Minnesota State Retirement System

Legislators Retirement Fund

Actuarial Valuation Report as of July 1, 2017

GRS Retirement Consulting
P: 800.521.0498 | F: 763.432.5842 | www.grsconsulting.com

December 6, 2017

Minnesota State Retirement System
Legislators Retirement Fund
St. Paul, Minnesota

Dear Board of Directors:

The results of the July 1, 2017 annual actuarial valuation of the Legislators Retirement Fund are presented in this report. This report was prepared at the request of the Board and is intended for use by the Board and staff and those designated or approved by the Board. This report may be provided to parties other than the Fund only in its entirety. GRS is not responsible for the consequences of any unauthorized use of this report by parties other than the intended users described above.

The purpose of the valuation is to measure the Fund's funding progress and to determine the required contribution rate for the fiscal year beginning July 1, 2017 according to prescribed assumptions. Note that we have not attempted to quantify the impact of GASB Statements No. 67 and No. 68 in this report. Please see the separate report dated December 1, 2017.

The required contribution rate shown on page one was designed to comply with Minnesota Statutes. Users of this report should be aware that contributions made at that rate do not guarantee benefit security. Given the importance of benefit security to any retirement system, we suggest that contributions to the System in excess of those presented in this report be considered.

The contribution rate in this report is determined using the actuarial assumptions and methods disclosed in the Actuarial Basis of this report. This report does not include a robust assessment of the risks of future experience differing materially from the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment. We encourage a review and assessment of investment and other significant risks that may have a material effect on the plan's financial condition.

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.

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 this report. MSRS is solely responsible for communicating to GRS any changes required thereto.

277 Coon Rapids Boulevard | Suite 212 | Coon Rapids, Minnesota 55433-2629

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. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of such future measurements.

This report should not be relied on 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.

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

Brian B. Murphy and Bonita J. Wurst 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 presents the actuarial position of the Legislators Retirement Fund as of the valuation date according to prescribed assumptions, 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.

We are available to answer any questions or provide further details.

Respectfully submitted,

Brian B. Murphy

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

Bonita J. Wurst

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

BBM/BJW:sc

GRS

Other Observations

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

Given the plan's pay-as-you-go contribution policy, if there are no changes in benefits or contributions and all actuarial assumptions are met (including the statutory assumption of the plan earning 0.00% on the actuarial value of assets), it is expected that:

(1) The funded status of the plan will remain at 0%, and

(2) The fund will be completely dependent upon current contributions to pay benefits.

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).

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.

Contents

Summary of Valuation Results

Contributions

The following table summarizes important contribution information as described in the Development of Costs section.

Contributions *(dollars in thousands)*	**Actuarial Valuation as of** July 1, 2017	**Actuarial Valuation as of** July 1, 2016
Statutory Contributions* - Chapter 3A	$ 73	$ 81
Required Contributions - Chapter 356	$ 26,518	$ 23,079
Sufficiency / (Deficiency)	$ (26,445)	$ (22,998)

** Active member contributions from the Legislators Retirement Plan are equal to 9% of payroll.*

The Minnesota Statutes Chapter 356 Required Contribution shown above represents the estimated annual contribution amount that would be needed for this plan to attain 100% funding by July 1, 2026, based upon the prescribed assumptions. The Required Contribution includes not only the expected benefit payments for the year, but also amounts intended to pre-fund future benefit payments. Actual contributions have been less than the Required Contribution amount since 1999. The funding target identified by Chapter 356 will not be met given the history of actual contributions made to the Fund.

This plan is currently funded on a pay-as-you-go basis by annual appropriations from the state's General Fund. For the fiscal year ending June 30, 2017, total contributions were $8.8 million and total benefit payments were $8.7 million. The ability of the fund to pay benefits in the future is critically dependent upon timely receipt of the contributions from the State's General Fund. The actuary cannot judge the probability that such payments will, in fact, be made. See page 7 for the expected benefit payments based on current data methods and assumptions.

Summary of Valuation Results

The ratio of retiree liabilities to total accrued liabilities gives an indication of the maturity of the System. As the ratio increases, cash flow needs increase, and the liquidity needs of the portfolio changes. A ratio on the order of 50% indicates a maturing system. The ratio of retiree liabilities to total accrued liabilities as of July 1, 2017 is 75.7%, up from 69.2% in the prior year.

Participant reconciliation and statistics are detailed in the *Membership Data* section. The *Actuarial Basis* section includes a summary of plan provisions and actuarial methods and assumptions used for the calculations in this report.

Accounting information prepared according to GASB Statements No. 67 and No. 68 has been provided in a separate report dated December 1, 2017.

Summary of Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in plan provisions, actuarial assumptions or valuation methods and procedures between the two valuations are described after the summary.

	Actuarial Valuation as of	
	July 1, 2017	**July 1, 2016**
Assumptions		
- Pre-retirement discount rate	0.0%	0.0%
- Post-retirement discount rate	0.0%	0.0%
- Annual post-retirement benefit increases	2.0%	2.0%
Contributions (*dollars in thousands*)		
Statutory - Chapter 3A	$ 73	$ 81
Required - Chapter 356	$ 26,518 *	$ 23,079
Sufficiency / (Deficiency)	$ (26,445) *	$ (22,998)
Funding Ratios (*dollars in thousands*)		
Accrued Liability Funding Ratio		
- Current assets (AVA)	$ -	$ -
- Actuarial accrued liability	$ 227,700	$ 218,514
- Funding ratio	0.00%	0.00%
Projected Benefit Funding Ratio		
- Current and expected future assets	$ 340	$ 429
- Current and expected future benefit obligations	$ 231,907	$ 222,550
- Projected benefit funding ratio	0.15%	0.19%
Participant Data		
Active Members		
- Number	19	23
- Annual valuation earnings *(000s)*	776	852
- Projected annual earnings *(000s)*	814	895
- Average projected annual earnings	42,842	38,913
- Average age	68.0	68.2
- Average service	29.0	29.2
Service Retirements	301	302
Survivors	74	70
Disability Retirements	0	0
Deferred Retirements	44	52
Terminated other Non-Vested	0	0
Total	**438**	**447**

* *Expected benefit payments for the fiscal year ending June 30, 2018 are $9,160. The Required Contribution also includes amounts intended to pre-fund future benefit payments.*

Summary of Valuation Results

Effects of Changes

The following changes in plan provisions, actuarial assumptions, and methods were recognized as of July 1, 2017:

- The base mortality table for annuitants and employees was changed from RP-2000 to RP-2014, fully generational, white collar adjustments with age adjustments. The mortality improvement scale was changed from Scale AA to Scale MP-2015.
- Actuarial equivalent factors were updated to reflect current mortality and interest assumptions, effective January 1, 2017. This change did not have a material impact on liabilities.
- Loading factors to account for members with Combined Service Annuities (CSA) were updated from 30% for deferred vested and non-vested terminated members to 0%. The CSA assumptions were approved by the LCPR based on an analysis completed by the LCPR actuary and documented in a report dated October 2016. The prior CSA assumptions were based on a 2001 study performed by a prior actuary.

Refer to the Actuarial Basis section of this report for a complete description of these changes.

The combined impact of the above changes was to increase the unfunded actuarial accrued liability by $13.9 million and increase the required contribution by $1.6 million, as follows:

	(000s)	
	Before Changes	**Reflecting Assumption Changes**
Normal Cost	$ 1,070	$ 1,183
Amortization of UAAL*	$ 23,759	$ 25,300
Expenses	$ 35	$ 35
Total Required Contribution	$ 24,864	$ 26,518
Accrued Liability Funding Ratio	0.0%	0.0%
Projected Benefit Funding Ratio	0.2%	0.1%
UAAL*	$213,827	$ 227,700

** Unfunded Actuarial Accrued Liability.*

Summary of Valuation Results

Valuation of Future Annual Post-Retirement Benefit Increases

Benefit recipients receive a future annual 2.00% post-retirement benefit increase. If the accrued liability funding ratio, determined on a market value of assets basis, of the State Employees Retirement Fund (SERF) reaches or exceeds 90% (based on a 2.50% post-retirement benefit increase assumption) for two consecutive years, the benefit increase in the Legislators Retirement Fund will revert to 2.50%. If, after reverting to a 2.50% increase, the accrued liability funding ratio (determined on a market value of assets basis) of the SERF declines to 80% or less for the most recent actuarial valuation year or 85% or less for two consecutive years, the benefit increase will decrease to 2.00%. Benefit increases already granted, however, will not be affected.

