SHERIFFS' PENSION & RELIEF FUND

ACTUARIAL VALUATION AS OF
JUNE 30, 2019

G. S. CURRAN & COMPANY, LTD.

Actuarial Services

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December 5, 2019

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, 2019. 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 2020, and to recommend the net direct employer contribution rate for Fiscal 2021. 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, 2019	June 30, 2018
Census Summary:	Active Members	14,540	14,350
	Retired Members and Survivors	5,898	5,613
	Terminated Due a Deferred Benefit	404	393
	Terminated Due a Refund	6,635	6,355
Payroll:		$ 697,984,502	$ 675,897,782
Benefits in Payment:		$ 177,335,191	$ 164,605,373
Present Value of Future Benefits:		$ 5,640,200,074	$ 5,288,701,651
Actuarial Accrued Liability (EAN):		$ 4,264,735,402	$ 3,998,832,755
Frozen Unfunded Actuarial Accrued Liability:		$ 30,814,726	$ 37,983,949
Funding Deposit Account Credit Balance:		$ 78,520,547	$ 52,683,236
Actuarial Value of Assets (AVA):		$ 3,808,734,449	$ 3,592,604,222
Market Value of Assets (MVA):		$ 3,791,712,511	$ 3,615,367,904
Ratio of AVA to Actuarial Accrued Liability (EAN):		89.31%	89.84%

	Fiscal 2019	Fiscal 2018
Market Rate of Return:	5.0%	8.5%
Actuarial Rate of Return:	6.1%	8.1%

	Fiscal 2020	Fiscal 2019
Employers' Normal Cost (Mid-year):	$ 107,518,266	$ 95,578,119
Amortization Cost (Mid-year):	$ 9,851,961	$ 9,581,796
Estimated Administrative Cost:	$ 2,018,131	$ 1,964,350
Projected Ad Valorem Tax Contributions:	$ 21,939,009	$ 21,133,926
Projected Revenue Sharing Funds:	$ 420,852	$ 420,757
Expected Insurance Premium Taxes Due:	$ 21,797,215	$ 20,587,174
Net Direct Employer Actuarially Required Contributions:	$ 75,231,282	$ 64,982,408
Projected Payroll:	$ 719,715,633	$ 696,186,684
Board Approved Employee Contribution Rate:	10.25%	10.25%
Board Approved Net Direct Employer Contribution Rate:	12.25%	12.25%
Actuarially Required Net Direct Employer Contribution Rate:	10.45%	9.33%

	Fiscal 2021	Fiscal 2020
Minimum Recommended Net Direct Employer Cont. Rate:	10.50%	9.25%

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 14,540 active members in the system, of whom 4,977 members have vested retirement benefits; 5,898 former members or their beneficiaries are receiving retirement benefits. An additional 7,039 terminated members have contributions remaining on deposit with the system; of this number, 404 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 $3,791,712,511 as of June 30, 2019. Net investment income for Fiscal 2019 measured on a market value basis was $181,005,669. Contributions to the system for the fiscal year totaled $209,995,494; benefits and expenses amounted to $214,656,556.

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.

In 2017, the Board of Trustees elected to reduce the valuation interest rate from 7.5% to 7.25% over the following two years and to re-evaluate the assumption prior to the June 30, 2019 valuation. In March 2019, the system's actuary recommended that the system further reduce its valuation interest rate to 7.0%. The Board approved a plan to reduce the rate to 7.1% in Fiscal 2019 and 7.0% in Fiscal 2020. This recommendation was based on a review of the valuation interest rate performed based upon an update to the G. S. Curran & Company Consultant Average Capital Market Assumptions for 2019 and an update to the actuary's reasonable range for the assumed rate of return. To determine the reasonable range, the actuary computed an expected long-term portfolio return and standard deviation based upon the system's target asset allocation and a thirty year time horizon. Based upon the results of this study, ten thousand stochastic trials were run to determine a reasonable range around the plan's expected long-term portfolio rate of return. The review found that the scheduled rate of 7.1% was within the reasonable range. Therefore, the assumed rate of return for the Fiscal 2019 valuation was set at 7.1%. For 2019, an assumed rate of inflation of 2.5% 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. In addition, the Board of Trustees' policy to pay future COLAs, or Permanent Benefit Increases, from the Funding Deposit Account reduces the likelihood that any future COLA would increase the present value of

future benefits without being fully offset by the side fund. Therefore, for purposes of determining the present value of benefits, these COLAs were deemed not to be substantively automatic and the present value of benefits excludes COLAs not previously granted by the Board of Trustees.

The current year actuarial assumptions utilized for the report are outlined on pages forty through forty-four. 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 1.5242%.

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 89.31% as of June 30, 2019. 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 0.52% 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 2019, this ratio is 25%; ten years ago this ratio was 12%.

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 2020 by 10.01% 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 2019 Regular Session of the Louisiana Legislature:

Act 77 clarifies rules related to permanent benefit increases (previously referred to as cost of living increases). The statutes provide for two permanent benefit increase types and specifically provide that the system may not grant both permanent benefit increases in the same fiscal year. The first permanent benefit increase type, when payable may not exceed two and one-half percent of the normal monthly benefit payable to the retiree, disability recipient, or survivor on the date the increase is granted. In addition, the dollar amount of the increase may not exceed five percent of the average monthly benefit in payment to service retires as of the end of the preceding fiscal year. The second permanent benefit increase type, when payable provides a permanent benefit increase of two percent of the monthly benefit to all retirees, disability recipients, and survivors who are at least sixty-five years of age on the date the increase is granted.

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.

	Market Value	Actuarial Value
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%
2018	8.5%	8.1%
2019	5.0%	6.1%

Geometric Average Market Rates of Return

5 year average	(Fiscal 2015 – 2019)	6.0%
10 year average	(Fiscal 2010 – 2019)	9.0%
15 year average	(Fiscal 2005 – 2019)	6.3%
20 year average	(Fiscal 2000 – 2019)	5.4%
25 year average	(Fiscal 1995 – 2019)	6.6%

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 2019, the fund earned $47,325,449 of dividends, interest and other recurring income. Net income was increased by realized and unrealized capital gains of $147,086,293. Investment expenses reduced income by $13,406,073.

The actuarial rate of return is presented for comparison to the assumed long-term rate of return of 7.25%. This rate is calculated based on the actuarial value of assets and the market value income adjusted for actuarial smoothing as given in Exhibit VI. Investment income used to calculate this yield is based upon a smoothing of investment income above or below the valuation interest rate over a five year period subject to limits as described in the section detailing actuarial assumptions. The difference between rates of return on an actuarial and market value basis results from the smoothing utilized. In the future, yields in excess of the 7.10% assumption will reduce future costs; yields below 7.10% will increase future costs. For Fiscal 2019, the system experienced net actuarial investment losses of $39,506,510 below the actuarial assumed earnings rate of 7.25% in effect for Fiscal 2019. For Fiscal 2020, actuarial investment gains and losses will be measured against the 7.10% valuation interest rate. This shortfall in earnings produced an actuarial loss, which increased the normal cost accrual rate by 0.5424%.

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 9.77 years of service and an average salary of $48,004. The system's active contributing membership increased during the fiscal year by 190 members. The plan has experienced a decrease in the active plan population of 35 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-fifty age group has decreased while the proportion of active members over-fifty 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 $2,726. The retired population increased by 285 during the last fiscal year. Over the last five years the number of retirees has increased by 1,388. During this same period, annual benefits in payment increased by $63,212,452 (i.e. by 55%).

Plan liability experience for Fiscal 2019 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. Disabilities were near projected levels. Overall, plan liability gains decreased the normal cost accrual rate by 0.1685%.

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 employer normal cost for Fiscal 2020 adjusted for mid-year payment is $107,518,266. The amortization payment on the fund's frozen unfunded actuarial accrued liability, adjusted for mid-year payment, is $9,851,961. 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 2020 is $119,388,358. 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 2020 is $75,231,282 or 10.45% 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 2019	14.2314%
Factors Increasing the Normal Cost Accrual Rate:	
Assumption Changes	1.5242%
Asset Experience Loss	0.5424%

Factors Decreasing the Normal Cost Accrual Rate:

Plan Liability Experience Gain	0.1685%
New Members	0.5788%
Employer's Normal Cost Accrual Rate – Fiscal 2020	15.5507%

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 2020, the net effect of the change in payroll on amortization costs will be to decrease such costs by 0.01% 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 0.08% of payroll in Fiscal 2020.

Although the actuarially required net direct employer contribution rate for Fiscal 2019 was 9.33%, the Board of Trustees voted to maintain the employer contribution at 12.25%. For Fiscal 2019, this system experienced a contribution gain of $22,017,776. In accordance with R. S. 11:107, these additional contributions were credited to the system's Funding Deposit Account as of June 30, 2019. Although the actuarially required net direct employer contribution rate for Fiscal 2020 is 10.45%; the board adopted employer contribution rate for Fiscal 2020 is 12.25% of payroll. Since the contribution rate for Fiscal 2020 was held at 12.25% 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 10.50% for Fiscal 2021. Under the provisions of R.S. 11:105 and R.S. 11:107, the Board of Trustees may set the net direct employer contribution at any level between the minimum recommended employer contribution rate of 10.50% and the current level of 12.25%. 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 2019, the actual cost of living (as measured by the US Department of Labor CPI-U) increased by 1.6%. Cost of living adjustment (COLA) or permanent benefit increase (PBI) provisions for the system are detailed in R.S. 11:2178, R.S. 11:246, and R.S. 11:241.

