

**REPORT ON THE SIXTY-SIXTH ANNUAL VALUATION  
OF THE TEACHERS' AND STATE EMPLOYEES'  
RETIREMENT SYSTEM OF NORTH CAROLINA  
PREPARED AS OF DECEMBER 31, 2008**



October 1, 2009

Board of Trustees  
Teachers' and State Employees'  
Retirement System of North Carolina  
325 North Salisbury Street  
Raleigh, NC 27603

Members of the Board:

We submit herewith our report on the sixty-sixth annual valuation of the Teachers' and State Employees' Retirement System of North Carolina prepared as of December 31, 2008. The report has been prepared in accordance with North Carolina General Statute 135-6(o).

The Appropriations Act of 2009 sets contributions at 3.57% of payroll effective for the fiscal year ending June 30, 2010. The valuation has been prepared in accordance with the parameters of Statement Nos. 25 and 27 of the Governmental Accounting Standards Board. The annual required contribution (ARC) under GASB for the 2010-2011 fiscal year is 6.71% of payroll which will liquidate the unfunded accrued liability within a 9-year period. On this basis, there is no preliminary reserve from undistributed gains.

The plan sponsor selected the assumptions used for the results in this report. I believe that these assumptions are reasonable and comply with the requirements of GASB Nos. 25 and 27. I prepared this report in accordance with the requirements of these standards.

I am an Enrolled Actuary, a Fellow of the Society of Actuaries and a Member of the American Academy of Actuaries. I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this report. This report has been prepared in accordance with all applicable Actuarial Standards of Practice, and I am available to answer questions about it.

The Table of Contents, which immediately follows, outlines the material contained in the report.

Respectfully submitted,



Richard A. Mackesey, FSA, EA, MAAA  
Principal, Consulting Actuary

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**REPORT ON THE SIXTY-SIXTH ANNUAL VALUATION OF THE  
TEACHERS' AND STATE EMPLOYEES' RETIREMENT SYSTEM OF NORTH CAROLINA  
PREPARED AS OF DECEMBER 31, 2008**

**SECTION I - SUMMARY OF PRINCIPAL RESULTS**

1. This report, prepared as of December 31, 2008, presents the results of the sixty-sixth actuarial valuation of the system. For convenience of reference, the principal results of the valuation and a comparison with the preceding year's results are summarized below.

**TABLE I  
SUMMARY OF PRINCIPAL RESULTS**

VALUATION DATE	12/31/08	12/31/07
Active members included in valuation		
Number	325,618*	338,490
Reported compensation	\$ 13,267,554,255	\$ 12,701,016,741
Valuation compensation	\$ 14,187,881,569	\$ 13,743,185,124
Beneficiaries		
Number	151,353	145,855
Annual allowances	\$ 3,062,394,827	\$ 2,885,868,222
Assets		
Actuarial value	\$ 55,127,658,183	\$ 55,283,120,813
Market value	45,629,312,989	58,619,737,886
Unfunded accrued liability	\$ 391,086,516	\$ (2,468,031,336)
<b>CONTRIBUTIONS FOR FISCAL YEAR ENDING</b>	<b>June 30, 2011</b>	<b>June 30, 2010</b>
<u>Appropriations Act</u>		
Employer contribution rate		
Normal	6.30%	6.26%
Accrued liability	<u>(2.73)</u>	<u>(2.90)</u>
Total	3.57%	3.36%
<u>GASB 25/27</u>		
Annual required contribution (ARC) of employer		
Normal	6.30%	6.26%
Accrued liability	<u>0.41</u>	<u>(2.69)</u>
Total	6.71%	3.57%
Liquidation period	9 years	9 years
Reserve from undistributed gains/(losses)	(3.14)%	(0.21)%

- \* The decrease in active membership is due to a change in the reporting of some active members, which allows us to determine terminating members in the year of termination instead of the year after termination. As of December 31, 2008, all members reported as inactive or retired members and all members who did not have earnings reported near the end of 2008 are treated as inactive or retired members.

2. The valuation balance sheet showing the results of the valuation is given in Section III.
3. Comments on the valuation results are given in Section IV, comments on the experience and actuarial gains during the valuation year are given in Section V and the rates of contribution payable
4. Schedule B of this report outlines the full set of actuarial assumptions and methods employed. Schedule A of this report presents the development of the actuarial value of assets.
5. Schedule C gives a summary of the benefit and contribution provisions of the system.

### SECTION II - MEMBERSHIP DATA

Data regarding the membership of the system for use as a basis for the valuation were furnished by the system's office. The following tables summarize the membership of the system as of December 31, 2008 upon which the valuation was based. Detailed tabulations of the data are given in Schedule D.

**TABLE II**

**THE NUMBER AND REPORTED COMPENSATION OF ACTIVE MEMBERS  
INCLUDED IN THE VALUATION AS OF DECEMBER 31, 2008**

GROUP	NUMBER	REPORTED COMPENSATION
Teachers	158,295	\$ 6,462,577,787
Employees	163,738	6,610,099,973
Law Enforcement Officers	<u>3,585</u>	<u>194,876,495</u>
Total	325,618	\$ 13,267,554,255

There are, in addition, 95,175 inactive members. The results of the valuation take these members into account.

