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**THE REPORT OF THE  
JUNE 30, 2003 ACTUARIAL VALUATION  
OF THE  
NON-TEACHER SCHOOL EMPLOYEE  
RETIREMENT SYSTEM OF MISSOURI**

Gabriel, Roeder, Smith & Company



Actuaries & Consultants

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**GABRIEL, ROEDER, SMITH & COMPANY**

**CONSULTANTS & ACTUARIES**

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October 22, 2003

Board of Trustees  
Non-Teacher School Employee Retirement System of Missouri  
3210 W. Truman Blvd.  
Jefferson City, MO. 65109

Dear Members of the Board:

We are pleased to present the report of the actuarial valuation of the Non-Teacher School Employee Retirement System of Missouri ("NTRS") as of June 30, 2003.

This valuation provides data on the funding status of NTRS. The results of the valuation show that the current contribution level will no longer fund the current benefits of NTRS within the framework of your funding policy.

This valuation is based on the provisions of NTRS in effect as of June 30, 2003, data on the NTRS membership and information on the asset value of the trust fund. All member data and asset information were provided by NTRS staff. While certain checks for reasonableness were performed, the data was used unaudited.

The actuarial assumptions and actuarial cost method used in this valuation are those used in the prior actuarial valuation of NTRS, except that, for this valuation, the actuarial value of assets has been marked to market. Next year we will begin to phase in, prospectively, the five year smoothing method which has been used in recent years.

To the best of our knowledge, this actuarial statement is complete and accurate, and has been prepared in accordance with generally accepted actuarial principles and practice.

Respectfully submitted,

Gabriel, Roeder, Smith & Company

A handwritten signature in black ink, appearing to read 'Norman S. Losk'.

Norman S. Losk, F.S.A  
Senior Consultant

A handwritten signature in black ink, appearing to read 'Alex Rivera'.

Alex Rivera, A.S.A  
Senior Consultant

NSL: cml

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## **SUMMARY OF THE VALUATION**

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## PURPOSES OF THE ACTUARIAL VALUATION

At your request we have performed the actuarial valuation of the Non-Teacher School Employee Retirement System of Missouri (“NTRS”) as of June 30, 2003.

The purposes of an actuarial valuation are as follows:

- To determine the funding status of NTRS as of the valuation date,
- To determine whether a contribution level of 10% of pay will fund the current benefit provisions within the framework of your funding policy, and
- To provide accounting and other data required by NTRS.

## REPORT HIGHLIGHTS

The key results of the valuation are summarized in the following table:

		June 30, 2002	June 30, 2003
		(\$ in Millions)	
<b>A. Summary of Results</b>			
(1)	Present Value of Future Benefits for:		
	(a) Active Members	\$1,913.8	\$2,082.4
	(b) Retired members	\$651.3	\$731.1
	(c) Inactive Members and Other Liabilities	<u>\$61.6</u>	<u>\$71.0</u>
	(d) Total	\$2,626.7	\$2,884.5
(2)	Present Value of Future Normal Costs	\$770.7	\$834.8
(3)	Actuarial Accrued Liability: (1) – (2)	\$1,856.0	\$2,049.7
(4)	Actuarial Value of Assets	\$1,810.6	\$1,677.8
(5)	Unfunded Actuarial Accrued Liability: (3) – (4)	\$45.4	\$371.9
(6)	Total Contribution Rate, Member + Employer	10.00%	10.00%
(7)	Normal Cost Rate	10.55%	10.58%
(8)	Approximate Rate Available for Unfunded Actuarial Accrued Liability: (6) – (7)	-0.55%	-0.58%
(9)	Number of Years Required to Amortize (5) if Compensation Increases 5.0% per year	Never	Never*
(10)	30-Year Contribution Rate	10.80%	12.47%
*While the current contribution rate will not fund the UAAL, the funding process is designed to fund that item over time.			

	June 30, 2002	June 30, 2003
<b>B. Highlights of Report</b>		
(1) Actuarial Accrued Liability Funding Ratio:		
(a) Actuarial Value of Assets	\$1,810.6	\$1,677.8
(b) Actuarial Accrued Liability	1,856.0	2,049.7
(c) Funding Ratio: (a) / (b)	97.6%	81.9%
(2) Active Members:		
(a) Number:		
Male	11,529	11,564
Female	<u>35,199</u>	<u>35,299</u>
Total	46,728	46,863
(b) Total Compensation for Fiscal Year (for Active Members at end of year):		
Male	270.5	293.5
Female	<u>624.9</u>	<u>677.6</u>
Total	895.4	971.1
(c) Average Age:		
Male	45.4	45.8
Female	<u>44.6</u>	<u>45.1</u>
Total	44.8	45.3
(d) Average Service:		
Male	6.3	6.5
Female	<u>6.4</u>	<u>6.6</u>
Total	6.4	6.6
(e) Average Compensation for Fiscal Year (not in millions):		
Male	\$23,467	\$25,384
Female	<u>17,752</u>	<u>19,197</u>
Total	\$19,162	\$20,724
(f) Average Amount of Assets per Active Member (based on actuarial value, not in millions)	\$23,491	\$18,686
(3) Retired Members and Beneficiaries		
(a) Number Service Retired:		
Life Annuities	10,381	10,582
Options	<u>2,760</u>	<u>3,037</u>
Total	13,141	13,619
(b) Number Disability Retired	387	405
(c) Number Survivors, Beneficiaries	<u>742</u>	<u>813</u>
(d) Total Persons Receiving Benefits	14,270	14,837
(e) Average Monthly Pension Being Paid at Valuation Date for New Service Retired, Including Options (not in millions)	661	676
(f) Average Amount of Assets per Retired Member (based on actuarial value, not in millions)	\$45,641	\$49,273
(g) Average Amount of Assets per New Service Retired (based on actuarial value, not in millions)	\$98,557	\$103,944

# MEMBERSHIP CHARACTERISTICS

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## Active and Inactive Membership

A total of 64,514 active and inactive members of NTRS are included in this 2003 actuarial valuation.

Active members	46,863
Inactive members	<u>17,651</u>
Total active and inactive members	64,514

Between the 2002 and 2003 actuarial valuations, the number of active employees increased by 135 or 0.29%. The average annual salaries of employees increased by 8.2% to \$20,724.

