

**SHERIFFS' PENSION & RELIEF FUND**

ACTUARIAL VALUATION AS OF  
JUNE 30, 2017

# G. S. CURRAN & COMPANY, LTD.

Actuarial Services

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November 28, 2017

Board of Trustees  
Sheriffs' Pension & Relief Fund  
1225 Nicholson Drive  
Baton Rouge, Louisiana 70802

Ladies and Gentlemen:

We are pleased to present our report on the actuarial valuation of the Sheriffs' Pension & Relief Fund 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 the Sheriffs' Pension & Relief Fund of the State of Louisiana. The primary purpose of this report is to determine the actuarially required contribution for the retirement system for the fiscal year ending 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 the Sheriffs' Pension & Relief Fund for a specific limited purpose. It is not for the use or benefit of any third party for any purpose.

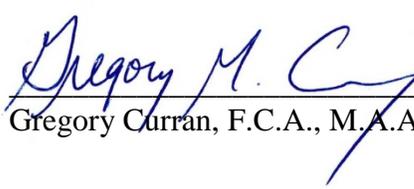
In our opinion, all of the assumptions on which this valuation is based are reasonable individually and in the aggregate. Both economic and demographic assumptions are based on our expectations for future experience for the fund. This report has been prepared in accordance with generally accepted actuarial 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 SHERIFFS' PENSION & RELIEF FUND

Valuation Date:	June 30, 2017	June 30, 2016
Census Summary:		
Active Members	14,609	14,684
Retired Members and Survivors	5,341	5,014
Terminated Due a Deferred Benefit	383	389
Terminated Due a Refund	5,951	5,690
Payroll:	\$ 682,370,194	\$ 669,735,563
Benefits in Payment:	\$ 149,408,905	\$ 137,218,247
Present Value of Future Benefits	\$ 5,015,860,010	\$ 4,749,629,209
Actuarial Accrued Liability (EAN):	\$ 3,761,394,421	\$ 3,545,155,452
Frozen Unfunded Actuarial Accrued Liability:	\$ 44,364,331	\$ 50,003,403
Funding Deposit Account Credit Balance	\$ 56,567,343	\$ 30,142,795
Actuarial Value of Assets (AVA):	\$ 3,322,151,803	\$ 3,049,411,053
Market Value of Assets (MVA):	\$ 3,328,367,058	\$ 2,910,465,956
Ratio of AVA to Actuarial Accrued Liability (EAN):	88.32%	86.02%
	Fiscal 2017	Fiscal 2016
Market Rate of Return:	13.6%	-0.4%
Actuarial Rate of Return:	8.3%	6.6%
	Fiscal 2018	Fiscal 2017
Employers' Normal Cost (Mid-year):	\$ 96,621,955	\$ 97,310,989
Amortization Cost (Mid-year):	\$ 9,324,494	\$ 9,055,871
Estimated Administrative Cost	\$ 1,850,159	\$ 1,768,771
Projected Ad Valorem Tax Contributions	\$ 20,677,724	\$ 20,165,258
Projected Revenue Sharing Funds	\$ 422,040	\$ 420,747
Expected Insurance Premium Taxes Due	\$ 19,733,532	\$ 19,090,190
Net Direct Employer Actuarially Required Contributions:	\$ 66,963,312	\$ 68,459,436
Projected Payroll:	\$ 702,339,701	\$ 690,024,707
Actual Employee Contribution Rate:	10.25%	10.25%
Actual Net Direct Employer Contribution Rate:	12.75%	13.25%
Actuarially Required Net Direct Employer Contribution Rate:	9.53%	9.92%
	Fiscal 2019	Fiscal 2018
Minimum Recommended Net Direct Employer Cont. Rate:	9.50%	10.00%

## 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 in such areas as expectation of population increase and turnover for the plan 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 process 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. Fortunately, 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 level of funding and to provide for the future benefits of plan participants.

## COMMENTS ON DATA

For the valuation, the administrative staff of the system furnished a census on electronic media 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, 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 IX, there are 14,609 active members in the system, of whom 4,765 members have vested retirement benefits; 5,341 former members or their beneficiaries are receiving retirement benefits. An additional 6,334 terminated members have contributions remaining on deposit with the system; of this number, 383 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, which 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 administrator 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. For this valuation, the number of such records with imputed data is de minimis. The assigned values are based on information from similar records or based on information implied from other data in the record.

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, L.L.P. As indicated in the system's audit report, the net market value of system's assets was \$3,328,367,058 as of June 30, 2017. Net investment income for Fiscal 2017 measured on a market value basis was \$397,949,672. Contributions to the system for the fiscal year totaled \$211,461,206; benefits and expenses amounted to \$191,509,776.

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 Frozen Attained Age Normal actuarial cost method with the unfunded accrued liability frozen as of June 30, 1989. Under the provisions of Louisiana R.S. 11:103 the unfunded accrued liability which was determined to be \$69,702,461 as of June 30, 1989, was amortized over forty years with payments increasing at 3.50% per year. Payroll growth in excess of 3.50% per year will reduce future amortization payments as a percent of payroll; payroll growth less than 3.50% will increase future payments as a percent of payroll. Under the Frozen Attained Age Normal Cost Method, actuarial gains and losses are spread over future normal costs. Thus, favorable plan experience will lower future normal costs; unfavorable experience will cause future normal costs to increase. In addition, changes in benefits and assumptions are also spread over future normal costs as are contribution surpluses and shortfalls.

Prior to the passage of Act 247 in the 2009 legislative session, in any year in which the net direct employer contribution was scheduled to decrease, the Board of Trustees could freeze the net direct employer contribution rate and use the excess funds collected, if any, to reduce the frozen unfunded actuarial accrued liability. Notwithstanding such a decrease, payments were made according to the regular amortization schedule, thereby reducing the amortization period. In Fiscal 2008 the excess contributions collected from the frozen employer contribution rate reduced the frozen unfunded actuarial accrued liability by \$22,548,024. Based upon the additional contributions collected during Fiscal 2008, the current frozen unfunded actuarial accrued liability will be fully amortized by June 30, 2023. Subsequent to June 30, 2008, any surplus contributions collected as a result of R. S. 11:2175.1 are credited to the Funding Deposit Account. The funds may then be used, at the discretion of the Board, to reduce the Unfunded Accrued Liability, reduce future normal costs, as an offset to direct employer contributions, or to provide funding for a cost of living increase.

For Fiscal 2018, the Board of Trustees set the employer contribution rate at 12.75%, which was above the minimum recommended net direct employer contribution rate of 10.00%. If this produces a contribution excess during Fiscal 2018, the excess contributions will be deposited into the funding deposit account as of June 30, 2018.

The current year 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. In reviewing the valuation interest rate, consideration was given to several factors. First, we considered consensus estimates of rates of return, standard deviations, and correlation coefficients for asset classes derived from various asset consulting firms. These factors were used to derive forward estimates of the Fund's portfolio. The valuation interest rate was reduced from 7.50% to 7.40% as a part of the Board approved plan to reduce the valuation interest rate to 7.25% over the next two years. An inflation rate of 2.775% 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 thirty-nine through forty-three. All assumptions 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 will be required to contribution levels. Such differences will be revealed in future actuarial valuations. The net effect of the changes in plan assumptions on the normal cost accrual rate was an increase of 0.9197%.

## **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 88.32% 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 0.48% 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 21.90%; ten years ago this ratio was 11.52%.

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 actuarially required employer contribution rate for Fiscal 2018 by 9.40% 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 assumptions, 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. The rates of return on assets were calculated by assuming a uniform distribution of income and expense throughout the fiscal year.

	<u>Market Value</u>	<u>Actuarial Value</u>
2008	-6.4%	6.5%
2009	-17.4%	-5.0% *
2010	10.9%	5.8%
2011	20.2%	5.0%
2012	-0.2%	2.3%
2013	12.9%	5.5%
2014	17.9%	11.6%
2015	3.8%	10.4%
2016	-0.4%	6.6%
2017	13.6%	8.3%

\* Includes effect of change in asset valuation method. Effective with 2009 fiscal year, the corridor limits were increased to 85% to 115% of the market value of assets and the final asset value was determined by averaging the smoothed value with the corridor limit if the smoothed value extends beyond the corridor.

### Geometric Average Market Rates of Return

5 year average	(Fiscal 2013 – 2017)	9.4%
10 year average	(Fiscal 2008 – 2017)	4.9%
15 year average	(Fiscal 2003 – 2017)	6.2%
20 year average	(Fiscal 1998 – 2017)	5.7%
25 year average	(Fiscal 1993 – 2017)	6.7%

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 and dividends. 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 \$36,396,621 of dividends, interest and other recurring income. Net income was increased by realized and unrealized capital gains of \$373,253,328. Investment expenses reduced income by \$11,700,277.

The actuarial rate of return is presented for comparison to the assumed long-term rate of return. As of June 30, 2012, the valuation interest rate was 8.0%. In response to a review of the assumed long term rate of return performed in the course of the development of the 2012 valuation, a recommendation was made to lower the valuation interest rate from 8.0% to 7.5%. The Board of Trustees approved a plan to reduce the valuation interest rate over five years by reducing the assumption by 0.10% each year from Fiscal 2013 through Fiscal 2017. In 2017, the Board approved a plan to reduce the valuation interest rate over the next two fiscal years to 7.25%. The assumed rate of return for Fiscal 2018 is 7.40%. This rate 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 smoothing earnings above or below the valuation interest rate over a five-year period, subject to constraints as outlined in the section in the report describing actuarial assumptions. The amount smoothed each year was based on the valuation interest rate in effect for that year. 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 over the five-year period. Yields in excess of the valuation interest rate assumption will reduce future costs; yields below the assumption will increase future costs. For Fiscal 2017, the system experienced net actuarial investment earnings of \$23,348,838 more than the actuarial assumed earnings rate of 7.50% in effect for Fiscal 2017 (Beginning with Fiscal 2018, actuarial investment gains and losses will be measured against the 7.40% valuation interest rate). This surplus in earnings produced an actuarial gain, which decreased the normal cost accrual rate by 0.3353%

## **DEMOGRAPHICS AND LIABILITY EXPERIENCE**

A reconciliation of the census for the system is given in Exhibit IX. The average active member is 43 years old with 9.56 years of service and an average salary of \$46,709. The system's active contributing membership decreased during the fiscal year by 75 members. The plan has experienced an increase in the active plan population of 378 members over the last five years. A review of the active census by age indicates that over the last ten years the population in the under-forty age group has decreased while the proportion of active members over-forty increased. During this ten-year period the plan

showed a decrease in the percentage of members with service less than ten years and a corresponding increase in all other service groups.

The average service retiree is 69 years old with a monthly benefit of \$2,550. The retired population increased by 327 during the last fiscal year. Over the last five years the number of retirees has increased by 1,419. During this same period, annual benefits in payment increased by \$58,514,532 (i.e. by 64%).

Plan liability experience for Fiscal 2017 was favorable. Salary increases were below projected levels while retiree deaths and withdrawals were above projected levels. These factors tend to reduce costs. Partially offsetting these factors were retirements above expected levels. Overall, plan liability gains decreased the normal cost accrual rate by 0.3575%.

## **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 payment on the unfunded actuarial accrued liability. The normal cost refers to the portion of annual cost based on the salary of active participants. 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. Under the funding method used for the plan, changes in plan experience, benefits, or assumptions do not affect the frozen unfunded actuarial accrued liability. These items increase or decrease future normal costs.

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.

The derivation of the actuarially required contribution for the current fiscal year is given in Exhibit I. The normal cost for Fiscal 2018 adjusted for mid-year payment is \$96,621,955. The amortization payment on the fund's frozen unfunded actuarial accrued liability, adjusted for mid-year payment, is \$9,324,494. The total actuarially required contribution is determined by adding estimated administrative expenses to these two values. As given on line 16 of Exhibit I the total actuarially required contribution for Fiscal 2018 is \$107,796,608. When this amount is reduced by projected ad valorem tax contributions, revenue sharing funds, and insurance premium taxes the remaining portion to be funded by direct employer contributions for Fiscal 2018 is \$66,963,312 or 9.53% of projected payroll.

