GRS Retirement Consulting

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January 31, 2019

CONFIDENTIAL

Mr. Doug Anderson
Executive Director
Public Employees Retirement Association of Minnesota
60 Empire Drive, Suite 200
St. Paul, MN 55103

Re: Projection of Contributions and Funding Status – Local Correctional Plan

Dear Doug:

Attached are 30-year projections of estimated funded status, required contributions, and statutory contributions under three asset return scenarios for the Local Correctional Retirement Plan. 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 Local Correctional Retirement Plan actuarial funding valuation as of July 1, 2018.

Basis for Projections

For all enclosed projections, liabilities are determined using the statutory investment return assumption of 7.5%. As required by the Minnesota Standards for Actuarial Work, the projections reflect three asset return scenarios (7.5%, 6.0% and 9.0%). Note that we believe the 9.0% 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 3.25% 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 3,981 members. The profile of these new members is the same as new members hired between July 1, 2012 and July 1, 2017:

- Average age at hire is 30.5
- Average salary at hire is $42,500
- Approximately 35% female, 65% males

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.

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. Effective January 1, 2019, actual benefit increases equal the Social Security Cost-of-Living Adjustment, not less than 1.00% and not more than 2.50%. If the funded status declines to 85% for two consecutive years or to 80% for one year (on a market value of assets basis), the maximum is lowered to 1.50%. For the 7.5% and 9.0% investment return scenarios, the projections assume a constant postretirement benefit increase of 2.00%. More information about this assumption can be found in the valuation report as of July 1, 2018.

For the 6.0% investment return scenario, if all assumptions are met, the funding status of the plan deteriorates to the point that the 1.5% maximum postretirement benefit increase is estimated to be applied beginning January 1, 2033. In this projection, the accrued liability and normal cost are based on a 2.0% postretirement benefit increase assumption for valuation dates through 2032, and a 1.5% postretirement benefit increase assumption for valuation dates in 2033 and later.

If actual benefit increases are greater than assumed, liabilities and required contributions will be greater than the amounts shown in the enclosed projections.

Comments

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

- Investment experience that has occurred since the measurement date is not reflected in this report.

- The enclosed projections are based on assumptions as outlined in the Local Government Correctional Service Retirement Plan actuarial funding valuation as of July 1, 2018. Please see that report for comments regarding the 7.5% statutory investment return assumption, and sensitivity test results based on alternate assumptions.

- Note that plan changes reflected in the July 1, 2018 valuation report may result in behavior changes that are not anticipated in the current assumptions.

- In the 7.5% and 9.0 % investment return scenarios, surplus assets reduce the projected required contributions to amounts less than normal cost, and eventually to zero. We would typically recommend the contribution be at least equal to the normal cost of the plan.

- We typically 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

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 Public Employees Retirement Association of Minnesota (PERA), 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 PERA.

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, 2018 valuation report. This valuation report includes risk metrics on page 9, 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.

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.

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, except as noted. PERA is solely responsible for communicating to GRS any changes required thereto.

In a 2018 analysis of long-term rate of investment return and inflation assumptions, GRS suggested that the current statutory investment return assumption of 7.5% is at the top of the reasonable range. Please see our letter dated October 3, 2018 for additional information. If capital markets decline further from the present levels, the 7.5% return assumption might not comply with actuarial standards for the July 1, 2019 valuation.

The 2018 analysis also concluded that the probability of exceeding the current 7.5% assumption over 20 years is less than 50%. The statutory requirement for projections that are 1.5% above and 1.5% below the assumed rate may give the reader the impression that the 7.5% projection is an accurate (middle of the road) representation of the expected future results. Based on the modeling we have done, the 7.5% scenario is optimistic and not representative of the expected (median) result. We caution against adjusting contribution rates without full consideration of the median results.

