Gabriel Roeder Smith & Company
Consultants & Actuaries

# CITY OF YPSILANTI FIRE AND POLICE RETIREMENT SYSTEM

## 61ST ACTUARIAL VALUATION REPORT

## JUNE 30, 2016

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GRS

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December 2, 2016

Retirement Board
City of Ypsilanti
Fire and Police Retirement System
Ypsilanti, Michigan

Dear Board Members:

***Submitted in this report*** are the results of the 61st Annual Actuarial Valuation of the City of Ypsilanti Fire and Police Retirement System, which is based on Act No. 345 of the Public Acts of 1937, as amended. The purpose of the valuation and gain (loss) analysis is to measure funding progress in relation to the actuarial cost method, and to determine employer contribution rates. Calculations required for compliance with the Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68 will be issued in a separate report. The results of the valuation may not be applicable for other purposes.

***The valuation was based upon*** data, furnished by the City, concerning financial operations and individual retirees, beneficiaries, and members. Data was checked for year to year consistency, but was not audited by the actuary. We are not responsible for the accuracy or completeness of the information provided by the City.

***The actuarial methods and assumptions*** used in the actuarial valuation are summarized in Section D of this report. The assumptions are established by the Board after consulting with the actuary. We believe the actuarial assumptions used in this valuation are reasonable.

***The date of the valuation*** was June 30, 2016.

This report should not be relied on for any purpose other than those described above. It was prepared at the request of the Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided to parties other than the System only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

The computed contribution shown on page B-1 is best viewed as the minimum contribution that complies with the Board's funding policy. Users of this report should be aware that contributions made at that rate do not guarantee benefit security. Until the plan is fully-funded, we encourage the plan sponsor to contribute in excess of the computed contribution.

This valuation assumes the continuing ability of the participating employer to make the contributions necessary to fund the system. A determination regarding whether or not the participating employer is actually able to do so is outside our scope of expertise. Consequently, we did not perform such an analysis.

The signing individuals are independent of the plan sponsor.

The findings in this report are based on data and other information through June 30, 2016. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as: plan experience differing from that anticipated by the economic and demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of the actuary's assignment, the actuary did not perform an analysis of the potential range of such future measurements.

This report has been prepared by individuals who have substantial experience valuing public employee retirement systems. To the best of our knowledge, this report is complete and accurate and was made in accordance with generally recognized actuarial methods in accordance with standards of practice prescribed by the Actuarial Standards Board and in compliance with the constitution of the State of Michigan.

Jeffrey T. Tebeau is a Member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,

David L. Hoffman

Jeffrey T. Tebeau, ASA, EA, MAAA

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# SECTION A

## BASIC FINANCIAL OBJECTIVE AND OPERATION OF THE RETIREMENT SYSTEM

# BASIC FINANCIAL OBJECTIVE AND OPERATION OF THE RETIREMENT SYSTEM

***Benefit Promises Made Which Must Be Paid For***. A retirement system is an orderly means of handing out, keeping track of, and financing contingent pension promises to a group of employees. As each member of the retirement system acquires a unit of service credit he is, in effect, handed an "IOU" which reads: "The Retirement System promises to pay you one unit of retirement benefits, payments in cash commencing when you retire."

The principal related financial question is: When shall the money required to cover the "IOU" be contributed? This year, when the benefit of the member's service is received? Or, some future year when the "IOU" becomes a cash demand?

The constitution of the State of Michigan is directed to the question:

> "Financial benefits arising on account of service rendered in each fiscal year shall be funded during that year and such funding shall not be used for financing unfunded accrued liabilities."

Section 9(2) of Act 345 is also directed to the question:

> "Sec. 9(2). - - - For the purpose of creating and maintaining a fund for the payment of the pensions and other benefits payable hereunder the said city, village or municipality, subject to the provisions of this act, shall appropriate, at the end of such regular intervals as may be adopted, quarterly, semi-annually, or annually, an amount sufficient to maintain actuarially determined reserves covering pensions payable or which might be payable on account of service performed and to be performed by active members and pensions being paid retired members and beneficiaries - - - -."

This retirement system meets this constitutional requirement by having as its ***financial objective to establish and receive contributions, expressed as percents of active member payroll, which will remain approximately level from year to year,*** and will not have to be increased for future generations of taxpayers.

Section 20(m) of Act 728 of 2002 requires that an annual required contribution shall consist of a current service cost (the normal cost) and a payment for unfunded actuarial liability (both interest and principal). This requirement is consistent with the financial objective stated above.

A by-product of the level percent-of-payroll contribution objective is the accumulation of invested assets for varying periods of time. ***Invested assets are a by-product of level percent-of-payroll contributions, not the objective***. Investment income becomes a major contributor to the retirement system, and the amount is directly related to the amount of contributions and investment performance.

If contributions to the retirement system are less than the preceding amount, the difference, plus investment earnings not realized thereon, will have to be contributed at some later time, or, benefits will have to be reduced, to satisfy the fundamental fiscal equation under which all retirement programs must operate; that is:

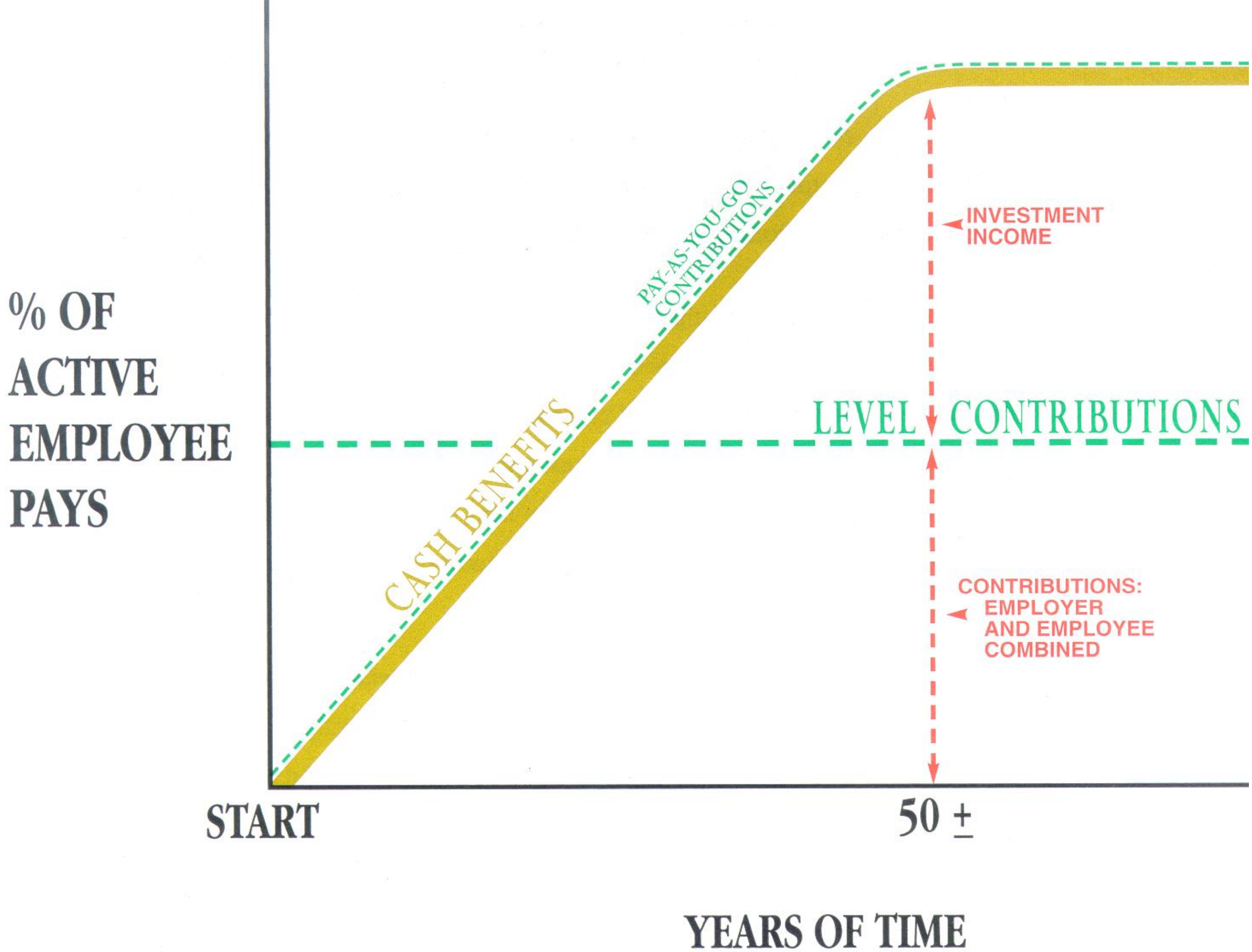
$$\mathbf{B = C + I - E}$$

> The aggregate amount of <u>B</u>enefit payments to any group of members and their beneficiaries cannot exceed the sum of:
>
> > The aggregate amount of <u>C</u>ontributions received on behalf of the group
> >
> > . . . plus . . .
> >
> > <u>I</u>nvestment earnings on contributions received and not required for immediate payment of benefits
> >
> > . . . minus . . .
> >
> > The <u>E</u>xpenses of operating the program.

