December 2008

State Patrol Retirement Fund

Actuarial Valuation Report as of July 1, 2008

MERCER

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Highlights

This report has been prepared by Mercer for the Minnesota State Retirement System to:

- Present the results of a valuation of State Patrol Retirement Fund as of July 1, 2008.
- Review experience under the Plan for the year ended June 30, 2008.
- Provide reporting and disclosure information for governmental agencies and other interested parties.

Contributions

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

	Plan Year Ending	
Contributions	**June 30, 2009**	**June 30, 2008***
Statutory Contributions – Chapter 352B (% of Payroll)	24.40%	22.70%
Required Contributions – Chapter 356 (% of Payroll)	34.49%	29.90%
Sufficiency / (Deficiency)	(10.09%)	(7.20%)

The contribution deficiency increased from (7.20%) of payroll to (10.09%) of payroll. The primary reasons for the increased deficiency are the less than expected return on assets and the impact of insufficient contributions.

Without a change in contribution rates, or favorable actuarial experience, the funded status will continue to deteriorate. In addition, as of the date of this report, the assets have experienced significant losses as a result of the turmoil in the financial marketplace this fall. If not reversed, losses will further increase the deficiency.

On the other hand, we would also note that absent any additional losses, the plan has sufficient assets to pay benefits for many years into the future.

The "Plan Assets" section provides detail on the plan assets used for the valuation including a development of the actuarial value of assets. The market value of assets earned (4.5%) for the plan year ending June 30, 2008 as compared to the assumed rate of 8.50%. Only 20% of the non-MPRIF asset loss will be recognized in the actuarial value of assets. The reminder will be recognized over the next four years. The actuarial value of assets earned 1.0% for the plan year ending June 30, 2008 as compared to the assumed rate of 8.50%.

Participant reconciliation and statistics are detailed in the "Participant Data" section. The "Actuarial Basis" section includes a summary of plan provisions and actuarial methods and assumptions used for the calculations in this report. The "Plan Accounting" sections detail the required accounting information for the Plan under GASB Statement No. 25 (as amended by GASB 50).

There were no changes in valuation methods since the July 1, 2007 valuation. Changes in actuarial assumptions and plan provisions are reflected in this report and summarized in the Actuarial Basis section.

* *Provided by The Segal Company.*

Principal Valuation Results

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

	Actuarial Valuation as of	
	July 1, 2008	**July 1, 2007***
Contributions *(% of Payroll)*		
Statutory – Chapter 352B	24.40%	22.70%
Required – Chapter 356	34.49%	29.90%
Sufficiency / (Deficiency)	(10.09%)	(7.20%)
Funding Ratios *(dollars in thousands)*		
Accrued Benefit Funding Ratio		
– Current assets (AVA)	$ 595,082	$ 617,901
– Current benefit obligations	680,022	647,476
– Funding ratio	87.51%	95.43%
Accrued Liability Funding Ratio		
– Current assets (AVA)	$ 595,082	$ 617,901
– Actuarial accrued liability	693,686	673,444
– Funding ratio	85.79%	91.75%
Projected Benefit Funding Ratio		
– Current and expected future assets	$ 749,086	$ 746,430
– Current and expected future benefit obligations	847,690	827,049
– Funding ratio	88.37%	90.25%
Participant Data		
Active members		
– Number	840	844
– Projected annual earnings *(000s)*	$ 63,771	$ 61,498
– Average annual earnings *(projected)*	$ 75,918	$ 72,864
– Average age	41.5	41.0
– Average service	12.4	12.0
Service retirements	660	645
Survivors	194	190
Disability retirements	42	41
Deferred retirements	35	32
Terminated other non-vested	7	8
Total	**1,778**	**1,760**

* *Provided by The Segal Company.*

Effects of Changes

The following changes in assumptions were recognized as of July 1, 2008:

- Change payroll growth assumption from 5.0% to 4.5%.

These assumption changes had the following impact on the valuation results:

- An increase in the required contribution of 0.48% of payroll.

The basis for determining benefit increases for benefit recipients was revised since the last valuation as of July 1, 2007. See the Summary of Plan Provisions for detail. This change in plan provisions had no impact on the results in this valuation.

Certification

We have prepared an actuarial valuation of the State Patrol Retirement Fund as of July 1, 2008 for the plan year ending June 30, 2009. This report reflects the provisions of the Plan effective July 1, 2008. To the best of our knowledge, this actuarial valuation was performed in accordance with the requirements of Minnesota Statutes, Section 356.215 and the requirements of the Standards of Actuarial Work established by the Minnesota Legislative Commission on Pensions and Retirement.

This report has been prepared exclusively for the Minnesota State Retirement System and the Legislative Commission on Pensions and Retirement to determine the annual required contribution and present accounting results required under GASB Nos. 25 (as amended by GASB 50) and 27. Mercer is not responsible for consequences arising from the use of any elements of this report for any other than their intended purpose. Determinations for other purposes may be significantly different from the results shown in this report.

A valuation report is a snapshot of a plan's estimated financial condition at a particular point in time; it is neither a prediction of a pension plan's future financial condition nor a prediction of a pension plan's ability to pay benefits in the future.