TABLE III

**THE NUMBER AND ANNUAL RETIREMENT ALLOWANCES OF BENEFICIARIES  
AND SURVIVORS ON THE ROLL AS OF DECEMBER 31, 2008**

GROUP	NUMBER	ANNUAL RETIREMENT ALLOWANCES
<u>Beneficiaries Receiving Service Retirement Allowances</u>		
Teachers	66,195	\$ 1,664,802,357
Employees	65,416	1,069,777,537
Law Enforcement Officers	<u>2,164</u>	<u>62,073,393</u>
Total	133,775	\$ 2,796,653,287
<u>Beneficiaries Receiving Disability Retirement Allowances</u>		
Teachers	1,558	\$ 38,689,144
Employees	3,873	67,660,552
Law Enforcement Officers	<u>153</u>	<u>3,871,975</u>
Total	5,584	\$ 110,221,671
<u>Benefits to Survivors of Deceased Beneficiaries</u>		
Teachers	3,757	\$ 62,675,000
Employees	7,904	86,466,972
Law Enforcement Officers	<u>333</u>	<u>6,377,897</u>
Total	11,994	\$ 155,519,869
Grand Total	<u>151,353</u>	<u>\$ 3,062,394,827</u>

**SECTION III - VALUATION BALANCE SHEET**

The following valuation balance sheet shows the assets and liabilities of the retirement system as of the current valuation date of December 31, 2008 and, for comparison purposes, as of the immediately previous valuation date of December 31, 2007. The items shown in the balance sheet are present values actuarially determined as of the relevant valuation date. The development of the actuarial value of assets is presented in Schedule A.

**TABLE IV**

**VALUATION BALANCE SHEET**  
**SHOWING THE ASSETS AND LIABILITIES OF THE**  
**TEACHERS' AND STATE EMPLOYEES'**  
**RETIREMENT SYSTEM OF NORTH CAROLINA**

	DECEMBER 31, 2008	DECEMBER 31, 2007
<b>ASSETS</b>		
Current actuarial value of assets:		
Annuity Savings Fund	\$ 9,330,710,086	\$ 8,756,422,950
Pension Accumulation Fund	<u>45,796,948,097</u>	<u>46,526,697,863</u>
Total current assets	\$ 55,127,658,183	\$ 55,283,120,813
Future member contributions to Annuity Savings Fund	\$ 7,905,452,496	\$ 7,666,167,078
Prospective contributions to Pension Accumulation Fund:		
Normal contributions	\$ 8,168,967,579	\$ 7,870,598,200
Unfunded accrued liability contributions	391,086,516	(2,468,031,336)
Undistributed gain contributions	<u>(2,977,283,363)</u>	<u>(193,102,829)</u>
Total prospective contributions	\$ 5,582,770,732	\$ 5,209,464,035
Total Assets	<u>\$ 68,615,881,411</u>	<u>\$ 68,158,751,926</u>
<b>LIABILITIES</b>		
Annuity Savings Fund:		
Past member contributions	\$ 9,330,710,086	\$ 8,756,422,950
Future member contributions	<u>7,905,452,496</u>	<u>7,666,167,078</u>
Total contributions to Annuity Savings Fund	\$ 17,236,162,582	\$ 16,422,590,028
Pension Accumulation Fund:		
Benefits currently in payment	\$ 27,858,790,243	\$ 26,200,906,236
Benefits to be paid to current active members	26,498,211,949	25,130,370,619
Reserve for increases in retirement allowances effective July 1, 2009 (July 1, 2008 for December 31, 2007 figure)	0	597,987,872
Reserve from undistributed gains/(losses)	<u>(2,977,283,363)</u>	<u>(193,102,829)</u>
Total benefits payable from Pension Accumulation Fund	\$ 51,379,718,829	\$ 51,736,161,898
Total Liabilities	<u>\$ 68,615,881,411</u>	<u>\$ 68,158,751,926</u>

#### SECTION IV - COMMENTS ON VALUATION

The valuation balance sheet gives the following information with respect to the funds of the system as of December 31, 2008.

##### Annuity Savings Fund

The Annuity Savings Fund is the fund to which are credited contributions made by members together with interest thereon. When a member retires, the amount of his accumulated contributions is transferred from the Annuity Savings Fund to the Pension Accumulation Fund. The assets credited to the Annuity Savings Fund on December 31, 2008, which represent the accumulated contributions of members to that date, amounted to \$9,330,710,086. The balance sheet also shows that the future contributions by members have a present value of \$7,905,452,496. The present value of both past and future contributions of members is therefore equal to \$17,236,162,582. The liabilities of this fund are also shown to be equal to \$17,236,162,582.

##### Pension Accumulation Fund

The Pension Accumulation Fund is the fund to which the contributions made by employers are credited and from which are paid all benefits on account of beneficiaries and their survivors.

The current market related actuarial value of assets creditable to the Pension Accumulation Fund on December 31, 2008 amounted to \$45,796,948,097. The liabilities on account of active members amounted to \$26,498,211,949. In addition, the balance sheet indicates liabilities of \$27,858,790,243 on account of all benefits payable to beneficiaries and survivors as of December 31, 2008. The balance sheet also shows a reserve from undistributed gains/(losses) of \$(2,977,283,363). The total liabilities of the Pension Accumulation Fund, therefore, amounted to \$51,379,718,829. The difference between these liabilities and the current assets credited to this fund is \$5,582,770,732 which represents the present value of future contributions to be made by the employers. Of this amount, \$8,168,967,579 represents the present value of prospective normal contributions by the employers, \$391,086,516 represents the present value of prospective accrued liability contributions by employers and the balance of \$(2,977,283,363) represents the present value of prospective contributions on account of undistributed actuarial gains/(losses).

The retirement act provides that the contributions of employers shall consist of a normal contribution and an accrued liability contribution. G.S. 135-8(d)(2) of the retirement act provides that the normal contribution rate is to be determined as the uniform percentage of the earnable compensation of the average new entrant throughout his entire period of active service and is to be determined after each valuation. The valuation indicates that the uniform normal percentage contribution rate should be set at 6.30% of compensation.



