GRS Gabriel Roeder Smith & Company
Consultants & Actuaries

MINNESOTA STATE RETIREMENT SYSTEM

STATE EMPLOYEES RETIREMENT FUND

GASB STATEMENTS NO. 67 AND NO. 68 ACCOUNTING AND FINANCIAL REPORTING FOR PENSIONS

JUNE 30, 2014

GRS
Gabriel Roeder Smith & Company
Consultants & Actuaries
100 South Fifth Street
Suite 1900
Minneapolis, MN 55402-1267
612.605.6200 phone
612.605.6203 fax
www.gabrielroeder.com

December 1, 2014

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

Dear Board of Directors:

This report provides accounting and financial reporting information that is intended to comply with the Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68 for the State Employees Retirement Fund ("SERF"). These calculations have been made on a basis that is consistent with our understanding of these accounting standards.

GASB Statement No. 67 is the accounting standard that applies to the financial reports issued by retirement systems. GASB Statement No. 68 establishes accounting and financial reporting for state and local government employers who provide their employees (including former employees) pension benefits through a trust.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of providing reporting and disclosure information that satisfies the requirements of GASB Statements No. 67 and No. 68. The calculation of the plan's liability for this report may not be applicable for funding purposes of the plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statement No. 67 may produce significantly different results. The information in this report is calculated on a total plan basis. MSRS is responsible for preparing the Schedule of Employer Allocations and the Schedule of Pension Amounts by Employer. This report may be provided to parties other than the Minnesota State Retirement System (MSRS) only in its entirety and only with the permission of MSRS.

This report is based upon information, furnished to us by MSRS, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. If your understanding of this information is different, please let us know. This information was checked for internal consistency, but it was not otherwise audited.

To the best of our knowledge, the information contained with this report is accurate and fairly represents the actuarial position of the State Employees Retirement Fund as of the measurement date. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board. 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 opinion contained herein.

Respectfully submitted,

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

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

TABLE OF CONTENTS

SECTION A

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

As of June 30, 2014 *(Dollars in Thousands)*

	2014
Actuarial Valuation Date	June 30, 2014
Measurement Date of the Net Pension Liability	June 30, 2014
Membership	
Number of	
- Service Retirements	29,225
- Survivors	3,686
- Disability Retirements	1,818
- Deferred Retirements	16,472
- Terminated other non-vested	5,818
- Active Members	49,663
- Total	106,682
Covered-employee Payroll	$ 2,620,660 [(1)]
Net Pension Liability	
Total Pension Liability	$ 13,120,176
Plan Fiduciary Net Position	11,498,604
Net Pension Liability	$ 1,621,572
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	87.64%
Net Pension Liability as a Percentage of Covered-employee Payroll	61.88%
Development of the Single Discount Rate	
Single Discount Rate	7.90%
Long-Term Expected Rate of Investment Return	7.90%
Long-Term Municipal Bond Rate[(2)]	4.29%
Last year ending June 30 in the 2015 to 2114 projection period for which projected benefit payments are fully funded	2114
Total Pension Expense/ (Income)	$ (257,887)

Deferred Outflows and Deferred Inflows of Resources by Source to be recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience in the measurement of the Total Pension Liability	$ -	$ 35,218
Changes in assumptions	-	1,181,846
Net difference between projected and actual earnings on pension plan investments	-	841,101
Total	$ -	$ 2,058,165

[(1)] *Assumed equal to actual member contributions divided by employee contribution rate.*

[(2)] *Based on the Bond Buyer 20-Bond Index of general obligation municipal bonds as of June 26, 2014 (i.e., the weekly rate closest to but not later than the Measurement Date).*

DISCUSSION

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67, *Financial Reporting for Pension Plans* establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68, *Accounting and Financial Reporting for Pensions* establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

Financial Statements

GASB Statement No. 68 requires state and local governmental employers to recognize the net pension liability and the pension expense on their financial statements. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

The pension expense or income recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the difference between expected and actual experience in the measurement of the total pension liability, assumption changes, and investment experience.

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a Statement of Fiduciary Net Position and a Statement of Changes in Fiduciary Net Position in accordance with GASB Statement No. 67. The *Statement of Fiduciary Net Position* presents the assets and liabilities of the pension plan at the end of the pension plan's reporting period. The *Statement of Changes in Fiduciary Net Position* presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.

Notes to Financial Statements

GASB Statement No. 68 requires the notes to the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions.

Both GASB Statements No. 67 and No. 68 require the notes to the financial statements for the employers and pension plans to include certain descriptive information about the pension plans through which the pension benefits are provided. The list of disclosure items should include:

- a description of benefits provided by the plan;
- the classes of employees and number of members covered by the pension plan;
- a description of the plan's funding policy, which includes member and employer contribution requirements;
- the pension plan's investment policies;
- the pension plan's fiduciary net position, net pension liability, and the pension plan's fiduciary net position as a percentage of the total pension liability;
- the net pension liability using a discount rate that is 1% higher and 1% lower than the current discount rate used to calculate the total pension liability and net pension liability for financial reporting purposes;
- significant assumptions and methods used to calculate the total pension liability;
- inputs to the discount rates; and
- certain information about mortality assumptions and the dates of experience studies.

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with Statement No. 67. This information includes:

- the composition of the pension plan's board and the authority under which benefit terms may be amended;
- a description of how fair value is determined;
- information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5%, receivables, and insurance contracts excluded from plan assets; and
- annual money-weighted rate of return.

MSRS' comprehensive annual financial report, which contains the basic financial statements and related note disclosures for the State Employees Retirement Fund can be obtained from MSRS at 60 Empire Drive, Suite 300, St. Paul, MN, 55103 or requested via email at info@msrs.us or telephone at 1-800-657-5757.

Required Supplementary Information

GASB Statement No. 67 requires a 10-year fiscal history of:

- sources of changes in the net pension liability;
- information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; and
- comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. The net pension liability and pension expense should be measured as of the pension plan's fiscal year end (measurement date) on a date that is within the employer's prior fiscal year. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2014 and a measurement date of June 30, 2014.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a single discount rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating (which is published by the Federal Reserve) as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the long-term expected rate of return on pension plan investments is 7.90%; the municipal bond rate is 4.29% (based on the weekly rate closest to but not later than the measurement date of the 20-Year Bond Buyer Index as published by the Federal Reserve Board); and the resulting single discount rate is 7.90%.

Effective Date and Transition

GASB Statements No. 67 and No. 68 are effective for fiscal years beginning after June 15, 2013, and June 15, 2014 respectively. Earlier application is encouraged by the GASB.

SECTION B

FINANCIAL STATEMENTS

PENSION EXPENSE UNDER GASB STATEMENT NO. 68

Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

A. Expense/(Income)

1.	Service Cost	$ 256,155
2.	Interest on the Total Pension Liability	922,181
3.	Current-Period Benefit Changes	-
4.	Employee Contributions (made negative for addition here)	(131,033)
5.	Projected Earnings on Plan Investments (made negative for addition here)	(778,245)
6.	Pension Plan Administrative Expense	8,125
7.	Other Changes in Plan Fiduciary Net Position	(20,528)
8.	Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability	(8,805)
9.	Recognition of Outflow (Inflow) of Resources due to assumption changes	(295,462)
10.	Recognition of Outflow (Inflow) of Resources due to the difference between projected (7.90%) and actual earnings on Pension Plan Investments	(210,275)
11.	**Total Pension Expense/ (Income)[(1)]**	**$ (257,887)**

[(1)] *Service cost and interest on Total Pension Liability were fully offset by decreases in Net Pension Liability, primarily due to better than expected return on the market value of assets and the discount rate change from 6.63% to 7.90%.*

Statement of Outflows and Inflows arising from Current Reporting Period

Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

A. Outflows (Inflows) of Resources due to Liabilities		
1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	$	(44,023)
2. Assumption Changes (gains) or losses		(1,477,308)
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years, rounded to the nearest whole number}		5.0000
4. Outflow (Inflow) of Resources to be recognized in the current pension expense for the difference between expected and actual experience in the measurement of the Total Pension Liability		(8,805)
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes		(295,462)
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	$	(304,267)
7. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for the difference between expected and actual experience of the Total Pension Liability	$	(35,218)
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes		(1,181,846)
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	$	(1,217,064)
B. Outflows (Inflows) of Resources due to Assets		
1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	$	(1,051,376)
2. Recognition period for Assets {in years}		5.0000
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets		(210,275)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	$	(841,101)

STATEMENT OF OUTFLOWS AND INFLOWS ARISING FROM CURRENT AND PRIOR REPORTING PERIODS

Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

A. Outflows and Inflows of Resources due to Liabilities and Assets to be recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows/(Inflows) of Resources
1. Due to Liabilities	$ -	$ 304,267	$ (304,267)
2. Due to Assets	-	210,275	(210,275)
3. Total	$ -	$ 514,542	$ (514,542)

B. Outflows and Inflows of Resources by Source to be recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows/(Inflows) of Resources
1. Differences between expected and actual experience	$ -	$ 8,805	$ (8,805)
2. Assumption Changes	-	295,462	(295,462)
3. Net Difference between projected and actual earnings on pension plan investments	-	210,275	(210,275)
4. Total	$ -	$ 514,542	$ (514,542)

C. Deferred Outflows and Deferred Inflows of Resources by Source to be recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows/ (Inflows) of Resources
1. Differences between expected and actual experience	$ -	$ 35,218	$ (35,218)
2. Assumption Changes	-	1,181,846	(1,181,846)
3. Net Difference between projected and actual earnings on pension plan investments	-	841,101	(841,101)
4. Total	$ -	$ 2,058,165	$ (2,058,165)

D. Deferred Outflows and Deferred Inflows of Resources by Year to be recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows/ (Inflows) of Resources
2015	$ (514,542)
2016	(514,542)
2017	(514,542)
2018	(514,539)
2019	-
Thereafter	-
Total	$ (2,058,165)

STATEMENT OF FIDUCIARY NET POSITION

As of June 30, 2014 *(Dollars in Thousands)*

Assets		**June 30, 2014**
Cash & Short-term Investments	$	292,465
Receivables		16,188
Investment Pools (at fair value)		11,187,051
Securities Lending Collateral		1,244,402
Capital Assets		16,269
Total Assets	**$**	**12,756,375**
Total Deferred Outflows of Resources	**$**	**-**
Total Liabilities	**$**	**(1,257,771)**
Total Deferred Inflows of Resources	**$**	**-**
Net Position Restricted for Pensions	**$**	**11,498,604**

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION

For the Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

Change in Fiduciary Net Position		Market Value
Year Ending		June 30, 2014
1.	Net Position at market value at beginning of year, as reported	$ 10,033,499
2.	Change in Accounting Principle	(61)
3.	Net Position at market value at beginning of year, as restated (1.) + (2.)	$ 10,033,438
Additions		
4.	Contributions	
	a. Member	$ 131,033
	b. Employer	128,037
	c. Other sources	-
	d. Total contributions	$ 259,070
5.	Investment income	
	a. Investment income/(loss)	$ 1,845,607
	b. Investment expenses	(15,986)
	c. Net investment income/(loss)	$ 1,829,621
6.	Other Additions	21,014
7.	Total Additions: (4.d.) + (5.c.) + (6.)	$ 2,109,705
Deductions		
8.	Benefits Paid	
	a. Annuity benefits	$ (623,942)
	b. Refunds	(11,986)
	c. Total benefits paid	$ (635,928)
9.	Expenses	
	a. Other deductions	$ (486)
	b. Administrative	(8,125)
	c. Total expenses	$ (8,611)
10.	Total deductions: (8.c.) + (9.c.)	$ (644,539)
11.	Net increase/(decrease) in fiduciary net position	$ 1,465,166
12.	Net position at market value at end of year (3.) + (7.) + (10.)	$ 11,498,604
13.	State Board of Investment calculated investment return	18.6%

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS
CURRENT PERIOD

Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

A. Total pension liability			
1. Service Cost	$	256,155	
2. Interest on the Total Pension Liability		922,181	
3. Changes of benefit terms		-	
4. Difference between expected and actual experience of the Total Pension Liability		(44,023)	
5. Changes of assumptions		(1,477,308)	(1)
6. Benefit payments, including refunds of employee contributions		(635,928)	
7. Net change in total pension liability	$	(978,923)	
8. Total pension liability – beginning		14,099,099	
9. Total pension liability – ending	**$**	**13,120,176**	
B. Plan fiduciary net position			
1. Contributions – employer	$	128,037	
2. Contributions – employee		131,033	
3. Net investment income		1,829,621	
4. Benefit payments, including refunds of employee contributions		(635,928)	
5. Pension Plan Administrative Expense		(8,125)	
6. Other changes		20,528	
7. Net change in plan fiduciary net position	$	1,465,166	
8. Plan fiduciary net position – beginning, as restated		10,033,438	
9. Plan fiduciary net position – ending	**$**	**11,498,604**	
C. Net pension liability, *A.9. - B.9.*	**$**	**1,621,572**	
D. Plan fiduciary net position as a percentage of the total pension liability, *B.9. / A.9.*		**87.64%**	
E. Covered-employee payroll	**$**	**2,620,660**	(2)
F. Net pension liability as a percentage of covered-employee payroll, *C. / E.*		**61.88%**	

(1) Assumption changes are summarized on page 29.
(2) Assumed equal to actual member contributions divided by employee contribution rate.

SCHEDULES OF REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in Net Pension Liability and Related Ratios Multiyear *(Dollars in Thousands)*

Last 10 Fiscal Years (which will be built prospectively)

Fiscal year ending June 30,	2014	2013	2012	2011	2010	2009	2008	2007	2006
Total Pension Liability									
Service Cost	$ 256,155								
Interest on the Total Pension Liability	922,181								
Benefit Changes	-								
Difference between Expected and Actual Experience	(44,023)								
Assumption Changes	(1,477,308) (1)								
Benefit Payments	(623,942)								
Refunds	(11,986)								
Net Change in Total Pension Liability	$ (978,923)								
Total Pension Liability - Beginning	14,099,099								
Total Pension Liability - Ending (a)	**$ 13,120,176**								
Plan Fiduciary Net Position									
Employer Contributions	$ 128,037								
Employee Contributions	131,033								
Pension Plan Net Investment Income	1,829,621								
Benefit Payments	(623,942)								
Refunds	(11,986)								
Pension Plan Administrative Expense	(8,125)								
Other	20,528								
Net Change in Plan Fiduciary Net Position	$ 1,465,166								
Plan Fiduciary Net Position - Beginning	10,033,438								
Plan Fiduciary Net Position - Ending (b)	**$ 11,498,604**								
Net Pension Liability - Ending (a) - (b)	$ 1,621,572								
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	87.64 %								
Covered-Employee Payroll	$ 2,620,660 (2)								
Net Pension Liability as a Percentage of Covered-Employee Payroll	61.88 %								

Notes to Schedule:

N/A

(1) *Assumption changes are summarized on page 29.*

(2) *Assumed equal to actual member contributions divided by employee contribution rate.*

SCHEDULES OF REQUIRED SUPPLEMENTARY INFORMATION

Schedule of the Net Pension Liability Multiyear *(Dollars in Thousands)*

Last 10 Fiscal Years (which will be built prospectively)

FY Ending June 30,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered-employee Payroll	Net Pension Liability as a % of Covered-employee Payroll
	(a)	(b)	(a) - (b) = (c)	(b) / (a)	(d)	(c) / (d)
2005						
2006						
2007						
2008						
2009						
2010						
2011						
2012						
2013						
2014	$ 13,120,176	$ 11,498,604	$ 1,621,572	87.64%	$ 2,620,660	61.88%

SCHEDULE OF CONTRIBUTIONS MULTIYEAR

Last 10 Fiscal Years

FY Ending June 30,	Actuarially Determined Contribution [1]	Actual Contributions	Contribution Deficiency (Excess)	Covered-employee Payroll	Actual Contribution as a % of Covered-employee Payroll
	(a)	(b)	(a) - (b) = (c)	(d)	(b) / (d)
2005	$ 99,051	$ 80,312	$ 18,739	$ 1,952,323	4.11%
2006	127,371	82,645	44,726	2,016,588	4.10
2007	122,389	86,492	35,897	2,095,310	4.13
2008	166,088	96,746	69,342	2,256,528	4.29
2009	179,759	107,211	72,548	2,329,499	4.60
2010	230,439	113,716	116,723	2,327,398	4.89
2011	146,191	118,563	27,628	2,440,580	4.86
2012	142,740	115,159	27,581	2,367,160 [2]	4.86
2013	181,756	121,673	60,083	2,483,000 [2]	4.90
2014	195,239	128,037	67,202	2,620,660 [2]	4.89

NOTES TO SCHEDULE OF CONTRIBUTIONS

Valuation Date:	June 30, 2014
Notes	(1) Actuarially determined contribution rates are calculated as of each July 1. (2) Assumed equal to actual member contributions divided by employee contribution rate.

Methods and Assumptions Used to Determine Contribution Rates Reported in this Schedule:

Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	26 years
Asset Valuation Method	5-Year smoothed market; no corridor
Inflation	3.00%
Salary Increases	Service based table of rates ranging from 10.50% with one year of service to 3.50% with 17 or more years of service, including inflation
Investment Rate of Return	8.00% through June 30, 2017; 8.50% thereafter
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2010 valuation pursuant to an experience study of the period 2004 - 2008, prepared by a former actuary.
Healthy Post-retirement Mortality	RP-2000 annuitant generational mortality table, projected with mortality improvement scale AA, white collar adjustment.

Other Information:

Benefit Increases After Retirement	The post-retirement increase is assumed to increase from 2.0% to 2.5% beginning January 1, 2016. See separate funding report as of July 1, 2014 for additional detail. To obtain this report, contact MSRS as noted on page 3.

Schedule of Investment Returns Multiyear

Last 10 Fiscal Years

FY Ending June 30,	Annual Return[1]
2005	
2006	
2007	
2008	
2009	
2010	
2011	
2012	
2013	
2014	18.67 %

[1] *Annual money-weighted rate of return, net of investment expenses.*

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to MSRS for GASB-compliance purposes. MSRS furnished this information to us for inclusion within this report. We did not audit this information. We are not responsible for its accuracy or completeness.

Rate of Return

For the year ended June 30, 2014, the annual money-weighted rate of return for the State Employees Retirement Fund was 18.67%. The money-weighted rate of return is a method of calculating period-by-period returns on pension plan investments that adjusts for the changing amounts actually invested. For purposes of this schedule, the money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.

10-Year Schedule of Money-Weighted Investment Return

Ten-year data is not available. Additional years will be provided when they become available.

To request additional information about the computation of the annual money-weighted rate of return and the investments for the Minnesota Retirement Systems (including the investments for MSRS' defined benefit retirement funds), contact SBI at 60 Empire Drive, Suite 355, St. Paul, Minnesota, 55103, via email at minn.sbi@state.mn.us or telephone at (651) 296-3328.

SECTION D

ADDITIONAL FINANCIAL STATEMENT DISCLOSURES

ASSET ALLOCATION

Long-Term Expected Return on Plan Assets

The long-term expected rate of return on pension plan investments was determined using a building-block method. Best estimates for expected future real rates of return (expected returns, net of inflation) were developed for each asset class using both long-term historical returns and long-term capital market expectation from a number of investment management and consulting organizations. The asset class estimates and the target allocations were then combined to produce a geometric, long-term expected real rate of return for the portfolio. Inflation expectations were applied to derive the nominal rate of return for the portfolio. For each major asset class that is included in the pension fund's target asset allocation as of June 30, 2014, these best estimates are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return (Geometric)
Domestic Stocks	45.00%	5.50%
International Stocks	15.00	6.00
Bonds	18.00	1.45
Alternative Assets	20.00	6.40
Unallocated Cash	2.00	0.50
Total	100.00%	

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to MSRS for GASB-compliance purposes. MSRS furnished this information to us for inclusion within this report. We did not audit this information. We are not responsible for its accuracy or completeness.

At MSRS' direction, for purposes of this valuation, the long-term expected rate of return assumption is 7.90%. This assumption is based on a review of inflation and investment return assumptions dated September 11, 2014.

SENSITIVITY OF NET PENSION LIABILITY TO THE SINGLE DISCOUNT RATE ASSUMPTION

Single Discount Rate

A single discount rate of 7.90% was used to measure the total pension liability. This single discount rate was based on the expected rate of return on pension plan investments of 7.90%. The projection of cash flows used to determine this single discount rate assumed that plan member and employer contributions will be made at the current statutory contribution rates. Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Regarding the sensitivity of the net pension liability to changes in the single discount rate, the following presents the fund's net pension liability, calculated using a single discount rate of 7.90%, as well as what the fund's net pension liability would be if it were calculated using a single discount rate that is 1-percentage-point lower (6.90%) or 1-percentage-point higher (8.90%) than the current rate:

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

(Dollars in Thousands)

1% Decrease 6.90%	Current Single Discount Rate Assumption 7.90%	1% Increase 8.90%
$3,272,613	$1,621,572	$249,639

A single discount rate of 6.63% was used for the measurement date as of July 1, 2013.

For more information on the calculation of the single discount rate, refer to Section G of this report.

GASB STATEMENT NO. 68 RECONCILIATION *(DOLLARS IN THOUSANDS)*

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Deferred Outflows	Deferred Inflows	Pension Expense
Balance Beginning of Year	**$ 14,099,099**	**$ 10,033,438** [2]	**$ 4,065,661**	**$ -**	**$ -**	
Changes for the Year:						
Service Cost	$ 256,155		$ 256,155			$ 256,155
Interest on Total Pension Liability	922,181		922,181			922,181
Interest on Fiduciary Net Position [1]		$ 778,245	(778,245)			(778,245)
Changes in Benefit Terms	-		-			-
Liability Experience Gains and Losses	(44,023)		(44,023)	$ -	$ 35,218	(8,805)
Changes in Assumptions	(1,477,308)		(1,477,308)	-	1,181,846	(295,462)
Contributions - Employer		128,037	(128,037)			
Contributions - Employees		131,033	(131,033)			(131,033)
Asset Gain/(Loss) [1]		1,051,376	(1,051,376)	-	841,101	(210,275)
Benefit Payouts	(635,928)	(635,928)	-			-
Administrative Expenses		(8,125)	8,125			8,125
Other changes		20,528	(20,528)			(20,528)
Net Changes	**$ (978,923)**	**$ 1,465,166**	**$ (2,444,089)**	**$ -**	**$ 2,058,165**	**$ (257,887)**
Balance End of Year	**$ 13,120,176**	**$ 11,498,604**	**$ 1,621,572**	**$ -**	**$ 2,058,165**	

(1) The sum of these items equals the net investment income of $1,829,621.
(2) Restated Fiduciary Net Position as of July 1, 2013 due to change in accounting principle.

SUMMARY OF POPULATION STATISTICS

		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.*

SECTION E

SUMMARY OF BENEFITS

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 Effective date	Shown as a percent of salary:
	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.

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% (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.

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.

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 with interest	
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 increase at 4.00% annual 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 increase at 4.00% annual interest compounded daily. If a member is vested, a deferred annuity may be elected in lieu of a refund.

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.

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	The 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.

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

Actuarial Methods

Actuarial Cost Method

Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using an **Individual Entry-Age Actuarial Cost Method** having the following characteristics:

(i) the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement;

(ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Actuarial gains/(losses), as they occur, reduce (increase) the Total Pension Liability.

Valuation of Future Post-Retirement Benefit Increases

Benefit recipients receive a future annual 2.0% post-retirement benefit increase. If the funding ratio 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%.

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 of 7.90%
- Liabilities and normal cost based on statutory funding assumptions
    - Discount rate of 8.00% through June 30, 2017; 8.50% thereafter
    - Statutory salary increases (rate of 10.50% at year 1 declining to 3.50% at years 17 and later)
- 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
- Current statutory contributions (i.e., not including potential contribution increases under the contribution stabilizer statutes) as directed by MSRS

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.

To determine the Total Pension Liability as of July 1, 2013, we performed a similar projection, and assumed the plan would pay 2.0% benefit increases indefinitely.

Decrement Timing

All decrements are assumed to occur mid-year.

Asset Valuation Method

Fair value of assets.

Summary of Actuarial Assumptions

The following assumptions were used in valuing the liabilities and benefits under the plan. All demographic 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 demographic assumptions are based on the last experience study, dated August 2009, prepared by a former actuary. The economic assumptions are based on a review of inflation and investment return assumptions dated September 11, 2014.

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	7.90%
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	2.75% per year.
Payroll growth	3.50% 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, white collar adjustment, 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.

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	For purposes of the Projection of Plan Fiduciary Net Position, total prior year administrative expenses expressed as a percentage of prior year projected payroll are assumed to increase 3.50% per year and are allocated to the closed group based on the ratio of closed group payroll to total 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.
Unclassified Plan Reversion	Liabilities for active members are increased by 0.18% (0.24% as of July 1, 2013) to account for the effect of Unclassified members who elect coverage under the State Employees Retirement Fund.

Summary of Actuarial Assumptions (Continued)

Unknown data for certain members	To prepare this report, GRS has used and relied on participant data supplied by MSRS. 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.

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	The single discount rate was changed from 6.63% to 7.90%. As of July 1, 2013, the post-retirement benefit increase is assumed to be 2.0% indefinitely. As of July 1, 2014, the benefit increase rate is assumed to increase from 2.0% to 2.5% on January 1, 2016.

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

Summary of Actuarial Assumptions (Concluded)

Retirement			Salary Scale	
Age	Rule of 90 Eligible	All Others	Year	Increase
55	20%	5%	1	10.25%
56	15	5	2	7.85
57	15	5	3	6.65
58	15	5	4	5.95
59	20	6	5	5.45
60	20	7	6	5.05
61	22	12	7	4.75
62	40	22	8	4.45
63	30	16	9	4.25
64	30	18	10	4.15
65	40	40	11	3.95
66	30	30	12	3.85
67	25	25	13	3.75
68	25	25	14	3.55
69	25	25	15	3.45
70	30	30	16	3.35
71+	100	100	17+	3.25

SECTION G

CALCULATION OF THE SINGLE DISCOUNT RATE

CALCULATION OF THE SINGLE DISCOUNT RATE

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Fiduciary Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the long-term expected rate of return is used as the discount rate. In years where assets are not projected to be sufficient to meet benefit payments, the use of a "risk-free" municipal bond rate is required, as described in the following paragraph.

The *Single Discount Rate* (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the plan fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating (which is published by the Federal Reserve Board (FRB)) as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the long-term expected rate of return on pension plan investments is 7.90% and the municipal bond rate is 4.29% (based on the FRB rate as of June 26, 2014). The Plan's Fiduciary Net Position was projected to be available to meet all projected future benefit payments of current active and inactive employees. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the Total Pension Liability. **The resulting single discount rate as of July 1, 2014 is 7.90%.**

The tables in this section provide background for the development of the single discount rate.

The **Projection of Contributions** table shows the development of expected contributions in future years. Normal Cost contributions for future hires are not included (nor are their liabilities).

The **Projection of Plan Fiduciary Net Position** table shows the development of expected asset levels in future years.

The **Present Values of Projected Benefit Payments** table shows the development of the Single Discount Rate (SDR). It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total at the SDR.

We performed a similar analysis as of July 1, 2013. Based on the long-term expected rate of return of 7.90% and a municipal bond rate of 4.29% (based on the FRB rate as of June 27, 2013), the Plan's Fiduciary Net Position was projected to be available to meet future benefit payments of current active and inactive employees through June 30, 2045. Benefit payments projected to occur through June 30, 2045 were discounted using 7.9%, the expected long-term rate of return on pension plan investments. Beginning July 1, 2045 when benefit payments exceed the Plan's Fiduciary Net Position, benefit payments were discounted at 4.63%, the municipal bond rate. An equivalent discount rate was determined that produced approximately the same present value of projected benefits as the present value of projected benefits using 7.9% through June 30, 2045 and 4.63% after. **The resulting single discount rate as of July 1, 2013 is 6.63%.**

SINGLE DISCOUNT RATE DEVELOPMENT

Projection of Contributions *(Dollars in Thousands)*

	Projected Covered-Employee Payroll			Projected Contributions			
Year	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll toward current UAL*	Total Contributions
	(a)	(b)	(c) = (a) + (b)	(d) = (a) * 5.5%	(e) = (a) * 5.5%	(f)	(g) = (d) + (e) + (f)
0	$ 2,620,660		$ 2,620,660				
1	2,647,040		2,647,040	$ 145,587	$ 145,587		$ 291,174
2	2,489,287	$ 250,400	2,739,687	136,911	136,911	$ 6,836	280,658
3	2,358,209	477,367	2,835,576	129,702	129,702	13,032	272,436
4	2,240,034	694,787	2,934,821	123,202	123,202	18,968	265,372
5	2,122,945	914,595	3,037,540	116,762	116,762	24,968	258,492
6	2,008,806	1,135,047	3,143,853	110,484	110,484	30,987	251,955
7	1,898,679	1,355,209	3,253,888	104,427	104,427	36,997	245,851
8	1,793,891	1,573,883	3,367,774	98,664	98,664	42,967	240,295
9	1,694,550	1,791,096	3,485,646	93,200	93,200	48,897	235,297
10	1,600,376	2,007,268	3,607,644	88,021	88,021	54,798	230,840
11	1,510,916	2,222,996	3,733,912	83,100	83,100	60,688	226,888
12	1,425,754	2,438,845	3,864,599	78,416	78,416	66,580	223,412
13	1,344,390	2,655,469	3,999,859	73,941	73,941	72,494	220,376
14	1,266,644	2,873,211	4,139,855	69,665	69,665	78,439	217,769
15	1,192,406	3,092,343	4,284,749	65,582	65,582	84,421	215,585
16	1,120,811	3,313,905	4,434,716	61,645	61,645	90,470	213,760
17	1,051,736	3,538,195	4,589,931	57,846	57,846	96,593	212,285
18	985,315	3,765,263	4,750,578	54,192	54,192	102,792	211,176
19	921,207	3,995,642	4,916,849	50,666	50,666	109,081	210,413
20	859,343	4,229,595	5,088,938	47,264	47,264	115,468	209,996
21	799,606	4,467,445	5,267,051	43,978	43,978	121,961	209,917
22	742,089	4,709,309	5,451,398	40,815	40,815	128,564	210,194
23	686,817	4,955,380	5,642,197	37,775	37,775	135,282	210,832
24	633,560	5,206,114	5,839,674	34,846	34,846	142,127	211,819
25	581,999	5,462,063	6,044,062	32,010	32,010	149,114	213,134
26	531,535	5,724,069	6,255,604	29,234	29,234	156,267	214,735
27	481,719	5,992,832	6,474,551	26,495	26,495	163,604	216,594
28	433,188	6,267,972	6,701,160	23,825	23,825	171,116	218,766
29	386,300	6,549,401	6,935,701	21,247	21,247	178,799	221,293
30	340,989	6,837,461	7,178,450	18,754	18,754	186,663	224,171
31	297,547	7,132,149	7,429,696	16,365	16,365	194,708	227,438
32	256,198	7,433,537	7,689,735	14,091	14,091	202,936	231,118
33	217,253	7,741,623	7,958,876	11,949	11,949	211,346	235,244
34	181,410	8,056,027	8,237,437	9,978	9,978	219,930	239,886
35	148,897	8,376,850	8,525,747	8,189	8,189	228,688	245,066
36	119,730	8,704,418	8,824,148	6,585	6,585	237,631	250,801
37	94,069	9,038,924	9,132,993	5,174	5,174	246,763	257,111
38	72,113	9,380,535	9,452,648	3,966	3,966	256,089	264,021
39	53,906	9,729,585	9,783,491	2,965	2,965	265,618	271,548
40	39,311	10,086,602	10,125,913	2,162	2,162	275,364	279,688
41	27,901	10,452,419	10,480,320	1,535	1,535	285,351	288,421
42	19,140	10,827,991	10,847,131	1,053	1,053	295,604	297,710
43	12,689	11,214,091	11,226,780	698	698	306,145	307,541
44	8,170	11,611,548	11,619,718	449	449	316,995	317,893
45	5,067	12,021,341	12,026,408	279	279	328,183	328,741
46	2,954	12,444,378	12,447,332	162	162	339,732	340,056
47	1,564	12,881,425	12,882,989	86	86	351,663	351,835
48	715	13,333,178	13,333,893	39	39	363,996	364,074
49	282	13,800,298	13,800,580	15	15	376,748	376,778
50	114	14,283,486	14,283,600	6	6	389,939	389,951

**Contributions related to future employees in excess of normal cost and expenses of 8.27% of pay.*

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

SINGLE DISCOUNT RATE DEVELOPMENT

Projection of Contributions (continued) *(Dollars in Thousands)*

	Projected Covered-Employee Payroll			Projected Contributions			
Year	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll toward current UAL*	Total Contributions
	(a)	(b)	(c) = (a) + (b)	(d) = (a) * 5.5%	(e) = (a) * 5.5%	(f)	(g) = (d) + (e) + (f)
51	47	14,783,479	14,783,526	$ 3	$ 3	$ 403,589	$ 403,595
52	19	15,300,930	15,300,949	1	1	417,715	417,717
53	7	15,836,476	15,836,483	-	-	432,336	432,336
54	3	16,390,756	16,390,759	-	-	447,468	447,468
55	1	16,964,435	16,964,436	-	-	463,129	463,129
56	-	17,558,191	17,558,191	-	-	479,339	479,339
57	-	18,172,728	18,172,728	-	-	496,115	496,115
58	-	18,808,773	18,808,773	-	-	513,480	513,480
59	-	19,467,081	19,467,081	-	-	531,451	531,451
60	-	20,148,428	20,148,428	-	-	550,052	550,052
61	-	20,853,623	20,853,623	-	-	569,304	569,304
62	-	21,583,500	21,583,500	-	-	589,230	589,230
63	-	22,338,923	22,338,923	-	-	609,853	609,853
64	-	23,120,785	23,120,785	-	-	631,197	631,197
65	-	23,930,012	23,930,012	-	-	653,289	653,289
66	-	24,767,563	24,767,563	-	-	676,154	676,154
67	-	25,634,428	25,634,428	-	-	699,820	699,820
68	-	26,531,633	26,531,633	-	-	724,314	724,314
69	-	27,460,240	27,460,240	-	-	749,665	749,665
70	-	28,421,348	28,421,348	-	-	775,903	775,903
71	-	29,416,095	29,416,095	-	-	803,059	803,059
72	-	30,445,659	30,445,659	-	-	831,166	831,166
73	-	31,511,257	31,511,257	-	-	860,257	860,257
74	-	32,614,151	32,614,151	-	-	890,366	890,366
75	-	33,755,646	33,755,646	-	-	921,529	921,529
76	-	34,937,094	34,937,094	-	-	953,783	953,783
77	-	36,159,892	36,159,892	-	-	987,165	987,165
78	-	37,425,488	37,425,488	-	-	1,021,716	1,021,716
79	-	38,735,380	38,735,380	-	-	1,057,476	1,057,476
80	-	40,091,118	40,091,118	-	-	1,094,488	1,094,488
81	-	41,494,308	41,494,308	-	-	1,132,795	1,132,795
82	-	42,946,608	42,946,608	-	-	1,172,442	1,172,442
83	-	44,449,740	44,449,740	-	-	1,213,478	1,213,478
84	-	46,005,481	46,005,481	-	-	1,255,950	1,255,950
85	-	47,615,672	47,615,672	-	-	1,299,908	1,299,908
86	-	49,282,221	49,282,221	-	-	1,345,405	1,345,405
87	-	51,007,099	51,007,099	-	-	1,392,494	1,392,494
88	-	52,792,347	52,792,347	-	-	1,441,231	1,441,231
89	-	54,640,079	54,640,079	-	-	1,491,674	1,491,674
90	-	56,552,482	56,552,482	-	-	1,543,883	1,543,883
91	-	58,531,819	58,531,819	-	-	1,597,919	1,597,919
92	-	60,580,432	60,580,432	-	-	1,653,846	1,653,846
93	-	62,700,748	62,700,748	-	-	1,711,730	1,711,730
94	-	64,895,274	64,895,274	-	-	1,771,641	1,771,641
95	-	67,166,608	67,166,608	-	-	1,833,648	1,833,648
96	-	69,517,440	69,517,440	-	-	1,897,826	1,897,826
97	-	71,950,550	71,950,550	-	-	1,964,250	1,964,250
98	-	74,468,819	74,468,819	-	-	2,032,999	2,032,999
99	-	77,075,228	77,075,228	-	-	2,104,154	2,104,154
100	-	79,772,861	79,772,861	-	-	2,177,799	2,177,799