Over time, a plan's total cost will depend on a number of factors, including the amount of benefits it pays, the number of people to whom it pays them, and the amount earned on any assets invested to pay the benefits. These amounts and others are uncertain and unknowable at the valuation date, but are predicted to fall within a reasonable range of possibilities. To prepare this report, *actuarial assumptions*, as described within, are used to select a single scenario from the range of possibilities. The results of that single scenario are included in this report. However, the future is uncertain and the plan's actual experience will differ from those assumptions; these differences may be significant or material. In addition, different assumptions or scenarios may also be within the reasonable range and results based on those assumptions would be different. Actuarial assumptions may also be changed from valuation to valuation based on experience, changes in expectations about the future, and other factors.

Because actual plan experience will differ from the assumptions, decisions about benefit changes, investment policy, funding amounts, benefit security and/or benefit related issues should be made only after careful consideration of alternative future financial conditions and scenarios, and not solely on the basis of a valuation report or reports.

Data

We used and relied on financial data submitted by the Fund without further audit. We have also used and relied on participant data supplied by the Fund; this data would customarily not be verified by the Fund's actuary. We have reviewed the participant data for internal consistency and have no reason to doubt its substantial accuracy. The Fund is solely responsible for the validity and completeness of this information.

Contributions

All costs, liabilities and other factors for the Fund were determined in accordance with generally accepted actuarial principles and procedures, in accordance with the provisions of current federal and state statutes and regulations issued thereunder. The economic assumptions are set in Minnesota Statutes, and the remaining assumptions are adopted by the Legislative Commission on Pensions and Retirement. We believe that these assumptions are reasonable. This report fully and fairly discloses the actuarial position of the Fund on an ongoing basis.

Certification

Professional Qualifications

We are available to answer any questions on the material contained in the report, or to provide explanations or further details as may be appropriate. The undersigned credentialed actuaries meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained in this report. We are not aware of any direct or material indirect financial interest or relationship, including investments or other services that could create a conflict of interest, that would impair the objectivity of our work.

The information contained in this document (including any attachments) is not intended by Mercer to be used, and it cannot be used, for the purpose of avoiding penalties under the Internal Revenue Code that may be imposed on the taxpayer.

Stephen T. McElhaney

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Principal

12/5/2008
Date

Bonita J. Wurst

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Supplemental Information

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

- **Plan assets** presents information about the plan's assets as reported by the Minnesota State Retirement System and the Minnesota State Board of Investments. The assets represent the portion of total fund liabilities that has been funded.
- **Membership data** presents and describes the membership data used in the valuation.
- **Development of costs** shows the liabilities for plan benefits and the derivation of the contribution amount.
- **Actuarial basis** describes the plan provisions, as well as the methods and assumptions used to value the plan. The valuation is based on the premise that the plan is ongoing.
- **Plan accounting under GASB 25 (as amended by GASB 50)** shows the disclosures required by GASB Statement No. 25 as amended by GASB Statement No. 50.
- **Glossary** defines the terms used in this report.

Plan Assets

Statement of Plan Net Assets for Year Ended June 30, 2008 *(Dollars in Thousands)*

	Market Value	Cost Value
Assets in Trust		
▪ Cash, equivalents, short term securities	$ 1,450	$ 1,450
▪ Fixed income	53,817	57,414
▪ Equity	171,690	178,780
▪ Equity in MPRIF	357,594	445,216
▪ Other	60,428	60,428
Total assets in trust	**$ 644,979**	**$ 743,288**
Due from MPRIF (for mortality gains)	4,236	4,236
Assets Receivable	762	762
Total Assets	**$ 649,977**	**$ 748,286**
Amounts Payable	(60,598)	(60,598)
Net Assets	**$ 589,379**	**$ 687,688**
Net assets held in trust for pension benefits		
▪ MPRIF reserves	357,594	445,216
▪ Member reserves	49,380	49,380
▪ Other non-MPRIF reserves	182,405	193,092
Total assets available for benefits	**$ 589,379**	**$ 687,688**

Plan Assets

Reconciliation of Plan Assets

The following exhibit shows the revenue, expenses and resulting assets of the Fund as reported by the Minnesota State Retirement System and the Minnesota State Board of Investment, for the Plan's Fiscal Year July 1, 2007 to June 30, 2008.

Change in Assets *(dollars in thousands)*	**Non-MPRIF Assets**	**MPRIF Reserve**	**Market Value**
1. Fund balance at market value at July 1, 2007	$ 249,447	$ 399,734	$ 649,181
2. Contributions			
a. Member	$ 5,594	$ 0	$ 5,594
b. Employer	8,280	0	8,280
c. Other sources	0	0	0
d. Total contributions	$ 13,874	$ 0	$ 13,874
3. Investment income			
a. Interest and dividends	$ (11,016)	$ (18,664)	$ (29,680)
b. Investment expenses	(343)	(555)	(898)
c. Net subtotal	$ (11,359)	$ (19,219)	$ (30,578)
4. Other	(179)	0	(179)
5. Total income *(2.c. + 3.c. + 4.)*	**$ 2,336**	**$ (19,219)**	**$ (16,883)**
6. Benefits Paid			
a. Annuity benefits	$ (52)	$ (42,752)	$ (42,804)
b. Refunds	(6)	0	(6)
c. Total benefits paid	$ (58)	$ (42,752)	$ (42,810)
7. Expenses			
a. Other	$ 0	$ 0	$ 0
b. Administrative	(109)	0	(109)
c. Total Expenses	(109)	0	(109)
8. Total disbursements *(6.c. + 7.c.)*	**$ (167)**	**$ (42,752)**	**$ (42,919)**
9. Other changes in reserves			
a. Annuities awarded	$ (24,067)	$ 24,067	$ 0
b. MPRIF mortality gain	4,236	(4,236)	0
c. Change in assumptions	0	0	0
d. Total other changes	$ (19,831)	$ 19,831	$ 0
10. Fund balance at market value at June 30, 2008 *(1. + 5. + 8. + 9.d.)*	**$ 231,785**	**$ 357,594**	**$ 589,378**