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

Sincerely,

Bonita J. Wurst

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

Brian B. Murphy

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

BJW/BBM:ah
Enclosure

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 7.5% on the market value of assets), 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 30 years, and
(3) The unfunded liability will grow initially as a dollar 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.

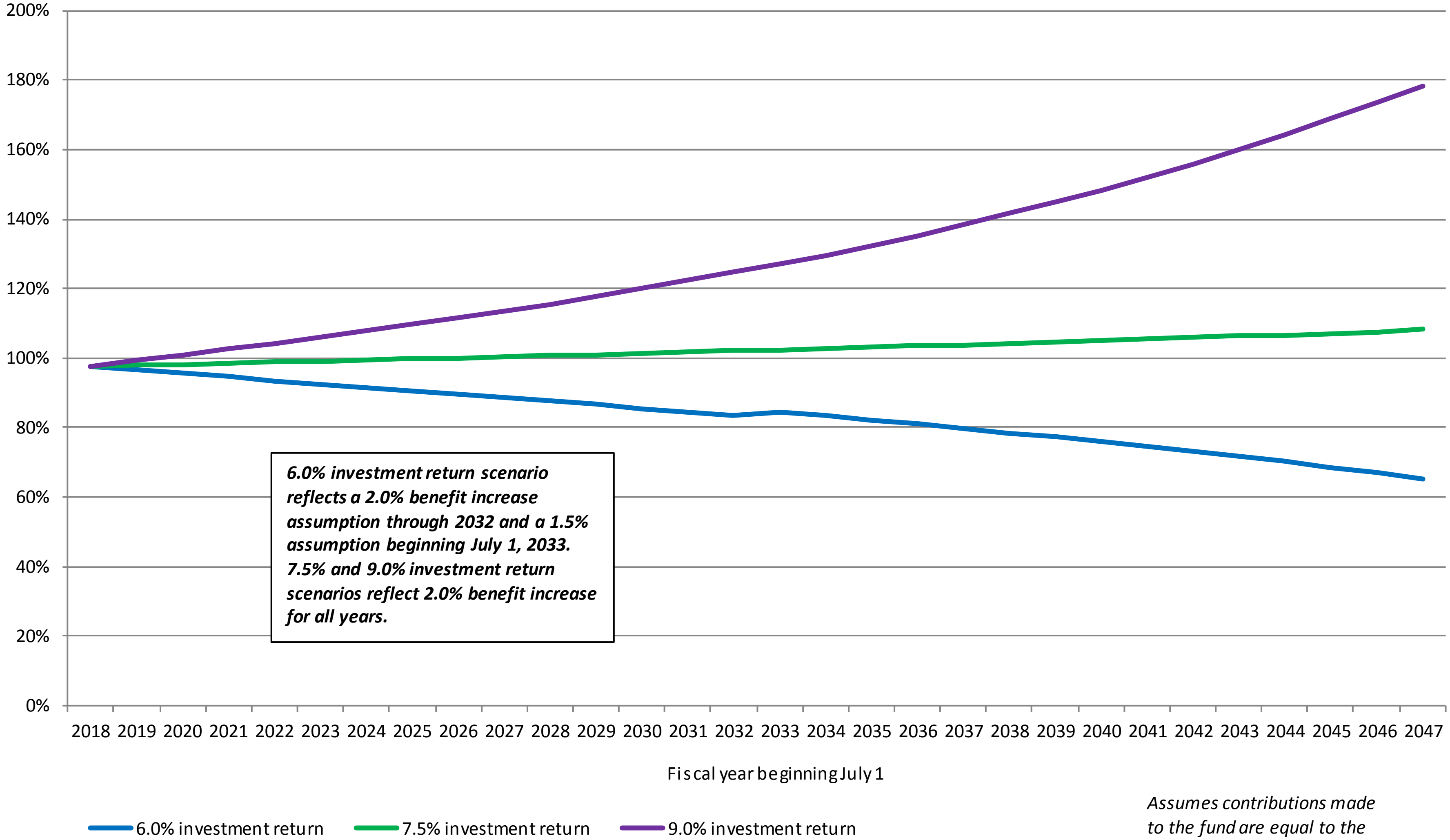
Limitations of Project Scope

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, 2019 letter to PERA.