There are retirement systems designed to defer the bulk of contributions far into the future. Lured by artificially low present contributions, the inevitable consequence of a relentlessly increasing contribution rate -- to a level greatly in excess of the level percent of payroll rate -- is ignored.

***This method of financing is prohibited in Michigan by the state constitution***.

***Computed Contribution Rate Needed to Finance Benefits***. From a given schedule of benefits and from the data furnished, the actuary calculates the contribution rate by means of an actuarial valuation - the technique of assigning monetary values to the risks assumed in operating a retirement system.




**CASH BENEFITS LINE.** This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).

**LEVEL CONTRIBUTION LINE.** Determining the level contribution line requires detailed assumptions concerning a variety of experiences in future decades, including:

- Economic Risk Areas
  - Rates of investment return
  - Rates of pay increase
  - Changes in active member group size
- Non-Economic Risk Areas
  - Ages at actual retirement
  - Rates of mortality
  - Rates of withdrawal of active members (turnover)
  - Rates of disability

# SECTION B

## VALUATION RESULTS

# CITY'S COMPUTED CONTRIBUTIONS FOR THE FISCAL YEAR BEGINNING JULY 1, 2017

| Contributions for | Contributions Expressed as Percents of Annual Pay | |
|---|---|---|
| Normal Cost | | |
| Age and service pensions | 18.36 % | |
| Death-in-Service survivor pensions | 0.59 | |
| Disability pensions | 1.47 | |
| Total | | 20.42 % |
| Members' Contributions | | |
| Gross contributions@ | 8.83 | |
| Less prospective refunds | 0.94 | |
| Available for pensions | | 7.89 |
| City's Normal Cost | | 12.53 |
| Unfunded Actuarial Accrued Liabilities | | |
| Retirants and beneficiaries* | 3.19 | |
| Active members* | 28.52 | |
| Total | | 31.71 |
| City's Required Employer Contribution for Pensions | | 44.24 % |
| City Dollar Contribution# | | $1,466,260 |

*@ Weighted average of two rates.*

** Financed as a level percent-of-payroll over a closed period of 28 years.*

*# Based on projected payroll from the valuation date to the beginning of fiscal year.*

## REPORTED FUND BALANCE

| Reserves | Reported Fund Balance June 30, 2016 | 2015 |
|---|---|---|
| Reserve for Employees' Contributions | $ 2,387,553 | $ 3,122,381 |
| Reserve for Employer Contributions | - | (965,486) |
| Reserve for Retired Benefit Payments | 24,745,788 | 28,247,336 |
| Reserve for Undistributed Investment Income | - | - |
| Total Fund Balance | $ 27,133,341 | $ 30,404,231 |

***Valuation assets*** are equal to reported market value of assets, except that only 20% of the difference between the market-to-market rate of return and the projected rate of return (the 7.5% actuarial assumption) is recognized each year. Such spreading reduces the fluctuation in the City's computed contribution rate which might otherwise be caused by market value fluctuations. The details of the spreading technique are shown on pages C-11 to C-14. The present method was adopted for the 1993 year. The valuation assets as of June 30, 2016 total $28,410,750.

***In financing actuarial accrued liabilities***, valuation assets allocated to pensions of $28,410,750 were distributed as follows:

| Reserves for | Valuation Assets Applied to Actuarial Accrued Liabilities for: Active Members | Retirants & Beneficiaries | Contingency Reserve | Totals |
|---|---|---|---|---|
| Employees' Contributions | $ 2,387,553 | | | $ 2,387,553 |
| Employer Contributions | - | | | - |
| Retired Benefit Payments | (5,484,534) | $ 30,230,322 | | 24,745,788 |
| Reserve for Undistributed Investment Income | - | | | - |
| Valuation Asset Adjustment | 1,277,409 | | | 1,277,409 |
| Total | $ (1,819,572) | $ 30,230,322 | $ - | $ 28,410,750 |

# DERIVATION OF EXPERIENCE GAIN (LOSS)
# YEAR ENDED JUNE 30, 2016

Actual experience will never (except by coincidence) coincide exactly with assumed experience. It is hoped that gains and losses will cancel each other over a period of years, but sizable year to year fluctuations are common. Detail on the derivation of the experience gain (loss) is shown below, along with a year by year comparative schedule.

| | | |
|---|---|---|
| (1) | UAAL* at start of year | $ 16,721,207 |
| (2) | Employer Normal cost from last valuation | 356,867 |
| (3) | Actual employer contributions | 1,240,657 |
| (4) | Interest accrual: [(1) + 1/2 [(2) - (3)]] x .075 | 1,220,948 |
| (5) | Expected UAAL before changes: (1) + (2) - (3) + (4) | 17,058,366 |
| (6) | Change from benefit changes | 0 |
| (7) | Change from revised actuarial assumptions/methods | (115,754) |
| (8) | Expected UAAL after changes: (5) + (6) + (7) | 16,942,612 |
| (9) | Actual UAAL at end of year | 18,090,355 |
| (10) | Gain (loss): (8) - (9) | (1,147,743) |
| (11) | Gain (loss) as percent of actuarial accrued liabilities at start of year: $46,444,833 | (2.5)% |

* *Unfunded Actuarial Accrued Liabilities.*

| Valuation Date June 30, | Experience Gain (Loss) as a % of Beginning Accrued Liability |
|---|---|
| 2007 | 1.0 % |
| 2008 | (2.1) |
| 2009 | (4.2) |
| 2010 | (3.9) |
| 2011 | (0.7) |
| 2012 | (7.9) |
| 2013 | (4.4) |
| 2014 | 3.3 |
| 2015 | 0.7 |
| 2016 | (2.5) |

# SUMMARY STATEMENT OF SYSTEM RESOURCES AND OBLIGATIONS

## PRESENT RESOURCES AND EXPECTED FUTURE RESOURCES

| | |
|---|---:|
| A. Present valuation assets: | |
| 1. Net assets from System financial statements | $27,133,341 |
| 2. Funding value adjustment | 1,277,409 |
| 3. Valuation assets | 28,410,750 |
| B. Actuarial present value of expected future employer contributions: | |
| 1. For normal costs | 2,215,380 |
| 2. For unfunded actuarial accrued liability | 18,090,355 |
| 3. Total | 20,305,735 |
| C. Actuarial present value of expected future member contributions | 1,591,806 |
| D. Total present and expected future resources | $50,308,291 |

## ACTUARIAL PRESENT VALUE OF EXPECTED FUTURE BENEFIT PAYMENTS

| | |
|---|---:|
| A. To retirants and beneficiaries | $30,230,322 |
| B. To vested terminated members | 1,608,299 |
| C. To present active members: | |
| 1. Allocated to service rendered prior to valuation date - actuarial accrued liability | 14,662,484 |
| 2. Allocated to service likely to be rendered after valuation date | 3,807,186 |
| 3. Total | 18,469,670 |
| D. Total actuarial present value of expected future benefit payments | $50,308,291 |

# COMMENTS AND CONCLUSION

**COMMENT A:** The overall 2015/2016 actuarial experience was less favorable than projected experience as reflected by the experience loss shown on page B-3. This experience loss is primarily attributable to less than assumed return on investments on a funding value basis. In addition, there were higher than expected individual pay increases for non-DROP active members (not total payroll).

**COMMENT B:** The June 30, 2015 actuarial valuation reflected a change in the mortality assumption. This change was made as a result of the 'expiration' of the mortality table used in recent valuations. We would be unable to certify the assumptions as reasonable unless the mortality table was updated. The last experience study was performed as of June 30, 2009. The Board should consider performing an experience study covering the period since the last study. Regardless, we will continue to monitor the System's experience and assumptions (especially the economic ones) and alert the Board if we believe certain assumptions are no longer reasonable. The mortality assumptions are described on page D-3.

**COMMENT C:** The June 30, 2016 actuarial valuation reflects the scheduled pay increases through June 30, 2017 as specified by the COAM, POAM, and IAFF contracts. The immediate effect of the salary increase assumptions was a decrease in the employer contribution rate of approximately 0.41% of payroll. Please see page D-4 for details about the salary increase assumptions used in this valuation.

**COMMENT D:** The June 30, 1996 and later actuarial valuations reflect benefit increases for existing retirees who were receiving benefits below the January 1, 1996 estimated Federal and State poverty levels. The contribution rates in the June 30, 2016 report reflect future expected increases in the poverty level.

**COMMENT E:** As of June 30, 2016, the funded ratio is 61.1%. Market value of System assets was $27.13 million. The difference between valuation assets and the market value of assets, $1.28 million, represents accumulated investment gains and losses scheduled for phased-in recognition in the next four actuarial valuations. Assuming 7.5% market value rates of return and no demographic gains or losses, it is expected that the System's funded ratio at that fourth year would be approximately 58%.