To determine an assumption regarding a future change in the post-retirement benefit increase, we performed a projection of SERF liabilities and assets. See the 2017 valuation report for SERF for additional detail. The projection indicates that this plan is expected to pay 2.00% benefit increases indefinitely. This assumption is reflected in our calculations.

Summary of Valuation Results

Sensitivity Tests

During the 2017 legislative session, the Legislative Commission on Pensions and Retirement (LCPR) enacted a new sensitivity disclosure requirement for MSRS' 2017 valuations. Per the LCPR's requirement, we have calculated the liabilities associated with the following scenario:

1) 2.5% post-retirement benefit increase for all future years

In each case, all other assumptions were unchanged from those used to develop the final valuation results in this report.

	Final Valuation Assumptions	Final Valuation Assumptions with 2.5% COLA for all future years
Normal Cost	$ 1,183	$ 1,285
Amortization of UAAL*	$ 25,300	$ 27,029
Expenses	$ 35	$ 35
Total Required Contribution	$ 26,518	$ 28,349
Accrued Liability Funding Ratio	0.0%	0.0%
Actuarial Accrued Liability (in millions)	$227.7	$243.3
Unfunded Accrued Liability (in millions)	$227.7	$243.3

Since the statutory discount rate for the Legislators Retirement Fund is 0%, we assumed the discount rate sensitivity is not required for this plan.

Summary of Valuation Results

Undiscounted Cash Flows

Fiscal Year Ending	Projected Benefit Payments	Fiscal Year Ending	Projected Benefit Payments
2018	$ 9,160,000	2068	$ 101,000
2019	9,385,000	2069	77,000
2020	9,590,000	2070	59,000
2021	9,616,000	2071	44,000
2022	9,590,000	2072	32,000
2023	9,539,000	2073	23,000
2024	9,431,000	2074	16,000
2025	9,339,000	2075	11,000
2026	9,142,000	2076	8,000
2027	8,979,000	2077	5,000
2028	8,755,000	2078	3,000
2029	8,506,000	2079	2,000
2030	8,236,000	2080	1,000
2031	7,952,000	2081	1,000
2032	7,680,000	2082	1,000
2033	7,372,000	2083	-
2034	7,055,000	2084	-
2035	6,733,000	2085	-
2036	6,405,000	2086	-
2037	6,076,000	2087	-
2038	5,744,000	2088	-
2039	5,409,000	2089	-
2040	5,075,000	2090	-
2041	4,743,000	2091	-
2042	4,415,000	2092	-
2043	4,092,000	2093	-
2044	3,776,000	2094	-
2045	3,469,000	2095	-
2046	3,173,000	2096	-
2047	2,889,000	2097	-
2048	2,617,000	2098	-
2049	2,359,000	2099	-
2050	2,116,000	2100	-
2051	1,889,000	2101	-
2052	1,677,000	2102	-
2053	1,481,000	2103	-
2054	1,302,000	2104	-
2055	1,138,000	2105	-
2056	990,000	2106	-
2057	855,000	2107	-
2058	735,000	2108	-
2059	627,000	2109	-
2060	532,000	2110	-
2061	447,000	2111	-
2062	373,000	2112	-
2063	309,000	2113	-
2064	253,000	2114	-
2065	204,000	2115	-
2066	164,000	2116	-
2067	129,000	2117	-
Total for all years:			$ 231,907,000

Supplemental Information

The remainder of the report includes information supporting the results presented in the previous sections.

- **Plan assets** presents information about the plan's assets as reported by the Minnesota State Retirement System. The assets represent the portion of total fund liabilities that has been funded.
- **Membership data** presents and describes the membership data used in the valuation.
- **Development of costs** shows the liabilities for plan benefits and the derivation of the contribution amount.
- **Actuarial basis** describes the plan provisions, as well as the methods and assumptions used to value the plan. The valuation is based on the premise that the plan is ongoing.
- **Additional schedules** includes a summary of funding progress over the long term.
- **Glossary** defines the terms used in this report.

Plan Assets

Statement of Fiduciary Net Position (Dollars in Thousands)

Assets	Market Value June 30, 2017		Market Value June 30, 2016	
Cash, equivalents, short term securities	$	259	$	1,465
Fixed income		-		-
Equity		-		-
Other		-		-
Total cash, investments, and other assets	**$**	**259**	**$**	**1,465**
Amounts Receivable		-		2
Total Assets	**$**	**259**	**$**	**1,467**
Amounts Payable		(259)		(1,508)
Net Position Restricted for Pensions	**$**	**-**	**$**	**(41)**
Adjustment to Zero	**$**	**-**	**$**	**41**
Adjusted Net Pension Restricted for Pensions	**$**	**-**	**$**	**-**

Plan Assets

Reconciliation of Plan Assets (Dollars in Thousands)

The following exhibit shows the revenue, expenses and resulting assets of the Fund as reported by the Minnesota State Retirement System for the prior two fiscal years.

Change in Assets	**Market Value**	
Year Ending	**June 30, 2017**	**June 30, 2016**
1. Fund balance at market value at beginning of year	**$ (41)**	**$ 3,430**
2. Contributions		
a. Member	80	89
b. Employer	-	-
c. Other sources (annual appropriations from state's General Fund)	8,716	5,087
d. Total contributions	$ 8,796	$ 5,176
3. Investment income		
a. Investment income/(loss)	-	(68)
b. Investment expenses	-	(1)
c. Net investment income/(loss)	$ -	$ (69)
4. Other	-	41 *
5. Total income: *(2.d.) + (3.c.) + (4.)*	**$ 8,796**	**$ 5,148**
6. Benefits paid		
a. Annuity benefits	$ (8,716)	$ (8,496)
b. Refunds	-	(40)
c. Total benefits paid	$ (8,716)	$ (8,536)
7. Expenses		
a. Other	$ -	$ -
b. Administrative	(39)	(42)
c. Total expenses	$ (39)	$ (42)
8. Total disbursements: *(6.c.) + (7.c.)*	**$ (8,755)**	**$ (8,578)**
9. Fund balance at market value at end of year: *(1.) + (5.) + (8.)*	**$ -**	**$ -**
10. State Board of Investment calculated investment return	N/A	-0.1%

** Fund balance of (41) adjusted to zero for valuation purposes.*

Actuarial Asset Value

The Actuarial Value of Assets (AVA) is equal to the Market Value of Assets (consistent with valuations since July 1, 2000).

Membership Data

Distribution of Active Members

	Years of Service as of June 30, 2017									
Age	**<3***	**3 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 34**	**35+**	**Total**
< 25										
Avg. Earnings										
25 - 29										
Avg. Earnings										
30 - 34										
Avg. Earnings										
35 - 39										
Avg. Earnings										
40 - 44										
Avg. Earnings										
45 - 49										
Avg. Earnings										
50 - 54						1				**1**
Avg. Earnings						$44,049				**$44,049**
55 - 59						1				**1**
Avg. Earnings						$40,381				**$40,381**
60 - 64						1	2	1		**4**
Avg. Earnings						$41,558	$41,069	$38,711		**$40,602**
65 - 69						2		2	1	**5**
Avg. Earnings						$41,715		$40,869	$40,614	**$41,156**
70+						2	1	2	3	**8**
Avg. Earnings						$40,381	$40,381	$40,527	$40,249	**$40,368**
Total						**7**	**3**	**5**	**4**	**19**
Avg. Earnings						**$41,454**	**$40,840**	**$40,300**	**$40,340**	**$40,819**

* *This exhibit does not reflect service earned in other MSRS Plans or Combined Service Annuity benefits. It should not be relied upon as an indicator of non-vested status.*

In each cell, the top number is the count of active participants for the age/service combination and the bottom number is average valuation earnings for the fiscal year ending on the valuation date.

