GRS Gabriel Roeder Smith & Company
Consultants & Actuaries

MICHIGAN PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM

ANNUAL ACTUARIAL VALUATION REPORT
SEPTEMBER 30, 2010

GRS
Gabriel Roeder Smith & Company
Consultants & Actuaries

One Towne Square
Suite 800
Southfield, MI 48076-3723

248.799.9000 phone
248.799.9020 fax
www.gabrielroeder.com

April 21, 2011

The Retirement Board
Michigan Public School Employees' Retirement System
General Office Building, Third Floor
P.O. Box 30171
Lansing, Michigan 48909

Re: Michigan Public School Employees' Retirement System - Actuarial Valuation as of September 30, 2010

Dear Board Members:

The results of the annual actuarial valuation of the Michigan Public School Employees' Retirement System pension benefits are presented in this report. The purpose of the valuation was to measure the System's funding progress and to determine the employer contribution for the next fiscal year.

The valuation was based upon information furnished by the Office of Retirement Services, concerning Retirement System benefits, financial transactions, and active members, terminated members, retirees and beneficiaries. Data was checked for internal and year-to-year consistency, but was not otherwise audited. Year 2005 and prior years' valuation results back to 1993 were not prepared by GRS and are reproduced for comparison with the current year's results. The spouse of one of the undersigned is a retiree of the System, but we believe that this circumstance in no way alters the ability of the undersigned to fairly and accurately report the results of the valuation. This report may be provided to parties other than the Office of Retirement Services only in its entirety and only with the permission of the Office of Retirement Services.

The valuation summarized in this report involves actuarial calculations that require making assumptions about future events. We believe that the assumptions and methods used in this report are reasonable and appropriate. However, other assumptions and methods could also be reasonable and could result in materially different results. Some of the numbers in this report are rounded. The use of rounded numbers for plan liabilities should not imply a lack of precision. In addition, because it is not possible or practical to consider every possible contingency, we may use summary information, estimates or simplifications of calculations to facilitate the modeling of future events. We may also exclude factors or data that we deem to be immaterial.

To the best of our knowledge, this report is complete and accurate and the valuation was conducted in accordance with standards of practice prescribed by the Actuarial Standards Board and in compliance with the applicable state statutes. All of the undersigned 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. It is our opinion that the actuarial assumptions used for the valuation produce results which are reasonable.

Sincerely,

Alan E. Sonnanstine

Alan Sonnanstine, ASA, MAAA

Curtis Powell, EA, MAAA

AES/CP:lr

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EXECUTIVE SUMMARY/BOARD SUMMARY

1. Required Employer Contributions to Support Retirement Benefits

The computed employer contribution for the fiscal year beginning October 1, 2010 is shown below. Computed contributions are shown as a percentage of active member payroll and as an annual dollar amount.

	Total Computed Employer Contribution *		
	Non-Hybrid Members	Hybrid (PPP) Members	Weighted Average
As a percentage of active member payroll	14.99%	13.76%	14.93%
As an annual dollar amount	$ 1,354,642,076	$ 63,712,677	$ 1,418,354,753

* *Does not include the cost of the 2010 early retirement incentive provision (see pages A-1 and A-2).*

2. Contribution Comparison

The chart below compares the results of this valuation of the Retirement System with the results of the prior year's valuation:

Valuation Date	9/30/2009	9/30/2010
Contribution %	11.56%	14.93%
Contribution $	$1,182,164,061	$1,418,354,753

3. Reasons for Change

There are three general reasons why contribution rates change from one valuation to the next. The first is a change in the benefits or eligibility conditions of the plan. The second is a change in the valuation assumptions used to predict future occurrences. The third is the difference during the year between the plan's actual experience and what the assumptions predicted.

Public Act 75 of 2010 established the hybrid plan (Pension Plus Plan) for members hired on or after July 1, 2010, and reduced the computed employer contributions attributable to those members. Act 75 also provided an early retirement incentive program, which increased the computed employer contribution requirement (see pages A-1 to A-5). Assumption and method changes, based on the adoption of the findings of the recently completed 5-year experience study, increased the computed liabilities and contribution requirements (see pages A-3 to A-5). Experience for the year ended September 30, 2010 was overall unfavorable and is described in more detail in Section B of the report.

SECTION A

INTRODUCTION

CONTRIBUTION REQUIREMENTS

Development of Employer Contributions for the Indicated Valuation Date

	Contributions for	September 30			
			2010		
		2009	Non-Hybrid	Hybrid (PPP)	Total
(1)	Total Normal Cost of Benefits (as a % of member pay)	9.55%	9.32%	7.36%	9.22%
(2)	Member Contribution % (weighted average)	5.42%	5.42%	4.69%	5.38%
(3)	Employer Normal Cost % = (1) - (2)	4.13%	3.90%	2.67%	3.84%
(4)	Projected Active Member Payroll for Coming Year	$ 10,226,332,708	$ 9,036,971,817	$ 463,028,183	$ 9,500,000,000
(5)	Employer Normal Cost $ = (3) x (4)	422,347,541	352,441,901	12,362,852	364,804,753
(6)	Total Accrued Liability	56,684,963,977			60,927,136,765
(7)	Funding Value of Assets	44,702,878,189			43,293,776,101
(8)	Unfunded Actuarial Accrued Liabilities (UAAL) = (6) - (7)	$ 11,982,085,788			$ 17,633,360,664
	a. Remaining Liability for Early Retirement Incentive	N/A			1,050,186,008
	b. Present Value of Future Reconciliation Payments	N/A			299,182,614
	c. Net UAAL to be Amortized = (8) - (8a) - (8b)	$ 11,982,085,788			$ 16,283,992,042
(9)	Amortization Period (years)	27			26
(10)	Amortization Factor (level percent of payroll payments)	15.77897730			15.46068455
(11)	Amortization Payment % = (8c) / (10) / (4)	7.43%	11.09%	11.09%	11.09%
(12)	Amortization Period for Early Retirement Incentive (years)	N/A			5
(13)	Amortization Factor (level dollar payments)	N/A			4.15037009
(14)	Amortization Payment % = (8a) / (13) / (4)	N/A	2.66%	2.66%	2.66% *
(15)	Total Amortization Payment % = (11) + (14)	7.43%	13.75%	13.75%	13.75%
(16)	Amortization Payment $ = (15) x (4)	$ 759,816,520	$ 1,242,583,625	$ 63,666,375	$ 1,306,250,000
(17)	Total Computed Employer Contribution % = (3) + (15)	11.56%	17.65%	16.42%	17.59% *
(18)	Total Computed Employer Contribution $ = (5) + (16)	**$ 1,182,164,061**	**$1,595,025,526**	**$ 76,029,227**	**$1,671,054,753**

* *The above employer contribution for the Early Retirement Incentive Program will be collected beginning in the 2012-2013 fiscal year. Please refer to page A-2.*

CONTRIBUTION REQUIREMENTS (CONT.)

Computed Employer Contributions

Based on the assumptions outlined in Section E, the long term employer contribution rate for the Michigan Public School Employees' Retirement System is expected to be 2.67% of payroll (the employer normal cost rate for the Pension Plus Plan – hybrid plan). However, for the current MPSERS active member population, the weighted average normal cost rate is 3.84%. Also, for the current year, there is a contribution needed to fund the unfunded actuarial accrued liability (UAAL). The sum of these two contributions is the recommended employer contribution rate.

Effect of 2010 Early Retirement Incentive Program

The increase in actuarial accrued liability associated with the Early Retirement Incentive Program is computed to be $1,050,186,008. This liability will be funded over five years beginning in FY 2012-2013. The annual payment will be 2.66% of payroll, as indicated on page A-1 ($252,700,000 based on an estimated $9.5 billion payroll). For FY 2010-2011, the employer contribution will be the total amounts reported on page A-1, less the contribution for the Early Retirement Incentive Program (as shown in the Executive Summary/Board Summary on page 1).