The present valuation indicates that if the employer contribution rate is set at 3.57% of payroll in accordance with the Appropriations Act of 2009, the accrued liability rate would be equal to (2.73%) of payroll effective July 1, 2009. The required employer contribution is 6.71% which will liquidate the unfunded accrued liability within a 9-year period.

#### **SECTION V - COMMENTS ON EXPERIENCE AND GAINS**

The unfunded accrued liability has increased to \$391 million from \$(2,468) million since the prior valuation. The significant items which affected the unfunded accrued liability include the expected increase in the unfunded accrued liability of \$204 million due to its amortization over the liquidation period, deviations in salary increases, termination/retirement rates and other demographic changes from expectations which increased the unfunded accrued liability by \$280 million and the 2008 adjustment towards market value of assets which increased the unfunded accrued liability by \$2,375 million.

The valuation results indicates that there is no preliminary reserve from undistributed gains. Each 1.0% increase in retirement allowances as of July 1, 2010 to beneficiaries on the retirement roll on July 1, 2009 and a prorated portion of each 1.0% increase as of July 1, 2010 for beneficiaries who retired after July 1, 2009 but before June 30, 2010 is equivalent to 0.32% of payroll. The cost of each 0.01% increase in the defined benefit formula with a corresponding increase in retirement allowances to all current benefit recipients is 0.39% of payroll.

**SECTION VI - RATES OF PAYMENT TO PENSION ACCUMULATION FUND**

The valuation balance sheet gives the basis for determining the percentage rates for contributions to be made by employers to the Pension Accumulation Fund and the Death Benefit Fund under the provisions of the retirement act. The following table shows the rates of contribution payable by employers as determined from the Appropriations Act and the present valuation for the 2010/2011 fiscal year.

**TABLE V**

**RATES OF CONTRIBUTION PAYABLE BY EMPLOYERS  
FOR THE 2010/2011 FISCAL YEAR  
BASED ON THE APPROPRIATIONS ACT  
AND THE VALUATION AS OF DECEMBER 31, 2008**

CONTRIBUTION	RATE
Normal	6.30%
Actuarial Accrued Liability	<u>(2.73)</u>
Total	3.57%

**SECTION VII - ACCOUNTING INFORMATION**

1. Statement Nos. 25 and 27 of the Governmental Accounting Standards Board (GASB) set forth certain items of information to be disclosed in the financial statements of the System and the employer. One such item is a distribution of the number of employees by type of membership, as follows:

**NUMBER OF ACTIVE AND RETIRED PARTICIPANTS  
AS OF DECEMBER 31, 2008**

GROUP	NUMBER
Retired participants and beneficiaries currently receiving benefits	151,353
Terminated participants and beneficiaries entitled to benefits but not yet receiving benefits	95,175
Active Participants	<u>325,618</u>
Total	572,146

2. Another such item is the schedule of funding progress as shown below.

**SCHEDULE OF FUNDING PROGRESS**

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b - a) / c)
12/31/03	\$45,117,507,733	\$41,733,701,348	\$(3,383,806,385)	108.1%	\$10,082,153,001	(33.56)%
12/31/04	47,383,509,397	43,827,854,276	(3,555,655,121)	108.1	10,366,136,571	(34.30)
12/31/05	49,670,182,206	46,624,667,789	(3,045,514,417)	106.5	10,990,238,891	(27.71)
12/31/06	52,420,807,724	49,391,906,996	(3,028,900,728)	106.1	11,711,385,640	(25.86)
12/31/07	55,283,120,813	52,815,089,477	(2,468,031,336)	104.7	12,701,016,741	(19.43)
12/31/08	55,127,658,183	55,518,744,699	391,086,516	99.3	13,267,554,255	2.95

3. Following is the calculation of the annual pension cost and net pension obligation for the fiscal year ending June 30, 2009.

Annual Pension Cost and Net Pension Obligation for Fiscal Year Ending 6/30/2009

(a)	Employer annual required contribution	\$ 472,374,000
(b)	Interest on net pension obligation	(3,083,000)
(c)	Adjustment to annual required contribution	6,369,000
(d)	Annual pension cost: (a) + (b) + (c)	\$ 475,660,000
(e)	Employer contributions made for fiscal year ending 6/30/2009	472,374,000
(f)	Increase (decrease) in net pension obligation: (d) – (e)	\$ 3,286,000
(g)	Net pension obligation beginning of fiscal year	(42,525,000)
(h)	Net pension obligation end of fiscal year: (f) + (g)	\$ (39,239,000)

TREND INFORMATION

<u>Year Ending</u>	<u>Annual Pension Cost (APC)</u>	<u>Percentage of APC Contributed</u>	<u>Net Pension Obligation</u>
June 30, 2007	\$329,890,000	109.8%	\$(3,030,000)
June 30, 2008	406,810,000	109.7	(42,525,000)
June 30, 2009	475,660,000	99.3	(39,239,000)

4. The annual required contribution (ARC) of the employer as a percentage of payroll, determined in accordance with the parameters of GASB 25/27, is shown below. The accrued liability rate is based on amortization of the unfunded actuarial accrued liability of \$391,086,516 over a 9-year period from the valuation date.

