GRS Gabriel Roeder Smith & Company
Consultants & Actuaries

MINNESOTA STATE RETIREMENT SYSTEM

STATE EMPLOYEES RETIREMENT FUND

ACTUARIAL VALUATION REPORT AS OF JULY 1, 2014

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December 12, 2014

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

Dear Board of Directors:

The results of the July 1, 2014 annual actuarial valuation of the State Employees 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.

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, 2014. 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, 2014.

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

Guidance regarding the selection of economic assumptions for measuring pension obligations is provided by Actuarial Standards of Practice (ASOP) No. 27. A revision of ASOP No. 27, applicable to valuation dates on or after September 30, 2014, will guide assumption setting for future valuations. A recent review of inflation and investment return assumptions for accounting and financial reporting purposes developed a recommended range of 6.99% to 7.92% for the assumed investment return. Additional review and discussion will be required before the next valuation.

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 and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. In addition, Mr. Murphy meets the requirements of "approved actuary" under Minnesota Statutes Section 356.215, Subdivision 1, Paragraph (c).

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge and belief the information contained in this report is accurate and fairly presents the actuarial position of the State Employees Retirement Fund as of the valuation date and was performed in accordance with the requirements of Minnesota Statutes Section 356.215, and the requirements of the Standards for Actuarial Work established by the LCPR. All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board and with applicable statutes.

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

Respectfully submitted,

Brian B. Murphy

Brian B. Murphy, FSA, EA, MAAA

Bonita J. Wurst

Bonita J. Wurst, ASA, EA, MAAA

BBM/BJW:sc

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Summary of Valuation Results

Contributions

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

	Actuarial Valuation as of	
Contributions	**July 1, 2014**	**July 1, 2013**
Statutory Contributions - Chapter 352 (% of Payroll)	11.00%	10.00%
Required Contributions - Chapter 356 (% of Payroll)	12.82%	12.45%
Sufficiency / (Deficiency)	(1.82)%	(2.45)%

The contribution deficiency decreased from (2.45%) of payroll to (1.82%) of payroll. The primary reason for the decreased contribution deficiency is the 1.00% of payroll increase in the statutory contribution rate. The 2014 required contribution reflects additional liability due to the assumption that the post-retirement benefit increase rate will increase from 2.0% to 2.5% in 2016.

Based on the actuarial value of assets and current contribution rates, statutory contributions are not sufficient to fully amortize the unfunded actuarial accrued liability over the statutory amortization period of 27 years. On a market value of assets basis, contributions are sufficient by 1.02% of payroll.

The Plan Assets section provides detail on the plan assets used for the valuation including a development of the actuarial value of assets (AVA). The market value of assets (MVA) earned approximately 18.6% for the plan year ending June 30, 2014. The AVA earned approximately 14.5% for the plan year ending June 30, 2014 as compared to the assumed rate of 8.0%. The assumed rate is mandated by Minnesota Statutes.

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 and financial reporting information prepared according to GASB Statements No. 67 and No. 68 was provided to MSRS in a separate report dated December 1, 2014.

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, 2014	**July 1, 2013**
Contributions (*% of Payroll*)		
Statutory - Chapter 352	11.00%	10.00%
Required - Chapter 356	12.82%	12.45%
Sufficiency / (Deficiency)	(1.82)%	(2.45)%
Funding Ratios (*dollars in thousands*)		
Assets		
- Current assets (AVA)	$ 10,326,272	$ 9,375,780
- Current assets (MVA)	11,498,604	10,033,499
Accrued Benefit Funding Ratio		
- Current benefit obligations	$ 11,916,653	$ 10,925,146
- Funding ratio (AVA)	86.65%	85.82%
- Funding ratio (MVA)	96.49%	91.84%
Accrued Liability Funding Ratio		
- Actuarial accrued liability	$ 12,445,126	$ 11,428,641
- Funding ratio (AVA)	82.97%	82.04%
- Funding ratio (MVA)	92.39%	87.79%
Projected Benefit Funding Ratio		
- Current and expected future assets	$ 12,995,648	$ 11,640,159
- Current and expected future benefit obligations	13,748,525	12,617,051
- Projected benefit funding ratio (AVA)	94.52%	92.26%
Participant Data		
Active Members		
- Number	49,663	49,121
- Projected annual earnings *(000s)*	2,653,367	2,553,156
- Average projected annual earnings	53,427	51,977
- Average age	47.1	47.1
- Average service	12.0	12.2
Service Retirements	29,225	27,654
Survivors	3,686	3,830
Disability Retirements	1,818	1,802
Deferred Retirements	16,472	16,062
Terminated Other Non-Vested	5,818	5,574
Total	**106,682**	**104,043**

Summary of Valuation Results

Effects of Changes

The following changes in plan provisions, actuarial assumptions, and methods were recognized as of July 1, 2014:

- Member and employer contribution rates increased from 5.0% to 5.5% of pay effective the first day of the first full pay period beginning after July 1, 2014.
- Effective July 1, 2014, the actuarial accrued liability funding ratio threshold, on a market value of asset basis, that must be attained to pay a 2.5% post-retirement benefit increase to benefit recipients was changed from 90% for one year to 90% for two consecutive years.
- The methodology for valuing future post-retirement increases was clarified in statutes, and the assumed post-retirement benefit increase rate was changed from 2.0% per year indefinitely to 2.0% per year through 2015 and 2.5% per year thereafter.
- As a result of the additional liability resulting from the change in the assumed post-retirement benefit increase rate, the amortization date was changed from June 30, 2040 to June 30, 2041 per Minnesota Statute 356.215, Subd. 11(c).
- Separate pre-retirement and post-retirement investment return rates which implicitly valued the post-retirement benefit increases were changed to a single investment return assumption and an explicit assumption for post-retirement benefit increases.

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 accrued liability by $581 million and increase the required contribution by 1.7% of pay, as follows:

	Before Plan Changes	Reflecting Plan Changes	Reflecting Assumption and Plan Changes	Reflecting Assumption, Plan and Amortization Changes
Normal Cost Rate, % of Pay	7.0%	7.0%	7.4%	7.4%
Amortization of Unfunded Accrued Liability, % of pay	3.8%	3.8%	5.2%	5.1%
Expenses (% of Pay)	0.3%	0.3%	0.3%	0.3%
Total Required Contribution, % of Pay	11.1%	11.1%	12.9%	12.8%
Accrued Liability Funding Ratio	87.0%	87.0%	83.0%	83.0%
Projected Benefit Funding Ratio	96.7%	99.8%	94.4%	94.5%
Unfunded Accrued Liability (in billions)	$1.5	$1.5	$2.1	$2.1

Summary of Valuation Results

Valuation of Future Annual Post-Retirement Benefit Increases

Benefit recipients receive a future annual compounding 2.0% post-retirement benefit increase. If the funding ratio, determined on a market value of assets basis, reaches 90% (based on a 2.5% post-retirement benefit increase assumption) for two consecutive years, the benefit increase will revert to 2.5%. As of July 1, 2014, this funding ratio exceeds 90%. If this funded ratio exceeds 90% as of the next valuation, the provision for an increased benefit increase will become operative.