## COMMENTS AND CONCLUSION

The table that follows shows our best, rough estimate of computed employer contributions in the next five actuarial valuations, assuming a 7.5% market value return, payroll growth as shown below, and no actuarial gains or losses. The change in the contribution from year to year reflects the phase-in of the accumulated investment losses discussed above.

| Valuation Date | Payroll | Estimated Employer Contribution |
|---|---|---|
| June 30, 2016 | $3,174,402 | 44.24% |
| June 30, 2017 | 3,186,856 | 44.12% |
| June 30, 2018 | 3,314,330 | 44.35% |
| June 30, 2019 | 3,446,903 | 45.56% |
| June 30, 2020 | 3,584,779 | 46.37% |
| June 30, 2021 | 3,728,170 | 46.37% |

Please remember that these are rough estimates and, as seen in recent years, actual experience can deviate significantly from assumed, even over the near term. These numbers are being provided at the request of the City; our understanding is that they are to be used for advanced preliminary budgeting purposes.

Please note that about 30% of the rates shown above are for normal cost and 70% for payment of Unfunded Actuarial Accrued Liability (UAAL). In dollars for the fiscal year beginning July 1, 2017, this is about $0.42 million for normal cost and $1.05 million for UAAL. If actual future payroll differs significantly from these projected payroll numbers the normal cost dollar amount will change proportionally while the UAAL dollar amount would be unchanged.

**CONCLUSION:** The City's contributions (members' contributions are additional) to the City of Ypsilanti Fire and Police Retirement System, for the fiscal year beginning July 1, 2017, have been computed to be 44.24% of active member payroll. This computed contribution meets the requirements of PA 728 of 2002.

# OTHER OBSERVATIONS

**General Implications of Contribution Allocation Procedure of Funding Policy on Future Expected System Contributions and Funded Status**

Given the System's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the System earning 7.50% on the funding value of assets), it is expected that:

(1) The employer normal cost as a percentage of pay will decrease to the level of the current new entrants (i.e., members hired after July 1, 2012) normal cost as time passes and the majority of the active population is comprised of members hired after this date.

(2) The unfunded actuarial accrued liabilities will increase for several years before decreasing and will be fully amortized after 28 years (June 30, 2045), and

(3) The funded status of the plan will decrease for several years and then increase gradually towards a 100% funded ratio.

**Limitations of Funded Status Measurements**

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the actuarial value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

(1) The measurement is inappropriate for assessing the sufficiency of System assets to cover the estimated cost of settling the System's benefit obligations; for example, transferring the liability to an unrelated third party in a market value type transaction.

(2) The measurement is dependent upon the actuarial cost method which, in combination with the System's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. The current funded status is 61.1%. Even if the funded status measurement in this report was 100%, it would not be synonymous with no required future contributions. If the funded status were 100%, the System would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).

(3) The measurement would produce a different result if the market value of assets were used instead of the actuarial value of assets.

# COMPARATIVE STATEMENT

| Valuation Date June 30, | Fiscal Year | Actuarial Accrued Liabilities & Reserves | Valuation Assets | % Funded | Unfunded Actuarial Accrued Liabilities & Reserves: Dollars | Amortiz. Period | % of Payroll | City's Contribution Rate: Percent | Dollars: Computed | Dollars: Actual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1996 | 97-98 | $ 23,778,940 | $ 24,612,528 | 103.5 % | $ (833,588) | 30 | - | 14.15 % | $ 707,556 | $ 526,000 |
| 1997 | 98-99 | 24,914,577 | 25,839,088 | 103.7 | (924,511) | 30 | - | 14.14 | 748,246 | 595,000 |
| 1998 | 99-00 | 25,708,661 | 27,766,480 | 108.0 | (2,057,819) | 30 | - | 12.83 | 742,909 | 595,000 |
| 1999 | 00-01 | 27,010,112 | 30,351,193 | 112.4 | (3,341,081) | 30 | - | 11.35 | 720,531 | 595,000 |
| 2000 | 01-02 | 26,204,216 | 32,718,398 | 124.9 | (6,514,182) | 10 | - | 0.00 * | 0 | 595,000 |
| 2001 | 02-03 | 26,933,083 | 34,479,264 | 128.0 | (7,546,181) | 10 | - | 0.00 | 0 | 0 |
| 2002 | 03-04 | 27,899,273 | 34,970,658 | 125.3 | (7,071,385) | 10 | - | 0.00 | 0 | 0 |
| 2003 | 04-05 | 29,020,485 | 33,916,996 | 116.9 | (4,896,511) | 10 | - | 0.00 | 0 | 0 |
| 2004 | 05-06 | 31,251,133 | 32,569,762 | 104.2 | (1,318,629) | 10 | - | 11.78 # | 500,602 | 500,602 |
| 2005 | 06-07 | 32,774,898 | 31,180,708 | 95.1 | 1,594,190 | 30 | - | 16.54 | 730,106 | 730,106 |
| 2006 | 07-08 | 34,980,132 | 30,843,790 | 88.2 | 4,136,342 | 30 | - | 21.57 # | 941,417 | 941,417 |
| 2007 | 08-09 | 36,211,916 | 32,056,915 | 88.5 | 4,155,001 | 30 | - | 21.91 # | 946,937 | 946,937 |
| 2008 | 09-10 | 37,869,913 | 32,934,094 | 87.0 | 4,935,819 | 30 | 128 % | 23.07 # | 968,212 | 968,212 |
| 2009 | 10-11 | 39,453,312 | 32,472,100 | 82.3 | 6,981,212 | 30 | 179 | 25.64 # | 1,089,013 | 1,018,284 |
| 2010 | 11-12 | 42,135,741 | 31,649,135 | 75.1 | 10,486,606 | 30 | 264 | 27.91 #* | 1,199,984 | 1,120,305 |
| 2011 | 12-13 | 42,667,144 | 31,577,876 | 74.0 | 11,089,268 | 30 | 285 | 29.03 | 1,222,085 | 1,222,085 |
| 2012 | 13-14 | 43,258,880 | 28,530,067 | 66.0 | 14,728,813 | 30 | 432 | 36.51 | 1,347,529 | 1,358,167 |
| 2013# | 14-15 | 44,583,788 | 27,649,572 | 62.0 | 16,934,216 | 30 | 531 | 40.47 | 1,395,423 | 1,395,423 |
| 2014 | 15-16 | 44,603,145 | 29,180,299 | 65.4 | 15,422,846 | 30 | 448 | 37.39 | 1,302,223 | **1,240,657** |
| 2015* | 16-17 | 46,444,833 | 29,723,626 | 64.0 | 16,721,207 | 29 | 507 | 40.66 | 1,350,449 | |
| **2016** | **17-18** | **46,501,105** | **28,410,750** | **61.1** | **18,090,355** | **28** | **570** | **44.24** | **1,466,260** | |

* *Revised actuarial assumptions.*
\# *Retirement System was amended.*

***The Ratio of Valuation Assets to AAL*** is a traditional measure of a system's funding progress. Except in years when the system is amended or actuarial assumptions are revised, this ratio is expected to increase gradually toward 100%.

***The Ratio of UAAL to Valuation Payroll*** is another relative index of condition. Unfunded actuarial accrued liabilities represent debt, while active member payroll represents the system's capacity to collect contributions to pay toward debt. The lower the ratio, the greater the financial strength - and vice-versa.

# SECTION C

## SUMMARY OF BENEFIT PROVISIONS AND VALUATION DATA

# BRIEF SUMMARY OF ACT 345 BENEFIT PROVISIONS (JUNE 30, 2016)

### SERVICE RETIREMENT

| Eligibility | Amount |
|---|---|
| 20 or more years of service, 25 years for Fire Chief, regardless of age or age 60 regardless of service. | Straight life pension equals 3.0% of 3-year Average Final Compensation (AFC) times first 25 years of service plus 1% of AFC times years of service in excess of 25 years for both IAFF and police. For COAM members hired before July 1, 2012, future accrual will be 3.0% of AFC times first 25 years of service accrued prior to July 1, 2012 or after July 1, 2014 plus 2.25% of AFC times first 25 years of service accrued between July 1, 2012 and July 1, 2014 plus 1.0% of AFC times years of service in excess of 25 years. |
| 25 or more years of service regardless of age for Fire members hired after July 1, 2009. | Straight life pension equals 2.5% of AFC times years of service, with a 75% maximum. |
| 25 or more years of service regardless of age for POAM/COAM members hired after July 1, 2009. | Straight life pension equals 2.0% of AFC times years of service. |
| Members hired after July 1, 2012. | Same as members hired after July 1, 2009, except there is no annuity withdrawal option. |

### DEFERRED RETIREMENT

| Eligibility | Amount |
|---|---|
| 10 or more years of service. | Computed as service retirement but based upon service, AFC and benefit in effect at termination. Benefit begins at date retirement would have occurred had member remained in employment. |

### DEATH AFTER RETIREMENT SURVIVOR'S PENSION

| Eligibility | Amount |
|---|---|
| Payable to a surviving spouse, if any, upon the death of a retired member who was receiving a straight life pension which was effective July 1, 1975 or later. | Spouse's pension equals 60% of the straight life pension the deceased retirant was receiving. |

### NON-DUTY DEATH-IN-SERVICE SURVIVOR'S PENSION

| Eligibility | Amount |
|---|---|
| Payable to a surviving spouse, if any, upon the death of a member with 10 or more years of service. | Accrued straight life pension actuarially reduced in accordance with an Option I election. |

# BRIEF SUMMARY OF ACT 345 BENEFIT PROVISIONS (JUNE 30, 2016)

| Eligibility | Amount |
|---|---|

### DUTY DEATH-IN-SERVICE SURVIVOR'S PENSION

Payable upon the expiration of worker's compensation to the survivors of a member who died in the line of duty.