2010/2011 FISCAL YEAR  
ANNUAL REQUIRED CONTRIBUTION (ARC)  
BASED ON THE VALUATION AS OF DECEMBER 31, 2008

<u>ANNUAL REQUIRED CONTRIBUTION (ARC)</u>	<u>RATE</u>
Normal	6.30%
Accrued liability	0.41
Total	6.71%

5. Additional information as of December 31, 2008 follows.

Valuation date	12/31/08
Actuarial cost method	Entry age
Amortization method	Level dollar open
Remaining amortization period	9 years
Asset valuation method	5-year smoothed market
Actuarial assumptions:	
Investment rate of return*	7.25%
Projected salary increases*	4.50 – 16.10%
*Includes inflation at	3.75%
Cost-of-living adjustments	N/A

SCHEDULE A

**DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS  
FOR THE YEAR ENDING DECEMBER 31, 2008**

1.	Actuarial Value of Assets as of December 31, 2007	\$ 55,283,120,813
2.	2008 Net Cash Flow	
	a. Contributions	1,356,438,123
	b. Disbursements	<u>3,082,761,491</u>
	c. Net Cash Flow: (a) - (b)	(1,726,323,368)
3.	Expected Investment Return: [(1) x .0725] + [(2)c x .03625]	3,945,447,037
4.	Expected Actuarial Value of Assets as of December 31, 2008: (1) + (2)c + (3)	57,502,244,482
5.	Market Value of Assets as of December 31, 2008	45,629,312,989
6.	Excess of Market Value over Expected Actuarial Value of Assets: (5) - (4)	(11,872,931,493)
7.	20% Adjustment towards Market Value: (6) x .20	(2,374,586,299)
8.	Actuarial Value of Assets as of December 31, 2008: (4) + (7)	55,127,658,183
9.	Rate of investment return on actuarial value	2.89%
10.	Rate of investment return on market value	(19.50)%

**SCHEDULE B****STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS**

Assumptions are based on the experience investigation prepared as of December 31, 2004 and adopted by the Board of Trustees on April 20, 2006.

INTEREST RATE: 7.25% per annum, compounded annually.

SEPARATIONS FROM ACTIVE SERVICE: Representative values of the assumed rates of separation from active service are as follows:

**GENERAL EMPLOYEES**

## Annual Rates of

Age	Withdrawal* and Vesting		Death		Disability		Service Retirement**	
	Male	Female	Male	Female	Male	Female	Male	Female
25	.0800	.0850	.0006	.0003	.0001	.0001		
30	.0800	.0850	.0008	.0003	.0004	.0004		
35	.0680	.0740	.0009	.0005	.0010	.0010		
40	.0530	.0500	.0010	.0007	.0029	.0018		
45	.0400	.0400	.0015	.0009	.0049	.0033		
50	.0400	.0350	.0023	.0013	.0084	.0050	.3500	.3500
55	.0400	.0350	.0040	.0021	.0144	.0088	.3000	.3500
60			.0071	.0039	.0240	.0138	.1500	.1500
65			.0129	.0076			.3000	.3000
69			.0199	.0118			.1500	.2000

**TEACHERS**

## Annual Rates of

Age	Withdrawal* and Vesting		Death		Disability		Service Retirement**	
	Male	Female	Male	Female	Male	Female	Male	Female
25	.0550	.0600	.0006	.0003	.0001	.0002		
30	.0550	.0600	.0007	.0003	.0001	.0003		
35	.0550	.0500	.0008	.0004	.0003	.0006		
40	.0350	.0350	.0009	.0006	.0007	.0010		
45	.0300	.0250	.0013	.0008	.0014	.0018		
50	.0350	.0300	.0019	.0011	.0023	.0032	.3500	.3500
55	.0350	.0300	.0032	.0017	.0047	.0055	.3500	.4500
60			.0056	.0029	.0077	.0102	.1500	.1500
65			.0102	.0058			.3000	.3500
69			.0162	.0097			.2500	.1500

\* Higher rates of withdrawal are used during the first 3 years of membership in the system.

\*\* An additional 15% of general employees and an additional 20% of teachers are assumed to retire in the year when first eligible for unreduced service retirement. Special rates are used for early service retirement.

**LAW ENFORCEMENT OFFICERS - MALES**

Annual Rates of

Age	Withdrawal and Vesting	Death		Disability		Service Retirement*
		Ordinary	Accidental	Ordinary	Accidental	
25	.0980	.00056	.00006	.0029	.0003	
30	.0570	.00070	.00008	.0036	.0004	
35	.0370	.00077	.00009	.0047	.0005	
40	.0300	.00090	.00010	.0061	.0007	
45	.0220	.00131	.00015	.0090	.0010	
50	.0220	.00210	.00023	.0151	.0017	.2000
55		.00358	.00040			.2000
60		.00638	.00071			.2000
65		.01165	.00129			.4000
69		.01787	.00199			.3000

**LAW ENFORCEMENT OFFICERS - FEMALES**

Annual Rates of

Age	Withdrawal and Vesting	Death		Disability		Service Retirement*
		Ordinary	Accidental	Ordinary	Accidental	
25	.0980	.00026	.00003	.0029	.0003	
30	.0570	.00030	.00003	.0036	.0004	
35	.0370	.00041	.00005	.0047	.0005	
40	.0300	.00059	.00007	.0061	.0007	
45	.0220	.00083	.00009	.0090	.0010	
50	.0220	.00118	.00013	.0151	.0017	.2000
55		.00187	.00021			.2000
60		.00347	.00039			.2000
65		.00686	.00076			.4000
69		.01058	.00118			.3000

\* An additional 40% are assumed to retire in the year when first eligible for unreduced service retirement. Special rates are used for early service retirement.

**SALARY INCREASES:** Representative values of the assumed annual rates of salary increases are as follows:

Age	Annual Rate of Salary Increase			
	General Employees	Law Enforcement Officers	Service	Teachers
25	10.28%	9.70%	0	14.73%
30	6.17	7.20	5	10.38
35	5.22	5.87	10	6.86
40	5.08	5.30	15	6.65
45	4.98	4.96	20	6.43
50	4.77	4.50	25	6.34
55	4.50	4.50	30	6.29
60	4.50	4.50	35	5.90
64	4.50	4.50	40	4.50
65	4.50	4.50	45	4.50
69	4.50	4.50	50	4.50



**DEATH AFTER RETIREMENT:** According to the 1994 Group Annuity Mortality Tables. These tables are not adjusted for male teachers, set forward one year for female teachers, set forward two years for general employees and law enforcement officers, and set forward two years for the beneficiaries of deceased members.