To determine an assumption regarding a future change in the post-retirement benefit increase, we performed a projection of liabilities and assets based on the following methods and assumptions:

- Future investment returns and liability discount rates of 8.00% through June 30, 2017; 8.50% thereafter;
- Open group; stable active population (new member profile based on average new members hired in recent years);
- The post-retirement benefit increase rate is assumed to be 2.0% per year until the funding ratio threshold required to pay a 2.5% post-retirement benefit increase is reached; and
- Current statutory contribution levels (i.e., not including potential contribution increases under the contribution stabilizer statutes).

Based on these assumptions and methods, the projection indicates that this plan is expected to attain the funding ratio threshold required to pay a 2.5% post-retirement benefit increase in the year 2015, and that the plan would begin paying 2.5% benefit increases on January 1, 2016. This assumption is reflected in our calculations. This is only an assumption; actual timing will depend on actual experience.

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)*

	Market Value	
	June 30, 2014	June 30, 2013
Assets		
Cash, equivalents, short term securities	$ 292,465	$ 254,574
Fixed income	2,683,530	2,303,788
Equity	8,503,521	7,462,912
Other*	1,260,671	987,992
Total cash, investments, and other assets	**$ 12,740,187**	**$ 11,009,266**
Amounts Receivable	16,188	14,012
Total Assets	**$ 12,756,375**	**$ 11,023,278**
Amounts Payable*	(1,257,771)	(989,779)
Net Position Restricted for Pensions	**$ 11,498,604**	**$ 10,033,499**

** Includes $1,244,402 in Securities Lending Collateral as of June 30, 2014 and $978,479 as of June 30, 2013.*

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, 2014**	**June 30, 2013**
1. Fund balance at market value at beginning of year	$ 10,033,499	$ 9,098,097
2. Adjustment to match restated MSRS fund balance	(61)	0
3. Fund balance at market value at beginning of year *(1.) + (2.)*	**$ 10,033,438**	**$ 9,098,097**
4. Contributions		
a. Member	131,033	124,150
b. Employer	128,037	121,673
c. Other sources	0	0
d. Total contributions	$ 259,070	$ 245,823
5. Investment income		
a. Investment income/(loss)	1,845,607	1,289,067
b. Investment expenses	(15,986)	(13,759)
c. Net investment income/(loss)	1,829,621	1,275,308
6. Other	21,014	21,511
7. Total income: *(4.d.) + (5.c.) + (6.)*	**$ 2,109,705**	**$ 1,542,642**
8. Benefits Paid		
a. Annuity benefits	(623,942)	(586,256)
b. Refunds	(11,986)	(12,222)
c. Total benefits paid	(635,928)	(598,478)
9. Expenses		
a. Other	(486)	(173)
b. Administrative	(8,125)	(8,589)
c. Total expenses	(8,611)	(8,762)
10. Total disbursements: *(8.c.) + (9.c.)*	**(644,539)**	**(607,240)**
11. Fund balance at market value at end of year *(3.) + (7.) + (10.)*	**$ 11,498,604**	**$ 10,033,499**
12. State Board of Investment calculated investment return	18.6%	14.2%

Plan Assets

Actuarial Asset Value *(Dollars in Thousands)*

	June 30, 2014	June 30, 2013
1. Market value of assets available for benefits	**$ 11,498,604**	**$ 10,033,499**
2. Determination of average balance		
a. Total assets available at beginning of year	10,033,438	9,098,097
b. Total assets available at end of year	11,498,604	10,033,499
c. Net investment income for fiscal year	1,829,621	1,275,308
d. Average balance *[a. + b. - c.] / 2*	9,851,211	8,928,144
3. Expected return *[8.0% x 2.d.]*	788,097	714,252
4. Actual return	1,829,621	1,275,308
5. Current year asset gain/(loss) *[4. - 3.]*	1,041,524	561,056
6. Unrecognized asset returns		

	Original Amount	Unrecognized Amount %	Unrecognized Amount $	Unrecognized Amount %	Unrecognized Amount $
a. Year ended June 30, 2014	1,041,524	80%	$ 833,220		N/A
b. Year ended June 30, 2013	561,056	60%	336,634	80%	$ 448,845
c. Year ended June 30, 2012	(554,532)	40%	(221,813)	60%	(332,719)
d. Year ended June 30, 2011	1,121,457	20%	224,291	40%	448,583
e. Year ended June 30, 2010	465,050		N/A	20%	93,010
f. Unrecognized return adjustment			**$ 1,172,332**		**$ 657,719**

	June 30, 2014	June 30, 2013
7. **Actuarial value at end of year** *(1. - 6.f.)*	**$ 10,326,272**	**$ 9,375,780**
8. Approximate return on actuarial value of assets during fiscal year	14.5%	6.3%
9. Ratio of actuarial value of assets to market value of assets	0.90	0.93

Membership Data

Distribution of Active Members

	Years of Service as of June 30, 2014									
Age	**<3***	**3 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 34**	**35+**	**Total**
< 25	1,065	22	3							**1,090**
Avg. Earnings	23,493	34,815	19,265							**23,710**
25 - 29	2,811	577	443	4						**3,835**
Avg. Earnings	33,285	40,073	42,031	45,054						**35,329**
30 - 34	2,345	739	1,729	271	9					**5,093**
Avg. Earnings	37,610	42,867	46,458	48,636	52,341					**41,989**
35 - 39	1,592	481	1,611	917	235	3				**4,839**
Avg. Earnings	39,341	47,198	50,021	55,362	56,752	57,583				**47,571**
40 - 44	1,258	444	1,352	965	672	109	4			**4,804**
Avg. Earnings	40,194	48,308	52,985	56,303	62,727	59,616	46,465			**51,378**
45 - 49	1,199	435	1,279	1,032	992	628	241	14		**5,820**
Avg. Earnings	42,179	47,752	52,703	56,942	62,712	65,658	62,266	58,504		**54,431**
50 - 54	1,196	434	1,377	1,110	1,028	940	1,028	558	29	**7,700**
Avg. Earnings	40,278	48,504	52,342	56,658	60,507	63,426	64,740	60,626	60,476	**55,603**
55 - 59	940	387	1,203	1,086	981	962	1,169	1,056	589	**8,373**
Avg. Earnings	40,879	47,759	51,917	55,631	60,735	62,584	64,354	61,953	59,560	**56,766**
60 - 64	528	249	775	819	730	674	772	623	911	**6,081**
Avg. Earnings	38,526	46,407	51,189	57,160	58,753	61,700	62,019	62,908	63,766	**57,231**
65 - 69	126	73	245	212	227	202	188	101	298	**1,672**
Avg. Earnings	29,211	37,352	49,923	56,434	60,102	59,152	65,919	66,026	65,166	**56,624**
70+	65	27	46	72	33	39	19	14	41	**356**
Avg. Earnings	14,864	18,661	33,191	50,822	59,543	57,343	58,323	54,505	62,536	**42,956**
Total	**13,125**	**3,868**	**10,063**	**6,488**	**4,907**	**3,557**	**3,421**	**2,366**	**1,868**	**49,663**
Avg. Earnings	**36,734**	**45,194**	**50,342**	**55,944**	**60,821**	**62,834**	**63,827**	**62,001**	**62,585**	**50,952**

* *This exhibit does not reflect service earned in other MSRS 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 valuation earnings for the fiscal year ending on the valuation date.