Membership Data

Distribution of Service Retirements

	Years Retired as of June 30, 2017							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
<50								
Avg. Benefit								
50 - 54								
Avg. Benefit								
55 - 59		2						**2**
Avg. Benefit		$ 18,034						**$ 18,034**
60 - 64	4	3	3					**10**
Avg. Benefit	$ 30,259	$ 32,858	$ 12,635					**$ 25,752**
65 - 69	5	19	16	6				**46**
Avg. Benefit	$ 20,511	$ 24,703	$ 28,258	$ 18,228				**$ 24,639**
70 - 74	1	4	26	16	12			**59**
Avg. Benefit	$ 37,209	$ 30,370	$ 20,960	$ 20,999	$ 13,047			**$ 20,275**
75 - 79		5	9	30	24			**68**
Avg. Benefit		$ 30,494	$ 23,604	$ 18,893	$ 20,579			**$ 20,964**
80 - 84	1		3	8	16	19		**47**
Avg. Benefit	$ 53,190		$ 23,293	$ 26,358	$ 31,831	$ 29,860		**$ 30,012**
85 - 89			2	7	8	21	14	**52**
Avg. Benefit			$ 23,974	$ 29,955	$ 27,491	$ 26,015	$ 25,297	**$ 26,501**
90+			1			5	11	**17**
Avg. Benefit			$ 29,957			$ 28,356	$ 21,763	**$ 24,184**
Total	**11**	**33**	**60**	**67**	**60**	**45**	**25**	**301**
Avg. Benefit	**$ 28,545**	**$ 26,604**	**$ 23,253**	**$ 21,383**	**$ 22,995**	**$ 27,898**	**$ 23,742**	**$ 24,081**

In each cell, the top number is the count of retired participants for the age/years retired combination and the bottom number is the average annual benefit amount.

Membership Data

Distribution of Survivors

	Years Since Death as of June 30, 2017							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
<45								
Avg. Benefit								
45 - 49								
Avg. Benefit								
50 - 54								
Avg. Benefit								
55 - 59			1					**1**
Avg. Benefit			$ 6,820					**$ 6,820**
60 - 64	1		1					**2**
Avg. Benefit	$ 16,143		$ 13,752					**$ 14,947**
65 - 69	1	1						**2**
Avg. Benefit	$ 9,122	$ 12,459						**$ 10,791**
70 - 74	1	4	3	1	2			**11**
Avg. Benefit	$ 47,200	$ 21,028	$ 31,737	$ 20,524	$ 25,781			**$ 27,146**
75 - 79	2		4	1		1	2	**10**
Avg. Benefit	$ 34,728		$ 13,395	$ 6,314		$ 12,317	$ 35,994	**$ 21,366**
80 - 84	1	3	5	3	1		1	**14**
Avg. Benefit	$ 10,627	$ 16,232	$ 29,782	$ 12,140	$ 78,150		$ 14,595	**$ 24,100**
85 - 89	3	6	2		2	5	1	**19**
Avg. Benefit	$ 30,824	$ 13,095	$ 11,134		$ 5,526	$ 28,540	$ 22,852	**$ 19,469**
90+		4	3	2		4	2	**15**
Avg. Benefit		$ 14,184	$ 13,620	$ 10,207		$ 28,789	$ 6,080	**$ 16,355**
Total	**9**	**18**	**19**	**7**	**5**	**10**	**6**	**74**
Avg. Benefit	**$ 27,225**	**$ 15,588**	**$ 20,074**	**$ 11,953**	**$ 28,153**	**$ 27,017**	**$ 20,266**	**$ 20,584**

In each cell, the top number is the count of survivors for the age/years since death combination and the bottom number is the average annual benefit amount.

Membership Data

Reconciliation of Members

		Terminated		Recipients			
	Actives	Deferred Retirement	Other Non-Vested	Service Retirement	Disability Retirement	Survivor	Total
Members on 7/1/2016	**23**	**52**	**0**	**302**	**0**	**70**	**447**
Additions	0	0	0	0	0	0	**0**
Return to active	0	0	0	0	0	0	**0**
Terminated non-vested	0	0	0	0	0	0	**0**
Service retirements	(2)	(9)	0	11	0	0	**0**
Terminated deferred	(1)	1	0	0	0	0	**0**
Terminated refund/transfer	0	0	0	0	0	0	**0**
Deaths	(1)	0	0	(11)	0	(4)	**(16)**
New beneficiary	0	0	0	0	0	9	**9**
Disabled	0	0	0	0	0	0	**0**
Unexpected status changes	0	0	0	(1)	0	(1)	**(2)**
Net change	(4)	(8)	0	(1)	0	4	**(9)**
Members on 6/30/2017	**19**	**44**	**0**	**301**	**0**	**74**	**438**

Terminated Member Statistics on June 30, 2017	**Deferred Retirement**	**Other Non-Vested**	**Total**
Number	44	0	44
Average age	60.5	N/A	60.5
Average service	12.1	N/A	12.1
Average annual benefit, with augmentation to Normal Retirement Date and 0% CSA load	$27,083	N/A	$27,083
Average refund value, with 0% CSA load	$73,707	N/A	$73,707

Development of Costs

Actuarial Valuation Balance Sheet *(Dollars in Thousands)*

The actuarial balance sheet is based on the principle that the long-term projected benefit obligations of the plan should be ideally equal to the long-term resources available to fund those obligations. **A Projected Benefit Funding Ratio less than 100% indicates that contributions are insufficient.** The resources available to meet projected obligations for current members consist of current fund assets plus the present value of anticipated future contributions intended to fund benefits for current members. In the exhibit below, since statutory contributions are less than normal cost, B.2. is equal to the statutory contribution rate, minus expenses, times the present value of future payroll and Item B.1 is zero, as required by the LCPR Standards for Actuarial Work. Future pay-as-you-go contributions are not reflected in this exhibit.

			June 30, 2017
A. Actuarial Value of Assets			$ -
B. Expected Future Assets			
1. Present value of expected future statutory supplemental contributions			-
2. Present value of future normal cost contributions			340
3. Total expected future assets: *(1.) + (2.)*			$ 340
C. Total Current and Expected Future Assets			$ 340
D. Current Benefit Obligations*			
1. Benefit recipients	**Non-Vested**	**Vested**	**Total**
a. Service retirements	$ -	$ 151,064	$ 151,064
b. Disability retirements	-	-	-
c. Survivors	-	21,336	21,336
2. Deferred retirements with augmentation	-	40,097	40,097
3. Former members without vested rights	-	-	-
4. Active members	-	17,059	17,059
5. Total Current Benefit Obligations	$ -	$ 229,556	$ 229,556
E. Expected Future Benefit Obligations			$ 2,351
F. Total Current and Expected Future Benefit Obligations**			$ 231,907
G. Unfunded Current Benefit Obligations: *(D.5.) - (A.)*			$ 229,556
H. Unfunded Current and Future Benefit Obligations: *(F.) - (C.)*			$ 231,567
I. Accrued Benefit Funding Ratio: *(A.)/(D.5.)*			0.00%
J. Projected Benefit Funding Ratio: *(C.)/(F.)*			0.15%

* *Present value of credited projected benefits (projected compensation, current service).*
** *Present value of projected benefits (projected compensation, projected service).*

Development of Costs

Determination of Unfunded Actuarial Accrued Liability and Supplemental Contribution Rate (*Dollars in Thousands)*

	Actuarial Present Value of Projected Benefits	Actuarial Present Value of Future Normal Costs	Actuarial Accrued Liability
A. Determination of Actuarial Accrued Liability (AAL)			
1. Active members			
a. Retirement annuities	$ 19,098	$ 4,012	$ 15,086
b. Disability benefits	-	-	-
c. Survivor's benefits	312	96	216
d. Deferred retirements	-	88	(88)
e. Refunds*	-	11	(11)
f. Total	$ 19,410	$ 4,207	$ 15,203
2. Deferred retirements with future augmentation	40,097	-	40,097
3. Former members without vested rights	-	-	-
4. Benefit recipients	172,400	-	172,400
5. Total	$ 231,907	$ 4,207	$ 227,700
B. Determination of Unfunded Actuarial Accrued Liability (UAAL)			
1. Actuarial accrued liability			$ 227,700
2. Current assets (AVA)			-
3. Unfunded actuarial accrued liability			$ 227,700
C. Determination of Supplemental Contribution Rate			
1. Current unfunded actuarial accrued liability to be amortized by June 30, 2026			$ 227,700
2. Supplemental contribution amount			25,300 **

