

# ACTUARIAL VALUATION REPORT

*as of*

*JUNE 30, 2007*



*New York State Teachers' Retirement System*

Office of the Actuary  
July 15, 2008

**NEW YORK STATE TEACHERS' RETIREMENT SYSTEM**

**Actuarial Valuation Report  
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**TABLE OF CONTENTS**

<b>A.</b>	<b>INTRODUCTION.....</b>	<b>1</b>
<b>B.</b>	<b>EMPLOYER CONTRIBUTION RATE.....</b>	<b>1</b>
<b>C.</b>	<b>GAIN/LOSS IN THE EMPLOYER CONTRIBUTION RATE.....</b>	<b>3</b>
<b>D.</b>	<b>NEW ASSET VALUATION METHOD.....</b>	<b>4</b>
<b>E.</b>	<b>EMPLOYER CONTRIBUTION RATE HISTORY.....</b>	<b>5</b>
<b>F.</b>	<b>EMPLOYER CONTRIBUTION RATE DECREASE.....</b>	<b>6</b>
<b>G.</b>	<b>MEMBER DATA.....</b>	<b>6</b>
<b>H.</b>	<b>FUNDED STATUS.....</b>	<b>7</b>
<b>I.</b>	<b>ACTUARIAL EXPERIENCE.....</b>	<b>8</b>
<b>J.</b>	<b>NEW LEGISLATION.....</b>	<b>8</b>
<b>K.</b>	<b>FUTURE EXPECTATIONS.....</b>	<b>8</b>
<b>L.</b>	<b>CERTIFICATION.....</b>	<b>9</b>

**APPENDICES**

<b>1.</b>	<b>DEVELOPMENT OF THE ACTUARIAL VALUE OF ASSETS.....</b>	<b>10</b>
<b>2.</b>	<b>COMPARISON OF MARKET VALUE TO ACTUARIAL VALUE OF ASSETS.....</b>	<b>11</b>
<b>3.</b>	<b>THE ACTUARY'S VALUATION BALANCE SHEET.....</b>	<b>12</b>
<b>4.</b>	<b>FUNDING PROGRESS.....</b>	<b>13</b>
<b>5.</b>	<b>EMPLOYER CONTRIBUTION RATE.....</b>	<b>14</b>
<b>6.</b>	<b>MEMBER RECONCILIATION.....</b>	<b>23</b>
<b>7.</b>	<b>DISTRIBUTION OF ACTIVE MEMBERS.....</b>	<b>24</b>
<b>8.</b>	<b>HISTORICAL MEMBER STATISTICS.....</b>	<b>27</b>
<b>9.</b>	<b>RETIREMENT STATISTICS.....</b>	<b>28</b>
<b>10.</b>	<b>2003 – 2007 EXPERIENCE STUDY.....</b>	<b>30</b>
<b>11.</b>	<b>HISTORY OF THE EMPLOYER CONTRIBUTION RATE.....</b>	<b>41</b>
<b>12.</b>	<b>HISTORY OF THE MEMBER CONTRIBUTION RATE.....</b>	<b>42</b>
<b>13.</b>	<b>ACTUARIAL COST AND ASSET VALUATION METHODS.....</b>	<b>43</b>
<b>14.</b>	<b>PRESENT ACTUARIAL ASSUMPTIONS.....</b>	<b>44</b>
<b>15.</b>	<b>SUMMARY OF BENEFIT PROVISIONS.....</b>	<b>62</b>

# NEW YORK STATE TEACHERS' RETIREMENT SYSTEM

## Actuarial Valuation Report as of June 30, 2007

### A. INTRODUCTION

This report presents the results of the annual actuarial valuation of assets and liabilities of the New York State Teachers' Retirement System as of June 30, 2007. The purpose of this report is to summarize the determination of the Employer Contribution Rate which will be applied to member salaries earned during the July 1, 2008 to June 30, 2009 fiscal year and to review the funded status of the Retirement System.

### B. EMPLOYER CONTRIBUTION RATE

The Employer Contribution Rate to be applied to member salaries for the July 1, 2008 to June 30, 2009 fiscal year and collected in the fiscal year ending June 30, 2010 consists of four components. These components may be described as follows:

The **Normal Rate** represents the annual cost of accruing active member benefits. This component includes the cost of benefits accruing to active members on account of retirement, withdrawal, disability and death, except for benefits funded by the group life insurance rate.

The **Expense Rate** represents the administrative cost of the Retirement System and is set during the budget process.

The **Group Life Rate** is a one-year term rate and represents the cost of the first \$50,000 of member death benefits.

The **Excess Benefit Plan Rate** is a one-year term rate and represents the cost of benefit payments in excess of the Internal Revenue Code Section 415 limits.

The actuarially computed Employer Contribution Rate to be applied to the member salaries for the fiscal year ending June 30, 2009 is **7.63%**. The Employer Contribution Rates determined by the actuarial valuations as of June 30, 2007 and June 30, 2006 and the changes between the two are summarized below:

	As of <u>6/30/2007</u>	As of <u>6/30/2006</u>	<u>Change</u>
Normal Rate	7.17%	8.28%	-1.11%
Expense Rate	0.32	0.32	0.00
Group Life Rate	0.13	0.13	0.00
Excess Benefit Plan Rate	<u>0.01</u>	<u>0.00</u>	<u>+0.01</u>
Employer Contribution Rate	<b>7.63%</b>	<b>8.73%</b>	<b>-1.10%</b>

As in prior years, the actual employer contributions made by participating employers during the fiscal year ending June 30, 2007 were equal to the employer contributions determined in accordance with the annual actuarial valuation. Additional payments are made by certain participating employers as required by statute for participation in early retirement incentives and Section 803 of Article 18 of the Retirement and Social Security Law.

### C. GAIN/LOSS IN THE EMPLOYER CONTRIBUTION RATE

The Employer Contribution Rate of 7.63% represents a 110 basis point decrease over the prior year's rate of 8.73%.

#### NORMAL RATE

The Normal Rate component of the Employer Contribution Rate has decreased by 111 basis points over the prior year's rate. This change may be broken down as follows:

<b><u>Asset Valuation Method:</u></b>	A new asset valuation method was implemented and had the net effect of increasing the normal rate for the June 30, 2007 valuation.	+2.93
<b><u>Salary/Service:</u></b>	This loss is due to salary and service data coming in higher than expected.	+0.06
<b><u>Net Investment Gain:</u></b>	The investment return on the actuarial value of assets was approximately 15.0% which was greater than the 8.0% expected return.	-4.72
<b><u>New Entrants:</u></b>	New entrants join the Retirement System with no accumulated assets, did not participate in prior favorable investment experience, and enter with a higher average Normal Contribution Rate of approximately 11.6%. Because of this, New Entrants exert upward pressure on the Employer Contribution Rate.	+0.20
<b><u>Withdrawal:</u></b>	Fewer members withdrew than expected.	+0.17
<b><u>Mortality:</u></b>	Members are living longer than expected and receive benefits for a longer period.	+0.33
<b><u>Retirement:</u></b>	There were less retirements at younger ages than expected.	<u>-0.08</u>
<b><u>TOTAL CHANGE IN THE NORMAL RATE</u></b>		<b>-1.11%</b>

## **OTHER COMPONENTS**

The **Expense Rate** is set during the budget process and is unchanged from the previous year.

The **Group Life Insurance Rate** is unchanged from the previous year. Although the premiums collected have generally been more than sufficient to cover payments over the past several years, this rate is being held constant in anticipation of rising payouts in the future due to Tier 2, 3 and 4 post-retirement death benefits and the inactive death benefit.

The **Excess Benefit Plan Rate** has increased from 0.00% to 0.01%. This rate represents the retirement benefits paid in excess of the Internal Revenue Code Section 415 limits. These payments are made exclusively from the Excess Benefit Plan. This fund was established in accordance with the Excess Benefit Plan which received final IRS approval in August 2001. The rate has been set to 1 basis point in order to replenish the fund and ensure that the fund balance does not go below zero.

### **D. NEW ASSET VALUATION METHOD**

Effective June 30, 2007, the System changed its methodology for calculating the actuarial value of assets used in the annual actuarial valuation.

Historically, the annual actuarial valuation has included an asset smoothing, or averaging, method in order to determine the actuarial value of assets to use in the valuation. This practice was used primarily to reduce the effect of short-term market volatility on the employer contribution rate, and has been used in the actuarial valuation process since the June 30, 1986 valuation.

As a result of a recent review, it was concluded that the prior asset smoothing method was overly dependent on the book value of certain asset classes. As the System's portfolio has matured, and the market value and book value have diverged, the book value is less meaningful. Under the prior smoothing method, the actuarial value of equities, specifically domestic equities, international equities, real estate and private equities, was determined by multiplying the book

value as of the valuation date by the weighted average ratio of the market value to the book value as of the valuation date and the preceding four years.

In the new asset valuation method, each year’s actual gain or loss, above (or below) an assumed inflationary gain of 3.0%, is recognized at a rate of 20% per year until fully recognized after five years. It is anticipated that the new method will more closely align with market value performance. The effect of the asset valuation method change on the June 30, 2007 actuarial valuation was an increase in the employer contribution rate of 2.93% of payroll. A detailed illustration of the new method is provided in Appendix 5.

The new method was adopted by the Retirement Board at its meeting on January 31, 2008. Both the prior and new methods are generally accepted actuarial techniques and are permitted in accordance with actuarial standards of practice as stated in ASOP No. 44 “Selection and Use of Asset Valuation Methods for Pension Valuations”.

**E. EMPLOYER CONTRIBUTION RATE HISTORY**

The following chart summarizes the Employer Contribution Rate for the last 20 years:

<u>Salary Year</u>	<u>Employer Contribution Rate</u>	<u>Salary Year</u>	<u>Employer Contribution Rate</u>
1989-1990	6.87%	1999-2000	1.43%
1990-1991	6.84	2000-2001	0.43
1991-1992	6.64	2001-2002	0.36
1992-1993	8.00	2002-2003	0.36
1993-1994	8.41	2003-2004	2.52
1994-1995	7.24	2004-2005	5.63
1995-1996	6.37	2005-2006	7.97
1996-1997	3.57	2006-2007	8.60
1997-1998	1.25	2007-2008	8.73
1998-1999	1.42	2008-2009	7.63

The complete Employer Contribution Rate history is presented in Appendix 11.

## **F. EMPLOYER CONTRIBUTION RATE DECREASE**

The Employer Contribution Rate has decreased this year from 8.73% to 7.63%. This represents approximately a 12.6% decrease. The Normal Rate component equals 7.17%, a decrease of approximately 13.4% from the prior year's Normal Rate of 8.28%. The impact of implementing the new asset valuation method would have been an increase in the Normal Rate; however, primarily due to very favorable investment experience during the fiscal year ending June 30, 2007, this increase was offset, leading to a decrease in the Normal Rate from that of the prior year.

Five years ago a separate reserve was created, a "Provision for Adverse Market Deviation", in order to dampen the volatility of the Employer Contribution Rate as a result of capital market fluctuations. This reserve continues to exist. As the Employer Contribution Rate has increased, this dampening of the volatility in the Employer Contribution Rate has greatly assisted participating employers, especially school districts, with budgeting for required employer contributions.

It is important to note that the plan's New Entrant Normal Rate is approximately **11.6%** of pay. This means the cost for each new member, if each year the actuarial assumptions are exactly realized, would be approximately 11.6% of pay. As the Retirement System's membership continues to grow, and more and more New Entrants join, the Normal Rate is pulled toward this 11.6% rate. Additionally, if returns in the capital markets over a period of years are below expectations and actuarial losses accrue as a result, the Normal Rate could well increase beyond the New Entrant Normal Rate of 11.6% of pay. It is not a cap.

## **G. MEMBER DATA**

The member data for the valuation was determined as of June 30, 2007. Compared with the previous year, the total number of members increased from 393,997 to 403,401; the number of active members increased from 264,410 to 270,045; the number of retired members increased from 124,954 to 128,591; and the number of beneficiaries receiving monthly benefits increased from 4,633 to 4,765.



The number of retirements decreased from 7,281 during the 2005-2006 fiscal year to 6,900 during the 2006-2007 fiscal year. There was no early retirement incentive offered in the 2006-2007 fiscal year. The number of retirements in recent years has remained generally consistent and, absent the offer of an early retirement incentive, is expected to continue. The number of retirements over the last ten years is as follows:

<u>Fiscal Year</u>	<u>Total Number of Retirements</u>	<u>Fiscal Year</u>	<u>Total Number of Retirements</u>
1997-1998*	5,303	2002-2003*	10,173
1998-1999*	6,111	2003-2004	7,287
1999-2000*	6,658	2004-2005	7,182
2000-2001*	7,946	2005-2006	7,281
2001-2002	7,344	2006-2007	6,900

\*denotes an early retirement incentive offered during that fiscal year.

## **H. FUNDED STATUS**

As of June 30, 2007, the actuarial value of plan assets was equal to \$82.86 billion. The accrued pension benefit liability in accordance with the Entry Age Normal Cost Method was equal to \$79.54 billion. These two values produced a funded ratio of 104.2% as of June 30, 2007.

In accordance with Governmental Accounting Standards Board (GASB) Statement No. 50 "Pension Disclosures", the plan liabilities have been calculated in accordance with the Entry Age Normal Cost method, for purposes of this funded ratio calculation. The Retirement System is funded in accordance with the Aggregate Cost Method. GASB now requires that the Entry Age Normal Cost Method be used to calculate the accrued liability for purposes of presenting the funded ratio calculation for plans being funded in accordance with the Aggregate Cost Method.