Plan Assets

Actuarial Asset Value *(Dollars in Thousands)*

				June 30, 2008
1. Market value of assets available for benefits			$	589,379
2. Determination of average balance				
a. Non-MPRIF assets available at July 1, 2007				249,447
b. Non-MPRIF assets available at June 30, 2008 (before MPRIF mortality adjustment)				227,549
c. Net investment income for fiscal year ending June 30, 2008				(11,538)
d. Average balance *[a. + b. – c.] / 2*				244,267
3. Expected return *[8.5% * 2.d.]*				20,763
4. Actual return				(11,538)
5. Current year unrecognized asset return				(32,301)
6. Unrecognized asset returns				
	Original Amount	**% Not Recognized**		
a. Year ended June 30, 2008	$ (32,301)	80%	$	(25,841)
b. Year ended June 30, 2007	24,934	60%		14,961
c. Year ended June 30, 2006	10,480	40%		4,192
d. Year ended June 30, 2005	4,925	20%		985
e. Total unrecognized return			$	(5,703)
7. Actuarial value at June 30, 2008 *(1. – 6.e.)*			**$**	**595,082**

Membership Data

Distribution of Active Participants

	Years of Service as of June 30, 2008									
Age	**0- 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 – 24**	**25 - 29**	**30 - 34**	**35 - 39**	**40+**	**Total**
Under 20										**0**
Avg. Earnings										
20 – 24	8									**8**
Avg. Earnings	41,082									**41,082**
25 – 29	52	10								**62**
Avg. Earnings	54,372	67,528								**56,494**
30 – 34	65	57	15							**137**
Avg. Earnings	59,560	69,692	76,863							**65,670**
35 – 39	49	60	53	3						**165**
Avg. Earnings	60,394	71,101	72,618	71,567						**68,417**
40 – 44	11	35	42	46	15					**149**
Avg. Earnings	57,725	70,886	73,291	78,001	78,698					**73,575**
45 – 49	16	15	31	32	54	20	1			**169**
Avg. Earnings	64,248	77,027	72,242	76,383	80,915	84,071	109,122			**77,083**
50 – 54	11	7	9	14	31	57	4			**133**
Avg. Earnings	55,191	79,573	77,839	80,336	81,526	82,928	84,042			**79,547**
55 – 59	2	1		2		6	3			**14**
Avg. Earnings	61,525	72,099		87,305		81,917	81,295			**79,939**
60 – 64		1	1	1						**3**
Avg. Earnings		79,401	81,524	76,785						**79,237**
65+										**0**
Avg. Earnings										
Total	**214**	**186**	**151**	**98**	**100**	**83**	**8**	**0**	**0**	**840**
Avg. Earnings	**57,850**	**71,284**	**73,520**	**77,787**	**80,772**	**83,131**	**86,147**			**71,463**

Membership Data

Distribution of Service Retirements

	Years Retired as of June 30, 2008							
Age	**<1**	**1 – 4**	**5 – 9**	**10 – 14**	**15 – 19**	**20 – 24**	**25+**	**Total**
<50								**0**
Avg. Benefit								
50 – 54	9	21						**30**
Avg. Benefit	36,258	43,671						**41,447**
55 – 59	26	72	28					**126**
Avg. Benefit	45,652	47,947	43,399					**46,463**
60 – 64	1	16	126	10				**153**
Avg. Benefit	35,690	48,431	52,905	48,500				**52,036**
65 – 69		3	31	84	2			**120**
Avg. Benefit		53,033	55,754	58,935	54,794			**57,897**
70 – 74			4	16	54			**74**
Avg. Benefit			51,829	66,925	61,841			**62,399**
75 – 79			1		19	51		**71**
Avg. Benefit			67,498		62,909	60,990		**61,595**
80 – 84				2		25	21	**48**
Avg. Benefit				59,769		61,915	54,342	**58,513**
85 – 90					1	7	20	**28**
Avg. Benefit					58,518	57,097	53,668	**54,698**
90+								
Avg. Benefit							10	**10**
							44,958	**44,958**
Total	**36**	**112**	**190**	**112**	**76**	**83**	**51**	**660**
Avg. Benefit	**43,027**	**47,351**	**52,023**	**59,160**	**61,878**	**60,940**	**52,238**	**54,223**

