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December 13, 2007

Minnesota Legislative Commission  
On Pensions and Retirement  
55 State Office Building  
St. Paul, Minnesota 55155-1201

Attention: Mr. Lawrence A. Martin

Commission Members:

We have completed the July 1, 2007 actuarial valuations. This report summarizes the results of these actuarial valuations. This report covers commentary on the 2007-2008 funding levels, as well as summaries of significant plan changes and actuarial assumptions used.

I, Thomas Levy, am an actuary for The Segal Company. I am a member of the American Academy of Actuaries and meet the qualification standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

I hope that you will find this summary report informative as a supplement to the more detailed reports for each of the funds.

Respectfully submitted,

Thomas D. Levy, FSA, MAAA, EA  
Senior Vice President and Chief Actuary

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# State of Minnesota

## Summary of 2007 Actuarial Valuations

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### **APPENDICES**

- Appendix A:* Alternative Analysis of Funded Status  
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## **I. 2007-2008 Funding Levels (Tables I-A, I-B, and I-C)**

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We have determined the actuarial funding requirements in accordance with the requirements of Section 356.215, Minnesota Statutes, for each of the Funds covered by those statutes. Each employer contributes to its respective Fund based on statutory requirements set for each individual Fund.

In Table I-A, we provide a detailed comparison of the requirements under Section 356.215 and the statutory employer contribution. This comparison allows an analysis of the Fund's ability to meet its long-term commitments. Table I-B provides a four-year history of the sufficiency determination. The pattern of these results gives a more complete picture of emerging concerns as to the adequacy of statutory requirements.

Another measure of funding adequacy is the ratio of plan assets to the present value of accrued benefits. These ratios are summarized for the last four valuations in Table I-C. Since this is more of a termination measure of adequacy, it is generally considered a less important measure for public plans than the sufficiency determination summarized in Tables I-A and I-B. Nonetheless, it does give a somewhat different and useful perspective when viewed in conjunction with other factors. If proper funding progress is made, these numbers should move toward a ratio of slightly over 100%.

Tables I-A, I-B, and I-C have been prepared based on the applicable Minnesota Statutes and the Actuarial Standards that have been adopted by the Legislative Commission.

Below we comment on our analysis of the actuarial valuations.

### **PERA**

1. The Public Employees plan experienced a significant decline in the deficiency measure, before the change in the Minnesota Post Retirement Investment Fund (MPRIF) asset valuation method, primarily due to the increase in statutory contributions. The deficiency increased slightly after the MPRIF asset valuation method change. This plan continues to show a modest deficiency, as statutory contributions are lower than required contributions. The deficit situation has been handled appropriately for the next few years, as the Coordinated member and employer contribution rates are scheduled to increase through January 2010. Corrective action by the legislature may be needed to deal with this deficit situation in the future.
2. The Police and Fire plan experienced a significant decline in the deficiency measure, before the change in the MPRIF asset valuation method, primarily due to the increase in statutory contributions. The deficiency increased significantly after the MPRIF asset

valuation method change. Statutory contributions are substantially below ongoing normal costs. The deficit situation has been handled for the next few years, as member and employer contribution rates are scheduled to increase through January 2009. Corrective action by the legislature may be needed to deal with this deficit situation in the future.

3. The Local Government Correctional plan is a new plan that was first effective July 1, 1999. The modest sufficiency is due mainly to the relatively low normal cost rate as new employees enter the plan.

### MSRS

4. The General plan experienced no change in deficiency, before the change in the MPRIF asset valuation method, primarily due to the increase in statutory contributions. The deficiency increased significantly after the MPRIF asset valuation method change. Corrective action has been recognized with regard to the deficit situation, as employee and employer contribution rates are scheduled to increase through July 1, 2010.
5. The significant decrease in the deficiency measure before the change in the MPRIF asset valuation method in the Correctional plan was primarily due to the increase in statutory contributions. The deficiency increased significantly after the MPRIF asset valuation method change. Corrective action has been recognized with regard to the deficit situation, as employee and employer contribution rates are scheduled to increase through July 1, 2010.
6. The State Patrol plan experienced a decrease in the deficiency measure before the change in the MPRIF asset valuation method, primarily due to an increase in statutory contributions. The deficiency increased significantly after the MPRIF asset valuation method change. The statutory contributions are no longer sufficient to meet the actuarially required contributions. Corrective action has been recognized with regard to the deficit situation, as employee and employer contribution rates are scheduled to increase through July 1, 2009.
7. The Judges plan experienced an increase in the deficiency measure from last year, before the change in the MPRIF asset valuation method. The deficiency increased significantly after the MPRIF asset valuation method change.
8. The Legislators plan is funded on a terminal funding basis. This funding basis means that the State (as employer) does not pre-fund for benefits earned while service is being performed. Rather, at the time of retirement of one of these participants, the State must fund that portion of the retirement benefit not covered by member contributions.
9. The Elective State Officers plan is handled on a pay-as-you-go basis. This payment basis means there is no accumulated funding (other than Member contributions held by the State's general fund). Actual retirement benefits are paid from the general fund via direct disbursements to the retirees (or beneficiaries). There are no longer any active employees in this plan.

## TEACHERS

10. The Minnesota TRA fund became sufficient before the MPRIF asset valuation method change, then returned to a significant deficiency after the MPRIF asset valuation method change. Corrective action has been recognized as member and employer contribution rates have increased and are scheduled to increase in the future. Statutory contributions are no longer sufficient to meet the actuarially required contributions.
11. The Duluth Teachers plan showed an increase in funding ratios and funding status. Recognition of deferred asset losses contributed to the decreases in the measures of funded status of the plan.
12. The St. Paul Teachers plan showed an increase in funding ratios and funding status, primarily due to a correction to data reported for benefit service purposes. However, the deficiency measure is expected to decline and is contingent, of course, on the current level of State supplemental contributions. We note that the statutory contributions exceed the ongoing normal costs. Consequently, the deficiency is the result of the plan's unfunded actuarial accrued liability.

