

**MUNICIPAL EMPLOYEES'  
RETIREMENT SYSTEM**

ACTUARIAL VALUATION AS OF  
JUNE 30, 2018

# G. S. CURRAN & COMPANY, LTD.

Actuarial Services

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December 11, 2018

Board of Trustees  
Municipal Employees' Retirement System  
7937 Office Park Boulevard  
Baton Rouge, Louisiana 70809

Ladies and Gentlemen:

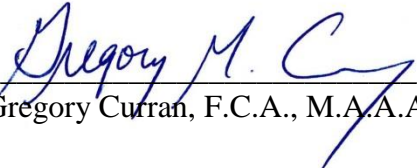
We are pleased to present our report on the actuarial valuation of the Municipal Employees' Retirement System for the fiscal year ending June 30, 2018. Our report is based on the actuarial assumptions specified and relies on the data supplied by the system's administrators and accountants. This report was prepared at the request of the Board of Trustees of the Municipal Employees' Retirement System 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 June 30, 2019, and to recommend the net direct employer contribution rate for Fiscal 2020. 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 Municipal Employees' Retirement System for a specific limited purpose. It is not for the use or benefit of any third party for any purpose.

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

Sincerely,

G. S. CURRAN & COMPANY, LTD.

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

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

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**SUMMARY OF VALUATION RESULTS**  
**MUNICIPAL EMPLOYEES' RETIREMENT SYSTEM – PLAN A**

Valuation Date:	June 30, 2018	June 30, 2017
Census Summary:		
Active Members	4,888	4,937
Retired Members and Survivors	3,468	3,417
Terminated Due a Deferred Benefit	185	184
Terminated Due a Refund	2,994	2,885
Payroll:	\$ 181,786,660	\$ 182,044,919
Benefits in Payment:	\$ 63,184,393	\$ 60,663,715
Present Value of Future Benefits:	\$ 1,335,318,466	\$ 1,297,752,340
Actuarial Accrued Liability (EAN):	\$ 1,129,080,666	\$ 1,096,616,918
Frozen Unfunded Actuarial Accrued Liability:	\$ 68,334,864	\$ 70,511,316
Funding Deposit Account Credit Balance:	\$ 8,712,724	\$ 8,112,406
Actuarial Value of Assets (AVA):	\$ 797,679,469	\$ 781,417,434
Market Value of Assets (MVA):	\$ 734,226,194	\$ 697,057,939
Ratio of AVA to Actuarial Accrued Liability (EAN):	70.65%	71.26%
	Fiscal 2018	Fiscal 2017
Market Rate of Return:	6.1%	4.7%
Actuarial Rate of Return:	2.8%	2.3%
	Fiscal 2019	Fiscal 2018
Employers' Normal Cost (Mid-year):	\$ 48,573,047	\$ 45,887,442
Amortization Cost (Mid-year):	\$ 7,393,261	\$ 7,135,005
Estimated Administrative Cost:	\$ 1,374,875	\$ 1,306,346
Projected Ad Valorem Tax Contributions:	\$ 6,180,051	\$ 6,182,538
Projected Revenue Sharing Funds:	\$ 113,209	\$ 114,303
Net Direct Employer Actuarially Required Contributions:	\$ 51,047,923	\$ 48,031,932
Projected Payroll:	\$ 185,436,456	\$ 185,573,045
Board Approved Employee Contribution Rate:	9.50%	9.50%
Board Approved Net Direct Employer Contribution Rate:	26.00%	24.75%
Actuarially Required Net Direct Employer Contribution Rate:	27.53%	25.88%
	Fiscal 2020	Fiscal 2019
Minimum Recommended Net Direct Employer Contribution Rate:	27.75%	26.00%

**SUMMARY OF VALUATION RESULTS**  
**MUNICIPAL EMPLOYEES' RETIREMENT SYSTEM – PLAN B**

Valuation Date:	June 30, 2018	June 30, 2017
Census Summary:		
Active Members	2,128	2,125
Retired Members and Survivors	1,050	1,025
Terminated Due a Deferred Benefit	92	82
Terminated Due a Refund	1,419	1,331
Payroll:	\$ 74,696,846	\$ 73,275,324
Benefits in Payment:	\$ 11,522,493	\$ 10,946,571
Present Value of Future Benefits:	\$ 293,683,688	\$ 282,707,864
Actuarial Accrued Liability (EAN):	\$ 241,302,909	\$ 232,425,916
Frozen Unfunded Actuarial Accrued Liability:	\$ 0	\$ 2,382,456
Funding Deposit Account Credit Balance:	\$ 1,523,023	\$ 3,286,730
Actuarial Value of Assets (AVA):	\$ 175,032,415	\$ 168,698,012
Market Value of Assets (MVA):	\$ 161,284,802	\$ 150,467,958
Ratio of AVA to Actuarial Accrued Liability (EAN):	72.54%	72.58%
	Fiscal 2018	Fiscal 2017
Market Rate of Return:	6.0%	4.6%
Actuarial Rate of Return:	2.7%	2.2%
	Fiscal 2019	Fiscal 2018
Employers' Normal Cost (Mid-year):	\$ 12,513,679	\$ 12,002,285
Amortization Cost (Mid-year):	\$ 0	\$ 532,482
Estimated Administrative Cost:	\$ 564,941	\$ 525,820
Projected Ad Valorem Tax Contributions:	\$ 2,539,407	\$ 2,488,548
Projected Revenue Sharing Funds:	\$ 46,518	\$ 46,008
Net Direct Employer Actuarially Required Contributions:	\$ 10,492,695	\$ 10,526,031
Projected Payroll:	\$ 76,396,822	\$ 75,165,500
Board Approved Employee Contribution Rate:	5.00%	5.00%
Board Approved Net Direct Employer Contribution Rate:	14.00%	13.25%
Actuarially Required Net Direct Employer Contribution Rate:	13.73%	14.00%
	Fiscal 2020	Fiscal 2019
Minimum Recommended Net Direct Employer Contribution Rate:	13.75%	14.00%

## GENERAL COMMENTS

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

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

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

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

## COMMENTS ON DATA

For the valuation, the administrative director of the system furnished a census on electronic media derived from the system's master data processing file indicating each active covered employee's sex, date of birth, service credit, annual salary, and accumulated contributions. Information on retirees detailing dates of birth of retirees and beneficiaries, 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 4,888 active members in Plan A, of whom, 1,809 members, including 221 participants in the Deferred Retirement Option Plan (DROP), have vested retirement benefits; 3,468 former Plan A members or their beneficiaries are receiving retirement benefits. An additional 3,179 former members of Plan A have contributions remaining on deposit with the system. This includes 185 former members who have vested rights or have filed reciprocal agreements for future retirement benefits. Census data on members of Plan B may be found in Exhibit XIX. There are 2,128 active members in Plan B, of whom, 825 members, including 80 DROP participants, have vested retirement benefits; 1,050 former members of Plan B or their beneficiaries are receiving retirement benefits. An additional, 1,511 former members of Plan B have contributions remaining on deposit with the system. Of this number, 92 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 administrative staff for verification and/or correction. Once the identified data has been researched and verified or corrected, it is returned to us for use in the valuation. Occasionally some requested information is either unavailable or impractical to obtain. In such cases, values may be assigned to missing data. The assigned values are based on information from similar records or based on information implied from other data in the record. For this valuation, the number of such records is de minimis.

In addition to the statistical information provided on the system's participants, the system's administrative director furnished general information related to other aspects of the system's expenses, benefits and funding. Except as stated below, 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 Hawthorn, Waymouth, and Carroll, L.L.P. As indicated in the system's audit report, the net market value of Plan A's assets was \$734,226,194 as of June 30, 2018. For Plan A, the net investment income for Fiscal 2018 measured on a market value basis amounted to \$42,327,639. Contributions to Plan A for the fiscal year totaled \$69,372,141; benefits and expenses amounted to \$74,531,522.

The net market value of Plan B's assets was \$161,284,802 as of June 30, 2018. For Plan B, the net investment income for Fiscal 2018 measured on a market value basis amounted to \$9,065,907.

Contributions to Plan B for the fiscal year totaled \$15,985,660; benefits and expenses amounted to \$14,234,723.

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**

Prior to Fiscal 2018 both plans' valuations were based on the Frozen Attained Age Normal actuarial cost method with the unfunded actuarial accrued liability frozen as of June 30, 1989. Under the provisions of Louisiana R.S. 11:103 the unfunded accrued liability for Plan A, which was determined to be \$48,466,297 as of June 30, 1989, was amortized over forty years with payments increasing at 4.25% per year. The unfunded accrued liability for Plan B, which was determined to be \$9,853,175 as of June 30, 1989, was amortized over forty years with payments decreasing at 2% per year. In Plan A, payroll growth less than 4.25% per year will increase future amortization payments as a percent of payroll. In Plan B, prior to the early payoff of the unfunded accrued liability, any payroll growth or payroll decline less than 2% per year would reduce future amortization payments as a percent of payroll. As of June 30, 2018, the remaining balance of the frozen unfunded accrued liability for Plan B was completely offset by a portion of the credit balance in the plan's Funding Deposit Account. With the unfunded accrued liability fully amortized, the actuarial funding method for Plan B has been converted to the Aggregate Funding Method in accordance with R.S. 11:22(D). Under both the Frozen Attained Age Normal Cost Method and the Aggregate Funding 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.

Prior to the June 30, 2009 valuation, in any year in which the net direct employer contribution was set above the actuarially required employer contribution rate, excess funds collected, if any, were used to reduce the frozen unfunded actuarial accrued liability. In Plan B, the Board elected to freeze the employer contribution rate in Fiscal 2001. As a result of the additional contributions generated by this freeze in rates, the unfunded accrued liability was set to be fully amortized by June 30, 2023. Effective with the June 30, 2009 valuation, any excess funds collected as a result of a freeze in employer contributions are credited to the Funding Deposit Account. Funds deposited into the Funding Deposit Account can be used to reduce the unfunded accrued liability, reduce future normal costs, fund cost of living increases to retirees, or offset net direct employer contributions as determined by the Board of Trustees.

In February of 2017, a recommendation was made to the Board of Trustees to reduce the long-term rate of return assumption. The recommendation was formed after an analysis of the system's portfolio along with expected long-term rates of return, standard deviations of return, and correlations between asset classes collected from a number of investment consulting firms in addition to the system's investment consultants, Meketa Investment Group. Based on this analysis and after discussions with the Board, a plan was approved to reduce the 7.5% valuation interest rate in effect for the Fiscal 2016 actuarial valuation to 7.0% over the coming four actuarial valuations with reductions of 0.10% in 2017, 0.125% in 2018, 0.10% in 2019, and 0.175% in 2020 for Plans A and B. Therefore, the assumed rate of



return for the Fiscal 2018 valuation was set at 7.275% for Plans A and B. For 2018, an assumed rate of inflation of 2.6% was implicit in the assumed rate of return for Plans A and B. The remaining actuarial assumptions utilized for this report are based on the results of an actuarial experience study for the period July 1, 2009 – June 30, 2014, unless otherwise specified in this report. Additional details are given in the complete Experience Report for fiscal years 2010 through 2014.

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

The current year actuarial assumptions utilized for the report are outlined on pages sixty-seven through seventy-five. 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 all changes in assumptions was to increase the normal cost accrual rate by 1.1864% in Plan A and 0.6598% in Plan B.

## **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. Interest rate declines can subject pension plans to an increase in this risk. In such an environment, as fixed income securities mature, investment managers are 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 70.65% for Plan A and 72.54% for Plan B as of June 30, 2018. 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 0.60% for Plan A and 0.32% for Plan B.

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 2018, this ratio is 35% for Plan A and 15% for Plan B. Ten years ago this ratio was 25% for Plan A and 11% for Plan B.

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 2019 by 9.11% of payroll for Plan A and 5.19% of payroll for Plan B.

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, changes in plan provisions or applicable law, or completion of amortization schedules. 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 in plan provisions were enacted during the 2018 Regular Session of the Louisiana Legislature:

**Act 4** of the 2018 Regular Session of the Louisiana Legislature clarifies the vesting requirements for members of Tier 2 of MERS Plan A and Plan B. Members of Tier 2 who withdraw from active service prior to becoming eligible for retirement and have at least seven years of creditable service and have not received a refund of accumulated contributions may receive a retirement allowance to commence at their earliest normal retirement date.

**Act 42** of the 2018 Regular Session of the Louisiana Legislature clarifies that upon the full-time reemployment of retirees the supplemental benefit when combined with the original benefit shall not exceed the final compensation figure used to compute the original benefit or the supplemental benefit, whichever is greater.

**Act 43** of the 2018 Regular Session of the Louisiana Legislature changes the definition of disability from the permanent and total disability from performing the duties and responsibilities of the position to a total and permanent disability that leaves an employee incapable of any employment. Additionally, the definition of minor child is changed to an unmarried child under the age of eighteen years or child who had a disability at the time of the member's death and who remains disabled. The definition of child means the issue of a marriage of a member, the legally adopted child of a member, the natural child of a female member, or the child of a male member if a court of competent jurisdiction has made an order of filiation declaring the paternity of such a member for the child or the father has formally acknowledged the child.

**Act 44** of the 2018 Regular Session of the Louisiana Legislature adds Option 4.2 and Option 4.3 to the listed optional forms of benefit available to members. Option 4.2 is commonly referred to as a Joint & 100% Popup option. It provides a reduced retirement allowance throughout the life of the member and upon his death continues that benefit to the person he nominated by written designation. If the designated beneficiary dies prior to the retiree, the benefits payable to the member increase to the maximum benefit effective on the first day of the next month following the death of the designated beneficiary. Under Option 4.3, which is commonly referred to as a Joint & 50% Popup option, the designated beneficiary is due a benefit of one-half of the reduced retirement allowance upon the death of the member. If the designated beneficiary dies prior to the retiree, the benefits payable to the member increases to the maximum benefit effective on the first day of the next month following the death of the designated beneficiary.

**Act 45** of the 2018 Regular Session of the Louisiana Legislature provides that state and statewide retirement systems may invest in terror free investments outside of index fund vehicles to meet the requirements of R.S. 11:316.

**Act 110** of the 2018 Regular Session of the Louisiana Legislature adds to the list of allowable participating employers, any tax board or commission of a municipality or parish in the state of Louisiana that has entered into an agreement with the board pursuant to R.S. 11:1733. In addition, the Firefighters' Pension and Relief Fund in the city of New Orleans and the Louisiana Uniform Local Sales Tax Board were authorized as participating employers. The act also removes language related to optional membership for certain elected officials.

**Act 111** of the 2018 Regular Session of the Louisiana Legislature adds language that provides that if employer contributions on behalf of a DROP participant are suspended due to an interruption of employment, benefit payments into the DROP will be suspended until payment of employer contributions are restored and the member's participation period in DROP will be extended by the number of months that benefits are suspended. In no case may a member participate in DROP for more than thirty-six months.

**Act 112** of the 2018 Regular Session of the Louisiana Legislature provides that if an employer eliminates an employee position or class of positions covered by this system by contracting with a private entity for the work formerly done by employees in eliminated positions, the employer shall remit that portion of the unfunded accrued liability (calculated using the Entry Age Normal funding method) existing on June 30<sup>th</sup> immediately prior to the date of privatization which is attributable to the eliminated position or class of positions.

**Act 185** of the 2018 Regular Session of the Louisiana Legislature requires certain surviving spouse elections to be made in writing within ninety days of the application for benefits.

**Act 225** of the 2018 Regular Session of the Louisiana Legislature added language to comply with certain federal laws related to the Uniformed Services Employment and Reemployment Rights Act (USERRA) providing that each Board of Trustees shall promulgate rules to comply with USERRA.

**Act 397** of the 2018 Regular Session of the Louisiana Legislature stipulates that state and statewide retirement systems may appoint an actuary or actuaries whose duties assigned by the Board shall relate

only to the practice of actuarial science or ministerial duties that do not require the exercise of supervision or discretionary control over the administration or management of the system.

**Act 399** of the 2018 Regular Session of the Louisiana Legislature stipulates that the Public Retirement Systems' Actuarial Committee is established as the public retirement and pension system advisor of the Legislature of Louisiana. The act further states that the chair and vice chair shall rotate biennially between the speaker of the House of Representatives, or his designee, and the president of the Senate, or his designee, with terms beginning on the first of July. The committee shall elect any other officers as deemed advisable but no officer shall serve for more than four consecutive years.

## ASSET EXPERIENCE

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

<u>Plan A</u>	<u>Market Value</u>	<u>Actuarial Value</u>
2009	-13.8% ‡	0.9% *
2010	11.0%	5.9%
2011	10.5%	4.2%
2012	-4.8% †	0.7%
2013	4.3%	0.7%
2014	12.3%	5.8%
2015	-3.1%	3.7%
2016	-2.9%	0.8%
2017	4.7%	2.3%
2018	6.1%	2.8%

<u>Plan B</u>	<u>Market Value</u>	<u>Actuarial Value</u>
2009	-13.7% ‡	0.9% *
2010	10.9%	5.8%
2011	10.5%	4.2%
2012	-4.7% †	1.0%
2013	4.1%	0.9%
2014	11.7%	5.6%
2015	-3.2%	3.5%
2016	-2.9%	0.7%
2017	4.6%	2.2%
2018	6.0%	2.7%

\* Includes the effect of a change in asset valuation method.

‡ Includes the impact of inclusion of the prior period adjustment for investment income as income in fiscal year.

† Based upon asset values which include an unaudited "best estimate" of the value of a receivable related to the FIA Leveraged Fund

Geometric Average Market Rates of Return – Plan A

5 year average (Fiscal 2014 – 2018)	3.3%
10 year average (Fiscal 2009 – 2018)	2.1%
15 year average (Fiscal 2004 – 2018)	4.3%
20 year average (Fiscal 1999 – 2018)	4.0%
25 year average (Fiscal 1994 – 2018)	5.3%

Geometric Average Market Rates of Return – Plan B

5 year average (Fiscal 2014 – 2018)	3.1%
10 year average (Fiscal 2009 – 2018)	2.0%
15 year average (Fiscal 2004 – 2018)	4.2%
20 year average (Fiscal 1999 – 2018)	3.8%
25 year average (Fiscal 1994 – 2018)	5.1%

The market rate of return gives a measure of investment return on a total return basis and includes realized and unrealized capital gains and losses as well as interest income. This rate of return gives an indication of performance for an actively managed portfolio where securities are bought and sold with the objective of producing the highest total rate of return. During 2018, Plan A earned \$1,019,179 and Plan B earned \$303,480 of dividends and interest income. In addition, Plan A had net realized and unrealized capital gains on investments of \$43,760,382 while the total of such gains for Plan B amounted to \$9,282,504. Investment expenses were \$2,451,922 for Plan A and \$520,077 for Plan B.

The actuarial rate of return is presented for comparison to the assumed long-term rate of return of 7.40% used for the prior valuation. This rate is calculated based on the smoothed value of assets subject to constraints as given in Exhibit VI for Plan A and Exhibit XVI for Plan B. Investment income used to calculate this yield is based upon a smoothing of investment income above or below the valuation interest rate. 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 valuation interest rate assumption will reduce future costs; yields below the valuation interest rate assumption will increase future costs. For Plan A, the net actuarial investment earnings for Fiscal 2018 were \$36,215,981 less than the actuarial assumed earnings rate of 7.40%, and were \$7,963,815 less for Plan B. These actuarial losses increased the normal cost accrual rate by 2.7377% for Plan A and 1.4576% for Plan B.

At the end of each fiscal year, a review of the data is made to identify current members of Plan A and Plan B who have consecutive service credit in both plans that have not been addressed in previous transfers of assets and liabilities between the Plan A and Plan B trust funds pursuant to the provisions of R.S. 11:1862(F). In the course of reviewing data for the June 30, 2018 valuation we found 1 member of Plan A with Plan B service credit and 3 such members of Plan B with Plan A service for whom a transfer must be made. Based upon a valuation of the liabilities for service in the previous plan, we recommend a transfer of \$38,092 with accrued interest thereon from June 30, 2018 be made from the Plan A trust to the Plan B trust for Fiscal 2018.

## **PLAN A – DEMOGRAPHICS AND LIABILITY EXPERIENCE**

A reconciliation of the census for the plan is given in Exhibit IX. The average active member is 48 years old with 9.65 years of service and an annual salary of \$37,190. The plan's active membership, inclusive of DROP participants, decreased by 49 members during the fiscal year. The plan has experienced a decrease in the active plan population of 51 members over the last five years. A review of the active census by age indicates that over the last ten years the population under age forty and above age fifty has increased while the proportion of active members age forty-one through fifty has decreased. Over the same ten-year period the plan showed an increase in members with less than ten years of service and more than twenty-five years of service. The average regular retiree is 71 years old with a monthly benefit of \$1,716. The number of retirees and beneficiaries receiving benefits from the system increased by 51 during the fiscal year; over the last five years the number of retirees has increased by 326 and benefit payments have increased by \$14,190,261.

Plan liability experience for Fiscal 2018 was favorable. Deaths and withdrawals were above projected levels while retirements and disabilities were below projected levels. In addition, salary increases were below projections. All of these factors generally reduce costs. DROP entries above projected levels partially offset these gains. Plan liability gains decreased the normal cost accrual rate by 0.6930%.

## **PLAN B – DEMOGRAPHICS AND LIABILITY EXPERIENCE**

A reconciliation of the census for the plan is given in Exhibit XIX. The average active member is 50 years old with 9.57 years of service and an annual salary of \$35,102. The plan's active membership, inclusive of DROP participants, increased by 3 members during the fiscal year. The plan experienced no net change in the active plan population 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 age fifty increased. Over the same ten-year period the plan showed no significant shift in the proportion of the active membership by service group. The average regular retiree is 73 years old with a monthly benefit of \$1,012. The number of retirees and beneficiaries receiving benefits from the system increased by 25 during the fiscal year; over the last five years the number of retirees has increased by 150 and benefit payments have increased by \$2,729,443.

Plan liability experience for Fiscal 2018 was favorable. Withdrawals and retiree deaths were above expected levels while disabilities were below projected levels. In addition, salary increases were below projections. These factors tend to reduce costs. Retirements above projected levels partially offset these gains. DROP entries were near projected levels. Plan liability gains decreased the normal cost accrual rate by 0.4629%.

## **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 both plans, changes in plan experience, benefits, or assumptions do not affect the 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.

