GRS Gabriel Roeder Smith & Company
Consultants & Actuaries

# MICHIGAN STATE EMPLOYEES' RETIREMENT SYSTEM

## ANNUAL ACTUARIAL VALUATION REPORT

## SEPTEMBER 30, 2010

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May 12, 2011

The Retirement Board
Michigan State Employees' Retirement System
General Office Building, Third Floor
P.O. Box 30171
Lansing, Michigan 48909

**Re: Michigan State Employees' Retirement System - Actuarial Valuation as of September 30, 2010**

Dear Board Members:

The results of the annual actuarial valuation of the Michigan State Employees' Retirement System pension benefits are presented in this report. The purpose of the valuation was to measure the System's funding progress and to determine the employer contribution for the next fiscal year.

The valuation was based upon information, furnished by the Office of Retirement Services, concerning Retirement System benefits, financial transactions, and active members, terminated members, retirees and beneficiaries. Data was checked for internal and year-to-year consistency, but was not otherwise audited. Year 2005 and prior years' valuation results back to 1993 were not prepared by GRS and are reproduced for comparison with the current year's results. This report may be provided to parties other than the Office of Retirement Services only in its entirety and only with the permission of the Office of Retirement Services.

The valuation results summarized in this report involve actuarial calculations that require making assumptions about future events. We believe that the assumptions and methods used in this report are reasonable and appropriate. However, other assumptions and methods could also be reasonable and could result in materially different results. Some of the numbers in this report are rounded. The use of rounded numbers for plan liabilities should not imply a lack of precision. In addition, because it is not possible or practical to consider every possible contingency, we may use summary information, estimates or simplifications of calculations to facilitate the modeling of future events. We may also exclude factors or data that we deem to be immaterial.

To the best of our knowledge, this report is complete and accurate and the valuation was conducted in accordance with standards of practice prescribed by the Actuarial Standards Board and in compliance with the applicable state statutes. All of the undersigned are Members of the American Academy of Actuaries (MAAA) as indicated, and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. It is our opinion that the actuarial assumptions used for the valuation produce results which are reasonable.

Sincerely,

Alan E. Sonnanstine

Alan Sonnanstine, ASA, MAAA

Louise Gates

Louise Gates, ASA, MAAA

AES/LG:mrb

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# EXECUTIVE SUMMARY/BOARD SUMMARY

## 1. Required Employer Contributions to Support Retirement Benefits

The computed employer contribution for the fiscal year beginning October 1, 2010 is shown below. Computed contributions are displayed as annual dollar amounts. The Retirement System is closed to new members and as a result, contributions expressed as percentages of active member payroll are not useful. We understand that the current policy is to contribute on the basis of the dollar amount shown below.

| Contribution $ |
|---|
| $447,924,105 |

## 2. Contribution Comparison

The chart below compares the results of this valuation of the Retirement System with the results of the prior year's valuation:

| Valuation Date | 9/30/2009 | 9/30/2010 |
|---|---|---|
| Contribution $ | $418,427,738 | $447,924,105 |

## 3. Reasons for Change

There are three general reasons why contribution rates change from one valuation to the next. The first is a change in the benefits or eligibility conditions of the plan. The second is a change in the valuation assumptions used to predict future occurrences. The third is the difference during the year between the plan's actual experience and what the assumptions predicted.

There were no benefit changes reported to the actuary for the year ended September 30, 2010. The early retirement incentive provided in Public Act 185 of 2010 will be reflected in the September 30, 2011 annual actuarial valuation report. Assumption changes, based on the adoption of the findings of the recently completed 5-year experience study, increased the computed liabilities (see pages A-3 to A-5). Experience for the year ended September 30, 2010 was overall unfavorable and is described in more detail in Section B of this report.

# SECTION A

## INTRODUCTION

# CONTRIBUTION REQUIREMENTS

## Development of Employer Contributions for the Indicated Valuation Date

| | | September 30 | |
|---|---|---|---|
| | **Contributions for** | **2009** | **2010** |
| (1) | Total Normal Cost of Benefits (as a % of member pay) | 8.30% | 6.89% |
| (2) | Member Contribution % | 0.00% | 0.00% |
| (3) | Employer Normal Cost % = (1) - (2) | 8.30% | 6.89% |
| (4) | Projected Active Member Payroll for Coming Year | $ 1,727,169,426 | $ 1,611,300,926 |
| (5) | Employer Normal Cost $ = (3) x (4) | 143,355,062 | 111,018,634 |
| | a. Tier 2 Employer Normal Cost $ | N/A | 5,038,048 |
| | b. Total Employer Normal Cost $ = (5) + (5a) | $ 143,355,062 | $ 116,056,682 |
| (6) | Total Accrued Liability | 14,233,709,585 | 14,860,374,611 |
| (7) | Funding Value of Assets | 11,106,969,100 | 10,782,286,541 |
| (8) | Unfunded Actuarial Accrued Liabilities (UAAL) = (6) - (7) | $ 3,126,740,485 | $ 4,078,088,070 |
| | a. Present Value of Future Reconciliation Payments | N/A | 348,949,819 |
| | b. Net UAAL to be Amortized = (8) - (8a) | $ 3,126,740,485 | $ 3,729,138,251 |
| (9) | Amortization Period (years) | 27 | 26 |
| (10) | Amortization Factor (level dollar payments) | 11.36696137 | 11.23683130 |
| (11) | Amortization Payment (Credit) = (8b) / (10) | $ 275,072,676 | $ 331,867,423 |
| (12) | Total Computed Employer Contribution = (5b) + (11) | **$ 418,427,738** | **$ 447,924,105** |

## Computed Employer Contributions

Based on the assumptions outlined in Section E, the long term contribution rate for Tier 1 members of the Michigan State Employees' Retirement System is expected to be 6.89% of payroll (the employer normal cost rate) until the last active member retires. However, there is also an employer normal cost to fund the disability and death-in-service benefits for the growing Tier 2 member population. For the current year, there is also a contribution needed to fund the unfunded actuarial accrued liability (UAAL). The sum of these contributions is the recommended employer contribution.

# CONTRIBUTION REQUIREMENTS

## Determining Employer Dollar Contributions

For any period of time, the percent-of-payroll contribution rate needs to be converted to dollars, then promptly contributed to the Retirement System. The employer normal cost rate (expressed as a % of active member payroll) is 6.89%. Applying the employer normal cost contribution rate of 6.89% to the projected payroll for the coming fiscal year, produces annual employer normal cost contributions of $111,018,634. The Tier 2 annual employer normal cost contributions are $5,038,048. The amortization payment for funding the UAAL, $331,867,423, when added to the two normal cost contributions produces a total employer contribution of $447,924,105. This contribution requirement is in addition to the reconciliation payments required by subsection 38(5) of the SERS statute.

## Disability and Death-In-Service Benefits for Tier 2 Participants

Section 67a of the SERS statute provides that if a Tier 2 participant (defined contribution plan) becomes disabled or dies in employment, there may be a disability pension or survivor pension payable from the defined benefit plan. The pension amount would be based on the regular disability and death-in-service provisions of the defined benefit plan (Tier 1), but would be reduced to reflect the lump sum payment from the participant's defined contribution account. Beginning with the September 30, 2010 annual actuarial valuation, this Tier 2 benefit provision is included in the calculation of liabilities and the employer contribution requirement. In prior years, there was no advance funding for this benefit provision. When a Tier 2 participant became disabled or died in employment and a defined benefit pension was payable, an actuarial loss occurred and future employer contribution requirements were increased. The new funding method, which was proposed in the recently completed 5-year experience study, will result in more level employer contribution requirements.

# DISCUSSION OF CHANGES

## Revisions in Benefits

There have been no revisions in plan benefits reported to GRS. The early retirement incentive provided in Public Act 185 of 2010 will be reflected in the September 30, 2011 annual actuarial valuation report.

## Revisions in Actuarial Assumptions or Methods

Assumptions were changed based on the adoption of the findings of the recently completed 5-year experience study. These changes resulted in increased computed liabilities.

## Actuarial Experience

Actuarial Experience was less favorable than that anticipated by the actuarial assumptions. The net actuarial loss was approximately $631 million. The loss was primarily due to recognized investment losses during the last plan year.

## Comment on the Investment Markets

Investment markets continue to be volatile. The actuarial value of assets (funding value), used to determine both the funded status and the required employer contribution, is based on a 5-year smoothed value of assets. This reduces the volatility of the valuation results.

As of September 30, 2010 the actuarial value of assets was 121% of market value. This means that meeting the actuarial assumption in the next few years will require average future market returns that exceed the 8% investment return assumption.

If the September 30, 2010 valuation results were based on market value instead of smoothed funding value, the funded percent of the plan would be 60.2% (instead of 72.6%), and the employer contribution requirement would be $611,862,187 (instead of $447,924,105). If the investment markets do not make up for the losses of the two year period ending September 30, 2009, the funded percent and employer contribution requirement can be expected to head in that direction.

# MEASURES OF FINANCIAL SOUNDNESS

The purpose of this section of the report is to provide certain measures which indicate the financial soundness of the program. These measures relate to long term solvency and level funding.

The various percentages listed in this Section as of a single valuation date are not overly significant standing alone. What is more significant is the trend of the rates over a period of years. It is also important to keep in mind that each time benefits or assumptions are revised, actuarial liabilities are created or diminished. Any newly created liabilities are financed systematically over a period of future years. All actuarially computed values in this analysis are based on the actuarial assumptions utilized in the respective years' actuarial valuations.