Liability and asset experience as well as changes in assumptions and benefits can increase or lower plan costs. In addition to these factors, any COLA granted in the prior fiscal year will increase required contributions. New entrants to the system can also increase or lower costs as a percent of payroll depending upon their demographic distribution and other factors related to prior plan experience. Finally, contributions above or below requirements may reduce or increase future costs.

The effects of various factors on the fund's cost structure are outlined below:

Employer's Normal Cost Accrual Rate – Fiscal 2017	14.6230%
Factors Increasing the Normal Cost Accrual Rate:	
Assumption Changes	0.9197%
Factors Decreasing the Normal Cost Accrual Rate:	
Asset Experience Gain	0.3353%
Plan Liability Experience Gain	0.3575%
New Members	0.6000%
Employer's Normal Cost Accrual Rate – Fiscal 2018	14.2499%

In addition to the above factors, payroll growth affects plan costs to the extent that payments on the system's unfunded liability are on a schedule that varies from actual trends in payroll growth or decline. If payroll changes at rates not consistent with the amortization schedule the result will be costs that change as a percentage of payroll. For Fiscal 2018, the net effect of the change in payroll on amortization costs will be to increase such costs by 0.02% of projected payroll. (Note: This value also includes the effect of the reduction in the valuation interest rate). Required net direct employer contributions are also affected by the available ad valorem taxes, revenue sharing funds, and insurance premium taxes which the system receives each year. When these funds change as a percentage of payroll, net direct employer contributions are adjusted accordingly. We estimate that these funds will increase by 0.06% of payroll in Fiscal 2018.

The balance in the Funding Deposit Account is \$56,567,343 as of June 30, 2017. Since the net direct employer contribution rate for Fiscal 2017 was set above the minimum actuarially required net direct employer contribution rate, \$24,163,838 was added to the funding deposit account as of June 30, 2017.

Although the actuarially required net direct employer contribution rate for Fiscal 2017 was 9.92%, the Board voted to maintain the employer contribution at 13.25%. Thus, for Fiscal 2017 the system experienced a contribution gain of \$24,163,838. In accordance with R. S. 11:107, these additional contributions were credited to the system's Funding Deposit Account as of June 30, 2017. Although the actuarially required net direct employer contribution rate for Fiscal 2018 is 9.53%; the actual employer contribution rate for Fiscal 2018 is 12.75% of payroll. Since the contribution rate for Fiscal 2018 was held at 12.75% by the Board, any surplus in employer contributions collected during the fiscal year will be credited to the Funding Deposit Account.

R.S. 11:103 requires that the net direct employer contributions be rounded to the nearest 0.25%, hence we are recommending a minimum net direct employer contribution rate of 9.50% for Fiscal 2019. Under the provisions of RS 11:105 and RS 11:107, the Board of Trustees may maintain the net direct

employer contribution at any level between the minimum recommended employer contribution rate of 9.50% and the current level of 12.75%. If the Board sets the net direct employer contribution rate above the minimum rate, any excess funds collected will be deposited in the Funding Deposit Account. Funds in this account can be used to reduce either future required contributions in a particular year or the normal cost accrual rate. In addition, if the system may grant a cost of living increase to retirees, such increase may be paid from funds in the Funding Deposit Account.

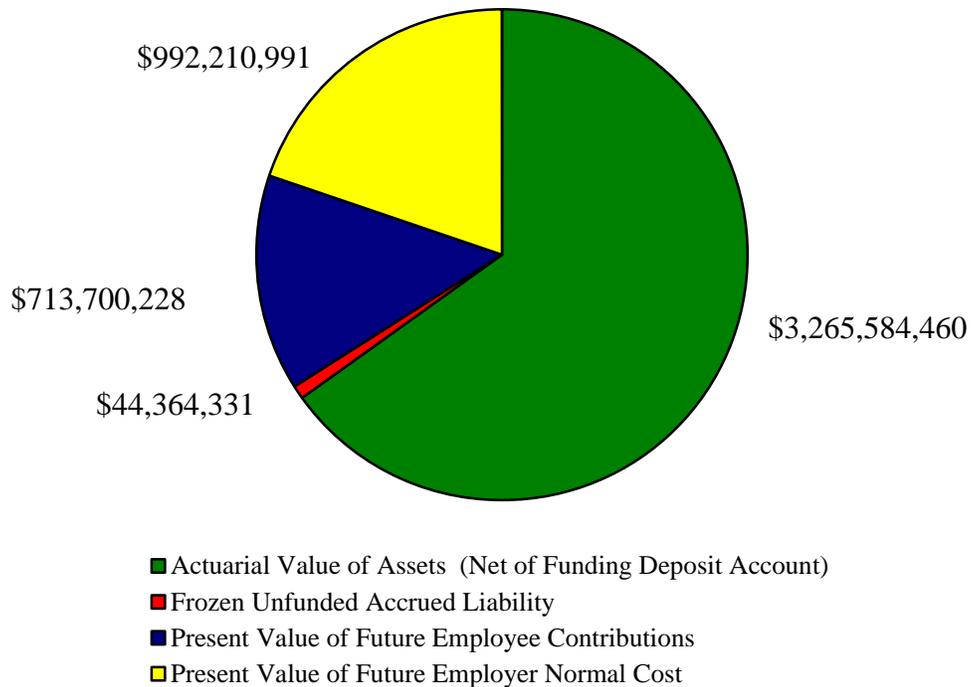
## **COST OF LIVING INCREASES**

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. 11:2178 and R.S. 11:246. R.S. 11:2178 details the provisions applicable to system retirees subject to certain limitations relative to the age and elapsed time since retirement. The permissible COLA is based on the members' current benefit and is subject to various percentage and dollar minimums and maximums. R.S. 11:246 provides cost of living increases for retirees and beneficiaries age 65 and over equal to 2% of the benefit 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.

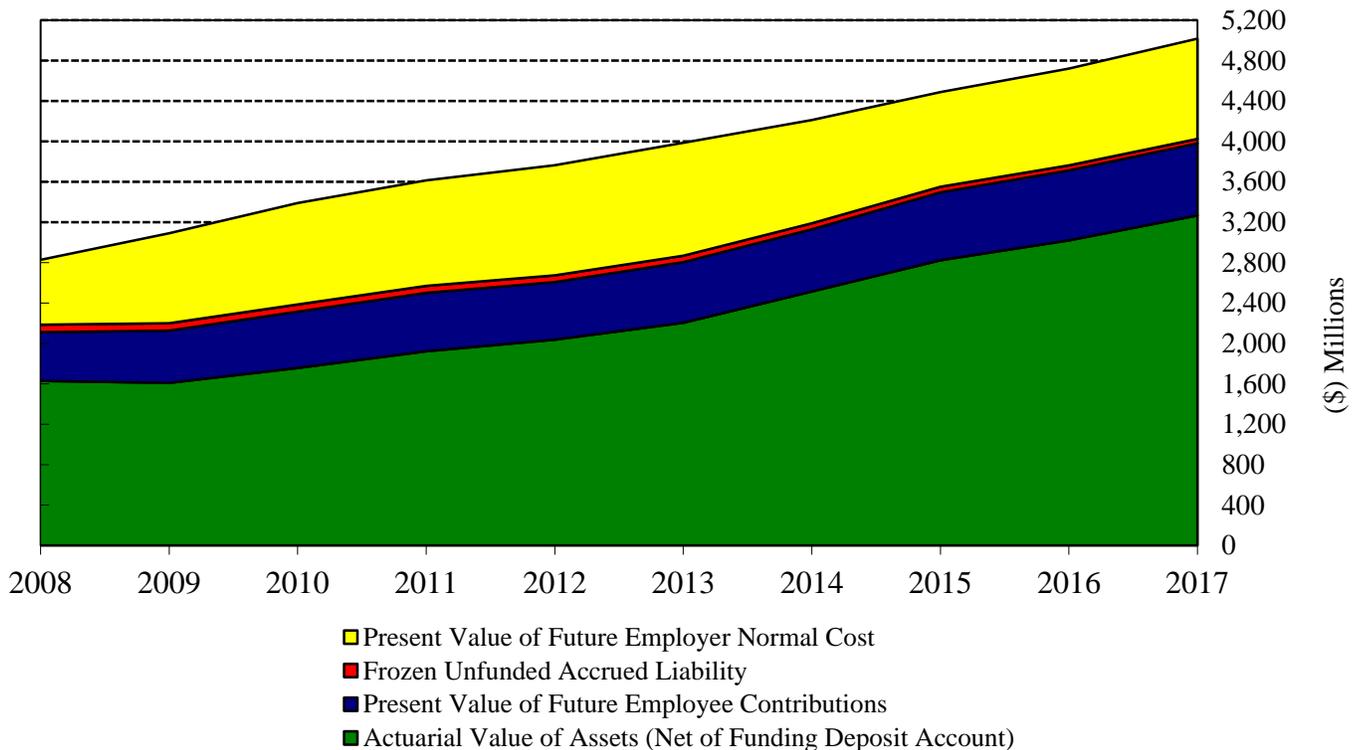
The above provisions require that the system's investments produce sufficient excess interest earnings to fund the increases or that such an increase be paid for by funds from the Funding Deposit Account. For Fiscal 2017, the fund earned excess interest of \$23,348,838; in addition, the current balance in the Funding Deposit Account as of June 30, 2017 is \$56,567,343. 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 Projected Unit Credit Method for this system).

With a funded ratio (as measured by the Actuarial Value of Assets divided by the Pension Benefit Obligation) of 94.12% and since the system granted a cost of living increase on January 1, 2015 which is not within the two most recent fiscal years, we have determined that for Fiscal 2017 the plan does meet the criteria set forth in R. S. 11:243 for granting a cost of living increase with an actuarial present value not to exceed \$23,348,838 from "excess interest earnings" or \$56,567,343 from the Funding Deposit Account.

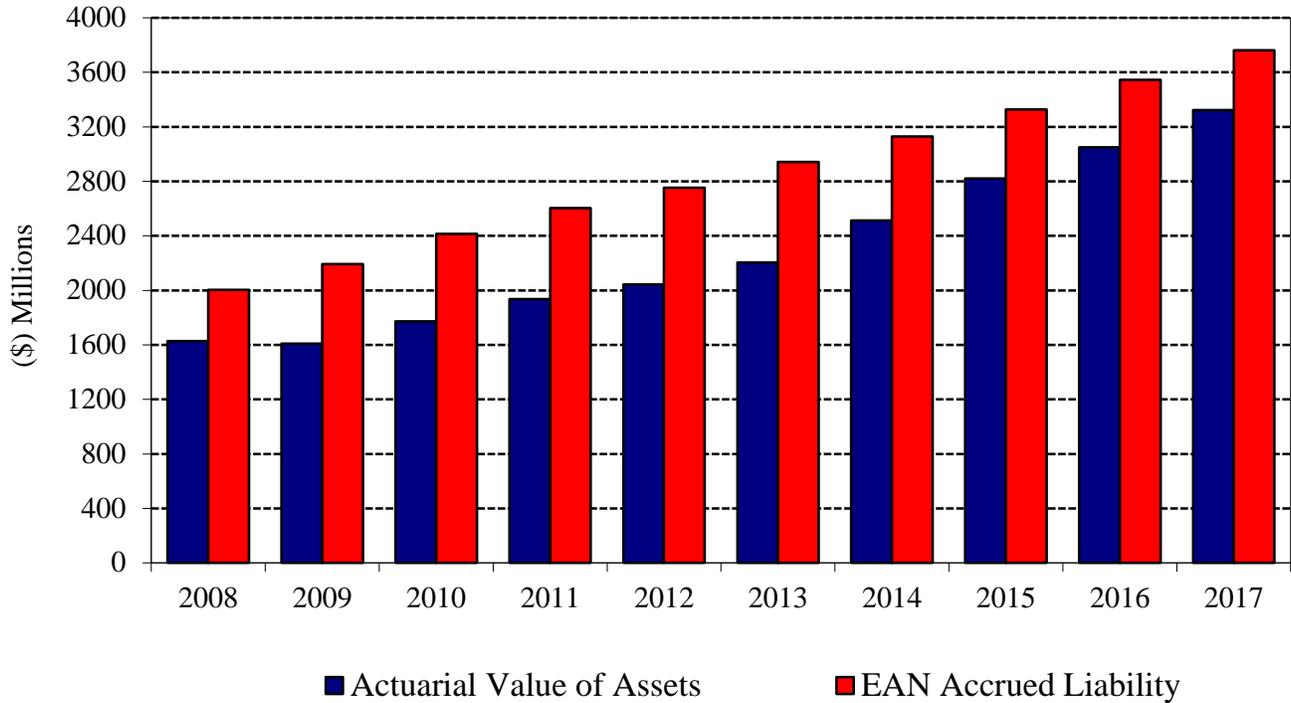
## Components of Present Value of Future Benefits June 30, 2017