### NON-DUTY DISABILITY

| Eligibility | Amount |
|---|---|
| Payable upon the total and permanent disability of a member with 5 or more years of service. | To Age 55: 1.5% of AFC times years of service.<br>At Age 55: Same as Service Retirement Pension. |

### DUTY DISABILITY

| Eligibility | Amount |
|---|---|
| Payable upon the total and permanent disability of a member in the line of duty. | To Age 55: 50% of AFC.<br>At Age 55: Same as Service Retirement Pension with service credit from date of disability to age 55. |

### POST-RETIREMENT BENEFIT INCREASES

Retirees who are receiving benefits below the estimated Federal and State poverty levels have their benefits increased up to the poverty level.

### MEMBER CONTRIBUTIONS

| Eligibility | Amount |
|---|---|
| | 10% of pay (Fire Chief: 5%).<br>5% of pay for COAM/POAM hired after July 1, 2009. |

| Eligibility | Amount |
|---|---|
| **DROP (DEFERRED RETIREMENT OPTION PLAN)** | |
| Participation is open to any member who has reached the age and service conditions for unreduced retirement. | A regular retirement benefit is computed for the member as of his DROP election date based upon Final Average Compensation (FAC) and service credit as of this date. Monthly payments equal to 100% of the computed monthly benefit are deposited into the DROP Reserve Account (DRA) on behalf of the member. Interest is credited monthly to this balance in the DRA at the rate of 4%, compounded annually. Employer contributions will continue while the member participates in the DROP. Employer contributions are not deposited in the DRA. Member contributions shall cease as of the member's DROP election date. The member may remain in the DROP for up to five years and then must terminate employment. The member's monthly benefit at retirement will be the original monthly payment determined at the DROP election date. The member has the option at that time to receive the DRA balance as a lump-sum, as a roll-over or leave the accumulated balance in the Plan. |

## RETIRANTS AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS
## COMPARATIVE STATEMENT

| Year Ended June 30, | Added to Rolls | | | Removed from Rolls | | Rolls End of Year | | | | % Incr. in Annual Pensions | Average Pension | Present Value of Pensions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | Annual Pensions | Post-Ret. Increases | No. | Annual Pensions | No. | Active Per Retired | Annual Pensions Dollars | Annual Pensions % of Pay | | | |
| 1985 | 2 | $ 50,137 | | | $ 368 | 42 | 1.6 | $ 409,718 | 19.9 % | 13.8 % | $ 9,755 | $ 4,542,985 |
| 1990 | 3 | 42,779 | $ 40,405 | 2 | 16,742 | 67 | 1.0 | 933,398 | 39.4 | 7.7 | 13,931 | 10,159,853 |
| 1997 | 2 | 40,767 | | 1 | 19,947 | 91 | 0.8 | 1,456,471 | 40.9 | 1.5 | 16,005 | 15,887,077 |
| 1998 | | | 2,190 | | | 91 | 0.8 | 1,458,661 | 38.6 | 0.2 | 16,029 | 15,649,774 |
| 1999 | 3 | 73,511 | 3,908 | 3 | 37,695 | 91 | 0.8 | 1,498,385 | 38.9 | 2.7 | 16,466 | 16,061,894 |
| 2000 | 6 | 180,781 | 2,591 | 4 | 55,996 | 93 | 0.7 | 1,625,761 | 43.6 | 8.5 | 17,481 | 16,749,097 |
| 2001 | 2 | 20,819 | 13,725 | 4 | 40,320 | 91 | 0.7 | 1,619,985 | 42.5 | (0.4) | 17,802 | 16,575,035 |
| 2002 | 3 | 53,805 | 2,446 | 3 | 43,160 | 91 | 0.7 | 1,633,076 | 42.3 | 0.8 | 17,946 | 16,589,766 |
| 2003 | | | 12,136 | 1 | 16,549 | 90 | 0.7 | 1,628,663 | 40.7 | (0.3) | 18,096 | 16,279,677 |
| 2004 | 2 | 24,041 | 2,533 | 3 | 33,849 | 89 | 0.7 | 1,621,388 | 41.7 | (0.4) | 18,218 | 16,177,858 |
| 2005 | 2 | 70,098 | 5,147 | 4 | 43,496 | 87 | 0.7 | 1,653,137 | 40.9 | 2.0 | 19,002 | 16,648,815 |
| 2006 | 1 | 75,314 | 12,483 | | | 88 | 0.7 | 1,740,934 | 43.6 | 5.3 | 19,783 | 17,361,798 |
| 2007 | 6 | 195,338 | 1,390 | 1 | 21,610 | 93 | 0.6 | 1,916,052 | 48.4 | 10.1 | 20,603 | 19,207,107 |
| 2008 | 9 | 213,336 | (6,350) | 1 | 15,816 | 101 | 0.5 | 2,107,222 | 54.8 | 10.0 | 20,864 | 21,167,561 |
| 2009 | 2 | 91,683 | 4,166 | 4 | 56,198 | 99 | 0.5 | 2,146,873 | 55.2 | 1.9 | 21,686 | 21,685,046 |
| 2010 | 1 | 29,237 | 5,248 | 1 | 48,732 | 99 | 0.5 | 2,132,626 | 58.8 | 1.2 | 21,542 | 21,714,152 |
| 2011 | 3 | 79,359 | (366) | 0 | 0 | 102 | 0.5 | 2,211,619 | 63.6 | 5.0 | 21,683 | 22,522,725 |
| 2012 | 6 | 299,010 | 2,997 | 0 | 0 | 108 | 0.3 | 2,513,626 | 99.1 | 13.7 | 23,274 | 25,926,503 |
| 2013 | 5 | 238,831 | 6,432 | 0 | 0 | 113 | 0.3 | 2,758,889 | 103.7 | 9.8 | 24,415 | 28,423,655 |
| 2014 | 4 | 147,302 | 3,384 | 4 | 57,876 | 113 | 0.4 | 2,851,699 | 91.7 | 3.4 | 25,236 | 29,574,818 |
| 2015 | 1 | 35,122 | 6,063 | 2 | 27,678 | 112 | 0.4 | 2,865,206 | 104.6 | 0.5 | 25,582 | 30,858,067 |
| **2016** | **-** | **-** | **2,572** | **3** | **51,690** | **109** | **0.3** | **2,816,089** | **127.2** | **(1.7)** | **25,836** | **30,230,322** |

*Note: DROP participants are not included in these totals. There were twelve (12) members participating in the DROP as of June 30, 2016 with annual benefits of $632,677.*

# Retirants and Beneficiaries June 30, 2016
# Tabulated by Type of Pensions Being Paid

| Type of Pensions Being Paid | Number | Annual Pensions |
|---|---|---|
| Age and Service Pension | | |
| Regular pension - benefit terminating upon death of retirant | 21 | $ 468,204 |
| Regular pension - automatic 60% joint and survivor benefit | 67 | 1,902,414 |
| Option 1 pension - joint and survivor benefit | 5 | 136,605 |
| Option 2 pension - modified joint and survivor benefit | 1 | 58,084 |
| Pension being paid survivor beneficiary of deceased age and service retirant | 8 | 137,652 |
| Total age and service pensions | 102 | 2,702,959 |
| Casualty Pensions | | |
| Duty disability pension | 5 | 84,512 |
| Survivor of former disabled retirant | 1 | 14,309 |
| Duty death | 1 | 14,309 |
| Total casualty pensions | 7 | 113,130 |
| **Total Pensions Being Paid** | **109** | **$ 2,816,089** |

*Note: DROP participants are not included in these totals. There were twelve (12) members participating in the DROP as of June 30, 2016 with annual benefits of $632,677.*