Membership Data

Distribution of Service Retirements

	Years Retired as of June 30, 2014							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
<50	3	17	1					**21**
Avg. Benefit	6,436	4,080	5,177					**4,469**
50 - 54	9	18						**27**
Avg. Benefit	10,894	8,083						**9,020**
55 - 59	374	710	30					**1,114**
Avg. Benefit	16,746	15,266	11,839					**15,671**
60 - 64	869	2,439	1,138	16				**4,462**
Avg. Benefit	19,238	20,366	16,055	12,708				**19,019**
65 - 69	684	3,827	2,678	1,071	17			**8,277**
Avg. Benefit	17,916	19,283	19,607	16,210	16,907			**18,872**
70 - 74	94	941	2,338	2,009	636	1		**6,019**
Avg. Benefit	17,462	17,796	17,876	19,006	16,518	32,079		**18,093**
75 - 79	15	148	441	1,722	1,226	398	4	**3,954**
Avg. Benefit	12,328	15,685	15,342	16,952	18,541	23,956	25,209	**17,914**
80 - 84	5	27	79	263	1,160	971	98	**2,603**
Avg. Benefit	16,876	14,879	11,513	15,193	17,755	25,075	23,867	**20,236**
85 - 89	1	9	19	53	198	943	494	**1,717**
Avg. Benefit	910	13,495	8,245	12,303	16,843	21,159	23,191	**20,777**
90+			2	13	21	174	821	**1,031**
Avg. Benefit			24,544	11,940	10,168	19,830	18,626	**18,584**
Total	**2,054**	**8,136**	**6,726**	**5,147**	**3,258**	**2,487**	**1,417**	**29,225**
Avg. Benefit	**18,142**	**18,942**	**17,962**	**17,436**	**17,701**	**23,047**	**20,598**	**18,686**

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, 2014							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
<45	9	48	28	6		1	1	**93**
Avg. Benefit	7,188	8,899	10,870	7,014		19,879	11,750	**9,354**
45 - 49	4	20	5	5	3			**37**
Avg. Benefit	9,222	8,572	6,539	4,559	6,736			**7,676**
50 - 54	10	30	24	10	7	3		**84**
Avg. Benefit	12,136	7,832	12,361	7,001	8,421	3,530		**9,435**
55 - 59	13	59	46	34	14		2	**168**
Avg. Benefit	16,556	13,407	14,866	11,866	5,571		7,235	**13,012**
60 - 64	33	125	105	61	30	6	3	**363**
Avg. Benefit	16,553	16,991	14,319	10,387	10,578	8,394	5,760	**14,303**
65 - 69	40	131	152	88	38	6	4	**459**
Avg. Benefit	14,582	16,722	16,158	14,244	15,486	13,948	12,150	**15,695**
70 - 74	35	147	139	84	52	32	6	**495**
Avg. Benefit	20,359	16,401	13,603	13,398	16,194	14,637	13,808	**15,218**
75 - 79	45	137	142	112	61	42	7	**546**
Avg. Benefit	18,379	19,177	17,714	17,383	19,140	16,004	12,332	**18,027**
80 - 84	39	147	120	105	70	49	31	**561**
Avg. Benefit	21,949	20,203	19,019	21,689	20,402	21,198	13,607	**20,097**
85 - 89	29	112	116	97	71	68	30	**523**
Avg. Benefit	18,693	20,395	22,691	20,175	22,159	21,008	13,979	**20,720**
90+	15	43	95	70	67	46	21	**357**
Avg. Benefit	22,932	18,748	16,324	19,773	21,644	15,365	15,972	**18,424**
Total	**272**	**999**	**972**	**672**	**413**	**253**	**105**	**3,686**
Avg. Benefit	**17,829**	**17,055**	**16,614**	**16,542**	**18,218**	**17,704**	**13,694**	**16,981**

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

Distribution of Disability Retirements

	Years Disabled as of June 30, 2014							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
< 45	1	7	8	3				**19**
Avg. Benefit	6,505	6,811	3,782	2,579				**4,852**
45 - 49	7	18	9	5	2			**41**
Avg. Benefit	8,128	7,992	7,937	7,621	8,744			**7,995**
50 - 54	17	47	45	22	7	2	2	**142**
Avg. Benefit	10,626	12,589	9,440	8,335	6,923	4,574	3,105	**10,171**
55 - 59	28	99	90	58	29	5	1	**310**
Avg. Benefit	15,590	16,010	13,138	9,661	10,017	10,530	7,223	**13,273**
60 - 64	23	138	161	100	39	12	1	**474**
Avg. Benefit	13,249	16,928	16,204	12,591	13,514	8,034	4,451	**15,056**
65 - 69	4	54	146	130	42	29	5	**410**
Avg. Benefit	25,496	11,734	16,051	15,851	13,235	14,651	9,908	**15,049**
70 - 74		1	26	100	63	19	6	**215**
Avg. Benefit		7,978	8,907	13,835	16,727	14,721	13,906	**14,139**
75+				28	69	67	43	**207**
Avg. Benefit				13,489	16,808	14,279	13,660	**14,887**
Total	**80**	**364**	**485**	**446**	**251**	**134**	**58**	**1,818**
Avg. Benefit	**13,591**	**14,687**	**14,212**	**13,163**	**14,553**	**13,578**	**12,728**	**13,975**

In each cell, the top number is the count of disabled participants for the age/years since disability 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 7/1/2013	**49,121**	**16,062**	**5,574**	**27,654**	**1,802**	**3,830**	**104,043**
New Members	5,326	0	0	0	0	0	**5,326**
Return to active	373	(217)	(156)	0	0	0	**0**
Terminated non-vested	(1,589)	0	1,589	0	0	0	**0**
Service retirements	(1,268)	(658)	0	1,926	0	0	**0**
Unclassified retirements	0	0	0	44	0	0	**44**
Terminated deferred	(1,444)	1,444	0	0	0	0	**0**
Terminated refund/transfer	(692)	(219)	(1,437)	0	0	0	**(2,348)**
Deaths	(75)	(27)	(5)	(692)	(60)	(146)	**(1,005)**
New beneficiary	0	0	0	0	0	272	**272**
Disabled	(67)	0	0	0	67	0	**0**
Unexpected status change	(22)	87	253	293	9	(270)	**350**
Net change	542	410	244	1,571	16	(144)	**2,639**
Members on 6/30/2014	**49,663**	**16,472**	**5,818**	**29,225**	**1,818**	**3,686**	**106,682**

* *Includes members in the General or Military Affairs Plans.*

** *Includes members in the General, Military Affairs or Unclassified Plans.*

Terminated Member Statistics on June 30, 2014	Deferred Retirement	Other Non-Vested	Total
Number	16,472	5,818	22,290
Average age	50.4	37.1	46.9
Average service	7.9	1.0	6.1
Average annual benefit, with augmentation to Normal Retirement Date and 40% CSA load	$15,112	N/A	$15,112
Average refund value, with 40% CSA load	$36,066	$2,752	$27,371

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. 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, B.2 is the estimated present value of contributions to fund the normal cost rate for current members until their respective termination dates. Item B.1 is the present value of the total 11.00% statutory contribution net of normal cost and anticipated plan expenses during the period from the valuation date to the statutory unfunded amortization date.

The contributions made in excess of amounts required for current benefit payments are accumulated as a reserve to help meet benefit payments in later years. It is this reserve system which permits the establishment of a level rate of contribution each year.