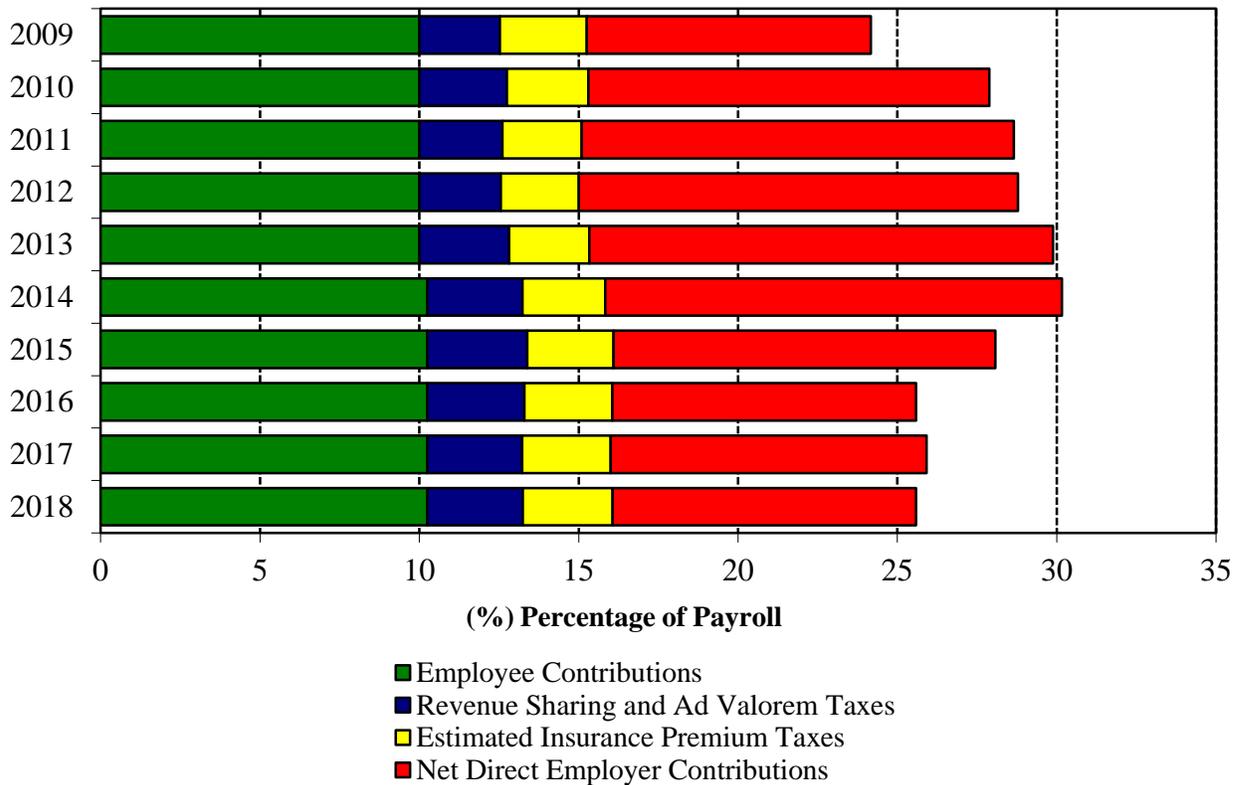
## Components of Present Value of Future Benefits



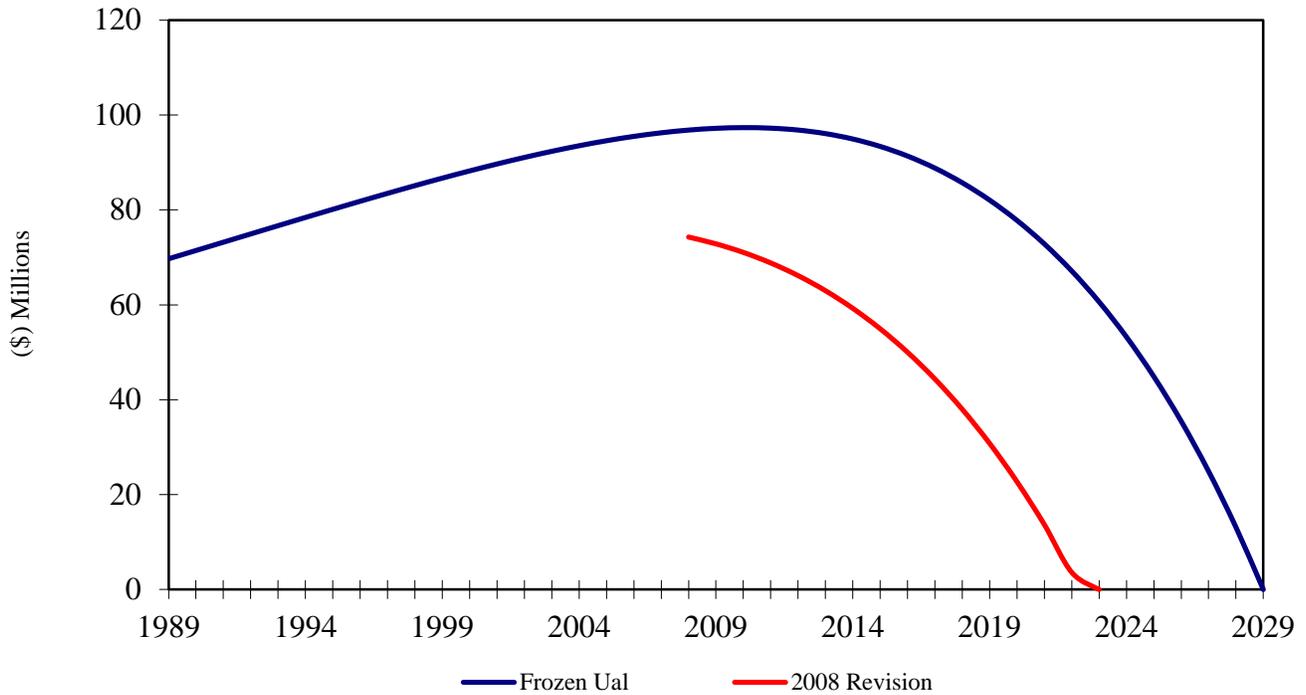
## Actuarial Value of Assets vs. EAN Accrued Liability



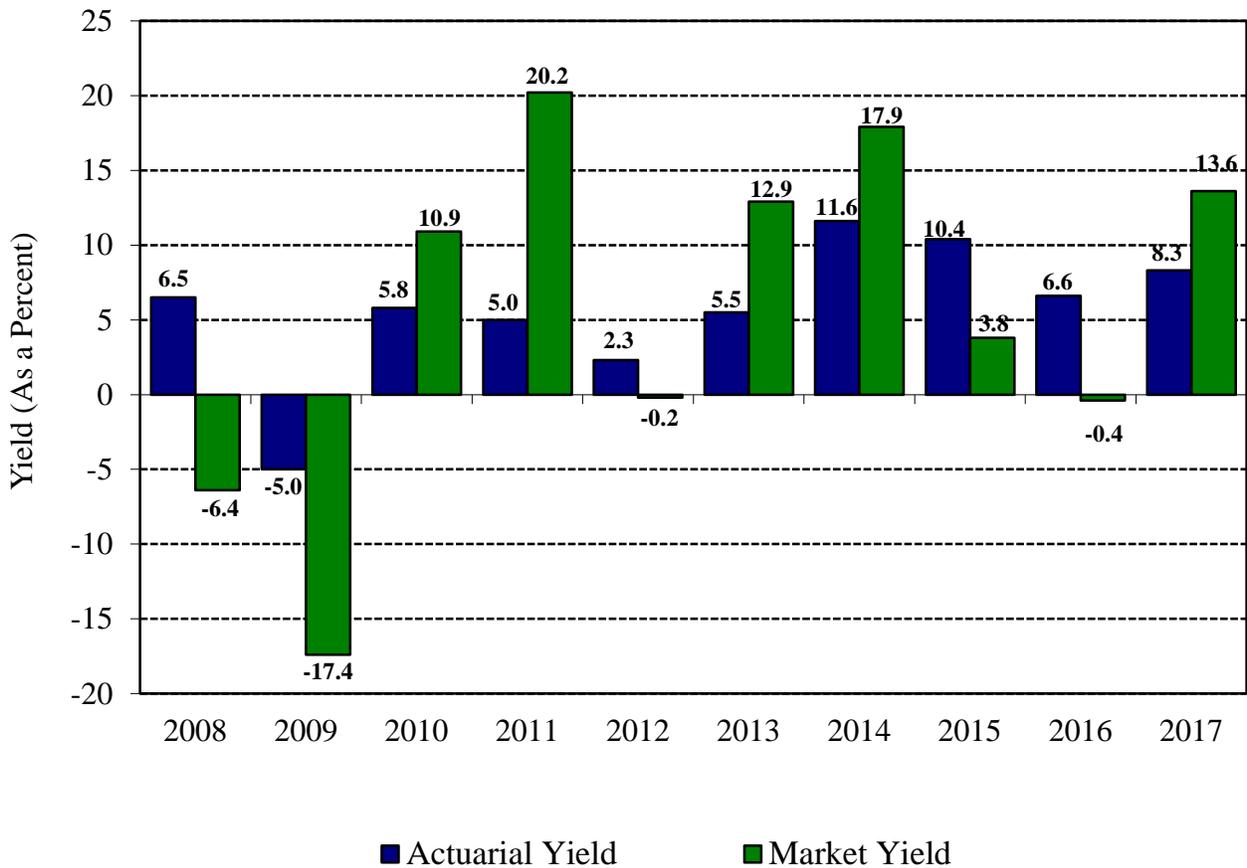
## Components of Actuarial Funding



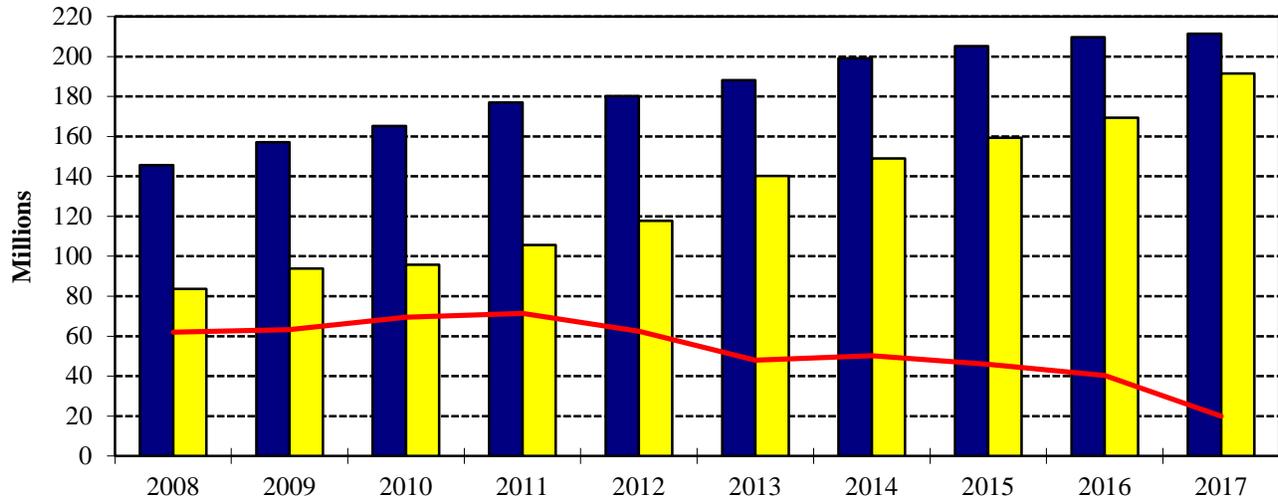
# Frozen Unfunded Actuarial Accrued Liability



