

**MUNICIPAL POLICE EMPLOYEES'  
RETIREMENT SYSTEM**

ACTUARIAL VALUATION AS OF  
JUNE 30, 2017

# G. S. CURRAN & COMPANY, LTD.

Actuarial Services

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November 20, 2017

Board of Trustees  
Municipal Police Employees' Retirement System  
7722 Office Park Boulevard, Suite 200  
Baton Rouge, Louisiana 70809

Ladies and Gentlemen:

We are pleased to present our report on the actuarial valuation of the Municipal Police Employees' Retirement System for the fiscal year ending June 30, 2017. Our report is based on the actuarial assumptions specified and relies on the data supplied by the system's administrators and accountants. This report was prepared at the request of the Board of Trustees of Municipal Police Employees' Retirement System of the State of Louisiana. The primary purposes of the report are to determine the actuarially required contribution for the retirement system for the fiscal year ending June 30, 2018 and to recommend the net direct employer contribution rate for Fiscal 2019. This report does not contain the information necessary for accounting disclosures as required by Governmental Accounting Standards Board (GASB) Statements 67 and 68; that information is included in a separate report. This report was prepared exclusively for Municipal Police Employees' Retirement System for a specific limited purpose. It is not for the use or benefit of any third party for any purpose.

In our opinion, all of the assumptions on which this valuation is based are reasonable individually and in the aggregate. Both economic and demographic assumptions are based on our expectations for future experience for the fund. This report has been prepared in accordance with generally accepted actuarial principles and practices, and to the best of our knowledge and belief, fairly reflects the actuarial present values and costs stated herein. The undersigned actuaries are members of the American Academy of Actuaries and have met the qualification standards for the American Academy of Actuaries to render the actuarial opinions incorporated in this report, and are available to provide further information or answer any questions with respect to this valuation.

Sincerely,

G. S. CURRAN & COMPANY, LTD.

By:   
Gary Curran, F.C.A., M.A.A.A., A.S.A.

  
Gregory Curran, F.C.A., M.A.A.A., A.S.A.

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## SUMMARY OF VALUATION RESULTS MUNICIPAL POLICE EMPLOYEES' RETIREMENT SYSTEM

Valuation Date:	June 30, 2017	June 30, 2016
Census Summary:		
Active Members	5,663	5,666
Retired Members and Survivors	4,691	4,637
DROP Participants	193	191
Terminated Due a Deferred Benefit	181	175
Terminated Due a Refund	1,443	1,324
Payroll (excluding DROP accruals):	\$ 293,792,282	\$ 281,546,022
Benefits in Payment:	\$ 139,782,252	\$ 134,868,073
Present Value of Future Benefits:	\$ 3,342,446,272	\$ 3,156,001,249
Actuarial Accrued Liability (EAN):	\$ 2,918,064,612	\$ 2,760,140,132
Unfunded Actuarial Accrued Liability:	\$ 834,823,803	\$ 810,384,316
Actuarial Value of Assets (AVA):	\$ 2,083,240,809	\$ 1,949,755,816
Market Value of Assets (MVA):	\$ 2,045,022,309	\$ 1,822,858,397
Ratio of AVA to Actuarial Accrued Liability:	71.39%	70.64%
	Fiscal 2017	Fiscal 2016
Market Rate of Return:	13.1%	-2.2%
Actuarial Rate of Return:	7.7%	5.7%
	Fiscal 2018	Fiscal 2017
Employers' Normal Cost (Mid-year):	\$ 27,935,402	\$ 25,246,189
Amortization Cost (Mid-year):	\$ 85,367,577	\$ 81,091,004
Estimated Administrative Cost:	\$ 1,507,074	\$ 1,365,125
Expected Insurance Premium Taxes Due:	\$ 19,733,532	\$ 19,090,190
Net Direct Employer Actuarially Required Contributions:	\$ 95,076,521	\$ 88,612,128
Projected Payroll:	\$ 295,099,358	\$ 284,556,608
Actual Employee Contribution Rate:		
For Employees in the Hazardous Subplan or Hired prior to January 1, 2013:	10.00% *	10.00% *
For Employees in the Non-Hazardous Subplan	8.00%	8.00%
Actual Net Direct Employer Contribution Rate:		
For Employees in the Hazardous Subplan or Hired prior to January 1, 2013:	30.75% *	31.75% *
For Employees in the Non-Hazardous Subplan:	30.75%	33.75%
Actuarially Required Net Direct Employer Contribution Rate:		
For Employees in the Hazardous Subplan or Hired prior to January 1, 2013:	32.22%	31.14%
For Employees in the Non-Hazardous Subplan:	32.22%	31.14%
	Fiscal 2019	Fiscal 2018
Minimum Recommended Net Direct Employer Cont. Rate:		
For Employees in the Hazardous Subplan or Hired prior to January 1, 2013:	32.25% *	30.75% *
For Employees in the Non-Hazardous Subplan:	32.25%	30.75%

\* For members with earnings greater than the Department of HHS poverty guidelines. For members with earnings below the poverty guidelines, employer rates will be 2.5% higher and employee rates will be 2.5% lower.

## GENERAL COMMENTS

The values and calculations in this report were determined by applying statistical analysis and projections to system data and the assumptions listed. There is sometimes a tendency for readers to either dismiss results as mere “guesses” or alternatively to ascribe a greater degree of accuracy to the results than is warranted. In fact, neither of these assessments is valid. Actuarial calculations by their very nature involve estimations. As such, it is likely that eventual results will differ from those presented. The degree to which such differences evolve will depend on several factors including the completeness and accuracy of the data utilized, the degree to which assumptions approximate future experience, and the extent to which the mathematical model accurately describes the plan’s design and future outcomes.

Data quality varies from system to system and year to year. The data inputs involve both asset information and census information of plan participants. In both cases, the actuary must rely on third parties; nevertheless, steps are taken to reduce the probability and degree of errors. The development of assumptions is primarily the task of the actuary; however, information and advice from plan administrators, staff, and other professionals may be factored into the formation of assumptions. The process of setting assumptions is based primarily on analysis of past trends, but modification of historical experience is often required when the actuary has reason to believe that future circumstances may vary significantly from the past. Setting assumptions includes but is not limited to collecting past plan experience and studying general population demographics and economic factors from the past. The actuary will also consider current and future macro-economic and financial expectations as well as factors that are likely to impact the particular group under consideration. Hence, assumptions will also reflect the actuary’s judgment with regard to future changes in plan population and decrements in view of the particular factors which impact participants. Thus, the process of setting assumptions is not mere “guess work” but rather a process of mathematical analysis of past experience and of those factors likely to impact the future.

One area where the actuary is limited in his ability to develop accurate estimates is the projection of future investment earnings. The difficulties here are significant. First, the future is rarely like the past, and the data points available to develop stochastic trials are far fewer than the number required for statistical significance. In this area, some guess work is inevitable. However, there are tools available to lay a foundation for making estimates with an expectation of reliability. Although past data is limited, that which is available is likely to provide some insight into the future. This data consists of general economic and financial values such as past rates of inflation, rates of return variance, and correlations of returns among various asset classes along with the actual asset experience of the plan. In addition, the actuary can review the current asset market environment as well as economic forecasts from governmental and investment research groups to form a reasonable opinion with regard to probable future investment experience for the plan.

All of the above efforts would be in vain if the assumption process was static, and the plan would have to deal with the consequences of actual experience differing from assumptions after forty or fifty years of compounded errors. However, actuarial funding methods for pension plans all allow for periodic corrections of assumptions to conform with reality as it unfolds. This process of repeated correction of estimates produces results which although imperfect are nevertheless a reasonable approach to determine the contribution levels which will provide for the future benefits of plan participants.

## COMMENTS ON DATA

For the valuation, the administrator of the system furnished a census on CD derived from the system's master data processing file indicating each active covered employee's sex, date of birth, service credit, annual salary, and accumulated contributions. Information on retirees detailing dates of birth of retirees and beneficiaries, sex, as well as option categories and benefit amounts, was provided in like manner. In addition, data was supplied on former employees who are vested or who have contributions remaining on deposit. As illustrated in Exhibit VII, there are 5,663 active contributing members in the system of whom 2,544 have vested retirement benefits; in addition, there are 193 participants in the Deferred Retirement Option Plan (DROP); 4,691 former members or their beneficiaries are receiving retirement benefits. An additional 1,624 terminated members have contributions remaining on deposit with the system; of this number 181 have vested rights for future retirement benefits. All individuals submitted were included in the valuation.

Census data submitted to our office is tested for errors. Several types of census data errors are possible; to ensure that the valuation results are as accurate as possible, a significant effort is made to identify and correct these errors. In order to minimize coverage errors (i.e., missing or duplicated individual records) the records are checked for duplicates, and a comparison of the current year's records to those submitted in prior years is made. Changes in status, new records, and previous records that have no corresponding current record are identified. This portion of the review indicates the annual flow of members from one status to another and is used to check some of the actuarial assumptions such as retirement rates, rates of withdrawal, and mortality. In addition, the census is checked for reasonableness in several areas such as age, service, salary, and current benefits. The records identified by this review as questionable are checked against data from prior valuations; those not recently verified are included in a detailed list of items sent to the system's administrative staff for verification and/or correction. Once the identified data has been researched and verified or corrected, it is returned to us for use in the valuation. Occasionally some requested information is either unavailable or impractical to obtain. In such cases, values may be assigned to missing data. The assigned values are based on information from similar records or based on information implied from other data in the record. For this valuation, the number of such records with imputed data is de minimis.

In addition to the statistical information provided on the system's participants, the system's administrator furnished general information related to other aspects of the system's expenses, benefits and funding. Valuation asset values as well as income and expenses for the fiscal year were based on information furnished by the system's auditor, the firm of Duplantier, Hrapmann, Hogan & Maher, Certified Public Accountants. As indicated in the system's financial statements, the net market value of the system's assets was \$2,045,022,309 as of June 30, 2017. Net investment income for Fiscal 2017 measured on a market value basis was \$238,535,243. Contributions to the system for the fiscal year totaled \$143,416,371; benefits and expenses amounted to \$159,787,702.

Notwithstanding our efforts to review both census and financial data for apparent errors, we must rely upon the system's administrative staff and accountants to provide accurate information. Our review of submitted information is limited to validation of reasonableness and consistency. Verification of submitted data to source information is beyond the scope of our efforts.

## COMMENTS ON ACTUARIAL METHODS AND ASSUMPTIONS

This valuation is based on the Entry Age Normal actuarial cost method. Prior to Fiscal 2002, experience gains and losses as well as contribution gains and losses were amortized over fifteen years with level amortization payments. Act 1079 of 2003 explicitly changed the amortization period for experience gains and losses, changes in assumptions, changes in methods, cost of living increases, and changes in plan benefit provisions to thirty years with level amortization payments. Act 402 of 2014 was introduced to improve the long-term health of the system and to reduce the likelihood for intergenerational cost shifting due to long amortization periods. The act changed the amortization period for all the existing outstanding unfunded liability bases from various periods ranging from one to thirty years to twenty years. The act also set the period to amortize all future actuarial gains and losses as well as changes in assumptions and benefits at fifteen years.

The cost method used for this valuation generally produces normal costs which are level as a percentage of pay if assumptions are met and the composition of the active group with regard to age, sex, and service is stable. Overall costs may increase or decrease depending on payroll growth. Since payments on all of the fund's amortization bases are level, any payroll growth will reduce future amortization payments as a percentage of payroll. Should overall payroll contract, amortization payments will increase as a percentage of payroll.

In February of 2017, a recommendation was made to the Board of Trustees to reduce the long-term rate of return assumption. The recommendation was formed after an analysis of the system's portfolio along with expected long-term rates of return, standard deviations of return, and correlations between asset classes collected from a number of investment consulting firms in addition to the system's investment consultants, New England Pension Consultants. Based on this analysis and after discussions with the Board, a plan was approved to reduce the 7.5% valuation interest rate in effect for the Fiscal 2016 actuarial valuation to 7.125% over the coming three actuarial valuations with reductions of 0.175% in 2017, 0.125% in 2018, and 0.075% in 2019. Therefore, the assumed rate of return for the Fiscal 2017 valuation was set at 7.325%. In addition, the inflation rate will be reduced over the coming valuations. For 2017, an assumed rate of inflation of 2.7% was implicit in the assumed rate of return. The remaining actuarial assumptions utilized for this report are based on the results of an actuarial experience study for the period July 1, 2009 – June 30, 2014, unless otherwise specified in this report. Additional details are given in the complete Experience Report for fiscal years 2010 through 2014.

Although the Board of Trustees has authority to grant ad hoc Cost of Living Increases (COLAs) under limited circumstances, these COLAs have not been shown to have a historical pattern, the amounts of the COLAs have not been relative to a defined cost-of-living or inflation index, and there is no evidence to conclude that COLAs will be granted on a predictable basis in the future. Therefore, for purposes of determining the present value of benefits, these COLAs were deemed not to be substantively automatic and the present value of benefits excludes COLAs not previously granted by the Board of Trustees.

The current year actuarial assumptions utilized for the report are outlined on pages forty-one through forty-six. All assumptions used are based on estimates of future long-term experience for the fund. All calculations, recommendations, and conclusions are based on the assumptions specified. To the extent that prospective experience differs from that assumed, adjustments to contribution levels will be required. Such differences will be revealed in future actuarial valuations. The net effect of the changes in assumptions increased the interest-adjusted amortization payments on the system's UAL by

\$5,673,197 which corresponds to payments of 1.92% of Fiscal 2017 projected payroll. In addition, the change in the valuation interest rate increased the system's normal cost by \$2,017,974, or 0.69% of projected payroll.

## **RISK FACTORS**

Defined benefit pension plans are subject to a number of risks. These can be related either to plan assets or liabilities. In order to pay benefits, the plan must have sufficient assets. Several factors can lead to asset levels which are below those required to pay promised benefits. The first risk in this regard is the failure to contribute adequate funds to the plan. In some ways, this is the greatest risk, since other risks can usually be addressed by adequate actuarial funding.

All pension plans are subject to asset performance risk. Asset performance is comprised of the real rates of return earned on the portfolio of investments plus the underlying inflation rate. High levels of inflation or deflation can present the plan with problems by either reducing the purchasing power of plan benefits or impairing asset values in the trust. Asset performance over the long run depends not only on average returns but also on the volatility of returns. Two portfolios of identical size with identical average rates of return will accumulate different levels of assets if the volatility of returns differs since increased volatility reduces the accumulation of assets. Another element of asset risk is reinvestment risk. Recent interest rate declines have subjected pension plans to an increase in this risk. As fixed income securities have matured, investment managers have been forced to reinvest funds at decreasing rates of return. For pension plans which require significant net cash flow above contributions to fund benefit payments, the risk of insufficient liquidity is another risk component which can create problems if it becomes necessary to sell securities under unfavorable market conditions in order to raise cash necessary to pay retirement benefits. Even for individual securities, insolvency and performance risk can subject a plan to stress if these investments comprise a significant portion of plan assets. Security insolvency or severe underperformance can result in steep increases in sponsor contributions where individual investments comprise more than a de minimis amount of the investment portfolio.

In addition to asset risk, the plan is also subject to risks related to liabilities. These risks include longevity risk (the risk that retirees will live longer than expected), termination risk (the risk that fewer than the anticipated number of members will terminate service prior to retirement), and other factors that may have an impact on the liability structure of the plan. Final average compensation plans are vulnerable to unexpectedly large increases in salary for individual members near retirement. Conversely, in cases where plans have large unfunded liabilities, payroll contraction is a risk insofar as contributions which are typically reported as a percentage of payroll may increase as payrolls decline.

