# Actuarial Section

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October 27, 2004

Board of Trustees
Teachers' Retirement System of Oklahoma
Oliver Hodge Education Building
2500 N. Lincoln Boulevard, 5th Floor
Oklahoma City, Oklahoma 73105

Dear Members of the Board:

**Subject: Actuarial Valuation as of June 30, 2004**

We certify that the information contained in this report is accurate and fairly presents the actuarial position of the Teachers' Retirement System of Oklahoma (the System) as of June 30, 2004.

All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, the results presented comply with the requirements of the Oklahoma statutes and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board. The undersigned are independent actuaries. They are Enrolled Actuaries and Members of the American Academy of Actuaries, and they are experienced in performing valuations for large public retirement systems. They meet the Qualification Standards of the American Academy of Actuaries.

### *Actuarial Valuation*

The primary purposes of the valuation report are to determine the adequacy of the current employer contribution rate, to describe the current financial condition of the System, and to analyze changes in the System's condition. In addition, the report provides information required by the System in connection with Governmental Accounting Standards Board Statement No. 25 (GASB 25), and it provides various summaries of the data.

Valuations are prepared annually, as of June 30 of each year, the last day of the System's plan and fiscal year.

### *Financing Objectives*

The member, state, federal and local employer contribution rates are established by law. Members contribute 7.00% of covered compensation. The state contributes 3.75% of its revenues from sales taxes, use taxes, corporate income taxes, and individual income taxes. Local employers contribute 7.05% of covered compensation. Additionally, OTRS receives "federal matching contributions" for positions whose funding comes from federal sources or certain grants. The federal matching contribution rate for FY 2005 is 4.5% which matches the FY 2004 rate.

In the fiscal year ending June 30, 2004, the state's contribution plus the federal contribution was equivalent to a contribution of about 5.0% of covered payroll. Combined with the 7.05% employer contribution rate, the employing entities contributed about 12.05% of covered payroll for FY 2004. However, the state's contribution rate as a percent of the specified revenues is scheduled to increase to 4.00% in FY 2006, 4.50% in FY 2007, and 5.00% in FY 2008. Federal contributions should also increase in the same pattern. This should raise the state and federal contributions to 7.1% of covered payroll by the end of the transition period, and should result in a total employer contribution of about 14.15% of covered payroll by FY 2008.

The state, local and federal contributions, when combined with the contributions made by members, are intended to pay for the normal cost and to amortize the unfunded actuarial accrued liability (UAAL).

### *Progress Toward Realization of Financing Objectives*

The UAAL at June 30, 2003 was $5,488 million, and it increased to $7,419 million this year. The funded ratio - actuarial value of assets divided by actuarial accrued liability - decreased from 54.0% to 47.3%.

Last year, the period required to completely amortize the UAAL (the funding period) based on the contribution schedule in effect at that time was 28.7 years, measured from June 30, 2003. This year, the funding period is infinite. The increase in the funding period and the decrease in the funded ratio are due to the impact of adding the 1% cost-of-living increase assumption, recognition of deferred asset losses, and benefit enhancements.

Based on the current statutes for determining the state, federal and employer contribution rates, the UAAL is expected to increase indefinitely without future experience gains or additional funding.

### *Deferred Asset Losses/Gains*

All of the figures above (the UAAL, the funded ratio, and the funding period) are based on actuarial calculations that make use of the actuarial value of assets, not the market value. The actuarial value of assets is based on the market value, but asset gains and losses – earnings greater or less than the 8.00% investment return assumption – are recognized at a rate of 20% per year for five years. The current actuarial value ($6,661 million) is $5.6 million smaller than the market value ($6,666 million). The actuarial value is now almost equal to the market value.

***Benefit Provisions***

The actuarial valuation reflects the benefit provisions as set forth in current statutes, including those adopted in the 2004 legislative session. There were several changes that affected the current valuation

1. An ad hoc benefit increase was granted to retirees and beneficiaries, beginning August 1, 2004, if they had retired on or before June 30, 2003. The benefit increase is based on the current benefit amount and service at retirement except for special retirees who received a 4.0% increase.

2. Members who joined the System on or after July 1, 1992 receive a year of service credit if they accumlate 120 days of unused sick leave. Previously, this was only available to members hired prior to July 1, 1992.

3. Beneficiaries of members hired on or after July 1, 1992 are now eligible to receive an $18,000 lump sum death benefit in addition the member's contribution balance with 100% of credited interest. If the member was eligible for early or normal retirement, the beneficiary may choose the retirement benefit for which the member was eligible in lieu of the contribution balance and the $18,000 lump sum. Previously, the annuity option and $18,000 lump sum were only available to members hired before July 1, 1992.

4. The benefit formula for members hired in FY 1996 at any of the colleges or universities in the Oklahoma State System of Higher Education was changed to 2.0% of final average salary for each year of service. Previously, the formula was 2.0% of salary for service in FY 1996 plus 2.0% of final average salary, computed at retirement, for each year of service earned after June 30, 1996.

5. The formula used to determine benefits accrued for service earned between July 1, 1995 and June 30, 2007, for members employed by a comprehensive university, was modified. Retirees who had service at a comprehensive university after June 30, 1995 will receive a benefit increase because of this formula change, effective as of January 1, 2005. No retroactive increase will be paid to such retirees.

6. The supplemental medical insurance credit is restricted to members who retire with at least 10 years of service credit.

***Assumptions and Methods***

Assumptions are set by the Board of Trustees, taking into account the recommendations of the plan's actuaries. The actuarial assumptions and methods used in this report are changed from last year. The Board adopted a 1.0% cost of living increase assumption to reflect future ad hoc increases. All actuarial assumptions are internally consistent and are reasonably based on the actual experience of the System.

The Retirement Board is required to submit actuarial information about the System to the Oklahoma State Pension Commission. The required information is based on a prescribed set of actuarial assumptions which is different from the assumption set used in preparing the actuarial valuation. This information appears as an addendum to this report in Appendix IV.

### *Data*

Member data for retired, active, and inactive participants was supplied as of June 30, 2004 by the System's staff. We have not subjected this data to any auditing procedures, but have examined the data for reasonableness and consistency with the prior year's data. Asset information was supplied by the auditors and by the System's staff.

### *Attached Schedules*

We prepared all of the schedules and exhibits in this section except for the Schedule of Increases and Decreases of Benefit Recipients which was prepared by the System's staff. We have also prepared the Schedule of Funding Progress and the Schedule of Employer Contributions in the Financial Section. We have prepared the annual actuarial valuations each year, beginning with the one prepared as of June 30, 1989. Information related to earlier actuarial valuations was prepared by the previous actuary for the System.

We thank both the staff and the auditors for their assistance.

Sincerely,
Gabriel, Roeder, Smith & Company

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# Executive Summary

| Item | 2004 | 2003 |
|---|---|---|
| Membership | | |
| • Number of | | |
| - Active members | 81,683 | 83,127 |
| - Retirees and beneficiaries | 39,593 | 38,059 |
| - Inactive, vested | 5,731 | 3,731 |
| - Inactive, nonvested | 7,536 | 9,028 |
| - Total | 134,543 | 133,945 |
| • Payroll | $3,031 million | $3,046 million |
| Statutory contribution rates | | |
| • State (% of tax revenues) | 3.75% | 3.54% |
| • Local district (% of pay) | 7.05% | 7.05% |
| • Member (% of pay) | 7.00% | 7.00% |
| Assets | | |
| • Market value | $6,666 million | $5,614 million |
| • Actuarial value | $6,661 million | $6,437 million |
| • Return on market value | 20.2% | 4.8% |
| • Return on actuarial value | 4.6% | 2.9% |
| • State/local federal contributions | $375 million | $362 million |
| • External cash flow % | (1.1%) | (1.1%) |
| • Ratio of actuarial to market value | 99.9% | 114.7% |
| Actuarial Information | | |
| • Normal cost % | 10.91% | 9.90% |
| • Unfunded actuarial accrued liability (UAAL) | $7,419 million | $5,488 million |
| • Funded ratio | 47.3% | 54.0% |
| • Funding period | infinite | 28.7 years |
| GASB 25 ARC (40-year funding cost) | | |
| • Dollar amount | $722,095,783 | $534,811,845 |
| • Percent of pay | 23.21% | 17.11% |
| Gains/(losses) | | |
| • Asset experience | $(215) million | $(320) million |
| • Liability experience | 6 million | 10 million |
| • Benefit changes | (538) million | 27 million |
| • Assumption changes | (1,056) million | 965 million |
| • Total | $(1,803) million | $682 million |

# Funded Status

Because the employer contribution rates are set by statute, this report determines the funding period required to amortize the Unfunded Actuarial Accrued Liability (UAAL).

The UAAL increased by $1.931 billion, from $5.488 billion to $7.419 billion. The funded ratio – the ratio of the actuarial value of assets to actuarial accrued liability – decreased from 54.0% to 47.3%. The funding period – the number of years that would be required under the current contribution schedule to amortize the UAAL – have gone from 28.7 years to infinite.

These effects, are due to the addition of an assumption that ad hoc cost-of-living increases averaging 1% per year would continue to be granted in the future, benefit enhancements since the prior valuation and recognition of additional deferred asset losses.

OTRS remains among the most poorly funded of all statewide plans. The market value of assets is not large enough to cover all of the liabilities for currently retired members.

The current combined state/local/federal contribution rate of about 12.07% of pay for FY 2004 is not large enough to pay the normal cost and pay the interest on the UAAL. Therefore, negative amortization results. The UAAL is expected to increase indefinitely. See the schedule of projected UAAL's in Table 13. In the absence of significant future gains or funding increases, the current UAAL will never be paid down.

This report also determines the 40-year funding requirement under Section 17-106. This is the contribution required to fund the normal cost and to amortize the UAAL in level installments (not as a level percent of pay) over 40 years. This amount is reported as the Annual Required Contribution (ARC) under GASB 25, and is shown in Table 1.

## Analysis of Changes

*UAAL*

Table 12a shows an analysis of the change in the UAAL. The UAAL, which was $5,488.3 million last year, has increased to $7,419.2 million this year. However, an increase of $147.2 million was expected, since the current statutory employer/state/federal contribution rate is not large enough to pay for the normal cost and for interest on the UAAL. Therefore, negative amortization is expected to occur.