<b>Summary of Changes in Membership</b>			
	<b>Male</b>	<b>Female</b>	<b>Total</b>
Active and Inactive Members 7/1/2002	15,451	47,190	62,641
New Membership 7/1/2002 to 6/30/2003	<u>2,233</u>	<u>5,636</u>	<u>7,869</u>
Total Membership Before Decreases	17,684	52,826	70,510
<b>Decreases:</b>			
Service Retirements	278	682	960
Disability Retirements	17	14	31
Withdrawals	1,073	2,615	3,688
Deaths	49	52	101
Other Terminations	323	759	1,082
Previous Memberships Voided	31	98	129
Reciprocity	<u>0</u>	<u>5</u>	<u>5</u>
Subtotal	1,771	4,225	5,996
Net membership 6/30/2003 (includes Inactive Members)	15,913	48,601	64,514

## Benefit Recipients

On June 30, 2003, NTRS was paying benefits to a total of 14,837 retired members, beneficiaries and survivors. The total number of benefit recipients increased 4.0% from 14,270 on June 30, 2002. The benefit recipients were comprised of 13,619 service retirees, 405 disability retirees, 813 beneficiaries and survivors.

There are two classes of retired members – members retired because of service and members retired because of disability.

The changes among the retired group of members during the 2002-2003 year were as follows:

	<b>Service Retirements</b>	<b>Disability Retirements</b>	<b>Beneficiaries</b>	<b>Total</b>
Retired Members, July 1, 2002	13,141	387	742	14,270
Added During Year	966	31	96	1,093
Died During Year	(491)	(12)	(25)	(528)
Resumed Retirement During Year	13	0	0	13
Resumed Employment During Year	(10)	(1)	0	(11)
Retired Members, June 30, 2003	13,619	405	813	14,837

As of June 30, 2003, the average monthly benefit payable to new service retirees was \$676 compared to \$661 as of June 30, 2002. These average benefit amounts and the amounts shown in the tables that follow include all post-retirement benefit increases.

## **ACTUARIAL ASSUMPTIONS AND METHODS**

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The actuarial assumptions used in this valuation are the same as those disclosed in the actuarial valuation report as of June 30, 2002. This set of assumptions and methods is described in Appendix E. The actuarial value of assets has been marked to the market value effective as of June 30, 2003. Next year the five year smoothing method used in recent years will begin to be phased in. For example, in next year's valuation and each of the four succeeding valuations we will recognize 20% of the difference between the actual return at market for FY 2004 and the assumed 8.0%. A new layer of gain or loss will be added each year until we have five layers.

## **EXPERIENCE DURING FY 2003**

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Overall the system experienced a net actuarial loss of about 104.9 million.

The net loss is determined as follows:

	<u>(\$ in Millions)</u>
1. Actuarial Loss on Assets (at actuarial value)	71.2
2. Actuarial Loss on Liabilities	<u>33.7</u>
3. Total Actuarial (Gain) or Loss (1+2)	104.9

The NTRS investment return (measured on market value, all income sources combined) in FY 2003 was about \$73 million, compared with an expected return on actuarial value of \$146 million resulting



in a total loss of over \$72 million. The use of the five year smoothing method to determine the actuarial value of assets would only have recognized 20% of this loss (and 40% of the FY 2002 loss). Thus, the actuarial loss on investments, before marking to market, was \$71.2 million as shown above.

For this actuarial valuation we are marking assets to market. That is, the actuarial value of assets for this valuation is the market value. We will begin the use of the smoothing technique to determine the actuarial value of assets in the 2004 valuation by recognizing only 20% of the gain or loss from investments in the fiscal year ending June 30, 2004.

As a result, the full impact of losses deferred from prior years are being recognized. Thus, we will have an additional actuarial loss of \$226.8 million in this valuation due to recognizing those losses from prior years which had not yet been recognized.

## **NTRS BENEFITS**

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A summary of the current benefit provisions appears in Appendix F. Several changes in the benefit provisions of NTRS were enacted in the 2003 session of the Legislature. The following provisions were added:

1. Extension of the 25-and-out provision to 2008,
2. A Partial Lump Sum Option,
3. Changes in the procedure and the cost of purchasing service, and
4. A limited work after retirement provision.

Except for the 25-and-out provision, which carries a minor cost impact, these changes are expected to have no impact on the results of NTRS actuarial valuations.

## **ASSET INFORMATION**

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The market value of the assets of the fund, which are available for benefits, has been increased from \$1.585 billion as of June 30, 2002 to \$1.678 billion as of June 30, 2003. Due to the marking of the actuarial value of assets to market value as of July 1, 2003, there was a decrease in the actuarial value of assets from \$1.811 billion to \$1.678 billion.

Based on the actuarial value, before marking to the market value, the assets of the fund returned about 4.1%.

The detailed determinations of asset values utilized in this valuation and asset growth in the last year are set out in Appendix B.

## **FUNDING STATUS**

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The funding status of NTRS is measured by the Funding Ratio. The Funding Ratio is the ratio of the assets available for benefits to a benefit liability measure for the System. While there are several such measures that could be appropriately used, the measure that ties most closely to your funding plan is the Actuarial Accrued Liability (“AAL”).

The NTRS actuarial accrued liability funding ratio dropped from 97.6% at June 30, 2002 to 81.9% using assets marked to market.

## **GASB DISCLOSURE**

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NTRS produces its accounting statements under the terms of GASB Statement Number 25. In Table 16, you will find Required Supplemental Information mandated by that statement.

## **FUNDING PROCESS**

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In the 2003 session of the Legislature the funding provisions of NTRS were amended. The following changes were adopted:

1. The limitation on the total contribution rate (10% of pay) was eliminated.
2. Contribution rates will now be established by actuarial valuation.
3. The annual increase in the total contribution rate may not exceed 0.5% of pay.