**MORTALITY PROJECTION:** All mortality rates are projected from December 31, 2005 using Scale AA.

**ADMINISTRATIVE EXPENSES:** 0.10% of payroll.

**MARRIAGE ASSUMPTION:** 100% married with the husband four years older than his wife.

**REPORTED COMPENSATION:** Calendar year compensation as furnished by the system's office.

**VALUATION COMPENSATION:** Reported compensation adjusted to reflect the assumed rate of pay as of the valuation date.

**VALUATION METHOD:** Entry age normal cost method. Entry age is established on an individual basis.

**ASSET VALUATION METHOD:** Actuarial value, as developed in Schedule A. The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected actuarial value of assets, based on the assumed valuation rate of return. The amount recognized each year is 20% of the difference between market value and expected actuarial value.

**SCHEDULE C****SUMMARY OF MAIN BENEFIT AND CONTRIBUTION PROVISIONS**

A summary of the main benefit provisions of the Retirement System and of the sources of revenue from which benefits are paid is presented in the following digest. Items in parentheses in the text are the provisions applicable to law enforcement officers.

"Average final compensation" as used in the summary means the average annual compensation during the four consecutive years of membership service which afford the highest such average. "Membership service" means service represented by regular contributions. "Creditable service" means membership service and may also include certain special purchased service.

**BENEFITS****Service Retirement Allowance****Condition for Allowance**

A service retirement allowance is payable to any member who retires from service after he has attained age 60 and completed 5 years of membership service (age 55 and 5 years of creditable service) or completed 30 years of creditable service.

**Amount of Allowance**

On service retirement on or after age 65 (55), or after age 60 and completion of 25 years of creditable service, or after completion of 30 years of creditable service, a member receives a retirement allowance equal to 1.82% of his average final compensation multiplied by the number of years of his creditable service.

If a member who is not a law enforcement officer has not attained age 65 or has not completed 25 or more years of creditable service at the time of his retirement, his allowance is reduced 1/4 of 1% for each month by which his age at retirement is less than age 65.

In no event will a member whose creditable service commenced on or before June 30, 1963 receive a smaller retirement allowance than he would have received under the benefit provisions of the system in effect on that date.

## Early Service Retirement Allowance

### Condition for Allowance

An early service retirement allowance is payable to any member who retires from service after he has attained age 50 and completed 20 (15) years of creditable service but prior to becoming eligible for a service retirement allowance.

### Amount of Allowance

The member's early service retirement allowance is equal to 1.82% of his average final compensation multiplied by the number of years of his creditable service at his date of retirement reduced by the lesser of:

(i)  $5/12$  ( $1/3$ ) of 1% for each month by which his age is less than 60 (55), plus  $1/4$  of 1% for each month by which his age is less than 65.

(ii) 5% times the difference between 30 years and his creditable service at retirement.

## Deferred Service Retirement Allowance

Any member who separates from service prior to becoming eligible for a service retirement allowance or an early service retirement allowance after completing 5 or more years of membership service and who leaves his total accumulated contributions in the system may receive a deferred retirement allowance, beginning at age 60 (55), computed in the same way as a service retirement allowance, or, if the member has 20 or more years of service, at age 50 computed in the same way as an early service retirement allowance, on the basis of his creditable service and compensation to the date of separation.

## Return of Contributions

Upon the withdrawal of a member without a retirement allowance and upon his request, his contributions are returned to him, together with accumulated regular interest thereon if he has at least 5 years of membership service.

Upon the death of a member before retirement, his contributions, together with the full accumulated regular interest thereon, are paid to his estate or to person(s) designated by the member unless the designated beneficiary, if eligible, elects the survivor's alternate benefit described below.

## Survivor's Alternate Benefit

Upon the death of a member in service who has attained age 60(55) and has completed 5 years of membership (creditable) service or completed 20 years of creditable service, his designated beneficiary may elect to receive a benefit equal to that which would have been payable under the provisions of Option 2 had the member retired on the first day of the month following his death and elected such option, in lieu of the member's accumulated contributions, provided the member had not instructed the Board of Trustees in writing that he did not wish the alternate benefit to apply.

## Death After Retirement

Upon the death of a beneficiary who did not retire under an effective election of Option 2 or Option 3, an amount equal to the excess if any, of his accumulated contributions at retirement over the retirement allowance payments received is paid to a designated person or to the beneficiary's estate.

Upon the death of the survivor of a beneficiary who retired under an effective election of Option 2 or Option 3, an amount equal to the excess, if any, of the beneficiary's accumulated contributions at retirement over the total retirement allowance payments received is paid to such other person designated by the beneficiary or to the beneficiary's estate.

## Optional Arrangements at Retirement

In lieu of the full retirement allowance, any member may elect to receive a reduced retirement allowance equal in value to the full allowance, with the provision that:

Option 1 - A member retiring prior to July 1, 1993, may elect that at his death within 10 years from his retirement date, an amount equal to his accumulated contributions at retirement, less 1/120 for each month he has received a retirement allowance, is paid to his estate, or to a person(s) designated by the member, or

Option 2 - At the death of the member his allowance shall be continued throughout the life of such other person as the member shall have designated at the time of his retirement, or

Option 3 - At the death of the member one-half of his allowance shall be continued throughout the life of such other person as the member shall have designated at the time of his retirement.

Option 4 - A member may elect to receive a retirement allowance in such amount that, together with his Social Security benefit, he will receive approximately the same income per annum before and after the earliest age at which he becomes eligible to receive the Social Security benefit.