Under the provisions of R.S. 11:103, excess or deficient contributions typically decrease or increase future normal costs. However, if the minimum net direct employer contribution is scheduled to decrease, the Board may maintain the contribution rate at some level above the minimum recommended rate. Pursuant to R. S. 11:105 and R. S. 11:107, such excess contributions are credited to the Funding Deposit Account. In addition, in accordance with R.S. 11:106, the Board may set the employer contribution rate up to 3% more than the minimum required contribution rate; any additional funds collected are credited to the Funding Deposit Account.

For Plan A, the derivation of the actuarially required contribution for the current fiscal year is given in Exhibit I. The normal cost for Fiscal 2019 adjusted for mid-year payment is \$48,573,047. The amortization payment on the plan's frozen unfunded actuarial accrued liability adjusted for mid-year payment is \$7,393,261. 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 gross actuarially required employer contribution for Fiscal 2019 is \$57,341,183. When this amount is reduced by projected tax contributions and revenue sharing funds, the resulting employers' minimum net direct actuarially required contribution for Fiscal 2019 is \$51,047,923. This is 27.53% of the projected Plan A payroll for Fiscal 2019.

Liability and asset experience as well as changes in assumptions and benefits can increase or decrease plan costs. In addition to these factors, any COLA granted in the prior fiscal year would increase required contributions (unless it is offset by a withdrawal from the Funding Deposit Account). New entrants to the system can also increase or decrease 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 cost structure for Plan A are outlined below:

Employer's Normal Cost Accrual Rate – Fiscal 2018	26.1717%
Factors Increasing the Normal Cost Accrual Rate:	
Asset Experience Loss	2.7377%
Assumption Changes	1.1864%
Contribution Loss	0.2216%



Factors Decreasing the Normal Cost Accrual Rate:

New Members	1.8544%
Plan Liability Experience Gain	0.6930%

Employer's Normal Cost Accrual Rate – Fiscal 2019	27.7700%
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Required net direct employer contributions are also affected by the available ad valorem taxes and revenue sharing funds 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 for Plan A these funds will remain the same percentage of projected payroll as was collected in the prior year. We also estimate the amortization payment on the fund's UAL will increase by 0.14% of projected payroll. The net effect of the above changes in the cost structure of the system resulted in a minimum actuarially required net direct employer contribution rate for Fiscal 2019 for Plan A of 27.53%; the board approved employer contribution rate for Fiscal 2019 is 26.00% of payroll. R.S. 11:103 requires that the net direct employer contributions be rounded to the nearest 0.25%, hence, after accounting for the anticipated contribution shortfall, we are recommending a minimum net direct employer contribution rate for Plan A of 27.75% for Fiscal 2020.

For Plan B, the derivation of the actuarially required contribution for the current fiscal year is given in Exhibit XI. The normal cost for Fiscal 2019 adjusted for mid-year payment is \$12,513,679. Based upon the Board of Trustees' decision to use a portion of the credit balance in the plan's Funding Deposit Account to fully amortize the remaining balance on the frozen unfunded accrued liability, there is no projected amortization payment in the calculation of the minimum recommended net direct employer contribution rate for Fiscal 2020. The total actuarially required contribution is determined by adding estimated administrative expenses to the normal cost accrual rate. As given on line 15 of Exhibit XI the gross actuarially required employer contribution for Fiscal 2019 is \$13,078,620. When this amount is reduced by projected tax contributions and revenue sharing funds, the resulting employers' minimum net direct actuarially required contribution for Fiscal 2019 is \$10,492,695. This is 13.73% of the projected Plan B payroll for Fiscal 2019.

The effects of various factors on the cost structure for Plan B are outlined below:

Employer's Normal Cost Accrual Rate – Fiscal 2018	17.0518%
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Factors Increasing the Normal Cost Accrual Rate:

Asset Experience Loss	1.4576%
Assumption Changes	0.6598%
Contribution Loss	0.1370%

Factors Decreasing the Normal Cost Accrual Rate:

New Members	1.2867%
Plan Liability Experience Gain	0.4629%

Employer's Normal Cost Accrual Rate – Fiscal 2019	17.5566%
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We estimate that for Plan B, the funds collected from ad valorem taxes and revenue sharing funds in Fiscal 2019 will increase by 0.01% of payroll. The payoff of the unfunded accrued liability resulted in a decrease in the required employer contribution rate of 0.66%. (Since Plan B was scheduled to fully amortize the unfunded accrued liability with a final payment on July 1, 2022, the employer contribution rates for each year until fiscal 2023 will be lower due to the early liquidation of the unfunded accrued liability.) The net effect of the above changes in the cost structure of the system resulted in a minimum actuarially required net direct employer contribution rate for Fiscal 2019 for Plan B of 13.73%; the actual employer contribution rate for Fiscal 2019 is 14.00% of payroll. R.S. 11:103 requires that the net direct employer contributions be rounded to the nearest 0.25%, hence, after accounting for the anticipated contribution excess, we are recommending a minimum net direct employer contribution rate for Plan B of 13.75% for Fiscal 2020.

Both Plan A and Plan B have Funding Deposit Account Credit Balances. Since neither plan experienced a contribution gain due to a net direct employer contribution rate above the minimum recommended employer contribution rate during fiscal 2018, no additional funds were credited to the Funding Deposit Account during the year. In accordance with R.S. 11:107.1(D), the balances were adjusted for the accrual of interest at the valuation interest rate. Pursuant to the action of the Board of Trustees to reduce the Plan B Funding Deposit Account in order to fully amortize the remaining balance of the unfunded accrued liability, the credit balance was reduced by \$2,006,925 as of June 30, 2018. The remaining funds in these accounts may be used to reduce the outstanding unfunded accrued liability, reduce the future normal costs, fund cost of living increases to retirees, or reduce contributions for specified fiscal years.

## **COST OF LIVING INCREASES**

During Fiscal 2018 the actual cost of living (as measured by the US Department of Labor CPI-U) increased by 2.9%. Cost of living provisions for the system are detailed in R.S. 11:1761, R.S. 11:246, and R.S. 11:241. R.S. 11:1761 allows the Board to use interest earnings in excess of the normal requirements to grant annual cost of living increases of 2% of each retiree's original benefit. R.S. 11:246 provides cost of living increases of retirees and beneficiaries over the age of 65 equal to 2% of the benefit in payment on October 1, 1977, or the date the benefit was originally received if retirement commenced after that date. R.S. 11:241 provides 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. The provisions of R.S. 11:241 do not repeal provisions relative to cost of living adjustments contained within the individual laws governing systems; however, they are to be controlling in cases of conflict.

In addition, Act 113 of the 2008 Regular Legislation Session provides for a COLA of 3% of the normal monthly benefit but not less than \$20 per month. Although this COLA is permanent, it may only be granted once. This one-time cost of living increase may only be paid from excess interest earnings.

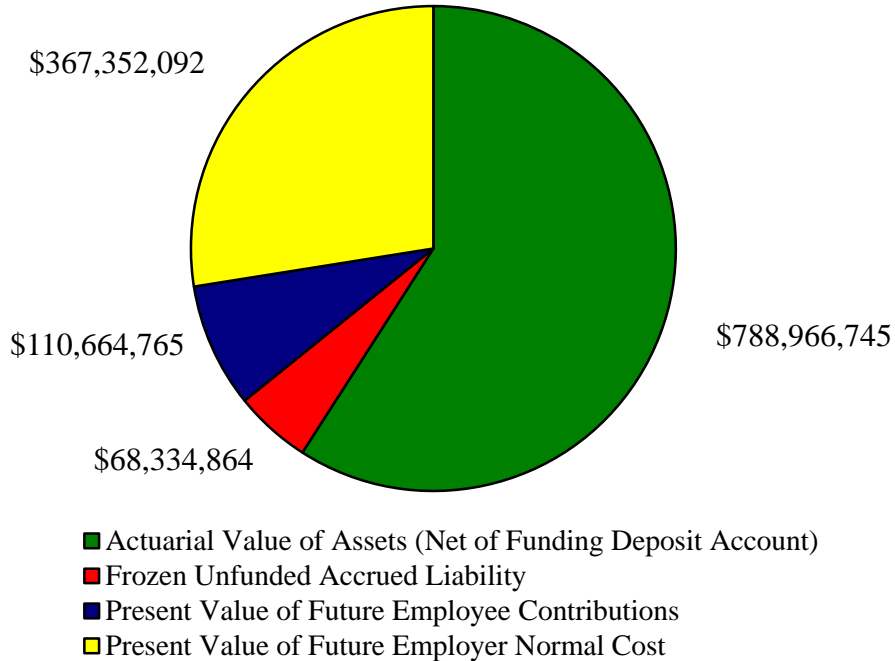
Based upon the irrevocable election of the Board of Trustees to accept the alternative method for determining eligibility to authorize cost of living increases under Act 170 of the 2013 Legislative Session, the ratio of the plan's assets to benefit obligations must meet the criteria established in R.S.

11:243. Under this section, the system would only be authorized to grant a COLA under R. S. 11:241, R.S. 11:246, or R. S. 11: 1761 in fiscal years in which the rate of return on an actuarial basis exceeds the valuation interest rate and one of the following applies:

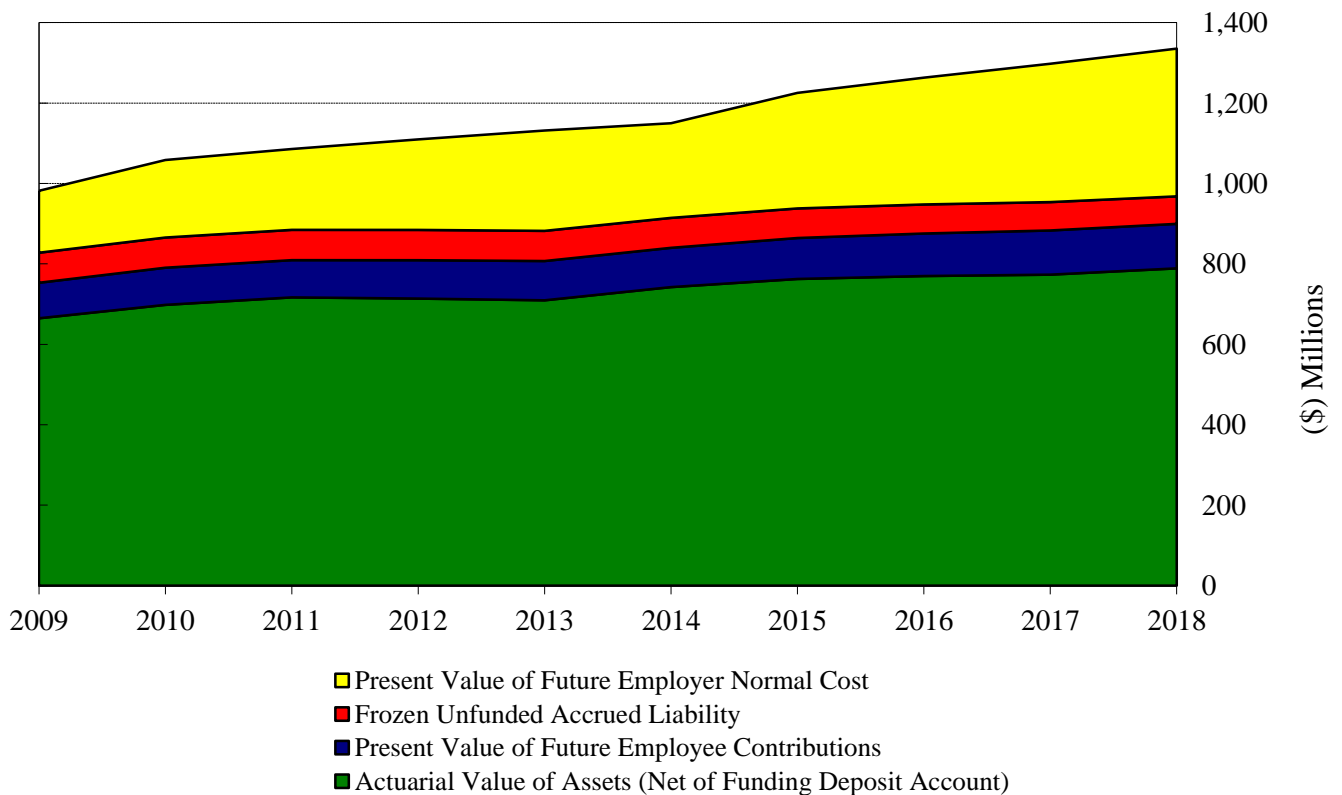
1. The system has a funded ratio of 90% or more and has not granted a benefit increase to retirees, survivors, and beneficiaries in the most recent fiscal year.
2. The system has a funded ratio of 80% or more and has not granted a benefit increase to retirees, survivors, and beneficiaries in the two most recent fiscal years.
3. The system has a funded ratio of 70% or more and has not granted a benefit increase to retirees, survivors, and beneficiaries in the three most recent fiscal years.

We have determined that for Fiscal 2018, neither plan had excess interest earnings; hence no cost of living increase is payable to regular retirees unless paid out of the Funding Deposit Account.

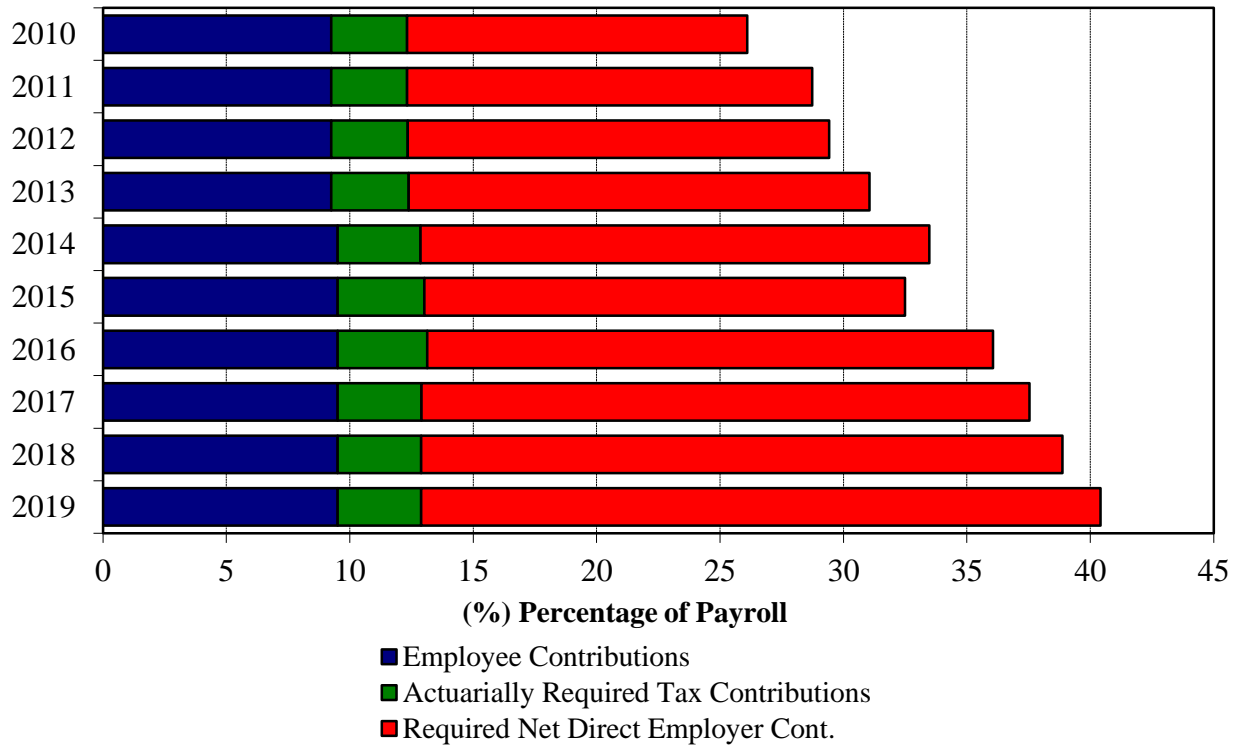
## Plan A – Components of Present Value of Future Benefits June 30, 2018



## Plan A – Components of Present Value of Future Benefits

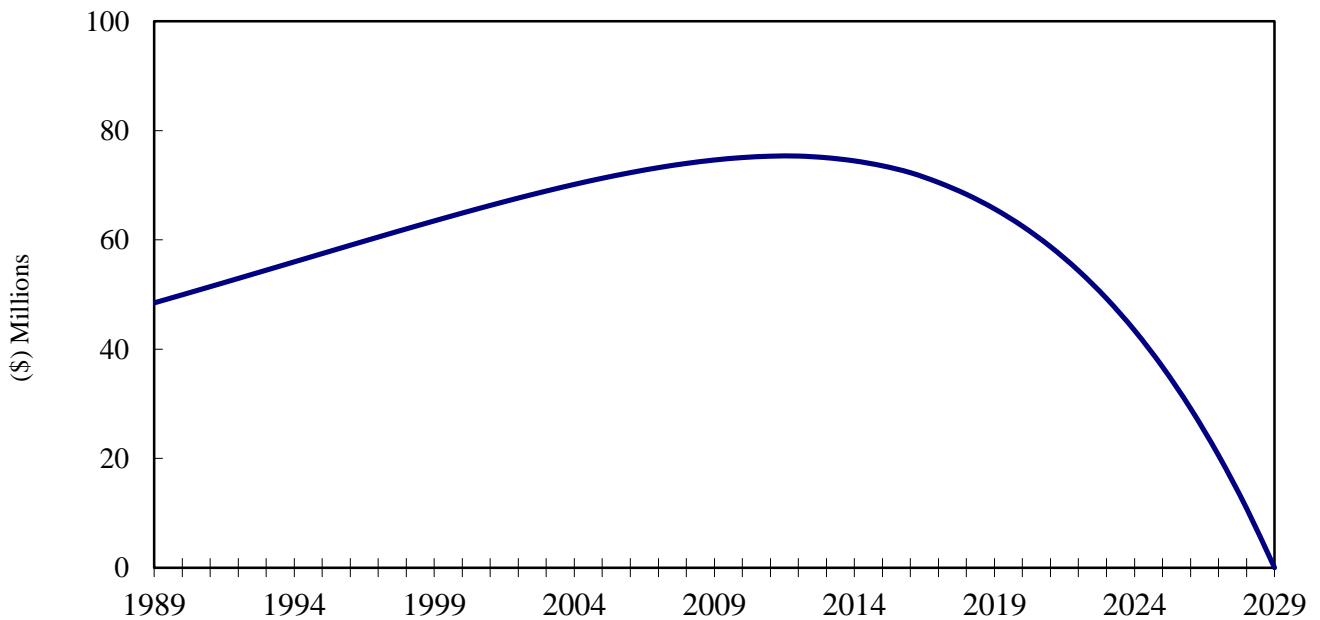


## Plan A – Components of Actuarial Funding

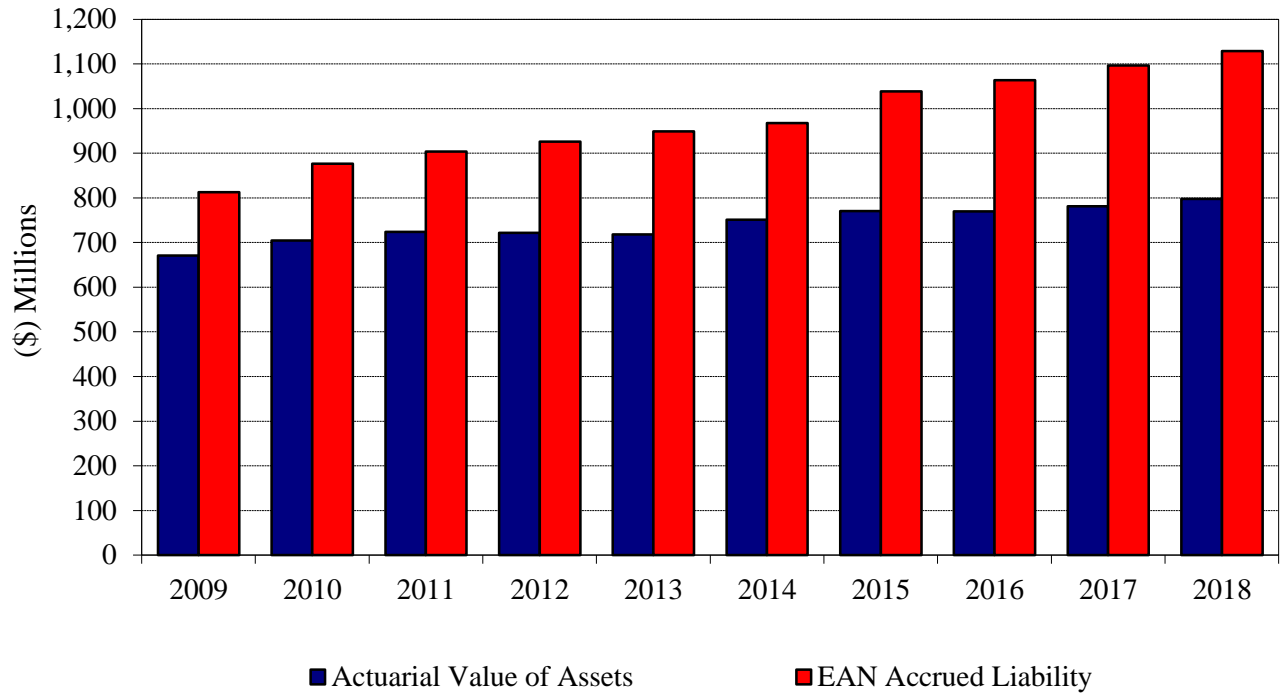


Projected Tax Contributions consist of Projected Ad Valorem and Revenue Sharing Funds as a percent of payroll

