ASSESSORS'
RETIREMENT FUND

ACTUARIAL VALUATION AS OF
SEPTEMBER 30, 2018

G. S. CURRAN & COMPANY, LTD.

Actuarial Services

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February 28, 2019

Board of Trustees
Louisiana Assessors' Retirement Fund
P.O. Box 14699
Baton Rouge, LA 70898-4699

Ladies and Gentlemen:

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

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

Sincerely,

G. S. CURRAN & COMPANY, LTD.

By: _____ _____

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

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SUMMARY OF VALUATION RESULTS
ASSESSORS' RETIREMENT FUND

Valuation Date:		September 30, 2018	September 30, 2017
Census Summary:	Active Members	747	751
	Retired Members and Survivors	572	570
	Terminated Due a Deferred Benefit	16	13
	Terminated Due a Refund	94	90
Payroll:		$ 43,686,762	$ 42,948,488
Benefits in Payment:		$ 21,566,139	$ 21,114,760
Present Value of Future Benefits		$ 557,165,263	$ 510,525,271
Actuarial Accrued Liability (EAN):		$ 427,882,294	$ 399,744,486
Frozen Unfunded Actuarial Accrued Liability:		$ 3,429,455	$ 6,658,938
Funding Deposit Account Credit Balance		$ 37,949,749	$ 34,439,283
Actuarial Value of Assets (AVA):		$ 398,857,013	$ 375,876,564
Market Value of Assets (MVA):		$ 408,441,921	$ 382,197,366
Ratio of AVA to EAN Actuarial Accrued Liability:		93.22%	94.03%

	Fiscal 2018	Fiscal 2017
Market Rate of Return:	7.7%	12.1%
Actuarial Rate of Return:	7.0%	7.6%

	Fiscal 2019	Fiscal 2018
Employers' Normal Cost (Mid-year):	$ 14,121,378	$ 11,977,783
Amortization Cost (Mid-year):	$ 3,535,001	$ 3,560,749
Estimated Administrative Cost	$ 302,235	$ 306,735
Projected Ad Valorem Tax Contributions	$ 13,427,563	$ 13,191,787
Projected Revenue Sharing Funds	$ 350,972	$ 351,613
Net Direct Employer Actuarially Required Contributions:	$ 4,180,079	$ 2,301,867
Projected Payroll:	$ 44,540,099	$ 43,929,744
Statutory Employee Contribution Rate:	8.00%	8.00%
Board Adopted Net Direct Employer Contribution Rate:	8.00%	8.00%
Actuarially Required Net Direct Employer Contribution Rate:	9.38%	5.24%

	Fiscal 2020	Fiscal 2019
Minimum Recommended Net Direct Employer Cont. Rate:	1.50%	5.25%

GENERAL COMMENTS

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

Data quality varies from system to system and year to year. The data inputs involve both asset information and census information of plan participants. In both cases, the actuary must rely on third parties; nevertheless, steps are taken to reduce the probability and degree of errors. The development of assumptions is primarily the task of the actuary; however, information and advice from plan administrators, staff, and other professionals may be factored into the formation of assumptions. The process of setting assumptions is based primarily on analysis of past trends, but modification of historical experience is often required when the actuary has reason to believe that future circumstances may vary significantly from the past. Setting assumptions includes but is not limited to collecting past plan experience and studying general population demographics and economic factors from the past. The actuary will also consider current and future macro-economic and financial expectations as well as factors that are likely to impact the particular group under consideration. Hence, assumptions will also reflect the actuary's judgment 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 staff 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 X, there are 747 active members in the system of whom 299 members have vested retirement benefits; 572 former members or their beneficiaries are receiving retirement benefits. An additional 110 terminated members have contributions remaining on deposit with the system; of this number, 16 have vested rights for future retirement benefits. All participant data is as of September 30, 2018. All individuals submitted were included in the valuation.

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

In addition to the statistical information provided on the system's participants, the system's administrator furnished general information related to other aspects of the system's expenses, benefits and funding. Valuation asset values as well as income and expenses for the fiscal year were based on information furnished by the system's auditor, the firm of Hawthorne, Waymouth, and Carroll, L.L.P. As indicated in the system's audit report, the net market value of system's assets was $408,441,921 as of September 30, 2018. Net investment income for Fiscal 2018 measured on a market value basis was $29,357,768. Contributions to the system for the fiscal year totaled $20,749,680; benefits and expenses amounted to $23,862,893.

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

COMMENTS ON ACTUARIAL METHODS AND ASSUMPTIONS

This valuation is based on the Frozen Attained Age Normal actuarial cost method with the unfunded accrued liability frozen as of September 30, 1989. Under the provisions of Louisiana R.S. 11:103 the unfunded accrued liability which was determined to be $27,874,011 as of September 30, 1989, was amortized over forty years with payments increasing at 3.5% per year. Under the Frozen Attained Age Normal Cost Method, actuarial gains and losses are spread over future normal costs. Thus, favorable plan experience will lower future normal costs; unfavorable experience will cause future normal costs to increase. In addition, changes in benefits and assumptions are also spread over future normal costs. The cost method used for this valuation generally produces normal costs which are level as a percentage of pay if assumptions are met and the composition of the active group with regard to age and service is stable. Overall costs may increase or decrease depending on payroll growth.

Prior to the passage of Act 296 in the 2009 legislative session, as detailed by R. S. 11:105, in any year in which the net direct employer contribution was scheduled to decrease, the Board of Trustees could freeze the net direct employer contribution rate and use the excess funds collected, if any, to reduce the frozen unfunded actuarial accrued liability. Also, in any year in which the Board elected to increase contributions pursuant to R.S. 11:106 the excess funds, if any, were used to reduce the system's frozen unfunded actuarial accrued liability. Notwithstanding such a decrease, payments were made according to the regular amortization schedule, thereby reducing the amortization period. Such additional unfunded liability payments of $791,748; $101,831; $538,661; $1,020,879; $2,890,530; and $7,988,122 were made in Fiscal 1999, Fiscal 2000, Fiscal 2003, Fiscal 2006, Fiscal 2007, and Fiscal 2008, respectively. As a result of these additional payments, the frozen unfunded actuarial accrued liability will be fully amortized by September 30, 2019, ten years ahead of the original schedule. No future payments will be due on the frozen unfunded actuarial accrued liability and the system will be funded on the Aggregate actuarial cost method. In addition, the Board of Trustees voted to maintain the net direct employer contribution rate at 13.50% for fiscal years 2009 through 2016 and at 8.00% for 2017 instead of lowering the rate to the minimum recommended employer contribution rate for those years. These freezes resulted in additional collections totaling $28,220,036 over the nine fiscal years, which under the provisions of Act 296 were credited to the Funding Deposit Account. For Fiscal 2018, the contribution rate was maintained at 8.00%; the additional funds collected, amounting to $1,185,814, were also credited to the Funding Deposit Account.

The current year actuarial assumptions utilized for this report are based on the results of an actuarial experience study for the period October 1, 2009 – September 30, 2014, unless otherwise specified in this report. In determining the valuation interest rate, consideration was given to several factors. First, average estimates of rates of return, standard deviations, and correlation coefficients for asset classes derived from various asset consulting firms were developed. These factors were used to derive forward estimates of the Fund's portfolio earnings rate. Consideration was also given to 2018 information from the AndCo Consulting Group on future expected rates of return for the current portfolio's asset allocation. Based on the results of this interest rate assumption review and a desire to reduce the long-term risk of the retirement fund, the assumed rate of return for the valuation was reduced from 6.75% to 6.25%. An inflation rate of 2.2% was implicit in both the assumed rate of return and rate of salary increases. Additional details are given in the complete Experience Report for fiscal years 2010 through 2014.

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

The current year actuarial assumptions utilized for the report are outlined on pages thirty-nine through forty-three. With the exception of the assumptions described above, all assumptions were the same as those used in the Fiscal 2017 valuation. All assumptions used are based on estimates of future long-term experience for the fund. All calculations, recommendations, and conclusions are based on the assumptions specified. To the extent that prospective experience differs from that assumed, adjustments to contribution levels will be required. Such differences will be revealed in future actuarial valuations. The net effect of the changes in assumptions on the normal cost accrual rate was an increase of 6.6038%.

RISK FACTORS

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

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

In addition to asset risk, the plan is also subject to risks related to liabilities. These risks include longevity risk (the risk that retirees will live longer than expected), termination risk (the risk that fewer than the anticipated number of members will terminate service prior to retirement), and other factors that may have an impact on the liability structure of the plan. Final average compensation plans are

vulnerable to unexpectedly large increases in salary for individual members near retirement. Conversely, in cases where plans have large unfunded liabilities, payroll contraction is a risk insofar as contributions which are typically reported as a percentage of payroll may increase as payrolls decline.

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

Recommended actuarial contributions are based on expectations related to asset and liability performance; all of the above mentioned factors can produce unexpected changes in the future cost structures of the plan. For this reason, future costs may differ significantly from current levels. Ordinarily, variations in these factors will offset to some extent. However, even with the expectation that not all variations in costs will likely travel in the same direction, certain factors have the potential on their own accord to pose a significant risk to future cost levels and solvency.

Beyond identifying risk categories, it is possible to quantify some risk factors. One fairly well known risk metric is the funded ratio of the plan. The rate is given as plan assets divided by plan liabilities. However, the definition of each of these terms may vary. The two typical alternatives used for assets are the market and actuarial value of assets. There are a number of alternative measures of liability depending on the funding method employed. The Governmental Accounting Standards Board (GASB) specifies that for financial reporting purposes, the funded ratio is determined by using the market value of assets divided by the entry age normal accrued liability. This value is given in the system's financial report. Alternatively, we have calculated the ratio of the actuarial value of assets to the entry age normal accrued liability based on the funding methodology used to fund the plan. The ratio is 93.22% as of September 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 0.83% for the fund.

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

loss by contributions related to active members. A measure of risk related to plan maturity is the ratio of total benefit payments to active payroll. For Fiscal 2018, this ratio is 49%; ten years ago this ratio was 26%.

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 14.01% of payroll.

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

CHANGES IN PLAN PROVISIONS

The following statutes affecting the retirement system were enacted during the 2018 Regular Session of the Louisiana Legislature:

Act 45 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 113 made technical changes to R.S. 11:241(B) which deals with the structure of COLAs based on the length of service and elapsed time since retirement.

Act 344 provides for eligible rollover distributions to certain persons.

Act 397 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 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 investment rates of return were determined by assuming a uniform distribution of income and expense throughout the fiscal year.

	Market Value	Actuarial Value
2009	6.6%	6.8%
2010	7.7%	5.1%
2011	-1.2%	2.6%
2012	18.4%	3.5%
2013	13.4%	9.2%
2014	9.1%	9.8%
2015	-1.7%	7.4%
2016	8.8%	8.2%
2017	12.1%	7.6%
2018	7.7%	7.0%

Geometric Average Market Rates of Return

5 year average	(Fiscal 2014 – 2018)	7.1%
10 year average	(Fiscal 2009 – 2018)	7.9%
15 year average	(Fiscal 2004 – 2018)	7.3%
20 year average	(Fiscal 1999 – 2018)	6.0%
25 year average	(Fiscal 1994 – 2018)	6.9%

The market rate of return gives a measure of investment return on a total return basis and includes realized and unrealized capital gains and losses as well as interest income and dividends. This rate of return gives an indication of performance for an actively managed portfolio where securities are bought and sold with the objective of producing the highest total rate of return. During 2018, the fund earned $5,871,732 of dividends, interest and other recurring income. Net income was increased by realized and unrealized capital gains of $25,214,994. Investment expenses reduced income by $1,728,958.