**Contributions related to future employees in excess of normal cost and expenses of 8.27% of pay.*

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

SINGLE DISCOUNT RATE DEVELOPMENT

Projection of Plan Fiduciary Net Position *(Dollars in Thousands)*

Year	Projected Beginning Plan Net Fiduciary Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.90%	Projected Ending Plan Fiduciary Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
1	$ 11,498,604	$ 291,174	$ 682,176	$ 8,471	$ 892,910	$ 11,992,041
2	11,992,041	280,658	739,168	7,966	929,296	12,454,861
3	12,454,861	272,436	799,206	7,546	963,230	12,883,775
4	12,883,775	265,372	857,351	7,168	994,602	13,279,230
5	13,279,230	258,492	914,401	6,793	1,023,380	13,639,908
6	13,639,908	251,955	970,932	6,428	1,049,444	13,963,947
7	13,963,947	245,851	1,024,570	6,076	1,072,741	14,251,893
8	14,251,893	240,295	1,076,991	5,740	1,093,256	14,502,713
9	14,502,713	235,297	1,125,124	5,423	1,111,024	14,718,487
10	14,718,487	230,840	1,171,937	5,121	1,126,095	14,898,364
11	14,898,364	226,888	1,215,894	4,835	1,138,460	15,042,983
12	15,042,983	223,412	1,258,326	4,562	1,148,117	15,151,624
13	15,151,624	220,376	1,298,015	4,302	1,155,054	15,224,737
14	15,224,737	217,769	1,334,427	4,053	1,159,327	15,263,353
15	15,263,353	215,585	1,367,473	3,816	1,161,022	15,268,671
16	15,268,671	213,760	1,398,524	3,587	1,160,177	15,240,497
17	15,240,497	212,285	1,425,974	3,366	1,156,839	15,180,281
18	15,180,281	211,176	1,450,810	3,153	1,151,085	15,088,579
19	15,088,579	210,413	1,472,354	2,948	1,142,984	14,966,674
20	14,966,674	209,996	1,491,073	2,750	1,132,620	14,815,467
21	14,815,467	209,917	1,507,025	2,559	1,120,061	14,635,861
22	14,635,861	210,194	1,520,470	2,375	1,105,369	14,428,579
23	14,428,579	210,832	1,530,490	2,198	1,088,637	14,195,360
24	14,195,360	211,819	1,536,275	2,027	1,070,034	13,938,911
25	13,938,911	213,134	1,537,605	1,862	1,049,780	13,662,358
26	13,662,358	214,735	1,535,537	1,701	1,028,081	13,367,936
27	13,367,936	216,594	1,531,122	1,542	1,005,071	13,056,937
28	13,056,937	218,766	1,524,333	1,386	980,855	12,730,839
29	12,730,839	221,293	1,514,579	1,236	955,575	12,391,892
30	12,391,892	224,171	1,502,203	1,091	929,395	12,042,164
31	12,042,164	227,438	1,488,158	952	902,442	11,682,934
32	11,682,934	231,118	1,472,579	820	874,814	11,315,467
33	11,315,467	235,244	1,455,356	695	846,617	10,941,277
34	10,941,277	239,886	1,435,824	581	817,997	10,562,755
35	10,562,755	245,066	1,413,896	476	789,148	10,182,597
36	10,182,597	250,801	1,390,273	383	760,257	9,802,999
37	9,802,999	257,111	1,364,673	301	731,508	9,426,644
38	9,426,644	264,021	1,337,054	231	703,117	9,056,497
39	9,056,497	271,548	1,306,888	172	675,338	8,696,323
40	8,696,323	279,688	1,273,627	126	648,490	8,350,748
41	8,350,748	288,421	1,237,788	89	622,918	8,024,210
42	8,024,210	297,710	1,199,706	61	598,958	7,721,111
43	7,721,111	307,541	1,159,387	41	576,958	7,446,182
44	7,446,182	317,893	1,116,532	26	557,300	7,204,817
45	7,204,817	328,741	1,071,735	16	540,389	7,002,196
46	7,002,196	340,056	1,026,326	9	526,580	6,842,497
47	6,842,497	351,835	980,895	5	516,181	6,729,613
48	6,729,613	364,074	935,691	2	509,489	6,667,483
49	6,667,483	376,778	890,747	1	506,815	6,660,328
50	6,660,328	389,951	846,190	-	508,487	6,712,576

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

SINGLE DISCOUNT RATE DEVELOPMENT

Projection of Plan Fiduciary Net Position (continued) *(Dollars in Thousands)*

Year	Projected Beginning Plan Net Fiduciary Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.90%	Projected Ending Plan Fiduciary Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
51	$ 6,712,576	$ 403,595	$ 802,050	$ -	$ 514,854	$ 6,828,975
52	6,828,975	417,717	758,264	-	526,293	7,014,721
53	7,014,721	432,336	714,794	-	543,218	7,275,481
54	7,275,481	447,468	671,587	-	566,078	7,617,440
55	7,617,440	463,129	628,620	-	595,365	8,047,314
56	8,047,314	479,339	585,906	-	631,608	8,572,355
57	8,572,355	496,115	543,492	-	675,380	9,200,358
58	9,200,358	513,480	501,466	-	727,294	9,939,666
59	9,939,666	531,451	459,959	-	788,004	10,799,162
60	10,799,162	550,052	419,151	-	858,206	11,788,269
61	11,788,269	569,304	379,262	-	938,637	12,916,948
62	12,916,948	589,230	340,538	-	1,030,075	14,195,715
63	14,195,715	609,853	303,245	-	1,133,342	15,635,665
64	15,635,665	631,197	267,648	-	1,249,305	17,248,519
65	17,248,519	653,289	234,016	-	1,378,879	19,046,671
66	19,046,671	676,154	202,596	-	1,523,037	21,043,266
67	21,043,266	699,820	173,581	-	1,682,809	23,252,314
68	23,252,314	724,314	147,119	-	1,859,299	25,688,808
69	25,688,808	749,665	123,301	-	2,053,687	28,368,859
70	28,368,859	775,903	102,151	-	2,267,247	31,309,858
71	31,309,858	803,059	83,628	-	2,501,356	34,530,645
72	34,530,645	831,166	67,640	-	2,757,507	38,051,678
73	38,051,678	860,257	54,037	-	3,037,323	41,895,221
74	41,895,221	890,366	42,634	-	3,342,572	46,085,525
75	46,085,525	921,529	33,217	-	3,675,178	50,649,015
76	50,649,015	953,783	25,560	-	4,037,240	55,614,478
77	55,614,478	987,165	19,425	-	4,431,043	61,013,261
78	61,013,261	1,021,716	14,579	-	4,859,073	66,879,471
79	66,879,471	1,057,476	10,805	-	5,324,036	73,250,178
80	73,250,178	1,094,488	7,908	-	5,828,868	80,165,626
81	80,165,626	1,132,795	5,715	-	6,376,758	87,669,464
82	87,669,464	1,172,442	4,077	-	6,971,161	95,808,990
83	95,808,990	1,213,478	2,871	-	7,615,820	104,635,417
84	104,635,417	1,255,950	1,994	-	8,314,788	114,204,161
85	114,204,161	1,299,908	1,366	-	9,072,446	124,575,149
86	124,575,149	1,345,405	923	-	9,893,534	135,813,165
87	135,813,165	1,392,494	614	-	10,783,174	147,988,219
88	147,988,219	1,441,231	403	-	11,746,900	161,175,947
89	161,175,947	1,491,674	261	-	12,790,691	175,458,051
90	175,458,051	1,543,883	166	-	13,921,004	190,922,772
91	190,922,772	1,597,919	104	-	15,144,813	207,665,400
92	207,665,400	1,653,846	64	-	16,469,649	225,788,831
93	225,788,831	1,711,730	39	-	17,903,644	245,404,166
94	245,404,166	1,771,641	23	-	19,455,578	266,631,362
95	266,631,362	1,833,648	13	-	21,134,930	289,599,927
96	289,599,927	1,897,826	7	-	22,951,933	314,449,679
97	314,449,679	1,964,250	4	-	24,917,638	341,331,563
98	341,331,563	2,032,999	2	-	27,043,971	370,408,531
99	370,408,531	2,104,154	1	-	29,343,808	401,856,492
100	401,856,492	2,177,799	1	-	31,831,051	435,865,341

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

SINGLE DISCOUNT RATE DEVELOPMENT

Present Values of Projected Benefits *(Dollars in Thousands)*

Year	Projected Beginning Plan Fiduciary Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=((c)/(1+sdr)^(a-.5)
1	$ 11,498,604	$ 682,176	$ 682,176	$ -	$ 656,728	$ -	$ 656,728
2	11,992,041	739,168	739,168	-	659,494	-	659,494
3	12,454,861	799,206	799,206	-	660,854	-	660,854
4	12,883,775	857,351	857,351	-	657,028	-	657,028
5	13,279,230	914,401	914,401	-	649,442	-	649,442
6	13,639,908	970,932	970,932	-	639,103	-	639,103
7	13,963,947	1,024,570	1,024,570	-	625,032	-	625,032
8	14,251,893	1,076,991	1,076,991	-	608,907	-	608,907
9	14,502,713	1,125,124	1,125,124	-	589,547	-	589,547
10	14,718,487	1,171,937	1,171,937	-	569,116	-	569,116
11	14,898,364	1,215,894	1,215,894	-	547,231	-	547,231
12	15,042,983	1,258,326	1,258,326	-	524,864	-	524,864
13	15,151,624	1,298,015	1,298,015	-	501,778	-	501,778
14	15,224,737	1,334,427	1,334,427	-	478,085	-	478,085
15	15,263,353	1,367,473	1,367,473	-	454,054	-	454,054
16	15,268,671	1,398,524	1,398,524	-	430,366	-	430,366
17	15,240,497	1,425,974	1,425,974	-	406,685	-	406,685
18	15,180,281	1,450,810	1,450,810	-	383,474	-	383,474
19	15,088,579	1,472,354	1,472,354	-	360,675	-	360,675
20	14,966,674	1,491,073	1,491,073	-	338,517	-	338,517
21	14,815,467	1,507,025	1,507,025	-	317,089	-	317,089
22	14,635,861	1,520,470	1,520,470	-	296,495	-	296,495
23	14,428,579	1,530,490	1,530,490	-	276,597	-	276,597
24	14,195,360	1,536,275	1,536,275	-	257,315	-	257,315
25	13,938,911	1,537,605	1,537,605	-	238,682	-	238,682
26	13,662,358	1,535,537	1,535,537	-	220,909	-	220,909
27	13,367,936	1,531,122	1,531,122	-	204,146	-	204,146
28	13,056,937	1,524,333	1,524,333	-	188,361	-	188,361
29	12,730,839	1,514,579	1,514,579	-	173,453	-	173,453
30	12,391,892	1,502,203	1,502,203	-	159,440	-	159,440
31	12,042,164	1,488,158	1,488,158	-	146,384	-	146,384
32	11,682,934	1,472,579	1,472,579	-	134,247	-	134,247
33	11,315,467	1,455,356	1,455,356	-	122,962	-	122,962
34	10,941,277	1,435,824	1,435,824	-	112,430	-	112,430
35	10,562,755	1,413,896	1,413,896	-	102,607	-	102,607
36	10,182,597	1,390,273	1,390,273	-	93,506	-	93,506
37	9,802,999	1,364,673	1,364,673	-	85,064	-	85,064
38	9,426,644	1,337,054	1,337,054	-	77,240	-	77,240
39	9,056,497	1,306,888	1,306,888	-	69,970	-	69,970
40	8,696,323	1,273,627	1,273,627	-	63,197	-	63,197
41	8,350,748	1,237,788	1,237,788	-	56,922	-	56,922
42	8,024,210	1,199,706	1,199,706	-	51,131	-	51,131
43	7,721,111	1,159,387	1,159,387	-	45,795	-	45,795
44	7,446,182	1,116,532	1,116,532	-	40,873	-	40,873
45	7,204,817	1,071,735	1,071,735	-	36,361	-	36,361
46	7,002,196	1,026,326	1,026,326	-	32,271	-	32,271
47	6,842,497	980,895	980,895	-	28,584	-	28,584
48	6,729,613	935,691	935,691	-	25,270	-	25,270
49	6,667,483	890,747	890,747	-	22,295	-	22,295
50	6,660,328	846,190	846,190	-	19,629	-	19,629

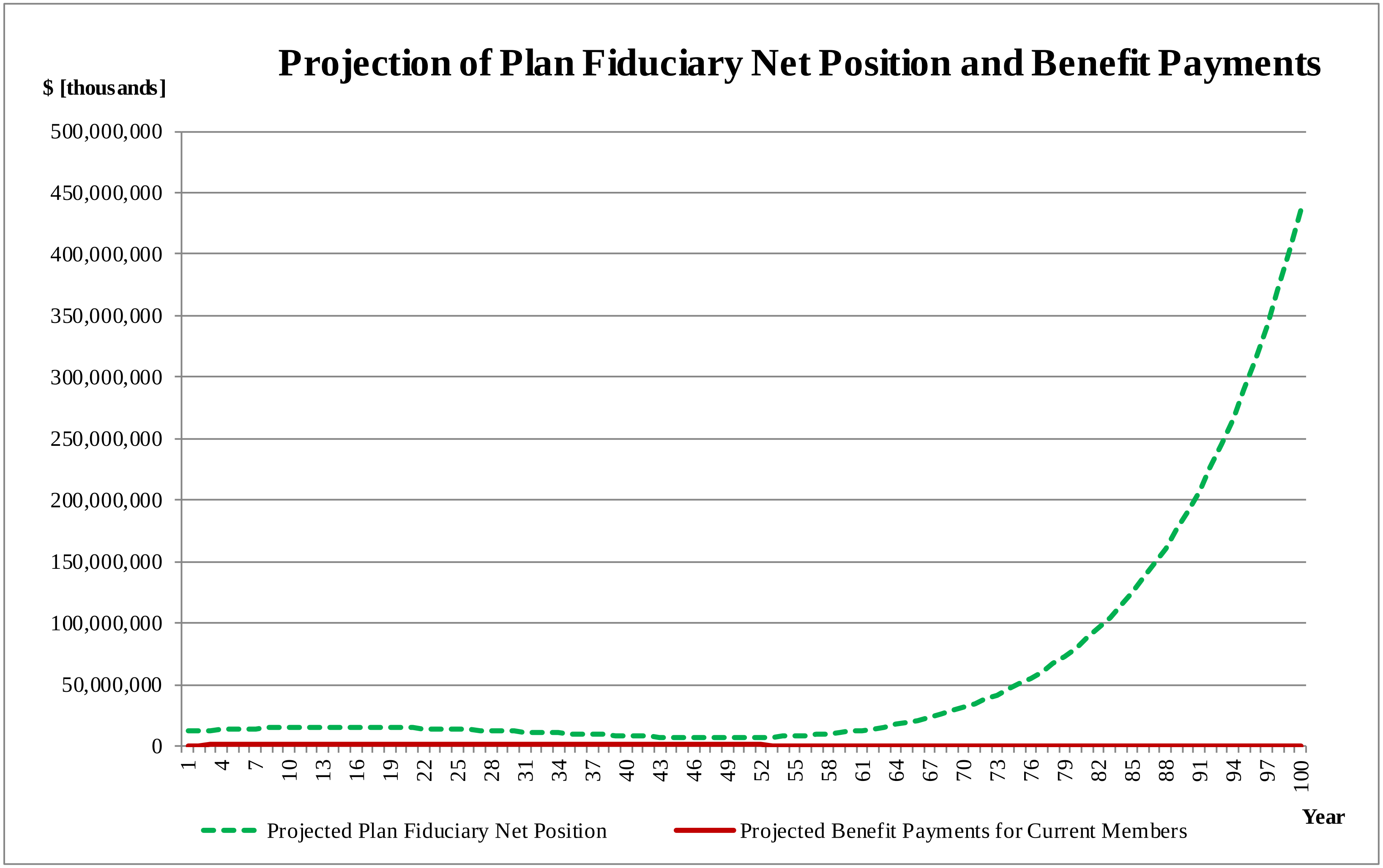
For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

SINGLE DISCOUNT RATE DEVELOPMENT

Present Values of Projected Benefits (continued) *(Dollars in Thousands)*

Year	Projected Beginning Plan Fiduciary Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=((c)/(1+sdr)^(a-.5)
51	$ 6,712,576	$ 802,050	$ 802,050	$ -	$ 17,243	$ -	$ 17,243
52	6,828,975	758,264	758,264	-	15,108	-	15,108
53	7,014,719	714,794	714,794	-	13,199	-	13,199
54	7,275,479	671,587	671,587	-	11,494	-	11,494
55	7,617,439	628,620	628,620	-	9,971	-	9,971
56	8,047,313	585,906	585,906	-	8,613	-	8,613
57	8,572,354	543,492	543,492	-	7,404	-	7,404
58	9,200,357	501,466	501,466	-	6,332	-	6,332
59	9,939,664	459,959	459,959	-	5,382	-	5,382
60	10,799,160	419,151	419,151	-	4,546	-	4,546
61	11,788,267	379,262	379,262	-	3,812	-	3,812
62	12,916,946	340,538	340,538	-	3,172	-	3,172
63	14,195,713	303,245	303,245	-	2,618	-	2,618
64	15,635,663	267,648	267,648	-	2,141	-	2,141
65	17,248,517	234,016	234,016	-	1,735	-	1,735
66	19,046,670	202,596	202,596	-	1,392	-	1,392
67	21,043,266	173,581	173,581	-	1,106	-	1,106
68	23,252,314	147,119	147,119	-	868	-	868
69	25,688,808	123,301	123,301	-	675	-	675
70	28,368,858	102,151	102,151	-	518	-	518
71	31,309,857	83,628	83,628	-	393	-	393
72	34,530,645	67,640	67,640	-	295	-	295
73	38,051,679	54,037	54,037	-	218	-	218
74	41,895,222	42,634	42,634	-	159	-	159
75	46,085,526	33,217	33,217	-	115	-	115
76	50,649,015	25,560	25,560	-	82	-	82
77	55,614,478	19,425	19,425	-	58	-	58
78	61,013,262	14,579	14,579	-	40	-	40
79	66,879,472	10,805	10,805	-	28	-	28
80	73,250,179	7,908	7,908	-	19	-	19
81	80,165,627	5,715	5,715	-	13	-	13
82	87,669,464	4,077	4,077	-	8	-	8
83	95,808,990	2,871	2,871	-	5	-	5
84	104,635,418	1,994	1,994	-	3	-	3
85	114,204,161	1,366	1,366	-	2	-	2
86	124,575,149	923	923	-	1	-	1
87	135,813,165	614	614	-	1	-	1
88	147,988,219	403	403	-	1	-	1
89	161,175,948	261	261	-	-	-	-
90	175,458,052	166	166	-	-	-	-
91	190,922,773	104	104	-	-	-	-
92	207,665,401	64	64	-	-	-	-
93	225,788,832	39	39	-	-	-	-
94	245,404,168	23	23	-	-	-	-
95	266,631,364	13	13	-	-	-	-
96	289,599,929	7	7	-	-	-	-
97	314,449,681	4	4	-	-	-	-
98	341,331,565	2	2	-	-	-	-
99	370,408,532	1	1	-	-	-	-
100	401,856,493	1	1	-	-	-	-
				Totals	$ 14,558,974	$ -	$ 14,558,974

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.


Projection of Plan Fiduciary Net Position and Benefit Payments
$ [thousands]
500,000,000
450,000,000
400,000,000
350,000,000
300,000,000
250,000,000
200,000,000
150,000,000
100,000,000
50,000,000
0
1
4
7
10
13
16
19
22
25
28
31
34
37
40
43
46
49
52
55
58
61
64
67
70
73
76
79
82
85
88
91
94
97
100
Year
Projected Plan Fiduciary Net Position
Projected Benefit Payments for Current Members

SECTION H

GLOSSARY OF TERMS

GLOSSARY OF TERMS

Actuarial Accrued Liability (AAL)	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability."
Actuarial Assumptions	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
Accrued Service	Service credited under the system which was rendered before the date of the actuarial valuation.
Actuarial Equivalent	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
Actuarial Gain (Loss)	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
Actuarial Present Value (APV)	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future benefit payments at predetermined rates of interest to reflect the expected effects of the time value (present value) of money and the probabilities of payment.
Actuarial Valuation	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.
Actuarial Valuation Date	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution (ADC)	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

GLOSSARY OF TERMS

Amortization Payment The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.

Amortization Method The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be "open" (meaning, reset each year) or "closed" (the number of years remaining will decline each year.

Cost-of-Living Adjustments Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.

Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan) A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.

Covered-Employee Payroll The payroll of covered employees, which is typically only the pensionable pay (meets the statutory salary definition) and does not include pay above any pay cap.

Deferred Inflows and Outflows of Resources The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.

Discount Rate or Single Discount Rate For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically:

1. The benefit payments to be made while the pension plans' fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period and;
2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.

Entry Age Actuarial Cost Method or Entry Age Normal (EAN) The EAN is a funding method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit ages(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.

GLOSSARY OF TERMS

Fiduciary Net Position	The fiduciary net position is the value of the net assets of the trust restricted for pension benefits.
GASB	The Governmental Accounting Standards Board is an organization that exists with authority to promulgate accounting standards for state and local governmental entities.
Long-Term Expected Rate of Return	The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.
Money-Weighted Rate of Return	The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.
Multiple-Employer Defined Benefit Pension Plan	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
Municipal Bond Rate	The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.
Net Pension Liability (NPL)	The NPL is the liability of employers and non-employer contribution entities to plan members for benefits provided through a defined benefit pension plan.
Non-Employer Contributing Entities	Non-employer contributing entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB Accounting Statements No. 67 and No. 68 plan members are not considered non-employer contribution entities.
Normal Cost	The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method.
Other Postemployment Benefits (OPEB)	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits regardless of the manner in which they are provided. Other post-employment benefits do not include termination benefits.
Real Rate of Return	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
Service Cost	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.

GLOSSARY OF TERMS

Total Pension Expense The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year:

1. Service Cost
2. Interest on the Total Pension Liability
3. Current-Period Changes in Benefit Terms
4. Employee Contributions
5. Projected Earnings on Plan Investments
6. Pension Plan Administrative Expense
7. Other Changes in Plan Fiduciary Net Position
8. Recognition of Outflow (Inflow) of Resources due to the difference between expected and actual experience in measurement of the Total Pension Liability
9. Recognition of Outflow (Inflow) of Resources due to assumption changes
10. Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings on pension plan investments

Total Pension Liability (TPL) The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.

Unfunded Actuarial Accrued Liability (UAAL) The UAAL is the difference between actuarial accrued liability and valuation assets.

Valuation Assets The valuation assets are the plan fiduciary net position used in determining the net pension liability of the fund. For purposes of the GASB Statement No. 67, the asset valuation method is equal to the market value of assets.

Gabriel Roeder Smith & Company
Consultants & Actuaries

MINNESOTA STATE RETIREMENT SYSTEM

CORRECTIONAL EMPLOYEES RETIREMENT FUND

GASB STATEMENTS NO. 67 AND NO. 68 ACCOUNTING AND FINANCIAL REPORTING FOR PENSIONS

JUNE 30, 2014

GRS Gabriel Roeder Smith & Company
Consultants & Actuaries

100 South Fifth Street
Suite 1900
Minneapolis, MN 55402-1267

612.605.6200 phone
612.605.6203 fax
www.gabrielroeder.com

December 1, 2014

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

Dear Board of Directors:

This report provides accounting and financial reporting information that is intended to comply with the Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68 for the Correctional Employees Retirement Fund ("CERF"). These calculations have been made on a basis that is consistent with our understanding of these accounting standards.

GASB Statement No. 67 is the accounting standard that applies to the financial reports issued by retirement systems. GASB Statement No. 68 establishes accounting and financial reporting for state and local government employers who provide their employees (including former employees) pension benefits through a trust.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of providing reporting and disclosure information that satisfies the requirements of GASB Statements No. 67 and No. 68. The calculation of the plan's liability for this report may not be applicable for funding purposes of the plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statement No. 67 may produce significantly different results. The information in this report is calculated on a total plan basis. MSRS is responsible for preparing the Schedule of Employer Allocations and the Schedule of Pension Amounts by Employer. This report may be provided to parties other than the Minnesota State Retirement System (MSRS) only in its entirety and only with the permission of MSRS.

This report is based upon information, furnished to us by MSRS, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. If your understanding of this information is different, please let us know. This information was checked for internal consistency, but it was not otherwise audited.

To the best of our knowledge, the information contained with this report is accurate and fairly represents the actuarial position of the Correctional Employees Retirement Fund as of the measurement date. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board. 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 opinion contained herein.

Respectfully submitted,

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

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

TABLE OF CONTENTS

SECTION A

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

As of June 30, 2014 *(Dollars in Thousands)*

	2014
Actuarial Valuation Date	June 30, 2014
Measurement Date of the Net Pension Liability	June 30, 2014
Membership	
Number of	
- Service Retirements	2,075
- Survivors	174
- Disability Retirements	268
- Deferred Retirements	1,232
- Terminated other non-vested	384
- Active Members	4,504
- Total	8,637
Covered-employee Payroll	$ 219,244 [1]
Net Pension Liability	
Total Pension Liability	$ 1,353,386
Plan Fiduciary Net Position	877,056
Net Pension Liability	$ 476,330
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	64.80%
Net Pension Liability as a Percentage of Covered-Employee Payroll	217.26%
Development of the Single Discount Rate	
Single Discount Rate	6.82%
Long-Term Expected Rate of Investment Return	7.90%
Long-Term Municipal Bond Rate [2]	4.29%
Last year ending June 30 in the 2015 to 2114 projection period for which projected benefit payments are fully funded	2056
Total Pension Expense/ (Income)	$ 23,637

Deferred Outflows and Deferred Inflows of Resources by Source to be recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience in the measurement of the Total Pension Liability	$ 3,419	$ 0
Changes in assumptions	0	122,556
Net difference between projected and actual earnings on pension plan investments	$ 0	63,039
Total	$ 3,419	$ 185,595

[1] *Assumed equal to actual member contributions divided by employee contribution rate.*

[2] *Based on the Bond Buyer 20-Bond Index of general obligation municipal bonds as of June 26, 2014 (i.e., the weekly rate closest to but not later than the Measurement Date).*

DISCUSSION

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67, *Financial Reporting for Pension Plans* establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68, *Accounting and Financial Reporting for Pensions* establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

Financial Statements

GASB Statement No. 68 requires state and local governmental employers to recognize the net pension liability and the pension expense on their financial statements. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

The pension expense recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the difference between expected and actual experience in the measurement of the Total Pension Liability, assumption changes and investment experience.

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a Statement of Fiduciary Net Position and a Statement of Changes in Fiduciary Net Position in accordance with GASB Statement No. 67. The *Statement of Fiduciary Net Position* presents the assets and liabilities of the pension plan at the end of the pension plan's reporting period. The *Statement of Changes in Fiduciary Net Position* presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.

Notes to Financial Statements

GASB Statement No. 68 requires the notes to the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions.

Both GASB Statements No. 67 and No. 68 require the notes to the financial statements for the employers and pension plans to include certain descriptive information about the pension plans through which the pension benefits are provided. The list of disclosure items should include:

- a description of benefits provided by the plan;
- the classes of employees and number of members covered by the pension plan;
- a description of the plan's funding policy, which includes member and employer contribution requirements;
- the pension plan's investment policies;
- the pension plan's fiduciary net position, net pension liability, and the pension plan's fiduciary net position as a percentage of the total pension liability;
- the net pension liability using a discount rate that is 1% higher and 1% lower than the current discount rate used to calculate the total pension liability and net pension liability for financial reporting purposes;
- significant assumptions and methods used to calculate the total pension liability;
- inputs to the discount rates; and
- certain information about mortality assumptions and the dates of experience studies.

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with Statement No. 67. This information includes:

- the composition of the pension plan's board and the authority under which benefit terms may be amended;
- a description of how fair value is determined;
- information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5%, receivables, and insurance contracts excluded from plan assets; and
- annual money-weighted rate of return.

MSRS' comprehensive annual financial report, which contains the basic financial statements and related note disclosures for the Correctional Employees Retirement Fund can be obtained from MSRS at 60 Empire Drive, Suite 300, St. Paul, MN, 55103 or requested via email at info@msrs.us or telephone at 1-800-657-5757.

Required Supplementary Information

GASB Statement No. 67 requires a 10-year fiscal history of:

- sources of changes in the net pension liability;
- information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; and
- comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. The net pension liability and pension expense should be measured as of the pension plan's fiscal year end (measurement date) on a date that is within the employer's prior fiscal year. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2014 and a measurement date of June 30, 2014.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a single discount rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating (which is published by the Federal Reserve) as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the long-term expected rate of return on pension plan investments is 7.90%; the municipal bond rate is 4.29% (based on the weekly rate closest to but not later than the measurement date of the 20-Year Bond Buyer Index as published by the Federal Reserve Board); and the resulting single discount rate is 6.82%.

Effective Date and Transition

GASB Statements No. 67 and No. 68 are effective for fiscal years beginning after June 15, 2013, and June 15, 2014 respectively. Earlier application is encouraged by the GASB.

SECTION B

FINANCIAL STATEMENTS

PENSION EXPENSE UNDER GASB STATEMENT NO. 68

Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

A. Expense

1.	Service Cost	$	54,443
2.	Interest on the Total Pension Liability		85,702
3.	Current-Period Benefit Changes		0
4.	Employee Contributions (made negative for addition here)		(18,855)
5.	Projected Earnings on Plan Investments (made negative for addition here)		(58,724)
6.	Pension Plan Administrative Expense		657
7.	Other Changes in Plan Fiduciary Net Position		1
8.	Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability		684
9.	Recognition of Outflow (Inflow) of Resources due to assumption changes		(24,511)
10.	Recognition of Outflow (Inflow) of Resources due to the difference between projected (7.90%) and actual earnings on Pension Plan Investments		(15,760)
11.	**Total Pension Expense / (Income)**	**$**	**23,637**

STATEMENT OF OUTFLOWS AND INFLOWS ARISING FROM CURRENT REPORTING PERIOD

Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

A. Outflows (Inflows) of Resources due to Liabilities		
1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	$	4,103
2. Assumption Changes (gains) or losses	$	(147,067)
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}		6.0000
4. Outflow (Inflow) of Resources to be recognized in the current pension expense for the difference between expected and actual experience of the Total Pension Liability	$	684
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	$	(24,511)
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	$	(23,827)
7. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for the difference between expected and actual experience of the Total Pension Liability	$	3,419
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	$	(122,556)
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	$	(119,137)
B. Outflows (Inflows) of Resources due to Assets		
1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	$	(78,799)
2. Recognition period for Assets {in years}		5.0000
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets	$	(15,760)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	$	(63,039)

STATEMENT OF OUTFLOWS AND INFLOWS ARISING FROM CURRENT AND PRIOR REPORTING PERIODS

Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

A. Outflows and Inflows of Resources due to Liabilities and Assets to be recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows/(Inflows) of Resources
1. Due to Liabilities	$ 684	$ 24,511	$ (23,827)
2. Due to Assets	0	15,760	(15,760)
3. Total	$ 684	$ 40,271	$ (39,587)

B. Outflows and Inflows of Resources by Source to be recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows/(Inflows) of Resources
1. Differences between expected and actual experience	$ 684	$ 0	$ 684
2. Assumption Changes	0	24,511	(24,511)
3. Net Difference between projected and actual earnings on pension plan investments	0	15,760	(15,760)
4. Total	$ 684	$ 40,271	$ (39,587)

C. Deferred Outflows and Deferred Inflows of Resources by Source to be recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows/ (Inflows) of Resources
1. Differences between expected and actual experience	$ 3,419	$ 0	$ 3,419
2. Assumption Changes	0	122,556	(122,556)
3. Net Difference between projected and actual earnings on pension plan investments	0	63,039	(63,039)
4. Total	$ 3,419	$ 185,595	$ (182,176)

D. Deferred Outflows and Deferred Inflows of Resources by Year to be recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows/ (Inflows) of Resources
2015	$ (39,587)
2016	(39,587)
2017	(39,587)
2018	(39,586)
2019	(23,829)
Thereafter	0
Total	$ (182,176)

STATEMENT OF FIDUCIARY NET POSITION

As of June 30, 2014 *(Dollars in Thousands)*

Assets		**June 30, 2014**
Cash & Short-term Investments	$	24,460
Receivables		1,607
Investment Pools (at fair value)		852,465
Securities Lending Collateral		94,843
Capital Assets		0
Total Assets	**$**	**973,375**
Total Deferred Outflows of Resources	$	0
Total Liabilities	$	(96,319)
Total Deferred Inflows of Resources	$	0
Net Position Restricted for Pensions	**$**	**877,056**

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION

For the Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

Change in Fiduciary Net Position		**Market Value**
Year Ending		**June 30, 2014**
1. Net position at market value at beginning of year	**$**	**747,157**
Additions		
2. Contributions		
a. Member	$	18,855
b. Employer		26,468
c. Other sources		0
d. Total contributions	$	45,323
3. Investment income		
a. Investment income/(loss)	$	138,740
b. Investment expenses		(1,217)
c. Net investment income/(loss)		137,523
4. Other Additions	$	0
5. Total Additions: *(2.d.) + (3.c.) + (4.)*	**$**	**182,846**
Deductions		
6. Benefits Paid		
a. Annuity benefits	$	(50,842)
b. Refunds		(1,447)
c. Total benefits paid	$	(52,289)
7. Expenses		
a. Other deductions	$	(1)
b. Administrative		(657)
c. Total expenses	$	(658)
8. Total deductions: *(6.c.) + (7.c.)*	**$**	**(52,947)**
9. Net increase/(decrease) in fiduciary net position	**$**	**129,899**
10. Net position at market value at end of year *(1.) + (5.) + (8.)*	**$**	**877,056**
11. State Board of Investment calculated investment return		18.6%

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS CURRENT PERIOD

Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

A. Total pension liability			
1. Service Cost	$	54,443	
2. Interest on the Total Pension Liability		85,702	
3. Changes of benefit terms		0	
4. Difference between expected and actual experience of the Total Pension Liability		4,103	
5. Changes of assumptions		(147,067)	(1)
6. Benefit payments, including refunds of employee contributions		(52,289)	
7. Net change in total pension liability	$	(55,108)	
8. Total pension liability – beginning		1,408,494	
9. Total pension liability – ending	**$**	**1,353,386**	
B. Plan fiduciary net position			
1. Contributions – employer	$	26,468	
2. Contributions – employee		18,855	
3. Net investment income		137,523	
4. Benefit payments, including refunds of employee contributions		(52,289)	
5. Pension Plan Administrative Expense		(657)	
6. Other changes		(1)	
7. Net change in plan fiduciary net position	$	129,899	
8. Plan fiduciary net position – beginning		747,157	
9. Plan fiduciary net position – ending	**$**	**877,056**	
C. Net pension liability, *A.9 - B.9.*	**$**	**476,330**	
D. Plan fiduciary net position as a percentage of the total pension liability, *B.9 / A.9.*		**64.80%**	
E. Covered-employee payroll	**$**	**219,244**	(2)
F. Net pension liability as a percentage of covered-employee payroll, *C. / E.*		**217.26%**	

(1) *Assumption changes are summarized on page 28.*
(2) *Assumed equal to actual member contributions divided by employee contribution rate.*

Schedules of Required Supplementary Information

Schedule of Changes in Net Pension Liability and Related Ratios Multiyear *(Dollars in Thousands)*

Last 10 Fiscal Years (which will be built prospectively)

Fiscal year ending June 30,	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
Total Pension Liability										
Service Cost	$ 54,443									
Interest on the Total Pension Liability	85,702									
Benefit Changes	0									
Difference between Expected and Actual Experience	4,103									
Assumption Changes	(147,067) [1]									
Benefit Payments	(50,842)									
Refunds	(1,447)									
Net Change in Total Pension Liability	$ (55,108)									
Total Pension Liability - Beginning	1,408,494									
Total Pension Liability - Ending (a)	**$ 1,353,386**									
Plan Fiduciary Net Position										
Employer Contributions	$ 26,468									
Employee Contributions	18,855									
Pension Plan Net Investment Income	137,523									
Benefit Payments	(50,842)									
Refunds	(1,447)									
Pension Plan Administrative Expense	(657)									
Other	(1)									
Net Change in Plan Fiduciary Net Position	$ 129,899									
Plan Fiduciary Net Position - Beginning	747,157									
Plan Fiduciary Net Position - Ending (b)	**$ 877,056**									
Net Pension Liability - Ending (a) - (b)	$ 476,330									
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	64.80 %									
Covered-Employee Payroll	$ 219,244 [2]									
Net Pension Liability as a Percentage of Covered-Employee Payroll	217.26 %									

Notes to Schedule:

(1) Assumed equal to plan member contributions divided by employee contribution rate.