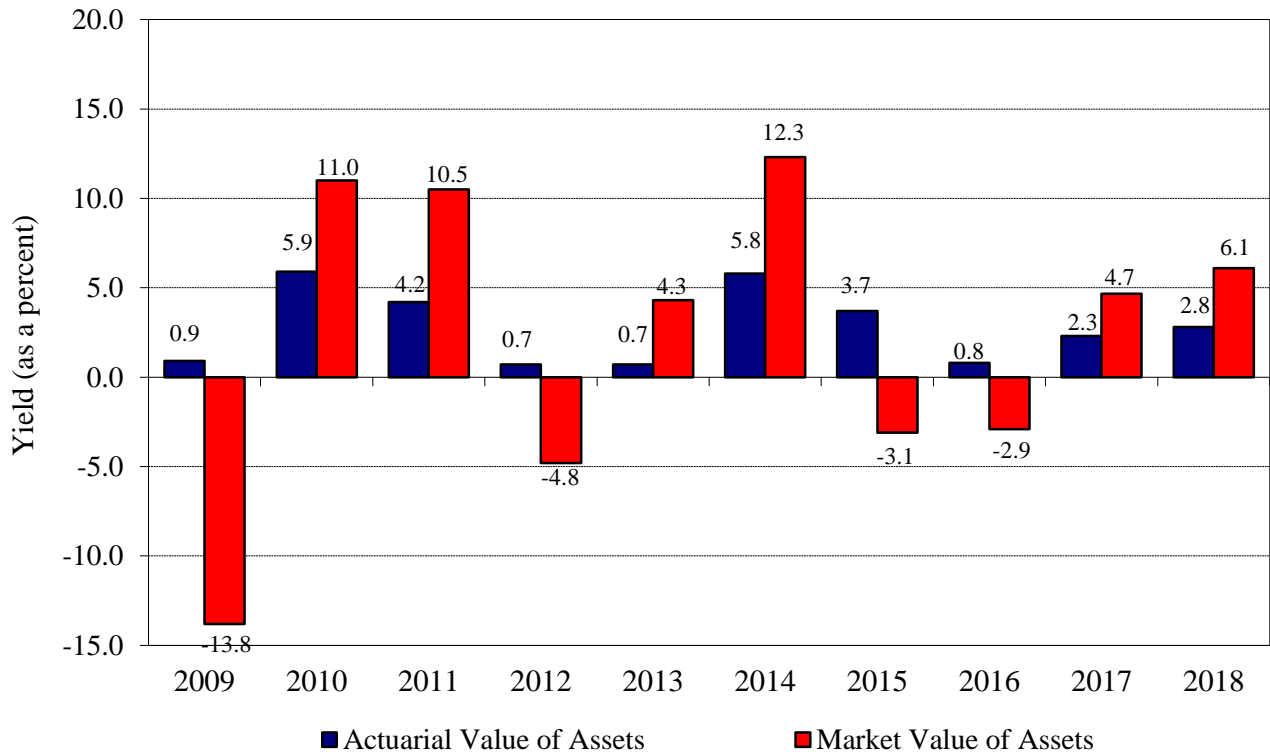
## Plan A – Frozen Unfunded Accrued Liability



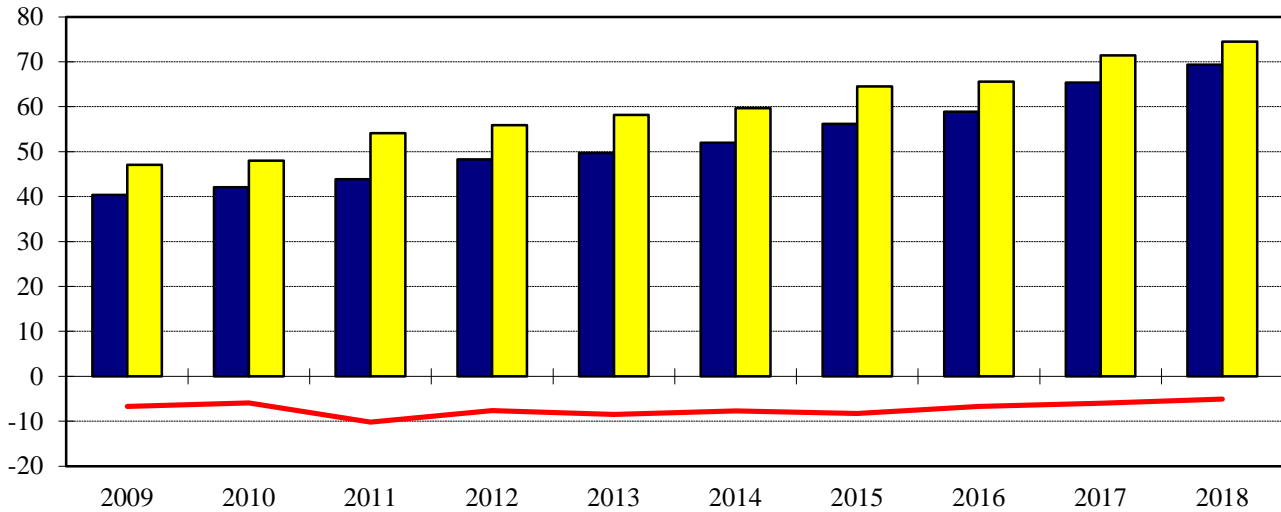
## Plan A – Actuarial Value of Assets vs. EAN Accrued Liability



## Plan A – Historical Asset Yield

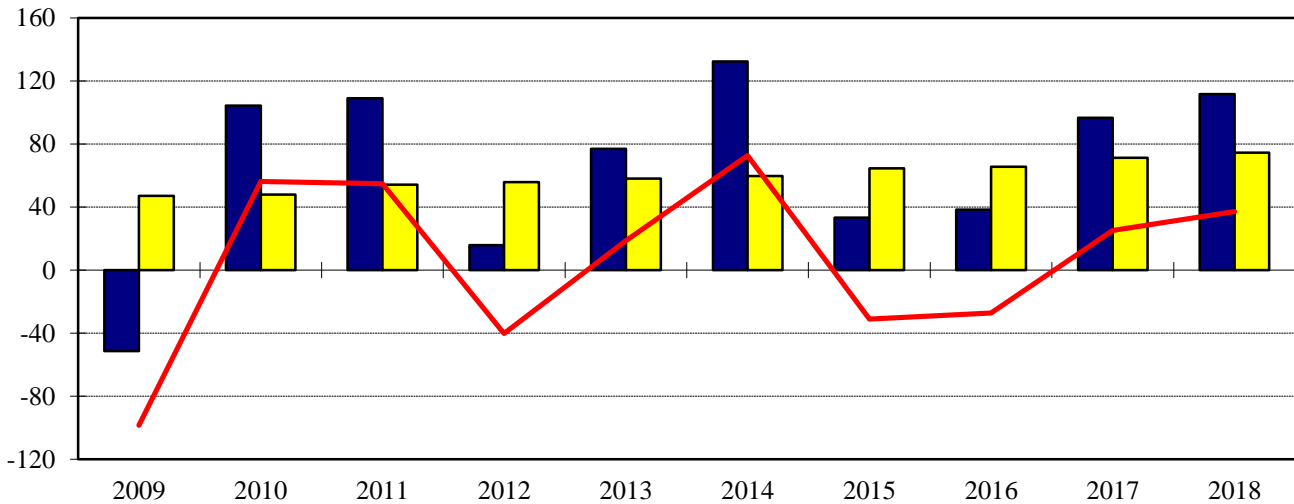


## Plan A – Net Non-Investment Income



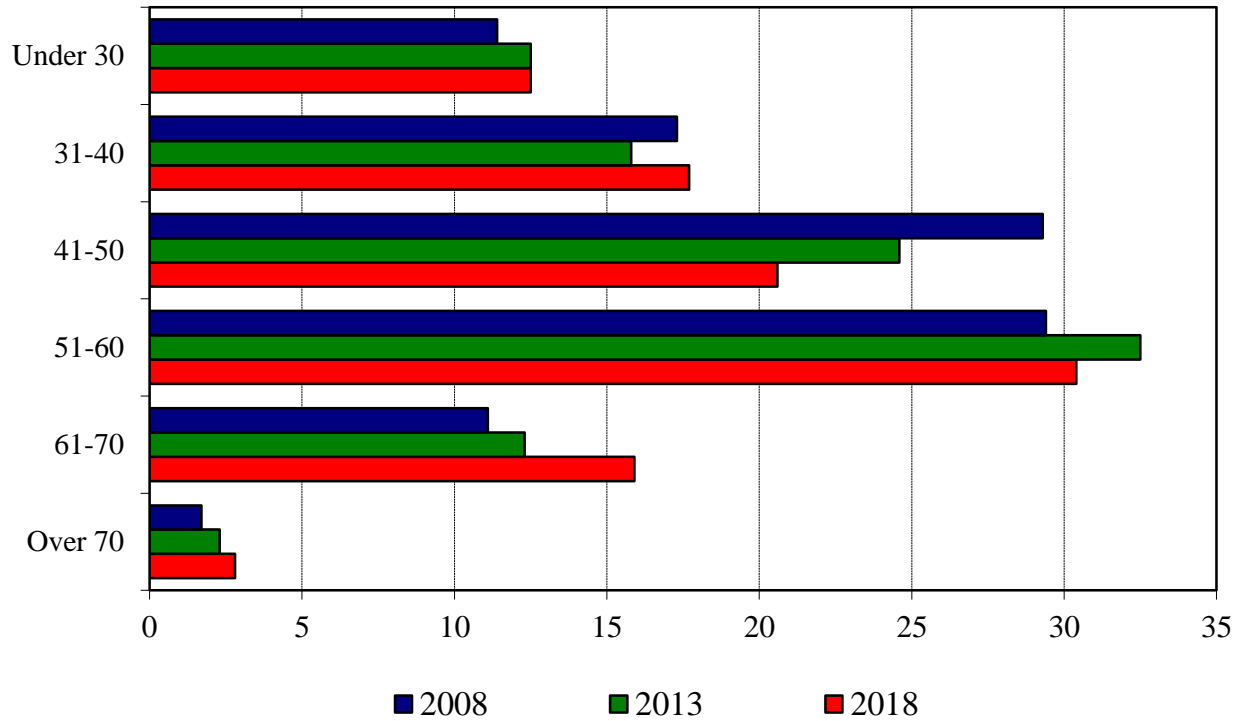
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Non-Investment Income (\$Mil)	<span style="color: blue;">■</span>	40.4	42.1	43.9	48.3	49.7	52.0	56.2	58.9	65.4	69.4
Benefits and Expenses (\$Mil)	<span style="color: yellow;">■</span>	47.1	48.0	54.1	55.9	58.2	59.7	64.5	65.6	71.4	74.5
Net Non-Investment Income (\$Mil)	<span style="color: red;">—</span>	-6.7	-5.9	-10.2	-7.6	-8.5	-7.7	-8.3	-6.7	-6.0	-5.1

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

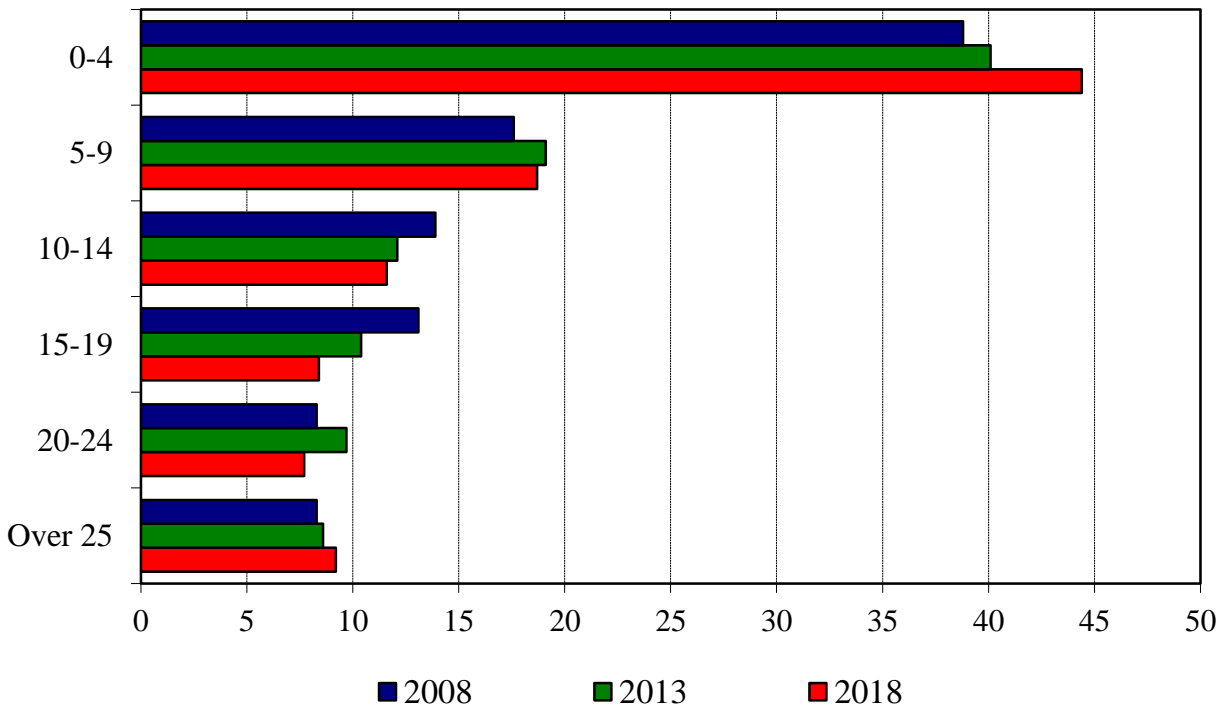


		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total Income (\$Mil)	<span style="color: blue;">■</span>	-51.3	104.3	108.9	15.8	77.0	132.4	33.4	38.5	96.6	111.7
Benefits and Expenses (\$Mil)	<span style="color: yellow;">■</span>	47.1	48.0	54.1	55.9	58.2	59.7	64.5	65.6	71.4	74.5
Net Change in MVA (\$Mil)	<span style="color: red;">—</span>	-98.4	56.3	54.8	-40.1	18.8	72.7	-31.1	-27.1	25.2	37.2

### Plan A – Active – Census By Age (as a percent)

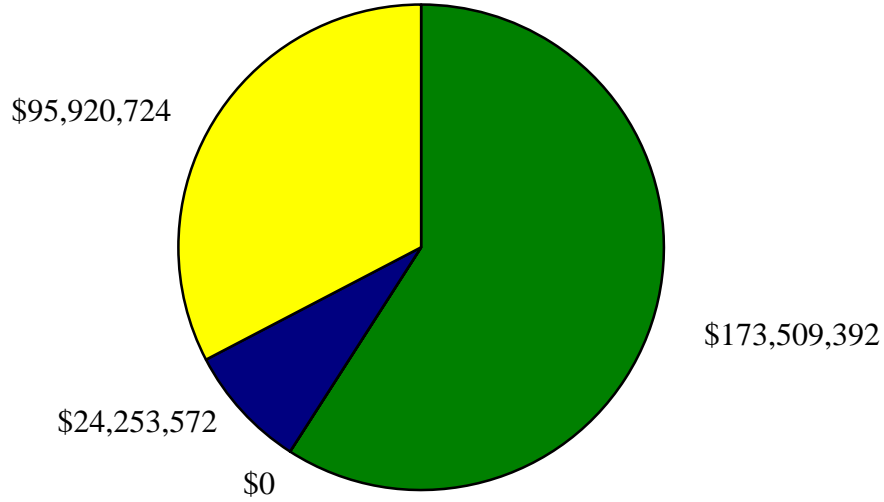


### Plan A – Active – Census By Service (as a percent)



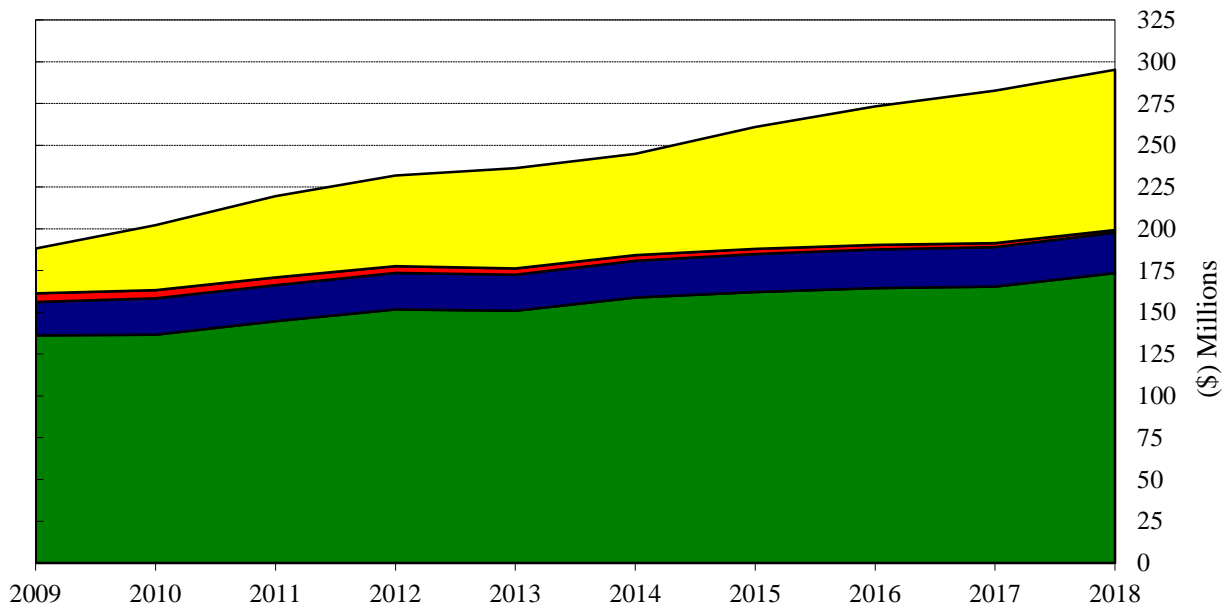


## Plan B – Components of Present Value of Future Benefits June 30, 2018



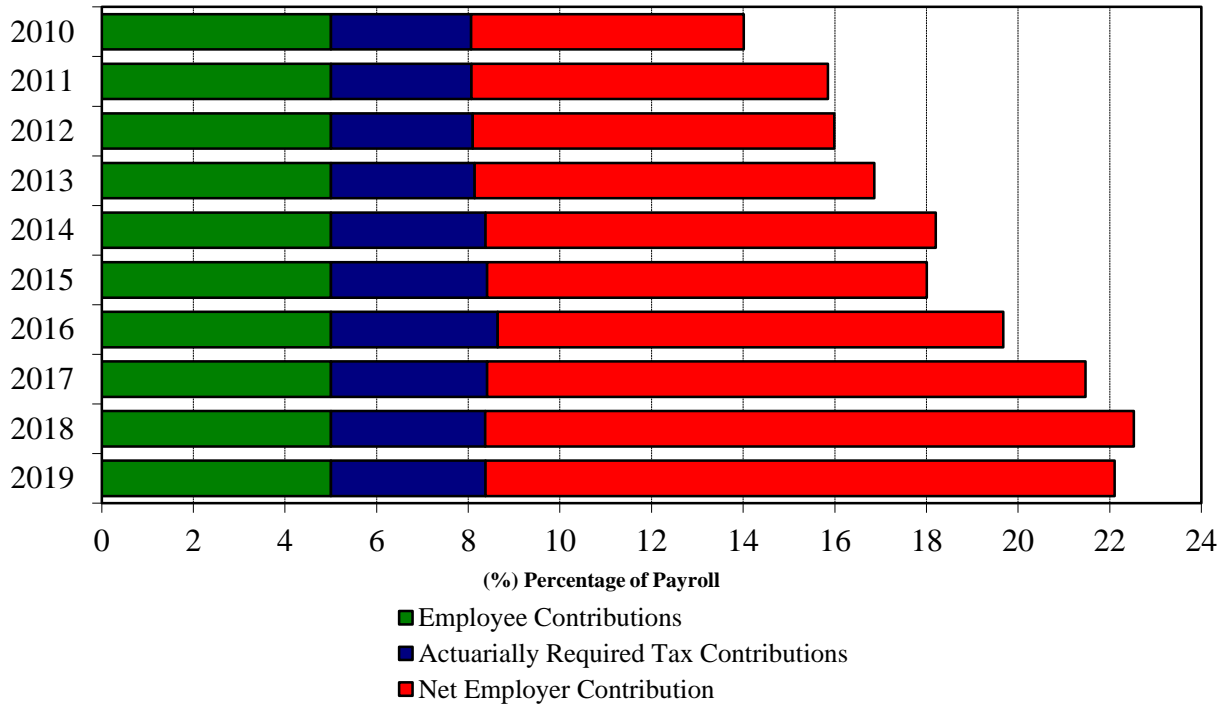
- Actuarial Value of Assets (Net of Funding Deposit Account)
- Frozen Unfunded Accrued Liability
- Present Value of Future Employee Contributions
- Present Value of Future Employer Normal Cost

## Plan B – Components of Present Value of Future Benefits

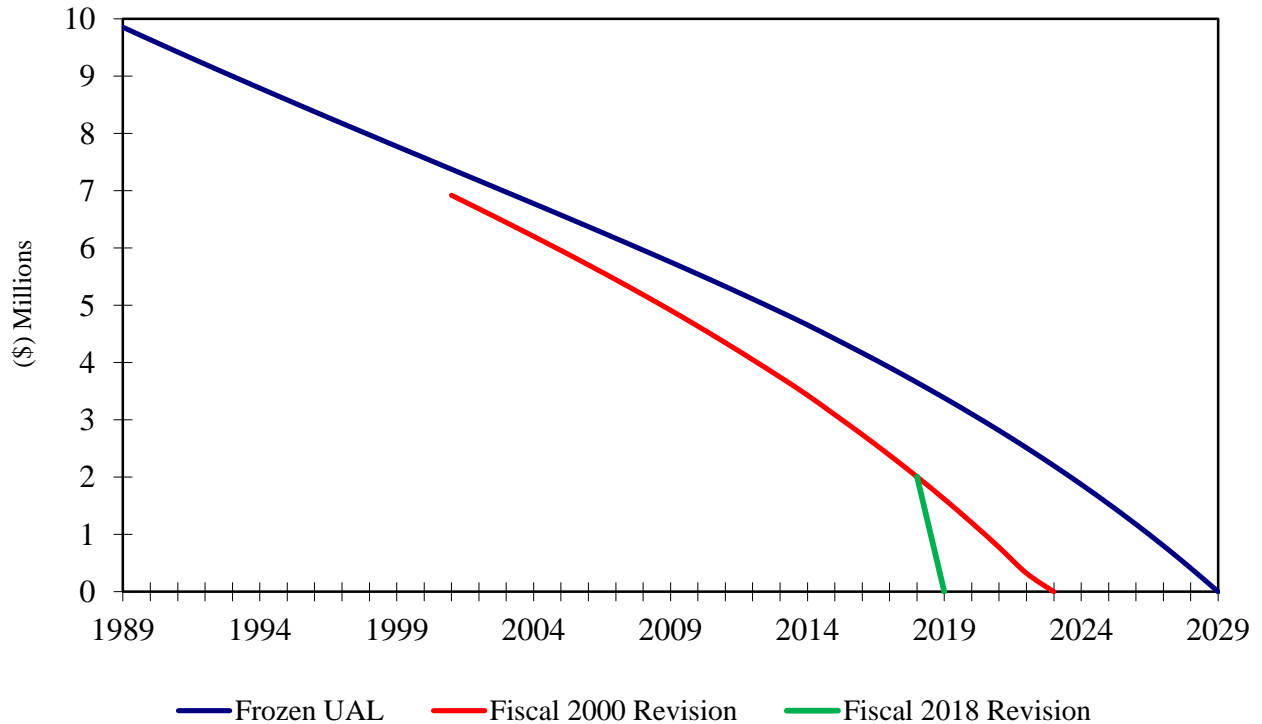


- Present Value of Future Employer Normal Cost
- Unfunded Accrued Liability
- Present Value of Future Employee Contributions
- Actuarial Value of Assets (Net of Funding Deposit Account)