Membership Data

Distribution of Survivors

	Years Since Retirement as of June 30, 2008							
Age	**<1**	**1 – 4**	**5 – 9**	**10 – 14**	**15 – 19**	**20 – 24**	**25+**	**Total**
<50		7	8	4				**19**
Avg. Benefit		14,971	12,209	19,714				**14,806**
50 – 54		4	2	1				**7**
Avg. Benefit		29,719	24,465	36,530				**29,191**
55 – 59	1	8	2	2			1	**14**
Avg. Benefit	14,890	19,623	14,683	45,876			11,297	**21,735**
60 – 64	1	7	6	3	1			**18**
Avg. Benefit	63,678	19,368	43,899	24,647	28,943			**31,418**
65 – 69		7	4	4	1			**16**
Avg. Benefit		40,532	29,605	38,205	14,418			**35,587**
70 – 74		1	5	1	4	1		**12**
Avg. Benefit		15,417	35,154	30,733	16,898	36,668		**27,181**
75 – 79	3	9	8	1	5		9	**35**
Avg. Benefit	30,640	36,502	36,009	29,496	28,009		30,290	**32,876**
80 – 84	2	6	10	2	4	1	6	**31**
Avg. Benefit	32,449	44,073	32,533	38,447	23,912	52,055	48,487	**37,748**
85 – 90	4	5	3	1	6	1	8	**28**
Avg. Benefit	23,022	28,962	21,056	17,220	23,592	40,336	25,232	**25,037**
90+		2	2	3	2		5	**14**
Avg. Benefit		10,548	25,797	25,521	49,540		25,564	**26,868**
Total	**11**	**56**	**50**	**22**	**23**	**3**	**29**	**194**
Avg. Benefit	**29,770**	**28,111**	**29,234**	**30,218**	**25,534**	**43,020**	**31,190**	**29,119**

Membership Data

Distribution of Disability Retirements

	Years Disabled as of June 30, 2008							
Age	<1	1 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25+	Total
<50	2	4	1					**7**
Avg. Benefit	33,181	44,367	27,357					**38,741**
50 – 54		3	2	2				**7**
Avg. Benefit		33,282	31,043	19,268				**28,638**
55 – 59		2	4	2	1			**9**
Avg. Benefit		54,299	30,180	48,873	38,174			**40,582**
60 – 64		2	5	2	1			**10**
Avg. Benefit		43,052	30,845	56,296	46,727			**39,965**
65 – 69					1	1	1	**3**
Avg. Benefit					22,285	40,856	39,006	**34,049**
70 – 74					2			**2**
Avg. Benefit					56,432			**56,432**
75 – 79							2	**2**
Avg. Benefit							40,839	**40,839**
80 – 84							1	**1**
Avg. Benefit							46,057	**46,057**
85 – 90							1	**1**
Avg. Benefit							25,876	**25,876**
90+								
Avg. Benefit								
Total	**2**	**11**	**12**	**6**	**5**	**1**	**5**	**42**
Avg. Benefit	**33,181**	**42,910**	**30,366**	**41,479**	**44,010**	**40,856**	**38,523**	**38,218**

Membership Data

Reconciliation of Members*

		Terminated		Recipients			
	Actives	Deferred Retirement	Other Non-vested	Service Retirements	Disability Retirements	Survivors	Total
Members on 7/1/2007	**844**	**32**	**8**	**645**	**41**	**190**	**1,760**
New entrants	37	0	0	0	0	0	**37**
Return to active	0	0	0	0	0	0	**0**
Terminated non-vested	(1)	0	1	0	0	0	**0**
Service retirements	(34)	(1)	0	36	0	0	**1**
Terminated deferred	(4)	1	0	0	0	0	**(3)**
Terminated refund	(1)	(1)	(1)	0	0	0	**(3)**
Deaths	0	0	0	(20)	(1)	(7)	**(28)**
New beneficiary	0	0	0	0	0	11	**11**
Disabled	(1)	(1)	0	0	2	0	**0**
Data correction	0	5	(1)	(1)	0	0	**3**
Net change	(4)	3	(1)	15	1	4	**18**
Members on 6/30/2008	**840**	**35**	**7**	**660**	**42**	**194**	**1,778**

* *Provided by Minnesota State Retirement System and checked for reasonableness.*

Development of Costs

Actuarial Valuation Balance Sheet *(Dollars in Thousands)*

The actuarial balance sheet is based on the fundamental equation that at any given time the present value of benefits to be paid in the future must be equal to the assets on hand plus the present value of future contributions to be received. The total rate of contribution is determined as that amount which will make the total present and potential assets balance with the total present value of future benefits. The members' rate of contribution is fixed at the current schedule of compensation. The employer's rate of contribution is the balance required to cover the total rate of contribution.

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

		June 30, 2008
A. Actuarial Value of Assets		$ 595,082
B. Expected future assets		
1. Present value of fund's future statutory supplemental contributions		$ 0
2. Present value of fund's future normal cost contributions		154,004
3. Total expected future assets *(1. + 2.)*		$ 154,004
C. Total current and expected future assets		$ 749,086

	Non-Vested	Vested	Total
D. Current benefit obligations			
1. Benefit recipients			
a. Service retirements	$ 0	$ 379,987	$ 379,987
b. Disability	0	16,329	16,329
c. Survivors	0	49,611	49,611
2. Deferred retirements with augmentation	0	5,590	5,590
3. Former members without vested rights	0	15	15
4. Active Members	2,195	226,295	228,490
5. Total Current Benefit Obligations	$ 2,195	$ 677,827	$ 680,022
E. Expected Future Benefit Obligations			$ 167,668
F. Total Current and Expected Future Benefit Obligations			$ 847,690
G. Unfunded Current Benefit Obligations *(D.5. − A.)*			$ 84,940
H. Unfunded Current and Future Benefit Obligations *(F. − C.)*			$ 98,604