(2) Assumption changes are summarized on page 28.

SCHEDULES OF REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Net Pension Liability Multiyear *(Dollars in Thousands)*

Last 10 Fiscal Years (which will be built prospectively)

FY Ending June 30,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered-Employee Payroll	Net Pension Liability as a % of Covered-Employee Payroll
	(a)	(b)	(a) - (b) = (c)	(b)/(c)	(d)	(c)/(d)
2005						
2006						
2007						
2008						
2009						
2010						
2011						
2012						
2013						
2014	$ 1,353,386	$ 877,056	$ 476,330	64.80%	$ 219,244	217.26%

SCHEDULE OF CONTRIBUTIONS MULTIYEAR *(Dollars in Thousands)*

Last 10 Fiscal Years

FY Ending June 30,	Actuarially Determined Contribution	Actual Contributions	Contribution Deficiency (Excess)	Covered-Employee Payroll	Actual Contribution as a % of Covered-Employee Payroll
	(a)	(b)	(a) - (b) = (c)	(d)	(b)/(d)
2005	$ 15,189	$ 11,016	$ 4,173	$ 132,335	8.32%
2006	16,871	12,152	4,719	145,879	8.33
2007	29,115	13,927	15,188	167,727	8.30
2008	34,734	18,623	16,111	194,391	9.58
2009	31,738	20,126	11,612	193,445	10.40
2010	32,557	21,988	10,569	192,450	11.43
2011	33,274	23,892	9,382	197,702	12.08
2012	34,806	24,188	10,618	200,035	12.09
2013	34,060	24,632	9,428	204,198	12.06
2014	38,390	26,468	11,922	219,244	12.07

NOTES TO SCHEDULE OF CONTRIBUTIONS

Valuation Date:	June 30, 2014
Notes	Actuarially determined contribution rates are calculated as of each July 1.

Methods and Assumptions Used to Determine Contribution Rates Reported in this Schedule:

Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	24 years
Asset Valuation Method	5-Year smoothed market; no corridor
Inflation	3.00%
Salary Increases	Service based tables ranging from 6.00% with one year of service to 3.75% with 19 or more years of service, including inflation.
Investment Rate of Return	8.00% through June 30, 2017; 8.50% thereafter
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2012 valuation pursuant to an experience study of the period 2006 - 2011, prepared by a former actuary.
Healthy Post-Retirement Mortality	RP-2000 annuitant generational mortality table, projected with mortality improvement scale AA, white collar adjustment, set forward one year for males and set back one year for females.

Other Information:

Benefit Increases After Retirement	The post-retirement increase is assumed to increase from 2.0% to 2.5% beginning January 1, 2034.
	See separate funding report as of July 1, 2014 for additional detail. To obtain this report, contact MSRS as noted on page 3.

SCHEDULE OF INVESTMENT RETURNS MULTIYEAR

Last 10 Fiscal Years

FY Ending June 30,	Annual Return[1]
2005	
2006	
2007	
2008	
2009	
2010	
2011	
2012	
2013	
2014	18.62 %

[1] *Annual money-weighted rate of return, net of investment expenses.*

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to MSRS for GASB-compliance purposes. MSRS furnished this information to us for inclusion within this report. We did not audit this information. We are not responsible for is accuracy or completeness.

Rate of Return

For the year ended June 30, 2014, the annual money-weighted rate of return for the State Patrol Retirement Fund was 18.62%. The money-weighted rate of return is a method of calculating period-by-period returns on pension plan investments that adjusts for the changing amounts actually invested. For purposes of this schedule, the money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.

10-Year Schedule of Money-Weighted Investment Return

Ten-year data is not available. Additional years will be provided when they become available.

To request additional information about the computation of the annual money-weighted rate of return and the investments for the Minnesota Retirement Systems (including the investments for MSRS' defined benefit retirement funds), contact SBI at 60 Empire Drive, Suite 355, St. Paul, Minnesota, 55103, via email at minn.sbi@state.mn.us or telephone at (651) 296-3328.

SECTION D

ADDITIONAL FINANCIAL STATEMENT DISCLOSURES

ASSET ALLOCATION

Long-Term Expected Return on Plan Assets

The long-term expected rate of return on pension plan investments was determined using a building-block method. Best estimates for expected future real rates of return (expected returns, net of inflation) are developed for each asset class using both long-term historical returns and long-term capital market expectation from a number of investment management and consulting organizations. The asset class estimates and the target allocations were then combined to produce geometric, long-term expected real rate of return for the portfolio. Inflation expectations were applied to derive the nominal rate of return for the portfolio. For each asset class that is included in the pension plan's target asset allocation as of June 30, 2014, these best estimates are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return (Geometric)
Domestic Stocks	45.00%	5.50%
International Stocks	15.00	6.00
Bonds	18.00	1.45
Alternative Assets	20.00	6.40
Unallocated Cash	2.00	0.50
Total	100.00%	

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to MSRS for GASB-compliance purposes. MSRS furnished this information to us for inclusion within this report. We did not audit this information. We are not responsible for is accuracy or completeness.

At MSRS' direction, for purposes of this valuation, the long-term expected rate of return assumption is 7.90%. This assumption is based on a review of inflation and investment return assumptions dated September 11, 2014.

SENSITIVITY OF NET PENSION LIABILITY TO THE SINGLE DISCOUNT RATE ASSUMPTION

Single Discount Rate

A single discount rate of 6.82% was used to measure the total pension liability. This single discount rate was based on an expected rate of return on pension plan investments of 7.90% and a municipal bond rate of 4.29%. The projection of cash flows used to determine this single discount rate assumed that plan member and employer contributions will be made at the current contribution rate. Based on these assumptions, the pension plan's fiduciary net position and future contributions were sufficient to fully finance the benefit payments through the year ending June 30, 2055 and assets were projected to be depleted in the year ending June 30, 2056. As a result, the long-term expected rate of return on pension plan investments was applied to projected benefit payments through the point of asset depletion in the year ending June 30, 2056, and the municipal bond rate was applied to all benefit payments after the point of asset depletion.

Regarding the sensitivity of the net pension liability to changes in the single discount rate, the following presents the fund's net pension liability, calculated using a single discount rate of 6.82%, as well as what the fund's net pension liability would be if it were calculated using a single discount rate that is 1-percentage-point lower (5.82%) or 1-percentage-point higher (7.82%) than the current rate.

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

(Dollars in Thousands)

1% Decrease 5.82%	Current Single Discount Rate Assumption 6.82%	1% Increase 7.82%
$681,822	$476,330	$309,149

A single discount rate of 6.08% was used for the measurement date as of July 1, 2013. For more information on the calculation of the single discount rate, refer to Section G of this report.

GASB STATEMENT NO. 68 RECONCILIATION *(Dollars in Thousands)*

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Deferred Outflows	Deferred Inflows	Pension Expense
Balance Beginning of Year	**$ 1,408,494**	**$ 747,157**	**$ 661,337**	**$ 0**	**$ 0**	
Changes for the Year:						
Service Cost	$ 54,443		$ 54,443			$ 54,443
Interest on Total Pension Liability	85,702		85,702			85,702
Interest on Plan Fiduciary Net Position (1)		$ 58,724	(58,724)			(58,724)
Changes in Benefit Terms						
Liability Experience Gains and Losses	4,103		4,103	$ 3,419		684
Changes in Assumptions	(147,067)		(147,067)		$ 122,556	(24,511)
Contributions - Employer		26,468	(26,468)			
Contributions - Employees		18,855	(18,855)			(18,855)
Asset Gain/(Loss) (1)		78,799	(78,799)		63,039	(15,760)
Benefit Payouts	(52,289)	(52,289)				
Administrative Expenses		(657)	657			657
Other Changes		(1)	1			1
Net Changes	**$ (55,108)**	**$ 129,899**	**$ (185,007)**	**$ 3,419**	**$ 185,595**	**$ 23,637**
Balance End of Year	**$ 1,353,386**	**$ 877,056**	**$ 476,330**	**$ 3,419**	**$ 185,595**	

(1) The sums of these items equals the net investment income of $137,523.

SUMMARY OF POPULATION STATISTICS

		Terminated		Recipients			
	Actives	Deferred Retirement	Other Non-Vested	Service Retirement	Disability Retirement	Survivor	Total
Members on 7/1/2013	**4,384**	**1,196**	**413**	**1,920**	**258**	**196**	**8,367**
New Members	510	0	0	0	0	0	**510**
Return to active	32	(20)	(12)	0	0	0	**0**
Terminated non-vested	(99)	0	99	0	0	0	**0**
Service retirements	(115)	(27)	0	142	0	0	**0**
Terminated deferred	(105)	105	0	0	0	0	**0**
Terminated refund/transfer	(77)	(18)	(144)	0	0	0	**(239)**
Deaths	(9)	(2)	0	(21)	(3)	(2)	**(37)**
New beneficiary	0	0	0	0	0	19	**19**
Disabled	(12)	0	0	0	12	0	**0**
Unexpected status change	(5)	(2)	28	34	1	(39)	**17**
Net change	120	36	(29)	155	10	(22)	**270**
Members on 6/30/2014	**4,504**	**1,232**	**384**	**2,075**	**268**	**174**	**8,637**

SECTION E

SUMMARY OF BENEFITS

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 in covered correctional service. Certain state employees with 75 percent working time spent in direct contact with inmates or patients are also eligible.	
Contributions	Shown as a percent of salary:	
<u>Effective date</u>	**<u>Member</u>**	**<u>Employer</u>**
July 1, 2010 to June 30, 2014	8.60%	12.10%
July 1, 2014*	9.10%	12.85%
	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 leave of absence, military service and periods while temporary Worker’s Compensation is paid.	
Salary	Includes wages, allowances and fees. Excludes lump sum payments of separation and reduced salary while receiving Worker’s Compensation benefits.	
Average salary	Average of the five highest successive years of Salary. Average Salary is based on all Allowable Service if less than five years.	
Vesting	Hired before July 1, 2010:	100% vested after 3 years of Allowable Service.
	Hired after June 30, 2010:	50% vested after 5 years of Allowable Service; 60% vested after 6 years of Allowable Service; 70% vested after 7 years of Allowable Service; 80% vested after 8 years of Allowable Service; 90% vested after 9 years of Allowable Service; 100% vested after 10 years of Allowable Service.

Retirement

<u>Normal retirement benefit</u>

Age/Service requirement	Age 55 and vested. Proportionate Retirement Annuity is available at age 65 and one year of Allowable Service.
Amount	2.40% (2.20% if first hired after June 30, 2010) of Average Salary for each year of Allowable Service, pro-rata for completed months.

<u>Early retirement</u>

Age/Service requirement	Age 50 and vested.
Amount	Normal Retirement Benefit based on Allowable Service and Average Salary at retirement date reduced by 2/10% (5/12% if first hired after June 30, 2010 or if hired before July 1, 2010 and retire after June 30, 2015) per month for each month that the member is under age 55.

Summary of Plan Provisions (Continued)

Retirement (Continued)

Form of payment	Life annuity. Actuarially equivalent options are: 50%, 75%, or 100% Joint and Survivor, or 15-year certain. If a Joint and Survivor benefit is elected and the beneficiary predeceases the annuitant, the annuitant's benefit increases to the Life Annuity amount. This "bounce back" is subsidized by the plan.
Benefit increases	Since 2011, benefit recipients have received annual 2.0% benefit increases. If the accrued liability funding ratio reaches 90% (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.

Disability

Duty Disability	
Age/Service requirement	Physically or mentally unable to perform normal job duties as a direct result of a disability relating to an incident while performing the duties of the job which present inherent dangers to the employee. Members who become disabled after June 30, 2009 will have disability benefits converted to retirement benefits at age 55 instead of age 65.
Amount	50.00% of Average Salary plus 2.40% (2.20% if first hired after June 30, 2010) of Average Salary for each year in excess of 20 years and 10 months of Allowable Service (pro rata for completed months). Payment begins at disability and ends at age 55 (age 65 if disabled prior to July 1, 2009) or the five-year anniversary of the effective date of the disability benefit, whichever is later. Payments stop earlier if disability ceases or death occurs. Benefits may be paid upon re-employment but salary plus benefit cannot exceed current salary of position held at time of disability. Member is reclassified from disabled to retired at age 55 (age 65 if disabled prior to July 1, 2009). Optional amount continues. Otherwise, normal retirement benefit equal to the disability benefit paid, or an actuarially equivalent option.
Regular Disability	
Age/Service requirement	At least one year of covered Correctional service for employees hired before July 1, 2009, or a vested Correctional employee hired after June 30, 2009, and the employee is determined to have a regular disability not related to an incident while performing the duties of the job.

Summary of Plan Provisions (Continued)

Disability (Continued)	
Amount	Normal retirement benefit based on covered Correctional Service (minimum of 15 years if hired prior to July 1, 2009) and Average Salary at disability. Payment begins at disability and ends at age 55 (age 65 if disabled prior to July 1, 2009) or the five-year anniversary of the effective date of the disability benefit, whichever is later. Payments stop earlier if disability ceases or death occurs. Benefits may be paid upon re-employment but salary plus benefit cannot exceed current salary of position held at time of disability. Member is reclassified from disabled to retired at age 55 (age 65 if disabled prior to July 1, 2009). Optional amount continues. Otherwise, normal retirement benefit equal to the disability benefit paid, or an actuarially equivalent option.
Benefit Increases	Same as for retirement.
Death	
Surviving spouse benefit	
Age/Service requirement	Member at any age or former member age 50 or older who dies before retirement or disability benefit commences and was vested. 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 50 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 (lump sum payable to estate at death).
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 to surviving spouse 100% joint and survivor annuity payable to the later of age 20 or five years. The amount is to be proportionally divided among surviving children.
Benefit increases	Same as for retirement.
Refund of contributions with interest	
Age/service requirement	Active employee dies and survivor benefits are not payable or a former employee dies before annuity begins. If accumulated member contributions with interest exceed total payments to the surviving spouse and children, then the remainder is paid out.

Summary of Plan Provisions (Continued)

Death (Continued)	
Amount	Member's contributions with 6.00% interest compounded daily until July 1, 2011 and 4.00% thereafter.
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.
Deferred benefit	
Age/service requirement	Partially or fully vested.
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; and (d.) 5.00% thereafter until the annuity begins (2.50% if hired after June 30, 2006), but before January 1, 2012; (e.) 2.00% from January 1, 2012 thereafter. Amount is payable at normal or early retirement.
Optional form conversion factors	Actuarially equivalent factors based on RP-2000 mortality for healthy annuitants, white collar adjustment, projected to 2027 using scale AA, set forward one year for males and set back one year for females, blended 70% males, and 6.5% interest.
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.

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 contributions are decreased by at most 0.25% and employer contributions are decreased by at most 0.375% 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 contributions are increased 0.25% and employer contributions are increased by 0.375%. o If the contribution deficiency is greater than 1.99% and less than 4.01%, member contributions are increased 0.50% and employer contributions are increased by 0.75%. o If the contribution deficiency is greater than 4.0%, member contributions are increased by 0.75% and employer contributions are increased by 1.125%.
Changes in plan provisions	Member contribution rates increased from 8.6% to 9.1% of pay and employer contribution rates increased from 12.1% to 12.85% 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.

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

Actuarial Methods

Actuarial Cost Method

Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using an **Individual Entry-Age Actuarial Cost Method** having the following characteristics:

(i) the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement;

(ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Actuarial gains/(losses), as they occur, reduce (increase) the Total Pension Liability.

Valuation of Future Post-Retirement Benefit Increases

Benefit recipients receive a future annual 2.0% post-retirement benefit increase. If the funding ratio reaches 90% (based on a 2.5% post-retirement benefit increase assumption) for two consecutive years, the benefit increase will revert to 2.5%.

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 of 7.90%
- Liabilities and normal cost based on statutory funding assumptions
  - Discount rate of 8.00% through June 30, 2017; 8.50% thereafter
  - Statutory salary increases (rate of 6.00% at year 1 declining to 3.75% at years 19 and later)
- Open group; stable active population (new member profile based on average new members hired in recent years)
- The postretirement benefit increase rate is assumed to be 2.0% per year until the funding ratio threshold required to pay a 2.5% postretirement benefit increase is reached
- Current statutory contributions (i.e., not including potential contribution increases under the contribution stabilizer statutes) as directed by MSRS.

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% postretirement benefit increase in the year 2065, and that the plan would begin paying 2.5% benefit increases on January 1, 2066. This assumption is reflected in our calculations.

To determine the Total Pension Liability as of July 1, 2013, we performed a similar projection, and assumed the plan would pay the 2.0% benefit increases indefinitely.

Decrement Timing

All decrements are assumed to occur mid-year.

Asset Valuation Method

Fair value of assets.

Summary of Actuarial Assumptions

The following assumptions were used in valuing the liabilities and benefits under the plan. All demographic 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 demographic assumptions prescribed are based on the last experience study, dated February 2012, prepared by a former actuary. The economic assumptions are based on a review of inflation and investment return assumptions dated September 11, 2014.

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	7.90% per annum
Benefit increases after retirement	2.00% per annum through 2065 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.
Payroll growth	3.50% per year.
Inflation	2.75% per year.
Mortality rates	
Healthy Pre-retirement	RP-2000 employee generational mortality table projected with mortality improvement scale AA, white collar adjustment.
Healthy Post-retirement	RP-2000 annuitant generational mortality table projected with mortality improvement scale AA, white collar adjustment, set forward one year for males and set back one year for females. 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 120. 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.
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	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:

Year	Select Withdrawal Rates
1	20%
2	15%
3	8%

Summary of Actuarial Assumptions (Continued)

Disability	Age-related rates based on experience; see table of sample rates. All incidences are assumed to be duty-related.
Allowance for combined service annuity	Liabilities for former members are increased by 30.00% to account for the effect of some participants having eligibility for a Combined Service Annuity.
Administrative expenses	For purposes of the projection of Plan Fiduciary Net Position, total prior year administrative expenses expressed as a percentage of prior year projected payroll are assumed to increase 3.50% per year and are allocated to the closed group based on the ratio of closed group payroll to total 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 55.
Percentage married	85% of active members are assumed to be married. Actual marital status is used for members in payment status.
Age of spouse	Females are assumed to be three years younger than their male spouses.
Form of payment	Married members retiring from active status are assumed to elect subsidized joint and survivor form of annuity as follows: Males: 10% elect 50% Joint & Survivor option 10% elect 75% Joint & Survivor option 40% elect 100% Joint & Survivor option Females: 10% elect 50% Joint & Survivor option 10% elect 75% Joint & Survivor option 30% 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 straight life annuity, except that current terminated deferred members who terminated prior to July 1, 1997 are assumed to receive the Level Social Security option to age 62.
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.

Summary of Actuarial Assumptions (Continued)

Unknown data for certain members	To prepare this report, GRS has used and relied on participant data supplied by MSRS. 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: Data for active members: There were 11 members reported with zero or invalid salary. We used prior year salary (11 members). 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 54 members reported without a 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 (26 members), we assumed a value of $30,000. If Credited Service was not reported (3 members), we assumed a value of 7.5 years. There were no members reported without a Termination Date. There were 66 members who terminated after June 30, 1997 and who were reported with a benefit in the Accelerated to Age 62 option. Based on direction from MSRS, we adjusted benefits for these members to reflect the assumed life annuity election. There were no members reported with missing or invalid gender or birth dates. Data for members receiving benefits: There were no members reported with missing or invalid birth dates. There were 5 members reported with an invalid gender. We assumed male gender for the valuation. There were retired members reported with a survivor option and an invalid or missing survivor gender (379 members) and/or survivor date of birth (322 members). We used the valuation assumptions if the survivor gender or date of birth was missing or invalid. There were 2 members reported without a benefit. Due to the small number of members with missing benefits, we made no adjustment to the reported data for members receiving benefits.

Summary of Actuarial Assumptions (Continued)

Unknown data for certain members	Data for members receiving benefits: There were 19 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. There were 44 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 was 1 retired member with an accelerated benefit election and an invalid end date. We assumed the benefit ends on the member's 62nd birthday. There were no survivors reported on the data file with an expired benefit. At MSRS' direction, we changed the status of 40 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	The single discount rate changed from 6.08% as of July 1, 2013 to 6.82% as of July 1, 2014. As of July 1, 2013, the post-retirement benefit increase is assumed to be 2.0% indefinitely. As of July 1, 2014, the benefit increase rate is assumed to increase from 2.0% to 2.5% on January 1, 2066.

Summary of Actuarial Assumptions (Continued)

	Rate (%)*					
	Healthy Post-Retirement Mortality**		Healthy Pre-Retirement Mortality**		Disability Mortality	
Age	Male	Female	Male	Female	Male	Female
20	0.04%	0.02%	0.03%	0.02%	2.26%	0.75%
25	0.04	0.02	0.04	0.02	2.26	0.75
30	0.04	0.02	0.04	0.03	2.26	0.75
35	0.06	0.04	0.06	0.05	2.26	0.75
40	0.10	0.06	0.09	0.06	2.26	0.75
45	0.15	0.09	0.13	0.10	2.26	0.75
50	0.60	0.15	0.20	0.16	2.90	1.15
55	0.54	0.32	0.27	0.24	3.54	1.65
60	0.73	0.51	0.43	0.38	4.20	2.18
65	1.30	0.82	0.67	0.59	5.02	2.80
70	2.14	1.37	0.98	0.88	6.26	3.76

* *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	13.20%	8.80%	0.05%	0.05%
25	8.10	7.80	0.08	0.08
30	5.00	7.45	0.11	0.11
35	3.45	7.10	0.15	0.15
40	2.55	5.70	0.24	0.24
45	1.95	3.50	0.39	0.39
50	0.00	0.00	0.67	0.67
55	0.00	0.00	1.17	1.17
60	0.00	0.00	1.88	1.88
65	0.00	0.00	0.00	0.00

Summary of Actuarial Assumptions (Concluded)

Age	Percent Retiring
50	5%
51	3
52	3
53	3
54	5
55	55
56	12
57	12
58	10
59	10
60	10
61	10
62	30
63	30
64	30
65	50
66	50
67	50
68	50
69	50
70+	100

Salary Scale	
Year	Increase
1	5.75%
2	5.60
3	5.45
4	5.30
5	5.15
6	5.00
7	4.85
8	4.70
9	4.55
10	4.40
11	4.30
12	4.20
13	4.10
14	4.00
15	3.90
16	3.80
17	3.70
18	3.60
19+	3.50

SECTION G

CALCULATION OF THE SINGLE DISCOUNT RATE

CALCULATION OF THE SINGLE DISCOUNT RATE

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Fiduciary Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the long-term expected rate of return is used as the discount rate. In years where assets are not projected to be sufficient to meet benefit payments, the use of a "risk-free" municipal bond rate is required, as described in the following paragraph.

The *Single Discount Rate* (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the plan fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating (which is published by the Federal Reserve Board (FRB)) as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.90%; the municipal bond rate is 4.29% (based on the FRB rate as of June 26, 2014). **The resulting single discount rate as of July 1, 2014 is 6.82%.**

Benefit payments projected to occur up through June 30, 2055 were fully funded and benefit payments projected to occur in the year ended June 30, 2056 were partially funded. Assets were projected to be fully depleted by the fiscal year ending June 30, 2056. Benefit payments were discounted using 7.9%, the long-term expected rate of return on pension plan investments, as long as assets were sufficient to fund the benefit payments. Beginning in the July 1, 2055 to June 30, 2056 fiscal year, when benefit payments exceed the Plan's Fiduciary Net Position, benefit payments were discounted at 4.29%, the municipal bond rate. An equivalent single discount rate was determined that produced approximately the same present value of projected benefits when applied to all years of projected benefits as the present value of projected benefits using 7.90% through the point of asset depletion and 4.29% after. For more information on the calculation of the equivalent present value of projected benefits, see pages 37 – 38 of this report.

The tables in this section provide background for the development of the single discount rate.

The **Projection of Contributions** table shows the development of expected contributions in future years. Normal Cost contributions for future hires are not included (nor are their liabilities).

The **Projection of Plan Fiduciary Net Position** table shows the development of expected asset levels in future years.

The **Present Values of Projected Benefit Payments** table shows the development of the Single Discount Rate (SDR). It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total at the SDR.

CALCULATION OF THE SINGLE DISCOUNT RATE (continued)

We performed a similar analysis as of July 1, 2013. Based on the long-term expected rate of return of 7.90% and a municipal bond rate of 4.63% (based on the FRB rate as of June 27, 2013), the plan is projected to have sufficient assets to pay benefits through the year ending June 30, 2043 and to pay partial benefits in the year ending June 30, 2044. We used the same procedure described above for to determine an equivalent discount rate. **The resulting single discount rate as of July 1, 2013 is 6.08%.**

SINGLE DISCOUNT RATE DEVELOPMENT

Projection of Contributions *(Dollars in Thousands)*

	Projected Covered-Employee Payroll			Projected Contributions			
Year	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll toward Current UAL*	Total Contributions
	(a)	(b)	(c) = (a) + (b)	(d) = (a) x 9.10%	(e) = (a) x 12.85%	(f)	(g) = (d) + (e) + (f)
0	$ 219,244		$ 219,244				
1	226,466		226,466	$ 20,608	$ 29,101		$ 49,709
2	215,990	$ 18,402	234,392	19,655	27,755	$ 839	48,249
3	207,158	35,438	242,596	18,851	26,620	1,616	47,087
4	198,563	52,524	251,087	18,069	25,515	2,395	45,979
5	189,856	70,019	259,875	17,277	24,396	3,193	44,866
6	181,341	87,629	268,970	16,502	23,302	3,996	43,800
7	172,668	105,716	278,384	15,713	22,188	4,821	42,722
8	163,975	124,153	288,128	14,922	21,071	5,661	41,654
9	155,425	142,787	298,212	14,144	19,972	6,511	40,627
10	147,195	161,455	308,650	13,395	18,915	7,362	39,672
11	139,625	179,827	319,452	12,706	17,942	8,200	38,848
12	131,942	198,691	330,633	12,007	16,955	9,060	38,022
13	124,264	217,941	342,205	11,308	15,968	9,938	37,214
14	117,338	236,844	354,182	10,678	15,078	10,800	36,556
15	110,681	255,898	366,579	10,072	14,222	11,669	35,963
16	104,010	275,399	379,409	9,465	13,365	12,558	35,388
17	97,451	295,237	392,688	8,868	12,522	13,463	34,853
18	90,869	315,563	406,432	8,269	11,677	14,390	34,336
19	84,370	336,288	420,658	7,678	10,842	15,335	33,855
20	78,000	357,381	435,381	7,098	10,023	16,297	33,418
21	71,556	379,063	450,619	6,512	9,195	17,285	32,992
22	64,739	401,652	466,391	5,891	8,319	18,315	32,525
23	57,779	424,935	482,714	5,258	7,425	19,377	32,060
24	51,126	448,483	499,609	4,652	6,570	20,451	31,673
25	44,823	472,273	517,096	4,079	5,760	21,536	31,375
26	38,676	496,518	535,194	3,520	4,970	22,641	31,131
27	32,909	521,017	553,926	2,995	4,229	23,758	30,982
28	27,743	545,570	573,313	2,525	3,565	24,878	30,968
29	23,023	570,356	593,379	2,095	2,958	26,008	31,061
30	18,815	595,332	614,147	1,712	2,418	27,147	31,277
31	15,167	620,476	635,643	1,380	1,949	28,294	31,623
32	12,062	645,828	657,890	1,098	1,550	29,450	32,098
33	9,487	671,429	680,916	863	1,219	30,617	32,699
34	7,413	697,335	704,748	675	953	31,799	33,427
35	5,719	723,695	729,414	520	735	33,001	34,256
36	4,290	750,654	754,944	390	551	34,230	35,171
37	3,122	778,245	781,367	284	401	35,488	36,173
38	2,189	806,526	808,715	199	281	36,778	37,258
39	1,467	835,553	837,020	133	188	38,101	38,422
40	934	865,382	866,316	85	120	39,461	39,666
41	565	896,072	896,637	51	73	40,861	40,985
42	322	927,697	928,019	29	41	42,303	42,373
43	172	960,327	960,499	16	22	43,791	43,829
44	86	994,031	994,117	8	11	45,328	45,347
45	41	1,028,870	1,028,911	4	5	46,916	46,925
46	18	1,064,905	1,064,923	2	2	48,560	48,564
47	7	1,102,188	1,102,195	1	1	50,260	50,262
48	2	1,140,770	1,140,772	0	0	52,019	52,019
49	1	1,180,698	1,180,699	0	0	53,840	53,840
50	0	1,222,024	1,222,024	0	0	55,724	55,724

**Contributions related to future employees in excess of normal cost and expenses of 17.39% of pay.*

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

SINGLE DISCOUNT RATE DEVELOPMENT

Projection of Contributions (continued) *(Dollars in Thousands)*

	Projected Covered-Employee Payroll			Projected Contributions			
Year	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll toward Current UAL*	Total Contributions
	(a)	(b)	(c) = (a) + (b)	(d) = (a) x 9.10%	(e) = (a) x 12.85%	(f)	(g) = (d) + (e) + (f)
51	$ 0	$ 1,264,794	$ 1,264,794	$ 0	$ 0	$ 57,675	$ 57,675
52	0	1,309,062	1,309,062	0	0	59,693	59,693
53	0	1,354,879	1,354,879	0	0	61,783	61,783
54	0	1,402,300	1,402,300	0	0	63,945	63,945
55	0	1,451,381	1,451,381	0	0	66,183	66,183
56	0	1,502,179	1,502,179	0	0	68,499	68,499
57	0	1,554,755	1,554,755	0	0	70,897	70,897
58	0	1,609,172	1,609,172	0	0	73,378	73,378
59	0	1,665,493	1,665,493	0	0	75,946	75,946
60	0	1,723,785	1,723,785	0	0	78,605	78,605
61	0	1,784,117	1,784,117	0	0	81,356	81,356
62	0	1,846,562	1,846,562	0	0	84,203	84,203
63	0	1,911,191	1,911,191	0	0	87,150	87,150
64	0	1,978,083	1,978,083	0	0	90,201	90,201
65	0	2,047,316	2,047,316	0	0	93,358	93,358
66	0	2,118,972	2,118,972	0	0	96,625	96,625
67	0	2,193,136	2,193,136	0	0	100,007	100,007
68	0	2,269,896	2,269,896	0	0	103,507	103,507
69	0	2,349,342	2,349,342	0	0	107,130	107,130
70	0	2,431,569	2,431,569	0	0	110,880	110,880
71	0	2,516,674	2,516,674	0	0	114,760	114,760
72	0	2,604,757	2,604,757	0	0	118,777	118,777
73	0	2,695,924	2,695,924	0	0	122,934	122,934
74	0	2,790,281	2,790,281	0	0	127,237	127,237
75	0	2,887,941	2,887,941	0	0	131,690	131,690
76	0	2,989,019	2,989,019	0	0	136,299	136,299
77	0	3,093,635	3,093,635	0	0	141,070	141,070
78	0	3,201,912	3,201,912	0	0	146,007	146,007
79	0	3,313,979	3,313,979	0	0	151,117	151,117
80	0	3,429,968	3,429,968	0	0	156,407	156,407
81	0	3,550,017	3,550,017	0	0	161,881	161,881
82	0	3,674,268	3,674,268	0	0	167,547	167,547
83	0	3,802,867	3,802,867	0	0	173,411	173,411
84	0	3,935,967	3,935,967	0	0	179,480	179,480
85	0	4,073,726	4,073,726	0	0	185,762	185,762
86	0	4,216,307	4,216,307	0	0	192,264	192,264
87	0	4,363,877	4,363,877	0	0	198,993	198,993
88	0	4,516,613	4,516,613	0	0	205,958	205,958
89	0	4,674,694	4,674,694	0	0	213,166	213,166
90	0	4,838,309	4,838,309	0	0	220,627	220,627
91	0	5,007,650	5,007,650	0	0	228,349	228,349
92	0	5,182,917	5,182,917	0	0	236,341	236,341
93	0	5,364,319	5,364,319	0	0	244,613	244,613
94	0	5,552,071	5,552,071	0	0	253,174	253,174
95	0	5,746,393	5,746,393	0	0	262,036	262,036
96	0	5,947,517	5,947,517	0	0	271,207	271,207
97	0	6,155,680	6,155,680	0	0	280,699	280,699
98	0	6,371,129	6,371,129	0	0	290,523	290,523
99	0	6,594,118	6,594,118	0	0	300,692	300,692
100	0	6,824,912	6,824,912	0	0	311,216	311,216