The permissible PBI described in R.S. 11:2178(K)(2)(a) is limited to 2½% of the members' current benefit and is subject to a maximum dollar amount equal to 5% of the average monthly benefit in payment to service retirees as of the end of the preceding fiscal year. Any such increase is only payable to members who have been retired for at least three years regardless of age or members who are at least age 61 who have been retired for at least one year. The permissible PBI described in R.S.

11:2178(K)(2)(b) is limited to 2% of the members' current benefit for all retirees, disability recipients, and survivors who are at least sixty-five years of age. Any such increase is only payable to members who have been retired for at least one year. The Fund may not grant both PBIs outlined in R.S. 11:2178 within the same fiscal year and may not grant such an increase in any fiscal year if a PBI was granted pursuant to this subsection in the immediately preceding fiscal year. The PBIs described in R.S. 11:2178 may be funded from either excess interest earnings on the system's investments or out of funds from the Funding Deposit Account. If the system funds such a PBI from excess interest earnings on the system's investments, the Fund must also meet the criteria set forth in R.S. 11:243.

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. In order to receive this COLA, a member must be retired for at least one year. This COLA must be payable from excess interest earnings and in order to grant this COLA the Fund must qualify under R.S. 11:243.

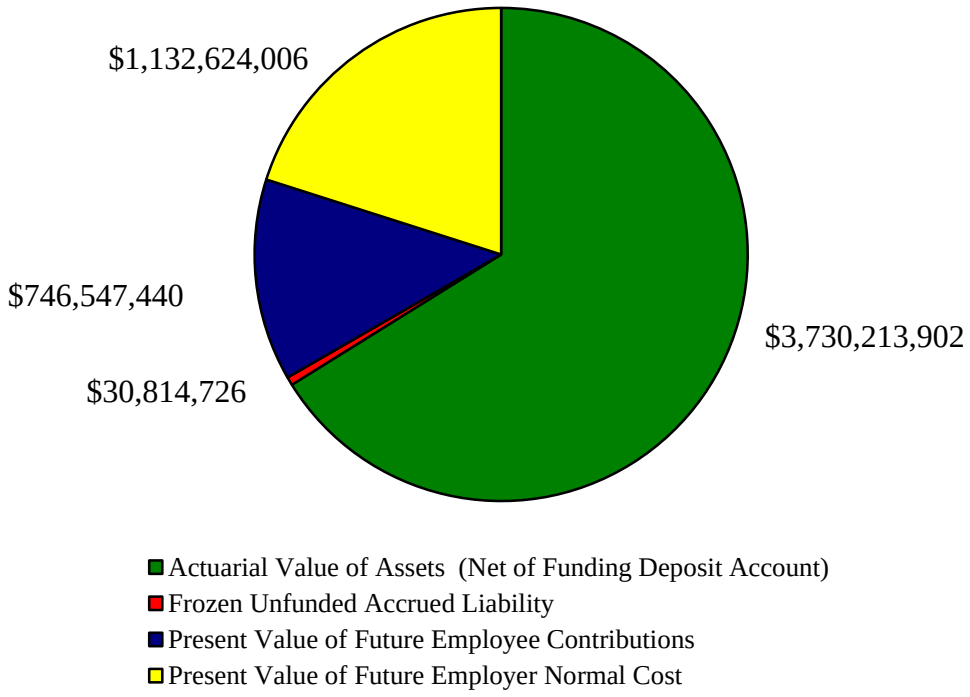
R.S. 11:241 provides for cost of living benefits payable based on a formula equal to up to $1 times the total of the number of years of credited service accrued at retirement or at death of the member or retiree plus the number of years since retirement or since death of the member or retiree to the system's fiscal year end preceding the payment of the benefit increase. In order to receive this COLA, a member must be retired for at least one year. This COLA must be payable from excess interest earnings and in order to grant this COLA the Fund must qualify under R.S. 11:243.

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).

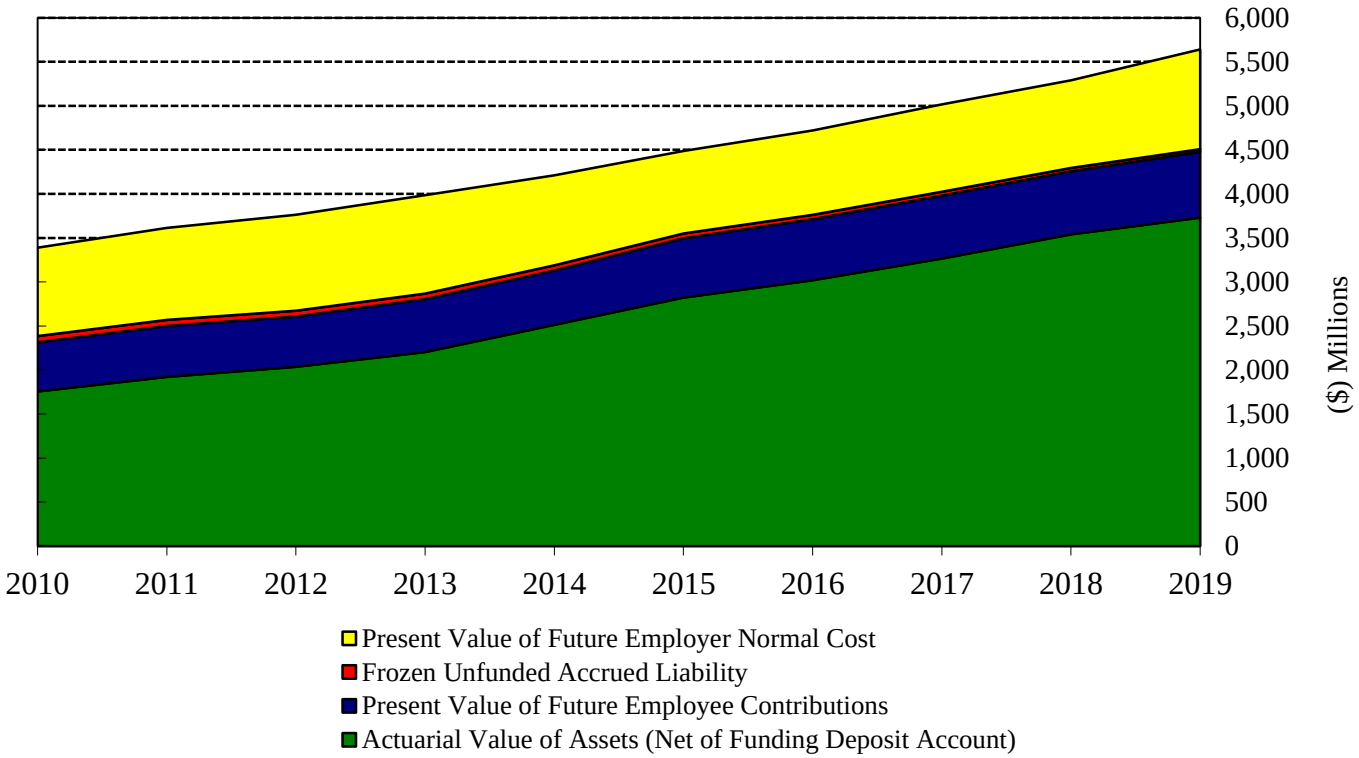
The plan's funded ratio for COLA purposes is 94.31% (i.e. the actuarial value of assets divided by the pension benefit obligation) as of June 30, 2019. Therefore, since the Board has not provided a cost of living increase to retirees since January 1, 2018, the Fund meets the requirements of R.S. 11:243(G)(3) because it did not grant a benefit increase to retirees, survivors, and beneficiaries of the fund within the prior fiscal year. For Fiscal 2019, the fund did not earn excess interest. Therefore, the Board is only authorized to grant a PBI from funds within the Funding Deposit Account in accordance with either R.S. 11:2178(K)(2)(a) or (b). The credit balance in the Funding Deposit Account as of June 30, 2019 is $78,520,547. Such PBI may not be effective prior to January 1, 2020. The following details the expected cost of providing benefit increases according to these two provisions:

	Increase In Annual Benefits	Increase In Present Value
R.S. 11:2178(K)(2)(a) – 2 ½% limited to 5% of $32,714	$ 3,723,739	$ 34,843,054
R.S. 11:2178(K)(2)(b) – 2% to over 65	$ 2,047,113	$ 17,427,967

