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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 – Correctional 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 Correctional 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 Correctional 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. 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 4,476 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 34.6
- Average salary at hire is $64,600
- Approximately 43% female, 57% 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.

The plan receives supplemental employer contributions of 4.45% of payroll until the plan reaches 100% funding (on a Market Value basis) for a minimum of three consecutive years. These supplemental employer contributions are projected to be eliminated in fiscal years ending 2035 and 2043 in the 8.5% and 7.0% investment return scenarios, respectively.

Comments

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

- The enclosed projections are based on recommended assumption changes as outlined in the Minnesota Correctional Employees Retirement Fund Four-Year Experience Study for the period July 1, 2019 through June 30, 2023.
- 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 Minnesota Correctional Employees Retirement Fund Four-Year Experience Study for the period July 1, 2019 through June 30, 2023.

The contribution rates shown in this report have been determined using the actuarial methods disclosed in the Actuarial Basis section of the July 1, 2024 valuation report and the recommended assumption changes as outlined in the Minnesota Correctional Employees Retirement Fund Four-Year Experience Study for the period July 1, 2019 through June 30, 2023. This valuation report includes risk metrics on pages 5-8, 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 Correctional 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

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 will 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.

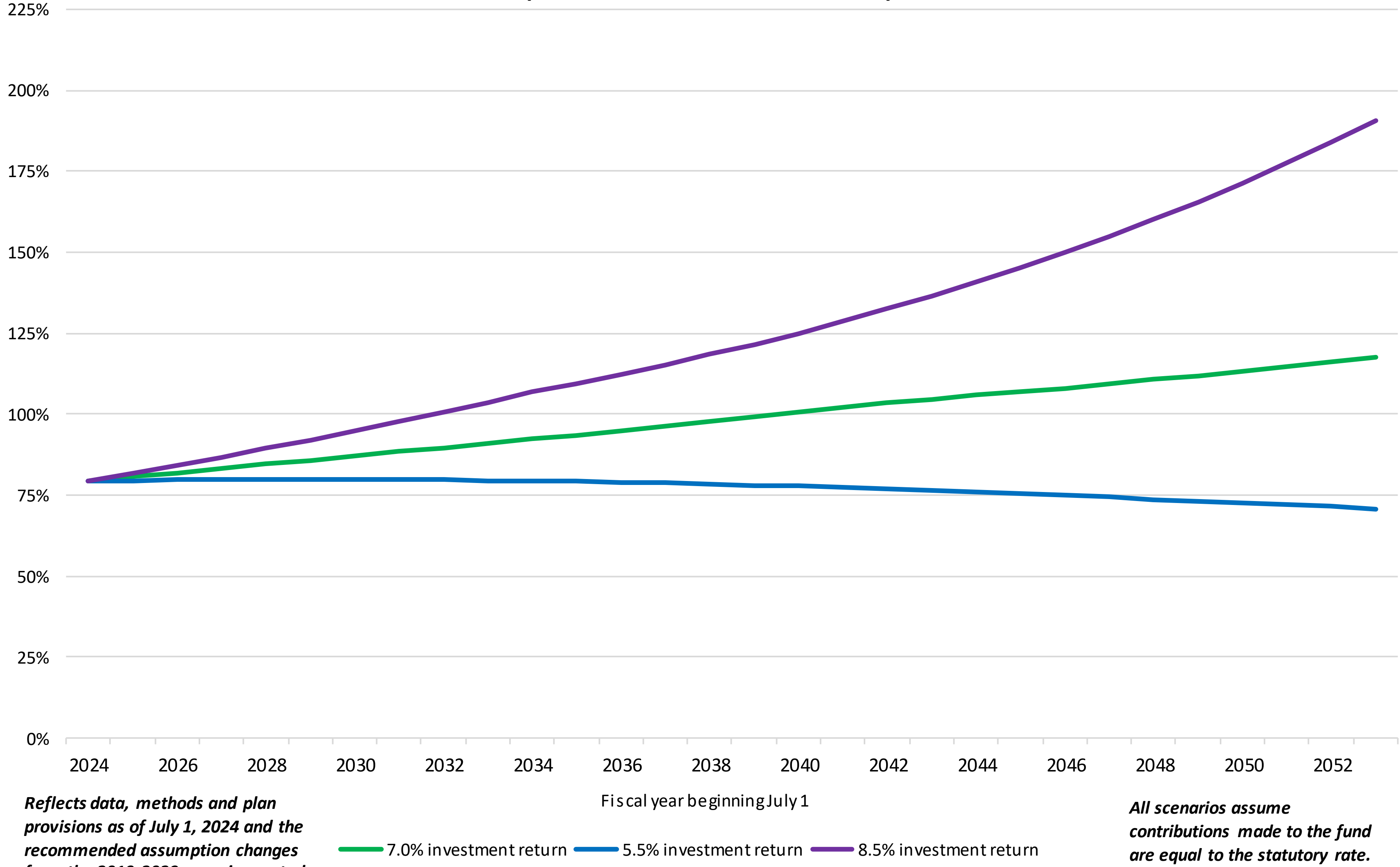
Limitations of Project Scope

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 Correctional 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%.



Reflects data, methods and plan provisions as of July 1, 2024 and the recommended assumption changes from the 2019-2023 experience study.

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

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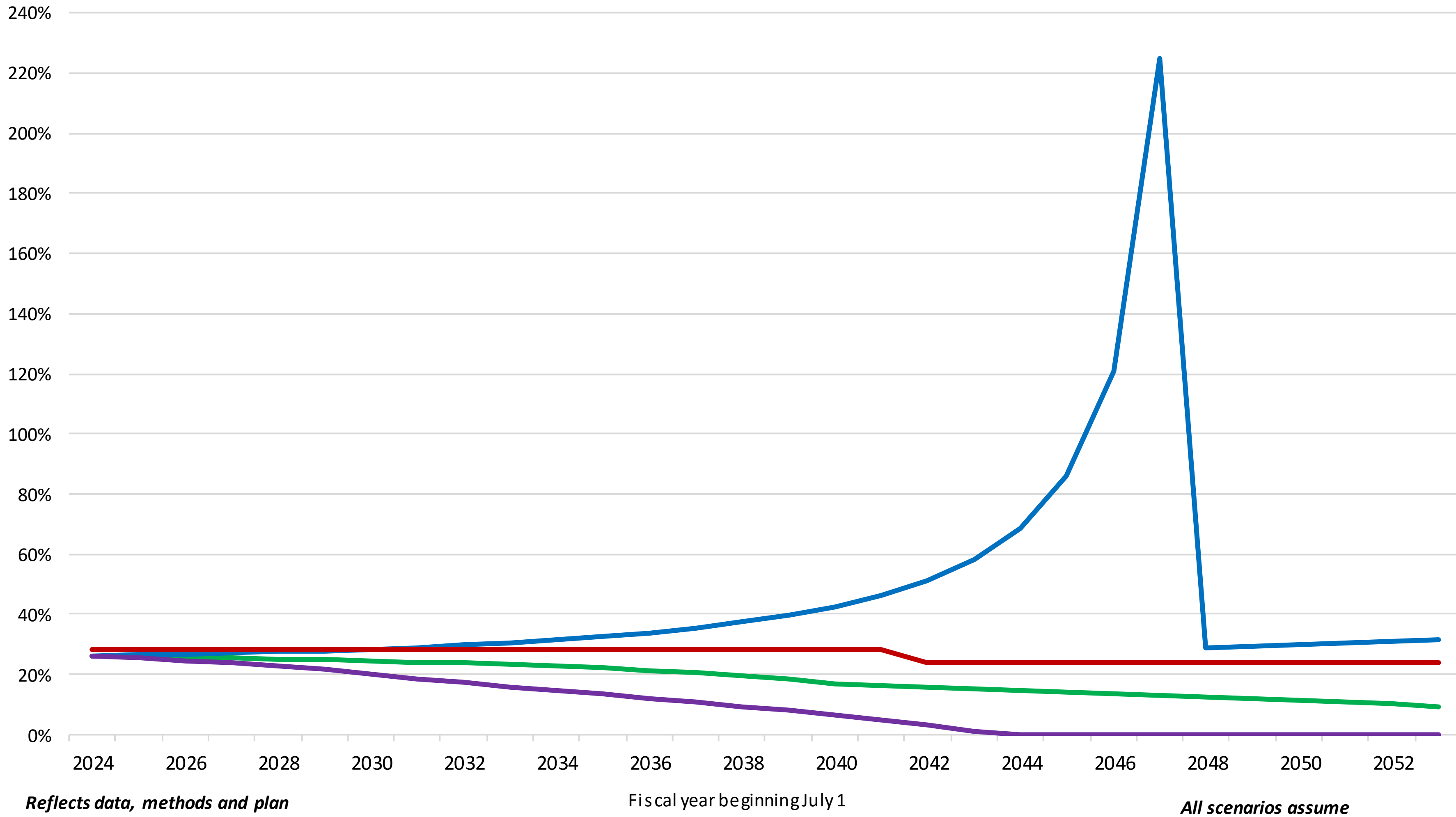
MSRS Correctional Employees Retirement Fund
Estimated Required Contribution Rates
(% of Pay, Market Value of Assets Basis)