			June 30, 2014
A. Actuarial Value of Assets			$ 10,326,272
B. Expected Future Assets			
1. Present value of expected future statutory supplemental contributions			1,365,977
2. Present value of future normal cost contributions			1,303,399
3. Total expected future assets: *(1.) + (2.)*			$ 2,669,376
C. Total Current and Expected Future Assets			$ 12,995,648
D. Current Benefit Obligations*			
1. Benefit recipients	**Non-Vested**	**Vested**	**Total**
a. Service retirements	$ 0	$ 5,742,405	$ 5,742,405
b. Disability retirements	0	234,369	234,369
c. Survivors	0	495,224	495,224
2. Deferred retirements with augmentation	0	1,239,741	1,239,741
3. Former members without vested rights**	5,804	0	5,804
4. Active members	68,601	4,130,509	4,199,110
5. Total Current Benefit Obligations	$ 74,405	$ 11,842,248	$ 11,916,653
E. Expected Future Benefit Obligations			$ 1,831,872
F. Total Current and Expected Future Benefit Obligations***			$ 13,748,525
G. Unfunded Current Benefit Obligations: *(D.5.) - (A.)*			$ 1,590,381
H. Unfunded Current and Future Benefit Obligations: *(F.) - (C.)*			$ 752,877
I. Accrued Benefit Funding Ratio: *(A.)/(D.5.)*			86.65%
J. Projected Benefit Funding Ratio: *(C.)/(F.)*			94.52%

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

** *Former members who have not satisfied vesting requirements and have not collected a refund of member contributions as of the valuation date.*

*** *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	$ 5,410,189	$ 904,177	$ 4,506,012
b. Disability benefits	216,663	71,642	145,021
c. Survivor's benefits	96,602	24,069	72,533
d. Deferred retirements	275,055	226,070	48,985
e. Refunds*	23,820	77,441	(53,621)
f. Total	$ 6,022,329	$ 1,303,399	$ 4,718,930
2. Deferred retirements with future augmentation	1,239,741	0	1,239,741
3. Former members without vested rights	5,804	0	5,804
4. Benefit recipients	6,471,998	0	6,471,998
5. Contingent actuarial accrued liability - UNCL Plan	8,653	0	8,653
6. Total	$ 13,748,525	$ 1,303,399	$ 12,445,126
B. Determination of Unfunded Actuarial Accrued Liability (UAAL)			
1. Actuarial accrued liability			$ 12,445,126
2. Current assets (AVA)			10,326,272
3. Unfunded actuarial accrued liability			$ 2,118,854
C. Determination of Supplemental Contribution Rate**			
1. Present value of future payrolls through the amortization date of June 30, 2041			$ 41,268,188
2. Supplemental contribution rate: *(B.3.) / (C.1.)*			5.13% ***

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

** *The amortization of the unfunded actuarial accrued liability (UAAL) using the current amortization method results in initial payments less than the "interest only" payment on the UAAL. Payments less than the interest only amount will result in the UAAL increasing for an initial period of time.*

*** *The amortization factor as of July 1, 2014 is 15.55314.*

Development of Costs

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

	Year Ending June 30, 2014		
	Actuarial Accrued Liability	Current Assets	Unfunded Actuarial Accrued Liability
A. Unfunded actuarial accrued liability at beginning of year	$ 11,428,641	$ 9,375,780	$ 2,052,861
B. Changes due to interest requirements and current rate of funding			
1. Normal cost, including expenses	$ 185,570	$ 0	$ 185,570
2. Benefit payments	(635,928)	(635,928)	0
3. Contributions	0	259,070	(259,070)
4. Interest on A., B.1., B.2. and B.3.	937,730	734,988	202,742
5. Total *(B.1. + B.2. + B.3. + B.4.)*	487,372	358,130	129,242
C. Expected unfunded actuarial accrued liability at end of year *(A. + B.5.)*			$ 2,182,103
D. Increase (decrease) due to actuarial losses (gains) because of experience deviations from expected			
1. Age and service retirements			$ (13,597)
2. Disability retirements			194
3. Death-in-service benefits			542
4. Withdrawals			5,558
5. Salary increases			(17,716)
6. Investment income			(592,362)
7. Mortality of annuitants			20,793
8. Other items			(47,246)
9. Total			(643,834)
E. Unfunded actuarial accrued liability at end of year before plan amendments and changes in actuarial assumptions *(C. + D.9.)*			$ 1,538,269
F. Change in unfunded actuarial accrued liability due to changes in plan provisions			0
G. Change in unfunded actuarial accrued liability due to changes in actuarial assumptions			580,585
H. Change in unfunded actuarial accrued liability due to changes in miscellaneous methodology			0
I. Unfunded actuarial accrued liability at end of year *(E. + F. + G. + H.)**			$ 2,118,854

** The unfunded actuarial accrued liability on a market value of assets basis is $946,522.*

Development of Costs

Determination of Contribution Sufficiency/(Deficiency) *(Dollars in Thousands)*

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.

	Percent of Payroll	Dollar Amount
A. Statutory contributions - Chapter 352		
1. Employee contributions	5.50%	$ 145,935
2. Employer contributions	5.50%	145,935
3. Total	11.00%	$ 291,870
B. Required contributions - Chapter 356		
1. Normal cost		
a. Retirement benefits	5.29%	$ 140,363
b. Disability benefits	0.38%	10,083
c. Survivors	0.14%	3,715
d. Deferred retirement benefits	1.14%	30,248
e. Refunds*	0.42%	11,144
f. Total	7.37%	$ 195,553
2. Supplemental contribution amortization of Unfunded Actuarial Accrued Liability by June 30, 2041	5.13%	$ 136,118
3. Allowance for expenses	0.32%	$ 8,491
4. Total	12.82% **	$ 340,162
C. Contribution Sufficiency/(Deficiency) *(A.3. - B.4.)*	(1.82%)	$ (48,292)

Note: Projected annual payroll for fiscal year beginning on the valuation date: $2,653,367.

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

*** The required contribution on a market value of assets basis is 9.98% of payroll.*

Development of Costs

Special Groups - Military Affairs Calculation

Section 352.85 of Chapter 352 of Minnesota Statutes provides that certain military affairs personnel may retire, with an unreduced benefit, at age 60. In addition, they may receive disability benefits upon being found disqualified for retention in active military duty. To fund these special benefits, employees and employer contribute an extra 1.60% of payroll.

To recognize the effect of the unreduced early retirement benefit available at age 60, we have assumed that all military affairs personnel will retire at age 60, or if over age 60, one year from the valuation date.

The unfunded liability for these members, if any, is reflected in the total unfunded liability shown on page 15.

	Year Ending June 30, 2014
A. Projected annual earnings	$ 226,495
B. Total normal cost	
1. Dollar amount	$ 22,808
2. Percent of payroll	10.07%
C. Normal cost of State Employees Retirement Fund (percent of payroll)	7.37%
D. Difference in normal cost *(B. - C., not less than zero)*	2.70%

Active Military Affairs Statistics	**Active Members**
Number	4
Average Age, in years	41.9
Average Service, in years	9.3

Development of Costs

Special Groups - Pilots Calculation

Section 352.86 of Chapter 352 of Minnesota Statutes provides that certain transportation department pilots may retire, with an unreduced benefit, at age 62. In addition, they may receive disability benefits upon being found disqualified for retention as pilots. To fund these special benefits, employees and employer contribute an extra 1.60% of payroll.

To recognize the effect of the unreduced early retirement benefit available at age 62, we have assumed that all pilots will retire at age 62, or if over age 62, one year from the valuation date.