# Appendices



# **Appendix A**

## **Membership Data**

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<b>Table 1</b>					
<b>Number, Average Age-Service-Salary, and Total Payroll of Active Members Included in Actuarial Valuations</b>					
<b>Male</b>					
<b>Actuarial Valuation as of June 30</b>					
<b>Item</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
Number	10,479	10,837	11,215	11,529	11,564
Average Age	44.7	44.8	45.0	45.4	45.8
Average Years of Service	6.4	6.3	6.3	6.3	6.5
Average Annual Salary	\$20,564	\$21,081	\$22,336	\$23,467	\$25,384
Total Payroll (000's)	\$215,488	\$228,453	\$250,497	\$270,555	\$293,537
<b>Female</b>					
<b>Actuarial Valuation as of June 30</b>					
<b>Item</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
Number	31,120	32,696	34,302	35,199	35,299
Average Age	44.5	44.4	44.5	44.6	45.1
Average Years of Service	6.6	6.4	6.3	6.4	6.6
Average Annual Salary	\$5,096	\$15,505	\$16,432	\$17,752	\$19,197
Total Payroll (000's)	\$469,784	\$506,948	\$563,661	\$624,865	\$677,640
<b>Total</b>					
<b>Actuarial Valuation as of June 30</b>					
<b>Item</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
Number	41,599	43,533	45,517	46,728	46,863
Average Age	44.6	44.5	44.6	44.8	45.3
Average Years of Service	6.5	6.4	6.3	6.4	6.6
Average Annual Salary	\$16,473	\$16,893	\$17,887	\$19,162	\$20,724
Total Payroll (000's)	\$685,272	\$735,400	\$814,158	\$895,420	\$971,177

<b>Table 2</b>								
<b>Employee Distribution by Age and Years of Service</b>								
<b>June 30, 2003</b>								
<b>Age</b>	<b>Years of Service</b>							<b>Total</b>
	<b>0-4</b>	<b>5-9</b>	<b>10-14</b>	<b>15-19</b>	<b>20-24</b>	<b>25-29</b>	<b>30 &amp; Over</b>	
Under 20	276	0	0	0	0	0	0	276
20-24	1,909	16	0	0	0	0	0	1,925
25-29	2,529	258	2	0	0	0	0	2,789
30-34	3,230	637	99	0	0	0	0	3,966
35-39	3,594	1,165	293	124	8	0	0	5,184
40-44	4,302	2,119	637	304	180	11	0	7,553
45-49	3,571	2,393	1,043	496	227	106	8	7,844
50-54	2,406	1,712	1,166	754	341	158	62	6,599
55-59	1,791	1,218	775	764	479	226	67	5,320
60-64	1,128	743	444	469	326	223	100	3,433
65 & Over	717	469	228	169	131	127	130	1,971
Unknown	3	0	0	0	0	0	0	3
<b>Total</b>	<b>25,456</b>	<b>10,730</b>	<b>4,687</b>	<b>3,080</b>	<b>1,692</b>	<b>851</b>	<b>367</b>	<b>46,863</b>

<b>Table 3</b>			
<b>Salary Distribution</b>			
<b>Employees in Active Service</b>			
<b>on June 30, 2003</b>			
	<b>Annual Salary</b>	<b>Number</b>	<b>Percent</b>
	Under \$10,000	7,912	16.9%
	\$10,000 - 12,499	4,213	9.0%
	\$12,500 - 14,999	5,149	11.0%
	\$15,000 - 17,499	4,717	10.1%
	\$17,500 - 19,999	4,125	8.8%
	\$20,000 - 22,499	3,718	7.9%
	\$22,500 - 24,999	3,351	7.2%
	\$25,000 - 27,499	2,787	5.9%
	\$27,500 - 29,999	2,324	5.0%
	\$30,000 & Over	<u>8,567</u>	<u>18.3%</u>
	<b>Total</b>	<b>46,863</b>	<b>100.0%</b>
Based on compensation actually paid during the plan year.			

<b>Table 4</b>				
<b>Salary Increase Rates by Service Group</b>				
<b>Employees in Both 2002 &amp; 2003 Actuarial Valuations</b>				
<b>Service in 2002</b>	<b>Number</b>	<b>Percent Increase In Average Salary</b>		
		<b>Actual</b>	<b>Expected</b>	
1-4	16,144	7.70%	6.66%	
5-9	8,839	5.90%	5.00%	
10-14	4,373	5.50%	5.00%	
15-19	2,650	4.60%	5.00%	
20 & Over	<u>2,552</u>	<u>4.80%</u>	<u>5.00%</u>	
<b>Total</b>	<b>34,558</b>	<b>6.50%</b>	<b>5.78%</b>	



<b>Table 5</b>				
<b>Pensions in Force on June 30, 2003</b>				
<b>by Type and Monthly Amount</b>				
<b>Monthly</b>	<b>Service</b>	<b>Disability</b>	<b>Beneficiary</b>	<b>Total</b>
Less than \$100	1,996	52	174	2,222
\$100 - 199	3,274	121	225	3,620
\$200 - 299	2,252	82	158	2,492
\$300 - 399	1,515	40	96	1,651
\$400 - 499	1,139	48	56	1,243
\$500 - 999	2,505	57	83	2,645
\$1,000 - 1,499	647	5	16	668
\$1,500 & Over	<u>291</u>	<u>0</u>	<u>5</u>	<u>296</u>
<b>Total</b>	<b>13,619</b>	<b>405</b>	<b>813</b>	<b>14,837</b>

<b>Table 6</b>				
<b>Pensions in Force on June 30, 2003</b>				
<b>by Type and Age</b>				
<b>Age</b>	<b>Service</b>	<b>Disability</b>	<b>Beneficiary</b>	<b>Total</b>
Under 55	70	87	60	217
55-59	491	106	35	632
60-64	1,930	93	69	2,092
65-69	2,878	66	129	3,073
70-74	2,782	27	154	2,963
75-79	2,313	14	157	2,484
80-84	1,734	8	140	1,882
85-89	961	4	50	1,015
90 & Over	<u>460</u>	<u>0</u>	<u>19</u>	<u>479</u>
<b>Total</b>	<b>13,619</b>	<b>405</b>	<b>813</b>	<b>14,837</b>