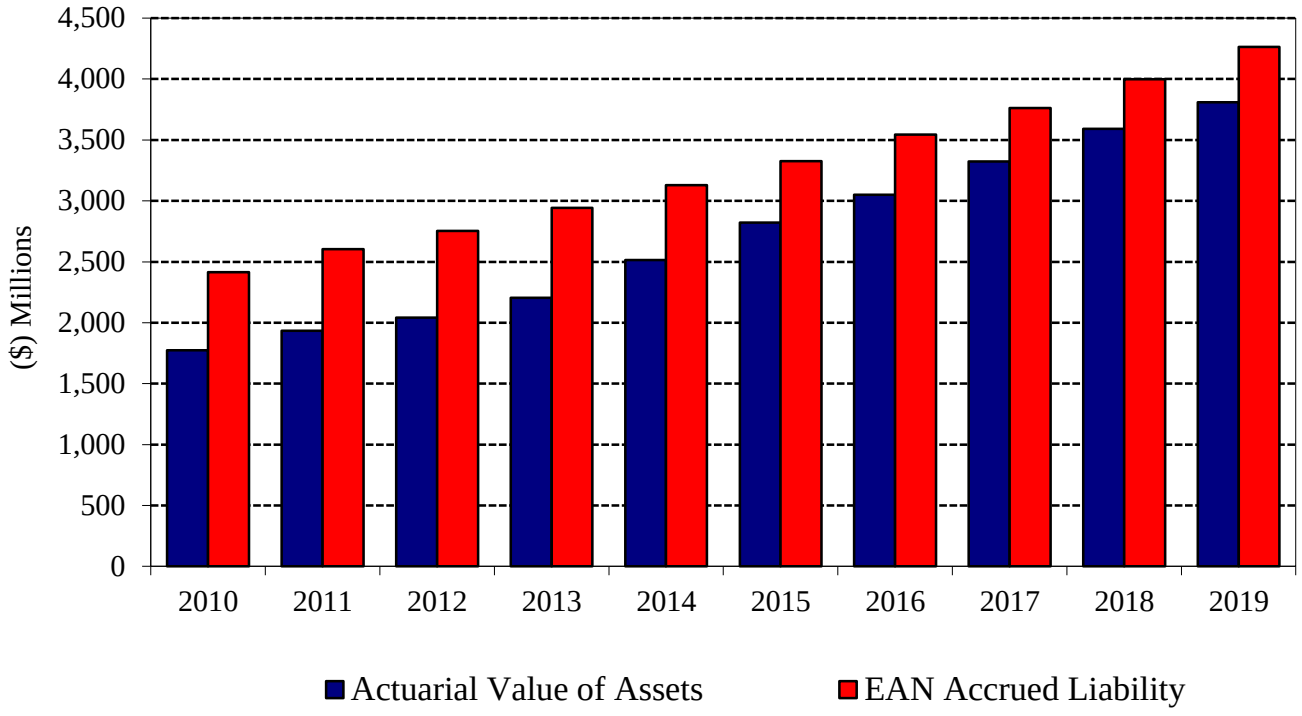
Components of Present Value of Future Benefits
June 30, 2019



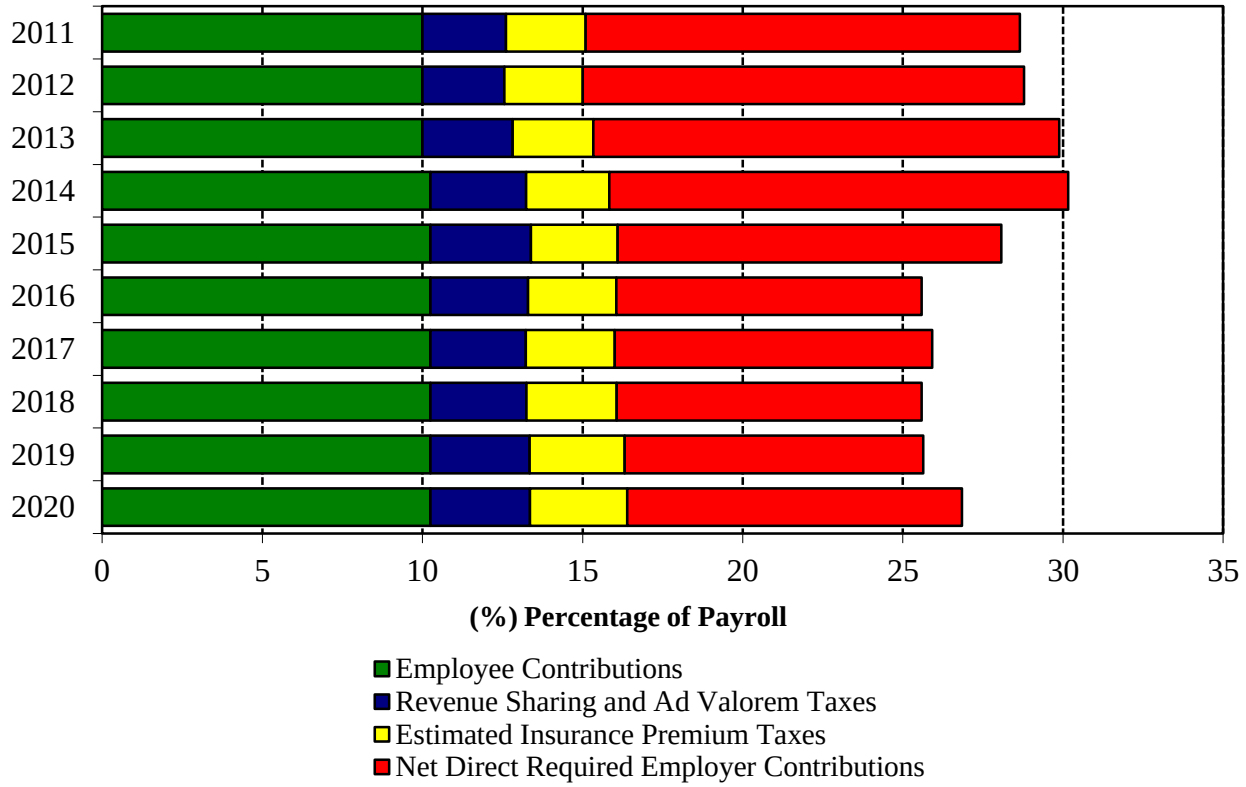
Components of Present Value of Future Benefits



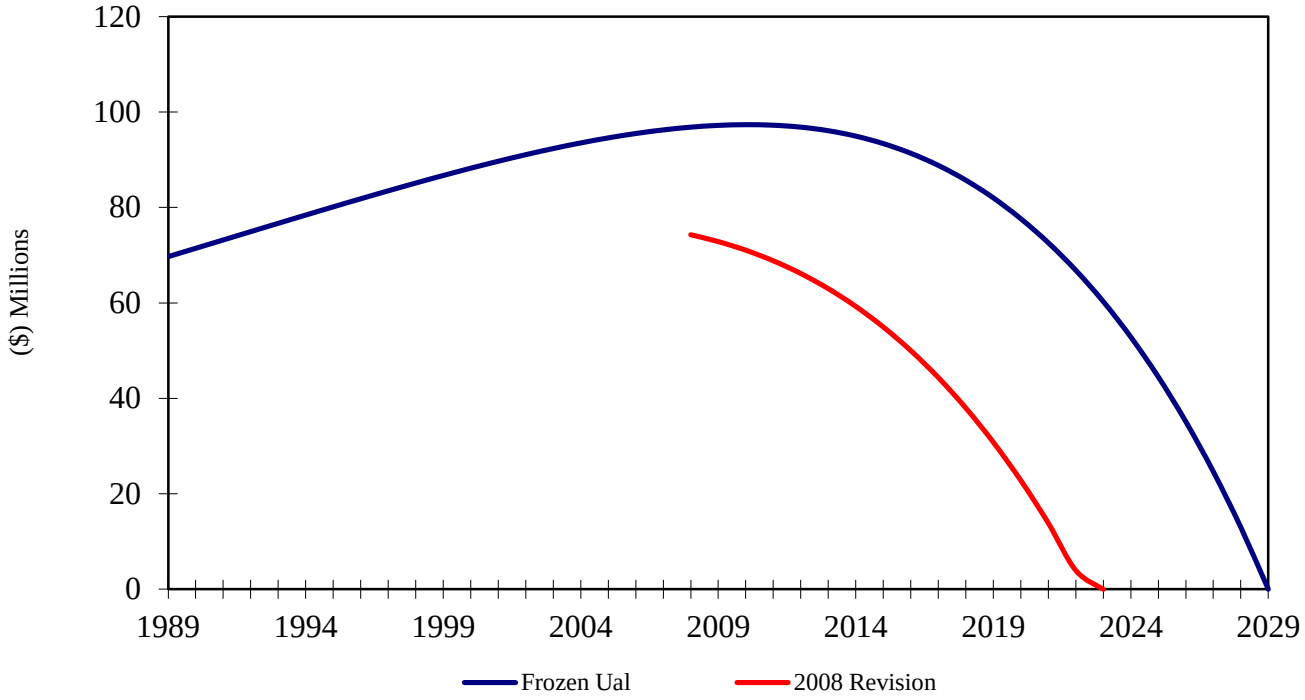
Actuarial Value of Assets vs. EAN Accrued Liability



