

**PUBLIC SCHOOL RETIREMENT SYSTEM  
OF ST. LOUIS**

**ACTUARIAL VALUATION  
AS OF JANUARY 1, 2006**

**February  
2007**

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## SECTION 1

### REPORT OF THE ACTUARY

#### PURPOSE OF THE REPORT

This report is submitted in accordance with Section 169.450-15 Revised Statutes of Missouri (R.S. Mo.) 1997 and amendments that require the actuary to make an annual valuation of the assets and liabilities of the System. The purpose of the actuarial valuation is twofold: (1) to determine the required annual contributions from the Board of Education, the Retirement System and Harris-Stowe State College (or the State of Missouri); and (2) to develop information to measure the relative financial condition of the System.

The required contribution to the Retirement System from the Board of Education, the Retirement System, charter schools and Harris-Stowe State College (or the State of Missouri) is computed in accordance with Section 169.490 R.S. Mo. 1997. The amount of the required contribution is stated in Table C of this report. A description of the actuarial cost method and assumptions appears in Section 3.

Information concerning the financial condition and factors affecting it will be found throughout the report. There is no generally accepted single measure or standard for determining whether or not a retirement system is "actuarially sound." The financial health of a retirement system is measured best on a relative basis. Results are compared over a period of years to determine whether adequate progress is being made in the funding of the system's liabilities. Another

relative measure is the stability of the contribution rate, with recognition for changes in funding requirements due to changes in benefit provisions. The actuarial balance sheet also provides an indication of the relative financial condition of the plan.

#### COMMENTS

This actuarial valuation reflects several changes in actuarial assumptions and methods from those used in the prior actuarial valuation. The mortality table was changed as a result of the five-year experience study. The Unfunded Frozen Actuarial Accrued Liability (UFAAL) was redetermined and set equal to the current actual Unfunded Actuarial Accrued Liability as of January 1, 2006. In keeping with a fresh start on the UFAAL, the Actuarial Value of Assets was set equal to the market value of assets as of January 1, 2006. The net effect of the above changes and the actuarial experience of the system, the Annual Required Contribution rate increased to 7.63% from 6.45%.

As a part of the package to increase benefits in 2001, the Board of Education agreed to fix the employer contribution at 8.00% for 2001 and institute a one-year lag for future years. Therefore, this actuarial valuation is used to determine the actual contribution rate for 2007. The dollar amount of the actual contribution increased to \$17,311,658 for 2007 from \$14,414,133 for 2006. As a percentage of covered compensation the contribution rate for


2007 increased to 7.63% from 6.45% for 2006. Under the actuarial funding method used to determine the contribution, actuarial gains (or losses) result in a decrease (or increase) in the normal cost rate. Actuarial gains (or losses) result from differences between the actual experience of the System and the expected experience projected by the actuarial assumptions. The assumptions are based on the long-term expected experience of the System. Actuarial gains (or losses) reflect short-term deviations between actual and expected experience. Since the normal cost is redetermined on an annual basis, the normal cost will usually fluctuate from year-to-year. For 2007, the annual normal cost is \$4,986,360 or 2.20% of the covered payroll of \$227,035,801.

The actuarial accrued liability contribution is determined as the amount necessary to amortize the remaining Unfunded Frozen Actuarial Accrued Liability (UFAAL) over a period of 30

years. As a modification to the actuarial cost method, the Board of Trustees acted to redetermine the UFAAL effective January 1, 2006. This portion of the contribution only changes to reflect changes in benefits or changes in actuarial assumptions and methods. The UFAAL amortization payment for 2007 is \$12,325,298 or 5.43% of the covered payroll.

In our opinion, the Retirement System has been and will continue to be funded on a sound actuarial basis provided the required contributions are made as recommended in this report.

Respectfully submitted,

  
James S. Rubie, Jr., F.S.A.

**SECTION 2**

**SUMMARY OF PRINCIPAL RESULTS OF THE  
ACTUARIAL VALUATION AS OF JANUARY 1, 2006**

**ANNUAL REQUIRED CONTRIBUTION**

	<b><u>Board of Education</u></b>	<b><u>Harris-Stowe State College</u></b>	<b><u>Retirement System</u></b>	<b><u>Charter Schools</u></b>	<b><u>Total</u></b>
<b><u>2006</u></b>					
Normal Cost Contribution	\$ 4,667,580	\$ 1,425	\$ 9,888	\$ 307,467	\$ 4,986,360
Actuarial Accrued Liability Contribution	<u>11,537,337</u>	<u>3,522</u>	<u>24,442</u>	<u>759,997</u>	<u>12,325,298</u>
Annual Required Contribution	\$ 16,204,917	\$ 4,947	\$ 34,330	\$1,067,464	\$ 17,311,658
Covered Payroll	212,521,330	64,876	450,221	13,999,374	227,035,801
ARC as % of Covered Payroll	7.63%	7.63%	7.63%	7.63%	7.63%
<b><u>2005*</u></b>					
Normal Cost Contribution	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
Actuarial Accrued Liability Contribution	<u>14,299,464</u>	<u>4,184</u>	<u>36,743</u>	<u>1,150,081</u>	<u>15,490,472</u>
Annual Required Contribution	\$ 14,299,464	\$ 4,184	\$ 36,743	\$1,150,081	\$ 15,490,472
Covered Payroll	221,718,075	64,876	569,706	17,832,398	240,185,055
ARC as % of Covered Payroll	6.45%	6.45%	6.45%	6.45%	6.45%

<b><u>SYSTEM ASSETS</u></b>	<b><u>January 1, 2006</u></b>	<b><u>January 1, 2005*</u></b>
Expense and Contingency Reserve	\$ 77,650,646	\$ 72,286,064
Market Value, excluding Expense & Contingency Reserve	983,828,243	988,291,113
Actuarial Value	983,828,243	935,328,638
<b><u>SYSTEM LIABILITIES</u></b>		
Unfunded Actuarial Accrued Liability	\$ 138,755,532	\$ 161,197,858
Actuarial Present Value of Projected Accrued Benefits	1,071,275,169	989,291,113

**FUNDING RATIO**

Actuarial Value Funding Ratio	91.8%	94.6%
Market Value Funding Ratio	91.8%	99.9%

\* Prior year shown for comparison purposes only.

## SECTION 3

### ACTUARIAL METHODOLOGY

#### INTRODUCTION

The actuarial valuation of a defined benefit retirement system is comprised of two separate processes.

First, the actuarial present value, as of the valuation date, of both current and projected benefits to be paid under the plan is determined. In determining the actuarial present value of these benefits, actuarial assumptions must be made as to the number of participants eventually receiving benefits, the amount of benefits to be paid, and the portion of the benefit obligation to be covered by future investment earnings.

Second, the financing of these benefit obligations on an advance basis is established. An actuarial cost method is applied to establish the NORMAL COST, which is the rate at which future costs will accrue annually after the valuation date. The actuarial cost method is applied to determine the ACTUARIAL ACCRUED LIABILITY, which is the amount of cost that has accrued as of the valuation date.

#### ACTUARIAL ASSUMPTIONS

The true cost of a member's retirement benefit is not known until he or his beneficiary has received the final benefit payment. Consequently, the exact cost of system benefits for the current employee group will not be determinable for 50 to 75 years. Since provisions for this cost must be made prior to the

exact determination, a model is established that will estimate the future cost of system benefits. The model utilizes parameters that require assumptions as to the future occurrences of various events affecting the demographic profile of the employee group and the assets of the system. Such actuarial assumptions include death, retirement, termination, disability, salary increases and investment return. Current and long-term economic factors, the nature of the employer's business and significant features of the system must be considered in the selection of a set of actuarial assumptions to assure the reasonableness of the results predicted by the assumptions.

While care is taken in the selection of actuarial assumptions, actual experience is expected to deviate from these assumptions over the short term. The suitability of actuarial assumptions is measured by how closely the experience of the system, on a long-term basis, conforms to projected results. Deviations from projected results are called actuarial gains and losses. Periodic actuarial valuations measure the extent of these gains and losses as of a valuation date. If either actuarial gains or losses predominate, then it is possible that one or more of the actuarial assumptions is no longer appropriate. Thus, actuarial assumptions must be continually monitored for reasonableness and subsequent cost estimates may be modified accordingly. While individual assumptions are intended to be representative, it is the aggregate effect of all actuarial assumptions working together that

determines their appropriateness.

An analysis of the experience of the Retirement System for the five-year period ending December 31, 2005 was performed. On the basis of that analysis, several actuarial assumptions were changed effective with the January 1, 2006 valuation. The next scheduled experience analysis is for the five-year period ending December 31, 2010.