The actuarial rate of return is presented for comparison to the assumed long-term rate of return of 6.75% in effect for Fiscal 2018 (6.25% for Fiscal 2019). This rate is calculated based on the actuarial value of assets and the market value income adjusted for actuarial smoothing as given in Exhibit VI. Investment income used to calculate this yield is based upon a smoothing of investment income above or below the valuation interest rate over a five year period subject to limits as described in the section detailing actuarial assumptions. The difference between rates of return on an actuarial and market value basis results from the smoothing utilized. In the future, yields in excess of the 6.25% assumption will reduce future costs; yields below 6.25% will increase future costs. For Fiscal 2018, the system experienced net actuarial investment earnings of $825,349 more than the actuarial assumed earnings rate of 6.75% in effect for Fiscal 2018. Beginning with Fiscal 2019, actuarial investment gains and losses will be measured against the 6.25% valuation interest rate. This surplus in earnings produced an actuarial gain, which decreased the normal cost accrual rate by 0.1720%.

DEMOGRAPHICS AND LIABILITY EXPERIENCE

A reconciliation of the census for the system is given in Exhibit X. The average active member is 49 years old with 12.03 years of service and an annual salary of $58,483. The system's active membership decreased during the fiscal year by 4 members. The plan has experienced no 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 has changed in several age subgroups but no overall trend is observable. Within the active census by service, the fund has shown an increase in the number of members with greater than five years and less than 19 years. There was a decrease in the population with greater than 20 years of service.

The average regular retiree is 72 years old with a monthly benefit of $3,245. The number of retirees and beneficiaries receiving benefits from the system increased by 2 during the fiscal year. Over the last five years, the number of retirees has increased by 53; during this same period, annual benefits in payment increased by $4,884,604.

Plan liability experience for Fiscal 2018 was favorable. Withdrawals from the Fund were below projected levels. This factor tends to increase costs. However, salary increases were below projections and retirements were below projections. These factors lowered costs by more than the increases from other sources. All other factors were close to neutral in their effect. In aggregate, liability gains decreased the normal cost accrual rate by 1.4706%.

FUNDING ANALYSIS AND RECOMMENDATIONS

Actuarial funding of a retirement system is a process whereby funds are accumulated over the working lifetimes of employees in such a manner as to have sufficient assets available at retirement to pay for the lifetime benefits accrued by each member of the system. The required contributions are determined by an actuarial valuation based on rates of mortality, termination, disability, and retirement, as well as investment return and other statistical measures specific to the particular group. Each year a determination is made of two cost components, and the actuarially required contributions are based on the sum of these two components plus administrative expenses. These two components are the normal cost and the amortization payment on the unfunded actuarial accrued liability. The normal cost refers to the portion of annual cost based on the salary of active participants. The term unfunded accrued liability (UAL) refers to the excess of the present value of plan benefits over the sum of current assets and future normal costs. Each year the UAL grows with interest and is reduced by payments. Under the funding method used for the plan, changes in plan experience, benefits, or assumptions do not affect the frozen unfunded actuarial accrued liability. These items increase or decrease future normal costs.

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

The derivation of the actuarially required contribution for the current fiscal year is given in Exhibit I. The normal cost for Fiscal 2019 adjusted with interest for mid-year payment is $14,121,378. The amortization payment on the fund's frozen unfunded actuarial accrued liability adjusted with interest for mid-year payment is $3,535,001. The total actuarially required contribution is determined by adding to these values estimated administrative expenses. As given on line 16 of Exhibit I the total actuarially required contribution for Fiscal 2019 is $17,958,614. When this amount is reduced by projected tax contributions and revenue sharing funds, the resulting employers' net direct actuarially required contribution for Fiscal 2019 is $4,180,079 or 9.38% of projected payroll.

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 will increase required contributions. 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 fund's cost structure are outlined below:

Employer's Normal Cost Accrual Rate – Fiscal 2018	27.6142%
Factors Increasing the Normal Cost Accrual Rate:	
Assumption Changes	6.6038%
Factors Decreasing the Normal Cost Accrual Rate:	
Asset Experience Gain	0.1720%
Plan Liability Experience Gain	1.4706%
New Members	0.3921%
Employer's Normal Cost Accrual Rate – Fiscal 2019	32.1833%

In addition to the above factors, payroll growth affects plan costs to the extent that payments on the system's unfunded liability are on a schedule that varies from actual trends in payroll growth or decline. If payroll changes at rates not consistent with the amortization schedule the result will be costs that change as a percentage of payroll. For Fiscal 2019, the net effect of the change in payroll on amortization costs was to decrease such costs by 0.17% of payroll. 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 these funds will increase by 0.11% of payroll in Fiscal 2019.

Although the actuarially required net direct employer contribution rate for Fiscal 2018 was 5.24%, the Board voted to maintain the employer contribution at 8.00%. For Fiscal 2018, the system experienced a contribution gain of $1,185,814. In accordance with R. S. 11:107, these additional contributions were credited to the system's Funding Deposit Account as of September 30, 2018. Since the Board approved employer contribution rate for Fiscal 2019 is 8.00% which is less than the actuarially

required net direct employer contribution rate of 9.38%, there will be a contribution shortfall of 1.38% of payroll. This shortfall will increase the actuarially required contribution recommended for Fiscal 2020. In order to determine a minimum recommended net direct employer contribution rate for Fiscal 2020, the employer normal cost was adjusted for the impact of the estimated contribution shortfall. Based upon this projected contribution loss, we adjusted the Employers' Minimum Net Direct Actuarially Required Contribution for Fiscal 2019 by adding an additional 0.12% when calculating the Minimum Recommended Net Direct Employer Contribution Rate for Fiscal 2020.

Typically, the recommended net direct employer contribution rate for a given year is based on the actuarially required contributions for the preceding year with an adjustment for anticipated contribution gains or loss, if any. However, in Fiscal 2019, the frozen unfunded actuarial accrued liability for the system will be completely amortized and no future payments will be due. Thus, in setting the recommended employer contribution for Fiscal 2020, we have further adjusted the result for elimination of the amortization payment. The anticipated reduction in the recommended employer rate is 7.94% of projected payroll. Furthermore, R.S. 11:103 requires that the net direct employer contributions be rounded to the nearest 0.25%, hence we are recommending a minimum net direct employer contribution rate of 1.50% for Fiscal 2020. Under the provisions of R.S. 11:105, R.S. 11:106 and R.S. 11:107, the Board of Trustees may set the net direct employer contribution at any level between the minimum recommended employer contribution rate of 1.50% and 8.00%. If the Board sets the net direct employer contribution rate above the minimum rate, any excess funds collected will be deposited into the Funding Deposit Account. Funds in this account can be used to reduce future required contributions in a particular year, to reduce the normal cost accrual rate, or to grant a cost of living increase to retirees.

COST OF LIVING INCREASES

During Fiscal 2018 the actual cost of living (as measured by the US Department of Labor CPI-U) increased by 2.3%. Cost of living provisions for the system are detailed in R.S. 11: 1461, R.S. 11:246, R.S. 11:241, and R.S. 11:243. R.S. 11:1461 allows the Board of Trustees to provide a cost of living increase from excess interest earnings to members who have been retired for at least one full calendar year. The increase cannot exceed the lesser of: 3% of the retiree's original benefit or an increase of $300 per year for each year of retirement. R.S. 11:246 provides cost of living increases to retirees and beneficiaries over the age of 65 equal to 2% of the benefit in payment on October 1, 1977, or the date the benefit was originally received if retirement commenced after that date. R.S. 11:241 provides 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.

In order to grant a COLA, the system must meet the funded ratio criteria specified in R.S. 11:243. For purposes of COLAs payable under R.S. 11:1461(A), R.S. 11:246, or R.S. 11:241, the system must

have investment earnings in excess of the valuation interest rate sufficient to offset the additional liability due to the cost of the COLA or fund the COLA out of the Funding Deposit Account.

The limitations on timing of COLAs given in R.S. 11:243 are as follows:

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.

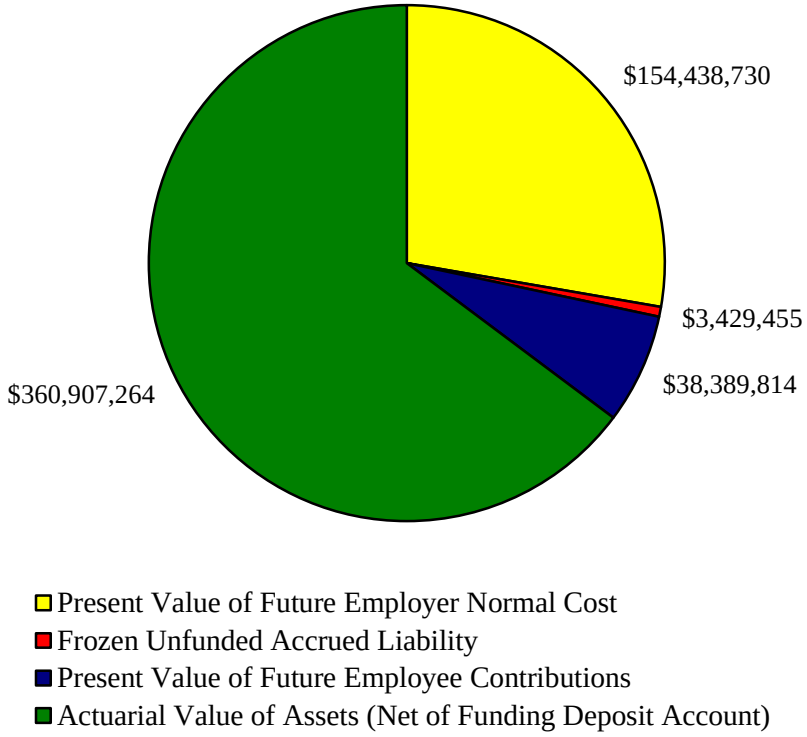
Since the most recent cost of living increase was granted by the Board of Trustees in a vote at its July 25, 2017 Board meeting based upon the results of the September 30, 2016 actuarial valuation and the system's funded ratio exceeds 90% as of September 30, 2018, it appears that the Fund meets the timing limitations contained within R.S. 11:243 to grant a cost of living increase based upon the results of the June 30, 2018 actuarial valuation. For Fiscal 2018 the fund achieved an actuarial rate of return of 7.0%. This return exceeded the assumed rate of return for Fiscal 2018 of 6.75% and generated $825,349 in excess interest. Therefore, the Board may not grant a full cost of living increase unless such an increase is funded through the system's Funding Deposit Account, which has a balance of $37,949,749 as of September 30, 2018.