The recognition of prior deferred asset losses also added to the UAAL. The asset loss increased the UAAL by $215.4 million. The loss was due to 80% of the FY 2004 gain being deferred and recognition of an additional 20% of asset losses from FY03, FY02 and FY01. I.e., they are not reflected in the actuarial value of assets. The return on the actuarial value was 4.6%, compared with the assumed 8.00% investment return rate. The actual return on market value was 20.2%. This is the third consecutive year since 1994 that the actuarial return was less than the assumed 8.00% rate.

There was a loss of $1,055.8 million due to the addition of the 1% cost-of-living assumption and a loss of $537.9 million from benefit enhancements, including an ad hoc COLA and changes to the benefit formula for comprehensive university members.

*Funding Period*

The funding period (the period required to amortize the UAAL) increased from 28.7 years to infinite. Without the change to add the 1.00% COLA assumption, the funding period would have increased to 39.7 years. The funding period would have been 30.6 years without the benefit changes. An analysis is shown on Table 12B.

## Actuarial Assumptions and Methods

Appendix III summarizes the actuarial assumptions used to determine the plan's liabilities and the actuarial methods used to determine the normal cost, UAAL and funding period.

The most significant assumptions are the investment return rate (8%), the salary increase rate (averages about 4.7%), the payroll growth rate (3.5%), and the state revenue growth rate (3.5%). There were no changes in actuarial assumptions or methods since last year, except that as a result of a new state law mandate, the Board voted to reinstate the assumption to reflect a 1% annual ad hoc COLA each year in the future. Except for the COLA assumption, actuarial assumptions were last changed in 2001, when the Board adopted changes recommended by the actuary, based on a review of System experience for the five-year period ending June 30, 1999.

When the System's experience does not match the actuarial assumptions, gains or losses arise. These gains and losses result in changes to the UAAL for the System, and in turn they change the funding period.

The method used to determine the normal cost, UAAL, and funding period is the Entry Age actuarial cost method. We continue to believe the Entry Age method is appropriate for the System.

The effect of reinstating the 1.00% COLA assumption is shown in the table below:

| Item | With the 1% COLA Assumption | With No Assumption for Future COLAs |
|---|---|---|
| (1) | (2) | (3) |
| Total normal cost rate | 10.91% | 10.23% |
| UAAL (millions) | $7,419.2 | $6,363.4 |
| Funded Ratio | 47.3% | 51.1% |
| Funding period | infinite | 39.7 years |
| GASB Annual Required Contribution (millions) | $722.1 | $615.5 |
| GASB Annual Required Contribution (percent of pay) | 23.21% | 19.79% |

# Development of Employer Cost

| | | June 30, 2004 (1) | June 30, 2003 (2) |
|---|---|---|---|
| 1. | Payroll | | |
| | a. Supplied by system | $ 3,030,749,000 | $ 3,045,676,600 |
| | b. Adjusted for one year's pay increase | 3,163,354,010 | 3,183,653,000 |
| | c. Adjusted for one year's pay increase with pay caps | 3,110,720,010 | 3,124,896,000 |
| 2. | Present value of future pay (paid monthly, with pay caps) | $ 23,908,170,043 | $ 24,551,829,000 |
| 3. | Normal cost rate (payable monthly) | | |
| | a. Total normal cost rate | 10.91% | 9.90% |
| | b. Less: member rate | (7.00%) | (7.00%) |
| | c. Employer normal cost rate | 3.91% | 2.90% |
| 4. | Actuarial accrued liability for active members | | |
| | a. Present value of future benefits for active members | $ 9,504,824,477 | $ 8,270,876,000 |
| | b. Less: present value of future employer normal costs (Item 3c * Item 2) | (934,809,449) | (712,003,041) |
| | c. Less: present value of future member contributions | (1,673,571,903) | (1,718,628,000) |
| | d. Actuarial accrued liability | $ 6,896,443,125 | $ 5,840,244,959 |
| 5. | Total actuarial accrued liability for: | | |
| | a. Retirees and beneficiaries | $ 6,899,041,564 | $ 5,893,954,300 |
| | b. Inactive members | 284,663,643 | 190,962,430 |
| | c. Active members (Item 4d) | 6,896,443,125 | 5,840,244,959 |
| | d. Total | $ 14,080,148,332 | $ 11,925,161,689 |
| 6. | Actuarial value of assets | $ 6,660,918,318 | $ 6,436,852,137 |
| 7. | Unfunded actuarial accrued liability (UAAL) (Item 5d - Item 6) | $ 7,419,230,014 | $ 5,488,309,552 |
| 8. | Funding period | Infinite | 28.7 years |
| 9. | 40-year amortization cost | | |
| | a. Employer normal cost (Item 1c * 3c) | $ 121,629,152 | $ 90,621,984 |
| | b. Level 40-year amortization of UAAL (payable monthly) | 600,466,631 | 444,189,861 |
| | c. Total | $ 722,095,783 | $ 534,811,845 |
| | d. Contribution as percentage of payroll (9c/1c) | 23.21% | 17.11% |

# Actuarial Present Value of Future Benefits

| | | June 30, 2004<br>(1) | June 30, 2003<br>(2) |
|---|---|---|---|
| 1. | Active members | | |
| | a. Service retirement benefits | $ 8,362,257,164 | $ 7,163,826,000 |
| | b. Deferred termination benefits | 393,434,985 | 84,266,000 |
| | c. Refunds | 28,688,914 | 408,820,000 |
| | d. Death benefits | 128,975,196 | 42,181,000 |
| | e. Disability retirement benefits | 200,157,480 | 177,417,000 |
| | f. Supplemental medical insurance | 361,369,777 | 365,119,000 |
| | g. $5,000 post-retirement death benefit | 29,940,961 | 29,247,000 |
| | h. Total | $ 9,504,824,477 | $ 8,270,876,000 |
| 2. | Retired members | | |
| | a. Service retirements | $ 6,139,620,212 | $ 5,202,337,800 |
| | b. Disability retirements | 113,425,831 | 97,501,200 |
| | c. Beneficiaries | 181,223,898 | 146,886,900 |
| | d. Supplemental medical insurance | 400,231,824 | 384,898,400 |
| | e. $5,000 post-retirement death benefit | 64,539,799 | 62,330,000 |
| | f. Total | $ 6,899,041,564 | $ 5,893,954,300 |
| 3. | Inactive members | | |
| | a. Vested terminations | $ 241,792,395 | $ 124,116,565 |
| | b. Nonvested terminations | 21,707,856 | 45,579,690 |
| | c. Suspense fund | 21,163,392 | 21,266,175 |
| | d. Total | $ 284,663,643 | $ 190,962,430 |
| 4. | Total actuarial present value of future benefits | $ 16,688,529,684 | $ 14,355,792,730 |

Note: Refund benefits for members currently active who terminate with a vested benefit in the future are included in Item 1.b. as of June 30, 2004, but were classified in Item 1.c. as of June 30, 2003. Similarly, death refunds have been reclassified from Item 1.c. as of June 30, 2003 to Item 1.d. as of June 30, 2004

# Analysis of Normal Cost

| | June 30, 2004<br>(1) | June 30, 2003<br>(2) |
|---|---|---|
| 1. Gross normal cost rate (payable monthly) | | |
| a. Retirement benefits | 8.10% | 7.25% |
| b. Deferred termination benefits | 1.08% | 0.21% |
| c. Refunds | 0.90% | 1.77% |
| d. Supplemental medical insurance | 0.33% | 0.35% |
| e. $5,000 Post-retirement death benefits | 0.04% | 0.04% |
| f. Death Benefits | 0.15% | 0.00% |
| g. Disability retirement benefits | 0.31% | 0.28% |
| h. Total | 10.91% | 9.90% |
| 2. Less: member rate | 7.00% | 7.00% |
| 3. Employer normal cost rate | 3.91% | 2.90% |

Note: Some items previously classified as refunds, such as refunds paid to vested terminated employees and death refunds have been reclassified. See note on Table 2.

## Schedule of Funding Progress
## (As required by GASB #25)

| Valuation Date | Actuarial Value of Assets (AVA) | Actuarial Accrued Liability (AAL) | Unfunded Actuarial Accrued Liability (UAAL) (3) - (2) | Funded Ratio (2)/(3) | Annual Covered Payroll | UAAL as % of Payroll (4)/(6) |
|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| June 30, 1993 | $2,569.2 | $6,456.9 | $3,887.7 | 39.8% | $2,122.0 | 183.2% |
| June 30, 1994 | $2,697.2 | $6,736.0 | $4,038.8 | 40.0% | $2,189.5 | 184.5% |
| June 30, 1995 | $2,869.9 | $7,480.4 | $4,610.5 | 38.4% | $2,336.1 | 197.4% |
| June 30, 1996 | $3,103.0 | $7,843.2 | $4,740.2 | 39.6% | $2,375.5 | 199.5% |
| June 30, 1997 | $3,544.9 | $8,257.2 | $4,712.3 | 42.9% | $2,428.7 | 194.0% |
| June 30, 1998 | $4,085.0 | $8,891.3 | $4,806.3 | 45.9% | $2,537.7 | 189.4% |
| June 30, 1999 | $4,708.0 | $9,458.6 | $4,750.5 | 49.8% | $2,648.4 | 179.4% |
| June 30, 2000 | $5,373.5 | $10,009.2 | $4,635.7 | 53.7% | $2,738.3 | 169.3% |
| June 30, 2001 | $5,959.0 | $11,591.1 | $5,632.1 | 51.4% | $2,990.5 | 188.3% |
| June 30, 2002 | $6,310.9 | $12,275.9 | $5,965.0 | 51.4% | $3,047.1 | 195.8% |
| June 30, 2003 | $6,436.9 | $11,925.2 | $5,488.3 | 54.0% | $3,045.7 | 180.2% |
| June 30, 2004 | $6,660.9 | $14,080.1 | $7,419.2 | 47.3% | $3,030.7 | 244.8% |

Note : Dollar amounts in millions

The results for June 30, 2001, June 30, 2002, and June 30, 2004 reflect an assumed 1% average future COLA.