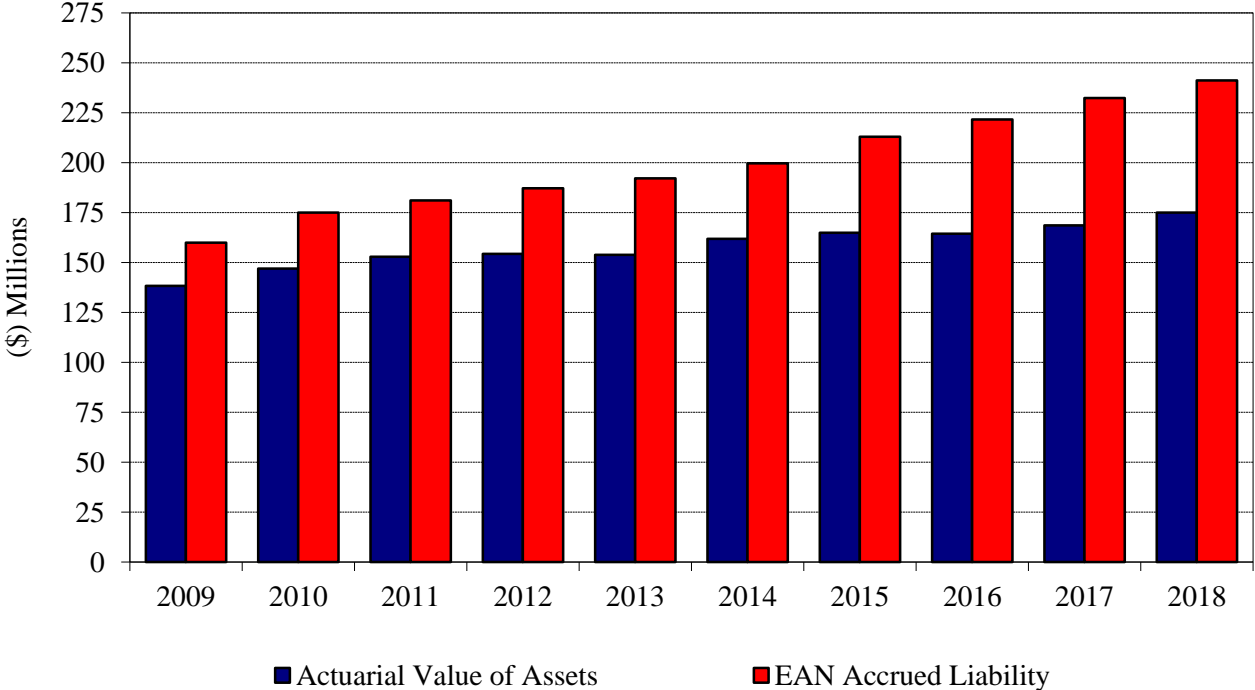
## Plan B – Components of Actuarial Funding



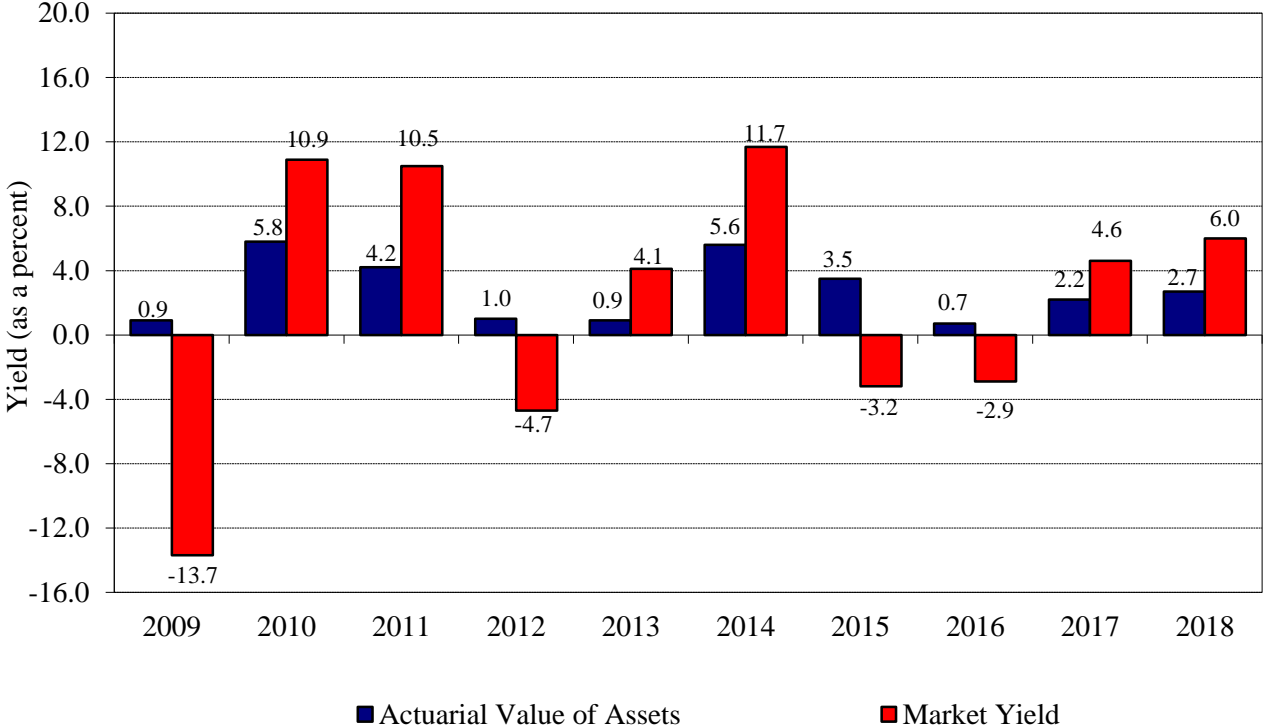
## Plan B – Frozen Unfunded Accrued Liability



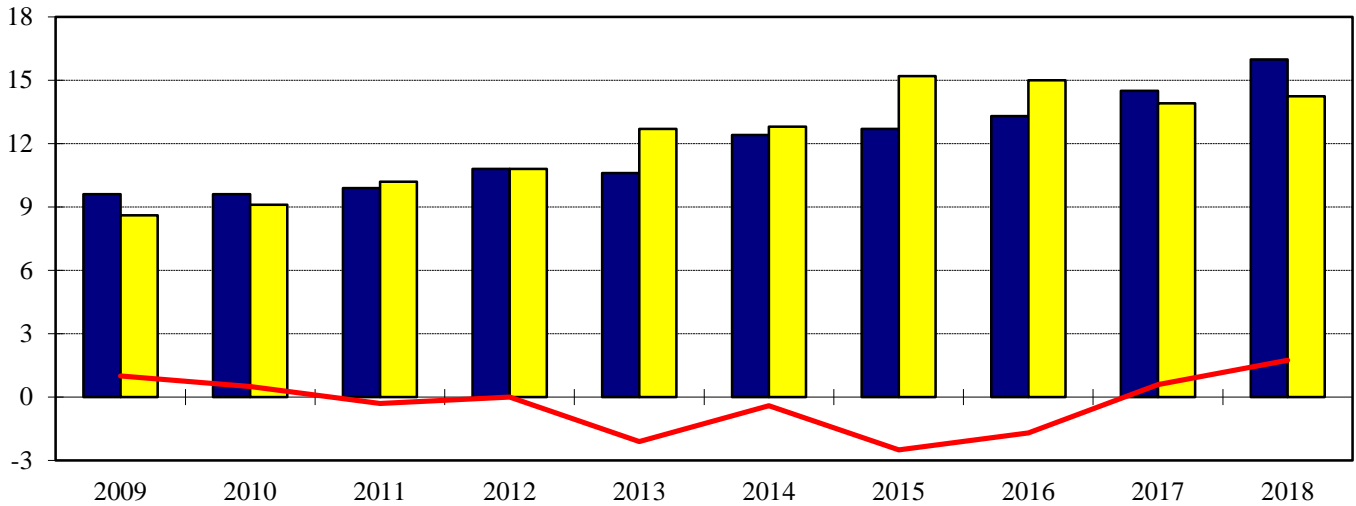
### Plan B – Actuarial Value of Assets vs. EAN Accrued Liability



### Plan B – Historical Asset Yield

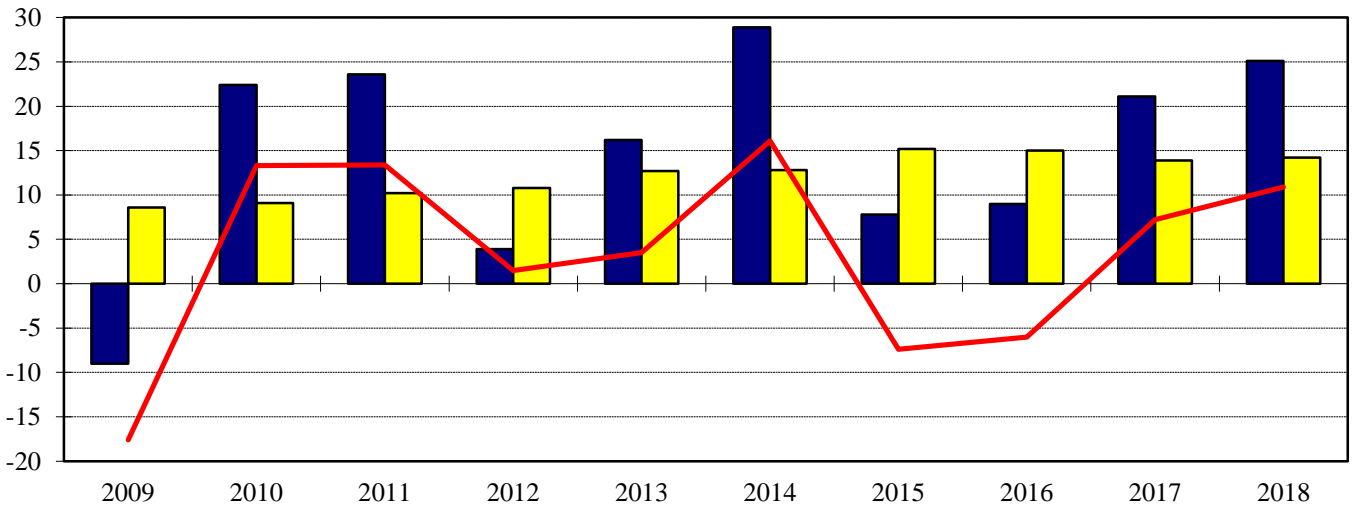


## Plan B – Net Non-Investment Income



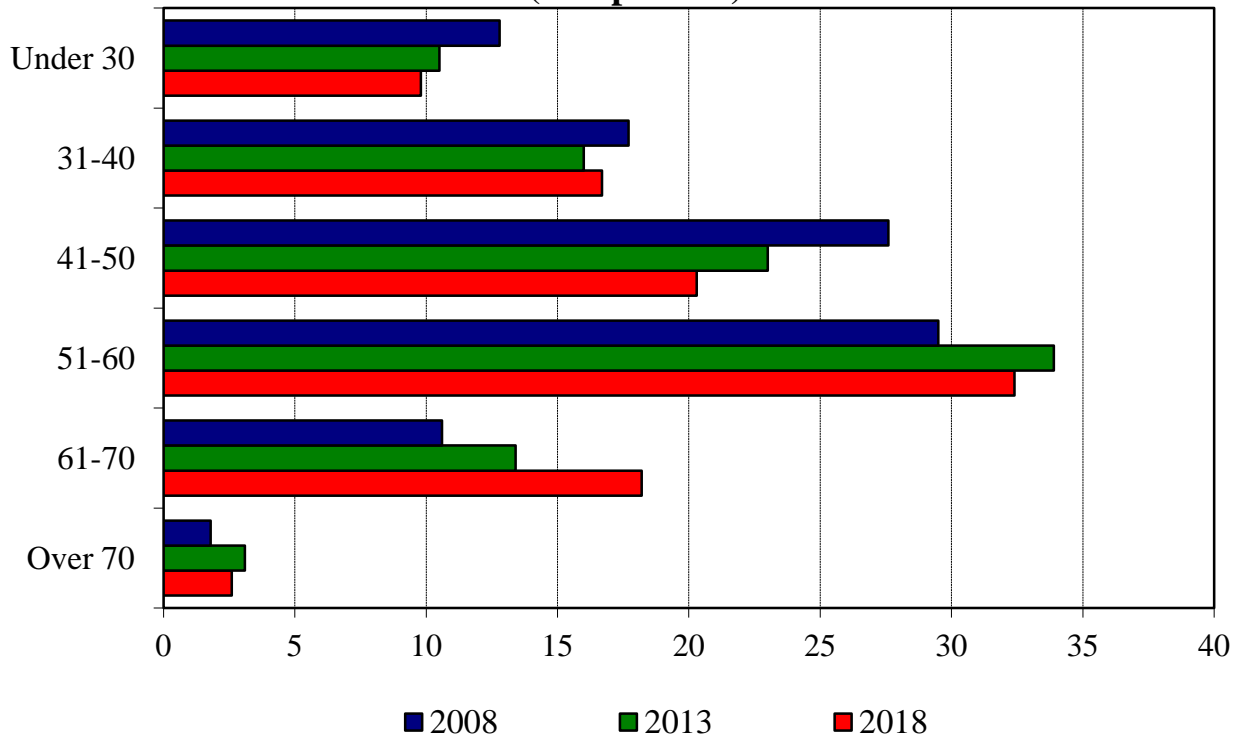
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Non-Investment Income (\$Mil)	<span style="color: blue;">■</span>	9.6	9.6	9.9	10.8	10.6	12.4	12.7	13.3	14.5	16.0
Benefits and Expenses (\$Mil)	<span style="color: yellow;">■</span>	8.6	9.1	10.2	10.8	12.7	12.8	15.2	15.0	13.9	14.2
Net Non-Investment Income (\$Mil)	<span style="color: red;">—</span>	1.0	0.5	-0.3	0.0	-2.1	-0.4	-2.5	-1.7	0.6	1.8

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

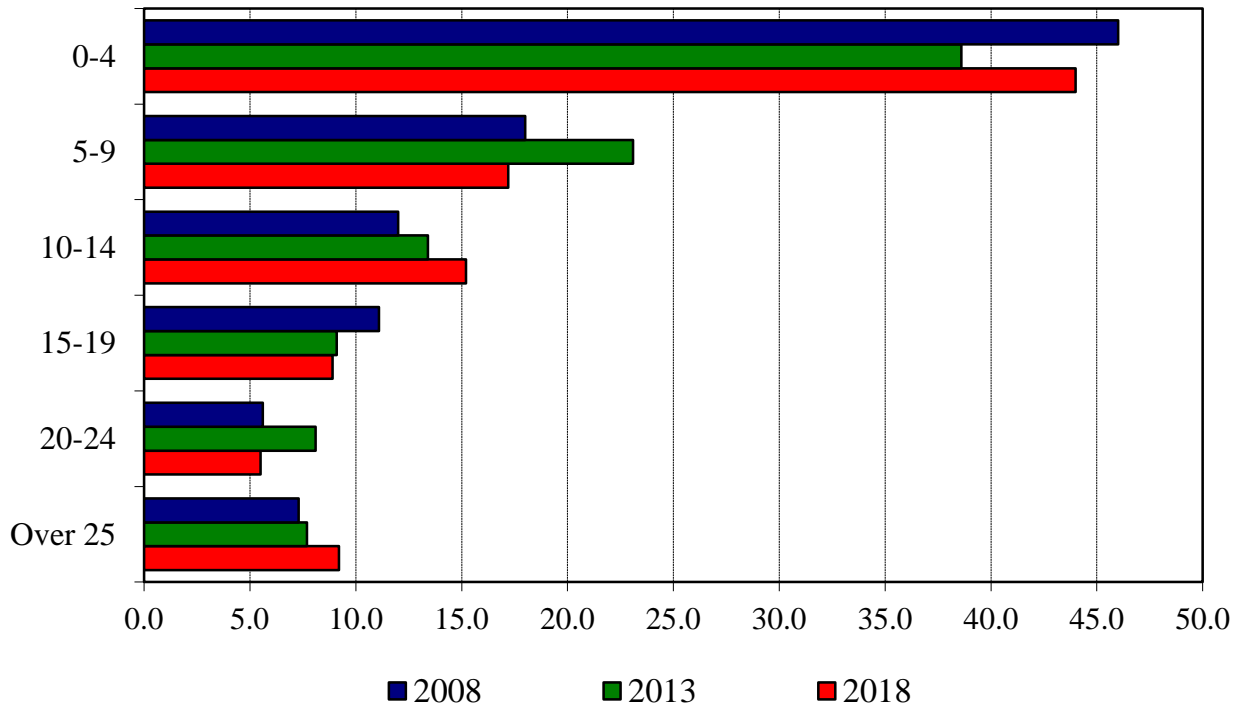


		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total Income (\$Mil)	<span style="color: blue;">■</span>	-9.0	22.4	23.6	3.9	16.2	28.9	7.8	9.0	21.1	25.1
Benefits and Expenses (\$Mil)	<span style="color: yellow;">■</span>	8.6	9.1	10.2	10.8	12.7	12.8	15.2	15.0	13.9	14.2
Net Change in MVA (\$Mil)	<span style="color: red;">—</span>	-17.6	13.3	13.4	1.5	3.5	16.1	-7.4	-6.0	7.2	10.9

**Plan B – Active – Census By Age**  
(as a percent)



**Plan B – Active – Census By Service**  
(as a percent)



**EXHIBIT I**  
**PLAN A: ANALYSIS OF ACTUARIALLY REQUIRED CONTRIBUTIONS**

1.	Present Value of Future Benefits .....	\$ 1,335,318,466
2.	Funding Deposit Account Credit Balance .....	\$ 8,712,724
3.	Frozen Unfunded Actuarial Accrued Liability .....	\$ 68,334,864
4.	Actuarial Value of Assets .....	\$ 797,679,469
5.	Present Value of Future Employee Contributions .....	\$ 110,664,765
6.	Present Value of Future Employer Normal Costs (1 + 2 – 3 – 4 – 5).....	\$ 367,352,092
7.	Present Value of Future Salaries.....	\$ 1,322,839,091
8.	Employer Normal Cost Accrual Rate (6 ÷ 7) .....	27.769976%
9.	Projected Fiscal 2019 Salary for Current Membership.....	\$ 168,877,032
10.	Employer Normal Cost as of July 1, 2018 (8 × 9).....	\$ 46,897,111
11.	Employer Normal Cost Interest Adjusted for Mid-year Payment .....	\$ 48,573,047
12.	Amortization Payment on Frozen Unfunded Accrued Liability with Payments Increasing at 4.25% per year .....	\$ 7,138,168
13.	Amortization Payment Interest Adjust for Mid-year Payment .....	\$ 7,393,261
14.	TOTAL Employer Normal Cost & Amortization Payment (11 + 13).....	\$ 55,966,308
15.	Estimated Administrative Cost for Fiscal 2019 .....	\$ 1,374,875
16.	Gross Employer Actuarially Required Contribution for Fiscal 2019 (14 + 15) .....	\$ 57,341,183
17.	Projected Ad Valorem Tax Contributions for Fiscal 2019 .....	\$ 6,180,051
18.	Projected Revenue Sharing Funds for Fiscal 2019 .....	\$ 113,209
19.	Employers' Minimum Net Direct Actuarially Required Contribution for Fiscal 2019 (16 – 17 – 18).....	\$ 51,047,923
20.	Projected Payroll for Fiscal 2019.....	\$ 185,436,456
21.	Employers' Minimum Net Direct Actuarially Required Contribution as a % of Projected Payroll for Fiscal 2019 (19 ÷ 20) .....	27.53%
22.	Board Approved Employer Contribution Rate for 2019.....	26.00%
23.	Contribution Shortfall (Excess) as a Percentage of Payroll (21 – 22) .....	1.53%
24.	Increase (Reduction) to Following Year Payment for Contribution Shortfall (Excess).....	0.20%
25.	Minimum Recommended Net Direct Employer Contribution Rate for Fiscal 2020 (21 + 24, Rounded to the nearest 0.25%).....	27.75%

**EXHIBIT II**  
**PLAN A: PRESENT VALUE OF FUTURE BENEFITS**

PRESENT VALUE OF FUTURE BENEFITS FOR ACTIVE MEMBERS:

Retirement Benefits .....	\$ 629,553,455
Survivor Benefits.....	10,854,217
Disability Benefits .....	11,754,314
Vested Termination Benefits.....	31,560,806
Refunds of Contributions .....	18,800,827

TOTAL Present Value of Future Benefits for Active Members..... \$ 702,523,619

PRESENT VALUE OF FUTURE BENEFITS FOR TERMINATED MEMBERS:

Terminated Vested Members Due Benefits at Retirement..	\$ 17,552,683
Terminated Members with Reciprocals	
Due Benefits at Retirement .....	1,127,348
Terminated Members Due a Refund .....	4,370,621

TOTAL Present Value of Future Benefits for Terminated Members..... \$ 23,050,652

PRESENT VALUE OF FUTURE BENEFITS FOR RETIREES:

Regular Retirees	
Maximum.....	\$ 223,704,703
Option 2 .....	231,556,008
Option 3 .....	72,728,583
Option 4 .....	2,980,349

TOTAL Regular Retirees..... \$ 530,969,643

Disability Retirees..... 12,843,000

Survivors & Widows..... 60,147,208

Reserve for Accrued Retiree DROP Account Balances..... 5,784,344

TOTAL Present Value of Future Benefits for Retirees & Survivors..... \$ 609,744,195

TOTAL Present Value of Future Benefits..... \$ 1,335,318,466

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

CURRENT ASSETS:

Cash in Banks .....	\$ 32,213,872
Contributions and Taxes Receivable.....	5,152,195
Accrued Interest and Dividends.....	600,751
Investments Receivable .....	5,110,046
Due (to) from Other Funds .....	4,785,572
Other Current Assets.....	12,037

TOTAL CURRENT ASSETS..... \$ 47,874,473

Property, Plant & Equipment..... \$ 1,451,231

INVESTMENTS:

Cash Equivalents.....	\$ 4,684,669
Equities .....	375,354,577
Fixed Income .....	234,209,558
Real Estate .....	28,940,657
Alternative Investments .....	42,402,569

TOTAL INVESTMENTS..... \$ 685,592,030

TOTAL ASSETS .....