### **ACTUARIAL LIABILITIES**

Actuarial liabilities include the actuarial present value of all future benefits and expenses. To determine the actuarial present value of all future benefits, the probability of future events that establish benefit payments is forecast utilizing the actuarial assumptions. System provisions and current member data are used to forecast the amount of benefits to be paid. Assumptions for survival among retired members and beneficiaries are used to estimate the duration of these benefit payments. Each probable benefit payment is then discounted to the valuation date using the actuarial assumption for investment return. These discounted payments are then summed to arrive at the total actuarial present value of benefits.

### **ACTUARIAL ASSETS**

The actuarial assets at any time are equal to the sum of present assets, valued on an actuarial basis, plus future assets. Future assets will result from future contributions and future investment return on all assets.

### **ASSET VALUATION METHOD**

The actuarial value of other assets is determined using the assumed yield method of valuing assets, less the Expense and Contingency Reserve. Under the assumed yield asset valuation method, the prior year's actuarial value is increased at the assumed rate of return with appropriate adjustments for contributions and disbursements to produce an expected actuarial value of assets at the end of the year. The expected actuarial value is compared to the market value of assets, and 20% of the difference is added to the expected actuarial value. The actuarial value of assets was "fresh-started" as of January 1, 2006 and set equal to the market value of assets as of that date. The Expense and Contingency Reserve is excluded from the calculation to produce the actuarial value of assets.

### **ACTUARIAL BALANCE SHEET**

The actuarial balance sheet of a retirement system displays the fundamental financial status of the system on the valuation date. As stated previously, the system liabilities are the sum of the actuarial present values of all future projected benefit payments to current active and inactive plan members and beneficiaries. Current assets, valued on an actuarial basis, plus the actuarial present value of future employer and employee contributions comprise the total actuarial assets of the system.

The actuarial present value of future employer contributions is the only item on the balance sheet that is not directly determined by the



system provisions, current assets, member data and actuarial assumptions. In fact, the actuarial present value of future employer contributions is the balancing item and reflects the future employer funding requirements based on the existing member population.

### **ACTUARIAL COST METHOD**

To determine the funding requirements of the system, it is necessary to employ an actuarial cost method. The choice of the cost method does not affect the balance sheet financial status, which is a function only of the system provisions, actuarial assumptions, member data and assets. However, the actuarial cost method has a direct impact on the incidence of the funding requirements. The actuarial cost method allocates the actuarial present value of future employer contributions between the past and future, and thus establishes the Unfunded Frozen Actuarial Accrued Liability (UFAAL) and the Normal Cost.

The actuarial cost method is the "frozen entry age actuarial cost method." Entry age is determined at the date each member would have entered the system. On the initial actuarial valuation date for which the cost method is used, the annual cost accruals (individual normal costs for each member) are determined as a level percentage of pay for each year from entry age until retirement or termination. The sum of these individual normal costs for all active members whose attained ages are under the

assumed retirement age is the normal cost for the initial plan year. The excess of all normal costs falling due prior to the initial actuarial valuation date, accumulated with interest, over the plan assets represents the initial UFAAL.

In subsequent years, the unfunded actuarial accrued liability is frozen, that is, it increases only because of the accrual of interest and additional normal costs, and decreases only as a result of contributions. Supplements to the UFAAL can occur for plan amendments or actuarial assumption changes. Supplements are determined by computing the change in the actuarial accrued liability as of the valuation date coincident with or next following the change. The UFAAL was originally determined and frozen as of January 1, 1981. Effective January 1, 2006, UFAAL was redetermined.

Subsequent normal costs are calculated as the level percentage of pay required to fund the excess of the actuarial present value of future benefits over the sum of the actuarial value of assets and the remaining UFAAL.

The funding requirement for each plan year is the sum of the "normal cost contribution" (equal to the normal cost for that year), plus the "actuarial accrued liability contribution." The "actuarial accrued liability contribution" is the payment required to amortize the UFAAL over 30 years, from January 1, 2006.

## SECTION 4

### ACTUARIAL ASSUMPTIONS

The following actuarial assumptions were used in the valuation:

*Interest* - 8% per annum, net of expenses.

*Salary Scale* - Salaries are assumed to increase at the rate of 4.5% per year.

*Mortality* - The RP-2000 Combined Healthy Lives Mortality Table for males and females is used for active members, retired members and beneficiaries. Rates used are shown in Exhibit C.

*Disability Mortality* - The RP-2000 Combined Healthy Lives Mortality Table for males and females is used for active members, with ages set up five years. The rates used are shown in Exhibit D.

*Disability* - Disabilities are assumed to occur at rates based on the actual experience of the Retirement System. The rates used are shown in Exhibit E.

*Withdrawal* - Select and ultimate rates based on actual experience of the Retirement System are used. The rates used for members who have completed three or more years of membership are shown in Exhibit E.

During the first three years of membership, the

rates for members employed by employers other than Charter Schools are:

<u>Year of Membership</u>	<u>Withdrawal Rate</u>	
	<u>Males</u>	<u>Females</u>
1	17.5%	15.0%
2	15.0%	12.5%
3	10.0%	10.0%

During the first three years of membership, the rates for members at Charter Schools are:

<u>Year of Membership</u>	<u>Withdrawal Rate</u>	
	<u>Males</u>	<u>Females</u>
1	50.0%	50.0%
2	25.0%	25.0%
3	15.0%	15.0%

*Retirement* - Retirements are assumed to occur at rates based on the actual experience of the Retirement System. Illustrative age-related rates are shown in Exhibit A. For those eligible to retire under the Rule of 85, it is assumed that 25% will retire when first eligible for unreduced benefits unless the age-related rate is greater, but not prior to 30 years of Credited Service.

*Family Structure* - The probability of a member being married and the probable number of children are based on a table constructed by the Social Security Administration, modified to reflect the experience of the Retirement System. The table used is presented in Exhibit F.

## SECTION 5

### RESULTS OF THE ACTUARIAL VALUATION AS OF JANUARY 1, 2006

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This section of the report shows the development of the principal elements of the actuarial valuation and the analyses of the various elements affecting the results. The actuarial valuation is based on:

- Membership data as of January 1, 2006 -- This data is summarized in Exhibits G and H.
- The statutes in effect on January 1, 2006 -- A summary of the principal provisions governing the System appears in Exhibit A.
- Actuarial assumptions and methods -- The assumptions appear in Section 4 and Exhibits C through F. The actuarial cost method is described in Section 3.
- System assets as of January 1, 2006 -- Fund values and summaries of fund activities and investment performance during 2005 are described later in Section 6 under "Valuation of the System's Assets."

#### **DETERMINATION OF THE ANNUAL REQUIRED CONTRIBUTION**

The Annual Required Contribution (ARC) is comprised of two elements -- the "normal cost contribution" and the "actuarial accrued liability contribution." The determination of the unfunded frozen actuarial accrued liability and the actuarial accrued liability contribution follows in Table A. The determination of the normal cost contribution follows in Table B. The determination of the annual required contribution appears in Table C.

#### **ACTUARIAL BALANCE SHEET**

As discussed in Section 3, the actuarial balance sheet is a measure of the financial condition of the System and shows the relationship between "actuarial assets" and "actuarial liabilities." The actuarial balance sheet is presented in Table D.