Option 5 - A member retiring prior to July 1, 1993 may elect to receive a reduced retirement allowance under the provisions of Option 2 or Option 3 in conjunction with the provisions of Option 1.

Option 6 - A member may elect either Option 2 or Option 3 with the added provision that in the event the designated beneficiary predeceases the member, the retirement allowance payable to the member after the designated beneficiary's death shall be equal to the retirement allowance which would have been payable had the member not elected the option.

Post-Retirement Increases  
in Allowances

Future increases in allowances may be granted if the Consumer Price Index rises, provided the liabilities on account of such increases do not increase the total employer rate of contribution.

CONTRIBUTIONS

REGULAR CONTRIBUTIONS

By Members

Each member contributes 6% of his compensation.

By Employers

Employers make annual contributions consisting of a normal contribution and an accrued liability contribution. The normal contribution covers the liability on account of current service and is determined by the actuary after each valuation.

The accrued liability contribution covers the liability on account of service rendered before the establishment of the retirement system and the liability on account of increases in benefits for service rendered prior to the effective date of any amendment.

SCHEDULE D

TABLE 1

**THE NUMBER AND REPORTED COMPENSATION OF  
ACTIVE MEMBERS DISTRIBUTED BY AGE  
AS OF DECEMBER 31, 2008**

Age	Men		Women	
	Number	Amount	Number	Amount
16			1	\$28,128
17			2	72,057
18			2	7,958
19	24	\$218,896	17	174,785
20	84	1,227,178	84	1,164,891
21	215	3,662,931	199	2,767,180
22	362	7,268,983	788	13,171,572
23	762	16,226,908	2,344	45,910,887
24	1,200	29,785,618	3,392	87,748,274
25	1,340	37,023,407	4,076	116,763,073
26	1,708	51,020,881	4,300	129,861,673
27	1,759	55,147,815	4,623	147,136,598
28	1,888	62,105,800	4,652	154,802,579
29	1,907	66,844,030	4,724	160,968,633
30	1,954	70,821,329	4,693	164,482,064
31	2,035	74,840,135	4,609	165,763,653
32	2,044	79,265,528	4,645	168,575,750
33	2,087	82,938,625	4,556	167,036,922
34	2,216	91,898,664	4,929	184,111,733
35	2,250	92,713,808	4,859	183,261,004
36	2,364	98,824,267	5,115	192,894,871
37	2,591	111,054,807	5,643	212,805,061
38	2,851	123,503,157	6,278	237,509,344
39	2,724	123,265,493	6,214	237,088,532
40	2,642	119,119,790	6,073	233,169,812
41	2,573	116,653,138	5,731	216,620,139
42	2,498	113,610,203	5,821	220,399,295
43	2,672	120,885,513	5,769	216,714,962
44	2,648	119,256,689	6,150	234,845,778
45	2,780	126,318,638	6,224	240,104,185
46	2,884	133,401,491	6,420	249,279,936
47	2,825	131,737,932	6,738	265,249,709
48	3,052	142,272,126	7,274	284,420,692
49	2,857	133,750,665	6,899	281,571,700
50	2,906	138,505,218	6,829	278,917,482
51	2,936	140,844,702	7,058	301,085,768
52	2,938	142,616,800	7,090	309,370,493

TABLE 1  
 THE NUMBER AND REPORTED COMPENSATION OF  
 ACTIVE MEMBERS DISTRIBUTED BY AGE  
 AS OF DECEMBER 31, 2008

CONTINUED

Age	Men		Women	
	Number	Amount	Number	Amount
53	2,827	\$137,917,913	6,804	\$299,943,952
54	2,750	138,345,480	6,548	288,682,300
55	2,807	139,568,010	6,491	288,535,068
56	2,696	138,401,765	6,093	272,857,319
57	2,661	137,414,612	5,790	260,653,255
58	2,545	127,693,387	5,380	244,521,962
59	2,357	119,386,726	4,921	221,610,345
60	2,252	115,469,420	4,431	198,298,103
61	2,064	105,813,840	3,857	168,565,729
62	1,928	101,525,558	3,410	151,684,942
63	1,055	56,923,170	1,820	81,238,371
64	950	50,057,811	1,416	62,589,709
65	719	38,945,354	1,091	48,190,006
66	556	30,955,056	771	31,644,805
67	371	20,733,386	436	18,726,703
68	295	15,415,661	338	12,319,446
69	248	13,193,257	252	10,090,666
70	175	8,403,662	191	7,348,709
71	142	6,653,155	148	5,191,991
72	101	5,624,671	117	4,411,891
73	84	3,485,364	71	2,395,742
74	76	4,036,964	73	2,508,165
75	62	2,907,270	42	1,571,421
76	1	198,422		
77			1	43,855
78			1	58,170
79	2	143,957		
80	1	56,812		
81			1	42,813
86	1	39,843		
89			1	39,953
	100,302	\$4,477,941,691	225,316	\$8,789,612,564