# Historical Asset Yields

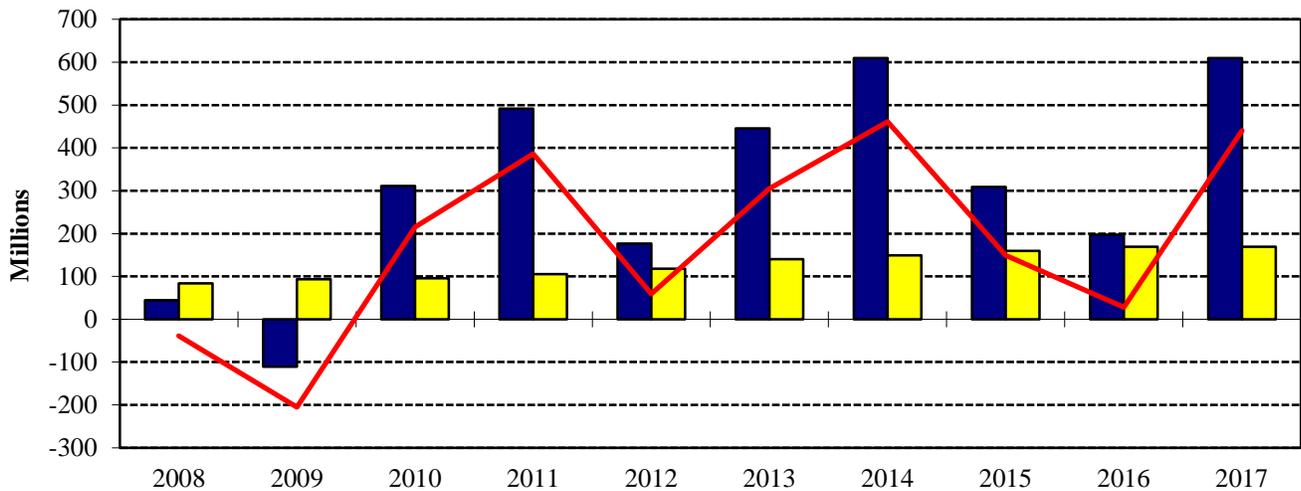


## Net Non-Investment Income



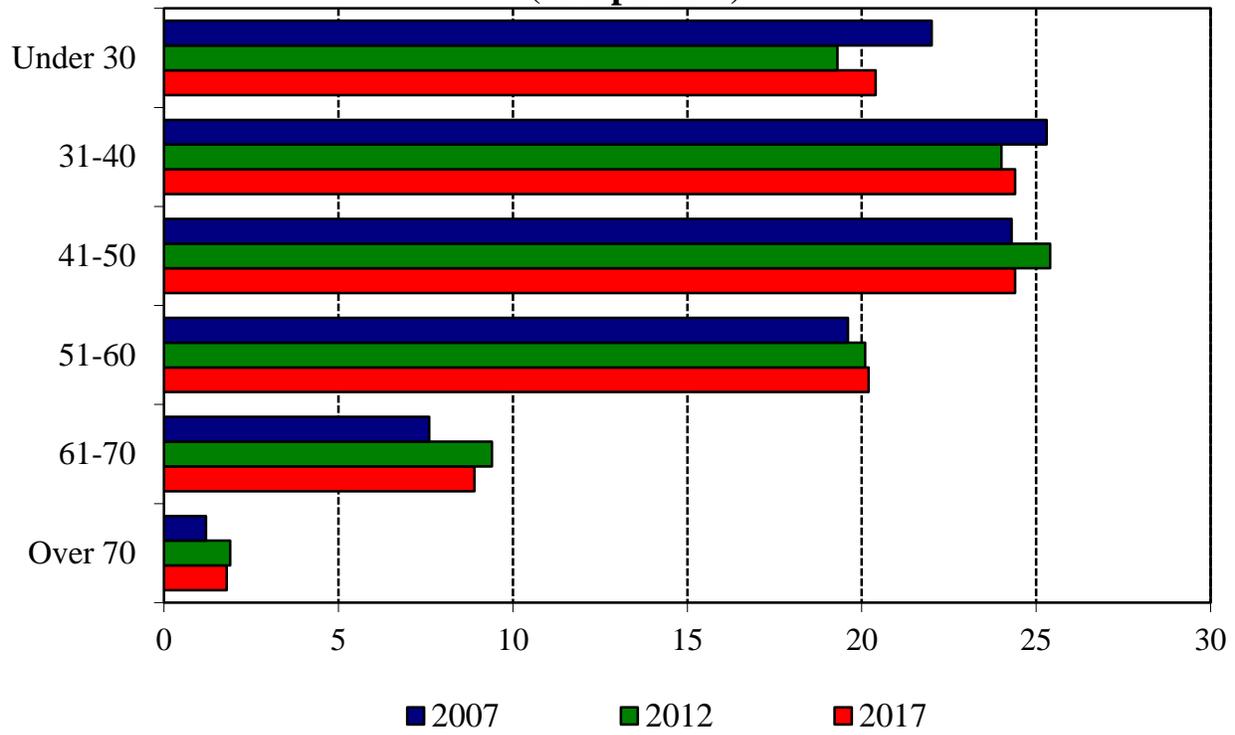
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Non-Investment Income (\$Mil)	■	145.7	157.1	165.3	177.0	180.2	188.1	199.2	205.2	209.7	211.5
Benefits and Expenses (\$Mil)	■	83.6	93.8	95.8	105.6	117.8	140.2	149.0	159.3	169.4	191.5
Net Non-Investment Income (\$Mil)	—	62.1	63.3	69.5	71.4	62.4	47.9	50.2	45.9	40.3	20.0

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

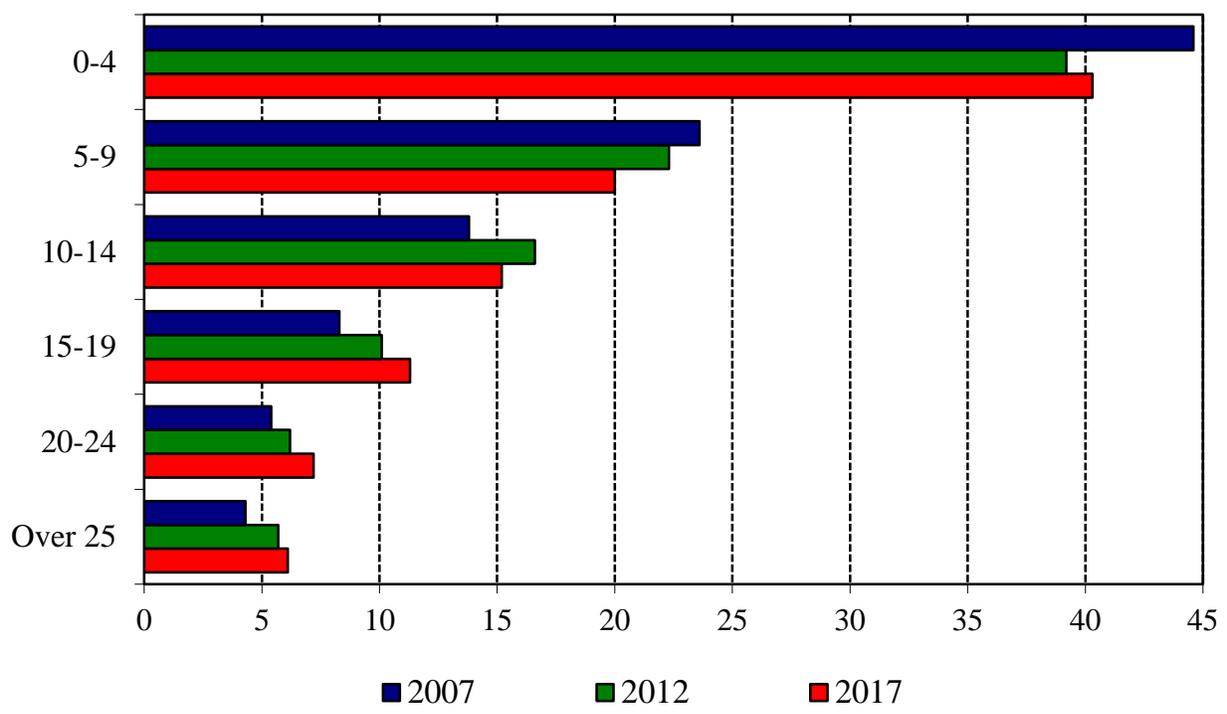


		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Income (\$Mil)	■	44.6	-111.0	311.0	491.3	176.9	445.4	609.8	308.6	197.5	609.4
Benefits and Expenses (\$Mil)	■	83.6	93.8	95.8	105.6	117.8	140.2	149.0	159.3	169.4	191.5
Net Change in MVA (\$Mil)	—	-39.0	-204.8	215.2	385.7	59.1	305.2	460.8	149.3	28.1	417.9

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



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



# **EXHIBITS**

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

1. Present Value of Future Benefits .....	\$ 5,015,860,010
2. Funding Deposit Account Credit Balance .....	\$ 56,567,343
3. Unfunded Actuarial Accrued Liability .....	\$ 44,364,331
4. Actuarial Value of Assets .....	\$ 3,322,151,803
5. Present Value of Future Employee Contributions .....	\$ 713,700,228
6. Present Value of Future Employer Normal Costs (1 + 2 – 3 – 4 – 5) .....	\$ 992,210,991
7. Present Value of Future Salaries.....	\$ 6,962,941,030
8. Employer Normal Cost Accrual Rate (6 ÷ 7) .....	14.249884%
9. Projected Fiscal 2018 Salary for Current Membership .....	\$ 654,278,051
10. Employer Normal Cost as of July 1, 2017 (8 × 9).....	\$ 93,233,863
11. Employer Normal Cost Interest Adjusted for Mid-year Payment .....	\$ 96,621,955
12. Amortization Payment on Remaining Frozen Unfunded Accrued Liability with Payments increasing at 3.50% per year .....	\$ 8,997,526
13. Amortization Payment Interest Adjust for Mid-year Payment.....	\$ 9,324,494
14. TOTAL Employer Normal Cost and Amortization Payment (12 + 13).....	\$ 105,946,449
15. Estimated Administrative Cost for Fiscal 2018.....	\$ 1,850,159
16. GROSS Employer Actuarially Required Contribution for Fiscal 2018 (14 + 15) .....	\$ 107,796,608
17. Projected Ad Valorem Tax Contributions for Fiscal 2018.....	\$ 20,677,724
18. Projected Revenue Sharing Funds for Fiscal 2018.....	\$ 422,040
19. GROSS Employer Actuarially Required Contribution to be Funded by Direct Employer Contributions and Insurance Premium Taxes for Fiscal 2018 (16 – 17 – 18) .....	\$ 86,696,844
20. Estimated Insurance Premium Taxes due for Fiscal 2018.....	\$ 19,733,532
21. Employer's Net Direct Actuarially Required Contribution (19 – 20) .....	\$ 66,963,312
22. Projected Payroll for Fiscal 2018 .....	\$ 702,339,701
23. Employers' Minimum Net Direct Actuarially Required Contribution as a % of Projected Payroll for Fiscal 2018 (21 ÷ 22).....	9.53%
24. Minimum Recommended Net Direct Employer Contribution Rate for Fiscal 2019 (23, Rounded to the nearest 0.25%).....	9.50%

