

**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.

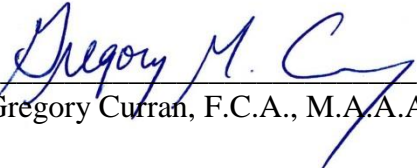

Gregory Curran, F.C.A., M.A.A.A., A.S.A.

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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 30th 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% |

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% |
|---|----------|

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% |

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.

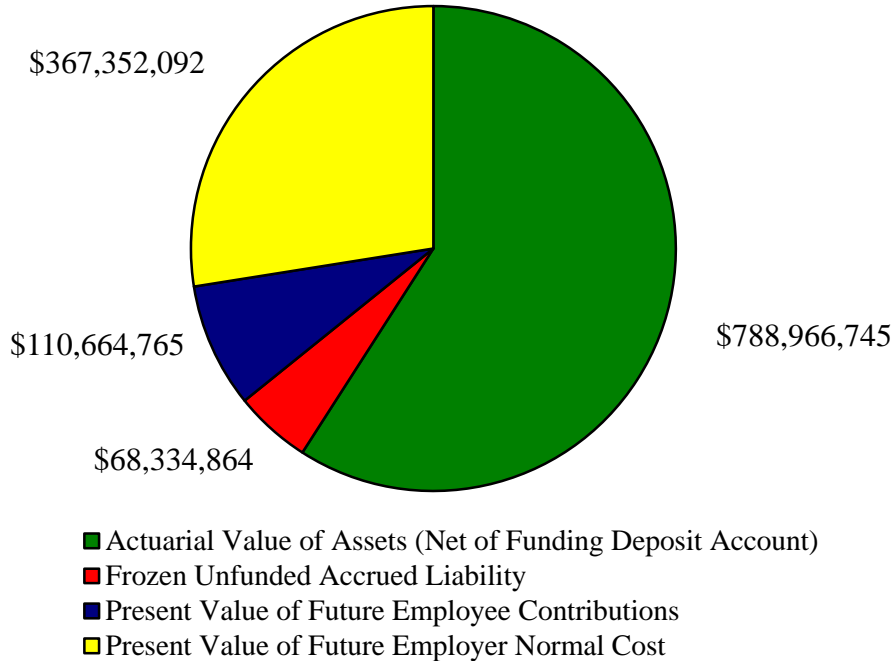
Based upon the irrevocable election of the Board of Trustees to accept the alternative method for determining eligibility to authorize cost of living increases under Act 170 of the 2013 Legislative Session, the ratio of the plan's assets to benefit obligations must meet the criteria established in R.S.

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:

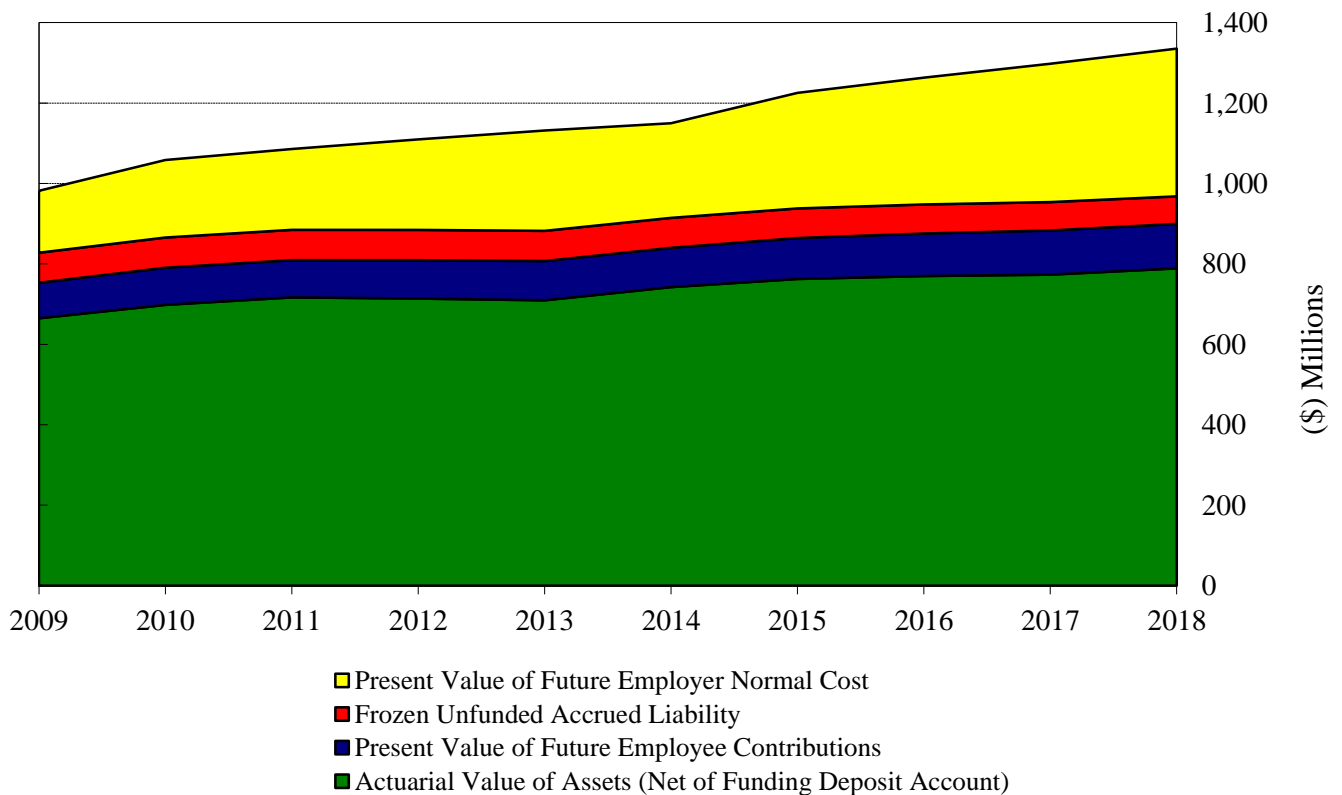
1. The system has a funded ratio of 90% or more and has not granted a benefit increase to retirees, survivors, and beneficiaries in the most recent fiscal year.
2. The system has a funded ratio of 80% or more and has not granted a benefit increase to retirees, survivors, and beneficiaries in the two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