## MERF

14. The Minneapolis Employees Retirement Fund had an actuarial asset loss and liability losses in the 2006-2007 year. We note that a significant source of the liability losses continues to come from retirement earlier than anticipated by the current actuarial assumptions and post-retirement mortality. As the active membership of this plan declines, the impact of these sources of liability loss is likely to become greater as a percentage of active payroll. The State's portion of the supplemental contribution was lower than its statutory maximum this year. In addition, required contribution rates for contributing employers increased by approximately 3.4% of pay. The Fund experienced a significant increase in the deficiency measure, primarily due to the change in the Retirement Benefit Fund (RBF) asset valuation method. Before the RBF asset valuation method change, the Fund showed no change in the deficiency measure from 2006.

Plans for which statutory contribution increases should be considered are Minnesota TRA, Duluth Teachers, St. Paul Teachers, MSRS General, MSRS Correctional, MSRS State Patrol, MSRS Judges, PERA, PERA Police and Fire and MERF.

**TABLE I-A: 2007-2008 FUNDING LEVELS (PERCENTAGES)**

**Section 356.215 Requirements**

<b>Fund</b>	<b>Normal Cost</b>	<b>Supplemental Cost</b>	<b>Expense</b>	<b>Total</b>
Public Employees (Chapter 353)*	7.78%	5.35%	0.19%	13.32%
Police and Fire (Chapter 353)*	22.19%	6.19%	0.10%	28.48%
Local Correctional (Chapter 353E)*	12.09%	0.14%	0.13%	12.36%
General (Chapter 352)*	8.40%	3.13%	0.23%	11.76%
State Patrol (Chapter 352B)*	24.75%	4.96%	0.19%	29.90%
Correctional (Chapter 352)*	17.68%	6.54%	0.22%	24.44%
Judges (Chapter 490)*	18.03%	15.53%	0.14%	33.70%
Teachers (Chapter 354)*	9.37%	3.78%	0.29%	13.44%
Duluth Teachers (Chapter 354A)	9.23%	4.51%	0.79%	14.53%
St. Paul Teachers (Chapter 354A)	9.05%	14.75%	0.30%	24.10%
Minneapolis Employees (Chapter 422A)*	17.88%	163.78%	5.67%	187.33%

**Statutory Requirements**

<b>Fund</b>	<b>Employee</b>	<b>Employer</b>	<b>Total</b>	<b>Sufficiency/ (Deficiency)</b>
Public Employees (Chapter 353)*	5.88%	6.38%	12.26%	- 1.06%
Police and Fire (Chapter 353)*	8.20%	12.30%	20.50%	- 7.98%
Local Correctional (Chapter 353E)*	5.83%	8.75%	14.58%	2.22%
General (Chapter 352)*	4.25%	4.25%	8.50%	- 3.26%
State Patrol (Chapter 352B)*	9.10%	13.60%	22.70%	-7.20%
Correctional (Chapter 352)*	6.40%	9.10%	15.50%	- 8.94%
Judges (Chapter 490)*	8.00%**	20.50%	28.07%	- 5.63%
Teachers (Chapter 354)*	5.51%	6.28%	11.79%	-1.65%
Duluth Teachers (Chapter 354A)	5.50%	5.79%	11.29%	- 3.24%
St. Paul Teachers (Chapter 354A)	5.64%	10.43%	16.07%	- 8.03%
Minneapolis Employees (Chapter 422A)*	9.75%	98.94%	108.69%	-78.64%

\* Results are shown after the MPRIF (RBF for MERF) asset valuation method change

\*\* Percent of participating employee payroll

**TABLE I-B: PATTERN OF SUFFICIENCY/DEFICIENCY: 2004-2007****Actuarial Requirements**

<b>Fund</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
Public Employees*	12.24%	12.74%	12.90%	13.32%
Police and Fire*	22.05%	24.24%	25.57%	28.48%
Local Correctional*	13.00%	13.05%	12.68%	12.36%
General*	9.33%	10.55%	10.11%	11.76%
State Patrol*	18.15%	19.84%	26.69%	29.90%
Correctional*	17.48%	17.71%	23.34%	24.44%
Judges*	29.42%	29.14%	30.73%	33.70%
Teachers*	8.46%	9.05%	12.11%	13.44%
Duluth Teachers	12.11%	14.16%	15.19%	14.53%
St. Paul Teachers	21.59%	23.78%	25.03%	24.10%
Minneapolis Teachers**	38.11%	46.29%	N/A	N/A
Minneapolis Employees*	63.92%	75.07%	95.33%	187.33%

**Statutory Requirements**

<b>Fund</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
Public Employees*	10.64%	11.07%	11.76%	12.26%
Police and Fire*	15.50%	16.50%	18.50%	20.50%
Local Correctional*	14.58%	14.58%	14.58%	14.58%
General*	8.00%	8.00%	8.00%	8.50%
State Patrol*	21.00%	21.00%	21.00%	22.70%
Correctional*	13.67%	13.67%	13.67%	15.50%
Judges*	28.04%	28.17%	28.09%	28.07%
Teachers*	10.00%	10.00%	11.31%	11.79%
Duluth Teachers	11.29%	11.29%	11.29%	11.29%
St. Paul Teachers	16.62%	16.49%	16.33%	16.07%
Minneapolis Teachers**	22.87%	22.99%	N/A	N/A
Minneapolis Employees*	63.91%	75.07%	95.32%	108.69%