Determining Employer Dollar Contributions

For any period of time, the percent-of-payroll contribution rate needs to be converted to dollars, then promptly contributed to the Retirement System. As an example, for the Non-Hybrid Plan members, the employer normal cost rate (expressed as a % of active member payroll reported for this valuation) is 3.90%. Applying the employer normal cost contribution rate of 3.90% to the projected payroll for the coming fiscal year, produces annual employer normal cost contributions of $352,441,901. The amortization payment for funding the UAAL, $1,242,583,625, when added to the normal cost contribution produces a total employer contribution of $1,595,025,526.

Reconciliation Payments

The contribution requirements shown on page A-1 are in addition to the reconciliation payments required by subsection 41(9) of the MPSERS statute.

Comment on the Projected Active Member Payroll

As of September 30, 2010, school employers had not yet completed their planned replacement of employees who retired under the 2010 Early Retirement Incentive Program. Consequently, reported active member payroll dropped significantly. However, reported payroll began to increase in the first few months after September 30, 2010. The actuary and the Office of Retirement Services estimate that actual payroll will be around $9.5 billion in FY 2010-2011 (see Page A-1).

DISCUSSION OF CHANGES

Revisions in Benefits

Public Act 75 of 2010 established the hybrid plan (Pension Plus Plan) for members hired on or after July 1, 2010. Act 75 also provided an Early Retirement Incentive Program for existing active members. The effects of those changes are shown on pages A-4 and A-5.

Revisions in Actuarial Assumptions or Methods

Assumptions and methods were changed based on the adoption of the findings of the recently completed 5-year experience study. These changes resulted in increased computed liabilities and contribution requirements.

Actuarial Experience

Actuarial Experience was less favorable than that anticipated by the actuarial assumptions. The total actuarial loss was $2.7 billion. The loss was primarily due to recognized investment losses during the last plan year.

Comment on the Investment Markets

Investment markets continue to be volatile. The actuarial value of assets (funding value), used to determine both the funded status and the required employer contribution, is based on a 5-year smoothed value of assets. This reduces the volatility of the valuation results.

As of September 30, 2010, the actuarial value of assets was 121% of market value. This means that meeting the actuarial assumption in the next few years will require average future market returns that exceed the 8% investment return assumption.

If the September 30, 2010 valuation results were based on market value instead of smoothed funding value, the funded percent of the plan would be 58.8% (instead of 71.1%), and the weighted average employer contribution requirement would be 22.65% of payroll (instead of 17.59%). If the investment markets do not make up for the losses of the two year period ending September 30, 2009, the funded percent and employer contribution requirement can be expected to head in that direction.

MEASURES OF FINANCIAL SOUNDNESS

The purpose of this section of the report is to provide certain measures which indicate the financial soundness of the program. These measures relate to long term solvency and level funding.

The various percentages listed in this section as of a single valuation date are not overly significant standing alone. What is more significant is the trend of the rates over a period of years. It is also important to keep in mind that each time benefits or assumptions are revised, actuarial liabilities are created or diminished. Any newly created liabilities are financed systematically over a period of future years. All actuarially computed values in this analysis are based on the actuarial assumptions utilized in the respective years' actuarial valuations.

Long Term Solvency

Over the longer term, the solvency of an ongoing plan can be measured by comparing the actuarial value of assets to an amount known as the actuarial accrued liability (AAL) under the Entry Age actuarial cost method. This item has often been called the "past service liability". The AAL is affected immediately by any revisions in benefits or assumptions. The accumulation of assets to equal the AAL can be considered a long range funding goal. Largely because of periodic benefit increases, very few retirement programs have attained this goal.

Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability	% of AAL Covered by Assets
9/30/2010 [2]	$43,293,776,101	$60,927,136,765	71.1 %
9/30/2010 [1]	43,293,776,101	59,876,950,757	72.3
9/30/2010	43,293,776,101	58,543,339,929	74.0
9/30/2009	44,702,878,189	56,684,963,977	78.9

[1] *Revised actuarial assumptions and methods.*

[2] *Change in plan provisions.*

MEASURES OF FINANCIAL SOUNDNESS

Level Contributions

The actuarial assumptions and cost methods have been chosen with the intent of producing required employer contributions which remain fairly level as a percentage of active member payroll.

Valuation Date	Normal Cost	Amortization Payment	Total Contribution
9/30/2010 [2]	3.84 %	13.75 %	17.59 %
9/30/2010 [1]	3.90	11.09	14.99
9/30/2010	4.09	10.38	14.47
9/30/2009	4.13	7.43	11.56

[1] *Revised actuarial assumptions and methods.*

[2] *Change in plan provisions. Normal cost is a weighted average.*

A major factor affecting the stability of the contribution requirements just shown is how well the actual plan experience compares to the actuarial assumptions. The value of the difference between what actually occurred and what was assumed to occur is called the actuarial gain or loss. Gains tend to lower the subsequent cost of the program while losses tend to cause subsequent costs to rise.

Year Ending	Actuarial Gain/(Loss)
9/30/2010	$ (2,727,392,257)
9/30/2009	(2,719,194,269)

Analysis of all the benchmarks listed above, over a period of years, will provide an indication of whether the program is becoming financially stronger or weaker.

SECTION B

FUNDING RESULTS

PRESENT VALUE OF FUTURE BENEFITS AND ACCRUED LIABILITY

Determination of Unfunded Accrued Liability
as of September 30, 2010

	All Divisions
A. Accrued Liability	
1. For retirees and beneficiaries	$ 39,638,623,027
2. For vested and other terminated members	837,484,350
3. For present active members	
a. Value of expected future benefit payments	26,619,254,600
b. Value of future normal costs	6,168,225,212
c. Active member accrued liability: (a) - (b)	20,451,029,388
4. Total accrued liability	60,927,136,765
B. Present Valuation Assets (Funding Value)	43,293,776,101
C. Unfunded Accrued Liability: (A.4) - (B)	17,633,360,664
D. Funding Ratio: (B) / (A.4)	71.1%

EXPERIENCE GAIN/(LOSS)

A. Derivation of Actuarial Gain/(Loss):		
1.	Unfunded Actuarial Accrued Liability (UAAL) - Previous Valuation	$ 11,982,085,788
2.	Total Normal Cost (employer plus member) for Year Ending 9/30/2010	976,614,774
3.	Total Contributions (employer plus member) for Year Ending 9/30/2010	1,379,000,428
4.	Interest at 8% on:	
	a. UAAL: .08 x (1)	958,566,863
	b. Normal Cost and Contributions: .04 x [(2) - (3)]	(16,095,426)
	c. Net Total: (a) + (b)	942,471,437
5.	Change in UAAL due to Benefit Changes	1,050,186,008
6.	Change in UAAL due to Assumption Changes	1,333,610,828
7.	Expected UAAL Current Year: (1) + (2) - (3) + (4c) + (5) + (6)	14,905,968,407
8.	Actual UAAL Current Year	17,633,360,664
9.	Experience Gain/(Loss): (7) - (8)	(2,727,392,257)
B. Approximate Portion of Gain/(Loss) due to Investments		(2,718,208,285)
C. Approximate Portion of Gain/(Loss) due to Liabilities: (A.9) - (B)		(9,183,972)

The schedule above shows the net, aggregate experience for the System. The next page shows this experience in detail.