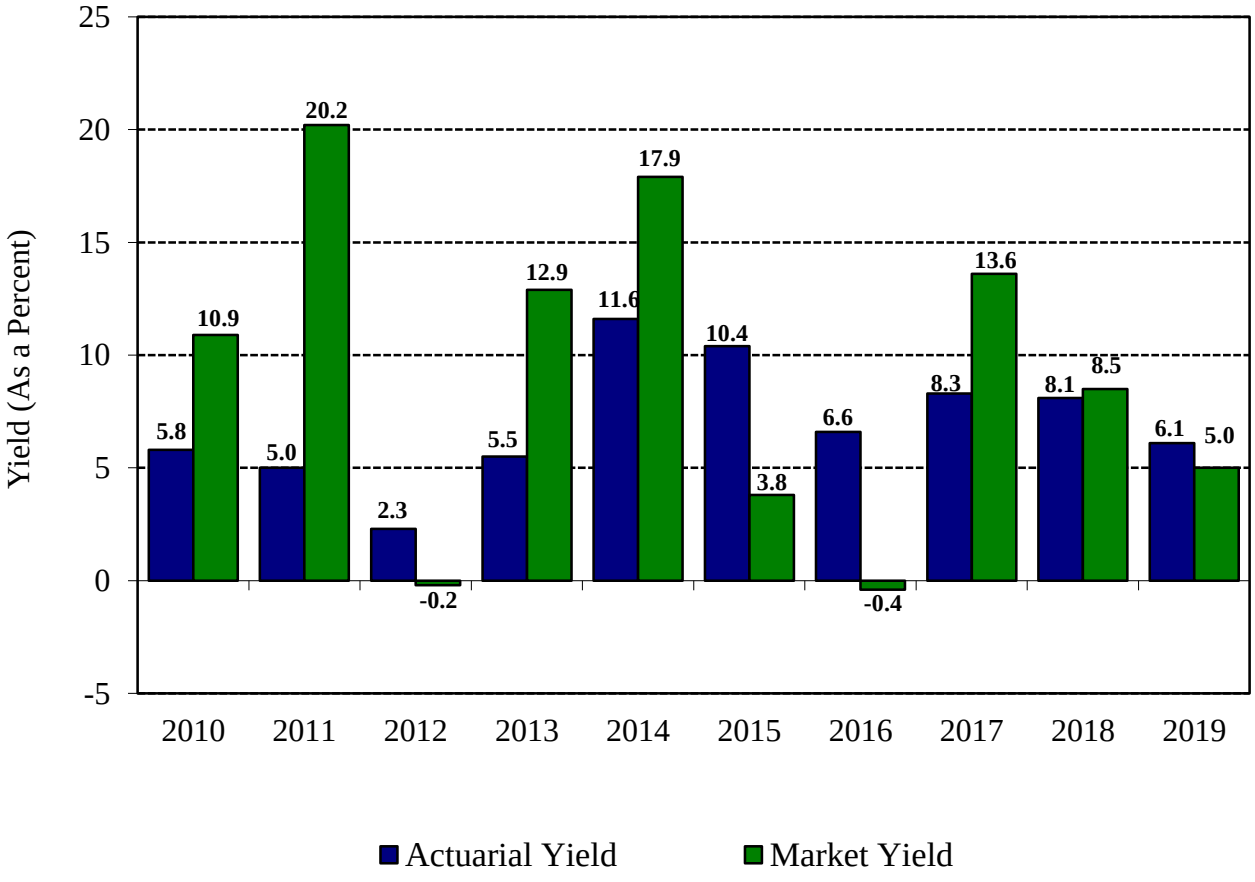
Components of Actuarial Funding



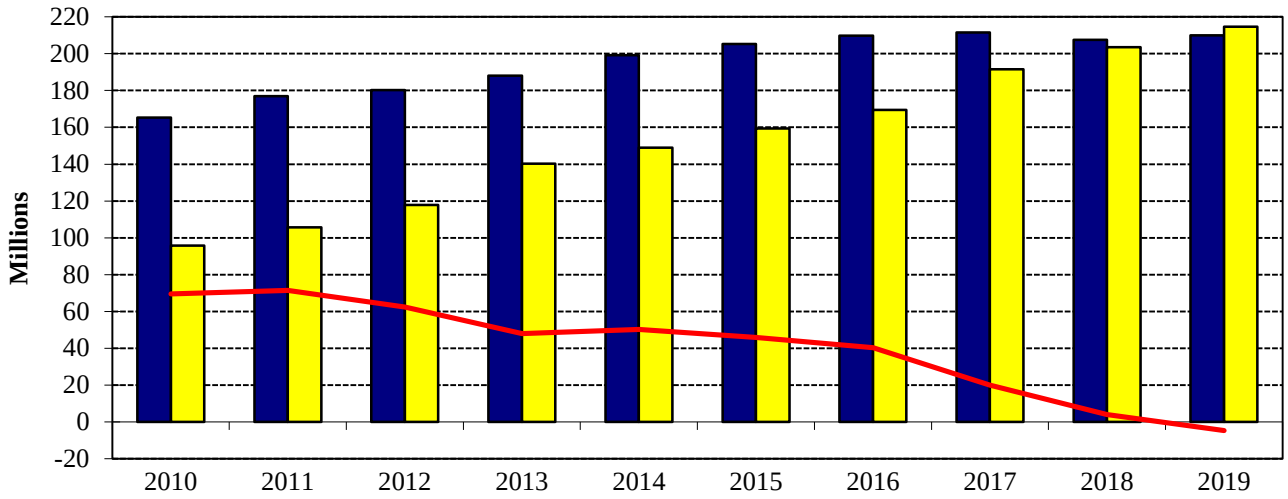
Frozen Unfunded Actuarial Accrued Liability



Historical Asset Yields

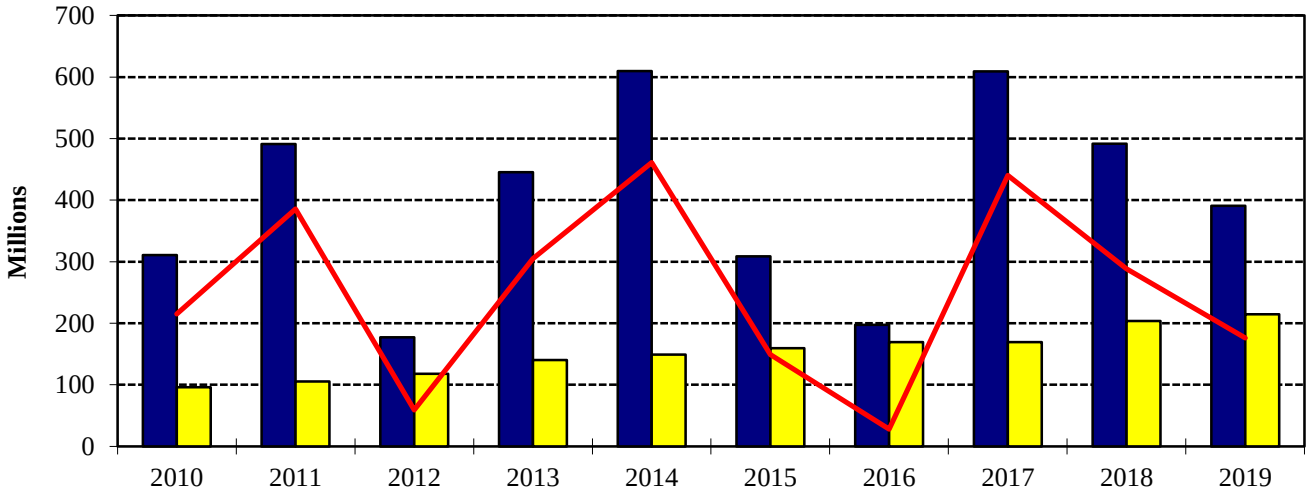


Net Non-Investment Income



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Non-Investment Income ($Mil)	165.3	177.0	180.2	188.1	199.2	205.2	209.7	211.5	207.6	210.0
Benefits and Expenses ($Mil)	95.8	105.6	117.8	140.2	149.0	159.3	169.4	191.5	203.6	214.7
Net Non-Investment Income ($Mil)	69.5	71.4	62.4	47.9	50.2	45.9	40.3	20.0	4.0	-4.7

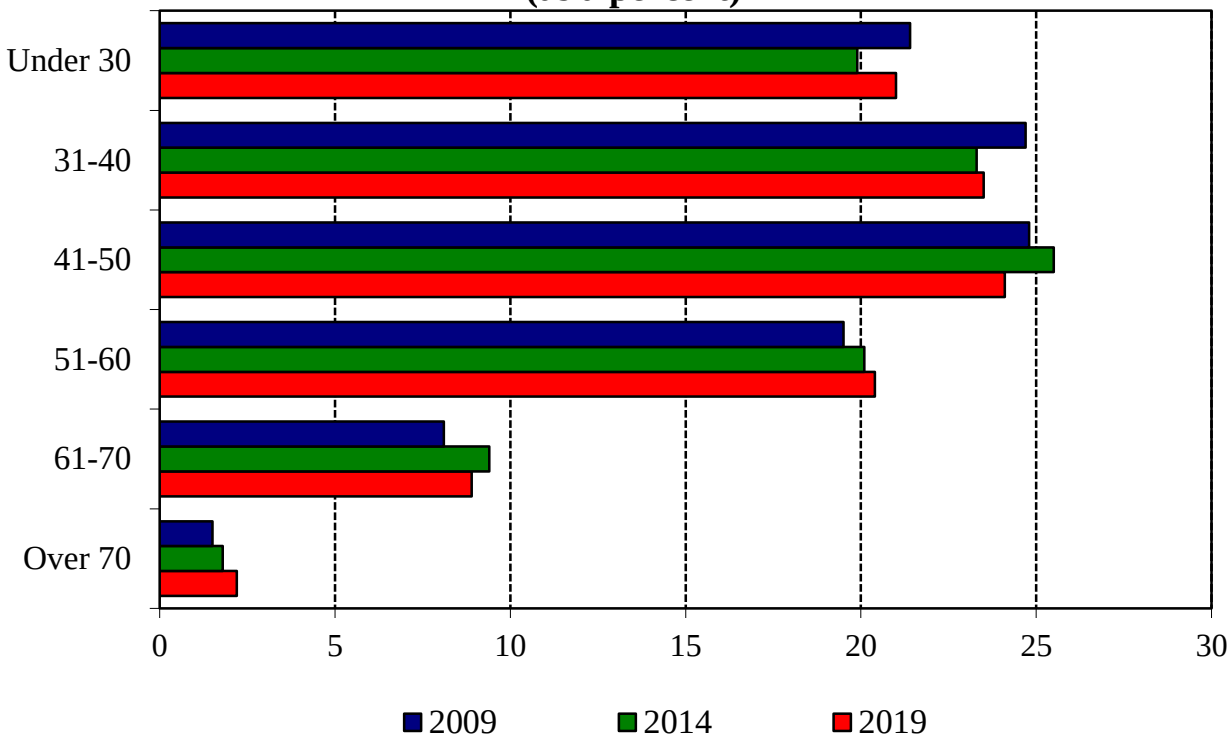
Total Income vs. Expenses
(Based on Market Value of Assets)