**Sufficiency/(Deficiency)**

<b>Fund</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
Public Employees*	- 1.60%	- 1.67%	-1.14%	-1.06%
Police and Fire*	- 6.55%	- 7.74%	-7.07%	-7.98%
Local Correctional*	1.58%	1.53%	1.90%	2.22%
General*	- 1.33%	- 2.55%	-2.11%	-3.26%
State Patrol*	2.85%	1.16%	-5.69%	-7.20%
Correctional*	- 3.81%	- 4.04%	-9.67%	-8.94%
Judges*	- 1.38%	- 0.97%	-2.64%	-5.63%
Teachers*	1.54%	0.95%	-0.80%	-1.65%
Duluth Teachers	- 0.82%	- 2.87%	-3.90%	-3.24%
St. Paul Teachers	-4.97%	-7.29%	-8.70%	-8.03%
Minneapolis Teachers**	- 15.24%	- 23.30%	N/A	N/A
Minneapolis Employees*	- 0.01%	0.00%	-0.01%	-78.64%

\* Results are shown after the MPRIF (RBF for MERF) asset valuation method change

\*\* Effective June 30, 2006, the Minneapolis Teachers' Retirement Fund Association merged into the Teachers Retirement Association Fund.

**TABLE I-C: ACCRUED BENEFIT FUNDING RATIOS: 2004-2007**

**Current Assets**

<b>Fund</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
Public Employees*	\$11,477,960,861	\$11,843,935,692	\$12,495,207,148	\$12,985,324,048
Police and Fire*	\$4,746,834,494	\$4,814,961,076	\$5,017,950,719	\$5,198,921,940
Local Correctional*	\$75,918,151	\$98,155,975	\$125,775,917	\$159,547,801
General*	\$7,884,984,028	\$8,081,736,374	\$8,486,756,016	\$8,904,516,772
State Patrol*	\$594,785,274	\$601,220,181	\$618,990,349	\$617,900,887
Correctional*	\$486,617,032	\$503,573,272	\$535,356,819	\$559,851,700
Judges*	\$138,948,244	\$144,465,380	\$151,850,386	\$153,561,828
Teachers*	\$17,519,909,350	\$17,752,917,313	\$19,035,611,839	\$18,794,389,076
Duluth Teachers	\$276,949,052	\$268,480,821	\$270,925,689	\$288,264,749
St. Paul Teachers	\$898,859,732	\$905,292,514	\$938,919,005	\$1,015,722,034
Minneapolis Teachers**	\$877,763,977	\$783,354,138	N/A	N/A
Minneapolis Employees*	\$1,513,388,863	\$1,489,713,085	\$1,490,280,063	\$1,383,741,762

**Present Value of Accrued Benefit**

<b>Fund</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
Public Employees*	\$13,955,493,543	\$14,857,712,393	\$15,683,352,490	\$16,619,016,580
Police and Fire*	\$4,546,939,738	\$4,801,003,844	\$5,097,120,530	\$5,502,218,179
Local Correctional*	\$77,151,845	\$98,278,594	\$120,717,463	\$147,453,664
General*	\$7,746,988,644	\$8,117,596,957	\$8,438,970,186	\$9,198,263,197
State Patrol*	\$534,169,211	\$555,957,356	\$629,477,444	\$647,476,418
Correctional*	\$482,144,107	\$502,823,402	\$612,358,420	\$668,085,847
Judges*	\$181,571,180	\$182,693,636	\$192,629,556	\$204,108,373
Teachers*	\$16,721,495,421	\$17,184,241,402	\$19,902,652,650	\$20,646,891,165
Duluth Teachers	\$289,460,171	\$298,956,352	\$310,052,477	\$319,973,899
St. Paul Teachers	\$1,200,070,893	\$1,248,867,191	\$1,305,809,497	\$1,345,611,315
Minneapolis Teachers**	\$1,673,999,414	\$1,701,068,129	N/A	N/A
Minneapolis Employees*	\$1,632,666,921	\$1,585,479,769	\$1,611,850,143	\$1,605,336,111

**Accrued Benefit Funding Ratio**

<b>Fund</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
Public Employees*	82.25%	79.72%	79.67%	78.14%
Police and Fire*	104.40%	100.29%	98.45%	94.49%
Local Correctional*	98.40%	99.88%	104.19%	108.20%
General*	101.78%	99.56%	100.57%	96.81%
State Patrol*	111.35%	108.14%	98.33%	95.43%
Correctional*	100.93%	100.15%	87.43%	83.80%
Judges*	76.53%	79.08%	78.83%	75.24%
Teachers*	104.77%	103.31%	95.64%	91.03%
Duluth Teachers	95.68%	89.81%	87.38%	90.09%
St. Paul Teachers	74.90%	72.49%	71.90%	75.48%
Minneapolis Teachers**	52.44%	46.05%	N/A	N/A
Minneapolis Employees*	92.69%	93.96%	92.46%	86.20%

\* Results are shown after the MPRIF (RBF for MERF) asset valuation method change

\*\* Effective June 30, 2006, the Minneapolis Teachers' Retirement Fund Association merged into the Teachers Retirement Association Fund.



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## II. Plan Provisions

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This section of our summary presents a brief summary of those changes made to the statutes since last year's report that had an impact on the actuarial funding. This section is not designed to provide a comprehensive summary of all changes that were made. For a more detailed description of the plan provisions, please refer to the individual report for each Fund.

For the July 1, 2007 Actuarial Valuation, we reflected the following changes:

*Public Employees (Chapter 353):* None.

*Police and Fire (Chapter 353):* Change in amount of duty disability benefit; Change in amount of regular disability benefit; Total and Permanent level and amount of benefits are defined; Automatic survivor benefits are available if the person is deemed to be totally and permanently duty disabled; Death in-the-line-of-duty surviving spouse benefits increased; Eligibility for non-duty death surviving spouse benefits changed.

*Local Government Correctional Service (Chapter 353E):* None.

*General (Chapter 352):* None.

*State Patrol (Chapter 352B):* None.