\$ 734,917,734

CURRENT LIABILITIES:

Accounts Payable .....	\$ 331,719
Refunds Payable.....	245,155
Due to other Plans .....	38,092
Other Current Liabilities .....	76,574

TOTAL CURRENT LIABILITIES .....

\$ 691,540

MARKET VALUE OF ASSETS .....

\$ 734,226,194



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

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

Fiscal year 2018.....	\$ (9,067,158)
Fiscal year 2017.....	(18,915,901)
Fiscal year 2016.....	(72,602,401)
Fiscal year 2015 .....	(79,045,238)
Fiscal year 2014 .....	29,763,811
 Total for Five Years .....	 \$ (149,866,887)

Deferral of Excess (Shortfall) of Invested Income:

Fiscal year 2018 (80%).....	\$ (7,253,726)
Fiscal year 2017 (60%).....	(11,349,541)
Fiscal year 2016 (40%).....	(29,040,960)
Fiscal year 2015 (20%).....	(15,809,048)
Fiscal year 2014 ( 0%).....	0
 Total Deferred for Year.....	 \$ (63,453,275)

Market Value of Plan Net Assets, End of Year..... \$ 734,226,194

Preliminary Actuarial Value of Plan Assets, End of Year..... \$ 797,679,469

Actuarial Value of Assets Corridor

85% of Market Value, End of Year.....	\$ 624,092,265
115% of Market Value, End of Year.....	\$ 844,360,123

Final Actuarial Value of Plan Net Assets, End of Year..... \$ 797,679,469

**EXHIBIT IV**  
**PLAN A: PRESENT VALUE OF FUTURE CONTRIBUTIONS**

Employee Contributions to the Annuity Savings Fund .....	\$ 110,664,765
Employer Normal Contributions to the Pension Accumulation Fund .....	367,352,092
Employer Amortization Payments to the Pension Accumulation Fund .....	68,334,864
Funding Deposit Account Debit (Credit) Balance .....	(8,712,724)
<b>TOTAL PRESENT VALUE OF FUTURE CONTRIBUTIONS .....</b>	<b>\$ 537,638,997</b>

**EXHIBIT V**  
**PLAN A: CHANGE IN FROZEN UNFUNDED ACTUARIAL ACCRUED LIABILITY**

Prior Year Frozen Unfunded Accrued Liability .....	\$ 70,511,316
Interest on Frozen Unfunded Accrued Liability .....	\$ 5,217,837
<b>TOTAL Interest Adjusted Cost Elements .....</b>	<b>\$ 5,217,837</b>
Amortization Payment on the Unfunded Accrued Liability .....	\$ 6,884,813
Interest on Amortization Payment .....	509,476
Credited Withdrawals from Funding Deposit Account .....	0
<b>TOTAL Interest Adjusted Employer Contributions .....</b>	<b>\$ 7,394,289</b>
<b>NET Change in Frozen Unfunded Accrued Liability .....</b>	<b>\$ (2,176,452)</b>
<b>CURRENT YEAR FROZEN UNFUNDED ACCRUED LIABILITY .....</b>	<b>\$ 68,334,864</b>

**EXHIBIT VI**  
**PLAN A: ANALYSIS OF CHANGE IN ASSETS**

Actuarial Value of Assets (June 30, 2017) .....	\$	781,417,434
<b>INCOME:</b>		
Member Contributions .....	\$	16,406,019
Employer Contributions .....		45,386,253
Ad Valorem Taxes and Revenue Sharing .....		6,237,749
Transfers from Other Plan/Systems .....		1,342,120
<b>Total Contributions .....</b>	<b>\$</b>	<b>69,372,141</b>
Net Appreciation in Fair Value of Investments .....	\$	43,760,382
Interest & Dividend Income .....		1,019,179
Investment Expense .....		(2,451,922)
<b>Net Investment Income .....</b>	<b>\$</b>	<b>42,327,639</b>
<b>TOTAL Income .....</b>	<b>\$</b>	<b>111,699,780</b>
<b>EXPENSES:</b>		
Retirement Benefits .....	\$	61,750,998
DROP Disbursements .....		5,565,777
Refunds of Contributions .....		4,508,706
Funds Transferred to another System .....		1,237,971
Transfer to Plan B .....		38,092
Administrative Expenses .....		1,429,978
<b>TOTAL Expenses .....</b>	<b>\$</b>	<b>74,531,522</b>
<b>Net Market Value Income for Fiscal 2018 (Income – Expenses) .....</b>	<b>\$</b>	<b>37,168,258</b>
<b>Unadjusted Fund Balance as of June 30, 2018</b> <b>(Fund Balance Previous Year + Net Income) .....</b>	<b>\$</b>	<b>818,585,692</b>
<b>Adjustment for Actuarial Smoothing .....</b>	<b>\$</b>	<b>(20,906,223)</b>
<b>Actuarial Value of Assets: (June 30, 2018) .....</b>	<b>\$</b>	<b>797,679,469</b>

**EXHIBIT VII  
PLAN A: FUNDING DEPOSIT ACCOUNT**

Funding Deposit Account Balance as of June 30, 2017 .....	\$ 8,112,406
Interest on Opening Balance at 7.40% .....	600,318
Contributions to the Funding Deposit Account .....	0
Withdrawals from the Funding Deposit Account .....	0
Funding Deposit Account Balance as of June 30, 2018 .....	\$ 8,712,724

**EXHIBIT VIII – SCHEDULE A  
PLAN A: PENSION BENEFIT OBLIGATION**

Present Value of Credited Projected Benefits Payable to Current Employees.....	\$ 480,634,989
Present Value of Benefits Payable to Terminated Employees .....	23,050,652
Present Value of Benefits Payable to Current Retirees and Beneficiaries .....	609,744,195
TOTAL PENSION BENEFIT OBLIGATION .....	\$ 1,113,429,836
NET ACTUARIAL VALUE OF ASSETS .....	\$ 797,679,469
Ratio of Net Actuarial Value of Assets to Pension Benefit Obligation.....	71.64%

**EXHIBIT VIII – SCHEDULE B  
PLAN A: ENTRY AGE NORMAL ACCRUED LIABILITIES**

Accrued Liability for Active Employees .....	\$ 496,285,819
Accrued Liability for Terminated Employees .....	23,050,652
Accrued Liability for Current Retirees and Beneficiaries .....	609,744,195
TOTAL ENTRY AGE NORMAL ACCRUED LIABILITY .....	\$ 1,129,080,666
ACTUARIAL VALUE OF ASSETS .....	\$ 797,679,469
Ratio of Net Actuarial Value of Assets to Entry Age Normal Accrued Liability .....	70.65%

**EXHIBIT IX  
CENSUS DATA – PLAN A**

	<b>Active</b>	<b>Terminated with Funds on Deposit</b>	<b>DROP</b>	<b>Retired</b>	<b>Total</b>
Number of members as of June 30, 2017	4,713	3,069	224	3,417	11,423
Additions to Census					
Initial membership	613	55			668
Omitted in error last year				1	1
Death of another member				47	47
Adjustment for multiple records	3			29	32
Change in Status during Year					
Actives terminating service	(202)	202			
Actives who retired	(86)			86	
Actives entering DROP	(91)		91		
Term. members rehired	13	(13)			
Term. members who retire		(19)		19	
Retirees who are rehired	14			(14)	
Refunded who are rehired	15	3			18
DROP participants retiring			(46)	46	
DROP returned to work	44		(44)		
Omitted in error last year					
Eliminated from Census					
Refund of contributions	(352)	(116)			(468)
Deaths	(16)	(2)	(1)	(163)	(182)
Included in error last year					
Adjustment for multiple records	(1)		(3)		(4)
Number of members as of June 30, 2018	4,667	3,179	221	3,468	11,535

PLAN A - ACTIVES CENSUS BY AGE:

Age	Number Male	Number Female	Total Number	Average Salary	Total Salary
16 - 20	29	8	37	22,439	830,248
21 - 25	143	70	213	25,225	5,372,961
26 - 30	223	137	360	30,622	11,023,792
31 - 35	282	145	427	34,495	14,729,329
36 - 40	276	161	437	35,630	15,570,334
41 - 45	255	171	426	36,130	15,391,572
46 - 50	383	199	582	38,439	22,371,283
51 - 55	480	238	718	39,549	28,396,071
56 - 60	494	276	770	40,256	30,997,321
61 - 65	366	202	568	40,295	22,887,634
66 - 70	143	68	211	42,111	8,885,426
71 - 75	64	22	86	38,539	3,314,360
76 - 80	36	8	44	39,483	1,737,230
81 - 85	4	3	7	33,537	234,759
86 - 90	1	1	2	22,170	44,340
TOTAL	3,179	1,709	4,888	37,190	181,786,660

THE ACTIVE CENSUS INCLUDES 1,809 ACTIVES WITH VESTED BENEFITS, INCLUDING 221 DROP PARTICIPANTS AND 199 ACTIVE FORMER DROP PARTICIPANTS.

PLAN A - TERMINATED MEMBERS DUE A DEFERRED RETIREMENT BENEFIT:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
31 - 35	3	1	4	10,418	41,672
36 - 40	7	2	9	13,928	125,356
41 - 45	7	8	15	15,586	233,786
46 - 50	17	5	22	16,580	364,766
51 - 55	33	24	57	15,648	891,959
56 - 60	29	30	59	14,456	852,884
61 - 65	5	7	12	10,934	131,211
66 - 70	1	1	2	9,420	18,839
71 - 75	1	2	3	7,321	21,963
76 - 80	1	1	2	3,444	6,887
TOTAL	104	81	185	14,537	2,689,323

PLAN A - TERMINATED MEMBERS DUE A REFUND OF CONTRIBUTIONS:

Contributions Ranging From	To	Number	Total Contributions
0	99	1,854	96,852
100	499	414	106,466
500	999	182	130,005
1000	1999	154	221,643
2000	4999	152	491,541
5000	9999	114	832,629
10000	19999	77	1,120,331
20000	99999	47	1,335,914
TOTAL		2,994	4,335,381

PLAN A - REGULAR RETIREES:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
41 - 45	4	0	4	18,931	75,725
46 - 50	13	5	18	28,146	506,628
51 - 55	55	30	85	28,646	2,434,928
56 - 60	168	95	263	29,030	7,634,898
61 - 65	359	133	492	25,286	12,440,515
66 - 70	358	181	539	21,990	11,852,669
71 - 75	332	135	467	16,791	7,841,473
76 - 80	249	100	349	16,071	5,608,777
81 - 85	150	71	221	15,189	3,356,729
86 - 90	101	35	136	13,480	1,833,291
91 & over	40	28	68	12,015	817,025
TOTAL	1,829	813	2,642	20,591	54,402,658

PLAN A - DISABILITY RETIREES:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
41 - 45	3	0	3	11,840	35,519
46 - 50	9	1	10	11,450	114,499
51 - 55	12	2	14	14,934	209,070
56 - 60	20	6	26	12,989	337,721
61 - 65	21	8	29	11,296	327,582
66 - 70	12	4	16	8,958	143,332
71 - 75	5	2	7	5,704	39,930
76 - 80	5	3	8	7,165	57,317
81 - 85	3	0	3	7,592	22,777
86 - 90	1	1	2	4,761	9,521
TOTAL	91	27	118	10,994	1,297,268

PLAN A - SURVIVORS:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
0 - 25	5	5	10	12,237	122,372
26 - 30	1	1	2	12,734	25,467
31 - 35	0	2	2	8,830	17,660
36 - 40	2	2	4	5,622	22,488
41 - 45	2	4	6	7,683	46,100
46 - 50	1	7	8	16,136	129,085
51 - 55	6	25	31	7,110	220,404
56 - 60	8	38	46	10,246	471,336
61 - 65	3	61	64	14,756	944,385
66 - 70	9	75	84	12,415	1,042,854
71 - 75	6	90	96	10,788	1,035,653
76 - 80	10	128	138	10,335	1,426,255
81 - 85	4	100	104	9,870	1,026,428
86 - 90	0	76	76	9,120	693,132
91 - 99	0	37	37	7,050	260,848
TOTAL	57	651	708	10,571	7,484,467

PLAN A - ACTIVE MEMBERS:

Attained Ages	Completed Years of Service											Total		
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over			
0 - 20	30	6	1											37
21 - 25	105	55	23	18	8	4								213
26 - 30	75	72	60	39	30	81	3							360
31 - 35	79	58	56	49	31	111	43							427
36 - 40	63	45	58	44	31	95	56							437
41 - 45	60	30	33	32	28	78	72	44	1					426
46 - 50	56	45	44	40	31	105	67	55	37	1				582
51 - 55	66	58	53	44	42	122	87	66	76	58	1			718
56 - 60	58	57	53	47	27	148	100	79	79	63	32			770
61 - 65	35	30	32	28	31	112	83	61	65	54	37			568
66 - 70	11	12	6	9	5	42	33	33	18	15	27			211
71 & Over	8	8	7	4	2	18	24	18	19	13	18			139
Totals	646	476	426	354	266	916	568	409	377	276	174			4,888

PLAN A - 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	21,769	25,202	25,953												22,439
21 - 25	23,767	26,715	25,786	25,056	27,762	35,493									25,225
26 - 30	26,113	27,335	32,204	32,103	37,681	33,185	31,498								30,622
31 - 35	26,842	30,592	33,095	34,110	33,650	40,613	40,897								34,495
36 - 40	27,851	30,105	34,813	34,231	32,981	37,745	41,674	44,017	57,029						35,630
41 - 45	27,419	27,566	33,350	32,969	35,335	37,611	37,768	42,821	46,271	54,354					36,130
46 - 50	27,020	27,219	32,299	33,954	31,713	34,798	41,077	43,961	50,203	51,284	43,892				38,439
51 - 55	30,288	30,543	31,381	36,087	33,907	37,256	38,135	41,423	47,461	52,344	61,802				39,549
56 - 60	30,302	34,172	36,929	35,101	34,519	38,189	39,594	45,068	41,077	47,323	56,861				40,256
61 - 65	30,984	30,953	35,739	38,882	36,114	34,450	40,308	40,601	47,448	47,515	59,248				40,295
66 - 70	35,347	23,316	32,021	35,342	45,690	43,404	42,050	40,178	39,357	59,965	49,398				42,111
71 & Over	30,205	24,770	27,172	35,300	49,938	32,504	43,282	42,952	31,222	46,085	48,351				38,350
Average	27,263	29,192	33,079	34,122	34,566	37,091	39,978	42,767	45,421	50,157	56,164				37,190



PLAN A - TERMINATED MEMBERS DUE A DEFERRED RETIREMENT BENEFIT:

Attained Ages	Years Until Retirement Eligibility											Total	
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over		
0 - 30													0
31 - 35												4	4
36 - 40									9				9
41 - 45								15					15
46 - 50							21						21
51 - 55	1					1							1
56 - 60	9	15	8	14	13	56							111
61 - 65	11					1							12
66 - 70	2												2
71 - 75	3												3
76 - 80	2												2
81 & Over													0
Totals	28	15	8	14	13	58	21	15	9	4	0		185

PLAN A - 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												10,418	10,418
36 - 40									13,928				13,928
41 - 45								15,586					15,586
46 - 50						25,170	16,171						16,580
51 - 55						15,496							15,648
56 - 60	14,525	14,549	12,447	14,303	15,700	3,596							14,456
61 - 65	11,601												10,934
66 - 70	9,420												9,420
71 - 75	7,321												7,321
76 - 80	3,444												3,444
81 & Over													0
Average	11,794	14,549	12,447	14,303	15,700	15,457	16,171	15,586	13,928	10,418	0		14,537

PLAN A - SERVICE RETIREES:

Attained Ages	Completed Years Since Retirement											Total	
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over		
0 - 50	7	3	4	6	9	2	3						22
51 - 55	13	13	12	10	9	25	3						85
56 - 60	31	20	25	26	20	80	52	8		1			263
61 - 65	58	50	58	45	51	98	99	25	5	3			492
66 - 70	26	35	39	42	35	211	83	54	7	5	2		539
71 - 75	13	16	9	19	21	144	170	55	16	4			467
76 - 80	5	3	3	10	5	56	94	106	42	19	6		349
81 - 85		1	1	4	1	19	33	57	68	29	8		221
86 - 90	1	1	1	1	1	4	12	23	34	42	17		136
91 & Over			1	1			3	2	7	21	33		68
Totals	154	142	153	164	142	639	549	330	179	124	66		2,642

PLAN A - 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	29,532	23,375	23,141	26,985	28,529	25,516							26,471
51 - 55	28,286	39,804	31,515	29,523	28,529	22,868	15,959						28,646
56 - 60	36,847	30,739	36,626	36,510	27,430	28,056	21,140	14,732		2,753			29,030
61 - 65	22,909	26,166	22,840	24,893	29,755	30,101	23,289	20,281	11,230	7,461			25,286
66 - 70	21,722	21,606	20,195	21,596	23,160	22,641	22,813	21,732	19,272	7,572	4,730		21,990
71 - 75	13,467	20,851	21,143	19,898	15,595	15,140	16,071	20,663	20,157	16,461			16,791
76 - 80	19,022	17,040	6,197	15,338	12,164	14,718	14,269	14,708	22,984	25,058	10,632		16,071
81 - 85		6,885	14,499	20,319	2,787	15,950	12,856	12,247	15,212	21,365	21,485		15,189
86 - 90	34,120	14,593	6,621	49,262	30,209	10,793	8,670	10,052	13,071	13,034	21,085		13,480
91 & Over			30,209	43,929			7,751	5,075	10,596	12,223	11,473		12,015
Average	25,419	25,867	24,568	25,241	24,821	21,823	18,162	16,465	16,938	16,360	14,882		20,591

PLAN A - DISABILITY RETIREES:

Attained Ages	Completed Years Since Retirement											Total	
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over		
0 - 40													0
41 - 45		2	1										3
46 - 50	1	3	2		1	1	2	1	1				10
51 - 55	2	2	2			3	3	1		1			14
56 - 60	1	3	1	1	1	6	6	5	2				26
61 - 65		2	1	4	1	8	3	7	3				29
66 - 70		1	1			5	3	3	2	1			16
71 - 75							1	4	2		2		7
76 - 80	1					1	1	1	2	1	1		8
81 - 85						1	1	1					3
86 - 90						1	1	1	1	1			2
91 & Over									1	1			0
Totals	5	13	6	5	3	25	20	23	11	4	3		118

PLAN A - 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 - 40													0
41 - 45		12,570	10,379										11,840
46 - 50	8,196	12,756				16,643	9,469	8,496	12,460				11,450
51 - 55	17,359	13,295	12,981		11,499	14,306	18,690	14,652		8,158			14,934
56 - 60	12,972	9,014	16,294	12,102	12,927	15,387	17,100	8,925	8,415				12,989
61 - 65		6,603	13,771	13,137	5,937	14,528	8,661	10,729	8,268				11,296
66 - 70		7,583	10,607			8,796	5,733	8,838	9,107	19,233			8,958
71 - 75							4,190	7,358			3,154		5,704
76 - 80	4,628					8,368	5,321	5,400	9,006	6,435	9,154		7,165
81 - 85						8,244	9,656	4,877	5,992	3,529			7,592
86 - 90													4,760
91 & Over													0
Average	12,103	10,602	12,835	12,930	10,121	13,148	11,998	9,092	8,756	9,338	5,154		10,994

PLAN A - SURVIVING BENEFICIARIES OF FORMER MEMBERS:

Completed Years Since Retirement

Attained Ages	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over	Total
0 - 20	4		2	1	1	2						10
21 - 25												0
26 - 30	1				1	1						2
31 - 35					1			1				2
36 - 40	1			1		2						4
41 - 45						2	2	1		1		6
46 - 50		1			1	1	1	4				8
51 - 55		1	1		1	6	9	5	2	1	5	31
56 - 60	1	3	2	6	3	9	11	6	2	4	2	46
61 - 65	1	1	4	5	1	13	14	10	10	7	2	64
66 - 70				3	4	13	24	16	13	6	5	84
71 - 75				3	4	9	27	19	21	6	7	96
76 - 80		1		3	2	8	19	29	34	22	20	138
81 - 85	2					4	10	21	21	23	23	104
86 - 90						2	3	9	8	27	27	76
91 & Over						1	1	3	1	5	27	37
Totals	10	7	9	19	14	73	120	124	112	102	118	708

PLAN A - AVERAGE ANNUAL BENEFITS PAYABLE TO SURVIVORS OF FORMER MEMBERS:

Completed Years Since Retirement

Attained Ages	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over	Average Benefit
0 - 20	11,224		17,461	7,133	18,188	8,617						12,237
21 - 25												0
26 - 30	17,890					7,577						12,733
31 - 35					7,862			9,798				8,830
36 - 40	4,554			4,229		6,852				7,255		5,622
41 - 45						5,989	12,497	1,874				7,683
46 - 50					8,999	3,997	53,259	12,498				16,136
51 - 55					23,878	5,120	9,866	4,814	6,671		1,842	7,110
56 - 60	9,328	12,839	20,493	12,622	20,094	11,521	7,922	9,361	8,146	2,774	2,771	10,246
61 - 65	14,836	18,617	19,298	34,637	13,697	22,077	17,028	10,855	6,837	5,751	5,495	14,756
66 - 70			29,120	8,954	11,076	16,039	10,687	13,048	9,072	6,032	3,209	12,415
71 - 75				8,348	26,184	13,139	11,202	12,340	11,030	6,311	5,692	10,788
76 - 80		7,428				7,994	11,040	11,863	9,933	10,328	7,938	10,335
81 - 85	12,662					7,745	8,061	7,058	10,772	11,939	10,456	9,869
86 - 90						4,046	15,739	7,967	7,933	10,975	7,642	9,120
91 & Over						7,469		14,435	8,169	7,342	6,118	7,050
Average	11,683	13,608	23,388	16,431	16,398	12,509	11,576	10,491	9,671	9,622	7,224	10,571