DETAILED EXPERIENCE GAIN/(LOSS)

Gains/(Losses) During the Year Ended September 30, 2010
Resulting from Differences Between Assumed and Actual Experience

TYPE OF ACTIVITY

	Gain/(Loss)
1. **Retirements** (including disability retirement). If members retire at older ages or with lower final average pay than assumed, there is a gain. If younger ages or higher average pays, a loss.	$ (19,645,766)
2. **Withdrawal from Employment** (including death-in-service). If more liabilities are released by withdrawals and deaths than assumed, there is a gain. If smaller releases, a loss.	(528,385)
3. **Pay Increases.** If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	114,123,581
4. **Investment Income.** If there is greater investment income than assumed, there is a gain. If less income, a loss.	(2,718,208,285)
5. **Death After Retirement.** If retirants and inactive vested members live longer than assumed, there is a loss. If not as long, a gain.	(259,583,254)
6. **New Entrants/Rehires.**	(60,048,594)
7. **Other.** Miscellaneous gains and losses resulting from data adjustments, timing of financial transactions, etc.	216,498,446
8. **Composite Gain/(Loss) During Year.**	$ (2,727,392,257)

EXPERIENCE GAIN/(LOSS)

Five-Year History
(Amounts Shown in Millions)

Plan Year Ending September 30	Experience Gain/(Loss)	Gain/(Loss) Due to Investments	Actuarial Value of Investments	Investment Gain/(Loss) as % of Assets
2010	$ (2,727)	$ (2,718)	$ 43,294	(6.28)%
2009	(2,719)	(2,728)	44,703	(6.10)
2008	(1,834)	(1,464)	45,677	(3.20)
2007	614	757	45,335	1.67
2006 [1]		3,102		
2006	539	(205)	39,893	(0.51)

[1] *Assets reset to market value on September 30, 2006.*

Plan Year Ending September 30	Gain/(Loss) Due to Liabilities	Actuarial Accrued Liability	Liability Gain/(Loss) as % of Accrued Liability
2010	$ (9)	$ 60,927	(0.02)%
2009	9	56,685	0.02
2008	(371)	54,608	(0.68)
2007	(143)	51,107	(0.28)
2006	744	49,136	1.51

HISTORICAL FUNDING LEVELS FOR ACTUARIAL ACCRUED LIABILITIES

(Amounts Shown in Millions)

Valuation Date September 30	Actuarial Accrued Liability	Actuarial Value of Assets	Funded Ratio	Unfunded/(Overfunded) Accrued Liability	Active Member Reported Payroll	Unfunded/(Overfunded) As % of Active Payroll
1997	$ 29,792	$ 30,051	100.9 %	$ (259)	$ 8,027	(3.2)%
1998	32,137	31,870	99.2	267	8,265	3.2
1998 [2]	32,863	31,870	97.0	993	8,265	12.0
1999	34,348	34,095	99.3	253	8,644	2.9
2000	37,139	36,893	99.3	246	8,985	2.7
2001	39,774	38,399	96.5	1,375	9,264	14.8
2002	41,957	38,382	91.5	3,575	9,707	36.8
2003	44,769	38,726	86.5	6,043	10,044	60.2
2004	47,055	38,784	82.4	8,271	10,465	79.0
2004 [2]	46,317	38,784	83.7	7,533	10,407	72.4
2005	48,206	38,211	79.3	9,995	10,206	97.9
2006	49,136	39,893	81.2	9,243	9,806	94.3
2006 [1]	49,136	42,995	87.5	6,141	9,806	62.6
2007	51,107	45,335	88.7	5,771	9,851	58.6
2008	53,555	45,677	85.3	7,878	9,958	79.1
2008 [3]	54,608	45,677	83.6	8,931	9,958	89.7
2009	56,685	44,703	78.9	11,982	9,884	121.2
2010	58,543	43,294	74.0	15,250	8,845	172.4
2010 [2]	59,877	43,294	72.3	16,583	8,845	187.5
2010 [3]	60,927	43,294	71.1	17,633	8,845	199.4

[1] *Revised asset valuation method.*
[2] *Revised actuarial assumptions and/or methods.*
[3] *Change in plan provisions.*

RECOMMENDED AND ACTUAL EMPLOYER CONTRIBUTIONS HISTORICAL COMPARISON

(Amounts Shown in Millions)

Fiscal Year Ending September 30	Valuation Date September 30	Contribution Rates As Percents of Valuation Payroll	Actual Payroll	Employer Contribution for Fiscal Year	
				Computed	Actual
1999	1998	6.96 %	$ 8,447.7	$ 588.0	-
1999	1998 [2]	7.18	8,447.7	606.5	$ 574.4
2000	1999	6.63	9,169.3	607.9	655.3
2001	2000	6.48	9,374.8	607.5	756.0
2002	2001	7.22	9,719.6	701.8	604.0
2003	2002	8.37	10,021.1	838.8	697.9
2004	2003	9.74	10,029.2	976.8	697.6
2005	2004	10.72	10,137.4	1,086.7	-
2005	2004 [2]	9.83	10,137.4	996.5	715.0
2006	2005	11.38	10,242.5	1,165.6	996.0
2007	2006	10.90	10,307.6	1,123.5	-
2007	2006 [1]	9.06	10,307.6	933.9	-
2007	2006 [4]	8.15	10,307.6	840.1	835.4
2008	2007	8.87	10,318.9	915.3	999.4
2009	2008	10.15	10,412.0	1,056.8	-
2009	2008 [3]	9.60	10,412.0	999.6	1,000.4
2010	2009	11.56	9,913.6	1,146.0	1,001.3
2011 [5]	2010	14.47			
2011 [5]	2010 [2]	14.99			
2011 [5]	2010 [3]	17.59			

[1] *Revised asset valuation method.*
[2] *Revised actuarial assumptions and/or methods.*
[3] *Change in plan provisions.*
[4] *Interest-only funding adopted for one year only.*
[5] *For the year ending September 30, 2011, the actual payroll and actual contribution are not yet known.*

HISTORICAL FUNDING LEVELS FOR PRIORITIZED ACTUARIAL ACCRUED LIABILITY

Valuation Date September 30	Actuarial Accrued Liability ($ in Millions) (1) Active Member Contributions	(2) Retirants and Beneficiaries	(3) Active and Inactive Members (Employer Financed Portion)	Valuation Assets ($ in Millions)	Portion of Actuarial Accrued Liability Covered by Assets (1)	(2)	(3)	(4) [4]
1997	$ 2,500	$ 14,303	$ 12,989	$ 30,051	100.0%	100.0%	102.0%	100.9%
1998	2,505	15,689	13,943	31,870	100.0	100.0	98.1	99.2
1998 [2]	2,505	15,888	14,470	31,870	100.0	100.0	93.1	97.0
1999	2,706	17,291	14,351	34,095	100.0	100.0	98.2	99.3
2000	2,932	19,200	15,007	36,893	100.0	100.0	98.4	99.3
2001	3,244	20,943	15,587	38,399	100.0	100.0	91.2	96.5
2002	3,490	22,480	15,987	38,382	100.0	100.0	77.6	91.5
2003	3,720	24,080	16,969	38,726	100.0	100.0	64.4	86.5
2004	3,800	26,178	17,077	38,784	100.0	100.0	51.6	82.4
2004 [2]	3,800	26,178	16,339	38,784	100.0	100.0	53.9	83.7
2005	3,898	28,047	16,261	38,211	100.0	100.0	38.5	79.3
2006	4,082	29,505	15,549	39,893	100.0	100.0	40.6	81.2
2006 [1]	4,082	29,505	15,549	42,995	100.0	100.0	60.5	87.5
2007	4,376	31,254	15,477	45,335	100.0	100.0	62.7	88.7
2008	5,168	32,723	15,664	45,677	100.0	100.0	49.7	85.3
2008 [3]	5,168	32,723	16,717	45,677	100.0	100.0	46.6	83.6
2009	5,449	34,159	17,077	44,703	100.0	100.0	29.8	78.9
2010	5,055	38,315	15,173	43,294	100.0	99.8	0.0	74.0
2010 [2]	5,055	38,589	16,233	43,294	100.0	99.1	0.0	72.3
2010 [3]	5,055	39,639	16,233	43,294	100.0	96.5	0.0	71.1

[1] *Revised asset valuation method.*
[2] *Revised actuarial assumptions and/or methods.*
[3] *Change in plan provisions.*
[4] *Percent funded on a total valuation asset and total actuarial accrued liability basis.*

FINANCIAL OBJECTIVE ACHIEVEMENT INDICATORS – HISTORICAL COMPARISON (DOLLAR AMOUNTS IN MILLIONS)