*Correctional Employees (Chapter 352):* None.

*Legislators (Chapter 3A):* None.

*Elective State Officers (Chapter 352C):* None.

*Judges (Chapter 490):* None.

*Teachers Retirement Association (Chapter 354):* None.

*Duluth Teachers (Chapter 354A):* None.

*St. Paul Teachers (Chapter 354A):* None.

*Minneapolis Employees (Chapter 422A):* None.

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### **III. Actuarial Assumptions and Methods**

(Tables III-A, III-B and III-C)

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In projecting costs to be incurred by a pension plan in future years, it is necessary to utilize actuarial assumptions relating to the future events that trigger those costs. To provide for all significant events, a wide range of assumptions must be utilized. These assumptions may be classified into three different categories.

Table III-A involves the economic assumptions. These assumptions include assumed investment return, salary increases, social security increases and cost-of-living increases on plan benefits. These assumptions are characterized as economic because they generally tend to be affected by interrelated factors that also affect economic growth.

Table III-B relates to assumptions that affect the expected working lifetime (and retired lifetime) of a member. These assumptions include mortality rates, disability rates and rates of separation due to other causes. Within a particular group classification (such as teachers or police officers), year-to-year mortality and disability rates may be reasonably represented by standard published tables. Separation due to other causes may vary considerably and should be reviewed and monitored on an individual group basis. In particular, where a subsidized benefit exists (such as for early retirement), extra care must be provided with respect to the rate of separation that is assumed to occur (such as the rate of early retirement).

Table III-C relates to miscellaneous assumptions that are needed to accommodate special plan provisions that are not adequately covered in the first two categories. These would include (but are not limited to) items such as assumed family composition, plan expenses, election of specific benefit forms, etc. These assumptions need to be monitored so that they remain consistent with current plan provisions and experience.

In Tables III-A, III-B and III-C, we have prepared a summary of some of the assumptions being used for each plan in all three categories. For a comprehensive review of assumptions being used for a particular plan, please refer to the actuarial valuation report.

In our opinion, the assumptions used for July 1, 2007 valuations are reasonable and in accordance with generally accepted actuarial principles and practices.

#### **Actuarial Methods**

##### **Asset Valuation Method**

Effective with the July 1, 2000 actuarial valuation, Minnesota Statutes require that the asset value used for actuarial purposes spread differences between actual return (measured on a

market-value basis) and expected return on non-MPRIF (non-RBF for MERF) assets over five years. An Asset Valuation Method requirement exists because market values (which include all unrealized gains and losses) are typically volatile and can produce erratic changes in the contribution requirements from year to year.

The calculation of the Actuarial Value of Assets for each fund is determined as:

Market Value of Assets at June 30, 2007; *less*

80% of the current year Unrecognized Asset Return at July 1, 2007 (the difference between actual net return on Market Value of Assets between June 30, 2006 and June 30, 2007 and the asset return expected during that period based on the assumed interest rate employed in the July 1, 2006 Actuarial Valuation); *less*

60% of the current year Unrecognized Asset Return at July 1, 2006 (the difference between actual net return on Market Value of Assets between June 30, 2005 and June 30, 2006 and the asset return expected during that period based on the assumed interest rate employed in the July 1, 2005 Actuarial Valuation); *less*

40% of the current year Unrecognized Asset Return at July 1, 2005 (the difference between actual net return on Market Value of Assets between June 30, 2004 and June 30, 2005 and the asset return expected during that period based on the assumed interest rate employed in the July 1, 2004 Actuarial Valuation); *less*

20% of the current year Unrecognized Asset Return at July 1, 2004 (the difference between actual net return on Market Value of Assets between June 30, 2003 and June 30, 2004 and the asset return expected during that period based on the assumed interest rate employed in the July 1, 2003 Actuarial Valuation).

The term "Actuarial Value of Assets" is used to indicate that the value was determined for use in the actuarial valuations. Minnesota Statutes refer to this value as "Current Assets."

Effective with the July 1, 2007 actuarial valuation, a modification to the asset valuation method is such that assets allocated to the MPRIF (RBF for MERF) must equal Market Value of Assets on the valuation date.

#### **Payment on the Unfunded Actuarial Accrued Liability**

Effective with the July 1, 2000 actuarial valuations, if the Current assets exceed the Actuarial Accrued Liability for any fund, the surplus amount shall be amortized over 30 years as a level percentage of payroll.

**TABLE III-A: JULY 1, 2007ACTUARIAL ASSUMPTIONS – ECONOMIC ASSUMPTIONS**

<b>Fund</b>	<b>Interest Rates Pre-retire/Post-retire</b>	<b>Salary Increase %/ Data Used</b>	<b>Social Security</b>	<b>COLA on Benefits</b>
Public Employees (Chapter 353)	8.5%/6.0%	<sup>(2)</sup> /Prior Year Salary Increased	N/A	2.5% Implied by 6.0% Interest Rate
Police and Fire (Chapter 353)	8.5%/6.0%	<sup>(1)</sup> /Prior Year Salary Increased	N/A	2.5% Implied by 6.0% Interest Rate
Local Government Correctional Service (Chapter 353E)	8.5%/6.0%	<sup>(1)</sup> /Prior Year Salary Increased	Current Law and 6.0% Salary Scale	2.5% Implied by 6.0% Interest Rate
General (Chapter 352)	8.5%/6.0%	<sup>(2)</sup> /Prior Year Salary Increased	N/A	2.5% Implied by 6.0% Interest Rate
State Patrol (Chapter 352B)	8.5%/6.0%	<sup>(1)</sup> /Prior Year Salary Increased	N/A	2.5% Implied by 6.0% Interest Rate
Correctional (Chapter 352)	8.5%/6.0%	<sup>(1)</sup> /Prior Year Salary Increased	Current Law and 6.0% Salary Scale	2.5% Implied by 6.0% Interest Rate
Judges (Chapter 490)	8.5%/6.0%	Statutory Salary, Then 5.0%	N/A	2.5% Implied by 6.0% Interest Rate
Teachers (Chapter 354)	8.5%/6.0%	<sup>(2)</sup> /Prior Year Salary Increased	N/A	2.5% Implied by 6.0% Interest Rate
Duluth Teachers (Chapter 354A)	8.5%/6.5%	<sup>(2)</sup> /Reported Salary Increased	N/A	2.0% Implied by 6.5% Interest Rate
St. Paul Teachers (Chapter 354A)	8.5%/8.5%	<sup>(2)</sup> /Reported Salary Increased	N/A	2.7% Per Annum January 2008 & 2009 2.0% Per Annum thereafter
Minneapolis Employees (Chapter 422A)	6.0%/5.0%	4.0%/Reported Pay Increased 1.98%	N/A	1.0% Implied by 5.0% Interest Rate