* *Includes non-vested refunds and non-married survivor benefits only.*

** *The amortization factor as of July 1, 2017 is 9.0000.*

Development of Costs

Changes in Unfunded Actuarial Accrued Liability (UAAL)
(Dollars in Thousands)

		Year Ending June 30, 2017
A. Unfunded actuarial accrued liability at beginning of year	$	218,514
B. Changes due to interest requirements and current rate of funding		
1. Normal cost, including expenses		1,229
2. Contributions		(8,796)
3. Interest on A., B.1. and B.2.		-
4. Total *(B.1. + B.2. + B.3.)*	$	(7,567)
C. Expected unfunded actuarial accrued liability at end of year *(A. + B.4.)*	$	210,947
D. Increase (decrease) due to actuarial losses (gains) because of experience deviations from expected		
1. Age and service retirements		(192)
2. Disability retirements		-
3. Death-in-service benefits		39
4. Withdrawals		25
5. Salary increases		581
6. Investment income		-
7. Mortality of annuitants		627
8. Other items		1,800
9. Total	$	2,880
E. Unfunded actuarial accrued liability at end of year before plan amendments and changes in actuarial assumptions *(C. + D.9.)*	$	213,827
F. Change in unfunded actuarial accrued liability due to changes in plan provisions		-
G. Change in unfunded actuarial accrued liability due to changes in actuarial assumptions		13,873
H. Change in unfunded actuarial accrued liability due to changes in actuarial methods		-
I. Unfunded actuarial accrued liability at end of year *(E. + F. + G. + H.)*		227,700

Development of Costs

Determination of Contribution Sufficiency/(Deficiency)*

The required contribution is defined in Minnesota Statutes as the sum of normal cost, a supplemental contribution to amortize the UAAL, and an allowance for expenses. The dollar amounts shown are for illustrative purposes and equal percent of payroll multiplied by projected annual payroll.

	Percent of Payroll	Dollar Amount (000s)
A. Statutory Contributions - Chapter 352		
1. Employee contributions	9.00%	$ 73
2. Employer contributions	0.00%	-
3. Total	9.00%	$ 73
B. Required Contributions - Chapter 356		
1. Normal cost		
a. Retirement benefits	137.07%	$ 1,116
b. Disability benefits	0.00%	-
c. Survivors	3.67%	30
d. Deferred retirement benefits	4.04%	33
e. Refunds	0.56%	4
f. Total	145.34%	$ 1,183
2. Supplemental contribution amortization of Unfunded Actuarial Accrued Liability by June 30, 2026	3,108.11%	$ 25,300
3. Allowance for expenses	4.36%	35
4. Total	3,257.81% *	$ 26,518
C. Contribution Sufficiency/(Deficiency) *(A.3. - B.4.)*	(3,248.81%)	$ (26,445)

* *Plan is funded by annual appropriations from the State's General Fund. Estimated benefit payments of $9,160 are expected to be paid during the upcoming fiscal year.*

Note: Projected annual payroll for fiscal year beginning on the valuation date: $814 (based on methods prescribed in the LCPR Standards for Actuarial Work).

Development of Costs

Elective State Officers Retirement Plan *(Dollars in Thousands)*

The Elective State Officers Retirement Plan was consolidated with the Legislators Retirement Plan on July 1, 2013, per 2013 legislation. These liabilities are included in the Unfunded Actuarial Accrued Liabilities on page 16 of this report.

Year Ending June 30, 2017

Group	Number	Annual Benefits	Average Age	Actuarial Accrued Liability
Deferred, Vested	0	N/A	N/A	$ -
Service Retirements	9	$ 366	81.9	$ 4,926
Survivors	3	$ 126	86.4	$ 1,537
Total	**12**	**$ 492**	**83.0**	**$ 6,463**

Actuarial Basis

Actuarial Methods

All actuarial methods are prescribed by Minnesota Statutes, the Legislative Commission on Pensions and Retirement, or the MSRS Board of Directors. Different methodologies may also be reasonable and results based on other methodologies would be different.

Actuarial Cost Method

Actuarial accrued liability and required contributions in this report are computed using the Entry Age Normal Cost method. This method is prescribed by Minnesota Statute. Under this method, a normal cost is developed by amortizing the actuarial value of benefits expected to be received by each active participant (as a level percentage of pay) over the total working lifetime of that participant, from hire to termination. Age as of the valuation date was calculated based on the dates of birth provided by the Fund. Entry age for valuation purposes was calculated as the age on the valuation date minus the provided years of service on the valuation date.

To the extent that current assets and future normal costs do not support participants' expected future benefits, an Unfunded Actuarial Accrued Liability ("UAAL") develops. The UAAL is amortized over the statutory amortization period using level dollar. The total contribution developed under this method is the sum of normal cost, expenses, and the payment toward the UAAL.

Asset Valuation Method

Market Value (consistent with valuations since July 1, 2000).

Payment on the Unfunded Actuarial Accrued Liability

The unfunded liability is amortized as a level dollar each year to the statutory amortization date of June 30, 2026. If the Unfunded Actuarial Accrued Liability is negative, the surplus amount shall be amortized over 30 years as a level dollar amount. If the unfunded liability increases due to changes in benefits, assumptions, or methods, the statutory amortization date may be extended.

Valuation of Future Post-Retirement Benefit Increases

If the State Employees Retirement Fund (SERF) has reached the accrued liability funding ratio threshold (determined on a market value of assets basis) required to pay a 2.50% benefit increase in this plan, Minnesota Statutes require the 2.50% benefit increase rate to be reflected in the liability calculations. If the SERF has not yet reached the accrued liability funding ratio threshold required to pay a 2.50% benefit increase, Minnesota Statutes require a projection to be performed to determine the expected attainment of the threshold, and the expected reversion to a 2.50% benefit increase rate must be reflected in the liability calculations.

Actuarial Basis

Actuarial Methods (Concluded)

Funding Objective

This plan is primarily funded on a pay-as-you-go basis, offset by active Legislators Retirement Fund member contributions and annual appropriations from the State's General Fund.

Changes in Methods since Prior Valuation

There have been no changes in actuarial methods since the prior valuation.

Actuarial Basis

Summary of Actuarial Assumptions

The following assumptions were used in valuing the liabilities and benefits under the plan. All actuarial assumptions are prescribed by Minnesota Statutes, the Legislative Commission on Pensions and Retirement (LCPR), or the MSRS Board of Directors. These parties are responsible for selecting the assumptions used for this valuation. The mortality assumption is based on the State Employees Retirement Fund experience study, dated June 30, 2015. Unless noted otherwise, all other assumptions prescribed are based on the last assumption review, dated January 2012, prepared by a former actuary, and are consistent with the *Alternate Assumptions* used in the 2011 valuation. The Allowance for Combined Service Annuity assumptions are based on an analysis completed by the LCPR actuary and documented in a report dated October 2016.

Investment return	0.00% per annum.
Benefit increases after retirement	2.00% per annum.
Salary increases	5.00% annually.
Inflation	2.75% annually.
Mortality rates	
Healthy Pre-retirement	RP-2014 employee generational mortality table projected with mortality improvement Scale MP-2015 from a base year of 2014, white collar adjustment, set forward one year for males and no adjustment for females.
Healthy Post-retirement	RP-2014 annuitant generational mortality table projected with mortality improvement Scale MP-2015 from a base year of 2014, white collar adjustment, set forward two years for males and no adjustment for females. The RP-2014 employee mortality table as published by the Society of Actuaries (SOA) contains mortality rates for ages 18 to 80 and the annuitant mortality table contains mortality rates for ages 50 to 120. We have extended the annuitant mortality table as needed for members younger than age 50 who are receiving a benefit by deriving rates based on the employee table and the juvenile table. Similarly, we have extended the employee table as needed for members older than age 80 by deriving rates based on the annuitant table.
Retirement	Members retiring from active status are assumed to retire according to the age related rates shown in the rate table. Members who have attained the highest assumed retirement age are assumed to retire in one year.
Withdrawal	Ultimate rates based on actual experience. Rates are shown in rate table.
Disability	None.
Allowance for combined service annuity	None.