**Contributions related to future employees in excess of normal cost and expenses of 17.39% of pay.*

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

SINGLE DISCOUNT RATE DEVELOPMENT

Projection of Plan Fiduciary Net Position *(Dollars in Thousands)*

Year	Projected Beginning Plan Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.90%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
1	$ 877,056	$ 49,709	$ 56,757	$ 702	$ 68,987	$ 938,293
2	938,293	48,249	60,811	670	73,612	998,673
3	998,673	47,087	64,637	642	78,190	1,058,671
4	1,058,671	45,979	68,632	616	82,734	1,118,136
5	1,118,136	44,866	72,817	589	87,227	1,176,823
6	1,176,823	43,800	77,329	562	91,648	1,234,380
7	1,234,380	42,722	82,538	535	95,953	1,289,982
8	1,289,982	41,654	88,167	508	100,087	1,343,048
9	1,343,048	40,627	93,936	482	104,017	1,393,274
10	1,393,274	39,672	99,744	456	107,723	1,440,469
11	1,440,469	38,848	105,481	433	111,198	1,484,601
12	1,484,601	38,022	111,305	409	114,428	1,525,337
13	1,525,337	37,214	117,435	385	117,378	1,562,109
14	1,562,109	36,556	123,458	364	120,025	1,594,868
15	1,594,868	35,963	129,180	343	122,369	1,623,677
16	1,623,677	35,388	135,057	322	124,396	1,648,082
17	1,648,082	34,853	140,860	302	126,079	1,667,852
18	1,667,852	34,336	146,782	282	127,392	1,682,516
19	1,682,516	33,855	152,698	262	128,304	1,691,715
20	1,691,715	33,418	158,490	242	128,790	1,695,191
21	1,695,191	32,992	164,464	222	128,817	1,692,314
22	1,692,314	32,525	170,828	201	128,326	1,682,136
23	1,682,136	32,060	177,335	179	127,253	1,663,935
24	1,663,935	31,673	183,552	158	125,560	1,637,458
25	1,637,458	31,375	189,296	139	123,234	1,602,632
26	1,602,632	31,131	194,838	120	120,260	1,559,065
27	1,559,065	30,982	199,651	102	116,626	1,506,920
28	1,506,920	30,968	203,479	86	112,359	1,446,682
29	1,446,682	31,061	206,662	71	107,481	1,378,491
30	1,378,491	31,277	209,062	58	102,009	1,302,657
31	1,302,657	31,623	210,677	47	95,970	1,219,526
32	1,219,526	32,098	211,502	37	89,389	1,129,474
33	1,129,474	32,699	211,499	29	82,299	1,032,944
34	1,032,944	33,427	210,631	23	74,735	930,452
35	930,452	34,256	209,076	18	66,730	822,344
36	822,344	35,171	206,992	13	58,306	708,816
37	708,816	36,173	204,387	10	49,477	590,069
38	590,069	37,258	201,312	7	40,258	466,266
39	466,266	38,422	197,799	5	30,659	337,543
40	337,543	39,666	193,882	3	20,690	204,014
41	204,014	40,985	189,593	2	10,358	65,762
42	65,762	42,373	184,971	1	0	0
43	0	43,829	180,059	1	0	0
44	0	45,347	174,886	0	0	0
45	0	46,925	169,483	0	0	0
46	0	48,564	163,876	0	0	0
47	0	50,262	158,082	0	0	0
48	0	52,019	152,113	0	0	0
49	0	53,840	145,981	0	0	0
50	0	55,724	139,699	0	0	0

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

SINGLE DISCOUNT RATE DEVELOPMENT

Projection of Plan Fiduciary Net Position (continued) *(Dollars in Thousands)*

Year	Projected Beginning Plan Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.90%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
51	$ 0	$ 57,675	$ 133,281	$ 0	$ 0	$ 0
52	0	59,693	127,027	0	0	0
53	0	61,783	120,942	0	0	0
54	0	63,945	114,691	0	0	0
55	0	66,183	108,285	0	0	0
56	0	68,499	101,743	0	0	0
57	0	70,897	95,092	0	0	0
58	0	73,378	88,357	0	0	0
59	0	75,946	81,577	0	0	0
60	0	78,605	74,806	0	0	0
61	0	81,356	68,095	0	0	0
62	0	84,203	61,499	0	0	0
63	0	87,150	55,077	0	0	0
64	0	90,201	48,891	0	0	0
65	0	93,358	43,000	0	0	0
66	0	96,625	37,453	0	0	0
67	0	100,007	32,297	0	0	0
68	0	103,507	27,567	0	0	0
69	0	107,130	23,284	0	0	0
70	0	110,880	19,458	0	0	0
71	0	114,760	16,088	0	0	0
72	0	118,777	13,158	0	0	0
73	0	122,934	10,643	0	0	0
74	0	127,237	8,514	0	0	0
75	0	131,690	6,735	0	0	0
76	0	136,299	5,268	0	0	0
77	0	141,070	4,074	0	0	0
78	0	146,007	3,116	0	0	0
79	0	151,117	2,357	0	0	0
80	0	156,407	1,761	0	0	0
81	0	161,881	1,300	0	0	0
82	0	167,547	947	0	0	0
83	0	173,411	681	0	0	0
84	0	179,480	482	0	0	0
85	0	185,762	337	0	0	0
86	0	192,264	232	0	0	0
87	0	198,993	157	0	0	0
88	0	205,958	104	0	0	0
89	0	213,166	68	0	0	0
90	0	220,627	44	0	0	0
91	0	228,349	28	0	0	0
92	0	236,341	17	0	0	0
93	0	244,613	10	0	0	0
94	0	253,174	6	0	0	0
95	0	262,036	4	0	0	0
96	0	271,207	2	0	0	0
97	0	280,699	1	0	0	0
98	0	290,523	0	0	0	0
99	0	300,692	0	0	0	0
100	0	311,216	0	0	0	0

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

SINGLE DISCOUNT RATE DEVELOPMENT

Present Values of Projected Benefits *(Dollars in Thousands)*

Year	Projected Beginning Plan Fiduciary Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=((c)/(1+sdr)^(a-.5)
1	$ 877,056	$ 56,757	$ 56,757	$ 0	$ 54,640	$ 0	$ 54,916
2	938,293	60,811	60,811	0	54,256	0	55,081
3	998,673	64,637	64,637	0	53,447	0	54,809
4	1,058,671	68,632	68,632	0	52,596	0	54,481
5	1,118,136	72,817	72,817	0	51,717	0	54,113
6	1,176,823	77,329	77,329	0	50,901	0	53,797
7	1,234,380	82,538	82,538	0	50,352	0	53,755
8	1,289,982	88,167	88,167	0	49,847	0	53,755
9	1,343,048	93,936	93,936	0	49,221	0	53,616
10	1,393,274	99,744	99,744	0	48,438	0	53,296
11	1,440,469	105,481	105,481	0	47,473	0	52,764
12	1,484,601	111,305	111,305	0	46,427	0	52,122
13	1,525,337	117,435	117,435	0	45,397	0	51,482
14	1,562,109	123,458	123,458	0	44,231	0	50,667
15	1,594,868	129,180	129,180	0	42,893	0	49,630
16	1,623,677	135,057	135,057	0	41,561	0	48,576
17	1,648,082	140,860	140,860	0	40,173	0	47,428
18	1,667,852	146,782	146,782	0	38,797	0	46,267
19	1,682,516	152,698	152,698	0	37,406	0	45,059
20	1,691,715	158,490	158,490	0	35,982	0	43,782
21	1,695,191	164,464	164,464	0	34,604	0	42,532
22	1,692,314	170,828	170,828	0	33,312	0	41,357
23	1,682,136	177,335	177,335	0	32,049	0	40,192
24	1,663,935	183,552	183,552	0	30,744	0	38,945
25	1,637,458	189,296	189,296	0	29,384	0	37,599
26	1,602,632	194,838	194,838	0	28,030	0	36,229
27	1,559,065	199,651	199,651	0	26,620	0	34,754
28	1,506,920	203,479	203,479	0	25,144	0	33,159
29	1,446,682	206,662	206,662	0	23,667	0	31,528
30	1,378,491	209,062	209,062	0	22,189	0	29,858
31	1,302,657	210,677	210,677	0	20,723	0	28,167
32	1,219,526	211,502	211,502	0	19,281	0	26,472
33	1,129,474	211,499	211,499	0	17,869	0	24,782
34	1,032,944	210,631	210,631	0	16,493	0	23,105
35	930,452	209,076	209,076	0	15,173	0	21,470
36	822,344	206,992	206,992	0	13,922	0	19,899
37	708,816	204,387	204,387	0	12,740	0	18,394
38	590,069	201,312	201,312	0	11,630	0	16,960
39	466,266	197,799	197,799	0	10,590	0	15,601
40	337,543	193,882	193,882	0	9,620	0	14,315
41	204,014	189,593	189,593	0	8,719	0	13,105
42	65,762	184,971	65,762	119,209	2,803	20,857	11,969
43	0	180,059	0	180,059	0	30,207	10,908
44	0	174,886	0	174,886	0	28,132	9,918
45	0	169,483	0	169,483	0	26,141	8,998
46	0	163,876	0	163,876	0	24,237	8,145
47	0	158,082	0	158,082	0	22,418	7,355
48	0	152,113	0	152,113	0	20,684	6,626
49	0	145,981	0	145,981	0	19,034	5,952
50	0	139,699	0	139,699	0	17,466	5,333

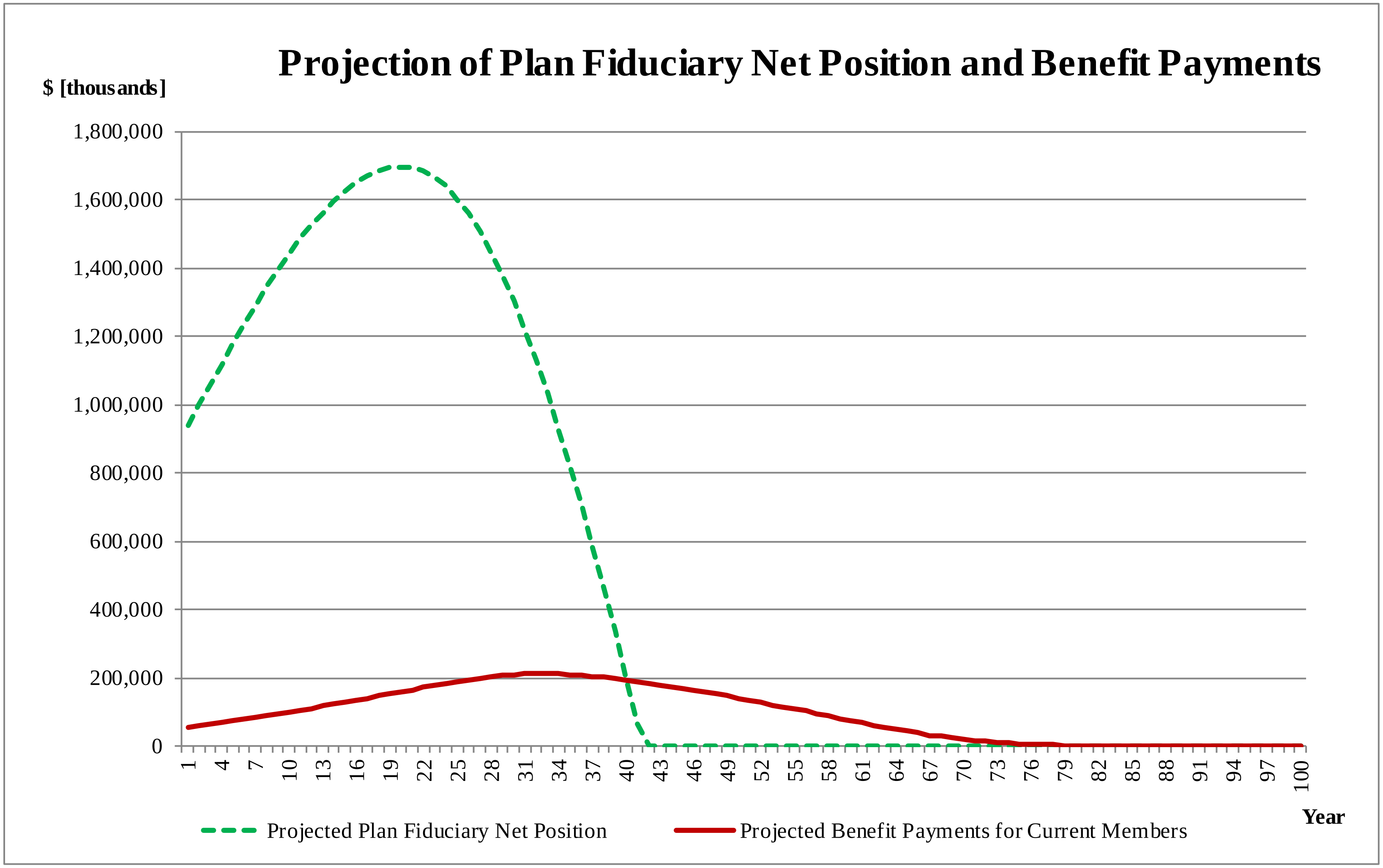
For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

SINGLE DISCOUNT RATE DEVELOPMENT

Present Values of Projected Benefits (continued) *(Dollars in Thousands)*

Year	Projected Beginning Plan Fiduciary Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=((c)/(1+sdr)^(a-.5)
51	$ 0	$ 133,281	$ 0	$ 133,281	$ 0	$ 15,978	$ 4,763
52	0	127,027	0	127,027	0	14,602	4,250
53	0	120,942	0	120,942	0	13,330	3,788
54	0	114,691	0	114,691	0	12,121	3,363
55	0	108,285	0	108,285	0	10,973	2,972
56	0	101,743	0	101,743	0	9,886	2,614
57	0	95,092	0	95,092	0	8,860	2,287
58	0	88,357	0	88,357	0	7,894	1,990
59	0	81,577	0	81,577	0	6,988	1,720
60	0	74,806	0	74,806	0	6,145	1,476
61	0	68,095	0	68,095	0	5,363	1,258
62	0	61,499	0	61,499	0	4,645	1,064
63	0	55,077	0	55,077	0	3,988	892
64	0	48,891	0	48,891	0	3,395	741
65	0	43,000	0	43,000	0	2,863	610
66	0	37,453	0	37,453	0	2,391	498
67	0	32,297	0	32,297	0	1,977	402
68	0	27,567	0	27,567	0	1,618	321
69	0	23,284	0	23,284	0	1,310	254
70	0	19,458	0	19,458	0	1,050	199
71	0	16,088	0	16,088	0	833	154
72	0	13,158	0	13,158	0	653	118
73	0	10,643	0	10,643	0	506	89
74	0	8,514	0	8,514	0	388	67
75	0	6,735	0	6,735	0	295	49
76	0	5,268	0	5,268	0	221	36
77	0	4,074	0	4,074	0	164	26
78	0	3,116	0	3,116	0	120	19
79	0	2,357	0	2,357	0	87	13
80	0	1,761	0	1,761	0	62	9
81	0	1,300	0	1,300	0	44	6
82	0	947	0	947	0	31	4
83	0	681	0	681	0	21	3
84	0	482	0	482	0	14	2
85	0	337	0	337	0	10	1
86	0	232	0	232	0	6	1
87	0	157	0	157	0	4	1
88	0	104	0	104	0	3	0
89	0	68	0	68	0	2	0
90	0	44	0	44	0	1	0
91	0	28	0	28	0	1	0
92	0	17	0	17	0	0	0
93	0	10	0	10	0	0	0
94	0	6	0	6	0	0	0
95	0	4	0	4	0	0	0
96	0	2	0	2	0	0	0
97	0	1	0	1	0	0	0
98	0	0	0	0	0	0	0
99	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0
				Totals	$ 1,381,061	$ 348,021	$ 1,729,082

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.



Note: Assets are expected to be fully depleted in year 42 (year ending June 30, 2056).

SECTION H

GLOSSARY OF TERMS

GLOSSARY OF TERMS

Actuarial Accrued Liability (AAL) The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability."

Actuarial Assumptions These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.

Accrued Service Service credited under the system which was rendered before the date of the actuarial valuation.

Actuarial Equivalent A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.

Actuarial Cost Method A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.

Actuarial Gain (Loss) The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.

Actuarial Present Value (APV) The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future benefit payments at predetermined rates of interest to reflect the expected effects of the time value (present value) of money and the probabilities of payment.

Actuarial Valuation The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.

Actuarial Valuation Date The date as of which an actuarial valuation is performed.

Actuarially Determined Contribution (ADC) A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

GLOSSARY OF TERMS

Amortization Payment	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
Amortization Method	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be "open" (meaning, reset each year) or "closed" (the number of years remaining will decline each year.
Cost-of-Living Adjustments	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
Covered-Employee Payroll	The payroll of covered employees, which is typically only the pensionable pay and does not include pay above any pay cap.
Deferred Inflows and Outflows of Resources	The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.
Discount Rate or Single Discount Rate	For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically: 1. The benefit payments to be made while the pension plans' fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period and; 2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.
Entry Age Actuarial Cost Method (EAN)	The EAN is a funding method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit ages(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.

GLOSSARY OF TERMS

Fiduciary Net Position	The fiduciary net position is the value of the net assets of the trust restricted for pension benefits.
GASB	The Governmental Accounting Standards Board is an organization that exists with authority to promulgate accounting standards for state and local governmental entities.
Long-Term Expected Rate of Return	The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.
Money-Weighted Rate of Return	The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.
Multiple-Employer Defined Benefit Pension Plan	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
Municipal Bond Rate	The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.
Net Pension Liability (NPL)	The NPL is the liability of employers and non-employer contribution entities to plan members for benefits provided through a defined benefit pension plan.
Non-Employer Contributing Entities	Non-employer contributing entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB Accounting Statements No. 67 and No. 68 plan members are not considered non-employer contribution entities.
Normal Cost	The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method.
Other Postemployment Benefits (OPEB)	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits regardless of the manner in which they are provided. Other post-employment benefits do not include termination benefits.
Real Rate of Return	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
Service Cost	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.

GLOSSARY OF TERMS

Total Pension Expense The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year:

1. Service Cost
2. Interest on the Total Pension Liability
3. Current-Period Changes in Benefit Terms
4. Employee Contributions
5. Projected Earnings on Plan Investments
6. Pension Plan Administrative Expense
7. Other Changes in Plan Fiduciary Net Position
8. Recognition of Outflow (Inflow) of Resources due to the difference between expected and actual in measurement of the Total Pension Liability
9. Recognition of Outflow (Inflow) of Resources due to Assumption Changes
10. Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings on pension plan investments

Total Pension Liability (TPL) The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.

Unfunded Actuarial Accrued Liability (UAAL) The UAAL is the difference between actuarial accrued liability and valuation assets.

Valuation Assets The valuation assets are the plan fiduciary net position used in determining the net position liability of the plan. For purposes of the GASB Statement No. 67, the asset valuation method is equal to the market value of assets.

Gabriel Roeder Smith & Company
Consultants & Actuaries

MINNESOTA STATE RETIREMENT SYSTEM

STATE PATROL RETIREMENT FUND

GASB STATEMENTS NO. 67 AND NO. 68 ACCOUNTING AND FINANCIAL REPORTING FOR PENSIONS

JUNE 30, 2014

GRS Gabriel Roeder Smith & Company
Consultants & Actuaries

100 South Fifth Street
Suite 1900
Minneapolis, MN 55402-1267

612.605.6200 phone
612.605.6203 fax
www.gabrielroeder.com

December 1, 2014

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

Dear Board of Directors:

This report provides accounting and financial reporting information that is intended to comply with the Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68 for the State Patrol Retirement Fund ("SPRF"). These calculations have been made on a basis that is consistent with our understanding of these accounting standards.

GASB Statement No. 67 is the accounting standard that applies to the financial reports issued by retirement systems. GASB Statement No. 68 establishes accounting and financial reporting for state and local government employers who provide their employees (including former employees) pension benefits through a trust.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of providing reporting and disclosure information that satisfies the requirements of GASB Statements No. 67 and No. 68. The calculation of the plan's liability for this report may not be applicable for funding purposes of the plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statement No. 67 may produce significantly different results. The information in this report is calculated on a total plan basis. MSRS is responsible for preparing the Schedule of Employer Allocations and the Schedule of Pension Amounts by Employer. This report may be provided to parties other than the Minnesota State Retirement System (MSRS) only in its entirety and only with the permission of MSRS.

This report is based upon information, furnished to us by MSRS, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. If your understanding of this information is different, please let us know. This information was checked for internal consistency, but it was not otherwise audited.

To the best of our knowledge, the information contained with this report is accurate and fairly represents the actuarial position of the State Patrol Retirement Fund as of the measurement date. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board. 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 opinion contained herein.
Respectfully submitted,

By Brian B. Murphy
Brian B. Murphy
FSA, ASA, EA, MAAA

By Bonita J. Wurst
Bonita J. Wurst
ASA, FSA, EA, MAAA

TABLE OF CONTENTS

SECTION A

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

As of June 30, 2014 *(Dollars in Thousands)*

		2014
Actuarial Valuation Date		June 30, 2014
Measurement Date of the Net Pension Liability		June 30, 2014
Membership		
Number of		
- Service Retirements		776
- Survivors		155
- Disability Retirements		54
- Deferred Retirements		44
- Terminated other non-vested		17
- Active Members		858
- Total		1,904
Covered-employee Payroll		$ 63,952 [1]
Net Pension Liability		
Total Pension Liability		$ 826,673
Plan Fiduciary Net Position		667,340
Net Pension Liability		$ 159,333
Plan Fiduciary Net Position as a Percentage of Total Pension Liability		80.73%
Net Pension Liability as a Percentage of Covered-employee Payroll		249.15%
Development of the Single Discount Rate		
Single Discount Rate		7.90%
Long-Term Expected Rate of Investment Return		7.90%
Long-Term Municipal Bond Rate[2]		4.29%
Last year ending June 30 in the 2015 to 2114 projection period for which projected benefit payments are fully funded		2114
Total Pension Expense / (Income)		$ 13,082

Deferred Outflows and Deferred Inflows of Resources by Source to be recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience in the measurement of Total Pension Liability	$ 0	$ 4,809
Changes in assumptions	25,048	0
Net difference between projected and actual earnings on pension plan investments	0	49,304
Total	$ 25,048	$ 54,113

[1] *Assumed equal to actual member contributions divided by employee contribution rate.*

[2] *Based on the Bond Buyer 20-Bond Index of general obligation municipal bonds as of June 26, 2014 (i.e., the weekly rate closest to but not later than the Measurement Date).*

DISCUSSION

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67, *Financial Reporting for Pension Plans* establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68, *Accounting and Financial Reporting for Pensions* establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

Financial Statements

GASB Statement No. 68 requires state and local governmental employers to recognize the net pension liability and the pension expense on their financial statements. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

The pension expense recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the difference between expected and actual experience in the measurement of total pension liability, assumption changes, and investment experience.

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a Statement of Fiduciary Net Position and a Statement of Changes in Fiduciary Net Position in accordance with GASB Statement No. 67. The *Statement of Fiduciary Net Position* presents the assets and liabilities of the pension plan at the end of the pension plan's reporting period. The *Statement of Changes in Fiduciary Net Position* presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.

Notes to Financial Statements

GASB Statement No. 68 requires the notes to the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions.

Both GASB Statements No. 67 and No. 68 require the notes to the financial statements for the employers and pension plans to include certain descriptive information about the pension plans through which the pension benefits are provided. The list of disclosure items should include:

- a description of benefits provided by the plan;
- the classes of employees and number of members covered by the pension plan;
- a description of the plan's funding policy, which includes member and employer contribution requirements;
- the pension plan's investment policies;
- the pension plan's fiduciary net position, net pension liability, and the pension plan's fiduciary net position as a percentage of the total pension liability;
- the net pension liability using a discount rate that is 1% higher and 1% lower than the current discount rate used to calculate the total pension liability and net pension liability for financial reporting purposes;
- significant assumptions and methods used to calculate the total pension liability;
- inputs to the discount rates; and
- certain information about mortality assumptions and the dates of experience studies.

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with Statement No. 67. This information includes:

- the composition of the pension plan's board and the authority under which benefit terms may be amended;
- a description of how fair value is determined;
- information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5%, receivables, and insurance contracts excluded from plan assets; and
- annual money-weighted rate of return.

MSRS' comprehensive annual financial report, which contains the basic financial statements and related note disclosures for the State Patrol Retirement Fund can be obtained from MSRS at 60 Empire Drive, Suite 300, St. Paul, MN, 55103 or requested via email at info@msrs.us or telephone at 1-800-657-5757.

Required Supplementary Information

GASB Statement No. 67 requires a 10-year fiscal history of:

- sources of changes in the net pension liability;
- information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; and
- comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. The net pension liability and pension expense should be measured as of the pension plan's fiscal year end (measurement date) on a date that is within the employer's prior fiscal year. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2014 and a measurement date of June 30, 2014.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a single discount rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating (which is published by the Federal Reserve) as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the long-term expected rate of return on pension plan investments is 7.90%; the municipal bond rate is 4.29% (based on the weekly rate closest to but not later than the measurement date of the 20-Year Bond Buyer Index as published by the Federal Reserve Board); and the resulting single discount rate is 7.90%.

Effective Date and Transition

GASB Statements No. 67 and No. 68 are effective for fiscal years beginning after June 15, 2013, and June 15, 2014 respectively; earlier application is encouraged by the GASB.

SECTION B

FINANCIAL STATEMENTS

PENSION EXPENSE UNDER GASB STATEMENT NO. 68

Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

A. Expense			
1.	Service Cost	$	14,514
2.	Interest on the Total Pension Liability		60,183
3.	Current-Period Benefit Changes		
4.	Employee Contributions (made negative for addition here)		(7,930)
5.	Projected Earnings on Plan Investments (made negative for addition here)		(45,557)
6.	Pension Plan Administrative Expense		150
7.	Other Changes in Plan Fiduciary Net Position		
8.	Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability		(962)
9.	Recognition of Outflow (Inflow) of Resources due to assumption changes		5,010
10.	Recognition of Outflow (Inflow) of Resources due to the difference between projected (7.90%) and actual earnings on Pension Plan Investments		(12,326)
11.	**Total Pension Expense / (Income)**	**$**	**13,082**

Statement of Outflows and Inflows arising from Current Reporting Period

Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

A. Outflows (Inflows) of Resources due to Liabilities		
1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	$	(5,771)
2. Assumption Changes (gains) or losses	$	30,058
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years, rounded to the nearest whole number}		6.0000
4. Outflow (Inflow) of Resources to be recognized in the current pension expense for the difference between expected and actual experience of the Total Pension Liability	$	(962)
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	$	5,010
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	$	4,048
7. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for the difference between expected and actual experience of the Total Pension Liability	$	(4,809)
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	$	25,048
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	$	20,239
B. Outflows (Inflows) of Resources due to Assets		
1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	$	(61,630)
2. Recognition period for Assets {in years}		5.0000
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets	$	(12,326)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	$	(49,304)

STATEMENT OF OUTFLOWS AND INFLOWS ARISING FROM CURRENT AND PRIOR REPORTING PERIODS

Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

A. Outflows and Inflows of Resources due to Liabilities and Assets to be recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows/(Inflows) of Resources
1. Due to Liabilities	$ 5,010	$ 962	$ 4,048
2. Due to Assets	0	12,326	(12,326)
3. Total	$ 5,010	$ 13,288	$ (8,278)

B. Outflows and Inflows of Resources by Source to be recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows/(Inflows) of Resources
1. Differences between expected and actual experience	$ 0	$ 962	$ (962)
2. Assumption Changes	5,010	0	5,010
3. Net Difference between projected and actual earnings on pension plan investments		12,326	(12,326)
4. Total	$ 5,010	$ 13,288	$ (8,278)

C. Deferred Outflows and Deferred Inflows of Resources by Source to be recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows/ (Inflows) of Resources
1. Differences between expected and actual experience	$ 0	$ 4,809	$ (4,809)
2. Assumption Changes	25,048	0	25,048
3. Net Difference between projected and actual earnings on pension plan investments	0	49,304	(49,304)
4. Total	$ 25,048	$ 54,113	$ (29,065)

D. Deferred Outflows and Deferred Inflows of Resources by Year to be recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows/ (Inflows) of Resources
2015	$ (8,278)
2016	(8,278)
2017	(8,278)
2018	(8,278)
2019	4,047
Thereafter	0
Total	$ (29,065)

STATEMENT OF FIDUCIARY NET POSITION

As of June 30, 2014 *(Dollars in Thousands)*

Assets		**June 30, 2014**
Cash & Short-term Investments	$	17,480
Receivables		701
Investment Pools (at fair value)		649,538
Securities Lending Collateral		72,256
Capital Assets		0
Total Assets	**$**	**739,975**
Total Deferred Outflows of Resources	**$**	**0**
Total Liabilities		**(72,635)**
Total Deferred Inflows of Resources		**0**
Net Position Restricted for Pensions	**$**	**667,340**

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION

For the Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

Change in Fiduciary Net Position		**Market Value**
Year Ending		**June 30, 2014**
1.	**Net Position at market value at beginning of year**	**$ 593,201**
Additions		
2.	Contributions	
	a. Member	$ 7,930
	b. Employer	11,894
	c. Other sources - Supplemental State Aid	1,000
	d. Total contributions	$ 20,824
3.	Investment income	
	a. Investment income/(loss)	$ 108,116
	b. Investment expenses	(929)
	c. Net investment income/(loss)	107,187
4.	Other Additions	$ 0
5.	**Total Additions:** *(2.d.) + (3.c.) + (4.)*	**$ 128,011**
Deductions		
6.	Benefits Paid	
	a. Annuity benefits	$ (53,697)
	b. Refunds	(25)
	c. Total benefits paid	$ (53,722)
7.	Expenses	
	a. Other deductions	$ 0
	b. Administrative	(150)
	c. Total expenses	$ (150)
8.	**Total deductions:** *(6.c.) + (7.c.)*	**$ (53,872)**
9.	**Net increase/(decrease) in fiduciary net position**	**$ 74,139**
10.	**Net Position at market value at end of year** *(1.) + (5.) + (8.)*	**$ 667,340**
11.	State Board of Investment calculated investment return	18.6%

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS CURRENT PERIOD

Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

A. Total pension liability			
1. Service Cost	$	14,514	
2. Interest on the Total Pension Liability		60,183	
3. Changes of benefit terms			
4. Difference between expected and actual experience of the Total Pension Liability		(5,771)	
5. Changes of assumptions		30,058	(1)
6. Benefit payments, including refunds of employee contributions		(53,722)	
7. Net change in total pension liability	$	45,262	
8. Total pension liability – beginning		781,411	
9. Total pension liability – ending	**$**	**826,673**	
B. Plan fiduciary net position			
1. Contributions – employer	$	12,894	(2)
2. Contributions – employee		7,930	
3. Net investment income		107,187	
4. Benefit payments, including refunds of employee contributions		(53,722)	
5. Pension Plan Administrative Expense		(150)	
6. Other changes			
7. Net change in plan fiduciary net position	$	74,139	
8. Plan fiduciary net position – beginning		593,201	
9. Plan fiduciary net position – ending	**$**	**667,340**	
C. Net pension liability, *A.9. - B.9.*	**$**	**159,333**	
D. Plan fiduciary net position as a percentage of the total pension liability, *B.9. / A.9.*		**80.73%**	
E. Covered-employee payroll	**$**	**63,952**	(3)
F. Net pension liability as a percentage of covered-employee payroll, *C. / E.*		**249.14%**	

(1) Assumption changes are summarized on page 27.
(2) Includes $1,000 supplemental state aid.
(3) Assumed equal to actual member contributions divided by employee contribution rate.

SCHEDULES OF REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in Net Pension Liability and Related Ratios Multiyear *(Dollars in Thousands)*

Last 10 Fiscal Years (which will be built prospectively)

Fiscal year ending June 30,	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
Total Pension Liability										
Service Cost	$ 14,514									
Interest on the Total Pension Liability	60,183									
Benefit Changes	0									
Difference between Expected and Actual Experience	(5,771)									
Assumption Changes	30,058 (1)									
Benefit Payments	(53,697)									
Refunds	(25)									
Net Change in Total Pension Liability	$ 45,262									
Total Pension Liability - Beginning	781,411									
Total Pension Liability - Ending (a)	**$ 826,673**									
Plan Fiduciary Net Position										
Employer Contributions	$ 12,894 (2)									
Employee Contributions	7,930									
Pension Plan Net Investment Income	107,187									
Benefit Payments	(53,697)									
Refunds	(25)									
Pension Plan Administrative Expense	(150)									
Other	0									
Net Change in Plan Fiduciary Net Position	$ 74,139									
Plan Fiduciary Net Position - Beginning	593,201									
Plan Fiduciary Net Position - Ending (b)	**$ 667,340**									
Net Pension Liability - Ending (a) - (b)	$ 159,333									
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	80.73 %									
Covered-Employee Payroll	$ 63,952 (3)									
Net Pension Liability as a Percentage of Covered-Employee Payroll	249.15 %									

Notes to Schedule:

(1) Assumption changes are summarized on page 27.
(2) Includes $1,000 supplemental state aid.
(3) Assumed equal to actual member contributions divided by employee contribution rate.

SCHEDULES OF REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Net Pension Liability Multiyear *(Dollars in Thousands)*

Last 10 Fiscal Years (which will be built prospectively)

FY Ending June 30,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered-Employee Payroll	Net Pension Liability as a % of Covered-Employee Payroll
	(a)	(b)	(a) - (b) = (c)	(b) / (c)	(d)	(c) / (d)
2005						
2006						
2007						
2008						
2009						
2010						
2011						
2012						
2013						
2014	$ 826,673	$ 667,340	$ 159,333	80.73%	$ 63,952	249.14%

SCHEDULE OF CONTRIBUTIONS MULTIYEAR *(Dollars in Thousands)*

Last 10 Fiscal Years

FY Ending June 30,	Actuarially Determined Contribution (1)	Actual Contributions	Contribution Deficiency (Excess)	Covered-Employee Payroll	Actual Contribution as a % of Covered-Employee Payroll
	(a)	(b)	(a) - (b) = (c)	(d)	(b) / (d)
2005	$ 5,491	$ 6,670	$ (1,179)	$ 55,142	12.10%
2006	6,741	7,055	(314)	57,765	12.21
2007	11,427	7,461	3,966	61,498	12.13
2008	12,355	8,279	4,076	60,029	13.79
2009	14,999	9,178	5,821	61,511	14.92
2010	17,410	10,104	7,306	63,250	15.97
2011	14,826	9,873	4,953	63,250	15.61
2012	14,912	11,620	3,292	62,524 (2)	18.58
2013	18,711	11,482	7,229	62,121 (2)	18.48
2014	18,444	12,894 (3)	5,550	63,952 (2)	20.16

NOTES TO SCHEDULE OF CONTRIBUTIONS

Valuation Date:	June 30, 2014
Notes	(1) Actuarially determined contribution rates are calculated as of each July 1. (2) Assumed equal to actual member contributions divided by employee contribution rate. (3) Include supplemental state aid of $1,000.

Methods and Assumptions Used to Determine Contribution Rates Reported in this Schedule:

Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	23 years
Asset Valuation Method	5-Year smoothed market; no corridor
Inflation	3.00%
Salary Increases	Service based tables ranging from 8.00% with one year of service to 4.00% with 21 or more years of service, including inflation
Investment Rate of Return	8.00% through June 30, 2017; 8.50% thereafter
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2012 valuation pursuant to an experience study of the period 2006 - 2011, prepared by a former actuary.
Healthy Post-retirement Mortality	RP-2000 annuitant generational mortality table, projected with mortality improvement scale AA, white collar adjustment, set back two years for males and set forward one year for females.

Other Information:

Benefit Increases After Retirement	The post-retirement benefit increase is assumed to increase from 1.0% to 1.5% beginning January 1, 2018 and from 1.5% to 2.5% beginning January 1, 2033. See separate funding report as of July 1, 2014 for additional detail. To obtain this report, contact MSRS as noted on page 3.

SCHEDULE OF INVESTMENT RETURNS MULTIYEAR
Last 10 Fiscal Years

FY Ending June 30,	Annual Return[1]
2005	
2006	
2007	
2008	
2009	
2010	
2011	
2012	
2013	
2014	18.69 %

[1] *Annual money-weighted rate of return, net of investment expenses.*

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to MSRS for GASB-compliance purposes. MSRS furnished this information to us for inclusion within this report. We did not audit this information. We are not responsible for its accuracy or completeness.

Rate of Return

For the year ended June 30, 2014, the annual money-weighted rate of return for the State Patrol Retirement Fund was 18.69%. The money-weighted rate of return is a method of calculating period-by-period returns on pension plan investments that adjusts for the changing amounts actually invested. For purposes of this schedule, the money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.

10-Year Schedule of Money-Weighted Investment Return

Ten-year data is not available. Additional years will be provided when they become available.