Development of Costs

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

	Actuarial Present Value of Projected Benefits	Actuarial Present Value of Future Normal Costs	Actuarial Accrued Liability
A. Determination of Actuarial Accrued Liability (AAL)			
1. Active Members			
a. Retirement annuities	$ 359,344	$ 131,168	$ 228,176
b. Disability benefits	22,663	12,921	9,742
c. Survivor's benefits	9,856	6,332	3,524
d. Deferred retirements	4,228	3,058	1,170
e. Refunds	67	525	(458)
f. Total	$ 396,158	$ 154,004	$ 242,154
2. Deferred retirements with future augmentation	5,590	0	5,590
3. Former members without vested rights	15	0	15
4. Annuitants in MPRIF	445,217	0	445,217
5. Recipients not in MPRIF	710	0	710
6. Total	$ 847,690	$ 154,004	$ 693,686
B. Determination of Unfunded Actuarial Accrued Liability (UAAL)			
1. Actuarial accrued liability			$ 693,686
2. Current assets (AVA)			595,082
3. Unfunded actuarial accrued liability			$ 98,604
C. Determination of Supplemental Contribution Rate			
1. Present value of future payrolls through the amortization date of July 1, 2036			$ 1,077,136
2. Supplemental contribution rate *(B.3. / C.1.)*			9.17%

Development of Costs

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

		Year Ending June 30, 2008
A. Unfunded actuarial accrued liability at beginning of year	$	55,543
B. Changes due to interest requirements and current rate of funding		
1. Normal cost and administrative expenses	$	15,328
2. Contributions		(13,874)
3. Interest on A., B.1. and B.2.		4,783
4. Total *(B.1. + B.2. + B.3.)*	$	6,237
C. Expected unfunded actuarial accrued liability at end of year *(A. + B.4.)*	$	61,780
D. Increase (decrease) due to actuarial losses (gains) because of experience deviations from expected		
1. Salary increases	$	(4,294)
2. Investment return		45,173
3. MPRIF Mortality		(4,236)
4. Mortality of other benefit recipients		0
5. Other items		181
6. Total	$	36,824
E. Unfunded actuarial accrued liability at end of year before plan amendments and changes in actuarial assumptions *(C. + D.6.)*	$	98,604
F. Change in unfunded actuarial accrued liability due to changes in plan provisions	$	0
G. Change in unfunded actuarial accrued liability due to changes in actuarial assumptions	$	0
H. Unfunded actuarial accrued liability at end of year *(E. + F. + G.)*	$	98,604

Development of Costs

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

	July 1, 2008		
	Percent of Payroll		**Dollar Amount**
A. Statutory contributions – Chapter 352B			
1. Employee contributions	9.80%	$	6,250
2. Employer contributions	14.60%		9,310
3. Total	24.40%	$	15,560
B. Required contributions – Chapter 356			
1. Normal cost			
a. Retirement benefits	21.37%	$	13,628
b. Disability benefits	2.16%		1,379
c. Survivors	1.06%		679 ~~379~~
d. Deferred retirement benefits	0.48%		304
e. Refunds	0.08%		51
f. Total	25.15%	$	16,041
2. Supplemental contribution amortization by July 1, 2036 of Unfunded Actuarial Accrued Liability			
a. Due to unfunded MPRIF liability	8.13%	$	5,184
b. Due to unfunded Non-MPRIF liability	1.03%		654
c. Total	9.16%	$	5,838
3. Allowance for expenses	0.18%	$	115
4. Total	34.49%	$	21,994
C. Contribution Sufficiency/(Deficiency) *(A.3. – B.4.)*	(10.09%)	$	(6,434)

Note: Projected annual payroll for fiscal year beginning on the valuation date: $63,771.

Actuarial Basis

Actuarial Cost Method

Liabilities and contributions in this report are computed using the Individual Entry Age Normal Cost Method. This method is prescribed by Minnesota Statutes.

The objective under this method is to fund each participants' benefits under the Plan as payments which are level as a percentage of salary, starting at original participation date (or employment date), and continuing until the assumed retirement termination, disability or death.

At the time the funding method is introduced, there will be a liability which represents the contributions which would have been accumulated if this method of funding had always been used. The difference between this liability and the assets (if any) which are held in the fund is the unfunded liability which is typically funded over a chosen period in accordance with the amortization schedule.

A detailed description of the calculation follows:

The normal costs for each active participant under the assumed retirement age is determined by applying to earnings the level percentage of salary which, if contributed each year from date of entry into the Plan until the assumed retirement (termination, disability or death) date, is sufficient to provide the full value of the benefits expected to be payable.

- The present value of present value of future normal costs is the total of the discounted values of all active participants' normal cost, assuming these to be paid in each case from the valuation date until retirement (termination, disability or death) date.

- The present value of projected benefits is calculated as the value of all benefit payments expected to be paid to the Plan's current participants, including active and retired members, beneficiaries, and terminated members with vested rights.