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



Reflects data, methods and plan provisions as of July 1, 2024 and the recommended assumption changes from the 2019-2023 experience study.

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

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Correctional 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 352.92	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%
Required - Chapter 356 (MVA)	26.26%	25.90%	25.66%	25.44%	25.15%	24.83%	24.50%	24.12%	23.71%	23.24%
Sufficiency / (Deficiency)	2.19%	2.55%	2.79%	3.01%	3.30%	3.62%	3.95%	4.33%	4.74%	5.21%
Contributions										
Statutory - Chapter 352	$ 99,656	$ 103,208	$ 106,315	$ 109,425	$ 112,758	$ 116,097	$ 119,476	$ 122,937	$ 126,485	$ 130,122
Required - Chapter 356 (MVA)	91,986	93,967	95,891	97,863	99,664	101,340	102,881	104,245	105,411	106,296
Sufficiency / (Deficiency)	7,670	9,241	10,424	11,562	13,093	14,757	16,595	18,692	21,074	23,826
Funding Ratios										
Current Assets (MVA)	$1,792,602	$1,905,884	$2,024,475	$2,147,980	$2,276,856	$2,411,844	$2,553,125	$2,700,241	$2,853,677	$3,013,352
Actuarial Accrued Liability (AAL)	2,256,549	2,361,842	2,469,995	2,580,872	2,694,904	2,812,484	2,933,619	3,057,665	3,184,884	3,314,965
Unfunded AAL	463,947	455,957	445,521	432,892	418,048	400,640	380,495	357,424	331,207	301,613
Funding Ratio	79.4%	80.7%	82.0%	83.2%	84.5%	85.8%	87.0%	88.3%	89.6%	90.9%
Benefit Payments	$ 110,252	$ 116,295	$ 122,637	$ 128,874	$ 134,977	$ 141,326	$ 148,582	$ 155,845	$ 163,701	$ 172,006
Ratio of Assets to Benefit Payments	16.26	16.39	16.51	16.67	16.87	17.07	17.18	17.33	17.43	17.52

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.