Below is a summary of the expected cost of the various COLA provisions, based upon the earliest effective date allowed under the statutes, April 1, 2019:

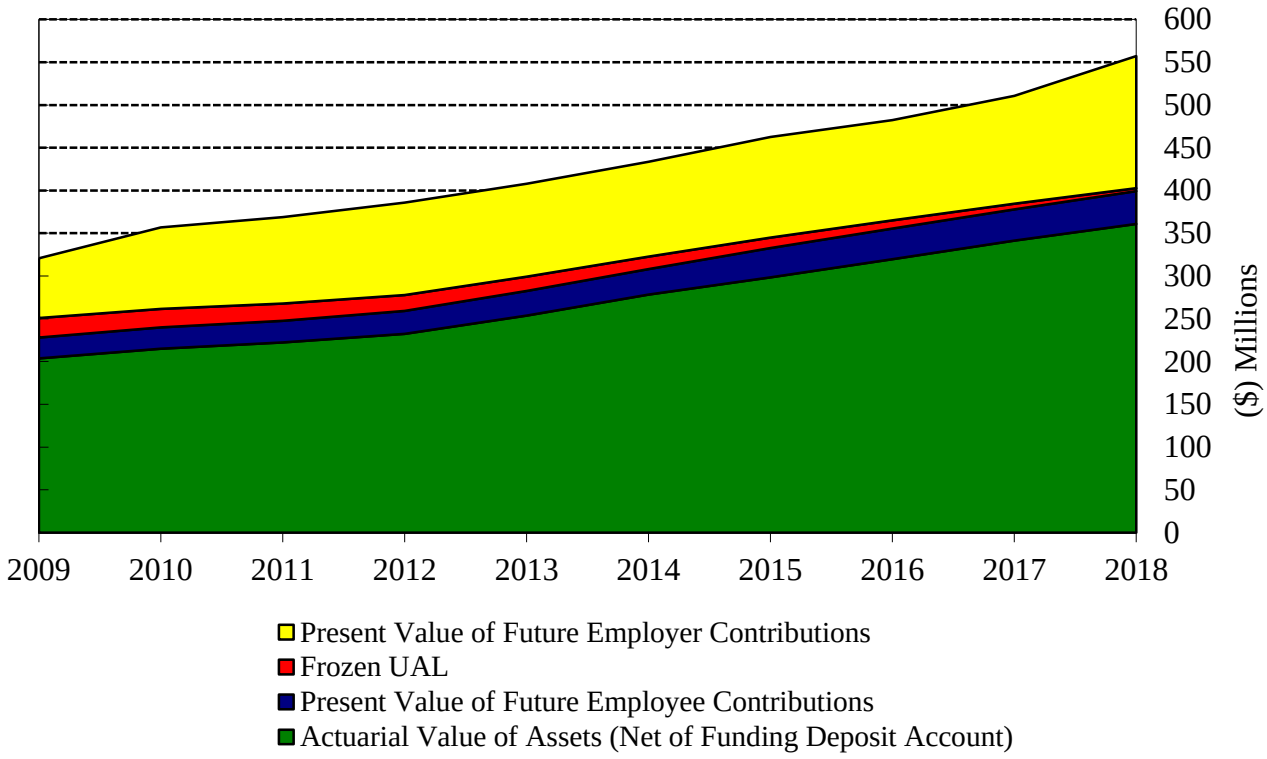
COLA Description	Annual Increase in Benefits	Present Value of Increase	Contribution Cost as a change in the normal cost accrual rate
3% of original benefit to pensioners with $25 per month maximum	$ 162,184	$ 1,457,116	0.30%
2% of base benefit to pensioners over age 65	$ 302,008	$ 2,692,239	0.56%
3% to pensioners with $20 per month minimum	$ 633,456	$ 6,142,479	1.28%
$1 × (Active Service + Period Retired)	$ 255,921	$ 2,143,950	0.45%

Note: If funds are charged against the Funding Deposit Account equal to the present value of increased COLA benefits, there is no change to the present value of future normal costs

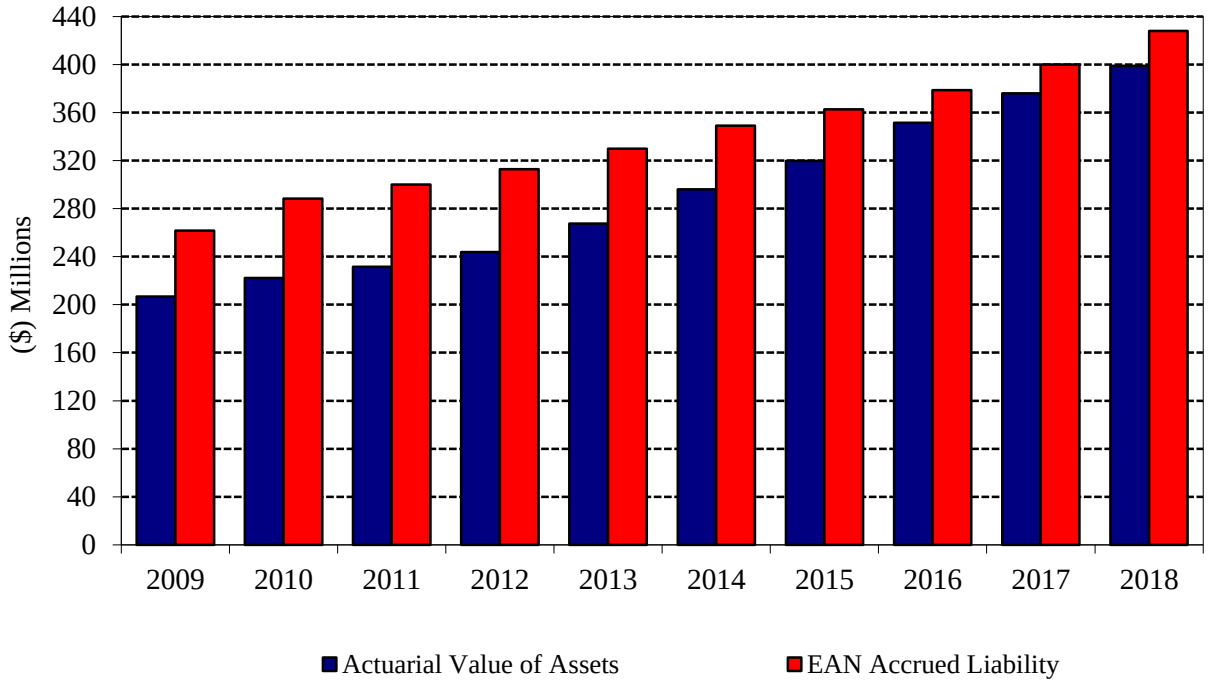
Components of Present Value of Future Benefits
September 30, 2018



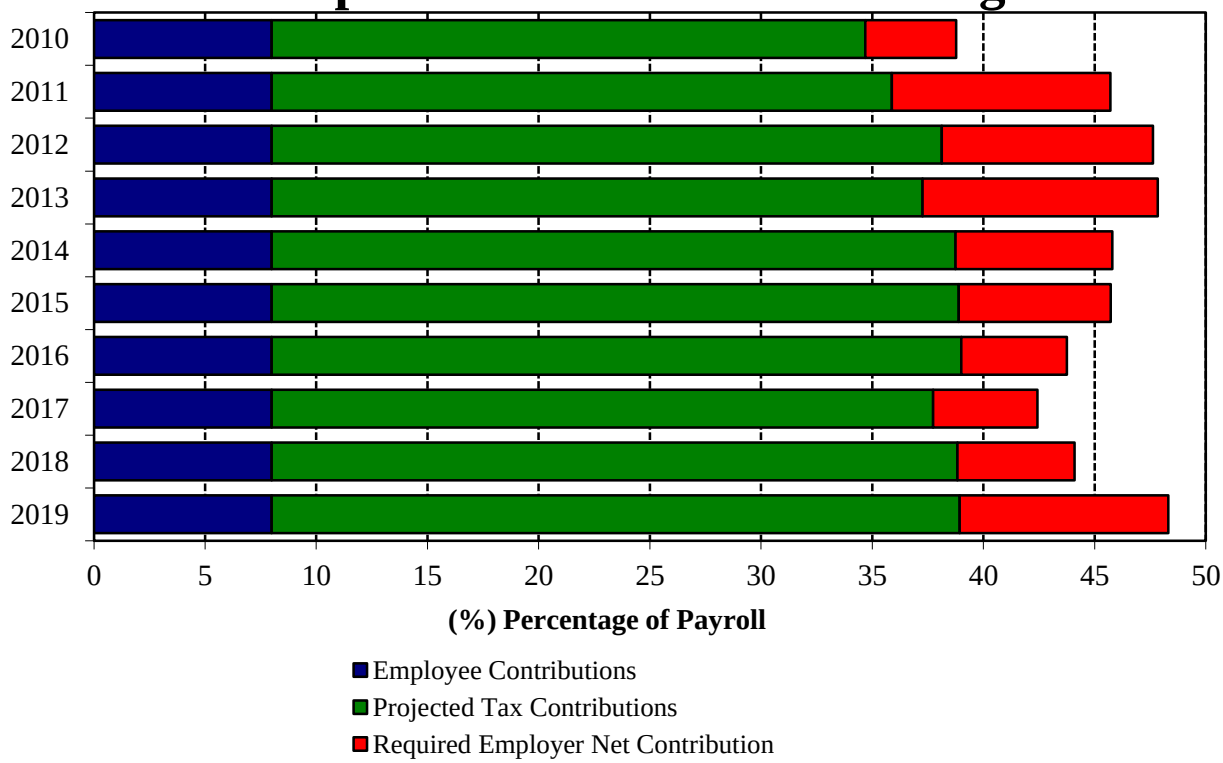
Components of Present Value of Future Benefits