To request additional information about the computation of the annual money-weighted rate of return and the investments for the Minnesota Retirement Systems (including the investments for MSRS' defined benefit retirement funds), contact SBI at 60 Empire Drive, Suite 355, St. Paul, Minnesota, 55103, via email at minn.sbi@state.mn.us or telephone at (651) 296-3328.

SECTION D

ADDITIONAL FINANCIAL STATEMENT DISCLOSURES

ASSET ALLOCATION

Long-Term Expected Return on Plan Assets

The long-term expected rate of return on pension plan investments was determined using a building-block method. Best estimates for expected future real rates of return (expected returns, net of inflation) are developed for each asset class using both long-term historical returns and long-term capital market expectation from a number of investment management and consulting organizations. The asset class estimates and the target allocations were then combined to produce geometric, long-term expected real rate of return for the portfolio. Inflation expectations were applied to derive the nominal rate of return for the portfolio. For each asset class that is included in the pension fund's target asset allocation as of June 30, 2014, these best estimates are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return (Geometric)
Domestic Stocks	45.00%	5.50%
International Stocks	15.00	6.00
Bonds	18.00	1.45
Alternative Assets	20.00	6.40
Unallocated Cash	2.00	0.50
Total	100.00%	

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to MSRS for GASB-compliance purposes. MSRS furnished this information to us for inclusion within this report. We did not audit this information. We are not responsible for its accuracy or completeness.

At MSRS' direction, for purposes of this valuation, the long-term expected rate of return assumption is 7.90%. This assumption is based on a review of inflation and investment return assumptions dated September 11, 2014.

SENSITIVITY OF NET PENSION LIABILITY TO THE SINGLE DISCOUNT RATE ASSUMPTION

Single Discount Rate

A single discount rate of 7.90% was used to measure the total pension liability. This single discount rate was based on the expected rate of return on pension plan investments of 7.90%. The projection of cash flows used to determine this single discount rate assumed that plan member and employer contributions will be made at the current statutory rates. Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Regarding the sensitivity of the net pension liability to changes in the single discount rate, the following presents the fund's net pension liability, calculated using a single discount rate of 7.90%, as well as what the fund's net pension liability would be if it were calculated using a single discount rate that is 1-percentage-point lower (6.90%) or 1-percentage-point higher (8.90%) than the current rate:

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

(Dollars in Thousands)

1% Decrease 6.90%	Current Single Discount Rate Assumption 7.90%	1% Increase 8.90%
$256,433	$159,333	$78,388

A single discount rate of 7.90% was used for the measurement date of July 1, 2013.

For more information on the calculation of the single discount rate, refer to Section G of this report.

GASB STATEMENT NO. 68 RECONCILIATION *(Dollars in Thousands)*

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Deferred Outflows	Deferred Inflows	Pension Expense
Balance Beginning of Year	**$ 781,411**	**$ 593,201**	**$ 188,210**	**$ 0**	**$ 0**	
Changes for the Year:						
Service Cost	$ 14,514		$ 14,514			$ 14,514
Interest on Total Pension Liability	60,183		60,183			60,183
Interest on Fiduciary Net Position (1)		$ 45,557	(45,557)			(45,557)
Changes in Benefit Terms						
Liability Experience Gains and Losses	(5,771)		(5,771)		$ 4,809	(962)
Changes in Assumptions	30,058		30,058	$ 25,048		5,010
Contributions - Employer (2)		12,894	(12,894)			
Contributions - Employees		7,930	(7,930)			(7,930)
Asset Gain/(Loss) (1)		61,630	(61,630)		49,304	(12,326)
Benefit Payouts	(53,722)	(53,722)	0			
Administrative Expenses		(150)	150			150
Other changes		0	0			
Net Changes	**$ 45,262**	**$ 74,139**	**$ (28,877)**	**$ 25,048**	**$ 54,113**	**$ 13,082**
Balance End of Year	**$ 826,673**	**$ 667,340**	**$ 159,333**	**$ 25,048**	**$ 54,113**	

(1) *The sum of these equals the net investment income of $107,187.*
(2) *Includes supplemental state aid of $1,000.*

SUMMARY OF POPULATION STATISTICS

		Terminated		Recipients			
	Actives	Deferred Retirement	Other Non-Vested	Service Retirement	Disability Retirement	Survivor	Total
Members on 7/1/2013	**845**	**41**	**18**	**748**	**50**	**185**	**1,887**
New Members	57	0	0	0	0	0	**57**
Return to active	0	0	0	0	0	0	**0**
Terminated non-vested	(3)	0	3	0	0	0	**0**
Service retirements	(30)	(1)	0	31	0	0	**0**
Terminated deferred	(6)	6	0	0	0	0	**0**
Terminated refund/transfer	(1)	0	(6)	0	0	0	**(7)**
Deaths	0	0	0	(21)	0	(25)	**(46)**
New beneficiary	0	0	0	0	0	11	**11**
Disabled	(4)	0	0	0	4	0	**0**
Unexpected status change	0	(2)	2	18	0	(16)	**2**
Net change	13	3	(1)	28	4	(30)	**17**
Members on 6/30/2014	**858**	**44**	**17**	**776**	**54**	**155**	**1,904**

SECTION E

SUMMARY OF BENEFITS

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 troopers, conservation officers, certain crime bureau and gambling enforcement officers, and certain other persons listed in Minnesota Statutes 352B.011 subdivision 10.
Contributions	Percent of Salary **Effective Date** / **Member** / **Employer** July 1, 2011 – June 30, 2014: 12.40% / 18.60% July 1, 2014 – June 30, 2016: 13.40% / 20.10% July 1, 2016 and later: 14.40% / 21.60% Member contributions are “picked up” according to the provisions of Internal Revenue Code 414(h).
State Contributions	$1 million paid annually on October 1 until both the Public Employees Retirement Association Police and Fire Plan and the State Patrol Plan become 90% funded (on a Market Value of Assets basis).
Allowable service	Service during which member contributions were deducted. Includes period receiving temporary Worker's Compensation and reduced salary from employer. See Normal Retirement benefit definition below for information about service limits.
Salary	Salaries excluding lump sum payments at separation.
Average salary	Average of the five highest years of Salary. Average Salary is based on all Allowable Service if less than five years. Average Salary is based on all years without regard to any service limits.

Retirement

Normal retirement benefit

Age/Service requirement	Age 55 and three years (ten years if first hired after June 30, 2013) of Allowable Service.
Amount	3.00% of Average Salary for each year of Allowable Service up to 33 years. Members with at least 28 years of service as of July 1, 2013 are not subject to this service limit. Member contributions made after the service cap will be refunded at retirement.

Early retirement benefit

Age/Service requirement	Age 50 and three years (ten years if first hired after June 30, 2013) of Allowable Service.
Amount	Normal Retirement Benefit based on Allowable Service and Average Salary at retirement reduced by 1/10% for each month that the member is under age 55. If the effective date of retirement is after June 30, 2015, the reduction is 0.34% for each month that the member is under age 55 at the time of retirement.
Form of payment	Life annuity. Actuarially equivalent options are: 50%, 75%, or 100% Joint and Survivor, or 15-year certain. If a Joint and Survivor benefit is elected and the beneficiary predeceases the annuitant, the annuitant’s benefit increases to the Life Annuity amount. This “bounce back” is subsidized by the plan.

Summary of Plan Provisions (Continued)

Retirement (Concluded)	
Benefit increases	Since January 1, 2014, benefit recipients receive annual 1.0% benefit increases. When the funding ratio reaches 85% for two consecutive years, the benefit increase will increase to 1.5%; the benefit will revert to 2.5% when the funding ratio reaches 90% for two consecutive years (funding ratio is determined using Market Value of Assets). 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.
Disability	
Occupational disability benefit	
Age/Service requirement	Member who cannot perform his duties as a direct result of a disability relating to an act of duty.
Amount	60% of Average Salary plus 3.00% of Average Salary for each year in excess of 20 years of Allowable Service (pro rata for completed months). Payments cease at age 65 or earlier if disability ceases or death occurs. Benefits may be paid upon re-employment but salary plus benefit cannot exceed current salary of position held at time of disability.
Non-duty disability benefit	
Age/Service requirement	At least one year of Allowable Service and disability not related to covered employment.
Amount	Normal Retirement Benefit based on Allowable Service (minimum of 15 years) and Average Salary at disability without reduction for commencement before age 55. Payments cease at age 65 or earlier if disability ceases or death occurs. Benefits may be paid upon re-employment but salary plus benefit cannot exceed current salary of position held at time of disability.
Retirement after disability	
Age/Service requirement	Age 65 with continued disability.
Amount	Optional annuity continues. Otherwise, normal retirement benefit equal to the disability benefit paid, or an actuarially equivalent option.
Form of payment	Same as for retirement.
Benefit increases	Same as for retirement.

Summary of Plan Provisions (Continued)

Death	
Surviving spouse benefit	
Age/Service requirement	Member who is active or receiving a disability benefit or former member.
Amount	50% of Average Salary if member was active or occupational disability and either had less than three years (five years if first hired after June 30, 2013) of Allowable Service or was under age 55. Annuity is paid for life. Surviving spouse receives the 100% joint and survivor benefit commencing on the member's 55th birthday if member was active or a disability with three years (five years if first hired after June 30, 2013) of Allowable Service. A spouse who had been receiving the 50% benefit shall be entitled to the greater benefit. The surviving spouse of a former member receives the 100% joint and survivor benefit commencing on the member's 55th birthday if former member had three years (five years if first hired after June 30, 2013) of Allowable Service.
Benefit increases	Same as for retirement
Surviving dependent children's benefit	
Age/Service requirement	Member who is active or receiving a disability benefit. Child must be unmarried, under age 18 (or 23 if full-time student) and dependent upon the member.
Amount	10% of Average Salary for each child and $20 per month prorated among all dependent children. Benefit must not be less than 50% nor exceed 70% of Average Salary.
Benefit increases	Same as for retirement.
Refund of contributions	
Age/Service requirement	Member dies before receiving any retirement benefits and survivor benefits are not payable.
Amount	Member contributions with 6.00% interest compounded daily until June 30, 2011, and 4.00% thereafter.

Summary of Plan Provisions (Continued)

Termination	
Refund of contributions	
Age/service requirement	Termination of state service.
Amount	Member contributions with 6.00% interest compounded daily to 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	Three years (ten years if first hired after June 30, 2013) of Allowable Service.
Amount	Benefit is 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, 2012; and (d.) 2.00% after December 31, 2011 until the annuity begins. 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%.
Optional form conversion factors	Actuarially equivalent factors based on RP-2000 for healthy annuitants, white collar adjustment, projected to 2027 using scale AA, set back two years for males and set forward one year for females, blended 95% males, and 6.5% interest.
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; and (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.

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 contributions are decreased by at most 0.25% and employer contributions are decreased by at most 0.375% to a level that is necessary to maintain a 2.0% 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 contributions are increased 0.25% and employer contributions are increased by 0.375%.
	
	    o If the contribution deficiency is greater than 1.99% and less than 4.01%, member contributions are increased 0.50% and employer contributions are increased by 0.75%.
	
	    o If the contribution deficiency is greater than 4.0%, member contributions are increased by 0.75% and employer contributions are increased by 1.125%.

Changes in plan provisions	Effective July 1, 2014, the funding ratio threshold that must be attained to pay a 1.5% post-retirement benefit increase to benefit recipients was changed from 85% for one year to 85% for two consecutive years. 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. The interest assumption used to determine optional form conversion factors was changed from an actuarial equivalent rate consistent with the post-retirement discount rate to a fixed rate of 6.5%.

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

Actuarial Methods

Actuarial Cost Method

Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using an **Individual Entry-Age Actuarial Cost Method** having the following characteristics:

(i) the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement; and

(ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Actuarial gains/(losses), as they occur, reduce (increase) the Total Pension Liability.

Valuation of Future Post-Retirement Benefit Increases

Benefit recipients receive a future annual 1.0% post-retirement benefit increase. If the funding ratio reaches 85% (based on a 1.5% post-retirement benefit increase assumption) for two consecutive years, the benefit increase will increase to 1.5%, if the funding ratio reaches 90% (based on a 2.5% post-retirement benefit increase assumption) for two consecutive years, the benefit increase will revert to 2.5%.

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 of 7.90%
- Liabilities and normal cost based on statutory funding assumptions
  - Discount rate of 8.00% through June 30, 2017; 8.50% thereafter
  - Statutory salary increases (rate of 8% at year 1 declining to 4% at years 21 and later)
- 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 1.00% per year until the funding ratio threshold required to pay a 1.50% post-retirement benefit increase is reached and is then assumed to be 1.50% until the threshold required to pay a 2.50% post-retirement increase is reached.
- Current statutory contributions (i.e., not including potential contribution increases under the contribution stabilizer statutes) as directed by MSRS.

Based on these assumptions and methods, the projection indicates that this plan is expected to attain the funding ratio threshold required to pay 1.50% post-retirement benefit increase in the year 2018 and 2.5% in 2045, and that the plan would begin paying 1.50% benefit increases on January 1, 2019 and 2.50% on January 1, 2046. This assumption is reflected in our calculations.

To determine the Total Pension Liability as of July 1, 2013, we performed a similar projection, and assumed the plan would pay the 1.00% benefit increases indefinitely.

Decrement Timing

All decrements are assumed to occur mid-year.

Asset Valuation Method

Fair value of assets.

Summary of Actuarial Assumptions

The following assumptions were used in valuing the liabilities and benefits under the plan. All demographic 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 demographic assumptions prescribed are based on the last experience study, dated February 2012, prepared by a former actuary. The economic assumptions are based on a review of inflation and investment return assumptions dated September 11, 2014.

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	7.90% per annum
Benefit increases after retirement	1.00% per annum through 2018, 1.50% per annum from 2019 to 2045, 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	2.75% per year.
Payroll growth	3.50% per year.
Mortality rates	
Healthy Pre-retirement	RP-2000 employee generational mortality table projected with mortality improvement scale AA, white collar adjustment.
Healthy Post-retirement	RP-2000 annuitant generational mortality table projected with mortality improvement scale AA, white collar adjustment, set back two years for males and set forward one year for females.
	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 annuitant generational mortality table projected with mortality improvement scale AA, white collar adjustment, set back two years for males and set forward one year 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.

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: Year — Select Withdrawal Rates 1 — 5% 2 — 2% 3 — 2%
Disability	Age-related rates based on experience; see table of sample rates. All incidences are assumed to be duty-related.
Allowance for combined service annuity	Liabilities for former members are increased by 30.00% to account for the effect of some participants having eligibility for a Combined Service Annuity.
Administrative expenses	For purposes of the Projection of Plan Fiduciary Net Position, total prior year administrative expenses expressed as a percentage of prior year projected payroll are assumed to increase 3.50% per year and are allocated to the closed group based on the ratio of closed group payroll to total payroll.
Refund of contributions	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. Account balances for deferred members accumulate interest until normal retirement date and are discounted back to the valuation date.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at age 55.
Percentage married	85% of active members are assumed to be married. Actual marital status is used for members in payment status.
Age of spouse	Females are assumed to be two years younger than their male 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	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 25% elect 75% Joint & Survivor option 35% elect 100% Joint & Survivor option Females: 25% elect 50% Joint & Survivor option 30% elect 75% Joint & Survivor option 5% elect 100% Joint & Survivor option Remaining married members and unmarried members are assumed to elect the Straight Life option.
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.

Summary of Actuarial Assumptions (Continued)

Unknown data for certain members	To prepare this report, GRS has used and relied on participant data supplied by MSRS. 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. There are no members reported with missing gender or birth dates. In cases where submitted data was missing or incomplete, the following assumptions were applied: <u>Data for active members</u>: There were no members reported with missing salary and no members reported with missing service. <u>Data for terminated members</u>: There was 1 member reported without a benefit. We calculated benefits for this member using the reported Credited Service and Termination Date. Average Salary was not reported, so we assumed a value of $35,000. <u>Data for members receiving benefits</u>: There were no members reported without a benefit. There were no survivors reported with an expired benefit. There were 5 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 10 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. For retirees that elected a survivor benefit option, we used the valuation assumptions if the survivor date of birth was missing or invalid (220 members) and/or the survivor gender was missing or invalid (238 members). At MSRS' direction, we changed the status of 18 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	As of July 1, 2013, the post-retirement benefit increase rate is assumed to be 1% indefinitely. As of July 1, 2014, the benefit increase rate is assumed to increase from 1% to 1.5% on January 1, 2019, and from 1.5% to 2.5% on January 1, 2046.

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%	0.03%	0.02%	0.03%	0.02%
25	0.04	0.02	0.04	0.02	0.04	0.02
30	0.04	0.03	0.04	0.03	0.04	0.03
35	0.05	0.05	0.06	0.05	0.05	0.05
40	0.08	0.07	0.09	0.06	0.08	0.07
45	0.11	0.11	0.13	0.10	0.11	0.11
50	0.17	0.25	0.20	0.16	0.17	0.25
55	0.57	0.39	0.27	0.24	0.57	0.39
60	0.57	0.61	0.43	0.38	0.57	0.61
65	0.92	1.01	0.67	0.59	0.92	1.01
70	1.58	1.69	0.98	0.88	1.58	1.69

* *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	1.47%	1.47%	0.03%	0.03%
25	1.13	1.13	0.05	0.05
30	0.80	0.80	0.06	0.06
35	0.47	0.47	0.09	0.09
40	0.40	0.40	0.14	0.14
45	0.40	0.40	0.23	0.23
50	0.00	0.00	0.40	0.40
55	0.00	0.00	0.70	0.70
60	0.00	0.00	1.13	1.13
65	0.00	0.00	0.00	0.00

Summary of Actuarial Assumptions (Concluded)

Age	Retirement
50	7 %
51	6
52	6
53	6
54	3
55	65
56	50
57	30
58	20
59	20
60+	100

Salary Scale	
Year	Increase
1	7.75%
2	7.25
3	6.75
4	6.50
5	6.25
6	6.00
7	5.75
8	5.60
9	5.45
10	5.30
11	5.15
12	5.00
13	4.85
14	4.70
15	4.55
16	4.40
17	4.25
18	4.10
19	3.95
20	3.80
21+	3.75

SECTION G

CALCULATION OF THE SINGLE DISCOUNT RATE

CALCULATION OF THE SINGLE DISCOUNT RATE

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Fiduciary Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the long-term expected rate of return is used as the discount rate. In years where assets are not projected to be sufficient to meet benefit payments, the use of a "risk-free" municipal rate is required, as described in the following paragraph.

The *Single Discount Rate* (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the plan fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating (which is published by the Federal Reserve Board (FRB)) as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the long-term expected rate of return on pension plan investments is 7.90%; the municipal bond rate is 4.29% (based on the FRB rate as of June 26, 2014). The Plan's Fiduciary Net Position was projected to be available to meet all projected future benefit payments of current active and inactive employees. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the Total Pension Liability. **The resulting single discount rate as of July 1, 2014 is 7.90%.**

The tables in this section provide background for the development of the single discount rate.

The **Projection of Contributions** table shows the development of expected contributions in future years. Normal Cost contributions for future hires are not included (nor are their liabilities).

The **Projection of Plan Fiduciary Net Position** table shows the development of expected asset levels in future years.

The **Present Values of Projected Benefit Payments** table shows the development of the Single Discount Rate (SDR). It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total at the SDR.

We performed a similar analysis as of July 1, 2013. Based on the long-term expected rate of return of 7.90% and a municipal bond rate of 4.29% (based on the FRB rate as of June 27, 2013); the Plan's Fiduciary Net Position was projected to be available to meet all projected future benefit payments of current active and inactive employees. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the Total Pension Liability. **The resulting single discount rate as of July 1, 2013 is 7.90%.**

SINGLE DISCOUNT RATE DEVELOPMENT

Projection of Contributions *(Dollars in Thousands)*

	Projected Covered-Employee Payroll			Projected Contributions				
Year	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll toward Current UAL*	Additional State Contributions	Total Contributions
	(a)	(b)	(c) = (a) + (b)	(d)	(e)	(f)	(g)	(h) = (d) + (e) + (f) + (g)
0	$ 63,952		$ 63,952					
1	68,574		68,574	$ 9,189	$ 13,783		$ 1,000	$ 23,972
2	67,587	$ 3,387	70,974	9,057	13,585	$ 314	1,000	22,956
3	66,399	7,059	73,458	9,561	14,342	830	1,000	24,733
4	65,440	10,589	76,029	9,423	14,135	1,245	1,000	24,803
5	64,573	14,117	78,690	9,299	13,948	1,660	1,000	24,907
6	63,691	17,753	81,444	9,171	13,757	2,088	1,000	25,016
7	62,731	21,564	84,295	9,033	13,550	2,536	1,000	25,119
8	61,998	25,247	87,245	8,928	13,392	2,969	1,000	25,289
9	60,940	29,359	90,299	8,775	13,163	3,453	1,000	25,391
10	59,276	34,183	93,459	8,536	12,804	4,020	1,000	25,360
11	57,224	39,506	96,730	8,240	12,360	4,646	1,000	25,246
12	54,814	45,302	100,116	7,893	11,840	5,328	1,000	25,061
13	52,241	51,379	103,620	7,523	11,284	6,042	1,000	24,849
14	49,399	57,848	107,247	7,113	10,670	6,803	1,000	24,586
15	46,294	64,706	111,000	6,666	10,000	7,609	1,000	24,275
16	43,148	71,737	114,885	6,213	9,320	8,436	1,000	23,969
17	39,933	78,973	118,906	5,750	8,626	9,287	1,000	23,663
18	36,505	86,563	123,068	5,257	7,885	10,180	1,000	23,322
19	33,036	94,340	127,376	4,757	7,136	11,094	1,000	22,987
20	29,861	101,973	131,834	4,300	6,450	11,992	1,000	22,742
21	26,715	109,733	136,448	3,847	5,770	12,905	1,000	22,522
22	23,620	117,603	141,223	3,401	5,102	13,830	1,000	22,333
23	20,772	125,394	146,166	2,991	4,487	14,746	1,000	22,224
24	18,226	133,056	151,282	2,625	3,937	15,647	1,000	22,209
25	15,801	140,776	156,577	2,275	3,413	16,555	1,000	22,243
26	13,167	148,890	162,057	1,896	2,844	17,509	1,000	22,249
27	10,511	157,218	167,729	1,514	2,270	18,489	1,000	22,273
28	7,965	165,635	173,600	1,147	1,720	19,479	1,000	22,346
29	5,783	173,893	179,676	833	1,249	20,450	1,000	22,532
30	4,170	181,794	185,964	601	901	21,379	1,000	22,881
31	2,863	189,610	192,473	412	618	22,298	1,000	23,328
32	1,735	197,475	199,210	250	375	23,223	1,000	23,848
33	945	205,237	206,182	136	204	24,136	0	24,476
34	510	212,888	213,398	73	110	25,036	0	25,219
35	283	220,584	220,867	41	61	25,941	0	26,043
36	153	228,445	228,598	22	33	26,865	0	26,920
37	61	236,538	236,599	9	13	27,817	0	27,839
38	17	244,863	244,880	2	4	28,796	0	28,802
39	4	253,446	253,450	1	1	29,805	0	29,807
40	0	262,321	262,321	0	0	30,849	0	30,849
41	0	271,502	271,502	0	0	31,929	0	31,929
42	0	281,005	281,005	0	0	33,046	0	33,046
43	0	290,840	290,840	0	0	34,203	0	34,203
44	0	301,020	301,020	0	0	35,400	0	35,400
45	0	311,555	311,555	0	0	36,639	0	36,639
46	0	322,460	322,460	0	0	37,921	0	37,921
47	0	333,746	333,746	0	0	39,248	0	39,248
48	0	345,427	345,427	0	0	40,622	0	40,622
49	0	357,517	357,517	0	0	42,044	0	42,044
50	0	370,030	370,030	0	0	43,516	0	43,516

**Contributions related to future employees in excess of normal cost and expenses of 24.24% of pay.*

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

SINGLE DISCOUNT RATE DEVELOPMENT

Projection of Contributions (continued) *(Dollars in Thousands)*

	Projected Covered-Employee Payroll			Projected Contributions				
Year	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll toward Current UAL*	Additional State Contributions	Total Contributions
	(a)	(b)	(c) = (a) + (b)	(d)	(e)	(f)	(g)	(h) = (d) + (e) + (f) + (g)
51	$ 0	$ 382,981	$ 382,981	$ 0	$ 0	$ 45,039	$ 0	$ 45,039
52	0	396,385	396,385	0	0	46,615	0	46,615
53	0	410,259	410,259	0	0	48,246	0	48,246
54	0	424,618	424,618	0	0	49,935	0	49,935
55	0	439,479	439,479	0	0	51,683	0	51,683
56	0	454,861	454,861	0	0	53,492	0	53,492
57	0	470,781	470,781	0	0	55,364	0	55,364
58	0	487,259	487,259	0	0	57,302	0	57,302
59	0	504,313	504,313	0	0	59,307	0	59,307
60	0	521,964	521,964	0	0	61,383	0	61,383
61	0	540,232	540,232	0	0	63,531	0	63,531
62	0	559,141	559,141	0	0	65,755	0	65,755
63	0	578,710	578,710	0	0	68,056	0	68,056
64	0	598,965	598,965	0	0	70,438	0	70,438
65	0	619,929	619,929	0	0	72,904	0	72,904
66	0	641,627	641,627	0	0	75,455	0	75,455
67	0	664,084	664,084	0	0	78,096	0	78,096
68	0	687,326	687,326	0	0	80,830	0	80,830
69	0	711,383	711,383	0	0	83,659	0	83,659
70	0	736,281	736,281	0	0	86,587	0	86,587
71	0	762,051	762,051	0	0	89,617	0	89,617
72	0	788,723	788,723	0	0	92,754	0	92,754
73	0	816,328	816,328	0	0	96,000	0	96,000
74	0	844,900	844,900	0	0	99,360	0	99,360
75	0	874,471	874,471	0	0	102,838	0	102,838
76	0	905,078	905,078	0	0	106,437	0	106,437
77	0	936,755	936,755	0	0	110,162	0	110,162
78	0	969,542	969,542	0	0	114,018	0	114,018
79	0	1,003,476	1,003,476	0	0	118,009	0	118,009
80	0	1,038,597	1,038,597	0	0	122,139	0	122,139
81	0	1,074,948	1,074,948	0	0	126,414	0	126,414
82	0	1,112,572	1,112,572	0	0	130,838	0	130,838
83	0	1,151,512	1,151,512	0	0	135,418	0	135,418
84	0	1,191,814	1,191,814	0	0	140,157	0	140,157
85	0	1,233,528	1,233,528	0	0	145,063	0	145,063
86	0	1,276,701	1,276,701	0	0	150,140	0	150,140
87	0	1,321,386	1,321,386	0	0	155,395	0	155,395
88	0	1,367,635	1,367,635	0	0	160,834	0	160,834
89	0	1,415,502	1,415,502	0	0	166,463	0	166,463
90	0	1,465,044	1,465,044	0	0	172,289	0	172,289
91	0	1,516,321	1,516,321	0	0	178,319	0	178,319
92	0	1,569,392	1,569,392	0	0	184,561	0	184,561
93	0	1,624,321	1,624,321	0	0	191,020	0	191,020
94	0	1,681,172	1,681,172	0	0	197,706	0	197,706
95	0	1,740,013	1,740,013	0	0	204,626	0	204,626
96	0	1,800,913	1,800,913	0	0	211,787	0	211,787
97	0	1,863,945	1,863,945	0	0	219,200	0	219,200
98	0	1,929,184	1,929,184	0	0	226,872	0	226,872
99	0	1,996,705	1,996,705	0	0	234,813	0	234,813
100	0	2,066,590	2,066,590	0	0	243,031	0	243,031

**Contributions related to future employees in excess of normal cost and expenses of 24.24% of pay.*

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

SINGLE DISCOUNT RATE DEVELOPMENT

Projection of Plan Fiduciary Net Position *(Dollars in Thousands)*

Year	Projected Beginning Plan Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.90%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
1	$ 667,340	$ 23,972	$ 54,313	$ 158	$ 51,538	$ 688,379
2	688,379	22,956	56,205	155	53,126	708,101
3	708,101	24,733	58,063	153	54,760	729,378
4	729,378	24,803	59,541	151	56,466	750,955
5	750,955	24,907	61,151	149	58,191	772,753
6	772,753	25,016	63,082	146	59,922	794,463
7	794,463	25,119	64,875	144	61,650	816,213
8	816,213	25,289	66,474	143	63,392	838,277
9	838,277	25,391	68,117	140	65,155	860,566
10	860,566	25,360	70,013	136	66,920	882,697
11	882,697	25,246	72,110	132	68,662	904,363
12	904,363	25,061	74,296	126	70,361	925,363
13	925,363	24,849	76,586	120	72,002	945,508
14	945,508	24,586	79,048	114	73,567	964,499
15	964,499	24,275	81,521	106	75,039	982,186
16	982,186	23,969	84,057	99	76,406	998,405
17	998,405	23,663	86,575	92	77,657	1,013,058
18	1,013,058	23,322	89,253	84	78,777	1,025,820
19	1,025,820	22,987	91,786	76	79,753	1,036,698
20	1,036,698	22,742	94,017	69	80,596	1,045,950
21	1,045,950	22,522	96,111	61	81,316	1,053,616
22	1,053,616	22,333	98,063	54	81,918	1,059,750
23	1,059,750	22,224	99,800	48	82,411	1,064,537
24	1,064,537	22,209	101,197	42	82,813	1,068,320
25	1,068,320	22,243	102,399	36	83,146	1,071,274
26	1,071,274	22,249	103,675	30	83,410	1,073,228
27	1,073,228	22,273	104,936	24	83,595	1,074,136
28	1,074,136	22,346	106,100	18	83,704	1,074,068
29	1,074,068	22,532	106,834	13	83,757	1,073,510
30	1,073,510	22,881	107,019	10	83,798	1,073,160
31	1,073,160	23,328	106,915	7	83,871	1,073,437
32	1,073,437	23,848	107,036	4	83,987	1,074,232
33	1,074,232	24,476	107,202	2	84,108	1,075,612
34	1,075,612	25,219	106,942	1	84,256	1,078,144
35	1,078,144	26,043	106,374	1	84,510	1,082,322
36	1,082,322	26,920	105,644	0	84,903	1,088,501
37	1,088,501	27,839	104,735	0	85,461	1,097,066
38	1,097,066	28,802	103,649	0	86,218	1,108,437
39	1,108,437	29,807	102,434	0	87,202	1,123,012
40	1,123,012	30,849	101,085	0	88,446	1,141,222
41	1,141,222	31,929	99,608	0	89,984	1,163,527
42	1,163,527	33,046	97,997	0	91,851	1,190,427
43	1,190,427	34,203	96,253	0	94,089	1,222,466
44	1,222,466	35,400	94,374	0	96,739	1,260,231
45	1,260,231	36,639	92,355	0	99,849	1,304,364
46	1,304,364	37,921	90,188	0	103,469	1,355,566
47	1,355,566	39,248	87,874	0	107,655	1,414,595
48	1,414,595	40,622	85,404	0	112,467	1,482,280
49	1,482,280	42,044	82,767	0	117,972	1,559,529
50	1,559,529	43,516	79,960	0	124,240	1,647,325

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

SINGLE DISCOUNT RATE DEVELOPMENT

Projection of Plan Fiduciary Net Position (continued)

(Dollars in Thousands)

Year	Projected Beginning Plan Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.90%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
51	$ 1,647,325	$ 45,039	$ 76,984	$ 0	$ 131,350	$ 1,746,730
52	1,746,730	46,615	73,841	0	139,386	1,858,890
53	1,858,890	48,246	70,533	0	148,438	1,985,041
54	1,985,041	49,935	67,073	0	158,604	2,126,507
55	2,126,507	51,683	63,480	0	169,986	2,284,696
56	2,284,696	53,492	59,774	0	182,697	2,461,111
57	2,461,111	55,364	55,979	0	196,853	2,657,349
58	2,657,349	57,302	52,127	0	212,581	2,875,105
59	2,875,105	59,307	48,255	0	230,011	3,116,168
60	3,116,168	61,383	44,392	0	249,285	3,382,444
61	3,382,444	63,531	40,565	0	270,552	3,675,962
62	3,675,962	65,755	36,806	0	293,972	3,998,883
63	3,998,883	68,056	33,139	0	319,714	4,353,514
64	4,353,514	70,438	29,585	0	347,960	4,742,327
65	4,742,327	72,904	26,168	0	378,904	5,167,967
66	5,167,967	75,455	22,915	0	412,755	5,633,262
67	5,633,262	78,096	19,849	0	449,734	6,141,243
68	6,141,243	80,830	16,991	0	490,082	6,695,164
69	6,695,164	83,659	14,362	0	534,053	7,298,514
70	7,298,514	86,587	11,975	0	581,923	7,955,049
71	7,955,049	89,617	9,841	0	633,990	8,668,815
72	8,668,815	92,754	7,965	0	690,571	9,444,175
73	9,444,175	96,000	6,347	0	752,013	10,285,841
74	10,285,841	99,360	4,976	0	818,688	11,198,913
75	11,198,913	102,838	3,837	0	891,000	12,188,914
76	12,188,914	106,437	2,910	0	969,385	13,261,826
77	13,261,826	110,162	2,170	0	1,054,319	14,424,137
78	14,424,137	114,018	1,593	0	1,146,313	15,682,875
79	15,682,875	118,009	1,153	0	1,245,925	17,045,656
80	17,045,656	122,139	822	0	1,353,757	18,520,730
81	18,520,730	126,414	578	0	1,470,463	20,117,029
82	20,117,029	130,838	401	0	1,596,749	21,844,215
83	21,844,215	135,418	276	0	1,733,379	23,712,736
84	23,712,736	140,157	188	0	1,881,180	25,733,885
85	25,733,885	145,063	127	0	2,041,043	27,919,864
86	27,919,864	150,140	84	0	2,213,934	30,283,854
87	30,283,854	155,395	56	0	2,400,893	32,840,086
88	32,840,086	160,834	36	0	2,603,047	35,603,931
89	35,603,931	166,463	23	0	2,821,610	38,591,981
90	38,591,981	172,289	15	0	3,057,892	41,822,147
91	41,822,147	178,319	10	0	3,313,309	45,313,765
92	45,313,765	184,561	6	0	3,589,388	49,087,708
93	49,087,708	191,020	4	0	3,887,780	53,166,504
94	53,166,504	197,706	2	0	4,210,264	57,574,472
95	57,574,472	204,626	1	0	4,558,762	62,337,859
96	62,337,859	211,787	1	0	4,935,347	67,484,992
97	67,484,992	219,200	0	0	5,342,258	73,046,450
98	73,046,450	226,872	0	0	5,781,910	79,055,232
99	79,055,232	234,813	0	0	6,256,912	85,546,957
100	85,546,957	243,031	0	0	6,770,077	92,560,065