Correctional 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 352.92	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%	24.00%	24.00%
Required - Chapter 356 (MVA)	22.70%	22.07%	21.35%	20.50%	19.49%	18.24%	17.08%	16.42%	15.74%	15.28%
Sufficiency / (Deficiency)	5.75%	6.38%	7.10%	7.95%	8.96%	10.21%	11.37%	12.03%	8.26%	8.72%
Contributions										
Statutory - Chapter 352	$ 133,870	$ 137,700	$ 141,634	$ 145,654	$ 149,759	$ 154,090	$ 158,443	$ 163,046	$ 141,590	$ 145,805
Required - Chapter 356 (MVA)	106,792	106,836	106,290	104,960	102,617	98,768	95,117	94,101	92,867	92,850
Sufficiency / (Deficiency)	27,078	30,865	35,344	40,694	47,143	55,322	63,326	68,944	48,722	52,955
Funding Ratios										
Current Assets (MVA)	$3,179,326	$3,351,460	$3,529,388	$3,712,695	$3,901,715	$4,097,205	$4,299,574	$4,509,151	$4,727,080	$4,927,529
Actuarial Accrued Liability (AAL)	3,447,707	3,582,651	3,719,152	3,856,470	3,994,603	4,133,986	4,274,493	4,416,111	4,559,434	4,705,271
Unfunded AAL	268,380	231,191	189,763	143,775	92,888	36,780	(25,081)	(93,040)	(167,646)	(222,259)
Funding Ratio	92.2%	93.6%	94.9%	96.3%	97.7%	99.1%	100.6%	102.1%	103.7%	104.7%
Benefit Payments	$ 180,985	$ 190,812	$ 201,536	$ 212,385	$ 222,974	$ 233,829	$ 244,852	$ 255,505	$ 265,618	$ 275,292
Ratio of Assets to Benefit Payments	17.57	17.56	17.51	17.48	17.50	17.52	17.56	17.65	17.80	17.90

Numbers may not add due to rounding.

The interest rate used to discount liabilities was 7.0%.

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Correctional 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 352.92	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%
Required - Chapter 356 (MVA)	14.80%	14.29%	13.77%	13.23%	12.67%	12.07%	11.46%	10.82%	10.16%	9.47%
Sufficiency / (Deficiency)	9.20%	9.71%	10.23%	10.77%	11.33%	11.93%	12.54%	13.18%	13.84%	14.53%
Contributions										
Statutory - Chapter 352	$ 150,165	$ 154,664	$ 159,286	$ 164,097	$ 169,084	$ 174,252	$ 179,522	$ 184,934	$ 190,556	$ 196,329
Required - Chapter 356 (MVA)	92,580	92,101	91,403	90,463	89,243	87,652	85,704	83,407	80,651	77,452
Sufficiency / (Deficiency)	57,585	62,562	67,883	73,634	79,841	86,601	93,818	101,527	109,905	118,876
Funding Ratios										
Current Assets (MVA)	$5,136,300	$5,354,321	$5,582,093	$5,820,326	$6,070,133	$6,332,640	$6,608,588	$6,898,631	$7,203,890	$7,525,403
Actuarial Accrued Liability (AAL)	4,854,338	5,007,129	5,163,714	5,324,371	5,489,688	5,660,239	5,836,134	6,017,457	6,204,699	6,398,140
Unfunded AAL	(281,962)	(347,192)	(418,379)	(495,956)	(580,444)	(672,402)	(772,454)	(881,174)	(999,191)	(1,127,264)
Funding Ratio	105.8%	106.9%	108.1%	109.3%	110.6%	111.9%	113.2%	114.6%	116.1%	117.6%
Benefit Payments	$ 284,771	$ 294,532	$ 304,385	$ 314,059	$ 323,599	$ 333,462	$ 343,701	$ 353,952	$ 364,435	$ 375,604
Ratio of Assets to Benefit Payments	18.04	18.18	18.34	18.53	18.76	18.99	19.23	19.49	19.77	20.04

Numbers may not add due to rounding.

The interest rate used to discount liabilities was 7.0%.