		Termination Indicator		Experience Indicator
Valuation September 30	Valuation Assets	Actuarial Present Value of Vested Benefits	Funded Ratio	Actuarial Gain/(Loss)
1997	$ 25,485	$ 23,413	108.8 %	$ 1,563
1997 [4]	30,051	23,601	127.3	1,563
1998	31,870	25,838	123.3	(583)
1998 [2]	31,870	26,205	121.6	(583)
1999	34,095	27,755	122.8	904
2000	36,893	30,264	121.9	2
2001	38,399	32,755	117.2	(1,259)
2002	38,382	34,686	110.7	(2,096)
2003	38,726	37,424	103.5	(2,337)
2004	38,784	39,659	97.8	(2,001)
2004 [2]	38,784	39,737	97.6	(2,001)
2005	38,211	41,595	91.9	(1,868)
2006	39,893	45,549	87.6	539
2006 [1]	42,995	45,549	94.4	3,641
2007	45,335	47,502	95.4	614
2008	45,677	50,286	90.8	(1,834)
2009	44,703	51,936	86.1	(2,719)
2010	43,294	52,901	81.8	(2,727)
2010 [2]	43,294	53,454	81.0	(2,727)
2010 [3]	43,294	54,505	79.4	(2,727)

[1] *Revised asset valuation method.*
[2] *Revised actuarial assumptions and/or methods.*
[3] *Change in plan provisions.*
[4] *Revised actuarial assumptions and asset valuation method.*

SECTION C

FUND ASSETS

PLAN NET ASSETS (ASSETS AT MARKET OR FAIR VALUE)

	September 30	
	2009	2010
Equity in Common Cash	$ 113,238,544	$ 51,537,845
Total Receivables	401,604,821	394,653,488
Short Term Investment Pools	792,418,383	334,020,337
Fixed Income Pools	6,686,446,346	6,035,961,419
Domestic Equity Pools	12,970,936,759	12,881,119,105
Real Estate Pool	3,035,118,231	3,118,647,580
Alternative Investment Pools	6,791,057,200	7,928,212,319
International Equity Pools	4,479,240,469	4,903,629,695
Absolute Return Pools	632,784,513	1,363,921,000
Securities Lending Collateral less Obligations	(1,382,979,347)	(1,115,187,717)
Total Assets	34,519,865,919	35,896,515,071
Other Liabilities	(21,486,356)	(41,037,226)
Net Assets Held in Trust for Pension Benefits	$34,498,379,563	$35,855,477,845

Note: Asset amounts exclude assets held for health benefits.

RECONCILIATION OF PLAN NET ASSETS

	September 30, 2009		September 30, 2010
Market Value, Beginning of Year	$39,065,741,456		$34,498,379,563
Additions			
Member Contributions	357,249,466		377,748,755
Employer Contributions	1,000,375,355		1,001,251,673
Net Investment Income	(2,712,429,401)		3,563,025,960
Audit Adjustment	122,297,344	*	0
Total Additions	(1,232,507,236)		4,942,026,388
Deductions			
Benefit Payments	3,278,118,116		3,525,020,341
Contribution Refunds/Transfers	33,943,530		33,907,066
Administrative Expenses	22,793,011		26,000,699
Total Deductions	3,334,854,657		3,584,928,106
Market Value, End of Year	$34,498,379,563		$35,855,477,845

* *Reflects adjustment made to the September 30, 2008 assets after the 2008 actuarial report was published.*

DEVELOPMENT OF VALUATION ASSETS

	2010	2011	2012	2013	2014
1. Beginning of Year Assets					
a. Market Value	$ 34,498,379,563				
b. Valuation Assets	44,702,878,189				
2. End of Year Assets at Market Value	35,855,477,845				
3. Net Additions to Market Value					
a. Member Contributions	377,748,755				
b. Employer Contributions	1,001,251,673				
c. Investment Income	3,563,025,960				
d. Benefit Payments	(3,525,020,341)				
e. Contribution Refunds/Transfers	(33,907,066)				
f. Administrative Expenses	(26,000,699)				
g. Transfer (to) from stabilization subaccount	0				
h. Audit Adjustment	0				
i. Total Additions to Market Value	1,357,098,282				
4. Summary of Net Additions to Market Value					
a. Net Contributions and Transfers = 3a + 3b + 3e +3g	1,345,093,362				
b. Net Investment Income = 3c + 3f	3,537,025,261				
c. Benefit Payments = 3d	(3,525,020,341)				
d. Audit Adjustment = 3h	0				
e. Total Additions to Market Value	1,357,098,282				
5. Average Valuation Assets =					
1b + .5 x (4a + 4c) + 4d	43,612,914,699				
6. Imputed Income at Valuation Rate = 8.00% x 5	3,489,033,176				
7. Gain (Loss) from Investments = 4b - 6	47,992,085				
8. Portion of Gains (Losses) Recognized from Prior Years					
a. From this year = .2 * 7	9,598,417				
b. From one year ago	(1,264,198,605)	$ 9,598,417			
c. From two years ago	(2,220,488,012)	(1,264,198,605)	$ 9,598,417		
d. From three years ago	756,879,915	(2,220,488,012)	(1,264,198,605)	$ 9,598,417	
e. From four years ago	0	756,879,917	(2,220,488,012)	(1,264,198,607)	$ 9,598,417
f. Total	(2,718,208,285)	(2,718,208,283)	(3,475,088,200)	(1,254,600,190)	9,598,417
9. Change in Valuation Assets = 4a + 4c + 4d + 6 + 8f	(1,409,102,088)				
10. End of Year Assets					
a. Market Value = 2	35,855,477,845				
b. Valuation Assets = 1b + 9	43,293,776,101				
11. Actuarial Rate of Return	1.77%				
12. Market Rate of Return	10.59%				

DEVELOPMENT OF VALUATION ASSETS (CONTINUED)

	2005	2006	2007	2008	2009
1. Beginning of Year Assets					
a. Market Value	$ 36,288,506,853	$ 39,216,068,515	$ 42,995,406,246	$ 48,362,932,895	$ 39,065,741,456
b. Valuation Assets	38,783,811,565	38,211,008,964	42,995,406,246	45,335,413,233	45,677,053,757
2. End of Year Assets at Market Value	39,216,068,515	42,995,406,246	48,362,932,895	39,065,741,456	34,498,379,563
3. Net Additions to Market Value					
a. Member Contributions	278,290,298	518,599,720	356,761,212	399,256,616	357,249,466
b. Employer Contributions	714,980,264	995,996,999	835,366,382	999,374,879	1,000,375,355
c. Investment Income	4,476,382,374	4,927,177,496	7,177,114,740	(7,520,927,313)	(2,712,429,401)
d. Benefit Payments	(2,554,278,925)	(2,761,292,217)	(2,944,920,179)	(3,117,434,847)	(3,278,118,116)
e. Contribution Refunds/Transfers	(22,061,718)	(24,024,234)	(32,241,730)	(32,720,146)	(33,943,530)
f. Administrative Expenses	(19,997,954)	(22,501,098)	(24,489,202)	(24,740,628)	(22,793,011)
g. Transfer (to) from stabilization subaccount	54,247,323	0	0	0	0
h. Audit Adjustment	0	145,381,065	(64,574)	0	122,297,344
i. Total Additions to Market Value	2,927,561,662	3,779,337,731	5,367,526,649	(9,297,191,439)	(4,567,361,893)
4. Summary of Net Additions to Market Value					
a. Net Contributions and Transfers = 3a + 3b + 3e +3g	1,025,456,167	1,490,572,485	1,159,885,864	1,365,911,349	1,323,681,291
b. Net Investment Income = 3c + 3f	4,456,384,420	4,904,676,398	7,152,625,538	(7,545,667,941)	(2,735,222,412)
c. Benefit Payments = 3d	(2,554,278,925)	(2,761,292,217)	(2,944,920,179)	(3,117,434,847)	(3,278,118,116)
d. Audit Adjustment = 3h	0	145,381,065	(64,574)	0	122,297,344
e. Total Additions to Market Value	2,927,561,662	3,779,337,731	5,367,526,649	(9,297,191,439)	(4,567,361,893)
5. Average Valuation Assets = 1b + .5 x (4a + 4c) + 4d	38,019,400,186	37,648,339,630	42,102,824,514	44,459,651,484	44,822,132,688
6. Imputed Income at Valuation Rate = 8.00% x 5	3,041,552,015	3,011,867,170	3,368,225,961	3,556,772,119	3,585,770,615
7. Gain (Loss) from Investments = 4b - 6	1,414,832,405	1,892,809,228	3,784,399,577	(11,102,440,060)	(6,320,993,027)
8. Portion of Gains (Losses) Recognized from Prior Years					
a. From this year = .2 * 7	282,966,481	3,481,017,538 [1]	756,879,915	(2,220,488,012)	(1,264,198,605)
b. From one year ago	221,796,961	282,966,481	0	756,879,915	(2,220,488,012)
c. From two years ago	295,714,940	221,796,961	0	0	756,879,915
d. From three years ago	(1,383,627,141)	295,714,940	0	0	0
e. From four years ago	(1,502,383,099)	(1,383,627,141)	0	0	0
f. Total	(2,085,531,858)	2,897,868,779	756,879,915	(1,463,608,097)	(2,727,806,702)
9. Change in Valuation Assets = 4a + 4c + 4d + 6 + 8f	(572,802,601)	4,784,397,282	2,340,006,987	341,640,524	(974,175,568)
10. End of Year Assets					
a. Market Value = 2	39,216,068,515	42,995,406,246	48,362,932,895	39,065,741,456	34,498,379,563
b. Valuation Assets = 1b + 9	38,211,008,964	42,995,406,246	45,335,413,233	45,677,053,757	44,702,878,189
11. Actuarial Rate of Return	2.51%	15.70%	9.80%	4.71%	1.91%
12. Market Rate of Return	12.54%	12.69%	16.99%	(15.89)%	(7.16)%