## Schedule of Employer Contributions
## (As required by GASB #25)

| Year Ending June 30, | Annual Required Contribution | Percentage Contributed |
|---|---|---|
| (1) | (2) | (3) |
| 1996 | $434,728,781 | 40.8% |
| 1997 | $446,459,961 | 62.0% |
| 1998 | $446,219,296 | 59.1% |
| 1999 | $456,864,002 | 53.5% |
| 2000 | $455,265,033 | 60.6% |
| 2001 | $451,463,258 | 72.7% |
| 2002 | $556,201,571 | 65.6% |
| 2003 | $585,168,488 | 61.9% |
| 2004 | $534,811,845 | 70.2% |

# Notes to Required Supplementary Information
# (as required by GASB #25)

The information presented in the required supplementary schedules was determined as part of the actuarial valuations at the dates indicated. Additional information as of the latest actuarial valuation follows:

| | |
|---|---|
| Valuation date | June 30, 2004 |
| Actuarial cost method | Entry Age Normal |
| Amortization method | Level dollar, open |
| Remaining amortization period | 40 years |
| Asset valuation method | 5-year smoothed market |
| Actuarial assumptions: | |
| Investment rate of return * | 8.00% |
| Projected salary increase * | 4.25% to 7.00% |
| * Includes inflation at: | 3.00% |
| Cost of living adjustment | 1.00% |

# Membership Data

| | | June 30, 2004 (1) | June 30, 2003 (2) |
|---|---|---|---|
| 1. | Active members | | |
| | a. Number | 81,683 | 83,127 |
| | b. Total payroll supplied by System | $ 3,030,749,000 | $ 3,045,676,600 |
| | c. Average salary | $ 37,104 | $ 36,639 |
| | d. Average age | 45.6 | 45.3 |
| | e. Average service | 11.8 | 11.5 |
| 2. | Vested inactive members | | |
| | a. Number | 5,731 | 3,731 |
| | b. Total annual deferred benefits | $ 41,353,072 | $ 20,055,414 |
| | c. Average annual deferred benefit | $ 7,216 | $ 5,375 |
| 3. | Nonvested inactive members | | |
| | a. Number | 7,536 | 9,028 |
| | b. Member contributions with interest due | $ 21,707,856 | $ 45,579,690 |
| | c. Average refund due | $ 2,881 | $ 5,049 |
| 4. | Service retirees | | |
| | a. Number | 36,508 | 35,073 |
| | b. Total annual benefits[1] | $ 587,867,333 | $ 560,383,156 |
| | c. Average annual benefit | $ 16,102 | $ 15,978 |
| 5. | Special service retirees | | |
| | a. Number | 201 | 264 |
| | b. Total annual benefits[1] | $ 433,046 | $ 569,516 |
| | c. Average annual benefit | $ 2,154 | $ 2,157 |
| 6. | Disabled retirees | | |
| | a. Number | 1,327 | 1,273 |
| | b. Total annual benefits[1] | $ 13,479,454 | $ 12,871,448 |
| | c. Average annual benefit | $ 10,158 | $ 10,111 |
| 7. | Beneficiaries and spouses | | |
| | a. Number | 1,557 | 1,449 |
| | b. Total annual benefits[1] | $ 20,049,437 | $ 18,085,566 |
| | c. Average annual benefit | $ 12,877 | $ 12,481 |

[1] Benefit amounts exclude the supplemental medical insurance payment

*TABLE 5b*

## Historical Summary of Active Member Data

| | Active Members | | Covered Payroll | | Average Salary | | | |
|---|---|---|---|---|---|---|---|---|
| Valuation as of June 30, | Number | Percent Increase | Amount in $ Millions | Percent Increase | $ Amount | Percent Increase | Average Age | Average Service |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| 1990 | 69,062 | 2.0% | 1,745 | 8.4% | 25,265 | 5.0% | 43.1 | 10.5 |
| 1991 | 71,936 | 4.2% | 1,921 | 10.1% | 26,709 | 5.7% | 43.1 | 10.5 |
| 1992 | 73,568 | 2.3% | 2,002 | 4.2% | 27,218 | 1.9% | 43.3 | 10.6 |
| 1993 | 75,599 | 2.8% | 2,122 | 6.0% | 28,069 | 3.1% | 43.4 | 10.7 |
| 1994 | 76,280 | 0.9% | 2,190 | 3.2% | 28,704 | 2.3% | 43.6 | 10.8 |
| 1995 | 79,044 | 3.6% | 2,336 | 6.7% | 29,555 | 3.0% | 43.6 | 10.7 |
| 1996 | 78,942 | (0.1%) | 2,375 | 1.7% | 30,091 | 1.8% | 44.0 | 11.1 |
| 1997 | 79,510 | 0.7% | 2,429 | 2.3% | 30,546 | 1.5% | 44.2 | 11.2 |
| 1998 | 80,578 | 1.3% | 2,538 | 4.5% | 31,493 | 3.1% | 44.3 | 11.2 |
| 1999 | 81,851 | 1.6% | 2,648 | 4.3% | 32,356 | 2.7% | 44.4 | 11.2 |
| 2000 | 83,024 | 1.4% | 2,738 | 3.4% | 32,982 | 1.9% | 44.5 | 11.0 |
| 2001 | 84,387 | 1.6% | 2,991 | 9.2% | 35,438 | 7.4% | 44.7 | 11.0 |
| 2002 | 85,366 | 1.2% | 3,047 | 1.9% | 35,695 | 0.7% | 44.9 | 11.1 |
| 2003 | 83,127 | (2.6%) | 3,046 | (0.0%) | 36,639 | 2.6% | 45.3 | 11.5 |
| 2004 | 81,683 | (1.7%) | 3,031 | (0.5%) | 37,104 | 1.3% | 45.6 | 11.8 |

# Plan Net Assets
## (Assets at Market or Fair Value)

| Item | Valuation as of June 30, 2004 | Valuation as of June 30, 2003 |
|---|---|---|
| (1) | (2) | (3) |
| 1. Cash and cash equivalents | $ 6,466,943 | $ 6,427,508 |
| 2. Receivables | | |
| a. Employer and member contributions | $ 33,490,888 | $ 32,833,301 |
| b. State contribution | 13,848,383 | 13,113,939 |
| c. Net investment income and other accruals | (104,346,915) | (240,894,169) |
| d. Total receivables | $ (57,007,644) | $ (194,946,929) |
| 3. Investments | | |
| a. Invested cash and other | $ 514,478,967 | $ 395,517,841 |
| b. Domestic equities | 3,605,558,746 | 3,179,821,394 |
| c. International equities | 1,316,719,833 | 930,793,198 |
| d. Domestic fixed income | 1,529,924,307 | 1,516,394,606 |
| e. International fixed income | 96,309,754 | 85,912,553 |
| f. Real estate, furniture & equipment | 287,256 | 309,543 |
| g. Total investments | $ 7,063,278,863 | $ 6,108,749,135 |
| 4. Total assets | $ 7,012,738,162 | $ 5,920,229,714 |
| 5. Liabilities | | |
| a. Benefits payable | $ 51,839,878 | $ 49,354,141 |
| b. Insurance premium payable | 2,584,929 | 2,463,271 |
| c. Expenses | 6,535,487 | 5,098,874 |
| d. Total liabilities | $ 60,960,294 | $ 56,916,286 |
| 6. Net assets available (Item 4 - Item 5) | $ 6,951,777,868 | $ 5,863,313,428 |
| 7. Less: Teachers' Deposit Fund | (285,288,429) | (249,249,470) |
| 8. Net assets available for OTRS benefits | $ 6,666,489,439 | $ 5,614,063,958 |

## Distribution of Assets at Market Value
## (Percentage of Total Investments)

| | | Valuation as of | |
|---|---|---|---|
| | Item | June 30, 2004 | June 30, 2003 |
| | (1) | (2) | (3) |
| a. | Invested cash and other | 7.28% | 6.47% |
| b. | Domestic equities | 51.05% | 52.05% |
| c. | International equities | 18.64% | 15.24% |
| d. | Domestic fixed income | 21.66% | 24.82% |
| e. | International fixed income | 1.36% | 1.41% |
| f. | Real estate, furniture & equipment | 0.01% | 0.01% |
| g. | Total investments | 100.00% | 100.00% |

## Reconciliation of Plan Net Assets

| | Year Ending June 30, 2004 (1) | Year Ending June 30, 2003 (2) |
|---|---|---|
| 1. Market value of assets at beginning of year, net of Teachers' Deposit Fund | $ 5,614,063,958 | $ 5,417,892,079 |
| 2. Revenue for the year | | |
| a. Contributions | | |
| i. Member contributions, including state credit | $ 233,121,332 | $ 220,503,412 |
| ii. Federal matching funds | 13,042,355 | 14,267,487 |
| iii. State contribution | 143,100,533 | 128,879,976 |
| iv. Employer/district contributions | 219,126,867 | 218,841,977 |
| v. Total | $ 608,391,087 | $ 582,492,852 |
| b. Net investment earnings | | |
| i. Interest, dividends and other income | $ 150,983,793 | $ 166,272,272 |
| ii. Net appreciation/(depreciation) | 1,048,927,967 | 115,804,022 |
| iii. Less: investment expenses | (21,573,692) | (16,040,134) |
| iv Less: transfers to Teachers' Deposit Fund | (49,511,384) | (9,196,843) |
| v Net investment earnings | $ 1,128,826,684 | $ 256,839,317 |
| c Total revenue | $ 1,737,217,771 | $ 839,332,169 |
| 3. Expenditures for the year | | |
| a. Refunds | $ 33,662,984 | $ 30,176,320 |
| b. Benefit payments, including insurance payments | 647,277,986 | 608,976,123 |
| c. Administrative expenses | 3,851,320 | 4,007,847 |
| d. Total expenditures | $ 684,792,290 | $ 643,160,290 |
| 4. Increase in net assets (Item 2 - Item 3) | $ 1,052,425,481 | $ 196,171,879 |
| 5. Market value of assets at end of year, net of Teachers' Deposit Fund (Item 1 + Item 4) | $ 6,666,489,439 | $ 5,614,063,958 |