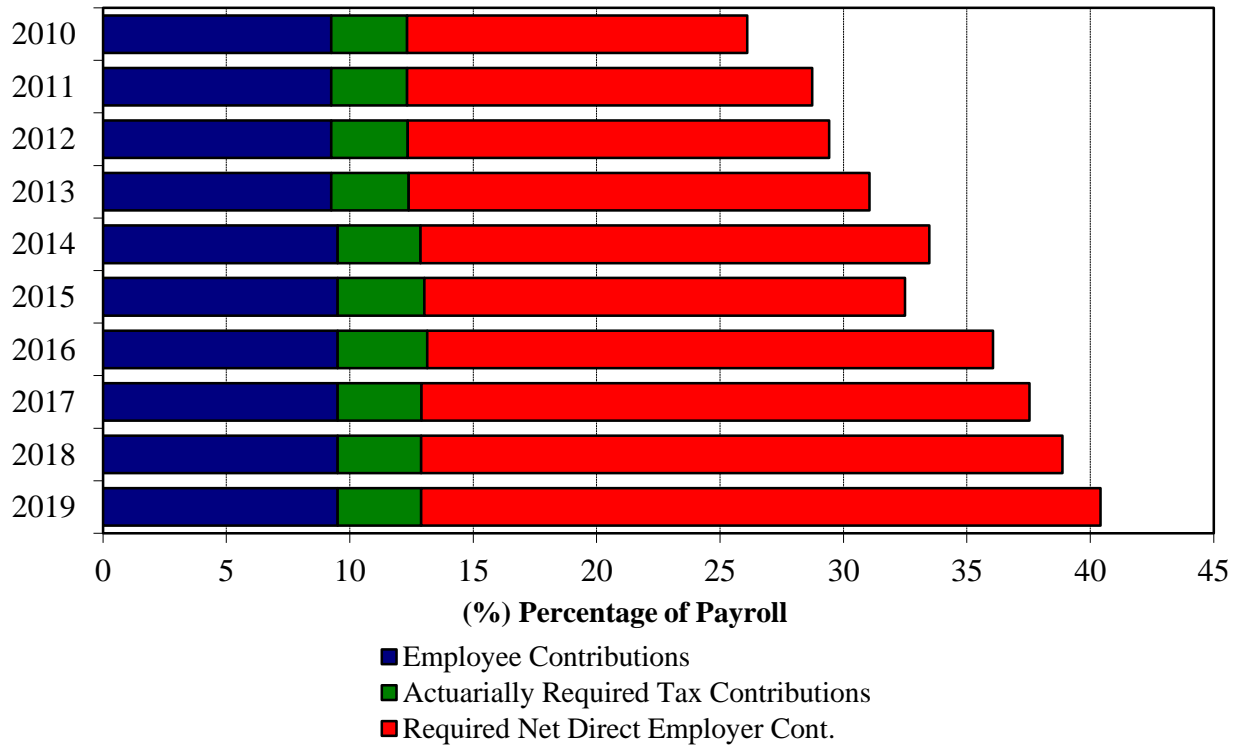
Plan A – Components of Present Value of Future Benefits June 30, 2018



Plan A – Components of Present Value of Future Benefits

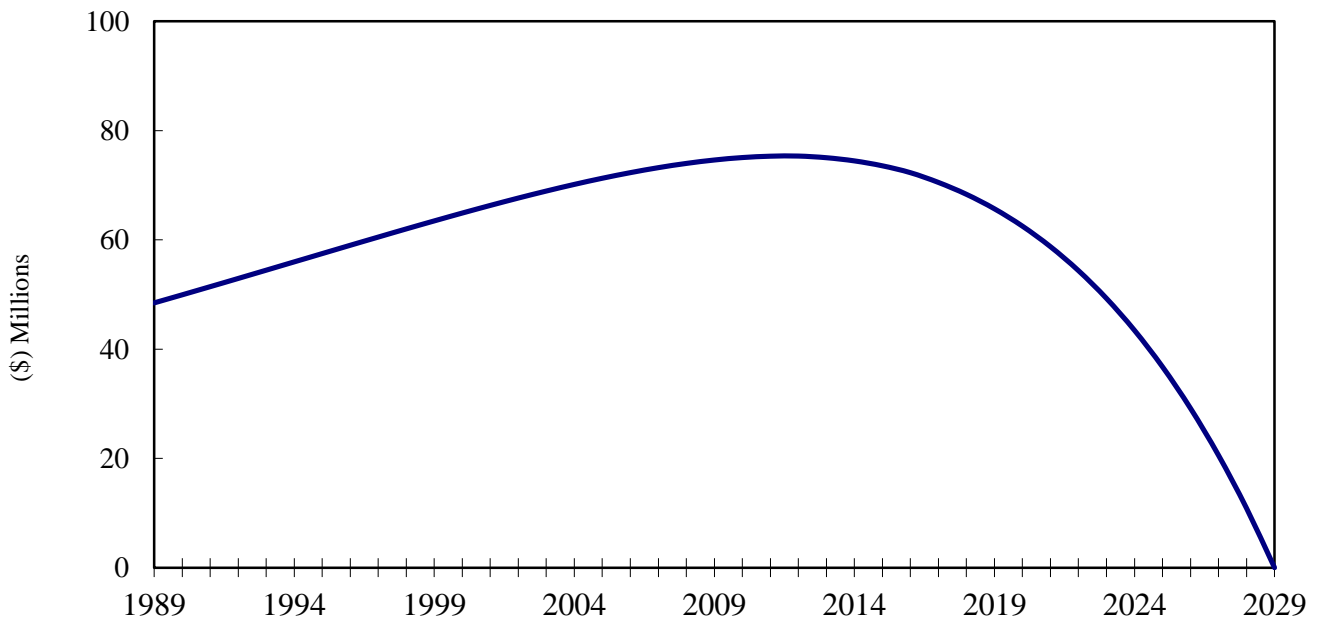


Plan A – Components of Actuarial Funding

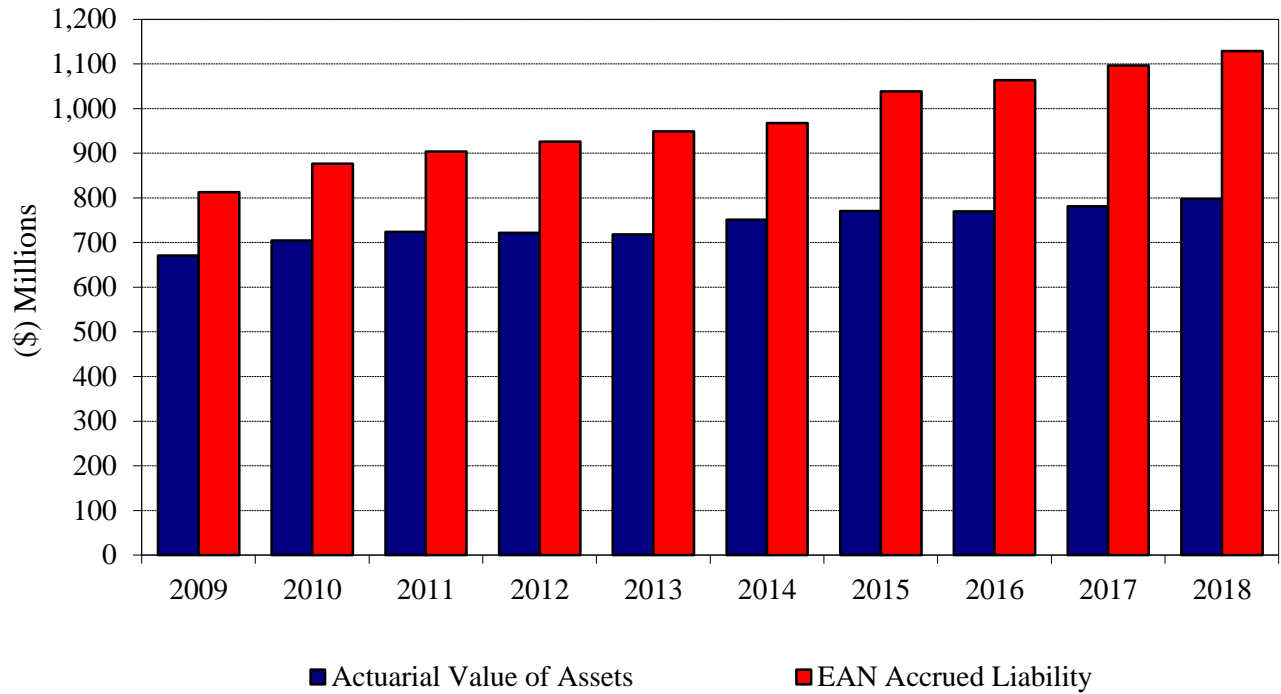


Projected Tax Contributions consist of Projected Ad Valorem and Revenue Sharing Funds as a percent of payroll