[1] *After adjusting to market value as of September 30, 2006.*

HISTORY OF APPROXIMATE INVESTMENT RETURN RATES

Plan Year Ending September 30	Approximate Rate of Return[1] Market	Actuarial
2001	(11.60) %	6.35 %
2002	(11.41)	2.76
2003	15.47	3.55
2004	12.76	2.87
2005	12.54	2.51
2006	12.69	7.46
2006[2]	12.69	15.70[2]
2007	16.99	9.80
2008	(15.89)	4.71
2009	(7.16)	1.91
2010	10.59	1.77
Average Returns:		
Last five years:	2.63 %	6.65 %
Last ten years:	2.71 %	5.11 %

[1] *Approximate return based on ratio of total investment return to average asset value, using an assumed beginning-of-year timing of audit adjustments (if any) and an assumed mid-year timing of other asset flows (see previous two pages).*

[2] *After adjusting to market value as of September 30, 2006.*

HISTORICAL GROWTH OF ASSETS AT MARKET VALUE

Fiscal Year Ended September 30	Revenues by Source: Member Contributions	Revenues by Source: Employer Contributions	Revenues by Source: Net Investment Income [1]	Expenses by Type: Retirement Benefits	Expenses by Type: Return of Contributions and Transfers	Expenses by Type: Administrative Expenses	Market Value of Assets
1991	$ 174,835,458	$ 502,685,310	$ 935,681,704 [2]	$ 726,785,861	$ 4,630,054	$ 15,591,629	$ 13,825,066,845
1992	196,103,714	533,038,202	784,516,383 [2]	797,152,247	3,453,420	17,197,026	14,520,922,451
1993	223,584,885	612,237,315	1,134,556,020 [2]	879,273,565	3,940,883	15,757,850	15,592,328,373
1994	244,086,635	809,783,443	1,086,059,845 [2]	977,986,904	5,457,370	19,759,103	16,729,054,919
1995	248,662,424	771,888,667	1,361,440,148 [2]	1,100,208,507	7,926,131	19,663,705	17,983,247,815
1996	255,085,948	829,601,695	6,675,359,302 [2]	1,268,260,318	11,638,709	10,381,801	24,453,013,932
1997	253,358,290	904,817,513	5,738,458,322 [2]	1,317,828,100	17,859,063	12,102,095	30,001,858,799
1998	252,672,436	622,437,022	2,409,304,679	1,454,451,439	21,626,704	14,463,339	31,795,731,454
1999	518,861,556	574,436,929	5,075,649,100	1,587,992,361	11,198,300	16,525,359	36,348,963,019
2000	321,557,146	655,258,922	4,755,872,070	1,735,936,328	17,455,802	15,918,143	40,312,340,884
2001	371,548,016	629,924,827	(4,575,630,855)	1,890,812,400	19,835,729	17,312,250	34,810,222,493
2002	413,163,871	603,949,327	(3,733,441,844)	2,041,439,863	20,813,845	23,610,482	30,008,029,657
2003	379,084,549	697,906,265	4,532,071,835	2,180,574,193	13,642,300	23,016,963	33,399,858,850
2004	456,352,606	697,647,338	4,130,642,038	2,358,216,073	18,403,233	19,374,673	36,288,506,853
2005	368,240,837	774,277,778	4,530,606,037	2,558,017,710	22,166,261	19,997,954	39,361,449,580
2006	518,599,720	995,932,425	4,927,177,496	2,761,292,217	24,024,234	22,501,098	42,995,341,672
2007	356,761,212	835,366,382	7,177,114,740	2,944,920,179	32,241,730	24,489,202	48,362,932,895
2008	399,256,616	999,374,879	(7,398,629,969)	3,117,434,847	32,720,146	24,740,628	39,188,038,800
2009	357,249,466	1,000,375,355	(2,712,429,401)	3,278,118,116	33,943,530	22,793,011	34,498,379,563
2010	377,748,755	1,001,251,673	3,563,025,960	3,525,020,341	33,907,066	26,000,699	35,855,477,845

[1] *Includes miscellaneous income.*
[2] *Includes other changes in net assets/reserves/fund balances and, in 1996, a $3,405,165,438 cumulative adjustment due to GASB Statement Nos. 25 and 26.*

Note: Data for the year 2007 and prior years was provided by the State of Michigan Department of Technology, Management and Budget - Financial Services.

SECTION D

CENSUS DATA

SUMMARY OF PARTICIPANT DATA BY CATEGORY

	As of September 30	
	2009	**2010**
Retirees and beneficiaries currently receiving benefits:		
Regular benefits	151,465	166,749
Survivor benefits	14,871	15,308
Disability benefits	5,586	5,665
Total	171,922	187,722
Current Employees:		
Vested	123,855	113,688
Non-vested	144,353	128,880
Total	268,208	242,568
Inactive employees entitled to benefits and not yet receiving them:	14,454	15,026
Total Participants	454,584	445,316

RETIREES AND BENEFICIARIES – HISTORICAL COMPARISON

Year Ended September 30	Rolls End of Year: Number	Rolls End of Year: Annual Benefit[1]	Annual % Increase: Number	Annual % Increase: Benefits	Average Annual Benefit
1991	86,253	$ 749,717	3.6%	9.2%	$ 8,692
1992	90,201	831,290	4.6	10.9	9,216
1993	93,574	911,686	3.7	9.7	9,743
1994	97,989	1,018,819	4.7	11.8	10,397
1995	103,151	1,141,972	5.3	12.1	11,071
1996	107,465	1,251,811	4.2	9.6	11,649
1997	111,842	1,371,479	4.1	9.6	12,263
1998	116,620	1,505,362	4.3	9.8	12,908
1999	120,913	1,639,825	3.7	8.9	13,562
2000	126,115	1,798,028	4.3	9.6	14,257
2001	130,790	1,943,444	3.7	8.1	14,859
2002	135,277	2,094,382	3.4	7.8	15,482
2003	139,814	2,251,766	3.4	7.5	16,105
2004	145,378	2,431,636	4.0	8.0	16,726
2005	151,706	2,644,700	4.4	8.8	17,433
2006	157,163	2,828,460	3.6	6.9	17,997
2007	162,844	3,013,075	3.6	6.5	18,503
2008	167,265	3,171,261	2.7	5.3	18,960
2009	171,922	3,336,165	2.8	5.2	19,405
2010	187,722	3,814,755	9.2	14.3	20,321