**EXHIBIT X**  
**PLAN A: YEAR-TO-YEAR COMPARISON**

	Fiscal 2018	Fiscal 2017	Fiscal 2016	Fiscal 2015
Number of Active Members	4,888	4,937	4,912	4,926
Number of Retirees & Survivors	3,468	3,417	3,345	3,262
Number of Terminated Due Deferred Benefits	185	184	186	182
Number Terminated Due Refunds	2,994	2,885	2,826	2,731
Active Lives Payroll	\$ 181,786,660	\$ 182,044,919	\$ 177,777,678	\$ 172,033,158
Retiree Benefits in Payment	\$ 63,184,393	\$ 60,663,715	\$ 57,895,282	\$ 54,791,332
Market Value of Assets (MVA)	\$ 734,226,194	\$ 697,057,939	\$ 671,876,210	\$ 698,984,365
Actuarial Value of Assets (AVA)	\$ 797,679,469	\$ 781,417,434	\$ 769,849,744	\$ 770,402,847
Entry Age Normal Accrued Liability	\$ 1,129,080,666	\$ 1,063,558,257	\$ 1,038,155,304	\$ 967,584,136
Ratio of AVA to EAN Accrued Liability	70.65%	71.26%	72.38%	74.21%
Frozen Unfunded Actuarial Accrued Liability	\$ 68,334,864	\$ 70,511,316	\$ 72,227,730	\$ 73,553,869
Present Value of Future Employer Normal Cost	\$ 367,352,092	\$ 344,034,117	\$ 315,256,488	\$ 287,312,026
Present Value of Future Employee Contrib.	\$ 110,664,765	\$ 109,901,879	\$ 105,774,692	\$ 101,854,569
Funding Deposit Account Balance	\$ 8,712,724	\$ 8,112,406	\$ 8,421,235	\$ 7,833,707
Present Value of Future Benefits	\$ 1,335,318,466	\$ 1,297,752,340	\$ 1,254,687,419	\$ 1,225,289,604
	Fiscal 2019	Fiscal 2018	Fiscal 2017	Fiscal 2016
Board Approved Employee Contribution Rate	9.50%	9.50%	9.50%	8.25%
Estimated Tax Contribution as a % of Payroll	3.39%	3.39%	3.40%	3.64%
Actuarially Required Net Direct Employer Contribution Rate	27.53%	25.88%	24.64%	22.92%
Board Approved Employer Contribution Rate	26.00%	24.75%	23.25%*	19.75%

\* Includes 0.5% from the Funding Deposit Account

Fiscal 2014	Fiscal 2013	Fiscal 2012	Fiscal 2011	Fiscal 2010	Fiscal 2009
4,894	4,939	5,021	5,029	5,068	5,052
3,177	3,106	3,040	3,001	2,907	2,861
184	193	181	174	183	172
2,667	2,672	2,632	2,594	2,590	2,596
\$ 167,852,836	\$ 167,422,222	\$ 167,511,550	\$ 164,262,655	\$ 162,546,523	\$ 157,082,727
\$ 51,636,071	\$ 48,994,132	\$ 46,224,138	\$ 44,218,709	\$ 41,527,971	\$ 39,834,118
\$ 730,072,543	\$ 657,723,192	\$ 639,209,518	\$ 679,285,361	\$ 624,427,505	\$ 568,167,813
\$ 751,235,484	\$ 717,816,409	\$ 721,475,280	\$ 723,942,801	\$ 704,735,602	\$ 670,910,030
\$ 967,584,136	\$ 948,970,683	\$ 925,638,084	\$ 903,431,729	\$ 876,252,316	\$ 812,467,140
77.64%	75.64%	77.94%	80.13%	80.43%	82.58%
\$ 74,454,702	\$ 75,038,341	\$ 75,337,890	\$ 75,313,546	\$ 75,064,492	\$ 74,616,607
\$ 235,357,990	\$ 249,506,497	\$ 225,090,618	\$ 201,003,138	\$ 192,786,430	\$ 154,002,240
\$ 97,716,362	\$ 97,624,041	\$ 95,445,659	\$ 92,535,571	\$ 92,383,724	\$ 88,362,181
\$ 8,930,139	\$ 8,287,832	\$ 7,691,723	\$ 7,121,966	\$ 6,594,413	\$ 6,105,938
\$ 1,149,834,399	\$ 1,131,697,456	\$ 1,109,657,724	\$ 1,085,673,090	\$ 1,058,375,835	\$ 981,785,120

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Fiscal 2015	Fiscal 2014	Fiscal 2013	Fiscal 2012	Fiscal 2011	Fiscal 2010
9.50%	9.50%	9.25%	9.25%	9.25%	9.25%
3.52%	3.36%	3.13%	3.09%	3.07%	3.07%
19.48%	20.62%	18.67%	17.08%	16.41%	13.78%
20.75%†	18.75%	17.00%	16.75%	14.25%	13.50%

† Includes 1.0% from the Funding Deposit Account

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**EXHIBIT XI**  
**PLAN B: ANALYSIS OF ACTUARIALLY REQUIRED CONTRIBUTIONS**

1. Present Value of Future Benefits .....	\$ 293,683,688
2. Funding Deposit Account Credit Balance .....	\$ 1,523,023
3. Frozen Unfunded Actuarial Accrued Liability .....	\$ 0
4. Actuarial Value of Assets .....	\$ 175,032,415
5. Present Value of Future Employee Contributions .....	\$ 24,253,572
6. Present Value of Future Employer Normal Costs (1 + 2 – 3 – 4 – 5).....	\$ 95,920,724
7. Present Value of Future Salaries.....	\$ 546,351,499
8. Employer Normal Cost Accrual Rate (6 ÷ 7) .....	17.556596%
9. Projected Fiscal 2019 Salary for Current Membership.....	\$ 68,816,950
10. Employer Normal Cost as of July 1, 2018 (8 × 9).....	\$ 12,081,914
11. Employer Normal Cost Interest Adjusted for Mid-year Payment .....	\$ 12,513,679
12. Amortization Payment on Frozen Unfunded Accrued Liability .....	\$ 0
13. TOTAL Employer Normal Cost & Amortization Payment (11 + 12).....	\$ 12,513,679
14. Estimated Administrative Cost for Fiscal 2019 .....	\$ 564,941
15. Gross Employer Actuarially Required Contribution for Fiscal 2019 (13 + 14) .....	\$ 13,078,620
16. Projected Ad Valorem Tax Contributions for Fiscal 2019 .....	\$ 2,539,407
17. Projected Revenue Sharing Funds for Fiscal 2019 .....	\$ 46,518
18. Employers' Minimum Net Direct Actuarially Required Contribution for Fiscal 2019 (15 – 16 – 17).....	\$ 10,492,695
19. Projected Payroll for Fiscal 2019.....	\$ 76,396,822
20. Employers' Minimum Net Direct Actuarially Required Contribution as a % of Projected Payroll for Fiscal 2019 (18 ÷ 19).....	13.73%
21. Board Approved Employer Contribution Rate for 2019.....	14.00%
22. Contribution Shortfall (Excess) as a Percentage of Payroll (20 – 21) .....	(0.27%)
23. Increase (Reduction) to Following Year Payment for Contribution Shortfall (Excess).....	(0.03%)
24. Minimum Recommended Net Direct Employer Contribution Rate for Fiscal 2020 (20 + 23, Rounded to the nearest 0.25%).....	13.75%



**EXHIBIT XII**  
**PLAN B: PRESENT VALUE OF FUTURE BENEFITS**

PRESENT VALUE OF FUTURE BENEFITS FOR ACTIVE MEMBERS:

Retirement Benefits .....	\$ 157,573,912
Survivor Benefits.....	3,168,401
Disability Benefits .....	7,748,349
Vested Termination Benefits.....	8,228,444
Refunds of Contributions .....	4,066,728

TOTAL Present Value of Future Benefits for Active Members..... \$ 180,785,834

PRESENT VALUE OF FUTURE BENEFITS FOR TERMINATED MEMBERS:

Terminated Vested Members Due Benefits at Retirement..	\$ 6,620,199
Terminated Members with Reciprocals Due Benefits at Retirement .....	1,177,685
Terminated Members Due a Refund .....	1,008,446

TOTAL Present Value of Future Benefits for Terminated Members..... \$ 8,806,330

PRESENT VALUE OF FUTURE BENEFITS FOR PENSIONERS:

Regular Retirees by Option Selected:

Maximum.....	\$ 40,927,769
Option 2 .....	34,282,528
Option 3 .....	9,536,190

TOTAL Regular Retirees .....	\$ 84,746,487
TOTAL Disability Retirees .....	\$ 3,916,574
TOTAL Survivors & Widows.....	\$ 14,727,357
Reserve for Accrued Retiree DROP Account Balances.....	\$ 701,106

TOTAL Present Value of Future Benefits for Retirees & Survivors..... \$ 104,091,524

TOTAL Present Value of Future Benefits..... \$ 293,683,688

**EXHIBIT XIII – SCHEDULE A  
PLAN B: MARKET VALUE OF ASSETS**

CURRENT ASSETS:

Cash in Banks .....	\$ 11,665,431
Contributions and Taxes Receivable.....	1,235,493
Accrued Interest and Dividends.....	135,752
Investments Receivable .....	1,083,950
Due (to) from Other Funds .....	(4,785,572)
Other Current Assets.....	4,843

TOTAL CURRENT ASSETS..... \$ 9,339,897

Property Plant & Equipment..... \$ 548,902

INVESTMENTS:

Cash Equivalents.....	\$ 7,050,119
Equities .....	79,620,670
Fixed Income .....	49,680,815
Real Estate .....	6,132,605
Alternative Investments .....	8,997,889

TOTAL INVESTMENTS..... \$ 151,482,098

TOTAL ASSETS .....

\$ 161,370,897

CURRENT LIABILITIES:

Accounts Payable .....	\$ 40,723
Refunds Payable.....	47,382
Due to other Plans .....	(38,092)
Other Current Liabilities .....	36,082

TOTAL CURRENT LIABILITIES .....

\$ 86,095

MARKET VALUE OF ASSETS..... \$ 161,284,802

**EXHIBIT XIII – SCHEDULE B  
PLAN B – ACTUARIAL VALUE OF ASSETS**

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

Fiscal year 2018 .....	\$ (2,132,350)
Fiscal year 2017 .....	(4,100,380)
Fiscal year 2016 .....	(15,463,450)
Fiscal year 2015 .....	(16,980,623)
Fiscal year 2014 .....	5,602,846
Total for Five Years .....	\$ (33,073,957)

Deferral of Excess (Shortfall) of Invested Income:

Fiscal year 2018 (80%) .....	\$ (1,705,880)
Fiscal year 2017 (60%) .....	(2,460,228)
Fiscal year 2016 (40%) .....	(6,185,380)
Fiscal year 2015 (20%) .....	(3,396,125)
Fiscal year 2014 ( 0%) .....	0
Total Deferred for Year .....	\$ (13,747,613)

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

	\$ 161,284,802
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Preliminary Actuarial Value of Plan Assets, End of Year .....

	\$ 175,032,415
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Actuarial Value of Assets Corridor

85% of Market Value, End of Year .....	\$ 137,092,082
115% of Market Value, End of Year .....	\$ 185,477,522

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

	\$ 175,032,415
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**EXHIBIT XIV**  
**PLAN B: PRESENT VALUE OF FUTURE CONTRIBUTIONS**

Employee Contributions to the Annuity Savings Fund .....	\$	24,253,572
Employer Normal Contributions to the Pension Accumulation Fund.....		95,920,724
Employer Amortization Payments to the Pension Accumulation Fund .....		0
Funding Deposit Account Credit Balance .....		(1,523,023)
 TOTAL PRESENT VALUE OF FUTURE CONTRIBUTIONS .....	 \$	 118,651,273

**EXHIBIT XV**  
**PLAN B: CHANGE IN FROZEN UNFUNDED ACTUARIAL ACCRUED LIABILITY**

Prior Year Frozen Unfunded Accrued Liability .....	\$	2,382,456
Interest on Frozen Unfunded Accrued Liability .....	\$	176,302
 TOTAL Interest Adjusted Cost Elements.....	 \$	 176,302
Amortization Payment on the Unfunded Accrued Liability .....	\$	513,810
Interest on Amortization Payment .....		38,023
Credited Withdrawals from Funding Deposit Account .....		2,006,925
 TOTAL Interest Adjusted Employer Contributions .....	 \$	 2,558,758
NET Change in Frozen Unfunded Accrued Liability.....	\$	(2,382,456)
 CURRENT YEAR FROZEN UNFUNDED ACCRUED LIABILITY .....	 \$	 0

**EXHIBIT XVI**  
**PLAN B: ANALYSIS OF CHANGE IN ASSETS**

Actuarial Value of Assets (June 30, 2017) .....	\$	168,698,012
<b>INCOME:</b>		
Member Contributions .....	\$	3,528,368
Employer Contributions .....		9,877,010
Ad Valorem Taxes and Revenue Sharing .....		2,510,840
Transfers from Other Plan/Systems .....		69,442
Total Contributions .....	\$	15,985,660
Net Appreciation in Fair Value of Investments .....	\$	9,282,504
Interest & Dividend Income .....		303,480
Investment Expense .....		(520,077)
Net Investment Income .....	\$	9,065,907
TOTAL Income .....	\$	25,051,567
<b>EXPENSES:</b>		
Retirement Benefits .....	\$	11,248,164
DROP Disbursements .....		922,725
Refunds of Contributions .....		1,117,113
Funds Transferred to another System .....		409,213
Transfer from Plan A .....		(38,092)
Administrative Expenses .....		575,600
TOTAL Expenses .....	\$	14,234,723
Net Market Value Income for Fiscal 2018 (Income – Expenses) .....	\$	10,816,844
Unadjusted Fund Balance as of June 30, 2018 (Fund Balance Previous Year + Net Income) .....	\$	179,514,856
Adjustment for Actuarial Smoothing .....	\$	(4,482,441)
Actuarial Value of Assets: (June 30, 2018) .....	\$	175,032,415

**EXHIBIT XVII**  
**PLAN B: FUNDING DEPOSIT ACCOUNT**

Funding Deposit Account Balance as of June 30, 2017 .....	\$ 3,286,730
Interest on Opening Balance at 7.40% .....	243,218
Contributions to the Funding Deposit Account .....	0
Withdrawals from the Funding Deposit Account .....	(2,006,925)
Funding Deposit Account Balance as of June 30, 2018 .....	\$ 1,523,023

**EXHIBIT XVIII – SCHEDULE A**  
**PLAN B: PENSION BENEFIT OBLIGATION**

Present Value of Credited Projected Benefits Payable to Current Employees.....	\$ 121,741,663
Present Value of Benefits Payable to Terminated Employees .....	8,806,330
Present Value of Benefits Payable to Current Retirees and Beneficiaries .....	104,091,524
TOTAL PENSION BENEFIT OBLIGATION .....	\$ 234,639,517
NET ACTUARIAL VALUE OF ASSETS .....	\$ 175,032,415
Ratio of Net Actuarial Value of Assets to Pension Benefit Obligation.....	74.60%

**EXHIBIT XVIII – SCHEDULE B**  
**PLAN B: ENTRY AGE NORMAL ACCRUED LIABILITIES**

Accrued Liability for Active Employees .....	\$ 128,405,055
Accrued Liability for Terminated Employees .....	8,806,330
Accrued Liability for Current Retirees and Beneficiaries .....	104,091,524
TOTAL ENTRY AGE NORMAL ACCRUED LIABILITY .....	\$ 241,302,909
ACTUARIAL VALUE OF ASSETS .....	\$ 175,032,415
Ratio of Net Actuarial Value of Assets to Entry Age Normal Accrued Liability .....	72.54%

**EXHIBIT XIX**  
**CENSUS DATA – PLAN B**

	Active	Terminated with Funds on Deposit	DROP	Retired	Total
Number of members as of June 30, 2017	2,043	1,413	82	1,025	4,563
Additions to Census					
Initial membership	344	52			396
Omitted in error last year					
Death of another member				18	18
Adjustment for multiple records	1			4	5
Change in Status during Year					
Actives terminating service	(116)	116			
Actives who retired	(40)			40	
Actives entering DROP	(31)		31		
Term. members rehired	8	(8)			
Term. members who retire		(10)		10	
Retirees who are rehired	1			(1)	
Refunded who are rehired	6	4			10
DROP participants retiring			(13)	12	(1)
DROP returned to work	18		(18)		
Omitted in error last year					
Eliminated from Census					
Refund of contributions	(180)	(55)			(235)
Deaths	(6)	(1)	(2)	(58)	(67)
Included in error last year					
Adjustment for multiple records					
Number of members as of June 30, 2018	2,048	1,511	80	1,050	4,689

PLAN B - ACTIVES CENSUS BY AGE:

Age	Number Male	Number Female	Total Number	Average Salary	Total Salary
16 - 20	13	3	16	22,056	352,890
21 - 25	64	21	85	24,166	2,054,117
26 - 30	79	29	108	27,449	2,964,471
31 - 35	108	46	154	29,575	4,554,613
36 - 40	126	76	202	33,813	6,830,174
41 - 45	130	51	181	36,531	6,612,181
46 - 50	149	102	251	36,513	9,164,722
51 - 55	213	89	302	36,449	11,007,560
56 - 60	260	127	387	37,192	14,393,154
61 - 65	172	93	265	37,753	10,004,632
66 - 70	87	35	122	38,854	4,740,207
71 - 75	22	9	31	37,849	1,173,308
76 - 80	16	1	17	29,617	503,495
81 - 85	4	2	6	53,002	318,009
86 - 90	1	0	1	23,313	23,313
TOTAL	1,444	684	2,128	35,102	74,696,846

THE ACTIVE CENSUS INCLUDES 825 ACTIVES WITH VESTED BENEFITS, INCLUDING 80 DROP PARTICIPANTS AND 89 ACTIVE FORMER DROP PARTICIPANTS.

PLAN B - TERMINATED MEMBERS DUE A DEFERRED RETIREMENT BENEFIT:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
31 - 35	1	0	1	13,801	13,801
36 - 40	1	1	2	9,103	18,205
41 - 45	4	3	7	10,746	75,220
46 - 50	14	6	20	13,412	268,239
51 - 55	13	6	19	10,654	202,422
56 - 60	25	11	36	13,346	480,469
61 - 65	3	2	5	8,237	41,183
71 - 75	1	0	1	494	494
81 - 85	1	0	1	630	630
TOTAL	63	29	92	11,964	1,100,663

PLAN B - TERMINATED MEMBERS DUE A REFUND OF CONTRIBUTIONS:

Contributions Ranging From	To	Number	Total Contributions
0 -	99	785	23,825
100 -	499	323	77,659
500 -	999	101	71,289
1000 -	1999	83	114,789
2000 -	4999	80	259,479
5000 -	9999	32	234,777
10000 -	19999	10	117,426
20000 -	99999	5	109,202
TOTAL		1,419	1,008,446



PLAN B - REGULAR RETIREES:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
51 - 55	2	0	2	29,434	58,868
56 - 60	17	9	26	21,776	566,183
61 - 65	90	39	129	13,898	1,792,817
66 - 70	130	52	182	13,712	2,495,631
71 - 75	114	42	156	11,689	1,823,487
76 - 80	75	33	108	9,982	1,078,036
81 - 85	63	33	96	9,725	933,630
86 - 90	35	13	48	9,217	442,438
91 - 99	14	5	19	5,828	110,732
TOTAL	540	226	766	12,143	9,301,822

PLAN B - DISABILITY RETIREES:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
46 - 50	3	0	3	7,097	21,290
51 - 55	5	1	6	10,542	63,251
56 - 60	15	4	19	11,657	221,487
61 - 65	4	2	6	10,448	62,690
71 - 75	1	0	1	12,210	12,210
TOTAL	28	7	35	10,884	380,928

PLAN B - SURVIVORS:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
31 - 35	0	1	1	2,245	2,245
36 - 40	1	0	1	10,042	10,042
41 - 45	0	4	4	8,900	35,599
46 - 50	0	1	1	6,909	6,909
51 - 55	3	11	14	5,459	76,425
56 - 60	1	10	11	5,962	65,585
61 - 65	6	28	34	9,655	328,273
66 - 70	2	24	26	8,941	232,453
71 - 75	0	29	29	7,579	219,792
76 - 80	2	37	39	6,758	263,578
81 - 85	0	37	37	7,399	273,748
86 - 90	1	31	32	6,896	220,678
91 - 99	1	19	20	5,221	104,416
TOTAL	17	232	249	7,389	1,839,743

PLAN B - ACTIVE MEMBERS:

Attained Ages	Completed Years of Service											Total	
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over		
0 - 20	14	2											16
21 - 25	56	13	9	6	1	19	1						85
26 - 30	31	20	17	10	10	35	25	1					108
31 - 35	36	18	14	20	5	37	33	21	2				154
36 - 40	39	21	16	22	11	37	33	33	15	1			202
41 - 45	32	14	12	12	11	33	34	17	22	16			181
46 - 50	39	20	18	15	6	42	43	29	22	1			251
51 - 55	37	22	22	22	13	54	50	38	21	13	10		302
56 - 60	32	34	21	27	11	70	55	42	23	33	39		387
61 - 65	18	12	15	15	16	42	49	24	22	26	26		265
66 - 70	8	6	5	10	5	24	24	14	5	13	8		122
71 & Over	2	3	3	4	3	11	10	4	6	4	5		55
Totals	344	185	152	163	92	367	324	190	116	106	89		2128