**TABLE A**

**DETERMINATION OF THE UNFUNDED FROZEN**

**ACTUARIAL ACCRUED LIABILITY**

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(1)	Unfunded Frozen Actuarial Accrued Liability as of January 1, 2005	\$ 161,197,858
(2)	Normal Cost due January 1, 2005	0
(3)	Interest on (1) and (2) at 8.0% to December 31, 2006	12,895,829
(4)	Employer contributions for 2005	23,514,266
(5)	Interest on (4) at 8.0% to December 31, 2005	0
(6)	Supplement for changes in actuarial assumptions, methods or benefits	(11,823,889)
(7)	Unfunded Frozen Actuarial Accrued Liability as of January 1, 2006: (1) + (2) + (3) - (4) - (5) + (6)	138,755,532
(8)	Actuarial Accrued Liability contribution for 2006	12,325,298

**TABLE B**

**DETERMINATION OF THE NORMAL COST CONTRIBUTION**

(1) Actuarial present value of all future benefits		
(a) Active members		
(i) Retirement benefits	\$ 384,742,345	
(ii) Vested withdrawal benefits	21,871,775	
(iii) Refund of contributions	2,756,298	
(iv) Survivor benefits	12,041,211	
(v) Disability benefits	13,263,205	
(vi) DROP members	153,260,099	
Total		\$ 587,934,933
(b) Retired members and beneficiaries		629,564,195
(c) Inactive members		
(i) Members on leave of absence without pay	9,355,899	
(ii) Terminated members	22,433,591	
Total		31,789,490
(d) Total actuarial present value of future benefits		\$ 1,249,288,618
(2) Unfunded Frozen Actuarial Accrued Liability as of January 1, 2006		138,755,532
(3) Actuarial Value of Assets as of January 1, 2006		983,828,243
(4) Actuarial present value of future member contributions		89,653,915
(5) Actuarial present value of future employer Normal Costs: (1)(d) - (2) - (3) - (4), not less than \$0		37,050,928
(6) Actuarial present value of future covered Compensation		1,821,953,300
(7) Employer Normal Cost rate: (5) / (6)		2.0336%
(8) Total covered Compensation		227,035,801
(9) Normal Cost due January 1, 2006: (7) x (8)		4,617,000
(10) Normal Cost Contribution due by December 31, 2006: (9) adjusted for interest at 8%		4,986,360

**TABLE C**

**ANNUAL REQUIRED CONTRIBUTION**

	<b>Board of Education</b>	<b>Harris- Stowe State College</b>	<b>Retirement System</b>	<b>Charter Schools</b>	<b>Total</b>
Normal Cost Contribution	\$ 4,667,580	\$ 1,425	\$ 9,888	\$ 307,467	\$ 4,986,360
Actuarial Accrued Liability Contribution	11,537,337	3,522	24,442	759,997	12,325,298
Annual Required Contribution (ARC) Covered Compensation	\$ 16,204,917	\$ 4,947	\$ 34,330	\$1,067,464	\$ 17,311,658
ARC as % of Covered Compensation	212,521,330	64,876	450,221	13,999,374	227,035,801
	7.63%	7.63%	7.63%	7.63%	7.63%

**TABLE D**  
**ACTUARIAL BALANCE SHEET AS OF**  
**JANUARY 1, 2006**

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**ACTUARIAL ASSETS**

Actuarial value of present assets		\$ 983,828,243
Actuarial present value of future member contributions		89,653,915
Actuarial present value of future employer contributions for:		
Normal Costs		37,050,928
Actuarial Accrued Liability		138,755,532
		\$ 1,249,288,618
Total present and future assets		\$ 1,249,288,618

**ACTUARIAL LIABILITIES**

Actuarial present value of benefits now payable		\$ 629,564,195
Actuarial present value of benefits payable in the future		
Active members – New Plan	\$ 434,674,834	
Active members – Old Plan	0	
Active members – DROP	153,260,099	
Members on leave of absence without pay	9,355,899	
Terminated members	22,433,591	
		619,724,423
Total liabilities for benefits		\$ 1,249,288,618

**TABLE E**

**PROJECTED BENEFIT OBLIGATION FUNDED STATUS**

At January 1, 2006, the Projected Benefit Obligation was as follows:

Retired members and beneficiaries currently receiving benefits and terminated members not yet receiving benefits	\$ 661,353,685
Current active members:	
Accumulated member contributions, including interest	90,001,111
Employer-financed vested benefits	317,721,355
Employer-financed non-vested benefits	<u>2,199,018</u>
Total Projected Benefit Obligation	\$ 1,071,275,169

At January 1, 2006, the Projected Benefit Obligation was funded as follows:

Net assets available for benefits at actuarial value	\$ 983,828,243
Unfunded Projected Benefit Obligation	87,446,926
Actuarial value funding ratio	91.8%
Net assets available for benefits at market value	\$ 983,828,243
Unfunded Projected Benefit Obligation	87,446,926
Market value funding ratio	91.8%



**TABLE F**

**PRIORITIZED SOLVENCY TEST**

The funding objective of the Retirement System is to meet long-term benefit promises through contributions that remain approximately level from year to year as a percentage of covered Compensation. If the contributions are level in concept and realistically determined, the System will pay all benefits when due -- the ultimate test of financial soundness. Testing for level contribution rates is the long-term solvency test.

A prioritized solvency test is an additional means of checking a system's progress under its funding program. In a prioritized solvency test, the plan's present assets (cash and investments) are compared with:

- active member contributions, accumulated with interest;
- the liabilities for future benefits to present inactive members and beneficiaries; and
- the liabilities for service already rendered by active members.

In a system that has been following the discipline of level percent of payroll financing, the liabilities for active member accumulated contributions (liability 1) and the liabilities for future benefits to inactive members and beneficiaries (liability 2) will be fully covered by assets (except in unusual circumstances). In addition, the liabilities for service already rendered by active members (liability 3) are normally partially covered by the remainder of the present assets. Generally, if the system has been using level cost financing, the funded portion of liability 3 will increase over time. Liability 3 being fully funded does not necessarily result from level percent of payroll funding methods.

The schedule below illustrates the history of the liabilities of the system and is indicative of the system following the discipline of level percent of compensation funding.

<b>Actuarial Present Value of Credited Projected Benefits</b>							
<b>Valuation Date</b>	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>Actuarial Value of Assets</b>	<b>Percent of Present Value Covered by Valuation Assets</b>		
	<b>Active Members' Accumulated Contributions</b>	<b>Retirants, Inactive Members &amp; Beneficiaries</b>	<b>Active Members (Employer-Financed)</b>		<b>(1)</b>	<b>(2)</b>	<b>(3)</b>
January 1							
1996	114,061,708	236,007,330	250,659,986	562,177,274	100	100	85
1997	118,041,749	272,393,748	251,827,653	598,638,356	100	100	83
1998	122,227,173	296,455,647	252,445,749	644,429,672	100	100	90
1999	130,705,014	276,290,128	303,953,494	694,250,672	100	100	95
2000	129,398,364	353,852,977	288,213,016	770,090,498	100	100	100
2001	127,086,325	414,052,293	269,590,438	828,097,298	100	100	100
2002	116,506,785	476,104,516	372,221,726	861,128,076	100	100	72
2003	115,570,837	492,633,382	361,818,972	873,260,102	100	100	73
2004	106,021,476	528,287,121	364,459,284	901,996,455	100	100	73
2005	89,710,662	518,880,414	368,306,240	935,328,638	100	100	89
2006	90,001,111	661,353,685	319,920,373	983,828,243	100	100	73

**TABLE G****INFORMATION FOR ACCOUNTING PURPOSES**

The following information is required to satisfy the reporting requirements of the Governmental Accounting Standards Board Statement No. 25 on Financial Reporting for Deferred Benefit Plans.

<u>Actuarial Valuation Date</u>	<u>Actuarial Value of Assets</u>	<u>Actuarial Accrued Liability</u>	<u>Unfunded Actuarial Accrued Liability (UAAL)</u>	<u>Funded Ratio</u>	<u>Covered Payroll</u>	<u>UAAL as a % of Payroll  (b) – (a)  / (c)</u>
	(a)	(b)	(b) – (a)	(a) / (b)	(c)	
1/1/1992	427,706,455	501,997,792	74,291,337	85.2%	194,190,353	38.3%
1/1/1993	458,279,727	530,766,832	72,487,105	86.3%	194,555,489	37.3%
1/1/1994	487,385,302	557,941,103	70,555,801	87.4%	202,384,485	34.9%
1/1/1995	519,088,399	588,157,615	69,069,216	88.3%	207,113,839	33.3%
1/1/1996	562,177,274	664,807,425	102,630,151	84.6%	206,935,682	49.6%
1/1/1997	598,638,356	716,727,527	118,089,171	83.5%	210,228,288	56.2%
1/1/1998	644,429,672	759,687,878	115,258,206	84.8%	210,843,186	54.7%
1/1/1999	694,250,672	846,891,006	152,640,034	82.0%	215,602,351	70.8%
1/1/2000	770,090,498	937,669,100	167,578,602	82.1%	216,699,483	77.3%
1/1/2001	828,097,298	1,022,042,819	193,945,521	81.0%	235,087,151	82.5%
1/1/2002	861,128,076	1,069,789,813	208,661,737	80.5%	243,880,038	85.6%
1/1/2003	873,260,102	1,063,209,205	189,949,103	82.1%	283,935,810	66.9%
1/1/2004	901,996,455	1,074,259,628	172,263,173	84.0%	255,317,974	67.5%
1/1/2005	935,328,638	1,084,409,302	149,080,664	86.3%	240,185,055	62.1%
1/1/2006	983,828,243	1,122,583,775	138,755,532	87.6%	227,035,801	61.1%

<u>Year Ended 12/31</u>	<u>Annual Required Contribution</u>	<u>Percentage Contributed</u>
1993	14,098,562	98.4%
1994	15,441,488	99.2%
1995	15,087,519	99.6%
1996	16,619,187	100.1%
1997	16,876,759	100.2%
1998	15,328,067	111.1%
1999	13,906,270	124.5%
2000	15,543,984	112.3%
2001	18,168,580	100.2%
2002	19,076,442	100.6%
2003	19,517,288	101.2%
2004	19,210,506	132.0%
2005	19,364,705	121.4%
2006	14,414,133	*
2007	17,311,658	*

\* To be determined at the end of the year.