Actuarial Basis

Summary of Actuarial Assumptions (Continued)

Administrative expenses	Prior year administrative expenses expressed as percentage of prior year projected payroll.
Refund of contributions	Account balances accumulate interest until normal retirement date and are discounted back to the valuation date. All employees withdrawing after becoming eligible for a deferred benefit take the larger of their contributions accumulated with interest or the value of their deferred benefit.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at age 62.
Percentage married	85% of active members are assumed to be married. Legislators in payment status are assumed to be 100% married for purposes of a death benefit, except if reported with a joint & survivor benefit. 100% of Elective State Officers members are assumed to be eligible for the automatic survivor benefit.
Age of spouse	Females are assumed to be three years younger than their spouses, and males are assumed to be three years older than their spouses.
Eligible children	Each member may have two dependent children depending on member's age. Assumed first born child born at member's age 28 and second born child at member's age 31.
Form of payment	Active married members are assumed to elect 50% joint and survivor annuity. Active single members and deferred members are assumed to elect a life annuity. Unless reported with a joint & survivor option, retired members are assumed to have a spouse that is eligible for the automatic survivor benefit. Deferred Elective State Officers Retirement Fund members are assumed to elect a life annuity with automatic survivor benefits.
Eligibility testing	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
Decrement operation	Withdrawal decrements do not operate during retirement eligibility. Decrements are assumed to occur mid-fiscal year.
Service credit accruals	It is assumed that members accrue one year of service credit per year.
Pay increases	Pay increases are assumed to happen at the beginning of the fiscal year. This is equivalent to assuming that reported earnings are pensionable earnings for the year ending on the valuation date.

Summary of Actuarial Assumptions (Continued)

Unknown data for certain members	To prepare this report, GRS has used and relied on participant data supplied by the Fund. Although GRS has reviewed the data in accordance with Actuarial Standards of Practice No. 23, GRS has not verified or audited any of the data or information provided.

In cases where submitted data was missing or incomplete, the following assumptions were applied:

Legislators Retirement Plan

Data for active members:
There were no members reported with zero or invalid salary.

There were no members reported with missing service.

There were no members reported with missing or invalid gender or birth dates.

Data for terminated members:
There were 10 members reported without a benefit. If available, we calculated benefits for these members using the reported Average Salary and credited service. If Average Salary was also not reported (9 members), we assumed a value of $30,000. There were no members reported without credited service or a termination date.

There were no members reported with missing or invalid gender or birth dates.

Data for members receiving benefits:
There was one member reported with missing gender. We assumed female gender. There were no members reported with missing or invalid birth dates or benefits.

There were 292 retired members reported:

- 111 members were reported with the 75% or 100% joint and survivor option. These members were valued as indicated by the option elected.
- 180 members were reported with a life annuity and one member was reported with the 50% joint and survivor option. All of these members were valued as a 50% joint and survivor annuity per MSRS' direction.

Of the 292 retired members, 147 members had an invalid or missing survivor gender and 139 members had a missing or invalid survivor date of birth. We used the valuation assumptions if the survivor gender or date of birth was missing or invalid.

There were no retirees reported with a bounce back annuity and an unreasonable reduction factor.

There were no survivors reported on the data file with an expired benefit.

Actuarial Basis

Summary of Actuarial Assumptions (Continued)

Unknown data for certain members	**Elective State Officers Retirement Plan** There were no members reported with missing gender, birth dates or benefit amounts. <u>Data for members receiving benefits:</u> All retired and deferred members were reported with a life annuity option. Members were assumed to have a spouse that is eligible for the automatic survivor benefits. Valuation assumptions were used if the survivor gender (6 members) or date of birth (6 members) were missing or invalid.
Changes in actuarial assumptions	The Allowance for Combined Service Annuity was changed from 30% for terminated members to 0% for all members. The base mortality table for healthy annuitants and employees was changed from the RP-2000 fully generational table to the RP-2014 fully generational table (with a base year of 2014), white collar adjustments, with age adjustments. The mortality improvement scale was changed from Scale AA to Scale MP-2015.

Actuarial Basis

Summary of Actuarial Assumptions (Concluded)

	Percent of Members Dying Each Year*			
	Healthy Post-Retirement Mortality**		Healthy Pre-Retirement Mortality**	
Age in 2017	Male	Female	Male	Female
20	0.03%	0.01%	0.03%	0.01%
25	0.04	0.02	0.03	0.01
30	0.06	0.05	0.03	0.02
35	0.09	0.08	0.04	0.02
40	0.14	0.11	0.04	0.03
45	0.20	0.15	0.07	0.05
50	0.29	0.20	0.12	0.09
55	0.42	0.27	0.21	0.14
60	0.59	0.38	0.36	0.20
65	0.89	0.63	0.63	0.30
70	1.47	1.00	1.10	0.52

* *Generally, mortality rates are expected to increase as age increases. These standard mortality rates have been adjusted slightly to prevent decreasing mortality rates. If the rates were not adjusted as described, we would not expect the valuation results to be materially different.*

** *Rates are adjusted for mortality improvements using Scale MP-2015 from a base year of 2014.*

Age	Percent Retiring
60	0.00%
61	0.00
62	40.00
63	30.00
64	30.00
65	40.00
66	30.00
67	25.00
68	25.00
69	25.00
70	30.00
71+	100.00

	Percent Terminating (Withdrawing)	
Service	House	Senate
1	0.0%	0.0%
2	30.0	0.0
3	0.0	0.0
4	20.0	25.0
5	0.0	0.0
6	10.0	0.0
7	0.0	0.0
8	5.0	10.0
9+	0.0	0.0

Actuarial Basis

Summary of Plan Provisions – Legislators Retirement Plan

Following is a summary of the major plan provisions used in the valuation of this report. MSRS is solely responsible for the validity, accuracy and comprehensiveness of this information. If any of the plan provisions shown below are not accurate and complete, the valuation results may differ significantly from those shown in this report and may require a revision of this report.

Plan year	July 1 through June 30.
Eligibility	Members of the State Legislature first elected to office before July 1, 1997, and who elect to retain coverage under this plan (i.e., do not elect Social Security coverage). Plan is closed to new members.
Contributions	
Member	9.00% of salary which must be paid to the state's General Fund.
Employer	Plan is funded by annual appropriations from the state's General Fund. Employee contributions are "picked up" according to the provisions of Internal Revenue Code 414(h).
Allowable service	Service while in an eligible position.
Salary	Compensation received for service as a member of the legislature. Salary includes the monthly compensation paid to a legislator and the per diem payments paid during a regular or special session. Salary does not include additional compensation attributable to a leadership position.
Average salary	Average of the five highest successive years of salary.
Retirement	
Normal retirement benefit	
Age/Service requirements	Age 62 and either six full years of service or service during all or part of four regular legislative sessions. For eligibility purposes, service does not include credit for time not served when a member does not serve a full term of office.
Amount	A percentage of Average Salary for each year of service as follows: First elected prior to January 1, 1979: (a) 5.00% for the first eight years of service prior to January 1, 1979; and (b) 2.50% for subsequent years. Elected after December 31, 1978: (a) 2.50%.
Early retirement benefit	
Age/service requirements	Age 55 and either six full years of service or service during all or part of four regular legislative sessions.

Summary of Plan Provisions – Legislators Retirement Plan (Continued)

Retirement (Continued)	
Early retirement benefit (Continued)	
Amount	Normal retirement benefit based on service and Average Salary at retirement date and actuarially reduced for each month the member is under age 62 assuming augmentation to age 62 at 3.00% per year.
Form of payment	Paid as a 50% joint and survivor annuity to member, spouse and dependent children. Annuitants may elect 100% joint and survivor bounce back annuity, life annuity, or a term certain and life annuity on an actuarially equivalent basis.
Benefit increases	Since 2011, benefit recipients have received annual 2.00% benefit increases. When the accrued liability funding ratio (determined on a market value of assets basis) of the State Employees Retirement Fund (SERF) reaches or exceeds 90% for two consecutive years, the benefit increase will revert to 2.50%. If, after reverting to a 2.50% increase, the SERF accrued liability funding ratio declines to 80% or less for the most recent valuation year or 85% or less for two consecutive years, the benefit increase will decrease to 2.00%. A benefit recipient who has been receiving a benefit for at least 12 full months as of the June 30 of the calendar year immediately before the adjustment will receive a full increase. Members receiving benefits for at least one month but less than 12 full months as of the June 30 of the calendar year immediately before the adjustment will receive a pro rata increase.
Disability	No additional benefits provided beyond standard plan. Treated as retirement or termination, depending on age and service at termination.
Death	
Surviving spouse benefit	
Age/Service requirement	Death while active, or after termination if service requirements for a normal retirement benefit is met but payments have not begun.
Amount	Survivor payments of 50% of the retirement benefit of the member assuming the member had attained normal retirement age and had a minimum of eight years of service. Benefit is paid for life. A former member's benefit is augmented as a Deferred Annuity to date of death before determining the portion payable to the spouse. If the legislator was at least age 60 at death, the surviving spouse may elect an optional joint and survivor annuity. If a deferred benefit was not eligible to be in pay status before July 1, 1997, an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.
Benefit increases	Same as for retirement.