SCHEDULE D

TABLE 2

**THE NUMBER AND REPORTED COMPENSATION OF  
ACTIVE MEMBERS DISTRIBUTED BY SERVICE  
AS OF DECEMBER 31, 2008**

Years of Service	Men		Women	
	Number	Amount	Number	Amount
0	3,505	\$35,421,314	6,840	\$64,261,868
1	10,120	283,758,090	21,542	529,235,409
2	7,910	300,152,277	18,211	609,351,473
3	7,427	293,711,117	17,567	607,962,606
4	6,457	261,112,255	14,593	517,893,933
5	5,871	241,546,531	12,861	467,736,811
6	4,912	210,525,633	10,857	409,634,988
7	3,999	177,939,408	9,493	364,712,507
8	4,175	187,352,724	10,176	392,988,788
9	3,962	178,406,484	9,616	371,692,200
10	3,733	171,952,321	9,084	358,506,981
11	3,295	158,418,405	7,955	325,766,728
12	3,002	145,452,659	7,065	296,842,067
13	2,835	141,861,707	6,396	273,705,323
14	2,627	132,314,514	5,854	258,422,587
15	2,722	136,277,400	5,446	245,158,535
16	2,172	117,074,964	4,960	228,508,962
17	2,179	114,916,852	4,538	213,819,135
18	1,652	91,057,353	3,647	176,548,076
19	1,975	104,538,979	4,182	201,000,391
20	1,825	96,383,278	4,315	208,976,539
21	1,759	99,920,262	4,146	204,212,841
22	1,524	90,862,223	3,313	173,139,612
23	1,275	78,097,466	2,947	156,114,316
24	1,483	88,838,306	3,138	164,543,273
25	1,495	91,242,163	2,899	158,637,538
26	1,090	68,642,481	2,003	113,694,346
27	914	57,537,051	1,841	106,639,719
28	797	52,303,124	1,862	105,987,232
29	842	55,715,095	2,064	116,833,671
30	678	47,285,334	1,877	107,922,396
31	477	35,851,529	1,266	75,537,974
32	396	29,326,962	838	53,025,106
33	283	22,493,435	526	34,328,726
34	222	17,825,665	412	28,773,667
35	189	14,723,114	333	21,384,273
36	135	10,722,597	231	16,404,876



TABLE 2  
 THE NUMBER AND REPORTED COMPENSATION OF  
 ACTIVE MEMBERS DISTRIBUTED BY SERVICE  
 AS OF DECEMBER 31, 2008

CONTINUED

Years of Service	Men		Women	
	Number	Amount	Number	Amount
37	107	\$9,309,662	136	\$9,488,651
38	73	6,336,632	90	6,759,360
39	66	6,418,341	65	4,601,138
40	38	3,446,719	38	2,948,029
41	42	4,472,518	29	1,663,589
42	18	1,599,328	19	1,364,867
43	9	1,177,597	10	651,630
44	9	947,354	12	839,987
45	9	863,323	4	216,864
46	6	782,862	7	531,789
47	2	154,814	4	188,788
48	5	630,857	3	175,436
49	2	143,957		
50	1	56,812		
51			1	42,813
52			1	57,435
53			2	136,762
56	1	39,843		
59			1	39,953
Total	100,302	\$4,477,941,691	225,316	\$8,789,612,564

SCHEDULE D

TABLE 3

THE DISTRIBUTION OF THE NUMBER AND ANNUAL  
RETIREMENT ALLOWANCES OF BENEFICIARIES AND  
SURVIVORS BY AGE AS OF DECEMBER 31, 2008

SERVICE RETIREMENTS AND  
DEPENDENTS OF DECEASED BENEFICIARIES

Age	Men		Women	
	Number	Amount	Number	Amount
25	31	\$372,519	12	\$103,582
26	5	47,807	6	61,680
27	5	67,597	2	20,486
28	10	117,950	4	44,313
29	3	55,133	2	20,098
30	6	89,261	4	55,160
31	12	137,349	1	9,277
32	10	158,286	10	136,811
33	7	100,395	7	103,155
34	9	86,842	5	84,371
35	10	96,590	5	37,784
36	7	84,200	4	31,399
37	22	265,247	5	45,891
38	18	135,741	9	146,083
39	14	126,825	11	156,138
40	19	237,833	12	121,304
41	19	179,198	12	118,458
42	28	232,358	10	62,073
43	26	259,071	15	200,612
44	25	251,991	16	194,866
45	32	326,723	12	108,485
46	37	356,046	23	235,517
47	38	484,076	23	262,726
48	69	1,137,804	58	1,013,674
49	78	1,589,533	43	830,954
50	114	2,600,587	120	2,103,715
51	185	4,179,458	234	4,964,674
52	293	7,551,896	463	11,499,704
53	388	10,322,589	755	20,067,213
54	571	15,550,159	1,102	31,458,433
55	692	19,443,931	1,607	47,198,406
56	838	25,050,641	2,084	62,411,352
57	995	29,730,801	2,210	66,920,533
58	1,095	33,853,585	2,416	72,119,775
59	1,229	38,943,109	2,528	74,183,699
60	1,438	46,326,776	2,958	82,536,212
61	1,786	53,808,967	3,689	91,722,181
62	2,286	62,002,999	4,536	100,385,795
63	1,843	43,951,375	3,692	69,834,429
64	1,926	45,903,989	3,750	68,984,785

TABLE 3  
 THE DISTRIBUTION OF THE NUMBER AND ANNUAL  
 RETIREMENT ALLOWANCES OF BENEFICIARIES AND  
 SURVIVORS BY AGE AS OF DECEMBER 31, 2008