Liability risk also includes items such as data errors. Significant errors in plan data can distort or disguise plan liabilities. When data corrections are made, the plan may experience unexpected increases or decreases in liabilities. Even natural disasters and dislocations in the economy or other unforeseen events can present risks to the plan. These events can affect member payroll and plan demographics, both of which impact costs.

Recommended actuarial contributions are based on expectations related to asset and liability performance; all of the above mentioned factors can produce unexpected changes in the future cost structures of the plan. For this reason, future costs may differ significantly from current levels. Ordinarily, variations in these factors will offset to some extent. However, even with the expectation



that not all variations in costs will likely travel in the same direction, certain factors have the potential on their own accord to pose a significant risk to future cost levels and solvency.

Beyond identifying risk categories, it is possible to quantify some risk factors. One fairly well known risk metric is the funded ratio of the plan. The rate is given as plan assets divided by plan liabilities. However, the definition of each of these terms may vary. The two typical alternatives used for assets are the market and actuarial value of assets. There are a number of alternative measures of liability depending on the funding method employed. The Governmental Accounting Standards Board (GASB) specifies that for financial reporting purposes, the funded ratio is determined by using the market value of assets divided by the entry age normal accrued liability. This value is given in the system's financial report. Alternatively, we have calculated the ratio of the actuarial value of assets to the entry age normal accrued liability based on the funding methodology used to fund the plan. The ratio is 71.39% as of June 30, 2017. This value gives some indication of the financial strength of the plan; however, it does not guarantee the ability of the fund to pay benefits in the future or indicate that in the future, contributions are likely to be less than or greater than current contributions. In addition, the ratio cannot be used in isolation to compare the relative strength of different retirement systems. However, the trend of this ratio over time can give some insight into the financial health of the plan. Even in this regard, caution is warranted since market fluctuations in asset values and changes in plan assumptions can distort underlying trends in this value. One additional risk measure is the sensitivity of the plan's cost structure to asset gains and losses. For this plan, we have determined that based on current assets and demographics, for each percentage under (over) the assumed rate of return on the actuarial value of assets, there will be a corresponding increase (reduction) in the actuarially required contribution as a percentage of projected payroll of 0.76% for the fund.

The ability of a system to recover from adverse asset or liability performance is related to the maturity of the plan population. In general, plans with increasing active membership are less sensitive to asset and liability gains and losses than mature plans since changes in plan costs can be partially allocated to new members. If the plan has a large number of active members compared to retirees, asset or liability losses can be more easily addressed. As more members retire, contributions can only be collected from a smaller segment of the overall plan population. Often, population ratios of actives to annuitants are used to measure the plan's ability to adjust or recover from adverse events since contributions are made by or on behalf of active members but not for retirees. Thus, if the plan suffers a mortality loss through increased longevity, this will affect both actives and retirees, but the system can only fund this loss by contributions related to active members. A measure of risk related to plan maturity is the ratio of total benefit payments to active payroll. For Fiscal 2017, this ratio is 48%; ten years ago this ratio was 36%.

One other area of risk is the risk that plan assumptions will need to be revised to conform to changing actual or expected plan experience. Such assumption revisions could relate to demographic or economic factors. With regard to the economic assumptions, we have determined that a reduction in the valuation interest rate by 1% (without any change to other collateral factors) would increase the minimum recommended net direct employer contribution rate for Fiscal 2019 by 15.97% of payroll.

There is a risk that future actuarial measurements may differ significantly from current measurements presented in this report due to factors such as the following: plan experience differing from that anticipated by the economic or demographic assumptions, changes in economic or demographic assumption, completion of amortization payment and credit schedules, and changes in plan provisions or applicable law. Analysis of the effect of all these factors and additional risk metrics is beyond the scope of this report.

## CHANGES IN PLAN PROVISIONS

The following changes to the system were enacted during the 2017 Regular Session of the Louisiana Legislature:

**Act 285** of the 2017 Regular Session of the Louisiana Legislature provides a framework to correct enrollment errors for all employees in positions covered by state and statewide retirement systems. The act requires the member to be enrolled in the correct system with a transfer of contributions and interest from the erroneous system to the correct system. As a part of the correction of the enrollment error, the member will be credited with the correct service credit, accrual rate, and employee contribution balance in the correct system. If the correction occurs within three years of the enrollment error, the correct system shall complete the correction upon receipt of the employee contributions and employer contributions that would have been paid had the member been properly enrolled with interest at the system's board-approved actuarial valuation interest rate. If the correction occurs more than three years after the enrollment error, the correct system shall receive the greater of 1) Employee contributions and employer contributions plus interest, and 2) The actuarial cost to the correct system of the service credit transferred. The employer must pay the difference between the amount transferred from the incorrect system to the correct system and the cost of the correction.

**Act 366** of the 2017 Regular Session of the Louisiana Legislature made individuals appointed or elected on or after July 1, 2017 ineligible to serve as trustee on the Board for any state or statewide retirement system if found in violation of the Code of Governmental Ethics for actions involving the misuse of public funds. In addition, the act clarified that legislative staff is authorized to attend executive sessions and that they enjoy lawyer-client privilege for information related to the executive session.

## ASSET EXPERIENCE

The actuarial and market rates of return for the past ten years are given below. These investment rates of return were determined by assuming a uniform distribution of income and expense throughout the fiscal year.

	<u>Market Value</u>	<u>Actuarial Value</u>
2008	- 7.6%	6.4%
2009	-24.2%	-16.7%
2010	12.4%	-0.8%
2011	23.5%	3.9% *
2012	-2.1%	7.8%
2013	13.7%	11.2%
2014	18.6%	11.9%
2015	1.4%	10.6%
2016	-2.2%	5.7%
2017	13.1%	7.7%

\* Includes the effect of transition to a new method for calculating the actuarial value of assets. The new method for calculating the actuarial value of assets is based on the market value of investment securities adjusted to phase in asset earnings above or below the assumed rate of return over a five-year period with limits set at 85% and 115% of the market value of assets. When the adjusted value falls outside of the limits, the actuarial value is set equal to the average of the limited and adjusted value.

### Geometric Average Market Rates of Return

5 year average	(Fiscal 2013 – 2017)	8.6%
10 year average	(Fiscal 2008 – 2017)	3.7%
15 year average	(Fiscal 2003 – 2017)	5.8%
20 year average	(Fiscal 1998 – 2017)	5.2%

The market rate of return gives a measure of investment return on a total return basis and includes realized and unrealized capital gains and losses as well as interest income. This rate of return gives an indication of performance for an actively managed portfolio where securities are bought and sold with the objective of producing the highest total rate of return. During 2017, the fund earned \$27,705,273 of dividends, interest and other recurring income. In addition, the Fund had net realized and unrealized capital gains on investments and non-recurring income of \$216,942,527. This income was offset by investment expenses of \$6,112,557.

The actuarial rate of return is presented for comparison to the assumed long-term rate of return of 7.325% used for the valuation. For Fiscal 2017, this rate adjusted for elimination of the effect of merger payments was 7.7%. DROP accounts should be credited with 7.2% (i.e. 7.7% less 0.5%). The actuarial rate of return is calculated based on the actuarial value of assets and all interest, dividends, and recognized capital gains as given in Exhibit VI. Investment income used to calculate this yield is based upon a smoothing of investment returns above or below the valuation interest rate over a five year period subject to constraints. The difference between rates of return on an actuarial and market value basis results from the smoothing of gains or losses on investments relative to the valuation interest rate. Yields in excess of the 7.325% assumption will reduce future costs; yields below 7.325% will increase future costs. For Fiscal 2017, the system experienced net actuarial investment earnings of \$4,227,464 above the actuarial assumed earnings rate of 7.50% (in effect for Fiscal 2017) which produced an actuarial gain and decreased the interest-adjusted amortization payments on the system's UAL by \$457,274 or 0.15% of projected payroll.

### **DEMOGRAPHICS AND LIABILITY EXPERIENCE**

A reconciliation of the census for the system is given in Exhibit VII. The average active contributing member is 40 years old with 10.99 years of service credit and an annual salary of \$51,879. The system's active contributing membership experienced a decrease of 3 members during Fiscal 2017. The number of DROP participants increased by 2. Over the last five years active membership has decreased by 116 members.

The average service retiree is 66 years old with a monthly benefit of \$2,966. The number of retirees and beneficiaries receiving benefits from the system increased by 54 during the fiscal year. Over the last five years, the number of retirees increased by 461 with annual benefits in payment increasing by \$34,783,749.

The changes in the makeup of the population, changes in assumptions, and changes in members' salaries increased the interest adjusted employer normal cost over the last year by \$2,689,213; the employer normal cost percentage increased by 0.60% of payroll. Plan liability experience for the year was unfavorable. The salary increase rates at most durations were significantly higher than projected levels. This is due in part to the inclusion of 27 biweekly pay periods during Fiscal 2017 for many of the system's employers where there were 26 pay periods during the previous year. Reducing the

impact of losses due to salary increases above projected levels were the number of disabilities, DROP entries, and retirements of DROP participants and active former DROP participants below projected levels. The number of retiree deaths and withdrawals were above projected levels. These factors tend to reduce costs. Net plan liability experience losses totaled \$7,622,189. The interest adjusted amortization charge on this loss was \$824,473, or 0.28% of projected payroll.

## **FUNDING ANALYSIS AND RECOMMENDATIONS**

Actuarial funding of a retirement system is a process whereby funds are accumulated over the working lifetimes of employees in such a manner as to have sufficient assets available at retirement to pay for the lifetime benefits accrued by each member of the system. The required contributions are determined by an actuarial valuation based on rates of mortality, termination, disability, and retirement, as well as investment return and other statistical measures specific to the particular group. Each year a determination is made of two cost components, and the actuarially required contributions are based on the sum of these two components plus administrative expenses. These two components are the normal cost and the amortization payments on the unfunded actuarial accrued liability. The normal cost refers to the annual cost for active members allocated to each year by the particular cost method utilized. The term unfunded accrued liability (UAL) refers to the excess of the present value of plan benefits over the sum of current assets and future normal costs. Each year the UAL grows with interest and is reduced by payments. In addition it may be increased or diminished by plan experience, changes in assumptions, or changes in benefits including COLA's. Contributions in excess of or less than the actuarially required amount can also decrease or increase the UAL balance. New entrants to the system can also increase or lower costs as a percent of payroll depending upon their demographic distribution. Finally, payroll growth affects plan costs since payments on the system's unfunded liability are on a fixed, level schedule. If payroll increases, these costs are reduced as a percentage of payroll.

In order to establish the actuarially required contribution in any given year, it is necessary to define the assumptions, funding method, and method of amortizing the UAL. Thus, the determination of what contribution is actuarially required depends upon the funding method and amortization schedules employed. Regardless of the method selected, the ultimate cost of providing benefits is dependent upon the benefits, expenses, and investment earnings. Only to the extent that some methods accumulate assets more rapidly and thus produce greater investment earnings does the funding method affect the ultimate cost.

An explanation of the change in costs related to asset and liability gains and losses as well as changes in demographics and assumptions is given in prior sections of the report. In addition to these components, variances in contribution levels and payroll also affect costs. For Fiscal 2017 contributions totaled \$8,105,382 more than required; the interest-adjusted amortization credit on the contribution surplus for Fiscal 2018 is \$876,739, or 0.30% of projected payroll. In addition, for 2018 the net effect of the change in payroll on amortization costs was to reduce such costs by 1.02% of projected payroll.

A reconciliation of the change in costs is given below. Values listed in dollars are interest adjusted for payment throughout the fiscal year. Percentages are based on the projected payroll for Fiscal 2018, except for those items labeled Fiscal 2017.

	Dollars	Percentage of Payroll
Employer Normal Cost for Fiscal 2017	\$ 25,246,189	8.87%
Cost of Demographic and Salary Changes	\$ 671,239	(0.09%)
Change due to Assumption Change	<u>\$ 2,017,974</u>	<u>0.69%</u>
Employer Normal Cost for Fiscal 2018	\$ 27,935,402	9.47%
UAL Payments for Fiscal 2017	\$ 81,091,004	28.50%
Change due to Change in Payroll	N/A	(1.02%)
Change due to Interest Rate Change	\$ (887,084)	(0.30%)
Additional Amortization Expenses for Fiscal 2018:		
Asset Experience Loss (Gain)	\$ (457,274)	(0.15%)
Assumption Loss (Gain)	\$ 5,673,197	1.92%
Contribution Loss (Gain)	\$ (876,739)	(0.30%)
Liability Experience Loss (Gain)	<u>\$ 824,473</u>	<u>0.28%</u>
Net Amortization Expense (Credit) for Fiscal 2018	\$ 5,163,657	1.75%
Estimated Administrative Cost for Fiscal 2018	\$ 1,507,074	0.51%
Total Normal Cost & Amortization Payments	\$ 114,810,053	38.91%

The derivation of the actuarially required contribution for the current fiscal year is given in Exhibit I. The employer normal cost for Fiscal 2018, interest adjusted for mid-year payment is \$27,935,402. The interest adjusted amortization payments on the system's unfunded actuarial accrued liability totaled \$85,367,577. The total actuarially required contribution is determined by summing these two values together with estimated administrative expenses. As given in line 12 of Exhibit I the total actuarially required contribution for Fiscal 2018 is \$114,810,053. We estimate insurance premium taxes of \$19,733,532, or 6.69% of payroll, will be paid to the system in Fiscal 2018. This level of Insurance Premium Taxes represents a 0.02% decrease from the prior year as a percentage of payroll. Hence, the total actuarially required net direct employer contribution for Fiscal 2018 amounts to \$95,076,521 or 32.22% of payroll.

Since the actual employer contribution rate for Fiscal 2018 is 30.75% of payroll, there will be a contribution shortfall of 1.47% of payroll. This shortfall will increase the actuarially required contribution for Fiscal 2019 by 0.15%. The resulting net direct actuarially required employer contribution rate is 32.37%. The statutes require rounding the net direct employer contribution rate to the nearest 0.25%. Therefore, as given on line 20 of Exhibit I, we recommend a minimum net direct employer contribution rate for Fiscal 2019 of 32.25% of projected payroll for all members with earnings greater than the Department of HHS poverty guidelines. For members of the Hazardous Duty subplan and for members who were hired before January 1, 2013 who have earnings below the poverty guidelines, the employer contribution rates will be 2.5% higher and the employee contribution rates will be 2.5% lower.