- The accrued liability is the excess of the present value of projected benefits over the present value of future normal cost.

- The unfunded liability is the excess of the accrued liability over the assets of the fund, and represents that part of the accrued liability which has not been funded by accumulated past contributions.

Actuarial Basis

Asset Valuation Method

MPRIF Reserve: Market Value

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

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

Payment on the Unfunded Actuarial Accrued Liability

A level percentage of payroll each year to the statutory amortization date of July 1, 2036 assuming payroll increases of 4.50% per annum (5.00% last year). If there is a negative Unfunded Actuarial Accrued Liability, the surplus amount shall be amortized over 30 years as a level percentage of payroll.

Actuarial Basis

Summary of Actuarial Assumptions

The following assumptions were used in valuing the liabilities and benefits under the plan.

Investment return:	6.0% compounded annually post-retirement. 8.5% compounded annually pre-retirement.
Benefit increases after retirement	Payment of benefit increase after retirement accounted for by using a 6.0% post-retirement assumption.
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 new members.
Mortality rates	
Healthy Pre-retirement	1983 Group Annuity Mortality for males set back five years 1983 Group Annuity Mortality for females set back two years
Healthy Post-retirement	1983 Group Annuity Mortality for males set back two years 1983 Group Annuity Mortality for females set back one year
Disabled	Combined Annuity Mortality
Retirement	Age related table as follows: Ages: 50-54 7.0% 55 60.0% 56 40.0% 57-59 20.0% 60 & over 100.0%
Withdrawal	Select and ultimate rates are based on plan experience. Ultimate rates after the third year are shown in the rate table. Select rates are 2.5% for the first three years of employment.
Disability	Rates adopted by MSRS as shown in rate table.
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 expenses expressed as percentage of prior year payroll.
Return 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.
Percentage married	100% of members are assumed to be married.
Age of spouse	Female members are assumed to be three years younger than males.
Eligible children	Each member is assumed to have two children whose ages are dependent upon the member's age. First child is assumed to be born at member's age 28 and second child is born at member's age 31.

Actuarial Basis

Summary of Actuarial Assumptions *(continued)*

Form of payment	Married members are assumed to elect subsidized joint and survivor form of annuity as follows: Males: 25.0% elect 50% J&S option 25.0% elect 100% J&S option Females: 5.0% elect 50% J&S option 5.0% elect 100% J&S option
Changes in actuarial assumptions	The following changes in assumptions were recognized as of July 1, 2008: ▪ Change payroll growth assumption from 5.0% to 4.5%.

Actuarial Basis

Summary of Actuarial Assumptions *(continued)*

Summary of Rates

	Rate (%)					
	Pre-Retirement Mortality		Ultimate Withdrawal	Disability	Salary Increase
Age	Male	Female			
20	0.03%	0.02%	1.47%	0.04%	7.75%
25	0.04	0.02	1.13	0.06	7.00
30	0.05	0.03	0.80	0.08	7.00
35	0.06	0.04	0.47	0.11	7.00
40	0.09	0.06	0.40	0.18	6.50
45	0.12	0.08	0.40	0.29	5.75
50	0.22	0.14	0.00	0.50	5.50
55	0.39	0.21	0.00	0.88	5.25
60	0.61	0.34	0.00	1.41	5.25
65	0.92	0.58	0.00	0.00	5.25
70	1.56	0.97	0.00	0.00	5.25

Actuarial Basis

Summary of Plan Provisions

This summary of provisions reflects the interpretation of applicable Statutes for purposes of preparing this valuation. This interpretation is not intended to create or rescind any benefit rights in conflict with any Minnesota Statutes.

Plan year	July 1 through June 30		
Eligibility	State troopers, conservation officers and certain crime bureau officers.		
Contributions	Shown as a percent of salary:		
	Date of Increase	**Employee**	**Employer**
	Current	9.80%	14.60%
	July 1, 2009	10.40%	15.60%
Allowable service	Service during which member contributions were deducted. Includes period receiving temporary Worker's Compensation.		
Salary	Salaries excluding lump sum payments at separation.		
Average salary	Average of the five highest successive years of Salary. Average Salary is based on all Allowable Service if less than five years.		
Retirement			
Normal retirement benefit			
Age/service requirements	Age 55 and three years of Allowable Service.		
Amount	3.00% of Average Salary for each year of Allowable Service.		
Early retirement benefit			
Age/service requirements	Age 50 and three years 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.		
Form of payment	Life annuity. Actuarially equivalent options are: 50% or 100% Joint and Survivor with bounce back feature without additional reduction.		
Benefit increases	The inflation-based benefit increase provided by the Minnesota Post Retirement Investment Fund (Post Fund) to benefit recipients is equal to 100 percent of CPI-W, but not to exceed 2.5 percent. An additional benefit increase may be provided to any individuals who have lost purchasing power compared to the value of the benefit they initially received when their benefit first commenced. This additional benefit increase can only be paid if the Post Fund composite funding ratio is at least 90 percent, if the rate of return earned on Post Fund assets exceeds 8.5 percent for the year, and if the inflation rate certified for the year is less than 2.5 percent. If the Post Fund has a funding ratio of 100 percent or more, an additional inflation component will be paid if CPI-W inflation exceeds 2.5 percent. An overall cap of 5.0 percent annually on benefit recipient adjustments is effective June 30, 2010.		