## **I. ACTUARIAL EXPERIENCE**

Each year the Retirement System completes an experience study in order to regularly monitor the reasonableness and appropriateness of the actuarial assumptions used in the actuarial valuation. These assumptions are used to estimate the probability a member will cease teaching due to retirement, withdrawal, disability, or death. In addition, the assumptions are used to estimate future salary increases, future investment earnings, and the probability of death for retired members and beneficiaries. A summary of the results of the most recent experience study is contained in Appendix 10. The current actuarial assumptions were adopted by the Retirement Board on October 26, 2006, effective with the actuarial valuation of the Retirement System's assets and liabilities as of June 30, 2006.

The Retirement Board annually reviews the asset allocation policy to determine if historical investment experience, recent developments and/or future expectations require any changes in the policy. The current asset allocation policy as approved by the Retirement Board in July 2007 produces a long-term expected annual investment rate of return of 8.2%. Therefore, the valuation rate of interest of 8.0% remains reasonable and appropriate.

## **J. NEW LEGISLATION**

There were no significant benefit improvements enacted during the 2007 Legislative Session.

## **K. FUTURE EXPECTATIONS**

The market value rate of return on assets for the fiscal year ending June 30, 2007 was 19.3%. The five-year market value rate of return was 12.3% as of June 30, 2007. The employer contribution rate decreased primarily due to actuarial gains on investments in this, as well as the prior few, fiscal years.

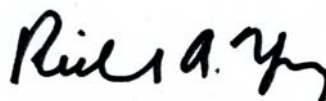
Looking ahead, however, the fiscal year ending June 30, 2008 was a very poor returning year in the capital markets. While our market value rate of return for the year has not yet been finalized, it is anticipated that it will be in the -5% to -10% range. The asset smoothing method

will dampen the impact of this negative return, however. Additionally, the rates of return during each of the prior four fiscal years exceeded the 8.0% assumed rate of return.

## **L. CERTIFICATION**

This actuarial valuation relies on member data provided by the participating employers to the Retirement System's administrative staff. The administrative and actuarial staffs review this data for reasonability as well as reconcile it against prior data. In addition, the valuation relies on financial data provided by the Retirement System's Finance Department. All data is reviewed by the Retirement System's independent auditors as part of the annual audit.

The benefits recognized in this actuarial valuation are prescribed by New York State statute (Article 11 of the Education Law and Articles 11, 14, 15, 18, 19, and 20 of the Retirement and Social Security Law), and are summarized in Appendix 15. All benefits are included in the actuarial valuation. The actuarial methods, calculations, and actuarial assumptions are in accordance with standards of practice prescribed by the Actuarial Standards Board and generally accepted actuarial principles and procedures. The assumptions used in determining the liabilities and costs are internally consistent and reasonably related to actual and anticipated future experience of the Retirement System. I meet the qualification standards of the American Academy of Actuaries.



Richard A. Young, A.S.A., E.A., M.A.A.A.  
Actuary

New York State  
Teachers' Retirement System  
Office of the Actuary  
July 15, 2008

## APPENDIX 1

### DEVELOPMENT OF THE ACTUARIAL VALUE OF ASSETS

From June 30, 2006 to June 30, 2007

	Actuarial Value* (in thousands)
1. Actuarial Value of Assets as of June 30, 2006	\$78,260,336
2. Contributions and Transfers	
Employer contributions	977,111
Member contributions	151,456
Net transfer of reserves in/out	<u>7,259</u>
Subtotal	1,135,826
3. Net Investment Income/(Loss)	8,042,756
4. Distributions	
Benefit payments	4,653,722
Return of member contributions	<u>16,819</u>
Subtotal	4,670,541
5. Actuarial Value of Assets as of June 30, 2007 <sup>1</sup>	<u>\$82,768,378<sup>2</sup></u>
6. Market Value of Assets as of June 30, 2007	\$104,912,949

\*Numbers may not total due to rounding.

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<sup>1</sup> Effective June 30, 2007, the Retirement System's asset valuation method has changed.

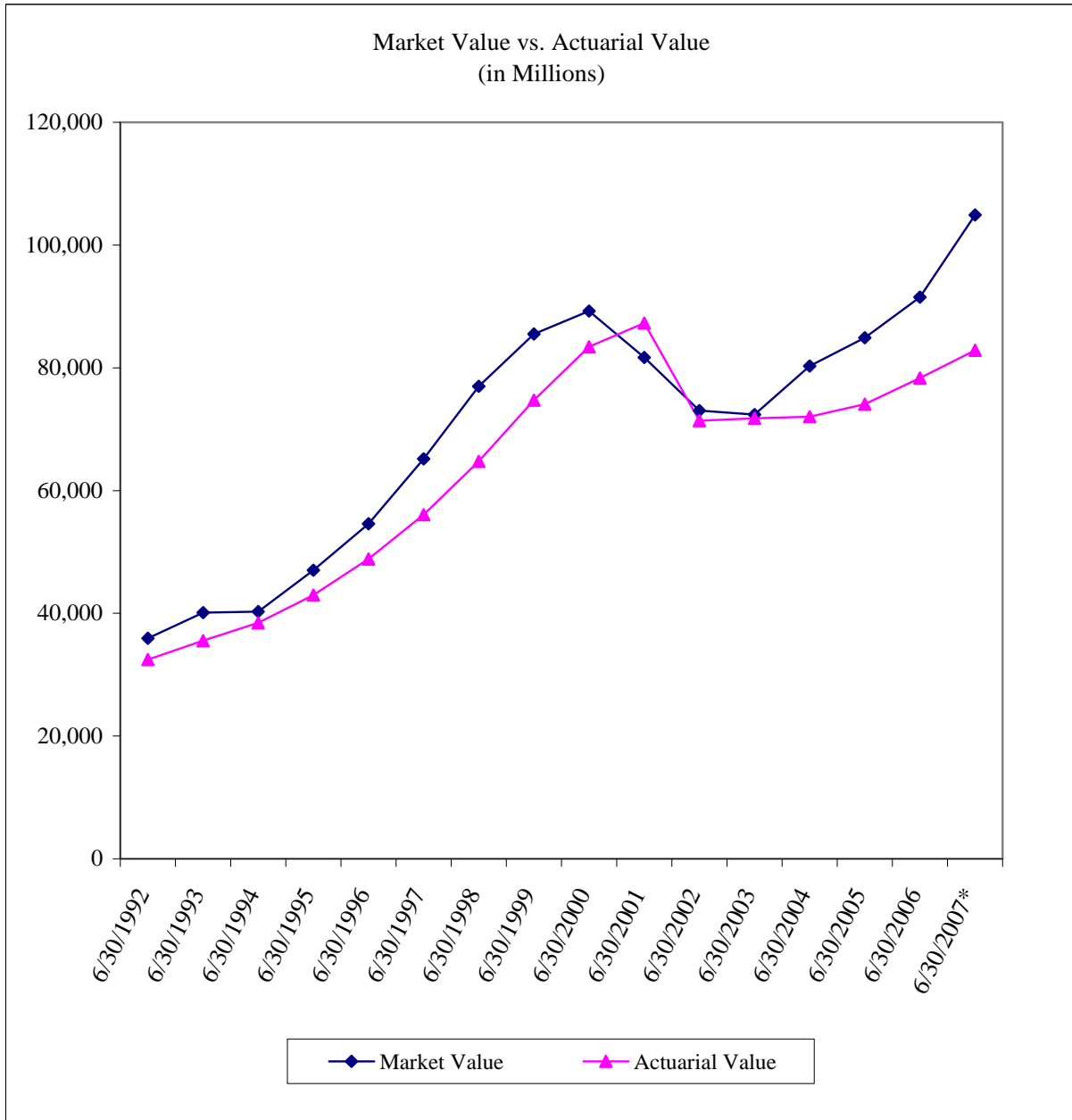
<sup>2</sup> Actuarial value of assets used in determining the Normal Rate, and excludes the net asset value of the Group Life Insurance Fund.

APPENDIX 2

COMPARISON OF MARKET VALUE TO ACTUARIAL VALUE OF ASSETS

(in Millions)

Fiscal Year Ending	Market Value	Actuarial Value	Fiscal Year Ending	Market Value	Actuarial Value
6/30/1992	\$ 35,940.9	\$ 32,432.3	6/30/2000	\$ 89,247.3	\$ 83,421.8
6/30/1993	40,094.6	35,527.1	6/30/2001	81,664.2	87,295.3
6/30/1994	40,291.5	38,464.9	6/30/2002	73,041.2	71,374.4
6/30/1995	46,999.1	42,984.8	6/30/2003	72,391.5	71,780.4
6/30/1996	54,567.5	48,865.4	6/30/2004	80,276.2	72,044.4
6/30/1997	65,152.4	56,085.3	6/30/2005	84,908.5	74,074.3
6/30/1998	76,980.5	64,778.9	6/30/2006	91,492.2	78,335.8
6/30/1999	85,514.4	74,721.1	6/30/2007*	104,912.9	82,858.9



\*Effective June 30, 2007, the Retirement System's asset valuation method has changed.

## APPENDIX 3

### THE ACTUARY'S VALUATION BALANCE SHEET

as of June 30, 2007  
(in Thousands)

Since the liabilities of a retirement system consist largely of obligations on account of benefits which have not yet matured, an annual statement of its receipts and disbursements or of its income and expenditures is not sufficient to indicate its true financial position. These statements give a clear picture of the current transactions of a retirement system and show what the present assets are, but since these present assets are held for the payment of future benefits coming due over a longer period of time, we have no basis for judging the financial solvency of the system unless we determine by actuarial valuation what these future benefits are likely to amount to and whether the present assets, together with the prospective assets, will be sufficient to cover their costs.

The following balance sheet furnishes this comparison. It presents the results of the annual actuarial valuation of the present and prospective assets and liabilities of the retirement system, which was prepared by the Actuary as of June 30, 2007.

#### ASSETS

Present Assets of System for Valuation Purposes <sup>1</sup>	\$82,858,898
Present Value of Prospective Contributions to Pension Accumulation Fund	
from Employer Contributions	10,935,612
from Member Contributions	<u>629,747</u>
TOTAL ASSETS	<u>\$94,424,257</u>

#### LIABILITIES

Present Value of Future Benefits to:	
Retired Members and Beneficiaries	\$45,317,563
Active Members	49,064,634
Member Contributions Accumulated to Date in the Annuity Savings Fund	29,354
Benefits Due and Unpaid	<u>12,706</u>
TOTAL LIABILITIES	<u>\$94,424,257</u>

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<sup>1</sup> Differs from the assets presented in the Retirement System's financial statements because the actuarial value of assets is not at market value.

## APPENDIX 4

### FUNDING PROGRESS

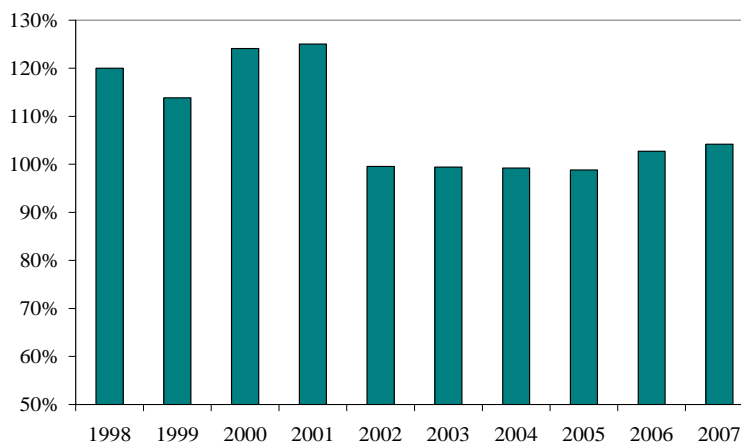
The Actuary's Valuation Balance Sheet provides a point-in-time comparison, as determined by actuarial valuation, between the present value of projected future benefits and the present assets as well as prospective contributions. In order to effectively assess the funding progress of a retirement system, it is necessary to compare the actuarial value of assets and the accrued pension benefit liabilities over a period of time.

The Retirement System's funding method has allowed the accumulation of assets sufficient for the funding of its liabilities in a systematic and reasonable manner.

#### Analysis of Funding Progress (in Millions)

Fiscal <u>Year</u>	Actuarial Value <u>of Assets</u>	Accrued Pension <u>Benefit Liability</u>	Percent <u>Funded</u>
1998	\$64,778.9	\$53,961.5	120.0%
1999	74,721.1	65,636.7	113.8
2000	83,421.8	67,201.9	124.1
2001	87,295.3	69,817.0	125.0
2002	71,374.4	71,693.4	99.6
2003	71,780.4	72,209.4	99.4
2004	72,044.4	72,604.9	99.2
2005	74,074.3	74,961.1	98.8
2006 <sup>1</sup>	78,335.8	76,353.0	102.6
2007 <sup>2</sup>	82,858.9	79,537.2	104.2

#### Percent Funded



<sup>1</sup> Effective June 30, 2006, the Accrued Pension Benefit Liability is calculated under the Entry Age Normal Cost Method as required by Governmental Accounting Standards Board (GASB) Statement No. 50 – *Pension Disclosures*. NYSTRS is funded in accordance with the Aggregate Cost Method. GASB now requires that the Entry Age Normal Cost Method be used to calculate the accrued liability for purposes of presenting the funded percentage.

<sup>2</sup> Effective June 30, 2007, the Retirement System's asset valuation method has changed.