Actuarial Value of Assets vs. EAN Accrued Liability

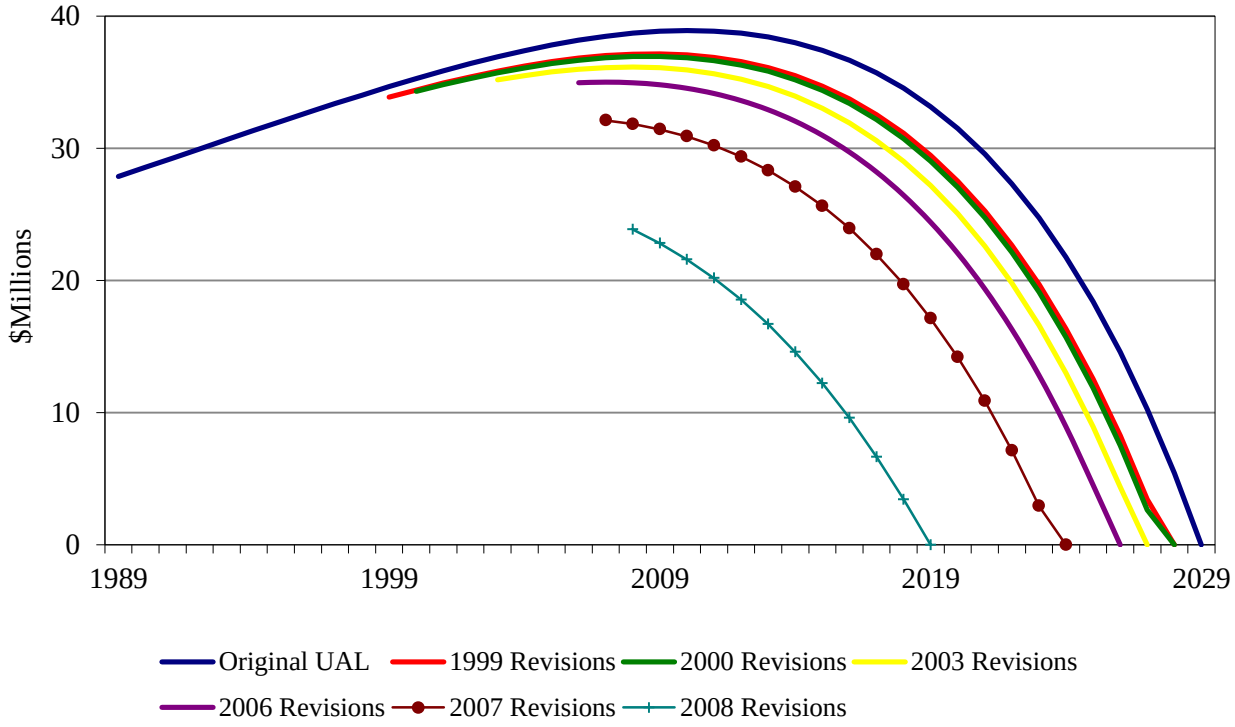


Components of Actuarial Funding

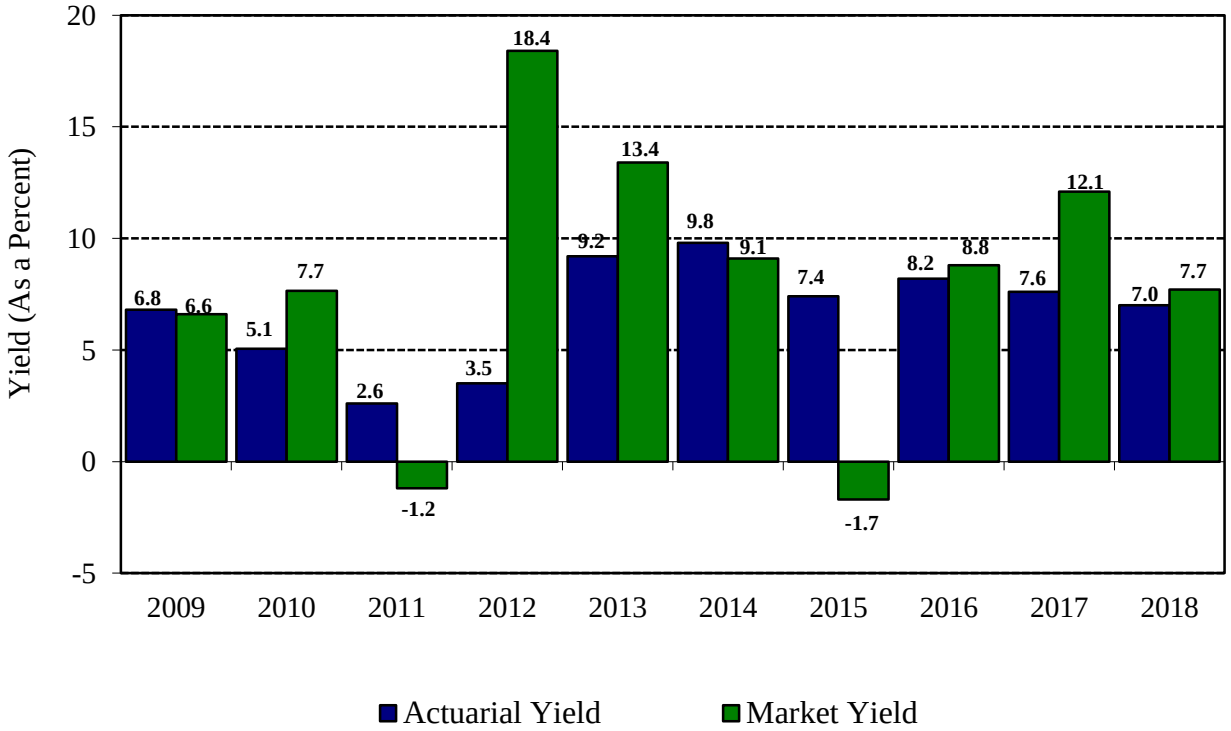


Actuarially Required Tax Contributions consist of the lesser of Actuarially Required Contributions and amount of taxes divided by the projected valuation payroll.

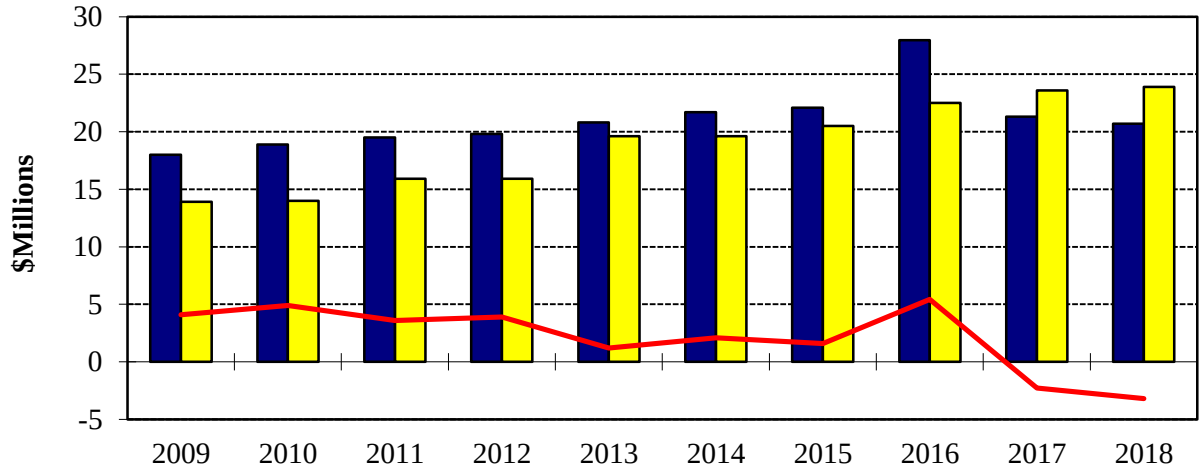
Frozen Unfunded Actuarial Accrued Liability



Historical Asset Yields

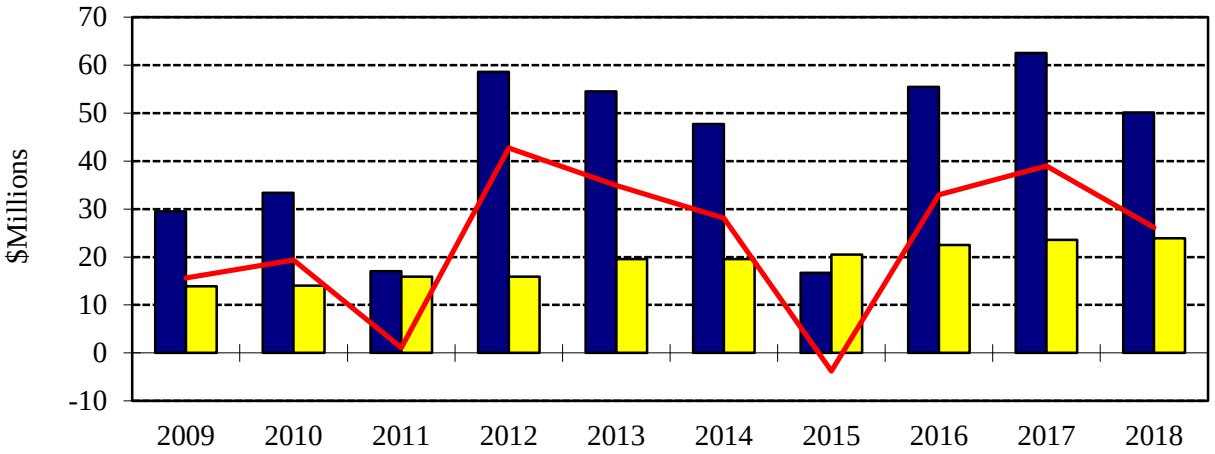


Net Non-Investment Income



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Non-Investment Income ($Mil)	18.0	18.9	19.5	19.8	20.8	21.7	22.1	28.0	21.3	20.7
Benefits and Expenses ($Mil)	13.9	14.0	15.9	15.9	19.6	19.6	20.5	22.5	23.6	23.9
Net Non-Investment Income ($Mil)	4.1	4.9	3.6	3.9	1.2	2.1	1.6	5.5	-2.3	-3.2

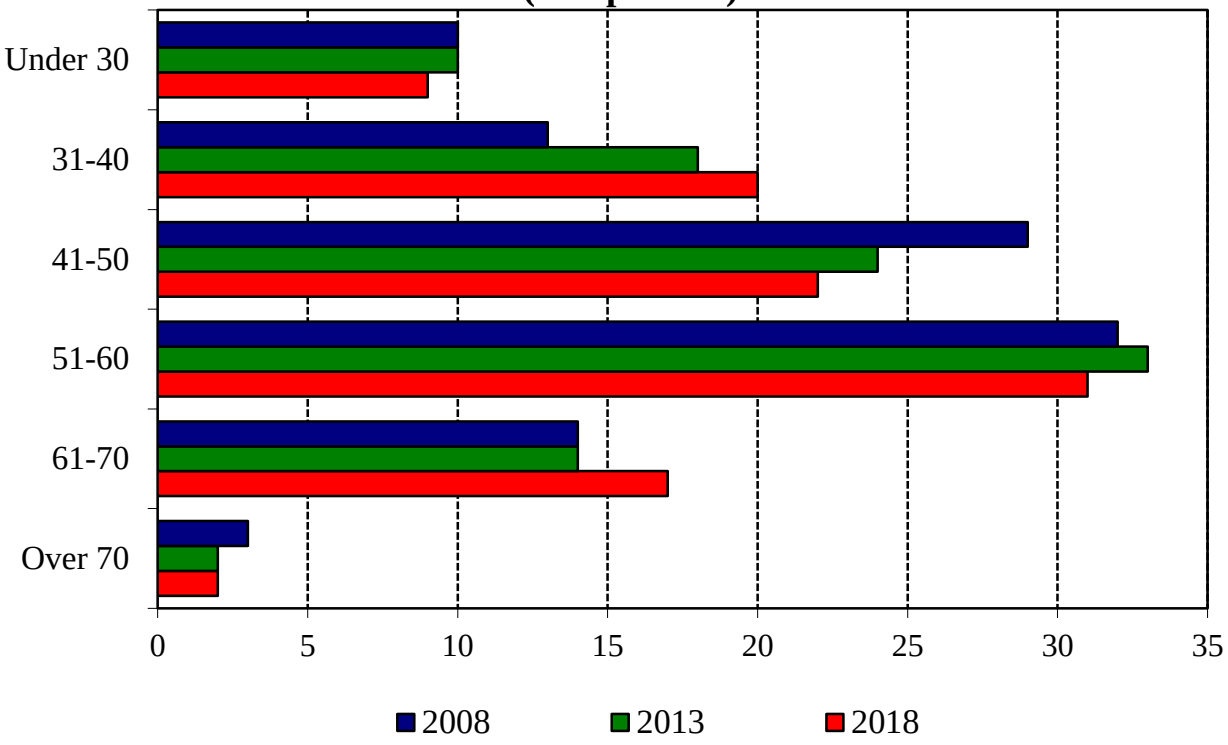
Total Income vs. Expenses
(Based on Market Value of Assets)



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total Income ($Mil)	29.5	33.4	17.0	58.6	54.5	47.7	16.7	55.5	62.5	50.1
Benefits and Expenses ($Mil)	13.9	14.0	15.9	15.9	19.6	19.6	20.5	22.5	23.6	23.9
Net Change in MVA ($Mil)	15.6	19.4	1.1	42.7	34.9	28.1	-3.8	33.0	38.9	26.2