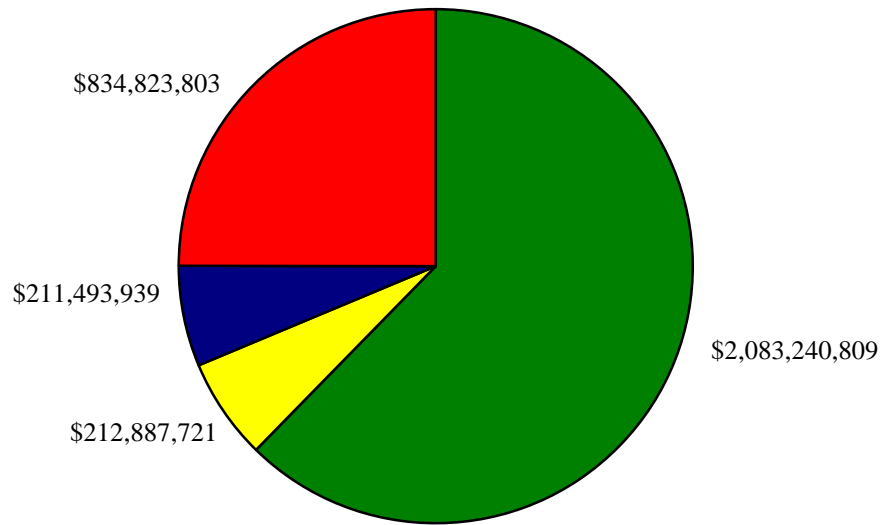
## **COST OF LIVING INCREASES**

During Fiscal 2017, the actual cost of living (as measured by the US Department of Labor CPI-U) increased by 1.63%. Cost of living provisions for the system are detailed in R.S. 11:2225(A)(7)(b), R.S. 11:246, and R.S. 11:241. R.S. 11:2225(A)(7)(b) allows the Board to use interest earnings in excess of the normal requirements to grant annual cost of living increases of 3% of each retiree's original or current benefit. R.S. 11:246 provides cost of living increases to retirees and beneficiaries over the age of 65 equal to 2% of the benefit in payment on October 1, 1977, or the date the benefit was originally received if retirement commenced after that date. R.S. 11:241 provides that cost of living benefits shall be in the form (unless the Board otherwise specifies) of  $\$X \times (A+B)$  where X is at most \$1 and "A" represents the number of years of credited service accrued at retirement or at death of the member or retiree and "B" is equal to the number of years since retirement or since death of the member or retiree to June 30<sup>th</sup> of the initial year of such increase. The provisions of this subpart do not repeal provisions relative to cost of living adjustments contained within the individual laws governing systems; however, they are to be controlling in cases of conflict.

All of the above provisions require that the system's investments produce sufficient excess interest earnings to fund the increases. R.S. 11:243 sets forth the funding criteria necessary in order to grant cost of living adjustments to regular retirees and beneficiaries (who are neither the surviving spouse nor children of the retiree.) The criteria for the fund to qualify as eligible to grant any such increase is as follows: a funded ratio of at least 70% if the system has not granted a benefit increase to retirees, survivors, or beneficiaries in any of the three most recent fiscal years; a funded ratio of at least 80% if the system has not granted such an increase in any of the two most recent fiscal years; or a funded ratio of at least 90% if the system has not granted such an increase in the most recent fiscal year. The funded ratio at any fiscal year end is the ratio of the actuarial value of assets to the actuarial accrued liability under the funding method prescribed by the legislative auditor (currently the Entry Age Normal Method for this system).

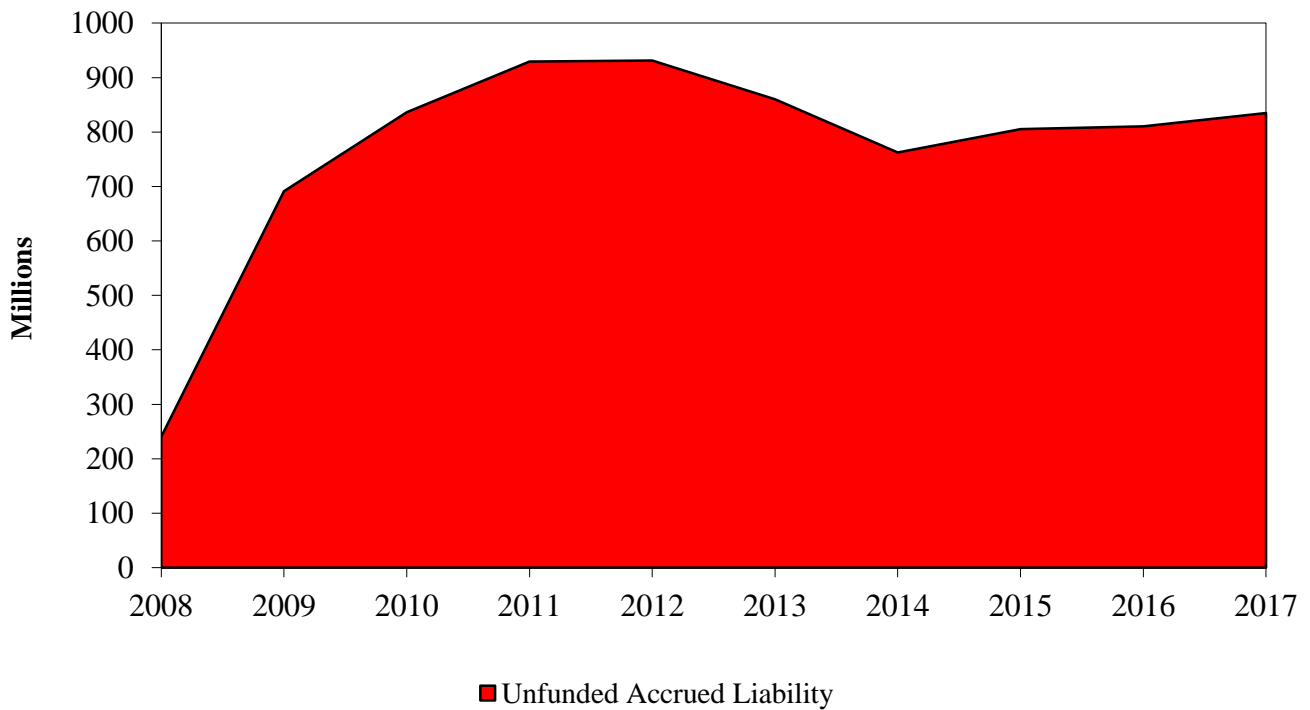
The system's funded ratio as of the end of Fiscal 2017 is 71.39% based on the Actuarial Value of Assets divided by the Entry Age Normal Accrued Liability. Since the system granted a COLA on November 1, 2014 and R.S. 11:243 only permits a COLA to be paid if a COLA has not been granted in any of the three most recent fiscal years if the funded percentage of the system is less than 80% (but at least 70%) the system is not eligible to grant a COLA in Fiscal 2018.

## Components of Present Value of Future Benefits June 30, 2017

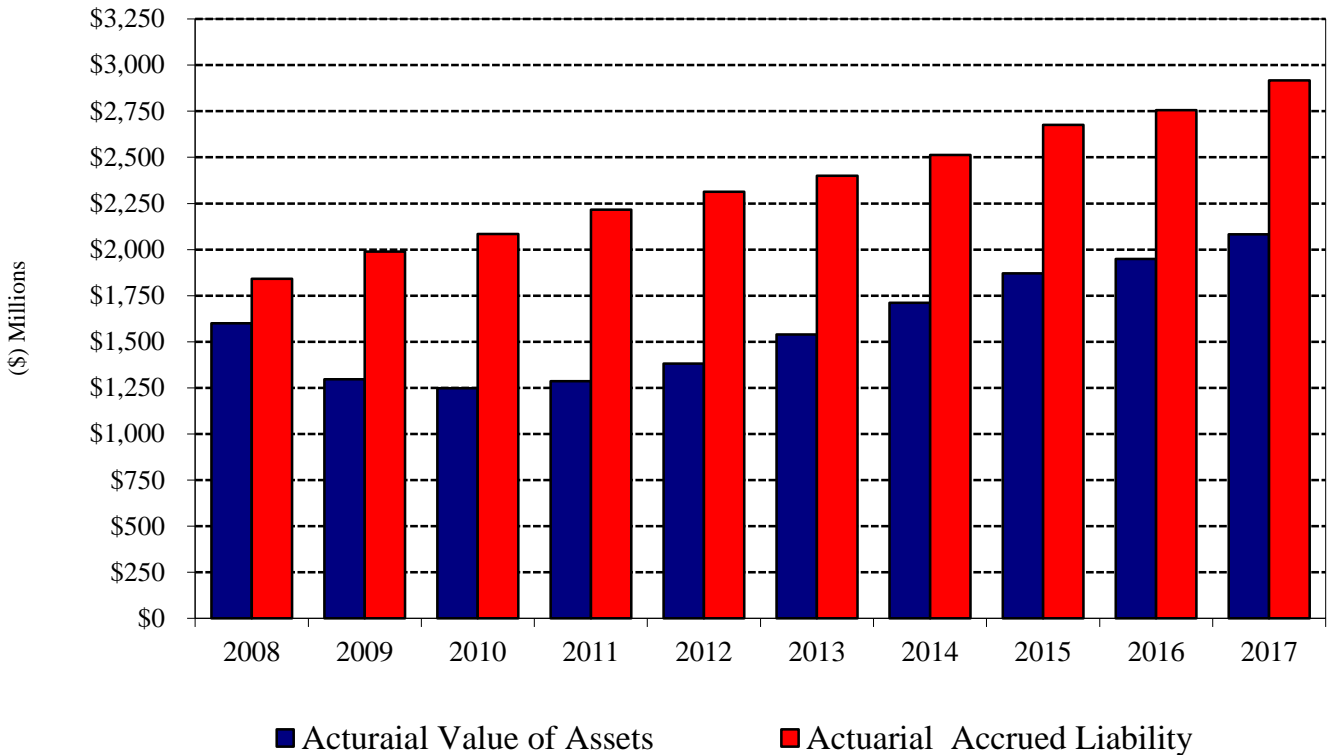


- Actuarial Value of Assets
- Present Value of Future Employer Normal Cost
- Present Value of Employee Contributions
- Unfunded Actuarial Accrued Liability

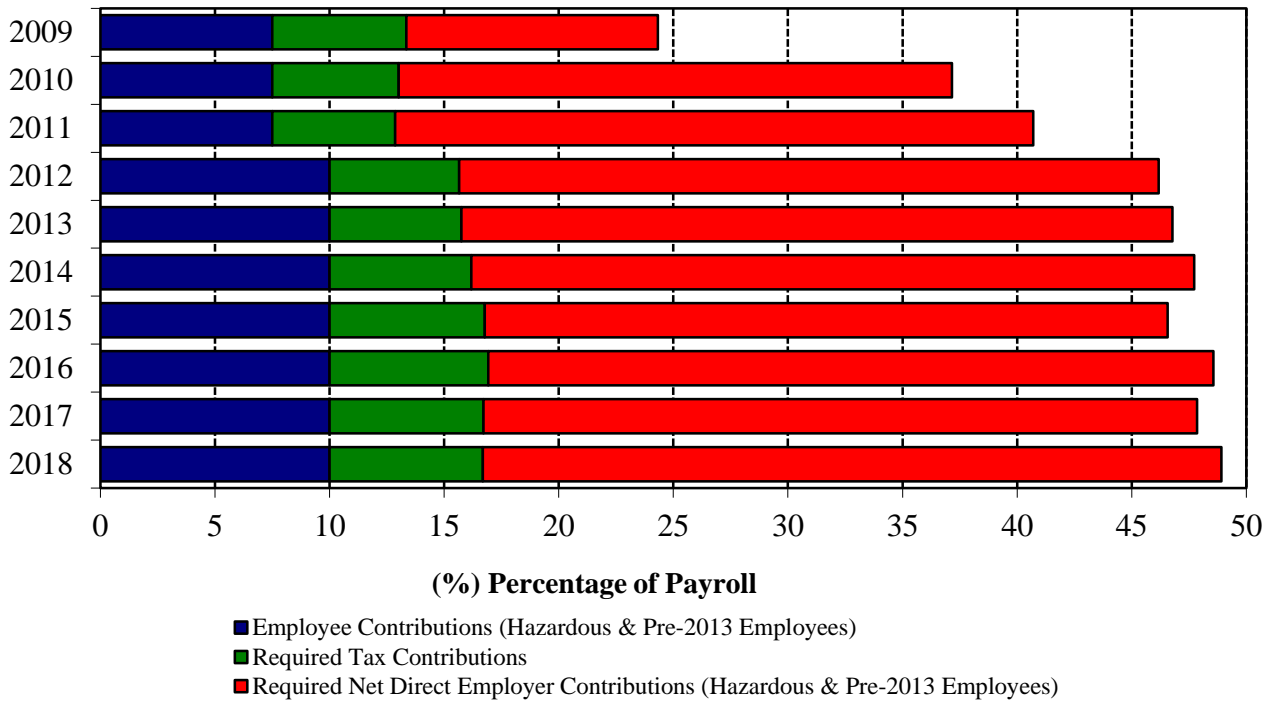
## Unfunded Accrued Liability



# Actuarial Value of Assets vs. Actuarial Accrued Liability



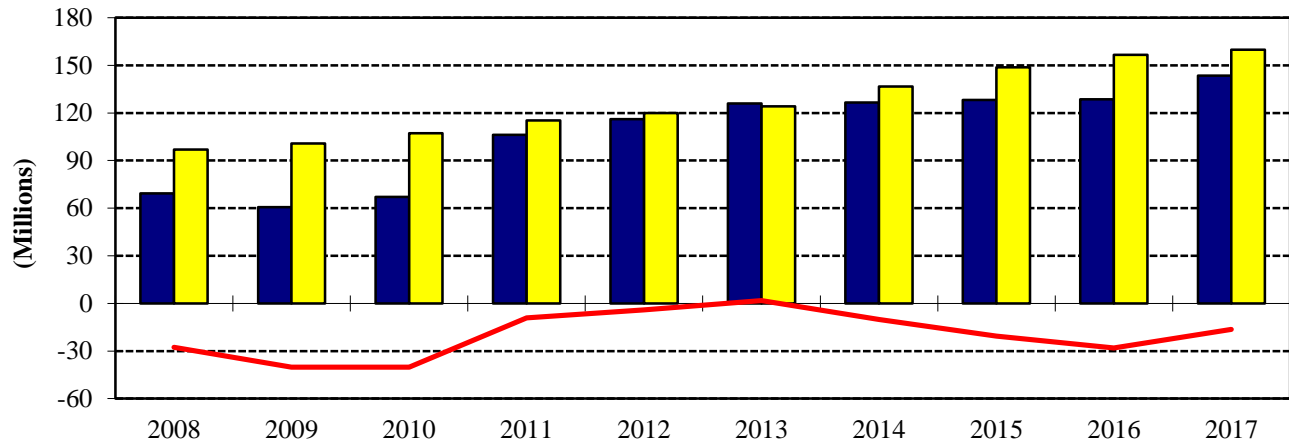
## Components of Actuarial Funding



(2012 and later employee contribution level is based on members with earnings above the poverty level)