APPENDIX 5

**EMPLOYER CONTRIBUTION RATE**

2007 Valuation  
8.00% Interest

<b>Normal Rate</b>	7.17 %
<b>Group Life Rate</b>	0.13
<b>Excess Benefit Plan Rate</b>	0.01
<b>Expense Rate</b>	<u>0.32</u>
<b>Computed Contribution Rate as of June 30, 2007</b>	= <b>7.63 %</b>



## APPENDIX 5 (Cont'd.)

**NORMAL RATE**

2007 Valuation

8.00% Interest

**Liabilities****Active Tier 1**

Service Pension	\$5,407,086,514
Disability Pension	112,223
Vested Pension	1,078,470
Active Death over \$50,000	17,617,644
Death Benefit After 10-Yr Withdrawal over \$50,000	151
Annuity Savings Fund	29,354,006
COLA	129,322,337
Total	<u>\$5,584,571,345</u>

**Active Tier 2**

Service Pension	\$4,958,463,233
Post Retired Death over \$50,000	2,752,107
Disability Pension	1,394,922
Post Disabled Death over \$50,000	20,902
Vested Pension	12,835,161
Active Death over \$50,000	9,789,786
Death Benefit After 10-Yr Withdrawal over \$50,000	2,182
COLA	126,506,327
Total	<u>\$5,111,764,620</u>

**Active Tier 3**

Service Pension	\$6,681,157,618
Post Retired Death over \$50,000	5,336,043
Disability Pension	17,588,155
Post Disabled Death over \$50,000	392,123
Refund on Active Death	4,032,000
Active Death over \$50,000	18,727,527
Refund on Quit	249,859
Vested Pension	136,354,958
Death Benefit After 10-Yr Withdrawal over \$50,000	56,696
Refund on Death after Vested Withdrawal	33,153
COLA	182,294,418
Total	<u>\$7,046,222,550</u>

**Active Tier 4**

Service Pension	\$27,449,939,519
Post Retired Death over \$50,000	56,890,755
Disability Pension	198,575,705
Post Disabled Death over \$50,000	7,086,671
Refund on Active Death	20,908,054
Active Death over \$50,000	191,639,662
Refund on Quit	194,716,922
Vested Pension	1,664,479,085
Death Benefit After 10-Yr Withdrawal over \$50,000	3,442,825
Refund on Death after Vested Withdrawal	1,899,062
COLA	721,338,455
Total	<u>\$30,510,916,715</u>

APPENDIX 5 (Cont'd.)

**NORMAL RATE**

2007 Valuation

8.00% Interest

**Liabilities (continued)**

**Retirees**

Retired Pension	\$40,178,520,225
Retired Annuity	195,020,037
Disability Pension	257,821,106
Disability Annuity	1,358,757
Beneficiary Pension	465,014,241
Beneficiary Annuity	8,958,416
DBA Pension	7,281,090
DBA Annuity	651,204
Escalation	5,173,423
Post Retired Death over \$50,000	703,113
COLA	3,102,108,425
Catch-Up & Prior §532 Supp	1,036,503,242
Total	<u>\$45,259,113,279</u>

**Vesteds**

Inactive Vested	\$147,267,373
Death Benefit After 10-Yr Withdrawal over \$50,000	478,174
Active Vested	317,148,374
Death Benefit After 10-Yr Withdrawal over \$50,000	963,107
COLA	12,101,411
Total	<u>\$477,958,439</u>

**TIAA**

Service Pension	\$3,813,649
Disability Pension	77,283
Vested Pension	122,424
Active Death over \$50,000	5,040
COLA	301,709
Total	<u>\$4,320,105</u>

**Miscellaneous**

Incurred Death but not Paid	\$3,992,710
Unclaimed Non-Member Funds	6,119,673
Total	<u>\$10,112,383</u>

**Total Liabilities**

\$94,004,979,436

APPENDIX 5 (Cont'd.)

**NORMAL RATE**

2007 Valuation

8.00% Interest

**Assets for Valuation**

Current Total Assets		\$103,651,575,130	
Less:	Left with Organization to Accrue Interest	769,507	
	Expenses Due and Accrued	24,312,133	
	Other Liabilities	176,737,553	
	Expense Fund	17,435,181	
	Sub-total		\$103,432,320,756
Less:	5 Year Smoothing Adjustment		15,848,422,460
Less:	Provision for Adverse Market Deviation		4,725,000,000
	<b>Assets for Valuation Purposes</b>		\$82,858,898,296
Less:	Group Life Insurance Fund Net Asset Value		\$90,520,794
	<b>Assets for Normal Rate Valuation Purposes</b>		\$82,768,377,502

**Receivables**

Assets receivable from Normal Rate in 2007-2008 fiscal year (2006-2007 paybase)(2005 Normal Rate)(1.0800) <sup>-7/24</sup> (13,083,003,687) (0.0821)(1.0800) <sup>-7/24</sup>		\$1,050,272,576
Assets receivable from Normal Rate in 2008-2009 fiscal year (2007-2008 paybase)(2006 Normal Rate)(1.0800) <sup>-1 7/24</sup> (13,522,000,000) (0.0828)(1.0800) <sup>-1 7/24</sup>		\$1,013,675,424
Assets receivable from the amortization of Article 18		\$186,864
Present Value of Future Member Contributions (Tier 4 Present Value of Future Employee Contributions)(1.0800) <sup>-7/24</sup> (644,042,864) (1.0800) <sup>-7/24</sup>		\$629,747,101
Assets receivable from Retirement Incentive Payments Chapter 69 of the Laws of 2002 Receivable in 2007-2008 (23,536,022) (1.0800) <sup>-7/24</sup>		<u>\$23,013,595</u>
		<u>\$23,013,595</u>
		\$2,716,895,560

APPENDIX 5 (Cont'd.)

**NORMAL RATE**

2007 Valuation  
8.00% Interest

Present Value of Future Salaries

	<u>Total PVFS</u>	
Tier 1	\$1,382,572,696	
Tier 2	1,902,824,383	
Tier 3	5,831,478,505	
Tier 4	<u>112,352,997,094</u>	
	<u>\$121,469,872,678</u>	$\times (1.0800)^{-7/24}$
		= \$118,773,616,651

Normal Rate

$\frac{\text{Total Liabilities - (Assets + Receivables)}}{\text{Present Value of Future Salaries}}$	=	
$\frac{\$8,519,706,374}{\$118,773,616,651}$		7.1731%
		7.17% (rounded)

**GROUP LIFE INSURANCE FUND**

2007 Valuation

8.00% Interest

**A) Calculation of June 30, 2007 Balance**

Actuarial Value as of July 1, 2006		\$121,425,830
Interest	[ 121,425,830 x .08 ]	\$9,714,066
October 15, 2006 actual premium	\$16,317,828	
October 15, 2006 deferred premium	<u>(\$16,528,200)</u>	
Premium Gain/(Loss)		(\$210,372)
Interest	[ (210,372) x (1.08 <sup>8.5/12</sup> - 1) ]	(\$11,787)
Death Benefits paid in 2006-2007		(\$7,942,682)
Interest	[ (7,942,682) x (1.08 <sup>.5</sup> - 1) ]	(\$311,595)
October 15, 2009 deferred premium [from B]		\$18,198,700
Interest discount	[ 18,198,700 x (1.08 <sup>-(2+3.5/12)</sup> - 1) ]	<u>(\$2,942,574)</u>
<b>Actuarial Value as of June 30, 2007</b>		<b>\$137,919,586</b>

**B) Calculation of Required Premium, GLIF Rate and Deferred Premium**

Death benefits	[ 7,942,682 x 1.08 <sup>2+9.5/12</sup> ]	\$9,846,348
Interest	[ (9,714,066) x 1.08 <sup>2+3.5/12</sup> ]	(\$11,587,698)
Premium Loss/(Gain)	[ 210,372 x 1.08 <sup>3</sup> ]	\$265,008
Adjustment to the GLIF reserve		<u>\$19,675,042</u>
Total required premium		\$18,198,700
GLIF Rate	=	$\frac{\text{Required premium}}{\text{Estimated 2008-2009 paybase}}$
	=	$\frac{\$18,198,700}{\$13,999,000,000}$
	=	0.13%
October 15, 2009 deferred premium	[ 13,999,000,000 x 0.0013 ]	\$18,198,700

**C) Summary of Deferred Premiums**

	<u>Deferred Premium</u>	<u>Present Value as of 6/30/2007</u>
Due October 15, 2007	\$16,840,200	\$16,466,400
Due October 15, 2008	\$17,314,700	\$15,676,266
Due October 15, 2009	\$18,198,700	<u>\$15,256,126</u>
		\$47,398,792

**D) GLIF Net Asset Value (A - C)**

\$137,919,586 - \$47,398,792 = \$90,520,794

APPENDIX 5 (Cont'd.)

**EXCESS BENEFIT PLAN FUND\***  
2007 Valuation

<b>Balance as of July 1, 2007</b>		\$3,244,925
<b>less</b>	Accrual Final Adjustment for the 2007 Fiscal Year	\$66,264
<b>plus</b>	Employer contribution (paid 10/15/2007) [ 0.0001 X \$13,083,003,687 (6/30/2005 ECR rate of .01% times '06-'07 paybase) ]	\$1,308,300
<b>less</b>	Annual Estimated Payments	<u>\$600,000</u>
<b>Expected Balance as of June 30, 2008</b>		\$3,886,961
<b>plus</b>	Employer contribution (payable 10/15/2008) [ .0000 X \$13,522,000,000 (6/30/2006 ECR rate of .0000% times est'd. '07-'08 paybase) ]	\$0
<b>less</b>	Annual Estimated Payments (\$600,000 X 1.5)	<u>\$900,000</u>
<b>Expected Balance as of June 30, 2009</b>		\$2,986,961

$$\begin{aligned}
 \text{Rate} &= \frac{\text{Anticipated Excess Benefits Paid in 2009-2010}}{\text{2008-2009 Salary}} = \frac{\$600,000 \times 1.5 \times 1.5}{\$13,999,000,000} \\
 &= \frac{\$1,350,000}{\$13,999,000,000} = 0.00964\%
 \end{aligned}$$

round to 0.01%

\* Fund is in a zero-interest checking account

APPENDIX 5 (Cont'd.)

The Administrative Employer Contribution Rate (Rate) and Employer Contributions<sup>1</sup>

The administrative portion of the employer contribution rate is adopted annually by the Retirement Board in the amount necessary to defray member-related expenses for the following fiscal year. The first step in determining the rate is to divide the projected member-related expenses by the projected member salary base. Consideration is then given to the overall health of the fund balance.

The Rate remained at 0.25% for a four-year period from 2004-05 through 2007-08 contributions. Economic conditions and projects set forth in the System's business plan necessitated an increase in the Rate to 0.32% where it remains today. The 32.07% increase in employer contributions for 2008-09 reflects the new rate as well as the projected growth in the member salary base from \$13,083,003,687 in 2006-07 to \$13,522,000,000 in 2007-08.

**Employer Contributions to the Administrative Expense Fund**

Member Salary Base			Employer Contributions (Net of Billing Adjustments)		Increase in Contributions to the Administrative Fund
Year	Amount	Rate	Year Collected	Amount	Percent
2002-03	11,427,089,463	0.23 %	2003-04	26,304,495	6.95 %
2003-04	11,766,665,114	0.25	2004-05	29,417,836	11.84
2004-05	12,163,707,565	0.25	2005-06	30,454,517	3.52
2005-06	12,518,030,337	0.25	2006-07	31,379,402	3.04
2006-07	13,083,003,687	0.25	2007-08	32,764,295	4.41
2007-08	13,522,000,000 *	0.32	2008-09	43,270,400	32.07
2008-09	13,999,000,000 *	0.32 *	2009-10	44,796,800	3.53
2009-10	14,489,000,000 *	0.32 *	2010-11	46,364,800	3.50

\*Projected.

Projected Member Salary Base

The member salary base is actuarially determined. It increases as new members join the System and as a result of pay increases members receive from their employers. Annual retirements and other forms of separation from service mitigate this increase. The member salary base is projected to increase 3.24% to 3.53% annually for the next several years. It has been estimated at \$13,999,000,000 for 2008-09.

Anticipated Expenses and the Administrative Employer Contribution Rate for 2009-10: 0.32%

Several factors have been considered in anticipating expenses to be used in calculating the 2009-10 administrative rate. These include general price increases, an estimated 10% increase in health insurance premiums, and planned capital asset purchases. Based on these factors, the 2009-10 operating budget is estimated to be \$60,600,000.

**Calculation of Administrative Rate**

Estimated operating budget 2009-10 based on above	\$ 60,600,000	
Percentage allocated to member-related programs	0.69	
Projected 2009-10 Member-Related Expenses	\$ 41,814,000	
<u>Projected 2009-10 Member-Related Expenses</u> =	<u>\$ 41,814,000</u>	= 0.30%
Projected 2008-09 Member Salary Base	\$13,999,000,000	
<b>Recommended rate based on this calculation and consideration of the overall strength of the fund balance:</b>		<b>= 0.32%</b>

<sup>1</sup> From the NYSTRS 2008-09 Operating Budget Report.

APPENDIX 5 (Cont'd.)