Local Government Correctional Service Retirement Plan
Estimated Funded Ratio

In all scenarios, the interest rate used to discount liabilities was 7.5%.



6.0% investment return scenario reflects a 2.0% benefit increase assumption through 2032 and a 1.5% assumption beginning July 1, 2033. 7.5% and 9.0% investment return scenarios reflect 2.0% benefit increase for all years.

Assumes contributions made to the fund are equal to the statutory rate.

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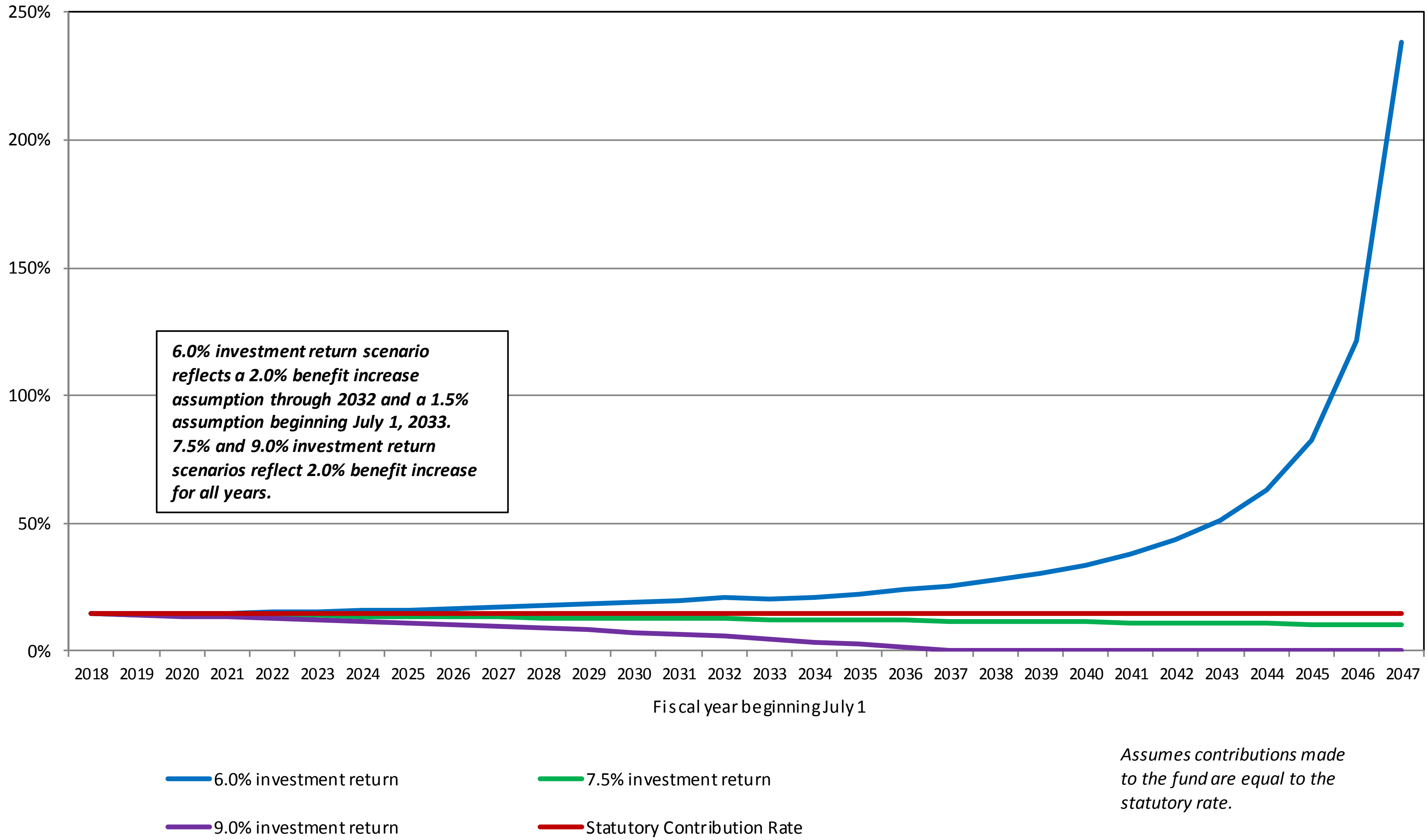
Local Government Correctional Service Retirement Plan