Summary of Plan Provisions – Legislators Retirement Plan (Continued)

Death (Continued)

Surviving dependent children's benefit

Age/Service requirement	Same as spouse's benefit.
Amount	Benefit for first child is 25.00% of the retirement benefit (computed as for surviving spouse) with 12.50% for each additional child. Maximum payable (including spouse) is 100.00% of the retirement benefit. Benefits cease when a child marries or attains age 18 (22 if a full-time student).
Benefit increases	Same as retirement.

Refund of contributions

Age/Service requirement	Member dies before receiving any retirement benefits and survivor benefits are not payable.
Amount	Member's contributions with 6.00% annual interest compounded daily until June 30, 2011, and 4.00% thereafter.

Termination

Refund of contributions

Age/Service requirement	Termination of service.
Amount	Member's contributions with 6.00% annual interest compounded daily until June 30, 2011, and 4.00% thereafter. If a member is vested, a deferred annuity may be elected in lieu of a refund.

Deferred benefit

Age/service requirement	Same service requirements as for normal retirement.
Amount	Benefit computed under law in effect at termination and increased by the following annual augmentation percentage: (a.) 0.00% before July 1, 1973; (b.) 5.00% from July 1, 1973, to January 1, 1981; (c.) 3.00% until the earlier of January 1 of the year following attainment of age 55 and January 1, 2012; (d.) 5.00% until the earlier of January 1, 2012, and when the annuity begins; and (e.) 2.00% from January 1, 2012, forward. Amount is payable at normal or early retirement. For members who terminated prior to July 1, 1997, but were not eligible to commence their pensions before July 1, 1997, the benefit shall be increased to reflect the actuarial equivalent change in post-retirement interest rate from 5.00% to 6.00%.

Actuarial Basis

Summary of Plan Provisions – Legislators Retirement Plan (Concluded)

Adjustments for benefits not in pay status	Benefits are adjusted on an actuarial equivalent basis to reflect the 1997 change in post-retirement interest rate assumption from 5.00% to 6.00%.
Actuarial equivalent factors	Actuarially equivalent factors based on RP-2014 mortality for healthy annuitants, white collar adjustment, male rates set forward two years, projected to 2019 using Scale MP-2015, blended 50% males, 5.88% post-retirement interest, and 8.00% pre-retirement interest. Based upon statutory requirements, joint and survivor factors are based on an interest assumption of 6.50%.
Combined service annuity	Members are eligible for combined service benefits if they: (a.) Have sufficient allowable service in total that equals or exceeds the applicable service credit vesting requirement of the retirement plan with the longest applicable service credit vesting requirement; (b.) Have at least six months of allowable service credit in each plan worked under; and (c.) Are not in receipt of a benefit from another plan, or have applied for benefits with an effective date within one year. Members who meet the above requirements must have their benefit based on the following: (a.) Allowable service in all covered plans are combined in order to determine eligibility for early retirement. (b.) Average salary is based on the high five consecutive years during their entire service in all covered plans.
Changes in Plan Provisions	Actuarial equivalent factors were updated to reflect current mortality and interest assumptions, effective January 1, 2017. This change did not have a material impact on the liabilities.

Actuarial Basis

Summary of Plan Provisions – Elective State Officers Retirement Plan

Following is a summary of the major plan provisions used in the valuation of this report. MSRS is solely responsible for the validity, accuracy and comprehensiveness of this information. If any of the plan provisions shown below are not accurate and complete, the valuation results may differ significantly from those shown in this report and may require a revision of this report.

Plan year	July 1 through June 30
Eligibility	Must be employed as a "Constitutional Officer" first elected prior to July 1, 1997, and must elect to retain coverage under this plan (i.e., does not elect Social Security coverage). Plan is closed to new members since July 1, 1997.
Contributions	Plan is funded by annual appropriations from the State's General Fund.
Allowable service	Service while in an eligible position as a constitution officer.
Salary	Salary upon which Elective State Officers Retirement Fund contributions have been made.
Average salary	Average of the five highest successive years of Salary.
Retirement	
Normal retirement benefit	
Age/Service requirements	Age 62 and eight years of Allowable Service.
Amount	2.50% of Average Salary for each year of Allowable Service. For members who terminated service after June 30, 1997, an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.
Early retirement benefit	
Age/Service requirement	Age 60 and eight years of Allowable Service.
Amount	Normal retirement benefit based on Allowable Service and Average Salary at retirement date with reduction of 0.50% for each month the member is under age 62 at the time of retirement.
Form of Payment	Life annuity.
Benefit increases	Since 2011, benefit recipients have received annual 2.00% benefit increases. When the accrued liability funding ratio (determined on a market value of assets basis) of the State Employees Retirement Fund (SERF) reaches or exceeds 90% for two consecutive years, the benefit increase will revert to 2.50%. If, after reverting to a 2.50% increase, the SERF accrued liability funding ratio declines to 80% or less for the most recent valuation year or 85% or less for two consecutive years, the benefit increase will decrease to 2.00%.

Actuarial Basis

Summary of Plan Provisions – Elective State Officers Retirement Plan (Continued)

Retirement (Continued)	
Early retirement benefit	
Benefit increases (Continued)	A benefit recipient who has been receiving a benefit for at least 12 full months as of the June 30 of the calendar year immediately before the adjustment will receive a full increase. Members receiving benefits for at least one month but less than 12 full months as of the June 30 of the calendar year immediately before the adjustment will receive a pro rata increase.
Disability	No additional benefits provided beyond standard plan. Treated as retirement or termination, depending on age and Allowable Service as of disablement.
Death	
Surviving spouse benefit	
Age/Service requirement	Death while active, or after retirement, or after termination but prior to retirement with at least eight years of Allowable Service.
Amount	Survivor payments of 50% of the retirement benefit of the member assuming the member had attained age 62 and had a minimum of eight years of Allowable Service. A former member's benefit is augmented as a Deferred Annuity to date of death before determining the portion payable to the spouse. If a member dies prior to July 1, 1997, and the beneficiary was not eligible to commence a survivor benefit as of July 1, 1997, an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.
Benefit increases	Same as for retirement.
Surviving dependent children's benefit	
Age/Service requirement	Same as spouse's benefit.
Amount	Benefit for first child is 25.00% of the retirement benefit (computed as for surviving spouse) with 12.50% for each additional eligible child. Maximum payable (including spouse) is 100.00% of the retirement benefit. Benefits cease when a child marries or attains age 18 (22 if a full-time student).
Benefit increases	Same as for retirement.
Termination	
Refund of contributions	
Age/Service requirement	Termination of service.

Actuarial Basis

Summary of Plan Provisions – Elective State Officers Retirement Plan (Continued)

Termination (Concluded)	
<u>**Refund of contributions (Concluded)**</u>	
Amount	Member's contributions with 6.00% interest compounded daily to July 1, 2011, and 4.00% compounded daily thereafter. If a member is vested, a deferred annuity may be elected in lieu of a refund.
<u>**Deferred benefit**</u>	
Age/service requirement	Eight years of Allowable Service.
Amount	Benefit computed under law in effect at termination and increased by the following annual augmentation percentage: (a.) 0.00% before July 1, 1979; (b.) 5.00% from July 1, 1979, to January 1, 1981; (c.) 3.00% until age 55, or until January 1, 2012, whichever is earlier; (d.) 5.00% thereafter until the annuity begins but prior to January 1, 2012; and (e.) 2.00% from January 1, 2012, thereafter. Amount is payable at normal or early retirement. If a member terminated prior to July 1, 1997, but was not eligible to commence his or her pension before July 1, 1997, an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.
Combined service annuity	Members are eligible for combined service benefits if they: (a.) Have sufficient allowable service in total that equals or exceeds the applicable service credit vesting requirement of the retirement plan with the longest applicable service credit vesting requirement; (b.) Have at least six months of allowable service credit in each plan worked under; and (c.) Are not in receipt of a benefit from another plan, or have applied for benefits with an effective date within one year.