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total Income ($Mil)	311.0	491.3	176.9	445.4	609.8	308.6	197.5	609.4	491.9	391.0
Benefits and Expenses ($Mil)	95.8	105.6	117.8	140.2	149.0	159.3	169.4	191.5	203.6	214.7
Net Change in MVA ($Mil)	215.2	385.7	59.1	305.2	460.8	149.3	28.1	417.9	288.3	176.3

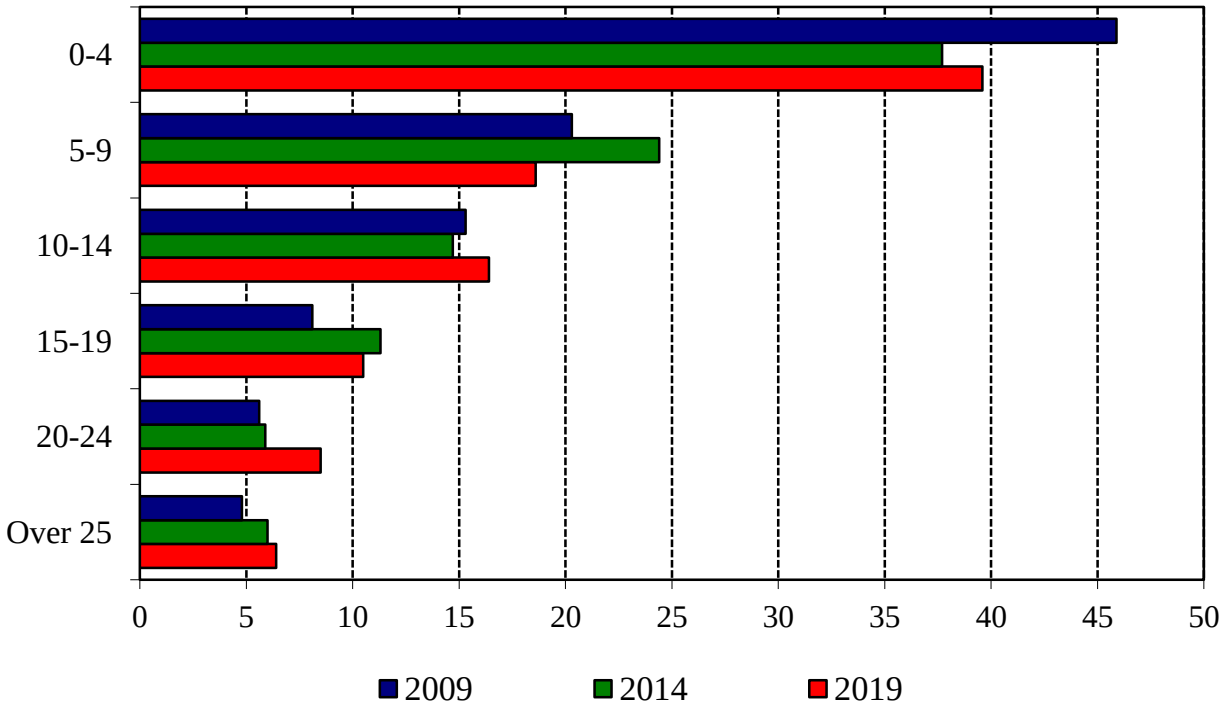
Active – Census by Age

(as a percent)



Active – Census by Service

(as a percent)



EXHIBITS

EXHIBIT I
ANALYSIS OF ACTUARIALLY REQUIRED CONTRIBUTIONS

1.	Present Value of Future Benefits	$	5,640,200,074
2.	Funding Deposit Account Credit Balance	$	78,520,547
3.	Unfunded Actuarial Accrued Liability	$	30,814,726
4.	Actuarial Value of Assets	$	3,808,734,449
5.	Present Value of Future Employee Contributions	$	746,547,440
6.	Present Value of Future Employer Normal Costs (1 + 2 – 3 – 4 – 5)	$	1,132,624,006
7.	Present Value of Future Salaries	$	7,283,422,808
8.	Employer Normal Cost Accrual Rate (6 ÷ 7)		15.550711%
9.	Projected Fiscal 2020 Salary for Current Membership	$	668,093,527
10.	Employer Normal Cost as of July 1, 2019 (8 × 9)	$	103,893,294
11.	Employer Normal Cost Interest Adjusted for Mid-year Payment	$	107,518,266
12.	Amortization Payment on Remaining Frozen Unfunded Accrued Liability with Payments increasing at 3.50% per year	$	9,519,803
13.	Amortization Payment Interest Adjust for Mid-year Payment	$	9,851,961
14.	TOTAL Employer Normal Cost and Amortization Payment (12 + 13)	$	117,370,227
15.	Estimated Administrative Cost for Fiscal 2020	$	2,018,131
16.	GROSS Employer Actuarially Required Contribution for Fiscal 2020 (14 + 15)	$	119,388,358
17.	Projected Ad Valorem Tax Contributions for Fiscal 2020	$	21,939,009
18.	Projected Revenue Sharing Funds for Fiscal 2020	$	420,852
19.	GROSS Employer Actuarially Required Contribution to be Funded by Direct Employer Contributions and Insurance Premium Taxes for Fiscal 2020 (16 – 17 – 18)	$	97,028,497
20.	Estimated Insurance Premium Taxes due for Fiscal 2020	$	21,797,215
21.	Employer's Net Direct Actuarially Required Contribution (19 – 20)	$	75,231,282
22.	Projected Payroll for Fiscal 2020	$	719,715,633
23.	Employers' Minimum Net Direct Actuarially Required Contribution as a % of Projected Payroll for Fiscal 2020 (21 ÷ 22)		10.45%
24.	Minimum Recommended Net Direct Employer Contribution Rate for Fiscal 2021 (23, Rounded to the nearest 0.25%)		10.50%

EXHIBIT II
PRESENT VALUE OF FUTURE BENEFITS

PRESENT VALUE OF FUTURE BENEFITS FOR ACTIVE MEMBERS:

Retirement Benefits	$ 3,361,948,223	
Survivor Benefits	130,189,033	
Disability Benefits	16,477,954	
Vested Termination Benefits	77,648,795	
Refunds of Contributions	81,318,323	
TOTAL Present Value of Future Benefits for Active Members		$ 3,667,582,328

PRESENT VALUE OF FUTURE BENEFITS FOR TERMINATED MEMBERS:

Terminated Vested Members Due Benefits at Retirement	$ 82,722,745	
Terminated Members with Reciprocals Due Benefits at Retirement	953,667	
Terminated Members Due a Refund	22,789,162	
TOTAL Present Value of Future Benefits for Terminated Members		$ 106,465,574

PRESENT VALUE OF FUTURE BENEFITS FOR RETIREES:

Regular Retirees		
Maximum	$ 471,331,369	
Option 1	172,069,447	
Option 2	687,798,220	
Option 3	222,152,415	
Option 4	2,729,488	
Option 5	46,853,670	
TOTAL Regular Retirees	$ 1,602,934,609	
Disability Retirees	38,190,198	
Survivors & Widows	161,169,680	
DROP and Back-DROP Annuities Payable to Retirees	45,424,645	
DROP and Back-DROP Account Balances	18,433,040	
TOTAL Present Value of Future Benefits for Retirees & Survivors		$ 1,866,152,172
TOTAL Present Value of Future Benefits		$ 5,640,200,074

EXHIBIT III – SCHEDULE A
MARKET VALUE OF ASSETS

CURRENT ASSETS:		
Cash in Banks	$ 15,260,761	
Contributions and Taxes Receivable	12,519,991	
Accrued Interest and Dividends	6,575,279	
Investments Receivable	262,668,456	
Prepaid Expenses	5,866	
Other Income	7,326,982	
TOTAL CURRENT ASSETS		$ 304,357,335
Property, Plant & Equipment		$ 2,018,077
INVESTMENTS:		
Cash Equivalents	$ 150,104,807	
Equities	2,206,025,978	
Fixed Income	1,117,474,858	
Real Estate	280,303,816	
Alternative Investments	243,188,767	
Collateral for Securities Lending	10,558,656	
TOTAL INVESTMENTS		$ 4,007,656,882
DEFERRED OUTFLOWS OF RESOURCES		$ 1,049,966
TOTAL ASSETS		$ 4,315,082,260
CURRENT LIABILITIES:		
Accounts Payable	$ 3,480,520	
Benefits Payable	158,721	
Refunds Payable	880,466	
Investments Payable	484,185,745	
Securities Lending Obligations	10,758,863	
Other Post-Employment Benefits	2,437,646	
Other Current Liabilities	21,176,428	
TOTAL CURRENT LIABILITIES		$ 523,078,389
DEFERRED INFLOWS OF RESOURCES		$ 291,360
TOTAL LIABILITIES		$ 523,369,749
MARKET VALUE OF ASSETS		$ 3,791,712,511