Estimated Required Contribution Rates (% of Pay)

In all scenarios, the interest rate used to discount liabilities was 7.5%.



Assumes contributions made to the fund are equal to the statutory rate.

This exhibit should only be viewed in conjunction with GRS' January 31, 2019 letter to PERA.

Local Government Correctional Service Retirement Plan

Scenario: 7.5% investment return for all years

Fiscal year beginning July 1

$ in Thousands	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Contributions (% of Payroll)										
Statutory - Chapter 353E	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%
Required - Chapter 356 (MVA)	14.5%	14.4%	14.2%	14.1%	14.0%	13.8%	13.7%	13.5%	13.4%	13.3%
Sufficiency / (Deficiency)	0.1%	0.2%	0.4%	0.5%	0.6%	0.8%	0.9%	1.0%	1.2%	1.3%
Contributions										
Statutory - Chapter 353E	31,756	33,207	34,593	35,862	37,139	38,414	39,716	41,058	42,428	43,840
Required - Chapter 356 (MVA)	31,660	32,737	33,742	34,641	35,530	36,392	37,249	38,118	38,987	39,901
Sufficiency / (Deficiency)	96	470	851	1,221	1,609	2,022	2,467	2,940	3,441	3,939
Funding Ratios										
Current Assets (MVA)	680,395	744,583	812,270	883,431	958,052	1,036,165	1,117,888	1,203,097	1,291,556	1,383,462
Actuarial Accrued Liability (AAL)	696,842	760,563	827,311	897,026	969,744	1,045,473	1,124,330	1,206,153	1,290,679	1,378,081
Unfunded AAL	16,447	15,980	15,041	13,595	11,692	9,308	6,442	3,056	(877)	(5,381)
Funding Ratio	98%	98%	98%	98%	99%	99%	99%	100%	100%	100%
Benefit Payments	18,747	21,450	24,366	27,431	30,724	34,154	37,990	42,345	46,773	51,349
Ratio of Assets to Benefit Payments	36.29	34.71	33.34	32.21	31.18	30.34	29.43	28.41	27.61	26.94

Numbers may not add due to rounding.

The interest rate used to discount liabilities was 7.5%.

This exhibit should only be viewed in conjunction with GRS' January 31, 2019 letter to PERA.