## Development of Actuarial Value of Assets

| | | Year Ending June 30, 2004 |
|---|---|---|
| 1. | Market value of assets at beginning of year | $ 5,614,063,958 |
| 2. | Net new investments | |
| | a. Contributions | $ 608,391,087 |
| | b. Benefits paid | (647,277,986) |
| | c. Refunds | (33,662,984) |
| | d. Subtotal | (72,549,883) |
| 3. | Market value of assets at end of year | $ 6,666,489,439 |
| 4. | Net earnings (3-1-2) | $ 1,124,975,364 |
| 5. | Assumed investment return rate | 8.00% |
| 6. | Expected return | $ 446,223,121 |
| 7. | Excess return (4-6) | $ 678,752,243 |
| 8. | Excess return on assets for last four years : | |

| | Period End | Excess Return (2) | Percent Deferred (3) | Deferred Amount (4) |
|---|---|---|---|---|
| a. | June 30, 2001 | (609,875,785) | 20% | $ (121,975,157) |
| b. | June 30, 2002 | (771,138,521) | 40% | (308,455,408) |
| c. | June 30, 2003 | (178,333,513) | 60% | (107,000,108) |
| d. | June 30, 2004 | 678,752,243 | 80% | 543,001,794 |
| | | | | $ 5,571,121 |

| | | |
|---|---|---|
| 9. | Actuarial value of assets (Item 3 - Item 8) | $ 6,660,918,318 |
| 10. | Actuarial value as percentage of market value | 99.9% |

# Estimation of Yields

| | | Year Ending | |
|---|---|---|---|
| | | June 30, 2004 | June 30, 2003 |
| | | (1) | (2) |
| A. | Market value yield | | |
| | 1. Beginning of year market assets | $ 5,614,063,958 | $ 5,417,892,079 |
| | 2. Net investment income (including realized and unrealized gains and losses) | $ 1,128,826,684 | $ 256,839,317 |
| | 3. End of year market assets | $ 6,666,489,439 | $ 5,614,063,958 |
| | 4. Estimated dollar weighted market value yield | 20.2% | 4.8% |
| B. | Actuarial value yield | | |
| | 1. Beginning of year actuarial assets | $ 6,436,852,137 | $ 6,310,930,799 |
| | 2. Actuarial return | $ 296,616,064 | $ 182,580,929 |
| | 3. End of year actuarial assets | $ 6,660,918,318 | $ 6,436,852,137 |
| | 4. Estimated actuarial value yield | 4.6% | 2.9% |

## History of Cash Flow

| Year Ending June 30, | Contributions | Benefit Payments | Refunds | Administrative Expenses | Total | External Cash Flow for the Year[1] | Market Value of Assets | External Cash Flow as Percent of Market Value |
|---|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| 1995 | 307.1 | (377.5) | (14.2) | (2.2) | (393.9) | (86.8) | 2,991 | (2.9%) |
| 1996 | 321.0 | (396.1) | (18.1) | (2.2) | (416.4) | (95.4) | 3,325 | (2.9%) |
| 1997 | 443.2 | (418.0) | (20.1) | (2.4) | (440.5) | 2.7 | 4,041 | 0.1% |
| 1998 | 444.8 | (439.2) | (23.0) | (3.3) | (465.5) | (20.7) | 4,884 | (0.4%) |
| 1999 | 435.0 | (479.6) | (24.5) | (2.7) | (506.9) | (71.8) | 5,387 | (1.3%) |
| 2000 | 471.8 | (500.3) | (29.5) | (3.0) | (532.7) | (60.9) | 5,890 | (1.0%) |
| 2001 | 544.8 | (537.3) | (31.4) | (3.5) | (572.2) | (27.4) | 5,732 | (0.5%) |
| 2002 | 591.5 | (561.2) | (26.7) | (3.9) | (591.9) | (0.4) | 5,418 | (0.0%) |
| 2003 | 582.5 | (609.0) | (30.2) | (4.0) | (643.2) | (60.7) | 5,614 | (1.1%) |
| 2004 | 608.4 | (647.3) | (33.7) | (3.9) | (684.9) | (76.5) | 6,666 | (1.1%) |

Dollar amounts in millions

[1] Column (7) = Column (2) + Column (6).

# Investment Experience Gain or Loss

| Item | Year Ending June 30, 2004 | Year Ending June 30, 2003 |
|---|---|---|
| (1) | (2) | (3) |
| 1. Actuarial assets, beginning of year | $ 6,436,852,137 | $ 6,310,930,799 |
| 2. Contributions during year | $ 608,391,087 | $ 582,492,852 |
| 3. Benefits and refunds paid | $ (680,940,970) | $ (639,152,443) |
| 4. Assumed net investment income at 8% | | |
| a. Beginning of year assets | $ 514,948,171 | $ 504,874,464 |
| b. Contributions | 24,335,643 | 23,299,714 |
| c. Benefits and refunds paid | (27,237,639) | (25,566,098) |
| d. Total | $ 512,046,175 | $ 502,608,080 |
| 5. Expected actuarial assets, end of year (Sum of items 1 through 4) | $ 6,876,348,429 | $ 6,756,879,288 |
| 6. Actual actuarial assets, end of year | $ 6,660,918,318 | $ 6,436,852,137 |
| 7. Asset gain (loss) for year (Item 6 - Item 5) | $ (215,430,111) | $ (320,027,151) |

## Total Experience Gain or Loss

| Item | Year Ending June 30, 2004 | Year Ending June 30, 2003 |
|---|---|---|
| (1) | (2) | (3) |
| A Calculation of total actuarial gain or loss | | |
| 1. Unfunded actuarial accrued liability (UAAL), previous year | $ 5,488,309,552 | $ 5,964,984,106 |
| 2. Normal cost for the year (employer and employee) | $ 309,364,704 | $ 320,935,124 |
| 3. Less: total contributions for the year | $ (608,391,087) | $ (582,492,852) |
| 4. Interest at 8 % | | |
| a. On UAAL | $ 439,064,764 | $ 477,198,728 |
| b. On normal cost | 12,374,588 | 12,837,405 |
| c. On contributions | (24,335,643) | (23,299,714) |
| d. Total | $ 427,103,709 | $ 466,736,419 |
| 5. Expected UAAL (Sum of Items 1 - 4) | $ 5,616,386,878 | $ 6,170,162,797 |
| 6. Actual UAAL | $ 7,419,230,014 | $ 5,488,309,552 |
| 7. Total gain (loss) for the year (Item 5 - Item 6) | $ (1,802,843,136) | $ 681,853,245 |
| B. Source of gains and losses | | |
| 8. Asset gain (loss) for the year | $ (215,430,111) | $ (320,027,151) |
| 9. Liability gain (loss) for the year | 6,297,973 | 9,551,020 |
| 10. Legislation changes | (537,905,575) | 26,854,459 |
| 11. Assumption changes (change from/to 1% COLA assumption) | (1,055,805,423) | 965,474,917 |
| 13. Total | $ (1,802,843,136) | $ 681,853,245 |

# Analysis of Change in Unfunded Actuarial Accrued Liability (UAAL)

| | Basis | June 30, 2004 UAAL (in $ Millions) | June 30, 2003 UAAL (in $ Millions) |
|---|---|---|---|
| 1. | From prior valuation | $ 5,488.3 | $ 5,965.0 |
| 2. | Impact of changes, gains and losses | | |
| a. | Expected increase based on statutory contributions and passage of time | 147.2 | 204.8 |
| b. | Liability (gain)/loss | (6.3) | (9.5) |
| c. | Asset (gain)/loss | 215.4 | 320.0 |
| d. | Impact of actual ctrb greater than expected under schedule | (19.1) | 0.4 |
| e. | Legislative changes | 537.9 | (26.9) |
| f. | Assumption changes (Change from/to 1% COLA assumption) | 1,055.8 | (965.5) |
| h. | Total | 1,930.9 | (476.7) |
| 3. | Current UAAL (1+2h) | $ 7,419.2 | $ 5,488.3 |

## Analysis of Change in Funding Period

| | Basis | | June 30, 2004 Funding Period (Years) | June 30, 2003 Funding Period (Years) |
|---|---|---|---|---|
| 1. | Funding period (years) from prior valuation | | 28.7 | 41.0 |
| 2. | Impact of changes, gains and losses | | | |
| | a. | Expected (decrease)/increase | -1.0 | -1.0 |
| | b. | Impact of payroll and revenue growth different than expected (including change in State's and federal/grant contributions) | 1.0 | 0.2 |
| | c. | Impact of contributions greater than expected | -0.2 | 0.0 |
| | d. | Impact of asset (gain)/loss | 2.2 | 6.1 |
| | e. | Impact of liability (gain)/loss | -0.1 | -0.2 |
| | f. | Impact of legislative changes | 9.1 | 3.3 |
| | g. | Impact of assumption changes | Infinite | -20.7 |
| | h. | Total | Infinite | -12.3 |
| 3. | Current funding period (years) (1+2j) | | Infinite | 28.7 |

# Projection of UAAL (cont.)

| Valuation Date (1) | UAAL (Millions) (2) |
|---|---|
| June 30, 2025 | $ 15,889.9 |
| June 30, 2026 | 16,473.5 |
| June 30, 2027 | 17,079.7 |
| June 30, 2028 | 17,709.5 |
| June 30, 2029 | 18,363.9 |
| June 30, 2030 | 19,044.0 |
| June 30, 2031 | 19,750.9 |
| June 30, 2032 | 20,485.8 |
| June 30, 2033 | 21,249.8 |
| June 30, 2034 | 22,044.4 |
| June 30, 2035 | 22,870.8 |
| June 30, 2036 | 23,730.6 |
| June 30, 2037 | 24,625.1 |
| June 30, 2038 | 25,556.2 |
| June 30, 2039 | 26,525.3 |
| June 30, 2040 | 27,534.3 |
| June 30, 2041 | 28,585.1 |
| June 30, 2042 | 29,679.7 |
| June 30, 2043 | 30,820.0 |
| June 30, 2044 | 32,008.4 |
| June 30, 2045 | 33,247.2 |
| June 30, 2046 | 34,538.9 |
| June 30, 2047 | 35,885.9 |
| June 30, 2048 | 37,291.2 |
| June 30, 2049 | 38,757.6 |
| June 30, 2050 | 40,288.2 |