## SECTION 6

### VALUATION OF THE SYSTEM'S ASSETS

This section of the report shows the development of the actuarial value of the assets of the System and provides information regarding the Expense and Contingency Reserve, investment results and the various assets of the System.

The amount of assets used in the actuarial valuation is known as the "actuarial value of assets." The method is discussed in Section 3 and the development of the actuarial value of assets is shown in Table H. An important element in the development of the actuarial value of assets is the Expense and Contingency Reserve (called the Expense Fund prior to 1988). The amount of the Reserve is determined pursuant to a policy adopted by the Board of Trustees. The history of the Reserve is presented in Table I.

As shown in Table J, the fund had a rate of return of 12.43% on an actuarial value basis,

4.43% above the assumed rate of return of 8.0% for 2005. A portion of the rate of return was due to an adjustment to increase the actuarial value to equal the market value as of January 1, 2006. Prior to the adjustment the rate of return on an actuarial value basis would have been 8.90%, 0.90% above the assumed rate of return of 8.00%. In accordance with Rule XI, \$0 was added to the investment contingency portion of the Reserve, because the preliminary actuarial rate of return would not have exceeded the assumed rate of return by more than 1%.

The rate of return on an actuarial value basis is intended to be a stable rate of return and fluctuate less than rates of return on book or market value basis. Thus, the rate of return on an actuarial basis is not always a fair measure of the investment performance of the fund. Another indicator of actual performance during the year is the rate of return on a market value basis of 6.15%, also presented in Table J.

## TABLE H

### DEVELOPMENT OF THE ACTUARIAL VALUE OF ASSETS

(1)	Actuarial value of assets as of January 1, 2005	\$ 935,328,638
(2)	Member contributions	10,515,944
(3)	Employer contributions	23,514,266
(4)	Benefit payments and expenses	96,477,282
(5)	Investment increment at 8.0%	71,387,838
(6)	Expected actuarial value on January 1, 2006: (1) + (2) + (3) - (4) + (5)	944,269,404
(7)	Market value of assets on January 1, 2006	1,061,478,889
(8)	Expense and Contingency Reserve on January 1, 2006	77,650,646
(9)	Adjustment to the Contingency Reserve on January 1, 2006	0
(10)	Excess of market value over expected actuarial value: (7) – (8) – (9) - (6)	39,558,839
(11)	Market value adjustment: 100% x (10)	39,558,839
(12)	Actuarial Value of Assets as of January 1, 2006: (6) + (11)	983,828,243

**TABLE I**

**THE EXPENSE AND CONTINGENCY RESERVE**

Effective January 1, 1996 the Board of Trustees revised Rule XI, which governs the determination of the amount of the Expense and Contingency Reserve. The expense portion of the Reserve is the sum of:

- (1) The estimated annual operating expenses for the ensuing year;
- (2) An amount equal to the liability for non-insurance supplements;
- (3) An amount equal to the liability for insurance supplements for those members participating in the program on January 1; and
- (4) The estimated amount of insurance supplements to be paid for members expected to retire and participate in the program during the ensuing year.

The contingency portion of the Reserve is intended to cover significant shortfall in the rate of return. When a shortfall of more than 1% occurs, the Reserve is used to reduce the amount of the shortfall. When the rate of return exceeds the assumed rate of return by more than 1%, an addition is made to the Reserve according to a formula in Rule XI.

Below is a history of the Expense and Contingency Reserve:

<u>January 1</u>	<u>Expense Reserve</u>	<u>Investment Contingency Reserve</u>	<u>Total Expense and Contingency Reserve</u>
1996	\$ 33,702,346	\$ 0	\$ 33,702,346
1997	25,403,190	5,220,821	30,624,011
1998	30,891,555	24,100,041	54,991,596
1999	22,142,759	45,972,067	68,114,826
2000	27,992,032	50,003,862	77,995,894
2001	29,837,776	50,003,743	79,841,519
2002	23,527,529	50,003,743	73,531,272
2003	24,952,255	37,759,976	62,712,231
2004	26,028,780	37,759,976	63,788,756
2005	27,170,188	45,115,876	72,286,064
2006	32,534,770	45,115,876	77,650,646

**TABLE J**

**INVESTMENT PERFORMANCE**

There are several different methods of approximating the rates of return on investments of the Trust Fund. Following is a brief

comparison of the actuarial assumed rate of return as compared with rates of return on Market and Actuarial Value bases:

**(a) Market Value Basis**

The rate of return on a Market Value Basis is the ratio of the appreciation (or depreciation) of assets less contributions plus disbursements to the Market Value at the beginning of the year plus the average of the receipts and disbursements made during the year. This may be approximated as follows:

(i)	A = Market Value of Assets as of January 1, 2005	\$ 1,060,577,177
(ii)	B = Market Value of Assets as of January 1, 2006	1,061,478,889
(iii)	C = Contributions during the period	34,030,210
(iv)	D = Disbursements during the period	96,477,282
(v)	Rate of Return: $\frac{B - A + D - C}{A + \frac{1}{2}(C - D)}$	6.15%
(vi)	Actuarial Assumed Rate of Return for 2005	8.00%
(vii)	Difference between actual and assumed rates of return: (v) – (vi)	-1.85%

**(b) Actuarial Value Basis**

The rate of return on an Actuarial Value Basis is approximated using the same method as the Market Value Basis:

(i)	A = Actuarial Value of Assets as of January 1, 2005	\$ 935,328,638
(ii)	I = Income Allocated as of January 1, 2006	110,946,677
(iii)	C = Contributions during the period, time-weighted	5,749,863
(iv)	D = Disbursements during the period, time-weighted	48,238,641
(v)	Rate of Return: $\frac{I}{A + C - D}$	12.43%
(vi)	Actuarial Assumed Rate of Return for 2005	8.00%
(vii)	Difference between actual and assumed rates of return: (v) – (vi)	4.43%

**SECTION 7**

**EXHIBITS AND APPENDIX**

**OUTLINE OF PROVISIONS OF CURRENT LAW**

1. Members - All persons regularly employed by the Board of Education and employees of the Board of Trustees are in the System. Certain employees of Harris-Stowe State College elected to remain in the System when Harris-Stowe came under the state retirement systems. A few employees elected to remain out of System when it started January 1, 1944. Some members elected to remain under old law as of October 13, 1961.
2. Board of Trustees - The Board consists of eleven members. Four members are appointed by Board of Education, three teacher members (two active and one retired), three non-teacher members (two active and one retired) and one active member who is a school administrator are elected by members of System.
3. Retirement Age
  - (a) Normal - Age 65 or any age if age plus the years of Credited Service equals or exceeds 85 (Rule of 85).
  - (b) Early - Age 60 in all cases, with reduced benefits.
4. Service Retirement Allowance
  - (a) 2% (1-1/4% prior to July 1, 1999) of Average Final Compensation (AFC), times
  - (b) Years of Credited Service.
    - (i) Compensation is the regular compensation for a period.
    - (ii) AFC is the highest average compensation for any three consecutive years of the last ten years of service.
  - (iii) Minimum monthly benefit, retirement age 65 and over is \$10.00 for each year of credited service, up to 15 years.
  - (iv) Unused sick leave is added to a member's credited service and age.
  - (c) Subject to a maximum of 60% of AFC.
5. Early Retirement Benefit - A reduced benefit using the same reduction factors as in the Social Security Law, from age 65 or the age at which the Rule of 85 would be satisfied, if earlier than age 65. For example, for a Member who could not satisfy the Rule of 85 before age 65, the age 60 factor is 66.67% and the age 62 factor is 80%. These factors are applied to the accrued benefit.
6. Disability Benefit - Accrued benefit for actual service, or 25% of AFC if larger, provided that in no case will the benefit exceed that payable if service had continued to age 65.
  - (a) Disability must be incurred while and employee.
  - (b) The member must have a minimum of five years of credited service and be under age 65.
  - (c) May be examined by doctor annually in first five years and every three years thereafter.
7. Withdrawal Benefit - Accumulated Contributions of member with interest credited to the member's account.
8. Vested Benefit - Full vesting on termination



of employment after at least five years of service is provided if contributions are left with the System. The full accrued benefit is payable at age 65 or a reduced early retirement benefit prior to age 65.