[1] *In thousands of dollars.*

RETIREES AND BENEFICIARIES AS OF SEPTEMBER 30, 2010 BY TYPE OF RETIREMENT AND SELECTED OPTION

Amount of Monthly Benefit	Number of Retirees	Type of Retirement*						Selected Option**				
		1	2	3	4	5	6	Opt. 1	Opt. 2	Opt. 3	Opt. 4	Opt 1E 2E,3E,4E
$ 1 - 200	13,426	11,730	1,062	101	368	2	163	7,476	2,864	1,948	160	978
201 - 400	20,987	17,716	1,467	124	1,298	1	381	11,660	4,089	3,583	366	1,289
401 - 600	15,874	13,024	1,185	95	1,169	1	400	8,307	3,256	2,965	369	977
601 - 800	12,398	10,138	894	49	913	2	402	6,169	2,502	2,482	359	886
801 - 1,000	10,283	8,388	832	35	662	0	366	4,904	2,046	2,103	358	872
1,001 - 1,200	8,967	7,386	755	19	504	0	303	4,042	1,875	1,760	310	980
1,201 - 1,400	8,123	6,715	732	15	405	0	256	3,375	1,691	1,527	325	1,205
1,401 - 1,600	7,723	6,586	621	6	283	0	227	2,939	1,594	1,381	324	1,485
1,601 - 1,800	7,478	6,547	479	3	266	1	182	2,774	1,537	1,255	347	1,565
1,801 - 2,000	7,761	6,921	459	4	206	0	171	2,785	1,760	1,268	361	1,587
Over 2,000	74,702	71,598	2,009	10	412	1	672	32,184	14,417	15,594	5,444	7,063
Totals	187,722	166,749	10,495	461	6,486	8	3,523	86,615	37,631	35,866	8,723	18,887

*** Type of Retirement**

1 – Normal retirement for age & service
2 – Survivor payment – normal retirement
3 – Duty disability retirement (including survivors)
4 – Non-duty disability retirement (including survivors)
5 – Survivor payment – duty death in service
6 – Survivor payment – non-duty death in service

**** Selected Option**

Opt. 1 – Straight life allowance
Opt. 2 – 100% survivor option
Opt. 3 – 50% survivor option
Opt. 4 – 75% survivor option
Opt. 1E, 2E, 3E, 4E – equated retirement plans

ACTIVE MEMBERS BY CLASSIFICATION

	September 30, 2009	September 30, 2010
Basic Members		
Number	39,425	30,938
Average Age	53.7 years	53.4 years
Average Service	23.1 years	22.5 years
Reported Payroll	$ 2,021,159,777	$ 1,561,234,217
Average Annual Pay	$ 51,266	$ 50,463
MIP Members		
Number	228,783	209,830
Average Age	44.0 years	44.1 years
Average Service	9.4 years	9.5 years
Reported Payroll	$ 7,862,513,884	$ 7,241,007,085
Average Annual Pay	$ 34,367	$ 34,509
PPP Members		
Number		1,800
Average Age		32.7 years
Average Service		0.1 years
Reported Payroll		$ 42,777,919
Average Annual Pay		$ 23,766
Total		
Number	268,208	242,568
Average Age	45.4 years	45.2 years
Average Service	11.4 years	11.1 years
Reported Payroll	$ 9,883,673,661	$ 8,845,019,221
Average Annual Pay	$ 36,851	$ 36,464

ACTIVE MEMBERS

Members in Active Service as of September 30, 2010
by Age and Years of Service

	Years of Service							Total	Total	Average
Age	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 & up	Count	Pay	Pay
Under 20	485							485	$ 4,491,266	$ 9,260
20 - 24	8,077	29						8,106	85,855,768	10,592
25 - 29	14,082	2,622	46					16,750	411,020,296	24,539
30 - 34	9,164	11,135	2,001	759				23,059	864,579,028	37,494
35 - 39	9,265	6,067	7,010	5,316	262			27,920	1,180,643,148	42,287
40 - 44	11,546	5,931	5,165	8,099	3,308	187		34,236	1,367,442,515	39,942
45 - 49	10,694	6,872	5,810	5,228	5,776	2,264	166	36,810	1,326,975,112	36,049
50 - 54	8,105	6,339	6,948	6,312	4,926	4,419	2,091	39,140	1,432,761,399	36,606
55 - 59	5,671	4,090	5,107	6,000	4,911	3,242	5,077	34,098	1,378,058,479	40,415
60 - 64	3,247	2,012	1,921	2,318	2,311	1,481	2,733	16,023	642,982,273	40,129
65 - 69	1,447	668	412	335	335	250	540	3,987	117,287,016	29,417
70 & Over	918	418	183	94	78	70	193	1,954	32,922,921	16,849
Total	82,701	46,183	34,603	34,461	21,907	11,913	10,800	242,568	$ 8,845,019,221	$ 36,464

ACTIVE AND INACTIVE MEMBERS REPORTED FOR VALUATION
HISTORICAL COMPARISON

Valuation Date September 30	Number of Inactive Vested Members	Active Members					
				Average			
		Number	Reported Payroll[1]	Annual Pay	% Increase	Age	Years of Service
1991	*	293,503	$ 6,032,513	$ 20,553	5.4 %	41.5	9.6
1992	*	297,230	6,427,775	21,626	5.2	41.7	9.5
1993	*	296,585	6,897,924	23,258	7.5	42.2	9.8
1994	*	291,006	7,164,807	24,621	5.9	42.5	10.0
1995	*	294,911	7,564,876	25,651	4.2	43.4	10.1
1996	*	295,096	7,807,029	26,456	3.1	43.6	9.9
1997	*	295,691	8,027,450	27,148	2.6	43.6	10.0
1998	*	302,016	8,265,463	27,368	0.8	43.5	9.7
1999	*	309,324	8,643,718	27,944	2.1	43.6	9.5
2000	*	312,699	8,984,737	28,733	2.8	43.6	9.7
2001	*	318,538	9,264,183	29,083	1.2	43.6	9.6
2002	14,403	326,350	9,707,281	29,745	2.3	43.6	9.5
2003	14,247	326,938	10,043,862	30,721	3.3	43.8	9.7
2004	15,756	322,494	10,407,072	32,271	5.0	43.8	9.7
2005	16,806	316,151	10,205,972	32,282	0.0	43.7	9.7
2006	15,679	308,233	9,806,452	31,815	(1.4)	44.1	9.9
2007	14,999	295,984	9,851,471	33,284	4.6	44.5	10.3
2008	14,312	278,642	9,958,132	35,738	7.4	44.9	10.8
2009	14,454	268,208	9,883,674	36,851	3.1	45.4	11.4
2010	15,026	242,568	8,845,019	36,464	(1.1)	45.2	11.1

* *Not available.*

[1] *Reported payroll in thousands. Beginning with the September 30, 2006 valuation, the payroll is no longer adjusted, and is the sum of the actual pays reported for each active member.*

SECTION E

METHODS AND ASSUMPTIONS

VALUATION METHODS

Actuarial Cost Method - Normal cost and the allocation of benefit values between service rendered before and after the valuation date was 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;

(iii) for Pension Plus Plan members, the normal cost is based on the benefit provisions applicable to new members (under the Pension Plus Plan). For other active members, the normal cost is based on the benefit provisions applicable to members hired from July 1, 2008 through June 30, 2010, consistent with previous actuarial valuations. Because there were so few members reported under the Pension Plus Plan (PPP) – only three months of the new hires – and because the data on these new hires is often incomplete, the employer normal cost rate for PPP members was set equal to the rate computed as if all active members were covered by PPP provisions.

Actuarial gains (losses), as they occur, reduce (increase) the Unfunded Actuarial Accrued Liability.