**Table 7**

**Cost of Living Increases to Retired Members  
June 30, 2003**

<b>Retirement In</b>	<b>First Increase Effective Date</b>	<b>Percentage Increase</b>	<b>Total Increases Through January 2003</b>	<b>January 2004 Increase</b>	<b>Total Increases Through January 2004</b>	<b>Number of Retired Members at 6/30/03</b>
1979&Earlier	Jan. 1983	4.00%	80.00%	0.00%	80.00%	837
1980	Jan. 1984	2.60%	77.22%	1.57%	80.00%	188
1981	Jan. 1985	4.00%	73.50%	2.10%	77.14%	255
1982	Jan. 1986	3.70%	67.77%	2.10%	71.29%	286
1983	Jan. 1987	1.70%	62.46%	2.10%	65.87%	246
1984	Jan. 1988	3.70%	60.03%	2.10%	63.39%	289
1985	Jan. 1989	4.00%	54.73%	2.10%	57.98%	396
1986	Jan. 1990	4.00%	49.00%	2.10%	52.13%	414
1987	Jan. 1991	4.00%	43.26%	2.10%	46.27%	391
1988	Jan. 1992	4.00%	37.76%	2.10%	40.65%	492
1989	Jan. 1993	3.10%	32.46%	2.10%	35.24%	511
1990	Jan. 1994	3.00%	28.48%	2.10%	31.18%	585
1991	Jan. 1995	2.50%	24.74%	2.10%	27.36%	556
1992	Jan. 1996	3.00%	21.69%	2.10%	24.25%	627
1993	Jan. 1997	2.80%	18.15%	2.10%	20.63%	589
1994	Jan. 1998	2.30%	14.93%	2.10%	17.34%	680
1995	Jan. 1999	1.70%	12.34%	2.10%	14.70%	728
1996	Jan. 2000	2.00%	10.46%	2.10%	12.78%	744
1997	Jan. 2001	3.70%	8.30%	2.10%	10.57%	814
1998	Jan. 2002	3.30%	4.44%	2.10%	6.63%	823
1999	Jan. 2003	1.10%	1.10%	2.10%	3.22%	920
2000	Jan. 2004		0.00%	2.10%	2.10%	981
2001						936
2002						513
2003						<u>223</u>
<b>Total</b>						<b>14,024</b>

<b>Table 8</b>				
<b>Analysis of Retired Membership by Type of Benefit</b>				
<b>(Dollar Amounts in Millions)</b>				
<b>June 30, 2003</b>				
<b>Type of Benefit</b>		<b>Number</b>	<b>Annual Benefit</b>	<b>Total Liability</b>
<b>Service Retirees</b>				
Options 1 & 10 (Life Only)		10,582	45.0	458.0
Options 2 & 21 (100% J&S with Pop-Up)		1,519	8.2	103.8
Option 3 & 31 (75% J&S with Pop-Up)		171	1.4	17.7
Option 4 & 41(50% J&S with Pop-Up)		372	3.0	35.5
Option 5 (10 Years Certain & Life)		251	1.3	15.6
Option 6 (5 Years Certain & Life)		71	0.5	5.7
Option 20 (100% J & S)		319	1.1	8.1
Option 30 (75% J & S)		1	0.0	0.0
Option 40 (50% J & S)		46	0.2	1.4
Accelerated Payment		<u>287</u>	<u>3.2</u>	<u>42.1</u>
Total		13,619	\$63.9	\$688.0
Disability Retirees		405	\$1.4	\$14.4
Beneficiaries of Retiree Deaths		813	\$2.8	\$27.4
Note: Excludes retirees returned to work.				

# **Appendix B**

## **Asset Information**



<b>Table 9</b>		
<b>Market Value of Assets</b>		
<b>Balance Sheet</b>		
	<b>June 30, 2002</b>	<b>June 30, 2003</b>
<b>Assets:</b>		
Cash	\$16,772,268	\$24,570,982
Contribution Receivable	9,542,047	9,806,091
Accrued Interest and Dividends	7,298,706	6,361,519
Investments	1,604,443,653	1,711,320,970
Investment Sales – Receivable	34,332,954	89,823,942
Other Assets	1,930	5,974
Prepaid Expenses	0	-
<b>Total</b>	<b>\$1,672,391,558</b>	<b>\$1,841,889,478</b>
<b>Liabilities:</b>		
Accounts Payable	497,309	549,776
Investment Purchases – Payable	86,757,917	163,224,108
Other Liabilities	119,110	345,949
<b>Total</b>	<b>\$87,374,336</b>	<b>\$164,119,833</b>
<b>Net Assets</b>	<b>\$1,585,017,222</b>	<b>\$1,677,769,645</b>

<b>Table 10</b>		
<b>Statement of Revenue and Expenses</b>		
<b>Market Value Reconciliation For Fiscal Year Ended June 30, 2003</b>		
<b>Operating Revenues</b>		<b>Amount</b>
	<i>Contributions:</i>	
	Employers	\$ 48,933,326
	Members	<u>48,994,009</u>
	Total Contributions	97,927,335
	<i>Net Investment Income:</i>	
	Interest	24,462,591
	Dividends	10,944,770
	Net Income from Security Lending Activities	<u>988,933</u>
	Total Investment Income	36,396,294
	Net Capital Appreciation (Depreciation)	39,016,895
	Less: Investment Expenses	<u>(2,225,613)</u>
	Total Investment Return	73,187,576
	<i>Other Income</i>	<u>15,859</u>
	Total Operating Revenues	<u>171,130,770</u>
<b>Operating Expenses</b>		
	Benefit Payments	67,398,657
	Refunds to Members	8,033,535
	Administrative Expenses	2,945,847
	Other Expense	<u>308</u>
	Total Operating Expenses	<u>78,378,347</u>
	<b>Excess of Revenues over Expenses</b>	<b>92,752,423</b>
	<b>Fund Balance, June 30, 2002</b>	<b>1,585,017,222</b>
	<b>Fund Balance, June 30, 2003</b>	<b>\$ 1,677,769,645</b>