This group is closed to new entrants effective June 1, 2008.

The unfunded liability for these members, if any, is reflected in the total unfunded liability shown on page 15.

	Year Ending June 30, 2014
A. Projected annual earnings	$ 185,523
B. Total normal cost	
1. Dollar amount	$ 21,613
2. Percent of payroll	11.65%
C. Normal cost of State Employees Retirement Fund (percent of payroll)	7.37%
D. Difference in normal cost (B. - C.)	4.28%

Active Pilots Statistics	**Active Members**
Number	2
Average Age, in years	68.0
Average Service, in years	21.7

Development of Costs

Special Groups - Fire Marshals Calculation

Section 352.87 of Chapter 352 of Minnesota Statutes provides that deputy state fire marshals may retire, with an unreduced benefit (with respect to service after July 1, 1999), at age 55. Credited Service after July 1, 1999 accrues retirement benefits at a rate of 2.00% per year, and disability benefits are based on a minimum of 15 years of service (20 years if duty related). To fund these special benefits, members contribute an extra 2.78% of payroll and employers contribute an extra 4.20% of payroll.

To recognize the effect of the unreduced early retirement benefit available at age 55, we have assumed that all fire marshals will retire in accordance with the retirement assumptions which apply to the members of the Correctional Employees Retirement Fund.

The unfunded liability for these members, if any, is reflected in the total unfunded liability shown on page 15.

	Year Ending June 30, 2014
A. Projected annual earnings	$ 734,374
B. Total normal cost	
1. Dollar amount	$ 112,065
2. Percent of payroll	15.26%
C. Normal cost of State Employees Retirement Fund (percent of payroll)	7.37%
D. Difference in normal cost (B. - C.)	7.89%

Active Fire Marshals Statistics	**Active Members**
Number	11
Average Age, in years	53.5
Average Service, in years	13.6

Development of Costs

Special Groups - Unclassified Plan Contingent Liability Calculation
(Dollars in Thousands)

Section 352D.02 of Chapter 352D of Minnesota Statutes provides that members credited with employee shares in the Unclassified Plan may elect to terminate participation in the Unclassified Plan and be covered by the State Employees Retirement Fund (General Plan) prior to termination of covered employment assuming that the member has acquired at least 10 years of allowable state service if hired prior to July 1, 2010 and has no more than 7 years of service if hired after June 30, 2010. Unclassified Plan members contribute 5.5% of payroll and employers contribute 6% of payroll. Certain members (Judges and Legislators) are not eligible to elect coverage under the State Employees Retirement Fund.

To recognize the effect of the option to elect coverage under the General Plan, we have assumed that all eligible Unclassified Plan members will elect coverage under the General Plan if such election provides the member with a greater economic present value than the accumulated contribution balance under the Unclassified Plan. The liabilities were measured using the actuarial assumptions that are applied to the State Employees Retirement Fund.

	Year Ending June 30, 2014
A. Number of active eligible members	1,172
B. Account balances for active members	$ 166,726
C. Accrued liability for active members	$ 175,379
D. Number of inactive members and ineligible active members*	2,441
E. Account balances for inactive members	$ 158,778
F. Net assets held in trust for Unclassified Plan members	$ 325,737
G. Contingent liability (C. - B.)	$ 8,653
H. Projected annual earnings for active members	$ 92,865
I. Normal cost	
1. Dollar amount	$ 10,714
2. Percent of payroll	11.54%
J. Normal cost of State Employee Retirement Fund (percent of payroll)	7.37%
K. Difference in normal cost (I.2. - J.)	4.17%

** Includes 2,258 terminated members, 172 active Legislators and 11 active Judges that are not eligible to elect coverage.*

Unclassified Member Statistics	**Active Eligible Members**
Number	1,172
Average Age, in years	45.8
Average Service, in years	10.3
Average Unclassified Account Balance	$ 142,258

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 percent of payroll assuming payroll increases. The total contribution developed under this method is the sum of the normal cost, expenses, and the payment toward the UAAL.

Select and Ultimate Discount Rate Methodology

Based on direction from the LCPR's actuary, the select and ultimate discount rate methodology is applied to the entry age normal results as follows:

1. The present value of projected benefits is calculated using the prescribed select and ultimate discount rates.
2. An equivalent single interest rate that produces approximately the same present value of projected benefits is determined.
3. The equivalent single interest rate is used to determine the entry age normal accrued liability and normal cost.

The equivalent single interest rate used in this valuation is 8.40% (8.37% last year).

Valuation of Future Post-Retirement Benefit Increases

If the plan has reached the funding ratio threshold required to pay a 2.5% benefit increase, Minnesota Statutes require the 2.5% benefit increase rate to be reflected in the liability calculations. If the plan has not yet reached the funding ratio threshold required to pay a 2.5% benefit increase, Minnesota Statutes require a projection to be performed to determine the expected attainment of the funding ratio threshold, and the expected reversion to a 2.5% benefit increase rate must be reflected in the liability calculations.

Actuarial Basis

Actuarial Methods (Concluded)

Funding Objective
The fundamental financing objective of the fund is to establish contribution rates which, when expressed as a percentage of active member payroll, will remain approximately level from generation to generation and meet the required deadline for full funding.

Decrement Timing
All decrements are assumed to occur mid-fiscal year.

Asset Valuation Method
The assets are valued based on a five-year moving average of expected and market values (five-year average actuarial value) determined as follows:

- At the end of each plan year, an average asset value is calculated as the average of the market asset value at the beginning and end of the fiscal year net of investment income for the fiscal year;
- The investment gain or (loss) is taken as the excess of actual investment income over the expected investment income based on the average asset value as calculated above;
- The investment gain or (loss) so determined is recognized over five years at 20% per year; and
- The asset value is the sum of the market asset value plus the scheduled recognition of investment gains or (losses) during the current and the preceding four fiscal years.

Payment on the Unfunded Actuarial Accrued Liability
Payment equals a level percentage of payroll each year to the statutory amortization date of June 30, 2041 assuming payroll increases of 3.75% per annum. If there is a negative Unfunded Actuarial Accrued Liability, the surplus amount is amortized over 30 years as a level percentage of payroll. If the unfunded liability increases due to changes in benefits, assumptions, or methods, the statutory amortization date will be re-determined. Projected payroll is multiplied by 0.959 in the determination of the present value of future payroll to account for timing differences (as required by the Standards for Actuarial Work).

Changes in Methods since Prior Valuation
The methodology for valuing future post-retirement increases was clarified in Minnesota Statutes.

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 assumptions prescribed are based on the last experience study, dated August 2009, prepared by a former actuary.

The Allowance for Combined Service Annuity was also based on a recommendation by a former actuary. We are unable to judge the reasonableness of this assumption without performing a substantial amount of additional work beyond the scope of the assignment.