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Correctional 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 352.92	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%
Required - Chapter 356 (MVA)	26.26%	26.39%	26.70%	27.09%	27.48%	27.93%	28.47%	29.08%	29.78%	30.60%
Sufficiency / (Deficiency)	2.19%	2.06%	1.75%	1.36%	0.97%	0.52%	(0.02)%	(0.63)%	(1.33)%	(2.15)%
Contributions										
Statutory - Chapter 352	$ 99,656	$ 103,208	$ 106,315	$ 109,425	$ 112,758	$ 116,097	$ 119,476	$ 122,937	$ 126,485	$ 130,122
Required - Chapter 356 (MVA)	91,986	95,748	99,770	104,209	108,910	113,994	119,549	125,647	132,415	139,954
Sufficiency / (Deficiency)	7,670	7,460	6,546	5,216	3,848	2,102	(73)	(2,710)	(5,930)	(9,833)
Funding Ratios										
Current Assets (MVA)	$1,792,602	$1,879,084	$1,967,719	$2,057,868	$2,149,723	$2,243,744	$2,339,800	$2,437,116	$2,535,834	$2,635,513
Actuarial Accrued Liability (AAL)	2,256,549	2,361,842	2,469,995	2,580,872	2,694,904	2,812,484	2,933,619	3,057,665	3,184,884	3,314,965
Unfunded AAL	463,947	482,758	502,277	523,004	545,180	568,740	593,819	620,549	649,050	679,452
Funding Ratio	79.4%	79.6%	79.7%	79.7%	79.8%	79.8%	79.8%	79.7%	79.6%	79.5%
Benefit Payments	$ 110,252	$ 116,295	$ 122,637	$ 128,874	$ 134,977	$ 141,326	$ 148,582	$ 155,845	$ 163,701	$ 172,006
Ratio of Assets to Benefit Payments	16.26	16.16	16.05	15.97	15.93	15.88	15.75	15.64	15.49	15.32

Numbers may not add due to rounding.

The interest rate used to discount liabilities was 7.0%.

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Correctional 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 352.92	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%
Required - Chapter 356 (MVA)	31.54%	32.64%	33.95%	35.51%	37.42%	39.73%	42.65%	46.39%	51.38%	58.34%
Sufficiency / (Deficiency)	(3.09)%	(4.19)%	(5.50)%	(7.06)%	(8.97)%	(11.28)%	(14.20)%	(17.94)%	(22.93)%	(29.89)%
Contributions										
Statutory - Chapter 352	$ 133,870	$ 137,700	$ 141,634	$ 145,654	$ 149,759	$ 154,090	$ 158,443	$ 163,046	$ 167,843	$ 172,840
Required - Chapter 356 (MVA)	148,395	157,985	169,002	181,816	196,990	215,175	237,517	265,859	303,104	354,413
Sufficiency / (Deficiency)	(14,525)	(20,285)	(27,368)	(36,163)	(47,231)	(61,086)	(79,074)	(102,813)	(135,261)	(181,573)
Funding Ratios										
Current Assets (MVA)	$2,735,832	$2,836,249	$2,935,979	$3,034,170	$3,130,694	$3,225,815	$3,319,411	$3,411,248	$3,501,862	$3,591,939
Actuarial Accrued Liability (AAL)	3,447,707	3,582,651	3,719,152	3,856,470	3,994,603	4,133,986	4,274,493	4,416,111	4,559,434	4,705,271
Unfunded AAL	711,875	746,402	783,172	822,300	863,909	908,171	955,083	1,004,864	1,057,572	1,113,331
Funding Ratio	79.4%	79.2%	78.9%	78.7%	78.4%	78.0%	77.7%	77.3%	76.8%	76.3%
Benefit Payments	$ 180,985	$ 190,812	$ 201,536	$ 212,385	$ 222,974	$ 233,829	$ 244,852	$ 255,505	$ 265,618	$ 275,292
Ratio of Assets to Benefit Payments	15.12	14.86	14.57	14.29	14.04	13.80	13.56	13.35	13.18	13.05

Numbers may not add due to rounding.