**ASSET VALUATION METHOD  
DEVELOPMENT OF SMOOTHING ADJUSTMENT**

<u>FYE</u>	<u>Market Value</u>	<u>Contributions</u>	<u>Benefit Payments</u>	<u>Average Market Value<sup>1</sup></u>
06/30/2002	72,754,465,180	277,878,054	3,256,091,779	
06/30/2003	71,979,965,783	231,728,685	3,670,076,118	71,083,568,273
06/30/2004	79,727,765,026	314,575,961	3,976,325,636	70,214,627,604
06/30/2005	84,011,699,408	494,425,829	4,190,897,542	77,982,534,551
06/30/2006	90,319,347,651	872,914,574	4,484,684,109	82,387,671,843
06/30/2007	103,651,575,130	1,176,264,166	4,722,377,152	88,791,346,193

<u>FYE</u>	<u>Actual Gain<sup>2</sup></u>	<u>(3.0%) Expected Gain<sup>3</sup></u>	<u>Unexpected Gain<sup>4</sup></u>	<u>Smoothing Adjustment<sup>5</sup></u>
06/30/2002	-7,603,665,928			
06/30/2003	658,543,826	2,132,507,048	-1,473,963,222	
06/30/2004	9,512,009,700	2,106,438,828	7,405,570,872	
06/30/2005	5,977,703,650	2,339,476,037	3,638,227,613	
06/30/2006	7,914,023,262	2,471,630,155	5,442,393,107	
06/30/2007	14,721,967,106	2,663,740,386	12,058,226,720	<b>15,848,422,460</b>

<sup>1</sup> Average Market Value = Market Value<sub>(previous yr)</sub> - (.5 x Benefit Payments)  
+ (8.5/12) x Contributions

<sup>2</sup> Actual Gain = Net Appreciation (Realized and Unrealized)

<sup>3</sup> Expected Gain = 3.0% x Average Market Value

<sup>4</sup> Unexpected Gain = Actual Gain - Expected Gain

<sup>5</sup> Smoothing Adjustment = (.20 x Unexpected Gain 6/30/2004)  
+ (.40 x Unexpected Gain 6/30/2005)  
+ (.60 x Unexpected Gain 6/30/2006)  
+ (.80 x Unexpected Gain 6/30/2007)



APPENDIX 6

**MEMBER RECONCILIATION**

**ACTIVE MEMBERS:**

	<b>Men</b>	<b>Women</b>	<b>Total</b>
June 30, 2006.....	64,747	199,663	<b>264,410</b>
Changes During Year:			
Added.....	3,817	12,789	<b>16,606</b>
Withdrawn.....	995	2,906	<b>3,901</b>
Retired.....	2,017	4,883	<b>6,900</b>
Died.....	58	112	<b>170</b>
Total Membership June 30, 2007.....	65,494	204,551	<b>270,045</b>

**MEMBERS RETIRED FOR:**

	<b>Service*</b>			<b>Disability</b>			<b>Total</b>		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
June 30, 2006.....	47,205	75,742	122,947	551	1,456	2,007	<b>47,756</b>	<b>77,198</b>	<b>124,954</b>
Changes During Year:									
Retired.....	1,995	4,770	6,765	22	113	135 **	<b>2,017</b>	<b>4,883</b>	<b>6,900</b>
Died.....	1,035	1,766	2,801	29	65	94	<b>1,064</b>	<b>1,831</b>	<b>2,895</b>
Lump Sum.....	93	271	364	0	0	0	<b>93</b>	<b>271</b>	<b>364</b>
Restored to Active Membership....	0	0	0	0	4	4	<b>0</b>	<b>4</b>	<b>4</b>
June 30, 2007.....	48,072	78,475	126,547	544	1,500	2,044 ***	<b>48,616</b>	<b>79,975</b>	<b>128,591</b>

**BENEFICIARIES OF DECEASED:**

	<b>Service Annuitants</b>			<b>Disability Annuitants</b>			<b>Active Members</b>			<b>Total</b>		
	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
June 30, 2006.....	832	3,307	4,139	78	179	257	33	204	237	<b>943</b>	<b>3,690</b>	<b>4,633</b>
Changes During Year:												
Added.....	105	277	382	5	4	9	0	0	0	<b>110</b>	<b>281</b>	<b>391</b>
Died.....	66	170	236	4	9	13	0	10	10	<b>70</b>	<b>189</b>	<b>259</b>
June 30, 2007.....	871	3,414	4,285	79	174	253	33	194	227	<b>983</b>	<b>3,782</b>	<b>4,765</b>

**SUMMARY**

	<b>Men</b>	<b>Women</b>	<b>Total</b>
Active Members.....	65,494	204,551	<b>270,045</b>
Retired Members.....	48,616	79,975	<b>128,591</b>
Beneficiaries.....	983	3,782	<b>4,765</b>
Total.....	115,093	288,308	<b>403,401</b>

\*Also includes vested retirees.

\*\*Includes 1 man retired for disability who receives a service benefit.

\*\*\*Includes 47 men and 65 women retired for disability who receive a service benefit.

APPENDIX 7

DISTRIBUTION OF ACTIVE MEMBERS

Distribution by Age as of June 30, 2007

<u>Age</u>	<u>Males</u>	<u>Females</u>	<u>Total Members</u>
15-19	11	22	33
20-24	1,524	5,563	7,087
25-29	8,523	25,874	34,397
30-34	10,277	28,479	38,756
35-39	10,104	28,710	38,814
40-44	8,199	25,357	33,556
45-49	7,334	26,473	33,807
50-54	7,749	28,305	36,054
55-59	7,817	24,838	32,655
60-64	3,070	8,677	11,747
65-69	627	1,768	2,395
70-74	168	350	518
75-79	66	113	179
80-84	22	18	40
85 or older	<u>3</u>	<u>4</u>	<u>7</u>
Total	65,494	204,551	270,045

*Average Male age is 42 years 1 month*

*Average Female age is 42 years 5 months*

APPENDIX 7 (Cont'd.)

Distribution of Active Members by Age and New York State Service as of June 30, 2007

**Males**

<u>Age</u>	<u>Less Than 10 Years New York State Service</u>	<u>10 or more Years New York State Service</u>	<u>Total New York State Service</u>
15-19	11	0	11
20-24	1,524	0	1,524
25-29	8,522	1	8,523
30-34	9,536	741	10,277
35-39	6,126	3,978	10,104
40-44	3,664	4,535	8,199
45-49	2,833	4,501	7,334
50-54	2,358	5,391	7,749
55-59	1,713	6,104	7,817
60-64	916	2,154	3,070
65-69	312	315	627
70-74	99	69	168
75-79	47	19	66
80-84	13	9	22
85 or older	<u>1</u>	<u>2</u>	<u>3</u>
Total	37,675	27,819	65,494

**Females**

<u>Age</u>	<u>Less Than 10 Years New York State Service</u>	<u>10 or more Years New York State Service</u>	<u>Total New York State Service</u>
15-19	22	0	22
20-24	5,563	0	5,563
25-29	25,874	0	25,874
30-34	26,739	1,740	28,479
35-39	19,294	9,416	28,710
40-44	13,602	11,755	25,357
45-49	13,232	13,241	26,473
50-54	10,071	18,234	28,305
55-59	5,500	19,338	24,838
60-64	1,892	6,785	8,677
65-69	516	1,252	1,768
70-74	115	235	350
75-79	43	70	113
80-84	11	7	18
85 or older	<u>2</u>	<u>2</u>	<u>4</u>
Total	122,476	82,075	204,551

APPENDIX 7 (Cont'd.)

Distribution of Active Members by Total Service as of June 30, 2007

<u>Service</u>	<u>Males</u>	<u>Females</u>	<u>Total</u>
0-4	21,845	69,262	91,107
5-9	15,185	50,608	65,793
10-14	9,447	29,212	38,659
15-19	5,615	19,950	25,565
20-24	4,663	16,712	21,375
25-29	3,471	10,253	13,724
30-34	3,437	6,575	10,012
35 or more	<u>1,831</u>	<u>1,979</u>	<u>3,810</u>
Total	65,494	204,551	270,045

*Median Male has 8 Years of Total Service*

*Median Female has 8 Years of Total Service*

APPENDIX 8  
HISTORICAL MEMBER STATISTICS

**Members and Annuitants 1925-2007**

<u>As of June 30</u>	<u>Members</u>	<u>Retirees</u>
1925	29,057	1,815
1930	39,663	2,732
1935	45,031	3,919
1940	48,193	4,771
1945	52,359	5,637
1950	56,504	6,374
1955	71,273	7,897
1960	99,555	10,796
1965	129,543	16,043
1970	186,914	22,700
1975	227,038	35,252
1980	203,330	46,812
1985	178,516	57,366
1990	195,194	69,127
1995	199,398	82,459
2000	224,986	100,839
2005	260,356	125,325
2007	270,045	133,356

**Number of Active Members by Tier**

<u>As of June 30</u>	<u>Tier 1</u>	<u>Tier 2</u>	<u>Tier 3</u>	<u>Tier 4</u>	<u>Total</u>
1988	92,858	19,809	32,095	43,171	187,933
1989	88,984	19,092	30,720	52,957	191,753
1990	85,103	18,590	29,422	62,079	195,194
1991	81,010	18,224	28,348	67,723	195,305
1992	74,872	17,801	27,495	72,205	192,373
1993	70,180	17,448	26,788	78,475	192,891
1994	67,423	17,212	26,121	84,935	195,691
1995	64,093	17,012	25,206	93,087	199,398
1996	58,850	16,596	24,546	100,926	200,918
1997	53,502	16,186	23,861	110,167	203,716
1998	49,266	15,860	23,302	120,652	209,080
1999	50,859	15,776	20,726	128,906	216,267
2000	47,234	15,700	20,159	141,893	224,986
2001	41,169	15,472	19,914	157,795	234,350
2002	35,601	15,121	19,674	172,438	242,834
2003	28,327	14,463	19,083	185,374	247,247
2004	22,986	13,947	18,835	198,747	254,515
2005	17,901	13,210	18,535	210,710	260,356
2006	13,621	12,084	18,173	220,532	264,410
2007	10,838	10,178	17,743	231,286	270,045

APPENDIX 9

RETIREMENT STATISTICS

**RETIREMENT STATISTICS 2006-07 RETIREES RETIRED FOR:**

	<b>Service*</b>	<b>Disability</b>
Number Retired.....	<b>6,766</b>	<b>134</b>
Age at Retirement:		
Average.....	58 yrs., 7 mos.	52 yrs., 6 mos.
Median.....	57 yrs., 6 mos.	53 yrs., 3 mos.
Years of Service:		
Average.....	28 yrs., 1 mo.	20 yrs., 0 mos.
Median.....	31 yrs., 7 mos.	18 yrs., 1 mo.
**Benefit:		
Average.....	\$44,204.39	\$25,521.46
Median.....	\$47,281.32	\$22,275.60
Final Average Salary:		
Average.....	\$74,185.31	\$64,384.60
Median.....	\$75,655.11	\$62,983.15
***Benefit as % of FAS:		
Average.....	53.44%	37.43%
Median.....	62.89%	33.33%

**2006-07 RETIREES RETIRED FOR SERVICE\* WITH:**

	<b>Less Than 20 Yrs. N.Y.</b>	<b>Between 20 Yrs. N.Y. and 35 Yrs. Total</b>	<b>35 Yrs. Total or More</b>
Number Retired.....	<b>1,359</b>	<b>3,412</b>	<b>1,995</b>
Age at Retirement:			
Average.....	59 yrs., 5 mos.	58 yrs., 3 mos.	58 yrs., 5 mos.
Median.....	58 yrs., 1 mo.	57 yrs., 0 mos.	57 yrs., 9 mos.
Years of Service:			
Average.....	12 yrs., 0 mos.	29 yrs., 2 mos.	37 yrs., 2 mos.
Median.....	12 yrs., 0 mos.	30 yrs., 4 mos.	36 yrs., 6 mos.
**Benefit			
Average.....	\$6,865.14	\$44,922.54	\$68,411.79
Median.....	\$4,581.36	\$45,353.76	\$64,100.16
Final Average Salary:			
Average.....	\$36,958.04	\$78,090.66	\$92,865.40
Median.....	\$30,896.44	\$77,001.83	\$86,791.74
***Benefit as % of FAS:			
Average.....	16.46%	56.47%	73.46%
Median.....	15.25%	60.44%	72.44%

\*Also includes vested retirees.

\*\*The Maximum, even though the member may have chosen an option.

\*\*\*The average and median of individual benefits as percentages of final average salary.

APPENDIX 9 (Cont'd.)

**RETIREMENT STATISTICS ALL RETIREES AS OF JUNE 30, 2007 RETIRED FOR:**

	<b>Service*</b>	<b>Disability</b>
Number Retired.....	<b>126,659</b>	<b>1,932</b>
Age at Retirement:		
Average.....	58 yrs., 1 mo.	49 yrs., 1 mo.
Median.....	56 yrs., 10 mos.	49 yrs., 11 mos.
Years of Service:		
Average.....	28 yrs., 3 mos.	19 yrs., 1 mo.
Median.....	30 yrs., 4 mos.	18 yrs., 4 mos.
**Benefit:		
Average.....	\$34,412.21	\$16,656.21
Median.....	\$33,321.24	\$14,726.40
Final Average Salary:		
Average.....	\$57,470.45	\$44,338.39
Median.....	\$57,866.27	\$44,004.01
***Benefit as % of FAS:		
Average.....	55.07%	36.39%
Median.....	60.43%	33.51%

**ALL RETIREES AS OF JUNE 30, 2007 RETIRED FOR SERVICE\* WITH:**

	<b>Less Than 20 Yrs. N.Y.</b>	<b>Between 20 Yrs. N.Y. and 35 Yrs. Total</b>	<b>35 Yrs. Total or More</b>
Number Retired.....	<b>21,325</b>	<b>76,087</b>	<b>29,247</b>
Age at Retirement:			
Average.....	58 yrs., 4 mos.	57 yrs., 11 mos.	58 yrs., 7 mos.
Median.....	56 yrs., 6 mos.	56 yrs., 4 mos.	57 yrs., 10 mos.
Years of Service:			
Average.....	14 yrs., 5 mos.	28 yrs., 7 mos.	37 yrs., 1 mo.
Median.....	14 yrs., 7 mos.	29 yrs., 8 mos.	36 yrs., 5 mos.
**Benefit:			
Average.....	\$7,004.09	\$33,881.82	\$55,776.26
Median.....	\$5,368.68	\$32,677.32	\$54,391.08
Final Average Salary:			
Average.....	\$30,206.86	\$58,113.41	\$75,676.61
Median.....	\$24,597.15	\$57,830.79	\$74,290.60
***Benefit as % of FAS:			
Average.....	22.64%	57.02%	73.66%
Median.....	21.50%	59.11%	72.86%

\*Also includes vested retirees.