Investment return	Select and Ultimate Rates: July 1, 2014 to June 30, 2017 8.00% per annum July 1, 2017 and later 8.50% per annum
Benefit increases after retirement	2.00% per annum through 2015 and 2.5% per annum thereafter
Salary increases	Reported salary at valuation date increased according to the rate table, to current fiscal year and annually for each future year. Prior fiscal year salary is annualized for members with less than one year of service.
Inflation	3.00% per year.
Payroll growth	3.75% per year.
Mortality rates Healthy Pre-retirement	 RP-2000 employee generational mortality table projected with mortality improvement scale AA, white collar adjustment, set forward three years for males and set back one year for females.
Healthy Post-retirement	RP-2000 annuitant generational mortality table projected with mortality improvement scale AA, white collar adjustment. The RP-2000 employee mortality table as published by the Society of Actuaries (SOA) contains mortality rates for ages 15 to 70 and the annuitant mortality table contains mortality rates for ages 50 to 95. We have applied the annuitant mortality table for active members beyond age 70 until the assumed retirement age and the employee mortality table for annuitants younger than age 50.
Disabled	RP-2000 disabled mortality table with no setback for males and set forward five years for females.
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.

Actuarial Basis

Summary of Actuarial Assumptions (Continued)

Withdrawal	Select and Ultimate rates based on actual experience. Ultimate rates after the third year are shown in rate table. Select rates in the first three years are:

	First Year	Second Year	Third Year
Male	0.45	0.14	0.09
Female	0.48	0.15	0.10

Disability	Age-related rates based on experience; see table of sample rates.
Allowance for Combined Service Annuity	Liabilities for active members are increased by 1.20% and liabilities for former members are increased by 40.00% to account for the effect of some participants having eligibility for a Combined Service Annuity.
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 normal retirement age.
Percentage married	85% of active male members and 70% of female members are assumed to be married. Actual marital status is used for members in payment status.
Age of spouse	Male members are assumed to have a beneficiary three years younger and female members are assumed to have a beneficiary two years older.
Form of payment	Married members retiring from active status are assumed to elect subsidized joint and survivor form of annuity as follows: Males: 15% elect 50% Joint & Survivor option 10% elect 75% Joint & Survivor option 50% elect 100% Joint & Survivor option Females: 15% elect 50% Joint & Survivor option 0% elect 75% Joint & Survivor option 25% elect 100% Joint & Survivor option Remaining married members and unmarried members are assumed to elect the Straight Life option. Members receiving deferred annuities (including current terminated deferred members) are assumed to elect a life annuity.
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.
Service credit accruals	It is assumed that members accrue one year of service credit per year.

Actuarial Basis

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: <u>Data for active members:</u> There were 88 members reported with zero or invalid salary. We used prior year salary (51 members), if available, otherwise, high five salary with a 10% load to account for salary increases (24 members). If neither pay nor high five salary was available, we assumed a value of $35,000 (13 members). There were 19 members reported with zero or negative service. Due to the small number of members with zero service, and based on direction from MSRS, we used service of 0 years for these members. There were also 33 members reported without a gender and 19 members reported with an invalid date of birth. We assumed a date of birth of July 1, 1976 and female gender. <u>Data for terminated members:</u> There were 708 members reported with a missing or invalid benefit. If available, we calculated benefits for these members using the reported Average Salary, Credited Service and Termination Date provided. If Average Salary was not reported (689 members), we assumed a value of $30,000. If termination date was not reported (15 members), we assumed the member terminated at age 40 (or current age if younger than 40). If credited service was either not reported or invalid (14 members), we assumed a value of 7.5 years. There were no members with an invalid gender or date of birth. <u>Data for members receiving benefits:</u> There were 51 members reported without a gender. We assumed female gender for the valuation. No retired members were reported with an invalid date of birth. There were 2 members reported without a benefit. In addition, there was 1 member who was reported with a joint & survivor election but was reported without a survivor benefit. Due to the small number of members with missing benefits, we made no adjustment to the reported data for members receiving benefits. There were 383 retirees reported with a survivor option and a survivor date of death. We assumed no benefit was payable to the survivor, and the member benefit already reflected the increase to the life annuity value (i.e., “bounce back”), if applicable.

Actuarial Basis

Summary of Actuarial Assumptions (Continued)

Unknown data for certain members	Data for members receiving benefits: There were 371 retirees reported with a bounce back annuity but were not reported with a reasonable reduction factor. A factor of 0.80, 0.85 and 0.90 was assumed for the 100%, 75% and 50% joint and survivor annuity, respectively. There were retired members reported with a survivor option and an invalid or missing survivor gender (4,961 members) and/or survivor date of birth (4,465 members). We used the valuation assumptions if the survivor gender or date of birth was missing or invalid. At MSRS' direction, we changed the status of 785 members who were reported with a disabled status at the beginning of the year and a retired status at the end of the year back to disabled status.
Changes in actuarial assumptions	Separate pre-retirement and post-retirement investment return rates which implicitly valued the post-retirement benefit increases were changed to a single investment return assumption and an explicit assumption for post-retirement benefit increases. The assumed post-retirement benefit increase rate was changed from 2.0% per year to 2.0% per year through 2015 and 2.5% per year thereafter. See page 4 for additional detail about this assumption.

Actuarial Basis

Summary of Actuarial Assumptions (Continued)

	Rate (%)*					
	Healthy Post-Retirement Mortality**		Healthy Pre-Retirement Mortality**		Disability Mortality	
Age	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
20	0.03%	0.02%	0.04%	0.02%	2.26%	0.75%
25	0.04	0.02	0.04	0.02	2.26	0.75
30	0.04	0.03	0.05	0.02	2.26	0.75
35	0.06	0.05	0.08	0.04	2.26	0.75
40	0.09	0.06	0.11	0.06	2.26	0.75
45	0.13	0.10	0.17	0.09	2.26	1.15
50	0.60	0.24	0.24	0.15	2.90	1.65
55	0.54	0.35	0.35	0.22	3.54	2.18
60	0.66	0.56	0.56	0.34	4.20	2.80
65	1.16	0.91	0.85	0.54	5.02	3.76
70	1.93	1.52	2.67	0.82	6.26	5.22

* *Generally, mortality rates are expected to increase as age increases. Due to the combination of pre-retirement rates, post-retirement rates, the white collar adjustment, and Projection Scale AA, the prescribed mortality tables have a few ages where assumed mortality decreases slightly instead of increases. We have used the rates as prescribed, but note that the prescribed assumption may not be reasonable at every age. If the rates were reasonably adjusted so that they decreased at all ages, we would not expect the valuation results to be materially different.*

** *These rates were adjusted for mortality improvements using projection scale AA.*

	Withdrawal Rates After Third Year		Disability Retirement	
Age	**Male**	**Female**	**Male**	**Female**
20	6.90%	8.55%	0.01%	0.01%
25	5.90	7.80	0.01	0.01
30	4.90	7.05	0.01	0.01
35	3.90	5.10	0.03	0.03
40	3.20	4.38	0.08	0.08
45	2.70	3.75	0.13	0.13
50	2.20	3.05	0.29	0.29
55	0.00	0.00	0.50	0.43
60	0.00	0.00	0.78	0.62
65	0.00	0.00	0.00	0.00

Actuarial Basis

Summary of Actuarial Assumptions (Concluded)

Retirement		
Age	**Rule of 90 Eligible**	**All Others**
55	20%	5%
56	15	5
57	15	5
58	15	5
59	20	6
60	20	7
61	22	12
62	40	22
63	30	16
64	30	18
65	40	40
66	30	30
67	25	25
68	25	25
69	25	25
70	30	30
71+	100	100

Salary Scale	
Year	**Increase**
1	10.50%
2	8.10
3	6.90
4	6.20
5	5.70
6	5.30
7	5.00
8	4.70
9	4.50
10	4.40
11	4.20
12	4.10
13	4.00
14	3.80
15	3.70
16	3.60
17+	3.50