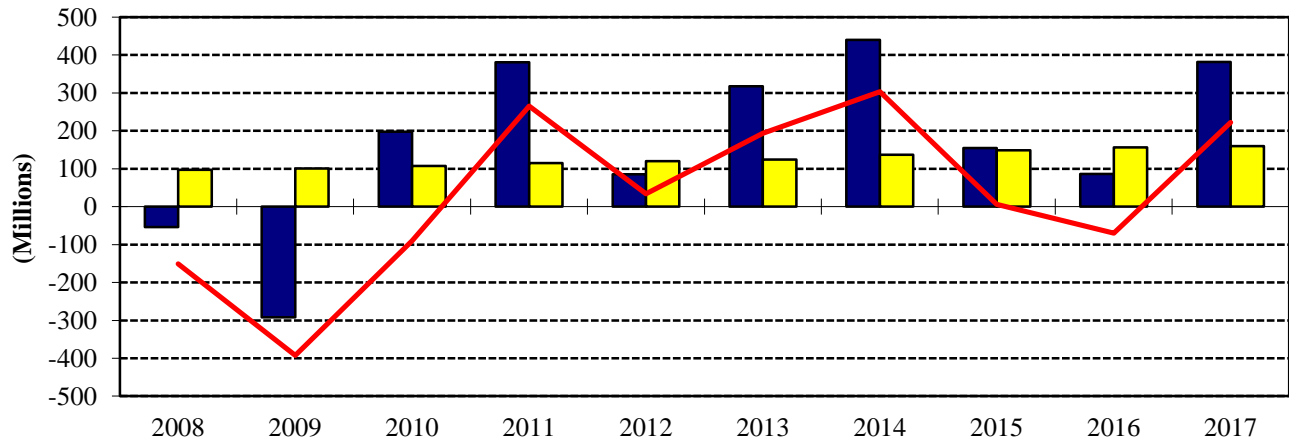


## Net Non-Investment Income



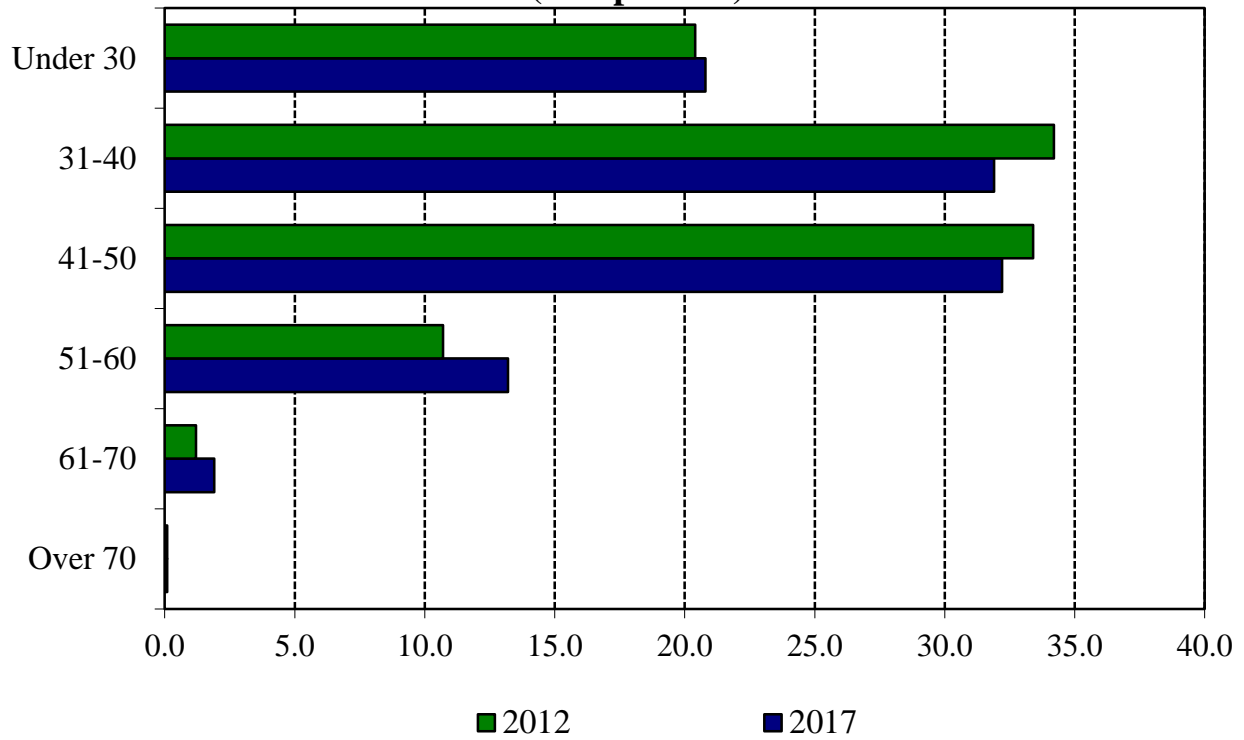
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Non-Investment Income (\$Mil)	■	69.3	60.6	67.0	106.1	116.0	125.9	126.6	128.2	128.6	143.4
Benefits and Expenses (\$Mil)	■	96.9	100.7	107.2	115.3	120.0	124.2	136.7	148.7	156.6	159.8
Net Non-Investment Income (\$Mil)	—	-27.6	-40.1	-40.2	-9.2	-4.0	1.7	-10.1	-20.5	-28.0	-16.4

## Total Income vs. Expenses (Based on Market Value of Assets)

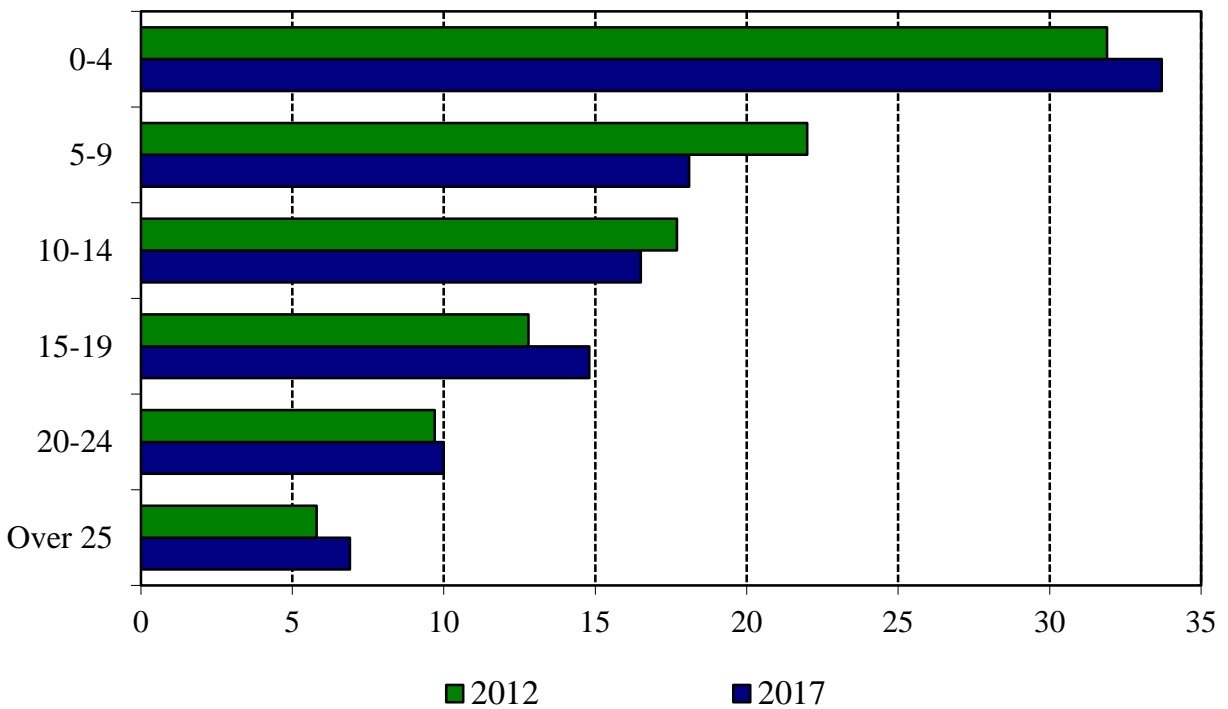


		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Income (\$Mil)	■	-53.6	-291.8	198.1	381.0	85.9	318.0	439.9	154.8	86.4	382.0
Benefits and Expenses (\$Mil)	■	96.9	100.7	107.2	115.3	120.0	124.2	136.7	148.7	156.6	159.8
Net Change in MVA (\$Mil)	—	-150.5	-392.5	90.9	265.7	34.1	193.8	303.2	6.1	-70.2	222.2

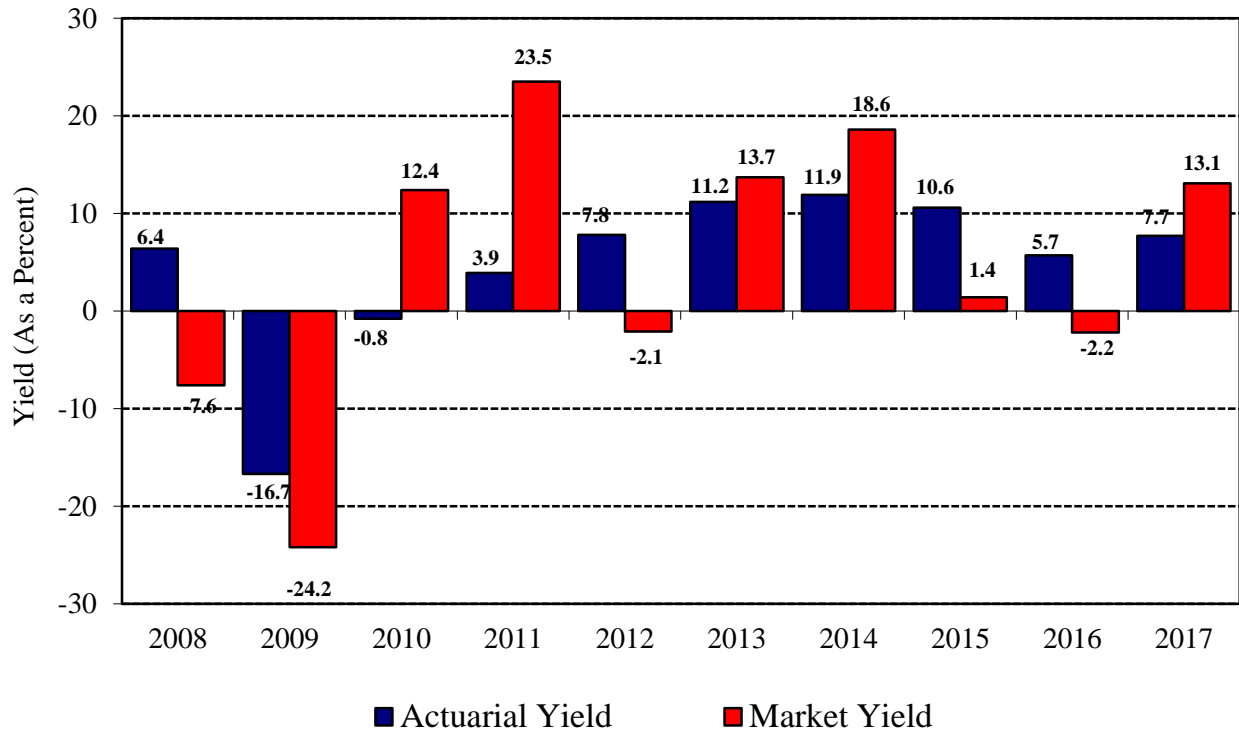
## Active – Census by Age (as a percent)



## Active – Census by Service (as a percent)



# Historical Asset Yields



**EXHIBIT I**  
**ANALYSIS OF ACTUARIALLY REQUIRED CONTRIBUTIONS**

1. Normal Cost of Retirement Benefits .....	\$	39,729,323	
2. Normal Cost of Death Benefits .....	\$	1,320,816	
3. Normal Cost of Disability Benefits .....	\$	3,814,257	
4. Normal Cost of Deferred Retirement Benefits.....	\$	3,831,336	
5. Normal Cost of Contribution Refunds .....	\$	5,759,407	
6. TOTAL Normal Cost as of July 1, 2017 (1 + 2 + 3 + 4 + 5) .....	\$	54,455,139	
7. TOTAL Normal Cost Interest Adjusted for Mid-year Payment .....	\$	56,414,315	
8. Adjustment to Total Normal Cost for Employee Portion .....	\$	28,478,913	
9. Employer Normal Cost, Adjusted for Midyear Payment .....	\$	27,935,402	
10. Amortization Payments on Unfunded Accrued Liability at Midyear .....	\$	85,367,577	
11. Projected Administrative Expenses for Fiscal 2018 .....	\$	1,507,074	
12. TOTAL Employer Cost (9 + 10 + 11) .....	\$	114,810,053	
13. Projected Insurance Premium Taxes due in Fiscal 2018.....	\$	19,733,532	
14. Net Direct Actuarially Required Employer Contribution for Fiscal 2018 (12 – 13) .....	\$	95,076,521	
15. Projected Payroll for Contributing Members (Fiscal 2018) .....	\$	295,099,358	
16. Net Direct Actuarially Required Employer Contribution as a Percentage of Projected Payroll for Fiscal 2018 (14 ÷ 15) .....		32.22%	*
17. Actual Net Direct Employer Contribution Rate for Fiscal 2018.....		30.75%	*
18. Projected Fiscal 2018 Contribution Loss (Gain) as a % of Payroll (16 – 17).....		1.47%	
19. Adjustment to following year payment for Projected Employer Contribution Shortfall (Surplus) .....		0.15%	
20. Minimum Recommended Net Direct Employer Contribution Rate for Fiscal 2019 (16 + 19, Rounded to nearest 0.25%).....		32.25%	*

\* The above rates are for members with earnings greater than the Department of HHS poverty guidelines. For members of the Hazardous Duty Subplan or hired before January 1, 2013, and who have earnings below the poverty guidelines, employer rates will be 2.5% higher and employee rates will be 2.5% lower.

**EXHIBIT II**  
**PRESENT VALUE OF FUTURE BENEFITS**

PRESENT VALUE OF FUTURE BENEFITS FOR ACTIVE MEMBERS:

Retirement Benefits.....	\$ 1,544,296,025
Survivor Benefits.....	18,056,579
Disability Benefits.....	76,691,887
Vested Termination Benefits.....	78,916,404
Refunds of Contributions .....	34,902,595

TOTAL Present Value of Future Benefits for Active Members..... \$ 1,752,863,490

PRESENT VALUE OF FUTURE BENEFITS FOR TERMINATED MEMBERS:

Terminated Vested Members Due Benefits at Retirement..	\$ 31,313,043
Terminated Members with Reciprocal	
Due Benefits at Retirement .....	137,363
Terminated Members Due a Refund .....	7,347,087

TOTAL Present Value of Future Benefits for Terminated Members..... \$ 38,797,493

PRESENT VALUE OF FUTURE BENEFITS FOR RETIREES:

Regular Retirees

Maximum.....	\$ 525,848,681
Option 1 .....	1,224,414
Option 2 .....	545,853,171
Option 3 .....	210,103,550
Option 4 .....	1,198,428
Option 5 .....	0

TOTAL Regular Retirees..... \$ 1,284,228,244

Disability Retirees ..... 51,022,198

Survivors & Widows..... 136,349,538

DROP Account Balances Payable to Retirees ..... 78,014,837

IBO Retirees' Account Balance ..... 1,170,472

TOTAL Present Value of Future Benefits for Retirees & Survivors..... \$ 1,550,785,289

TOTAL PRESENT VALUE OF FUTURE BENEFITS..... \$ 3,342,446,272

**EXHIBIT III – SCHEDULE A  
MARKET VALUE OF ASSETS**

**CURRENT ASSETS:**

Cash in Banks .....	\$ 41,115,667
Contributions and Taxes Receivable.....	11,950,856
Accrued Interest and Dividends.....	4,050,408
Investments Receivable .....	5,858,441

TOTAL CURRENT ASSETS..... \$ 62,975,372

Property Plant & Equipment..... \$ 2,011,769

**INVESTMENTS:**

Cash Equivalents.....	\$ 74,960,326
Equities .....	1,139,144,317
Fixed Income .....	389,933,389
Real Estate .....	164,427,399
Alternative Investments .....	111,882,668
Tactical Allocation.....	107,040,056
Collateral for Securities Lending.....	41,168,112

TOTAL INVESTMENTS..... \$ 2,028,556,267

TOTAL ASSETS .....