\*\*The Maximum, even though the member may have chosen an option.

\*\*\*The average and median of individual benefits as percentages of final average salary.

APPENDIX 10

2003 – 2007 EXPERIENCE STUDY  
 NUMBER OF SERVICE RETIREMENTS  
 TIER 1 AND TIERS 2,3,4 AT LEAST AGE 62 OR WITH 30 YEARS OF SERVICE  
 EXPOSURE BASED ON ACTIVE TEACHERS  
 ASSUMPTIONS ADOPTED OCTOBER 2006 (T1, T234)

AGE	MALES				FEMALES			
	EXPOSURES	ACTUAL	EXPECTED	RATIO OF ACTUAL TO EXPECTED	EXPOSURES	ACTUAL	EXPECTED	RATIO OF ACTUAL TO EXPECTED
50	101	1	0.00	N/A	190	1	0.00	N/A
51	257	7	0.00	N/A	731	5	0.00	N/A
52	1,756	27	0.00	N/A	3,832	30	0.00	N/A
53	3,740	89	0.00	N/A	8,061	154	0.00	N/A
54	5,791	384	0.00	N/A	11,912	555	0.00	N/A
55	7,568	2,994	2,847.69	1.051	14,922	5,041	4,580.86	1.100
56	5,716	1,895	1,762.12	1.075	11,572	3,210	2,892.05	1.110
57	4,286	994	1,134.96	0.876	8,668	1,586	1,654.61	0.959
58	3,503	891	904.23	0.985	7,181	1,348	1,367.45	0.986
59	2,771	769	779.10	0.987	5,903	1,199	1,197.00	1.002
60	1,941	558	582.71	0.958	4,624	1,075	1,081.24	0.994
61	1,346	385	403.65	0.954	3,401	773	814.29	0.949
62	1,736	472	652.26	0.724	5,701	1,507	1,721.44	0.875
63	1,129	262	359.17	0.729	3,866	880	1,154.97	0.762
64	778	152	229.34	0.663	2,707	528	772.01	0.684
65	566	115	182.79	0.629	1,896	487	616.44	0.790
66	379	83	104.10	0.797	1,260	284	371.29	0.765
67	293	45	82.76	0.544	917	182	227.35	0.801
68	254	49	69.68	0.703	701	143	199.21	0.718
69	180	26	43.10	0.603	533	107	148.28	0.722
70	134	22	25.06	0.878	397	68	101.90	0.667
71	548	68	548.00	0.124	1,265	248	1,265.00	0.196
<b>TOTAL</b>	<b>44,773</b>	<b>10,288</b>	<b>10,710.72</b>	<b>0.961</b>	<b>100,240</b>	<b>19,411</b>	<b>20,165.39</b>	<b>0.963</b>



APPENDIX 10 (Cont'd.)

2003-2007 EXPERIENCE STUDY

NUMBER OF SERVICE RETIREMENTS

TIERS 2,3,4 LESS THAN AGE 62 AND WITH LESS THAN 30 YEARS OF SERVICE

EXPOSURE BASED ON ACTIVE TEACHERS

ASSUMPTIONS ADOPTED OCTOBER 2006 (T234)

AGE	MALES				FEMALES			
	EXPOSURES	ACTUAL	EXPECTED	RATIO OF ACTUAL TO EXPECTED	EXPOSURES	ACTUAL	EXPECTED	RATIO OF ACTUAL TO EXPECTED
50	7,050	0	0.00	N/A	24,870	4	0.00	N/A
51	7,775	3	0.00	N/A	25,999	11	0.00	N/A
52	7,171	2	0.00	N/A	24,582	5	0.00	N/A
53	6,203	4	0.00	N/A	21,580	9	0.00	N/A
54	5,276	50	0.00	N/A	18,222	134	0.00	N/A
55	4,453	284	418.89	0.678	15,041	778	1154.35	0.674
56	3,482	164	268.36	0.611	11,687	506	730.20	0.693
57	2,717	123	179.87	0.684	9,230	388	440.47	0.881
58	2,145	111	138.42	0.802	7,376	328	351.15	0.934
59	1,706	74	119.91	0.617	6,036	335	306.00	1.095
60	1,298	76	97.42	0.780	4,801	340	280.66	1.211
61	1013	65	75.95	0.856	3,808	322	227.94	1.413
62	0	0	0.00	N/A	0	0	0.00	N/A
63	0	0	0.00	N/A	0	0	0.00	N/A
64	0	0	0.00	N/A	0	0	0.00	N/A
65	0	0	0.00	N/A	0	0	0.00	N/A
66	0	0	0.00	N/A	0	0	0.00	N/A
67	0	0	0.00	N/A	0	0	0.00	N/A
68	0	0	0.00	N/A	0	0	0.00	N/A
69	0	0	0.00	N/A	0	0	0.00	N/A
70	0	0	0.00	N/A	0	0	0.00	N/A
71	0	0	0.00	N/A	0	0	0.00	N/A
TOTAL	50,289	956	1,298.82	0.736	173,232	3,160	3,490.77	0.905

APPENDIX 10 (Cont'd.)

2003-2007 EXPERIENCE STUDY  
 NUMBER OF DEATHS AMONG ACTIVE MEMBERS  
 EXPOSURE BASED ON ACTIVE TEACHERS  
 ASSUMPTIONS ADOPTED OCTOBER 2006

CENTRAL <u>AGE</u>	MALES			FEMALES		
	<u>ACTUAL</u>	<u>EXPECTED</u>	RATIO OF ACTUAL TO <u>EXPECTED</u>	<u>ACTUAL</u>	<u>EXPECTED</u>	RATIO OF ACTUAL TO <u>EXPECTED</u>
20	0	0.08	0.000	1	0.19	5.263
25	6	3.50	1.714	10	7.44	1.344
30	13	6.88	1.890	18	14.42	1.248
35	11	9.01	1.221	11	18.41	0.598
40	12	10.88	1.103	20	25.08	0.797
45	20	17.85	1.120	43	43.46	0.989
50	41	32.31	1.269	83	69.37	1.196
55	58	59.91	0.968	87	88.89	0.979
60	32	27.99	1.143	43	45.49	0.945
65	13	6.63	1.961	15	13.85	1.083
70	14	2.06	6.796	14	3.26	4.294
TOTAL	220	177.10	1.242	345	329.86	1.046

APPENDIX 10 (Cont'd.)

2003-2007 EXPERIENCE STUDY  
 NUMBER OF DISABILITY RETIREMENTS  
 EXPOSURE BASED ON ACTIVE TEACHERS  
 ASSUMPTIONS ADOPTED OCTOBER 2006

CENTRAL AGE	MALES			FEMALES		
	<u>ACTUAL</u>	<u>EXPECTED</u>	<u>RATIO OF ACTUAL TO EXPECTED</u>	<u>ACTUAL</u>	<u>EXPECTED</u>	<u>RATIO OF ACTUAL TO EXPECTED</u>
30	0	0.92	0.000	0	1.84	0.000
35	1	2.95	0.339	7	14.10	0.496
40	3	5.39	0.557	22	34.69	0.634
45	18	15.83	1.137	61	72.95	0.836
50	35	56.88	0.615	158	180.35	0.876
54	24	38.67	0.621	102	105.10	0.971
TOTAL	81	120.64	0.671	350	409.03	0.856

APPENDIX 10 (Cont'd.)

2003-2007 EXPERIENCE STUDY  
 COMPARISON OF SALARY SCALE TO ACTUAL SALARY INCREASES  
 ASSUMPTIONS ADOPTED OCTOBER 2006

**MALES**

CENTRAL <u>AGE</u>	<u>ACTUAL SALARIES</u>	<u>EXPECTED SALARIES</u>	<u>RATIO OF ACTUAL TO EXPECTED</u>
20	16,158,598	13,481,541	1.199
25	1,028,034,426	1,011,618,373	1.016
30	1,937,916,427	1,947,609,912	0.995
35	2,293,788,214	2,304,282,906	0.995
40	2,039,794,329	2,048,700,408	0.996
45	1,984,911,251	1,994,076,610	0.995
50	2,713,217,846	2,723,804,954	0.996
55	3,651,026,015	3,705,875,284	0.985
60	1,238,454,816	1,265,129,402	0.979
65	200,792,712	205,534,366	0.977
70	63,874,181	65,473,208	0.976
<b>TOTAL</b>	<b>17,167,968,815</b>	<b>17,285,586,964</b>	<b>0.993</b>

APPENDIX 10 (Cont'd.)

2003-2007 EXPERIENCE STUDY  
 COMPARISON OF SALARY SCALE TO ACTUAL SALARY INCREASES  
 ASSUMPTIONS ADOPTED OCTOBER 2006

**FEMALES**

CENTRAL <u>AGE</u>	<u>ACTUAL SALARIES</u>	<u>EXPECTED SALARIES</u>	<u>RATIO OF ACTUAL TO EXPECTED</u>
20	58,290,557	46,556,516	1.252
25	3,089,054,131	3,033,536,367	1.018
30	4,971,712,004	5,013,787,882	0.992
35	5,113,931,815	5,136,972,279	0.996
40	4,998,101,996	5,006,379,452	0.998
45	5,671,126,842	5,685,141,718	0.998
50	7,662,896,956	7,688,888,703	0.997
55	8,291,007,312	8,360,265,126	0.992
60	2,928,501,281	2,953,430,222	0.992
65	570,437,414	581,888,314	0.980
70	137,518,080	139,923,354	0.983
<b>TOTAL</b>	<b>43,492,578,388</b>	<b>43,646,769,933</b>	<b>0.996</b>

APPENDIX 10 (Cont'd.)

2003-2007 EXPERIENCE STUDY  
 NUMBER OF WITHDRAWALS  
 EXPOSURE BASED ON ACTIVE TEACHERS  
 ASSUMPTIONS ADOPTED OCTOBER 2006

CENTRAL AGE	MALES			FEMALES		
	<u>ACTUAL</u>	<u>EXPECTED</u>	RATIO OF ACTUAL TO <u>EXPECTED</u>	<u>ACTUAL</u>	<u>EXPECTED</u>	RATIO OF ACTUAL TO <u>EXPECTED</u>
20	180	217.91	0.826	525	670.49	0.783
25	2,679	2,513.27	1.066	8,099	7,944.10	1.019
30	2,013	1,769.63	1.138	8,084	7,893.08	1.024
35	1,461	1,304.07	1.120	6,862	6,698.00	1.024
40	1,181	1,050.47	1.124	4,377	4,403.28	0.994
45	1,028	981.37	1.048	3,819	3,858.74	0.990
50	990	1,034.02	0.957	3,469	3,744.17	0.927
54	431	444.94	0.969	1,272	1,414.07	0.900
<b>TOTAL</b>	<b>9,963</b>	<b>9,315.68</b>	<b>1.069</b>	<b>36,507</b>	<b>36,625.93</b>	<b>0.997</b>

APPENDIX 10 (Cont'd.)

2003-2007 EXPERIENCE STUDY  
 NUMBER OF DEATHS AMONG MEMBERS RETIRED FOR DISABILITY  
 MORTALITY ADOPTED OCTOBER 2006

CENTRAL AGE	MALES			FEMALES		
	ACTUAL	EXPECTED	RATIO OF ACTUAL TO EXPECTED	ACTUAL	EXPECTED	RATIO OF ACTUAL TO EXPECTED
30	0	0.00	N/A	0	0.04	0.000
35	0	0.12	0.000	1	0.71	1.408
40	0	0.80	0.000	4	5.50	0.727
45	5	4.70	1.064	19	23.79	0.799
50	12	14.20	0.845	58	62.86	0.923
55	36	36.11	0.997	83	105.16	0.789
60	32	23.88	1.340	56	53.60	1.045
65	16	14.32	1.117	21	21.52	0.976
70	17	12.74	1.334	24	18.76	1.279
75	12	12.64	0.949	21	19.95	1.053
80	6	8.21	0.731	17	15.78	1.077
85	5	2.46	2.033	15	11.24	1.335
90	1	0.67	1.493	10	8.17	1.224
95	0	0.00	N/A	11	7.27	1.513
100	0	0.00	N/A	5	4.52	1.106
105	0	0.00	N/A	1	1.50	0.667
110	0	0.00	N/A	0	0.00	N/A
TOTAL	142	130.85	1.085	346	360.37	0.960

APPENDIX 10 (Cont'd.)

2003-2007 EXPERIENCE STUDY  
 NUMBER OF DEATHS AMONG MEMBERS RETIRED FOR SERVICE  
 MORTALITY ADOPTED OCTOBER 2006

CENTRAL AGE	MALES			FEMALES		
	<u>ACTUAL</u>	<u>EXPECTED</u>	<u>RATIO OF ACTUAL TO EXPECTED</u>	<u>ACTUAL</u>	<u>EXPECTED</u>	<u>RATIO OF ACTUAL TO EXPECTED</u>
55	89	90.01	0.989	116	117.63	0.986
60	259	289.64	0.894	306	308.58	0.992
65	418	396.54	1.054	363	381.57	0.951
70	601	617.37	0.973	548	524.96	1.044
75	880	868.97	1.013	814	835.42	0.974
80	1034	1,001.89	1.032	1079	1128.62	0.956
85	857	790.37	1.084	1672	1576.80	1.060
90	488	491.32	0.993	1942	1757.66	1.105
95	204	186.57	1.093	1428	1274.46	1.120
100	40	34.78	1.150	442	388.15	1.139
105	2	1.42	1.408	43	37.44	1.149
110	0	0	N/A	1	1.21	0.826
TOTAL	4,872	4,768.88	1.022	8,754	8,332.50	1.051



APPENDIX 10 (Cont'd.)