Financing of Unfunded Actuarial Accrued Liabilities - Unfunded actuarial accrued liabilities (full funding credit if assets exceed liabilities) were amortized by level (principal and interest combined) percent-of-payroll contributions over a reasonable period of future years.

VALUATION METHODS

Present value of future reconciliation payments – Subsection 41(9) of the MPSERS statute provides for a process to reconcile actual employer contributions to the actuarially computed contribution requirements. In order to avoid duplication of the employer contributions, the present value of future reconciliation payments is subtracted from the unfunded actuarial accrued liability. The net unfunded actuarial accrued liability is then amortized, resulting in the required amortization payment. Please refer to page A-1.

Actuarial Value of System Assets - The actuarial value of assets recognizes assumed investment income fully each year. Differences between actual and assumed investment income are phased in over a closed five year period. During periods when investment performance exceeds the assumed rate, actuarial value of assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, actuarial value of assets will tend to be greater than market value. The actuarial value of assets was reset to market value as of September 30, 2006, with five-year smoothing restarted at that time.

VALUATION ASSUMPTIONS

The rate of investment return was 8.0% a year, compounded annually net of investment and administrative expenses.

The assumed real return is the rate of return in excess of wage inflation. Considering other assumptions used in the valuation, the 8.0% nominal rate translates to a net real return of 4.5% a year.

The rates of pay increase used for individual members are in accordance with the table below. This assumption is used to project a member's current pay to the pay upon which System benefits will be based. The current assumption was first used for the September 30, 2004 valuation of the System.

	Pay Increase Assumptions For an Individual Member		
Sample Ages	Merit & Seniority	Base (Economy)	Increase Next Year
20	12.4 %	3.5 %	15.9 %
25	8.8	3.5	12.3
30	5.2	3.5	8.7
35	3.7	3.5	7.2
40	2.6	3.5	6.1
45	1.7	3.5	5.2
50	0.8	3.5	4.3
55	0.3	3.5	3.8
60	0.0	3.5	3.5
65	0.0	3.5	3.5
Ref	269		

The charts shown in this section may include a reference number (for example, 269 is used above). These reference numbers are used by GRS to track and identify assumption tables.

VALUATION ASSUMPTIONS

The healthy life post-retirement mortality table used in this valuation of the System was the RP-2000 Female Combined Healthy Mortality Table, adjusted for mortality improvements to 2020 using projection scale AA. For men, 140% of the table rates for ages 0-79, 133% of the table rates for ages 80-84, and 121.8% of the table rates for ages over 84 were used. For women, 96% of the table rates were used. This assumption was first used for the September 30, 2010 valuation of the System. Sample rates of mortality and years of life expectancy are shown below. This assumption is used to measure the probabilities of each benefit payment being made after retirement.

Sample Attained Ages	Probability of Dying Next Year		Future Life Expectancy (years)	
	Men	Women	Men	Women
50	0.17 %	0.11 %	31.95	35.01
55	0.32	0.22	27.27	30.25
60	0.64	0.44	22.82	25.67
65	1.23	0.84	18.70	21.36
70	2.12	1.45	15.00	17.38
75	3.35	2.30	11.73	13.75
80	5.30	3.83	8.88	10.48
Ref:	779 x 1.00	455 x 0.96		

For active members, the probabilities of dying before retirement were based upon the RP-2000 Combined Healthy Mortality Table, adjusted for mortality improvements to 2020 using projection scale AA. For men, 101% of the male table rates were used. For women, 82% of the female table rates were used. This assumption was first used for the September 30, 2010 valuation of the System. Sample rates of mortality and years of life expectancy are shown on the following page.

VALUATION ASSUMPTIONS

Sample Attained Ages	Probability of Dying Next Year		Future Life Expectancy (years)	
	Men	Women	Men	Women
20	0.02 %	0.01 %	61.77	66.00
25	0.03	0.01	56.85	61.03
30	0.04	0.02	51.94	56.08
35	0.07	0.03	47.07	51.14
40	0.09	0.04	42.25	46.23
45	0.12	0.07	37.45	41.34
50	0.15	0.10	32.68	36.49
55	0.25	0.19	27.96	31.70
60	0.49	0.37	23.39	27.08
65	0.97	0.72	19.09	22.70
Ref:	454 x 1.01	455 x 0.82		

Active member deaths are assumed to be non-duty related.

The disabled life mortality table used in this valuation was developed by the prior actuary pursuant to an experience study. Beginning with the September 30, 2010 valuation of the System, 110% of the table rates were used. For disabled retirees, the sample rates of mortality and years of life expectancy are shown below.

Sample Attained Ages	Probability of Dying Next Year		Future Life Expectancy (years)	
	Men	Women	Men	Women
50	2.75 %	1.89 %	19.84	24.11
55	2.95	2.24	17.48	21.42
60	3.48	2.68	15.05	18.88
65	4.33	3.12	12.72	16.44
70	5.52	3.56	10.55	13.98
75	7.24	4.14	8.55	11.42
80	9.61	5.85	6.76	8.78
Ref:	476 x 1.10	477 x 1.10		

VALUATION ASSUMPTIONS

The rates of retirement used to measure the probability of eligible members retiring during the next year are shown below. These assumptions were first used for the September 30, 2010 valuation of the System.

A Basic member is eligible for normal retirement after attaining age 55 with 30 or more years of credited service, or after attaining age 60 with 10 or more years of credited service.

A MIP member is eligible for normal retirement after 30 years of service, or after attaining age 60 with 5 or more years of service.

A Basic or MIP member is eligible for early retirement after attaining age 55 with 15 but less than 30 years of credited service.

A Pension Plus member is eligible for normal retirement after attaining age 60 with 10 or more years of credited service. Pension Plus members are not eligible for early retirement.

Normal Retirement

Retirement Ages	Percent of Eligible Members Retiring			
	Basic Members		MIP# and Pension Plus Members	
	Teachers	Non-Teachers	Teachers	Non-Teachers
55	25 %	30 %		
56	21	26		
57	16	24		
58	16	22		
59	18	22		
60	18	16	23 %	23 %
61	20	21	20	19
62	26	29	22	24
63	26	29	22	27
64	23	24	22	21
65	22	24	22	23
66	28	35	25	26
67	24	28	22	20
68	21	23	22	20
69	21	25	15	18
70	21	25	15	18
71	21	25	15	18
72	21	25	15	18
73	21	25	15	18
74	21	25	15	18
75 & Over	100	100	100	100
Ref	1727	1728	1730	1732

 # Applies to MIP members with fewer than 30 years of service.

VALUATION ASSUMPTIONS

Normal Retirement

Years of Service	Percent of Eligible Members Retiring — MIP Members with 30+ Years of Service: Teachers	Percent of Eligible Members Retiring — MIP Members with 30+ Years of Service: Non-Teachers
30	60 %	55 %
31	45	40
32	25	25
33	18	23
34	19	23
35	19	23
36	21	26
37	25	29
38	23	29
39	27	32
40	30	33
41	30	33
42	30	33
43	30	33
44	30	33
45	30	33
46	30	33
47	30	33
48	30	33
49	30	33
50	100	100
Ref	1731	1733

Early Retirement

Retirement Ages	Percent of Eligible Members Retiring: Basic Members	Percent of Eligible Members Retiring: MIP Members
55	7.7 %	8.4 %
56	7.7	8.4
57	7.7	8.4
58	7.7	8.4
59	7.7	8.4
Ref	1729	1734

VALUATION ASSUMPTIONS

Rates of separation from active membership used in the valuation are shown below (rates do not apply to members eligible to retire and do not include separation on account of death or disability). This assumption measures the probabilities of members remaining in employment, and was first used for the September 30, 2010 valuation of the System.