Local Government Correctional Service Retirement Plan

Scenario: 7.5% investment return for all years

Fiscal year beginning July 1

$ in Thousands	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Contributions (% of Payroll)										
Statutory - Chapter 353E	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%
Required - Chapter 356 (MVA)	13.1%	13.0%	12.9%	12.8%	12.6%	12.5%	12.4%	12.2%	12.1%	11.9%
Sufficiency / (Deficiency)	1.4%	1.6%	1.7%	1.8%	2.0%	2.1%	2.2%	2.4%	2.5%	2.7%
Contributions										
Statutory - Chapter 353E	45,304	46,810	48,352	49,944	51,590	53,296	55,061	56,890	58,786	60,743
Required - Chapter 356 (MVA)	40,837	41,782	42,729	43,686	44,652	45,632	46,621	47,619	48,624	49,622
Sufficiency / (Deficiency)	4,467	5,028	5,623	6,258	6,938	7,664	8,440	9,271	10,162	11,121
Funding Ratios										
Current Assets (MVA)	1,478,962	1,578,007	1,680,736	1,787,094	1,897,207	2,010,927	2,128,386	2,249,865	2,375,409	2,505,106
Actuarial Accrued Liability (AAL)	1,468,469	1,561,746	1,658,015	1,757,176	1,859,301	1,964,185	2,071,894	2,182,642	2,296,405	2,413,189
Unfunded AAL	(10,493)	(16,261)	(22,721)	(29,918)	(37,906)	(46,742)	(56,492)	(67,223)	(79,004)	(91,917)
Funding Ratio	101%	101%	101%	102%	102%	102%	103%	103%	103%	104%
Benefit Payments	56,286	61,385	66,841	72,485	78,597	84,902	91,265	97,939	104,889	111,972
Ratio of Assets to Benefit Payments	26.28	25.71	25.15	24.65	24.14	23.69	23.32	22.97	22.65	22.37

Numbers may not add due to rounding.

The interest rate used to discount liabilities was 7.5%.

This exhibit should only be viewed in conjunction with GRS' January 31, 2019 letter to PERA.

Local Government Correctional Service Retirement Plan

Scenario: 7.5% investment return for all years

Fiscal year beginning July 1

$ in Thousands	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047
Contributions (% of Payroll)										
Statutory - Chapter 353E	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%
Required - Chapter 356 (MVA)	11.8%	11.6%	11.4%	11.3%	11.1%	10.9%	10.7%	10.5%	10.3%	10.1%
Sufficiency / (Deficiency)	2.8%	3.0%	3.2%	3.3%	3.5%	3.7%	3.9%	4.1%	4.3%	4.5%
Contributions										
Statutory - Chapter 353E	62,764	64,847	67,011	69,244	71,552	73,925	76,367	78,884	81,470	84,142
Required - Chapter 356 (MVA)	50,610	51,579	52,537	53,465	54,362	55,217	56,023	56,775	57,464	58,089
Sufficiency / (Deficiency)	12,154	13,268	14,474	15,779	17,190	18,708	20,344	22,109	24,006	26,053
Funding Ratios										
Current Assets (MVA)	2,639,190	2,777,853	2,921,360	3,069,919	3,224,012	3,384,039	3,550,179	3,722,560	3,901,342	4,086,519
Actuarial Accrued Liability (AAL)	2,533,146	2,656,370	2,783,026	2,913,197	3,047,247	3,185,441	3,327,821	3,474,366	3,625,077	3,779,775
Unfunded AAL	(106,044)	(121,483)	(138,334)	(156,722)	(176,765)	(198,598)	(222,358)	(248,194)	(276,265)	(306,744)
Funding Ratio	104%	105%	105%	105%	106%	106%	107%	107%	108%	108%
Benefit Payments	119,252	126,668	134,315	141,930	149,634	157,659	166,071	174,853	184,172	193,796
Ratio of Assets to Benefit Payments	22.13	21.93	21.75	21.63	21.55	21.46	21.38	21.29	21.18	21.09

Numbers may not add due to rounding.

The interest rate used to discount liabilities was 7.5%.

This exhibit should only be viewed in conjunction with GRS' January 31, 2019 letter to PERA.