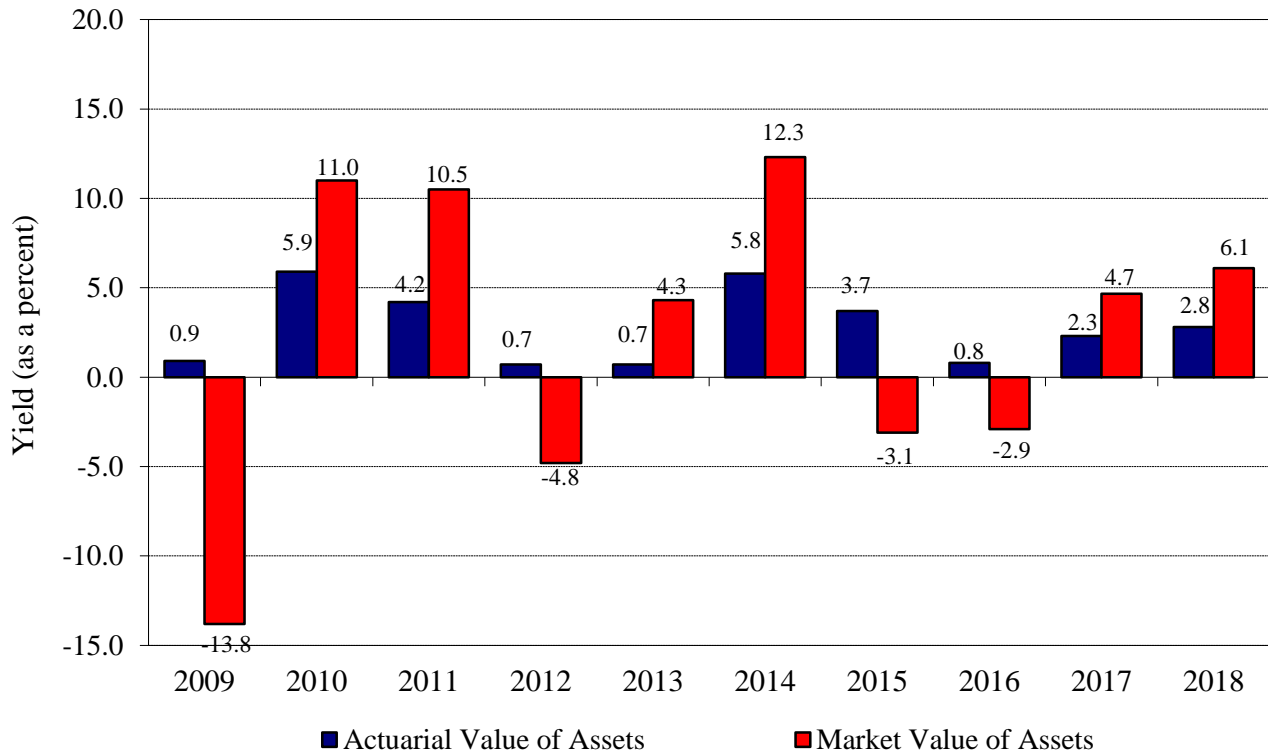
Plan A – Frozen Unfunded Accrued Liability



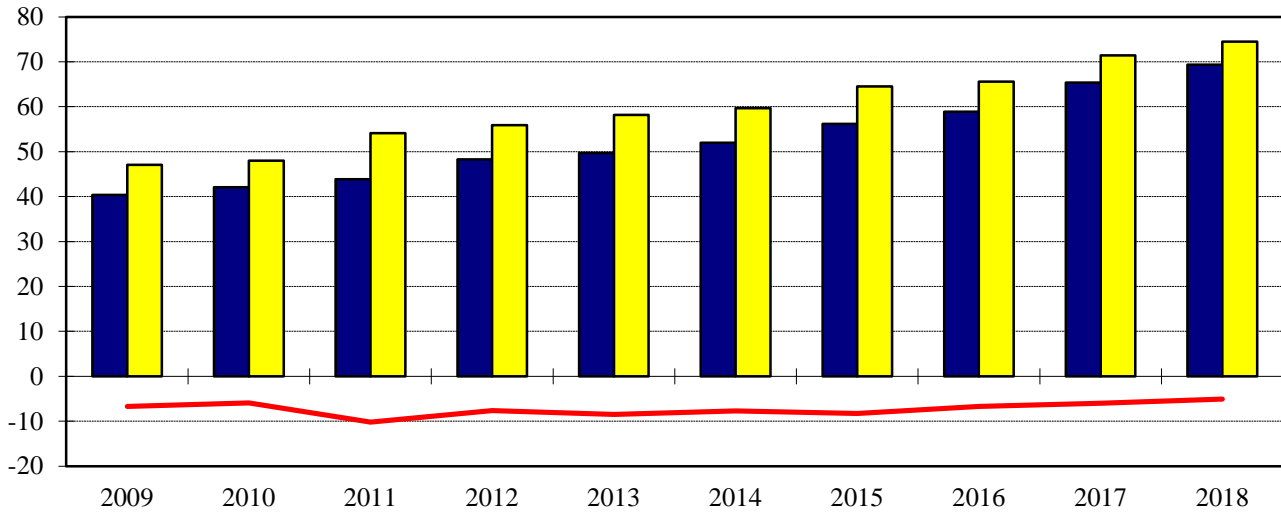
Plan A – Actuarial Value of Assets vs. EAN Accrued Liability