# Projection of UAAL

| | | Valuation Date | | UAAL (Millions) |
|---|---|---|---|---|
| | | (1) | | (2) |
| A. | Actual | June 30, 1993 | $ | 3,887.7 |
| | | June 30, 1994 | | 4,038.8 |
| | | June 30, 1995 | | 4,610.5 |
| | | June 30, 1996 | | 4,740.2 |
| | | June 30, 1997 | | 4,712.3 |
| | | June 30, 1998 | | 4,806.2 |
| | | June 30, 1999 | | 4,750.5 |
| | | June 30, 2000 | | 4,635.7 |
| | | June 30, 2001 | | 5,632.1 |
| | | June 30, 2002 | | 5,965.0 |
| | | June 30, 2003 | | 5,488.3 |
| | | June 30, 2004 | | 7,419.2 |
| B. | Projected | June 30, 2005 | $ | 7,741.0 |
| | | June 30, 2006 | | 8,064.4 |
| | | June 30, 2007 | | 8,378.7 |
| | | June 30, 2008 | | 8,678.8 |
| | | June 30, 2009 | | 8,990.0 |
| | | June 30, 2010 | | 9,312.7 |
| | | June 30, 2011 | | 9,647.3 |
| | | June 30, 2012 | | 9,994.3 |
| | | June 30, 2013 | | 10,354.2 |
| | | June 30, 2014 | | 10,727.5 |
| | | June 30, 2015 | | 11,114.7 |
| | | June 30, 2016 | | 11,516.4 |
| | | June 30, 2017 | | 11,933.2 |
| | | June 30, 2018 | | 12,365.7 |
| | | June 30, 2019 | | 12,814.6 |
| | | June 30, 2020 | | 13,280.4 |
| | | June 30, 2021 | | 13,763.9 |
| | | June 30, 2022 | | 14,265.8 |
| | | June 30, 2023 | | 14,786.9 |
| | | June 30, 2024 | | 15,328.0 |

## Solvency Test

Actuarial Accrued Liability and Percent of Active Member Payroll for:

| | Accumulated Member Contributions Including Interest | | Retirees and Beneficiaries Currently Receiving Benefits | | Terminated Employees Not Yet Receiving Benefits | | Employer Financed Portion of Vested and Nonvested Benefits | | | Portion of Accrued Liabilities Covered by Assets | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| June 30, | (1) | % of Payroll | (2) | % of Payroll | (3) | % of Payroll | (4) | % of Payroll | Actuarial Value of Assets | (1) | (2) | (3) | (4) |
| 1994 | 1,467.9 | 67% | 3,187.5 | 146% | 102.5 | 5% | 1,978.1 | 90% | 2,697.2 | 100% | 39% | 0% | 0% |
| 1995 | 1,628.4 | 70% | 3,409.3 | 146% | 96.7 | 4% | 2,346.0 | 100% | 2,869.9 | 100% | 36% | 0% | 0% |
| 1996 | 1,799.1 | 76% | 3,586.3 | 151% | 106.7 | 4% | 2,351.1 | 99% | 3,103.0 | 100% | 36% | 0% | 0% |
| 1997 | 1,967.9 | 81% | 3,797.8 | 156% | 114.4 | 5% | 2,377.1 | 98% | 3,544.9 | 100% | 42% | 0% | 0% |
| 1998 | 2,143.4 | 84% | 4,195.9 | 165% | 125.7 | 5% | 2,426.3 | 96% | 4,085.0 | 100% | 46% | 0% | 0% |
| 1999 | 2,330.6 | 88% | 4,415.0 | 167% | 136.4 | 5% | 2,576.5 | 97% | 4,708.0 | 100% | 54% | 0% | 0% |
| 2000 | 2,518.2 | 92% | 4,803.8 | 175% | 151.1 | 6% | 2,536.1 | 93% | 5,373.5 | 100% | 59% | 0% | 0% |
| 2001 | 2,728.4 | 91% | 5,459.6 | 183% | 173.1 | 6% | 3,230.0 | 108% | 5,959.0 | 100% | 59% | 0% | 0% |
| 2002 | 2,934.3 | 96% | 5,959.9 | 196% | 184.9 | 6% | 3,196.8 | 105% | 6,310.9 | 100% | 57% | 0% | 0% |
| 2003 | 3,072.8 | 101% | 5,894.0 | 194% | 191.0 | 6% | 2,767.4 | 91% | 6,436.9 | 100% | 57% | 0% | 0% |
| 2004 | 3,212.9 | 106% | 6,899.0 | 228% | 284.7 | 9% | 3,683.6 | 122% | 6,660.9 | 100% | 50% | 0% | 0% |

Note : Dollar amounts in millions

# Distribution of Active Members by Age and by Years of Service
## As of 06/30/2004

| | Years of Credited Service | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35 & Over | Total |
| Attained Age | Count & Avg. Comp. | Count & Avg. Comp. | Count & Avg. Comp. | Count & Avg. Comp. | Count & Avg. Comp. | Count & Avg. Comp. | Count & Avg. Comp. | Count & Avg. Comp. | Count & Avg. Comp. | Count & Avg. Comp. | Count & Avg. Comp. | Count & Avg. Comp. | Count & Avg. Comp. |
| Under 25 | 652 | 163 | 51 | 20 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 890 |
| | $24,015 | $24,694 | $20,448 | $20,965 | $25,497 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $23,873 |
| 25-29 | 1,353 | 1,146 | 1,191 | 851 | 669 | 334 | 1 | 0 | 0 | 0 | 0 | 0 | 5,545 |
| | $27,327 | $29,337 | $29,650 | $30,861 | $31,858 | $32,616 | $5,340 | $0 | $0 | $0 | $0 | $0 | $29,645 |
| 30-34 | 925 | 810 | 868 | 920 | 962 | 3,414 | 380 | 1 | 0 | 0 | 0 | 0 | 8,280 |
| | $28,072 | $31,508 | $32,990 | $31,223 | $33,120 | $34,781 | $35,729 | $37,668 | $0 | $0 | $0 | $0 | $32,979 |
| 35-39 | 840 | 681 | 800 | 719 | 691 | 2,415 | 2,682 | 316 | 1 | 0 | 0 | 0 | 9,145 |
| | $26,209 | $31,685 | $32,429 | $33,115 | $33,737 | $36,415 | $37,579 | $39,096 | $38,004 | $0 | $0 | $0 | $34,749 |
| 40-44 | 854 | 704 | 859 | 790 | 754 | 2,584 | 2,313 | 2,200 | 429 | 0 | 0 | 0 | 11,487 |
| | $24,689 | $29,482 | $30,917 | $32,686 | $32,689 | $35,560 | $38,801 | $40,943 | $42,791 | $0 | $0 | $0 | $35,600 |
| 45-49 | 690 | 546 | 666 | 652 | 699 | 2,579 | 2,623 | 1,808 | 2,705 | 617 | 1 | 0 | 13,586 |
| | $25,324 | $29,191 | $31,849 | $30,587 | $33,341 | $34,319 | $38,498 | $42,114 | $44,401 | $45,663 | $82,596 | $0 | $37,676 |
| 50-54 | 535 | 424 | 577 | 527 | 565 | 2,229 | 2,614 | 2,337 | 2,090 | 2,704 | 443 | 0 | 15,045 |
| | $27,351 | $30,171 | $31,627 | $33,987 | $32,505 | $35,415 | $37,153 | $41,031 | $46,735 | $47,633 | $49,818 | $0 | $40,043 |
| 55-59 | 354 | 267 | 401 | 309 | 328 | 1,432 | 1,937 | 1,935 | 1,628 | 1,220 | 1,292 | 114 | 11,217 |
| | $25,549 | $30,245 | $32,746 | $33,051 | $36,081 | $36,579 | $36,819 | $39,532 | $45,519 | $52,002 | $52,100 | $54,413 | $41,326 |
| 60-64 | 158 | 110 | 139 | 130 | 122 | 645 | 918 | 932 | 618 | 464 | 389 | 324 | 4,949 |
| | $24,267 | $26,973 | $28,356 | $27,510 | $27,718 | $34,708 | $36,473 | $37,458 | $43,999 | $54,246 | $64,341 | $63,226 | $41,696 |
| 65 & Over | 64 | 68 | 56 | 59 | 45 | 217 | 289 | 232 | 141 | 119 | 99 | 150 | 1,539 |
| | $15,261 | $18,711 | $20,702 | $24,008 | $21,101 | $26,131 | $32,055 | $36,789 | $42,429 | $48,081 | $69,799 | $88,382 | $39,711 |
| Total | 6,425 | 4,919 | 5,608 | 4,977 | 4,839 | 15,849 | 13,757 | 9,761 | 7,612 | 5,124 | 2,224 | 588 | 81,683 |
| | $26,095 | $29,792 | $31,238 | $31,766 | $32,873 | $35,166 | $37,528 | $40,410 | $45,120 | $49,045 | $54,588 | $67,935 | $37,104 |

# Summary of Actuarial Assumptions and Methods
## (Adopted Effective June 30, 2001, and Amended Effective June 30, 2003)

*I* *Valuation Date*

The valuation date is June 30th of each plan year. This is the date as of which the actuarial present value of future benefits and the actuarial value of assets are determined.

*II* *Actuarial Cost Method*

Because the employer contribution rate is set by statute, the actuarial valuation is used to determine the funding period--the number of years required to amortize the Unfunded Actuarial Accrued Liability (UAAL). It is also used to calculate the Annual Required Contribution (ARC) as defined by GASB 25.

The actuarial valuation uses the Entry Age actuarial cost method. Under this method, a normal cost rate is first determined. This is the contribution rate (level as a percentage of pay) required to provide the benefits of the average new member. The normal cost rate consists of two pieces: (i) the member's own contribution rate, and (ii) a portion of the employer contribution rate. This second piece is called the employer normal cost rate.

The total normal cost is determined by dividing the present value of future benefits for a hypothetical group of new members (based on actual new entrants during the 1999 fiscal year) by the present value of their future pay. In calculating the benefits for this group, all changes in provisions or member contribution rates scheduled to occur in the future are assumed to already be in effect.