PLAN B - 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	22,031	22,229											22,056
21 - 25	24,624	24,257	21,933	23,098	23,866	30,248	23,604						24,166
26 - 30	26,108	25,669	27,782	28,497	28,617	30,749	31,811	52,310					27,449
31 - 35	28,583	25,971	27,904	29,483	30,807	30,749	31,811	36,925	41,185				29,575
36 - 40	26,548	30,410	29,420	34,104	32,861	35,438	42,567	46,849	41,185				33,813
41 - 45	27,466	30,484	27,518	29,317	30,189	41,315	42,616	46,849	42,968	39,114			36,531
46 - 50	29,597	31,682	36,360	34,041	31,714	38,804	37,459	39,667	40,782	42,202	58,163		36,513
51 - 55	25,524	28,561	25,836	34,951	32,699	34,962	43,086	41,360	39,186	52,177	55,730		36,449
56 - 60	27,312	35,588	26,100	34,802	29,788	33,105	39,658	38,571	37,427	47,593	49,843		37,192
61 - 65	26,118	32,307	30,573	28,434	30,885	28,581	39,212	43,949	41,227	49,337	53,892		37,753
66 - 70	22,164	35,620	25,357	32,033	29,580	39,783	43,206	49,799	35,281	37,843	49,611		38,854
71 & Over	24,497	34,006	25,648	42,156	35,200	27,274	46,344	52,278	33,306	42,003	35,108		36,693
Average	26,480	30,170	28,254	32,208	30,960	34,376	40,249	41,722	39,578	46,282	50,932		35,102

PLAN B -- TERMINATED MEMBERS DUE A DEFERRED RETIREMENT BENEFIT:

Attained Ages	Years Until Retirement Eligibility											Total	
	0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over		
0 - 30													0
31 - 35												1	1
36 - 40									2				2
41 - 45								7					7
46 - 50							20						20
51 - 55						19							19
56 - 60	5	6	10	11	4								36
61 - 65	4			1									5
66 - 70													0
71 - 75	1												1
76 - 80													0
81 - 85	1												1
86 & Over													0
Totals	11	6	10	12	4	19	20	7	2	1	0		92

PLAN B -- 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												13,801	13,801
36 - 40									9,103				9,103
41 - 45								10,746					10,746
46 - 50							13,412						13,412
51 - 55						10,654							10,654
56 - 60	9,104	13,930	18,287	11,875	9,469								13,346
61 - 65	10,026			1,080									8,237
66 - 70													0
71 - 75													494
76 - 80													0
81 - 85													630
86 & Over													0
Average	7,886	13,930	18,287	10,975	9,469	10,654	13,412	10,746	9,103	13,801	0		11,964

PLAN B - SERVICE RETIREES:

Attained Ages	Completed Years Since Retirement											Total	
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over		
0 - 50													0
51 - 55		2											2
56 - 60	5	1											26
61 - 65	32	27	13	5	3	8	1	2					129
66 - 70	17	13	16	31	14	70	6	6					182
71 - 75	3	9	4	14	5	60	50	10			1		156
76 - 80	5	3	1	7	2	21	30	30	9				108
81 - 85	2	3			1	5	14	40	25	6			96
86 - 90		1				5	4	8	23	6			48
91 & Over						1	1			8		9	19
Totals	64	59	39	72	27	200	119	96	57	22	11		766

PLAN B - 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													0
51 - 55		29,434											29,434
56 - 60	25,499	24,503	22,943	21,232	22,059	20,069	9,042						21,776
61 - 65	12,741	12,536	10,669	13,910	19,935	17,967	13,970	4,375					13,898
66 - 70	15,222	10,905	11,692	15,196	12,686	13,300	18,686	12,505		5,194			13,712
71 - 75	9,933	7,939	10,173	13,575	18,298	12,126	10,211	15,574			6,183		11,689
76 - 80	8,081	18,208	9,381	7,604	17,546	9,898	9,752	8,551	14,260				9,982
81 - 85	9,451	15,359			13,738	11,770	10,758	9,333	8,611	9,474			9,725
86 - 90		26,284				4,101	8,824	8,024	10,562	6,558			9,217
91 & Over						5,364	4,396			9,178			5,828
Average	13,798	12,916	12,578	14,091	15,703	13,253	11,170	9,725	10,290	8,182	4,331		12,143

PLAN B - DISABILITY RETIREES:

Attained Ages	Completed Years Since Retirement											Total	
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over		
0 - 45													0
46 - 50						2	1	1					3
51 - 55		2		1	1		2						6
56 - 60	1	1	1	2	3	6	2	1	1	1			19
61 - 65			1		1	2		2					6
66 - 70													0
71 - 75										1			1
76 & Over													0
Totals	1	3	2	3	5	10	5	3	1	2	0		35

PLAN B - 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 - 45													0
46 - 50						7,209	6,872						7,097
51 - 55							9,474						10,542
56 - 60	8,886	13,035	12,618	8,016	10,215	12,521	7,394	8,626	4,766	5,071			11,657
61 - 65		19,062	18,109	14,775	14,331	9,482		7,600					10,448
66 - 70													0
71 - 75										12,210			12,210
76 & Over													0
Average	8,886	15,044	15,363	12,522	12,725	10,851	8,122	7,942	4,766	8,640	0		10,884

PLAN B - SURVIVING BENEFICIARIES OF FORMER MEMBERS:

Completed Years Since Retirement

Attained Ages	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over	Total
0 - 30												0
31 - 35								1				1
36 - 40						1						1
41 - 45	1					1			1			4
46 - 50				1								1
51 - 55		1	1	1	1	1	4	1	2	1	1	14
56 - 60			2	1	1	4	1	5	2	1	1	11
61 - 65	3	2			1	10	7	4	4	1	1	34
66 - 70		2	2			7	4	4	3	2	2	26
71 - 75	1					2	12	9	4	1	1	29
76 - 80				1	1	2	5	14	10	5	1	39
81 - 85				1	1	3	8	10	7	8		37
86 - 90					1		1	6	5	9	10	32
91 & Over							1	1	2	3	13	20
Totals	5	5	5	4	5	31	43	52	40	30	29	249

PLAN B - AVERAGE ANNUAL BENEFITS PAYABLE TO SURVIVORS OF FORMER MEMBERS:

Completed Years Since Retirement

Attained Ages	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over	Average Benefit
0 - 30												0
31 - 35								2,245				2,245
36 - 40						10,042						10,042
41 - 45	24,661					3,069		3,588	4,280			8,900
46 - 50				6,909								6,909
51 - 55		1,415	7,379	4,266	6,079	19,784	5,423	9,607	1,959	1,386	898	5,459
56 - 60			6,783		4,269	5,403	8,517		6,231		5,159	5,962
61 - 65	19,314	10,653			15,910	11,454	8,145	4,512	7,319	6,888	2,836	9,655
66 - 70		12,807	9,776			8,776	11,026	11,624	5,435	5,544	3,933	8,941
71 - 75	6,876					6,884	9,619	5,637	7,198	4,196		7,579
76 - 80				836	5,590	7,713	7,420	7,041	5,690	8,533	6,493	6,758
81 - 85				29,105		5,342	8,582	8,033	4,276	6,212	7,755	7,399
86 - 90					5,341		507	6,443	8,547	6,210	7,755	6,896
91 & Over							12,789	2,131	1,879	4,204	5,625	5,221
Average	17,896	9,667	8,099	10,279	7,438	8,893	8,507	6,825	5,709	6,147	5,998	7,389

**EXHIBIT XX**  
**PLAN B: YEAR-TO-YEAR COMPARISON**

	Fiscal 2018	Fiscal 2017	Fiscal 2016	Fiscal 2015
Number of Active Members	2,128	2,125	2,142	2,200
Number of Retirees & Survivors	1,050	1,025	975	959
Number of Terminated Due Deferred Benefits	92	82	71	71
Number Terminated Due Refunds	1,419	1,331	1,258	1,218
Active Lives Payroll	\$ 74,696,846	\$ 73,275,324	\$ 71,918,938	\$ 69,909,530
Retiree Benefits in Payment	\$ 11,522,493	\$ 10,946,571	\$ 10,254,964	\$ 9,917,688
Market Value of Assets (MVA)	\$ 161,284,802	\$ 150,467,958	\$ 143,201,586	\$ 149,268,995
Actuarial Value of Assets (AVA)	\$ 175,032,415	\$ 168,698,012	\$ 164,516,476	\$ 165,154,609
Entry Age Normal Accrued Liability	\$ 241,302,909	\$ 232,425,916	\$ 221,633,353	\$ 212,961,895
Ratio of AVA to EAN Accrued Liability	72.54%	72.58%	74.23%	77.55%
Frozen Unfunded Actuarial Accrued Liability	\$ 0	\$ 2,382,456	\$ 2,742,698	\$ 3,088,551
Present Value of Future Employer Normal Cost	\$ 95,920,724	\$ 91,249,645	\$ 82,911,008	\$ 72,948,195
Present Value of Future Employee Contrib.	\$ 24,253,572	\$ 23,664,481	\$ 23,119,585	\$ 22,770,216
Funding Deposit Account Balance	\$ 1,523,023	\$ 3,286,730	\$ 3,233,725	\$ 3,008,116
Present Value of Future Benefits	\$ 293,683,688	\$ 282,707,864	\$ 270,056,042	\$ 260,953,455
	Fiscal 2019	Fiscal 2018	Fiscal 2017	Fiscal 2016
Board Approved Employee Contribution Rate	5.00%	5.00%	5.00%	5.00%
Estimated Tax Contribution as a % of Payroll	3.38%	3.37%	3.41%	3.64%
Actuarially Required Net Direct Employer Contribution Rate	13.73%	14.00%	13.06%	11.04%
Board Approved Employer Contribution Rate	14.00%	13.25%	11.25%*	9.50%

\* Includes 0.25% from the Funding Deposit Account

Fiscal 2014	Fiscal 2013	Fiscal 2012	Fiscal 2011	Fiscal 2010	Fiscal 2009
2,168	2,128	2,155	2,175	2,197	2,269
916	900	879	865	836	833
74	61	61	62	72	67
1,170	1,155	1,100	1,062	1,062	1,022
\$ 67,939,158	\$ 65,928,929	\$ 66,409,896	\$ 65,427,477	\$ 65,241,810	\$ 64,816,945
\$ 9,141,803	\$ 8,793,050	\$ 8,285,257	\$ 7,953,795	\$ 7,339,269	\$ 7,149,177
\$ 156,659,396	\$ 140,744,063	\$ 137,164,489	\$ 144,028,034	\$ 130,596,777	\$ 117,258,410
\$ 161,992,280	\$ 153,851,774	\$ 154,451,871	\$ 152,966,837	\$ 147,046,143	\$ 138,441,127
\$ 199,762,726	\$ 192,160,973	\$ 187,178,650	\$ 181,142,563	\$ 175,023,271	\$ 159,960,891
81.09%	80.06%	82.52%	84.45%	84.02%	86.55%
\$ 3,421,001	\$ 3,740,857	\$ 4,049,257	\$ 4,346,525	\$ 4,633,960	\$ 4,912,541
\$ 60,613,662	\$ 60,012,141	\$ 54,153,087	\$ 49,451,626	\$ 48,645,557	\$ 38,895,181
\$ 21,982,912	\$ 21,589,199	\$ 21,845,625	\$ 21,582,459	\$ 21,546,957	\$ 21,769,886
\$ 3,126,521	\$ 2,901,644	\$ 2,692,941	\$ 2,493,464	\$ 2,308,763	\$ 1,806,555
\$ 244,883,334	\$ 236,292,327	\$ 231,806,899	\$ 225,853,983	\$ 219,563,854	\$ 202,212,180

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Fiscal 2015	Fiscal 2014	Fiscal 2013	Fiscal 2012	Fiscal 2011	Fiscal 2010
5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
3.41%	3.38%	3.14%	3.10%	3.07%	3.06%
9.60%	9.82%	8.72%	7.89%	7.78%	5.95%
10.00% †	8.75%	8.00%	8.00%	6.75%	6.75%

† Includes 0.50% from the Funding Deposit Account



## **SUMMARY OF PRINCIPAL PLAN PROVISIONS**

All members of the Municipal Employees' Retirement System are participants in either Plan A or B according to the provisions of the agreement entered into by their employer. All employees of a participating employer must participate in the same plan. The principal provisions of each plan are given below. The following summary of plan provisions is for general informational purposes only and does not constitute a guarantee of benefits.

**MEMBERSHIP** – All persons who are actively employed by a participating employer on a permanent, regularly scheduled basis of at least an average of thirty-five hours per week are members of this system. Excluded from membership are members of city councils, alderman, town councilmen, and constables; the exclusion does not apply to persons serving in excluded positions on January 1, 1997.

### **PLAN A PROVISIONS:**

**CONTRIBUTION RATES** – The Board of Trustees may set the employee contribution rate not less than 9.25% nor more than 10.00%. In addition, each sheriff and ex officio tax collector deducts one-fourth of one percent of the aggregate amount of the tax shown to be collected by the tax roll of each respective parish, excepting Orleans Parish, and remits the money to the system on an annual basis. Taxes are apportioned between Plan A and Plan B in proportion to salaries of plan participants. Taxes received from East Baton Rouge Parish are apportioned between the Municipal Employees' Retirement System and the Employees' Retirement System of the City of Baton Rouge. The system also receives revenue sharing funds each year as appropriated by the legislature. The remaining employer contributions are determined according to actuarial requirements and are set annually.

**RETIREMENT BENEFITS (Tier 1)** – Members with ten years of creditable service may retire at age sixty; members with twenty-five years of service may retire regardless of age. The monthly retirement allowance is equal to three percent of the member's final compensation multiplied by his years of creditable service; elected officials receive an additional one-half percent of final compensation for each year of such elected service. However, the accrued retirement benefits for those employees who were members of only the supplemental plan prior to October 1, 1978, are based on one percent of final compensation plus two dollars per month for each year of service credited prior to October 1, 1978. The retirement allowance may not exceed the greater of final annual salary or one hundred percent of the member's final average compensation. Members with twenty years of service credit, not otherwise eligible for normal retirement, are eligible for a modified actuarially reduced early retirement.

**RETIREMENT BENEFITS (Tier 2)** – Employees whose first employment making them eligible for membership occurs on or after January 1, 2013 become members of Tier 2. Normal retirement eligibility in Tier 2 is at age 67 with seven years of service credit, at age 62 with ten years of service credit, or age 55 with thirty years of service credit. Members are eligible for an actuarially reduced early retirement at twenty-five years of service credit. Retirement benefits are based on a 3% accrual rate. Employee contributions are set by the Board of Trustees within a range of 8% to 10%.

**DISABILITY BENEFITS** – Five years of creditable service are required in order to be eligible for disability benefits. Twenty years of creditable service are required in order for a member to have a vested disability benefit. A disabled member receives a normal retirement allowance if eligible under

regular retirement provisions; if he is not eligible for a normal retirement, he receives a disability benefit equal to the lesser of:

- 1) Forty-five percent of his final average compensation or three percent of his final average compensation multiplied by his years of creditable service, whichever is greater; or
- 2) Three percent of his final average compensation multiplied by his years of creditable service projected to his earliest normal retirement age.

**SURVIVOR BENEFITS** – Five years of creditable service are required in order to be eligible for survivor benefits. If the member is eligible for normal retirement at the time of death, the surviving spouse receives an automatic option two benefit. If the member is not eligible for a normal retirement, the surviving spouse with minor children receives sixty percent of final compensation payable until no child in her care satisfies the definition of minor child. The surviving spouse with no minor children receives forty percent of final compensation payable upon attainment of age sixty by the spouse, or the actuarial equivalent of this amount payable immediately (such equivalent not to be less than 20% of final compensation). Minor children with no surviving unmarried parent receive thirty percent of final compensation each not to exceed a total of sixty percent of final compensation. Survivor benefits are also payable to the surviving spouses of former members who have not withdrawn their accumulated contributions and who have at least twenty years of creditable service. The benefits payable are the actuarial equivalent of the Option 2 benefits that would have become payable to the surviving spouse at the time the former member would have begun receiving deferred normal retirement benefits, had the member survived until that date, elected Option 2, and died at that time.

#### **PLAN B PROVISIONS:**

**CONTRIBUTION RATES** – The Board of Trustees may set the employee contribution rate not less than 5.00% nor more than 6.00%. In addition, each sheriff and ex officio tax collector deducts one-fourth of one percent of the aggregate amount of the tax shown to be collected by the tax roll of each respective parish, excepting Orleans Parish, and remits the money to the system on an annual basis. Taxes are apportioned between Plan A and Plan B in proportion to salaries of plan participants. Taxes received from East Baton Rouge Parish are apportioned between the Municipal Employees' Retirement System and the Employees' Retirement System of the City of Baton Rouge. The system also receives revenue sharing funds each year as appropriated by the legislature. The remaining employer contributions are determined according to actuarial requirements and are set annually.

**RETIREMENT BENEFITS (Tier 1)** – Members with ten years of creditable service may retire at age sixty; members with thirty years of service may retire at any age. The monthly retirement allowance is equal to two percent of the member's final compensation multiplied by his years of creditable service; elected officials receive an additional one-half percent of final compensation for each year of such elected service.

**RETIREMENT BENEFITS (Tier 2)** – Employees whose first employment making them eligible for membership occurs on or after January 1, 2013 will become members of Tier 2. Normal retirement eligibility in Tier 2 is at age 67 with seven years of service credit, at age 62 with ten years of service credit, or age 55 with thirty years of service credit. Members are eligible for an actuarially reduced

early retirement at twenty-five years of service credit. Retirement benefits are based on a 2% accrual rate. Employee contributions are set by the Board of Trustees within a range of 4% to 6%.

**DISABILITY BENEFITS** – Ten years of creditable service are required in order to be eligible for disability benefits. Twenty years of creditable service are required in order for a member to have a vested disability benefit. A disabled member receives a normal retirement allowance if eligible under regular retirement provisions; if he is not eligible for a normal retirement allowance, he receives a disability benefit equal to the lesser of:

- 1) Thirty percent of his final average compensation or two percent of his final average compensation multiplied by his years of creditable service, whichever is greater; and
- 2) Two percent of his final average compensation multiplied by his years of creditable service projected to his earliest normal retirement age.

**SURVIVOR BENEFITS** – The surviving spouse of a member who was eligible for normal retirement at the time of death receives an automatic option two benefit. The surviving spouse of a member with five or more years of creditable service and not eligible for normal retirement at the time of death receives either 30% of the member's final compensation payable to the spouse when they attain age 60 or an actuarial equivalent of 30% of the deceased member's final compensation, but not less than 15% of such final compensation. Survivor benefits are also payable to the surviving spouses of former members who have not withdrawn their accumulated contributions and who have at least twenty years of creditable service. The benefits payable are the actuarial equivalent of the Option 2 benefits that would have become payable to the surviving spouse at the time the former member would have begun receiving deferred normal retirement benefits, had the member survived until that date, elected Option 2, and died at that time.

**PROVISIONS APPLICABLE TO BOTH PLAN A AND B:**

**FINAL AVERAGE COMPENSATION** –For a member whose first employment making him eligible for membership in the system began after June 30, 2006, 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 sixty month period may not exceed 115% of the preceding twelve month period.

Effective January 1, 2013, for a member whose first employment making him eligible for membership in the system began before July 1, 2006, final average compensation was redefined to be thirty-six months plus the number of whole months since January 1, 2013 not to exceed sixty months. However, the actual monthly final average compensation used to determine the member's benefit cannot be less than the thirty-six month final average compensation as of January 1, 2013. The earnings to be considered for each twelve month period within the final average compensation period may not exceed 115% of the preceding twelve month period.

**UNUSED SICK & ANNUAL LEAVE** – All unused sick and annual leave is credited at the time of retirement to the member if the employer so elects for his employees. The actuarial cost of providing this conversion is borne solely by the employer and must be paid to the Board within thirty days of the member's retirement date.

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

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

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

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

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

DEFERRED RETIREMENT OPTION PLAN – In lieu of terminating employment and accepting a service retirement allowance, any member of Plan A or B who is eligible for a normal retirement may elect to participate in the Deferred Retirement Option Plan (DROP) for up to three years and defer the receipt of benefits. Upon commencement of participation in the plan, membership in the system terminates. During participation in the plan, employer contributions are payable but employee contributions cease. The monthly retirement benefits that would have been payable, had the person elected to cease employment and receive a service retirement allowance, are paid into the DROP account. After a member terminates his participation in DROP his account will earn interest at the actual rate of return earned on the funds left on deposit as certified by the custodian of the system's assets. This interest will be credited to the individual member's account balance on a daily basis beginning July 1, 2006. In addition, no cost of living increases are payable to participants until employment which made them eligible to become members of the system has been terminated for at least one full year.

Upon termination of employment prior to, or at the end of, the specified period of participation, a participant in the plan may receive, at his option, a lump sum payment from the account equal to the payments into the account, a true annuity based upon his account balance in that fund, or any other method of payment if approved by the Board of Trustees. The monthly benefits that were being paid into the DROP account will begin to be paid to the retiree. If a participant dies during the participation in the plan, a lump sum equal to his account balance in the plan fund shall be paid to his named beneficiary or, if none, to his estate. If employment is not terminated at the end of the three years, payments into the plan fund cease and the person resumes active contributing membership in the system. For any member hired prior to July 1, 2006, additional accrued benefits are based on final average compensation used to calculate the member's original benefit unless the additional period of service is at least thirty-six months. For any member hired on or after July 1, 2006, whose period of additional service after their DROP participation period ends is less than sixty months, the final compensation figure used to calculate the additional benefit will be that used to calculate the original

benefit. If their period of additional service is sixty months or more, the final compensation figure used to calculate the additional benefit will be based on their compensation during the period of additional service.

**COST OF LIVING INCREASES** – The Board of Trustees is authorized to grant retired members, and widows of members, who have been retired for at least one full year an annual cost of living increase of two percent of their original benefit and all retired members and widows who are sixty-five years of age and older a two percent increase in their original benefit (or their benefit as of October 1, 1977, if they retired prior to that time). In order for the Board to grant either of these increases the system must meet certain criteria detailed in the statute related to funding status and interest earnings on investments. In lieu of the prior provisions, 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 for the board to grant any of these increases, the system must meet certain criteria detailed in the statutes related to funding status and interest earnings.

## 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 effect of emerging experience on the fund is illustrated by the following chart.

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:

Plan A: 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.

Plan B: The Aggregate Actuarial Cost Method with allocation based on earnings. The normal cost is interest adjusted for midyear payment.