Plan A – Historical Asset Yield

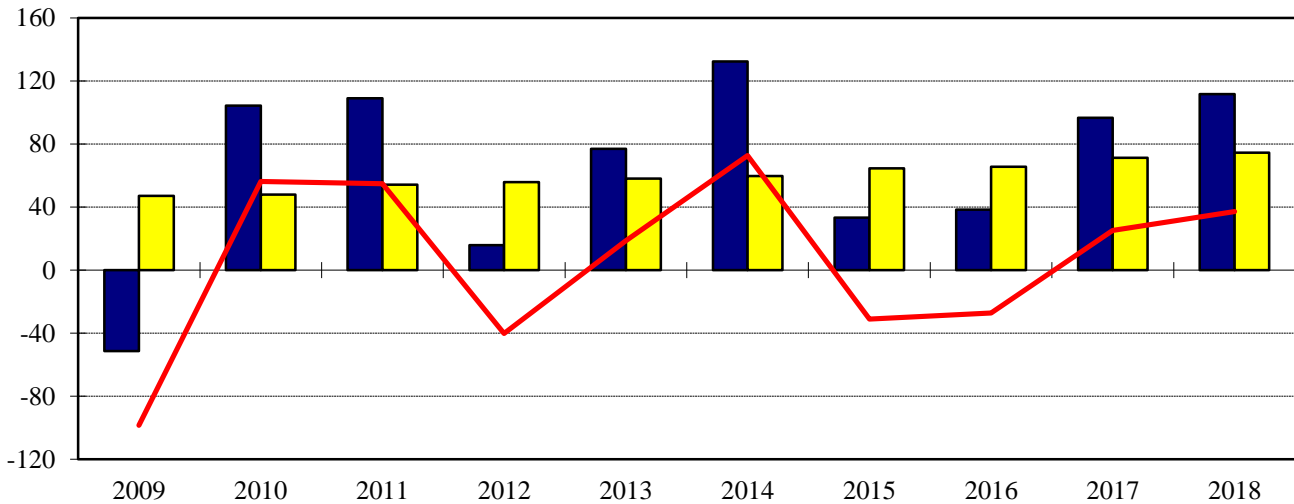


Plan A – Net Non-Investment Income



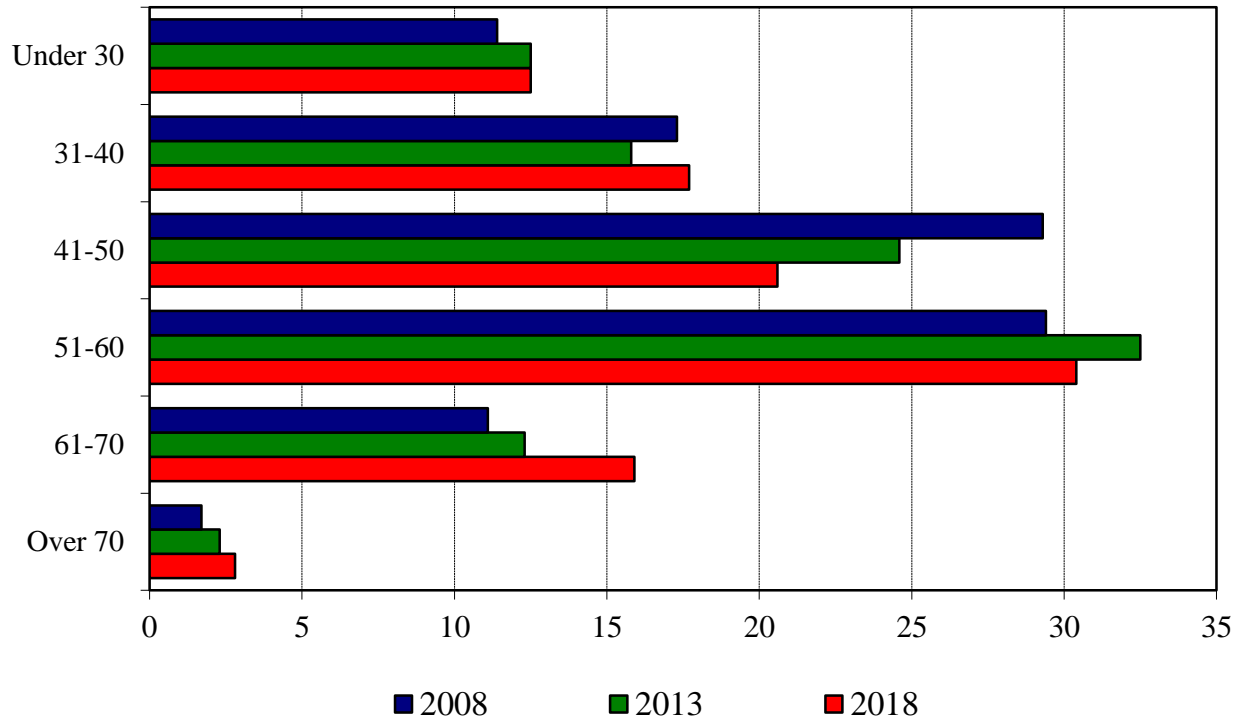
| | | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|-----------------------------------|---------------------------------------|------|------|-------|------|------|------|------|------|------|------|
| Non-Investment Income (\$Mil) | ■ | 40.4 | 42.1 | 43.9 | 48.3 | 49.7 | 52.0 | 56.2 | 58.9 | 65.4 | 69.4 |
| Benefits and Expenses (\$Mil) | ■ | 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) | — | -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)

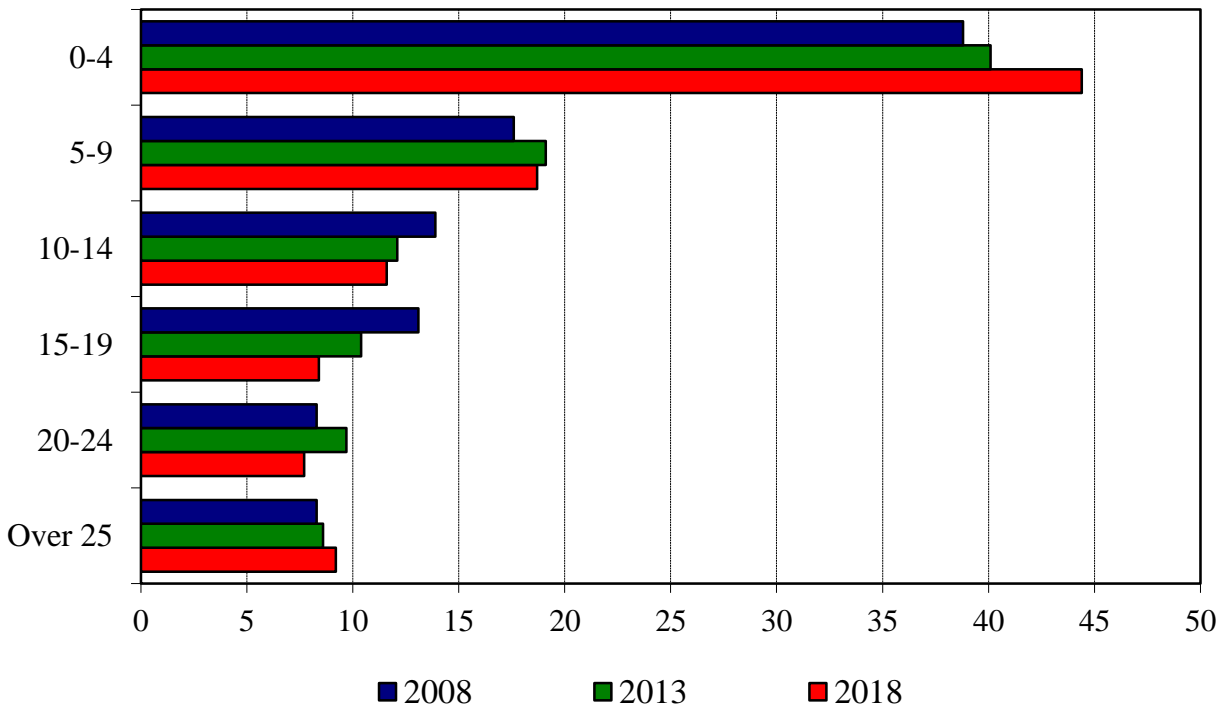


| | | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|-------------------------------|---------------------------------------|-------|-------|-------|-------|------|-------|-------|-------|------|-------|
| Total Income (\$Mil) | ■ | -51.3 | 104.3 | 108.9 | 15.8 | 77.0 | 132.4 | 33.4 | 38.5 | 96.6 | 111.7 |
| Benefits and Expenses (\$Mil) | ■ | 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) | — | -98.4 | 56.3 | 54.8 | -40.1 | 18.8 | 72.7 | -31.1 | -27.1 | 25.2 | 37.2 |

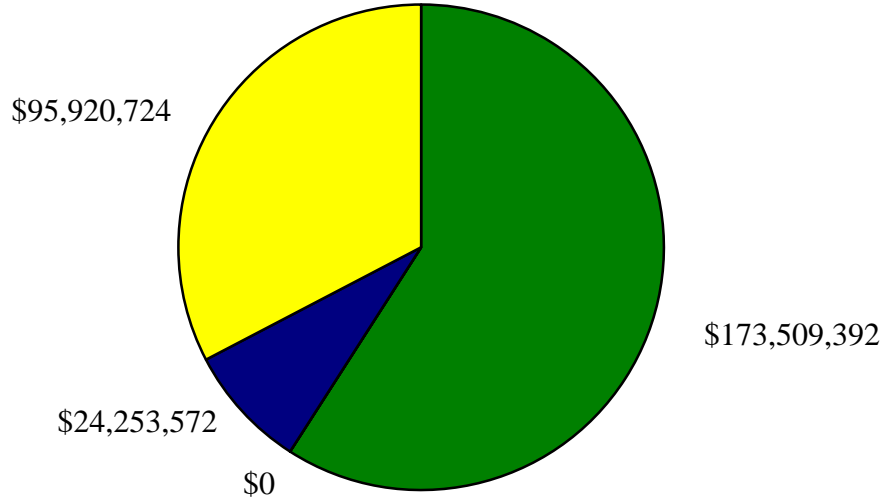
Plan A – Active – Census By Age (as a percent)