2003-2007 EXPERIENCE STUDY  
 NUMBER OF DEATHS AMONG BENEFICIARIES  
 MORTALITY ADOPTED OCTOBER 2006

CENTRAL AGE	MALES			FEMALES		
	ACTUAL	EXPECTED	RATIO OF ACTUAL TO EXPECTED	ACTUAL	EXPECTED	RATIO OF ACTUAL TO EXPECTED
5	0	0.00	N/A	0	0.00	N/A
10	0	0.00	N/A	0	0.00	N/A
15	0	0.00	N/A	0	0.00	N/A
20	0	0.00	N/A	0	0.00	N/A
25	0	0.00	N/A	0	0.00	N/A
30	0	0.00	N/A	0	0.00	N/A
35	0	0.00	N/A	0	0.02	0.000
40	0	0.03	0.000	1	0.05	20.000
45	0	0.10	0.000	0	0.09	0.000
50	0	0.30	0.000	0	0.35	0.000
55	2	0.88	2.273	0	1.64	0.000
60	3	1.77	1.695	6	4.83	1.242
65	7	3.63	1.928	15	10.79	1.390
70	11	9.61	1.145	35	22.79	1.536
75	24	21.91	1.095	59	54.22	1.088
80	41	37.11	1.105	114	116.74	0.977
85	77	63.51	1.212	222	197.08	1.126
90	85	69.62	1.221	216	217.78	0.992
95	45	30.85	1.459	157	144.06	1.090
100	8	6.21	1.288	31	31.33	0.989
105	0	0.00	N/A	2	2.46	0.813
110	0	0.00	N/A	0	0.00	N/A
TOTAL	303	245.53	1.234	858	804.23	1.067

APPENDIX 10 (Cont'd.)

Investment Rate of Return<sup>1</sup>  
on  
Market and Actuarial Value of Assets

as of June 30, 2007

Annualized rate of return over the last:

	<u>Based Upon Market Value of Assets</u>	<u>Based Upon Actuarial Value of Assets<sup>2</sup></u>
1 Year:	19.3%	15.0%
3 Years:	13.8%	11.3%
5 Years:	12.3%	8.9%
10 Years:	8.8%	8.5%
15 Years:	10.8%	
20 Years:	10.4%	
25 Years:	12.3%	

Annualized inflation over the last:

	<u>Inflation Assumption</u>		<u>COLA Benefit</u>	
	<u>Actual</u>	<u>Expected</u>	<u>Actual</u>	<u>Expected<sup>3</sup></u>
1 Year:	2.78%	3.0%	1.4%	1.75%
3 Years:	3.10%	3.0%	1.6%	1.75%
5 Years:	2.81%	3.0%	1.5%	1.75%

<sup>1</sup> The interest rate for valuation purposes is a level 8.0%.

<sup>2</sup> Prior to the change in asset valuation method effective June 30, 2007.

<sup>3</sup> The annual percentage for estimating COLA benefit payments is 1.75%. The COLA percentage is one-half of the increase in the CPI with a floor of 1.0% and a cap of 3.0%. Therefore the estimate of inflation for the COLA benefit is the result of analyzing available CPI data with percentages bounded between 2.0% and 6.0%, and reduced by 50%. The COLA benefit was first initiated in 2001.

APPENDIX 11

HISTORY OF THE EMPLOYER CONTRIBUTION RATE

<u>Salary Year</u>	<u>Employer Contribution Rate</u>	<u>Salary Year</u>	<u>Employer Contribution Rate</u>
1921-22	5.10 %	1966-67	17.72 %
1922-23	5.10	1967-68	18.50
1923-24	5.20	1968-69	18.80
1924-25	5.20	1969-70	18.60
1925-26	5.20	1970-71	18.80
1926-27	5.20	1971-72	18.80
1927-28	5.20	1972-73	18.80
1928-29	5.30	1973-74	18.80
1929-30	5.50	1974-75	18.80
1930-31	5.50	1975-76	19.40
1931-32	5.50	1976-77	19.40
1932-33	5.50	1977-78	20.40
1933-34	5.50	1978-79	21.40
1934-35	5.60	1979-80	22.49
1935-36	5.70	1980-81	23.49
1936-37	5.80	1981-82	23.49
1937-38	5.93	1982-83	23.49
1938-39	6.03	1983-84	22.90
1939-40	6.13	1984-85	22.80
1940-41	6.23	1985-86	21.40
1941-42	6.33	1986-87	18.80
1942-43	6.43	1987-88	16.83
1943-44	6.53	1988-89	14.79
1944-45	7.10	1989-90	6.87
1945-46	7.20	1990-91	6.84
1946-47	7.50	1991-92	6.64
1947-48	7.80	1992-93	8.00
1948-49	8.00	1993-94	8.41
1949-50	8.40	1994-95	7.24
1950-51	8.80	1995-96	6.37
1951-52	9.60	1996-97	3.57
1952-53	9.90	1997-98	1.25
1953-54	9.90	1998-99	1.42
1954-55	10.30	1999-00	1.43
1955-56	10.40	2000-01	0.43
1956-57	10.90	2001-02	0.36
1957-58	11.20	2002-03	0.36
1958-59	13.40	2003-04	2.52
1959-60	14.00	2004-05	5.63
1960-61	18.35	2005-06	7.97
1961-62	18.55	2006-07	8.60
1962-63	19.55	2007-08	8.73
1963-64	21.13	2008-09	7.63
1964-65	17.67		
1965-66	17.70	Average	10.86 %

## APPENDIX 12

### HISTORY OF THE MEMBER CONTRIBUTION RATE

<u>Year of Membership</u>	<u>Required Contribution</u>
1921	4%
1948	5% (new members - 1948 and after)
1948	Voluntary 4% <u>could</u> be contributed (all members eligible)
1951	If member elected special retirement allowance: 4% went to 6.5%, 5% went to 8% (all members eligible)
1957	If member elected 1/120th plan: 6.5% went to 9%, 8% went to 11% (all members eligible)
1970	0%
1976	3% (new members - 1976 and after)

As of August 1, 1921, when the Retirement System was established, members contributed 4% of salary. These contributions were used to fund a separate annuity, over and above the regular pension. New members on or after July 1, 1948 were required to contribute 5% of salary. Additional contributions, not in excess of 4% of salary, were permitted during the five-year period beginning July 1, 1948.

Under the provisions of a law passed in 1950, members could elect before July 1, 1951, or within one year of their date of membership, if later, to contribute towards a special service retirement allowance. If their rate of contribution was 4%, their new rate would be 6.5%. If their rate of contribution was 5%, their new rate would be 8%. In 1956, an amendment was passed which provided additional benefits for service in excess of 25 years, but not in excess of 35 years, for those members who elected to contribute an additional 2.5% or 3% of their salaries. This increased the rate of contribution to 9% or 11% depending on whether the member's normal rate of contribution was 6.5% or 8%.

Throughout the 1960's the advent of the "take-home pay" program effectively reduced the required contribution rate to zero for many members. As of July 1, 1970, all members were no longer required to make contributions, nor permitted to make voluntary contributions unless they had been making them previously.

The law that created Tier 3 in 1976 reinstated member contributions and required members who joined the System after July 26, 1976 to contribute 3% of their annual salary. This money, however, helps fund the member's pension and does not fund a separate annuity as before. The 3% required contribution is still in place for all current and new members who join after July 26, 1976. Effective October 1, 2000, however, in accordance with Chapter 126 of the Laws of 2000, the 3% required member contribution ceases upon the attainment of the earlier of 10 years of service credit or 10 years of membership.

## ACTUARIAL COST AND ASSET VALUATION METHODS

1. Actuarial Cost Method

The cost method used to determine the liabilities and normal cost in this valuation is the Aggregate Cost Method.

Each year a normal rate percentage is developed as a level percentage of total member compensation. This percentage equals the portion of the actuarial present value of projected benefits which exceeds the actuarial value of assets divided by one percent of the present value of future compensation of the active members, as of the valuation date.

The cost of active member death benefits up to \$50,000, Retirement System administrative expenses, and benefits in excess of the IRC §415 limits are each determined using a one-year term cost method.

Each year, actuarial gains and losses will occur because actual experience will vary from the actuarial assumptions. All gains and losses are automatically amortized as part of the normal rate, over the expected future working lifetime of active members.

2. Asset Valuation Method

The actuarial value of assets is determined by recognizing each year's realized and unrealized appreciation, in excess of (or less than) an assumed inflationary gain of 3%, at a rate of 20% per year, until fully recognized after five years.

## APPENDIX 14

### PRESENT ACTUARIAL ASSUMPTIONS

Actuarial assumptions have been developed based upon actual member experience. Various actuarial and graduation techniques are applied to experience data and tables are developed. An experience study is performed annually and assumptions are revised when warranted.

#### Table of Contents

- I. Active Mortality Rates
- II. Disability Retirement Rates
- III. Withdrawal Rates
  - a) Males
  - b) Females
- IV. Retirement Rates
  - a) Tier 1 Members and Tiers 2, 3 and 4 Members at Least Age 62 or with 30 Years of Service
  - b) Tiers 2, 3 and 4 Members Less Than Age 62 and with Less than 30 Years of Service
- V. Service and Deferred Annuitant and Beneficiary Mortality Rates
- VI. Disabled Annuitant Mortality Rates
- VII. Salary Scale
- VIII. Valuation Interest Assumption

## APPENDIX 14 (Cont'd.)

Mortality Rates  
for Active Members

<u>Males</u>		<u>Females</u>	
<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
20	0.000050	20	0.000042
21	0.000064	21	0.000061
22	0.000082	22	0.000063
23	0.000103	23	0.000072
24	0.000116	24	0.000074
25	0.000124	25	0.000083
26	0.000135	26	0.000098
27	0.000141	27	0.000109
28	0.000159	28	0.000113
29	0.000167	29	0.000125
30	0.000171	30	0.000140
31	0.000187	31	0.000150
32	0.000195	32	0.000151
33	0.000207	33	0.000166
34	0.000214	34	0.000171
35	0.000224	35	0.000184
36	0.000239	36	0.000193
37	0.000248	37	0.000201
38	0.000258	38	0.000210
39	0.000270	39	0.000244
40	0.000317	40	0.000269
41	0.000379	41	0.000288
42	0.000437	42	0.000310
43	0.000499	43	0.000343
44	0.000540	44	0.000391
45	0.000581	45	0.000425
46	0.000640	46	0.000441
47	0.000682	47	0.000465
48	0.000735	48	0.000489
49	0.000785	49	0.000525
50	0.000847	50	0.000549
51	0.000916	51	0.000570
52	0.001013	52	0.000594
53	0.001082	53	0.000616
54	0.001154	54	0.000637

APPENDIX 14 (Cont'd.)

Mortality Rates  
for Active Members

<u>Males</u>		<u>Females</u>	
<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
55	0.001207	55	0.000684
56	0.001309	56	0.000723
57	0.001404	57	0.000789
58	0.001506	58	0.000825
59	0.001558	59	0.000880
60	0.001652	60	0.000969
61	0.001702	61	0.001043
62	0.001803	62	0.001108
63	0.001906	63	0.001174
64	0.002009	64	0.001261
65	0.002205	65	0.001362
66	0.002408	66	0.001462
67	0.002603	67	0.001609
68	0.003006	68	0.001810
69	0.003508	69	0.002000
70	0.005003	70	0.002305



APPENDIX 14 (Cont'd.)

Disability Retirement Rates  
for Active Members

<u>Males</u>		<u>Females</u>	
<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
30	0.000015	30	0.000015
31	0.000038	31	0.000025
32	0.000062	32	0.000046
33	0.000065	33	0.000072
34	0.000070	34	0.000099
35	0.000073	35	0.000133
36	0.000078	36	0.000178
37	0.000085	37	0.000229
38	0.000089	38	0.000279
39	0.000119	39	0.000319
40	0.000153	40	0.000361
41	0.000202	41	0.000406
42	0.000264	42	0.000459
43	0.000341	43	0.000522
44	0.000417	44	0.000591
45	0.000484	45	0.000663
46	0.000564	46	0.000767
47	0.000799	47	0.000914
48	0.001154	48	0.001113
49	0.001401	49	0.001272
50	0.001571	50	0.001436
51	0.001673	51	0.001564
52	0.001751	52	0.001663
53	0.001811	53	0.001739
54	0.001867	54	0.001777

APPENDIX 14 (Cont'd.)