The interest rate used to discount liabilities was 7.0%.

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Correctional 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 352.92	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%
Required - Chapter 356 (MVA)	68.76%	86.13%	120.89%	225.09%	29.01%	29.48%	29.99%	30.54%	31.12%	31.75%
Sufficiency / (Deficiency)	(40.31)%	(57.68)%	(92.44)%	(196.64)%	(0.56)%	(1.03)%	(1.54)%	(2.09)%	(2.67)%	(3.30)%
Contributions										
Statutory - Chapter 352	$ 178,009	$ 183,341	$ 188,821	$ 194,523	$ 200,435	$ 206,562	$ 212,808	$ 219,224	$ 225,888	$ 232,731
Required - Chapter 356 (MVA)	430,224	555,060	802,329	1,539,022	204,397	214,024	224,293	235,311	247,080	259,741
Sufficiency / (Deficiency)	(252,215)	(371,719)	(613,508)	(1,344,499)	(3,962)	(7,462)	(11,485)	(16,087)	(21,192)	(27,010)
Funding Ratios										
Current Assets (MVA)	$3,682,104	$3,772,735	$3,863,735	$3,955,180	$4,047,503	$4,141,104	$4,235,938	$4,331,809	$4,428,933	$4,527,394
Actuarial Accrued Liability (AAL)	4,854,338	5,007,129	5,163,714	5,324,371	5,489,688	5,660,239	5,836,134	6,017,457	6,204,699	6,398,140
Unfunded AAL	1,172,234	1,234,394	1,299,978	1,369,191	1,442,185	1,519,135	1,600,196	1,685,648	1,775,766	1,870,746
Funding Ratio	75.9%	75.4%	74.8%	74.3%	73.7%	73.2%	72.6%	72.0%	71.4%	70.8%
Benefit Payments	$ 284,771	$ 294,532	$ 304,385	$ 314,059	$ 323,599	$ 333,462	$ 343,701	$ 353,952	$ 364,435	$ 375,604
Ratio of Assets to Benefit Payments	12.93	12.81	12.69	12.59	12.51	12.42	12.32	12.24	12.15	12.05

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.

Correctional 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 352.92	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%	28.45%
Required - Chapter 356 (MVA)	26.26%	25.41%	24.61%	23.75%	22.71%	21.55%	20.24%	18.73%	17.13%	15.85%
Sufficiency / (Deficiency)	2.19%	3.04%	3.84%	4.70%	5.74%	6.90%	8.21%	9.72%	11.32%	12.60%
Contributions										
Statutory - Chapter 352	$ 99,656	$ 103,208	$ 106,315	$ 109,425	$ 112,758	$ 116,097	$ 119,476	$ 122,937	$ 126,485	$ 130,122
Required - Chapter 356 (MVA)	91,986	92,186	91,958	91,337	90,020	87,949	84,990	80,940	76,138	72,490
Sufficiency / (Deficiency)	7,670	11,022	14,357	18,088	22,738	28,147	34,486	41,997	50,347	57,632
Funding Ratios										
Current Assets (MVA)	$1,792,602	$1,932,685	$2,082,034	$2,240,667	$2,409,485	$2,589,724	$2,782,102	$2,986,749	$3,204,784	$3,436,817
Actuarial Accrued Liability (AAL)	2,256,549	2,361,842	2,469,995	2,580,872	2,694,904	2,812,484	2,933,619	3,057,665	3,184,884	3,314,965
Unfunded AAL	463,947	429,157	387,961	340,205	285,418	222,760	151,518	70,916	(19,900)	(121,853)
Funding Ratio	79.4%	81.8%	84.3%	86.8%	89.4%	92.1%	94.8%	97.7%	100.6%	103.7%
Benefit Payments	$ 110,252	$ 116,295	$ 122,637	$ 128,874	$ 134,977	$ 141,326	$ 148,582	$ 155,845	$ 163,701	$ 172,006
Ratio of Assets to Benefit Payments	16.26	16.62	16.98	17.39	17.85	18.32	18.72	19.16	19.58	19.98

Numbers may not add due to rounding.