9. Retirement Options - A reduced benefit payable for life of member with:

Option 1 - Same retirement allowance continued after death to the beneficiary.

Option 2 - One-half of the retirement allowance continued after death to the beneficiary.

Option 3 - Same retirement allowance continued after death to the beneficiary. If the beneficiary predeceases the member, the retirement allowance is adjusted back to the unreduced allowance.

Option 4 - One-half of retirement allowance continued after death to the beneficiary. If the beneficiary predeceases the member, the retirement allowance is adjusted back to the unreduced allowance.

Option 5 - Increased retirement allowance is provided up to age 62, such that benefit provided prior to age 62 is approximately equal to the sum of the reduced retirement allowance paid after age 62 and Social Security.

Option 6 - Options 1 and 5 combined.

Option 7 - Options 2 and 5 combined.

10. Survivor Benefits - If a member dies after 18 months of service and before service retirement or during disability retirement, survivor benefits are payable in lieu of a lump sum refund of member contributions.

(a) A widow age 62 who was married to a

member for at least one year receives \$60 a month.

(b) A widow with dependent, unmarried children under age 22 receives \$60 a month plus \$60 per child, not to exceed \$240. The benefit ceases when youngest child is age 22 and resumes again under (a) at age 62.

(c) If no benefits are payable under (a) or (b), minor children may receive a benefit of \$60 per child or \$180 divided among them if more than three children.

(d) If no benefits are payable under (a), (b) or (c), a dependent parent or parents may receive \$60 per month.

11. Death Benefit Before Retirement

(a) Under age 65 - If survivor benefits are not payable, contributions are refunded.

(b) With five years of service - Benefits may be paid as if member was at least age 55 and had retired as of the date of death under Option 1 in lieu of survivor benefits.

12. If a member dies before receiving benefits at least as great as accumulated contributions, the difference is paid to his beneficiary. This minimum guarantee also applies to survivor benefits under options.

13. DROP – Effective July 1, 2001, active members may elect to enter the Deferred Retirement Option Plan (DROP) for up to four years. Upon entering the DROP, the member's retirement benefit is frozen and credited to the member's DROP account. At the end of the DROP, or upon earlier termination of employment, the DROP account is paid in a lump sum or installments, at the member's option.

During the DROP, the member continues as an active member, but does not pay contributions. To enter the DROP the member must be age 65 or meet the Rule of 85.

14. Special Contributions - A member may contribute additional amounts that will be used to provide additional benefits (tax

sheltered annuities).

15. Contributions by Members - 5% of compensation.
16. Contributions by Employers - As needed to keep System actuarially sound.
17. Expenses - Administration expenses paid out of investment income.

**LEGISLATIVE HISTORY OF THE RETIREMENT SYSTEM**

*On and after January 1, 1944*, all persons employed by the Board of Education on a full-time permanent basis are members of the System as a condition of employment. In 1961, provisions regarding benefits and employee contribution levels were revised for all future employees of the Board of Education. Members of the System at that time were granted the right to remain under the "Old Plan" and have their membership governed by the provisions of the law in effect prior to 1961. These Old Plan members have both benefits and contributions based on a \$3,000 maximum annual compensation. Old Plan members have been given the option to transfer into the revised plan at various times since 1961.

*Effective October 13, 1969*, legislation permitted the reinstatement of credited service lost during the years 1944 to 1947 inclusive when the married women teachers rule was in effect.

*Effective August 31, 1972*, legislation resulted in the following changes:

- Purchase of past service credit by paying contributions for service claimed plus interest.
- Service as Extended Substitute Teacher.
- Service of re-employed members lost on prior terminations.
- Service out-state Missouri and outside the State of Missouri.
- Service lost by those who elected to stay out

of the retirement plan either temporarily or to date.

- Old Plan members who wished to become New Plan members could do so by paying the differential in member contributions under the new and old plans, plus interest.
- Dependent beneficiary on death of member before retirement but after age 60 or age 55 with 30 years service may receive Option 1 benefit as if member had retired under such option.
- A member with five or more years of service and prior to age 65 may be retired with a disability benefit if the medical board certifies that such member is mentally or physically totally incapacitated for further performance of duty.
- Minimum retirement benefit at age 65 or after ten years service is \$50.00 per month.

*On February 10, 1975*, the Missouri Supreme Court handed down a decision supporting HB 613 (Section 169.585 of state statutes), which granted increased benefits to retired teachers. The increases apply to those teachers who retired after June 30, 1957 and prior to January 1, 1971. Technically, those retirees are retained as "advisors and supervisor" and receive a "salary" of \$5 per month for each year of service, with a maximum of \$75. This salary plus the regular retirement benefit cannot exceed \$150 per month. To the extent that assets are depleted because of this law, future district

contributions will increase. Because these benefits are paid as "salaries," coming out of investment income along with other expenses of operation, there will be less money available for crediting of interest to the various funds at the end of the year.

*Effective August 13, 1978* legislation resulted in the following changes:

- The service retirement allowance and projected service retirement allowance was changed to 1-1/4% of average final compensation per year of credited service. The member's allowance plus his Social Security primary insurance amount could not exceed 80% of his average final compensation. Members born before 1917 receive the larger of the allowances calculated under the new formula and the formula in effect immediately before it.
- Credited service no longer limited to a maximum of 35 years.
- Two new joint and survivor optional forms of payment were added which provide for the member's pension to be adjusted back to his unreduced pension in the event his spouse predeceases him.
- Contributions from members shall be 3% of compensation.
- End of period for purchasing prior service or outside service extended from December 31, 1973 to December 31, 1980. Deleted requirement of electing to purchase out-state or outside the State of Missouri service within one year of completing five years of credited service.
- Gives Board of Trustees the power to establish regulations, methods and factors

that may be needed to calculate primary Social Security benefits.

- Dependent beneficiary on death of member before retirement with five or more years of credited service may receive Option 1 benefit as if the member had retired under that option as of the date of his death.
- Allow retired educational secretaries to serve as part-time or temporary substitute educational secretary up to a maximum of 360 hours per school year without a reduction in the retired employee's retirement allowance or requiring the retired employees to contribute to the Retirement System.

*Effective September 28, 1979,* legislation resulted in the following changes:

- Accumulated and unused days of sick leave shall be included in computing a member's age and credited service at retirement.
- Members who have attained age 62 and who have 30 or more years of credited service may retire and receive a service retirement allowance without reduction for early retirement. The early retirement reduction for members who retire with 30 or more years of credited service but who have not attained age 62 on their retirement date shall be determined on the basis of the number of months by which their age at retirement is less than age 62.
- Benefits to survivors of a member who dies while an employee and after having at least 18 months of credited service are as follows:
  - (a) Surviving spouse age 62 or over: \$60 per month.
  - (b) Surviving spouse with unmarried

dependent children under age 22: \$60 per month, plus \$30 per month for each eligible child, with a maximum of \$150 per month.

(c) Unmarried dependent children under age 22: \$60 per month for each eligible child, with a maximum of \$120 per month. This benefit is payable if the benefit in (b) is not payable.

(d) Dependent parent(s): \$60 per month, provided no benefits are payable under (a), (b) or (c) above.

*Effective September 28, 1981*, legislation resulted in the following changes:

- The provision limiting service retirement and projected service retirement allowances to 80% of average final compensation less Social Security was removed for future retirees.
- The minimum monthly benefit payable to members retiring on or after age 65 with ten or more years of service was increased to \$75.
- Old plan members were extended the option to transfer into the current system by paying the difference in member contributions plus interest. Such election to be made on or before December 31, 1984. Retired members who retired prior to January 1, 1955 may be employed as "special school advisors and supervisors" at a "salary" of \$250 per month less their retirement benefits.
- Retired members who retired prior to January 1, 1976 may be employed as "school consultants" at a "salary" equal to \$4 for each year of retirement prior to January

1, 1982. Total "salaries" as a "school consultant" and "special school advisor and supervisor" are limited to \$250 per month.

- The Retirement System may contribute as part of its administrative expenses toward health, life and similar insurance for retirees.
- The actuarial cost method was changed from the "entry age cost method" to the "frozen entry age cost method." The period for amortizing "supplements" to the unfunded actuarial accrued liability was set at 50 years from the time the "supplement" is created.
- Several changes were made dealing with the administration and operation of the System.
- Investment powers were broadened.