Next, the UAAL is determined. This is the liability for future benefits which is in excess of (i) the actuarial value of assets, and (ii) the present value of future normal costs. The employer contribution that is not used for the employer normal cost is applied to amortize the UAAL.

The funding period is calculated as the number of years required to fully amortize the UAAL, assuming that the System's payroll increases at the payroll growth rate and the State's contribution increases at the State's revenue growth rate. Both employer and member contributions are assumed to be made monthly.

The Entry Age actuarial cost method is an "immediate gain" method (i.e., experience gains and losses are separately identified as part of the UAAL). However, they are amortized over the same period applied to all other components of the UAAL.

The actuarial valuation also determines a 40-year funding cost as required by Section 17-106. This is the dollar contribution required to pay the normal cost and amortize the UAAL over 40 years in equal installments. While this amount is not required to be paid under the statutes, it is reported as the Annual Required Contribution (ARC) under GASB 25. The 40-year period applies to all components of the UAAL and is recalculated each year (open amortization method).

## III. *Actuarial Value of Assets*

The actuarial value of assets is equal to the market value, adjusted for a five-year phase in of actual investment return in excess of expected investment return. The actual return is calculated net of investment and administrative expenses, and the expected investment return is equal to the assumed investment return rate multiplied by the prior year's market value of assets, adjusted for contributions, benefits paid, and refunds.

## IV. *Actuarial Assumptions*

### A. Economic Assumptions

1. Investment return: 8% per year, compounded annually, composed of an assumed 3.00% inflation rate and a 5.00% net real rate of return.
2. Salary increase rate: A merit/promotional component dependent on service, plus a 3% inflation component, plus a 1.25% productivity increase, as follows:

| Years of Service | Merit/ Promotional Component | Total Salary Increase Rate |
|---|---|---|
| (1) | (2) | (3) |
| 0 | 2.75% | 7.00% |
| 1 | 2.00% | 6.25 |
| 2 | 1.50% | 5.75 |
| 3 | 1.00% | 5.25 |
| 4 | 1.00% | 5.25 |
| 5 | 1.00% | 5.25 |
| 6 | 0.75% | 5.00 |
| 7 | 0.75% | 5.00 |
| 8 | 0.75% | 5.00 |
| 9 | 0.50% | 4.75 |
| 10 | 0.50% | 4.75 |
| 11 | 0.50% | 4.75 |
| 12 | 0.50% | 4.75 |
| 13 | 0.25% | 4.50 |
| 14 | 0.25% | 4.50 |
| 15 or more | 0.00% | 4.25 |

3. Payroll growth rate: In the amortization of the unfunded actuarial accrued liability, payroll is assumed to increase 3.5% per year. This increase rate has no allowance for future membership growth.

4. State revenue growth rate: In determining the funding period, the state's sales and income tax revenues are anticipated to grow at 3.5% per year.

5. Future ad hoc cost-of-living increases: 1.0% per year

B. Demographic Assumptions

1. Mortality rates - after retirement or termination.

a. Healthy males - 1994 Unisex Pension Mortality Table for males, set back two years.

b. Healthy females - 1994 Unisex Pension Mortality Table for females, set back two years.

c. Disabled males - PBGC Table Va for disabled males eligible for Social Security disability benefits.

d. Disabled females - PBGC Table VIa for disabled females eligible for Social Security disability benefits.

Sample rates are shown below:

| | Expected Deaths per 100 Lives | | | |
|---|---|---|---|---|
| Age | Healthy Males | Healthy Females | Disabled Males | Disabled Females |
| (1) | (2) | (3) | (4) | (4) |
| 40 | 0.10 | 0.06 | 2.82 | 2.09 |
| 45 | 0.15 | 0.09 | 3.22 | 2.24 |
| 50 | 0.23 | 0.13 | 3.83 | 2.57 |
| 55 | 0.39 | 0.21 | 4.82 | 2.95 |
| 60 | 0.68 | 0.36 | 6.03 | 3.31 |
| 65 | 1.23 | 0.72 | 6.78 | 3.70 |
| 70 | 2.14 | 1.26 | 7.39 | 4.11 |
| 75 | 3.35 | 1.97 | 8.42 | 4.92 |
| 80 | 5.40 | 3.41 | 11.28 | 7.46 |

2. Mortality rates - active members - Based on 1989 Experience Study, males and females separate. Sample rates are shown below:

| | Expected Deaths per 100 Lives | |
|---|---|---|
| Age | Male Members | Female Members |
| (1) | (2) | (3) |
| 25 | .04 | .02 |
| 30 | .06 | .04 |
| 35 | .08 | .06 |
| 40 | .11 | .08 |
| 45 | .16 | .11 |
| 50 | .23 | .16 |
| 55 | .32 | .23 |
| 60 | .43 | .32 |
| 65 | .59 | .43 |

3. Disability rates - Based on 1999 Experience Study, males and females separate. Sample rates are shown below:

| | Expected Disabilities Occurring per 100 Lives | |
|---|---|---|
| Age | Male Members | Female Members |
| (1) | (2) | (3) |
| 25 | .06 | .06 |
| 30 | .06 | .06 |
| 35 | .06 | .08 |
| 40 | .09 | .11 |
| 45 | .21 | .20 |
| 50 | .32 | .38 |
| 55 | .36 | .51 |
| 60 | .27 | .42 |
| 65 | .08 | .12 |

Disability rates are applied only for members with 10 or more years of service, since rates were developed based on exposure for this group.

4. Termination Rates - Separate male and female rates, based on both age and service, developed from the 1999 Experience Study. Rates reflect terminations for causes other than death, disability or retirement. Sample rates are shown below:

Expected Terminations per 100 Lives (Male Members)

| | Years of Service | | | | |
|---|---|---|---|---|---|
| Age | 0 | 1 | 4 | 7 | 10 or more |
| (1) | (2) | (3) | (4) | (5) | (6) |
| 25 | 27.27 | 21.13 | 8.25 | 6.26 | 3.66 |
| 30 | 26.66 | 18.89 | 8.21 | 5.58 | 3.17 |
| 35 | 27.75 | 19.04 | 7.79 | 5.12 | 2.71 |
| 40 | 31.50 | 20.20 | 7.12 | 4.82 | 2.30 |
| 45 | 35.05 | 21.43 | 6.49 | 4.75 | 1.94 |
| 50 | 37.48 | 22.58 | 6.29 | 5.02 | 1.62 |
| 55 | 38.50 | 23.77 | 7.02 | 5.80 | 1.28 |
| 60 | 39.65 | 25.17 | 9.08 | 7.18 | 1.02 |
| 65 | 40.44 | 26.81 | 12.61 | 9.18 | .99 |

Expected Terminations per 100 Lives (Female Members)

| | Years of Service | | | | |
|---|---|---|---|---|---|
| Age | 0 | 1 | 4 | 7 | 10 or more |
| (1) | (2) | (3) | (4) | (5) | (6) |
| 25 | 26.81 | 19.23 | 10.27 | 7.96 | 5.96 |
| 30 | 24.40 | 17.31 | 8.85 | 6.49 | 4.33 |
| 35 | 26.56 | 17.50 | 7.49 | 5.40 | 3.11 |
| 40 | 29.62 | 18.05 | 6.28 | 4.69 | 2.33 |
| 45 | 31.25 | 18.11 | 5.40 | 4.34 | 1.99 |
| 50 | 31.56 | 18.28 | 5.11 | 4.32 | 1.77 |
| 55 | 32.04 | 18.56 | 5.67 | 4.67 | 1.39 |
| 60 | 32.68 | 18.93 | 7.27 | 5.44 | 0.97 |
| 65 | 33.66 | 19.50 | 9.97 | 6.67 | 0.70 |

Termination rates are not applied to a member who is eligible for a retirement benefit (reduced or unreduced).

5. Retirement rates - Separate male and female rates, based on age, developed from the 1999 Experience Study. Sample rates are shown below:

| | Expected Retirements per 100 Lives | | | | | |
|---|---|---|---|---|---|---|
| | Unreduced Retirement | | | | Reduced Retirement | |
| | After First Year | | In First Year | | | |
| Age | Male | Female | Male | Female | Male | Female |
| 49 | 40 | 40 | 60 | 60 | 0 | 0 |
| 50 | 40 | 40 | 60 | 60 | 0 | 0 |
| 51 | 40 | 40 | 60 | 60 | 0 | 0 |
| 52 | 40 | 40 | 40 | 40 | 0 | 0 |
| 53 | 15 | 25 | 40 | 45 | 0 | 0 |
| 54 | 15 | 25 | 30 | 50 | 0 | 0 |
| 55 | 15 | 25 | 30 | 52 | 1 | 2 |
| 56 | 15 | 25 | 30 | 54 | 1 | 2 |
| 57 | 15 | 25 | 30 | 56 | 2 | 2 |
| 58 | 15 | 25 | 40 | 52 | 2 | 2 |
| 59 | 15 | 25 | 40 | 42 | 3 | 2 |
| 60 | 15 | 25 | 40 | 40 | 4 | 5 |
| 61 | 25 | 35 | 40 | 40 | 4 | 5 |
| 62 | 50 | 50 | 50 | 50 | | |
| 63 | 25 | 25 | 25 | 25 | | |
| 64 | 25 | 25 | 25 | 25 | | |
| 65 | 50 | 55 | 50 | 55 | | |
| 66 | 30 | 30 | 30 | 30 | | |
| 67 | 30 | 30 | 30 | 30 | | |
| 68 | 30 | 30 | 30 | 30 | | |
| 69 | 30 | 30 | 30 | 30 | | |
| 70 | 100 | 100 | 100 | 100 | | |

C. Other Assumptions

1. Percent married: 80% of employees are assumed to be married.

2. Age difference: Male members are assumed to be three years older than their spouses, and female members are assumed to be three years younger than their spouses.

3. Percent electing annuity on death (when eligible): All of the spouses of married participants who die after becoming eligible for a retirement benefit are assumed to elect an annuity, in lieu of the $18,000 lump sum and refund.

4. Percent electing deferred termination benefit: vested terminating members are assumed to elect a refund or a deferred benefit, whichever is more valuable at the time of termination.