# RETIRANTS AND BENEFICIARIES - BY ATTAINED AGES
# JUNE 30, 2016

| Attained Ages | No. | Annual Pensions |
|---|---|---|
| 45 - 49 | 10 | $ 419,691 |
| 50 - 54 | 11 | 449,312 |
| 55 - 59 | 10 | 324,229 |
| 60 - 64 | 10 | 266,942 |
| 65 - 69 | 18 | 410,590 |
| 70 - 74 | 22 | 448,098 |
| 75 - 79 | 15 | 261,829 |
| 80 - 84 | 3 | 56,578 |
| 85 - 89 | 6 | 111,503 |
| 90 - 94 | 4 | 67,317 |
| **Totals** | **109** | **$ 2,816,089** |

*Note: DROP participants are not included in these totals. There were twelve (12) members participating in the DROP as of June 30, 2016 with annual benefits of $632,677.*

# DROP MEMBERS - BY ATTAINED AGES
## JUNE 30, 2016

| Attained Ages | No. | Annual Pensions |
|---|---|---|
| 40 - 44 | 1 | $ 43,617 |
| 45 - 49 | 2 | 103,856 |
| 50 - 54 | 5 | 263,735 |
| 55 - 59 | 3 | 173,885 |
| 60 - 64 | 1 | 47,584 |
| **Totals** | **12** | **$ 632,677** |

# INACTIVE VESTED MEMBERS - BY ATTAINED AGES
## JUNE 30, 2016

| Attained Ages | No. | Estimated Annual Pensions |
|---|---|---|
| 34 | 1 | $ 26,640 |
| 35 | 1 | 26,244 |
| 41 | 1 | 42,774 |
| 45 | 1 | 53,448 |
| **Totals** | **4** | **$149,106** |

# ACTIVE MEMBERS IN VALUATION - COMPARATIVE SCHEDULE

| Year Ended June 30, | Number Added During Year A | Number Added During Year E | Terminations During Year: Normal Retirement A | Normal Retirement E | Disability Retirement A | Disability Retirement E | Died-in Service A | Died-in Service E | Withdrawals: Vested A | Withdrawals: Other A | Withdrawals: Total A | Withdrawals: Total E | End of Year No. | Valuation Payroll | Group Averages: Pay | % Incr. | Age | Service |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1997 | 6 | 8 | 1 | 2.6 | 0 | 0.2 | 0 | 0.1 | 1 | 6 | 7 | 3.7 | 72 | $3,564,118 | $49,502 | 6.6 % | 35.5 yrs. | 8.0 yrs. |
| 1998 | 5 | 5 | 0 | 2.1 | 0 | 0.2 | 0 | 0.1 | 2 | 3 | 5 | 3.2 | 72 | 3,776,037 | 52,445 | 5.9 | 36.1 | 8.6 |
| 1999 | 4 | 5 | 2 | 2.2 | 0 | 0.3 | 0 | 0.1 | 0 | 3 | 3 | 2.9 | 71 | 3,855,156 | 54,298 | 3.5 | 37.6 | 9.1 |
| 2000 | 5 | 10 | 4 | 2.8 | 0 | 0.2 | 1 | 0.1 | 0 | 5 | 5 | 2.7 | 66 | 3,728,601 | 56,494 | 4.0 | 36.9 | 8.8 |
| 2001 | 4 | 3 | 0 | 1.7 | 0 | 0.2 | 0 | 0.0 | 0 | 3 | 3 | 2.3 | 67 | 3,813,904 | 56,924 | 0.8 | 37.9 | 9.4 |
| 2002 | 5 | 9 | 1 | 0.8 | 0 | 0.3 | 0 | 0.0 | 0 | 8 | 8 | 2.3 | 63 | 3,858,409 | 61,245 | 7.6 | 37.6 | 10.2 |
| 2003 | 2 | 3 | 0 | 0.5 | 0 | 0.1 | 0 | 0.0 | 0 | 3 | 3 | 1.9 | 62 | 4,003,846 | 64,578 | 5.4 | 38.7 | 11.3 |
| 2004 | 2 | 3 | 2 | 1.8 | 0 | 0.2 | 0 | 0.0 | 1 | 0 | 1 | 1.7 | 61 | 3,891,478 | 63,795 | (1.2) | 39.0 | 11.9 |
| 2005 | 3 | 5 | 2 | 1.2 | 0 | 0.2 | 0 | 0.0 | 0 | 3 | 3 | 1.6 | 59 | 4,042,199 | 68,512 | 7.4 | 39.5 | 12.5 |
| 2006 | 5 | 5 | 1 | 2.9 | 0 | 0.2 | 1 | 0.0 | 0 | 3 | 3 | 1.3 | 59 | 3,996,679 | 67,740 | (1.1) | 39.3 | 12.6 |
| 2007 | 8 | 7 | 3 | 4.3 | 0 | 0.2 | 1 | 0.0 | 0 | 3 | 3 | 2.3 | 60 | 3,957,733 | 65,962 | (2.6) | 37.3 | 10.9 |
| 2008 | 3 | 8 | 4 | 2.8 | 0 | 0.2 | 0 | 0.0 | 0 | 4 | 4 | 1.9 | 55 | 3,843,177 | 69,876 | 5.9 | 37.7 | 11.6 |
| 2009 | 2 | 3 | 1 | 2.8 | 0 | 0.2 | 0 | 0.0 | 0 | 2 | 2 | 1.9 | 54 | 3,889,397 | 72,026 | 3.1 | 38.8 | 12.3 |
| 2010 | 0 | 1 | 0 | 5.1 | 0 | 0.2 | 0 | 0.0 | 0 | 1 | 1 | 0.4 | 53 | 3,975,109 | 75,002 | 7.3 | 42.7 | 13.6 |
| 2011 | 2 | 1 | 1 | 5.1 | 0 | 0.2 | 0 | 0.0 | 0 | 3 | 3 | 0.4 | 51 | 3,892,132 | 76,316 | 1.8 | 41.3 | 14.9 |
| 2012 | 2 | 9 | 6 | 4.3 | 0 | 0.1 | 0 | 0.0 | 0 | 3 | 3 | 0.8 | 44 | 3,412,398 | 77,555 | 1.6 | 41.6 | 14.8 |
| 2013 | 1 | 6 | 5 | 1.4 | 0 | 0.1 | 0 | 0.0 | 1 | 0 | 1 | 1.1 | 39 | 3,187,910 | 81,741 | 5.4 | 41.1 | 14.4 |
| 2014 | 13 | 5 | 3 | 2.0 | 0 | 0.1 | 0 | 0.0 | 0 | 2 | 2 | 0.9 | 47 | 3,440,058 | 73,193 | (10.5) | 38.8 | 11.5 |
| 2015 | 6 | 5 | 1 | 1.3 | 0 | 0.1 | 0 | 0.0 | 1 | 3 | 4 | 2.8 | 48 | 3,298,809 | 68,725 | (6.1) | 38.8 | 11.3 |
| **2016** | **6** | **7** | **0** | **1.3** | **0** | **0.1** | **0** | **0.0** | **2** | **5** | **7** | **2.3** | **47** | **3,174,402** | **67,540** | **(1.7)** | **40.1** | **11.8** |

*A = Actual number of persons.*
*E = Expected number of persons.*

*Note: Actual counts, valuation payroll and group averages include DROP participants.*

# ACTIVE MEMBERS JUNE 30, 2016
## BY ATTAINED AGE AND YEARS OF SERVICE

| Attained Age | Years of Service to Valuation Date | | | | | | | Totals | |
|---|---|---|---|---|---|---|---|---|---|
| | 0-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30 Plus | No. | Valuation Payroll |
| 20-24 | 1 | | | | | | | 1 | $ 40,175 |
| 25-29 | 8 | | | | | | | 8 | 372,151 |
| 30-34 | 6 | 2 | 2 | | | | | 10 | 607,735 |
| 35-39 | 2 | 2 | 1 | | | | | 5 | 305,954 |
| 40-44 | 1 | | 1 | 4 | | | | 6 | 437,728 |
| 45-49 | | | | 3 | | | | 3 | 264,671 |
| 50-54 | | | | 1 | 1 | | | 2 | 184,980 |
| **Totals** | **18** | **4** | **4** | **8** | **1** | | | **35** | **$ 2,213,394** |
| **DROP** | | | | | | | | **12** | **$ 961,008** |
| **Totals** | | | | | | | | **47** | **$ 3,174,402** |

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

**Group Averages:**

| | |
|---|---|
| **Age:** | 40.1 years |
| **Service:** | 11.8 years |
| **Annual Pay:** | $67,540 |

# Derivation of Valuation Assets
## Market Value with 20% Recognition of the Difference Between the Market Rate of Return and the Projected Rate of Return