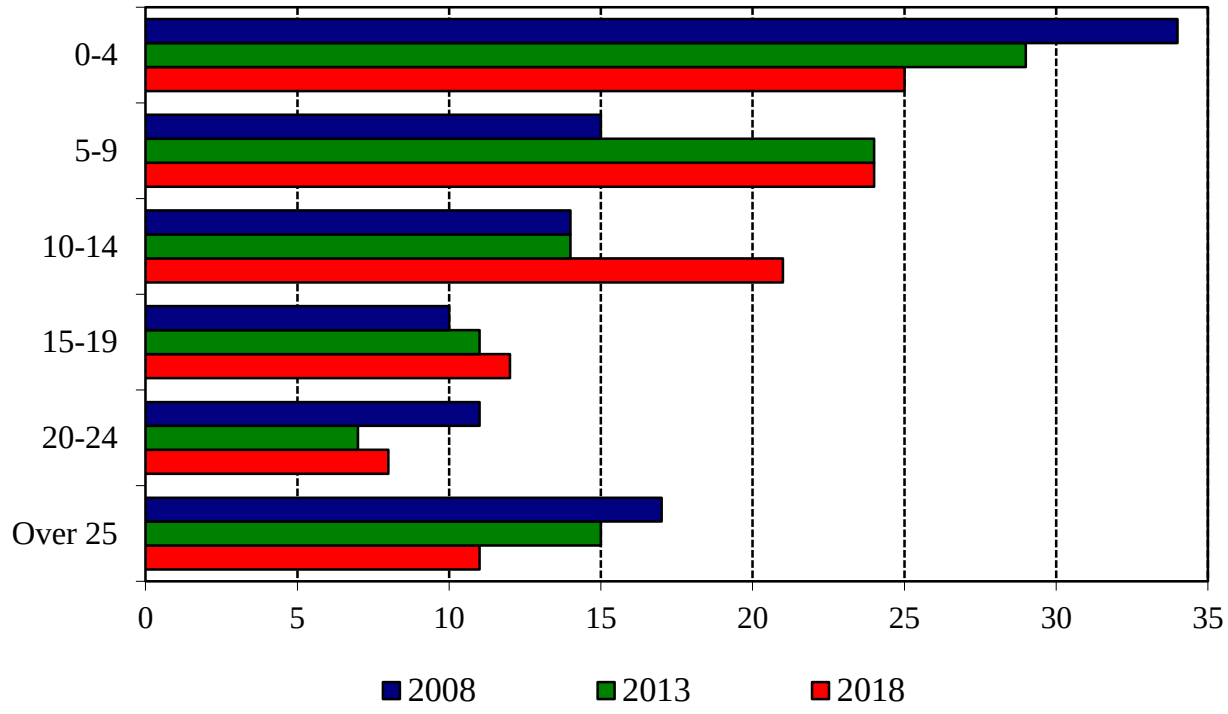
Active – Census by Age

(as a percent)



Active – Census by Service

(as a percent)



EXHIBITS

EXHIBIT I
ANALYSIS OF ACTUARIALLY REQUIRED CONTRIBUTIONS

1.	Present Value of Future Benefits	$	557,165,263
2.	Funding Deposit Account Credit Balance	$	37,949,749
3.	Unfunded Actuarial Accrued Liability	$	3,429,455
4.	Actuarial Value of Assets	$	398,857,013
5.	Present Value of Future Employee Contributions	$	38,389,814
6.	Present Value of Future Employer Normal Costs (1 + 2 – 3 – 4 – 5)	$	154,438,730
7.	Present Value of Future Salaries	$	479,872,672
8.	Employer Normal Cost Accrual Rate (6 ÷ 7)		32.183273%
9.	Projected Fiscal 2019 Salary for Current Membership	$	42,567,916
10.	Employer Normal Cost as of October 1, 2018 (8 × 9)	$	13,699,749
11.	Employer Normal Cost Interest Adjusted for Mid-year Payment	$	14,121,378
12.	Amortization Payment on Remaining Frozen Unfunded Accrued Liability	$	3,429,455
13.	Amortization Payment Interest Adjust for Mid-year Payment	$	3,535,001
14.	TOTAL Employer Normal Cost and Amortization Payment (11 + 13)	$	17,656,379
15.	Estimated Administrative Cost for Fiscal 2019	$	302,235
16.	GROSS Employer Actuarially Required Contribution for Fiscal 2019 (14 + 15)	$	17,958,614
17.	Projected Ad Valorem Tax Contributions for Fiscal 2019	$	13,427,563
18.	Projected Revenue Sharing Funds for Fiscal 2019	$	350,972
19.	Employer's Net Direct Employer Actuarially Required Contribution for Fiscal 2019 (16 – 17 – 18)	$	4,180,079
20.	Projected Payroll for Fiscal 2019	$	44,540,099
21.	Employers' Minimum Net Direct Actuarially Required Contribution as a % of Projected Payroll for Fiscal 2019 (19 ÷ 20)		9.38%
22.	Board Adopted Employer Contribution Rate for Fiscal 2019		8.00%
23.	Contribution Shortfall as a Percentage of Payroll (21 – 22)		1.38%
24.	Increase to Following Year Payment for Contribution Shortfall		0.12%
25.	Adjustment due to Elimination of UAL as of September 30, 2019		(7.94%)
26.	Minimum Recommended Net Direct Employer Contribution Rate for Fiscal 2020 (21 + 24 + 25, Rounded to the nearest 0.25%)		1.50%

EXHIBIT II
PRESENT VALUE OF FUTURE BENEFITS

PRESENT VALUE OF FUTURE BENEFITS FOR ACTIVE MEMBERS:

Retirement Benefits	$ 316,056,168	
Survivor Benefits	6,879,337	
Disability Benefits	1,576,292	
Vested Termination Benefits	2,591,523	
Refunds of Contributions	1,907,006	
TOTAL Present Value of Future Benefits for Active Members		$ 329,010,326

PRESENT VALUE OF FUTURE BENEFITS FOR TERMINATED MEMBERS:

Terminated Vested Members Due Benefits at Retirement	$ 3,442,743	
Terminated Members with Reciprocals Due Benefits at Retirement	0	
Terminated Members Due a Refund	819,418	
TOTAL Present Value of Future Benefits for Terminated Members		$ 4,262,161

PRESENT VALUE OF FUTURE BENEFITS FOR RETIREES:

Regular Retirees			
Maximum	$ 88,294,732		
Option 2	90,798,740		
Option 3	25,923,902		
Option 4	186,961		
TOTAL Regular Retirees		$ 205,204,335	
Disability Retirees		0	
Survivors & Widows		16,022,798	
DROP & Back-DROP Account Balances Payable to Retirees		2,665,643	
TOTAL Present Value of Future Benefits for Retirees & Survivors			$ 223,892,776
TOTAL Present Value of Future Benefits			$ 557,165,263

EXHIBIT III – SCHEDULE A
MARKET VALUE OF ASSETS

CURRENT ASSETS:		
Cash in Banks	$ 2,051,038	
Contributions and Taxes Receivable	377,796	
Accrued Interest and Dividends	591,255	
Other Income	2,081,867	
TOTAL CURRENT ASSETS		$ 5,101,956
INVESTMENTS:		
Equities	$ 268,086,340	
Fixed Income	111,956,548	
Real Estate	20,288,803	
Cash Equivalents	2,978,402	
Other Investments	254,445	
TOTAL INVESTMENTS		$ 403,564,538
TOTAL ASSETS		$ 408,666,494
CURRENT LIABILITIES:		
Accounts Payable	$ 224,573	
TOTAL CURRENT LIABILITIES		$ 224,573
MARKET VALUE OF ASSETS		$ 408,441,921

EXHIBIT III – SCHEDULE B
ACTUARIAL VALUE OF ASSETS

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

Fiscal year 2018	$	3,662,801
Fiscal year 2017		17,283,787
Fiscal year 2016		4,843,728
Fiscal year 2015		(28,265,481)
Fiscal year 2014		4,468,634
Total for Five Years	$	1,993,469

Deferral of Excess (Shortfall) of Invested Income:

Fiscal year 2018 (80%)	$	2,930,241
Fiscal year 2017 (60%)		10,370,272
Fiscal year 2016 (40%)		1,937,491
Fiscal year 2015 (20%)		(5,653,096)
Fiscal year 2014 (0%)		0
Total Deferred for Year	$	9,584,908

Market Value of Plan Net Assets, End of Year	$	408,441,921
Preliminary Actuarial Value of Plan Assets, End of Year	$	398,857,013

Actuarial Value of Assets Corridor

85% of Market Value, End of Year	$	347,175,633
115% of Market Value, End of Year	$	469,708,209
Final Actuarial Value of Plan Net Assets, End of Year	$	398,857,013

EXHIBIT IV
PRESENT VALUE OF FUTURE CONTRIBUTIONS

Employee Contributions to the Annuity Savings Fund	$	38,389,814
Employer Normal Contributions to the Pension Accumulation Fund		154,438,730
Employer Amortization Payments to the Pension Accumulation Fund		3,429,455
Funding Deposit Account Debit (Credit) Balance		(37,949,749)
TOTAL PRESENT VALUE OF FUTURE CONTRIBUTIONS	$	158,308,250

EXHIBIT V
CHANGE IN FROZEN UNFUNDED ACTUARIAL ACCRUED LIABILITY

Prior Year Frozen Unfunded Accrued Liability			$ 6,658,938
Interest on Frozen Unfunded Accrued Liability	$	449,478	
TOTAL Increase in Unfunded Accrued Liability			$ 449,478
Amortization Payment on Unfunded Accrued Liability	$	3,446,334	
Interest on Amortization Payment		232,627	
Withdrawals from Funding Deposit Account		0	
TOTAL Decrease in Unfunded Accrued Liability			$ 3,678,961
NET Change in Frozen Unfunded Accrued Liability			$ (3,229,483)
CURRENT YEAR FROZEN UNFUNDED ACCRUED LIABILITY			$ 3,429,455

EXHIBIT VI
ANALYSIS OF CHANGE IN ASSETS

Actuarial Value of Assets (September 30, 2017)		$ 375,876,564
INCOME:		
Member Contributions	$ 3,548,870	
Employer Contributions	3,547,160	
Tax Revenue	13,506,509	
Transfers from Other Systems	147,141	
Total Contributions		$ 20,749,680
Net Appreciation of Investments	$ 25,214,994	
Interest & Dividends	5,871,732	
Investment Expense	(1,728,958)	
Net Investment Income		$ 29,357,768
TOTAL Income		$ 50,107,448
EXPENSES:		
Retirement Benefits	$ 21,304,439	
DROP & Back-DROP Disbursements	1,962,022	
Refunds of Contributions	229,006	
Administrative Expenses	367,426	
TOTAL Expenses		$ 23,862,893
Net Market Value Income for Fiscal 2018 (Income – Expenses)		$ 26,244,555
Unadjusted Fund Balance as of September 30, 2018 (Fund Balance Previous Year + Net Income)		$ 402,121,119
Adjustment for Actuarial Smoothing		$ (3,264,106)
Actuarial Value of Assets: (September 30, 2018)		$ 398,857,013

EXHIBIT VII
FUNDING DEPOSIT ACCOUNT

Funding Deposit Account Balance as of September 30, 2017	$	34,439,283
Interest on Opening Balance at 6.75%		2,324,652
Contributions to the Funding Deposit Account		1,185,814
Withdrawals from the Funding Deposit Account		0
Funding Deposit Account Balance as of September 30, 2018	$	37,949,749