## Long Term Solvency

Over the longer term, the solvency of an ongoing plan can be measured by comparing the actuarial value of assets to an amount known as the actuarial accrued liability (AAL) under the Entry Age actuarial cost method. This item has often been called the "past service liability". The AAL may be affected immediately by any revisions in benefits or assumptions. The accumulation of assets to equal the AAL can be considered a long range funding goal. Largely because of periodic benefit increases, very few retirement programs have attained this goal.

| Valuation | Actuarial Value of Assets | Actuarial Accrued Liability | % of AAL Covered by |
|---|---|---|---|
| 9/30/2010 * | $10,782,286,541 | $14,860,374,611 | 72.6% |
| 9/30/2010 | 10,782,286,541 | 14,527,692,061 | 74.2 |
| 9/30/2009 | 11,106,969,100 | 14,233,709,585 | 78.0 |

** Revised actuarial assumptions and methods.*

# MEASURES OF FINANCIAL SOUNDNESS

## Level Contributions

The actuarial assumptions and cost methods have been chosen with the intent of producing required employer contributions which remain fairly level. In a closed plan, the normal cost dollar amount will eventually decline as active members retire and terminate employment.

| Valuation Date | Normal Cost | Amortization Payment | Total Contribution |
|---|---|---|---|
| 9/30/2010 * | $116,056,682 | $331,867,423 | $447,924,105 |
| 9/30/2010 | 133,693,080 | 333,315,097 | 467,008,177 |
| 9/30/2009 | 143,355,062 | 275,072,676 | 418,427,738 |

** Revised actuarial assumptions and methods.*

A major factor affecting the stability of the contribution requirements just shown is how well the actual plan experience compares to the actuarial assumptions. The value of the difference between what actually occurred and what was assumed to occur is called the actuarial gain or loss. Gains tend to lower the subsequent cost of the program while losses tend to cause subsequent costs to rise.

| Year Ending | Actuarial Gain/(Loss) |
|---|---|
| 9/30/2010 | $(631,285,409) |
| 9/30/2009 | (787,953,401) |

Analysis of all the benchmarks listed above, over a period of years, will provide an indication of whether the program is becoming financially stronger or weaker.

# SECTION B

## FUNDING RESULTS

# PRESENT VALUE OF FUTURE BENEFITS AND ACCRUED LIABILITY

**Determination of Unfunded Accrued Liability**
**as of September 30, 2010**

| | All Divisions |
|---|---|
| A. Accrued Liability | |
| 1. For retirees and beneficiaries | $ 9,264,546,400 |
| 2. For vested and other terminated members | 527,776,781 |
| 3. For present active members | |
| a. Value of expected future benefit payments | 5,763,064,458 |
| b. Value of future normal costs | 695,013,028 |
| c. Active member accrued liability: (a) - (b) | 5,068,051,430 |
| 4. Total accrued liability | 14,860,374,611 |
| B. Present Valuation Assets (Funding Value) | 10,782,286,541 |
| C. Unfunded Accrued Liability: (A.4) - (B) | 4,078,088,070 |
| D. Funding Ratio: (B) / (A.4) | 72.6% |

# EXPERIENCE GAIN/(LOSS)

| | |
|---|---|
| A. Derivation of Actuarial Gain/(Loss): | |
| 1. Unfunded Actuarial Accrued Liability (UAAL) - Previous Valuation | $3,126,740,485 |
| 2. Total Normal Cost (employer plus member) for Year Ending 9/30/2010 | 143,355,062 |
| 3. Total Contributions (employer plus member) for Year Ending 9/30/2010 | 396,008,536 |
| 4. Interest at 8% on: | |
| a. UAAL: .08 x (1) | 250,139,239 |
| b. Normal Cost and Contributions: .04 x [(2) - (3)] | (10,106,139) |
| c. Net Total: (a) + (b) | 240,033,100 |
| 5. Change in UAAL due to Benefit Changes | 0 |
| 6. Change in UAAL due to Assumption Changes | 332,682,550 |
| 7. Expected UAAL Current Year: (1) + (2) - (3) + (4c) + (5) + (6) | 3,446,802,661 |
| 8. Actual UAAL Current Year | 4,078,088,070 |
| 9. Experience Gain/(Loss): (7) - (8) | (631,285,409) |
| B. Approximate Portion of Gain/(Loss) due to Investments | (670,791,230) |
| C. Approximate Portion of Gain/(Loss) due to Liabilities: (A.9) - (B) | 39,505,821 |

The schedule above shows the net, aggregate experience for the System. The next page shows this experience in detail.

# DETAILED EXPERIENCE GAIN/(LOSS)

## Gains/(Losses) during the Year Ended September 30, 2010 Resulting from Differences between Assumed and Actual Experience

| TYPE OF ACTIVITY | Gain/(Loss) |
|---|---|
| 1. **Retirements** (including disability retirement). If members retire at older ages or with lower final average pay than assumed, there is a gain. If younger ages or higher average pays, a loss. | $ (23,456,656) |
| 2. **Withdrawal from Employment** (including death-in-service). If more liabilities are released by withdrawals and deaths than assumed, there is a gain. If smaller releases, a loss. | (3,512,147) |
| 3. **Pay Increases.** If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss. | 127,511,562 |
| 4. **Investment Income.** If there is greater investment income than assumed, there is a gain. If less income, a loss. | (670,791,230) |
| 5. **Death After Retirement.** If retirants and inactive vested members live longer than assumed, there is a loss. If not as long, a gain. | (27,001,785) |
| 6. **Rehires.** Rehires into the System will generally result in an actuarial loss. | (33,963,793) |
| 7. **Other.** Miscellaneous gains and losses resulting from data adjustments, timing of financial transactions, etc. | (71,360) |
| 8. **Composite Gain/(Loss) During Year.** | $ (631,285,409) |

# EXPERIENCE GAIN/(LOSS)

**Five-Year History**
**(Amounts Shown in Thousands)**

| Plan Year Ending September 30 | Experience Gain/(Loss) | Gain/(Loss) Due to Investments | Actuarial Value of Investments | Investment Gain/(Loss) as % of Assets |
|---|---|---|---|---|
| 2010 | $ (631,285) | $ (670,791) | $ 10,782,287 | (6.22)% |
| 2009 | (787,953) | (672,967) | 11,106,969 | (6.06) |
| 2008 | (436,904) | (357,935) | 11,402,861 | (3.14) |
| 2007 | 181,987 | 189,882 | 11,343,529 | 1.67 |
| 2006 [1] | | 779,267 | | |
| 2006 | 26,951 | (73,434) | 10,110,658 | (0.73) |

[1] *Assets reset to market value on September 30, 2006.*

| Plan Year Ending September 30 | Gain/(Loss) Due to Liabilities | Actuarial Accrued Liability | Liability Gain/(Loss) as % of Accrued Liability |
|---|---|---|---|
| 2010 | $ 39,506 | $ 14,860,375 | 0.27% |
| 2009 | (114,986) | 14,233,710 | (0.81) |
| 2008 | (78,969) | 13,765,638 | (0.57) |
| 2007 | (7,895) | 13,161,656 | (0.06) |
| 2006 | 100,385 | 12,798,520 | 0.78 |

## HISTORICAL FUNDING LEVELS FOR ACTUARIAL ACCRUED LIABILITIES

**(Amounts Shown in Thousands)**

| Valuation Date September 30 | Actuarial Accrued Liability | Actuarial Value of Assets | Funded Ratio | Unfunded/(Overfunded) Accrued Liability | Active Member Reported Payroll | Unfunded/(Overfunded) As % of Active Payroll |
|---|---|---|---|---|---|---|
| 1996 | $ 7,147,279 | $ 6,678,011 | 93.4% | $ 469,268 | $ 2,515,420 | 18.7% |
| 1997 | 8,213,429 | 7,515,869 | 91.5 | 697,560 | 2,273,203 | 30.7 |
| 1997 [3] | 8,100,552 | 8,834,424 | 109.1 | (733,872) | 2,273,203 | (32.3) |
| 1998 | 8,373,977 | 9,108,985 | 108.8 | (735,008) | 2,107,996 | (34.9) |
| 1998 [2] | 8,496,974 | 9,108,985 | 107.2 | (612,011) | 2,107,996 | (29.0) |
| 1999 | 9,028,621 | 9,648,383 | 106.9 | (619,762) | 2,213,851 | (28.0) |
| 2000 | 9,473,873 | 10,336,872 | 109.1 | (863,000) | 2,253,818 | (38.3) |
| 2001 | 9,878,161 | 10,632,677 | 107.6 | (754,516) | 2,230,562 | (33.8) |
| 2002 | 10,752,684 | 10,616,278 | 98.7 | 136,406 | 2,133,477 | 6.4 |
| 2003 | 11,761,147 | 10,440,611 | 88.8 | 1,320,536 | 1,859,555 | 71.0 |
| 2004 | 12,166,603 | 10,149,275 | 83.4 | 2,017,328 | 1,889,410 | 106.8 |
| 2004 [2] | 12,003,995 | 10,149,275 | 84.6 | 1,854,719 | 1,889,410 | 98.2 |
| 2005 | 12,400,361 | 9,896,760 | 79.8 | 2,503,601 | 1,880,179 | 133.2 |
| 2006 | 12,798,520 | 10,110,658 | 79.0 | 2,687,861 | 1,847,653 | 145.5 |
| 2006 [1] | 12,798,520 | 10,889,925 | 85.1 | 1,908,595 | 1,847,653 | 103.3 |
| 2007 | 13,161,656 | 11,343,529 | 86.2 | 1,818,126 | 1,825,889 | 99.6 |
| 2008 | 13,765,638 | 11,402,861 | 82.8 | 2,362,777 | 1,763,672 | 134.0 |
| 2009 | 14,233,710 | 11,106,969 | 78.0 | 3,126,741 | 1,734,325 | 180.3 |
| 2010 | 14,527,692 | 10,782,287 | 74.2 | 3,745,405 | 1,621,709 | 231.0 |
| 2010 [2] | 14,860,375 | 10,782,287 | 72.6 | 4,078,088 | 1,621,709 | 251.5 |