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

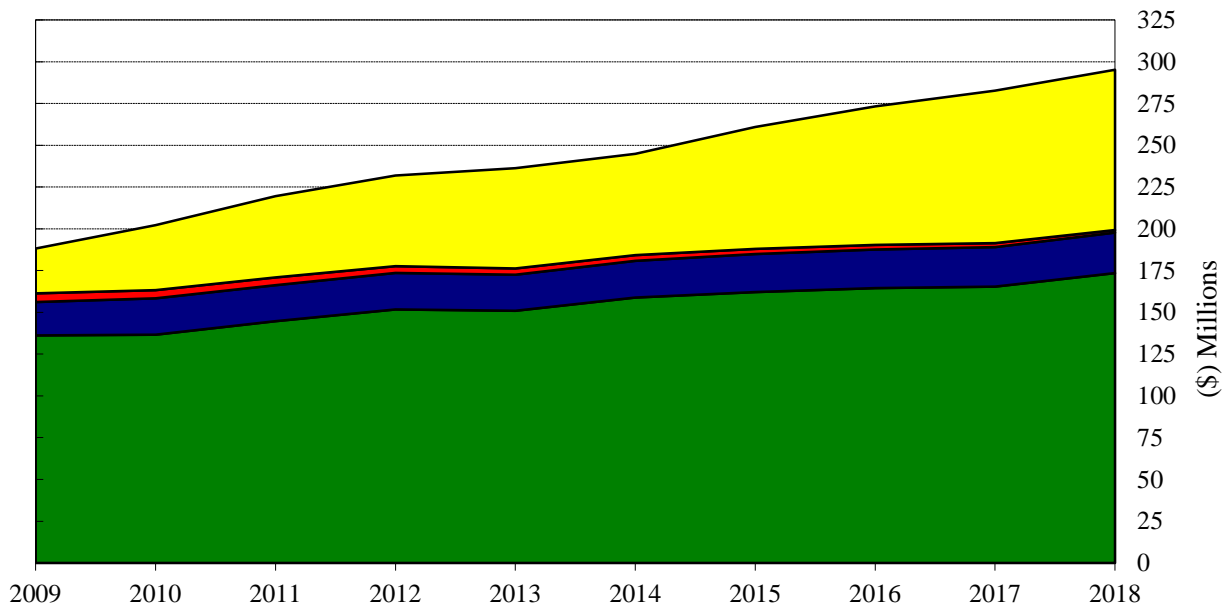


Plan B – Components of Present Value of Future Benefits June 30, 2018



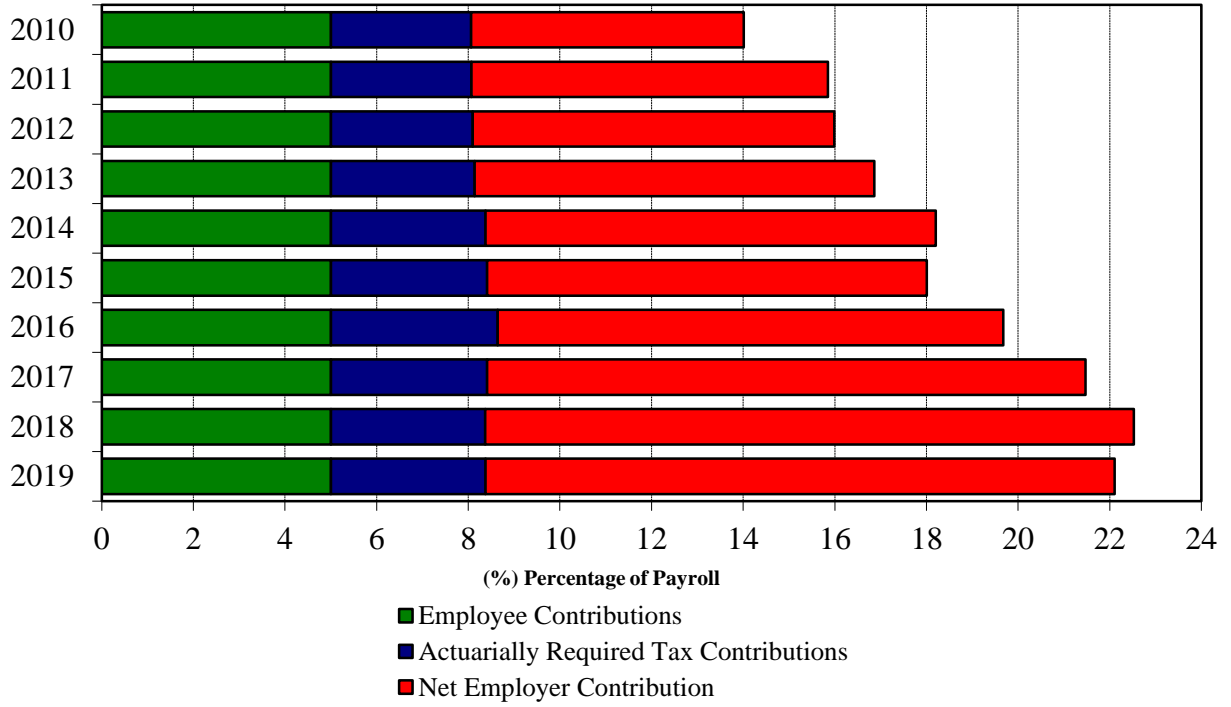
- Actuarial Value of Assets (Net of Funding Deposit Account)
- Frozen Unfunded Accrued Liability
- Present Value of Future Employee Contributions
- Present Value of Future Employer Normal Cost

Plan B – Components of Present Value of Future Benefits

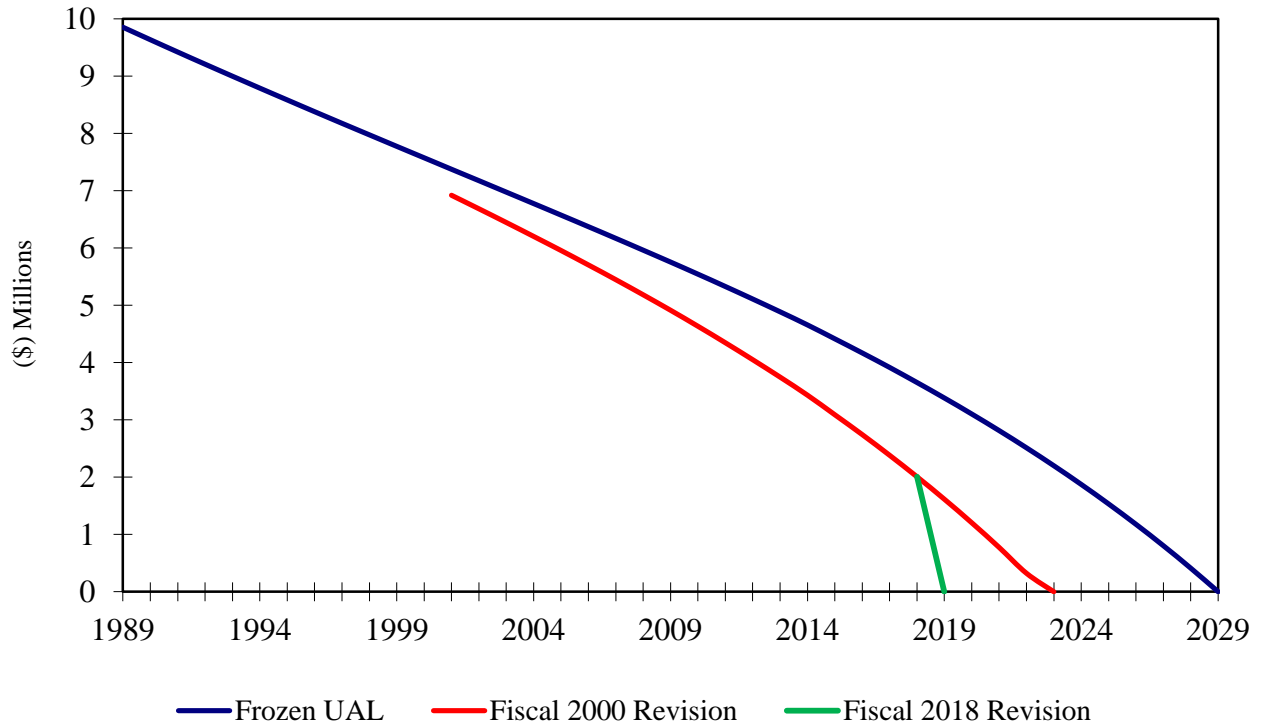


- Present Value of Future Employer Normal Cost
- Unfunded Accrued Liability
- Present Value of Future Employee Contributions
- Actuarial Value of Assets (Net of Funding Deposit Account)