Actuarial Basis

Summary of Plan Provisions – Elective State Officers Retirement Plan (Concluded)

Combined service annuity (Continued)	Members who meet the above requirements must have their benefit based on the following: (a.) Allowable service in all covered plans are combined in order to determine eligibility for early retirement. (b.) Average salary is based on the high five consecutive years during their entire service in all covered plans.
Actuarial Equivalent Factors	Actuarially equivalent factors based on RP-2014 mortality for healthy annuitants, white collar adjustment, male rates set forward two years, projected to 2019 using Scale MP-2015, blended 50% males, 5.88% post-retirement interest, and 8.00% pre-retirement interest. Based upon statutory requirements, joint and survivor factors are based on an interest assumption of 6.50%.
Changes in Plan Provisions	Actuarial equivalent factors were updated to reflect current mortality and interest assumptions, effective January 1, 2017. This change did not have a material impact on the liabilities.

Additional Schedules

Schedule of Funding Progress[1] *(Dollars in Thousands)*

Legislators Retirement Fund

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded (Overfunded) AAL (UAAL) (b)-(a)	Funded Ratio (a)/(b)	Actual Covered Payroll (Previous FY) (c)	UAAL as a Percentage of Covered Payroll (b)-(a) / (c)
07/01/1991	$ 14,694	$ 30,403	$ 15,709	48.33%	$ 7,078	221.94%
07/01/1992	15,160	33,224	18,064	45.63	6,556	275.53
07/01/1993	17,169	36,801	19,632	46.65	7,322	268.12
07/01/1994	18,738	45,448	26,710	41.23	6,589	405.37
07/01/1995	21,213	50,255	29,042	42.21	7,056	411.59
07/01/1996	22,532	54,225	31,693	41.55	6,267	505.71
07/01/1997	25,678	60,055	34,377	42.76	7,767	442.60
07/01/1998	31,212	62,928	31,716	49.60	6,802	466.27
07/01/1999	33,474	66,418	32,944	50.40	7,490	439.84
07/01/2000	37,265	69,364	32,099	53.72	5,808	552.67
07/01/2001	42,608	75,072	32,464	56.76	5,858	554.18
07/01/2002	45,501	78,070	32,569	58.28	5,089	639.99
07/01/2003[2]	-	-	-	-	-	-
07/01/2004	46,155	83,197	37,042	55.48	3,815	970.89
07/01/2005	45,523	81,836	36,314	55.63	3,014	1,204.84
07/01/2006	48,504	81,361	32,858	59.62	2,894	1,135.45
07/01/2007	44,869	86,449	41,580	51.90	2,380	1,747.42
07/01/2008	39,209	86,131	46,922	45.52	1,993	2,354.34
07/01/2009	28,663	90,431	61,768	31.70	1,963	3,146.61
07/01/2010	26,821	86,236	59,415	31.10	1,877	3,165.42
07/01/2011[3]	19,140	216,559	197,419	8.84	1,774	11,128.47
07/01/2012	15,523	247,657	232,134	6.27	1,378 [4]	16,845.72
07/01/2013	11,493	235,877	224,384	4.87	1,233 [4]	18,198.22
07/01/2014[5]	8,258	250,860	242,602	3.29	1,122 [4]	21,622.28
07/01/2015	3,430	230,219	226,789	1.49	1,700 [4]	13,340.53
07/01/2016	-	218,514	218,514	0.00	989 [4]	22,094.44
07/01/2017	-	227,700	227,700	0.00	889 [4]	25,613.05

1 *Information prior to 2012 provided by prior actuaries. See prior reports for additional detail.*
2 *An actuarial valuation was not completed as of July 1, 2003.*
3 *Based on the alternate assumptions, including an investment return assumption of 0%.*
4 *Assumed equal to actual member contributions divided by 9%.*
5 *Effective July 1, 2013, the Elective State Officers Retirement Fund was administratively consolidated with the Legislators Retirement Fund, first combined as of July 1, 2014 in this exhibit.*

Additional Schedules

Schedule of Funding Progress[1] *(Dollars in Thousands)*

Elective State Officers Retirement Fund

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded (Overfunded) AAL (UAAL) (b) - (a)	Funded Ratio (a)/(b)	Actual Covered Payroll (Previous FY) (c)	UAAL as a Percentage of Covered Payroll [(b)-(a)]/(c)
7-1-1991	$ 308	$ 2,249	$ 1,941	13.69%	$ 422	459.95 %
7-1-1992	334	2,380	2,046	14.03	378	541.27
7-1-1993	322	2,689	2,367	11.97	500	473.40
7-1-1994	361	2,848	2,487	12.68	411	605.11
7-1-1995	378	2,948	2,570	12.82	422	609.00
7-1-1996	412	2,983	2,571	13.81	456	563.82
7-1-1997	456	3,214	2,758	14.19	467	590.58
7-1-1998	500	3,369	2,869	14.84	461	622.34
7-1-1999	198	3,373	3,175	5.87	291	1091.07
7-1-2000	199	3,535	3,336	5.63	-	N/A
7-1-2001	201	3,775	3,574	5.32	-	N/A
7-1-2002	201	4,075	3,874	4.93	-	N/A
7-1-2003 [2]						
7-1-2004	204	4,002	3,798	5.09	-	N/A
7-1-2005	204	4,065	3,861	5.03	-	N/A
7-1-2006	207	3,970	3,763	5.22	-	N/A
7-1-2007	212	3,969	3,757	5.33	-	N/A
7-1-2008	212	3,908	3,696	5.43	-	N/A
7-1-2009	213	3,886	3,673	5.49	-	N/A
7-1-2010	214	3,782	3,568	5.66	-	N/A
7-1-2011 [3]	-	7,610	7,610	0.00	-	N/A
7-1-2012	-	8,907	8,907	0.00	-	N/A
7-1-2013[4]	-	8,595	8,595	0.00	-	N/A

[1] *Information prior to 2012 provided by prior actuaries. See prior reports for additional detail.*
[2] *An actuarial valuation was not completed as of July 1, 2003.*
[3] *Based on the alternate assumptions, including an investment return assumption of 0%.*
[4] *Effective July 1, 2013, the Elective State Officers Retirement Fund was administratively consolidated with the Legislators Retirement Fund. Effective July 1, 2014 combined results are shown with the Legislators Retirement Fund exhibit.*

Additional Schedules

Schedule of Contributions from the Employer and Other Contributing Entities[1] *(Dollars in Thousands)*

Legislators Retirement Fund

Plan Year Ended June 30	Actuarially Required Contribution Rate (a)	Actual Covered Payroll (b)	Actual Member Contributions (c)	Annual Required Contributions [(a)x(b)] - (c) = (d)	Actual Employer Contributions[2] (e)	Percentage Contributed (e)/(d)
1991	32.62 %	$ 7,078	$ 637	$ 1,672	$ 1,889	112.98 %
1992	27.67	6,556	590	1,224	601	49.10
1993	30.49	7,322	659	1,573	2,284	145.20
1994	32.12	6,589	593	1,457	1,618	111.05
1995	38.34	7,056	635	2,070	2,938	141.93
1996	41.54	6,267	564	2,039	1,511	74.10
1997	43.96	7,767	699	2,715	3,176	116.98
1998	48.03	6,802	612	2,655	5,199	195.82
1999	47.19	7,490	674	2,861	2,091	73.09
2000	52.72	5,808	523	2,539	3,192	125.72
2001	47.26	5,858	527	2,241	5,039	224.85
2002	60.14	5,089	458	2,603	4,135	158.86
2003 [3]	63.12	-	-	-	-	-
2004	63.12	3,815	343	2,065	425	20.58
2005	104.72	3,014	384	2,773	1,822	65.71
2006	112.64	2,894	264	2,995	5,684	189.78
2007	111.24	2,380	239	2,408	1,772	73.59
2008	171.10	1,993	180	3,230	2,217	68.64
2009	243.21	1,963	248	4,526	1,269	28.04
2010	413.00	1,877	170	7,582	1,975	26.05
2011	432.92	1,774	160	7,520	2,805	37.30
2012 [4]	1,320.95	1,378 [5]	124	18,079	3,935	21.77
2013	1,340.00	1,233 [5]	111	16,411	3,399	20.71
2014 [6]	1,887.98	1,122 [5]	101	21,082	3,436	16.30
2015	2,287.58	1,700 [5]	153	38,736	3,216	8.30
2016	2,204.22	989 [5]	89	21,711	5,087	23.43
2017	2,578.68	889 [5]	80	22,844	8,716	38.15
2018	3,257.81	N/A [5]	N/A	N/A	N/A	N/A