[1] *Revised asset valuation method.*
[2] *Revised actuarial assumptions and/or methods.*
[3] *Revised actuarial assumptions and asset valuation method.*

# RECOMMENDED AND ACTUAL STATE CONTRIBUTIONS
# HISTORICAL COMPARISON

| Fiscal Year Ending September 30 | Valuation Date September 30 | Contribution Rates As Percents of Valuation Payroll | Actual Payroll | Employer Contribution for Fiscal Year | |
|---|---|---|---|---|---|
| | | | | Computed | Actual |
| 1998 | 1997 | 5.56 % | $ 2,282,056,831 | $ 126,882,360 | $ 145,734,677 |
| 1999 | 1998 | 5.41 | 2,125,707,551 | 115,000,779 | - |
| 1999 | 1998 [2] | 5.29 | 2,125,707,551 | 112,449,929 | 121,119,857 |
| 2000 | 1999 | 5.46 | 2,153,964,222 | 117,606,447 | 121,817,366 |
| 2001 | 2000 | 4.57 | 2,204,452,791 | 100,743,493 | 112,299,808 |
| 2002 | 2001 | 5.00 | 2,165,589,882 | 108,279,494 | 0 [4] |
| 2003 | 2002 | 8.63 | 1,859,884,999 | 160,508,075 | 61,927,219 [4] |
| 2004 | 2003 | 14.12 | 1,759,588,178 | 248,453,851 | 128,326,810 [4] |
| 2005 | 2004 | 17.30 | 1,844,786,278 | 319,148,026 | - |
| 2005 | 2004 [2] | 16.31 | 1,844,786,278 | 300,884,642 | 254,160,400 |
| 2006 | 2005 | 19.50 | 1,789,601,622 | 348,972,316 | 270,705,017 |
| 2007 | 2006 | N/A [6] | 1,783,386,714 | 380,308,846 | - |
| 2007 | 2006 [3] | N/A | 1,783,386,714 | 382,729,234 | - |
| 2007 | 2006 [1] | N/A | 1,783,386,714 | 316,138,419 | - |
| 2007 | 2006 [7] | N/A | 1,783,386,714 | 238,929,773 | 192,162,537 [8] |
| 2008 | 2007 | N/A | 1,775,357,906 | 308,019,761 | 355,732,115 |
| 2009 | 2008 | N/A | 1,698,833,836 | 351,646,663 | 343,787,486 |
| 2010 | 2009 | N/A | 1,603,842,498 | 418,427,738 | 369,952,868 |
| 2011 [5] | 2010 | N/A | | 467,008,177 | |
| 2011 [5] | 2010 [2] | N/A | | 447,924,105 | |

[1] *Revised asset valuation method.*
[2] *Revised actuarial assumptions and/or methods.*
[3] *Revised benefit provisions.*
[4] *Net after transfer was made to the Health Advance Funding Subaccount from employer contributions.*
[5] *For the year ending September 30, 2011 the actual payroll and actual contributions are not yet known.*
[6] *For the 2006 and later valuations a contribution percentage is not computed because the Retirement System is closed.*
[7] *Interest-only funding adopted for one year only.*
[8] *Includes transfer from the Health Advance Funding Subaccount.*

## HISTORICAL FUNDING LEVELS FOR PRIORITIZED ACTUARIAL ACCRUED LIABILITY

| Valuation Date September 30 | Actuarial Accrued Liability ($ in Millions) (1) Active Member Contributions | (2) Retirants and Beneficiaries | (3) Active and Inactive Members (Employer Financed Portion) | Valuation Assets ($ in Millions) | Portion of Actuarial Accrued Liability Covered by Assets (1) | (2) | (3) | (4) [4] |
|---|---|---|---|---|---|---|---|---|
| 1996 | $ 55 | $ 2,844 | $ 4,248 | $ 6,678 | 100% | 100% | 89.0% | 93.4% |
| 1997 | 3 | 4,300 | 3,910 | 7,516 | 100 | 100 | 82.2 | 91.5 |
| 1997 [3] | 3 | 4,300 | 3,798 | 8,834 | 100 | 100 | 119.3 | 109.0 |
| 1998 | 27 | 4,360 | 3,987 | 9,109 | 100 | 100 | 118.4 | 108.8 |
| 1998 [2] | 27 | 4,484 | 3,986 | 9,109 | 100 | 100 | 115.4 | 107.2 |
| 1999 | 35 | 4,538 | 4,456 | 9,648 | 100 | 100 | 113.9 | 106.9 |
| 2000 | 29 | 4,659 | 4,786 | 10,337 | 100 | 100 | 118.0 | 109.1 |
| 2001 | 34 | 4,677 | 5,167 | 10,633 | 100 | 100 | 114.6 | 107.6 |
| 2002 | 123 | 5,512 | 5,118 | 10,616 | 100 | 100 | 97.3 | 98.7 |
| 2003 | 57 | 7,386 | 4,318 | 10,441 | 100 | 100 | 69.4 | 88.8 |
| 2004 | 78 | 7,503 | 4,586 | 10,149 | 100 | 100 | 56.0 | 83.4 |
| 2004 [2] | 78 | 7,503 | 4,423 | 10,149 | 100 | 100 | 58.1 | 84.5 |
| 2005 | 97 | 7,607 | 4,696 | 9,896 | 100 | 100 | 46.7 | 79.8 |
| 2006 | 107 | 7,607 | 5,085 | 10,111 | 100 | 100 | 47.1 | 79.0 |
| 2006 [1] | 107 | 7,607 | 5,085 | 10,890 | 100 | 100 | 62.5 | 85.1 |
| 2007 | 116 | 7,847 | 5,199 | 11,344 | 100 | 100 | 65.0 | 86.2 |
| 2008 | 119 | 8,361 | 5,286 | 11,403 | 100 | 100 | 55.3 | 82.8 |
| 2009 | 127 | 8,681 | 5,426 | 11,107 | 100 | 100 | 42.4 | 78.0 |
| 2010 | 138 | 9,151 | 5,239 | 10,782 | 100 | 100 | 28.5 | 74.2 |
| 2010 [2] | 138 | 9,265 | 5,457 | 10,782 | 100 | 100 | 25.3 | 72.6 |

[1] *Revised asset valuation method.*
[2] *Revised actuarial assumptions and/or methods.*
[3] *Revised actuarial assumptions and asset valuation method.*
[4] *Percent funded on a total valuation asset and total actuarial accrued liability basis.*

## FINANCIAL OBJECTIVE ACHIEVEMENT INDICATORS – HISTORICAL COMPARISON (DOLLAR AMOUNTS IN THOUSANDS)

| Valuation September 30 | Valuation Assets | Termination Indicator: Actuarial Present Value of Vested Benefits | Termination Indicator: Funded Ratio | Experience Indicator: Actuarial Gain/(Loss) |
|---|---|---|---|---|
| 1996 | $ 6,678,011 | $ 5,337,969 | 125.1 % | $ 308,146 |
| 1997 | 7,515,869 | 6,528,114 | 115.1 | 279,245 |
| 1997 [3] | 8,834,424 | 6,528,114 | 135.3 | 279,245 |
| 1998 | 9,108,985 | 6,607,380 | 137.9 | (8,425) |
| 1998 [2] | 9,108,985 | 6,696,390 | 136.0 | (8,425) |
| 1999 | 9,648,383 | 7,351,103 | 131.3 | 6,923 |
| 2000 | 10,336,872 | 7,535,245 | 137.2 | 252,243 |
| 2001 | 10,632,677 | 7,917,271 | 134.3 | (106,544) |
| 2002 | 10,616,278 | 8,861,608 | 119.8 | (553,528) |
| 2003 | 10,440,611 | 10,146,046 | 102.9 | (460,905) |
| 2004 | 10,149,275 | 10,513,034 | 96.5 | (560,154) |
| 2004 [2] | 10,149,275 | 10,503,835 | 96.6 | (560,154) |
| 2005 | 9,896,760 | 10,886,913 | 90.9 | (600,525) |
| 2006 | 10,110,658 | 12,122,695 | 83.4 | 26,951 |
| 2006 [1] | 10,889,925 | 12,122,695 | 89.8 | 806,218 |
| 2007 | 11,343,529 | 12,516,362 | 90.6 | 181,987 |
| 2008 | 11,402,861 | 13,144,428 | 86.8 | (436,904) |
| 2009 | 11,106,969 | 13,638,715 | 81.4 | (787,953) |
| 2010 | 10,782,287 | 13,976,277 | 77.1 | (631,285) |
| 2010 [2] | 10,782,287 | 14,361,594 | 75.1 | (631,285) |