### 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.

### VALUATION INTEREST RATE:

7.275% (Net of Investment Expense)

### ANNUAL SALARY INCREASE RATE:

5.0% (including 2.6% inflation)

### ACTIVE MEMBER MORTALITY:

RP 2000 Employee Table for set back two years for males and females

ANNUITANT, AND  
BENEFICIARY MORTALITY:

RP 2000 Healthy Annuitant Table set forward 2 years and projected to 2028 using Scale AA for males and set forward 1 year and projected to 2028 using Scale AA for females

RETIREE COST OF LIVING INCREASES:

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

RATES OF RETIREMENT:

The table of these rates is included later in the report. These rates apply only to those individuals eligible to retire. Members are assumed to retire no earlier than normal retirement age.

RETIREMENT LIMITATIONS:

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

DROP ENTRY RATES:

The table of these rates is included later in the report. These rates apply only to those individuals eligible to participate in DROP.

DROP PARTICIPATION PERIOD:

DROP participants are assumed to participate for 3 years. At the end of the DROP participation period, one half of participants are assumed to retire; the other half are assumed to work one additional year.

RETIREMENT RATES FOR ACTIVE  
FORMER DROP PARTICIPANTS:

Retirement rates for active former DROP participants are as follows:

<u>Ages</u>	<u>Plan A</u>	<u>Plan B</u>
Below 86	0.21	0.17
86 & Above	1.00	1.00

RATES OF WITHDRAWAL:

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

<u>Service</u>	<u>Plan A</u>	<u>Plan B</u>
0	0.20	0.23
1	0.17	0.20
2	0.14	0.15
3	0.12	0.13
4	0.10	0.10
5	0.09	0.09
6	0.08	0.08

7	0.07	0.07
8	0.06	0.06
9	0.06	0.05
10	0.05	0.04
11	0.05	0.04
12	0.04	0.03
13	0.04	0.03
14	0.03	0.03
15	0.03	0.03
16	0.02	0.03
17	0.02	0.03
18	0.02	0.03
Over 18	0.02	0.02

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

RATES OF DISABILITY – Plan A: 25% of the disability rates used for the 21<sup>st</sup> valuation of the Railroad Retirement System for individuals with 10 – 19 years of service.

RATES OF DISABILITY – Plan B: 60% of the disability rates used for the 21<sup>st</sup> valuation of the Railroad Retirement System for individuals with 10 – 19 years of service.

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 <u>Age</u>	% With <u>Children</u>	Number of <u>Children</u>	Average <u>Age</u>
25	70%	1.84	5
35	86%	2.13	9
45	75%	1.70	12
55	22%	1.42	14
65	4%	1.45	15

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

VESTING ELECTING PERCENTAGE – Plan A: Tier 1 – 60% of members with less than 20 years of service are assumed to elect a deferred benefit in lieu of a refund of contributions. 100% of members with 20 or more years of service are assumed to elect the deferred benefit.



Tier 2 – 60% of members with less than 25 years of service are assumed to elect a deferred benefit in lieu of a refund of contributions. 100% of members with 25 or more years of service are assumed to elect the deferred benefit.

**VESTING ELECTING PERCENTAGE – Plan B:**

Tier 1 – 66% of members are assumed to elect a deferred benefit in lieu of a refund of contributions.

Tier 2 – 60% of members with less than 25 years of service are assumed to elect a deferred benefit in lieu of a refund of contributions. 100% of members with 25 or more years of service are assumed to elect the deferred benefit.

## PLAN A – ACTUARIAL TABLES AND RATES

Age	Retired Male Mortality Rates	Retired Female Mortality Rates	Active Male Mortality Rates	Active Female Mortality Rates	Male Disabled Mortality Rates	Female Disabled Mortality Rates	Retirement Rates Tier 1	Retirement Rates Tier 2
18	0.00020	0.00013	0.00028	0.00018	0.02257	0.00745	0.00000	0.00000
19	0.00021	0.00013	0.00030	0.00018	0.02257	0.00745	0.00000	0.00000
20	0.00021	0.00012	0.00032	0.00019	0.02257	0.00745	0.00000	0.00000
21	0.00022	0.00012	0.00033	0.00019	0.02257	0.00745	0.00000	0.00000
22	0.00023	0.00012	0.00035	0.00019	0.02257	0.00745	0.00000	0.00000
23	0.00025	0.00013	0.00036	0.00019	0.02257	0.00745	0.00000	0.00000
24	0.00026	0.00014	0.00037	0.00019	0.02257	0.00745	0.00000	0.00000
25	0.00029	0.00014	0.00037	0.00020	0.02257	0.00745	0.00000	0.00000
26	0.00033	0.00016	0.00038	0.00020	0.02257	0.00745	0.00000	0.00000
27	0.00036	0.00017	0.00038	0.00021	0.02257	0.00745	0.00000	0.00000
28	0.00039	0.00018	0.00038	0.00021	0.02257	0.00745	0.00000	0.00000
29	0.00043	0.00019	0.00038	0.00022	0.02257	0.00745	0.00000	0.00000
30	0.00049	0.00023	0.00039	0.00024	0.02257	0.00745	0.00000	0.00000
31	0.00055	0.00028	0.00041	0.00025	0.02257	0.00745	0.00000	0.00000
32	0.00061	0.00031	0.00044	0.00026	0.02257	0.00745	0.00000	0.00000
33	0.00067	0.00034	0.00050	0.00031	0.02257	0.00745	0.00000	0.00000
34	0.00073	0.00036	0.00056	0.00035	0.02257	0.00745	0.00000	0.00000
35	0.00079	0.00038	0.00063	0.00039	0.02257	0.00745	0.00000	0.00000
36	0.00084	0.00040	0.00070	0.00044	0.02257	0.00745	0.00000	0.00000
37	0.00089	0.00041	0.00077	0.00047	0.02257	0.00745	0.00000	0.00000
38	0.00091	0.00044	0.00084	0.00051	0.02257	0.00745	0.00000	0.00000
39	0.00094	0.00046	0.00090	0.00055	0.02257	0.00745	0.00000	0.00000
40	0.00097	0.00051	0.00096	0.00060	0.02257	0.00745	0.00000	0.00000
41	0.00101	0.00056	0.00102	0.00065	0.02257	0.00745	0.06000	0.00000
42	0.00105	0.00061	0.00108	0.00071	0.02257	0.00745	0.06000	0.00000
43	0.00111	0.00067	0.00114	0.00077	0.02257	0.00745	0.06000	0.00000
44	0.00115	0.00074	0.00122	0.00085	0.02257	0.00745	0.06000	0.00000
45	0.00120	0.00078	0.00130	0.00094	0.02257	0.00745	0.06000	0.00000
46	0.00125	0.00082	0.00140	0.00103	0.02257	0.00745	0.06000	0.00000
47	0.00131	0.00086	0.00151	0.00112	0.02257	0.00745	0.06000	0.00000
48	0.00340	0.00093	0.00162	0.00122	0.02257	0.00745	0.06000	0.00000
49	0.00342	0.00141	0.00173	0.00133	0.02257	0.00818	0.06000	0.00000
50	0.00339	0.00152	0.00186	0.00143	0.02257	0.00896	0.06000	0.00000
51	0.00334	0.00169	0.00200	0.00155	0.02385	0.00978	0.06000	0.00000
52	0.00329	0.00195	0.00214	0.00168	0.02512	0.01063	0.06000	0.00000
53	0.00335	0.00228	0.00229	0.00181	0.02640	0.01154	0.06000	0.00000
54	0.00348	0.00266	0.00245	0.00197	0.02769	0.01248	0.06000	0.00000
55	0.00377	0.00313	0.00262	0.00213	0.02897	0.01346	0.06000	0.06000
56	0.00415	0.00370	0.00281	0.00232	0.03027	0.01446	0.06000	0.06000
57	0.00463	0.00428	0.00303	0.00253	0.03156	0.01550	0.06000	0.06000
58	0.00522	0.00481	0.00331	0.00276	0.03286	0.01654	0.06000	0.06000
59	0.00573	0.00539	0.00363	0.00301	0.03415	0.01760	0.06000	0.06000
60	0.00631	0.00601	0.00400	0.00329	0.03544	0.01865	0.12000	0.12000
61	0.00717	0.00668	0.00441	0.00360	0.03673	0.01971	0.12000	0.12000
62	0.00794	0.00739	0.00488	0.00393	0.03803	0.02077	0.12000	0.12000
63	0.00904	0.00816	0.00538	0.00429	0.03933	0.02184	0.12000	0.12000
64	0.01002	0.00901	0.00592	0.00466	0.04067	0.02294	0.12000	0.12000
65	0.01109	0.00992	0.00647	0.00504	0.04204	0.02408	0.18000	0.18000
66	0.01262	0.01090	0.00703	0.00543	0.04347	0.02529	0.18000	0.18000
67	0.01394	0.01197	0.00757	0.00582	0.04498	0.02660	0.18000	0.18000
68	0.01496	0.01317	0.00810	0.00621	0.04658	0.02803	0.18000	0.18000
69	0.01656	0.01455	0.00860	0.00658	0.04831	0.02959	0.18000	0.18000
70	0.01787	0.01615	0.00907	0.00695	0.05017	0.03132	0.18000	0.18000
71	0.01990	0.01746	0.00951	0.00729	0.05221	0.03323	0.18000	0.18000
72	0.02220	0.01941	0.00992	0.00761	0.05445	0.03533	0.12000	0.12000
73	0.02478	0.02091	0.02457	0.01858	0.05691	0.03764	0.12000	0.12000
74	0.02762	0.02309	0.02728	0.02067	0.05961	0.04014	0.12000	0.12000
75	0.03161	0.02473	0.03039	0.02297	0.06258	0.04285	0.12000	0.12000

**PLAN A – ACTUARIAL TABLES AND RATES (Continued)**

<b>Age</b>	<b>DROP Entry Rates Tier 1</b>	<b>DROP Entry Rates Tier 2</b>	<b>Disability Rates</b>	<b>Remarriage Rates</b>
18	0.00000	0.00000	0.00038	0.06124
19	0.00000	0.00000	0.00038	0.06124
20	0.00000	0.00000	0.00038	0.06124
21	0.00000	0.00000	0.00038	0.05818
22	0.00000	0.00000	0.00038	0.05524
23	0.00000	0.00000	0.00038	0.05242
24	0.00000	0.00000	0.00038	0.04971
25	0.00000	0.00000	0.00038	0.04566
26	0.00000	0.00000	0.00038	0.04335
27	0.00000	0.00000	0.00038	0.04114
28	0.00000	0.00000	0.00038	0.03902
29	0.00000	0.00000	0.00038	0.03698
30	0.00000	0.00000	0.00038	0.03502
31	0.00000	0.00000	0.00038	0.03314
32	0.00000	0.00000	0.00038	0.03134
33	0.00000	0.00000	0.00038	0.02961
34	0.00000	0.00000	0.00038	0.02795
35	0.00000	0.00000	0.00043	0.02636
36	0.00000	0.00000	0.00048	0.02483
37	0.00000	0.00000	0.00053	0.02336
38	0.00000	0.00000	0.00060	0.02195
39	0.00000	0.00000	0.00068	0.02060
40	0.00000	0.00000	0.00078	0.01930
41	0.18000	0.00000	0.00088	0.01805
42	0.18000	0.00000	0.00098	0.01686
43	0.18000	0.00000	0.00110	0.01571
44	0.18000	0.00000	0.00125	0.01461
45	0.18000	0.00000	0.00143	0.01355
46	0.18000	0.00000	0.00163	0.01253
47	0.18000	0.00000	0.00183	0.01156
48	0.18000	0.00000	0.00208	0.01063
49	0.18000	0.00000	0.00235	0.00973
50	0.27000	0.00000	0.00268	0.00887
51	0.27000	0.00000	0.00305	0.00804
52	0.27000	0.00000	0.00345	0.00725
53	0.27000	0.00000	0.00392	0.00649
54	0.27000	0.00000	0.00445	0.00576
55	0.27000	0.27000	0.00505	0.00000
56	0.27000	0.27000	0.00575	0.00000
57	0.27000	0.27000	0.00653	0.00000
58	0.27000	0.27000	0.00740	0.00000
59	0.27000	0.27000	0.00843	0.00000
60	0.24000	0.24000	0.01220	0.00000
61	0.16000	0.16000	0.01220	0.00000
62	0.16000	0.16000	0.01220	0.00000
63	0.16000	0.16000	0.01220	0.00000
64	0.16000	0.16000	0.01220	0.00000
65	0.16000	0.16000	0.01220	0.00000
66	0.16000	0.16000	0.01220	0.00000
67	0.16000	0.16000	0.01220	0.00000
68	0.16000	0.16000	0.01220	0.00000
69	0.16000	0.16000	0.01220	0.00000
70	0.09000	0.09000	0.01220	0.00000
71	0.09000	0.09000	0.01220	0.00000
72	0.09000	0.09000	0.01220	0.00000
73	0.09000	0.09000	0.01220	0.00000
74	0.09000	0.09000	0.01220	0.00000
75	0.09000	0.09000	0.01220	0.00000

## PLAN B – ACTUARIAL TABLES AND RATES

Age	Retired Male Mortality Rates	Retired Female Mortality Rates	Active Male Mortality Rates	Active Female Mortality Rates	Male Disabled Mortality Rates	Female Disabled Mortality Rates	Retirement Rates Tier 1	Retirement Rates Tier 2
18	0.00020	0.00013	0.00028	0.00018	0.02257	0.00745	0.00000	0.00000
19	0.00021	0.00013	0.00030	0.00018	0.02257	0.00745	0.00000	0.00000
20	0.00021	0.00012	0.00032	0.00019	0.02257	0.00745	0.00000	0.00000
21	0.00022	0.00012	0.00033	0.00019	0.02257	0.00745	0.00000	0.00000
22	0.00023	0.00012	0.00035	0.00019	0.02257	0.00745	0.00000	0.00000
23	0.00025	0.00013	0.00036	0.00019	0.02257	0.00745	0.00000	0.00000
24	0.00026	0.00014	0.00037	0.00019	0.02257	0.00745	0.00000	0.00000
25	0.00029	0.00014	0.00037	0.00020	0.02257	0.00745	0.00000	0.00000
26	0.00033	0.00016	0.00038	0.00020	0.02257	0.00745	0.00000	0.00000
27	0.00036	0.00017	0.00038	0.00021	0.02257	0.00745	0.00000	0.00000
28	0.00039	0.00018	0.00038	0.00021	0.02257	0.00745	0.00000	0.00000
29	0.00043	0.00019	0.00038	0.00022	0.02257	0.00745	0.00000	0.00000
30	0.00049	0.00023	0.00039	0.00024	0.02257	0.00745	0.00000	0.00000
31	0.00055	0.00028	0.00041	0.00025	0.02257	0.00745	0.00000	0.00000
32	0.00061	0.00031	0.00044	0.00026	0.02257	0.00745	0.00000	0.00000
33	0.00067	0.00034	0.00050	0.00031	0.02257	0.00745	0.00000	0.00000
34	0.00073	0.00036	0.00056	0.00035	0.02257	0.00745	0.00000	0.00000
35	0.00079	0.00038	0.00063	0.00039	0.02257	0.00745	0.00000	0.00000
36	0.00084	0.00040	0.00070	0.00044	0.02257	0.00745	0.00000	0.00000
37	0.00089	0.00041	0.00077	0.00047	0.02257	0.00745	0.00000	0.00000
38	0.00091	0.00044	0.00084	0.00051	0.02257	0.00745	0.00000	0.00000
39	0.00094	0.00046	0.00090	0.00055	0.02257	0.00745	0.00000	0.00000
40	0.00097	0.00051	0.00096	0.00060	0.02257	0.00745	0.00000	0.00000
41	0.00101	0.00056	0.00102	0.00065	0.02257	0.00745	0.00000	0.00000
42	0.00105	0.00061	0.00108	0.00071	0.02257	0.00745	0.00000	0.00000
43	0.00111	0.00067	0.00114	0.00077	0.02257	0.00745	0.00000	0.00000
44	0.00115	0.00074	0.00122	0.00085	0.02257	0.00745	0.00000	0.00000
45	0.00120	0.00078	0.00130	0.00094	0.02257	0.00745	0.00000	0.00000
46	0.00125	0.00082	0.00140	0.00103	0.02257	0.00745	0.08000	0.00000
47	0.00131	0.00086	0.00151	0.00112	0.02257	0.00745	0.08000	0.00000
48	0.00340	0.00093	0.00162	0.00122	0.02257	0.00745	0.08000	0.00000
49	0.00342	0.00141	0.00173	0.00133	0.02257	0.00818	0.08000	0.00000
50	0.00339	0.00152	0.00186	0.00143	0.02257	0.00896	0.08000	0.00000
51	0.00334	0.00169	0.00200	0.00155	0.02385	0.00978	0.08000	0.00000
52	0.00329	0.00195	0.00214	0.00168	0.02512	0.01063	0.08000	0.00000
53	0.00335	0.00228	0.00229	0.00181	0.02640	0.01154	0.08000	0.00000
54	0.00348	0.00266	0.00245	0.00197	0.02769	0.01248	0.08000	0.00000
55	0.00377	0.00313	0.00262	0.00213	0.02897	0.01346	0.20000	0.20000
56	0.00415	0.00370	0.00281	0.00232	0.03027	0.01446	0.08000	0.08000
57	0.00463	0.00428	0.00303	0.00253	0.03156	0.01550	0.08000	0.08000
58	0.00522	0.00481	0.00331	0.00276	0.03286	0.01654	0.08000	0.08000
59	0.00573	0.00539	0.00363	0.00301	0.03415	0.01760	0.08000	0.08000
60	0.00631	0.00601	0.00400	0.00329	0.03544	0.01865	0.08000	0.08000
61	0.00717	0.00668	0.00441	0.00360	0.03673	0.01971	0.08000	0.08000
62	0.00794	0.00739	0.00488	0.00393	0.03803	0.02077	0.12000	0.12000
63	0.00904	0.00816	0.00538	0.00429	0.03933	0.02184	0.12000	0.12000
64	0.01002	0.00901	0.00592	0.00466	0.04067	0.02294	0.12000	0.12000
65	0.01109	0.00992	0.00647	0.00504	0.04204	0.02408	0.12000	0.12000
66	0.01262	0.01090	0.00703	0.00543	0.04347	0.02529	0.12000	0.12000
67	0.01394	0.01197	0.00757	0.00582	0.04498	0.02660	0.12000	0.12000
68	0.01496	0.01317	0.00810	0.00621	0.04658	0.02803	0.12000	0.12000
69	0.01656	0.01455	0.00860	0.00658	0.04831	0.02959	0.12000	0.12000
70	0.01787	0.01615	0.00907	0.00695	0.05017	0.03132	0.12000	0.12000
71	0.01990	0.01746	0.00951	0.00729	0.05221	0.03323	0.12000	0.12000
72	0.02220	0.01941	0.00992	0.00761	0.05445	0.03533	0.12000	0.12000
73	0.02478	0.02091	0.02457	0.01858	0.05691	0.03764	0.12000	0.12000
74	0.02762	0.02309	0.02728	0.02067	0.05961	0.04014	0.12000	0.12000
75	0.03161	0.02473	0.03039	0.02297	0.06258	0.04285	0.12000	0.12000

**PLAN B – ACTUARIAL TABLES AND RATES (Continued)**

Age	DROP Entry Rates Tier 1	DROP Entry Rates Tier 2	Disability Rates	Remarriage Rates
18	0.00000	0.00000	0.00090	0.06124
19	0.00000	0.00000	0.00090	0.06124
20	0.00000	0.00000	0.00090	0.06124
21	0.00000	0.00000	0.00090	0.05818
22	0.00000	0.00000	0.00090	0.05524
23	0.00000	0.00000	0.00090	0.05242
24	0.00000	0.00000	0.00090	0.04971
25	0.00000	0.00000	0.00090	0.04566
26	0.00000	0.00000	0.00090	0.04335
27	0.00000	0.00000	0.00090	0.04114
28	0.00000	0.00000	0.00090	0.03902
29	0.00000	0.00000	0.00090	0.03698
30	0.00000	0.00000	0.00090	0.03502
31	0.00000	0.00000	0.00090	0.03314
32	0.00000	0.00000	0.00090	0.03134
33	0.00000	0.00000	0.00090	0.02961
34	0.00000	0.00000	0.00090	0.02795
35	0.00000	0.00000	0.00102	0.02636
36	0.00000	0.00000	0.00114	0.02483
37	0.00000	0.00000	0.00126	0.02336
38	0.00000	0.00000	0.00144	0.02195
39	0.00000	0.00000	0.00162	0.02060
40	0.00000	0.00000	0.00186	0.01930
41	0.00000	0.00000	0.00210	0.01805
42	0.00000	0.00000	0.00234	0.01686
43	0.00000	0.00000	0.00264	0.01571
44	0.00000	0.00000	0.00300	0.01461
45	0.00000	0.00000	0.00342	0.01355
46	0.33000	0.00000	0.00390	0.01253
47	0.33000	0.00000	0.00438	0.01156
48	0.33000	0.00000	0.00498	0.01063
49	0.33000	0.00000	0.00564	0.00973
50	0.33000	0.00000	0.00642	0.00887
51	0.33000	0.00000	0.00732	0.00804
52	0.33000	0.00000	0.00828	0.00725
53	0.33000	0.00000	0.00942	0.00649
54	0.33000	0.00000	0.01068	0.00576
55	0.25000	0.25000	0.01212	0.00000
56	0.25000	0.25000	0.01380	0.00000
57	0.25000	0.25000	0.01566	0.00000
58	0.25000	0.25000	0.01776	0.00000
59	0.25000	0.40000	0.02022	0.00000
60	0.40000	0.20000	0.02928	0.00000
61	0.20000	0.20000	0.02928	0.00000
62	0.20000	0.20000	0.02928	0.00000
63	0.20000	0.20000	0.02928	0.00000
64	0.20000	0.20000	0.02928	0.00000
65	0.20000	0.10000	0.02928	0.00000
66	0.10000	0.10000	0.02928	0.00000
67	0.10000	0.10000	0.02928	0.00000
68	0.10000	0.10000	0.02928	0.00000
69	0.10000	0.10000	0.02928	0.00000
70	0.10000	0.10000	0.02928	0.00000
71	0.10000	0.10000	0.02928	0.00000
72	0.10000	0.10000	0.02928	0.00000
73	0.10000	0.10000	0.02928	0.00000
74	0.10000	0.10000	0.02928	0.00000
75	0.10000	0.10000	0.02928	0.00000

## **PRIOR YEAR ASSUMPTIONS**

VALUATION INTEREST RATE: 7.4% (Net of investment expense)

INFLATION RATE: 2.775%

## 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.



## NOTES