Actuarial Basis

Summary of Plan Provisions

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	State employees, non-academic staff of the University of Minnesota and employees of certain Metro level government units, unless excluded by law.
Contributions	Shown as a percent of salary:
Effective date	
	Member / **Employer**
July 1, 2010 to June 30, 2014	5.00% / 5.00%
July 1, 2014*	5.50% / 5.50%
	Member contributions are "picked up" according to the provisions of Internal Revenue Code 414(h). **Increase is effective the first day of the first full pay period beginning after July 1, 2014.*
Allowable Service	Service during which member contributions were made. May also include certain leaves of absence, military service and periods while temporary Worker's Compensation is paid. Excludes lump sum vacation and severance pay at termination.
Average Salary	Average of the five highest successive years of Salary. Average Salary is based on all Allowable Service if less than five years.
Salary	Includes wages, allowances and fees. Excludes lump sum payments at separation, employer contributions to deferred compensation and tax-sheltered annuity plans and benevolent vacation and sick leave donation programs.
Retirement	
Normal retirement benefit	
Age/Service requirement	First hired before July 1, 1989: (a.) Age 65 and three years of Allowable Service. (b.) Proportionate Retirement Annuity is available at age 65 and one year of Allowable Service. First hired after June 30, 1989: (a.) The greater of age 65 or the age eligible for full Social Security retirement benefits (but not higher than age 66) and three years of Allowable Service (five years if hired after June 30, 2010). (b.) Proportionate Retirement Annuity is available at normal retirement age and one year of Allowable Service.
Amount	1.70% of Average Salary for each year of Allowable Service.

Actuarial Basis

Summary of Plan Provisions (Continued)

Retirement (Continued)	
Early retirement	
Age/Service requirement	First hired before July 1, 1989: (a.) Age 55 and three years of Allowable Service. (b.) Any age with 30 years of Allowable Service. (c.) Rule of 90: Age plus Allowable Service totals 90. First hired after June 30, 1989: (a.) Age 55 and three years (five years if hired after June 30, 2010) of Allowable Service.
Amount	First hired before July 1, 1989: The greater of (a) or (b): (a.) 1.20% of Average Salary for each of the first ten years of Allowable Service and 1.70% of Average Salary for each subsequent year with reduction of 0.25% for each month the member is under age 65 at time of retirement or under age 62 if 30 or more years of Allowable Service. No reduction if age plus years of Allowable Service totals 90. (b.) 1.70% of Average Salary for each year of Allowable Service assuming augmentation to age 65 at 3.00% per year and actuarial reduction for each month the member is under age 65. First hired after June 30, 1989: 1.70% of Average Salary for each year of Allowable Service assuming augmentation to the age eligible for full Social Security retirement benefit (but not higher than age 66) at 3.00% (2.50% if hired after June 30, 2006) per year and actuarial reduction for each month the member is under the normal retirement age.
Form of payment	Life annuity with return on death of any balance of member contributions over aggregate monthly payments. Actuarially equivalent options are: (a.) 50%, 75%, or 100% Joint and Survivor with bounce back feature without additional reduction. (b.) 15-year Certain and Life.
Benefit increases	Since 2011, benefit recipients have received annual 2.0% benefit increases. When the funding ratio reaches 90% (actuarial accrued liability ratio on a Market Value of Assets basis) for two consecutive years, the benefit increase will revert to 2.5%. A benefit recipient who has been receiving a benefit for at least 18 full months as of the January 1 increase will receive a full increase. Members receiving benefits for at least six months but less than 18 full months as of the January 1 increase will receive a pro rata increase.

Actuarial Basis

Summary of Plan Provisions (Continued)

Retirement (Continued)	
Benefit increases (Continued)	Prior to 2002, members who retired under the laws in effect before July 1, 1973 received an additional lump sum payment each year. In 1989, this lump sum payment was the greater of $25 times each full year of Allowable Service or $400 per full year of service less any Social Security benefits received or annuity from a Minnesota public employee pension plan. In each following year, the lump sum payment was increased by the same percentage increase that was applied to regular annuities paid from the Minnesota Post Retirement Investment Fund. Effective January 1, 2002, the annual lump sum payment was divided by 12 and paid as a monthly life annuity in the annuity form elected.
Disability	
Disability benefit	
Age/Service requirement	Total and permanent disability before normal retirement age with three years of Allowable Service (five years if hired after June 30, 2010).
Amount	Normal Retirement benefit based on Allowable Service and Average Salary at disability without reduction for commencement before normal retirement age. Payments stop if disability ceases or death occurs. Payments revert to a retirement annuity at normal retirement age. Benefits may be reduced on resumption of partial employment.
Retirement after disability	
Age/Service requirement	Normal retirement age with continued disability.
Amount	Any optional annuity continues. Otherwise, a normal retirement benefit equal to the disability benefit paid before normal retirement age, or an actuarially equivalent optional annuity.
Form of payment	Same as for retirement.
Benefit Increases	Same as for retirement.
Death	
Surviving spouse optional benefit	
Age/Service requirement	Member or former member who dies before retirement or disability benefits commence with three years of Allowable Service (five years if hired after June 30, 2010). If a former member dies before age 55 and has less than 30 years of Allowable Service, benefits commence when the former member would have been age 55. If an active member dies, benefits may commence immediately, regardless of age.
Amount	Surviving spouse receives the 100% joint and survivor benefits using the Normal Retirement formula above. If commencement is prior to age 55, the appropriate early retirement formula described above applies except that one-half the monthly reduction factor is used from age 55 to the commencement age and the Rule of 90 does not apply. In lieu of this benefit, the surviving spouse may elect a refund of member contributions with interest or an actuarially equivalent term certain annuity.

Actuarial Basis

Summary of Plan Provisions (Continued)

Death (Continued)	
Amount (Continued)	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	If no surviving spouse, all dependent children (biological or adopted) below age 20 who are dependent for more than half of their support on deceased member.
Amount	Actuarially equivalent 100% joint and survivor annuity to surviving spouse payable to the later of age 20 or five years. The amount is proportionally divided among surviving children.
Benefit increases	Same as for retirement.
Refund of contributions	
Age/Service requirement	Active member dies and survivor benefits are not payable or a former member dies before annuity begins or former member who is not entitled to an annuity dies.
Amount	Member's contributions with 6.00% interest through June 30, 2011 compounded daily. Beginning July 1, 2011, a member's contributions will increase at 4.00% interest compounded daily.
Age/Service requirement	Retired or disabled annuitant who did not select an optional annuity dies, or the remaining recipient of an option dies.
Amount	The excess of the member's contributions over all benefits paid.
Unclassified Plan Provision	Eligible members credited with employee shares in the Unclassified Plan may elect to terminate participation in the Unclassified Plan and be covered by the State Employees Retirement Fund prior to termination of covered employment assuming that the member has acquired at least 10 years of allowable state service (no more than seven years of service if hired after June 30, 2010).
Termination	
Refund of contributions	
Age/Service requirement	Termination of state service.
Amount	Member's contributions with 6.00% interest through June 30, 2011 compounded daily. Beginning July 1, 2011 a member's contributions will increase at 4.00% interest compounded daily. If a member is vested, a deferred annuity may be elected in lieu of a refund.