5. Assumed age for commencement of deferred benefits: Members electing to receive a deferred benefit are assumed to commence receipt at age 62.

6. Administrative expenses: The assumed investment return rate represents the anticipated net return after payment of all investment and administrative expenses.

7. Supplemental medical insurance: All members, whether currently active, inactive, or retired, are assumed to be eligible to receive the supplemental insurance benefit, if they have at least 10 years of service credit at retirement.

8. Members who retire with at least 24 years credit are assumed to have 120 days of unused sick leave for which they will receive one year of service credit.

9. No assumption was made that current active members employed by the comprehensive universities will elect to transfer out of OTRS.

10. Reemployment, purchase of service, transfers: No recognition is made of (i) future member reimbursements upon reemployment, (ii) future purchase of additional service, or (iii) special transfer provisions.

## V. Participant Data

Participant data was supplied on an electronic file for (i) active members, (ii) inactive vested members who are entitled to a future deferred benefit, (iii) inactive nonvested members who are entitled to a refund of their employee contributions, and in some cases a portion of the accumulated interest, and (iv) members and beneficiaries receiving benefits.

The data for active and inactive, non-retired members included birthdate, sex, years of service, a classified/non-classified status code, salary, employee contributions and accumulated interest on employee contributions. The data also included a code to indicate whether the employee had elected to make contributions on salary above $25,000, and a code indicating the type of employer (comprehensive university, other college or university, or other employer). For retired members and beneficiaries, the data included date of birth, sex, spouse's date of birth (where applicable), amount of monthly benefit, date of retirement, and a form of payment code.

Salary supplied for the current year was based on the earnings for the October preceding the valuation date. This salary was adjusted by the salary increase rate for one year, and limited by the maximum pay where appropriate.

Assumptions were made to correct for missing, bad, or inconsistent data. These had no material impact on the results presented.

Some inactive, nonvested employees who are entitled to a refund are not included in the data, but a liability for their refund is included instead in the Suspense Fund, which is included in the liability.

VI. Dates of Adoption of Assumptions and Methods

Generally, actuarial assumptions and methods were developed from the 1999 experience study, and were adopted by the Board of Trustees in May 2001 and first reflected in the June 30, 2001 actuarial valuation. The adopted assumptions were recommended by the actuary. Some assumptions were left unchanged from the prior experience study in 1995, including female mortality for disabled retirees, the investment return rate, and active member mortality for males and females.

In the June 30, 2004 valuation, there is an assumption that future ad hoc cost-of-living increases would be granted from time to time, without additional funding, and these would average 1.00% per year.

## Addendum to June 30, 2004 Actuarial Valuation

## Certification

We have prepared an actuarial valuation of the Oklahoma Teachers' Retirement System as of June 30, 2004, for the plan year ending June 30, 2005. The results of the valuation are set forth in this report, which reflects the provisions of the System as amended and effective on June 30, 2004.

The valuation is based on employee and financial data which were provided by the Oklahoma Teachers' Retirement System and the independent auditor, respectively, and which are summarized in this report.

The results in this Addendum have been prepared for the sole purpose of meeting the Retirement Board's requirement to submit this information to the Oklahoma State Pension Commission, based on the following prescribed assumptions (70 O.S. 2001, Section 17-106.1, Section H):

Interest rate: 7.5%
COLA assumption: 2.0%
Mortality: RP 2000 Generational Mortality Tables (active members, healthy annuitants, and disabled annuitants)
Amortization period: 30 years, open period
Sources of all contributions and revenues, including dedicated tax fee revenue and federal monies

All other assumptions, methodologies, and plan provisions used are consistent with those used in the June 30, 2004 valuation.

The results shown in this Addendum are not consistent with those in the June 30, 2004 valuation. The June 30, 2004 valuation results were determined in accordance with generally accepted actuarial principles and procedures, and are in compliance with the Actuarial Standards of Board Actuarial Standard of Practice No. 27-Selection of Economic Assumptions for Measuring Pension Obligations. The results shown in this Addendum are not based on the assumptions and methodologies adopted by the Retirement Board. For those results, see the June 30, 2004 actuarial valuation.

We are available to answer any questions on the material contained in the report, or to provide explanations or further details as may be appropriate.

J. Christian Conradi

J. Christian Conradi, ASA, MAAA, EA — October 27, 2004

W. Michael Carter

W. Michael Carter, FSA, MAAA, EA — October 27, 2004

WB Fornia

William B. Fornia, FSA, MAAA, EA — October 27, 2004

## Summary of Valuation Results Under Prescribed Assumptions

This supplemental report has been prepared by Gabriel, Roeder, Smith & Company for the Oklahoma Teachers' Retirement System to present the results of a valuation of the Oklahoma Teachers' Retirement System as of June 30, 2004, based on the prescribed assumptions under 70 O.S. 2001, Section 17-106.1, Section H of current State Statutes and regulations issued thereunder.

A summary of principal valuation results from the current valuation and the prior valuation.

| | Actuarial Valuation as of | | Change Between Years | |
|---|---|---|---|---|
| | July 1, 2004 | July 1, 2003 | Amount | Percent |
| **Summary of Costs** | | | | |
| Required State Contribution for Current Year under Prescribed Assumptions | $717,349,127 | $610,721,212 | $106,627,915 | 17.46% |
| Actual State Contribution Received in Prior Year | $143,100,533 | $128,879,976 | $ 14,220,557 | 11.03% |
| **Funded Status** | | | | |
| Actuarial Accrued Liability | $15,861,120,669 | $14,506,297,789 | $1,354,822,880 | 9.34% |
| Actuarial Value of Assets | $ 6,660,918,318 | $ 6,436,852,137 | $ 224,066,181 | 3.48% |
| Unfunded Actuarial Accrued Liability | $ 9,200,202,351 | $ 8,069,445,652 | $1,130,756,699 | 14.01% |
| **Market Value of Assets and Additional Liabilities** | | | | |
| Market Value of Assets | $ 6,666,489,439 | $ 5,614,063,958 | $1,052,425,481 | 18.75% |
| Present Value of Projected System Benefits | $19,158,355,942 | $17,776,393,728 | $1,381,962,214 | 7.77% |

| Summary of Contribution Requirements | Actuarial Valuation as of | | | | % of Change |
|---|---|---|---|---|---|
| | July 1, 2004 | | July 1, 2003 | | |
| | Amount | % of Active Covered Comp. | Amount | % of Active Covered Comp. | |
| 1. Payroll | | | | | |
| a. Supplied by System | $3,030,749,000 | | $3,045,676,600 | | (0.49)% |
| b. Adjusted for 1-year's pay increase | $3,163,354,010 | | $3,183,653,000 | | (0.64)% |
| c. Adjusted for 1-year's pay increase with pay caps | $3,110,720,010 | | $3,124,896,000 | | (0.45)% |
| 2. Total Normal Cost Mid-Year | $ 414,036,833 | 13.31% | $ 401,861,625 | 12.86% | 3.03% |
| 3. Unfunded Actuarial Accrued Liability | $9,200,202,351 | | $8,069,445,652 | | 14.01% |
| 4. Amortization of Unfunded Actuarial Accrued Liability over 30 years from July 1, 2004 | $ 753,431,456 | 24.22% | $ 660,830,485 | 21.15% | 14.01% |
| 5. Total Required Contribution under Prescribed Assumptions (2 + 4) | $1,167,468,289 | 37.53% | $1,062,692,110 | 34.01% | 9.86% |
| 6. Estimated Employee Contribution (7% x 1c) | $ 217,750,401 | 7.00% | $ 218,742,720 | 7.00% | (0.45)% |
| 7. Estimated local employer and Federal contributions | | | | | |
| a. Local employers (7.05%) | $ 219,305,761 | 7.05% | $ 220,305,168 | 7.05% | (0.45)% |
| b. Federal | 13,063,000 | 0.42% | 12,923,010 | 0.41% | 1.08% |
| c. Total | $ 232,368,761 | 7.47% | $ 233,228,178 | 7.46% | (0.37)% |
| 8. Required State Contribution to amortize Unfunded Actuarial Accrued Liability over 30 years from July 1, 2003 (5 – 6 – 7c) | $ 717,349,127 | 23.06% | $ 610,721,212 | 19.54% | 17.46% |
| 9. Previous year's actual State Contribution | $ 143,100,533 | 4.58%[1] | $ 128,879,976 | 4.13%[2] | 11.03% |
| 10. Funding Period | Not Sufficient to Amortize UAAL | | Not Sufficient to Amortize UAAL | | N/A |
| | | | | | |

[1] Percent of previous years' annual compensation for active members
[2] Percent of previous years' annual compensation for active members

## Unfunded Actuarial Accrued Liability

The actuarial accrued liability is the present value of projected system benefits allocated to past service by the actuarial funding method being used.

| | Total System | |
|---|---|---|
| | July 1, 2004 | July 1, 2003 |
| 1. Actuarial Present Value of Benefits | | |
| a. Active Members | $ 11,315,970,003 | $ 10,647,809,000 |
| b. Inactive Members | 303,852,234 | 219,363,228 |
| c. Retirees and beneficiaries | 7,538,533,705 | 6,909,221,500 |
| d. Total | $ 19,158,355,942 | $ 17,776,393,728 |
| 2. Actuarial Present Value of Future Normal Costs | $ 3,297,235,273 | $ 3,270,095,939 |
| 3. Total Actuarial Accrued Liability (1d - 2) | $ 15,861,120,669 | $ 14,506,297,789 |
| 4. Actuarial Value of Assets | $ 6,660,918,318 | $ 6,436,852,137 |
| **5. Unfunded Actuarial Accrued Liability (3 - 4, not less than $0)** | **$ 9,200,202,351** | **$ 8,069,445,652** |

## Normal Cost

The components of normal cost under the System's funding method are:

| Component | July 1, 2004 | July 1, 2003 |
|---|---|---|
| Retirement Benefits | $ 319,470,945 | $ 310,927,152 |
| Withdrawal Benefits | 37,328,640 | 12,187,094 |
| Active Death Benefits | 4,666,080 | 0 |
| Refunds | 25,818,976 | 51,873,274 |
| Supplemental Medical Insurance | 11,509,664 | 12,187,094 |
| Post Retirement Death Benefits | 1,555,360 | 1,249,958 |
| Disability Benefits | 13,687,168 | 13,437,053 |
| **Total Normal Cost (Mid-year)** | **$ 414,036,833** | **$ 401,861,625** |
| Annual Covered Payroll (with pay caps) | $ 3,110,720,010 | $ 3,124,896,000 |
| Normal Cost Rate At Mid-year | 13.31% | 12.86% |

## Actuarial Assumptions

This section presents and describes the actuarial assumptions used for this supplemental valuation. The census of members, market and actuarial value of assets, actuarial basis and provisions of the Plan are the same as described elsewhere in this valuation report. The valuation is based on the premise that the Plan will continue in existence.