[1] *Revised asset valuation method.*
[2] *Revised actuarial assumptions and/or method.*
[3] *Revised actuarial assumptions and asset valuation method.*

# SECTION C

## FUND ASSETS

# PLAN NET ASSETS (ASSETS AT MARKET OR FAIR VALUE)

| | September 30 | |
|---|---|---|
| | 2009 | 2010 |
| Cash | $ 19,670,004 | $ 33,125,264 |
| Total Receivables | 109,661,461 | 75,064,164 |
| Short Term Investment Pools | 193,891,407 | 142,411,485 |
| Fixed Income Pools | 1,624,865,766 | 1,459,487,235 |
| Domestic Equity Pools | 3,224,115,147 | 3,205,117,687 |
| Real Estate Pool | 816,049,108 | 836,422,537 |
| Alternative Investments Pools | 1,617,617,450 | 1,886,869,106 |
| International Equities Pools | 1,137,074,376 | 1,243,837,282 |
| Absolute Return Pools | 189,987,767 | 341,174,724 |
| Securities Lending Collateral less Obligations | (343,404,641) | (278,601,051) |
| Total Assets | 8,589,527,845 | 8,944,908,433 |
| Other Liabilities | (6,373,229) | (4,766,460) |
| Net Assets Held in Trust for Pension Benefits | $8,583,154,616 | $8,940,141,973 |

Note: Asset amounts exclude assets held for health benefits.

# RECONCILIATION OF PLAN NET ASSETS

| | September 30, 2009 | September 30, 2010 |
|---|---|---|
| Market Value, Beginning of Year | $9,781,238,658 | $8,583,154,616 |
| Additions | | |
| Member Contributions | 6,994,975 | 26,055,668 |
| Employer Contributions | 343,787,486 | 369,952,868 |
| Net Investment Income | (678,455,022) | 883,646,242 |
| Audit Adjustment | 5,005,245 * | 0 |
| Total Additions | $(322,667,316) | $1,279,654,778 |
| Deductions | | |
| Benefit Payments | 870,278,863 | 917,328,820 |
| Contribution Refunds/Transfers | 272,631 | 265,155 |
| Administrative Expenses | 4,865,232 | 5,073,446 |
| Total Deductions | 875,416,726 | 922,667,421 |
| Market Value, End of Year | $8,583,154,616 | $8,940,141,973 |

* *Reflects adjustments made to the September 30, 2008 assets after the 2008 actuarial report was published.*

## DEVELOPMENT OF VALUATION ASSETS

| | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| 1. Beginning of Year Assets | | | | | |
| a. Market Value | $ 8,583,154,616 | | | | |
| b. Valuation Assets | 11,106,969,100 | | | | |
| 2. End of Year Assets at Market Value | 8,940,141,973 | | | | |
| 3. Net Additions to Market Value | | | | | |
| a. Member Contributions | 26,055,668 | | | | |
| b. Employer Contributions | 369,952,868 | | | | |
| c. Investment Income | 883,646,242 | | | | |
| d. Benefit Payments | (917,328,820) | | | | |
| e. Contribution Refunds/Transfers | (265,155) | | | | |
| f. Administrative Expenses | (5,073,446) | | | | |
| g. Transfer (to) from Stabilization Subaccount | 0 | | | | |
| h. Audit Adjustment | 0 | | | | |
| i. Total Additions to Market Value | 356,987,357 | | | | |
| 4. Summary of Net Additions to Market Value | | | | | |
| a. Net Contributions = 3a + 3b + 3e + 3g | 395,743,381 | | | | |
| b. Net Investment Income = 3c + 3f | 878,572,796 | | | | |
| c. Benefit Payments = 3d | (917,328,820) | | | | |
| d. Audit Adjustment = 3h | 0 | | | | |
| e. Total Additions to Market Value | 356,987,357 | | | | |
| 5. Average Valuation Assets = 1b + .5 x (4a + 4c) + 4d | 10,846,176,381 | | | | |
| 6. Imputed Income at Valuation Rate = 8.00% x 5 | 867,694,110 | | | | |
| 7. Gain (Loss) from Investments = 4b - 6 | 10,878,686 | | | | |
| 8. Portion of Gains (Losses) Recognized from Prior Years | | | | | |
| a. From this year = .2 * 7 | 2,175,737 | | | | |
| b. From one year ago | (315,031,763) | $ 2,175,737 | | | |
| c. From two years ago | (547,817,019) | (315,031,763) | $ 2,175,737 | | |
| d. From three years ago | 189,881,815 | (547,817,019) | (315,031,763) | $ 2,175,737 | |
| e. From four years ago | 0 | 189,881,813 | (547,817,021) | (315,031,764) | $ 2,175,738 |
| f. Total | (670,791,230) | (670,791,232) | (860,673,047) | (312,856,027) | 2,175,738 |
| 9. Change in Valuation Assets = 4a + 4c + 4d + 6 + 8f | (324,682,559) | | | | |
| 10. End of Year Assets | | | | | |
| a. Market Value = 2 | 8,940,141,973 | | | | |
| b. Valuation Assets = 1b + 9 | 10,782,286,541 | | | | |
| 11. Actuarial Rate of Return | 1.82% | | | | |
| 12. Market Rate of Return | 10.56% | | | | |

## DEVELOPMENT OF VALUATION ASSETS (CONTINUED)

| | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|
| 1. Beginning of Year Assets | | | | | |
| a. Market Value | $ 9,428,463,524 | $ 10,130,839,539 | $ 10,889,925,227 | $ 12,103,056,651 | $ 9,781,238,658 |
| b. Valuation Assets | 10,149,275,470 | 9,896,760,034 | 10,889,925,227 | 11,343,529,393 | 11,402,861,293 |
| 2. End of Year Assets at Market Value | 10,130,839,539 | 10,889,925,227 | 12,103,056,651 | 9,781,238,658 | 8,583,154,616 |
| 3. Net Additions to Market Value | | | | | |
| a. Member Contributions | 30,583,004 | 9,434,310 | 19,696,132 | 5,643,805 | 6,994,975 |
| b. Employer Contributions | 254,160,400 | 270,705,017 | 150,858,506 | 355,732,115 | 343,787,486 |
| c. Investment Income | 1,168,692,345 | 1,248,722,460 | 1,802,354,022 | (1,845,408,441) | (678,455,022) |
| d. Benefit Payments | (746,470,156) | (767,000,706) | (795,842,013) | (832,553,176) | (870,278,863) |
| e. Contribution Refunds/Transfers | (291,593) | (133,474) | (124,028) | (183,559) | (272,631) |
| f. Administrative Expenses | (4,297,985) | (4,628,043) | (5,115,226) | (5,048,737) | (4,865,232) |
| g. Transfer (to) from Stabilization Subaccount | 0 | 0 | 41,304,031 | 0 | 0 |
| h. Audit Adjustment | 0 | 1,986,124 | 0 | 0 | 5,005,245 |
| i. Total Additions to Market Value | 702,376,015 | 759,085,688 | 1,213,131,424 | (2,321,817,993) | (1,198,084,042) |
| 4. Summary of Net Additions to Market Value | | | | | |
| a. Net Contributions = 3a + 3b + 3e + 3g | 284,451,811 | 280,005,853 | 211,734,641 | 361,192,361 | 350,509,830 |
| b. Net Investment Income = 3c + 3f | 1,164,394,360 | 1,244,094,417 | 1,797,238,796 | (1,850,457,178) | (683,320,254) |
| c. Benefit Payments = 3d | (746,470,156) | (767,000,706) | (795,842,013) | (832,553,176) | (870,278,863) |
| d. Audit Adjustment = 3h | 0 | 1,986,124 | 0 | 0 | 5,005,245 |
| e. Total Additions to Market Value | 702,376,015 | 759,085,688 | 1,213,131,424 | (2,321,817,993) | (1,198,084,042) |
| 5. Average Valuation Assets = | | | | | |
| 1b + .5 x (4a + 4c) + 4d | 9,918,266,298 | 9,654,255,669 | 10,597,871,541 | 11,107,848,986 | 11,147,982,022 |
| 6. Imputed Income at Valuation Rate = 8.00% x 5 | 793,461,304 | 772,340,454 | 847,829,723 | 888,627,919 | 891,838,562 |
| 7. Gain (Loss) from Investments = 4b - 6 | 370,933,056 | 471,753,963 | 949,409,073 | (2,739,085,097) | (1,575,158,816) |
| 8. Portion of Gains (Losses) Recognized from Prior Years | | | | | |
| a. From this year = .2 * 7 | 74,186,611 | 873,617,768 [1] | 189,881,815 | (547,817,019) | (315,031,763) |
| b. From one year ago | 51,360,911 | 74,186,611 | 0 | 189,881,815 | (547,817,019) |
| c. From two years ago | 76,582,150 | 51,360,911 | 0 | 0 | 189,881,815 |
| d. From three years ago | (369,913,970) | 76,582,150 | 0 | 0 | 0 |
| e. From four years ago | (416,174,097) | (369,913,971) | 0 | 0 | 0 |
| f. Total | (583,958,395) | 705,833,469 | 189,881,815 | (357,935,204) | (672,966,967) |
| 9. Change in Valuation Assets = 4a + 4c + 4d + 6 + 8f | (252,515,436) | 993,165,194 | 453,604,166 | 59,331,900 | (295,892,193) |
| 10. End of Year Assets | | | | | |
| a. Market Value = 2 | 10,130,839,539 | 10,889,925,227 | 12,103,056,651 | 9,781,238,658 | 8,583,154,616 |
| b. Valuation Assets = 1b + 9 | 9,896,760,034 | 10,889,925,227 | 11,343,529,393 | 11,402,861,293 | 11,106,969,100 |
| 11. Actuarial Rate of Return | 2.11 % | 15.31 % | 9.79 % | 4.78 % | 1.96 % |
| 12. Market Rate of Return | 12.66 % | 12.58 % | 16.96 % | (15.59)% | (7.17)% |