**CURRENT LIABILITIES:**

Accounts Payable .....	\$ 160,060
Refunds Payable.....	361,966
Investments Payable.....	6,088,721
Securities Lending Obligations .....	41,168,112
Other Post-Employment Benefits .....	742,240

TOTAL CURRENT LIABILITIES..... \$ 48,521,099

MARKET VALUE OF ASSETS..... \$ 2,045,022,309

**EXHIBIT III – SCHEDULE B  
ACTUARIAL VALUE OF ASSETS**

Excess (Shortfall) of Invested Income  
for Current and Previous 4 Years:

Fiscal year 2017 .....	\$ 102,423,689
Fiscal year 2016 .....	(183,165,585)
Fiscal year 2015 .....	(114,129,074)
Fiscal year 2014 .....	176,967,651
Fiscal year 2013 .....	<u>86,627,167</u>
Total for five years .....	\$ 68,723,848

Deferral of Excess (Shortfall) of Invested Income:

Fiscal year 2017 (80%) .....	\$ 81,938,951
Fiscal year 2016 (60%) .....	(109,899,351)
Fiscal year 2015 (40%) .....	(45,651,630)
Fiscal year 2014 (20%) .....	35,393,530
Fiscal year 2013 ( 0%) .....	<u>0</u>
Total Deferred for Year .....	\$ (38,218,500)

Market Value of Plan Net Assets, End of Year .....

\$ 2,045,022,309

Preliminary Actuarial Value of Plan Assets, End of Year .....

\$ 2,083,240,809

Actuarial Value of Assets Corridor

85% of market value, end of year .....

\$ 1,738,268,963

115% of market value, end of year .....

\$ 2,351,775,655

Final Actuarial Value of Plan Net Assets, End of Year .....

\$ 2,083,240,809

**EXHIBIT IV  
PRESENT VALUE OF FUTURE CONTRIBUTIONS**

Employee Contributions to the Annuity Savings Fund .....	\$ 211,493,939
Employer Normal Contributions to the Pension Accumulation Fund .....	212,887,721
Employer Amortization Payments to the Pension Accumulation Fund .....	834,823,803
<b>TOTAL PRESENT VALUE OF FUTURE CONTRIBUTIONS .....</b>	<b>\$ 1,259,205,463</b>

**EXHIBIT V – SCHEDULE A  
ACTUARIAL ACCRUED LIABILITIES**

**LIABILITY FOR ACTIVE MEMBERS**

Accrued Liability for Retirement Benefits .....	\$ 1,231,092,519
Accrued Liability for Survivor Benefits .....	8,093,358
Accrued Liability for Disability Benefits .....	47,588,660
Accrued Liability for Vested Termination Benefits .....	49,657,468
Accrued Liability for Refunds of Contributions .....	(7,950,175)

TOTAL Actuarial Accrued Liability for Active Members..... \$ 1,328,481,830

LIABILITY FOR TERMINATED MEMBERS ..... \$ 38,797,493

LIABILITY FOR RETIREES AND SURVIVORS ..... \$ 1,550,785,289

TOTAL ACTUARIAL ACCRUED LIABILITY ..... \$ 2,918,064,612

ACTUARIAL VALUE OF ASSETS ..... \$ 2,083,240,809

UNFUNDED ACTUARIAL ACCRUED LIABILITY ..... \$ 834,823,803

**EXHIBIT V – SCHEDULE B  
CHANGE IN UNFUNDED ACTUARIAL ACCRUED LIABILITY**

PRIOR YEAR UNFUNDED ACCRUED LIABILITY ..... \$ 810,384,316

Interest on Unfunded Accrued Liability ..... \$ 60,778,823

Liability Assumption Loss..... 52,448,263

Liability Experience Loss ..... 7,622,189

TOTAL Additions to UAL ..... \$ 120,849,275

Investment Experience Gain..... \$ 4,227,464

Contribution Excess with Accrued Interest ..... 8,105,382

Interest Adjusted Amortization Payments ..... 84,076,942

TOTAL Reductions to UAL ..... \$ 96,409,788

NET Change in Unfunded Accrued Liability..... \$ 24,439,487

CURRENT YEAR UNFUNDED ACCRUED LIABILITY ..... \$ 834,823,803



**EXHIBIT V – SCHEDULE C**  
**AMORTIZATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY**  
**JUNE 30, 2017**

<u>FISCAL</u> <u>YEAR</u>	<u>DESCRIPTION</u>	<u>AMORT.</u> <u>PERIOD</u>	<u>INITIAL</u> <u>BALANCE</u>	<u>YEARS</u> <u>REMAINING</u>	<u>REMAINING</u> <u>BALANCE</u>	<u>AMORT.</u> <u>PAYMENTS</u>
2014	Cumulative Bases	20	\$801,359,380	17	\$741,576,197	\$72,373,246
2015	Asset Experience Gain	15	(52,886,689)	13	(48,685,053)	(5,528,048)
2015	Liability Experience Gain	15	(9,412,440)	13	(8,664,658)	(983,847)
2015	Contribution Gain	15	(6,385,205)	13	(5,877,926)	(667,422)
2015	Liability Assumption Loss	15	91,142,323	13	83,901,428	9,526,766
2016	Asset Experience Loss	15	32,707,657	14	31,455,371	3,416,894
2016	Liability Experience Gain	15	(8,714,512)	14	(8,380,857)	(910,385)
2016	Contribution Loss	15	1,831,833	14	1,761,697	191,367
2017	Asset Experience Gain	15	(4,227,464)	15	(4,227,464)	(441,394)
2017	Liability Experience Loss	15	7,622,189	15	7,622,189	795,840
2017	Contribution Gain	15	(8,105,382)	15	(8,105,382)	(846,291)
2017	Liability Assumption Loss	15	52,448,263	15	52,448,263	5,476,176

TOTAL Unfunded Actuarial Accrued Liability \$834,823,803 \*

TOTAL Fiscal 2018 Amortization Payments at Beginning of Year \$ 82,402,902

TOTAL Fiscal 2018 Amortization Payments Adjusted to Mid-Year \$85,367,577

\* Does not equal sum of remaining balances due to rounding.

**EXHIBIT VI**  
**ANALYSIS OF CHANGE IN ASSETS**

Actuarial Value of Assets (June 30, 2016) .....		\$ 1,949,755,816
<b>INCOME:</b>		
Member Contributions .....	\$ 29,175,452	
Employer Contributions .....	94,847,073	
Irregular Contributions .....	228,102	
Insurance Premium Taxes .....	19,090,190	
Other Income .....	75,554	
 Total Contributions .....		 \$ 143,416,371
Net Appreciation of Investments .....	\$ 216,612,630	
Interest & Dividends .....	20,422,987	
Securities Litigation Income .....	329,897	
Alternative Investment Income .....	7,282,286	
Investment Expense .....	(6,112,557)	
 Net Investment Income .....		 \$ 238,535,243
 TOTAL Income .....		 \$ 381,951,614
 <b>EXPENSES:</b>		
Retirement Benefits .....	\$ 136,804,153	
DROP Disbursements .....	14,749,321	
Refunds of Contributions .....	4,217,420	
Transfers to Other Systems .....	2,584,245	
Administrative Expenses .....	1,432,563	
 TOTAL Expenses .....		 \$ 159,787,702
 Net Market Value Income for Fiscal 2017 (Income – Expenses) .....		 \$ 222,163,912
 Unadjusted Fund Balance as of June 30, 2017 (Fund Balance Previous Year + Net Income) .....		 \$ 2,171,919,728
 Adjustment for Actuarial Smoothing .....		 \$ (88,678,919)
 Actuarial Value of Assets: (June 30, 2017) .....		 \$ 2,083,240,809

**EXHIBIT VII  
CENSUS DATA**

	<b>Active</b>	<b>Terminated with Funds on Deposit</b>	<b>DROP</b>	<b>Retired</b>	<b>Total</b>
Number of members as of June 30, 2016	5,666	1,499	191	4,637	11,993
Additions to Census					
Initial membership	546	67			613
Omitted in error last year					
Death of another member			(1)	47	46
Adjustment for multiple records				9	9
Change in Status during Year					
Actives terminating service	(218)	218			
Actives who retired	(81)			81	
Actives entering DROP	(90)		90		
Term. members rehired	22	(22)			
Term. members who retire		(16)		16	
Retirees who are rehired					
Refunded who are rehired	11	10			21
DROP participants retiring			(55)	55	
DROP returned to work	32		(32)		
Omitted in error last year					
Eliminated from Census					
Refund of contributions	(217)	(130)			(347)
Deaths	(8)	(2)		(148)	(158)
Included in error last year				(6)	(6)
Adjustment for multiple records					
Number of members as of June 30, 2017	5,663	1,624	193	4,691	12,171

ACTIVES CENSUS BY AGE:

Age	Number Male	Number Female	Total Number	Average Salary	Total Salary
16 - 20	12	5	17	28,702	487,936
21 - 25	271	103	374	35,450	13,258,122
26 - 30	596	193	789	41,208	32,512,818
31 - 35	718	187	905	47,106	42,631,355
36 - 40	661	239	900	51,120	46,008,323
41 - 45	698	219	917	56,057	51,404,503
46 - 50	732	176	908	60,246	54,703,669
51 - 55	414	117	531	61,494	32,653,171
56 - 60	155	59	214	61,853	13,236,484
61 - 65	55	25	80	62,600	5,007,991
66 - 70	17	8	25	67,965	1,699,130
76 - 80	2	0	2	51,305	102,609
86 - 90	1	0	1	86,171	86,171
TOTAL	4,332	1,331	5,663	51,879	293,792,282

THE ACTIVE CENSUS INCLUDES 2,544 ACTIVES WITH VESTED BENEFITS, INCLUDING 131 ACTIVE FORMER DROP PARTICIPANTS. THE 193 CURRENT DROP PARTICIPANTS ARE EXCLUDED.

DROP PARTICIPANTS:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
46 - 50	28	3	31	54,674	1,694,890
51 - 55	75	14	89	55,377	4,928,574
56 - 60	35	18	53	46,295	2,453,635
61 - 65	8	7	15	32,758	491,375
66 - 70	2	3	5	25,485	127,424
TOTAL	148	45	193	50,238	9,695,898

TERMINATED MEMBERS DUE A DEFERRED RETIREMENT BENEFIT:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
31 - 35	1	0	1	19,058	19,058
36 - 40	25	2	27	23,653	638,626
41 - 45	40	10	50	26,643	1,332,171
46 - 50	63	7	70	26,381	1,846,668
51 - 55	23	9	32	22,439	718,055
56 - 60	1	0	1	15,712	15,712
TOTAL	153	28	181	25,250	4,570,290

TERMINATED MEMBERS DUE A REFUND OF CONTRIBUTIONS:

Contributions Ranging From To	Number	Total Contributions
0 - 99	215	9,225
100 - 499	359	91,246
500 - 999	185	131,834
1000 - 1999	149	214,222
2000 - 4999	169	533,334
5000 - 9999	123	894,452
10000 - 19999	126	1,842,097
20000 - 99999	117	3,601,795
TOTAL	1,443	7,318,205

## REGULAR RETIREES:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
41 - 45	2	0	2	34,838	69,675
46 - 50	59	4	63	42,915	2,703,627
51 - 55	230	44	274	49,238	13,491,289
56 - 60	483	103	586	45,383	26,594,698
61 - 65	614	113	727	39,124	28,442,822
66 - 70	629	74	703	32,228	22,656,205
71 - 75	479	59	538	26,382	14,193,290
76 - 80	231	20	251	25,802	6,476,210
81 - 85	117	7	124	23,178	2,874,092
86 - 90	54	3	57	22,857	1,302,836
91 - 99	25	5	30	19,897	596,911
TOTAL	2,923	432	3,355	35,589	119,401,655

## DISABILITY RETIREES:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
31 - 35	1	0	1	20,307	20,307
36 - 40	7	4	11	20,295	223,250
41 - 45	10	7	17	18,699	317,876
46 - 50	30	9	39	20,348	793,557
51 - 55	24	15	39	18,930	738,269
56 - 60	34	7	41	16,567	679,247
61 - 65	38	11	49	16,659	816,304
66 - 70	39	9	48	16,322	783,433
71 - 75	19	3	22	14,915	328,125
76 - 80	10	1	11	13,443	147,868
81 - 85	2	0	2	13,806	27,611
86 - 90	2	0	2	10,334	20,667
TOTAL	216	66	282	17,364	4,896,514

## SURVIVORS:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
0 - 25	45	56	101	7,809	788,723
26 - 30	0	3	3	23,522	70,566
31 - 35	1	1	2	24,537	49,074
36 - 40	0	10	10	22,789	227,887
41 - 45	0	15	15	18,878	283,168
46 - 50	2	26	28	18,342	513,580
51 - 55	0	48	48	19,615	941,504
56 - 60	3	53	56	20,867	1,168,560
61 - 65	9	92	101	18,324	1,850,699
66 - 70	5	132	137	16,295	2,232,404
71 - 75	9	148	157	15,187	2,384,321
76 - 80	4	135	139	13,869	1,927,740
81 - 85	4	126	130	12,347	1,605,099
86 - 90	5	68	73	11,114	811,300
91 - 99	4	50	54	11,657	629,458
TOTAL	91	963	1,054	14,691	15,484,083

ACTIVE MEMBERS:

Attained Ages	Completed Years of Service											Total	
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over		
0 - 20	15	2											17
21 - 25	171	112	67	18	3	3							374
26 - 30	141	147	153	83	97	165	3						789
31 - 35	86	90	85	54	75	351	158	6					905
36 - 40	66	47	53	29	32	225	315	132	1				900
41 - 45	36	35	35	27	16	124	210	314	117	3			917
46 - 50	28	23	21	12	20	99	131	196	264	111	3		908
51 - 55	5	6	5	3	7	40	80	124	126	114	21		531
56 - 60						17	33	42	34	50	38		214
61 - 65			2			1	6	18	20	11	22		80
66 - 70							1	4	3	3	14		25
71 & Over									1		2		3
Totals	548	462	421	226	250	1,025	937	836	566	292	100		5,663

AVERAGE ANNUAL SALARY OF ACTIVE MEMBERS:

Attained Ages	Completed Years of Service											Average Salary	
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over		
0 - 20	29,030	26,243											28,702
21 - 25	32,819	36,100	40,123	37,681	37,520	41,269	47,347	51,658					35,450
26 - 30	33,669	39,787	42,997	40,716	44,606	45,393	56,020	61,312					41,208
31 - 35	34,451	38,933	43,342	41,764	47,109	49,945	56,308	62,968					47,106
36 - 40	32,978	41,243	45,883	40,501	43,199	48,973	56,097	62,968	55,418				51,120
41 - 45	34,595	36,607	42,890	37,730	40,468	48,424	56,097	62,968	67,649	79,493			56,057
46 - 50	45,810	34,371	33,127	41,261	44,859	46,935	54,914	59,012	69,469	76,629	96,739		60,246
51 - 55	36,715	40,627	53,495	35,932	35,672	43,554	50,256	58,498	66,745	74,862	78,114		61,494
56 - 60						35,072	48,983	53,115	65,790	70,243	80,104		61,853
61 - 65			63,398			59,520	47,628	50,919	60,448	60,834	79,147		62,600
66 - 70							75,244	36,714	55,688	65,615	79,509		67,965
71 & Over									25,427	81,677			62,927
Average	34,025	38,317	42,693	40,306	44,597	48,012	55,179	60,155	67,771	74,167	79,923		51,879

TERMINATED MEMBERS DUE A DEFERRED RETIREMENT BENEFIT:

Attained Ages	Years Until Retirement Eligibility											Total	
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over		
0 - 30													0
31 - 35									1				1
36 - 40								26	1				27
41 - 45						3	46	1					50
46 - 50	2	4	2	3	4	55							70
51 - 55	1	6	6	10	9								32
56 - 60	1												1
61 & Over													0
Totals	4	10	8	13	13	58	46	27	2	0	0	0	181

AVERAGE ANNUAL BENEFITS OF TERMINATED MEMBERS DUE A DEFERRED RETIREMENT BENEFIT:

Attained Ages	Years Until Retirement Eligibility											Average Benefit	
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over		
0 - 30													0
31 - 35									19,058				19,058
36 - 40								23,642	23,938				23,653
41 - 45						29,216	26,152	41,545					26,643
46 - 50	35,037	37,852	42,381	37,899	39,448	23,072							26,381
51 - 55	26,396	21,231	18,358	21,612	26,445								22,439
56 - 60	15,712												15,712
61 & Over													0
Average	28,045	27,879	24,364	25,371	30,446	23,389	26,152	24,305	21,498	0	0	0	25,250



SERVICE RETIREES:

Attained Ages	Completed Years Since Retirement											Total			
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over				
0 - 50	21	18	14	4	4	4									65
51 - 55	58	56	33	43	27	50	7								274
56 - 60	38	53	63	76	55	215	81	4	1						586
61 - 65	16	32	29	46	42	225	260	67	10						727
66 - 70	5	9	9	13	9	123	221	217	87	8					703
71 - 75	2	1	4	5	4	22	69	163	204	22	2				538
76 - 80						7	16	18	69	82	42				251
81 - 85			1			2	1	3	16	24	58				124
86 - 90							1	3	4	3	46				57
91 & Over							1	1	1	1	27				30
Totals	140	169	153	187	141	648	656	476	392	140	253				3,355

AVERAGE ANNUAL BENEFITS PAYABLE TO SERVICE RETIREES:

Attained Ages	Completed Years Since Retirement											Average Benefit			
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over				
0 - 50	48,098	44,258	42,993	38,452	31,216	21,511									42,666
51 - 55	50,500	49,754	54,211	53,836	44,801	46,121	22,356								49,238
56 - 60	43,436	46,003	48,751	50,935	50,012	45,091	37,554	15,885	12,905						45,383
61 - 65	39,464	49,250	43,880	50,856	49,276	39,308	36,822	29,588	15,350						39,124
66 - 70	45,710	43,993	37,075	40,359	26,479	38,878	31,806	29,891	27,364	27,992	16,515				32,228
71 - 75	36,270	80,882	26,465	38,265	52,677	28,853	28,900	24,969	27,762	25,885	14,296				26,382
76 - 80			23,517			26,345	23,856	21,911	28,478	30,831	17,225				25,802
81 - 85						64,178	71,466	15,401	19,445	30,489	20,323				23,178
86 - 90							2,840	43,439	44,462	29,670	19,627				22,857
91 & Over								6,605	36,608	26,160	19,538				19,897
Average	46,586	47,774	47,044	50,241	46,835	41,143	33,920	27,688	27,298	29,774	18,372				35,589

DISABILITY RETIREES:

Attained Ages	Completed Years Since Retirement											Total	
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over		
0 - 30													0
31 - 35		1											1
36 - 40	2		1		3	5							11
41 - 45	1	2	1			8	3	2					17
46 - 50	4	2	3	2		11	6	9					39
51 - 55	4	1		4	2	8	7	7	4	2			39
56 - 60					2	2	12	15	4	5	1		41
61 - 65		1			2	2	11	9	14	8	4		49
66 - 70							4	7	12	18	7		48
71 - 75						1		2	3	6	10		22
76 - 80									3	3	5		11
81 - 85											2		2
86 - 90											2		2
91 & Over													0
Totals	11	6	5	6	10	37	43	51	40	42	31		282

AVERAGE ANNUAL BENEFITS PAYABLE TO DISABILITY RETIREES:

Attained Ages	Completed Years Since Retirement											Average Benefit	
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over		
0 - 30													0
31 - 35		20,307											20,307
36 - 40	18,201		23,278		19,670	20,912	21,830	11,214					20,295
41 - 45	24,424	22,113	17,486			17,978	18,106	12,638					18,699
46 - 50	24,900	36,348	24,827	23,451	18,213	21,916	13,596	11,446					20,348
51 - 55	23,732	11,297		25,580	24,315	28,256	20,649	15,109	10,221	19,435			18,930
56 - 60					22,067	26,741	19,870	20,884	13,448	9,371	6,560		16,567
61 - 65					13,917	15,363	19,288	20,884	15,575	12,525	11,720		16,659
66 - 70							19,301	14,921	18,301	16,580	11,968		16,322
71 - 75						13,555	11,538	14,646	11,538	15,136	15,985		14,915
76 - 80							9,218	11,075	9,218	17,398	17,398		13,443
81 - 85											13,806		13,806
86 - 90											10,333		10,333
91 & Over													0
Average	23,214	24,754	23,049	24,870	20,212	21,980	18,902	14,993	14,865	14,486	13,946		17,364

SURVIVING BENEFICIARIES OF FORMER MEMBERS:

Completed Years Since Retirement

Attained Ages	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over	Total
0 - 20	10	11	7	1	1	24	14	3	1	1		73
21 - 25	1	2	2		2	7	7	1	5	1		28
26 - 30	2		1									3
31 - 35	1							1				2
36 - 40	2	2	1				3			1	1	10
41 - 45			1			8	2	2	1		1	15
46 - 50	1	1	1			7	7	4	4	1	2	28
51 - 55		3		1		6	9	8	13	6	2	48
56 - 60		2		1		9	15	6	13	4	6	56
61 - 65	1			1	2	9	17	20	20	13	18	101
66 - 70				1		10	18	30	34	13	31	137
71 - 75				1	2	2	6	18	41	30	57	157
76 - 80		1					4	5	15	23	91	139
81 - 85						1		6	3	13	107	130
86 - 90								1	1	4	68	73
91 & Over									1	1	52	54
Totals	18	22	13	6	7	83	102	105	151	111	436	1,054

AVERAGE ANNUAL BENEFITS PAYABLE TO SURVIVORS OF FORMER MEMBERS:

Completed Years Since Retirement

Attained Ages	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over	Average Benefit
0 - 20	7,156	12,010	8,760	20,507	9,352	6,888	5,014	4,470	3,178	2,640		7,529
21 - 25	11,881	6,525	10,852		19,822	7,282	10,201	3,448	4,820	2,924		8,540
26 - 30	26,632		17,301									23,522
31 - 35	47,031							2,043				24,537
36 - 40	33,488	24,844	17,743				24,983			15,825	2,705	22,789
41 - 45			41,586			23,370	13,200	9,425	5,537		3,833	18,878
46 - 50	36,835	30,887	15,365			29,927	17,138	8,970	8,837	22,333	3,741	18,342
51 - 55		38,405		32,792		31,234	26,353	15,725	10,622	12,013	16,470	19,615
56 - 60		35,779		53,199		30,759	25,835	19,137	13,603	10,593	7,568	20,867
61 - 65	36,694			20,089	10,130	30,732	26,592	18,259	17,359	12,365	9,550	18,324
66 - 70				37,886		18,140	19,119	16,260	18,728	17,585	10,188	16,295
71 - 75				16,995	8,238	41,919	27,301	13,041	18,851	17,652	9,930	15,187
76 - 80		22,261					22,201	15,339	20,128	20,499	10,622	13,869
81 - 85						62,379		18,662	4,839	18,855	10,945	12,347
86 - 90								5,136		24,256	10,429	11,114
91 & Over									28,854	30,662	10,960	11,657
Average	18,013	19,762	13,463	30,245	12,248	20,255	19,965	15,198	16,458	17,309	10,465	14,691

**EXHIBIT VIII  
YEAR-TO-YEAR COMPARISON**

	Fiscal 2017	Fiscal 2016	Fiscal 2015	Fiscal 2014
Number of Active Members	5,663	5,666	5,535	5,468
Number of Retirees & Survivors	4,691	4,637	4,538	4,444
DROP Participants	193	191	228	271
Number of Terminated Due Deferred Benefits	181	175	168	159
Number Terminated Due Refunds	1,443	1,324	1,320	1,272
Active Lives Payroll (excludes DROP participants)	\$ 293,792,282	\$ 281,546,022	\$ 265,089,428	\$ 259,594,435
Retiree Benefits in Payment	\$ 139,782,252	\$ 134,868,070	\$ 128,050,009	\$ 118,522,277*
Market Value of Assets	\$ 2,045,022,309	\$ 1,822,858,397	\$ 1,893,077,295	\$ 1,887,019,463
Ratio of Actuarial Value of Assets to Actuarial Accrued Liability	71.39%	70.64%	69.91%	68.11%
Actuarial Accrued Liability (EAN)	\$ 2,918,064,612	\$ 2,760,140,132	\$ 2,676,472,766	\$ 2,512,627,665
Actuarial Value of Assets	\$ 2,083,240,809	\$ 1,949,755,816	\$ 1,871,160,542	\$ 1,711,268,285
UAL (Funding Excess)	\$ 834,823,803	\$ 810,384,316	\$ 805,312,224	\$ 801,359,380

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	Fiscal 2018	Fiscal 2017	Fiscal 2016	Fiscal 2015
Employee Contribution Rate:				
For Employees in the Hazardous Subplan or Hired prior to January 1, 2013:	10.00%†	10.00%†	10.00%†	10.00%†
For Employees in the Non-Hazardous Subplan:	8.00%	8.00%	8.00%	8.00%
Required Tax Contributions as a Percentage of Projected Payroll	6.69%	6.71%	6.93%	6.77%
Actuarially Required Employer Contribution Rate:				
For Employees in the Hazardous Subplan or Hired prior to January 1, 2013:	32.22%†	31.14%†	31.63%†	29.80%†
For Employees in the Non-Hazardous Subplan:	32.22%	31.14%	33.63%	31.80%
Actual Employer Contribution Rate				
For Employees in the Hazardous Subplan or Hired prior to January 1, 2013:	30.75%†	31.75%†	29.50%†	31.50%†
For Employees in the Non-Hazardous Subplan:	30.75%	33.75%	31.50%	33.50%

\* COLA not included

† For members with earnings greater than the Department of HHS poverty guidelines. For members with earnings below the poverty guidelines, employer rates will be 2.5% higher and employee rates will be 2.5% lower.

Fiscal 2013	Fiscal 2012	Fiscal 2011	Fiscal 2010	Fiscal 2009	Fiscal 2008
5,602	5,779	5,933	6,197	6,071	5,908
4,340	4,230	4,165	4,028	3,984	3,896
314	284	231	194	185	213
145	130	128	112	112	114
1,252	1,176	1,251	1,198	1,197	1,095
\$ 264,711,491	\$ 272,606,934	\$ 273,348,634	\$ 280,977,278	\$ 270,236,561	\$ 252,562,020
\$ 110,735,234	\$ 104,998,503	\$ 99,863,547	\$ 93,382,980	\$ 90,285,300	\$ 85,848,060
\$ 1,600,532,779	\$ 1,406,662,003	\$ 1,440,795,586	\$ 1,175,083,706	\$ 1,084,169,309	\$ 1,476,652,461
64.15%	59.75%	58.05%	59.87%	65.23%	86.95%
\$ 2,399,375,820	\$ 2,313,751,839	\$ 2,215,674,343	\$ 2,083,809,321	\$ 1,988,394,358	\$ 1,841,234,995
\$ 1,539,218,085	\$ 1,382,503,860	\$ 1,286,287,651	\$ 1,247,546,395	\$ 1,297,128,398	\$ 1,600,941,810
\$ 860,157,735	\$ 931,247,979	\$ 929,386,692	\$ 836,262,926	\$ 691,265,960	\$ 240,293,185
Fiscal 2014	Fiscal 2013	Fiscal 2012	Fiscal 2011	Fiscal 2010	Fiscal 2009
10.00%	10.00%	10.00%	7.50%	7.50%	7.50%
N/A	N/A	N/A	N/A	N/A	N/A
6.19%	5.75%	5.65%	5.36%	5.52%	5.85%
31.53%	31.03%	30.52%	27.84%	24.13%	10.98%
N/A	N/A	N/A	N/A	N/A	N/A
31.00%	31.00%	26.50%	25.00%	11.00%	9.50%
N/A	N/A	N/A	N/A	N/A	N/A

## **SUMMARY OF PRINCIPAL PLAN PROVISIONS**

The Municipal Police Employees' Retirement System was established as of July 1, 1973, for the purpose of providing retirement allowances and other benefits as described under R.S. 11:2211 – 11:2235. The following summary of plan provisions is for general informational purposes only and does not constitute a guarantee of benefits. The provisions contained within this section are as of June 30, 2017.

**MEMBERSHIP** – All full-time police officers empowered to make arrests, all full-time police officers decommissioned due to illness or injury, empowered by a municipality of the state of Louisiana, and engaged in law enforcement, all individuals in a position as defined in the municipal fire and police civil service system who are employed on a full-time basis by a police department of any municipality of this state, and are under the direction of a chief of police, and are paid from the budget of the applicable police department are required to become members of this retirement system, if they earn at least \$375 per month excluding state supplemental pay. All elected chiefs of police, whose salary is at least \$100 per month, all academy recruits who are participating in or awaiting participation in a formal training program, required prior to commission as a municipal police officer, with complete law enforcement office authority, all full-time secretaries to an appointed chief or elected chief of police, and all full-time employees of the system are required to become members of this retirement system. Persons must be under the age of fifty on their date of employment to be eligible for system membership. Certain restrictions to membership apply to those who are receiving disability or regular retirement benefits from another system.

For employees whose first employment making them eligible for membership in the system occurred on or after January 1, 2013, membership will be in the Hazardous Duty Subplan if they are eligible to receive state supplemental pay by virtue of their employment or the Nonhazardous Duty Subplan if they are not eligible for state supplemental pay.

**CONTRIBUTION RATES** – The fund is financed by employee and employer contributions together with funds from dedicated insurance premium taxes as allocated by the Public Retirement Systems' Actuarial Committee in accordance with R.S. 11:62, R.S. 11:103, and R.S. 22:1476A(3). For employees hired prior to January 1, 2013, the employee contribution rate is at least 7.5% but not greater than 10% based on the total contribution expressed as a percentage of payroll after applying all required tax contributions. The employee rate, when such contributions total 25% or less, is set at 7.5%. The employee rate then increases 0.25% for each 0.75% increase in the total rate, and an additional 0.25% when the rate exceeds 28.75%, subject to a maximum rate of 10%. Regardless of the total contribution rate, members whose earnable compensation is less than or equal to the poverty guidelines issued by the U.S. Department of Health and Human Services have an employee contribution rate of 7.5%. Net direct employer contributions are nine percent (9.0%) of earnable compensation unless the funds allocated from dedicated taxes are insufficient to provide the actuarially required contributions or the actuarially required contributions are less than 9.0%. Members are not required to contribute to the system once they have enough service to have accrued 100% of final average compensation, but the employer is required to continue to contribute the employer's contribution until the member retires or enters DROP.

For employees hired on or after January 1, 2013 who are members of the Hazardous Duty Subplan, the employee contribution rate is the same as that for employees hired before January 1, 2013. For employees hired on or after January 1, 2013 who are members of the Nonhazardous Duty Subplan, the employee contribution rate is 8%.

CONTRIBUTION REFUNDS – Upon withdrawal from service, members not entitled to a retirement allowance may receive a refund of accumulated contributions. Refunds are payable thirty days after the effective date of withdrawal from service, if the member’s employer has submitted all contributions.