EXHIBIT III – SCHEDULE B
ACTUARIAL VALUE OF ASSETS

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

Fiscal year 2019	$ (80,942,497)
Fiscal year 2018	37,881,375
Fiscal year 2017	178,930,072
Fiscal year 2016	(232,843,968)
Fiscal year 2015	(108,809,371)
Total for five years	$ (205,784,389)

Deferral of excess (shortfall) of invested income:

Fiscal year 2019 (80%)	$ (64,753,998)
Fiscal year 2018 (60%)	22,728,825
Fiscal year 2017 (40%)	71,572,029
Fiscal year 2016 (20%)	(46,568,794)
Fiscal year 2015 (0%)	0
Total deferred for year	$ (17,021,938)

Market value of plan net assets, end of year	$ 3,791,712,511
Preliminary actuarial value of plan assets, end of year	$ 3,808,734,449

Actuarial value of assets corridor

85% of market value, end of year	$ 3,222,955,634
115% of market value, end of year	$ 4,360,469,388
Final actuarial value of plan net assets, end of year	$ 3,808,734,449

EXHIBIT IV
PRESENT VALUE OF FUTURE CONTRIBUTIONS

Employee Contributions to the Annuity Savings Fund	$	746,547,440
Employer Normal Contributions to the Pension Accumulation Fund		1,132,624,006
Employer Amortization Payments to the Pension Accumulation Fund		30,814,726
Funding Deposit Account Debit (Credit) Balance		(78,520,547)
TOTAL PRESENT VALUE OF FUTURE CONTRIBUTIONS	$	1,831,465,625

EXHIBIT V
CHANGE IN FROZEN UNFUNDED ACTUARIAL ACCRUED LIABILITY

Prior Year Frozen Unfunded Accrued Liability			$	37,983,949
Interest on Frozen Unfunded Accrued Liability	$	2,753,836		
TOTAL Interest Adjusted Cost Elements			$	2,753,836
Amortization Payment on the Unfunded Accrued Liability	$	9,252,269		
Interest on Amortization Payment		670,790		
Withdrawals from Funding Deposit Account		0	†	
TOTAL Interest Adjusted Employer Contributions			$	9,923,059
NET Change in Frozen Unfunded Accrued Liability			$	(7,169,223)
CURRENT YEAR FROZEN UNFUNDED ACCRUED LIABILITY			$	30,814,726

† Excludes withdrawals from the Funding Deposit Account to offset cost of COLAs

EXHIBIT VI
ANALYSIS OF INCREASE IN ASSETS

Actuarial Value of Assets (June 30, 2018)		$ 3,592,604,222
INCOME:		
Member Contributions	$ 71,306,407	
Employer Contributions	85,968,418	
Ad Valorem Taxes and Revenue Sharing	21,773,286	
Insurance Premium Taxes	20,587,174	
Transfers from Other Systems	10,359,751	
Other	458	
Total Contributions		$ 209,995,494
Net Appreciation of Investments	$ 147,083,586	
Interest & Dividends	47,325,449	
Miscellaneous Income	2,707	
Investment Expense	(13,406,073)	
Net Investment Income		$ 181,005,669
TOTAL Income		$ 391,001,163
EXPENSES:		
Retirement Benefits	$ 193,696,425	
Refunds of Contributions	17,141,123	
Transfers to Other Systems	1,910,607	
Administrative Expenses	1,908,401	
TOTAL Expenses		$ 214,656,556
Net Market Value Income for Fiscal 2019 (Income – Expenses)		$ 176,344,607
Unadjusted Fund Balance as of June 30, 2019 (Fund Balance Previous Year + Net Income)		$ 3,768,948,829
Adjustment for Actuarial Smoothing		$ 39,785,620
Actuarial Value of Assets: (June 30, 2019)		$ 3,808,734,449

EXHIBIT VII
FUNDING DEPOSIT ACCOUNT

Funding Deposit Account Balance as of June 30, 2018	$	52,683,236
Interest on Opening Balance at 7.25%		3,819,535
Contributions to the Funding Deposit Account		22,017,776
Withdrawals from the Funding Deposit Account		0
Funding Deposit Account Balance as of June 30, 2019	$	78,520,547

EXHIBIT VIII – Schedule A
PENSION BENEFIT OBLIGATION

Present Value of Credited Projected Benefits Payable to Current Employees	$	2,065,995,774
Present Value of Benefits Payable to Terminated Employees		106,465,574
Present Value of Benefits Payable to Current Retirees and Beneficiaries		1,866,152,172
TOTAL PENSION BENEFIT OBLIGATION	$	4,038,613,520
NET ACTUARIAL VALUE OF ASSETS	$	3,808,734,449
Ratio of Net Actuarial Value of Assets to Pension Benefit Obligation		94.31%

EXHIBIT VIII – Schedule B
ENTRY AGE NORMAL ACCRUED LIABILITIES

Accrued Liability for Active Employees	$	2,292,117,656
Accrued Liability for Terminated Employees		106,465,574
Accrued Liability for Current Retirees and Beneficiaries		1,866,152,172
TOTAL ENTRY AGE NORMAL ACCRUED LIABILITY	$	4,264,735,402
NET ACTUARIAL VALUE OF ASSETS	$	3,808,734,449
Ratio of Net Actuarial Value of Assets to Entry Age Normal Accrued Liability		89.31%

EXHIBIT IX
CENSUS DATA

	Active	Terminated with Funds on Deposit	Retired	Total
Number of members as of June 30, 2018	14,350	6,748	5,613	26,711
Additions to Census				
Initial membership	1,759	233		1,992
Omitted in error last year			1	1
Death of another member			50	50
Adjustment for multiple records			5	5
Change in Status during Year				
Actives terminating service	(481)	481		
Actives who retired	(362)		362	
Actives entering DROP				
Term. members rehired	109	(109)		
Term. members who retire		(31)	31	
Retirees who are rehired	5		(5)	
Refunded who are rehired	68	16		84
DROP participants retiring				
DROP returned to work				
Omitted in error last year				
Eliminated from Census				
Refund of contributions	(890)	(293)		(1,183)
Deaths	(18)	(6)	(159)	(183)
Included in error last year				
Adjustment for multiple records				
Number of members as of June 30, 2019	14,540	7,039	5,898	27,477

ACTIVES CENSUS BY AGE:

Age	Number Male	Number Female	Total Number	Average Salary	Total Salary
16 - 20	101	41	142	31,942	4,535,756
21 - 25	752	408	1,160	35,535	41,221,151
26 - 30	1,067	678	1,745	40,610	70,863,611
31 - 35	1,108	610	1,718	46,407	79,726,564
36 - 40	1,044	648	1,692	48,874	82,695,530
41 - 45	1,024	607	1,631	51,525	84,036,634
46 - 50	1,175	705	1,880	53,464	100,512,615
51 - 55	1,118	618	1,736	54,896	95,300,248
56 - 60	691	536	1,227	50,843	62,384,913
61 - 65	488	326	814	49,329	40,154,128
66 - 70	314	162	476	48,525	23,097,668
71 - 75	176	46	222	44,047	9,778,532
76 - 80	59	13	72	39,731	2,860,617
81 - 85	16	4	20	31,783	635,654
86 - 90	3	1	4	31,964	127,855
91 - 95	1	0	1	53,026	53,026
TOTAL	9,137	5,403	14,540	48,004	697,984,502

THE ACTIVE CENSUS INCLUDES 4,977 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	4	1	5	24,199	120,994
36 - 40	39	11	50	23,639	1,181,964
41 - 45	45	22	67	27,214	1,823,364
46 - 50	83	30	113	28,713	3,244,592
51 - 55	100	36	136	28,992	3,942,977
56 - 60	17	3	20	16,132	322,633
61 - 65	1	1	2	683	1,366
66 - 70	5	1	6	15,971	95,823
71 - 75	1	1	2	7,594	15,187
76 - 80	1	0	1	993	993
81 - 85	1	0	1	1,881	1,881
86 - 90	1	0	1	399	399
TOTAL	298	106	404	26,614	10,752,173

TERMINATED MEMBERS DUE A REFUND OF CONTRIBUTIONS:

Contributions Ranging From		To	Number	Total Contributions
0	-	99	1,437	61,844
100	-	499	1,831	476,108
500	-	999	866	624,389
1000	-	1999	714	1,010,666
2000	-	4999	725	2,327,911
5000	-	9999	411	2,906,616
10000	-	19999	344	4,870,607
20000	-	99999	307	9,498,067
TOTAL			6,635	21,776,208

REGULAR RETIREES:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
41 - 45	1	0	1	14,850	14,850
46 - 50	2	3	5	47,792	238,962
51 - 55	91	41	132	51,003	6,732,397
56 - 60	447	230	677	43,949	29,753,365
61 - 65	596	341	937	38,092	35,692,544
66 - 70	717	376	1,093	32,062	35,043,885
71 - 75	621	267	888	28,409	25,226,922
76 - 80	406	155	561	24,153	13,549,825
81 - 85	209	90	299	19,981	5,974,399
86 - 90	77	30	107	19,214	2,055,863
91 - 99	24	12	36	18,044	649,587
TOTAL	3,191	1,545	4,736	32,714	154,932,599