Withdrawal Rates  
for Active Members

Males

<u>Age</u>	<u>0 Years of Service</u>	<u>1 Year of Service</u>	<u>2 Years of Service</u>	<u>3 Years of Service</u>	<u>4 Years of Service</u>	<u>5 Years of Service</u>	<u>6 Years of Service</u>	<u>7 Years of Service</u>	<u>8 Years of Service</u>	<u>9 Years of Service</u>	<u>10 or more Years of Service</u>
20	0.260517	0.101803	0.065606	0.037313	0.025162	0.020051	0.017520	0.014856	0.010593	0.003281	0.010398
21	0.260517	0.101803	0.065606	0.037313	0.025162	0.020051	0.017520	0.014856	0.010593	0.003281	0.010398
22	0.260517	0.101803	0.065606	0.037313	0.025162	0.020051	0.017520	0.014856	0.010593	0.003281	0.010398
23	0.262212	0.101803	0.065606	0.037313	0.025162	0.020051	0.017520	0.014856	0.010593	0.003281	0.010398
24	0.263908	0.103029	0.065606	0.037313	0.025162	0.020051	0.017520	0.014856	0.010593	0.003281	0.010398
25	0.265603	0.104254	0.065949	0.037313	0.025162	0.020051	0.017520	0.014856	0.010593	0.003281	0.010398
26	0.267299	0.105480	0.066291	0.038886	0.025162	0.020051	0.017520	0.014856	0.010593	0.003281	0.010398
27	0.268994	0.106706	0.066634	0.040459	0.026449	0.020051	0.017520	0.014856	0.010593	0.003281	0.010398
28	0.270690	0.107931	0.066976	0.042032	0.027735	0.020787	0.017520	0.014856	0.010593	0.003281	0.010398
29	0.272385	0.109157	0.067319	0.043605	0.029022	0.021523	0.018688	0.014856	0.010593	0.003281	0.010398
30	0.274081	0.110383	0.067661	0.045178	0.030309	0.022260	0.019856	0.014940	0.010593	0.003281	0.010398
31	0.271427	0.110812	0.068886	0.045112	0.031596	0.022996	0.021024	0.015025	0.011516	0.003281	0.010398
32	0.268773	0.111241	0.070112	0.045046	0.032882	0.023732	0.022191	0.015109	0.012439	0.005117	0.010398
33	0.266119	0.111670	0.071337	0.044979	0.034169	0.024468	0.023359	0.015194	0.013362	0.006954	0.010244
34	0.263465	0.112100	0.072562	0.044913	0.035456	0.025205	0.024527	0.015279	0.014285	0.008790	0.010090
35	0.260811	0.112529	0.073787	0.044847	0.036742	0.025941	0.025695	0.015363	0.015208	0.010627	0.009935
36	0.263803	0.115408	0.075717	0.046966	0.037348	0.028379	0.024681	0.017463	0.015639	0.012464	0.009781
37	0.266794	0.118287	0.077646	0.049086	0.037955	0.030816	0.023668	0.019563	0.016070	0.014300	0.009626
38	0.269786	0.121165	0.079575	0.051206	0.038561	0.033254	0.022654	0.021662	0.016501	0.016137	0.009472
39	0.272778	0.124044	0.081505	0.053326	0.039167	0.035692	0.021640	0.023762	0.016933	0.017973	0.009318
40	0.275770	0.126923	0.083434	0.055446	0.039773	0.038129	0.020626	0.025862	0.017364	0.019810	0.009163
41	0.273127	0.128411	0.083212	0.058174	0.041323	0.038680	0.024053	0.027373	0.019111	0.020298	0.008855
42	0.270485	0.129899	0.082990	0.060902	0.042873	0.039231	0.027479	0.028884	0.020858	0.020786	0.008546
43	0.267842	0.131388	0.082768	0.063631	0.044423	0.039782	0.030905	0.030394	0.022605	0.021275	0.008238
44	0.265200	0.132876	0.082546	0.066359	0.045973	0.040333	0.034331	0.031905	0.024352	0.021763	0.007929
45	0.262557	0.134364	0.082324	0.069088	0.047523	0.040884	0.037757	0.033416	0.026099	0.022251	0.007621
46	0.266854	0.135077	0.086828	0.069149	0.050506	0.045896	0.038026	0.034646	0.028790	0.025757	0.007882
47	0.271151	0.135791	0.091332	0.069211	0.053490	0.050909	0.038294	0.035877	0.031481	0.029263	0.008143
48	0.275448	0.136504	0.095837	0.069272	0.056473	0.055921	0.038563	0.037107	0.034173	0.032769	0.008404
49	0.279745	0.137218	0.100341	0.069334	0.059457	0.060934	0.038831	0.038338	0.036864	0.036275	0.008664
50	0.284043	0.137931	0.104845	0.069395	0.062440	0.065946	0.039100	0.039568	0.039555	0.039781	0.008925
51	0.288340	0.138644	0.109349	0.069456	0.065423	0.070958	0.039368	0.040799	0.042246	0.043286	0.009186
52	0.292637	0.139358	0.113853	0.069518	0.068407	0.075971	0.039636	0.042029	0.044937	0.046792	0.009447
53	0.296934	0.140071	0.118357	0.069579	0.071390	0.080983	0.039905	0.043260	0.047629	0.050298	0.009708
54	0.301231	0.140785	0.122861	0.069641	0.074374	0.085996	0.040173	0.044490	0.050320	0.053804	0.009969

APPENDIX 14 (Cont'd.)

Withdrawal Rates  
for Active Members

Females

Age	0 Years of Service	1 Year of Service	2 Years of Service	3 Years of Service	4 Years of Service	5 Years of Service	6 Years of Service	7 Years of Service	8 Years of Service	9 Years of Service	10 or more Years of Service
20	0.239474	0.101131	0.061054	0.046437	0.052638	0.052717	0.050623	0.051462	0.050984	0.054963	0.037037
21	0.239474	0.101131	0.061054	0.046437	0.052638	0.052717	0.050623	0.051462	0.050984	0.054963	0.037037
22	0.239474	0.101131	0.061054	0.046437	0.052638	0.052717	0.050623	0.051462	0.050984	0.054963	0.037037
23	0.245399	0.101131	0.061054	0.046437	0.052638	0.052717	0.050623	0.051462	0.050984	0.054963	0.037037
24	0.251323	0.103802	0.061054	0.046437	0.052638	0.052717	0.050623	0.051462	0.050984	0.054963	0.037037
25	0.257247	0.106473	0.066031	0.046437	0.052638	0.052717	0.050623	0.051462	0.050984	0.054963	0.037037
26	0.263171	0.109143	0.071008	0.051351	0.052638	0.052717	0.050623	0.051462	0.050984	0.054963	0.037037
27	0.269095	0.111814	0.075985	0.056266	0.054905	0.052717	0.050623	0.051462	0.050984	0.054963	0.037037
28	0.275019	0.114485	0.080962	0.061180	0.057172	0.055094	0.050623	0.051462	0.050984	0.054963	0.037037
29	0.280943	0.117155	0.085939	0.066094	0.059439	0.057471	0.053375	0.051462	0.050984	0.054963	0.037037
30	0.286867	0.119826	0.090916	0.071009	0.061705	0.059848	0.056127	0.053786	0.050984	0.054963	0.037037
31	0.280855	0.120841	0.091119	0.071390	0.063972	0.062225	0.058878	0.056111	0.053483	0.054963	0.037037
32	0.274843	0.121855	0.091322	0.071771	0.066239	0.064601	0.061630	0.058435	0.055983	0.054963	0.037037
33	0.268831	0.122870	0.091525	0.072152	0.068506	0.066978	0.064381	0.060760	0.058482	0.054963	0.037037
34	0.262819	0.123884	0.091728	0.072534	0.070772	0.069355	0.067133	0.063084	0.060981	0.054963	0.037037
35	0.256807	0.124899	0.091931	0.072915	0.073039	0.071732	0.069885	0.065409	0.063480	0.054963	0.037037
36	0.251402	0.119873	0.088700	0.069278	0.067732	0.065074	0.064350	0.060394	0.058585	0.051900	0.033579
37	0.245997	0.114846	0.085469	0.065641	0.062424	0.058416	0.058815	0.055378	0.053691	0.048837	0.030121
38	0.240593	0.109820	0.082239	0.062004	0.057117	0.051758	0.053281	0.050363	0.048796	0.045774	0.026664
39	0.235188	0.104794	0.079008	0.058366	0.051809	0.045101	0.047746	0.045348	0.043902	0.042712	0.023206
40	0.229784	0.099768	0.075777	0.054729	0.046502	0.038443	0.042211	0.040332	0.039007	0.039649	0.019748
41	0.230350	0.100167	0.075293	0.052637	0.045548	0.037934	0.039791	0.037762	0.035936	0.035894	0.018024
42	0.230916	0.100566	0.074809	0.050545	0.044594	0.037425	0.037370	0.035192	0.032865	0.032139	0.016299
43	0.231482	0.100966	0.074326	0.048454	0.043640	0.036917	0.034950	0.032622	0.029794	0.028383	0.014575
44	0.232048	0.101365	0.073842	0.046362	0.042686	0.036408	0.032530	0.030052	0.026723	0.024628	0.012851
45	0.232615	0.101764	0.073358	0.044270	0.041732	0.035900	0.030109	0.027482	0.023652	0.020873	0.011127
46	0.240807	0.105514	0.076273	0.048294	0.043248	0.037497	0.031159	0.029064	0.024572	0.022283	0.011271
47	0.249000	0.109263	0.079187	0.052318	0.044763	0.039094	0.032209	0.030646	0.025493	0.023692	0.011416
48	0.257193	0.113013	0.082102	0.056342	0.046278	0.040692	0.033260	0.032227	0.026414	0.025102	0.011560
49	0.265385	0.116763	0.085017	0.060366	0.047794	0.042289	0.034310	0.033809	0.027335	0.026512	0.011705
50	0.273578	0.120512	0.087931	0.064390	0.049309	0.043886	0.035360	0.035391	0.028256	0.027921	0.011849
51	0.281771	0.124262	0.090846	0.068414	0.050825	0.045484	0.036410	0.036972	0.029177	0.029331	0.011994
52	0.289964	0.128012	0.093761	0.072438	0.052340	0.047081	0.037460	0.038554	0.030097	0.030741	0.012139
53	0.298156	0.131761	0.096675	0.076462	0.053855	0.048679	0.038511	0.040135	0.031018	0.032151	0.012283
54	0.306349	0.135511	0.099590	0.080486	0.055371	0.050276	0.039561	0.041717	0.031939	0.033560	0.012428

APPENDIX 14 (Cont'd.)

Service Retirement Rates  
 For Tier 1 Members and Tiers 2, 3 and 4 Members  
 at Least Age 62 or with 30 Years of Service

<u>Males</u>		<u>Females</u>	
<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
55	0.376281	55	0.306987
56	0.308279	56	0.249918
57	0.264807	57	0.190887
58	0.258131	58	0.190426
59	0.281161	59	0.202779
60	0.300213	60	0.233832
61	0.299891	61	0.239428
62	0.375728	62	0.301954
63	0.318129	63	0.298751
64	0.294776	64	0.285191
65	0.322943	65	0.325128
66	0.274670	66	0.294672
67	0.282458	67	0.247931
68	0.274328	68	0.284185
69	0.239470	69	0.278190
70	0.187019	70	0.256669
71	1.000000	71	1.000000

APPENDIX 14 (Cont'd.)  
 Service Retirement Rates  
 For Tiers 2, 3 and 4 Members Less Than Age 62  
 and with Less Than 30 Years of Service

<u>Males</u>		<u>Females</u>	
<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
55	0.094070	55	0.076747
56	0.077070	56	0.062480
57	0.066202	57	0.047722
58	0.064533	58	0.047607
59	0.070290	59	0.050695
60	0.075053	60	0.058458
61	0.074973	61	0.059857

APPENDIX 14 (Cont'd.)

Mortality Rates for Service  
and Deferred Annuitants and Beneficiaries  
(Also used in calculating the benefits pursuant to  
subdivision b.3 of Section 512 of the Education Law)

<u>Males</u>		<u>Females</u>	
<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
1	0.000637	1	0.000571
2	0.000430	2	0.000372
3	0.000357	3	0.000278
4	0.000278	4	0.000208
5	0.000255	5	0.000188
6	0.000244	6	0.000176
7	0.000234	7	0.000165
8	0.000216	8	0.000147
9	0.000209	9	0.000140
10	0.000212	10	0.000141
11	0.000219	11	0.000143
12	0.000228	12	0.000148
13	0.000240	13	0.000155
14	0.000254	14	0.000162
15	0.000269	15	0.000170
16	0.000284	16	0.000177
17	0.000301	17	0.000184
18	0.000316	18	0.000188
19	0.000331	19	0.000190
20	0.000345	20	0.000191
21	0.000357	21	0.000192
22	0.000366	22	0.000194
23	0.000373	23	0.000197
24	0.000376	24	0.000201
25	0.000376	25	0.000207
26	0.000378	26	0.000214
27	0.000382	27	0.000223
28	0.000393	28	0.000235
29	0.000412	29	0.000248

APPENDIX 14 (Cont'd.)

Mortality Rates for Service  
and Deferred Annuitants and Beneficiaries  
(Also used in calculating the benefits pursuant to  
subdivision b.3 of Section 512 of the Education Law)  
(cont'd.)

<u>Males</u>		<u>Females</u>	
<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
30	0.000444	30	0.000264
31	0.000499	31	0.000307
32	0.000562	32	0.000350
33	0.000631	33	0.000394
34	0.000702	34	0.000435
35	0.000773	35	0.000475
36	0.000841	36	0.000514
37	0.000904	37	0.000554
38	0.000964	38	0.000598
39	0.001021	39	0.000648
40	0.001079	40	0.000706
41	0.001142	41	0.000774
42	0.001215	42	0.000852
43	0.001299	43	0.000937
44	0.001397	44	0.001029
45	0.001508	45	0.001124
46	0.001616	46	0.001223
47	0.001734	47	0.001326
48	0.001860	48	0.001434
49	0.001995	49	0.001550
50	0.002138	50	0.001676
51	0.002449	51	0.001852
52	0.002667	52	0.002018
53	0.002916	53	0.002207
54	0.003196	54	0.002424
55	0.003490	55	0.002660
56	0.003804	56	0.002900
57	0.004108	57	0.003132
58	0.004396	58	0.003352
59	0.004704	59	0.003554

APPENDIX 14 (Cont'd.)

Mortality Rates for Service  
and Deferred Annuitants and Beneficiaries  
(Also used in calculating the benefits pursuant to  
subdivision b.3 of Section 512 of the Education Law)  
(cont'd.)