Actuarial Basis

Summary of Plan Provisions (Continued)

Termination (Continued)	
Deferred benefit	
Age/Service requirement	Three years of Allowable Service if hired prior to June 30, 2010, five years of Allowable Service if hired after June 30, 2010.
Amount	Benefit computed under law in effect at termination and increased by the following annual augmentation percentage: (a.) 0.00% before July 1, 1971; (b.) 5.00% from July 1, 1971 to January 1, 1981; (c.) 3.00% thereafter (2.50% if hired after June 30, 2006) until January 1 of the year following attainment of age 55 or January 1, 2012, whichever is earlier; (d.) 5.00% thereafter until the annuity begins (2.50% if hired after June 30, 2006), but before January 1, 2012. Amount is payable as a normal or early retirement; (e.) 2.00% from January 1, 2012 thereafter. Amount is payable at normal or early retirement. If a member terminated employment prior to July 1, 1997 but was not eligible to commence their 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; (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.
Optional Form Conversion Factors	Actuarially equivalent factors based on RP-2000 mortality for healthy annuitants, white collar adjustment, projected to 2025 using scale AA, blended 55% males, and 6.5% interest.

Actuarial Basis

Summary of Plan Provisions (Concluded)

Contribution Stabilizer	The following is a summary of contribution stabilizer provisions in Minnesota Statute 352.045: • If a contribution sufficiency of at least 1.0% has existed for two consecutive years, member and employer contributions are decreased by at most 0.25% to a level that is necessary to maintain a 1.0% sufficiency. A contribution rate decrease under this section must not be made until at least two years have passed since fully implementing a previous decrease. • If a contribution deficiency of at least 0.5% has existed for two consecutive years, the member and employer contribution rates are increased as follows: o If the contribution deficiency is less than 2.0%, member and employer contributions are each increased by 0.25%. o If the contribution deficiency is greater than 1.99% and less than 4.01%, member and employer contributions are each increased by 0.50%. o If the contribution deficiency is greater than 4.0%, member and employer contributions are each increased by 0.75%.
Changes in Plan Provisions	Member and employer contribution rates increased from 5.0% to 5.5% of pay effective the first day of the first full pay period beginning after July 1, 2014. Effective July 1, 2014, the funding ratio threshold that must be attained to pay a 2.5% post-retirement benefit increase to benefit recipients was changed from 90% for one year to 90% for two consecutive years.

Additional Schedules

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

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	$ 2,304,311	$ 2,883,603	$ 579,292	79.91%	$ 1,370,964	42.25 %
7-1-1992	2,613,472	3,125,299	511,827	83.62	1,409,108	36.32
7-1-1993	2,905,578	3,563,492	657,914	81.54	1,482,005	44.39
7-1-1994	3,158,068	3,876,584	718,516	81.47	1,536,978	46.75
7-1-1995	3,462,098	3,795,926	333,828	91.21	1,514,177	22.05
7-1-1996	3,975,832	4,087,273	111,441	97.27	1,560,369	7.14
7-1-1997	4,664,519	4,519,542	(144,977)	103.21	1,568,747	(9.24)
7-1-1998	5,390,526	5,005,165	(385,361)	107.70	1,557,880	(24.74)
7-1-1999	5,968,692	5,464,207	(504,485)	109.23	1,649,469	(30.58)
7-1-2000	6,744,165	6,105,703	(638,462)	110.46	1,733,054	(36.84)
7-1-2001	7,366,673	6,573,193	(793,480)	112.07	1,834,042	(43.26)
7-1-2002	7,673,028	7,340,397	(332,631)	104.53	1,915,350	(17.37)
7-1-2003	7,757,292	7,830,671	73,379	99.06	2,009,975	3.65
7-1-2004	7,884,984	7,878,363	(6,621)	100.08	1,965,546	(0.34)
7-1-2005	8,081,736	8,455,336	373,600	95.58	1,952,320	19.14
7-1-2006	8,486,756	8,819,161	332,405	96.23	2,016,588	16.48
7-1-2007	8,904,517	9,627,305	722,788	92.49	2,095,310	34.50
7-1-2008	9,013,456	9,994,602	981,146	90.18	2,256,528	43.48
7-1-2009	9,030,401	10,512,760	1,482,359	85.90	2,329,499	63.63
7-1-2010	8,960,391	10,264,071	1,303,680	87.30	2,327,398	56.01
7-1-2011	9,130,011	10,576,481	1,446,470	86.32	2,440,580	59.27
7-1-2012	9,162,301	11,083,227	1,920,926	82.67	2,367,160 [2]	81.15
7-1-2013	9,375,780	11,428,641	2,052,861	82.04	2,483,000 [2]	82.68
7-1-2014	10,326,272	12,445,126	2,118,854	82.97	2,620,660 [2]	80.85

[1] *Information prior to 2012 provided by prior actuaries. See prior reports for additional detail.*
[2] *Assumed equal to actual member contributions divided by 5.00%.*

Additional Schedules

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

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	8.17%	$ 1,370,964	$ 56,895	$ 55,113	$ 57,986	105.21%
1992	7.86	1,409,108	58,478	52,278	59,244	113.33
1993	8.27	1,482,005	59,132	63,430	58,982	92.99
1994	8.93	1,536,978	62,555	74,697	60,741	81.32
1995	9.15	1,514,177	61,627	76,920	63,161	82.11
1996	8.05	1,560,369	63,507	62,103	65,557	105.56
1997	7.21	1,568,747	63,848	49,259	66,568	135.14
1998	7.13	1,557,880	62,901	48,176	62,315	129.35
1999	6.48	1,649,469	66,823	40,063	65,979	164.69
2000	6.12	1,733,054	70,378	35,685	69,322	194.26
2001	7.12	1,834,042	74,364	56,220	73,362	130.49
2002	6.79	1,915,350	79,487	50,565	76,614	151.52
2003	8.34	2,009,975	83,850	83,782	80,399	95.96
2004	9.43	1,965,546	82,103	103,248	78,622	76.15
2005	9.33	1,952,323	83,101	99,051	80,312	81.08
2006	10.55	2,016,588	85,379	127,371	82,645	64.88
2007	10.11	2,095,310	89,447	122,389	86,492	70.67
2008	11.76	2,256,528	99,280	166,088	96,746	58.25
2009	12.39	2,329,499	108,866	179,759	107,211	59.64
2010	14.85	2,327,398	115,180	230,439	113,716	49.35
2011	10.99	2,440,580	122,029	146,191	118,563	81.10
2012	11.03	2,367,160 [3]	118,358	142,740	115,159	80.68
2013	12.32	2,483,000 [3]	124,150	181,756	121,673	66.94
2014	12.45	2,620,660 [3]	131,033	195,239	128,037	65.58
2015	12.82	N/A	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).*
[3] *Assumed equal to actual member contributions divided by 5.00%.*

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 a 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.

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.

Glossary of Terms (Concluded)

GASB	Governmental Accounting Standards Board.
GASB Statements No. 25 and No. 27	These are the governmental accounting standards that set the accounting and financial reporting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 27 sets the accounting and financial reporting 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 of 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 only for pension plans that are not administered as trusts. Please refer to the definition of GASB Statements No. 67 and No. 68.
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 rules information prepared according to Statements No. 67 and No. 68 will be provided in a separate report beginning with the June 30, 2014 actuarial valuation.
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.
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 are determined. The benefits expected to be paid in the future are discounted to this date.