**Table 11**

**Growth of Cash Flow  
(In Thousands)**

Year Ending June 30	Contributions for the Year	Payments During the Year			External Cash Flow for the Year	Covered Payroll	Payments as Percent of Covered Payroll
		Benefit Payments and Refund of Contributions	Expenses	Total			
1985	\$18,956	(\$7,333)	(\$424)	(\$7,757)	\$11,199	\$228,781	3.4 %
1986	20,140	(8,974)	(411)	(9,385)	10,755	245,407	3.8
1987	21,986	(9,641)	(500)	(10,141)	11,845	268,173	3.8
1988	23,927	(10,886)	(538)	(11,424)	12,503	304,029	3.8
1989	26,110	(12,567)	(585)	(13,152)	12,958	331,352	4.0
1990	28,176	(14,643)	(712)	(15,355)	12,821	359,577	4.3
1991	30,505	(16,634)	(721)	(17,355)	13,150	389,080	4.5
1992	31,470	(18,858)	(813)	(19,671)	11,799	398,147	4.9
1993	32,640	(21,025)	(821)	(21,846)	10,794	415,672	5.3
1994	35,298	(23,772)	(901)	(24,673)	10,625	452,339	5.5
1995	38,706	(27,067)	(905)	(27,972)	10,734	495,449	5.6
1996	42,122	(30,338)	(1,233)	(31,571)	10,551	538,022	5.9
1997	49,009	(34,425)	(1,950)	(36,375)	12,634	556,534	6.5
1998	54,844	(38,460)	(2,652)	(41,112)	13,732	616,303	6.7
1999	60,385	(41,813)	(1,604)	(43,417)	16,967	685,272	6.3
2000	68,684	(51,432)	(1,920)	(53,352)	15,332	735,362	7.3
2001	75,434	(58,239)	(2,246)	(60,485)	14,949	814,158	7.4
2002	91,990	(67,737)	(2,574)	(70,311)	21,679	895,420	7.8
2003	97,927	(75,432)	(2,946)	(78,378)	19,549	971,177	8.1



<b>Table 12</b>		
<b>Development of the Actuarial Value of Assets</b>		
1. Valuation Assets June 30, 2002		\$1,810,618,705
2. Activity for FY 2003		
a. Contributions	\$97,927,335	
b. Benefits and Expenses	(78,378,347)	
c. Net Cash Flow	19,548,988	
3. Expected Returns	145,616,413	
4. Assets Before Allocation of G/L (1+2+3)		1,975,784,106
5. Actual Returns for 2003	73,203,435	
6. Excess Returns for 2003 (5-3)	(72,412,978)	
7. Recognized Excess Returns		
2003	(14,482,596)	
2002	(36,491,293)	
2001	(30,409,325)	
2000	1,305,548	
1999	8,893,768	
Total		(71,183,898)
8. Actuarial Value of Assets June 30, 2003		
Before Fresh Start to Market Value		\$1,904,600,208
9. Actuarial Value of Assets June 30, 2003		
After Fresh Start to Market Value		\$1,677,769,645

Note: Excess returns are total return on assets at market in excess of expected investment return at 8% on actuarial value.

# **Appendix C**

## **Actuarial Determinations**



**Table 13**

**Ten Year Historical Summary  
(All Dollar Figures in Thousands)**

	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
Active Members	30,662	32,598	34,153	35,982	38,672	41,599	43,533	45,517	46,728	46,863
Retired Members	9,792	10,216	10,643	10,811	11,218	12,461	13,061	13,673	14,270	14,837
Actuarial Assets	\$698,988	\$778,325	\$876,886	\$1,001,035	\$1,150,311	\$1,335,308	\$1,522,660	\$1,686,242	\$1,810,619	\$1,677,770
UAAL	(\$12,908)	\$8,074	\$2,675	(\$36,823)	(\$113,965)	(\$166,796)	(\$127,360)	(\$50,166)	\$45,363	\$371,946
Benefit And Refunds	\$23,772	\$27,067	\$30,338	\$34,425	\$38,460	\$41,813	\$51,432	\$58,239	\$67,737	\$75,432
Accumulated Members' Contributions	\$155,238	\$169,846	\$185,763	\$204,757	\$225,373	\$250,327	\$274,167	\$301,936	\$354,296	\$394,925
APV of Retirees' Benefits	\$224,650	\$252,034	\$293,937	\$312,390	\$350,860	\$396,846	\$467,653	\$565,126	\$651,295	\$731,059

<b>Table 14</b>			
<b>Determination of Normal Cost</b>			
<b>June 30, 2003</b>			
<b>For the 2003 - 2004 Plan Year</b>			
		<b>Dollar</b>	<b>Rate</b>
<b>Active Members</b>			
	Retirement Benefits	\$81,393,501	8.85%
	Termination Benefits	12,751,690	1.39%
	Death Benefits	1,804,787	0.20%
	Disability Benefits	1,298,970	0.14%
<b>Total Normal Cost</b>		<b>\$97,248,948</b>	<b>10.58%</b>
<b>Estimated Employee Contributions</b>		<b>46,004,515</b>	
<b>Employer Normal Cost</b>		<b>\$51,244,433</b>	
(Total Normal Cost less Employee Contributions)			

<b>Table 15</b>			
<b>Determination of the Unfunded Actuarial Accrued Liability</b>			
<b>June 30, 2003</b>			
<b>Actives Members:</b>			
	Service Retirement		\$1,215,219,440
	Death Benefits		23,564,545
	Disability Benefits		12,030,631
	Termination Benefits		(3,183,892)
	Inactives		71,025,846
Total for Active and Inactives Members			1,318,656,570
<b>Pay Status Members:</b>			
	Service Retirees		689,243,653
	Disability Retirees		14,446,037
	Survivors		27,369,456
Total for Pay Status Members			731,059,146
Total Actuarial Accrued Liability			2,049,715,716
Actuarial Value of Assets			1,677,769,645
<b>Total Unfunded Actuarial Accrued Liability</b>			<b>371,946,071</b>

**Table 16**  
**GASB 25 Exhibits**  
**Schedule of Funding Progress**  
**(In Thousands)**

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL)			Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a)/c)
		Liability (AAL) Entry Age (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)		
6/30/1995	778,325	786,399	8,074	99.0%	495,449	1.6%
6/30/1996	876,886	879,561	2,675	99.7%	538,022	0.5%
6/30/1997	1,001,035	964,212	(36,823)	103.8%	556,534	-6.6%
6/30/1998	1,150,311	1,036,347	(113,964)	111.0%	616,303	-18.5%
6/30/1999	1,335,308	1,168,511	(166,797)	114.3%	685,272	-24.3%
6/30/2000	1,522,660	1,395,300	(127,360)	109.1%	735,400	-17.3%
6/30/2001	1,686,242	1,636,076	(50,166)	103.1%	814,158	-6.2%
6/30/2002	1,810,619	1,855,982	45,363	97.6%	895,420	5.1%
6/30/2003	1,677,770	2,049,716	371,946	81.9%	971,177	38.3%

**Schedule of Employer Contributions**

Actuarial Valuation Date	Annual Required Contribution	Percentage Contributed
6/30/1995	19,248,692	100.0%
6/30/1996	20,966,576	100.0%
6/30/1997	24,393,542	100.0%
6/30/1998	27,315,729	100.0%
6/30/1999	30,012,859	100.0%
6/30/2000	34,185,605	100.0%
6/30/2001	37,500,243	100.0%
6/30/2002	45,773,119	100.0%
6/30/2003	48,933,326	92.6%