SERVICE RETIREMENTS AND  
 DEPENDENTS OF DECEASED BENEFICIARIES

CONTINUED

Age	Men		Women	
	Number	Amount	Number	Amount
65	2,005	\$45,923,346	4,177	\$75,849,729
66	2,281	51,446,696	4,614	81,731,611
67	1,962	43,346,455	4,001	68,880,107
68	1,919	42,156,628	3,800	64,600,086
69	1,783	39,155,922	3,482	58,370,243
70	1,810	39,761,012	3,279	54,162,030
71	1,690	36,715,994	3,246	52,272,045
72	1,551	34,315,536	3,002	48,398,987
73	1,550	35,254,324	2,956	46,833,493
74	1,441	31,411,577	2,944	45,914,122
75	1,377	31,011,539	2,495	37,373,106
76	1,266	28,397,210	2,485	37,478,701
77	1,241	27,908,294	2,430	35,524,268
78	1,216	28,033,374	2,351	35,372,707
79	1,130	25,560,780	2,156	32,033,770
80	973	21,545,424	2,133	29,708,400
81	895	19,609,142	2,028	28,188,038
82	821	17,203,458	1,856	25,611,113
83	719	15,506,448	1,698	22,206,826
84	657	13,122,362	1,604	19,743,478
85	535	10,649,619	1,407	17,405,390
86	475	9,136,411	1,221	15,722,915
87	378	8,964,095	1,211	14,410,841
88	385	7,411,284	1,038	12,910,010
89	267	4,626,706	895	10,245,397
90	241	4,426,680	730	8,506,529
91	148	2,517,439	605	7,176,327
92	111	1,856,443	497	5,866,664
93	95	1,649,106	419	4,990,322
94	65	1,029,188	328	4,317,847
95	46	790,768	271	3,306,525
96	27	501,876	203	2,622,462
97	11	172,404	131	1,767,948
98	16	255,587	90	1,191,160
99	12	175,955	70	911,283
100	10	156,461	53	705,967

TABLE 3  
THE DISTRIBUTION OF THE NUMBER AND ANNUAL  
RETIREMENT ALLOWANCES OF BENEFICIARIES AND  
SURVIVORS BY AGE AS OF DECEMBER 31, 2008

SERVICE RETIREMENTS AND  
DEPENDENTS OF DECEASED BENEFICIARIES

CONTINUED

Age	Number	Men		Women	
		Number	Amount	Number	Amount
101	3		\$28,212	38	\$494,639
102	3		26,650	18	239,048
103	2		9,640	15	205,648
104	1		33,000	7	100,629
105				8	118,234
106				5	88,426
Total	47,337		\$1,128,020,282	98,432	\$1,824,152,874
Maximum	14,127		324,053,247	48,654	860,459,451
Cash Refund	2,080		47,477,522	7,996	113,859,411
100% J&S	7,649		179,056,763	3,126	43,095,892
50% J&S	3,432		95,046,230	2,359	42,027,826
Soc. Sec Level	8,195		218,392,513	18,857	461,660,308
Odd Surv.	19		733,566	12	240,972
100% J&S Popup	5,574		135,033,057	3,913	75,114,397
50% J&S Popup	3,379		99,183,097	4,403	101,219,035
Beneficiaries	2,882		29,044,287	9,112	126,475,582

SCHEDULE D

TABLE 4

THE DISTRIBUTION OF THE NUMBER AND ANNUAL  
RETIREMENT ALLOWANCES OF BENEFICIARIES AND  
SURVIVORS BY AGE AS OF DECEMBER 31, 2008

## DISABILITY RETIREMENTS

Age	Men		Women	
	Number	Amount	Number	Amount
42	1	\$9,192		
44	2	23,556		
45	2	37,644	1	\$14,815
46	2	16,558	1	11,868
47	5	89,406	7	108,970
48	3	45,757	15	241,940
49	7	136,154	9	121,152
50	11	194,408	22	380,073
51	29	662,274	27	615,238
52	31	683,562	38	722,801
53	41	914,786	71	1,543,506
54	52	1,183,599	83	2,100,166
55	53	1,202,448	76	1,947,882
56	55	1,269,946	120	3,095,949
57	58	1,602,203	139	3,718,310
58	64	1,603,247	141	3,756,942
59	79	1,958,199	141	3,796,095
60	79	1,844,890	149	3,926,887
61	98	2,411,531	147	3,719,837
62	110	2,827,486	167	3,861,410
63	86	2,064,608	120	2,613,962
64	70	1,533,685	139	2,855,926
65	62	1,319,340	139	2,700,579
66	78	1,823,653	142	2,931,949
67	76	1,559,885	133	2,516,663
68	70	1,378,488	121	1,989,092
69	84	1,667,742	103	1,623,185
70	48	877,015	117	1,781,253
71	53	962,513	128	2,064,531
72	43	835,988	73	1,128,942
73	65	1,101,510	85	1,252,390
74	44	800,486	76	1,198,994
75	44	705,448	76	1,092,409
76	38	694,784	65	836,199
77	29	436,027	59	774,469
78	31	547,827	54	771,092
79	31	487,756	63	818,381
80	26	393,689	66	863,329
81	28	392,754	51	592,773

TABLE 4  
THE DISTRIBUTION OF THE NUMBER AND ANNUAL  
RETIREMENT ALLOWANCES OF BENEFICIARIES AND  
SURVIVORS BY AGE AS OF DECEMBER 31, 2008

## DISABILITY RETIREMENTS

## CONTINUED

Age	Men		Women	
	Number	Amount	Number	Amount
82	26	\$351,465	64	\$742,973
83	34	511,335	56	664,792
84	24	416,412	46	404,793
85	17	234,157	46	540,863
86	30	474,881	51	572,457
87	13	220,796	32	408,503
88	11	162,602	34	367,803
89	6	123,333	25	269,388
90	9	91,611	19	203,068
91	7	91,239	17	257,225
92	3	15,723	20	188,280
93	2	15,596	14	214,953
94	3	53,274	5	50,066
95	3	27,695	7	61,893
96			3	31,750
97			2	30,301
99			1	11,532
101			1	6,658
103			1	14,231
Total	1,976	\$41,090,163	3,608	\$69,131,508
Maximum	1,175	27,603,060	2,612	54,694,456
Cash Refund	218	3,648,622	625	8,393,324
100% J&S	150	2,029,264	78	982,704
50% J&S	195	3,104,125	105	1,436,910
Soc Sec Level	14	422,784	26	731,376
Odd Surv			2	32,454
100% J&S Popup	58	899,808	32	512,150
50% J&S Popup	166	3,382,500	128	2,348,134