-	-	-	-
Sufficiency / (Deficiency)	959,252	986,085	1,013,666	1,042,064	1,071,330	1,101,481	1,132,671	1,164,946	1,198,361	1,232,974
Funding Ratios										
Current Assets (MVA)	$56,076,699	$59,906,577	$64,043,174	$68,509,435	$73,330,792	$78,534,578	$84,149,826	$90,208,659	$96,745,587	$103,798,813
Actuarial Accrued Liability (AAL)	32,115,154	33,178,222	34,290,000	35,450,654	36,660,869	37,921,113	39,231,262	40,591,715	42,002,542	43,464,547
Unfunded AAL	(23,961,546)	(26,728,355)	(29,753,174)	(33,058,781)	(36,669,923)	(40,613,465)	(44,918,564)	(49,616,944)	(54,743,044)	(60,334,267)
Funding Ratio	174.6%	180.6%	186.8%	193.3%	200.0%	207.1%	214.5%	222.2%	230.3%	238.8%
Benefit Payments	$ 1,833,435	$ 1,877,642	$ 1,925,576	$ 1,976,791	$ 2,031,587	$ 2,090,576	$ 2,153,313	$ 2,220,175	$ 2,290,480	$ 2,364,095
Ratio of Assets to Benefit Payments	30.59	31.91	33.26	34.66	36.10	37.57	39.08	40.63	42.24	43.91

Numbers may not add due to rounding.

The interest rate used to discount liabilities was 7.0%.