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

**PRESENT VALUE OF FUTURE BENEFITS FOR ACTIVE MEMBERS:**

Retirement Benefits .....	\$ 3,103,822,804
Survivor Benefits.....	118,527,685
Disability Benefits .....	15,101,476
Vested Termination Benefits.....	74,578,551
Refunds of Contributions .....	78,888,595

TOTAL Present Value of Future Benefits for Active Members ..... \$ 3,390,919,111

**PRESENT VALUE OF FUTURE BENEFITS FOR TERMINATED MEMBERS:**

Terminated Vested Members Due Benefits at Retirement..	\$ 65,381,165
Terminated Members with Reciprocal	
Due Benefits at Retirement .....	978,517
Terminated Members Due a Refund .....	20,469,700

TOTAL Present Value of Future Benefits for Terminated Members ..... \$ 86,829,382

**PRESENT VALUE OF FUTURE BENEFITS FOR RETIREES:**

Regular Retirees	
Maximum.....	\$ 401,478,962
Option 1 .....	139,172,188
Option 2 .....	554,727,421
Option 3 .....	177,723,817
Option 4 .....	2,092,998
Option 5 .....	45,174,171

TOTAL Regular Retirees ..... \$ 1,320,369,557

Disability Retirees ..... 34,963,090

Survivors & Widows..... 138,272,959

Annuities Certain Payable to Retirees..... 32,256,749

DROP and Back-DROP Account Balances ..... 12,249,162

TOTAL Present Value of Future Benefits for Retirees & Survivors ..... \$ 1,538,111,517

TOTAL Present Value of Future Benefits ..... \$ 5,015,860,010

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

CURRENT ASSETS:

Cash in Banks .....	\$ 15,510,559
Contributions and Taxes Receivable.....	11,422,451
Accrued Interest and Dividends.....	4,912,181
Investments Receivable .....	127,213,824
Other Income .....	446,272

TOTAL CURRENT ASSETS..... \$ 159,505,287

Property, Plant & Equipment..... \$ 2,212,824

INVESTMENTS:

Cash Equivalents.....	\$ 136,027,781
Equities .....	1,978,533,217
Fixed Income .....	876,377,555
Alternative Investments .....	449,973,005
Collateral for Securities Lending.....	34,343,294

TOTAL INVESTMENTS..... \$ 3,475,254,852

TOTAL ASSETS .....

\$ 3,636,972,963

CURRENT LIABILITIES:

Accounts Payable .....	\$ 3,442,882
Benefits Payable.....	70,616
Refunds Payable.....	1,004,142
Investments Payable.....	251,266,188
Securities Lending Obligations.....	34,334,252
Other Current Liabilities .....	18,487,825

TOTAL CURRENT LIABILITIES..... \$ 308,605,905

MARKET VALUE OF ASSETS..... \$ 3,328,367,058

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

Excess (Shortfall) of invested income  
for current and previous 4 years:

Fiscal year 2017 .....	\$ 178,930,072
Fiscal year 2016 .....	(232,843,968)
Fiscal year 2015 .....	(108,809,371)
Fiscal year 2014 .....	231,506,629
Fiscal year 2013 .....	<u>100,065,241</u>
Total for five years .....	\$ 168,848,603

Deferral of excess (shortfall) of invested income:

Fiscal year 2017 (80%) .....	\$ 143,144,058
Fiscal year 2016 (60%) .....	(139,706,381)
Fiscal year 2015 (40%) .....	(43,523,748)
Fiscal year 2014 (20%) .....	46,301,326
Fiscal year 2013 ( 0%) .....	0
Total deferred for year .....	\$ 6,215,255

Market value of plan net assets, end of year..... \$ 3,328,367,058

Preliminary actuarial value of plan assets, end of year ..... \$ 3,322,151,803

Actuarial value of assets corridor

85% of market value, end of year .....	\$ 2,829,111,999
115% of market value, end of year .....	\$ 3,827,622,117

Final actuarial value of plan net assets, end of year ..... \$ 3,322,151,803

**EXHIBIT IV**  
**PRESENT VALUE OF FUTURE CONTRIBUTIONS**

Employee Contributions to the Annuity Savings Fund .....	\$ 713,700,228
Employer Normal Contributions to the Pension Accumulation Fund.....	992,210,991
Employer Amortization Payments to the Pension Accumulation Fund .....	44,364,331
Funding Deposit Account Debit (Credit) Balance.....	(56,567,343)
<b>TOTAL PRESENT VALUE OF FUTURE CONTRIBUTIONS .....</b>	<b>\$ 1,693,708,207</b>

**EXHIBIT V**  
**CHANGE IN FROZEN UNFUNDED ACTUARIAL ACCRUED LIABILITY**

Prior Year Frozen Unfunded Accrued Liability .....	\$ 50,003,403
Interest on Frozen Unfunded Accrued Liability .....	\$ 3,750,255
<b>TOTAL Interest Adjusted Cost Elements.....</b>	<b>\$ 3,750,255</b>
Amortization Payment on the Unfunded Accrued Liability .....	\$ 8,734,258
Interest on Amortization Payment .....	655,069
Withdrawals from Funding Deposit Account.....	0
<b>TOTAL Interest Adjusted Employer Contributions .....</b>	<b>\$ 9,389,327</b>
<b>NET Change in Frozen Unfunded Accrued Liability.....</b>	<b>\$ (5,639,072)</b>
<b>CURRENT YEAR FROZEN UNFUNDED ACCRUED LIABILITY .....</b>	<b>\$ 44,364,331</b>

**EXHIBIT VI**  
**ANALYSIS OF INCREASE IN ASSETS**

Actuarial Value of Assets (June 30, 2016) ..... \$ 3,049,411,053

**INCOME:**

Member Contributions ..... \$ 70,997,859

Employer Contributions ..... 91,758,224

Irregular Contributions ..... 9,009,925

Ad Valorem Taxes and Revenue Sharing ..... 20,605,008

Insurance Premium Taxes ..... 19,090,190

Total Contributions ..... \$ 211,461,206

Net Appreciation of Investments ..... \$ 373,253,328

Interest & Dividends ..... 36,393,447

Miscellaneous Income ..... 3,174

Investment Expense ..... (11,700,277)

Net Investment Income ..... \$ 397,949,672

TOTAL Income ..... \$ 609,410,878

**EXPENSES:**

Retirement Benefits ..... \$ 167,386,535

Refunds of Contributions ..... 20,637,999

Transfers to Other Systems ..... 1,704,358

Administrative Expenses ..... 1,780,884

TOTAL Expenses ..... \$ 191,509,776

Net Market Value Income for Fiscal 2017 (Income – Expenses) ..... \$ 417,901,102

Unadjusted Fund Balance as of June 30, 2017

(Fund Balance Previous Year + Net Income) ..... \$ 3,467,312,155

Adjustment for Actuarial Smoothing ..... \$ (145,160,352)

Actuarial Value of Assets: (June 30, 2017) ..... \$ 3,322,151,803

**EXHIBIT VII  
FUNDING DEPOSIT ACCOUNT**

Funding Deposit Account Balance as of June 30, 2016 .....	\$ 30,142,795
Interest on Opening Balance at 7.50% .....	2,260,710
Contributions to the Funding Deposit Account .....	24,163,838
Withdrawals from the Funding Deposit Account .....	0
Funding Deposit Account Balance as of June 30, 2017 .....	\$ 56,567,343

**EXHIBIT VIII – Schedule A  
PENSION BENEFIT OBLIGATION**

Present Value of Credited Projected Benefits Payable to Current Employees.....	\$ 1,904,631,676
Present Value of Benefits Payable to Terminated Employees .....	86,829,382
Present Value of Benefits Payable to Current Retirees and Beneficiaries .....	1,538,111,517
TOTAL PENSION BENEFIT OBLIGATION .....	\$ 3,529,572,575
NET ACTUARIAL VALUE OF ASSETS .....	\$ 3,322,151,803
Ratio of Net Actuarial Value of Assets to Pension Benefit Obligation.....	94.12%

**EXHIBIT VIII – Schedule B  
ENTRY AGE NORMAL ACCRUED LIABILITIES**

Accrued Liability for Active Employees .....	\$ 2,136,453,522
Accrued Liability for Terminated Employees .....	86,829,382
Accrued Liability for Current Retirees and Beneficiaries .....	1,538,111,517
TOTAL ENTRY AGE NORMAL ACCRUED LIABILITY .....	\$ 3,761,394,421
NET ACTUARIAL VALUE OF ASSETS .....	\$ 3,322,151,803
Ratio of Net Actuarial Value of Assets to Entry Age Normal Accrued Liability .....	88.32%

**EXHIBIT IX  
CENSUS DATA**

	<b>Active</b>	<b>Terminated with Funds on Deposit</b>	<b>Retired</b>	<b>Total</b>
Number of members as of June 30, 2016	14,684	6,079	5,014	25,777
Additions to Census				
Initial membership	1,670	266		1,936
Omitted in error last year				
Death of another member			75	75
Adjustment for multiple records			11	11
Change in Status during Year				
Actives terminating service	(490)	490		
Actives who retired	(390)		390	
Actives entering DROP				
Term. members rehired	134	(134)		
Term. members who retire		(22)	22	
Retirees who are rehired	2		(2)	
Refunded who are rehired	64	6		70
DROP participants retiring				
DROP returned to work				
Omitted in error last year				
Eliminated from Census				
Refund of contributions	(1,021)	(339)		(1,360)
Deaths	(44)	(9)	(167)	(220)
Included in error last year			(2)	(2)
Adjustment for multiple records		(3)		(3)
Number of members as of June 30, 2017	14,609	6,334	5,341	26,284

ACTIVES CENSUS BY AGE:

Age	Number Male	Number Female	Total Number	Average Salary	Total Salary
16 - 20	86	25	111	29,304	3,252,763
21 - 25	717	437	1,154	34,381	39,675,793
26 - 30	1,075	635	1,710	39,663	67,824,161
31 - 35	1,205	629	1,834	44,678	81,940,341
36 - 40	1,086	638	1,724	47,767	82,349,689
41 - 45	1,075	596	1,671	50,701	84,721,777
46 - 50	1,206	689	1,895	51,939	98,424,572
51 - 55	1,054	641	1,695	52,851	89,581,906
56 - 60	755	504	1,259	49,455	62,263,569
61 - 65	513	333	846	48,014	40,620,113
66 - 70	322	131	453	46,506	21,067,145
71 - 75	131	38	169	45,647	7,714,382
76 - 80	50	19	69	32,754	2,260,019
81 - 85	13	1	14	35,662	499,271
86 - 90	5	0	5	34,939	174,693
TOTAL	9,293	5,316	14,609	46,709	682,370,194

THE ACTIVE CENSUS INCLUDES 4,765 ACTIVES WITH VESTED BENEFITS, INCLUDING 2 ACTIVE FORMER DROP PARTICIPANTS.