Actuarial Basis

Summary of Plan Provisions *(continued)*

Retirement *(continued)*	
Benefit increases (continued)	A benefit recipient who has been receiving a benefit for at least 12 full months as of June 30 will receive a full increase. Members receiving benefits for at least one full month but less than 12 full months will receive a pro rata increase. For members retired under laws in effect before June 1, 1973 receive an additional 6.00% supplement through July 1, 1994. For each of those years, the supplement increases by 6.00% of the total annuity, which includes both MPRIF and supplemental amounts. Thereafter, regular MPRIF increases apply. Members retired under laws in effect before June 1, 1973 receive an additional lump sum payment each year. In 1989, this lump sum payment was \$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 will increase by the same percentage increase that is applied to regular annuities paid from MPRIF. Effective January 1, 2002 annual lump sum payment is divided by 12 and paid as a monthly life annuity in the annuity form elected.
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. If a member became disabled prior to July 1, 1997 but was not eligible to commence their benefit 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%.

Actuarial Basis

Summary of Plan Provisions *(continued)*

Disability *(continued)*	
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. If a member became disabled prior to July 1, 1997 but was not eligible to commence their benefit 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.
Benefit increases	Adjusted by MSRS to provide same increase as MPRIF.
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.
Death	
Surviving spouse benefit	
Age/service requirement	Member who is active or receiving a disability benefit.
Amount	50% of Annual Salary if member was active or occupational disability and either had less than three years of Allowable Service or was under age 55. Annuity if 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 of Allowable Service. A spouse who had been receiving the 50% benefit shall be entitled to the greater benefit. If a member became deceased prior to July 1, 1997 and the beneficiary was not eligible to commence the survivor benefit 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	Adjusted by MSRS to provide same increase as MPRIF.

Actuarial Basis

Summary of Plan Provisions *(continued)*

***Death** (continued)*	
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. If a member became deceased prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefit 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%.
Refund of contributions	
Age/service requirement	Member dies before receiving any retirement benefits and survivor benefits are not payable.
Amount	The member's contributions with 5.00% interest if death occurred before May 16, 1989 and 6.00% interest if death occurred on or after May 16, 1989.
Termination	
Refund of contributions	
Age/service requirement	Termination of state service.
Amount	Member's contributions with 5.00% interest compounded annually if termination occurred before May 16, 1989 and 6.00% interest if termination occurred on or after May 16, 1989.
Deferred benefit	
Age/service requirement	Three years of Allowable Service.
Amount	Benefit computed under law in effect at termination and increased by the following annual percentage: (1.) 0.00% before July 1, 1971; (2.) 5.00% from July 1, 1971 to January 1, 1981; and (3.) 3.00% thereafter until the annuity begins (2.5% if hired after June 30, 2006). Amount is payable as a normal 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%.

Actuarial Basis

Summary of Plan Provisions *(continued)*

Changes in Plan Provisions	Revised Minnesota Post Retirement Investment Fund Benefit Increase The inflation-based benefit increase provided by the Minnesota Post Retirement Investment Fund (Post Fund) to benefit recipients is equal to 100 percent of CPI-W, but not to exceed 2.5 percent. An additional benefit increase may be provided to any individuals who have lost purchasing power compared to the value of the benefit they initially received when their benefit first commenced. This additional benefit increase can only be paid if the Post Fund composite funding ratio is at least 90 percent, if the rate of return earned on Post Fund assets exceeds 8.5 percent for the year, and if the inflation rate certified for the year is less than 2.5 percent. If the Post Fund has a funding ratio of 100 percent or more, an additional inflation component will be paid when CPI-W inflation exceeds 2.5 percent. An overall cap of 5.0 percent annually on benefit recipient adjustments is effective June 30, 2010. Potential Dissolution of Minnesota Post Fund If the Post Fund composite funding ratio is less than 80 percent in any one year, or less than 85 percent in two consecutive years, the Post Fund must be dissolved, and assets will be transferred back to the applicable plan and be merged with the active member assets for that plan. If the Post Fund is dissolved, not withstanding any other law, the benefit recipients will receive an annual 2.5 percent increase in lieu of any other benefit increase. By November 30 following the dissolution of the Post Fund, the executive directors of the applicable plans must propose legislation needed to revise statutes to conform to the dissolved Post Fund.

Plan Accounting Under GASB 25 (as amended by GASB 50)

Provided below is information required under GASB Statement No. 25 as amended by GASB Statement No. 50 – Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans as amended by GASB Statement No. 50.