Local Government Correctional Service Retirement Plan

Scenario: 6.0% investment return for all years

Fiscal year beginning July 1

$ in Thousands	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Contributions (% of Payroll)										
Statutory - Chapter 353E	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%
Required - Chapter 356 (MVA)	14.5%	14.6%	14.8%	15.0%	15.2%	15.5%	15.8%	16.2%	16.6%	17.1%
Sufficiency / (Deficiency)	0.1%	(0.1)%	(0.2)%	(0.4)%	(0.6)%	(0.9)%	(1.2)%	(1.6)%	(2.1)%	(2.6)%
Contributions										
Statutory - Chapter 353E	31,756	33,207	34,593	35,862	37,139	38,414	39,716	41,058	42,428	43,840
Required - Chapter 356 (MVA)	31,660	33,351	35,089	36,856	38,770	40,838	43,107	45,628	48,418	51,525
Sufficiency / (Deficiency)	96	(144)	(496)	(994)	(1,631)	(2,424)	(3,391)	(4,570)	(5,990)	(7,685)
Funding Ratios										
Current Assets (MVA)	680,395	734,282	790,096	847,669	906,833	967,456	1,029,485	1,092,612	1,156,408	1,220,867
Actuarial Accrued Liability (AAL)	696,842	760,563	827,311	897,026	969,744	1,045,473	1,124,330	1,206,153	1,290,679	1,378,081
Unfunded AAL	16,447	26,281	37,215	49,357	62,911	78,017	94,845	113,541	134,271	157,214
Funding Ratio	98%	97%	96%	94%	94%	93%	92%	91%	90%	89%
Benefit Payments	18,747	21,450	24,366	27,431	30,724	34,154	37,990	42,345	46,773	51,349
Ratio of Assets to Benefit Payments	36.29	34.23	32.43	30.90	29.52	28.33	27.10	25.80	24.72	23.78

Numbers may not add due to rounding.

The interest rate used to discount liabilities was 7.5%.

This exhibit should only be viewed in conjunction with GRS' January 31, 2019 letter to PERA.

Local Government Correctional Service Retirement Plan

Scenario: 6.0% investment return for all years

Fiscal year beginning July 1

$ in Thousands	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**
Contributions (% of Payroll)										
Statutory - Chapter 353E	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%
Required - Chapter 356 (MVA)	17.7%	18.3%	19.1%	19.9%	20.9%	20.1%	21.2%	22.5%	24.0%	25.7%
Sufficiency / (Deficiency)	(3.1)%	(3.8)%	(4.5)%	(5.3)%	(6.3)%	(5.6)%	(6.6)%	(7.9)%	(9.4)%	(11.1)%
Contributions										
Statutory - Chapter 353E	45,304	46,810	48,352	49,944	51,590	53,296	55,061	56,890	58,786	60,743
Required - Chapter 356 (MVA)	55,000	58,891	63,260	68,199	73,817	73,623	80,149	87,730	96,621	107,161
Sufficiency / (Deficiency)	(9,696)	(12,081)	(14,908)	(18,255)	(22,227)	(20,327)	(25,088)	(30,840)	(37,835)	(46,418)
Funding Ratios										
Current Assets (MVA)	1,285,920	1,351,284	1,416,852	1,482,308	1,547,500	1,611,987	1,675,902	1,739,031	1,801,094	1,861,828
Actuarial Accrued Liability (AAL)	1,468,469	1,561,746	1,658,015	1,757,176	1,859,301	1,908,870	2,011,072	2,115,956	2,223,486	2,333,661
Unfunded AAL	182,549	210,462	241,163	274,868	311,801	296,883	335,170	376,925	422,392	471,833
Funding Ratio	88%	87%	85%	84%	83%	84%	83%	82%	81%	80%
Benefit Payments	56,286	61,385	66,841	72,485	78,597	84,596	90,828	97,353	104,134	111,030
Ratio of Assets to Benefit Payments	22.85	22.01	21.20	20.45	19.69	19.06	18.45	17.86	17.30	16.77

Numbers may not add due to rounding.

The interest rate used to discount liabilities was 7.5%.

This exhibit should only be viewed in conjunction with GRS' January 31, 2019 letter to PERA.