**Notes in Trend Data**

Information:	Data
Valuation Date	6/30/2003
Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percent, Open
Remaining Amortization Period (years)	30
Asset Valuation Method	5-Year Smoothed Market
	Marked to Market as of June 30, 2003

Actuarial	
Investment rate of return	8.0%
Projected salary increases	5.0% - 10.0%
Cost-of-living adjustments	3.5%

<b>Table 17</b>				
<b>Calculation of Unfunded Actuarial Accrued Liability</b>				
<b>June 30, 2003</b>				
				<b>Amount</b>
(1) Present Value of Future Benefits for:				
	Active Members			\$2,082,439,161
	Service Retirees			689,243,653
	Disability Retirees			14,446,037
	Survivors			27,369,456
	Inactive Members			71,025,846
	Total			2,884,524,153
(2) Present Value of Future Normal Costs				834,808,437
(3) Actuarial Accrued Liability ((1)-(2))				2,049,715,716
(4) Actuarial Value of Assets				1,677,769,645
(5) Unfunded Actuarial Accrued Liability ((3)-(4))				\$371,946,071
<b>Required Contribution Rate &amp; Amortization of Unfunded Liability</b>				
<b>June 30, 2003</b>				
				<b>Percentage of Payroll</b>
(1) Total Contribution Rate, Member + Employer				10.00%
(2) Normal Cost Rate				10.58%
(3) Approximate Rate Available for Unfunded Actuarial Accrued Liability ((1)-(2))				-0.58%
(4) Number of Years Required to Amortized Unfunded Actuarial Accrued Liability				Never*
(5) Benchmark Contribution Rate for the System to Amortize the Unfunded Actuarial Accrued Liability in 30 Years				12.47%
*While the current contribution rate will not fund the UAAL, the funding process is designed to fund that item over time.				

<b>Table 18</b>		
<b>Analysis of Actuarial Gains and Losses</b>		
		<b>Amount</b>
1.	Unfunded Actuarial Liability as of June 30, 2002	45,363,320
2.	Normal Cost for 2003 Plan Year	89,470,063
3.	Contribution Received during Year	(97,927,335)
4.	Interest to Year End @ 8.00% on 1., 2., and 3.	3,297,283
5.	Expected Unfunded Actuarial Liability as of June 30, 2003	40,203,331
6.	Actuarial (Gain)/Loss During the Year	
a.	From Investment	71,183,897
b.	From Actuarial Liabilities	33,728,280
c.	Total	104,912,177
7.	Change in Asset Method, Fresh Start to MV as of June 30, 2003	226,830,563
8.	Actuarial Unfunded Actuarial Liability as of June 30, 2003	371,946,071



# **Appendix D**

## **Additional Data**

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**Table 19****Schedule of Active Member Valuation Data**

<b>Actuarial Valuation Date</b>	<b>Number of Members</b>	<b>Covered Annual Payroll (000)</b>	<b>Average Annual Salary</b>	<b>% Increase in Average Salary</b>	<b>Average Attained Age</b>	<b>Average Years of Service</b>
6/30/1991	28,554	\$389,080	\$13,626	5.1%	45.5	7.4
6/30/1992	28,410	398,147	14,014	2.8%	45.7	7.6
6/30/1993	29,055	415,672	14,306	2.1%	45.7	7.7
6/30/1994	30,662	452,339	14,752	3.1%	45.5	7.6
6/30/1995	32,598	495,449	15,199	3.0%	45.3	7.3
6/30/1996	34,153	538,022	15,753	3.6%	45.2	7.2
6/30/1997	35,982	556,534	15,467	-1.8%	45.1	7.1
6/30/1998	38,672	616,303	15,937	3.0%	44.8	6.7
6/30/1999	41,599	685,272	16,473	3.4%	44.6	6.5
6/30/2000	43,533	735,400	16,893	2.5%	44.5	6.4
6/30/2001	45,517	814,158	17,887	5.9%	44.6	6.3
6/30/2002	46,728	895,420	19,162	7.1%	44.8	6.4
6/30/2003	46,863	971,177	20,724	8.2%	45.3	6.6

**Table 20**

**Solvency Test  
(\$ in 000's)**

<b>Actuarial Accrued Liability</b>							
<b>Actuarial</b>	<b>Member</b>	<b>Current</b>	<b>Active &amp; Inactive</b>	<b>Net Assets</b>	<b>Percentage of Actuarial Liabilities</b>		
<b>Valuation</b>	<b>Contributions</b>	<b>Retirees &amp;</b>	<b>Employer</b>	<b>Available for</b>	<b>Covered by Net Assets for:</b>		
<b>Date</b>	<b>(1)</b>	<b>Beneficiaries</b>	<b>Financed Portion</b>	<b>Benefits</b>	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>
		<b>(2)</b>	<b>(3)</b>				
6/30/1991	\$113,462	\$144,240	\$244,839	\$453,722	100.0%	100.0%	80.1%
6/30/1992	127,335	163,586	248,947	513,693	100.0%	100.0%	89.5%
6/30/1993	140,790	196,936	277,693	583,058	100.0%	100.0%	88.3%
6/30/1994	155,238	224,650	306,192	698,988	100.0%	100.0%	104.2%
6/30/1995	169,846	252,034	364,519	778,325	100.0%	100.0%	97.8%
6/30/1996	185,763	293,937	399,861	876,886	100.0%	100.0%	99.3%
6/30/1997	204,757	312,390	447,065	1,001,035	100.0%	100.0%	108.2%
6/30/1998	225,454	350,860	460,033	1,150,311	100.0%	100.0%	124.8%
6/30/1999	231,252	396,846	540,413	1,335,308	100.0%	100.0%	130.9%
6/30/2000	274,167	467,653	653,480	1,522,660	100.0%	100.0%	119.5%
6/30/2001	301,936	565,126	769,014	1,686,242	100.0%	100.0%	106.5%
6/30/2002	354,296	651,295	850,391	1,810,619	100.0%	100.0%	94.7%
6/30/2003	394,925	731,059	923,732	1,677,770	100.0%	100.0%	59.7%