*Effective September 28, 1984*, legislation resulted in the following changes:

- Dependent beneficiary on death of employed, active member before retirement with five or more years of service may receive Option 1 benefit as if the member had attained age 55 (if less than 55 at his death) and had retired under Option 1 as of the date of his death.
- In addition to the Option 1 death benefit, a surviving spouse may receive \$30 per month for each unmarried dependent child, provided that the total benefit does not exceed the greater of \$150 or the Option 1 benefit.
- Surviving spouse benefits do not cease on remarriage.
- Dependent children's benefits do not require that the child remain a full-time student.
- Members retired on disability may elect to receive an actuarial equivalent benefit under Options 1 through 4.

- Retired members who retired on or after January 1, 1976 may be employed as school consultants and receive a salary and insurance benefits provided other retirants.

*Effective August 13, 1986*, legislation resulted in the following changes:

- A member with 30 years of credited service who is between the ages of 55 and 62, upon certification by the Board of Education, is eligible for a supplemental early retirement benefit payable to age 62. This provision remains in effect until December 31, 1991.
- Benefits to a surviving spouse for dependent children are increased from \$30 to \$60 per month, with a maximum of \$240 per month, including the \$60 for the surviving spouse.
- Supplemental pay to retired members employed as "school consultants" is increased by \$2 per month for each year between the member's date of retirement and December 31, 1986

*Effective June 19, 1987* legislation resulted in the following changes:

- Reinstated the option for "old plan" members to elect "new plan" membership by paying the difference in contributions accumulated with interest.
- Increased the minimum benefit for members retiring on or after age 65 to \$10 per month for each year of credited service, up to a maximum of 15 years.
- Several changes were made dealing with the accounting, administration and operation of the System.

*Effective August 13, 1988*, legislation resulted in

the following changes:

- Made provisions for children's benefits uniform, providing \$60 per month per child, up to a maximum of \$180 per month, under both subsections 169.460(13) and (15) survivor benefits.
- Supplemental pay to retired members of \$2 per month for each year of retirement up to December 31, 1988.

*Effective June 14, 1989*, legislation resulted in the following changes:

- The maximum on compensation was removed.
- Average Final Compensation is based on the highest three consecutive years, rather than the highest five consecutive years.
- Members may retire with unreduced benefits at any age, if their age plus Credited Service equals or exceeds 85 (the "Rule of 85").

*Effective May 31, 1990*, legislation resulted in the following change:

- Supplemental pay of \$2 per month for each year of retirement up to December 31, 1990.

*Effective August 28, 1993*, legislation resulted in the following change:

- Supplemental pay of \$3 per month for each year of retirement up to December 31, 1993.

*Effective August 28, 1996*, legislation resulted in the following changes:

- Provision was added for the purchase of service for certain periods of layoff.
- The investment trustee position was eliminated and the position of school administrator trustee was added.

- Cost-of-living increases for members who retired prior to August 28, 1996 with at least fifteen years of Credited Service. The cost-of-living increases are up to 3% in one year, with a cumulative maximum of 10%.
- The Board of Education is authorized to increase retirement benefits and the member contribution rate, subject to several conditions.

*Effective August 28, 1997*, legislation resulted in the following change:

- Cost-of-living increases extended to members who retired prior to August 28, 1997 with at least fifteen years of Credited Service. The cost-of-living increases are up to 3% in one year, with a cumulative maximum of 10%.

In accordance with the statutory authority granted the Board of Education in 1996, the Board of Education made the following changes:

- Member contributions were increased to 4.5%, *effective July 1, 1998*; to 5.0%, *effective July 1, 1999*; and, if necessary to 5.5%, *effective July 1, 2000*.
- The service retirement allowance was changed to 2.00% of average final compensation per year of credited service, subject to a maximum of 60% of average final compensation, effective for members who retired *after June 29, 1999*.
- A “catch-up” Cost-of-Living Adjustment (Cola) is provided for members who retired prior to June 30, 1999 and survivors of members who retired or died prior to June 30, 1999. The amount of the “catch-up” Cola is equal to 65% of the amount by

which the member’s original benefit would have increased due to increases in the CPI, in excess of any supplements or Cola increases being received by the member. The “catch-up” Cola is *effective July 1, 2000*.

- The Board of Education agreed to contribute 8.03% of covered compensation for 1998, 1999 and 2000, in order to fund the benefit increase and the “catch-up” Cola.

In accordance with the statutory authority granted the Board of Education in 1996, the Board of Education made the following changes:

- *Effective January 1, 2001*, all members who retired prior to January 1, 2000 received a 3% cost-of-living increase.
- *Effective July 1, 2001*, a DROP was made available until June 30, 2005, at which time the program will be evaluated to determine whether or not it should be extended. Eligible members may elect to enter the DROP for up to four years.
- In conjunction with the DROP, employers will contribute at 8.00% of covered compensation for 2001. The contribution rate for subsequent years will be based on the rate determined by the actuarial valuation for the January 1 of the year preceding the year the contribution is due.

*Effective August 28, 2002*, legislation resulted in the following changes:

- Purchase of service rules were updated.
- The System may accept qualified transfers of funds for the purchase of service.
- Clarified provisions relating to Charter School participation in the System.

- Option 5, the level income option is added.
- Replaced the specific actuarial cost method in the statutes with a provision that the method adopted by the Board of Trustees

may be any method in accordance with generally accepted actuarial standards. The amortization period for the UAAL may not exceed thirty years.



**NON-DISABLED LIFE MORTALITY RATES**

<b>Death Rate</b>			<b>Death Rate</b>		
<b>Male</b>	<b>Age</b>	<b>Female</b>	<b>Male</b>	<b>Age</b>	<b>Female</b>
.000345	20	.000191	.012737	65	.009706
.000357	21	.000192	.014409	66	.010954
.000366	22	.000194	.016075	67	.012163
.000373	23	.000197	.017871	68	.013445
.000376	24	.000201	.019802	69	.014860
.000376	25	.000207	.022206	70	.016742
.000378	26	.000214	.024570	71	.018579
.000382	27	.000223	.027281	72	.020665
.000393	28	.000235	.030387	73	.022970
.000412	29	.000248	.033900	74	.025458
.000444	30	.000264	.037834	75	.028106
.000499	31	.000307	.042169	76	.030966
.000562	32	.000350	.046906	77	.034105
.000631	33	.000394	.052123	78	.037595
.000702	34	.000435	.057927	79	.041506
.000773	35	.000475	.064368	80	.045879
.000841	36	.000514	.072041	81	.050780
.000904	37	.000554	.080486	82	.056294
.000964	38	.000598	.089718	83	.062506
.001021	39	.000648	.099779	84	.069517
.001079	40	.000706	.110757	85	.077446
.001142	41	.000774	.122797	86	.086376
.001215	42	.000852	.136043	87	.096337
.001299	43	.000937	.150590	88	.107303
.001397	44	.001029	.166420	89	.119154
.001508	45	.001124	.183408	90	.131682
.001616	46	.001223	.199769	91	.144604
.001734	47	.001326	.216605	92	.157618
.001860	48	.001434	.233662	93	.170433
.001995	49	.001550	.250693	94	.182799
.002138	50	.001679	.267491	95	.194509
.002449	51	.001852	.283905	96	.205379
.002667	52	.002018	.299852	97	.215240
.002916	53	.002207	.315296	98	.223947
.003196	54	.002424	.330207	99	.231387
.003624	55	.002717	.344556	100	.237467
.004200	56	.003090	.358628	101	.244834
.004693	57	.003478	.371685	102	.254498
.005273	58	.003923	.383040	103	.266044
.005945	59	.004441	.392003	104	.279055
.006747	60	.005055	.397886	105	.293116
.007676	61	.005814	.400000	106	.307811
.008757	62	.006657	.400000	107	.322725
.010012	63	.007648	.400000	108	.337441
.011280	64	.008619	.400000	109	.351544

**NON-DISABLED LIFE MORTALITY RATES**

**(Continued)**

<b>Death Rate</b>					
<b>Male</b>	<b>Age</b>	<b>Female</b>	<b>Male</b>	<b>Age</b>	<b>Female</b>
.400000	110	.364617	.400000	115	.400000
.400000	111	.376246	.400000	116	.400000
.400000	112	.386015	.400000	117	.400000
.400000	113	.393507	.400000	118	.400000
.400000	114	.398308	.400000	119	.400000
			1.000000	120	1.000000