[1] *After adjusting to market value as of September 30, 2006.*

# HISTORY OF APPROXIMATE INVESTMENT RETURN RATES

| Plan Year Ending September 30 | Approximate Rate of Return [1] | |
|---|---|---|
| | Market | Actuarial |
| 2001 | (11.46) % | 6.49 % |
| 2002 | (10.71) | 3.00 |
| 2003 | 15.13 | 3.72 |
| 2004 | 12.38 | 2.70 |
| 2005 | 12.66 | 2.11 |
| 2006 | 12.58 | 7.24 |
| 2006 [2] | 12.58 | 15.31 [2] |
| 2007 | 16.96 | 9.79 |
| 2008 | (15.59) | 4.78 |
| 2009 | (7.17) | 1.96 |
| 2010 | 10.56 | 1.82 |
| **Average Returns:** | | |
| Last five years: | 2.67 % | 6.61 % |
| Last ten years: | 2.77 % | 5.09 % |

[1] *Approximate return based on ratio of total investment return to average asset value, using an assumed beginning-of-year timing of audit adjustments (if any) and an assumed mid-year timing of other asset flows (see previous two pages).*

[2] *After adjusting to market value as of September 30, 2006.*

# HISTORICAL GROWTH OF ASSETS AT MARKET VALUE

| Fiscal Year Ended September 30 | Revenues by Source | | | Expenses by Type | | | |
|---|---|---|---|---|---|---|---|
| | Member Contributions | Employer Contributions | Net Investment Income [1] | Retirement Benefits | Return of Contributions and Transfers | Administrative Expenses | Market Value of Assets |
| 1991 | $ 4,416,336 | $ 141,476,780 | $ 276,782,381 [3] | $ 190,723,340 | $ 126,406 | $ 4,339,321 | $ 4,097,389,068 |
| 1992 | 4,810,700 | 192,117,873 | 244,287,508 | 226,130,628 | 123,792 | 5,223,109 | 4,307,127,620 |
| 1993 | 4,068,696 | 265,867,853 | 332,767,025 [3] | 260,340,711 | 99,369 | 4,198,410 | 4,645,192,704 |
| 1994 | 2,257,216 | 248,562,234 | 325,436,846 [3] | 273,332,603 | 92,153 | 5,101,169 | 4,942,923,075 |
| 1995 | 2,260,511 | 256,845,912 | 405,103,276 [3] | 289,266,598 | 80,453 | 5,547,632 | 5,312,238,091 |
| 1996 | 2,619,067 | 285,766,953 | 1,939,209,206 [3] | 321,314,081 | 30,082 | 3,489,761 | 7,214,999,393 |
| 1997 | 12,144,153 | 288,590,215 | 1,677,780,071 | 382,866,379 | 7,848,649 | 5,247,943 | 8,797,550,861 |
| 1998 | 5,158,744 | 147,599,551 | 702,058,316 | 429,879,875 | 134,533,763 | 4,297,092 | 9,083,656,742 |
| 1999 | 6,186,018 | 121,119,857 | 1,465,196,232 | 446,219,254 | 728,366 | 4,330,623 | 10,224,880,606 |
| 2000 | 4,606,662 | 121,817,366 | 1,359,608,718 | 458,803,774 | 222,163 | 3,954,992 | 11,247,932,423 |
| 2001 | 3,341,381 | 112,299,808 | (1,264,290,456) | 478,525,328 | 91,699 | 4,149,284 | 9,616,516,845 |
| 2002 | 173,232,835 | 87,486,128 | (1,005,732,436) | 503,453,879 | 87,504,459 [2] | 6,432,819 | 8,274,112,215 |
| 2003 | 80,185,475 | 79,291,845 | 1,215,018,189 | 701,664,432 | 17,484,652 [2] | 5,192,039 | 8,924,266,601 |
| 2004 | 37,682,883 | 103,873,294 | 1,073,759,972 | 731,009,109 | (24,206,316) [2] | 4,316,433 | 9,428,463,524 |
| 2005 | 30,395,040 | 256,433,052 | 1,168,692,344 | 746,673,263 | 187,049 | 4,297,985 | 10,132,825,663 |
| 2006 | 9,434,310 | 270,705,017 | 1,248,722,460 | 767,000,706 | 133,474 | 4,628,043 | 10,889,925,227 |
| 2007 | 19,696,132 | 150,858,506 | 1,802,354,022 | 795,842,013 | (41,180,003) [2] | 5,115,226 | 12,103,056,651 |
| 2008 | 5,643,805 | 355,732,115 | (1,840,403,196) | 832,553,176 | 183,559 | 5,048,737 | 9,786,243,903 |
| 2009 | 6,994,975 | 343,787,486 | (678,455,022) | 870,278,863 | 272,631 | 4,865,232 | 8,583,154,616 |
| 2010 | 26,055,668 | 369,952,868 | 883,646,242 | 917,328,820 | 265,155 | 5,073,446 | 8,940,141,973 |

[1] *Includes miscellaneous income.*

[2] *Includes transfers to/from the Health Advance Funding Subaccount.*

[3] *Includes other changes in net assets/reserves/fund balances and, in 1996, a $990,253,705 cumulative adjustment due to GASB Statement Nos. 25 and 26.*

*Note: Data for the year 2007 and prior years was provided by the State of Michigan Department of Technology, Management and Budget - Financial Services.*

# SECTION D

## CENSUS DATA

# SUMMARY OF PARTICIPANT DATA BY CATEGORY

| | As of September 30 | |
|---|---|---|
| | **2009** | **2010** |
| Retirees and beneficiaries currently receiving benefits: | | |
| Regular benefits | 38,839 | 40,152 |
| Survivor benefits | 6,601 | 6,745 |
| Disability benefits | 3,589 | 3,565 |
| Total | 49,029 | 50,462 |
| Current Employees: | | |
| Vested | 26,923 | 24,829 |
| Non-vested | 532 | 649 |
| Total | 27,455 | 25,478 |
| Inactive employees entitled to benefits and not yet receiving them: | 6,613 | 6,243 |
| Total Participants | 83,097 | 82,183 |

# RETIREES AND BENEFICIARIES – HISTORICAL COMPARISON

| Year Ended September 30 | Number Added | Number Removed | Rolls End of Year | | % Increase in Annual Benefits | Average Annual Benefit |
|---|---|---|---|---|---|---|
| | | | Number | Annual Benefit[1] | | |
| 1991 | | | 25,566 | $194,928 | 7.9 % | $ 7,625 |
| 1992 | | | 28,856 | 243,612 | 25.0 | 8,442 |
| 1993 | | | 29,175 | 257,193 | 5.6 | 8,816 |
| 1994 | 1,888 | 1,101 | 29,962 | 273,387 | 6.3 | 9,124 |
| 1995 | 1,566 | 966 | 30,562 | 290,694 | 6.3 | 9,512 |
| 1996 | 1,595 | 1,064 | 31,093 | 307,933 | 5.9 | 9,904 |
| 1997 | 6,098 | 1,068 | 36,123 | 421,060 | 36.7 | 11,656 |
| 1998 | 1,279 | 1,217 | 36,185 | 432,456 | 2.7 | 11,951 |
| 1999 | 1,409 | 1,248 | 36,346 | 444,167 | 2.7 | 12,221 |
| 2000 | 1,540 | 1,181 | 36,705 | 463,969 | 4.5 | 12,640 |
| 2001 | 1,648 | 1,242 | 37,111 | 471,407 | 1.6 | 12,703 |
| 2002 | 3,806 | 1,251 | 39,666 | 546,968 | 16.0 | 13,789 |
| 2003 | 6,448 | 623 | 45,491 | 708,607 | 29.6 | 15,577 |
| 2004 | 1,561 | 1,433 | 45,619 | 729,087 | 2.9 | 15,982 |
| 2005 | 1,542 | 1,360 | 45,801 | 747,428 | 2.5 | 16,319 |
| 2006 | 1,728 | 1,549 | 45,980 | 769,096 | 2.9 | 16,727 |
| 2007 | 2,206 | 1,300 | 46,886 | 802,018 | 4.3 | 17,106 |
| 2008 | 2,653 | 1,461 | 48,078 | 842,612 | 5.1 | 17,526 |
| 2009 | 2,423 | 1,472 | 49,029 | 880,763 | 4.5 | 17,964 |
| 2010 | 2,937 | 1,504 | 50,462 | 934,092 | 6.1 | 18,511 |

[1] *Amounts shown in thousands of dollars.*

Note: Data related to additions and removals before 1994 is not available.