**Table 21**

**Schedule of Retirees and Beneficiaries Added to  
and Removed From Retirement rolls**

<b>Actuarial Valuation Date</b>	<b>Service Retirees</b>			<b>Disability Retirees</b>			<b>Beneficiaries</b>		
	<b>Added to Rolls</b>	<b>Removed from Rolls</b>	<b>Rolls End of Year</b>	<b>Added to Rolls</b>	<b>Removed from Rolls</b>	<b>Rolls End of Year</b>	<b>Added to Rolls</b>	<b>Removed from Rolls</b>	<b>Rolls End of</b>
6/30/1989	703	272	7,645	24	14	151	30	1	148
6/30/1990	678	253	8,070	23	10	164	29	8	169
6/30/1991	712	277	8,505	24	13	175	54	4	219
6/30/1992	715	316	8,904	28	7	196	46	5	260
6/30/1993	689	336	9,257	26	10	215	40	7	293
6/30/1994	658	358	9,557	29	9	235	60	9	344
6/30/1995	782	372	9,967	33	19	249	54	12	386
6/30/1996	799	390	10,376	26	8	267	47	18	415
6/30/1997	823	388	10,811	22	13	276	63	18	460
6/30/1998	841	424	11,218	29	17	288	59	22	497
6/30/1999	813	431	11,600	35	7	316	67	19	545
6/30/2000	945	432	12,113	45	14	347	76	20	601
6/30/2001	987	468	12,632	53	22	378	76	14	663
6/30/2002	980	471	13,141	30	21	387	97	18	742
6/30/2003	979	501	13,619	31	13	405	96	25	813

<b>Table 22</b>							
<b>Schedule of Retirees by Type</b>							
<b>(\$ in 000's)</b>							
<b>Actuarial Valuation Date</b>	<b>Service Retirees</b>		<b>Disability</b>		<b>Beneficiaries</b>		
	<b>Number</b>	<b>Benefits</b>	<b>Number</b>	<b>Benefits</b>	<b>Number</b>	<b>Benefits</b>	
6/30/1991	8,505	12,616	175	232	219	318	
6/30/1992	8,904	14,403	196	287	260	414	
6/30/1993	9,257	16,464	215	347	293	478	
6/30/1994	9,557	18,534	235	417	344	572	
6/30/1995	9,967	20,842	249	481	383	699	
6/30/1996	10,376	23,785	267	550	415	820	
6/30/1997	10,811	27,250	276	616	460	1,007	
6/30/1998	11,218	30,240	288	672	497	1,126	
6/30/1999	11,600	35,395	316	826	545	1,384	
6/30/2000	12,113	41,091	347	1,002	601	1,653	
6/30/2001	12,632	50,512	378	1,232	663	2,038	
6/30/2002	13,141	57,697	387	1,346	742	2,413	
6/30/2003	13,619	63,860	405	1,449	813	2,752	
<b>Average New Retiree Statistics</b>							
<b>Actuarial Valuation Date</b>	<b>New Service Retirees</b>		<b>Average New Benefit</b>		<b>% Change From Previous Year</b>		
6/30/1991	606		228.87		3		
6/30/1992	609		242.19		6		
6/30/1993	597		275.23		12		
6/30/1994	571		306.20		11		
6/30/1995	679		298.76		(3)		
6/30/1996	797		330.40		11		
6/30/1997	823		327.16		(1)		
6/30/1998	805		324.82		(1)		
6/30/1999	813		366.42		13		
6/30/2000	945		431.89		18		
6/30/2001	987		565.29		31		
6/30/2002	980		660.51		17		
6/30/2003	979		676.19		2		

# **Appendix E**

## **Actuarial Method and Assumptions**

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## Statement of Funding Policy

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In order to establish long-term, consistent methods in the funding of the System, the Board of Trustees has adopted this statement of its funding policy. The funding of the System shall be carried out in such a way that the burden of paying retirement costs shall be shared equitably by present and succeeding generations of members and taxpayers. To this end, the following principles shall apply:

1. The Board of Trustees shall adopt actuarial assumptions, each of which individually represents a reasonable long-term estimate of anticipated experience under the System, derived from experience studies conducted every fifth year.
2. The actuarial funding method used shall be the Entry Age Normal Method with normal costs calculated as a percentage of payroll.
3. It shall be the general objective to maintain an amortization period of 30 years or less in the funding of the Unfunded Actuarial Accrued Liability. Whenever a change is made in the System's benefit and contribution rate structures, the amortization period for the System after this change should not exceed 30 years initially.
4. If an escalation in future payroll is assumed in determining the amortization payments toward the Unfunded Actuarial Accrued Liability, then the annual rate of such escalation shall not exceed the expected rate of expansion in total System payroll based upon the actuarial assumptions.
5. Assets used in the actuarial valuation shall be valued using adjusted market values averaged over a period of five years.
6. Annual actuarial valuations shall be made of the System's assets and liabilities. The contribution rate shall be established based on the results of these valuations.

# Actuarial Assumptions

## (Adopted for Use with the June 30, 2001 Valuation)

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### Investment Return

It is assumed that investments of the System will return, on average, a yield of 8% per annum compound, net of system expenses (investment and administrative expenses).

### Salary and Payroll Increases

Salaries are assumed to increase each year at the rate of 5%. Longevity adjustments are made for those with less than 5 years of service.

Service	Longevity Adjustment	Total Increase
0	5.00%	10.00%
1	2.50	7.50
2	1.75	6.75
3	1.00	6.00
4	.75	5.75
5 and Over	0.00	5.00

Total covered payroll of the entire membership is assumed to increase 5.0% per year in the future.