EXHIBIT VIII
PENSION BENEFIT OBLIGATION

Present Value of Credited Projected Benefits Payable to Current Employees	$	193,700,695
Present Value of Benefits Payable to Terminated Employees		4,262,161
Present Value of Benefits Payable to Current Retirees and Beneficiaries		223,892,776
TOTAL PENSION BENEFIT OBLIGATION	$	421,855,632
NET ACTUARIAL VALUE OF ASSETS	$	398,857,013
Ratio of Net Actuarial Value of Assets to Pension Benefit Obligation		94.55%

EXHIBIT IX
ENTRY AGE NORMAL ACCRUED LIABILITIES

Accrued Liability for Active Employees	$	199,727,357
Accrued Liability for Terminated Employees		4,262,161
Accrued Liability for Current Retirees and Beneficiaries		223,892,776
TOTAL ENTRY AGE NORMAL ACCRUED LIABILITY	$	427,882,294
NET ACTUARIAL VALUE OF ASSETS	$	398,857,013
Ratio of Net Actuarial Value of Assets to Entry Age Normal Accrued Liability		93.22%

EXHIBIT X
CENSUS DATA

	Active	Terminated with Funds on Deposit	Retired	Total
Number of members as of September 30, 2017	751	103	570	1,424
Additions to Census				
Initial membership	31			31
Omitted in error last year				
Death of another member			6	6
Adjustment for multiple records				
Change in Status during Year				
Actives terminating service	(15)	15		
Actives who retired	(16)		16	
Term. members rehired		(1)	1	
Term. members who retire				
Retirees who are rehired				
Refunded who are rehired				
Omitted in error last year				
Eliminated from Census				
Refund of contributions	(4)	(7)		(11)
Deaths			(21)	(21)
Included in error last year				
Adjustment for multiple records				
Number of members as of September 30, 2018	747	110	572	1,429

ACTIVES CENSUS BY AGE:

Age	Number Male	Number Female	Total Number	Average Salary	Total Salary
16 - 20	2	1	3	28,223	84,668
21 - 25	9	5	14	33,382	467,353
26 - 30	17	27	44	37,232	1,638,191
31 - 35	21	47	68	45,736	3,110,041
36 - 40	27	51	78	49,917	3,893,557
41 - 45	37	49	86	51,821	4,456,591
46 - 50	26	53	79	61,826	4,884,288
51 - 55	35	79	114	66,660	7,599,188
56 - 60	41	77	118	65,139	7,686,373
61 - 65	35	45	80	65,785	5,262,798
66 - 70	26	23	49	70,779	3,468,149
71 - 75	8	4	12	76,667	920,003
76 - 80	0	1	1	56,816	56,816
81 - 85	1	0	1	158,746	158,746
TOTAL	285	462	747	58,483	43,686,762

THE ACTIVE CENSUS INCLUDES 299 ACTIVES WITH VESTED BENEFITS, INCLUDING 0 DROP PARTICIPANTS AND 1 ACTIVE FORMER DROP PARTICIPANTS.

TERMINATED MEMBERS DUE A DEFERRED RETIREMENT BENEFIT:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
31 - 35	0	1	1	21,108	21,108
36 - 40	1	0	1	32,464	32,464
41 - 45	3	0	3	31,843	95,529
46 - 50	2	4	6	32,963	197,780
51 - 55	0	4	4	16,724	66,896
56 - 60	0	1	1	11,769	11,769
TOTAL	6	10	16	26,597	425,546

TERMINATED MEMBERS DUE A REFUND OF CONTRIBUTIONS:

Contributions Ranging From		To	Number	Total Contributions
0	-	99	2	89
100	-	499	7	2,178
500	-	999	14	10,184
1000	-	1999	9	13,593
2000	-	4999	18	56,716
5000	-	9999	16	104,109
10000	-	19999	15	219,738
20000	-	99999	13	412,811
TOTAL			94	819,418

REGULAR RETIREES:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
51 - 55	4	6	10	50,358	503,580
56 - 60	13	39	52	53,910	2,803,306
61 - 65	14	62	76	42,689	3,244,380
66 - 70	31	62	93	46,227	4,299,136
71 - 75	38	50	88	44,649	3,929,117
76 - 80	25	51	76	28,777	2,187,029
81 - 85	31	23	54	25,260	1,364,021
86 - 90	13	21	34	26,243	892,253
91 - 99	6	13	19	16,966	322,358
TOTAL	175	327	502	38,935	19,545,180

DISABILITY RETIREES:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
TOTAL	0	0	0	0	0

SURVIVORS:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
61 - 65	1	8	9	53,261	479,350
66 - 70	2	1	3	18,965	56,895
71 - 75	2	10	12	33,818	405,813
76 - 80	1	9	10	26,060	260,603
81 - 85	0	10	10	30,072	300,718
86 - 90	1	13	14	19,290	270,065
91 - 99	1	11	12	20,626	247,515
TOTAL	8	62	70	28,871	2,020,959

ACTIVE MEMBERS:

Attained Ages	Completed Years of Service											
	0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over	Total
0 - 20	3											3
21 - 25	5	3	3	1	1	1						14
26 - 30	3	4	7	7	8	14	1					44
31 - 35	4	3	5	4	6	30	16					68
36 - 40	4	6	6	3	3	23	27	5	1			78
41 - 45	4	3	8	6	5	22	21	12	4	1		86
46 - 50	2	3	3	4	2	25	17	8	9	6		79
51 - 55	2	2	9	3	3	24	16	20	16	10	9	114
56 - 60	1	5	5	6		20	24	22	10	9	16	118
61 - 65	1	1	3	2	4	14	22	9	12	2	10	80
66 - 70	1	1	2		3	7	8	9	5	3	10	49
71 & Over			1			1	4	2	3		3	14
Totals	30	31	52	36	35	181	156	87	60	31	48	747

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	28,223											28,223
21 - 25	31,541	32,767	36,214	40,385	28,086	34,236						33,382
26 - 30	32,769	31,606	34,036	37,001	39,099	40,367	38,280					37,232
31 - 35	37,176	39,490	38,795	41,965	38,580	47,547	51,447					45,736
36 - 40	32,953	36,140	37,468	41,916	45,376	50,470	59,123	51,716	42,500			49,917
41 - 45	39,876	30,686	41,659	36,179	37,539	54,038	56,601	68,643	50,200	65,000		51,821
46 - 50	34,500	42,953	45,549	47,451	36,690	54,812	58,877	77,282	92,571	77,333		61,826
51 - 55	43,346	39,447	68,442	35,620	43,508	64,857	50,023	67,641	72,972	90,066	89,141	66,660
56 - 60	53,119	44,010	33,994	42,783		67,019	52,208	77,665	67,459	67,198	87,823	65,139
61 - 65	47,887	31,350	53,779	38,488	35,737	68,596	73,678	58,733	65,467	72,057	76,272	65,785
66 - 70	54,912	29,400	42,105		43,074	65,166	59,133	54,198	103,018	62,514	105,077	70,779
71 & Over			44,345			65,191	76,858	44,163	82,664		127,427	81,112
Average	36,410	36,795	44,451	40,011	39,207	55,936	58,347	67,433	74,455	76,326	91,734	58,483

TERMINATED MEMBERS DUE A DEFERRED RETIREMENT BENEFIT:

Attained Ages	Years Until Retirement Eligibility											
	0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over	Total
0 - 30												0
31 - 35									1			1
36 - 40								1				1
41 - 45							3					3
46 - 50						6						6
51 - 55		1	2	1								4
56 - 60	1											1
61 & Over												0
Totals	1	1	2	1	0	6	3	1	1	0	0	16

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									21,108			21,108
36 - 40								32,464				32,464
41 - 45							31,843					31,843
46 - 50						32,963						32,963
51 - 55		13,856	18,061	16,918								16,724
56 - 60	11,769											11,769
61 & Over												0
Average	11,769	13,856	18,061	16,918	0	32,963	31,843	32,464	21,108	0	0	26,597

SERVICE RETIREES:

Attained Ages	Completed Years Since Retirement											
	0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over	Total
0 - 50												0
51 - 55	6	1		2		1						10
56 - 60	5	7	8	10	10	11	1					52
61 - 65	5	4	8	7	4	41	7					76
66 - 70	3	5	7	7	5	34	30	2				93
71 - 75	1	10	1	2	4	35	21	13	1			88
76 - 80		1	3	3	1	15	15	17	19	2		76
81 - 85						7	11	8	10	14	4	54
86 - 90						2	2	7	7	10	6	34
91 & Over								1	2	4	12	19
Totals	20	28	27	31	24	146	87	48	39	30	22	502

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	54,347	48,231		41,278		46,713						50,358
56 - 60	46,446	54,494	47,892	44,928	41,274	81,029	53,141					53,910
61 - 65	46,999	45,565	44,183	46,020	33,902	41,518	44,809					42,689
66 - 70	55,866	63,338	76,963	39,945	33,866	52,286	32,928	30,802				46,227
71 - 75	37,765	55,530	32,234	15,046	26,926	57,591	38,232	25,927	10,419			44,649
76 - 80		38,990	32,477	18,039	24,031	50,373	32,130	19,990	18,714	19,750		28,777
81 - 85						36,475	20,961	26,187	26,956	20,967	26,384	25,260
86 - 90						58,132	54,936	37,678	17,496	19,531	14,098	26,243
91 & Over								19,056	34,591	21,388	12,381	16,966
Average	49,933	54,390	52,037	39,284	35,392	51,787	34,252	25,641	21,210	20,463	15,395	38,935

SURVIVING BENEFICIARIES OF FORMER MEMBERS:

Attained Ages	Completed Years Since Retirement											
	0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over	Total
0 - 60												0
61 - 65		2		1	1	1		4				9
66 - 70						2			1			3
71 - 75				1		2	4	2	3			12
76 - 80							5	3	1		1	10
81 - 85						3	1	4			2	10
86 - 90								2	5	2	5	14
91 & Over										3	9	12
Totals	0	2	0	2	1	8	10	15	10	5	17	70

AVERAGE ANNUAL BENEFITS PAYABLE TO SURVIVORS OF FORMER MEMBERS:

Attained Ages	Completed Years Since Retirement											Average Benefit
	0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over	
0 - 60												0
61 - 65		33,513		38,893	68,154	152,188		38,272				53,261
66 - 70						24,007			8,881			18,965
71 - 75				52,463		54,312	36,728	15,278	22,419			33,818
76 - 80							23,003	29,798	20,156		36,038	26,060
81 - 85						59,008	14,940	25,438			3,501	30,072
86 - 90								43,461	12,089	32,848	11,400	19,290
91 & Over										34,596	15,970	20,626
Average	0	33,513	0	45,678	68,154	60,731	27,687	30,781	15,674	33,897	14,339	28,871