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

Single Discount Rate Development

Present Values of Projected Benefits *(Dollars in Thousands)*

Year	Projected Beginning Plan Fiduciary Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=((c)/(1+sdr)^(a-.5)
1	$ 667,340	$ 54,313	$ 54,313	$ 0	$ 52,287	$ 0	$ 52,287
2	688,379	56,205	56,205	0	50,147	0	50,147
3	708,101	58,063	58,063	0	48,011	0	48,011
4	729,378	59,541	59,541	0	45,629	0	45,629
5	750,955	61,151	61,151	0	43,431	0	43,431
6	772,753	63,082	63,082	0	41,523	0	41,523
7	794,463	64,875	64,875	0	39,577	0	39,577
8	816,213	66,474	66,474	0	37,583	0	37,583
9	838,277	68,117	68,117	0	35,692	0	35,692
10	860,566	70,013	70,013	0	33,999	0	33,999
11	882,697	72,110	72,110	0	32,454	0	32,454
12	904,363	74,296	74,296	0	30,990	0	30,990
13	925,363	76,586	76,586	0	29,606	0	29,606
14	945,508	79,048	79,048	0	28,320	0	28,320
15	964,499	81,521	81,521	0	27,068	0	27,068
16	982,186	84,057	84,057	0	25,867	0	25,867
17	998,405	86,575	86,575	0	24,691	0	24,691
18	1,013,058	89,253	89,253	0	23,591	0	23,591
19	1,025,820	91,786	91,786	0	22,484	0	22,484
20	1,036,698	94,017	94,017	0	21,345	0	21,345
21	1,045,950	96,111	96,111	0	20,222	0	20,222
22	1,053,616	98,063	98,063	0	19,122	0	19,122
23	1,059,750	99,800	99,800	0	18,036	0	18,036
24	1,064,537	101,197	101,197	0	16,950	0	16,950
25	1,068,320	102,399	102,399	0	15,895	0	15,895
26	1,071,274	103,675	103,675	0	14,915	0	14,915
27	1,073,228	104,936	104,936	0	13,991	0	13,991
28	1,074,136	106,100	106,100	0	13,111	0	13,111
29	1,074,068	106,834	106,834	0	12,235	0	12,235
30	1,073,510	107,019	107,019	0	11,359	0	11,359
31	1,073,160	106,915	106,915	0	10,517	0	10,517
32	1,073,437	107,036	107,036	0	9,758	0	9,758
33	1,074,232	107,202	107,202	0	9,057	0	9,057
34	1,075,612	106,942	106,942	0	8,374	0	8,374
35	1,078,144	106,374	106,374	0	7,720	0	7,720
36	1,082,322	105,644	105,644	0	7,105	0	7,105
37	1,088,501	104,735	104,735	0	6,528	0	6,528
38	1,097,066	103,649	103,649	0	5,988	0	5,988
39	1,108,437	102,434	102,434	0	5,484	0	5,484
40	1,123,012	101,085	101,085	0	5,016	0	5,016
41	1,141,222	99,608	99,608	0	4,581	0	4,581
42	1,163,527	97,997	97,997	0	4,177	0	4,177
43	1,190,427	96,253	96,253	0	3,802	0	3,802
44	1,222,466	94,374	94,374	0	3,455	0	3,455
45	1,260,231	92,355	92,355	0	3,133	0	3,133
46	1,304,364	90,188	90,188	0	2,836	0	2,836
47	1,355,566	87,874	87,874	0	2,561	0	2,561
48	1,414,595	85,404	85,404	0	2,307	0	2,307
49	1,482,280	82,767	82,767	0	2,072	0	2,072
50	1,559,529	79,960	79,960	0	1,855	0	1,855

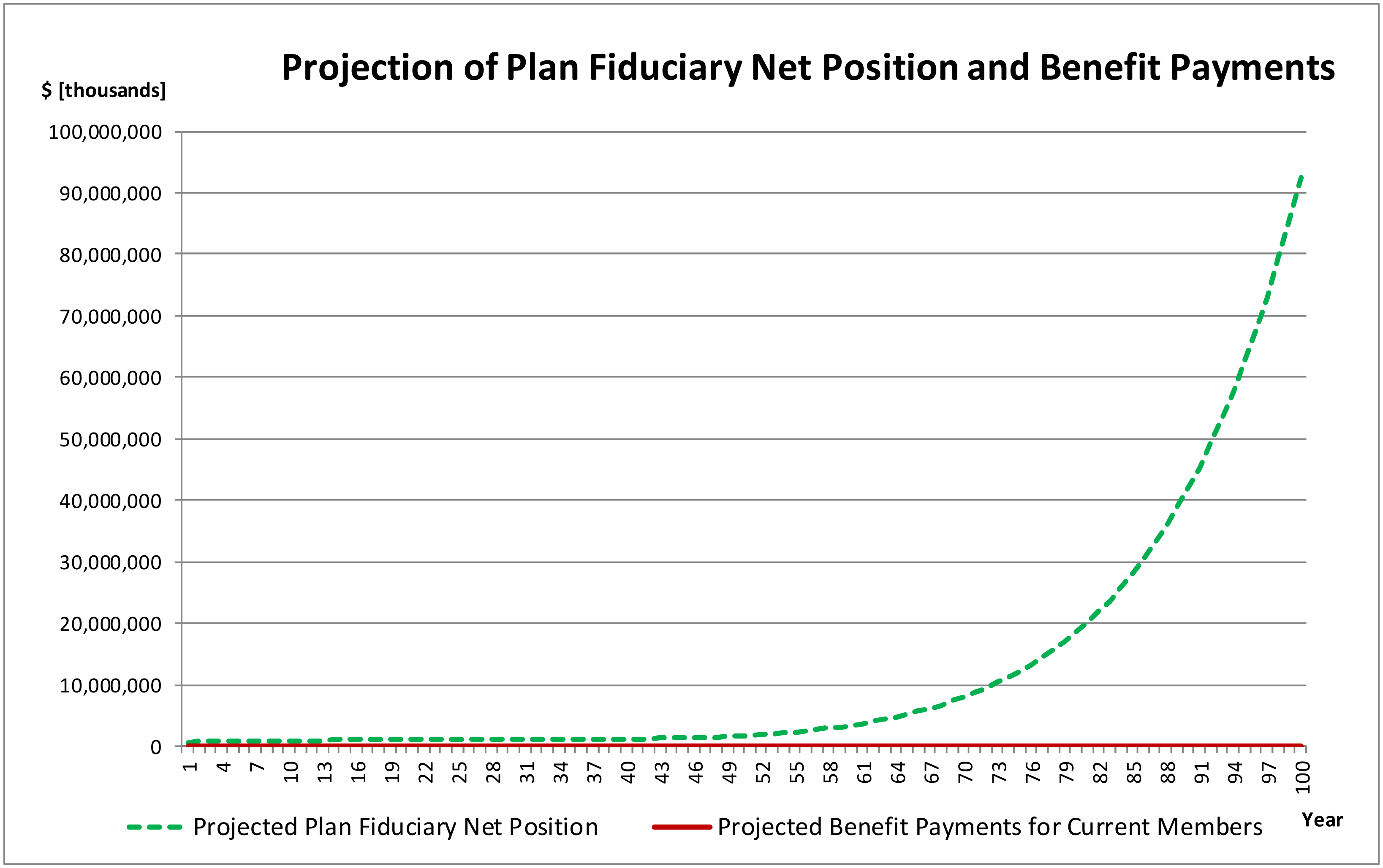
For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

SINGLE DISCOUNT RATE DEVELOPMENT

Present Values of Projected Benefits (continued) *(Dollars in Thousands)*

Year	Projected Beginning Plan Fiduciary Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=((c)/(1+sdr)^(a-.5)
51	$ 1,647,325	$ 76,984	$ 76,984	$ 0	$ 1,655	$ 0	$ 1,655
52	1,746,730	73,841	73,841	0	1,471	0	1,471
53	1,858,890	70,533	70,533	0	1,302	0	1,302
54	1,985,041	67,073	67,073	0	1,148	0	1,148
55	2,126,507	63,480	63,480	0	1,007	0	1,007
56	2,284,696	59,774	59,774	0	879	0	879
57	2,461,111	55,979	55,979	0	763	0	763
58	2,657,349	52,127	52,127	0	658	0	658
59	2,875,105	48,255	48,255	0	565	0	565
60	3,116,168	44,392	44,392	0	481	0	481
61	3,382,444	40,565	40,565	0	408	0	408
62	3,675,962	36,806	36,806	0	343	0	343
63	3,998,883	33,139	33,139	0	286	0	286
64	4,353,514	29,585	29,585	0	237	0	237
65	4,742,327	26,168	26,168	0	194	0	194
66	5,167,967	22,915	22,915	0	157	0	157
67	5,633,262	19,849	19,849	0	126	0	126
68	6,141,243	16,991	16,991	0	100	0	100
69	6,695,164	14,362	14,362	0	79	0	79
70	7,298,514	11,975	11,975	0	61	0	61
71	7,955,049	9,841	9,841	0	46	0	46
72	8,668,815	7,965	7,965	0	35	0	35
73	9,444,175	6,347	6,347	0	26	0	26
74	10,285,841	4,976	4,976	0	19	0	19
75	11,198,913	3,837	3,837	0	13	0	13
76	12,188,914	2,910	2,910	0	9	0	9
77	13,261,826	2,170	2,170	0	6	0	6
78	14,424,137	1,593	1,593	0	4	0	4
79	15,682,875	1,153	1,153	0	3	0	3
80	17,045,656	822	822	0	2	0	2
81	18,520,730	578	578	0	1	0	1
82	20,117,029	401	401	0	1	0	1
83	21,844,215	276	276	0	1	0	1
84	23,712,736	188	188	0	0	0	0
85	25,733,885	127	127	0	0	0	0
86	27,919,864	84	84	0	0	0	0
87	30,283,854	56	56	0	0	0	0
88	32,840,086	36	36	0	0	0	0
89	35,603,931	23	23	0	0	0	0
90	38,591,981	15	15	0	0	0	0
91	41,822,147	10	10	0	0	0	0
92	45,313,765	6	6	0	0	0	0
93	49,087,708	4	4	0	0	0	0
94	53,166,504	2	2	0	0	0	0
95	57,574,472	1	1	0	0	0	0
96	62,337,859	1	1	0	0	0	0
97	67,484,992	0	0	0	0	0	0
98	73,046,450	0	0	0	0	0	0
99	79,055,232	0	0	0	0	0	0
100	85,546,957	0	0	0	0	0	0
				Totals	$ 968,544		$ 968,544

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.


Projection of Plan Fiduciary Net Position and Benefit Payments
$ [thousands]
100,000,000
90,000,000
80,000,000
70,000,000
60,000,000
50,000,000
40,000,000
30,000,000
20,000,000
10,000,000
0
1 4 7 10 13 16 19 22 25 28 31 34 37 40 43 46 49 52 55 58 61 64 67 70 73 76 79 82 85 88 91 94 97 100
Year
Projected Plan Fiduciary Net Position
Projected Benefit Payments for Current Members

SECTION H
GLOSSARY OF TERMS

GLOSSARY OF TERMS

Actuarial Accrued Liability (AAL)	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability."
Actuarial Assumptions	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
Accrued Service	Service credited under the system which was rendered before the date of the actuarial valuation.
Actuarial Equivalent	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
Actuarial Gain (Loss)	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
Actuarial Present Value (APV)	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future benefit payments at predetermined rates of interest to reflect the expected effects of the time value (present value) of money and the probabilities of payment.
Actuarial Valuation	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.
Actuarial Valuation Date	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution (ADC)	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

GLOSSARY OF TERMS

Amortization Payment — The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.

Amortization Method — The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be "open" (meaning, reset each year) or "closed" (the number of years remaining will decline each year.

Cost-of-Living Adjustments — Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.

Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan) — A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.

Covered-Employee Payroll — The payroll of covered employees, which is typically only the pensionable pay (meets the statutory salary definition) and does not include pay above any pay cap.

Deferred Inflows and Outflows of Resources — The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.

Discount Rate or Single Discount Rate — For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically:

1. The benefit payments to be made while the pension plans' fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period and;
2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.

Entry Age Actuarial Cost Method or Entry Age Normal (EAN) — The EAN is a funding method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit ages(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.

GLOSSARY OF TERMS

Fiduciary Net Position	The fiduciary net position is the value of the net assets of the trust restricted for pension benefits.
GASB	The Governmental Accounting Standards Board is an organization that exists with authority to promulgate accounting standards for state and local governmental entities.
Long-Term Expected Rate of Return	The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.
Money-Weighted Rate of Return	The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.
Multiple-Employer Defined Benefit Pension Plan	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
Municipal Bond Rate	The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.
Net Pension Liability (NPL)	The NPL is the liability of employers and non-employer contribution entities to plan members for benefits provided through a defined benefit pension plan.
Non-Employer Contributing Entities	Non-employer contributing entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB Accounting Statements No. 67 and No. 68 plan members are not considered non-employer contribution entities.
Normal Cost	The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method.
Other Postemployment Benefits (OPEB)	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits regardless of the manner in which they are provided. Other post-employment benefits do not include termination benefits.
Real Rate of Return	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
Service Cost	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.

GLOSSARY OF TERMS

Total Pension Expense

The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year:

1. Service Cost
2. Interest on the Total Pension Liability
3. Current-Period Changes in Benefit Terms
4. Employee Contributions
5. Projected Earnings on Plan Investments
6. Pension Plan Administrative Expense
7. Other Changes in Plan Fiduciary Net Position
8. Recognition of Outflow (Inflow) of Resources due to the difference between expected and actual in measurement of the Total Pension Liability
9. Recognition of Outflow (Inflow) of Resources due to Assumption Changes
10. Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings on pension plan investments

Total Pension Liability (TPL)

The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.

Unfunded Actuarial Accrued Liability (UAAL)

The UAAL is the difference between actuarial accrued liability and valuation assets.

Valuation Assets

The valuation assets are the plan fiduciary net position used in determining the net position liability of the plan. For purposes of the GASB Statement No. 67, the asset valuation method is equal to the market value of assets.

Gabriel Roeder Smith & Company
Consultants & Actuaries

MINNESOTA STATE RETIREMENT SYSTEM

JUDGES RETIREMENT FUND

GASB STATEMENTS NO. 67 AND NO. 68 ACCOUNTING AND FINANCIAL REPORTING FOR PENSIONS

JUNE 30, 2014

GRS
Gabriel Roeder Smith & Company
Consultants & Actuaries

100 South Fifth Street
Suite 1900
Minneapolis, MN 55402-1267

612.605.6200 phone
612.605.6203 fax
www.gabrielroeder.com

December 1, 2014

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

Dear Board of Directors:

This report provides accounting and financial reporting information that is intended to comply with the Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68 for the Judges Retirement Fund ("JRF"). These calculations have been made on a basis that is consistent with our understanding of these accounting standards.

GASB Statement No. 67 is the accounting standard that applies to the financial reports issued by retirement systems. GASB Statement No. 68 establishes accounting and financial reporting for state and local government employers who provide their employees (including former employees) pension benefits through a trust.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of providing reporting and disclosure information that satisfies the requirements of GASB Statements No. 67 and No. 68. The calculation of the plan's liability for this report may not be applicable for funding purposes of the plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statement No. 67 may produce significantly different results. The information in this report is calculated on a total plan basis. MSRS is responsible for preparing the Schedule of Employer Allocations and the Schedule of Pension Amounts by Employer. This report may be provided to parties other than the Minnesota State Retirement System (MSRS) only in its entirety and only with the permission of MSRS.

This report is based upon information, furnished to us by MSRS, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. If your understanding of this information is different, please let us know. This information was checked for internal consistency, but it was not otherwise audited.

To the best of our knowledge, the information contained with this report is accurate and fairly represents the actuarial position of the Judges Retirement Fund as of the measurement date. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board. 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 opinion contained herein.
Respectfully submitted,

By Brian B Murphy	By Bonita J. Wurst
Brian B. Murphy	Bonita J. Wurst
FSA, EA, MAAA	ASA, EA, MAAA

TABLE OF CONTENTS

SECTION A

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

As of June 30, 2014 *(Dollars in Thousands)*

	2014
Actuarial Valuation Date	June 30, 2014
Measurement Date of the Net Pension Liability	June 30, 2014
Membership	
Number of	
- Service Retirements	227
- Survivors	84
- Disability Retirements	24
- Deferred Retirements	16
- Terminated other non-vested	0
- Active Members	316
- Total	667
Covered-Employee Payroll	$ 41,893 [1]
Net Pension Liability	
Total Pension Liability	$ 381,511
Plan Fiduciary Net Position	175,556
Net Pension Liability	$ 205,955
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	46.02%
Net Pension Liability as a Percentage of Covered-Employee Payroll	491.62%
Development of the Single Discount Rate	
Single Discount Rate	5.78%
Long-Term Expected Rate of Investment Return	7.90%
Long-Term Municipal Bond Rate [2]	4.29%
Last year ending June 30 in the 2015 to 2114 projection period for which projected benefit payments are fully funded	2034
Total Pension Expense/(Income)	$ 13,246

Deferred Outflows and Deferred Inflows of Resources by Source to be recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience in the measurement of Total Pension Liability	$ 4,064	$ 0
Changes in assumptions	0	6,733
Net difference between projected and actual earnings on pension plan investments	0	12,837
Total	$ 4,064	$ 19,570

[1] *Assumed equal to actual employer contributions divided by employer contribution rate.*

[2] *Based on the Bond Buyer 20-Bond Index of general obligation municipal bonds as of June 26, 2014 (i.e., the weekly rate closest to but not later than the Measurement Date).*

DISCUSSION

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67, *Financial Reporting for Pension Plans* establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68, *Accounting and Financial Reporting for Pensions* establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

Financial Statements

GASB Statement No. 68 requires state and local governmental employers to recognize the net pension liability and the pension expense on their financial statements. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

The pension expense recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the difference between expected and actual experience in the measurement of the Total Pension Liability, assumption changes, and investment experience.

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a Statement of Fiduciary Net Position and a Statement of Changes in Fiduciary Net Position in accordance with GASB Statement No. 67. The *Statement of Fiduciary Net Position* presents the assets and liabilities of the pension plan at the end of the pension plan's reporting period. The *Statement of Changes in Fiduciary Net Position* presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.

Notes to Financial Statements

GASB Statement No. 68 requires the notes to the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions.

Both GASB Statements No. 67 and No. 68 require the notes to the financial statements for the employers and pension plans to include certain descriptive information about the pension plans through which the pension benefits are provided. The list of disclosure items should include:

- a description of benefits provided by the plan;
- the classes of employees and number of members covered by the pension plan;
- a description of the plan's funding policy, which includes member and employer contribution requirements;
- the pension plan's investment policies;
- the pension plan's fiduciary net position, net pension liability, and the pension plan's fiduciary net position as a percentage of the total pension liability;
- the net pension liability using a discount rate that is 1% higher and 1% lower than the current discount rate used to calculate the total pension liability and net pension liability for financial reporting purposes;
- significant assumptions and methods used to calculate the total pension liability;
- inputs to the discount rates; and
- certain information about mortality assumptions and the dates of experience studies.

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with Statement No. 67. This information includes:

- the composition of the pension plan's board and the authority under which benefit terms may be amended;
- a description of how fair value is determined;
- information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5%, receivables, and insurance contracts excluded from plan assets; and
- annual money-weighted rate of return.

MSRS' comprehensive annual financial report, which contains the basic financial statements and related note disclosures for the Judges Retirement Fund can be obtained from MSRS at 60 Empire Drive, Suite 300, St. Paul, MN, 55103 or requested via email at info@msrs.us or telephone at 1-800-657-5757.

Required Supplementary Information

GASB Statement No. 67 requires a 10-year fiscal history of:

- sources of changes in the net pension liability;
- information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; and
- comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. The net pension liability and pension expense should be measured as of the pension plan's fiscal year end (measurement date) on a date that is within the employer's prior fiscal year. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2014 and a measurement date of June 30, 2014.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a single discount rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating (which is published by the Federal Reserve) as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the long-term expected rate of return on pension plan investments is 7.90%; the municipal bond rate is 4.29% (based on the weekly rate closest to but not later than the measurement date of the 20-Year Bond Buyer Index as published by the Federal Reserve Board); and the resulting single discount rate is 5.78%.

Effective Date and Transition

GASB Statements No. 67 and No. 68 are effective for fiscal years beginning after June 15, 2013, and June 15, 2014 respectively. Earlier application is encouraged by the GASB.

SECTION B

FINANCIAL STATEMENTS

PENSION EXPENSE UNDER GASB STATEMENT NO. 68

Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

A. Expense

1.	Service Cost	$	12,075
2.	Interest on the Total Pension Liability		20,535
3.	Current-Period Benefit Changes		0
4.	Employee Contributions (made negative for addition here)		(3,578)
5.	Projected Earnings on Plan Investments (made negative for addition here)		(11,965)
6.	Pension Plan Administrative Expense		55
7.	Other Changes in Plan Fiduciary Net Position		0
8.	Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability		1,016
9.	Recognition of Outflow (Inflow) of Resources due to assumption changes		(1,683)
10.	Recognition of Outflow (Inflow) of Resources due to the difference between projected (7.90%) and actual earnings on Pension Plan Investments		(3,209)
11.	**Total Pension Expense / (Income)**	**$**	**13,246**

Statement of Outflows and Inflows arising from Current Reporting Period

Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

A. Outflows (Inflows) of Resources due to Liabilities		
1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	$	5,080
2. Assumption Changes (gains) or losses	$	(8,416)
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}		5.0000
4. Outflow (Inflow) of Resources to be recognized in the current pension expense for the difference between expected and actual experience of the Total Pension Liability	$	1,016
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	$	(1,683)
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	$	(667)
7. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for the difference between expected and actual experience of the Total Pension Liability	$	4,064
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	$	(6,733)
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	$	(2,669)
B. Outflows (Inflows) of Resources due to Assets		
1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	$	(16,046)
2. Recognition period for Assets {in years}		5.0000
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets	$	(3,209)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	$	(12,837)

STATEMENT OF OUTFLOWS AND INFLOWS ARISING FROM CURRENT AND PRIOR REPORTING PERIODS

Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

A. Outflows and Inflows of Resources due to Liabilities and Assets to be recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows/ (Inflows) of Resources
1. Due to Liabilities	$ 1,016	$ 1,683	$ (667)
2. Due to Assets	0	3,209	(3,209)
3. Total	$ 1,016	$ 4,892	$ (3,876)

B. Outflows and Inflows of Resources by Source to be recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows/ (Inflows) of Resources
1. Differences between expected and actual experience	$ 1,016	$ 0	$ 1,016
2. Assumption Changes	0	1,683	(1,683)
3. Net Difference between projected and actual earnings on pension plan investments	0	3,209	(3,209)
4. Total	$ 1,016	$ 4,892	$ (3,876)

C. Deferred Outflows and Deferred Inflows of Resources by Source to be recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows/ (Inflows) of Resources
1. Differences between expected and actual experience	$ 4,064	$ 0	$ 4,064
2. Assumption Changes	0	6,733	(6,733)
3. Net Difference between projected and actual earnings on pension plan investments	0	12,837	(12,837)
4. Total	$ 4,064	$ 19,570	$ (15,506)

D. Deferred Outflows and Deferred Inflows of Resources by Year to be recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows/ (Inflows) of Resources
2015	$ (3,876)
2016	(3,876)
2017	(3,876)
2018	(3,878)
2019	0
Thereafter	0
Total	$ (15,506)

STATEMENT OF FIDUCIARY NET POSITION

As of June 30, 2014 *(Dollars in Thousands)*

Assets		**June 30, 2014**
Cash & Short-term Investments	$	5,198
Receivables		60
Investment Pools (at fair value)		170,415
Securities Lending Collateral		18,963
Capital Assets		0
Total Assets	**$**	**194,636**
Total Deferred Outflows of Resources	**$**	**0**
Total Liabilities	**$**	**(19,080)**
Total Deferred Inflows of Resources	**$**	**0**
Net Position Restricted for Pensions	**$**	**175,556**

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION

For the Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

Change in Fiduciary Net Position	**Market Value**
Year Ending	**June 30, 2014**
1. Net position at market value at beginning of year	**$ 155,398**
Additions	
2. Contributions	
a. Member	$ 3,578
b. Employer	9,426
c. Other sources	0
d. Total contributions	$ 13,004
3. Investment income	
a. Investment income/(loss)	$ 28,255
b. Investment expenses	(244)
c. Net investment income/(loss)	$ 28,011
4. Other Additions	$ 0
5. Total Additions: *(2.d.) + (3.c.) + (4.)*	**$ 41,015**
Deductions	
6. Benefits Paid	
a. Annuity benefits	$ (20,802)
b. Refunds	0
c. Total benefits paid	$ (20,802)
7. Expenses	
a. Other deductions	$ 0
b. Administrative	(55)
c. Total expenses	$ (55)
8. Total deductions: *(6.c.) + (7.c.)*	**$ (20,857)**
9. Net increase/(decrease) in fiduciary net position	**$ 20,158**
10. Net position at market value at end of year *(1.) + (5.) + (8.)*	**$ 175,556**
11. State Board of Investment calculated investment return	18.6%

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in Net Pension Liability and Related Ratios
Current Period

Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

A. Total pension liability			
1. Service Cost	$	12,075	
2. Interest on the Total Pension Liability		20,535	
3. Changes of benefit terms		0	
4. Difference between expected and actual experience of the Total Pension Liability		5,080	
5. Changes of assumptions		(8,416)	(1)
6. Benefit payments, including refunds of employee contributions		(20,802)	
7. Net change in total pension liability	$	8,472	
8. Total pension liability – beginning		373,039	
9. Total pension liability – ending	**$**	**381,511**	
B. Plan fiduciary net position			
1. Contributions – employer	$	9,426	
2. Contributions – employee		3,578	
3. Net investment income		28,011	
4. Benefit payments, including refunds of employee contributions		(20,802)	
5. Pension Plan Administrative Expense		(55)	
6. Other changes		0	
7. Net change in plan fiduciary net position	$	20,158	
8. Plan fiduciary net position – beginning		155,398	
9. Plan fiduciary net position – ending	**$**	**175,556**	
C. Net pension liability, *A.9 - B.9.*	**$**	**205,955**	
D. Plan fiduciary net position as a percentage of the total pension liability, *B.9 / A.9.*		**46.02%**	
E. Covered-employee payroll	**$**	**41,893**	(2)
F. Net pension liability as a percentage of covered-employee payroll, *C. / E.*		**491.62%**	

(1) Assumption changes are summarized on page 26.
(2) Assumed equal to actual employer contributions divided by employer contribution rate.

SCHEDULES OF REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in Net Pension Liability and Related Ratios Multiyear *(Dollars in Thousands)*

Last 10 Fiscal Years (which will be built prospectively)

Fiscal year ending June 30,	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
Total Pension Liability										
Service Cost	$ 12,075									
Interest on the Total Pension Liability	20,535									
Benefit Changes	0									
Difference between Expected and Actual Experience	5,080									
Assumption Changes	(8,416) (1)									
Benefit Payments	(20,802)									
Refunds	0									
Net Change in Total Pension Liability	$ 8,472									
Total Pension Liability - Beginning	373,039									
Total Pension Liability - Ending (a)	**$ 381,511**									
Plan Fiduciary Net Position										
Employer Contributions	$ 9,426									
Employee Contributions	3,578									
Pension Plan Net Investment Income	28,011									
Benefit Payments	(20,802)									
Refunds	0									
Pension Plan Administrative Expense	(55)									
Other	0									
Net Change in Plan Fiduciary Net Position	$ 20,158									
Plan Fiduciary Net Position - Beginning	155,398									
Plan Fiduciary Net Position - Ending (b)	**$ 175,556**									
Net Pension Liability - Ending (a) - (b)	$ 205,955									
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	46.02 %									
Covered-Employee Payroll	$ 41,893 (2)									
Net Pension Liability as a Percentage of Covered-Employee Payroll	491.62 %									

Notes to Schedule:

(1) *Assumption changes are summarized on page 26.*

(2) *Assumed equal to actual employer contributions divided by employer contribution rate.*

SCHEDULES OF REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Net Pension Liability Multiyear *(Dollars in Thousands)*

Last 10 Fiscal Years (which will be built prospectively)

FY Ending June 30,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered-Employee Payroll	Net Pension Liability as a % of Covered-Employee Payroll
	(a)	(b)	(a) - (b) = (c)	(b)/(c)	(d)	(c)/(d)
2005						
2006						
2007						
2008						
2009						
2010						
2011						
2012						
2013						
2014	$ 381,511	$ 175,556	$ 205,955	46.02%	$ 41,893	491.62%

SCHEDULE OF CONTRIBUTIONS MULTIYEAR *(Dollars in Thousands)*

Last 10 Fiscal Years

FY Ending June 30,	Actuarially Determined Contribution [1]	Actual Contributions	Contribution Deficiency (Excess)	Covered-Employee Payroll	Actual Contributions as a % of Covered-Employee Payroll
	(a)	(b)	(a) - (b) = (c)	(d)	(b)/(d)
2005	$ 7,912	$ 7,225	$ 687	$ 35,941	20.10%
2006	7,779	7,336	443	36,529	20.08
2007	8,331	7,572	759	36,195	20.92
2008	10,045	7,936	2,109	38,296	20.72
2009	8,985	8,219	766	39,444	20.84
2010	9,400	8,283	1,117	39,291	21.08
2011	9,804	8,297	1,507	40,473	20.50
2012	9,879	7,922	1,957	38,644 [2]	20.50
2013	13,524	8,177	5,347	39,888 [2]	20.50
2014	14,193	9,426	4,767	41,893 [2]	22.50

NOTES TO SCHEDULE OF CONTRIBUTIONS

Valuation Date: June 30, 2014

Notes

(1) Actuarially determined contribution rates are calculated as of each July 1.

(2) Assumed equal to actual employer contributions divided by employer contribution rate

Methods and Assumptions Used to Determine Contribution Rates Reported in this Schedule:

Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	25 years
Asset Valuation Method	5-Year smoothed market; no corridor
Inflation	3.00%
Salary Increases	3.00%
Investment Rate of Return	8.00% through June 30, 2017; 8.50% thereafter
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2012 valuation pursuant to an experience study of the period 2007 - 2011, prepared by a former actuary.
Healthy Post-Retirement Mortality	RP-2000 annuitant generational mortality table, projected with mortality improvement scale AA, white collar adjustment, set back one year for males and set back two years for females.

Other Information:

Benefit Increases After Retirement	The post-retirement increase is assumed to remain at 1.75% indefinitely. See separate funding report as of July 1, 2014 for additional detail. To obtain this report, contact MSRS as noted on page 3.

SCHEDULE OF INVESTMENT RETURNS MULTIYEAR

Last 10 Fiscal Years

FY Ending June 30,	Annual Return[1]
2005	
2006	
2007	
2008	
2009	
2010	
2011	
2012	
2013	
2014	18.66 %

[1] Annual money-weighted rate of return, net of investment expenses.

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to MSRS for GASB-compliance purposes. MSRS furnished this information to us for inclusion within this report. We did not audit this information. We are not responsible for its accuracy or completeness.

Rate of Return

For the year ended June 30, 2014, the annual money-weighted rate of return for the State Patrol Retirement Fund was 18.66%. The money-weighted rate of return is a method of calculating period-by-period returns on pension plan investments that adjusts for the changing amounts actually invested. For purposes of this schedule, the money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.

10-Year Schedule of Money-Weighted Investment Return

Ten-year data is not available. Additional years will be provided when they become available.

To request additional information about the computation of the annual money-weighted rate of return and the investments for the Minnesota Retirement Systems (including the investments for MSRS' defined benefit retirement funds), contact SBI at 60 Empire Drive, Suite 355, St. Paul, Minnesota, 55103, via email at minn.sbi@state.mn.us or telephone at (651) 296-3328.

SECTION D

ADDITIONAL FINANCIAL STATEMENT DISCLOSURES

ASSET ALLOCATION

Long-Term Expected Return on Plan Assets

The long-term expected rate of return on pension plan investments was determined using a building-block method. Best estimates for expected future real rates of return (expected returns, net of inflation) were developed for each asset class using both long-term historical returns and long-term capital market expectation from a number of investment management and consulting organizations. The asset class estimates and the target allocations were then combined to produce geometric, long-term expected real rate of return for the portfolio. Inflation expectations were applied to derive the nominal rate of return for the portfolio. For each asset class that is included in the pension fund's target asset allocation as of June 30, 2014, these best estimates are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return (Geometric)
Domestic Stocks	45.00%	5.50%
International Stocks	15.00	6.00
Bonds	18.00	1.45
Alternative Assets	20.00	6.40
Unallocated Cash	2.00	0.50
Total	100.00%	

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to MSRS for GASB-compliance purposes. MSRS furnished this information to us for inclusion within this report. We did not audit this information. We are not responsible for its accuracy or completeness.

At MSRS' direction, for purposes of this valuation, the long-term expected rate of return assumption is 7.90%. This assumption is based on a review of inflation and investment return assumptions dated September 11, 2014.

SENSITIVITY OF NET PENSION LIABILITY TO THE SINGLE DISCOUNT RATE ASSUMPTION

Single Discount Rate

A single discount rate of 5.78% was used to measure the total pension liability. This single discount rate was based on an expected rate of return on pension plan investments of 7.90% and a municipal bond rate of 4.29%. The projection of cash flows used to determine this single discount rate assumed that plan member and employer contributions will be made at the current contribution rates. Based on these assumptions, the pension plan's fiduciary net position and future contributions were sufficient to fully finance the benefit payments through the year ending June 30, 2034 and assets were projected to be fully depleted in the year ending June 30, 2036. As a result, the long-term expected rate of return on pension plan investments was applied to projected benefit payments through the point of asset depletion, and the municipal bond rate was applied to all benefit payments after the point of asset depletion.

Regarding the sensitivity of the net pension liability to changes in the single discount rate, the following presents the fund's net pension liability, calculated using a single discount rate of 5.78%, as well as what the fund's net pension liability would be if it were calculated using a single discount rate that is 1-percentage-point lower (4.78%) or 1-percentage-point higher (6.78%) than the current single discount rate:

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

(Dollars in Thousands)

1% Decrease 4.78%	Current Single Discount Rate Assumption 5.78%	1% Increase 6.78%
$248,832	$205,955	$169,607

A single discount rate of 5.57% was used for the measurement date as of July 1, 2013. For more information on the calculation of the single discount rate, refer to Section G of this report.

GASB STATEMENT NO. 68 RECONCILIATION *(Dollars in Thousands)*

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Deferred Outflows	Deferred Inflows	Pension Expense
Balance Beginning of Year	**$ 373,039**	**$ 155,398**	**$ 217,641**	**$ 0**	**$ 0**	
Changes for the Year:						
Service Cost	$ 12,075		$ 12,075			$ 12,075
Interest on Total Pension Liability	20,535		20,535			20,535
Interest on Plan Fiduciary Net Position [(1)]		$ 11,965	(11,965)			(11,965)
Changes in Benefit Terms						
Liability Experience Gains and Losses	5,080		5,080	$ 4,064		1,016
Changes in Assumptions	(8,416)		(8,416)		$ 6,733	(1,683)
Contributions - Employer		9,426	(9,426)			
Contributions - Employees		3,578	(3,578)			(3,578)
Asset Gain/(Loss) [(1)]		16,046	(16,046)		12,837	(3,209)
Benefit Payouts	(20,802)	(20,802)	0			
Administrative Expenses		(55)	55			55
Other Changes						
Net Changes	**$ 8,472**	**$ 20,158**	**$ (11,686)**	**$ 4,064**	**$ 19,570**	**$ 13,246**
Balance End of Year	**$ 381,511**	**$ 175,556**	**$ 205,955**	**$ 4,064**	**$ 19,570**	

(1) The sum of these items equal the net investment income of $28,011.