**EXHIBIT D**

**DISABLED LIFE MORTALITY RATES**

<b>Death Rate</b>			<b>Death Rate</b>		
<b>Male</b>	<b>Age</b>	<b>Female</b>	<b>Male</b>	<b>Age</b>	<b>Female</b>
.000773	30	.000475	.064368	75	.045879
.000841	31	.000514	.072041	76	.050780
.000904	32	.000554	.080486	77	.056294
.000964	33	.000598	.089718	78	.062506
.001021	34	.000648	.099779	79	.069517
.001079	35	.000706	.110757	80	.077446
.001142	36	.000774	.122797	81	.086376
.001215	37	.000852	.136043	82	.096337
.001299	38	.000937	.150590	83	.107303
.001397	39	.001029	.166420	84	.119154
.001508	40	.001124	.183408	85	.131682
.001616	41	.001223	.199769	86	.144604
.001734	42	.001326	.216605	87	.157618
.001860	43	.001434	.233662	88	.170433
.001995	44	.001550	.250693	89	.182799
.002138	45	.001679	.267491	90	.194509
.002449	46	.001852	.283905	91	.205379
.002667	47	.002018	.299852	92	.215240
.002916	48	.002207	.315296	93	.223947
.003196	49	.002424	.330207	94	.231387
.003624	50	.002717	.344556	95	.237467
.004200	51	.003090	.358628	96	.244834
.004693	52	.003478	.371685	97	.254498
.005273	53	.003923	.383040	98	.266044
.005945	54	.004441	.392003	99	.279055
.006747	55	.005055	.397886	100	.293116
.007676	56	.005814	.400000	101	.307811
.008757	57	.006657	.400000	102	.322725
.010012	58	.007648	.400000	103	.337441
.011280	59	.008619	.400000	104	.351544
.012737	60	.009706	.397886	105	.364617
.014409	61	.010954	.400000	106	.376246
.016075	62	.012163	.400000	107	.386015
.017871	63	.013445	.400000	108	.393507
.019802	64	.014860	.400000	109	.398308
.022206	65	.016742	.400000	110	.400000
.024570	66	.018579	.400000	111	.400000
.027281	67	.020665	.400000	112	.400000
.030387	68	.022970	.400000	113	.400000
.033900	69	.025458	.400000	114	.400000
.037834	70	.028106	1.000000	115	1.000000
.042169	71	.030966			
.046906	72	.034105			
.052123	73	.037595			
.057927	74	.041506			

**ACTIVE MEMBER RATES OF  
DECREMENT AND SALARY INCREASE**

<b>Attained Age</b>	<b><u>Withdrawal Rate</u></b>		<b><u>Disability Rate</u></b>		<b>Retirement Rate</b>
	<b><u>Males</u></b>	<b><u>Females</u></b>	<b><u>Males</u></b>	<b><u>Females</u></b>	
20	15.00%	15.00%	.000%	.000%	0.0%
21	14.50%	14.50%	.000%	.000%	0.0%
22	14.00%	14.00%	.000%	.000%	0.0%
23	13.50%	13.50%	.000%	.000%	0.0%
24	13.00%	13.00%	.000%	.000%	0.0%
25	12.50%	12.50%	.000%	.000%	0.0%
26	12.00%	12.00%	.000%	.000%	0.0%
27	11.50%	11.50%	.000%	.000%	0.0%
28	11.00%	11.00%	.000%	.000%	0.0%
29	9.50%	9.50%	.000%	.000%	0.0%
30	9.00%	9.00%	.040%	.040%	0.0%
31	8.80%	8.80%	.040%	.040%	0.0%
32	8.40%	8.40%	.040%	.040%	0.0%
33	7.90%	7.90%	.040%	.040%	0.0%
34	7.50%	7.50%	.040%	.040%	0.0%
35	7.00%	7.00%	.040%	.040%	0.0%
36	6.80%	6.80%	.045%	.045%	0.0%
37	6.60%	6.60%	.050%	.050%	0.0%
38	6.40%	6.40%	.060%	.060%	0.0%
39	6.20%	6.20%	.070%	.070%	0.0%
40	6.00%	6.00%	.080%	.075%	0.0%
41	5.40%	5.40%	.095%	.080%	0.0%
42	4.80%	4.80%	.110%	.085%	0.0%
43	4.20%	4.20%	.125%	.090%	0.0%
44	3.60%	3.60%	.140%	.095%	0.0%
45	3.00%	3.00%	.150%	.100%	0.0%
46	2.80%	2.80%	.160%	.110%	0.0%
47	2.60%	2.60%	.170%	.120%	0.0%
48	2.40%	2.40%	.180%	.130%	0.0%
49	2.20%	2.20%	.190%	.140%	0.0%
50	2.00%	2.00%	.200%	.150%	0.0%
51	1.90%	1.90%	.250%	.170%	0.0%
52	1.80%	1.80%	.300%	.190%	0.0%
53	1.70%	1.70%	.350%	.210%	0.0%
54	1.60%	1.60%	.400%	.230%	0.0%

**ACTIVE MEMBER RATES OF  
DECREMENT AND SALARY INCREASE**  
(Continued)

<b>Attained Age</b>	<b><u>Withdrawal Rate</u></b>		<b><u>Disability Rate</u></b>		<b>Retirement Rate</b>
	<b><u>Males</u></b>	<b><u>Females</u></b>	<b><u>Males</u></b>	<b><u>Females</u></b>	
55	1.50%	1.50%	.450%	.250%	5.0%
56	1.40%	1.40%	.470%	.260%	5.0%
57	1.30%	1.30%	.490%	.275%	5.0%
58	1.20%	1.20%	.510%	.285%	5.0%
59	1.10%	1.10%	.530%	.300%	7.5%
60	1.00%	1.00%	.550%	.325%	7.5%
61	0.00%	0.00%	.600%	.350%	12.5%
62	0.00%	0.00%	.650%	.350%	25.0%
63	0.00%	0.00%	.700%	.350%	17.5%
64	0.00%	0.00%	.750%	.350%	25.0%
65	0.00%	0.00%	.000%	.000%	35.0%
66	0.00%	0.00%	.000%	.000%	20.0%
67	0.00%	0.00%	.000%	.000%	20.0%
68	0.00%	0.00%	.000%	.000%	20.0%
69	0.00%	0.00%	.000%	.000%	25.0%
70	0.00%	0.00%	.000%	.000%	100.0%

FAMILY STRUCTURE

	Age		Age of Youngest Child	Average Number of Children	Probability of Being Married	Probability of Children if Married
	Male	Female				
20		17	2	.90	.30	.50
21		18	2	.90	.35	.50
22		19	2	.98	.40	.50
23		20	2	.98	.46	.53
24		21	3	1.05	.53	.56
25		22	3	1.13	.60	.59
26		23	4	1.20	.67	.62
27		24	4	1.28	.74	.65
28		25	4	1.35	.76	.67
29		26	5	1.43	.78	.69
30		27	5	1.50	.80	.71
31		28	6	1.58	.82	.73
32		29	6	1.65	.84	.75
33		30	7	1.80	.85	.76
34		31	7	1.95	.86	.77
35		32	8	2.10	.87	.78
36		33	8	2.10	.87	.79
37		34	9	2.10	.87	.80
38		35	9	2.30	.87	.79
39		36	10	1.95	.87	.78
40		37	10	1.88	.87	.77
41		38	11	1.80	.87	.76
42		39	11	1.73	.87	.75
43		40	11	1.73	.87	.72
44		41	12	1.65	.87	.69
45		42	12	1.65	.86	.66
46		43	12	1.58	.86	.63
47		44	12	1.58	.86	.60
48		45	12	1.50	.85	.56
49		46	12	1.43	.85	.52
50		47	13	1.43	.85	.48
51		48	13	1.35	.85	.44
52		49	13	1.35	.85	.40
53		50	13	1.35	.85	.37
54		51	13	1.35	.84	.34

**FAMILY STRUCTURE**  
(Continued)

<u>Age</u>		<u>Age of Youngest Child</u>	<u>Average Number of Children</u>	<u>Probability of Being Married</u>	<u>Probability of Children if Married</u>
<u>Male</u>	<u>Female</u>				
55	52	13	1.28	.84	.31
56	53	13	1.28	.83	.28
57	54	13	1.28	.83	.25
58	55	13	1.28	.83	.23
59	56	13	1.20	.82	.21
60	57	13	1.20	.81	.19
61	58	13	1.20	.80	.17
62	59	13	1.20	.79	.15
63	60	13	1.20	.78	.13
64	61	13	1.20	.77	.11
65	62	13	1.13	.76	.09
66	63	13	1.13	.75	.07
67	64	13	1.13	.74	.05
68	65	13	1.13	.73	.04
69	66	13	1.05	.72	.03
70	67	13	1.05	.71	.02
71	68	13	1.05	.70	.01