EXHIBIT XI
YEAR-TO-YEAR COMPARISON

	Fiscal 2018	Fiscal 2017	Fiscal 2016	Fiscal 2015
Number of Active Members	747	751	772	757
Number of Retirees & Survivors	572	570	556	544
Number of Terminated Due Deferred Benefits	16	13	10	13
Number Terminated Due Refunds	94	90	84	79
Active Lives Payroll	$ 43,686,762	$ 42,948,488	$ 43,573,217	$ 41,689,719
Retiree Benefits in Payment	$ 21,566,139	$ 21,114,760	$ 19,561,454	$ 18,432,197
Market Value of Assets	$ 408,441,921	$ 382,197,366	$ 343,233,124	$ 310,262,528
Entry Age Normal Accrued Liability	$ 427,882,294	$ 399,744,486	$ 378,520,063	$ 362,594,812
Ratio of AVA to EAN Accrued Liability	93.22%	94.03%	92.87%	88.15%
Actuarial Value of Assets	$ 398,857,013	$ 375,876,564	$ 351,549,680	$ 319,630,048
Frozen Unfunded Actuarial Accrued Liability	$ 3,429,455	$ 6,658,938	$ 9,593,206	$ 12,221,554
Present Value of Future Employer Normal Cost	$ 154,438,730	$ 125,942,737	$ 117,204,572	$ 117,637,907
Present Value of Future Employee Contrib.	$ 38,389,814	$ 36,486,315	$ 35,833,133	$ 34,266,075
Funding Deposit Account Balance	$ 37,949,749	$ 34,439,283	$ 31,866,114	$ 21,170,541
Present Value of Future Benefits	$ 557,165,263	$ 510,525,271	$ 482,314,477	$ 462,585,043

	Fiscal 2019	Fiscal 2018	Fiscal 2017	Fiscal 2016
Employee Contribution Rate	8.00%	8.00%	8.00%	8.00%
Estimated Tax Contribution as a % of Payroll	30.94%	30.83%	29.74%	31.00%
Actuarially Required Net Direct Employer Contribution Rate	9.38%	5.24%	4.69%	4.75%
Board Adopted Employer Contribution Rate	8.00%	8.00%	10.00%	13.50%

Fiscal 2014	Fiscal 2013	Fiscal 2012	Fiscal 2011	Fiscal 2010	Fiscal 2009
757	747	758	744	768	777
535	519	489	493	460	454
14	17	18	20	22	23
74	75	70	68	60	58
$ 40,498,685	$ 39,962,471	$ 39,098,798	$ 36,976,826	$ 37,837,825	$ 38,039,395
$ 17,346,092	$ 16,681,535	$ 14,191,340	$ 13,718,479	$ 11,705,460	$ 11,184,513
$ 314,045,097	$ 285,977,787	$ 251,096,489	$ 208,403,362	$ 207,336,952	$ 187,888,278
$ 349,004,741	$ 329,768,390	$ 312,848,872	$ 300,017,223	$ 288,389,709	$ 261,531,084
84.80%	81.11%	77.93%	77.21%	77.03%	79.03%
$ 295,965,881	$ 267,473,843	$ 243,797,375	$ 231,647,617	$ 222,141,802	$ 206,677,106
$ 14,585,158	$ 16,695,158	$ 18,552,185	$ 20,177,466	$ 21,590,624	$ 22,817,329
$ 110,250,598	$ 108,615,730	$ 108,058,007	$ 101,041,103	$ 95,265,554	$ 69,846,719
$ 29,803,451	$ 28,814,590	$ 26,841,544	$ 25,278,807	$ 24,956,172	$ 24,352,444
$ 17,024,774	$ 13,720,700	$ 11,421,183	$ 9,257,096	$ 7,104,280	$ 2,939,108
$ 433,580,314	$ 407,878,621	$ 385,827,928	$ 368,887,897	$ 356,849,872	$ 320,754,490

Fiscal 2015	Fiscal 2014	Fiscal 2013	Fiscal 2012	Fiscal 2011	Fiscal 2010
8.00%	8.00%	8.00%	8.00%	8.00%	8.00%
30.90%	30.75%	29.26%	30.13%	27.88%	26.69%
6.84%	7.05%	10.58%	9.49%	9.83%	4.08%
13.50%	13.50%	13.50%	13.50%	13.50%	13.50%

SUMMARY OF PRINCIPAL PLAN PROVISIONS

The Louisiana Assessors' Retirement Fund is a defined benefit pension plan that provides retirement allowances and other benefits for the assessors and their permanent, full-time employees. The plan was established by Act 91 of the 1950 Louisiana Legislative Session. Provisions of the plan are set forth in the Louisiana Revised Statutes (R.S. 11:1401 through R.S. 11:1483). The following summary of plan provisions is for general informational purposes only and does not constitute a guarantee of benefits.

MEMBERSHIP – Membership in the fund is allowed only to assessors, full-time permanent employees of assessors, the secretary and regular employees of the Assessors' Retirement Fund, and permanent employees of the Louisiana Assessors' Association and Louisiana Assessors' Insurance Fund. Full-time, permanent employees as used herein, means those employed on a full twelve-month basis within each calendar year; provided, however, that members may be granted leaves of absence, with no creditable service to be allowed for time on leave. Membership is not allowed on a part-time, temporary, or intermittent basis.

CONTRIBUTION RATES – Under the provisions of R.S. 11:62 and 11:103, the fund is financed by employee contributions of 8% of earnable compensation as determined by the Board of Trustees. Each assessor has the option of electing to pay all or a portion of their employees' contribution into the retirement fund. This election remains in effect for 1 year and can be rescinded only upon written notice to the retirement system. In addition, the fund receives revenue sharing funds as appropriated each year by the legislature. Also, under R.S. 11:82, each sheriff and ex-officio tax collector remits the employers' share of the actuarially required contribution to fund the system up to a maximum of 0.25% of the aggregate amount of the tax shown to be collected by the tax roll of each respective parish, including that shown on the tax rolls to be exempted by virtue of homestead exemptions. Should employee contributions and tax funds collected from ad valorem taxes and revenue sharing funds be insufficient to provide for the gross employer actuarially required contribution, the employer is required to make direct contributions as determined by the Public Retirement Systems' Actuarial Committee. Under R.S. 11:106, the Board of Trustees is authorized to require a net direct contribution rate of up to three percent more than the rate determined under R.S. 11:103. Under R.S. 11:105 and R.S. 11:107, in any fiscal year during which the net direct employer contribution rates would otherwise be decreased, the Board of Trustees is authorized to set the employer contribution rate at any point between the previous year's employer contribution rate and the decreased rate that would otherwise occur. Any excess funds resulting from the additional contributions will be credited to the Funding Deposit Account defined in R.S. 11:107.1.

FUNDING DEPOSIT ACCOUNT – If the contribution rate is set above the minimum recommended rate pursuant to R.S. 11:105, 11:106 or 11:107, the surplus contributions collected, if any, are credited to the Funding Deposit Account defined in R.S. 11:107.1. The funds in the account earn interest annually at the Board-approved actuarial valuation interest rate, and such interest is credited to the account at least once a year. The Board of Trustees may, in any fiscal year, direct that funds from the account be charged for the following purposes: (1) to reduce the unfunded accrued liability; (2) to reduce the present value of future normal costs for systems using an aggregate funding method; (3) to pay all or a portion of any future net direct employer contributions; or (4) to provide for cost of living increases, in accordance with applicable law. In no event will the funds charged from the account exceed the outstanding account balance. If the Board of Trustees of the system elects to utilize funds from the funding deposit account to pay all or a portion of any future net direct employer contributions, the percent reduction in the minimum recommended employer contribution rate otherwise applicable is determined by dividing the interest-adjusted value of the charges from the funding deposit account by the projected payroll for the fiscal year for which the contribution rate is to

be reduced. For funding purposes, any asset value utilized in the calculation of the actuarial value of assets of a system excludes the funding deposit account balance as of the asset determination date for such calculation. For all purposes other than funding, the funds in the account are considered assets of the system.

RETIREMENT BENEFITS –

For members hired before October 1, 2013 – Members with thirty years of creditable service may retire at any age and members with at least twelve years of service may retire at age fifty-five. The benefit accrual rate is three and one-third percent for all years of service. The normal retirement benefit for individuals hired prior to October 1, 2006, will be equal to three and one-third percent of the highest monthly average final compensation received during any thirty-six consecutive months while employed in an assessor's office or other creditable employment times the number of years of the member's creditable service not to exceed one hundred percent of the member's monthly average final compensation after taking into account the reduction arising from any optional retirement selected. The normal retirement benefit for individuals hired on or after October 1, 2006, will be equal to three and one-third percent of the highest monthly average final compensation received during any sixty consecutive months while employed in an assessor's office or other creditable employment times the number of years of the member's creditable service not to exceed one hundred percent of the member's monthly average final compensation after taking into account the reduction arising from any optional retirement selected.

For members hired on or after October 1, 2013 – Members with twelve or more years of creditable service may retire at age sixty and members with thirty or more years of creditable service may retire at age fifty-five. The normal retirement benefit for members with less than thirty years of creditable service will be equal to three percent of the highest monthly average final compensation times the number of years of creditable service. The normal retirement benefit for members with at least thirty years of creditable service will be equal to three and one-third percent of the highest monthly average final compensation times the number of years of creditable service. Only transferred service with an accrual rate of at least three and one-third percent will be used to meet the thirty year requirement. Benefits are calculated using the highest sixty month average compensation. Monthly benefits may not exceed 100% of the monthly average final compensation.

OPTIONAL ALLOWANCES – Members may receive their benefits as a life annuity, or in lieu of such receive a reduced benefit according to the option selected that is the actuarial equivalent of the maximum benefit. If, upon retirement, a member selects their spouse as their beneficiary under Option 2 or Option 3 or Option 4, the option reduction factor will be based on the ages of the member and his or her beneficiary as of the member's sixtieth birthday. If a participant selects an option 4 for someone other than their spouse, the option reduction factor is based on the ages of the member and beneficiary as of the later of the date of the member's retirement or the member's sixtieth birthday.

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

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

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

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

EXCESS BENEFIT PLAN – Under the provisions of this excess benefit plan a member may receive a benefit equal to the amount by which the member's monthly benefit from the fund has been reduced because of the limitations of Section 415 of the Internal Revenue Code.

DISABILITY BENEFITS – Disability benefits are awarded to active members who are totally disabled with twelve or more years of creditable service. In addition, any member with twenty years of service who withdraws from service prior to reaching retirement age is eligible for disability benefits. The disability benefit is equal to the lesser of the member's applicable retirement accrual rate times the final average compensation multiplied by the number of years of creditable service (but not less than forty-five percent) or the retirement benefit which would be payable assuming accrued creditable service plus additional accrued service, if any, to the earliest normal retirement age.

SURVIVOR BENEFITS – If a member dies in service with less than twelve years of service credit, his accumulated contributions are paid to the surviving spouse. If a member dies with twelve or more years of creditable service and is not eligible for retirement, the surviving spouse receives an automatic option 2 benefit that ceases on remarriage. If a member dies who is eligible for retirement, the surviving spouse receives an automatic option 2 benefit that does not terminate on remarriage. The minor children or handicapped children of a member with no spouse who dies in the line of duty or with four years of creditable service receives $50 per month for the first child and $10 per month for each additional child.

Back-DROP – In lieu of receiving a service retirement allowance any member of the fund who has more than sufficient service for a regular service retirement may elect to receive a "Back-DROP" benefit. The Back-DROP benefit is based upon the Back-DROP period selected and the final average compensation prior to the period selected. The Back-DROP period is the lesser of three years or the service accrued between the time a member first becomes eligible for retirement and his actual date of retirement. At retirement the member's maximum monthly retirement benefit is based upon his service, final average compensation, and plan provisions in effect on the last day of creditable service immediately prior to the commencement of the Back-DROP period. In addition to the monthly benefit at retirement, the member receives a lump-sum payment equal to the maximum monthly benefit as calculated above multiplied by the number of months in the Back-DROP period.