AVERAGE FINAL COMPENSATION –

**For employees hired prior to January 1, 2013:** The average annual earned compensation of an employee for the highest period of thirty-six successive or joined months of service as an employee.

**For employees hired on or after January 1, 2013:** The average annual earned compensation of an employee for the highest period of sixty successive or joined months of service as an employee.

The twelve month salaries used to compute the average final compensation are subject to a limit in the rate of increase of 15% per year with certain exceptions.

NORMAL RETIREMENT BENEFITS –

**For employees hired prior to January 1, 2013:** Members with twelve years of creditable service may retire at age fifty-five; members with twenty years of service may retire at age fifty; members with twenty-five years of service may retire regardless of age. The retirement allowance is equal to three and one-third percent of the member’s average final compensation multiplied by his years of creditable service, not to exceed one hundred percent of his average final compensation.

**For employees hired on or after January 1, 2013 who participate in the Hazardous Duty Subplan:** Members with twelve years of creditable service may retire at age fifty-five; members with twenty-five years of service may retire at any age. The retirement allowance is equal to three percent of the member’s average final compensation multiplied by his years of creditable service, not to exceed one hundred percent of his average final compensation. Members in this subplan who retire with thirty or more years of creditable service receive benefits according to a three and one-third percent retirement allowance.

**For employees hired on or after January 1, 2013 who participate in the Nonhazardous Duty Subplan:** Members with ten years of creditable service may retire at age sixty; members with twenty-five years of creditable service may retire at age fifty-five; members with thirty years of service may retire at any age. The retirement allowance is equal to two and one-half percent of the member’s average final compensation multiplied by his years of creditable service, not to exceed one hundred percent of his average final compensation.

EARLY RETIREMENT –

**For employees hired prior to January 1, 2013:** Members with twenty or more years of creditable service who leave employment before age fifty may elect to receive early retirement benefits equal to an actuarially reduced accrued normal retirement benefit.

**For employees hired on or after January 1, 2013:** Members with twenty or more years of creditable service may elect to receive early retirement benefits equal to an actuarially reduced accrued normal retirement benefit.

OPTIONAL ALLOWANCES – Members may receive their benefits as a life annuity, or in lieu of such receive a reduced benefit according to the option selected which is the actuarial equivalent of the maximum benefit.

**Option 1** – If the member dies before he has received in annuity payments the present value of his member's annuity as it was at the time of retirement the balance is paid to his beneficiary.

**Option 2** – Upon retirement, the member receives a reduced benefit. Upon the member's death, the designated beneficiary will continue to receive the same reduced benefit.

**Option 3** – Upon retirement, the member receives a reduced benefit. Upon the member's death, the designated beneficiary will receive one-half of the member's reduced benefit.

**Option 4** – Upon retirement, the member elects to receive a Board approved benefit which is actuarially equivalent to the maximum benefit.

A member may also elect to receive an actuarially reduced benefit which provides for an automatic 2 ½% annual compound increase in monthly retirement benefits based on the reduced benefit and commencing on the later of age fifty-five or retirement anniversary; this COLA is in addition to any ad hoc COLAs which are payable.

**Initial Benefit Option** – This option is available only to regular retirees who have not participated in the Deferred Retirement Option Plan. Under this option members may receive an initial benefit plus a reduced monthly retirement allowance which, when combined, equal the actuarially equivalent amount of the maximum retirement allowance. The initial benefit may not exceed an amount equal to thirty-six payments of the member's maximum retirement allowance. The initial benefit can be paid either as a lump-sum payment or placed in an account called an "initial benefit account" with interest credited thereto and monthly payments made from the account.

DISABILITY BENEFITS – Any member who has been officially certified as totally disabled solely as the result of injuries sustained in the performance of his official duties, or for any cause, provided the member has a least ten years of creditable service and provided that the disability was incurred while the member was an active contributing member, is entitled to disability benefits.

**For employees hired prior to January 1, 2013:** Disability retirees will receive a benefit equal to three percent of final average compensation multiplied by the number of years of service, subject to a minimum of 40% of final compensation and a maximum of 60% of final compensation. Any disability retiree who is in a coma or paraplegic, or who is blinded or loses the total use of a limb, solely as a result of injuries sustained in the line of duty will receive a benefit equal to 100% of final average compensation. Disability retirees who retired with a service-connected disability benefit have the option, at normal retirement age, to continue receiving a disability benefit or to convert to receiving their vested retirement benefit. All other disability retirees, at normal retirement age, will receive the greater of their disability retirement benefit or their vested benefit.

**For employees hired on or after January 1, 2013 who participate in the Hazardous Duty Subplan:** Disability retirees who are disabled in the line of duty or who have 10 years of service credit will receive a benefit equal to two and three-quarters percent of final average compensation multiplied by the number of years of service, subject to a minimum of 33% of final compensation and a maximum of 55% of final compensation. Any disability retiree who is in a coma or paraplegic, or who



is blinded or loses the total use of a limb, solely as a result of injuries sustained in the line of duty will receive a benefit equal to 100% of final average compensation. Disability retirees who retired with a service-connected disability benefit have the option, at normal retirement age, to continue receiving a disability benefit or to convert to receiving their vested retirement benefit. All other disability retirees, at normal retirement age, will receive the greater of their disability retirement benefit or their vested benefit.

**For employees hired on or after January 1, 2013 who participate in the Nonhazardous Duty Subplan:** Disability retirees who have at least 10 years of service credit will receive a benefit equal to two and one-quarter percent of final average compensation multiplied by the number of years of service, subject to a minimum of 25% of final compensation and a maximum of 50% of final compensation. Any disability retiree who is in a coma or paraplegic, or who is blinded or loses the total use of a limb, solely as a result of injuries sustained in the line of duty will receive a benefit equal to 100% of final average compensation. At normal retirement age, disability retirees will receive the greater of their disability retirement benefit or their vested benefit.

**SURVIVOR BENEFITS** – Benefits are payable to survivors of any active contributing member who dies before retirement, or disability retirees who die after retirement as follows.

**For employees hired prior to January 1, 2013:** If he leaves a surviving spouse, she will receive an annual benefit equal to 3 1/3% of the deceased member's average final compensation multiplied by his total years of creditable service; however, in no event is the annual benefit less than 40% nor more than 60% of the deceased member's average final compensation. If the surviving spouse remarries, the benefits shall cease unless the remarriage occurs after age fifty-five. If the member dies as a result of injuries sustained in the line of duty, the surviving spouse receives a benefit equal to 100% of final average compensation, which shall not cease due to remarriage, less any benefits payable to surviving children. Unmarried children of the deceased member who are under the age of eighteen years are entitled to the greater of \$200 per month or 10% of average final compensation (not to exceed 100% of average final compensation when combined with the surviving spouse's benefit) until reaching the age of eighteen, or until the age of twenty-three, assuming they remain unmarried, if enrolled full-time in an institution of higher learning, high school, or vocational-technical school, unless the surviving child is physically handicapped or mentally retarded in which case the benefit is payable regardless of age. If a deceased member dies leaving no surviving spouse, but at least one minor child, each child is entitled to receive forty percent of the deceased's average final compensation, not to exceed an aggregate of sixty percent of average final compensation, subject to the same age restrictions as in the case of a surviving spouse with minor children. If a member dies after he is eligible for retirement but before actual retirement, his surviving spouse will be paid the greater of the surviving spouse benefits detailed above, or an automatic option 2 benefit. Members who have terminated employment with at least twelve years of service credit are eligible for the benefits detailed in this paragraph.

**For employees hired on or after January 1, 2013 who participate in the Hazardous Duty Subplan:** The surviving spouse of a deceased active contributing member or disability retiree with at least ten years of creditable service not killed in the line of duty will receive an annual benefit equal to the benefit calculated using the regular retirement formula; however, in no event is the annual benefit less than 33% nor more than 55% of the deceased member's average final compensation. If the surviving spouse remarries, the benefits shall cease unless the remarriage occurs after age sixty. If the member dies as a result of injuries sustained in the line of duty, the surviving spouse receives a benefit equal to 100% of final average compensation, which shall not cease due to remarriage, less any

benefits payable to surviving children. Unmarried children of the deceased member who are under the age of eighteen years are entitled to the greater of \$200 per month or 10% of average final compensation (not to exceed 100% of average final compensation when combined with the surviving spouse's benefit) until reaching the age of eighteen, or until the age of twenty-three, assuming they remain unmarried, if enrolled full-time in an institution of higher learning, high school, or vocational-technical school, unless the surviving child is physically handicapped or mentally retarded in which case the benefit is payable regardless of age. If a deceased member dies leaving no surviving spouse, but at least one minor child, each child is entitled to receive twenty-five percent of the deceased's average final compensation, not to exceed an aggregate of fifty percent of average final compensation, subject to the same age restrictions as in the case of a surviving spouse with minor children. If a member dies after he is eligible for retirement but before actual retirement, his surviving spouse will be paid the greater of the surviving spouse benefits detailed above, or an automatic option 2 benefit. Members who have terminated employment with at least twelve years of service credit are eligible for the benefits detailed in this paragraph.

**For employees hired on or after January 1, 2013 who participate in the Nonhazardous Duty Subplan:** The surviving spouse of a deceased active contributing member or disability retiree with at least ten years of creditable service not killed in the line of duty will receive an annual benefit equal to the benefit calculated using the regular retirement formula; however, in no event is the annual benefit less than 25% nor more than 50% of the deceased member's average final compensation. If the surviving spouse remarries, the benefits shall cease unless the remarriage occurs after age sixty. If the member dies as a result of injuries sustained in the line of duty, the surviving spouse receives a benefit equal to 100% of final average compensation, which shall not cease due to remarriage, less any benefits payable to surviving children. Unmarried children of the deceased member who are under the age of eighteen years are entitled to the greater of \$200 per month or 10% of average final compensation (not to exceed 100% of average final compensation when combined with the surviving spouse's benefit) until reaching the age of eighteen, or until the age of twenty-three, assuming they remain unmarried, if enrolled full-time in an institution of higher learning, high school, or vocational-technical school, unless the surviving child is physically handicapped or mentally retarded in which case the benefit is payable regardless of age. If a deceased member dies leaving no surviving spouse, but at least one minor child, each child is entitled to receive twenty percent (twenty-five percent in the case of one minor child) of the deceased's average final compensation, not to exceed an aggregate of fifty percent of average final compensation, subject to the same age restrictions as in the case of a surviving spouse with minor children. If a member dies after he is eligible for retirement but before actual retirement, his surviving spouse will be paid the greater of the surviving spouse benefits detailed above, or an automatic option 2 benefit. Members who have terminated employment with at least twelve years of service credit are eligible for the benefits detailed in this paragraph.

**DEFERRED RETIREMENT OPTION PLAN** – In lieu of terminating employment and accepting a service retirement allowance, any member of the system who is eligible to receive a regular retirement allowance may elect to participate in the Deferred Retirement Option Plan for up to thirty-six months and defer the receipt of benefits. Upon commencement of participation in the plan, membership in the system terminates and neither the employee nor employer contributions are payable. Compensation and creditable service will remain as they existed on the effective date of commencement of participation in the plan. The monthly retirement benefits that would have been payable, had the member elected to cease employment and receive a service retirement allowance, are paid into the deferred retirement option plan account. Upon termination of employment at the end of the specified period of participation, a participant in the program may receive, at his option, a lump sum payment

from the account equal to the payments to the account, or a true annuity based upon his account, or he may elect any other method of payment if approved by the Board of Trustees. The monthly benefits that were being paid into the fund during the period of participation will begin to be paid to the retiree. If employment is not terminated at the end of the thirty-six months, payments into the account cease and the member resumes active contributing membership in the system. Such members may accumulate an additional benefit for service rendered after completion of the Deferred Retirement Option Plan. If the participant dies during the period of participation in the program, a lump sum payment equal to his account balance is paid to his named beneficiary or, if none, to his estate; in addition, normal survivor benefits are payable to survivors of retirees.

**COST OF LIVING INCREASES** – Pursuant to R.S. 11:2225, the Board of Trustees is authorized to use interest earnings in excess of the normal requirements to grant annual cost of living increases of 3% of each retiree's original or current benefit. R.S. 11:246 provides cost of living increases to retirees and beneficiaries over the age of 65 equal to 2% of the benefit in payment on October 1, 1977, or the date the benefit was originally received if retirement commenced after that date. In lieu of these cost of living adjustments, the Board may grant an increase under R.S. 11:241 in the form of  $\$X \times (A+B)$  where X is at most \$1 and "A" represents the number of years of credited service accrued at retirement or at death of the member or retiree, and "B" is equal to the number of years since retirement or since death of the member or retiree to June 30<sup>th</sup> of the initial year of such increase.

All of the above provisions require that the system earn sufficient excess interest earnings to fund the increases and to meet certain other criteria detailed in the statutes related to funding status.

R. S. 11:2225(A)(7)(c) and (d) provide that the Board of Trustees is authorized to provide a one-time cost of living adjustment of 3% of each retiree's normal monthly benefit (not to be less than \$20 per month) from excess interest earnings without regard to the provisions of R.S. 11:242 (which describes the target ratio).

## ACTUARIAL ASSUMPTIONS

In determining actuarial costs, certain assumptions must be made regarding future experience under the plan. These assumptions include the rate of investment return, mortality of plan members, rates of salary increase, rates of retirement, rates of termination, rates of disability, and various other factors that have an impact on the cost of the plan. To the extent that future experience varies from the assumptions selected for valuation, future costs will be either higher or lower than anticipated. The following chart illustrates the effect of emerging experience on the plan.

Factor	Increase in Factor Results in
Investment Earnings Rate	Decrease in Cost
Annual Rate of Salary Increase	Increase in Cost
Rates of Retirement	Increase in Cost
Rates of Termination	Decrease in Cost
Rates of Disability	Increase in Cost
Rates of Mortality	Decrease in Cost
 ACTUARIAL COST METHOD:	 Individual Entry Age Normal With Allocation of Cost Based on Earnings. Entry and Attained Ages Calculated on an Age Near Birthday Basis.
 VALUATION INTEREST RATE:	 7.325% (Net of investment expense)
 ACTUARIAL ASSET VALUES:	 All assets are valued at market value adjusted to defer four-fifths of all earnings above or below the valuation interest rate in the valuation year, three-fifths of all earnings above or below the valuation interest rate in the prior year, two-fifths of all earnings above or below the valuation interest rate from two years prior, and one-fifth of all earnings above or below the valuation interest rate from three years prior. The resulting smoothed values are subject to a corridor of 85% to 115% of the market value of assets. If the smoothed value falls outside the corridor, the actuarial value is set equal to the average of the corridor limit and the smoothed value.
 ACTIVE MEMBER MORTALITY:	 RP 2000 Sex Distinct Employee Tables set back 4 years for males and set back 3 years for females.
 ANNUITANT AND BENEFICIARY MORTALITY:	 RP-2000 Combined Healthy with Blue Collar Adjustment Sex Distinct Tables Projected to 2029 using Scale AA for males and set back 1 year and Projected to 2029 using Scale AA for females.

RETIREE COST OF LIVING INCREASES: The present value of future retirement benefits is based on benefits currently being paid by the system and includes previously granted cost of living increases. The present values do not include provisions for potential future increases not yet authorized by the Board of Trustees.