The interest rate used to discount liabilities was 7.0%.

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Correctional 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 352.92	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%
Required - Chapter 356 (MVA)	14.49%	13.31%	12.07%	10.76%	9.39%	7.93%	6.39%	4.77%	3.07%	1.28%
Sufficiency / (Deficiency)	9.51%	10.69%	11.93%	13.24%	14.61%	16.07%	17.61%	19.23%	20.93%	22.72%
Contributions										
Statutory - Chapter 352	$ 112,931	$ 116,162	$ 119,480	$ 122,871	$ 126,335	$ 129,988	$ 133,660	$ 137,543	$ 141,590	$ 145,805
Required - Chapter 356 (MVA)	68,183	64,440	60,102	55,110	49,448	42,949	35,578	27,339	18,133	7,781
Sufficiency / (Deficiency)	44,749	51,722	59,378	67,761	76,887	87,039	98,082	110,204	123,456	138,025
Funding Ratios										
Current Assets (MVA)	$3,683,661	$3,924,159	$4,178,174	$4,446,011	$4,728,789	$5,028,124	$5,345,340	$5,681,803	$6,039,749	$6,421,737
Actuarial Accrued Liability (AAL)	3,447,707	3,582,651	3,719,152	3,856,470	3,994,603	4,133,986	4,274,493	4,416,111	4,559,434	4,705,271
Unfunded AAL	(235,955)	(341,508)	(459,022)	(589,541)	(734,186)	(894,138)	(1,070,847)	(1,265,692)	(1,480,315)	(1,716,467)
Funding Ratio	106.8%	109.5%	112.3%	115.3%	118.4%	121.6%	125.1%	128.7%	132.5%	136.5%
Benefit Payments	$ 180,985	$ 190,812	$ 201,536	$ 212,385	$ 222,974	$ 233,829	$ 244,852	$ 255,505	$ 265,618	$ 275,292
Ratio of Assets to Benefit Payments	20.35	20.57	20.73	20.93	21.21	21.50	21.83	22.24	22.74	23.33

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.

Correctional 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 352.92	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%
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)	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%
Contributions										
Statutory - Chapter 352	$ 150,165	$ 154,664	$ 159,286	$ 164,097	$ 169,084	$ 174,252	$ 179,522	$ 184,934	$ 190,556	$ 196,329
Required - Chapter 356 (MVA)	-	-	-	-	-	-	-	-	-	-
Sufficiency / (Deficiency)	150,165	154,664	159,286	164,097	169,084	174,252	179,522	184,934	190,556	196,329
Funding Ratios										
Current Assets (MVA)	$6,830,441	$7,268,484	$7,738,209	$8,242,338	$8,784,179	$9,367,255	$9,994,922	$10,670,682	$11,398,758	$12,183,569
Actuarial Accrued Liability (AAL)	4,854,338	5,007,129	5,163,714	5,324,371	5,489,688	5,660,239	5,836,134	6,017,457	6,204,699	6,398,140
Unfunded AAL	(1,976,103)	(2,261,355)	(2,574,495)	(2,917,968)	(3,294,490)	(3,707,017)	(4,158,788)	(4,653,225)	(5,194,059)	(5,785,429)
Funding Ratio	140.7%	145.2%	149.9%	154.8%	160.0%	165.5%	171.3%	177.3%	183.7%	190.4%
Benefit Payments	$ 284,771	$ 294,532	$ 304,385	$ 314,059	$ 323,599	$ 333,462	$ 343,701	$ 353,952	$ 364,435	$ 375,604
Ratio of Assets to Benefit Payments	23.99	24.68	25.42	26.24	27.15	28.09	29.08	30.15	31.28	32.44

Numbers may not add due to rounding.

The interest rate used to discount liabilities was 7.0%.