Sample Ages	Years of Service	Percent Separating Within Next Year			
		Pay More Than $20,000		Pay Less Than $20,000	
		Teachers	Non-Teachers	Teachers	Non-Teachers
All	0	28.00 %	30.00 %	36.00 %	37.50 %
	1	12.50	13.00	22.00	22.50
	2	7.75	8.50	14.50	13.50
	3	6.20	6.80	13.50	11.00
	4	5.00	5.30	12.50	9.00
20	5 & over	3.70	5.00	12.50	9.00
25		3.70	4.70	12.50	9.00
30		3.28	3.90	12.50	8.10
35		2.52	2.96	11.00	6.90
40		1.90	2.24	8.80	5.60
45		1.46	1.85	7.40	4.70
50		1.27	1.45	6.40	4.20
55		1.25	1.25	6.00	4.00
60		1.25	1.25	6.00	4.00
Svc Ref		576	574	577	575
Age Ref		1083	1081	1084	1082

VALUATION ASSUMPTIONS

Rates of disability among active members used in the valuation are shown below, and were first used in the September 30, 2010 valuation of the System. Disabilities are assumed to be non-duty related.

Sample Ages	Percent Becoming Disabled Within Next Year
20	0.00 %
25	0.01
30	0.01
35	0.02
40	0.05
45	0.10
50	0.18
55	0.26
60	0.36
Ref.	393 x 0.80

Service Credit Accrual Rates: Members were assumed to accrue service credit each year as described in the table below:

	Assumed Average Service Credit Accrued Each Year
Teachers with Pay Over $20,000	0.95 years
Non-Teachers with Pay Over $20,000	0.95
Teachers with Pay Under $20,000	0.66
Non-Teachers with Pay Under $20,000	0.76

Unknown Data: Members with unknown gender were assumed to be female. Members with unknown dates of birth were assumed to have an entry-age equal to 35 for MIP/PPP and 31 for Basic members. Active members who were reported without any annual pay were assumed to have pay equal to the average pay of the corresponding active group.

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

Benefit Service	Exact fractional service is used to determine the amount of benefit payable.
Decrement Operation	Disability and withdrawal decrements do not operate during retirement eligibility.
Decrement Timing	Retirement decrements are assumed to occur on July 1. All other decrements are assumed to occur mid-year.
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.
Forfeitures	For vested separations from service, it is assumed that 0% of members separating will withdraw their contributions and forfeit an employer financed benefit. It was further assumed that the liability at termination is the greater of the vested deferred benefit (if any) or the member's accumulated contributions.
Incidence of Contributions	Contributions are assumed to be received continuously throughout the year.
Liability Adjustments	Inactive vested member liabilities were increased by 2% to reflect the value of the death benefit provision.
Marriage Assumption	75% of males and 65% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses for active member valuation purposes.
Normal Form of Benefit	A straight life benefit is the normal form of benefit.
Pay Increase Timing	Pay increases were assumed to be at the beginning of the fiscal year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.

SECTION F

PLAN PROVISIONS

PLAN PROVISIONS

Our actuarial valuation of the System is based on the present provisions of the Public School Employees' Retirement Act (Act 300 of 1980, as amended).

Regular Retirement (no reduction factor for age):

Eligibility – For Basic members, age 55 with 30 years credited service; or age 60 with 10 years credited service. For Member Investment Plan (MIP) members, any age with 30 years credited service; or age 60 with 10 years credited service; or age 60 with 5 years of credited service provided member worked through 60th birthday and has credited service in each of the last 5 years. For Pension Plus Plan (PPP) members, age 60 with 10 years of credited service.

Mandatory Retirement Age - None.

Annual Amount - Total credited service times 1.5% of final average compensation.

Final Annual Compensation - Average of highest 5 consecutive years. (3 years for MIP members).

Early Retirement (age reduction factor used):

Eligibility - Age 55 with 15 or more years of credited service and earned credited service in each of the last 5 years. PPP members are not eligible for early retirement benefits.

Annual Amount - Regular retirement benefit, reduced by 1/2% for each month by which the commencement age is less than 60.

Deferred Retirement (vested benefit):

Eligibility - 10 years of credited service. Benefit commences at the time age qualification is met.

Annual Amount - Regular retirement benefit based on service and final average compensation at time of termination.

PLAN PROVISIONS

Duty Disability Retirement:

Eligibility - No age or service requirement; in receipt of workers' disability compensation.

Annual Amount - Computed as regular retirement benefit with minimum benefit based on 10 years credited service. Additional limitation such that disability benefits plus authorized outside earnings limited to 100% of final average compensation (increased by 2% each year retired).

Non-Duty Disability Retirement:

Eligibility - 10 years of credited service.

Annual Amount - Computed as regular retirement benefit based on credited service and final average compensation at time of disability. Additional limitation such that disability benefits plus authorized outside earnings limited to 100% of final average compensation (increased by 2% each year retired).

Duty Death Before Retirement:

Eligibility – No age or service requirement. Beneficiary is in receipt of workers' compensation. Also applies to "duty disability" retirees during first three years of disability.

Annual Amount – Spouse benefit computed as regular retirement benefit with minimum benefit based on 10 years of credited service, reduced for 100% Joint and Survivor election. If no surviving spouse, children under 18 share in benefit; if no spouse or children, a disabled and dependent parent is eligible.

Non-Duty Death Before Retirement:

Eligibility – For Basic members, 15 years of credited service, or age 60 and 10 years of credited service. For MIP members, 10 years of credited service, or age 60 and 5 years of credited service. For PPP members, 10 years of credited service, or age 60 and 10 years of credited service.

Annual Amount - Computed as regular retirement benefit, reduced in accordance with a 100% Joint and Survivor election, with payments commencing first of month following death. For the beneficiary of a deferred member, benefit commences at time member would have attained the minimum age qualification.

PLAN PROVISIONS

Member Contributions:

Basic Participants – None.

MIP Participants hired before January 1, 1990 - 3.9% of pay.

MIP Participants hired on or after January 1, 1990 and before July 1, 2008 - 3.0% of first $5,000 of pay, plus 3.6% of next $10,000 of pay, plus 4.3% of pay in excess of $15,000.

MIP and PPP Participants hired on or after July 1, 2008 - 3.0% of first $5,000 of pay, plus 3.6% of next $10,000 of pay, plus 6.4% of pay in excess of $15,000.

Post-Retirement Cost-of-Living Adjustments:

One-time upward adjustments have been made in 1972, 1974, 1976, and 1977 for members retired on or after July 1, 1956 and prior to July 1, 1976 who were eligible for Social Security benefits. For members who retired prior to July 1, 1956 and were not eligible for Social Security benefits based upon membership service, the minimum base pension was increased in 1965, 1971, 1972, 1974, and 1981 and in 1976 and 1977 one-time upward adjustment were made.

Beginning in 1983 some benefit recipients received an annual distribution of investment earnings in excess of 8% (supplemental payment). On January 1, 1986, all members who retired prior to January 1, 1986 were given a permanent 8% increase. On January 1, 1990 a one-time upward adjustment for members who retired prior to October 1, 1981 was made.

Currently members receive annual increases based on the following schedule:

Retired before January 1, 1987 - Greater of supplemental payment or automatic 3% increases.

Retired on or after January 1, 1987 under MIP - Automatic 3% increases only.

Retired on or after January 1, 1987 under Basic plan - Supplemental payment only.

Retired under PPP – No increases.

SECTION G

GLOSSARY

GLOSSARY

Actuarial Accrued Liability	The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as "accrued liability" or "past service liability."
Accrued Service	The service credited under the plan which was rendered before the date of the actuarial valuation.
Actuarial Assumptions	Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the "actuarial present value of future plan benefits" between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the "actuarial funding method."
Actuarial Equivalent	A single amount or series of amounts of equal value to another single amount or series of amounts, computed on the basis of the rate(s) of interest and mortality tables used by the plan.
Actuarial Present Value	The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.
Amortization	Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.
Experience Gain/(Loss)	A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

GLOSSARY

Normal Cost	The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as "current service cost." Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.
Reserve Account	An account used to indicate that funds have been set aside for a specific purpose and is not generally available for other uses.
Unfunded Actuarial Accrued Liability	The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as "unfunded accrued liability."
Valuation Assets	The value of current plan assets recognized for valuation purposes. Generally based on market value plus a portion of unrealized appreciation or depreciation.