ANNUAL SALARY INCREASE RATE: Salary increases include 2.7% inflation and merit increases. The gross rates including inflation and merit increases are as follows:

<u>Years of Service</u>	<u>Salary Growth Rate</u>
1-2	9.75%
3-23	4.75%
Above 23	4.25%

RETIREMENT RATES: The table of these rates through age 75 is included later in the report. These rates apply only to those individuals eligible to retire.

RETIREMENT LIMITATIONS: Projected retirement benefits are not subject to IRS Section 415 limits.

DROP ENTRY RATES: A table of these rates is included later in the report. These rates apply only to those individuals eligible to enter DROP.

DROP PARTICIPATION PERIOD: All DROP participants are assumed to participate for 3 years and retire at the end of this participation period.

RETIREMENT RATES FOR ACTIVE FORMER DROP PARTICIPANTS: Retirement rates for active former DROP participants are as follows:

<u>Ages</u>	<u>Retirement Rates</u>
74 & Under	0.24
75 & Over	1.00

DISABILITY RATES: 55% of the disability rates used for the 21<sup>st</sup> valuation of the Railroad Retirement System for individuals with 10-19 years of service. The table of these rates is included later in the report.

WITHDRAWAL RATES: The rates of withdrawal are applied based upon the attained age with a multiplier applied based upon the member's completed years of service. A table of the age based rates is included later in the

report. Those rates are multiplied by the following factors based on the member's completed years of service.

<u>Service</u>	<u>Factor</u>
<1	4.5
1	3.3
2-3	2.6
4	2.5
5-6	2.0
7-9	1.6
10-13	1.4
14-16	1.2
>16	1.0

Note: The withdrawal rate for individuals eligible to retire is assumed to be zero.

**MARRIAGE STATISTICS:** 70% of the members are assumed to be married; husbands are assumed to be three years older than wives.

**SERVICE RELATED DEATH:** 20% of Total Deaths

**FAMILY STATISTICS:** Assumptions utilized in determining the costs of various survivor benefits as listed below, are derived from the information provided in the 2010 U. S. Census:

<u>Member's Age</u>	<u>% With Children</u>	<u>Number of Children</u>	<u>Average Age</u>
25	70%	1.84	5
35	86%	2.13	9
45	75%	1.70	12
55	22%	1.42	14
65	2%	1.45	15

**SERVICE RELATED DISABILITY:** 20% of Total Disabilities

**DISABLED LIVES MORTALITY:** RP-2000 Disabled Lives Mortality Tables set back 5 years for males and set back 3 years for females.

**VESTING ELECTING PERCENTAGE:** 55% of vested participants with not more than 20 years of service and 90% of vested participants with more than 20 years of service elect deferred benefits in lieu of contribution refunds.

## ACTUARIAL TABLES AND RATES

Age	Disability Rates	Retirement Rates	DROP Entry Rates	Withdrawal Rates	Remarriage Rates
18	0.00083	0.00000	0.00000	0.04750	0.06124
19	0.00083	0.00000	0.00000	0.04750	0.06124
20	0.00083	0.00000	0.00000	0.04750	0.06124
21	0.00083	0.00000	0.00000	0.04750	0.05818
22	0.00083	0.00000	0.00000	0.04750	0.05524
23	0.00083	0.00000	0.00000	0.04750	0.05242
24	0.00083	0.00000	0.00000	0.04500	0.04971
25	0.00083	0.00000	0.00000	0.04500	0.04566
26	0.00083	0.00000	0.00000	0.04500	0.04335
27	0.00083	0.00000	0.00000	0.04000	0.04114
28	0.00083	0.00000	0.00000	0.04000	0.03902
29	0.00083	0.00000	0.00000	0.04000	0.03698
30	0.00083	0.00000	0.00000	0.04000	0.03502
31	0.00083	0.00000	0.00000	0.03500	0.03314
32	0.00083	0.00000	0.00000	0.03500	0.03134
33	0.00083	0.00000	0.00000	0.03500	0.02961
34	0.00083	0.00000	0.00000	0.03500	0.02795
35	0.00094	0.00000	0.00000	0.03500	0.02636
36	0.00105	0.00000	0.00000	0.03000	0.02483
37	0.00116	0.00000	0.00000	0.03000	0.02336
38	0.00132	0.00000	0.00000	0.03000	0.02195
39	0.00149	0.00000	0.00000	0.02300	0.02060
40	0.00171	0.00000	0.00000	0.02300	0.01930
41	0.00193	0.08000	0.23000	0.02300	0.01805
42	0.00215	0.08000	0.23000	0.02300	0.01686
43	0.00242	0.08000	0.23000	0.02300	0.01571
44	0.00275	0.08000	0.23000	0.02300	0.01461
45	0.00314	0.08000	0.23000	0.02300	0.01355
46	0.00358	0.08000	0.23000	0.02300	0.01253
47	0.00402	0.08000	0.23000	0.02500	0.01156
48	0.00457	0.08000	0.23000	0.02500	0.01063
49	0.00517	0.08000	0.23000	0.02500	0.00973
50	0.00589	0.08000	0.15000	0.03000	0.00887
51	0.00671	0.08000	0.23000	0.03000	0.00804
52	0.00759	0.08000	0.23000	0.03000	0.00725
53	0.00864	0.08000	0.23000	0.03000	0.00649
54	0.00979	0.08000	0.23000	0.03000	0.00576
55	0.01111	0.08000	0.20000	0.03000	0.00000
56	0.01265	0.05000	0.20000	0.03000	0.00000
57	0.01436	0.05000	0.20000	0.03000	0.00000
58	0.01628	0.05000	0.20000	0.03000	0.00000
59	0.01854	0.05000	0.20000	0.03000	0.00000
60	0.02684	0.12000	0.20000	0.03000	0.00000
61	0.02684	0.12000	0.20000	0.03000	0.00000
62	0.02684	0.12000	0.20000	0.03000	0.00000
63	0.02684	0.12000	0.20000	0.03000	0.00000
64	0.02684	0.12000	0.20000	0.03000	0.00000
65	0.02684	0.12000	0.20000	0.03000	0.00000
66	0.02684	0.12000	0.20000	0.03000	0.00000
67	0.02684	0.12000	0.20000	0.03000	0.00000
68	0.02684	0.12000	0.20000	0.03000	0.00000
69	0.02684	0.12000	0.20000	0.03000	0.00000
70	0.02684	0.12000	0.20000	0.03000	0.00000
71	0.02684	0.12000	0.20000	0.03000	0.00000
72	0.02684	0.12000	0.20000	0.03000	0.00000
73	0.02684	0.12000	0.20000	0.03000	0.00000
74	0.02684	0.12000	0.20000	0.03000	0.00000
75	0.02684	1.00000	0.00000	0.03000	0.00000

## ACTUARIAL TABLES AND RATES (Continued)

Age	Male Employee Mortality Rates	Female Employee Mortality Rates	Male Retired Mortality Rates	Female Retired Mortality Rates	Male Disabled Mortality Rates	Female Disabled Mortality Rates
18	0.00025	0.00017	0.00018	0.00012	0.02257	0.00745
19	0.00027	0.00018	0.00019	0.00012	0.02257	0.00745
20	0.00028	0.00018	0.00020	0.00012	0.02257	0.00745
21	0.00030	0.00019	0.00021	0.00012	0.02257	0.00745
22	0.00032	0.00019	0.00022	0.00012	0.02257	0.00745
23	0.00033	0.00019	0.00024	0.00012	0.02257	0.00745
24	0.00035	0.00019	0.00026	0.00013	0.02257	0.00745
25	0.00036	0.00019	0.00028	0.00013	0.02257	0.00745
26	0.00037	0.00020	0.00032	0.00015	0.02257	0.00745
27	0.00037	0.00020	0.00033	0.00015	0.02257	0.00745
28	0.00038	0.00021	0.00034	0.00016	0.02257	0.00745
29	0.00038	0.00021	0.00036	0.00017	0.02257	0.00745
30	0.00038	0.00022	0.00038	0.00019	0.02257	0.00745
31	0.00038	0.00024	0.00043	0.00021	0.02257	0.00745
32	0.00039	0.00025	0.00049	0.00024	0.02257	0.00745
33	0.00041	0.00026	0.00055	0.00027	0.02257	0.00745
34	0.00044	0.00031	0.00061	0.00029	0.02257	0.00745
35	0.00050	0.00035	0.00067	0.00032	0.02257	0.00745
36	0.00056	0.00039	0.00073	0.00033	0.02257	0.00745
37	0.00063	0.00044	0.00078	0.00035	0.02257	0.00745
38	0.00070	0.00047	0.00081	0.00037	0.02257	0.00745
39	0.00077	0.00051	0.00083	0.00039	0.02257	0.00745
40	0.00084	0.00055	0.00085	0.00042	0.02257	0.00745
41	0.00090	0.00060	0.00088	0.00046	0.02257	0.00745
42	0.00096	0.00065	0.00091	0.00050	0.02257	0.00745
43	0.00102	0.00071	0.00094	0.00055	0.02257	0.00745
44	0.00108	0.00077	0.00098	0.00060	0.02257	0.00745
45	0.00114	0.00085	0.00103	0.00064	0.02257	0.00745
46	0.00122	0.00094	0.00107	0.00068	0.02257	0.00745
47	0.00130	0.00103	0.00112	0.00072	0.02257	0.00745
48	0.00140	0.00112	0.00117	0.00078	0.02257	0.00745
49	0.00151	0.00122	0.00121	0.00085	0.02257	0.00818
50	0.00162	0.00133	0.00316	0.00094	0.02257	0.00896
51	0.00173	0.00143	0.00317	0.00147	0.02385	0.00978
52	0.00186	0.00155	0.00314	0.00163	0.02512	0.01063
53	0.00200	0.00168	0.00318	0.00187	0.02640	0.01154
54	0.00214	0.00181	0.00323	0.00216	0.02769	0.01248
55	0.00229	0.00197	0.00339	0.00253	0.02897	0.01346
56	0.00245	0.00213	0.00362	0.00297	0.03027	0.01446
57	0.00262	0.00232	0.00392	0.00339	0.03156	0.01550
58	0.00281	0.00253	0.00432	0.00379	0.03286	0.01654
59	0.00303	0.00276	0.00469	0.00426	0.03415	0.01760
60	0.00331	0.00301	0.00513	0.00478	0.03544	0.01865
61	0.00363	0.00329	0.00581	0.00536	0.03673	0.01971
62	0.00400	0.00360	0.00640	0.00598	0.03803	0.02077
63	0.00441	0.00393	0.00728	0.00665	0.03933	0.02184
64	0.00488	0.00429	0.00805	0.00736	0.04067	0.02294
65	0.00538	0.00466	0.00892	0.00812	0.04204	0.02408
66	0.00592	0.00504	0.01017	0.00896	0.04347	0.02529
67	0.00647	0.00543	0.01126	0.00987	0.04498	0.02660
68	0.00703	0.00582	0.01209	0.01084	0.04658	0.02803
69	0.00757	0.00621	0.01336	0.01191	0.04831	0.02959
70	0.00810	0.00658	0.01433	0.01310	0.05017	0.03132
71	0.00860	0.00695	0.01585	0.01406	0.05221	0.03323
72	0.00907	0.00729	0.01760	0.01560	0.05445	0.03533
73	0.00951	0.00761	0.01960	0.01686	0.05691	0.03764
74	0.00992	0.01858	0.02187	0.01874	0.05961	0.04014
75	0.02457	0.02067	0.02514	0.02017	0.06258	0.04285



## **PRIOR YEAR ASSUMPTIONS**

VALUATION INTEREST RATE: 7.5% (Net of investment expense)

INFLATION RATE: 2.875%

## GLOSSARY

**Accrued Benefit** – The pension benefit that an individual has earned as of a specific date based on the provisions of the plan and the individual's age, service, and salary as of that date.

**Actuarial Accrued Liability** – The actuarial present value of benefits payable to members of the fund less the present value of future normal costs attributable to the members.

**Actuarial Assumptions** – Assumptions as to the occurrence of future events affecting pension costs. These assumptions include rates of mortality, withdrawal, disablement, and retirement. Also included are rates of investment earnings, changes in compensation, as well as statistics related to marriage and family composition.

**Actuarial Cost Method** – A procedure for determining the portion of the cost of a pension plan to be allocated to each year. Each cost method allocates a certain portion of the actuarial present value of benefits between the actuarial accrued liability and future normal costs. Once this allocation is made, a determination of the normal cost attributable to a specific year can be made along with the payment to amortize any unfunded actuarial accrued liability. To the extent that a particular funding method allocates a greater (lesser) portion of the actual present value of benefits to the actuarial accrued liability it will allocate less (more) to future normal costs.

**Actuarial Equivalence** – Payments or receipts with equal actuarial value on a given date when valued using the same set of actuarial assumptions.

**Actuarial Gain (Loss)** – The financial effect on the fund of the difference between the expected and actual experience of the fund. The experience may be related to investment earnings above (or below) those expected or changes in the liability structure due to fewer (or greater) than the expected numbers of retirements, deaths, disabilities, or withdrawals. In addition, other factors such as pay increases above (or below) those forecast can result in actuarial gains or losses. The effect of such gains (or losses) is to decrease (or increase) future costs.

**Actuarial Present Value** – The value, as of a specified date, of an amount or series of amounts payable or receivable thereafter, with each amount adjusted to reflect the time value of money (through accrual of interest) and the probability of payments. For example: if \$600 invested today will be worth \$1,000 in 10 years and there is a 50% probability that a person will live 10 years, then the actuarial present value of \$1,000 payable to that person if he should survive 10 years is \$300.

**Actuarial Value of Assets** – The value of cash, investments, and other property belonging to the pension plan as used by the actuary for the purpose of the actuarial valuation. This may correspond to the book value, market value, or some modification involving either or both book and market value. Adjustments to market values are often made to reduce the volatility of asset values.

**Asset Gain (Loss)** – That portion of the actuarial gain attributable to investment performance above (below) the expected rate of return in the actuarial assumptions.

**Amortization Payment** – That portion of the pension plan contribution designated to pay interest and reduce the outstanding principal balance of unfunded actuarial accrued liability. If the amortization payment is less than the accrued interest on the unfunded actuarial accrued liability the outstanding principal balance will increase.

**Contribution Shortfall (Excess)** – The difference between contributions recommended in the prior valuation and the actual amount received.

**Decrements** – Events which result in the termination of membership in the system such as retirement, disability, withdrawal, or death.

**Employer Normal Cost** – That portion of the normal cost not attributable to employee contributions. It includes both direct contributions made by the employer and contributions from other non-employee sources such as revenue sharing and revenues related to taxes.

**Funded Ratio** – A measure of the ratio of assets to liabilities of the system according to a specific definition of those two values. Typically the assets used in the measure are the actuarial value of assets; the liabilities are defined by reference to some recognized actuarial funding method. Thus the funded ratio of a plan depends not only on the financial strength of the plan but also on the funding method used to determine the liabilities and the asset valuation method used to determine the assets in the ratio.

**Normal Cost** – That portion of the actuarial present value of pension plan benefits and expenses allocated to a valuation year by the actuarial cost method. This is analogous to one year's insurance premium.

**Pension Benefit Obligation** – The actuarial present value of benefits earned or credited to date based on the members expected final average compensation at retirement. For current retirees or terminated members this is equivalent to the actuarial present value of their accrued benefit.

**Projected Benefits** – The benefits expected to be paid in the future based on the provisions of the plan and the actuarial assumptions. The projected values are based on anticipated future advancement in age and accrual of service as well as increases in salary paid to the participant.

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

**Vested Benefits** – Benefits that the members are entitled to even if they withdraw from service.