<u>Males</u>		<u>Females</u>	
<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
60	0.005082	60	0.003803
61	0.005591	61	0.004070
62	0.006149	62	0.004354
63	0.006824	63	0.004703
64	0.007708	64	0.005173
65	0.008710	65	0.005742
66	0.009844	66	0.006373
67	0.011123	67	0.007074
68	0.012239	68	0.007852
69	0.013464	69	0.008716
70	0.014946	70	0.009762
71	0.016590	71	0.010933
72	0.018414	72	0.012136
73	0.020256	73	0.013592
74	0.022484	74	0.015360
75	0.025182	75	0.017356
76	0.028708	76	0.019439
77	0.032724	77	0.021772
78	0.036657	78	0.024384
79	0.041239	79	0.027310
80	0.046187	80	0.030861
81	0.052192	81	0.035181
82	0.058455	82	0.040458
83	0.064885	83	0.046123
84	0.073320	84	0.053041
85	0.082118	85	0.060467
86	0.091973	86	0.068932
87	0.103929	87	0.079272
88	0.116400	88	0.090370
89	0.130369	89	0.102118



APPENDIX 14 (Cont'd.)

Mortality Rates for Service  
and Deferred Annuity and Beneficiaries  
(Also used in calculating the benefits pursuant to  
subdivision b.3 of Section 512 of the Education Law)  
(cont'd.)

<u>Males</u>		<u>Females</u>	
<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
90	0.144709	90	0.114372
91	0.160627	91	0.126953
92	0.176690	92	0.142188
93	0.194359	93	0.159250
94	0.213795	94	0.178360
95	0.235174	95	0.196196
96	0.256340	96	0.213854
97	0.276847	97	0.233101
98	0.298995	98	0.251749
99	0.325904	99	0.274406
100	0.355236	100	0.299103
101	0.387207	101	0.329013
102	0.418183	102	0.361914
103	0.447456	103	0.398106
104	0.474304	104	0.433935
105	0.502762	105	0.468650
106	0.527900	106	0.501456
107	0.554295	107	0.531543
108	0.582010	108	0.558120
109	0.611110	109	0.586026
110	0.641666	110	0.615327

APPENDIX 14 (Cont'd.)

Mortality Rates for  
Disabled Annuitants

<u>Males</u>		<u>Females</u>	
<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
30	0.025310	30	0.035341
31	0.028145	31	0.036899
32	0.032542	32	0.038946
33	0.035000	33	0.039428
34	0.038165	34	0.040473
35	0.042432	35	0.041935
36	0.048006	36	0.042849
37	0.054112	37	0.042928
38	0.060124	38	0.043225
39	0.065006	39	0.044281
40	0.072142	40	0.045084
41	0.078563	41	0.050017
42	0.088195	42	0.052569
43	0.094091	43	0.057009
44	0.098659	44	0.061248
45	0.101034	45	0.065552
46	0.099347	46	0.068744
47	0.096113	47	0.071598
48	0.093684	48	0.073556
49	0.093042	49	0.075532
50	0.092882	50	0.076793
51	0.090847	51	0.076422
52	0.086215	52	0.073796
53	0.078395	53	0.069154
54	0.068565	54	0.063134
55	0.058441	55	0.056557
56	0.049080	56	0.050331
57	0.042276	57	0.045190
58	0.037908	58	0.041109
59	0.036513	59	0.038283

APPENDIX 14 (Cont'd.)

Mortality Rates for  
Disabled Annuitants  
(cont'd.)

<u>Males</u>		<u>Females</u>	
<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
60	0.035343	60	0.036275
61	0.033208	61	0.034031
62	0.032877	62	0.031506
63	0.032076	63	0.028898
64	0.032520	64	0.026691
65	0.034208	65	0.025801
66	0.036150	66	0.026486
67	0.038988	67	0.028334
68	0.040047	68	0.030330
69	0.041535	69	0.032655
70	0.042186	70	0.033325
71	0.043699	71	0.034535
72	0.044923	72	0.035391
73	0.045511	73	0.037100
74	0.046988	74	0.039842
75	0.047350	75	0.041951
76	0.049896	76	0.043826
77	0.052758	77	0.045256
78	0.055654	78	0.047337
79	0.060161	79	0.049481
80	0.062129	80	0.051959
81	0.068638	81	0.054581
82	0.073036	82	0.058699
83	0.080164	83	0.061989
84	0.086903	84	0.063698
85	0.092528	85	0.069228
86	0.100695	86	0.076222
87	0.110949	87	0.081432
88	0.120296	88	0.094991
89	0.130369	89	0.102118

## APPENDIX 14 (Cont'd.)

Mortality Rates for  
Disabled Annuitants  
(cont'd.)

<u>Males</u>		<u>Females</u>	
<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
90	0.144709	90	0.114372
91	0.160627	91	0.126953
92	0.176690	92	0.142188
93	0.194359	93	0.159250
94	0.213795	94	0.178360
95	0.235174	95	0.196196
96	0.256340	96	0.213854
97	0.276847	97	0.233101
98	0.298995	98	0.251749
99	0.325904	99	0.274406
100	0.355236	100	0.299103
101	0.387207	101	0.329013
102	0.418183	102	0.361914
103	0.447456	103	0.398106
104	0.474304	104	0.433935
105	0.502762	105	0.468650
106	0.527900	106	0.501456
107	0.554295	107	0.531543
108	0.582010	108	0.558120
109	0.611110	109	0.586026
110	0.641666	110	0.615327

APPENDIX 14 (Cont'd.)

Salary Scale

<u>Males</u>		<u>Females</u>	
<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
20	1.1265	20	1.1327
21	1.1245	21	1.1315
22	1.1223	22	1.1294
23	1.1204	23	1.1259
24	1.1176	24	1.1204
25	1.1130	25	1.1107
26	1.1064	26	1.1040
27	1.1019	27	1.0972
28	1.0972	28	1.0904
29	1.0928	29	1.0854
30	1.0889	30	1.0816
31	1.0855	31	1.0783
32	1.0827	32	1.0754
33	1.0802	33	1.0734
34	1.0777	34	1.0718
35	1.0751	35	1.0704
36	1.0728	36	1.0695
37	1.0706	37	1.0689
38	1.0686	38	1.0682
39	1.0666	39	1.0671
40	1.0645	40	1.0658
41	1.0626	41	1.0649
42	1.0608	42	1.0643
43	1.0592	43	1.0636
44	1.0578	44	1.0630
45	1.0565	45	1.0623
46	1.0552	46	1.0615
47	1.0534	47	1.0603
48	1.0521	48	1.0589
49	1.0511	49	1.0574

APPENDIX 14 (Cont'd.)

Salary Scale  
(cont'd.)

<u>Males</u>		<u>Females</u>	
<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
50	1.0502	50	1.0556
51	1.0490	51	1.0534
52	1.0492	52	1.0527
53	1.0472	53	1.0500
54	1.0457	54	1.0475
55	1.0432	55	1.0435
56	1.0411	56	1.0418
57	1.0398	57	1.0414
58	1.0395	58	1.0411
59	1.0386	59	1.0407
60	1.0369	60	1.0404
61	1.0363	61	1.0397
62	1.0361	62	1.0388
63	1.0360	63	1.0381
64	1.0358	64	1.0369
65	1.0357	65	1.0359
66	1.0355	66	1.0351
67	1.0354	67	1.0351
68	1.0353	68	1.0362
69	1.0351	69	1.0364
70	1.0347	70	1.0367

Valuation Rate of Interest Assumption

The interest rate for valuation purposes is a level 8.0%. This valuation rate of interest is made up of a 3.0%<sup>1</sup> annual rate of inflation and a 5.0% real rate of return.

The valuation rate of interest assumption represents our best estimate of the anticipated annual rate of return on plan assets over a very long-term horizon.

The valuation rate of interest assumption is developed based upon the Retirement System's specific asset allocation, and capital market assumptions, based upon recommendations from Callan Associates Inc., the System's investment consultant. Using expected returns and standard deviations for each asset class, and including anticipated correlation between the classes, a long-term anticipated rate of return is developed. As of June 30, 2007, Callan has estimated this annual rate of return to be 8.2% given our asset allocation. This analysis is performed annually.

Projected COLA Assumption

The annual percentage for estimating future COLA benefit payments is 1.75%.<sup>2</sup>

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<sup>1</sup> The average annual rate of increase in the Consumer Price Index (CPI) for 1925 – 2007 was 3.06%.

<sup>2</sup> The COLA percentage is one-half of the increase in the CPI with a floor of 1.0% and a cap of 3.0%. Therefore the estimate of inflation for the COLA benefit is the result of analyzing available CPI data with percentages bounded between 2.0% and 6.0%, and reduced by 50%.

## APPENDIX 15

### SUMMARY OF BENEFIT PROVISIONS

#### 1. Membership

Membership is mandatory for all full-time New York State public school teachers, outside New York City, except those employed under the Comprehensive Employment and Training Act (CETA). Membership is optional for teachers employed on other than a full-time basis and for certain employees of the State University of New York and community colleges. Generally, the membership of any person credited with less than 5 years of service will terminate when seven years have elapsed since (s)he last rendered at least 20 days of credited service in a school year.

Tiers are determined by a member's most recent date of membership in the Retirement System as follows:

Tier 1:	Membership prior to 7/1/73;
Tier 2:	Membership 7/1/73 - 7/26/76;
Tier 3:	Membership 7/27/76 - 8/31/83;
Tier 4:	Membership on or after 9/1/83.

Tier 3 members are entitled to receive the benefits of either Tier 3 or Tier 4, however, they may not mix the provisions of the two tiers.

#### 2. Service Retirement

The service retirement benefits are payable for life generally as follows:

Tier 1: If 20 or more years of NYS service: 2% of final average salary (FAS) per year of NYS service after July 1, 1959, plus 1.8% of FAS per year of NYS service prior to that date, plus 1% of FAS per year of out-of-state service. Out-of-state service is allowed only up to a maximum of 10 years, and only to the extent that it does not raise the total service credit to greater than 35 years. The provisions of Article 19 of the Retirement and Social Security Law, effective July 11, 2000, provides to eligible members additional service credit of one-twelfth of a year of service for each year of retirement credit as of the date of retirement or death, up to a maximum of two additional years. The maximum pension, as a result of Article 19, can be 79% of FAS.

If less than 20 years of NYS service, the above formula is used except the benefit is reduced by 5% for each year of service less than 20, subject to a maximum reduction of 50%.

Tier 1 members generally may retire at:

- Age 55 with 2 years of NYS service or
- Any age with 35 years of total service.



Tier 2: Computed under the Tier 1 formula, but may be reduced for early retirement, as noted below.

Tier 2 members generally may retire at:

- Age 62 with 5 years of service,
- Age 55 with 30 years of service, or
- Age 55 with 5 years of service, with benefit reduced by 6% for each of the first 2 years under age 62 and 3% for each of the next 5 years.

Tier 3: 1 2/3% of FAS per year of NYS service (if less than 20 years) or 2% of FAS per year of NYS service (if 20 to 30 years). There is no additional benefit for more than 30 years of service. At age 62 the benefit is reduced by 50% of the primary Social Security benefit accrued while in NYS public employment. A member may be eligible for automatic cost-of-living adjustments.

Tier 3 members generally may retire at:

- Age 62 with 5 years of service,
- Age 55 with 30 years of service, or
- Age 55 with 5 years of service, with benefit reduced by 1/15th for each of the first 2 years under age 62 and 1/30th for each of the next 5 years.

Tier 4: 1 2/3% of FAS per year of NYS service (if less than 20 years), or 2% of FAS per year of NYS service (if 20 to 30 years), plus 1 1/2% of FAS per year of NYS service in excess of 30 years.

Tier 4 members generally may retire at:

- Age 62 with 5 years of service,
- Age 55 with 30 years of service, or
- Age 55 with 5 years of service, with benefit reduced by 6% for each of the first 2 years under age 62 and 3% for each of the next 5 years.

### 3. Disability Retirement

Generally a member with at least 10 years of service may qualify for a disability retirement benefit of the smaller of 1) 1 2/3% of FAS per year of projected service to age 60 or 2) 1/3 of FAS; but the benefit shall not be less than 1 2/3% of FAS per year of completed service.

## APPENDIX 15 (Cont'd.)

### 4. Death Benefits

#### *a) Active Service*

The Tier 1 death benefit is generally equal to the greater of 1) 3 times annual salary after 36 years of service (proportionately reduced for less than 36 years) or 2) for members who are at least age 55 with 20 years of service, the pension reserve calculated under a prior, lower service retirement formula.

The death benefit for Tier 2, 3, and 4 members is generally equal to one of the following two options based on the member's election at entry: 1) 3 times annual salary after 3 years of service (proportionately reduced for service under 3 years) or 2) the greater of (1) above or the Tier 1 death benefit.

#### *b) Not in Active Service*

The death benefit for members of all tiers with at least ten years of service credit who die when not in active service is equal to one-half the active member death benefit.

### 5. Deferred Retirement

A member with at least 5 years of credited service who ceases teaching has a vested right to receive a deferred service retirement benefit. A member with at least five, but less than ten years of service credit, has the choice of receiving a refund of their member contributions with interest or a deferred service retirement benefit. A member with ten or more years of service credit will receive the deferred service retirement benefit.

### 6. Member Contributions

Tier 3 and 4 members are required to contribute 3% of pay to fund a portion of their benefit. Such contributions cease upon the attainment of the earlier of 10 years of service credit or 10 years of membership effective October 1, 2000. Certain Tier 1 and 2 members may elect to contribute in order to receive an additional benefit.

7. Cost-of-Living Adjustment (COLA)

A permanent, annually-adjusted cost-of-living benefit is provided to both current and future retired members. This benefit was first paid commencing September 2001, and is increased every September thereafter, to retired members who meet one of the following eligibility criteria:

- Age 62 and retired for 5 years,
- Age 55 and retired for 10 years, or
- Retired for 5 years under a disability retirement.

The annual COLA percentage is equal to 50% of the increase in the annual CPI; not to exceed 3% nor be lower than 1%. It is applied to the first \$18,000 of annual benefit. Additionally, commencing September 2000, members retired before 1997 are eligible for a "Catch-Up" supplemental benefit upon satisfaction of the above eligibility criteria.