# RETIREES AND BENEFICIARIES
# AS OF SEPTEMBER 30, 2010
# BY TYPE OF RETIREMENT AND SELECTED OPTION

| Amount of Monthly Benefit | Number of Retirees | Type of Retirement* | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| $ 1 - 200 | 481 | 254 | 160 | 7 | 42 | 0 | 9 | 1 | 8 |
| 201 - 400 | 2,398 | 1,496 | 485 | 8 | 255 | 0 | 48 | 2 | 104 |
| 401 - 600 | 4,600 | 2,562 | 707 | 256 | 624 | 16 | 165 | 11 | 259 |
| 601 - 800 | 4,940 | 2,894 | 656 | 9 | 784 | 1 | 232 | 33 | 331 |
| 801 - 1,000 | 4,524 | 2,679 | 520 | 8 | 722 | 1 | 226 | 91 | 277 |
| 1,001 - 1,200 | 4,121 | 2,539 | 377 | 16 | 618 | 1 | 216 | 122 | 232 |
| 1,201 - 1,400 | 4,048 | 2,735 | 342 | 7 | 489 | 0 | 187 | 149 | 139 |
| 1,401 - 1,600 | 4,143 | 3,058 | 343 | 3 | 300 | 0 | 130 | 218 | 91 |
| 1,601 - 1,800 | 3,684 | 2,898 | 224 | 4 | 150 | 1 | 94 | 258 | 55 |
| 1,801 - 2,000 | 3,361 | 2,735 | 177 | 3 | 86 | 0 | 61 | 258 | 41 |
| Over 2,000 | 14,162 | 11,941 | 345 | 2 | 78 | 0 | 115 | 1,625 | 56 |
| Totals | 50,462 | 35,791 | 4,336 | 323 | 4,148 | 20 | 1,483 | 2,768 | 1,593 |

| Amount of Monthly Benefit | Number of Retirees | Selected Option** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Reg. | Opt. A | Opt. B | Opt. C | Opt. E | Opt. E1 | Opt. E2 | Opt. E3 |
| $ 1 - 200 | 481 | 116 | 145 | 153 | 5 | 45 | 9 | 8 | 0 |
| 201 - 400 | 2,398 | 929 | 642 | 511 | 38 | 173 | 49 | 55 | 1 |
| 401 - 600 | 4,600 | 1,927 | 1,223 | 751 | 84 | 366 | 100 | 142 | 7 |
| 601 - 800 | 4,940 | 1,932 | 1,327 | 826 | 96 | 487 | 105 | 163 | 4 |
| 801 - 1,000 | 4,524 | 1,831 | 1,181 | 774 | 95 | 404 | 80 | 148 | 11 |
| 1,001 - 1,200 | 4,121 | 1,794 | 1,200 | 630 | 113 | 233 | 53 | 87 | 11 |
| 1,201 - 1,400 | 4,048 | 1,836 | 1,215 | 653 | 109 | 131 | 50 | 52 | 2 |
| 1,401 - 1,600 | 4,143 | 1,795 | 1,307 | 724 | 137 | 99 | 45 | 32 | 4 |
| 1,601 - 1,800 | 3,684 | 1,487 | 1,180 | 685 | 165 | 76 | 49 | 36 | 6 |
| 1,801 - 2,000 | 3,361 | 1,347 | 1,003 | 592 | 200 | 95 | 60 | 43 | 21 |
| Over 2,000 | 14,162 | 5,091 | 3,867 | 2,511 | 951 | 895 | 298 | 418 | 131 |
| Totals | 50,462 | 20,085 | 14,290 | 8,810 | 1,993 | 3,004 | 898 | 1,184 | 198 |

*** Type of Retirement**

1 – Normal retirement for age & service
2 – Survivor payment – normal or early retirement
3 – Duty disability retirement (incl. survivors)
4 – Non-duty disability retirement (incl. survivors)
5 – Survivor payment – duty death in service
6 – Survivor payment – non-duty death in service
7 – Retirees with supplemental benefits for early retirement incentive factors
8 – Retirees with reduced benefits for early retirement reduction factors

**** Selected Option**

Reg. – Straight life allowance
Opt. A – 100% survivor option
Opt. B – 50% survivor option
Opt. C – 75% survivor option
Opt. E – Social Security equated
Opt. E1 – Social Security equated w/100% survivor option
Opt. E2 – Social Security equated w/50% survivor option
Opt. E3 – Social Security equated w/75% survivor option

# ACTIVE MEMBERS BY CLASSIFICATION

| | September 30, 2009 | September 30, 2010 |
|---|---|---|
| **Conservation Officers** | | |
| Number | 103 | 94 |
| Average Age | 44.9 | 45.4 |
| Average Service | 18.1 | 18.5 |
| Reported Payroll | $ 7,326,669 | $ 7,083,606 |
| Average Annual Payroll | 71,133 | 75,358 |
| **Corrections Officers** | | |
| Number | 7,393 | 6,643 |
| Average Age | 49.1 | 49.3 |
| Average Service | 20.3 | 21.0 |
| Reported Payroll | $ 471,447,234 | $ 420,552,568 |
| Average Annual Payroll | 63,769 | 63,308 |
| **All Other** | | |
| Number | 19,959 | 18,741 |
| Average Age | 53.3 | 53.8 |
| Average Service | 24.8 | 25.2 |
| Reported Payroll | $1,255,550,911 | $1,194,073,020 |
| Average Annual Payroll | 62,907 | 63,714 |
| **Total** | | |
| Number | 27,455 | 25,478 |
| Average Age | 52.1 | 52.6 |
| Average Service | 23.5 | 24.1 |
| Reported Payroll | $1,734,324,814 | $1,621,709,194 |
| Average Annual Payroll | 63,170 | 63,651 |

# ACTIVE MEMBERS

**Members in Active Service as of September 30, 2010**
**by Age and Years of Service**

| Age | Years of Service | | | | | | | Total Count | Total Pay | Average Pay |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20 - 24 | 25 - 29 | 30 & up | | | |
| 20 - 24 | 1 | | | | | | | 1 | $ 15,912 | $15,912 |
| 30 - 34 | 16 | 22 | 38 | 7 | | | | 83 | 4,863,629 | 58,598 |
| 35 - 39 | 36 | 59 | 390 | 369 | 16 | | | 870 | 52,552,138 | 60,405 |
| 40 - 44 | 42 | 72 | 505 | 1,244 | 689 | 37 | | 2,589 | 158,150,668 | 61,086 |
| 45 - 49 | 40 | 53 | 360 | 1,162 | 2,293 | 657 | 66 | 4,631 | 289,822,031 | 62,583 |
| 50 - 54 | 40 | 67 | 328 | 945 | 2,130 | 1,501 | 1,725 | 6,736 | 419,421,280 | 62,266 |
| 55 - 59 | 45 | 54 | 219 | 742 | 1,445 | 1,207 | 2,959 | 6,671 | 431,964,505 | 64,753 |
| 60 - 64 | 34 | 39 | 144 | 370 | 638 | 473 | 1,363 | 3,061 | 206,939,837 | 67,605 |
| 65 - 69 | 8 | 7 | 27 | 74 | 124 | 66 | 335 | 641 | 44,904,650 | 70,054 |
| 70 & up | 8 | 6 | 10 | 19 | 18 | 13 | 121 | 195 | 13,074,544 | 67,049 |
| Total | 270 | 379 | 2,021 | 4,932 | 7,353 | 3,954 | 6,569 | 25,478 | $ 1,621,709,194 | $63,651 |

# ACTIVE AND INACTIVE MEMBERS REPORTED FOR VALUATION
# HISTORICAL COMPARISON

| Valuation Date September 30 | Number of Inactive Vested Members | Active Members | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | Average | | | |
| | | Number | Reported Payroll [1] | Annual Pay | % Increase | Age | Years of Service |
| 1991 | 3,030 | 65,595 | $ 2,236,336 | $ 34,093 | 6.5 % | 42.1 | 11.9 |
| 1992 | 4,367 | 64,248 | 2,189,752 | 34,083 | 0.0 | 42.2 | 11.9 |
| 1993 | 4,359 | 63,906 | 2,185,036 | 34,191 | 0.3 | 42.6 | 12.1 |
| 1994 | 4,540 | 64,923 | 2,271,158 | 34,982 | 2.3 | 43.1 | 12.6 |
| 1995 | 5,276 | 65,133 | 2,348,534 | 36,058 | 3.1 | 43.2 | 12.7 |
| 1996 | 6,667 | 63,807 | 2,515,420 | 39,422 | 9.3 | 43.8 | 13.0 |
| 1997 | 7,656 | 55,434 | 2,273,203 | 41,007 | 4.0 | 43.7 | 13.1 |
| 1998 | 8,021 | 49,717 | 2,107,996 | 42,400 | 3.4 | 44.8 | 14.8 |
| 1999 | 7,376 | 49,612 | 2,213,851 | 44,623 | 5.2 | 45.9 | 15.8 |
| 2000 | 7,556 | 47,778 | 2,253,818 | 47,173 | 5.7 | 46.7 | 16.7 |
| 2001 | 8,809 | 45,852 | 2,230,562 | 48,647 | 3.1 | 47.4 | 17.7 |
| 2002 | 7,917 | 43,064 | 2,133,477 | 49,542 | 1.8 | 48.0 | 18.6 |
| 2003 | 7,528 | 36,536 | 1,859,555 | 50,897 | 2.7 | 47.7 | 17.9 |
| 2004 | 7,397 | 34,749 | 1,889,410 | 54,373 | 6.8 | 48.4 | 19.0 |
| 2005 | 7,200 | 33,770 | 1,880,179 | 55,676 | 2.4 | 49.3 | 20.0 |
| 2006 | 7,217 | 32,575 | 1,847,653 | 56,720 | 1.9 | 50.1 | 21.0 |
| 2007 | 6,663 | 30,864 | 1,825,889 | 59,159 | 4.3 | 50.8 | 21.8 |
| 2008 | 6,912 | 28,568 | 1,763,672 | 61,736 | 4.4 | 51.4 | 22.7 |
| 2009 | 6,613 | 27,455 | 1,734,325 | 63,170 | 2.3 | 52.1 | 23.5 |
| 2010 | 6,243 | 25,478 | 1,621,709 | 63,651 | 0.8 | 52.6 | 24.1 |

[1] *Amounts shown in thousands of dollars.*

# SECTION E

## METHODS AND ASSUMPTIONS

# VALUATION METHODS

***Actuarial Cost Method*** **-** Normal cost and the allocation of benefit values between service rendered before and after the valuation date was determined using an Individual Entry-Age Actuarial Cost Method having the following characteristics:

(i) the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement;

(ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Actuarial gains (losses), as they occur, reduce (increase) the Unfunded Actuarial Accrued Liability.