### Economic Assumptions

1. Investment Return (Prescribed) — 7.5%, net of investment and administrative expenses, per annum, compound annually.

2. Earnings Progression — Sample rates below:

| Years of Service | Merit/ Promotional Component | Total Salary Increase Rate |
|---|---|---|
| (1) | (2) | (3) |
| 0 | 2.75% | 7.00% |
| 1 | 2.00% | 6.25 |
| 2 | 1.50% | 5.75 |
| 3 | 1.00% | 5.25 |
| 4 | 1.00% | 5.25 |
| 5 | 1.00% | 5.25 |
| 6 | 0.75% | 5.00 |
| 7 | 0.75% | 5.00 |
| 8 | 0.75% | 5.00 |
| 9 | 0.50% | 4.75 |
| 10 | 0.50% | 4.75 |
| 11 | 0.50% | 4.75 |
| 12 | 0.50% | 4.75 |
| 13 | 0.25% | 4.50 |
| 14 | 0.25% | 4.50 |
| 15 or more | 0.00% | 4.25 |

3. Payroll growth rate: In the amortization of the unfunded actuarial accrued liability, payroll is assumed to increase 3.5% per year. This increase rate has no allowance for future membership growth.

4. State revenue growth rate: In determining the funding period, the state's sales and income tax revenues are anticipated to grow at 3.5% per year.

5. Future ad hoc cost-of-living increases: We assume that in future years, cost-of-living increases will be granted that will average 2% per year.

## Demographic Assumptions

1. Retirement rate - Sample rates are shown below:

| | Expected Retirements per 100 Lives | | | | | |
|---|---|---|---|---|---|---|
| | Unreduced Retirement | | | | Reduced Retirement | |
| | After First Year | | In First Year | | | |
| Age | Male | Female | Male | Female | Male | Female |
| 49 | 40 | 40 | 60 | 60 | 0 | 0 |
| 50 | 40 | 40 | 60 | 60 | 0 | 0 |
| 51 | 40 | 40 | 60 | 60 | 0 | 0 |
| 52 | 40 | 40 | 40 | 40 | 0 | 0 |
| 53 | 15 | 25 | 40 | 45 | 0 | 0 |
| 54 | 15 | 25 | 30 | 50 | 0 | 0 |
| 55 | 15 | 25 | 30 | 52 | 1 | 2 |
| 56 | 15 | 25 | 30 | 54 | 1 | 2 |
| 57 | 15 | 25 | 30 | 56 | 2 | 2 |
| 58 | 15 | 25 | 40 | 52 | 2 | 2 |
| 59 | 15 | 25 | 40 | 42 | 3 | 2 |
| 60 | 15 | 25 | 40 | 40 | 4 | 5 |
| 61 | 25 | 35 | 40 | 40 | 4 | 5 |
| 62 | 50 | 50 | 50 | 50 | | |
| 63 | 25 | 25 | 25 | 25 | | |
| 64 | 25 | 25 | 25 | 25 | | |
| 65 | 50 | 55 | 50 | 55 | | |
| 66 | 30 | 30 | 30 | 30 | | |
| 67 | 30 | 30 | 30 | 30 | | |
| 68 | 30 | 30 | 30 | 30 | | |
| 69 | 30 | 30 | 30 | 30 | | |
| 70 | 100 | 100 | 100 | 100 | | |

2. Mortality rates - Active members – RP-2000 Generational Mortality Tables for active employees, males and females separate, projected with Scale AA.

Retirees (non-disabled) and beneficiaries – RP-2000 Generational Mortality Tables for healthy annuitants, males and females separate, projected with Scale AA.

Disabled retirees – RP-2000 Generational Mortality Tables for disabled annuitants, males and females separate, projected with Scale AA

3. Disability rates - Sample rates are shown below:

| Age | Expected Disabilities Occurring per 100 Lives: Male Members | Female Members |
|---|---|---|
| (1) | (2) | (3) |
| 25 | .06 | .06 |
| 30 | .06 | .06 |
| 35 | .06 | .08 |
| 40 | .09 | .11 |
| 45 | .21 | .20 |
| 50 | .32 | .38 |
| 55 | .36 | .51 |
| 60 | .27 | .42 |
| 65 | .08 | .12 |

Disability rates are applied only for members with 10 or more years of service, since rates were developed based on exposure for this group

4. Withdrawal Rates - Sample rates are shown below:

| | Expected Terminations per 100 Lives (Male Members) | | | | |
|---|---|---|---|---|---|
| | Years of Service | | | | |
| Age | 0 | 1 | 4 | 7 | 10 or more |
| (1) | (2) | (3) | (4) | (5) | (6) |
| 25 | 27.27 | 21.13 | 8.25 | 6.26 | 3.66 |
| 30 | 26.66 | 18.89 | 8.21 | 5.58 | 3.17 |
| 35 | 27.75 | 19.04 | 7.79 | 5.12 | 2.71 |
| 40 | 31.50 | 20.20 | 7.12 | 4.82 | 2.30 |
| 45 | 35.05 | 21.43 | 6.49 | 4.75 | 1.94 |
| 50 | 37.48 | 22.58 | 6.29 | 5.02 | 1.62 |
| 55 | 38.50 | 23.77 | 7.02 | 5.80 | 1.28 |
| 60 | 39.65 | 25.17 | 9.08 | 7.18 | 1.02 |
| 65 | 40.44 | 26.81 | 12.61 | 9.18 | .99 |

| | Expected Terminations per 100 Lives (Female Members) Years of Service | | | | |
|---|---|---|---|---|---|
| Age | 0 | 1 | 4 | 7 | 10 or more |
| (1) | (2) | (3) | (4) | (5) | (6) |
| 25 | 26.81 | 19.23 | 10.27 | 7.96 | 5.96 |
| 30 | 24.40 | 17.31 | 8.85 | 6.49 | 4.33 |
| 35 | 26.56 | 17.50 | 7.49 | 5.40 | 3.11 |
| 40 | 29.62 | 18.05 | 6.28 | 4.69 | 2.33 |
| 45 | 31.25 | 18.11 | 5.40 | 4.34 | 1.99 |
| 50 | 31.56 | 18.28 | 5.11 | 4.32 | 1.77 |
| 55 | 32.04 | 18.56 | 5.67 | 4.67 | 1.39 |
| 60 | 32.68 | 18.93 | 7.27 | 5.44 | 0.97 |
| 65 | 33.66 | 19.50 | 9.97 | 6.67 | 0.70 |

Termination rates are not applied to a member who is eligible for a retirement benefit (reduced or unreduced).

6. Marital Status – Percentage married: 80% of employees are assumed to be married.
Age Difference: Males are assumed to be three (3) years older than females.

## Other Assumptions

1. Percent married: 80% of employees are assumed to be married.

2. Age difference: Male members are assumed to be three years older than their spouses, and female members are assumed to be three years younger than their spouses.

3. Percent electing annuity on death (when eligible): All of the spouses of married participants who die after becoming eligible for a retirement benefit are assumed to elect an annuity, in lieu of the $18,000 lump sum and refund.

4. Percent electing deferred termination benefit: vested terminating members are assumed to elect a refund or a deferred benefit, whichever is more valuable at the time of termination.

5. Assumed age for commencement of deferred benefits: Members electing to receive a deferred benefit are assumed to commence receipt at age 62.

6. Administrative expenses: The assumed investment return rate represents the anticipated net return after payment of all investment and administrative expenses.

7. Supplemental medical insurance: All members, whether currently active, inactive, or retired, are assumed to be eligible to receive the supplemental insurance benefit, if they have at least 10 years of service credit at retirement.

8. Members who retire with at least 24 years credit are assumed to have 120 days of unused sick leave for which they will receive one year of service credit.

9. No assumption was made that current active members employed by the comprehensive universities will elect to transfer out of OTRS.

10. Reemployment, purchase of service, transfers: No recognition is made of (i) future member reimbursements upon reemployment, (ii) future purchase of additional service, or (iii) special transfer provisions.

## Schedule of Increases and Decreases
## of Benefit Recipients
## Periods Ended June 30

| | Added to Rolls | | Removed from Rolls | | Rolls-End of Year | | | |
|---|---|---|---|---|---|---|---|---|
| Year Ended | No. | Annual Allowances* | No. | Annual Allowances | No. | Annual Allowances | % Increase in Annual Allowances | Average Annual Allowances** |
| 1999 | 2,048 | 51,559,112 | 1,047 | 12,313,512 | 33,033 | 451,604,774 | 9.5% | 1,187 |
| 2000 | 2,031 | 31,487,149 | 947 | 11,916,120 | 34,117 | 471,175,803 | 4.3% | 1,199 |
| 2001 | 1,980 | 40,394,458 | 909 | 12,641,988 | 35,188 | 498,928,273 | 5.9% | 1,231 |
| 2002 | 2,236 | 36,595,970 | 913 | 12,303,662 | 36,511 | 523,220,581 | 4.9% | 1,231 |
| 2003 | 2,521 | 57,537,594 | 973 | 10,798,222 | 38,059 | 569,959,953 | 8.9% | 1,304 |
| 2004 | 2,724 | $49,732,316 | 1,190 | $12,334,953 | 39,593 | $607,357,316 | 6.6% | $1,315 |

* Includes post-retirement increases for members who retired in previous years and changes occurring due to plan options which offer a continuing monthly benefit payment to beneficiaries.

** Does not include special annuitants.

### Retired Members