TERMINATED MEMBERS DUE A DEFERRED RETIREMENT BENEFIT:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
31 - 35	3	2	5	22,953	114,763
36 - 40	21	14	35	22,310	780,866
41 - 45	43	19	62	25,565	1,585,019
46 - 50	79	33	112	27,586	3,089,633
51 - 55	102	38	140	21,947	3,072,615
56 - 60	9	5	14	15,184	212,571
61 - 65	4	1	5	8,678	43,388
66 - 70	4	1	5	12,604	63,018
71 - 75	1	2	3	10,554	31,661
81 - 85	1	0	1	1,881	1,881
86 - 90	1	0	1	399	399
TOTAL	268	115	383	23,488	8,995,814

TERMINATED MEMBERS DUE A REFUND OF CONTRIBUTIONS:

Contributions Ranging From	To	Number	Total Contributions
0 -	99	1,371	58,801
100 -	499	1,664	427,516
500 -	999	756	544,313
1000 -	1999	598	845,645
2000 -	4999	622	2,009,181
5000 -	9999	362	2,580,715
10000 -	19999	313	4,419,186
20000 -	99999	265	8,285,605
TOTAL		5,951	19,170,962

## REGULAR RETIREES:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
46 - 50	2	0	2	28,813	57,626
51 - 55	95	35	130	50,348	6,545,243
56 - 60	369	232	601	41,191	24,755,897
61 - 65	590	313	903	34,662	31,300,175
66 - 70	681	315	996	30,492	30,369,929
71 - 75	553	233	786	24,836	19,520,765
76 - 80	338	119	457	22,605	10,330,345
81 - 85	184	68	252	18,956	4,776,863
86 - 90	65	20	85	19,005	1,615,383
91 - 99	18	14	32	17,911	573,141
TOTAL	2,895	1,349	4,244	30,595	129,845,367

## DISABILITY RETIREES:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
26 - 30	3	0	3	14,278	42,834
31 - 35	0	1	1	9,977	9,977
36 - 40	3	2	5	20,076	100,380
41 - 45	11	3	14	24,939	349,142
46 - 50	16	5	21	19,541	410,365
51 - 55	16	11	27	24,886	671,913
56 - 60	18	11	29	19,704	571,426
61 - 65	21	12	33	15,499	511,468
66 - 70	23	6	29	13,218	383,311
71 - 75	13	3	16	13,942	223,071
76 - 80	6	3	9	10,591	95,323
81 - 85	4	1	5	13,903	69,515
86 - 90	3	0	3	11,322	33,966
91 - 99	1	0	1	14,371	14,371
TOTAL	138	58	196	17,791	3,487,062

## SURVIVORS:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
0 - 25	12	40	52	8,013	416,655
26 - 30	1	2	3	9,410	28,229
31 - 35	0	3	3	12,447	37,342
36 - 40	0	9	9	18,764	168,874
41 - 45	3	17	20	25,140	502,794
46 - 50	0	18	18	29,339	528,098
51 - 55	5	34	39	20,174	786,769
56 - 60	4	56	60	22,264	1,335,869
61 - 65	4	90	94	21,086	1,982,073
66 - 70	5	129	134	19,931	2,670,692
71 - 75	11	144	155	18,880	2,926,344
76 - 80	8	109	117	14,487	1,694,927
81 - 85	2	93	95	15,226	1,446,437
86 - 90	2	62	64	16,860	1,079,063
91 - 99	2	36	38	12,429	472,310
TOTAL	59	842	901	17,843	16,076,476

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	95	14	2												111
21 - 25	445	308	216	115	42	28									1,154
26 - 30	311	275	294	237	164	398	31								1,710
31 - 35	217	166	166	133	127	640	369	16							1,834
36 - 40	157	114	115	86	72	403	477	280	20						1,724
41 - 45	126	102	87	68	68	304	281	398	226	11					1,671
46 - 50	106	95	88	78	74	308	280	314	341	201	10				1,895
51 - 55	101	96	59	65	68	248	254	241	220	232	111				1,695
56 - 60	76	82	62	56	57	224	202	190	120	107	83				1,259
61 - 65	41	37	42	42	55	194	162	119	76	30	48				846
66 - 70	23	26	22	17	20	111	118	55	31	14	16				453
71 & Over	17	16	11	6	23	60	51	39	13	10	11				257
Totals	1,715	1,331	1,164	903	770	2,918	2,225	1,652	1,047	605	279				1,4609

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	29,137	30,948	25,729												29,304
21 - 25	30,175	33,942	38,072	38,811	42,991	46,466									34,381
26 - 30	32,102	35,184	37,979	41,557	42,288	46,853	50,568								39,663
31 - 35	32,971	37,138	40,226	41,541	43,677	47,420	52,958	61,279							44,678
36 - 40	32,829	37,030	38,444	41,264	40,558	47,570	53,673	57,158	65,375						47,767
41 - 45	33,970	39,445	40,971	40,895	43,544	46,214	52,173	58,473	64,099	58,509					50,701
46 - 50	33,397	40,906	38,859	40,772	40,305	44,668	49,618	55,667	64,310	68,016					51,939
51 - 55	32,510	34,354	38,093	39,801	40,370	45,594	50,464	54,077	61,758	69,330	68,491				52,851
56 - 60	33,447	36,179	34,891	38,070	41,697	42,115	46,865	52,019	57,358	71,663	81,301				49,455
61 - 65	29,749	30,887	35,722	33,871	43,628	42,967	48,118	50,347	60,652	75,061	82,327				48,014
66 - 70	31,550	33,237	31,235	34,484	31,988	43,476	48,476	55,490	58,621	49,838	90,707				46,506
71 & Over	28,166	34,101	31,114	31,697	42,755	34,664	41,125	46,961	45,744	63,386	79,177				41,433
Average	31,813	35,820	38,199	40,160	41,943	45,667	50,859	55,404	62,287	68,844	79,923				46,709

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									5			5
36 - 40								35				35
41 - 45							60	2				62
46 - 50						110	2					112
51 - 55	17	36	26	25	34	2						140
56 - 60	10	1			1							14
61 - 65	5											5
66 - 70	5											5
71 - 75	3											3
76 - 80												0
81 - 85	1											1
86 - 90	1											1
91 & Over												0
Totals	42	37	26	27	35	112	62	37	5	0	0	383

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									22,953			22,953
36 - 40								22,310				22,310
41 - 45							25,819	17,939				25,565
46 - 50						27,855	12,805					27,586
51 - 55	20,929	18,240	21,445	19,581	29,263	9,064						21,947
56 - 60	19,769	872		6,143	1,719							15,184
61 - 65	8,678											8,678
66 - 70	12,604											12,604
71 - 75	10,554											10,554
76 - 80												0
81 - 85	1,881											1,881
86 - 90	399											399
91 & Over												0
Average	16,520	17,771	21,445	18,586	28,476	27,519	25,399	22,074	22,953	0	0	23,488

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	2														2
51 - 55	55	21	25	16	7	5	1								130
56 - 60	115	138	118	62	76	84	6	1	1						601
61 - 65	109	81	79	86	112	341	91	4							903
66 - 70	74	71	59	62	111	273	294	51	1						996
71 - 75	33	23	36	41	60	197	242	132	22						786
76 - 80	13	10	12	21	26	71	113	119	56	15	1				457
81 - 85	3	6	4	8	9	28	35	51	49	42	17				252
86 - 90	1	1	1	1	1	5	5	9	23	12	28				85
91 & Over			1	1	1	1	1	2	2	9	17				32
Totals	405	351	335	296	401	1,004	788	369	154	78	63				4,244

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	28,813														28,813
51 - 55	49,694	57,519	51,502	43,552	54,747	45,097	11,094								50,348
56 - 60	41,028	42,939	41,529	38,159	44,037	38,449	41,459	15,246	5,288						41,191
61 - 65	34,071	29,055	33,975	34,934	41,857	34,162	34,429	18,543							34,662
66 - 70	28,676	27,839	24,223	34,409	36,600	30,639	30,401	26,042	15,676						30,492
71 - 75	23,554	22,904	22,219	20,721	30,517	26,847	26,563	20,059	16,881	18,493	16,577				24,836
76 - 80	16,398	14,050	20,747	24,468	28,306	24,809	25,900	20,242	19,412	12,480	13,684				22,605
81 - 85	13,232	20,836	30,169	18,449	17,171	20,415	25,774	20,560	18,577	18,417	16,387				18,956
86 - 90	6,406	10,729	12,635	18,449	17,171	14,066	20,269	28,608	20,722	21,277	15,889				19,005
91 & Over			35,509	18,449	17,171	7,469	17,923	7,469	21,587	15,565	15,526				17,911
Average	35,509	34,947	34,384	32,809	37,911	31,037	28,816	21,125	18,893	15,565	15,526				30,595

DISABILITY RETIREES:

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 - 30	1	1	1									3
31 - 35						1						1
36 - 40	2	1				2						5
41 - 45	3	4	1	1	2		1					14
46 - 50		3			3	6	5	3				21
51 - 55	1	4	1	1	4	11	2	3	1			27
56 - 60	1			1	4	7	5	5	4	2		29
61 - 65		2	2		4	10	6	4	3	4	2	33
66 - 70			1		1	2	4	9	7	4	1	29
71 - 75					4	4	2		5	4	1	16
76 - 80						4	2		2	4	1	9
81 - 85							2			4	4	5
86 - 90							1			1	2	3
91 & Over										1		1
Totals	8	15	6	4	13	45	28	24	22	20	11	196

AVERAGE ANNUAL BENEFITS PAYABLE TO DISABILITY RETIREES:

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 - 30	12,724	12,652	17,457									14,278
31 - 35						9,977						9,977
36 - 40	24,668	27,226				11,909						20,076
41 - 45	30,603	31,956	16,167	27,787	15,493	17,947	18,677					24,939
46 - 50		45,432			18,176	20,386	11,847	10,190	7,420			19,541
51 - 55	25,834	34,869	47,036	28,590	31,343	22,504	11,176	11,904				24,886
56 - 60	12,367			14,808	34,768	21,381	21,546	15,618	12,425	9,995		19,704
61 - 65		20,415	11,251			11,696	27,623	18,001	7,819	11,293	12,402	15,499
66 - 70			17,869	19,746		18,838	15,449	13,334	9,762	10,976	13,976	13,218
71 - 75						14,405	13,101	11,849	16,364	11,849	10,032	13,942
76 - 80							9,417	11,913	7,966	11,913	12,907	10,591
81 - 85								17,274		13,061	13,876	13,903
86 - 90							6,215					11,322
91 & Over										14,371		14,371
Average	24,009	32,287	20,172	22,732	26,920	17,810	17,385	14,016	11,212	11,788	12,883	17,791

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	12	3	4	5	4	12	5					45
21 - 25		1		1		2	2	1				7
26 - 30	1						1					3
31 - 35					2			1				3
36 - 40	1			1	1	3	2	1				9
41 - 45	5		1	1	2	3	7	1				20
46 - 50		1	3	3	3	5	1	4				18
51 - 55	1	2	1	1	3	9	11	5		2	1	39
56 - 60	1	4	4	4	7	11	12	7		2	1	60
61 - 65	2	3	3	6	4	29	18	13	5	8	6	94
66 - 70	4	1	2	7	5	24	33	29	14	6	9	134
71 - 75	1		3	4	3	32	33	39	29	5	6	155
76 - 80	1	1	1		1	6	13	30	41	12	13	117
81 - 85			1			5	6	10	29	17	26	95
86 - 90						2	2	4	14	12	30	64
91 & Over							1	1	4	2	31	38
Totals	29	12	23	33	32	143	146	147	147	66	123	901

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	12,517	5,681	7,605	10,034	6,553	6,039	7,119	4,951				8,491
21 - 25		5,279		6,132		4,453	4,640	4,830				4,935
26 - 30	19,563						3,836	4,506				9,410
31 - 35					16,418							12,447
36 - 40	18,403		34,402	25,150	16,885	23,435	13,768	10,595				18,764
41 - 45	33,646		44,622	61,421	19,671	19,868	18,683	9,012				25,140
46 - 50		34,992	44,622	55,623	21,541	21,541	20,250	12,485	14,480			29,339
51 - 55	51,642	17,601	52,300	6,003	25,338	26,119	17,178	12,377	12,693	17,996	5,624	20,174
56 - 60	16,344	24,384	17,333	43,493	25,918	31,018	22,308	12,072	10,023	11,994	9,722	22,264
61 - 65	12,271	32,482	32,482	18,287	27,366	24,448	25,514	18,697	14,605	11,011	11,416	21,086
66 - 70	12,877	14,277	11,274	23,462	20,371	25,354	24,813	18,006	13,113	15,053	10,319	19,931
71 - 75	5,088		17,273	20,097	28,962	19,273	24,227	17,541	16,268	13,136	10,723	18,880
76 - 80	14,520		16,152		9,850	30,482	15,054	13,881	14,205	10,262	12,591	14,487
81 - 85			4,744			34,579	24,026	12,125	15,199	13,710	12,296	15,226
86 - 90						6,632	12,875	15,221	25,977	19,191	12,840	16,860
91 & Over								14,305	21,279	19,071	10,798	12,429
Average	17,933	17,027	22,306	25,577	21,274	22,367	21,419	15,595	15,803	14,071	11,743	17,843