1 *Information prior to 2012 provided by prior actuary. See prior reports for additional detail.*
2 *Includes contributions from other sources (if applicable). Information for 2004 to 2012 provided by MSRS.*
3 *An actuarial valuation for this fiscal year was not completed.*
4 *Based on the alternate assumptions, including an investment return assumption of 0%.*
5 *Assumed equal to actual member contributions divided by 9%.*
6 *Effective July 1, 2013, the Elective State Officers Retirement Fund was administratively consolidated with the Legislators Retirement Fund, first combined for plan year ending June 30, 2014 in this exhibit.*

Additional Schedules

Schedule of Contributions from the Employer and Other Contributing Entities[1] *(Dollars in Thousands)*

Elective State Officers Retirement Fund

Plan Year Ended June 30	Actuarially Required Contribution Rate/Amount[2] (a)	Actual Covered Payroll (b)	Actual Member Contributions (c)	Annual Required Contributions[3] [(a)x(b)] - (c) = (d)	Actual Employer Contributions (e)	Percentage Contributed (e)/(d)
1991	34.84%	$ 422	$ 38	$ 109	$ 40	36.70%
1992	33.28	378	34	92	111	120.65
1993	36.23	500	45	136	88	64.71
1994	38.64	411	37	122	164	134.43
1995	42.00	422	38	139	165	118.71
1996	43.58	456	41	158	151	95.57
1997	43.49	467	42	161	167	103.73
1998	51.07	461	42	193	175	90.67
1999	51.66	291	26	124	40	32.26
2000	$ 321	-	-	321	306	95.33
2001	340	-	-	340	330	97.06
2002	371	-	-	371	354	95.42
2003	412	-	-	412	371	90.12
2004	412	-	-	412	383	92.88
2005	437	-	-	437	395	90.37
2006	465	-	-	465	417	89.66
2007	477	-	-	477	427	89.57
2008	506	-	-	506	435	85.92
2009	558	-	-	558	442	79.28
2010	601	-	-	601	453	75.37
2011	644	-	-	644	460	71.54
2012[4]	1,269	-	-	1,269	466	36.73
2013[5]	991	-	-	991	470	47.43

[1] *Information prior to 2012 provided by prior actuaries. See prior reports for additional detail.*
[2] *Shown as a percent of payroll for years before 2000.*
[3] *For years after 1999, the Annual Required Contribution is the dollar amount shown in (a).*
[4] *Based on the alternate assumptions, including an investment return assumption of 0%.*
[5] *Effective July 1, 2013, the Elective State Officers Retirement Fund was administratively consolidated with the Legislators Retirement Fund. Effective July 1, 2014 combined results are shown with the Legislators Retirement Fund exhibit.*

Glossary of Terms

Accrued Benefit Funding Ratio	The ratio of assets to Current Benefit Obligations.
Accrued Liability Funding Ratio	The ratio of assets to Actuarial Accrued Liability.
Actuarial Accrued Liability (AAL)	The difference between the Actuarial Present Value of Future Benefits, and the Actuarial Present Value of Future Normal Costs.
Actuarial Assumptions	Assumptions about future plan experience that affect costs or liabilities, such as: mortality, withdrawal, disablement, and retirement; future increases in salary; future rates of investment earnings; future investment and administrative expenses; characteristics of members not specified in the data, such as marital status; characteristics of future members; future elections made by members; and other items.
Actuarial Cost Method	A procedure for allocating the Actuarial Present Value of Future Benefits between the Actuarial Present Value of future Normal Costs and the Actuarial Accrued Liability.
Actuarial Equivalent	Of equal Actuarial Present Value, determined as of a given date and based on a given set of Actuarial Assumptions.
Actuarial Present Value (APV)	The amount of funds required to provide a payment or series of payments in the future. It is determined by discounting the future payments with an assumed interest rate and with the assumed probability each payment will be made.
Actuarial Present Value of Projected Benefits	The Actuarial Present Value of amounts which are expected to be paid at various future times to active members, retired members, beneficiaries receiving benefits, and inactive, non-retired members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.
Actuarial Valuation	The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial Valuation for a governmental retirement system typically also includes calculations of items needed for developing and monitoring retirement system's funding policy, such as the Funded Ratio and the Annual Required Contribution (ARC).
Actuarial Value of Assets	The value of the assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets or a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the Funded Ratio and the Actuarially Required Contribution (ARC).

Glossary of Terms (Continued)

Amortization Method	A method for determining the Amortization Payment. Under the Level Percentage of Pay method, the Amortization payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. The stream of payments increases at the rate at which total covered payroll of all active members is assumed to increase.
Amortization Payment	That portion of the plan contribution or ARC which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.
Amortization Period	The period used in calculating the Amortization Payment.
Annual Required Contribution (ARC)	The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation. The ARC consists of the Employer Normal Cost and Amortization Payment.
Augmentation	Annual increases to deferred benefits.
Closed Amortization Period	A specific number of years that is reduced by one each year, and declines to zero with the passage of time. For example if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc.
Current Benefit Obligations	The present value of benefits earned to the valuation date, based on current service and including future salary increases to retirement (comparable to a Projected Unit Credit measurement).
Employer Normal Cost	The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions.
Expected Assets	The present value of anticipated future contributions intended to fund benefits for current members.
Experience Gain/Loss	A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two actuarial valuations. To the extent that actual experience differs from that assumed, Unfunded Actuarial Accrued Liabilities emerge which may be larger or smaller than projected. Gains are due to favorable experience, e.g., the assets earn more than projected, salaries do not increase as fast as assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, losses are the result of unfavorable experience, i.e., actual results that produce Unfunded Actuarial Accrued Liabilities which are larger than projected.
GASB	Governmental Accounting Standards Board.

Glossary of Terms (Concluded)

GASB Statements No. 25 and No. 27	These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 27 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 25 sets the rules for the systems themselves. These statements remain in effect only for pension plans that are not administered as trusts or equivalent arrangements. Please refer to the definition for GASB Statements No. 67 and No. 68 below.
GASB Statement No. 50	The accounting standard governing a state or local governmental employer's accounting for pensions. This statement remains in effect for pension plans that are not administered as trusts. Please refer to the definition of GASB Statements No. 67 and No. 68 below.
GASB Statements No. 67 and No. 68	Statements No. 67 and No. 68, issued in June 2012, replace the requirements of Statements No. 25, No. 27, and No. 50, respectively for pension plans administered as trusts. Statement No. 68, effective for the fiscal year beginning July 1, 2014, sets the accounting and financial reporting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 67, effective for the fiscal year beginning July 1, 2013, sets the rules for the systems themselves. Accounting and financial reporting information prepared according to Statements No. 67 and No. 68 is provided in a separate report beginning with the June 30, 2014 actuarial valuation.
GASB Statement No. 82	Statement No. 82, issued in March 2016, is an amendment to Statements No. 67, No. 68, and No. 73, and is intended to improve consistency in the application of the accounting statements.
Normal Cost	The annual cost assigned, under the Actuarial Cost Method, to the current plan year.
Projected Benefit Funding Ratio	The ratio of the sum of Actuarial Value of Assets and Expected Assets to the Actuarial Present Value of Projected Benefits. A Ratio less than 100% indicates that contributions are insufficient.
Unfunded Actuarial Accrued Liability	The difference between the Actuarial Accrued Liability and Actuarial Value of Assets.
Valuation Date	The date as of which the Actuarial Present Value of Future Benefits is determined. The benefits expected to be paid in the future are discounted to this date.