**MEMBERSHIP AS OF JANUARY 1, 2006**

	<u>Males</u>	<u>Females</u>	<u>Total</u>
<b><u>Active Members</u></b>			
Regular Active Members	1,173	3,598	4,771
DROP	<u>74</u>	<u>311</u>	<u>385</u>
Total Active Members	1,247	3,909	5,156
<b><u>Inactive Members (Terminated or Leave of Absence without Pay)</u></b>	<u>394</u>	<u>558</u>	<u>952</u>
Total Members Not Retired	1,641	4,467	6,108
<b><u>Retired Members and Beneficiaries</u></b>			
Retired Members and Contingent Annuitants	964	2,505	3,469
Survivors	44	258	302
Disabled Members	<u>77</u>	<u>178</u>	<u>255</u>
Total Retired Members and Beneficiaries	<u>1,085</u>	<u>2,941</u>	<u>4,026</u>
<b><u>Total Membership</u></b>	2,726	7,408	10,134



**RETIRED MEMBERS AND BENEFICIARIES**  
**AS OF JANUARY 1, 2006**

<u>Option</u>	<u>Service Benefit</u>	<u>Disability Benefit</u>	<u>Survivor Benefit</u>
0	2,963	214	302
1	133	16	0
2	81	4	0
3	143	11	0
4	141	4	0
5	5	4	0
6	3	2	0
Total	3,469	255	302

<u>Option</u>	<u>Service Benefit</u>	<u>Disability Benefit</u>	<u>Survivor Benefit</u>
0	\$ 56,522,232	\$ 2,085,182	\$ 2,513,081
1	2,034,754	213,149	0
2	1,521,023	68,806	0
3	2,624,097	111,406	0
4	3,145,636	67,894	0
5	112,785	41,823	0
6	32,518	8,917	0
Total	\$ 65,993,048	\$ 2,597,178	\$ 2,513,081

## APPENDIX

### DEFINITIONS OF ACTUARIAL TERMS

Accrued Benefit is the benefit earned by a *participant* as of the date at which the determination is made payable in the form of an annual benefit commencing at *Normal Retirement Age*. The *accrued benefit* also includes the eligibility provisions, factors and optional forms of payment associated with it.

Accumulated Plan Benefits are the *accrued benefits* and any other benefits, whether vested or not, that have been earned by the *participants* covered by the plan as of the date at which the determination is made. These other benefits include any death, early retirement or disability benefits provided under the plan. The *present value* of *accumulated plan benefits* as of the valuation date is determined for purposes of financial reporting.

Actuarial Accrued Liability is equal to the *actuarial present value* of future benefits less the *present value* of future annual *normal costs* (see *Annual Normal Cost*.)

Actuarial Assumptions are the bases for estimates of future events affecting pension costs. These assumptions include projections of mortality, withdrawals, disability, ages at retirement, rates of investment earnings, plan expenses and other relevant factors.

Actuarial Cost Method is the method for allocating the *actuarial present value* of a

pension plan's benefits and expenses to various time periods. The allocation is usually in the form of an *annual normal cost* and *amortization* of an *actuarial accrued liability*. An *actuarial cost method* is also referred to as a "funding method."

Actuarial Gain/(Loss) is the difference between the plan's actual experience and that expected based upon a set of *actuarial assumptions*. It is determined in accordance with a particular *actuarial cost method* for the period between two *actuarial valuation dates*. A gain occurs when the experience of the plan is more favorable (in terms of cost) than the assumptions projected; a loss occurs when experience is less favorable.

*Actuarial gains/(losses)* are also referred to as *experience gains/(losses)*.

Actuarial Present Value -- See *Present Value*.

Actuarial Valuation is the determination, as of a *valuation date*, of the *annual normal cost*, *actuarial accrued liability*, *actuarial value of assets* and related *actuarial present values* for a pension plan.

Actuarial Value of Assets is the value of cash, investments and other property belonging to a pension plan determined by the actuary for the purpose of an *actuarial valuation*.

Amortization is the spreading of a *present value* or a cost over a period of years. A plan's *unfunded actuarial accrued liability* is amortized over a period of years.

Annual Normal Cost is that portion of the *actuarial present value* of pension plan benefits and expenses that is allocated to a valuation year by the *actuarial cost method*. The *annual normal cost* may differ depending upon the *actuarial cost method* used.

#### Contribution Amounts

(a) The *Minimum Contribution\** is the contribution required for a plan year in order to ensure funding which satisfies the funding requirements of *ERISA*. It normally consists of the *annual normal cost* plus the *amortization* payment for the *unfunded actuarial accrued liability* as determined by the *actuarial cost method*. The *Absolute Minimum Contribution* is the contribution required to avoid a *funding deficiency* in the *Funding Standard Account*.

(b) The *Maximum Deduction\** is the largest contribution to the plan which is currently deductible. The law limits how rapidly the *unfunded actuarial accrued liabilities* may be amortized. The *Maximum Deduction* normally consists of the *annual normal cost* plus the *amortization* payment (limit adjustment) based on the shortest period permitted by law.

Credit Balance\* is the cumulative excess of credits over charges to the *Funding Standard Account*.

Current Liability\* means the *present value* of all liabilities to *participants* and beneficiaries under

the plan determined as if the plan terminated and based on the plan's *actuarial assumptions* including reasonable withdrawal and mortality rates. The interest rate used to determine *current liability* must be within a specified permissible range and may or may not equal the actuarial assumed rate of interest for purposes of determining *contribution amounts*.

ERISA is the Employee Retirement Income Security Act of 1974, as amended to date--the primary federal act governing pension and welfare plans.

Fiscal Year is the year on which the plan sponsor maintains its financial records.

Funded means provided by plan assets. A liability is "fully funded" when assets exceed or equal the liability.

Funding Deficiency\* is an excess of cumulative charges over credits in the plan's *Funding Standard Account*. The deficiency must be eliminated, under penalty of an excise tax, unless the Internal Revenue Service grants a funding waiver under special procedures.

Funding Standard Account\* is the account a plan is required to maintain in compliance with the minimum funding standards set by *ERISA*.

Future Service is service with the employer after the *valuation date*.

Maximum / Minimum Deduction\* -- See *Contribution Amounts*.

Member -- See *participant*.

Normal Retirement Age is an age defined in the plan for purposes of establishing when benefits must be paid and the amount of benefit that is to be treated as non-forfeitable.

Normal Retirement Benefit is the benefit payable when it commences at the *normal retirement age*.

Offsettable Bases\* are the charge and credit *amortization* bases which are established as the result of the establishment of the plan and plan amendments. Bases created as a result of *actuarial gains/(losses)* or changes in *actuarial assumptions* are not *offsettable bases*.

Participant is a person covered by a pension plan in accordance with its terms including active participants, retired participants and beneficiaries, vested terminations and vested transfers.

Plan Year is the year on which the plan maintains its financial records.

Present Value is the value of an amount or series of amounts payable at various times, determined as of a given date by the application based on a particular set of *actuarial assumptions*. It is a single sum that reflects the time value of money (through discounts for investment yield) and the probabilities of payment (taking into account death, disability, withdrawal and age at retirement).

Rate of Return is the actual or expected investment income (including interest, dividends, realized gains/(losses) and unrealized

appreciation/(depreciation)) as a percentage of a plan's average assets. The rate can be measured on various bases--for example, an actuarial rate based on the *actuarial value of assets*, a market rate based on the market value of assets, etc.

Unfunded means not provided by the value of assets.

Unfunded Actuarial Accrued Liability is the excess of the *actuarial accrued liability* over the *actuarial value of assets*.

Unfunded Old Liability\* is the *unfunded current liability* of the plan as of the beginning of the first *plan year* beginning after 1987, determined without regard to any plan amendment adopted after October 16, 1987 that increases plan liabilities.

Unfunded Old Liability Amount\* is the amount necessary to amortize the *unfunded old liability* under the plan in equal annual installments over a period of 18 *plan years* beginning with the first *plan year* beginning after 1988.

Valuation -- See *Actuarial Valuation*.

Valuation Date is the date as of which the actuarial status of the plan is determined.

Vested Benefit is a benefit that is not forfeited if the *participant* has a permanent break in service.

\* -- These terms are used primarily for private plans covered by *ERISA*.