Local Government Correctional Service Retirement Plan

Scenario: 6.0% investment return for all years

Fiscal year beginning July 1

$ in Thousands	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047
Contributions (% of Payroll)										
Statutory - Chapter 353E	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%
Required - Chapter 356 (MVA)	27.8%	30.4%	33.7%	37.9%	43.4%	51.2%	62.9%	82.5%	121.5%	238.6%
Sufficiency / (Deficiency)	(13.3)%	(15.9)%	(19.1)%	(23.3)%	(28.8)%	(36.6)%	(48.4)%	(67.9)%	(106.9)%	(224.0)%
Contributions										
Statutory - Chapter 353E	62,764	64,847	67,011	69,244	71,552	73,925	76,367	78,884	81,470	84,142
Required - Chapter 356 (MVA)	119,840	135,360	154,788	179,775	213,094	259,722	329,629	446,075	678,828	1,376,750
Sufficiency / (Deficiency)	(57,076)	(70,513)	(87,777)	(110,531)	(141,542)	(185,797)	(253,262)	(367,191)	(597,358)	(1,292,608)
Funding Ratios										
Current Assets (MVA)	1,921,098	1,978,699	2,034,477	2,088,189	2,139,839	2,189,309	2,236,227	2,280,134	2,320,571	2,356,869
Actuarial Accrued Liability (AAL)	2,446,619	2,562,444	2,681,291	2,803,234	2,928,625	3,057,718	3,190,543	3,327,064	3,467,269	3,610,967
Unfunded AAL	525,521	583,745	646,814	715,045	788,786	868,409	954,316	1,046,930	1,146,698	1,254,098
Funding Ratio	79%	77%	76%	74%	73%	72%	70%	69%	67%	65%
Benefit Payments	118,104	125,291	132,687	140,029	147,437	155,145	163,219	171,637	180,569	189,778
Ratio of Assets to Benefit Payments	16.27	15.79	15.33	14.91	14.51	14.11	13.70	13.28	12.85	12.42

Numbers may not add due to rounding.

The interest rate used to discount liabilities was 7.5%.

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Local Government Correctional Service Retirement Plan

Scenario: 9.0% investment return for all years

Fiscal year beginning July 1

$ in Thousands	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Contributions (% of Payroll)										
Statutory - Chapter 353E	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%
Required - Chapter 356 (MVA)	14.5%	14.1%	13.7%	13.2%	12.7%	12.2%	11.6%	11.0%	10.4%	9.7%
Sufficiency / (Deficiency)	0.1%	0.5%	0.9%	1.4%	1.9%	2.4%	3.0%	3.6%	4.2%	4.9%
Contributions										
Statutory - Chapter 353E	31,756	33,207	34,593	35,862	37,139	38,414	39,716	41,058	42,428	43,840
Required - Chapter 356 (MVA)	31,660	32,123	32,393	32,442	32,349	32,084	31,654	31,061	30,271	29,268
Sufficiency / (Deficiency)	96	1,084	2,200	3,420	4,790	6,330	8,062	9,997	12,157	14,572
Funding Ratios										
Current Assets (MVA)	680,395	754,884	834,752	920,195	1,011,437	1,108,771	1,212,599	1,323,110	1,440,404	1,565,044
Actuarial Accrued Liability (AAL)	696,842	760,563	827,311	897,026	969,744	1,045,473	1,124,330	1,206,153	1,290,679	1,378,081
Unfunded AAL	16,447	5,679	(7,441)	(23,169)	(41,693)	(63,298)	(88,269)	(116,957)	(149,725)	(186,963)
Funding Ratio	98%	99%	101%	103%	104%	106%	108%	110%	112%	114%
Benefit Payments	18,747	21,450	24,366	27,431	30,724	34,154	37,990	42,345	46,773	51,349
Ratio of Assets to Benefit Payments	36.29	35.19	34.26	33.55	32.92	32.46	31.92	31.25	30.80	30.48

Numbers may not add due to rounding.

The interest rate used to discount liabilities was 7.5%.

This exhibit should only be viewed in conjunction with GRS' January 31, 2019 letter to PERA.