CONTRIBUTION REFUNDS – Upon withdrawal from service, members not entitled to a retirement allowance are paid a refund of accumulated contributions upon request. Receipt of such a refund cancels all accrued benefits in the system. If the total of all benefits paid to a retiree and all benefits paid on the retiree's account after their death is less than the retiree's accumulated employee contributions, the remaining accumulated employee contributions shall be paid to the retiree's beneficiary or to their estate if they do not have a designated beneficiary. Upon the death of a member or former member who has not been paid any benefits from the fund and who is not survived by any person eligible for any benefits from the fund, the accumulated employee contributions of the member or former member shall be paid to their designated beneficiary or to their estate if they do not have a designated beneficiary.

COST OF LIVING INCREASES – Cost of living provisions for the system are detailed in R.S.11:1461, R.S. 11:246, R.S. 11:241, and R.S. 11:243. R.S. 11:1461 allows the Board of Trustees to provide a cost of living increase from excess interest earnings to members who have been retired for at least one full calendar year. The increase cannot exceed the lesser of: 3% of the retiree's original

benefit or an increase of $300 per year for each year of retirement. R.S. 11:246 provides cost of living increases to retirees and beneficiaries over the age of 65 equal to 2% of the benefit in payment on October 1, 1977, or the date the benefit was originally received if retirement commenced after that date. R.S. 11:241 provides 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.

In order to grant a COLA, the system must meet the funded ratio criteria specified in R.S. 11:243. For purposes of COLAs payable under R.S. 11:1461(A), R.S. 11:246, or R.S. 11:241, the system must have investment earnings in excess of the valuation interest rate sufficient to offset the additional liability due to the cost of the COLA or fund the COLA out of the Funding Deposit Account.

The limitations on timing of COLAs given in R.S. 11:243 are as follows:

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.

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 which have an impact on the cost of the plan. To the extent that future experience varies from the assumptions selected for valuation, future costs will be either higher or lower than anticipated. The following chart illustrates the effect of emerging experience on the plan.

Factor	Increase in Factor Results in
Investment Earnings Rate	Decrease in Cost
Annual Rate of Salary Increase	Increase in Cost
Rates of Retirement	Increase in Cost
Rates of Termination	Decrease in Cost
Rates of Disability	Increase in Cost
Rates of Mortality	Decrease in Cost

ACTUARIAL COST METHOD: Frozen Attained Age Normal Actuarial Method with allocation based on earnings. The actuarial accrued liabilities utilized to calculate the frozen unfunded accrued liability were calculated on the Projected Unit Credit Cost Method. Changes in assumptions and plan benefits are funded through adjustments to future normal costs.

VALUATION INTEREST RATE: 6.25% (Net of Investment Expense)

ACTUARIAL ASSET VALUES: 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.

Note: All deferrals are based on the valuation interest rate in effect as of the beginning of the fiscal year for each individual year.

ANNUAL SALARY INCREASE RATE: 5.75% (2.20% inflation /3.55% merit)

ACTIVE MEMBER MORTALITY: RP 2000 Employee Table set back 4 years for males and set back 3 years for females

ANNUITANT AND BENEFICIARY MORTALITY: RP 2000 Healthy Annuitant Table set forward 1year and projected to 2030 for males and projected to 2030 for females with no set forward

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

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

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

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

Service	Factor	Service	Factor
<1	0.100	6	0.060
1	0.100	7	0.060
2	0.060	8	0.020
3	0.060	9	0.020
4	0.060	>9	0.005
5	0.060		

Note: Withdrawal rates for members eligible to retire are assumed to be zero.

RETIREMENT RATES FOR ACTIVE FORMER DROP PARTICIPANTS: The rate for all ages is assumed to be 33%.

DISABILITY RATES: 12% of the disability rates used for the 21st valuation of the Railroad Retirement System for individuals with 10-19 years of service. The table of these rates is included later in the report.

DISABLED LIVES MORTALITY: RP-2000 Disabled Lives Mortality Table set back 5 years for Males and set back 3 years for Females

VESTING ELECTING PERCENTAGE: 60% of those vested elect deferred benefits in lieu of contribution refunds.

MARRIAGE AND OPTION SELECTION: 70% of members are assumed to be married. Wives are assumed to be 3 years younger than their husbands. Fifty-five percent of married members who retire with less than 30 years of service are assumed to select a Joint and 100% Survivor Annuity form of optional benefits and forty-five percent are assumed to select the Maximum. All members with more than 30 years of service are assumed to select a Joint and 100% Survivor Annuity form of option benefits.

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

Member's Age	% With Children	Number of Children	Average Age	Remarriage Rates
25	70%	1.84	5	0.04566
35	86%	2.13	9	0.02636
45	75%	1.70	12	0.01355
55	22%	1.42	14	N/A
65	4%	1.45	15	N/A

Back-DROP BENEFITS: Members eligible for Back-DROP benefits are assumed to elect the benefit form with the greatest present value.

ACTUARIAL TABLES AND RATES

Age	Male Employee Mortality Rates	Female Employee Mortality Rates	Male Retired Mortality Rates	Female Retired Mortality Rates	Male Disabled Mortality Rates	Female Disabled Mortality Rates
18	0.00025	0.00017	0.00019	0.00012	0.02257	0.00745
19	0.00027	0.00018	0.00019	0.00012	0.02257	0.00745
20	0.00028	0.00018	0.00020	0.00012	0.02257	0.00745
21	0.00030	0.00019	0.00021	0.00011	0.02257	0.00745
22	0.00032	0.00019	0.00022	0.00012	0.02257	0.00745
23	0.00033	0.00019	0.00024	0.00012	0.02257	0.00745
24	0.00035	0.00019	0.00025	0.00013	0.02257	0.00745
25	0.00036	0.00019	0.00028	0.00014	0.02257	0.00745
26	0.00037	0.00020	0.00032	0.00015	0.02257	0.00745
27	0.00037	0.00020	0.00034	0.00016	0.02257	0.00745
28	0.00038	0.00021	0.00035	0.00016	0.02257	0.00745
29	0.00038	0.00021	0.00038	0.00017	0.02257	0.00745
30	0.00038	0.00022	0.00043	0.00020	0.02257	0.00745
31	0.00038	0.00024	0.00048	0.00024	0.02257	0.00745
32	0.00039	0.00025	0.00054	0.00028	0.02257	0.00745
33	0.00041	0.00026	0.00060	0.00030	0.02257	0.00745
34	0.00044	0.00031	0.00067	0.00032	0.02257	0.00745
35	0.00050	0.00035	0.00072	0.00034	0.02257	0.00745
36	0.00056	0.00039	0.00078	0.00036	0.02257	0.00745
37	0.00063	0.00044	0.00083	0.00037	0.02257	0.00745
38	0.00070	0.00047	0.00085	0.00039	0.02257	0.00745
39	0.00077	0.00051	0.00087	0.00041	0.02257	0.00745
40	0.00084	0.00055	0.00090	0.00045	0.02257	0.00745
41	0.00090	0.00060	0.00093	0.00049	0.02257	0.00745
42	0.00096	0.00065	0.00096	0.00054	0.02257	0.00745
43	0.00102	0.00071	0.00100	0.00060	0.02257	0.00745
44	0.00108	0.00077	0.00105	0.00065	0.02257	0.00745
45	0.00114	0.00085	0.00109	0.00069	0.02257	0.00745
46	0.00122	0.00094	0.00114	0.00073	0.02257	0.00745
47	0.00130	0.00103	0.00118	0.00077	0.02257	0.00745
48	0.00140	0.00112	0.00123	0.00083	0.02257	0.00745
49	0.00151	0.00122	0.00320	0.00090	0.02257	0.00818
50	0.00162	0.00133	0.00321	0.00140	0.02257	0.00896
51	0.00173	0.00143	0.00317	0.00152	0.02385	0.00978
52	0.00186	0.00155	0.00312	0.00173	0.02512	0.01063
53	0.00200	0.00168	0.00316	0.00202	0.02640	0.01154
54	0.00214	0.00181	0.00322	0.00236	0.02769	0.01248
55	0.00229	0.00197	0.00344	0.00277	0.02897	0.01346
56	0.00245	0.00213	0.00374	0.00328	0.03027	0.01446
57	0.00262	0.00232	0.00412	0.00377	0.03156	0.01550
58	0.00281	0.00253	0.00461	0.00423	0.03286	0.01654
59	0.00303	0.00276	0.00505	0.00476	0.03415	0.01760
60	0.00331	0.00301	0.00555	0.00533	0.03544	0.01865
61	0.00363	0.00329	0.00630	0.00595	0.03673	0.01971
62	0.00400	0.00360	0.00696	0.00662	0.03803	0.02077
63	0.00441	0.00393	0.00794	0.00732	0.03933	0.02184
64	0.00488	0.00429	0.00879	0.00808	0.04067	0.02294
65	0.00538	0.00466	0.00974	0.00892	0.04204	0.02408
66	0.00592	0.00504	0.01112	0.00982	0.04347	0.02529
67	0.00647	0.00543	0.01229	0.01079	0.04498	0.02660
68	0.00703	0.00582	0.01317	0.01185	0.04658	0.02803
69	0.00757	0.00621	0.01455	0.01304	0.04831	0.02959
70	0.00810	0.00658	0.01561	0.01440	0.05017	0.03132
71	0.00860	0.00695	0.01734	0.01551	0.05221	0.03323
72	0.00907	0.00729	0.01931	0.01725	0.05445	0.03533
73	0.00951	0.00761	0.02154	0.01861	0.05691	0.03764
74	0.00992	0.01858	0.02404	0.02062	0.05961	0.04014
75	0.02457	0.02067	0.02762	0.02209	0.06258	0.04285

ACTUARIAL TABLES AND RATES (Continued)

Age	Retirement Rates	Disability Rates
18	0.00000	0.00018
19	0.00000	0.00018
20	0.00000	0.00018
21	0.00000	0.00018
22	0.00000	0.00018
23	0.00000	0.00018
24	0.00000	0.00018
25	0.00000	0.00018
26	0.00000	0.00018
27	0.00000	0.00018
28	0.00000	0.00018
29	0.00000	0.00018
30	0.00000	0.00018
31	0.00000	0.00018
32	0.00000	0.00018
33	0.00000	0.00018
34	0.00000	0.00018
35	0.00000	0.00020
36	0.00000	0.00023
37	0.00000	0.00025
38	0.00000	0.00029
39	0.00000	0.00032
40	0.00000	0.00037
41	0.00000	0.00042
42	0.00000	0.00047
43	0.00000	0.00053
44	0.00000	0.00060
45	0.00000	0.00068
46	0.30000	0.00078
47	0.30000	0.00088
48	0.30000	0.00100
49	0.30000	0.00113
50	0.30000	0.00128
51	0.30000	0.00146
52	0.30000	0.00166
53	0.30000	0.00188
54	0.20000	0.00214
55	0.20000	0.00242
56	0.10000	0.00276
57	0.10000	0.00313
58	0.10000	0.00355
59	0.10000	0.00404
60	0.10000	0.00586
61	0.10000	0.00586
62	0.10000	0.00586
63	0.10000	0.00586
64	0.10000	0.00586
65	0.25000	0.00586
66	0.25000	0.00586
67	0.25000	0.00586
68	0.25000	0.00586
69	0.25000	0.00586
70	0.25000	0.00586
71	0.25000	0.00586
72	0.25000	0.00586
73	0.25000	0.00586
74	0.25000	0.00586
75	0.25000	0.00586

PRIOR YEAR ASSUMPTIONS

VALUATION INTEREST RATE: 6.75% (Net of investment expense)

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.