SUMMARY OF POPULATION STATISTICS

		Terminated		Recipients			
	Actives*	Deferred Retirement	Other Non-Vested	Service Retirement	Disability Retirement	Survivor	Total
Members on 7/1/2013	**309**	**16**	**0**	**210**	**24**	**98**	**657**
New Members	25	0	0	0	0	0	**25**
Return to active	0	0	0	0	0	0	**0**
Terminated non-vested	0	0	0	0	0	0	**0**
Service retirements	(16)	(2)	0	18	0	0	**0**
Terminated deferred	(2)	2	0	0	0	0	**0**
Terminated refund/transfer	0	0	0	0	0	0	**0**
Deaths	0	0	0	(8)	0	(6)	**(14)**
New beneficiary	0	0	0	0	0	3	**3**
Disabled	0	0	0	0	0	0	**0**
Unexpected status change	0	0	0	7	0	(11)	**(4)**
Net change	7	0	0	17	0	(14)	**10**
Members on 6/30/2014	**316**	**16**	**0**	**227**	**24**	**84**	**667**

* *Includes active Judges who have reached the maximum benefit formula (employee contributions are directed to the Unclassified Employees Retirement Plan)*

SECTION E

SUMMARY OF BENEFITS

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	A judge or justice of any court. If the member was active prior to January 1, 1974, benefits may be computed according to provisions of the prior plan.
Tier 1 / Tier 2 Member	Tier 1 includes judges or justices first appointed or elected before July 1, 2013 and Tier 2 includes judges or justices first appointed or elected after June 30, 2013. A judge or justice with less than five years of service as of December 30, 2013 may make a one-time irrevocable election into Tier 2. For the purpose of this valuation, we have assumed no Tier 1 members elected Tier 2 benefits as of the valuation date.
Contributions	
Member	9.00% of salary for Tier 1 members, 7.00% of salary for Tier 2 members. Tier 1 member contributions after maximum benefit is reached are redirected to the Unclassified Employees Retirement Plan.
Employer	22.50% of salary.
	Member contributions are "picked up" according to the provisions of Internal Revenue Code 414(h).
Allowable service	Service as a judge. Credit may also be earned for uncredited judicial service if the appropriate employee contributions, with interest, are made.
Salary	Salary set by law.
Average salary	Average of the five highest years of salary of the last 10 years prior to termination of judicial service.

Summary of Plan Provisions (Continued)

Retirement	
Normal retirement benefit	
Age/Service requirement	First appointed as a judge before July 1, 2013 (Tier 1): (a.) Age 65 and five years of Allowable Service (b.) Age 70 (mandatory retirement age) First appointed as a judge after June 30, 2013 (Tier 2): (a.) Age 66 and five years of Allowable Service (b.) Age 70 (mandatory retirement age) Judges appointed before July 1, 2013 with less than five years of allowable service on or before December 31, 2013 may make a one-time election for the Tier 2 benefit package.
Amount	First appointed as a judge before July 1, 2013 (Tier 1): 2.70% of Average Salary for each year of Allowable Service prior to July 1, 1980 and 3.20% of Average Salary for each year of Allowable Service after June 30, 1980. Maximum benefit equal to 76.80% of Average Salary. First appointed as a judge after June 30, 2013 (Tier 2): 2.50% of Average Salary for each year of Allowable Service Tier 1 who elected into Tier 2: 3.20% of Average Salary for each year of Allowable Service prior to January 1, 2014 plus 2.50% of Average Salary for each year of Allowable Service after December 31, 2013.
Early retirement	
Age/Service requirement	Age 60 and five 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 Normal Retirement Age at time of retirement.
Form of payment	Life annuity. Actuarially equivalent options are: (a.) 50%,75% or 100% joint and survivor with no bounce back feature (b.) 50%, 75% or 100% bounce back feature (c.) 15-year certain and life thereafter
Benefit increases	Since January 1, 2014, benefit recipients receive annual 1.75% benefit increases. If the accrued liability funding ratio reaches 70% for two consecutive years (on a Market Value of Assets basis), the benefit increase will revert to 2.0%. If the accrued liability funding ratio reaches 90% for two consecutive years (on a Market Value of Assets basis), 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.

Summary of Plan Provisions (Continued)

Disability	
Disability benefit	
Age/Service requirement	Permanent inability to perform the function of judge.
Amount	No benefit is paid by the Fund. Instead, salary is continued for one year but not beyond age 70. Employee contributions continue and Allowable Service is earned. If disability continues after the first year (or at age 70 if earlier), the larger of 25.00% of Average Salary or the Normal Retirement Benefit, without reduction.
Retirement after disability	
Age/Service requirement	Member is still disabled after salary payments cease after one year or at age 70, if earlier.
Amount	No change in disability benefit amount from pre-retirement computed benefit amount.
Form of payment	Same as for retirement.
Benefit increases	Same as for retirement.
Death	
Survivor's benefit	
Age/service requirement	Active or disabled member dies before retirement or a former member eligible for a deferred annuity dies.
Amount	Larger of 25% of Average Salary or 60% of Normal Retirement Benefit earned at date of death. If member dies after age 60 with five or more years of service, spouse may receive the 100% joint and survivor benefit the member had earned as of date of death. Benefit paid to spouse for life. If no spouse, benefit is paid to surviving dependent children until child marries, dies, or attains age 18 (age 22 if full-time student).
Benefit increases	Same as for retirement.
Refund of contributions	
Age/service requirement	Member dies prior to retirement or former member eligible for a deferred annuity dies and survivors' benefits are not payable.
Amount	Member contributions with 6.00% annual interest compounded daily until June 30, 2011 and 4.00% thereafter.

Summary of Plan Provisions (Concluded)

Termination	
Refund of contributions	
Age/Service requirement	Termination of service as a judge.
Amount	Member contributions with 6.00% annual interest compounded daily until June 30, 2011, 4.00% thereafter. If a member is vested, a deferred annuity may be elected in lieu of a refund.
Deferred benefit	
Age/service requirement	Five years of Allowable Service.
Amount	Benefit computed under law in effect at termination. 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%.
Form of payment	Same as for retirement.
Optional form conversion factors	Actuarially equivalent factors based on RP-2000 for healthy annuitants, white collar adjustment, projected to 2022 using scale AA, set back one year for males and set back two years for females, blended 80% males, and 6.5% interest.
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	Effective July 1, 2014, the funding ratio threshold that must be attained to pay a 2.0% post-retirement benefit increase to benefit recipients was changed from 70% for one year to 70% for two consecutive years. 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. The 10-year certain and life thereafter optional form of payment is no longer available.

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

Actuarial Methods

Actuarial Cost Method

Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using an **Individual Entry-Age Actuarial Cost Method** having the following characteristics:

(i) the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement;

(ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Actuarial gains/(losses), as they occur, reduce (increase) the Total Pension Liability.

Valuation of Future Post-Retirement Benefit Increases

Benefit recipients receive a future annual 1.75% post-retirement benefit increase. If the funding ratio reaches 70% (based on a 2.00% post-retirement benefit increase assumption) for two consecutive years, the benefit increase will increase to 2.00%, if the funding ratio reaches 90% (based on a 2.50% post-retirement benefit increase assumption) for two consecutive years, the benefit increase revert to 2.50%.

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 of 7.90%
- Liabilities and normal cost based on statutory funding assumptions
    - Discount rate of 8.00% through June 30, 2017; 8.50% thereafter
    - Statutory salary increases of 3.00%
- Open group; stable active population (new member profile based on average new members hired in recent years)
- The postretirement benefit increase rate is assumed to be 1.75% per year until the funding ratio threshold required to pay a 2.00% postretirement benefit increase is reached and is assumed to be 2.00% per year until the threshold required to pay a 2.50% postretirement benefit increase is reached.
- Current statutory contributions (i.e. not including potential contribution increases under the contribution stabilizer statutes) as directed by MSRS.

Based on these assumptions and methods, the projection indicates that this plan is expected to pay 1.75% postretirement benefit increases indefinitely. This assumption is reflected in our calculations.

To determine the Total Pension Liability as of July 1, 2013, we performed a similar projection, and assumed the plan would pay the 1.75% benefit increases indefinitely.

Decrement Timing

All decrements are assumed to occur mid-year.

Asset Valuation Method

Fair value of assets.

Summary of Actuarial Assumptions

The following assumptions were used in valuing the liabilities and benefits under the plan. All demographic 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 demographic assumptions prescribed are based on the last experience study, dated February 2012, prepared by a former actuary. The economic assumptions are based on a review of inflation and investment return assumptions dated September 11, 2014.

Investment return	7.90% per annum.
Benefit increases after retirement	1.75% per annum.
Salary increases	2.75% per year.
Payroll growth	2.75% per year.
Inflation	2.75% per year.
Mortality rates	
Healthy pre-retirement	RP-2000 employee generational mortality table projected using mortality improvement scale AA, white collar adjustment.
Healthy post-retirement	RP-2000 annuitant generational mortality table projected with mortality improvement scale AA, white collar adjustment, set back one year for males and set back two years for females. 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 annuitant generational mortality table projected with mortality improvement scale AA, white collar adjustment, set back one year for males and set back two 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.
Withdrawal	None.

Actuarial Basis

Summary of Actuarial Assumptions (Continued)

Disability	Age-related rates based on experience; see table of sample rates.
Administrative expenses	For purposes of the Projection of Plan Fiduciary Net Position, total prior year administrative expenses expressed as a percentage of prior year projected payroll are assumed to increase 2.75% per year and are allocated to the closed group based on the ratio of closed group payroll to total payroll.
Refund of contributions	Account balances for deferred members accumulate interest until normal retirement date and are discounted back to the valuation date.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at age 65.
Percentage married	Marital status as indicated by data.
Age of spouse	Females are assumed to be three years younger than their male spouses.
Form of payment	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.
Unknown data for certain members	To prepare this report, GRS has used and relied on participant data supplied by MSRS. 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 15 members who have reached the 24 year service cap; 5 of these were reported as terminated members. These members are reflected as active members in this valuation. We assumed these members earned the greater of the salary reported under the Unclassified Employees Retirement Plan or $134,289 for the July 1, 2013 to June 30, 2014 plan year. There was 1 member reported without pay who was not in the group mentioned above. We assumed an annualized pay of $134,289 for the July 1, 2013 to June 30, 2014 period. There were no members reported with missing service. There were no members reported with missing or invalid birth dates. There was 1 member reported with an invalid gender. We assumed the member was male. <u>Data for terminated members:</u> There was 1 member reported without a benefit. We calculated the benefit for this member using the reported Average Salary, Credited Service and Termination Date provided.

Actuarial Basis

Summary of Actuarial Assumptions (Continued)

Unknown data for certain members	<u>Data for members receiving benefits:</u> There were no members reported without a benefit. There were no members reported with missing or invalid birth dates or gender. There were retired members reported with a survivor option and an invalid or missing survivor gender (56 members) and/or survivor date of birth (43 members). We used the valuation assumptions if the survivor gender or date of birth was missing or invalid. There were 4 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. There was 1 retiree reported with a bounce back annuity but was not reported with a reasonable reduction factor. A factor of 0.80 was assumed for the 100% joint and survivor annuity. There were no survivors reported on the data file with an expired benefit. At MSRS' direction, we changed the status of 22 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	The single discount rate was changed from 5.57% to 5.78%.

Actuarial Basis

Summary of Actuarial Assumptions (Concluded)

	Rate (%) *					
	Healthy Post-Retirement Mortality**		Healthy Pre-Retirement Mortality**		Disability Mortality**	
Age	Male	Female	Male	Female	Male	Female
20	0.03%	0.02%	0.03%	0.02%	0.03%	0.02%
25	0.04	0.02	0.04	0.02	0.04	0.02
30	0.04	0.02	0.04	0.03	0.04	0.02
35	0.05	0.04	0.06	0.05	0.05	0.04
40	0.08	0.06	0.09	0.06	0.08	0.06
45	0.12	0.08	0.13	0.10	0.12	0.08
50	0.18	0.13	0.20	0.16	0.18	0.13
55	0.56	0.29	0.27	0.24	0.56	0.29
60	0.61	0.47	0.43	0.38	0.61	0.47
65	1.04	0.74	0.67	0.59	1.04	0.74
70	1.74	1.24	0.98	0.88	1.74	1.24

** 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.*

	Disability Retirement	
Age	Male	Female
20	0.00%	0.00%
25	0.00	0.00
30	0.00	0.00
35	0.01	0.00
40	0.01	0.01
45	0.02	0.03
50	0.07	0.05
55	0.17	0.12
60	0.38	0.31
65	0.00	0.00
70	0.00	0.00

Age	Retirement
60	0%
61	0
62	8
63	5
64	8
65	25
66	20
67	10
68	30
69	10
70	100

SECTION G

CALCULATION OF THE SINGLE DISCOUNT RATE

CALCULATION OF THE SINGLE DISCOUNT RATE

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Fiduciary Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the long-term rate of return is used as the discount rate. In years where assets are not projected to be sufficient to meet benefit payments, the use of a "risk-free" municipal bond rate is required, as described in the following paragraph.

The *Single Discount Rate* (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating (which is published by the Federal Reserve Board (FRB)) as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.90%; the municipal bond rate is 4.29% (based on the FRB rate as of June 27, 2013). **The resulting single discount rate as of July 1, 2014 is 5.78%.**

Benefit payments projected to occur up through June 30, 2034 were fully funded and benefit payments projected to occur in the year ended June 30, 2035 were partially funded. Assets were projected to be depleted by the fiscal year ending June 30, 2036. Benefit payments were discounted using 7.9%, the expected long-term rate of return on pension plan investments, as long as assets were sufficient to fund the benefit payments. Beginning in the July 1, 2034 to June 30, 2035 fiscal year, when benefit payments exceed the Plan's Fiduciary Net Position, benefit payments were discounted at 4.29%, the municipal bond rate. An equivalent single discount rate was determined that produced approximately the same present value of projected benefits when applied to all years of projected benefits as the present value of projected benefits using 7.90% through the point of asset depletion and 4.29% after. For calculation of the equivalent present value of projected benefits, see pages 34 and 35 of this report.

The tables in this section provide background for the development of the single discount rate.

The **Projection of Contributions** table shows the development of expected contributions in future years. Normal Cost contributions for future hires are not included (nor are their liabilities).

The **Projection of Plan Fiduciary Net Position** table shows the development of expected asset levels in future years.

The **Present Values of Projected Benefit Payments** table shows the development of the Single Discount Rate (SDR). It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total at the SDR.

CALCULATION OF THE SINGLE DISCOUNT RATE (continued)

We performed a similar analysis as of July 1, 2013. Based on an expected rate of return of 7.90% and a municipal bond rate of 4.63% (based on the FRB rate as of June 27, 2013), the plan is projected to have sufficient assets to pay benefits through June 30, 2028 and to pay partial benefits in the year ending June 30, 2029. **The resulting single discount rate as of July 1, 2013 is 5.57%.**

SINGLE DISCOUNT RATE DEVELOPMENT

Projection of Contributions *(Dollars in Thousands)*

	Projected Covered-Employee Payroll			Projected Contributions			
Year	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll toward Current UAL*	Total Contributions
	(a)	(b)	(c) = (a) + (b)	(d)	(e)	(f)	(g) = (d) + (e) + (f)
0	$ 41,893		$ 41,893				
1	43,421		43,421	$ 3,700	$ 9,770		$ 13,470
2	41,805	$ 2,810	44,615	3,542	9,406	$ 332	13,280
3	39,618	6,224	45,842	3,338	8,914	739	12,991
4	37,472	9,631	47,103	3,139	8,431	1,149	12,719
5	35,290	13,108	48,398	2,940	7,940	1,572	12,452
6	33,355	16,374	49,729	2,763	7,505	1,974	12,242
7	31,637	19,460	51,097	2,605	7,118	2,358	12,081
8	29,816	22,686	52,502	2,441	6,709	2,763	11,913
9	27,861	26,085	53,946	2,268	6,269	3,193	11,730
10	25,873	29,556	55,429	2,094	5,822	3,636	11,552
11	23,854	33,100	56,954	1,919	5,367	4,093	11,379
12	22,024	36,496	58,520	1,761	4,955	4,535	11,251
13	20,402	39,727	60,129	1,622	4,590	4,962	11,174
14	18,736	43,047	61,783	1,481	4,216	5,403	11,100
15	16,969	46,513	63,482	1,333	3,818	5,868	11,019
16	15,045	50,183	65,228	1,175	3,385	6,362	10,922
17	13,181	53,840	67,021	1,023	2,966	6,859	10,848
18	11,617	57,247	68,864	896	2,614	7,329	10,839
19	10,175	60,583	70,758	780	2,289	7,794	10,863
20	8,830	63,874	72,704	673	1,987	8,257	10,917
21	7,597	67,106	74,703	575	1,709	8,717	11,001
22	6,362	70,396	76,758	479	1,431	9,188	11,098
23	5,167	73,702	78,869	386	1,163	9,666	11,215
24	4,243	76,794	81,037	315	955	10,120	11,390
25	3,452	79,814	83,266	255	777	10,567	11,599
26	2,742	82,814	85,556	201	617	11,016	11,834
27	2,056	85,853	87,909	150	463	11,474	12,087
28	1,524	88,802	90,326	110	343	11,924	12,377
29	1,160	91,650	92,810	83	261	12,364	12,708
30	804	94,558	95,362	57	181	12,815	13,053
31	516	97,469	97,985	37	116	13,270	13,423
32	283	100,396	100,679	20	64	13,732	13,816
33	165	103,283	103,448	12	37	14,191	14,240
34	109	106,184	106,293	8	25	14,590	14,623
35	36	109,180	109,216	3	8	15,001	15,012
36	0	112,219	112,219	0	0	15,419	15,419
37	0	115,305	115,305	0	0	15,843	15,843
38	0	118,476	118,476	0	0	16,279	16,279
39	0	121,734	121,734	0	0	16,726	16,726
40	0	125,082	125,082	0	0	17,186	17,186
41	0	128,522	128,522	0	0	17,659	17,659
42	0	132,056	132,056	0	0	18,145	18,145
43	0	135,688	135,688	0	0	18,643	18,643
44	0	139,419	139,419	0	0	19,156	19,156
45	0	143,253	143,253	0	0	19,683	19,683
46	0	147,193	147,193	0	0	20,224	20,224
47	0	151,240	151,240	0	0	20,780	20,780
48	0	155,400	155,400	0	0	21,352	21,352
49	0	159,673	159,673	0	0	21,939	21,939
50	0	164,064	164,064	0	0	22,542	22,542

** Contributions related to future employees in excess of normal cost and expenses. Normal cost and expenses initially total 19.28% of pay but trend down over the projection period (based on the projection assumptions) due to the recognition of lower normal costs for Judges hired after June 30, 2013.*

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

SINGLE DISCOUNT RATE DEVELOPMENT

Projection of Contributions (continued) *(Dollars in Thousands)*

	Projected Covered-Employee Payroll			Projected Contributions			
Year	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll toward Current UAL*	Total Contributions
	(a)	(b)	(c) = (a) + (b)	(d)	(e)	(f)	(g) = (d) + (e) + (f)
51	$ 0	$ 168,576	$ 168,576	$ 0	$ 0	$ 23,162	$ 23,162
52	0	173,212	173,212	0	0	23,799	23,799
53	0	177,975	177,975	0	0	24,454	24,454
54	0	182,869	182,869	0	0	25,126	25,126
55	0	187,898	187,898	0	0	25,817	25,817
56	0	193,065	193,065	0	0	26,527	26,527
57	0	198,375	198,375	0	0	27,257	27,257
58	0	203,830	203,830	0	0	28,006	28,006
59	0	209,435	209,435	0	0	28,776	28,776
60	0	215,195	215,195	0	0	29,568	29,568
61	0	221,113	221,113	0	0	30,381	30,381
62	0	227,193	227,193	0	0	31,216	31,216
63	0	233,441	233,441	0	0	32,075	32,075
64	0	239,861	239,861	0	0	32,957	32,957
65	0	246,457	246,457	0	0	33,863	33,863
66	0	253,234	253,234	0	0	34,794	34,794
67	0	260,198	260,198	0	0	35,751	35,751
68	0	267,354	267,354	0	0	36,734	36,734
69	0	274,706	274,706	0	0	37,745	37,745
70	0	282,260	282,260	0	0	38,783	38,783
71	0	290,023	290,023	0	0	39,849	39,849
72	0	297,998	297,998	0	0	40,945	40,945
73	0	306,193	306,193	0	0	42,071	42,071
74	0	314,613	314,613	0	0	43,228	43,228
75	0	323,265	323,265	0	0	44,417	44,417
76	0	332,155	332,155	0	0	45,638	45,638
77	0	341,289	341,289	0	0	46,893	46,893
78	0	350,675	350,675	0	0	48,183	48,183
79	0	360,318	360,318	0	0	49,508	49,508
80	0	370,227	370,227	0	0	50,869	50,869
81	0	380,408	380,408	0	0	52,268	52,268
82	0	390,870	390,870	0	0	53,705	53,705
83	0	401,619	401,619	0	0	55,182	55,182
84	0	412,663	412,663	0	0	56,700	56,700
85	0	424,011	424,011	0	0	58,259	58,259
86	0	435,672	435,672	0	0	59,861	59,861
87	0	447,653	447,653	0	0	61,507	61,507
88	0	459,963	459,963	0	0	63,199	63,199
89	0	472,612	472,612	0	0	64,937	64,937
90	0	485,609	485,609	0	0	66,723	66,723
91	0	498,963	498,963	0	0	68,558	68,558
92	0	512,685	512,685	0	0	70,443	70,443
93	0	526,783	526,783	0	0	72,380	72,380
94	0	541,270	541,270	0	0	74,370	74,370
95	0	556,155	556,155	0	0	76,416	76,416
96	0	571,449	571,449	0	0	78,517	78,517
97	0	587,164	587,164	0	0	80,676	80,676
98	0	603,311	603,311	0	0	82,895	82,895
99	0	619,902	619,902	0	0	85,175	85,175
100	0	636,949	636,949	0	0	87,517	87,517

* *Contributions related to future employees in excess of normal cost and expenses. Normal cost and expenses initially total 19.28% of pay but trend down over the projection period (based on the projection assumptions) due to the recognition of lower normal costs for Judges hired after June 30, 2013.*

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

SINGLE DISCOUNT RATE DEVELOPMENT

Projection of Plan Fiduciary Net Position *(Dollars in Thousands)*

Year	Projected Beginning Plan Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.90%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
1	$ 175,556	$ 13,470	$ 21,391	$ 61	$ 13,560	$ 181,134
2	181,134	13,280	22,380	59	13,955	185,930
3	185,930	12,991	23,620	55	14,274	189,520
4	189,520	12,719	24,755	52	14,504	191,936
5	191,936	12,452	25,987	49	14,636	192,988
6	192,988	12,242	27,141	47	14,667	192,709
7	192,709	12,081	28,008	44	14,605	191,343
8	191,343	11,913	28,896	42	14,456	188,774
9	188,774	11,730	29,851	39	14,209	184,823
10	184,823	11,552	30,855	36	13,851	179,335
11	179,335	11,379	31,862	33	13,372	172,191
12	172,191	11,251	32,693	31	12,771	163,489
13	163,489	11,174	33,423	29	12,052	153,263
14	153,263	11,100	34,182	26	11,212	141,367
15	141,367	11,019	34,878	24	10,242	127,726
16	127,726	10,922	35,604	21	9,133	112,156
17	112,156	10,848	36,226	18	7,876	94,636
18	94,636	10,839	36,681	16	6,474	75,252
19	75,252	10,863	36,976	14	4,932	54,057
20	54,057	10,917	37,109	12	3,255	31,108
21	31,108	11,001	37,051	11	1,447	6,494
22	6,494	11,098	36,913	9	0	0
23	0	11,215	36,624	7	0	0
24	0	11,390	36,077	6	0	0
25	0	11,599	35,355	5	0	0
26	0	11,834	34,536	4	0	0
27	0	12,087	33,615	3	0	0
28	0	12,377	32,458	2	0	0
29	0	12,708	31,167	2	0	0
30	0	13,053	29,847	1	0	0
31	0	13,423	28,468	1	0	0
32	0	13,816	27,053	0	0	0
33	0	14,240	25,582	0	0	0
34	0	14,623	24,095	0	0	0
35	0	15,012	22,644	0	0	0
36	0	15,419	21,202	0	0	0
37	0	15,843	19,775	0	0	0
38	0	16,279	18,382	0	0	0
39	0	16,726	17,026	0	0	0
40	0	17,186	15,710	0	0	0
41	0	17,659	14,436	0	0	0
42	0	18,145	13,205	0	0	0
43	0	18,643	12,020	0	0	0
44	0	19,156	10,884	0	0	0
45	0	19,683	9,799	0	0	0
46	0	20,224	8,768	0	0	0
47	0	20,780	7,794	0	0	0
48	0	21,352	6,880	0	0	0
49	0	21,939	6,027	0	0	0
50	0	22,542	5,238	0	0	0

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

SINGLE DISCOUNT RATE DEVELOPMENT

Projection of Plan Fiduciary Net Position (continued) *(Dollars in Thousands)*

Year	Projected Beginning Plan Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.90%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
51	$ 0	$ 23,162	$ 4,513	$ 0	$ 0	$ 0
52	0	23,799	3,854	0	0	0
53	0	24,454	3,258	0	0	0
54	0	25,126	2,728	0	0	0
55	0	25,817	2,262	0	0	0
56	0	26,527	1,857	0	0	0
57	0	27,257	1,508	0	0	0
58	0	28,006	1,211	0	0	0
59	0	28,776	963	0	0	0
60	0	29,568	758	0	0	0
61	0	30,381	590	0	0	0
62	0	31,216	454	0	0	0
63	0	32,075	347	0	0	0
64	0	32,957	262	0	0	0
65	0	33,863	195	0	0	0
66	0	34,794	144	0	0	0
67	0	35,751	106	0	0	0
68	0	36,734	77	0	0	0
69	0	37,745	55	0	0	0
70	0	38,783	39	0	0	0
71	0	39,849	27	0	0	0
72	0	40,945	19	0	0	0
73	0	42,071	13	0	0	0
74	0	43,228	8	0	0	0
75	0	44,417	6	0	0	0
76	0	45,638	4	0	0	0
77	0	46,893	2	0	0	0
78	0	48,183	1	0	0	0
79	0	49,508	1	0	0	0
80	0	50,869	1	0	0	0
81	0	52,268	0	0	0	0
82	0	53,705	0	0	0	0
83	0	55,182	0	0	0	0
84	0	56,700	0	0	0	0
85	0	58,259	0	0	0	0
86	0	59,861	0	0	0	0
87	0	61,507	0	0	0	0
88	0	63,199	0	0	0	0
89	0	64,937	0	0	0	0
90	0	66,723	0	0	0	0
91	0	68,558	0	0	0	0
92	0	70,443	0	0	0	0
93	0	72,380	0	0	0	0
94	0	74,370	0	0	0	0
95	0	76,416	0	0	0	0
96	0	78,517	0	0	0	0
97	0	80,676	0	0	0	0
98	0	82,895	0	0	0	0
99	0	85,175	0	0	0	0
100	0	87,517	0	0	0	0

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

SINGLE DISCOUNT RATE DEVELOPMENT

Present Values of Projected Benefits *(Dollars in Thousands)*

Year	Projected Beginning Plan Fiduciary Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=((c)/(1+sdr)^(a-.5)
1	$ 175,556	$ 21,391	$ 21,391	$ 0	$ 20,593	$ 0	$ 20,799
2	181,134	22,380	22,380	0	19,967	0	20,571
3	185,930	23,620	23,620	0	19,531	0	20,525
4	189,520	24,755	24,755	0	18,971	0	20,337
5	191,936	25,987	25,987	0	18,457	0	20,182
6	192,988	27,141	27,141	0	17,865	0	19,927
7	192,709	28,008	28,008	0	17,086	0	19,440
8	191,343	28,896	28,896	0	16,337	0	18,961
9	188,774	29,851	29,851	0	15,641	0	18,518
10	184,823	30,855	30,855	0	14,984	0	18,095
11	179,335	31,862	31,862	0	14,340	0	17,664
12	172,191	32,693	32,693	0	13,637	0	17,135
13	163,489	33,423	33,423	0	12,920	0	16,561
14	153,263	34,182	34,182	0	12,246	0	16,011
15	141,367	34,878	34,878	0	11,581	0	15,445
16	127,726	35,604	35,604	0	10,956	0	14,905
17	112,156	36,226	36,226	0	10,332	0	14,337
18	94,636	36,681	36,681	0	9,695	0	13,724
19	75,252	36,976	36,976	0	9,058	0	13,079
20	54,057	37,109	37,109	0	8,425	0	12,409
21	31,108	37,051	31,108	5,943	6,544	2,514	11,713
22	6,494	36,913	6,494	30,419	1,266	12,330	11,031
23	0	36,624	0	36,624	0	14,233	10,347
24	0	36,077	0	36,077	0	13,444	9,636
25	0	35,355	0	35,355	0	12,633	8,927
26	0	34,536	0	34,536	0	11,833	8,244
27	0	33,615	0	33,615	0	11,044	7,586
28	0	32,458	0	32,458	0	10,225	6,925
29	0	31,167	0	31,167	0	9,414	6,286
30	0	29,847	0	29,847	0	8,645	5,691
31	0	28,468	0	28,468	0	7,906	5,131
32	0	27,053	0	27,053	0	7,204	4,610
33	0	25,582	0	25,582	0	6,532	4,121
34	0	24,095	0	24,095	0	5,899	3,670
35	0	22,644	0	22,644	0	5,316	3,260
36	0	21,202	0	21,202	0	4,773	2,886
37	0	19,775	0	19,775	0	4,268	2,545
38	0	18,382	0	18,382	0	3,804	2,236
39	0	17,026	0	17,026	0	3,379	1,958
40	0	15,710	0	15,710	0	2,990	1,708
41	0	14,436	0	14,436	0	2,634	1,484
42	0	13,205	0	13,205	0	2,310	1,283
43	0	12,020	0	12,020	0	2,016	1,104
44	0	10,884	0	10,884	0	1,751	945
45	0	9,799	0	9,799	0	1,511	804
46	0	8,768	0	8,768	0	1,297	680
47	0	7,794	0	7,794	0	1,105	572
48	0	6,880	0	6,880	0	935	477
49	0	6,027	0	6,027	0	786	395
50	0	5,238	0	5,238	0	655	325

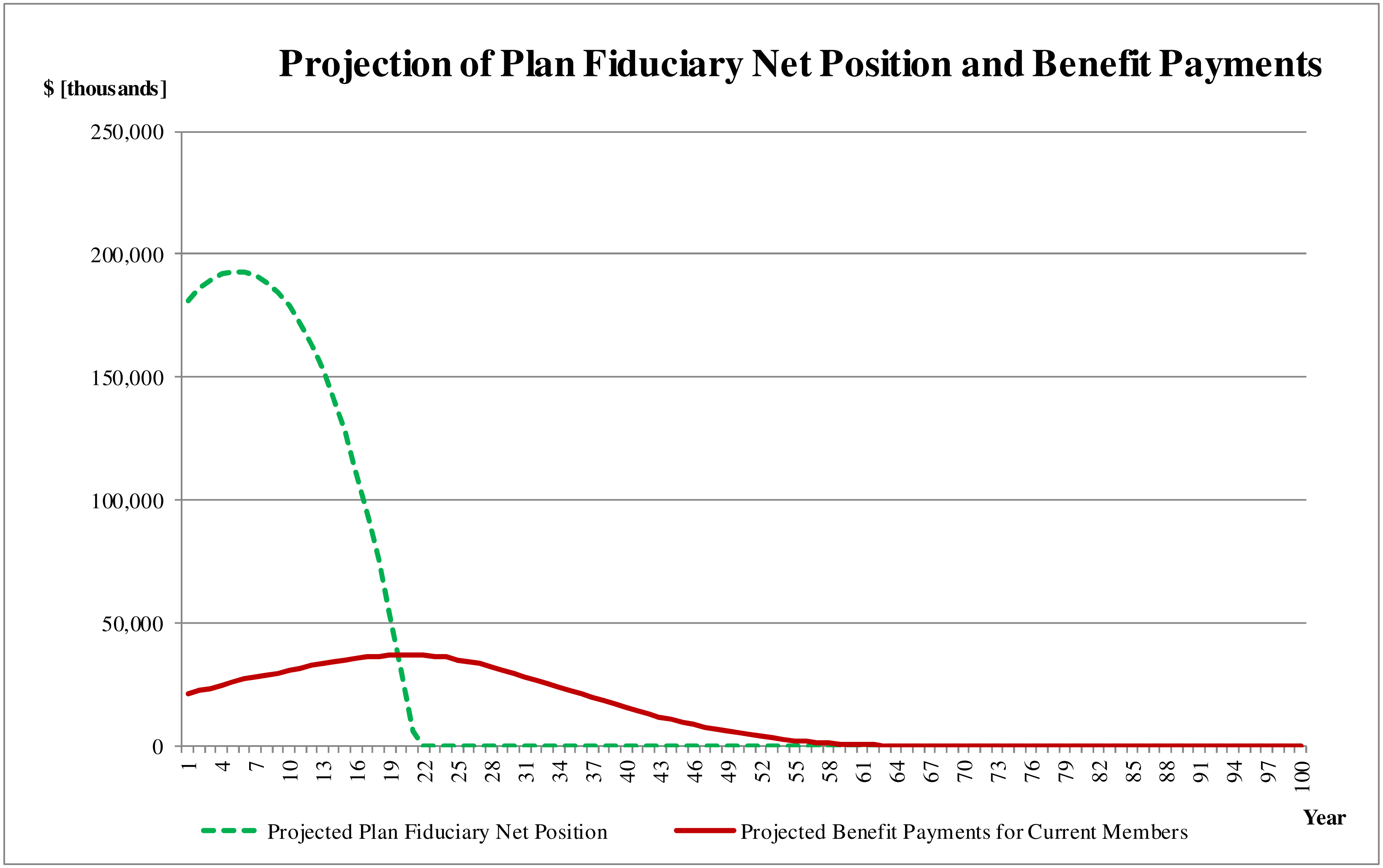
For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

SINGLE DISCOUNT RATE DEVELOPMENT

Present Values of Projected Benefits (continued) *(Dollars in Thousands)*

Year	Projected Beginning Plan Fiduciary Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=((c)/(1+sdr)^(a-.5)
51	$ -	$ 4,513	$ -	$ 4,513	$ 20,593	$ 541	$ 265
52	0	3,854	0	3,854	19,967	443	214
53	0	3,258	0	3,258	19,531	359	171
54	0	2,728	0	2,728	18,971	288	135
55	0	2,262	0	2,262	18,457	229	106
56	0	1,857	0	1,857	17,865	180	82
57	0	1,508	0	1,508	17,086	140	63
58	0	1,211	0	1,211	16,337	108	48
59	0	963	0	963	15,641	83	36
60	0	758	0	758	14,984	62	27
61	0	590	0	590	14,340	46	20
62	0	454	0	454	13,637	34	14
63	0	347	0	347	12,920	25	10
64	0	262	0	262	12,246	18	7
65	0	195	0	195	11,581	13	5
66	0	144	0	144	10,956	9	4
67	0	106	0	106	10,332	6	3
68	0	77	0	77	9,695	5	2
69	0	55	0	55	9,058	3	1
70	0	39	0	39	8,425	2	1
71	0	27	0	27	6,544	1	1
72	0	19	0	19	1,266	1	0
73	0	13	0	13	0	1	0
74	0	8	0	8	0	0	0
75	0	6	0	6	0	0	0
76	0	4	0	4	0	0	0
77	0	2	0	2	0	0	0
78	0	1	0	1	0	0	0
79	0	1	0	1	0	0	0
80	0	1	0	1	0	0	0
81	0	0	0	0	0	0	0
82	0	0	0	0	0	0	0
83	0	0	0	0	0	0	0
84	0	0	0	0	0	0	0
85	0	0	0	0	0	0	0
86	0	0	0	0	0	0	0
87	0	0	0	0	0	0	0
88	0	0	0	0	0	0	0
89	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0
91	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0
93	0	0	0	0	0	0	0
94	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0
96	0	0	0	0	0	0	0
97	0	0	0	0	0	0	0
98	0	0	0	0	0	0	0
99	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0
				Totals	$ 300,433	$ 175,987	$ 476,420

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.



Note: Assets are expected to be fully depleted in year 22 (year ending June 30, 2036).