## EXHIBIT X YEAR-TO-YEAR COMPARISON

	Fiscal 2017	Fiscal 2016	Fiscal 2015	Fiscal 2014
Number of Active Members	14,609	14,684	14,689	14,575
Number of Retirees & Survivors	5,341	5,014	4,766	4,510
Number of Terminated Due Deferred Benefits	383	389	354	362
Number Terminated Due Refunds	5,951	5,690	5,374	5,150
Active Lives Payroll	\$ 682,370,194	\$ 669,735,563	\$ 656,499,456	\$ 634,536,119
Retiree Benefits in Payment	\$ 149,408,905	\$ 137,218,242	\$ 126,604,621	\$ 114,122,739
Market Value of Assets	\$ 3,328,367,058	\$ 2,910,465,956	\$ 2,882,373,570	\$ 2,733,132,117
Actuarial Value of Assets	\$ 3,322,151,803	\$ 3,049,411,053	\$ 2,822,174,398	\$ 2,513,293,197
EAN Accrued Liability	\$ 3,761,394,421	\$ 3,545,155,452	\$ 3,328,125,306	\$ 3,129,132,635
Ratio of AVA to EAN Accrued Liability	88.32%	86.02%	84.80%	80.32%
Frozen Unfunded Actuarial Accrued Liability	\$ 44,364,331	\$ 50,003,403	\$ 54,953,449	\$ 59,264,382
Present Value of Future Employer Normal Cost	\$ 992,210,991	\$ 987,893,018	\$ 937,016,484	\$ 1,022,657,685
Present Value of Future Employee Contrib.	\$ 713,700,228	\$ 692,464,530	\$ 672,573,918	\$ 616,003,094
Funding Deposit Account Balance	\$ 56,567,343	\$ 30,142,795	\$ 0	\$ 0
Present Value of Future Benefits	\$ 5,015,860,010	\$ 4,749,629,209	\$ 4,486,718,249	\$ 4,211,218,358

	Fiscal 2018	Fiscal 2017	Fiscal 2016	Fiscal 2015
Employee Contribution Rate	10.25%	10.25%	10.25%	10.25%
Estimated Tax Contribution as a % of Payroll	3.00%	2.98%	3.05%	3.04%
Estimated Insurance Taxes as a % of Payroll	2.81%	2.77%	2.75%	2.70%
Actuarially Required Net Direct Employer Contribution Rate	9.53%	9.92%	9.54%	12.07%
Actual Employer Contribution Rate	12.75%	13.25%	13.75%	14.25%

† 12.00% paid directly by employers with additional 0.75% allocated from the Funding Deposit Account

‡ 12.50% paid directly by employers with additional 1.25% allocated from the Funding Deposit Account

\* 13.25% paid directly by employers with additional 0.50% allocated from the Funding Deposit Account

§ 13.89% paid directly by employers with additional 0.61% allocated from the Funding Deposit Account

Fiscal 2013	Fiscal 2012	Fiscal 2011	Fiscal 2010	Fiscal 2009	Fiscal 2008
14,559	14,231	14,754	14,711	14,396	14,038
4,293	3,922	3,716	3,510	3,369	3,140
343	350	323	325	306	328
5,069	5,056	4,743	4,727	4,435	4,156
\$ 622,720,506	\$ 611,139,881	\$ 623,084,570	\$ 603,250,449	\$ 577,078,980	\$ 537,082,456
\$ 105,832,204	\$ 90,894,373	\$ 83,741,250	\$ 76,379,208	\$ 71,517,150	\$ 64,309,775
\$ 2,272,263,124	\$ 1,967,024,952	\$ 1,907,946,452	\$ 1,522,233,162	\$ 1,306,974,663	\$ 1,511,820,016
\$ 2,203,646,722	\$ 2,042,809,526	\$ 1,935,179,988	\$ 1,773,450,705	\$ 1,608,228,363	\$ 1,628,303,910
\$ 2,942,457,560	\$ 2,752,868,402	\$ 2,603,584,473	\$ 2,415,074,197	\$ 2,192,263,534	\$ 2,003,918,104
74.89%	74.21%	74.33%	73.43%	73.36%	81.26%
\$ 62,983,756	\$ 66,156,793	\$ 68,826,417	\$ 71,042,296	\$ 72,846,699	\$ 74,278,468
\$ 1,125,270,083	\$ 1,089,982,874	\$ 1,044,434,589	\$ 1,003,967,230	\$ 890,632,040	\$ 641,924,601
\$ 600,569,823	\$ 570,327,767	\$ 578,341,253	\$ 557,530,584	\$ 517,818,601	\$ 482,053,768
\$ 3,689,049	\$ 6,448,956	\$ 13,680,020	\$ 17,151,710	\$ 15,881,213	\$ 0
\$ 3,998,781,335	\$ 3,762,828,004	\$ 3,613,102,227	\$ 3,388,839,105	\$ 3,073,644,490	\$ 2,826,560,747

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Fiscal 2014	Fiscal 2013	Fiscal 2012	Fiscal 2011	Fiscal 2010	Fiscal 2009
10.25%	10.00%	10.00%	10.00%	10.00%	10.00%
2.99%	2.82%	2.56%	2.61%	2.75%	2.53%
2.59%	2.51%	2.44%	2.48%	2.55%	2.72%
14.33%	14.55%	13.78%	13.56%	12.58%	8.92%
14.50% §	13.75% *	13.75% ‡	12.75% †	11.00%	11.00%

## **SUMMARY OF PRINCIPAL PLAN PROVISIONS**

The Sheriffs' Pension & Relief Fund is a defined benefit pension plan that provides retirement allowances and other benefits. The following summary of plan provisions is for general informational purposes only and does not constitute a guarantee of benefits.

**MEMBERSHIP** – Any sheriff elected or deputy employed, who is otherwise eligible for membership must become a participating member of the fund. All salaried employees of the Sheriffs' Pension and Relief Fund and the Louisiana Sheriffs' Association who meet certain requirements are also eligible to become members of the retirement system.

**CONTRIBUTION RATES** – Under the provisions of R.S. 11:62, 11:82 and 11:103, the fund is financed by a combination of employee contributions, employer contributions, dedicated ad valorem taxes, revenue sharing funds, and insurance premium taxes. The employee contribution rate is determined by the Board of Trustees but cannot be less than 9.8% or more than 10.25% of earnable compensation. Gross employer contributions are determined by actuarial valuation and are subject to change each year in accordance with R. S. 11:103 and R. S. 11:105. Any excess funds resulting from additional contributions will be credited to the Funding Deposit Account defined in R.S. 11:2175.1. Also, the fund annually receives revenue sharing funds and ad valorem taxes equal to 0.5% of the aggregate amount of the tax shown to be collected by the tax roll of each respective parish, and additional funds as indicated by valuation and apportioned by the Public Employees' Retirement Systems' Actuarial Committee from available insurance premium taxes described in R.S. 22:1476(A)(3)..

**CONTRIBUTION REFUNDS** – Upon withdrawal from service, members not entitled to a retirement allowance who have remained out of service for a period of thirty days are paid a refund of accumulated contributions upon request. Receipt of such a refund cancels all accrued benefits in the system.

**NORMAL RETIREMENT BENEFITS** – For members whose first employment making them eligible for membership in the system began on or before December 31, 2011: Members with twelve years of creditable service may retire at age fifty-five; members with thirty years of creditable service may retire at any 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 (after reduction for optional payment form) 100% of average final compensation.

For members whose first employment making them eligible for membership in the system began on or after January 1, 2012: Members with twelve years of creditable service may retire at age sixty-two; members with twenty years of service may retire at age sixty; members with thirty years of creditable service may retire at age fifty-five. The benefit accrual rate for such members with less than thirty years of service is three percent; for members with thirty or more years of service, the accrual rate is three and one-third percent. The retirement allowance is equal to the benefit accrual rate times the member's average final compensation multiplied by his years of creditable service, not to exceed (after reduction for optional payment form) 100% of average final compensation.

**EARLY RETIREMENT BENEFITS** – For members whose first employment making them eligible for membership in the system began on or before December 31, 2011: Active, contributing members with at least ten years of creditable service may retire at age sixty. The accrued normal retirement benefit is

reduced actuarially for each month or fraction thereof that retirement begins prior the member's earliest normal retirement date assuming continuous service.

For all members: Members with twenty or more years of service may retire with a reduced retirement at age fifty.

**FINAL AVERAGE COMPENSATION** – For a member whose first employment making him eligible for membership in the system began on or before June 30, 2006, final average compensation is based on the average monthly earnings during the highest thirty-six consecutive months or joined months if service was interrupted. The earnings to be considered for each twelve month period within the thirty-six month period shall not exceed 125% of the preceding twelve month period.

For a member whose first employment making him eligible for membership in the system began after June 30, 2006 and prior to July 1, 2013, final average compensation is based on the average monthly earnings during the highest sixty consecutive months or joined months if service was interrupted.

For a member whose first employment making him eligible for membership in the system began on or after July 1, 2013, final average compensation is based on the average monthly earnings during the highest sixty consecutive months or joined months if service was interrupted. The earnings to be considered for each twelve month period within the thirty-six month period shall not exceed 115% of the preceding twelve month period.

**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 spouse to whom the member was married and living with at the time of retirement will continue to receive the same reduced benefit.

**Option 2A** – Upon retirement, the member receives a reduced benefit. Upon the member's death, the spouse to whom the member was married and living with at the time of retirement will continue to receive the same reduced benefit. If the member's spouse dies before the member, the member's benefit will revert to the maximum.

**Option 3** – Upon retirement, the member receives a reduced benefit. Upon the member's death, the spouse to whom the member was married and living with at the time of retirement will receive one-half of the member's reduced benefit.

**Option 3A** – Upon retirement, the member receives a reduced benefit. Upon the member's death, the spouse to whom the member was married and living with at the time of retirement will receive one-half of the member's reduced benefit. If the member's spouse dies before the member, the member's benefit will revert to the maximum.

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

**Option 5** – Upon retirement, the member may receive ninety percent of the maximum benefit. Upon the member's death, if survived by a surviving spouse to whom the member was married and living with at the time of retirement, fifty percent of the member's benefit shall be paid to the spouse during said spouse's lifetime.

A member may also elect to receive an actuarially reduced benefit which provides for an automatic 2½% 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. Back-DROP participants are not eligible for this benefit.

**DISABILITY BENEFITS** – Ten years of creditable service are required in order to be eligible for disability benefits when a non-service related disability is incurred; there are no service requirements for a service related disability. Totally disabled members receive the lesser of their accrued retirement benefit (with a minimum of 45%) or their accrued retirement benefit assuming continued service to their earliest normal retirement age. Members who become partially disabled receive 75% of the amount payable for total disability.

**SURVIVOR BENEFITS** – Survivor benefits for death solely as a result of injuries received in the line of duty are based on the following. For a spouse alone, a sum equal to 50% of the member's final average compensation with a minimum of \$150 per month. If a spouse is entitled to benefits and has a child or children under eighteen years of age (or over said age if physically or mentally incapacitated and dependent upon the member at the time of his death), an additional sum of 15% of the member's final average compensation is paid to each child with total benefits paid to spouse and children not to exceed 100%. If a member dies with no surviving spouse, surviving children under age eighteen receive monthly benefits of 15% of the member's final average compensation up to a maximum of 60% of final average compensation if there are more than four children. If a member is eligible for normal retirement at the time of death, the surviving spouse receives an automatic option 2 benefit; the additional benefit payable to children is the same as those available for members who die in the line of duty. In lieu of receiving option 2 benefits, the surviving spouse may receive a refund of the member's accumulated contributions. Benefits payable to surviving children are extended through age twenty-three, if the child is a full time student in good standing enrolled at a Board approved or accredited school, college, or university.