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|---|---|---|
| **Beginning of Year:** | | | | | | | |
| (1) Market Value | $20,609,921 | $20,193,121 | $20,487,287 | $21,523,460 | $22,960,936 | $21,752,529 | $23,543,512 |
| (2) Valuation Assets | 19,774,199 | 21,183,338 | 21,829,960 | 22,204,796 | 23,085,622 | 23,480,820 | 23,970,822 |
| **End of Year:** | | | | | | | |
| (3) Market Value | 20,193,121 | 20,487,287 | 21,523,460 | 22,960,936 | 21,752,529 | 23,543,512 | 24,653,827 |
| (4) Net Additions to Assets, Excluding Investment Income, Administrative Expenses, and Retiree Health Insurance | (292,674) | (524,324) | (616,864) | (530,070) | (413,962) | (833,803) | (919,389) |
| (5) Total Investment Income =(3)-(1)-(4) | (124,126) | 818,490 | 1,653,037 | 1,967,546 | (794,445) | 2,624,786 | 2,029,704 |
| (6) Projected Rate of Return | 7.00% | 7.00% | 7.00% | 7.00% | 7.00% | 7.00% | 7.00% |
| (7) Projected Investment Income =(6)x[(2)+.5x(4)] | 1,373,950 | 1,464,482 | 1,506,507 | 1,535,783 | 1,601,505 | 1,614,474 | 1,645,779 |
| (8) Investment Income In Excess of Projected Income | (1,498,076) | (645,992) | 146,530 | 431,763 | (2,395,950) | 1,010,312 | 383,925 |
| (9) Excess Investment Income Recognized This Year (5-year recognition) | | | | | | | |
| (9a) From This Year | (299,615) | (129,198) | 29,306 | 86,353 | (479,190) | 202,062 | 76,785 |
| (9b) From One Year Ago | 188,269 | (299,615) | (129,198) | 29,306 | 86,353 | (479,190) | 202,062 |
| (9c) From Two Years Ago | (303,568) | 188,269 | (299,615) | (129,198) | 29,306 | 86,353 | (479,190) |
| (9d) From Three Years Ago | 250,576 | (303,568) | 188,269 | (299,615) | (129,198) | 29,306 | 86,353 |
| (9e) From Four Years Ago | 492,201 | 250,576 | (303,569) | 188,267 | (299,616) | (129,200) | 29,306 |
| (10) Change in Valuation Assets =(4)+(7)+9[a..e] | 1,409,139 | 646,622 | 374,836 | 880,826 | 395,198 | 490,002 | 641,706 |
| **End of Year:** | | | | | | | |
| (3) Market Value | 20,193,121 | 20,487,287 | 21,523,460 | 22,960,936 | 21,752,529 | 23,543,512 | 24,653,827 |
| (11) Valuation Assets = (2) + (10) | 21,183,338 | 21,829,960 | 22,204,796 | 23,085,622 | 23,480,820 | 23,970,822 | 24,612,528 |
| **Rate of Return:** | | | | | | | |
| Market Value | (0.6)% | 4.1% | 8.2% | 9.3% | (3.5)% | 12.3% | 8.8% |
| Asset Value | 8.7% | 5.6% | 4.6% | 6.4% | 3.5% | 5.7% | 6.6% |

# DERIVATION OF VALUATION ASSETS
# MARKET VALUE WITH 20% RECOGNITION OF THE DIFFERENCE BETWEEN THE MARKET RATE OF RETURN AND THE PROJECTED RATE OF RETURN

| | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|---|---|---|---|---|---|---|---|
| **Beginning of Year:** | | | | | | | |
| (1) Market Value | $24,653,827 | $27,468,157 | $31,304,085 | $33,313,844 | $33,763,825 | $31,168,835 | $27,758,724 |
| (2) Valuation Assets | 24,612,528 | 25,839,088 | 27,766,480 | 30,351,189 | 32,718,396 | 34,479,264 | 33,095,260 |
| **End of Year:** | | | | | | | |
| (3) Market Value | 27,468,157 | 31,304,085 | 33,313,844 | 33,763,825 | 31,168,835 | 27,758,724 | 26,539,534 |
| (4) Net Additions to Assets, Excluding Investment Income, Administrative Expenses, and Retiree Health Insurance | (725,382) | (549,377) | (725,382) | (549,377) | (779,265) | (743,567) | (1,244,169) |
| (5) Total Investment Income: =(3)-(1)-(4) | 3,539,712 | 4,385,305 | 3,539,712 | 4,385,305 | (1,815,725) | (2,666,544) | 24,979 |
| (6) Projected Rate of Return | 7.00% | 7.00% | 7.00% | 8.00% | 8.00% | 8.00% | 8.00% |
| (7) Projected Investment Income: =(6)x[(2)+.5x(4)] | 1,697,489 | 1,789,508 | 1,920,886 | 2,390,714 | 2,586,301 | 2,728,598 | 2,597,854 |
| (8) Investment Income In Excess of Projected Income | 1,842,223 | 2,595,797 | 739,374 | (1,006,200) | (4,402,026) | (5,395,142) | (2,572,875) |
| (9) Excess Investment Income Recognized This Year (5-year recognition) | | | | | | | |
| (9a) From This Year | 368,445 | 519,159 | 147,875 | (201,240) | (880,405) | (1,079,028) | (514,575) |
| (9b) From One Year Ago | 76,785 | 368,445 | 519,159 | 147,875 | (201,240) | (880,405) | (1,079,028) |
| (9c) From Two Years Ago | 202,062 | 76,785 | 368,445 | 519,159 | 147,875 | (201,240) | (880,405) |
| (9d) From Three Years Ago | (479,190) | 202,062 | 76,785 | 368,445 | 519,159 | 147,875 | (201,240) |
| (9e) From Four Years Ago | 86,351 | (479,190) | 202,060 | 76,787 | 368,443 | (1,356,237) | 147,875 |
| (10) Change in Valuation Assets: =(4)+(7)+9[a..e] | 1,226,560 | 1,927,392 | 2,584,709 | 2,367,207 | 1,760,868 | (1,384,004) | (1,173,688) |
| **End of Year:** | | | | | | | |
| (3) Market Value | 27,468,157 | 31,304,085 | 33,313,844 | 33,763,825 | 31,168,835 | 27,758,724 | 26,539,534 |
| (11) Valuation Assets: = (2) + (10) | 25,839,088 | 27,766,480 | 30,351,189 | 32,718,396 | 34,479,264 | 33,095,260 | 31,921,572 |
| **Rate of Return:** | | | | | | | |
| Market Value | 14.6% | 16.1% | 8.6% | 4.2% | (5.4)% | (8.7)% | 0.1% |
| Asset Value | 8.0% | 9.7% | 11.8% | 11.0% | 7.9% | (1.9)% | 0.2% |

# DERIVATION OF VALUATION ASSETS
# MARKET VALUE WITH 20% RECOGNITION OF THE DIFFERENCE BETWEEN THE MARKET RATE OF RETURN AND THE PROJECTED RATE OF RETURN

| | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|---|
| **Beginning of Year:** | | | | | | | |
| (1) Market Value | $26,539,534 | $28,249,831 | $28,640,403 | $30,236,677 | $33,605,000 | $30,628,653 | $25,358,400 |
| (2) Valuation Assets | 31,921,572 | 30,476,636 | 31,180,708 | 30,843,790 | 32,056,915 | 32,934,094 | 32,472,100 |
| **End of Year:** | | | | | | | |
| (3) Market Value | 28,249,831 | 28,640,403 | 30,236,677 | 33,605,000 | 30,628,653 | 25,358,400 | 26,887,526 |
| (4) Net Additions to Assets, Excluding Investment Income, Administrative Expenses, and Retiree Health Insurance | (1,387,895) | (1,365,010) | (1,150,381) | (1,056,000) | (1,278,148) | (1,055,282) | (1,605,721) |
| (5) Total Investment Income: =(3)-(1)-(4) | 3,098,192 | 1,755,582 | 2,746,655 | 4,424,323 | (1,698,199) | (4,214,971) | 3,134,847 |
| (6) Projected Rate of Return | 8.00% | 8.00% | 8.00% | 8.00% | 8.00% | 8.00% | 7.50% |
| (7) Projected Investment Income: =(6)x[(2)+.5x(4)] | 2,498,210 | 2,383,530 | 2,448,441 | 2,425,263 | 2,513,427 | 2,592,516 | 2,375,193 |
| (8) Investment Income In Excess of Projected Income | 599,982 | (627,948) | 298,214 | 1,999,060 | (4,211,626) | (6,807,487) | 759,654 |
| (9) Excess Investment Income Recognized This Year (5-year recognition) | | | | | | | |
| (9a) From This Year | 119,996 | (125,590) | 59,643 | 399,812 | (842,325) | (1,361,497) | 151,931 |
| (9b) From One Year Ago | (514,575) | 119,996 | (159,080) | 59,643 | 399,812 | (842,325) | (1,361,497) |
| (9c) From Two Years Ago | (1,079,028) | (514,575) | 88,070 | (159,080) | 59,643 | 399,812 | (842,325) |
| (9d) From Three Years Ago | (880,405) | (1,079,028) | (544,581) | 88,070 | (159,080) | 59,643 | 399,812 |
| (9e) From Four Years Ago | (201,239) | (880,406) | (1,079,030) | (544,583) | 183,850 | (254,861) | 59,642 |
| (10) Change in Valuation Assets: =(4)+(7)+9[a..e] | (1,444,936) | (1,461,083) | (336,918) | 1,213,125 | 877,179 | (461,994) | (822,965) |
| **End of Year:** | | | | | | | |
| (3) Market Value | 28,249,831 | 28,640,403 | 30,236,677 | 33,605,000 | 30,628,653 | 25,358,400 | 26,887,526 |
| (11) Valuation Assets: = (2) + (10) | 30,476,636 | 29,015,553 | 30,843,790 | 32,056,915 | 32,934,094 | 32,472,100 | 31,649,135 |
| **Rate of Return:** | | | | | | | |
| Market Value | 12.0% | 6.4% | 9.8% | 14.9% | (5.2)% | (14.0)% | 12.8% |
| Asset Value | (0.2)% | (0.3)% | 2.7% | 7.5% | 6.9% | 1.8% | 2.5% |