(1) Graded rates using a 5.0% base increase plus a merit scale.

(2) Select and ultimate rates using a 5.0% base increase plus a merit scale plus a 10-year select period.

**TABLE III-B: JULY 1, 2007 ACTUARIAL ASSUMPTIONS – DEMOGRAPHICS**

<b>Fund</b>	<b>Pre-retirement Mortality Table (male rates shown)</b>	<b>Disability Table (male rates shown)</b>	<b>Retirement Rates (Coordinated)</b>	<b>Other Separation (male rates shown)</b>
Public Employees (Chapter 353)	1983 GAM Male set back 8 years	Graded: 0.05% @ 35 0.49% @ 55	Graded from age 55 and separate graded rates for Rule of 90	Select and ultimate graded
Police and Fire (Chapter 353)	1983 GAM Male set back 6 years	Graded: 0.19% @ 35 2.03% @ 55	Graded from age 50	Select and ultimate graded
Local Government Correctional Service (Chapter 353E)	1983 GAM Male set back 1 year	Graded: 0.11% @ 35 0.88% @ 55	Graded from age 50	Graded: 6.00% @ 35 1.40% @ 55
General (Chapter 352)	1983 GAM Male set back 5 years	Graded: 0.03% @ 35 0.42% @ 55	Graded from age 55 and separate graded rates for Rule of 90	Select and ultimate graded
State Patrol (Chapter 352B)	1983 GAM Male set back 5 years	Graded: 0.11% @ 35 0.88% @ 55	Graded from age 50	Graded: 0.47% @ 35 0.00% @ 55
Correctional (Chapter 352)	1983 GAM Male set back 5 years	Graded: 0.15% @ 35 1.17% @ 55	Graded from age 50	Select and ultimate graded
Judges (Chapter 490)	1983 GAM Male set back 4 years	Graded: 0.02% @ 35 0.34% @ 55	Graded from age 62	None
Teachers (Chapter 354)	1983 GAM Male set back 12 years	Graded: 0.01% @ 35 0.22% @ 55	Graded from age 55 and separate graded rates for Rule of 90	Select and ultimate graded
Duluth Teachers (Chapter 354A)	1983 GAM Male- set back 10 years	Graded: 0.01% @ 35 0.15% @ 55	Graded from age 55 40% under Rule of 90	Select and ultimate graded
St. Paul Teachers (Chapter 354A)	1983 GAM Male set back 7 years	Graded: 0.03% @ 35 0.24% @ 55	Graded from age 55 and separate graded rates for Rule of 90	Select and ultimate graded
Minneapolis Employees (Chapter 422A)	1986 Projected Exp. Table set back 1 year	Graded: 0.30% @ 35 1.60% @ 55	Age 61	Graded: 1.50% @ 35 1.00% @ 55

**TABLE III-C: JULY 1, 2007 ACTUARIAL ASSUMPTIONS – OTHER**

<b>Fund</b>	<b>Family Composition (Male/Female)</b>	<b>Expenses (Admin. Only)</b>	<b>Bounceback Annuity Election (Male/Female)</b>	<b>Other</b>
Public Employees (Chapter 353)	85%/65% married; no children	Prior year as % of payroll	10%/ 5% for 25% J&S 20%/ 5% for 50% J&S 10%/ 5% for 75% J&S 30%/15% for 100% J&S	0.8%/60% load on liabilities for Members/former Members for Combined Service Annuities
Police and Fire (Chapter 353)	85%/65% married; no children	Prior year as % of payroll	40%/15% for 50% J&S 45%/15% for 100% J&S	0%/30% load on liabilities for Members/former Members for Combined Service Annuities
Local Government Correctional Service (Chapter 353E)	85%/85% married	Prior year as % of payroll	25%/ 5% for 50% J&S 25%/ 5% for 100% J&S	0%/30% load on liabilities for Members/former Members for Combined Service Annuities
General (Chapter 352)	85%/85% married	Prior year as % of payroll	20%/10% for 50% J&S 50%/15% for 100% J&S	1.2%/40% load on liabilities for Members/former Members for Combined Service Annuities
State Patrol (Chapter 352B)	100%/100% married; two children	Prior year as % of payroll	25%/ 5% for 50% J&S 25%/ 5% for 100% J&S	0%/30% load on liabilities for Members/former Members for Combined Service Annuities
Correctional (Chapter 352)	85%/85% married	Prior year as % of payroll	25%/ 5% for 50% J&S 25%/ 5% for 100% J&S	0%/30% load on liabilities for Members/former Members for Combined Service Annuities
Judges (Chapter 490)	Actual data	Prior year as % of payroll	None	No refunds 0%/30% load on liabilities for Members/former Members for Combined Service Annuities