Schedule of Funding Progress *(Dollars in Thousands)**

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded (Overfunded) AAL (UAAL) (b) – (a)	Funded Ratio (a)/(b)	Actual Covered Payroll (Previous FY) (c)	UAAL as a Percentage of Covered Payroll (b) – (a) / (c)
07/01/1991	$ 200,068	$ 224,033	$ 23,965	89.30%	$ 32,365	74.05%
07/01/1992	222,314	233,656	11,342	95.15%	32,882	34.49%
07/01/1993	244,352	258,202	13,850	94.64%	35,765	38.73%
07/01/1994	262,570	275,377	12,807	95.35%	35,341	36.24%
07/01/1995	284,918	283,078	(1,840)	100.65%	37,518	(4.90%)
07/01/1996	323,868	303,941	(19,927)	106.56%	41,476	(48.04%)
07/01/1997	375,650	332,427	(43,223)	113.00%	41,996	(102.92%)
07/01/1998	430,011	371,369	(58,642)	115.79%	43,456	(134.95%)
07/01/1999	472,687	406,215	(66,472)	116.36%	45,333	(146.63%)
07/01/2000	528,573	458,384	(70,189)	115.31%	48,167	(145.72%)
07/01/2001	572,815	489,483	(83,332)	117.02%	48,935	(170.29%)
07/01/2002	591,383	510,344	(81,039)	115.88%	49,278	(164.45%)
07/01/2003	591,521	538,980	(52,541)	109.75%	54,175	(96.98%)
07/01/2004	594,785	545,244	(49,542)	109.09%	51,619	(95.98%)
07/01/2005	601,220	566,764	(34,456)	106.08%	55,142	(62.49%)
07/01/2006	618,990	641,479	22,489	96.49%	57,765	38.93%
07/01/2007	617,901	673,444	55,543	91.75%	61,498	90.32%
07/01/2008	595,082	693,686	98,604	85.79%	60,029	164.26%

* *2007 and earlier provided by The Segal Company.*

Plan Accounting Under GASB 25 (as amended by GASB 50)

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

The GASB Statement No. 25 (as amended by GASB 50) required and actual contributions are as follows:

Plan Year Ended June 30	Actuarially Required Contribution Rate (a)	Actual Covered Payroll (b)	Actual Member Contributions (c)	Annual Required Contributions [(a)x(b)] – (c)	Actual Employer Contributions[1]	Percentage Contributed
1991	22.15%	$ 32,365	$ 2,751	$ 4,418	$ 4,825	109.21%
1992	22.58%	32,882	2,795	4,630	4,893	105.68%
1993	22.27%	35,765	3,040	4,925	5,288	107.37%
1994	21.94%	35,341	3,004	4,750	5,159	108.61%
1995	21.79%	37,518	3,189	4,986	5,583	111.97%
1996	21.34%	41,476	3,484	5,367	5,742	106.99%
1997	21.33%	41,996	3,746	5,212	6,151	118.02%
1998	15.67%	43,456	3,634	3,176	5,475	172.39%
1999	14.14%	45,333	3,850	2,560	5,712	223.13%
2000[2]	15.17%	48,167	4,044	3,263	6,069	185.99%
2001[3]	15.48%	48,935	4,145	3,430	6,166	179.77%
2002	14.00%	49,278	4,215	2,684	6,209	231.33%
2003[4]	14.34%	54,175	4,555	3,214	6,826	212.38%
2004	17.81%	51,619	4,493	4,700	6,504	138.39%
2005	18.15%	55,142	4,517	5,491	6,670	121.47%
2006	19.84%	57,765	4,719	6,741	7,055	104.66%
2007[5]	26.69%	61,498	4,987	11,427	7,461	65.30%
2008[6]	29.90%[7]	60,029	5,594	12,355	8,279	67.01%
2009	34.49%					

* *2007 and earlier provided by The Segal Company*

[1] *Includes contributions from other sources (if applicable)*
[2] *Actuarially Required Contributions calculated according to parameters of GASB 25 using a 30-year amortization of the negative unfunded actuarial accrued liability.*
[3] *Actuarially Required Contributions Rate prior to change in Asset Valuation Method is 15.15%.*
[4] *Actuarially Required Contribution Rate prior to change in Actuarial Assumptions is 14.20%.*
[5] *Actuarially Required Contribution Rate prior to change in Actuarial Assumptions is 21.76%.*
[6] *Actuarially Required Contribution Rate prior to change in Asset Valuation Method is 27.02%.*
[7] *Actuarially Required Contribution Rate provided by The Segal Company.*

Glossary

Actuarial Asset Value. The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method. The goal of an asset valuation method is to produce a relatively stable asset value thereby reducing year-to-year volatility in contribution requirements.

Actuarial Cost Method. Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Annual Pension Cost. A measure of the periodic cost of an employer's participation in a defined benefit pension plan.

Annual Required Contributions (ARC). The employer's periodic required contributions to a defined benefit pension plan, calculated in accordance with the parameters of GASB 25 (as amended by GASB 50) or GASB 27.

ASA. Associate of the Society of Actuaries.

Current Benefit Obligations. The present value of benefits earned to the valuation date, based on current service and including future salary increases to retirement.

FSA. Fellow of the Society of Actuaries.

Normal Cost. The annual cost assigned to the current year, under the actuarial cost method in use.

Present Value. Sometimes called "actuarial present value," the current worth (on the valuation date) of an amount or series of amounts payable or receivable in the future. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Statement No. 25 of the Governmental Accounting Standards Board (GASB 25). The accounting standard governing the financial reporting for defined benefit pension plans and note disclosures for defined contribution plans.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27). The accounting standard governing a state or local governmental employer's accounting for pensions.

Statement No. 50 of the Governmental Accounting Standards Board (GASB 50). The accounting standard amending both GASB 25 and GASB 27 to require a schedule of funding progress under the Entry Age Normal method for plans that use the aggregate funding method to determine the Annual Required Contribution.

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