***Financing of Unfunded Actuarial Accrued Liabilities*** **-** Unfunded actuarial accrued liabilities (full funding credit if assets exceed liabilities) were amortized by level (principal and interest combined) dollar contributions over a reasonable period of future years.

***Present value of future reconciliation payments*** **–** Subsection 38(5) of the SERS statute provides for a process to reconcile actual employer contributions to the actuarially computed contribution requirements. In order to avoid duplication of the employer contributions, the present value of future reconciliation payments is subtracted from the unfunded actuarial accrued liability. The net unfunded actuarial accrued liability is then amortized, resulting in the required amortization payment. Please refer to page A-1.

***Actuarial Value of System Assets*** **-** The actuarial value of assets recognizes assumed investment income fully each year. Differences between actual and assumed investment income are phased in over a closed five year period. During periods when investment performance exceeds the assumed rate, actuarial value of assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, actuarial value of assets will tend to be greater than market value. The actuarial value of assets was reset to market value as of September 30, 2006, with five-year smoothing restarted at that time.

# VALUATION ASSUMPTIONS

***The rate of investment return*** was 8.0% a year, compounded annually net of investment and administrative expenses.

The assumed real return is the rate of return in excess of wage inflation. Considering other assumptions used in the valuation, the 8.0% nominal rate translates to a net real return of 4.5% a year.

***The rates of pay increase*** used for individual members are in accordance with the table below. This assumption is used to project a member's current pay to the pay upon which System benefits will be based. These rates were first used for the September 30, 2010 valuation of the System.

| Sample Ages | Salary Increase Assumptions For an Individual Member | | |
|---|---|---|---|
| | Merit & Seniority | Base (Economy) | Increase Next Year |
| 20 | 9.0% | 3.5% | 12.5% |
| 25 | 6.0 | 3.5 | 9.5 |
| 30 | 2.6 | 3.5 | 6.1 |
| 35 | 1.2 | 3.5 | 4.7 |
| 40 | 0.8 | 3.5 | 4.3 |
| 45 | 0.5 | 3.5 | 4.0 |
| 50 | 0.4 | 3.5 | 3.9 |
| 55 | 0.4 | 3.5 | 3.9 |
| 60 | 0.0 | 3.5 | 3.5 |
| 65 | 0.0 | 3.5 | 3.5 |
| Ref | 326 | | |

The charts shown in this section of the report may include a reference number (for example, 326 is used above). These reference numbers are used by GRS to track and identify assumption tables.

# VALUATION ASSUMPTIONS

***The healthy life post-retirement mortality table*** used in this valuation of the System was the RP-2000 Combined Healthy Mortality Table, adjusted for mortality improvements to 2020 using projection scale AA. For men, 100% of the table rates for ages 0-79 and 104-110, and 81% of the table rates for ages 80-103 were used, set forward 2 years. For women, 107% of the table rates were used. This assumption was first used for the September 30, 2010 valuation of the System. Sample rates of mortality and years of life expectancy are shown below: This assumption is used to measure the probabilities of each benefit payment being made after retirement.

| Sample Attained Ages | Probability of Dying Next Year | | Future Life Expectancy (years) | |
|---|---|---|---|---|
| | Men | Women | Men | Women |
| 50 | 0.18% | 0.13% | 31.51 | 34.01 |
| 55 | 0.33 | 0.25 | 26.84 | 29.28 |
| 60 | 0.65 | 0.49 | 22.37 | 24.73 |
| 65 | 1.24 | 0.94 | 18.25 | 20.46 |
| 70 | 2.02 | 1.62 | 14.48 | 16.55 |
| 75 | 3.61 | 2.56 | 11.11 | 13.00 |
| 80 | 5.55 | 4.27 | 8.42 | 9.82 |
| Ref: | 781 x 1.00 sf2 | 455 x 1.07 | | |

***For active members*** the probabilities of dying before retirement were based upon the RP-2000 Combined Healthy Mortality Table, adjusted for mortality improvements to 2020 using projection scale AA. For men, 150% of the male table rates were used. For women, 115% of the female table rates were used. This assumption was first used for the September 30, 2010 valuation of the System. Sample rates of mortality and years of life expectancy are shown on the following page.

# VALUATION ASSUMPTIONS

| Sample Attained Ages | Probability of Dying Next Year | | Future Life Expectancy (years) | |
|---|---|---|---|---|
| | Men | Women | Men | Women |
| 20 | 0.04% | 0.02% | 58.21 | 62.72 |
| 25 | 0.05 | 0.02 | 53.31 | 57.77 |
| 30 | 0.06 | 0.02 | 48.45 | 52.83 |
| 35 | 0.10 | 0.04 | 43.62 | 47.91 |
| 40 | 0.14 | 0.06 | 38.87 | 43.02 |
| 45 | 0.17 | 0.09 | 34.14 | 38.17 |
| 50 | 0.22 | 0.14 | 29.45 | 33.36 |
| 55 | 0.37 | 0.27 | 24.81 | 28.64 |
| 60 | 0.73 | 0.53 | 20.38 | 24.11 |
| 65 | 1.44 | 1.01 | 16.28 | 19.88 |
| Ref: | 454 x 1.50 | 455 x 1.15 | | |

For Conservation Officers, 80% of active member deaths are assumed to be non-duty deaths and 20% of the deaths are assumed to be duty related. For Correction Officers, 70% of active member deaths are assumed to be non-duty deaths and 30% of the deaths are assumed to be duty related. For all others, 90% of active member deaths are assumed to be non-duty deaths and 10% of the deaths are assumed to be duty related.

***The disabled life mortality table*** used in this valuation was developed by the prior actuary pursuant to an experience study. Beginning with the September 30, 2010 valuation, 101% of the male table rates and 105% of the female table rates were used. For disabled retirees, the sample rates of mortality and years of life expectancy are shown below.

| Sample Attained Ages | Probability of Dying Next Year | | Future Life Expectancy (years) | |
|---|---|---|---|---|
| | Men | Women | Men | Women |
| 50 | 2.53% | 1.81% | 20.83 | 24.70 |
| 55 | 2.71 | 2.14 | 18.37 | 21.95 |
| 60 | 3.19 | 2.56 | 15.85 | 19.36 |
| 65 | 3.98 | 2.98 | 13.43 | 16.86 |
| 70 | 5.07 | 3.40 | 11.17 | 14.35 |
| 75 | 6.65 | 3.95 | 9.08 | 11.73 |
| 80 | 8.83 | 5.59 | 7.21 | 9.05 |
| Ref: | 476 x 1.01 | 477 x 1.05 | | |

# VALUATION ASSUMPTIONS

***The rates of regular retirement*** used to measure the probability of eligible members retiring with an unreduced benefit during the next year are shown below. This assumption was first used for the September 30, 2010 valuation of the System.

| Retirement Ages | Percent of Eligible Members Retiring | | |
|---|---|---|---|
| | Conservation Officers | Corrections Officers | Others |
| 45 | 28% | | |
| 46 | 28 | | |
| 47 | 28 | | |
| 48 | 28 | | |
| 49 | 28 | | |
| 50 | 28 | | |
| 51 | 28 | 27% | |
| 52 | 28 | 21 | |
| 53 | 28 | 14 | |
| 54 | 28 | 16 | |
| 55 | 28 | 16 | 15% |
| 56 | 28 | 22 | 14 |
| 57 | 28 | 15 | 10 |
| 58 | 28 | 12 | 10 |
| 59 | 28 | 12 | 11 |
| 60 | 28 | 18 | 14 |
| 61 | 28 | 18 | 13 |
| 62 | 50 | 32 | 22 |
| 63 | 40 | 24 | 19 |
| 64 | 40 | 22 | 16 |
| 65 | 60 | 16 | 25 |
| 66 | 50 | 22 | 22 |
| 67 | 50 | 30 | 21 |
| 68 | 50 | 40 | 20 |
| 69 | 50 | 50 | 22 |
| 70 | 100 | 100 | 50 |
| 71 | 100 | 100 | 60 |
| 72 | 100 | 100 | 70 |
| 73 | 100 | 100 | 80 |
| 74 | 100 | 100 | 90 |
| 75 | 100 | 100 | 100 |
| Ref | 1603 | 1604 | 1605 |

Note: For Conservation Officers, 40% are assumed to retire in their first year of eligibility for unreduced benefits (completion of 25 years of service).