SECTION H

GLOSSARY OF TERMS

GLOSSARY OF TERMS

Actuarial Accrued Liability (AAL)	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability."
Actuarial Assumptions	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
Accrued Service	Service credited under the system which was rendered before the date of the actuarial valuation.
Actuarial Equivalent	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
Actuarial Gain (Loss)	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
Actuarial Present Value (APV)	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future benefit payments at predetermined rates of interest to reflect the expected effects of the time value (present value) of money and the probabilities of payment.
Actuarial Valuation	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.
Actuarial Valuation Date	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution (ADC)	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

GLOSSARY OF TERMS

Amortization Payment The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.

Amortization Method The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be "open" (meaning, reset each year) or "closed" (the number of years remaining will decline each year.

Cost-of-Living Adjustments Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.

Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan) A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.

Covered-Employee Payroll The payroll of covered employees, which is typically only the pensionable pay and does not include pay above any pay cap.

Deferred Inflows and Outflows of Resources The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.

Discount Rate or Single Discount Rate For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically:

1. The benefit payments to be made while the pension plans' fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period and;
2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.

Entry Age Actuarial Cost Method or Entry Age Normal (EAN) The EAN is a funding method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit ages(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.

GLOSSARY OF TERMS

Fiduciary Net Position	The fiduciary net position is the value of the net assets of the trust restricted for pension benefits.
GASB	The Governmental Accounting Standards Board is an organization that exists with authority to promulgate accounting standards for state and local governmental entities.
Long-Term Expected Rate of Return	The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.
Money-Weighted Rate of Return	The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.
Multiple-Employer Defined Benefit Pension Plan	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
Municipal Bond Rate	The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.
Net Pension Liability (NPL)	The NPL is the liability of employers and non-employer contribution entities to plan members for benefits provided through a defined benefit pension plan.
Non-Employer Contributing Entities	Non-employer contributing entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB Accounting Statements No. 67 and No. 68 plan members are not considered non-employer contribution entities.
Normal Cost	The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method.
Other Postemployment Benefits (OPEB)	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits regardless of the manner in which they are provided. Other post-employment benefits do not include termination benefits.
Real Rate of Return	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
Service Cost	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.

GLOSSARY OF TERMS

Total Pension Expense The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year:

1. Service Cost
2. Interest on the Total Pension Liability
3. Current-Period Changes in Benefit Terms
4. Employee Contributions
5. Projected Earnings on Plan Investments
6. Pension Plan Administrative Expense
7. Other Changes in Plan Fiduciary Net Position
8. Recognition of Outflow (Inflow) of Resources due to the difference between expected and actual in measurement of the Total Pension Liability
9. Recognition of Outflow (Inflow) of Resources due to Assumption Changes
10. Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings on pension plan investments

Total Pension Liability (TPL) The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.

Unfunded Actuarial Accrued Liability (UAAL) The UAAL is the difference between actuarial accrued liability and valuation assets.

Valuation Assets The valuation assets are the plan fiduciary net position used in determining the net position liability of the plan. For purposes of the GASB Statement No. 67, the asset valuation method is equal to the market value of assets.

Gabriel Roeder Smith & Company
Consultants & Actuaries

MINNESOTA STATE RETIREMENT SYSTEM

LEGISLATORS RETIREMENT FUND

GASB STATEMENTS NO. 67 AND NO. 68 ACCOUNTING AND FINANCIAL REPORTING FOR PENSIONS

JUNE 30, 2014

GRS
Gabriel Roeder Smith & Company
Consultants & Actuaries
100 South Fifth Street
Suite 1900
Minneapolis, MN 55402-1267
612.605.6200 phone
612.605.6203 fax
www.gabrielroeder.com

December 1, 2014

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

Dear Board of Directors:

This report provides accounting and financial reporting information that is intended to comply with the Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68 for the Legislators Retirement Fund ("LRF"). These calculations have been made on a basis that is consistent with our understanding of these accounting standards.

GASB Statement No. 67 is the accounting standard that applies to the financial reports issued by retirement systems. GASB Statement No. 68 establishes accounting and financial reporting for state and local government employers who provide their employees (including former employees) pension benefits through a trust.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of providing reporting and disclosure information that satisfies the requirements of GASB Statements No. 67 and No. 68. The calculation of the plan's liability for this report may not be applicable for funding purposes of the plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statement No. 67 may produce significantly different results. The information in this report is calculated on a total plan basis. MSRS is responsible for preparing the Schedule of Employer Allocations and the Schedule of Pension Amounts by Employer. This report may be provided to parties other than the Minnesota State Retirement System (MSRS) only in its entirety and only with the permission of MSRS.

This report is based upon information, furnished to us by MSRS, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. If your understanding of this information is different, please let us know. This information was checked for internal consistency, but it was not otherwise audited.

To the best of our knowledge, the information contained with this report is accurate and fairly represents the actuarial position of the Legislators Retirement Fund as of the measurement date. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board. 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 opinion contained herein.

Respectfully submitted,

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

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

TABLE OF CONTENTS

SECTION A

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

As of June 30, 2014 *(Dollars in Thousands)*

	2014
Actuarial Valuation Date	June 30, 2014
Measurement Date of the Net Pension Liability	June 30, 2014
Membership	
Number of	
- Service Retirements	301
- Survivors	74
- Disability Retirements	0
- Deferred Retirements	63
- Terminated other non-vested	0
- Active Members	24
- Total	462
Covered-employee Payroll	$ 1,122 [1]
Net Pension Liability	
Total Pension Liability	$ 146,499
Plan Fiduciary Net Position	8,258
Net Pension Liability	$ 138,241
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	5.64%
Net Pension Liability as a Percentage of Covered-employee Payroll	12,320.94%
Development of the Single Discount Rate	
Single Discount Rate	4.29%
Long-Term Expected Rate of Investment Return	7.90%
Long-Term Municipal Bond Rate [2]	4.29%
Last year ending June 30 in the 2015 to 2114 projection period for which projected benefit payments are fully funded	2014
Total Pension Expense/(Income)	$ 16,555

Deferred Outflows and Deferred Inflows of Resources by Source to be recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience in the measurement of the Total Pension Liability	$ 0	$ 0
Changes in assumptions	0	0
Net difference between projected and actual earnings on pension plan investments	0	831
Total	**$ 0**	**$ 831**

[1] *Assumed equal to actual member contributions divided by employee contribution rate.*
[2] *Based on the Bond Buyer 20-Bond Index of general obligation municipal bonds as of June 26, 2014 (i.e., the weekly rate closest to but not later than the Measurement Date).*

DISCUSSION

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67, *Financial Reporting for Pension Plans* establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68, Accounting and *Financial Reporting for Pensions* establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

Financial Statements

GASB Statement No. 68 requires state and local governmental employers to recognize the net pension liability and the pension expense on their financial statements. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

The pension expense recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the difference between expected and actual experience in the measurement of the Total Pension Liability, assumption changes and investment experience.

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a Statement of Fiduciary Net Position and a Statement of Changes in Fiduciary Net Position in accordance with GASB Statement No. 67. The *Statement of Fiduciary Net Position* presents the assets and liabilities of the pension plan at the end of the pension plan's reporting period. The *Statement of Changes in Fiduciary Net Position* presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.

Notes to Financial Statements

GASB Statement No. 68 requires the notes to the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions.

Both GASB Statements No. 67 and No. 68 require the notes to the financial statements for the employers and pension plans to include certain descriptive information about the pension plans through which the pension benefits are provided. The list of disclosure items should include:

- a description of benefits provided by the plan;
- the classes of employees and number of members covered by the pension plan;
- a description of the plan's funding policy, which includes member and employer contribution requirements;
- the pension plan's investment policies;
- the pension plan's fiduciary net position, net pension liability, and the pension plan's fiduciary net position as a percentage of the total pension liability;
- the net pension liability using a discount rate that is 1% higher and 1% lower than the current discount rate used to calculate the total pension liability and net pension liability for financial reporting purposes;
- significant assumptions and methods used to calculate the total pension liability;
- inputs to the discount rates; and
- certain information about mortality assumptions and the dates of experience studies.

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with Statement No. 67. This information includes:

- the composition of the pension plan's board and the authority under which benefit terms may be amended;
- a description of how fair value is determined;
- information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5%, receivables, and insurance contracts excluded from plan assets; and
- annual money-weighted rate of return.

MSRS' comprehensive annual financial report, which contains the basic financial statements and related note disclosures for the Legislators Retirement Fund can be obtained from MSRS at 60 Empire Drive, Suite 300, St. Paul, MN, 55103 or requested via email at info@msrs.us or telephone at 1-800-657-5757.

Required Supplementary Information

GASB Statement No. 67 requires a 10-year fiscal history of:

- sources of changes in the net pension liability;
- information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; and
- comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. The net pension liability and pension expense should be measured as of the pension plan's fiscal year end (measurement date) on a date that is within the employer's prior fiscal year. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2014 and a measurement date of June 30, 2014.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a single discount rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating (which is published by the Federal Reserve) as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected long-term rate of return on pension plan investments is 7.90%; the municipal bond rate is 4.29% (based on the weekly rate closest to but not later than the measurement date of the 20-Year Bond Buyer Index as published by the Federal Reserve Board); and the resulting single discount rate is 4.29%.

Effective Date and Transition

GASB Statements No. 67 and No. 68 are effective for fiscal years beginning after June 15, 2013, and June 15, 2014 respectively. Earlier application is encouraged by the GASB.

SECTION B

FINANCIAL STATEMENTS

PENSION EXPENSE UNDER GASB STATEMENT NO. 68

Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

A. Expense			
1.	Service Cost	$	398
2.	Interest on the Total Pension Liability		6,177
3.	Current-Period Benefit Changes		0
4.	Employee Contributions (made negative for addition here)		(101)
5.	Projected Earnings on Plan Investments (made negative for addition here)		(711)
6.	Pension Plan Administrative Expense		36
7.	Other Changes in Plan Fiduciary Net Position		0
8.	Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability		(237)
9.	Recognition of Outflow (Inflow) of Resources due to assumption changes		11,201
10.	Recognition of Outflow (Inflow) of Resources due to the difference between projected (7.90%) and actual earnings on Pension Plan Investments		(208)
11.	**Total Pension Expense / (Income)**	**$**	**16,555**

Statement of Outflows and Inflows arising from Current Reporting Period

Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

A. Outflows (Inflows) of Resources due to Liabilities		
1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	$	(237)
2. Assumption Changes (gains) or losses		11,201
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}		1.0000
4. Outflow (Inflow) of Resources to be recognized in the current pension expense for the difference between expected and actual experience of the Total Pension Liability		(237)
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes		11,201
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	$	10,964
7. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for the difference between expected and actual experience of the Total Pension Liability		0
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes		0
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	$	0
B. Outflows (Inflows) of Resources due to Assets		
1. Net difference between projected and actual earnings on pension plan investments (gains) or losses		(1,039)
2. Recognition period for Assets {in years}		5.0000
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets		(208)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets		(831)

STATEMENT OF OUTFLOWS AND INFLOWS ARISING FROM CURRENT AND PRIOR REPORTING PERIODS

Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

A. Outflows and Inflows of Resources due to Liabilities and Assets to be recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows/(Inflows) of Resources
1. Due to Liabilities	$ 11,201	$ 237	$ 10,964
2. Due to Assets	0	208	(208)
3. Total	$ 11,201	$ 445	$ 10,756

B. Outflows and Inflows of Resources by Source to be recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows/(Inflows) of Resources
1. Differences between expected and actual experience	$ 0	$ 237	$ (237)
2. Assumption Changes	11,201	0	11,201
3. Net Difference between projected and actual earnings on pension plan investments	0	208	(208)
4. Total	$ 11,201	$ 445	$ 10,756

C. Deferred Outflows and Deferred Inflows of Resources by Source to be recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows/(Inflows) of Resources
1. Differences between expected and actual experience	$ 0	$ 0	$ 0
2. Assumption Changes	0	0	0
3. Net Difference between projected and actual earnings on pension plan investments	0	831	(831)
4. Total	$ 0	$ 831	$ (831)

D. Deferred Outflows and Deferred Inflows of Resources by Year to be recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows/(Inflows) of Resources
2015	$ (208)
2016	(208)
2017	(208)
2018	(207)
2019	0
Thereafter	0
Total	$ (831)

STATEMENT OF FIDUCIARY NET POSITION

As of June 30, 2014 *(Dollars in Thousands)*

Assets		**June 30, 2014**
Cash & Short-term Investments	$	571
Receivables		2
Investment Pools (at fair value)		8,180
Securities Lending Collateral		909
Capital Assets		0
Total Assets	**$**	**9,662**
Total Deferred Outflows of Resources		0
Total Liabilities		(1,404)
Total Deferred Inflows of Resources		0
Net Position Restricted for Pensions	**$**	**8,258**

Statement of Changes in Fiduciary Net Position

For the Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

Fiduciary Net Position		**Market Value**	
Year Ending		**June 30, 2014**	
1.	**Net position at market value at beginning of year**	**$**	**11,493**
Additions			
2.	Contributions		
	a. Member	$	101
	b. Employer		0
	c. State General Fund Appropriations		3,436
	d. Total contributions	$	3,537
3.	Investment income		
	a. Investment income/(loss)	$	1,762
	b. Investment expenses		(12)
	c. Net investment income/(loss)	$	1,750
4.	Other Additions	$	0
5.	**Total Additions:** *(2.d.) + (3.c.) + (4.)*	**$**	**5,287**
Deductions			
6.	Benefits Paid		
	a. Annuity benefits	$	(8,407)
	b. Refunds		(79)
	c. Total benefits paid	$	(8,486)
7.	Expenses		
	a. Other deductions	$	0
	b. Administrative		(36)
	c. Total expenses	$	(36)
8.	**Total deductions:** *(6.c.) + (7.c.)*	**$**	**(8,522)**
9.	**Net increase/(decrease) in fiduciary net position**	**$**	**(3,235)**
10.	**Net position at market value at end of year** *(1.) + (5.) + (8.)*	**$**	**8,258**
11.	State Board of Investment calculated investment return		18.6%

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in Net Pension Liability and Related Ratios Current Period

Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

A. Total pension liability			
1. Service Cost	$	398	
2. Interest on the Total Pension Liability		6,177	
3. Changes of benefit terms		0	
4. Difference between expected and actual experience of the Total Pension Liability		(237)	
5. Changes of assumptions		11,201	(1)
6. Benefit payments, including refunds of employee contributions		(8,486)	
7. Net change in total pension liability	$	9,053	
8. Total pension liability – beginning		137,446	
9. Total pension liability – ending	**$**	**146,499**	
B. Plan fiduciary net position			
1. Contributions – State General Fund Appropriations	$	3,436	
2. Contributions – employee		101	
3. Net investment income		1,750	
4. Benefit payments, including refunds of employee contributions		(8,486)	
5. Pension Plan Administrative Expense		(36)	
6. Other changes		0	
7. Net change in plan fiduciary net position	$	(3,235)	
8. Plan fiduciary net position – beginning		11,493	
9. Plan fiduciary net position – ending	**$**	**8,258**	
C. Net pension liability, *A.9.-B.9.*	**$**	**138,241**	
D. Plan fiduciary net position as a percentage of the total pension liability, *B.9./A.9.*		**5.64%**	
E. Covered-employee payroll	**$**	**1,122**	**(2)**
F. Net pension liability as a percentage of covered-employee payroll, *C./E.*		**12,320.94%**	

(1) *Assumption changes are summarized on page 30.*
(2) *Assumed equal to actual member contributions divided by employee contribution rate.*

Schedules of Required Supplementary Information

Schedule of Changes in Net Pension Liability and Related Ratios Multiyear *(Dollars in Thousands)*

Last 10 Fiscal Years (which will be built prospectively)

Fiscal year ending June 30,	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
Total Pension Liability										
Service Cost	$ 398									
Interest on the Total Pension Liability	6,177									
Benefit Changes	0									
Difference between Expected and Actual Experience	(237)									
Assumption Changes	11,201 (1)									
Benefit Payments	(8,407)									
Refunds	(79)									
Net Change in Total Pension Liability	$ 9,053									
Total Pension Liability - Beginning	137,446									
Total Pension Liability - Ending (a)	**$ 146,499**									
Plan Fiduciary Net Position										
State General Fund Appropriation	$ 3,436									
Employee Contributions	101									
Pension Plan Net Investment Income	1,750									
Benefit Payments	(8,407)									
Refunds	(79)									
Pension Plan Administrative Expense	(36)									
Other	0									
Net Change in Plan Fiduciary Net Position	$ (3,235)									
Plan Fiduciary Net Position - Beginning	11,493									
Plan Fiduciary Net Position - Ending (b)	**$ 8,258**									
Net Pension Liability - Ending (a) - (b)	**$ 138,241**									
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	5.64 %									
Covered-Employee Payroll	$ 1,122 (2)									
Net Pension Liability as a Percentage of Covered-Employee Payroll	12,320.94 %									

Notes to Schedule:

(1) *Assumption changes are summarized on page 30.*
(2) *Assumed equal to plan member contributions divided by employee contribution rate.*

Schedules of Required Supplementary Information

Schedule of Net Pension Liability Multiyear *(Dollars in Thousands)*

Last 10 Fiscal Years (which will be built prospectively)

FY Ending June 30,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered-Employee Payroll	Net Pension Liability as a % of Covered-Employee Payroll
	(a)	(b)	(a)-(b)=(c)	(b)/(c)	(d)	(c)/(d)
2005						
2006						
2007						
2008						
2009						
2010						
2011						
2012						
2013						
2014	$ 146,499	$ 8,258	$ 138,241	5.64%	$ 1,122	12,320.94 %

SCHEDULE OF CONTRIBUTIONS MULTIYEAR* *(Dollars in Thousands)*

Last 10 Fiscal Years

FY Ending June 30,	Actuarially Determined Contribution	Actual Contributions	Contribution Deficiency (Excess)	Covered-Employee Payroll	Actual Contribution as a % of Covered-Employee Payroll
	(a)	(b)	(a)-(b)=(c)	(d)	(b)/(d)
2005	$ 3,210	$ 2,217	$ 993	$ 3,014	73.56%
2006	3,460	6,101	(2,641)	2,894	210.82
2007	2,885	2,199	686	2,380	92.39
2008	3,736	2,652	1,084	1,993	133.07
2009	5,084	1,711	3,373	1,963	87.16
2010	8,183	2,428	5,755	1,877	129.36
2011	8,164	3,265	4,899	1,774	184.05
2012	19,348	4,401	14,947	1,378	319.38
2013	17,402	3,869	13,533	1,233	313.79
2014	22,157	3,436	18,721	1,122	306.24

* *Effective July 1, 2013, the Elective State Officers Retirement Fund was administratively consolidated with the Legislators Retirement Fund.. All figures in the table above represent the combined total from both funds, as directed by MSRS.*

NOTES TO SCHEDULE OF CONTRIBUTIONS

Valuation Date:	June 30, 2014
Notes	Actuarially determined contribution rates are calculated as of each July 1.

Methods and Assumptions Used to Determine Contribution Rates Reported in this Schedule:

Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Dollar, Closed
Remaining Amortization Period	12 years
Asset Valuation Method	Market value of assets
Salary Increases	5% including inflation
Investment Rate of Return	0.00% per annum
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2012 valuation pursuant to an experience study prepared by a former actuary.
Healthy Post-Retirement Mortality	RP-2000 annuitant generational mortality table, projected with mortalilty improvement scale AA, white collar adjustment.
Other Information:	
Benefit Increases After Retirement	The post-retirement increase is assumed to increase from 2.0% to 2.5% beginning January 1, 2016.
	See separate funding report as of July 1, 2014 for additional detail. To obtain this report, contact MSRS as noted on page 3.

SCHEDULE OF INVESTMENT RETURNS MULTIYEAR

Last 10 Fiscal Years

FY Ending June 30,	Annual Return[1]
2005	
2006	
2007	
2008	
2009	
2010	
2011	
2012	
2013	
2014	19.30 %

[1] *Annual money-weighted rate of return, net of investment expenses.*

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to MSRS for GASB-compliance purposes. MSRS furnished this information to us for inclusion within this report. We did not audit this information. We are not responsible for its accuracy or completeness.

Rate of Return

For the year ended June 30, 2014, the annual money-weighted rate of return for the State Patrol Retirement Fund was 19.30%. The money-weighted rate of return is a method of calculating period-by-period returns on pension plan investments that adjusts for the changing amounts actually invested. For purposes of this schedule, the money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.

10-Year Schedule of Money-Weighted Investment Return

Ten-year data is not available. Additional years will be provided when they become available.

To request additional information about the computation of the annual money-weighted rate of return and the investments for the Minnesota Retirement Systems (including the investments for MSRS' defined benefit retirement funds), contact SBI at 60 Empire Drive, Suite 355, St. Paul, Minnesota, 55103, via email at minn.sbi@state.mn.us or telephone at (651) 296-3328.

SECTION D

ADDITIONAL FINANCIAL STATEMENT DISCLOSURES

ASSET ALLOCATION

Long-Term Expected Return on Plan Assets

The long-term expected rate of return on pension plan investments was determined using a building-block method. Best estimates for expected future real rates of return (expected returns, net of inflation) were developed for each asset class using both long-term historical returns and long-term capital market expectation from a number of investment management and consulting organizations. The asset class estimates and the target allocations were then combined to produce geometric, long-term expected real rate of return for the portfolio. Inflation expectations were applied to derive the nominal rate of return for the portfolio. For each asset class that is included in the pension fund's target asset allocation as of June 30, 2014, these best estimates are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return (Geometric)
Domestic Stocks	45.00%	5.50%
International Stocks	15.00	6.00
Bonds	18.00	1.45
Alternative Assets	20.00	6.40
Unallocated Cash	2.00	0.50
Total	100.00%	

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to MSRS for GASB-compliance purposes. MSRS furnished this information to us for inclusion within this report. We did not audit this information. We are not responsible for its accuracy or completeness.

At MSRS' direction, for purposes of this valuation, the long-term expected rate of return assumption is 7.90%. This assumption is based on a review of inflation and investment return assumptions dated September 11, 2014. Since the plan's assets are expected to be depleted during the first year, MSRS' long-term expected rate of investment return of 7.90% is not utilized in this valuation. A single discount rate of 4.29% was used to measure the total pension liability as of July 1, 2014.

SENSITIVITY OF NET PENSION LIABILITY TO THE SINGLE DISCOUNT RATE ASSUMPTION

Single Discount Rate

A single discount rate of 4.29% was used to measure the total pension liability. This single discount rate was based on a municipal bond rate of 4.29% and the pay-as-you-go status of this plan. Since the plan's assets are expected to be depleted during the first year, MSRS' long-term expected rate of investment return of 7.90% is not utilized in this valuation.

Regarding the sensitivity of the net pension liability to changes in the single discount rate, the following presents the fund's net pension liability, calculated using a single discount rate of 4.29%, as well as what the fund's net pension liability would be if it were calculated using a single discount rate that is 1-percentage-point lower (3.29%) or 1-percentage-point higher (5.29%) than the current rate:

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

(Dollars in Thousands)

1% Decrease 3.29%	Current Single Discount Rate Assumption 4.29%	1% Increase 5.29%
$155,270	$138,241	$124,014

A single discount rate of 4.63% was used for the measurement date as of July 1, 2013.

For more information on the calculation of the single discount rate, refer to Section G of this report.

GASB STATEMENT NO. 68 RECONCILIATION *(Dollars in Thousands)*

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Deferred Outflows	Deferred Inflows	Pension Expense
Balance Beginning of Year	**$ 137,446**	**$ 11,493**	**$ 125,953**	**$ 0**	**$ 0**	
Changes for the Year:						
Service Cost	$ 398		$ 398			$ 398
Interest on Total Pension Liability	6,177		6,177			6,177
Interest on Plan Fiduciary Net Position [(1)]		$ 711	(711)			(711)
Changes in Benefit Terms	0		0			0
Liability Experience Gains and Losses	(237)		(237)	$ 0		(237)
Changes in Assumptions	11,201		11,201	0		11,201
State General Fund Appropriations		3,436	(3,436)			
Contributions - Employees		101	(101)			(101)
Asset Gain/(Loss) [(1)]		1,039	(1,039)	0	$ 831	(208)
Benefit Payouts	(8,486)	(8,486)	0			0
Administrative Expenses		(36)	36			36
Other Changes		0	0			0
Net Changes	**$ 9,053**	**$ (3,235)**	**$ 12,288**	**$ 0**	**$ 831**	**$ 16,555**
Balance End of Year	**$ 146,499**	**$ 8,258**	**$ 138,241**	**$ 0**	**$ 831**	

(1) The sum of these items equals the net investment income of $1,750.

SUMMARY OF POPULATION STATISTICS

		Terminated		Recipients			
	Actives	Deferred Retirement	Other Non-Vested	Service Retirement	Disability Retirement	Survivor	Total
Members on 7/1/2013	**24**	**70**	**1**	**287**	**0**	**75**	**457**
New Members	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	0	(7)	0	7	0	0	**0**
Terminated deferred	0	0	0	0	0	0	**0**
Terminated refund/transfer	0	(1)	(1)	0	0	0	**(2)**
Deaths	0	0	0	(11)	0	(2)	**(13)**
New beneficiary	0	0	0	0	0	0	**0**
Disabled	0	0	0	0	0	0	**0**
Unexpected status change	0	0	0	8	0	(3)	**5**
Net change	0	(8)	(1)	4	0	(5)	**(10)**
Addition of ESO members*	0	1	0	10	0	4	**15**
Members on 6/30/2014	**24**	**63**	**0**	**301**	**0**	**74**	**462**

* *Effective July 1, 2013, the Elective State Officers Retirement Fund was administratively consolidated with the Legislators Retirement Fund.*

SECTION E

SUMMARY OF BENEFITS

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).
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%.

Summary of Plan Provisions – Legislators Retirement Plan (Continued)

Retirement (Continued)	
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.
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	Benefit recipients receive future annual 2.0% benefit increases. When the funding ratio of the State Employees Retirement Fund reaches 90% (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.
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, 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, 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%.
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 5.0% to 6.0%.

Summary of Plan Provisions – Legislators Retirement Plan (Concluded)

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.
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; and (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	The funding ratio threshold that must be attained in the State Employees Retirement Fund to pay a 2.5% post-retirement benefit increase to benefit recipients in the Legislators Retirement Fund was changed from 90% for one year to 90% for two consecutive years.

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 2.0% benefit increases. When the funding ratio of the State Employees Retirement Fund reaches 90% (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.
Disability	No additional benefits provided beyond standard plan. Treated as retirement or termination, depending on age and Allowable Service as of disablement.

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

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.
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.
Deferred benefit	
Age/service requirement	Eight years of Allowable Service.

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

Termination (Continued) Deferred benefit 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; and (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.
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.
Changes in Plan Provisions	Effective July 1, 2014, the funding ratio threshold that must be attained in the State Employees Retirement Fund to pay a 2.5% post-retirement benefit increase to benefit recipients in the Elective State Officers Retirement Fund was changed from 90% for one year to 90% for two consecutive years.

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

Actuarial Methods

Actuarial Cost Method

Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using an **Individual Entry-Age Actuarial Cost Method** having the following characteristics:

(i) the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement;

(ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Actuarial gains/(losses), as they occur, reduce (increase) the Total Pension Liability.

Valuation of Future Post-Retirement Benefit Increases

Benefit recipients receive a future annual 2.0% post-retirement benefit increase. If the funding ratio of the State Employees Retirement Fund (SERF) reaches 90% (based on a 2.5% post-retirement benefit increase assumption) for two consecutive years, the benefit increase in the Legislators Retirement Fund will revert to 2.5%.

To determine an assumption regarding a future change in the post-retirement benefit increase, we performed a projection of the SERF liabilities and assets. See the 2014 GASB Statements No. 67 and 68 valuation report for the SERF for additional detail. The projection indicates that this plan is expected to begin paying 2.5% benefit increases on January 1, 2016. This assumption is reflected in our calculations.

To determine the Total Pension Liability as of July 1, 2013, we performed a similar projection, and assumed the plan would pay 2.0% benefit increases indefinitely.

Decrement Timing

All decrements are assumed to occur mid-year.

Asset Valuation Method

Fair value of assets.

Summary of Actuarial Assumptions

The following assumptions were used in valuing the liabilities and benefits under the plan. All demographic 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 demographic assumptions prescribed are based on the last assumption review, dated January 2012, prepared by a former actuary. The economic assumptions are based on a review of inflation and investment return assumptions dated September 11, 2014.

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	7.90% per annum.
Benefit increases after retirement	2.00% per annum through 2015 and 2.50% thereafter.
Salary increases	4.75% annually.
Inflation	2.75% annually.
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 120. 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	N/A
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.

Summary of Actuarial Assumptions (Continued)

Disability	None.
Allowance for combined service annuity	Liabilities for former members are increased by 30.00% to account for the effect of some participants having eligibility for a Combined Service Annuity.
Administrative expenses	Prior year administrative expenses expressed as a 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. 100% of Elective State Officers members are assumed to be eligible for the automatic 50% survivor benefit.
Age of spouse	Females are assumed to be three years younger than their male 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.
Service credit accruals	It is assumed that members accrue one year of service credit per year.

Summary of Actuarial Assumptions (Continued)

Unknown data for certain members	To prepare this report, GRS has used and relied on participant data supplied by MSRS. 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 Fund** <u>Data for active members:</u> 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. <u>Data for terminated members:</u> There were 11 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 (10 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. <u>Data for members receiving benefits:</u> There were no members reported with missing or invalid birth dates. There was one survivor reported with an invalid gender. We assumed female gender for the valuation. There were 291 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 or the 50% joint and survivor option. All of these members were valued as a 50% joint & survivor annuity per MSRS' direction. Of the 291 retired members, 164 members had an invalid or missing survivor gender and 156 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 was 1 retiree reported with a bounce back annuity but was not reported with a reasonable reduction factor. A factor of 0.80 was assumed for the 100% joint and survivor annuity. There were no survivors reported on the data file with an expired benefit.

Summary of Actuarial Assumptions (Continued)

Unknown data for certain members	**Elective State Officers Retirement Fund** There were no members reported with missing gender, birth dates or benefit amounts. <u>Data for members receiving benefits:</u> Unless reported with the 100% joint & survivor option, all retired and deferred members were assumed to have a spouse that is eligible for the automatic survivor benefit. Valuation assumptions were used if the survivor gender or date of birth were missing.
Changes in actuarial assumptions	As of July 1, 2013, the post-retirement benefit increase rate was expected to be 2.00% indefinitely, and the single discount rate was 4.63%. As of July 1, 2014, the post-retirement benefit increase rate was expected to change from 2.00% to 2.50% on January 1, 2016, and the single discount rate was 4.29%.

Summary of Actuarial Assumptions (Concluded)

	Rate (%)*			
	Healthy Pre-Retirement Mortality**		Healthy Post-Retirement Mortality**	
Age	Male	Female	Male	Female
20	0.04%	0.02%	0.03%	0.02%
25	0.04	0.02	0.04	0.02
30	0.05	0.02	0.04	0.03
35	0.08	0.04	0.06	0.05
40	0.11	0.06	0.09	0.06
45	0.17	0.09	0.13	0.10
50	0.24	0.15	0.60	0.24
55	0.35	0.22	0.54	0.35
60	0.56	0.34	0.66	0.56
65	0.85	0.54	1.16	0.91
70	2.67	0.82	1.93	1.52

* *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 prescribed, but note that the prescribed assumption may not be reasonable at every age. If the rates were reasonably adjusted so that they decrease 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.*

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

	Withdrawal	
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

SECTION G

CALCULATION OF THE SINGLE DISCOUNT RATE

CALCULATION OF THE SINGLE DISCOUNT RATE

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Fiduciary Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the long-term expected rate of return is used as the discount rate. In years where assets are not projected to be sufficient to meet benefit payments, the use of a "risk-free" municipal bond rate is required, as described in the following paragraph.

The *Single Discount Rate* (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the plan fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating (which is published by the Federal Reserve Board (FRB)) as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

This plan is currently funded on a pay-as-you-go basis by annual appropriations from the state's General Fund. The current contribution levels (member contributions and annual appropriations) are not sufficient to cover annual benefit payments. For the fiscal year ending June 30, 2014, total contributions (plan member contributions and state General Fund appropriations) were $3.5 million and total benefit payments were $8.5 million.

For the purpose of this valuation, we have recognized that the assets are not sufficient to pay benefits in any future year regardless of future investment income. The municipal bond rate is 4.29% (based on the FRB rate as of June 27, 2013); and the resulting single discount rate is 4.29%.

As of July 1, 2013, the municipal bond rate is 4.63%, and the resulting single discount rate is 4.63%.

The Plan Fiduciary Net Position was projected to be available to meet projected future benefit payments of current active and inactive employees through the year 2054.

SECTION H

GLOSSARY OF TERMS

GLOSSARY OF TERMS

Actuarial Accrued Liability (AAL)	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability."
Actuarial Assumptions	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
Accrued Service	Service credited under the system which was rendered before the date of the actuarial valuation.
Actuarial Equivalent	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
Actuarial Gain (Loss)	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
Actuarial Present Value (APV)	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future benefit payments at predetermined rates of interest to reflect the expected effects of the time value (present value) of money and the probabilities of payment.
Actuarial Valuation	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.
Actuarial Valuation Date	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution (ADC)	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

GLOSSARY OF TERMS

Amortization Payment	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
Amortization Method	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be "open" (meaning, reset each year) or "closed" (the number of years remaining will decline each year.
Cost-of-Living Adjustments	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
Covered-Employee Payroll	The payroll of covered employees, which is typically only the pensionable pay meets the statutory salary definition) and does not include pay above any pay cap.
Deferred Inflows and Outflows of Resources	The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.
Discount Rate or Single Discount Rate	For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically: 1. The benefit payments to be made while the pension plans' fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period and; 2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.
Entry Age Actuarial Cost Method or Entry Age Normal (EAN)	The EAN is a funding method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit ages(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.

GLOSSARY OF TERMS

Fiduciary Net Position	The fiduciary net position is the value of the net assets of the trust restricted for pension benefits.
GASB	The Governmental Accounting Standards Board is an organization that exists with authority to promulgate accounting standards for state and local governmental entities.
Long-Term Expected Rate of Return	The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.
Money-Weighted Rate of Return	The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.
Multiple-Employer Defined Benefit Pension Plan	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
Municipal Bond Rate	The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.
Net Pension Liability (NPL)	The NPL is the liability of employers and non-employer contribution entities to plan members for benefits provided through a defined benefit pension plan.
Non-Employer Contributing Entities	Non-employer contributing entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB Accounting Statements No. 67 and No. plan members are not considered non-employer contribution entities.
Normal Cost	The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method.
Other Postemployment Benefits (OPEB)	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits regardless of the manner in which they are provided. Other post-employment benefits do not include termination benefits.
Real Rate of Return	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
Service Cost	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.

GLOSSARY OF TERMS

Total Pension Expense The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year:

1. Service Cost
2. Interest on the Total Pension Liability
3. Current-Period Changes in Benefit Terms
4. Employee Contributions
5. Projected Earnings on Plan Investments
6. Pension Plan Administrative Expense
7. Other Changes in Plan Fiduciary Net Position
8. Recognition of Outflow (Inflow) of Resources due to the difference between expected and actual in measurement of the Total Pension Liability
9. Recognition of Outflow (Inflow) of Resources due to Assumption Changes
10. Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings on pension plan investments

Total Pension Liability (TPL) The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.

Unfunded Actuarial Accrued Liability (UAAL) The UAAL is the difference between actuarial accrued liability and valuation assets.

Valuation Assets The valuation assets are the plan fiduciary net position used in determining the net position liability of the fund. For purposes of the GASB Statement No. 67, the asset valuation method is equal to the market value of assets.