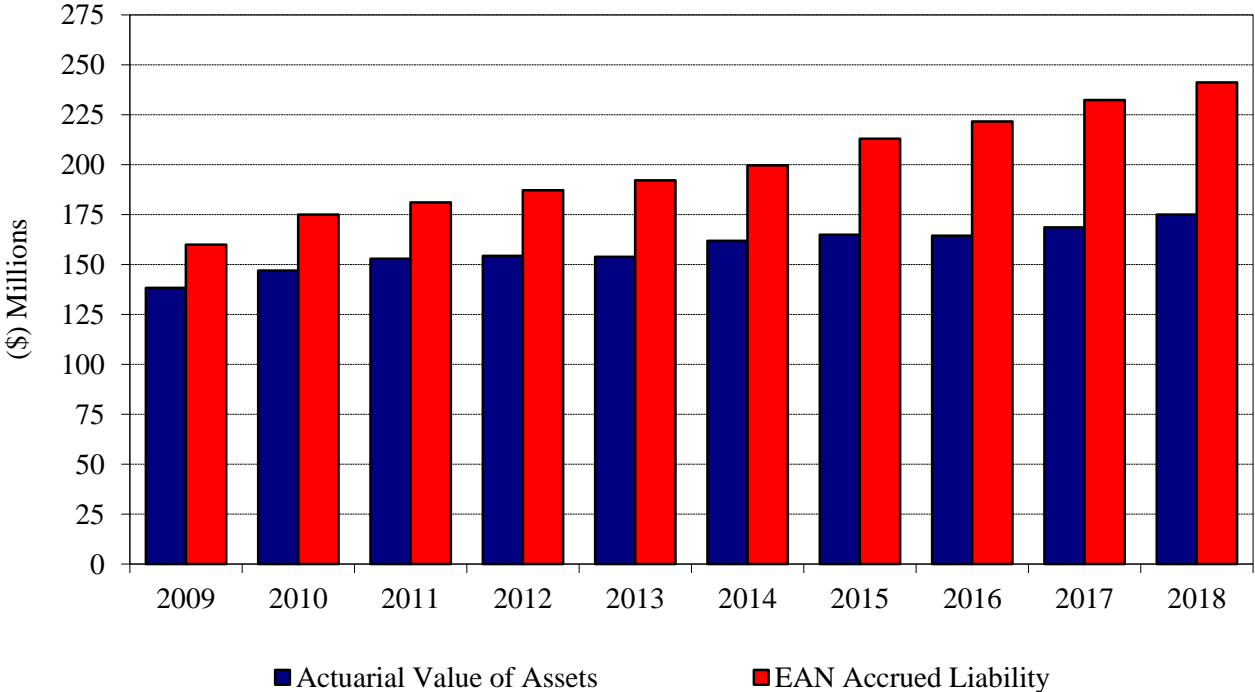
Plan B – Components of Actuarial Funding



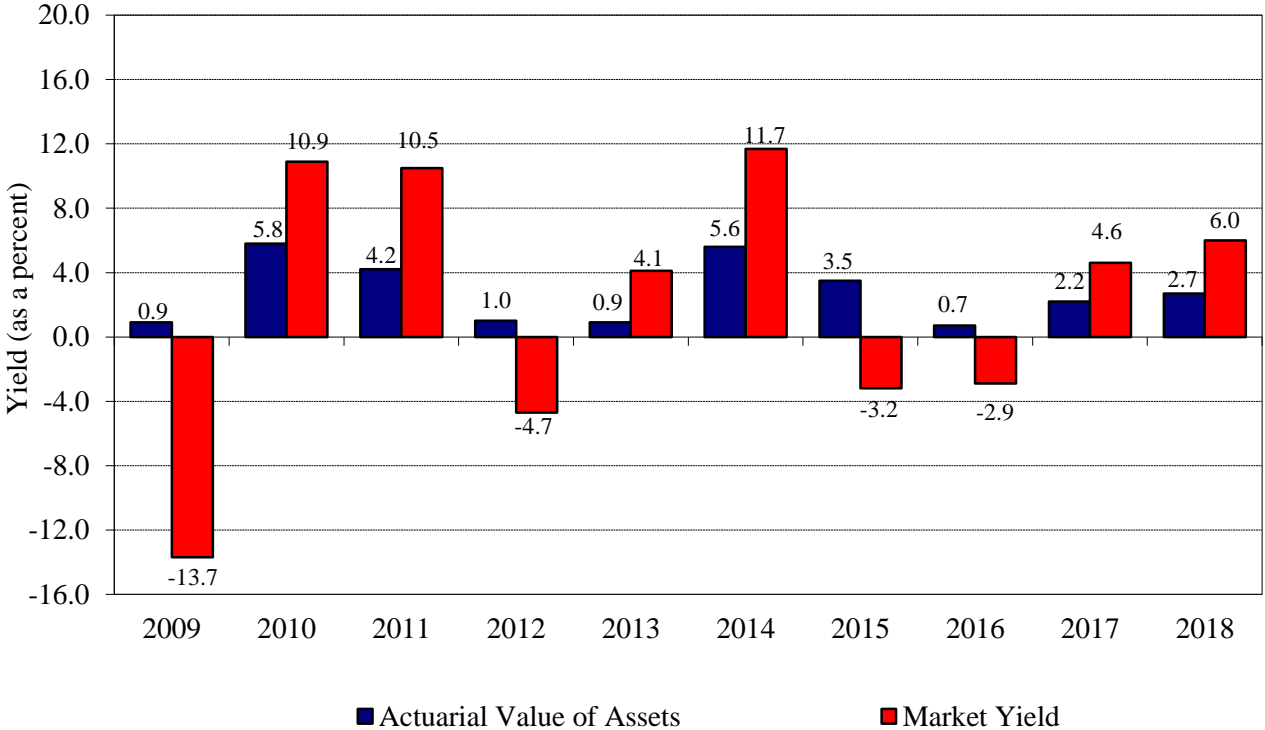
Plan B – Frozen Unfunded Accrued Liability