Local Government Correctional Service Retirement Plan

Scenario: 9.0% investment return for all years

Fiscal year beginning July 1

$ in Thousands	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Contributions (% of Payroll)										
Statutory - Chapter 353E	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%
Required - Chapter 356 (MVA)	9.0%	8.3%	7.5%	6.6%	5.7%	4.7%	3.7%	2.6%	1.4%	0.2%
Sufficiency / (Deficiency)	5.6%	6.3%	7.1%	8.0%	8.9%	9.9%	10.9%	12.0%	13.2%	14.4%
Contributions										
Statutory - Chapter 353E	45,304	46,810	48,352	49,944	51,590	53,296	55,061	56,890	58,786	60,743
Required - Chapter 356 (MVA)	28,036	26,535	24,730	22,599	20,108	17,225	13,905	10,106	5,776	852
Sufficiency / (Deficiency)	17,268	20,275	23,622	27,345	31,482	36,071	41,156	46,784	53,010	59,891
Funding Ratios										
Current Assets (MVA)	1,697,579	1,838,398	1,988,119	2,147,210	2,316,367	2,496,063	2,687,107	2,890,521	3,107,160	3,337,995
Actuarial Accrued Liability (AAL)	1,468,469	1,561,746	1,658,015	1,757,176	1,859,301	1,964,185	2,071,894	2,182,642	2,296,405	2,413,189
Unfunded AAL	(229,110)	(276,652)	(330,104)	(390,034)	(457,066)	(531,878)	(615,213)	(707,879)	(810,755)	(924,806)
Funding Ratio	116%	118%	120%	122%	125%	127%	130%	132%	135%	138%
Benefit Payments	56,286	61,385	66,841	72,485	78,597	84,902	91,265	97,939	104,889	111,972
Ratio of Assets to Benefit Payments	30.16	29.95	29.74	29.62	29.47	29.40	29.44	29.51	29.62	29.81

Numbers may not add due to rounding.

The interest rate used to discount liabilities was 7.5%.

This exhibit should only be viewed in conjunction with GRS' January 31, 2019 letter to PERA.

Local Government Correctional Service Retirement Plan

Scenario: 9.0% investment return for all years

Fiscal year beginning July 1

$ in Thousands	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047
Contributions (% of Payroll)										
Statutory - Chapter 353E	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%
Required - Chapter 356 (MVA)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sufficiency / (Deficiency)	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%
Contributions										
Statutory - Chapter 353E	62,764	64,847	67,011	69,244	71,552	73,925	76,367	78,884	81,470	84,142
Required - Chapter 356 (MVA)	-	-	-	-	-	-	-	-	-	-
Sufficiency / (Deficiency)	62,764	64,847	67,011	69,244	71,552	73,925	76,367	78,884	81,470	84,142
Funding Ratios										
Current Assets (MVA)	3,584,227	3,847,103	4,128,042	4,428,512	4,750,377	5,095,546	5,465,849	5,863,214	6,289,767	6,747,646
Actuarial Accrued Liability (AAL)	2,533,146	2,656,370	2,783,026	2,913,197	3,047,247	3,185,441	3,327,821	3,474,366	3,625,077	3,779,775
Unfunded AAL	(1,051,081)	(1,190,733)	(1,345,016)	(1,515,315)	(1,703,130)	(1,910,105)	(2,138,028)	(2,388,848)	(2,664,690)	(2,967,871)
Funding Ratio	141%	145%	148%	152%	156%	160%	164%	169%	174%	179%
Benefit Payments	119,252	126,668	134,315	141,930	149,634	157,659	166,071	174,853	184,172	193,796
Ratio of Assets to Benefit Payments	30.06	30.37	30.73	31.20	31.75	32.32	32.91	33.53	34.15	34.82

Numbers may not add due to rounding.

The interest rate used to discount liabilities was 7.5%.