**TABLE III-C: JULY 1, 2007 ACTUARIAL ASSUMPTIONS – OTHER**

<b>Fund</b>	<b>Family Composition (Male/Female)</b>	<b>Expenses (Admin. Only)</b>	<b>Bounceback Annuity Election (Male/Female)</b>	<b>Other</b>
Teachers (Chapter 354)	85%/65% married; no children	Prior year as % of payroll	15%/20% for 50% J&S 25%/10% for 75% J&S 55%/30% for 100% J&S	1.4%/4% load on liabilities for Members/former Members for Combined Service Annuities
Duluth Teachers (Chapter 354A)	80%/80% married	Prior year as % of payroll	35%/25% for 50% J&S 55%/25% for 100% J&S	10%/10% load on liabilities for Members/former Members for Combined Service Annuities
St. Paul Teachers (Chapter 354A)	85%/60% married; two children	Prior year as % of payroll	10%/10% for 50% J&S 45%/10% for 100% J&S	Benefit increase = (5 yr. return – 8.5%) x (1 – contribution deficiency) 7.0%/30% load on liabilities for Members/former Members for Combined Service Annuities
Minneapolis Employees (Chapter 422A)	67%/67% married	Prior year increased by 4% as % of payroll	None	Investment expense amortized to a required date 0.2%/30% load on liabilities for Members/former Members for Combined Service Annuities

**APPENDIX A: ALTERNATIVE ANALYSIS OF FUNDED RATIOS**

**Table A-1**

**June 30, 2007 – Relationship of Current Assets to Market Value of Assets**

	<b>Current *</b> <b>Assets</b>	<b>Market</b> <b>Value</b>	<b>Ratio</b>
<i><u>Plans With Segregated Post-Funds</u></i>			
PERA – General	\$12,985,324,048	\$13,718,459,059	95%
PERA – Police and Fire	\$5,198,921,940	\$5,529,662,776	94%
PERA – Local Correctional	\$159,547,801	\$174,280,940	92%
MSRS – General	\$8,904,516,772	\$9,507,005,127	94%
MSRS – State Patrol	\$617,900,887	\$649,181,278	95%
MSRS – Correctional	\$559,851,700	\$595,057,508	94%
MSRS – Judges	\$153,561,828	\$159,363,300	96%
TRA	\$18,794,389,076	\$19,938,881,872	94%
MERF	\$1,383,741,762	\$1,398,395,188	99%
<i><u>Plans Without Segregated Post-Funds</u></i>			
DTRFA	\$288,264,749	\$318,973,530	90%
StPTRFA	\$1,015,722,034	\$1,156,017,206	88%

\* Actuarial value of assets are shown after the MPRIF (RBF for MERF) asset valuation method change, if applicable.



**APPENDIX A: ALTERNATIVE ANALYSIS OF FUNDED RATIOS**

**Table A-2**

**Deferred Asset Gains and Losses That  
Will Be Recognized as of July 1, 2008**

<u><i>Plans With Segregated Post-Funds</i></u>	
PERA – General	\$259,091,704
PERA – Police and Fire	\$120,018,475
PERA – Local Correctional	\$4,959,611
MSRS – General	\$214,417,289
MSRS – State Patrol	\$11,142,772
MSRS – Correctional	\$12,363,893
MSRS – Judges	\$1,852,304
TRA	\$411,710,097
MERF	\$4,885,418
<u><i>Plans Without Segregated Post-Funds</i></u>	
DTRFA	\$11,076,310
StPTRFA	\$51,943,979

**APPENDIX A: ALTERNATIVE ANALYSIS OF FUNDED RATIOS**

**Table A-3**

**July 1, 2007 – Actuarial Accrued  
Liability Funding Ratios**

	<b>Current Asset Basis</b>	<b>Market Value Basis</b>
<i>Plans With Segregated Post-Funds</i>		
PERA – General	73.34%	77.48%
PERA – Police and Fire	91.70%	97.54%
PERA – Local Correctional	98.38%	107.47%
MSRS – General	92.49%	98.75%
MSRS – State Patrol	91.75%	96.40%
MSRS – Correctional	79.04%	84.01%
MSRS – Judges	71.66%	74.37%
TRA	87.54%	92.87%
MERF	85.90%	86.81%
<i>Plans Without Segregated Post-Funds</i>		
DTRFA	86.77%	98.99%
StPTRFA	73.01%	83.09%