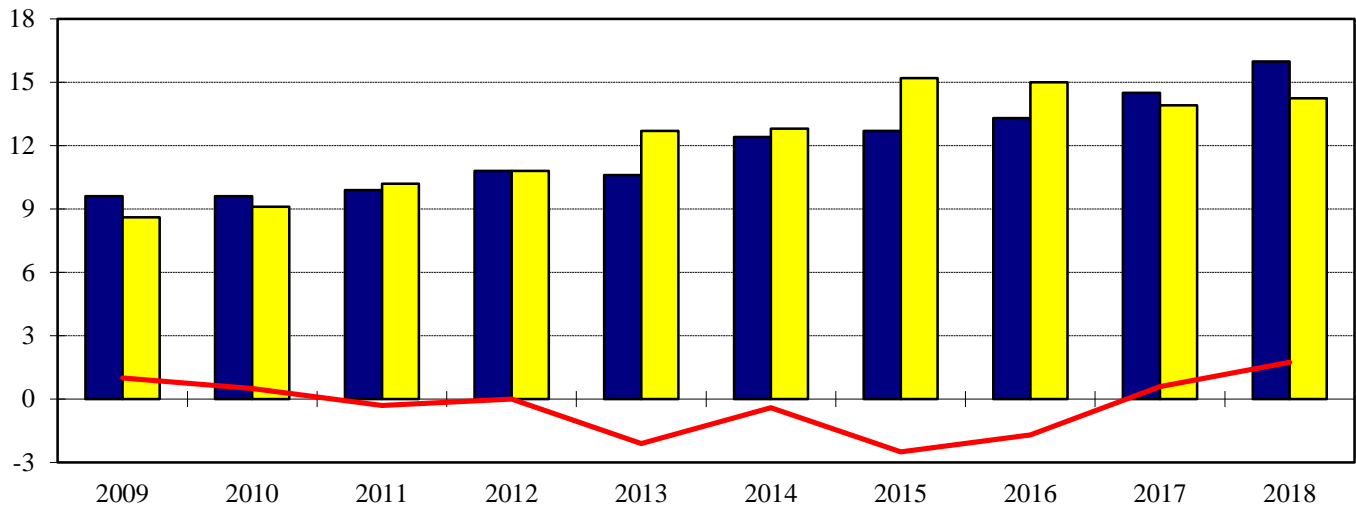
Plan B – Actuarial Value of Assets vs. EAN Accrued Liability



Plan B – Historical Asset Yield

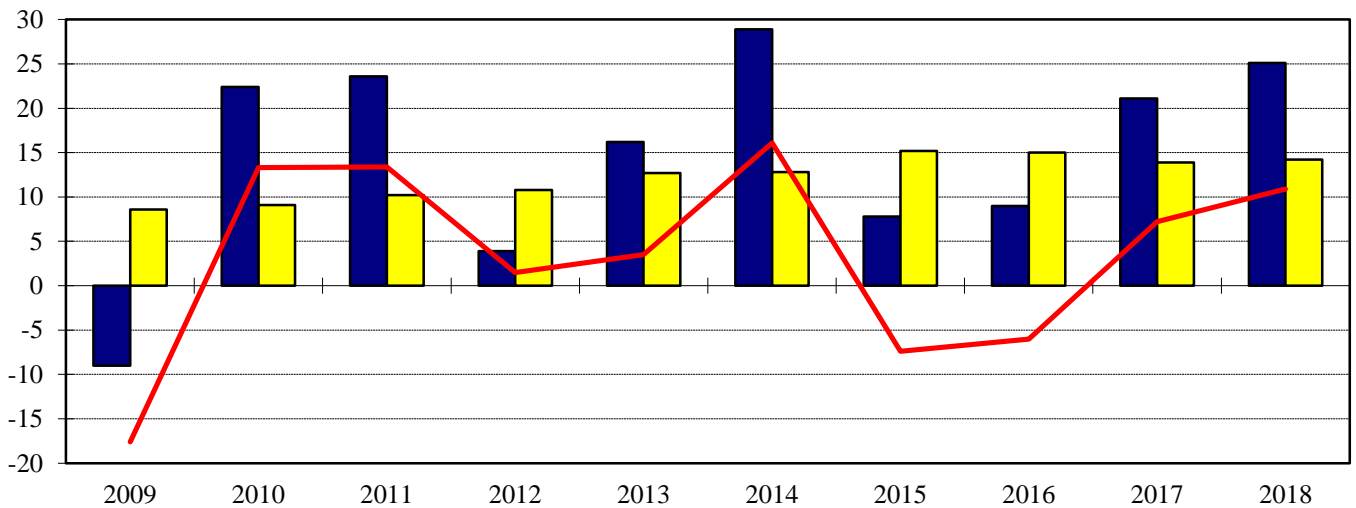


Plan B – Net Non-Investment Income



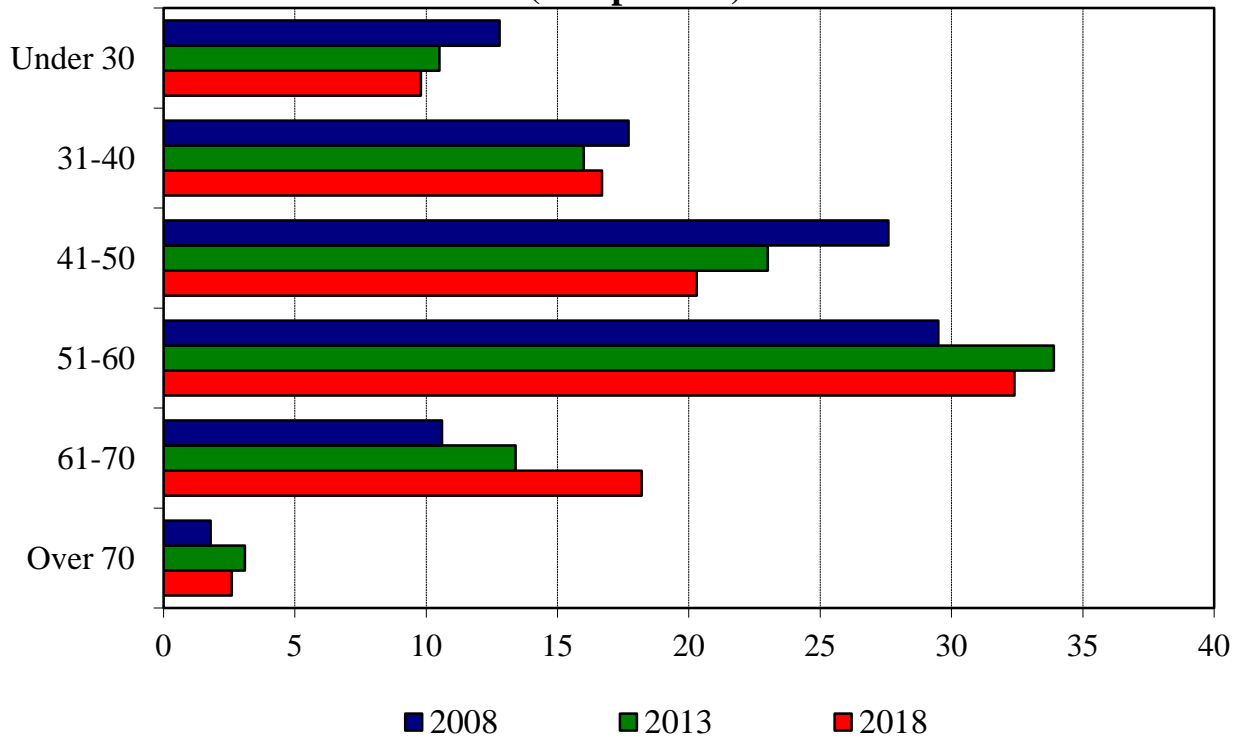
| | | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|-----------------------------------|---------------------------------------|------|------|------|------|------|------|------|------|------|------|
| Non-Investment Income (\$Mil) | ■ | 9.6 | 9.6 | 9.9 | 10.8 | 10.6 | 12.4 | 12.7 | 13.3 | 14.5 | 16.0 |
| Benefits and Expenses (\$Mil) | ■ | 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) | — | 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) | ■ | -9.0 | 22.4 | 23.6 | 3.9 | 16.2 | 28.9 | 7.8 | 9.0 | 21.1 | 25.1 |
| Benefits and Expenses (\$Mil) | ■ | 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) | — | -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)