# VALUATION ASSUMPTIONS

***The rates of early retirement*** used to measure the probability of eligible members retiring with reduced retirement benefits during the next year are shown below. These rates were first used for the September 30, 2010 valuation of the System.

| Retirement Ages | Percent of Eligible Members Retiring |
|---|---|
| 55 | 5.5% |
| 56 | 8.0 |
| 57 | 7.0 |
| 58 | 7.0 |
| 59 | 7.0 |
| Ref | 1606 |

***The rates of separation from active membership*** used in the valuation are shown below (rates do not apply to members eligible to retire and do not include separation on account of death or disability). This assumption measures the probabilities of members remaining in employment, and was first used for the September 30, 2004 actuarial valuation of the System.

| Sample Ages | Years of Service | Percent Separating Within Next Year |
|---|---|---|
| All | 0 | 12.00% |
| | 1 | 8.50 |
| | 2 | 6.50 |
| | 3 | 5.00 |
| | 4 | 4.00 |
| 20 | 5 & Over | 4.00 |
| 25 | | 3.50 |
| 30 | | 3.00 |
| 35 | | 2.50 |
| 40 | | 2.25 |
| 45 | | 2.00 |
| 50 | | 1.75 |
| 55 | | 1.75 |
| 60 | | 1.75 |
| Ref | 405 | 794 |

## VALUATION ASSUMPTIONS

***Rates of disability*** among active members used in the valuation are shown below, and were first used for the September 30, 2010 valuation of the System.

| Sample Ages | Percent Becoming Disabled Within Next Year | |
|---|---|---|
| | Non-Duty Disability | Duty Disability |
| 25 | 0.03% | 0.00% |
| 30 | 0.05 | 0.01 |
| 35 | 0.10 | 0.01 |
| 40 | 0.20 | 0.02 |
| 45 | 0.34 | 0.04 |
| 50 | 0.47 | 0.06 |
| 55 | 0.92 | 0.08 |
| 60 | 2.10 | 0.11 |
| 65 | 2.30 | 0.16 |
| Ref. | 571 | 14 x .20 |

## MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

| | |
|---|---|
| ***Benefit Service*** | Exact fractional service is used to determine the amount of benefit payable. |
| ***Decrement Operation*** | Disability and withdrawal decrements do not operate during retirement eligibility. |
| ***Decrement Timing*** | Decrements of all types are assumed to occur mid-year. |
| ***Eligibility Testing*** | Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur. |
| ***Forfeitures*** | For vested separations from service, it is assumed that 0% of members separating will withdraw their contributions and forfeit an employer financed benefit. It was further assumed that the liability at termination is the greater of the vested deferred benefit (if any) or the member's accumulated contributions. |
| ***Incidence of Contributions*** | Contributions are assumed to be received continuously throughout the year. |
| ***Liability Adjustments*** | Retirement liabilities were increased by 1% to account for unused vacation time. Inactive vested member liabilities were increased by 2% to reflect the value of the death benefit provision. |
| ***Marriage Assumption*** | 75% of males and 60% of females were assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses for active member valuation purposes. |
| ***Normal Form of Benefit*** | A straight life benefit is the normal form of benefit. |
| ***Pay Increase Timing*** | Pay increases were assumed to be at the beginning of the fiscal year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date. |
| ***Service Credit Accruals*** | Members were assumed to accrue one year of service credit per year. |

# SECTION F

## PLAN PROVISIONS

# PLAN PROVISIONS

Our actuarial valuation of the System is based on the present provisions of Public Act No. 240 of 1943.

**Regular Retirement** (no reduction factor for age):

Eligibility - Age 55 with 30 years of service; or age 60 with 10 or more years service. Corrections Officers may retire at age 51 with 25 or more years service; or age 56 with 10 or more years service. Conservation Officers may retire after 25 years of service regardless of age.

Final Average Compensation - Regular retirement benefit is based on final average compensation (FAC), which is usually the average of highest 3 consecutive years (2 years for Conservation Officers).

Annual Amount - Total service times 1.5% of FAC. For members with 20 or more years of service, a $3,000 minimum annual benefit is payable. Corrections Officers receive an additional temporary supplement to age 62 equal to the product of supplemental service times 0.5% of FAC. Conservation Officers retiring after 25 years receive a benefit equal to 60% of FAC.

**Early Retirement** (age reduction factor used):

Eligibility - Age 55 with 15 or more years service.

Annual Amount - Computed as regular retirement benefit but reduced by ½ % for each month under age 60.

**Deferred Retirement** (vested benefit):

Eligibility - 10 years service (5 years for unclassified persons in the executive or legislative branch). Benefit commences at age 60.

Annual Amount - Computed as regular retirement benefit based on service and FAC at termination.

# PLAN PROVISIONS

**Duty Disability Retirement**:

Eligibility - No age or service requirement.

Annual Amount - Disability age 60+: Computed as regular retirement benefit with minimum benefit based on 10 years service. Disability prior to age 60: To age 60, benefit is computed as a regular retirement benefit using service at the time of disability retirement with a minimum benefit of $6,000 per year. Additional limitation such that benefit plus workers' compensation does not exceed final compensation. At age 60, benefit is recomputed as a regular retirement benefit with service granted for period in receipt of disability benefit before age 60. If the member dies before age 60, benefits are payable to a surviving spouse computed as a regular retirement benefit but based on service at time of disability retirement plus elapsed time between date of retirement and age 60.

**Non-Duty Disability Retirement**:

Eligibility - 10 years of service.

Annual Amount - Computed as regular retirement benefit based on service and FAC at time of disability. Minimum annual benefit is $600.

**Duty Death Before Retirement**:

Eligibility - No age or service requirement.

Annual Amount - Surviving spouse receives annual benefit computed as a regular retirement benefit as if the deceased member retired the day before date of death and elected Option A. Benefit is based on member's service at time of death, or 10 years of service, whichever is greater. A minimum benefit of $6,000 per year is payable. Children under age 21 each receive an equal share of 1/2 of the benefit payable (surviving spouse receives the other 1/2), to a maximum of 1/2 for all children. A given child's share of benefits terminates upon the child's marriage, death or attainment of age 21. In the event that there is no surviving spouse, the benefit is allocated equally among all children subject to the limitations described above. In the event that there is no surviving spouse or eligible children, benefits may be paid to an eligible, dependent parent. Benefits end upon the marriage or death of the surviving parent. Additional limitation such that benefit plus workers' compensation does not exceed final compensation.

# PLAN PROVISIONS

**Non-Duty Death Before Retirement**:

Eligibility - 10 years of service. In the case of a deceased vested former member, the survivor benefit commences when the deceased former member would have attained age 60.

Annual Amount - Computed as a regular retirement benefit but reduced in accordance with a 100% Joint and Survivor form of payment.

**Post Retirement Cost-of-Living Adjustments**:

One-time upward adjustments have been made in 1972, 1974, 1976, 1977, and 1987. Beginning in 1983 some benefit recipients share in a distribution of a portion of investment income earned in excess of 8% annually (supplemental payment). Beginning in 1988 all benefit recipients are eligible for automatic 3% annual (non-compounded) benefit increases, with a maximum $300 annual increase. Eligibility for the above benefits:

Retired before October 1, 1987 - Greater of supplemental payment or the combination of the 1987 one-time adjustment and the automatic increases.

Retired on or after October 1, 1987 - Automatic increases only.

**Member Contributions**:

None.

**Defined Contribution Legislation (Public Act 487 of 1996)**:

New state employees hired on or after March 31, 1997 become participants in Tier 2 (*i.e.*, a defined contribution plan) rather than Tier 1 (*i.e.*, the above described defined benefit plan).

Active members on March 30, 1997 could irrevocably elect to terminate membership in Tier 1 and become participants in Tier 2. Elections had to be in writing and submitted between January 2, 1998 and April 30, 1998. Such members became Tier 2 participants on June 1, 1998, and had the actuarial present value of their Tier 1 accrued benefit transferred into Tier 2 by November 30, 1998.

A defined benefit disability pension or death-in-service pension may be payable if a Tier 2 participant becomes disabled or dies in service (see page A-2).

# SECTION G

## GLOSSARY

# GLOSSARY

***Actuarial Accrued Liability*** The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as "accrued liability" or "past service liability."

***Accrued Service*** The service credited under the plan which was rendered before the date of the actuarial valuation.

***Actuarial Assumptions*** Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

***Actuarial Cost Method*** A mathematical budgeting procedure for allocating the dollar amount of the "actuarial present value of future plan benefits" between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the "actuarial funding method."

***Actuarial Equivalent*** A single amount or series of amounts of equal value to another single amount or series of amounts, computed on the basis of the rate(s) of interest and mortality tables used by the plan.

***Actuarial Present Value*** The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

***Amortization*** Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

***Experience Gain/(Loss)*** A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

# GLOSSARY

| | |
|---|---|
| ***Normal Cost*** | The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as "current service cost." Any payment toward the unfunded actuarial accrued liability is not part of the normal cost. |
| ***Reserve Account*** | An account used to indicate that funds have been set aside for a specific purpose and is not generally available for other uses. |
| ***Unfunded Actuarial Accrued Liability*** | The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as "unfunded accrued liability." |
| ***Valuation Assets*** | The value of current plan assets recognized for valuation purposes. Generally based on market value plus a portion of unrealized appreciation or depreciation. |