# DERIVATION OF VALUATION ASSETS
# MARKET VALUE WITH 20% RECOGNITION OF THE DIFFERENCE BETWEEN THE MARKET RATE OF RETURN AND THE PROJECTED RATE OF RETURN

| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Beginning of Year:** | | | | | | | | | | |
| (1) Market Value | $26,887,526 | $30,726,406 | $26,951,680 | $28,119,714 | $31,597,237 | $30,404,231 | | | | |
| (2) Valuation Assets | 31,649,135 | 31,577,876 | 28,530,067 | 27,649,572 | 29,180,299 | 29,723,626 | | | | |
| **End of Year:** | | | | | | | | | | |
| (3) Market Value | 30,726,406 | 26,951,680 | 28,119,714 | 31,597,237 | 30,404,231 | 27,133,341 | | | | |
| (4) Net Additions to Assets, Excluding Investment Income, Administrative Expenses, and Retiree Health Insurance | (1,308,318) | (3,253,205) | (1,960,578) | (1,444,699) | (2,135,956) | (2,949,949) | | | | |
| (5) Total Investment Income; =(3)-(1)-(4) | 5,147,198 | (521,521) | 3,128,612 | 4,922,222 | 942,950 | (320,941) | | | | |
| (6) Projected Rate of Return | 7.50% | 7.50% | 7.50% | 7.50% | 7.50% | 7.50% | | | | |
| (7) Projected Investment Income: =(6)x[(2)+.5x(4)] | 2,324,623 | 2,246,346 | 2,066,233 | 2,019,542 | 2,108,424 | 2,118,649 | | | | |
| (8) Investment Income In Excess of Projected Income | 2,822,575 | (2,767,867) | 1,062,379 | 2,902,680 | (1,165,474) | (2,439,590) | | | | |
| (9) Excess Investment Income Recognized This Year (5-year recognition) | | | | | | | | | | |
| (9a) From This Year | 564,515 | (553,573) | 212,476 | 580,536 | $ (233,095) | $ (487,918) | | | | |
| (9b) From One Year Ago | 151,931 | 564,515 | (553,573) | 212,476 | 580,536 | (233,095) | $(487,918) | | | |
| (9c) From Two Years Ago | (1,361,497) | 151,931 | 564,515 | (553,573) | 212,476 | 580,536 | (233,095) | $(487,918) | | |
| (9d) From Three Years Ago | (842,325) | (1,361,497) | 151,931 | 564,515 | (553,573) | 212,476 | 580,536 | (233,095) | $(487,918) | |
| (9e) From Four Years Ago | 399,812 | (842,326) | (1,361,499) | 151,930 | 564,515 | (553,575) | 212,475 | 580,536 | (233,094) | $ (487,918) |
| (10) Change in Valuation Assets: =(4)+(7)+9[a..e] | (71,259) | (3,047,809) | (880,495) | 1,530,727 | 543,327 | (1,312,876) | | | | |
| **End of Year:** | | | | | | | | | | |
| (3) Market Value | 30,726,406 | 26,951,680 | 28,119,714 | 31,597,237 | 30,404,231 | 27,133,341 | | | | |
| (11) Valuation Assets: = (2) + (10) | 31,577,876 | 28,530,067 | 27,649,572 | 29,180,299 | 29,723,626 | 28,410,750 | | | | |
| **Rate of Return:** | | | | | | | | | | |
| Market Value | 19.6% | (1.8)% | 12.0% | 18.0% | 3.1% | (1.1)% | | | | |
| Valuation Assets | 4.0% | 0.7% | 3.9% | 11.0% | 9.5% | 5.8% | | | | |

# SUMMARY OF CURRENT ASSET INFORMATION FURNISHED FOR VALUATION

## Balance Sheet as of June 30, 2016

| Current Assets (Market Value) | | Reserve for | |
|---|---|---|---|
| Cash & Equivalent | $ 1,677,592 | Employees' Contributions | $ 2,387,553 |
| Accruals & Receivables | 0 | Employer Contributions | 0 |
| Common & Preferred Stock | 19,800,315 | Retired Benefit Payments | 24,745,788 |
| Bonds | 6,519,056 | Undistributed Income | 0 |
| Real Estate & Other | 438,728 | | |
| Total Current Assets | 28,435,691 | | |
| Less Accounts Payable | 1,302,350 | | |
| Total Net Assets | $ 27,133,341 | Total Reserves | $ 27,133,341 |

## Receipts and Disbursements

| | 2015-2016 | 2014-2015 |
|---|---|---|
| Balance - July 1, | $ 30,404,231 | $ 31,597,237 |
| Receipts: | | |
| Employees' Contributions | 234,471 | 274,671 |
| Employer Contributions | 1,240,657 | 1,395,423 |
| Investment Income | (146,830) | 1,125,635 |
| Disbursements: | | |
| Benefit Payments * | 2,833,113 | 3,136,191 |
| Refund of Member Contributions | 1,591,944 | 669,859 |
| Expenses | 174,131 | 182,685 |
| Balance June 30, | $ 27,133,341 | $ 30,404,231 |
| Ratio of investment income (net of expenses and health insurance premiums) to mean assets balance | (1.1)% | 3.1% |

* *Including payments made to DROP accounts for members currently in the DROP.*

# SECTION D

## SUMMARY OF ACTUARIAL COST METHOD AND ASSUMPTIONS

# ACTUARIAL COST METHOD

Normal cost and the allocation of benefit values between service rendered before and after the valuation date was determined using the individual entry age actuarial cost method having the following characteristics:

(i) The annual normal costs for each individual active member, payable from the date of hire to the date of retirement, are sufficient to accumulate the actuarial present 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.

***Financing of Unfunded Actuarial Accrued Liabilities***. Unfunded actuarial accrued liabilities (the portion of total liabilities not covered by present assets or expected future normal cost contributions) were amortized by level (principal and interest combined) percent-of-payroll contributions over a closed period of 28 years.

# ACTUARIAL ASSUMPTIONS USED FOR THE VALUATIONS

The actuary calculates the contribution requirements and benefit values of the System by applying actuarial assumptions to the benefit provisions and people information furnished, using the actuarial cost method described on the previous page.

The principal areas of financial risk which require assumptions about future experiences are:

(i) Long-term rates of investment return to be generated by the assets of the Fund.

(ii) Patterns of pay increases to members.

(iii) Rates of mortality among members, retirants and beneficiaries.

(iv) Rates of withdrawal of active members (without entitlement to a retirement benefit).

(v) Rates of disability among members.

(vi) The age patterns of actual retirement.

In making a valuation, the actuary calculates the monetary effect of each assumption for as long as a present covered person survives - - - a period of time which can be as long as a century.

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Actual experience of the System will not coincide exactly with assumed experience, regardless of the wisdom of the assumptions, or the skill of the actuary and the precision of the many calculations made. Each valuation provides a complete recalculation of assumed future experience and takes into account all past differences between assumed and actual experience. The result is a continual series of adjustments (usually small) to the computed contribution rate.

From time to time it becomes appropriate to modify one or more of the assumptions, to reflect experience trends (but not random year to year fluctuations). The assumptions are established by the Board after consulting with the actuary. New assumptions were adopted for the June 30, 2010 valuation pursuant to the Experience Study dated September 23, 2010, which contains the rationale for those assumptions. The mortality tables were updated for the June 30, 2015 valuation. All actuarial assumptions are based on future expectations, not market measures.