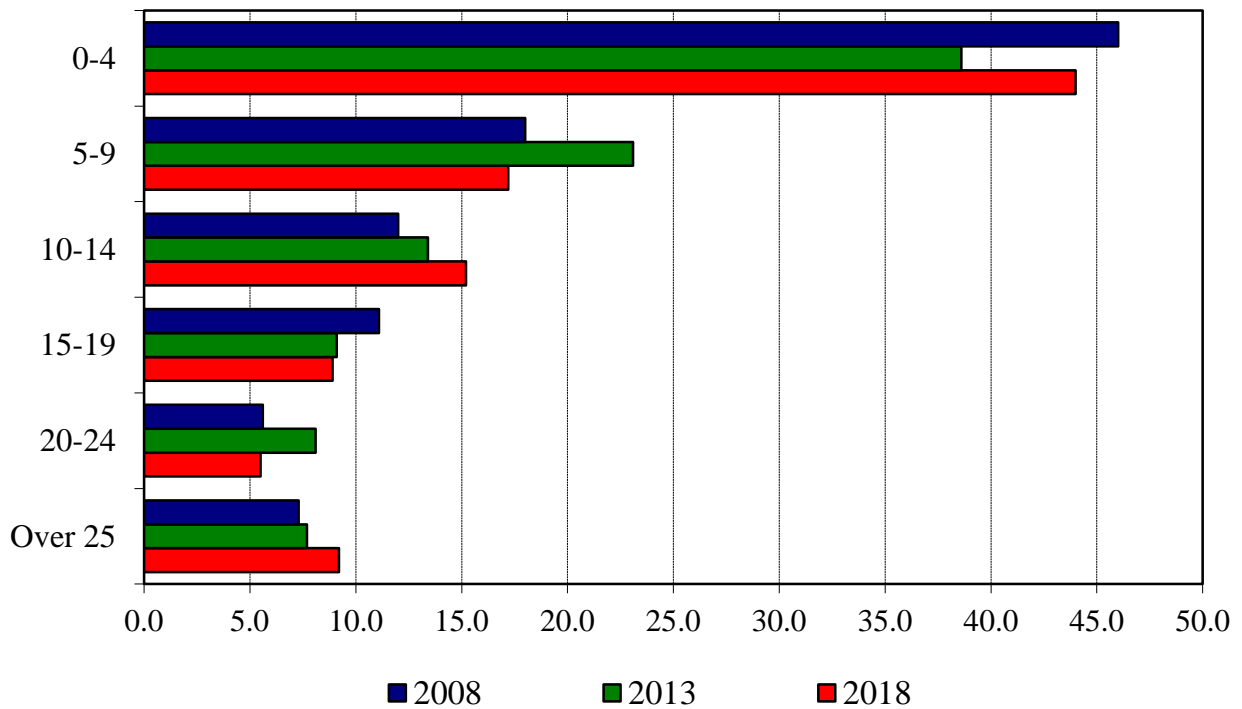


EXHIBIT I
PLAN A: ANALYSIS OF ACTUARIALLY REQUIRED CONTRIBUTIONS

| | | |
|-----|--|------------------|
| 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) |
| TOTAL PRESENT VALUE OF FUTURE CONTRIBUTIONS | \$ 537,638,997 |

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

EXHIBIT VI
PLAN A: ANALYSIS OF CHANGE IN ASSETS

| | | |
|--|-----------|--------------------|
| Actuarial Value of Assets (June 30, 2017) | \$ | 781,417,434 |
| INCOME: | | |
| 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 |
| Total Contributions | \$ | 69,372,141 |
| Net Appreciation in Fair Value of Investments | \$ | 43,760,382 |
| Interest & Dividend Income | | 1,019,179 |
| Investment Expense | | (2,451,922) |
| Net Investment Income | \$ | 42,327,639 |
| TOTAL Income | \$ | 111,699,780 |
| EXPENSES: | | |
| 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 |
| TOTAL Expenses | \$ | 74,531,522 |
| Net Market Value Income for Fiscal 2018 (Income – Expenses) | \$ | 37,168,258 |
| Unadjusted Fund Balance as of June 30, 2018 (Fund Balance Previous Year + Net Income) | \$ | 818,585,692 |
| Adjustment for Actuarial Smoothing | \$ | (20,906,223) |
| Actuarial Value of Assets: (June 30, 2018) | \$ | 797,679,469 |

**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**

| | Active | Terminated with Funds on Deposit | DROP | Retired | Total |
|--|---------------|---|-------------|----------------|--------------|
| 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 | 1 | | | | | | | 426 |
| 46 - 50 | 56 | 45 | 44 | 40 | 31 | 105 | 67 | 55 | | | | | | | 582 |
| 51 - 55 | 66 | 58 | 53 | 44 | 42 | 122 | 87 | 66 | | | | | | | 718 |
| 56 - 60 | 58 | 57 | 53 | 47 | 27 | 148 | 100 | 79 | | | | | | | 770 |
| 61 - 65 | 35 | 30 | 32 | 28 | 31 | 112 | 83 | 61 | | | | | | | 568 |
| 66 - 70 | 11 | 12 | 6 | 9 | 5 | 42 | 33 | 33 | | | | | | | 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 | | | | | | | | 35,630 |
| 41 - 45 | 27,419 | 27,566 | 33,350 | 32,969 | 35,335 | 37,611 | 37,768 | 42,821 | 57,029 | | | | | | | 36,130 |
| 46 - 50 | 27,020 | 27,219 | 32,299 | 33,954 | 31,713 | 34,798 | 41,077 | 43,961 | 46,271 | | | | | | | 38,439 |
| 51 - 55 | 30,288 | 30,543 | 31,381 | 36,087 | 33,907 | 37,256 | 38,135 | 41,423 | 50,203 | | | | | | | 39,549 |
| 56 - 60 | 30,302 | 34,172 | 36,929 | 35,101 | 34,519 | 38,189 | 39,594 | 45,068 | 47,461 | | | | | | | 40,256 |
| 61 - 65 | 30,984 | 30,953 | 35,739 | 38,882 | 36,114 | 34,450 | 40,308 | 40,601 | 41,077 | | | | | | | 40,295 |
| 66 - 70 | 35,347 | 23,316 | 32,021 | 35,342 | 45,690 | 43,404 | 42,050 | 40,178 | 47,448 | | | | | | | 42,111 |
| 71 & Over | 30,205 | 24,770 | 27,172 | 35,300 | 49,938 | 32,504 | 43,282 | 42,952 | 39,357 | 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 | | | | | | | 1 | | | | | | 1 |
| 51 - 55 | 1 | | | | | | 56 | | | | | | 57 |
| 56 - 60 | 9 | | 8 | | 13 | | | | | | | | 59 |
| 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 | 15,959 | | | | | | 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 | 1 | | | 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 | | | | 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 | 2 | 4 | 10 | 21 | 21 | 23 | 23 | 104 |
| 86 - 90 | | | | 2 | 2 | 2 | 3 | 9 | 8 | 27 | 27 | 76 |
| 91 & Over | | | | 1 | 1 | 1 | 3 | 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 | | 12,019 | 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 |

| 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 Reciprocal 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

Preliminary Actuarial Value of Plan Assets, End of Year

\$ 175,032,415

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

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 |
| INCOME: | | |
| 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 |
| EXPENSES: | | |
| 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 | | | | | 1 | | | | | | 26 |
| 61 - 65 | 32 | 27 | 13 | 2 | 3 | 8 | 6 | 2 | | | | | 129 |
| 66 - 70 | 17 | 13 | 16 | 31 | 14 | 70 | 13 | 6 | | 2 | | | 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 | | | 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 | | | | 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 |

| 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 21st 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 21st 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)

| Age | DROP Entry Rates Tier 1 | DROP Entry Rates Tier 2 | Disability Rates | Remarriage Rates |
|------------|------------------------------------|------------------------------------|-----------------------------|-----------------------------|
| 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