DISABILITY RETIREES:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
26 - 30	1	0	1	17,894	17,894
31 - 35	2	0	2	12,688	25,376
36 - 40	4	3	7	18,606	130,243
41 - 45	7	3	10	29,299	292,992
46 - 50	14	7	21	22,184	465,856
51 - 55	23	12	35	23,276	814,668
56 - 60	16	9	25	21,019	525,480
61 - 65	17	13	30	18,158	544,737
66 - 70	26	8	34	14,764	501,960
71 - 75	13	2	15	12,490	187,350
76 - 80	6	3	9	11,787	106,087
81 - 85	5	1	6	11,138	66,826
86 - 90	2	1	3	16,656	49,969
TOTAL	136	62	198	18,836	3,729,438

SURVIVORS:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
0 - 25	13	40	53	8,361	443,155
26 - 30	1	3	4	8,727	34,906
31 - 35	1	1	2	9,258	18,515
36 - 40	0	6	6	30,542	183,253
41 - 45	3	19	22	24,542	539,927
46 - 50	0	22	22	30,440	669,671
51 - 55	2	22	24	25,651	615,625
56 - 60	4	72	76	22,156	1,683,835
61 - 65	6	80	86	24,580	2,113,865
66 - 70	7	137	144	21,395	3,080,832
71 - 75	6	154	160	19,280	3,084,723
76 - 80	11	126	137	19,292	2,642,953
81 - 85	3	106	109	15,160	1,652,389
86 - 90	0	74	74	16,685	1,234,720
Above 90	1	44	45	14,995	674,785
TOTAL	58	906	964	19,370	18,673,154

ACTIVE MEMBERS:

Attained Ages	Completed Years of Service											
	0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over	Total
0 - 20	121	20	1									142
21 - 25	485	304	186	98	63	24						1,160
26 - 30	354	276	221	209	233	426	26					1,745
31 - 35	187	119	136	120	150	573	408	25				1,718
36 - 40	167	107	88	95	83	357	500	269	26			1,692
41 - 45	137	83	92	71	81	238	310	345	267	7		1,631
46 - 50	107	101	79	72	60	294	295	273	380	207	12	1,880
51 - 55	116	58	72	71	48	217	264	230	286	253	121	1,736
56 - 60	74	51	58	64	51	211	226	167	136	91	98	1,227
61 - 65	49	15	36	49	38	167	166	126	88	46	34	814
66 - 70	34	18	19	17	23	115	118	57	34	22	19	476
71 & Over	30	11	20	13	14	78	73	35	24	9	12	319
Totals	1,861	1,163	1,008	879	844	2,700	2,386	1,527	1,241	635	296	14,540

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	31,986	31,287	39,752									31,942
21 - 25	32,243	36,075	37,899	40,246	41,231	42,738						35,535
26 - 30	34,026	37,199	39,340	42,076	43,840	46,112	46,338					40,610
31 - 35	35,365	38,600	40,691	43,040	44,267	48,433	54,093	54,357				46,407
36 - 40	35,396	40,467	40,153	43,128	42,339	48,422	53,766	57,911	60,071			48,874
41 - 45	36,038	36,533	41,978	44,469	43,543	47,419	53,674	59,333	62,451	64,549		51,525
46 - 50	35,557	35,733	38,534	44,796	45,251	47,084	50,760	55,622	64,555	71,023	73,349	53,464
51 - 55	36,648	38,711	40,228	43,530	42,792	44,430	49,890	55,257	63,200	71,191	75,660	54,896
56 - 60	34,624	34,862	36,208	39,772	38,825	44,904	48,979	53,160	58,822	69,073	78,694	50,843
61 - 65	34,958	37,001	35,704	36,952	40,654	42,078	49,177	53,103	56,404	81,961	77,357	49,329
66 - 70	31,513	29,976	30,213	37,380	34,677	43,857	49,001	57,754	66,897	56,963	96,538	48,525
71 & Over	33,243	21,840	26,311	33,895	32,471	39,517	41,810	57,909	47,427	54,863	83,618	42,181
Average	34,076	36,786	38,828	41,986	42,701	46,336	51,554	56,443	62,223	70,816	78,428	48,004

TERMINATED MEMBERS DUE A DEFERRED RETIREMENT BENEFIT:

Attained Ages	Years Until Retirement Eligibility											
	0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over	Total
0 - 30												0
31 - 35									4	1		5
36 - 40								50				50
41 - 45							66	1				67
46 - 50						112	1					113
51 - 55	19	30	30	27	27	3						136
56 - 60	17	2	1									20
61 - 65	2											2
66 - 70	6											6
71 - 75	2											2
76 - 80	1											1
81 - 85	1											1
86 - 90	1											1
91 & Over												0
Totals	49	32	31	27	27	115	67	51	4	1	0	404

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									26,522	14,907		24,199
36 - 40								23,639				23,639
41 - 45							27,392	15,476				27,214
46 - 50						28,787	20,402					28,713
51 - 55	23,212	27,917	32,211	32,242	29,236	12,729						28,992
56 - 60	18,155	6,143	1,719									16,132
61 - 65	683											683
66 - 70	15,970											15,970
71 - 75	7,593											7,593
76 - 80	993											993
81 - 85	1,881											1,881
86 - 90	399											399
91 & Over												0
Average	17,659	26,556	31,227	32,242	29,236	28,368	27,288	23,479	26,522	14,907	0	26,614

SERVICE RETIREES:

Attained Ages	Completed Years Since Retirement											
	0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over	Total
0 - 50	5	1										6
51 - 55	60	27	18	13	9	4	1					132
56 - 60	147	118	115	112	85	93	5	1	1			677
61 - 65	77	82	98	80	89	401	104	4	1	1		937
66 - 70	57	63	94	81	77	345	319	56	1			1,093
71 - 75	23	25	51	34	43	271	218	194	28	1		888
76 - 80	11	5	13	12	20	118	158	133	80	10	1	561
81 - 85	7	5	8	7	6	44	36	67	54	49	16	299
86 - 90	1	1	1	2	1	8	12	15	21	21	24	107
91 & Over			1		1	1	1	3	2	2	25	36
Totals	388	327	399	341	331	1,285	854	473	188	84	66	4,736

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	39,980	53,913										42,302
51 - 55	49,814	53,496	50,648	55,672	49,465	51,802	11,371					51,003
56 - 60	43,736	44,068	43,286	45,616	43,051	44,924	33,883	16,130	14,450			43,949
61 - 65	35,515	40,712	36,640	35,659	42,196	38,837	36,017	20,102	15,337	5,420		38,092
66 - 70	27,717	26,926	30,658	26,983	27,059	35,747	32,837	31,905	22,256			32,062
71 - 75	20,848	26,132	29,811	27,794	24,471	32,121	29,395	25,324	19,065	17,112		28,409
76 - 80	25,624	17,690	21,958	15,374	22,654	25,404	28,389	22,156	19,327	25,796	22,593	24,153
81 - 85	16,235	16,007	15,022	22,642	23,697	22,498	27,764	23,902	16,238	13,872	13,278	19,981
86 - 90	13,043	18,920	12,783	12,591	12,951	11,272	20,443	24,763	20,926	18,159	18,553	19,214
91 & Over			6,567		36,396	6,818	28,140	24,415	15,168	38,280	15,661	18,044
Average	38,197	38,452	35,858	35,731	35,167	35,082	31,110	24,923	18,504	16,882	16,240	32,714

DISABILITY RETIREES:

Attained Ages	Completed Years Since Retirement											
	0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over	Total
0 - 30					1							1
31 - 35			1	1								2
36 - 40	1	1	1	1		1	2					7
41 - 45		4	1	3		1	1					10
46 - 50	2	2	4	2	1	4	4	1	1			21
51 - 55	1	4	1	5		14	6	4				35
56 - 60	1	1		1	1	7	6	4	1	2	1	25
61 - 65	1	1		1	1	7	7	7	2	3		30
66 - 70				1	2	3	5	7	9	3	4	34
71 - 75							2	1	6	4	2	15
76 - 80								1	1	4	3	9
81 - 85							1		1		4	6
86 - 90											3	3
91 & Over												0
Totals	6	13	8	15	6	37	34	25	21	16	17	198

AVERAGE ANNUAL BENEFITS PAYABLE TO DISABILITY RETIREES:

Attained Ages	Completed Years Since Retirement											Average Benefit
	0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over	
0 - 30					17,894							17,894
31 - 35			12,724	12,652								12,688
36 - 40	27,630	23,566	17,431	27,226		12,372	11,009					18,606
41 - 45		27,321	31,905	34,726		28,481	19,144					29,299
46 - 50	32,728	25,012	29,217	36,046	16,571	19,249	12,663	9,592	7,606			22,184
51 - 55	31,845	15,223	25,834	40,120		22,291	23,070	11,252				23,276
56 - 60	15,321	13,646		26,726	47,036	29,150	18,660	15,734	9,614	12,120	9,955	21,019
61 - 65	11,338	13,860		21,428	10,723	14,094	25,239	21,755	14,940	9,963		18,158
66 - 70				20,422	15,329	16,638	17,403	15,192	13,146	11,861	13,427	14,764
71 - 75							12,501	12,536	13,665	11,720	10,472	12,490
76 - 80								9,566	11,698	9,995	14,948	11,788
81 - 85							9,738		6,115		12,743	11,138
86 - 90											16,656	16,656
91 & Over												0
Average	25,265	20,867	25,595	32,355	20,480	21,150	18,842	15,931	12,629	11,036	13,552	18,836

SURVIVING BENEFICIARIES OF FORMER MEMBERS:

Attained Ages	Completed Years Since Retirement											
	0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over	Total
0 - 20	2	6	11	3	4	16	5					47
21 - 25	1					3	1	1				6
26 - 30			1	1		1	1					4
31 - 35						1	1					2
36 - 40		2	1			1	1		1			6
41 - 45	1		4		1	7	5	3	1			22
46 - 50		1	1	1	3	6	4	4	2			22
51 - 55		2	1	2	1	9	3	3	2		1	24
56 - 60	1	4	2	4	3	15	21	9	11	3	3	76
61 - 65	1	4	3	5	3	28	17	16	4	3	2	86
66 - 70		2	4	1	2	32	34	28	15	11	15	144
71 - 75		2	3		3	23	33	46	39	2	9	160
76 - 80		2	1	2	2	16	26	29	29	18	12	137
81 - 85						5	11	15	31	24	23	109
86 - 90						2	6	1	14	14	37	74
91 & Over						1			1	8	35	45
Totals	6	25	32	19	22	166	169	155	150	83	137	964

AVERAGE ANNUAL BENEFITS PAYABLE TO SURVIVORS OF FORMER MEMBERS:

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 - 20	7,764	8,191	12,920	5,681	7,795	7,440	6,431					8,643
21 - 25	2,604					7,078	3,730	9,368				6,156
26 - 30			19,563	5,279		6,132	3,932					8,726
31 - 35						14,583	3,932					9,257
36 - 40		57,343	18,403			19,074	26,472		4,618			30,542
41 - 45	33,557		33,281		35,262	29,687	19,700	6,939	10,860			24,542
46 - 50		56,052	35,108	34,992	45,360	36,302	24,992	14,772	15,286			30,440
51 - 55		40,848	51,642	24,450	53,607	28,093	18,704	13,142	12,276		6,850	25,651
56 - 60	51,859	30,649	49,370	25,288	20,837	25,919	22,173	20,411	11,571	11,938	15,257	22,156
61 - 65	20,546	47,807	16,269	27,049	16,259	27,583	27,888	19,821	9,658	11,233	16,681	24,580
66 - 70		19,095	19,187	14,634	38,690	30,605	23,133	19,703	14,851	15,025	11,216	21,395
71 - 75		20,034	8,131		14,847	23,279	22,646	21,299	14,579	22,851	10,991	19,280
76 - 80		33,550	14,520	9,449	15,303	18,374	27,531	21,460	15,087	15,752	13,222	19,292
81 - 85						17,937	17,051	16,368	14,211	15,319	13,976	15,160
86 - 90						11,818	31,975	15,575	13,485	18,849	14,891	16,685
91 & Over						8,099			48,828	25,657	11,789	14,995
Average	20,682	30,430	20,724	19,797	23,634	23,794	23,039	19,641	14,290	16,877	13,116	19,370

EXHIBIT X
YEAR-TO-YEAR COMPARISON

	Fiscal 2019	Fiscal 2018	Fiscal 2017	Fiscal 2016
Number of Active Members	14,540	14,350	14,609	14,684
Number of Retirees & Survivors	5,898	5,613	5,341	5,014
Number of Terminated Due Deferred Benefits	404	393	383	389
Number Terminated Due Refunds	6,635	6,355	5,951	5,690
Active Lives Payroll	$ 697,984,502	$ 675,897,782	$ 682,370,194	$ 669,735,563
Retiree Benefits in Payment	$ 177,335,191	$ 164,605,373	$ 149,408,905	$ 137,218,242
Market Value of Assets	$ 3,791,712,511	$ 3,615,367,904	$ 3,328,367,058	$ 2,910,465,956
Actuarial Value of Assets	$ 3,808,734,449	$ 3,592,604,222	$ 3,322,151,803	$ 3,049,411,053
EAN Accrued Liability	$ 4,264,735,402	$ 3,998,832,755	$ 3,761,394,421	$ 3,545,155,452
Ratio of AVA to EAN Accrued Liability	89.31%	89.84%	88.32%	86.02%
Frozen Unfunded Actuarial Accrued Liability	$ 30,814,726	$ 37,983,949	$ 44,364,331	$ 50,003,403
Present Value of Future Employer Normal Cost	$ 1,132,624,006	$ 994,512,457	$ 992,210,991	$ 987,893,018
Present Value of Future Employee Contrib.	$ 746,547,440	$ 716,284,259	$ 713,700,228	$ 692,464,530
Funding Deposit Account Balance	$ 78,520,547	$ 52,683,236	$ 56,567,343	$ 30,142,795
Present Value of Future Benefits	$ 5,640,200,074	$ 5,288,701,651	$ 5,015,860,010	$ 4,749,629,209

	Fiscal 2020	Fiscal 2019	Fiscal 2018	Fiscal 2017
Employee Contribution Rate	10.25%	10.25%	10.25%	10.25%
Estimated Tax Contribution as a % of Payroll	3.11%	3.10%	3.00%	2.98%
Estimated Insurance Taxes as a % of Payroll	3.03%	2.96%	2.81%	2.77%
Actuarially Required Net Direct Employer Contribution Rate	10.45%	9.33%	9.53%	9.92%
Actual Employer Contribution Rate	12.25%	12.25%	12.75%	13.25%

Fiscal 2015	Fiscal 2014	Fiscal 2013	Fiscal 2012	Fiscal 2011	Fiscal 2010
14,689	14,575	14,559	14,231	14,754	14,711
4,766	4,510	4,293	3,922	3,716	3,510
354	362	343	350	323	325
5,374	5,150	5,069	5,056	4,743	4,727
$ 656,499,456	$ 634,536,119	$ 622,720,506	$ 611,139,881	$ 623,084,570	$ 603,250,449
$ 126,604,621	$ 114,122,739	$ 105,832,204	$ 90,894,373	$ 83,741,250	$ 76,379,208
$ 2,882,373,570	$ 2,733,132,117	$ 2,272,263,124	$ 1,967,024,952	$ 1,907,946,452	$ 1,522,233,162
$ 2,822,174,398	$ 2,513,293,197	$ 2,203,646,722	$ 2,042,809,526	$ 1,935,179,988	$ 1,773,450,705
$ 3,328,125,306	$ 3,129,132,635	$ 2,942,457,560	$ 2,752,868,402	$ 2,603,584,473	$ 2,415,074,197
84.80%	80.32%	74.89%	74.21%	74.33%	73.43%
$ 54,953,449	$ 59,264,382	$ 62,983,756	$ 66,156,793	$ 68,826,417	$ 71,042,296
$ 937,016,484	$ 1,022,657,685	$ 1,125,270,083	$ 1,089,982,874	$ 1,044,434,589	$ 1,003,967,230
$ 672,573,918	$ 616,003,094	$ 600,569,823	$ 570,327,767	$ 578,341,253	$ 557,530,584
$ 0	$ 0	$ 3,689,049	$ 6,448,956	$ 13,680,020	$ 17,151,710
$ 4,486,718,249	$ 4,211,218,358	$ 3,998,781,335	$ 3,762,828,004	$ 3,613,102,227	$ 3,388,839,105

Fiscal 2016	Fiscal 2015	Fiscal 2014	Fiscal 2013	Fiscal 2012	Fiscal 2011
10.25%	10.25%	10.25%	10.00%	10.00%	10.00%
3.05%	3.04%	2.99%	2.82%	2.56%	2.61%
2.75%	2.70%	2.59%	2.51%	2.44%	2.48%
9.54%	12.07%	14.33%	14.55%	13.78%	13.56%
13.75%	14.25%	14.50% §	13.75% *	13.75% ‡	12.75% †

† 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

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 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 R.S. 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 permissible PBI described in R.S. 11:2178(K)(2)(a) is limited to 2 ½% of the members' current benefit and is subject to a maximum dollar amount equal to 5% of the average monthly benefit in payment to service retirees as of the end of the preceding fiscal year. Any such increase is only payable to members who have been retired for at least three years regardless of age or members who are at least age 61 who have been retired for at least one year. The permissible PBI described in R.S. 11:2178(K)(2)(b) is limited to 2% of the members' current benefit for all retirees, disability recipients, and survivors who are at least sixty-five years of age. Any such increase is only payable to members who have been retired for at least one year. The Fund may not grant both PBIs outlined in R.S. 11:2178 within the same fiscal year and may not grant such an increase in any fiscal year if a PBI was granted pursuant to this subsection in the immediately preceding fiscal year. The PBIs described in R.S. 11:2178 may be funded from either excess interest earnings on the system's investments or out of funds from the Funding Deposit Account. If the system funds such a PBI from excess interest earnings on the system's investments, the Fund must also meet the criteria set forth in R.S. 11:243.

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. In order to receive this COLA, a member must be retired for at least one year. This COLA must be payable from excess interest earnings and in order to grant this COLA the Fund must qualify under R.S. 11:243.

R.S. 11:241 provides for cost of living benefits payable based on a formula equal to up to $1 times the total of the number of years of credited service accrued at retirement or at death of the member or retiree plus the number of years since retirement or since death of the member or retiree to the system's fiscal year end preceding the payment of the benefit increase. In order to receive this COLA, a member must be retired for at least one year. This COLA must be payable from excess interest earnings and in order to grant this COLA the Fund must qualify under R.S. 11:243.

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).

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:	7.10%
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 2.5% 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:

Service Duration (≤)	Rate
1	0.210
2	0.160
3	0.120
4	0.110
5	0.090
6	0.080
7-8	0.060
9-10	0.040
11-16	0.030
17-19	0.014
>19	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:

Member's Age	% With Children	Number of Children	Average Age
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 21st 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:	7.25%
ASSUMED LONG-TERM INFLATION RATE:	2.6%

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.