### Retirement Rates

Retirement rates are only applied to those eligible for retirement. Retirement is assumed in accordance with the following rates per 1,000 eligible members:

For All Members Age 60 With at Least Five Years of Service	
Age	Male and Female
60	100
61	125
62	300
63	250
64	150
65	350
66-74	250
75 and Over	1000



**For Members Who Are Below Age 60 With 30 Years of Service and for  
Members Who are Below Age 60 but Meet the Rule of 80**

<b>Service</b>	<b>Males and Females</b>
30 and Over	100

**For Members who have at least 25 years of service and are below age 55,  
during the July 1, 1998- July 1, 2003 Period:**

<b>Service</b>	<b>Males and Females</b>
25	45
26	60
27	75
28	90
29	105

**For Members Who are Only Eligible for a Reduced Retirement Benefit  
(Age 55 with 5 Years of Service)**

<b>Service</b>	<b>Males and Females</b>
All Years Eligible	35

**Withdrawal Rates**

Termination of membership prior to eligibility for retirement from all causes other than death, disability or retirement, whether resulting in a refund or a deferred benefit, is assumed in accordance with the following illustrative rates per 1,000 members:

<b>Service</b>	<b>Rate</b>
0	300.0
1	175.0
2	125.0
3	105.0
4	85.0
5	75.0
10	44.0
15	28.0
20	18.0
25	0.0

### Disability Rates

Retirement for disability prior to age 60 is assumed in accordance with the following illustrative rates per 1,000 eligible members:

<u>Age</u>	<u>Male and Female Rates</u>
35	-
40	0.465
45	0.697
50	1.395
55	2.557

### Mortality Rates

Mortality Rates for retirees, beneficiaries, and survivors are based on the GAM94 Table with male ages set forward one year. Rates for active members are 70% of retiree rates for males and 64% of retiree rates for females. Illustrative rates per 1,000 for retirees and disabled members at various ages are as follows:

<u>Service Retired Members, Beneficiaries and Survivors</u>		
<u>Age</u>	<u>Male</u>	<u>Female</u>
20	0.530	0.284
30	0.821	0.351
40	1.156	0.709
50	2.872	1.428
60	8.986	4.439
70	25.951	13.730
80	68.615	39.396
90	167.260	116.265
100	333.461	276.427
110	496.356	482.325

### Disability Retired Members, Male and Female

<u>Age</u>	<u>Rate</u>
40	24.075
50	26.175
60	31.500
70	44.625
80	76.650
90	173.276
100	507.128

### **Cost of Living Adjustments**

The cost of living adjustment assumed in the valuation is 3.5% per year. The total lifetime COLA cannot exceed 80% of the original benefit.

### **Asset Valuation Method**

The Actuarial Value of Assets is based on a five-year average of adjusted market value returns. The actuarial value for a year is computed by taking the actuarial value at June 30 of the prior year, subtracting all expenses (including benefit payments), and adding contributions and expected investment return at 8%. The difference between the actual returns at market value for the year and expected returns is determined. Twenty percent (20%) of that difference is added to the actuarial value along with corresponding amounts from each of the prior four years. The Actuarial Value of Assets has been marked to the market value as of June 30, 2003.

### **Provisions for Expenses**

The assumed investment return rate is intended to represent the net rate of return after payment of all investment and administrative expenses.

### **Beneficiaries**

80% of males and females are assumed to be married or to have eligible dependent beneficiaries. Beneficiaries are assumed to be of the opposite sex from the member. Female beneficiaries are assumed to be 3 years younger than the member, and male beneficiaries are assumed to be 3 years older than the member.

### **Terminations**

Half of all active members who terminate for reasons other than death, disability or retirement are assumed to take of refund of their member account balance. The other half are expected to elect a termination benefit deferred to age 60. The same approach is used to value vested, inactive members.

# **Appendix F**

## **Summary Of Benefit Provisions Of NTRS**



# Member Contributions

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Half the total NTRS contribution rate. The current NTRS contribution rate is 10% of pay.

## Normal (Unreduced) Retirement

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### Eligibility

Attainment of age 60 with at least five years of Creditable Service, or  
Completion of 30 years of Creditable Service at any age.  
Age plus Creditable Service is at least 80.

### Benefit

1.61% of Final Average Salary for each year of Membership Service. A year of Prior Service is treated as .6 year of Membership Service. Any person retiring prior to age 62 under the Rule of 80 or with 30 years of creditable service will receive an additional benefit payable to attainment of age 62. This benefit is equal to .8% of Final Average Salary for each year of Membership Service.

### Final Average Salary

Average monthly salary over the Member's three highest consecutive years of service.

### Membership Service

Service while a participating member of NTRS. Service is measured each year in relation to minimum salary for 20 hours per week in the position for that year.

### Prior Service

Service rendered in a covered position prior to November 1, 1965.

### Creditable Service

Membership Service plus any Prior Service.

### Normal Form of Benefit

Single Life Annuity

Options available include joint and survivor (50%, 75%, or 100%) and term certain (60 or 120 months) and life thereafter.

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## Early (Age Reduced) Retirement

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### Eligibility

Attainment of age 55 and under age 60 with at least five years of creditable service.

### Benefit

Normal retirement benefit accrued to the date of early retirement, actuarially reduced from age 60.

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## Special Normal Retirement – Under Modified Formula

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### Eligibility

Retirement on or before 7-1-2008 at an age under 55 and with at least 25 years of creditable service but not eligible for the Rule of 80.

### Benefit

Based on a percentage of final average salary per year of creditable service. Percentages are as follows:

<u>Years of Service</u>	<u>Benefit Percentage</u>
25-25.9	1.51%
26-26.9	1.53
27-27.9	1.55
28-28.9	1.57
29-29.9	1.59

## COLA Adjustments

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In any year in which the Board determines that the CPI has increased, the Board may provide for annual increases in the current benefit of up to 5%. For any member such adjustments commence in the fourth January after commencement of benefits. The total of such increases may not exceed 80% of the original benefit for any member.

## Disability Benefits

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### Definition of Disability

Incapacity for performance of gainful employment after completion of five years of creditable service and before age 60.

### Benefit

Lifetime benefit equal to 90% of accrued normal retirement benefit.

### Form of Benefit

If eligible, surviving spouse may elect a survivor benefit. COLA adjustments similar to those provided retirees are provided on this benefit.

## Vesting

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### Eligibility

Completion of five years of creditable service.

### Benefit

Accrued normal retirement benefit payable at earliest retirement age based on service at date of termination. Benefit is based on formula in effect at commencement of benefit.

## Death / Survivor Benefits

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### **Refund**

Refund of accumulated member contributions with interest

### **Survivor Benefits**

If the member has at least 5 years of creditable service at date of death, the spouse may receive a survivor benefit based on 100% J & S equivalent of the benefit accrued to date of death. The benefit may commence:

1. immediately if member is eligible to retire at date of death, or
2. at a future retirement date of the deceased member.

The benefit may be reduced for early commencement if the deceased member would not have been eligible for unreduced retirement at that date based on service to date of death. COLA adjustments similar to those provided retirees are provided on these benefits.