**Back-DROP** – In lieu of receiving a service retirement allowance any member of the fund who has more than sufficient service for a regular service retirement may elect to receive a "Back-DROP" benefit. The Back-DROP benefit is based upon the Back-DROP period selected and the final average compensation prior to the period selected. The Back-DROP period is the lesser of three years or the service accrued between the time a member first becomes eligible for retirement and his actual date of retirement. Members who have thirty or more years of service may elect a Back-DROP period not to exceed the lesser of forty-eight months or the number of months of creditable service accrued after the member first became eligible for regular retirement. At retirement the member's maximum monthly retirement benefit is based upon his service, final average compensation, and plan provisions in effect on the last day of creditable service immediately prior to the commencement of the Back-DROP period. In addition to the monthly benefit at retirement, the member receives a lump-sum payment equal to the maximum monthly benefit as calculated above multiplied by the number of months in the Back-DROP period. In addition, the member's Back-DROP account is credited with employee contributions received by the retirement fund during the Back-DROP period.

**FUNDING DEPOSIT ACCOUNT** – If the contribution rate is set above the minimum recommended rate pursuant to RS 11:105, the surplus contributions collected, if any, are credited to the Funding Deposit Account defined in R.S. 11:2175.1. For any fiscal year ending on or after December 31, 2008, in which the Board of Trustees elects or previously elected to set the net direct employer contribution rate higher than the minimum recommended rate, all surplus funds collected by the system shall be credited to the system’s funding deposit account. The funds in the account earn interest annually at the Board-approved actuarial valuation interest rate, and such interest is credited to the account at least once a year. The Board of Trustees may in any fiscal year direct that funds from the account be charged for the following purposes: (1) to reduce the unfunded accrued liability; (2) to reduce the present value of future normal costs; (3) to pay all or a portion of any future net direct employer contributions; and (4) to provide for permanent benefit increases as provided for in R.S. 11.2178(K). In no event shall the funds charged from the account exceed the outstanding account balance. If the Board of Trustees of the system elects to utilize funds from the funding deposit account to pay all or a portion of any future net direct employer contributions, the percent reduction in the minimum recommended employer contribution rate otherwise applicable is determined by dividing the interest-adjusted value of the charges from the funding deposit account by the projected payroll for the fiscal year for which the contribution rate is to be reduced. For funding purposes, any asset value utilized in the calculation of the actuarial value of assets of a system excludes the funding deposit account balance as of the asset determination date for such calculation. For all purposes other than funding, the funds in the account are considered assets of the system.

**COST OF LIVING INCREASES** – The Board of Trustees is authorized to grant retired members and widows of members who have retired an annual cost of living increase of up to 2½% of their current benefit, not to exceed five percent of the average monthly benefit in payment to service retirees at the end of the preceding fiscal year. Members retiring on or after July 1, 2007, who have not attained the age of sixty years, may not receive this cost-of-living increase until they have been retired for three years. Those who have attained the age of sixty years may not receive this cost-of-living increase until they have been retired for one year. Different waiting periods applied to retirements prior to July 1, 2007. In addition, the Board may grant retired members and widows who are sixty-five years of age and older a 2% increase in their original benefit (or the benefit being received on October 1, 1977 if retirement had commenced prior to that date). In order for the Board to grant either of these increases the system must meet certain criteria in the statutes related to funding status and interest earnings. In lieu of these cost of living adjustments the Board may also grant an increase in the form of “ $X \times (A+B)$ ” where “X” is any amount up to \$1 per month and “A” is equal to 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 thirtieth of the initial year of such increase. The Board may only grant such COLA’s in years in which the fund meets certain funding and investment earnings targets.

## 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:	Frozen Attained Age Normal actuarial cost method with allocation based on earnings. The frozen actuarial accrued liabilities were calculated on the projected unit credit cost method.
VALUATION INTEREST RATE:	7.40%
ACTUARIAL ASSET VALUES:	Invested 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.
ANNUAL SALARY INCREASE RATE:	5.5% (including 2.775% inflation)
ACTIVE MEMBER, ANNUTITANT, AND BENEFICIARY MORTALITY:	RP-2000 Combined Healthy with Blue Collar Adjustment Sex Distinct Tables Projected to 2028 for males and set forward 1 year and Projected to 2028 for females. (Projections based on Scale AA as published by the Society of Actuaries)

Back-DROP: Members eligible for Back-DROP are assumed to elect benefits which have a present value of ½% less than the maximum possible present value based on a comparison to available back DROP benefits and regular retirement benefits.

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.

RATES OF RETIREMENT: The table of these rates is included later in the report. These rates apply only to those individuals eligible to retire. Retirement rates for members who have completed DROP participation and are currently active are 0.3.

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

RATES OF WITHDRAWAL: The rates of withdrawal are applied based upon completed years of service according to the following table:

<u>Service</u>	<u>Factor</u>
<1	0.210
1	0.160
2	0.120
3	0.110
4	0.090
5	0.080
6-7	0.060
8-9	0.040
10-15	0.030
16-18	0.020
>18	0.010

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.

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	4%	1.45	15

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

SERVICE RELATED DEATHS: 15% of total deaths

RATES OF DISABILITY: 12% 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.

SERVICE RELATED DISABILITIES: 20% of Total Disabilities

VESTING ELECTING PERCENTAGE: 60% of those members under age 50 who are terminated vested elect deferred benefits in lieu of contribution refunds. 80% of those who are at least age 50 who are terminated vested elect deferred benefits in lieu of contribution refunds.

## ACTUARIAL TABLES AND RATES

Age	Disability Rates	Retirement Rates – Tier 1 & 2	Retirement Rates – Tier 3	Remarriage Rates	Male Mortality Rates	Female Mortality Rates	Male Disabled Mortality Rates	Female Disabled Mortality Rates
18	0.00018	0.00000	0.00000	0.06124	0.00018	0.00012	0.02257	0.00745
19	0.00018	0.00000	0.00000	0.06124	0.00019	0.00012	0.02257	0.00745
20	0.00018	0.00000	0.00000	0.06124	0.00020	0.00012	0.02257	0.00745
21	0.00018	0.00000	0.00000	0.05818	0.00021	0.00012	0.02257	0.00745
22	0.00018	0.00000	0.00000	0.05524	0.00023	0.00013	0.02257	0.00745
23	0.00018	0.00000	0.00000	0.05242	0.00024	0.00013	0.02257	0.00745
24	0.00018	0.00000	0.00000	0.04971	0.00026	0.00014	0.02257	0.00745
25	0.00018	0.00000	0.00000	0.04566	0.00028	0.00015	0.02257	0.00745
26	0.00018	0.00000	0.00000	0.04335	0.00032	0.00016	0.02257	0.00745
27	0.00018	0.00000	0.00000	0.04114	0.00033	0.00017	0.02257	0.00745
28	0.00018	0.00000	0.00000	0.03902	0.00034	0.00018	0.02257	0.00745
29	0.00018	0.00000	0.00000	0.03698	0.00036	0.00022	0.02257	0.00745
30	0.00018	0.00000	0.00000	0.03502	0.00063	0.00026	0.02257	0.00745
31	0.00018	0.00000	0.00000	0.03314	0.00070	0.00029	0.02257	0.00745
32	0.00018	0.00000	0.00000	0.03134	0.00076	0.00032	0.02257	0.00745
33	0.00018	0.00000	0.00000	0.02961	0.00082	0.00035	0.02257	0.00745
34	0.00018	0.00000	0.00000	0.02795	0.00089	0.00038	0.02257	0.00745
35	0.00020	0.00000	0.00000	0.02636	0.00094	0.00041	0.02257	0.00745
36	0.00023	0.00000	0.00000	0.02483	0.00100	0.00045	0.02257	0.00745
37	0.00025	0.00000	0.00000	0.02336	0.00105	0.00048	0.02257	0.00745
38	0.00029	0.00000	0.00000	0.02195	0.00107	0.00052	0.02257	0.00745
39	0.00032	0.00000	0.00000	0.02060	0.00108	0.00058	0.02257	0.00745
40	0.00037	0.00000	0.00000	0.01930	0.00109	0.00064	0.02257	0.00745
41	0.00042	0.00000	0.00000	0.01805	0.00111	0.00070	0.02257	0.00745
42	0.00047	0.00000	0.00000	0.01686	0.00114	0.00077	0.02257	0.00745
43	0.00053	0.00000	0.00000	0.01571	0.00117	0.00084	0.02257	0.00745
44	0.00060	0.00000	0.00000	0.01461	0.00120	0.00088	0.02257	0.00745
45	0.00068	0.00000	0.00000	0.01355	0.00124	0.00092	0.02257	0.00745
46	0.00078	0.14000	0.00000	0.01253	0.00128	0.00096	0.02257	0.00745
47	0.00088	0.14000	0.00000	0.01156	0.00131	0.00103	0.02257	0.00745
48	0.00100	0.14000	0.00000	0.01063	0.00135	0.00110	0.02257	0.00745
49	0.00113	0.14000	0.00000	0.00973	0.00140	0.00121	0.02257	0.00818
50	0.00128	0.05000	0.04500	0.00887	0.00145	0.00134	0.02257	0.00896
51	0.00146	0.05000	0.04500	0.00804	0.00160	0.00151	0.02385	0.00978
52	0.00166	0.05000	0.04500	0.00725	0.00170	0.00172	0.02512	0.01063
53	0.00188	0.05000	0.04500	0.00649	0.00187	0.00195	0.02640	0.01154
54	0.00214	0.05000	0.04500	0.00576	0.00207	0.00223	0.02769	0.01248
55	0.00242	0.14000	0.12600	0.00000	0.00245	0.00258	0.02897	0.01346
56	0.00276	0.14000	0.12600	0.00000	0.00299	0.00295	0.03027	0.01446
57	0.00313	0.14000	0.12600	0.00000	0.00348	0.00330	0.03156	0.01550
58	0.00355	0.14000	0.12600	0.00000	0.00407	0.00374	0.03286	0.01654
59	0.00404	0.14000	0.12600	0.00000	0.00462	0.00430	0.03415	0.01760
60	0.00586	0.14000	0.12600	0.00000	0.00526	0.00504	0.03544	0.01865
61	0.00586	0.14000	0.12600	0.00000	0.00617	0.00589	0.03673	0.01971
62	0.00586	0.14000	0.12600	0.00000	0.00706	0.00693	0.03803	0.02077
63	0.00586	0.14000	0.12600	0.00000	0.00829	0.00794	0.03933	0.02184
64	0.00586	0.14000	0.12600	0.00000	0.00931	0.00904	0.04067	0.02294
65	0.00586	0.21000	0.18900	0.00000	0.01047	0.01029	0.04204	0.02408
66	0.00586	0.21000	0.18900	0.00000	0.01217	0.01149	0.04347	0.02529
67	0.00586	0.21000	0.18900	0.00000	0.01355	0.01279	0.04498	0.02660
68	0.00586	0.21000	0.18900	0.00000	0.01461	0.01424	0.04658	0.02803
69	0.00586	0.21000	0.18900	0.00000	0.01613	0.01619	0.04831	0.02959
70	0.00586	0.21000	0.18900	0.00000	0.01753	0.01752	0.05017	0.03132
71	0.00586	0.21000	0.18900	0.00000	0.01921	0.01949	0.05221	0.03323
72	0.00586	0.21000	0.18900	0.00000	0.02108	0.02100	0.05445	0.03533
73	0.00586	0.21000	0.18900	0.00000	0.02319	0.02315	0.05691	0.03764
74	0.00586	0.21000	0.18900	0.00000	0.02558	0.02467	0.05961	0.04014
75	0.00586	0.21000	0.18900	0.00000	0.02906	0.02698	0.06258	0.04285

## **PRIOR YEAR ASSUMPTIONS**

VALUATION INTEREST RATE: 7.5%

RATE OF INFLATION: 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.