**APPENDIX A: ALTERNATIVE ANALYSIS OF FUNDED RATIOS**

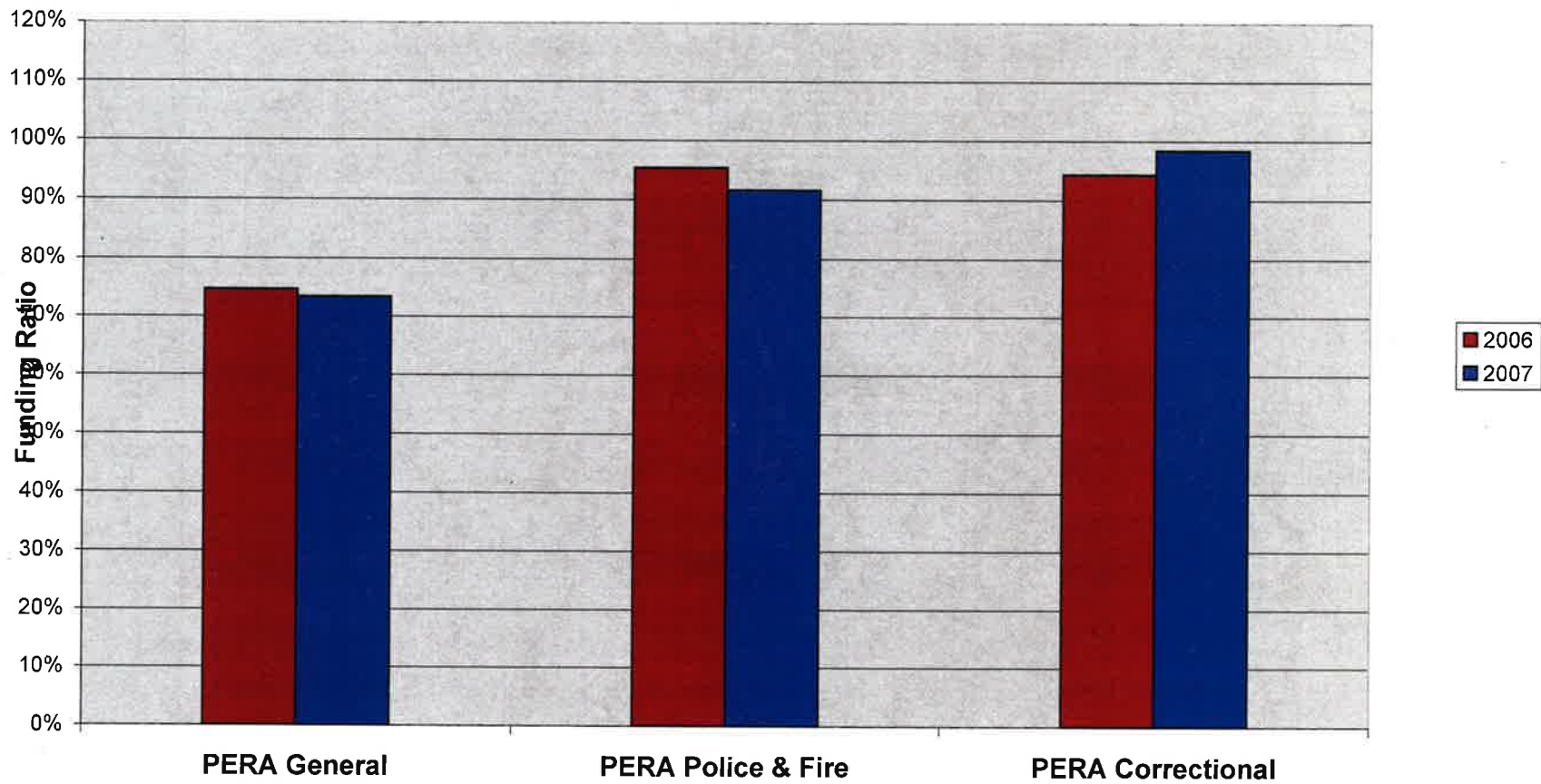
**Table A-4**

**2007-08 Contribution  
Sufficiency/(Deficiency) Measure**

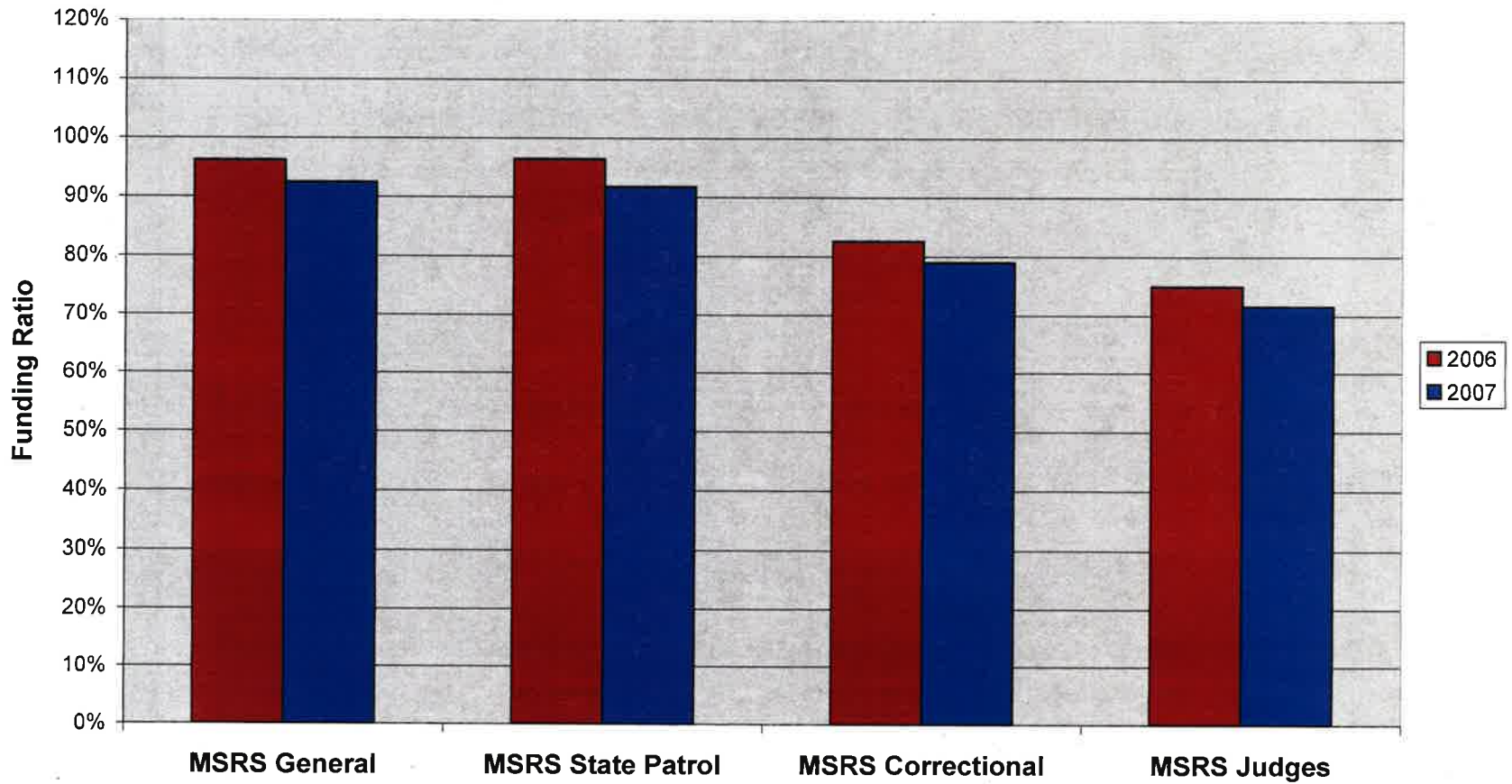
	<b>Current Asset Basis</b>	<b>Market Value Basis</b>
<i><u>Plans With Segregated Post-Funds</u></i>		
PERA – General	- 1.06%	- 0.23%
PERA – Police and Fire	- 7.98%	- 3.64%
PERA – Local Correctional	2.22%	2.75%
MSRS – General	-3.26%	- 0.65%
MSRS – State Patrol	-7.20%	-4.41%
MSRS – Correctional	-8.94%	- 7.39%
MSRS – Judges	-5.63%	- 4.15%
TRA	-1.65%	- 0.03%
MERF	-78.64%	- 68.20%
<i><u>Plans Without Segregated Post-Funds</u></i>		
DTRFA	- 3.24%	0.94%
StPTRFA	- 8.03%	- 2.52%