# VALUATION ASSUMPTIONS

***The rate of investment return (regular interest)***, net of expenses, used in making the valuation was 7.5% per annum, compounded annually. This rate is not the assumed real return which, for funding purposes, is the rate of return in excess of average salary increases. Considering other assumptions used in the valuation, the 7.5% translates to a real return of approximately 3.5%. Experience over the last 5 years has been as illustrated below:

| | Year Ended June 30, | | | | | 5-Year |
|---|---|---|---|---|---|---|
| | **2016** | **2015** | **2014** | **2013** | **2012** | **Average** |
| 1) Gross investment return | 6.4 % | 10.1 % | 11.6 % | 4.5 % | 1.2 % | 6.8 % |
| Less: expenses | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 | 0.6 |
| 2) Net nominal rate of return# | 5.8 | 9.5 | 11.0 | 3.9 | 0.7 | 6.2 |
| 3) Increase in CPI | 1.0 | 0.1 | 2.1 | 1.8 | 3.6 | 1.7 |
| 4) Average salary increase | (1.7) | (6.1) | (10.5) | 5.4 | 1.6 | (2.3) |
| 5) Real return: | | | | | | |
| - funding purposes | 7.5 | 15.6 | 21.5 | (1.5) | (0.9) | 8.4 |
| - assumption | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |

\# *The nominal rate of return was computed using the approximate formula: i = I divided by 1/2 (A+B-I), where I is realized investment income net of expenses and prior to 1997, health care premiums, A is the beginning of year asset value and B is the end of year asset value.*

***The mortality table*** used to measure post-retirement mortality was the RP-2014 Healthy Annuitant Mortality Table for males and females projected six years to 2020, with MP-2014. The provision for future mortality improvement is the projection to 2020. This table was first used for the June 30, 2015 valuation. This assumption is used to measure the probabilities of members dying before retirement and the probabilities of each benefit payment being made after retirement.

For pre-retirement mortality, the RP-2014 Employee Mortality Table for males and females projected to 2020 with MP-2014 is used. Fifty percent of pre-retirement deaths were assumed to be Duty related.

The RP-2014 Disabled Retiree Mortality Table projected to 2020 with MP-2014 is used for current disability retirees for projecting disability costs.

Published mortality tables have been extended to high and low ages using a cubic spline method.

| | Single Life Retirement Values | | | |
|---|---|---|---|---|
| | Present Value of $1 Monthly for Life | | Future Life Expectancy (Years) | |
| Sample Ages | Men | Women | Men | Women |
| 45 | $148.62 | $151.82 | 37.87 | 40.67 |
| 50 | 143.55 | 147.57 | 33.38 | 36.08 |
| 55 | 137.32 | 142.03 | 29.04 | 31.57 |
| 60 | 129.65 | 134.86 | 24.85 | 27.14 |
| 65 | 120.09 | 125.76 | 20.81 | 22.86 |
| 70 | 108.41 | 114.58 | 16.95 | 18.78 |
| 75 | 94.58 | 101.28 | 13.35 | 14.97 |
| 80 | 78.95 | 86.11 | 10.09 | 11.50 |

## SAMPLE RATES OF SEPARATION (EXCLUDING DEATHS AND DISABILITY) FROM ACTIVE EMPLOYMENT BEFORE RETIREMENT

| Sample Ages | Years of Service | % of Active Members Separating within Next Year: Police | Fire |
|---|---|---|---|
| ALL | 0 | 25.00 % | 8.00 % |
| | 1 | 15.00 | 6.00 |
| | 2 | 10.00 | 5.00 |
| | 3 | 7.00 | 4.00 |
| | 4 | 5.00 | 3.00 |
| 25 | 5 & Over | 6.50 | 2.50 |
| 30 | | 5.46 | 2.50 |
| 35 | | 3.25 | 1.40 |
| 40 | | 1.30 | 0.60 |
| 45 | | 0.65 | 0.50 |
| 50 | | 0.65 | 0.50 |
| 55 | | 0.65 | 0.50 |
| 60 | | 0.65 | 0.50 |

These rates were first used for the June 30, 2010 valuation.

| Sample Ages | Percent Increase in Salary During Next Year*: Base | Merit and Seniority |
|---|---|---|
| 20 | 4.00 % | 1.00 % |
| 25 | 4.00 | 1.00 |
| 30 | 4.00 | 0.70 |
| 35 | 4.00 | 0.50 |
| 40 | 4.00 | 0.30 |
| 45 | 4.00 | 0.10 |
| 50 | 4.00 | 0.10 |
| 55 | 4.00 | 0.10 |
| 60 | 4.00 | 0.00 |

| Service at Beginning of Year* | Additional Service Based Merit & Seniority Portion of Annual Increases |
|---|---|
| 1 | 4.00 % |
| 2 | 3.00 |
| 3-5 | 1.75 |

**Percent Increase in Salary During the Next Year (All Ages and Service, through June 30, 2017)**

| | POAM | COAM | Fire |
|---|---|---|---|
| July 1, 2016 | 0.00% | 0.00% | 1.00% |

** For years after July 1, 2017.*

These assumptions were first used for the June 30, 2010 valuation.

If the number of active members remains constant, then the total active member payroll will increase 4.0% annually (except through June 30, 2017), the base portion of the individual salary increase assumptions. This increasing payroll was recognized in amortizing unfunded actuarial accrued liabilities.

Sample rates of becoming disabled are as follows:

| Sample Ages | Percent Becoming Disabled within Next Year | |
|---|---|---|
| | Men | Women |
| 20 | 0.10 % | 0.04 % |
| 25 | 0.13 | 0.07 |
| 30 | 0.14 | 0.11 |
| 35 | 0.21 | 0.19 |
| 40 | 0.30 | 0.27 |
| 45 | 0.46 | 0.40 |
| 50 | 0.74 | 0.63 |

It is assumed that 90% of disabilities are duty related.

***Probabilities of retirement*** for members eligible to retire were:

| Active Members Retiring within Next Year | | | | | | |
|---|---|---|---|---|---|---|
| Years of Service | 20 and Out Eligibility | | 25 and Out Eligibility | | Retirement Ages | Fire Chief |
| | Police | Fire | Police | Fire | | |
| 20 | 20 % | 10 % | | | 45 | 20 % |
| 21 | 20 | 15 | | | 46 | 20 |
| 22 | 20 | 15 | | | 47 | 20 |
| 23 | 20 | 15 | | | 48 | 20 |
| 24 | 60 | 50 | | | 49 | 20 |
| 25 | 60 | 50 | 70 % | 70 % | 50 | 20 |
| 26 | 60 | 50 | 50 | 20 | 51 | 15 |
| 27 | 60 | 50 | 50 | 20 | 52 | 10 |
| 28 | 60 | 50 | 50 | 20 | 53 | 10 |
| 29 | 60 | 50 | 50 | 20 | 54 | 10 |
| 30 | 100 | 100 | 100 | 100 | 55 | 10 |
| | | | | | 56 | 10 |
| | | | | | 57 | 10 |
| | | | | | 58 | 10 |
| | | | | | 59 | 20 |
| | | | | | 60 | 100 |

A member was assumed to be eligible for retirement after attaining age 40 with 20 or more years of service (age 45 with 25 or more years of service for Fire Chief, 25 or more years of service for new hires as of July 1, 2009 for Fire and Police) or after attaining age 60 with 10 or more years of service.

These rates were first used for the June 30, 2010 valuation.

## Pensions in an Inflationary Environment

### Value of $1,000/month Retirement Benefit
### To an Individual Who Retires at Age 40
### In an Environment of 4.0% Inflation

| Age | Value |
|---|---|
| 40 | $ 1,000 |
| 41 | 962 |
| 42 | 925 |
| 43 | 889 |
| 44 | 855 |
| 45 | 822 |
| 50 | 676 |
| 55 | 555 |
| 60 | 456 |
| 65 | 375 |
| 70 | 308 |
| 75 | 253 |
| 80 | 208 |
| 85 | 171 |

The life expectancy of a 40-year-old male retiree is age 82. The life expectancy for a 40-year-old female retiree is age 85. Half of the people will outlive their life expectancy. The effects of even moderate amounts of inflation can be significant for those who live to an advanced age.

# SUMMARY OF ASSUMPTIONS USED
# JUNE 30, 2016
# MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

**Marriage Assumption:** 90% of members are assumed to be married for purposes of death-in-service benefits. 80% of members are assumed to be married at retirement.

**Pay Increase Timing:** Beginning of (Fiscal) year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.

**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.

**Benefit Service:** Exact fractional service is used to determine the amount of benefit payable.

**Decrement Relativity:** Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.

**Decrement Operation:** Disability and mortality decrements do not operate during the first 5 years of service. Disability and turnover decrements do not operate during retirement eligibility.

**Normal Form of Benefit:** The assumed normal form of benefit is 60% Joint and Survivor.

**Loads:** Retirement Present Values were loaded by 5.5% to account for the subsidized annuity withdrawal. Active liabilities were loaded 0.5% and retiree benefits were assumed to increase 3% per year beginning 40 years after retirement to account for future increases in the poverty level.

**Incidence of Contributions:** Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made. New entrant normal cost contributions are applied to the funding of new entrant benefits.

# 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, turn-over 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.

**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.

**PLAN TERMINATION LIABILITY**. The actuarial present value of future plan benefits based on the assumption that there will be no further accruals for the future service and salary. The termination liability will generally be less than the liabilities computed on a "going-concern" basis and is not normally determined in a routine actuarial valuation.

**RESERVE ACCOUNT**. An account used to indicate that funds have been set aside for a specific purpose and are 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, adjusted to eliminate some of the market value fluctuation.