## **APPENDIX B: SUMMARY CHARTS OF LIABILITY FUNDING RATIOS**

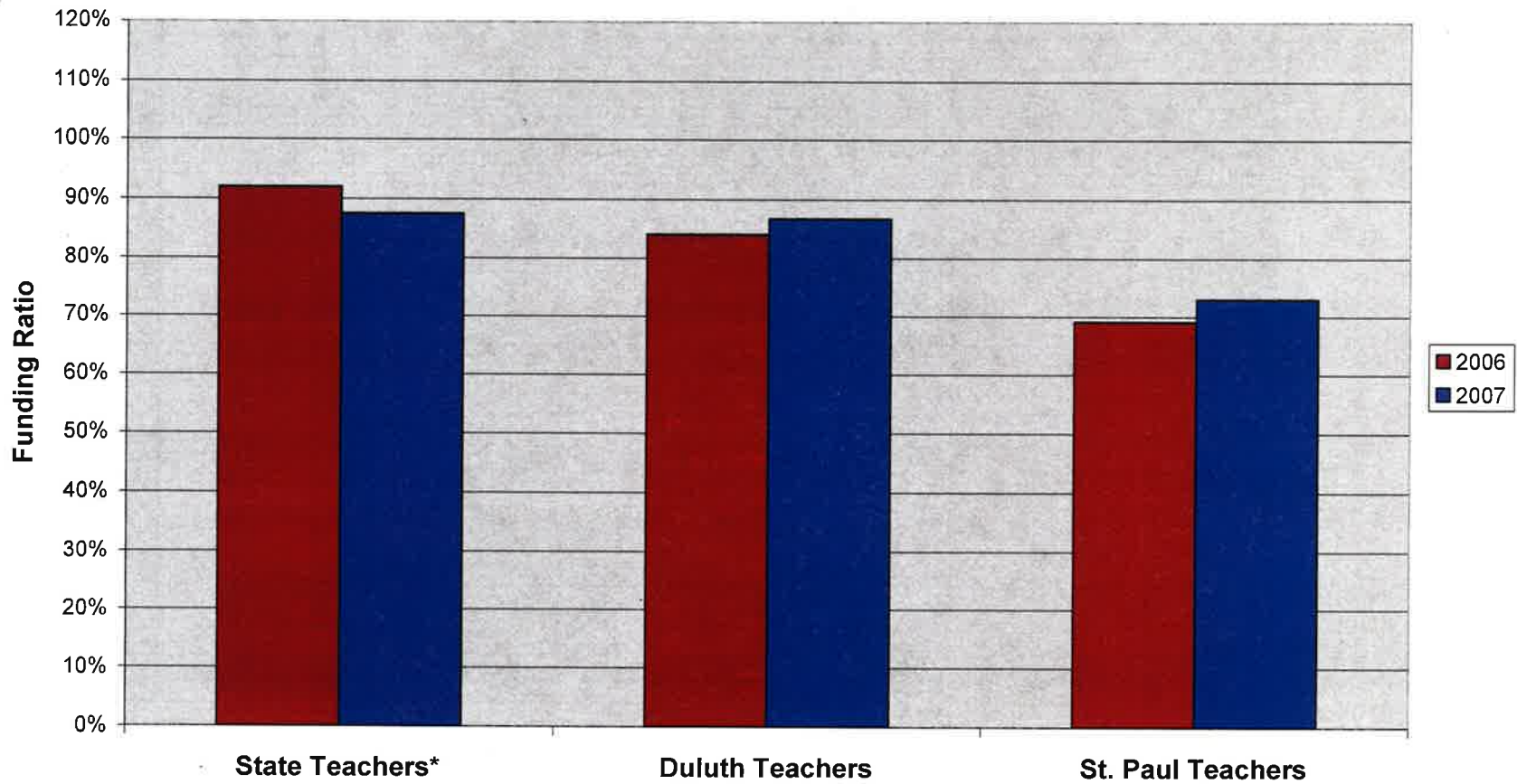
**PERA  
ACTUARIAL ACCRUED LIABILITY FUNDING RATIOS  
CURRENT ASSET BASIS**



**MSRS  
ACTUARIAL ACCRUED LIABILITY FUNDING RATIOS  
CURRENT ASSET BASIS**



**TEACHERS' PLANS  
ACTUARIAL ACCRUED LIABILITY FUNDING RATIOS  
CURRENT ASSET BASIS**



\*The State Teachers July 1, 2006 actuarial valuation reflects the MTRFA merger effective June 30, 2006.