LOUISIANA SCHOOL EMPLOYEES' RETIREMENT SYSTEM

ACTUARIAL VALUATION AS OF
JUNE 30, 2019

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September 30, 2019

Board of Trustees
Louisiana School Employees' Retirement System
8660 United Plaza Boulevard.
Baton Rouge, Louisiana 70809

Ladies and Gentlemen:

We are pleased to present our report on the actuarial valuation of the Louisiana School Employees' Retirement System for the fiscal year ending June 30, 2019. Our report is based on the actuarial assumptions specified and relies on the data supplied by the system's administrators and accountants. This report was prepared at the request of the Board of Trustees of Louisiana School Employees' Retirement System of the State of Louisiana. The primary purposes of the report are to determine the actuarially required contribution for the retirement system for the fiscal year ending June 30, 2020, and to recommend the net direct employer contribution rate for Fiscal 2021. This report does not contain the information necessary for accounting disclosures as required by Governmental Accounting Standards Board (GASB) Statements 67 and 68; that information is included in a separate report. This report was prepared exclusively for Louisiana School Employees' Retirement System for a specific limited purpose. It is not for the use or benefit of any third party for any purpose.

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

Valuation Date:		June 30, 2019	June 30, 2018
Census Summary:	Active Members	11,920	12,033
	Retired Members and Survivors	13,648	13,482
	DROP Participants	605	631
	Terminated Due a Deferred Benefit	333	339
	Terminated Due a Refund	4,328	4,475
Payroll (excluding DROP accruals):		$ 289,730,586	$ 288,861,936
Benefits in Payment:		$ 176,378,784	$ 171,928,421
Present Value of Future Benefits		$ 2,887,298,287	$ 2,861,792,613
Actuarial Accrued Liability (EAN):		$ 2,640,451,339	$ 2,614,250,388
Unfunded Actuarial Accrued Liability:		$ 676,307,996	$ 664,343,734
Experience Account:		$ 5,174,949	$ 4,911,217
Amortization Conversion Account:		$ 0	$ 6,838,575
Net Valuation Assets:		$ 1,964,143,343	$ 1,949,906,654 †
Market Value of Assets (Includes side funds):		$ 1,940,389,574	$ 1,946,113,040
Ratio of Net Valuation Assets to Actuarial Accrued Liability:		74.39%	74.59%

	Fiscal 2019	Fiscal 2018
Market Rate of Return (Excluding Money Market DROP funds):	4.70%	6.41%
Actuarial Rate of Return (Excluding Money Market DROP funds):	5.37%	7.64%
Non-Money Market DROP Account Interest Credit Rate:	4.87%	7.14%

	Fiscal 2020	Fiscal 2019
Employers' Normal Cost (Mid-year):	$ 22,633,372	$ 22,716,996
Amortization Cost (Mid-year):	$ 61,358,318	$ 58,007,423
Projected Administrative Expenses:	$ 4,742,477	$ 4,792,189
Amortization Conversion Account Supplement:	$ 0	$ (2,278,309)
Net Direct Employer Actuarially Required Contributions:	$ 88,734,167	$ 83,238,299
Projected Payroll:	$ 292,615,645	$ 292,662,231
Actuarially Required Net Direct Employer Contribution Rate:	30.3%	28.4%
Actual Employee Contribution Rate:		
Employees whose first state service occurred before July 1, 2010:	7.5%	7.5%
Employees whose first state service occurred on or after July 1, 2010:	8.0%	8.0%
Actual Net Direct Employer Contribution Rate:	29.4%	28.0%

	Fiscal 2021	Fiscal 2020
Minimum Recommended Net Direct Employer Cont. Rate:	28.7%	29.4%

† Excludes the Amortization Conversion Account.

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 system's administration furnished census data 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, sex, 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 VIII, there are 11,920 active contributing members in the system of whom 7,207 have vested retirement benefits; in addition, there are 605 participants in the Deferred Retirement Option Plan (DROP); 13,648 former members or their beneficiaries are receiving retirement benefits. An additional 4,661 terminated members have contributions remaining on deposit with the system; of this number 333 have vested rights for future retirement benefits**.**

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 that have no corresponding current record are identified. This portion of the review indicates the annual flow of members from one status to another and is used to check some of the actuarial assumptions such as retirement rates, rates of withdrawal, and mortality. In addition, the census is checked for reasonableness in several areas such as age, service, salary, and current benefits. The records identified by this review as questionable are checked against data from prior valuations; those not recently verified are included in a detailed list of items sent to the system's administrative staff for verification and/or correction. Once the identified data has been researched and verified or corrected, it is returned to us for use in the valuation. Occasionally some requested information is either unavailable or impractical to obtain. In such cases, values may be assigned to missing data. The assigned values are based on information from similar records or based on information implied from other data in the record.

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 Duplantier, Hrapmann, Hogan & Maher, L.L.P. As indicated in the system's financial statements, the net market value of assets was $1,940,389,574 as of June 30, 2019. Net investment income for Fiscal 2019 measured on a market value basis was $88,335,369. Contributions to the system for the fiscal year totaled $106,230,613; benefits and expenses amounted to $200,289,448.

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 Individual Entry Age Normal actuarial cost method. The unfunded accrued liability is amortized with level payments over various periods as specified in Louisiana Revised Statute R.S. 11:102. Effective with the June 30, 2014 valuation, the system's outstanding amortization bases were consolidated and re-amortized over thirty years with level payments. For fiscal years 2015 and 2016, amortization bases for actuarial asset and liability gains or losses (except as noted below) or changes in assumptions were set to be amortized over 30 years. Since the 2016 valuation indicated that the funded ratio of the plan (based on the net valuation assets) exceeded 72%, such amortization periods for new amortization bases beginning with the Fiscal 2017 valuation were set to twenty years. All contribution shortfalls and excesses are amortized as a level dollar amount over 5 years. Since the passage of Act 95 of 2016, the first $15,000,000 of any asset gain (adjusted pro-rata for increases in the Actuarial Value of Assets) has been used to immediately reduce the system's oldest outstanding positive amortization base without re-amortization. The statutes state that after the system's funded percentage reaches 80%, the remaining balance of the bases that have been reduced by such gains will be re-amortized over the remainder of the amortization period originally established for each base. R.S. 11:102.3 further states that beginning with Fiscal 2020 and every fifth year thereafter, the remaining liability of such bases net of all payments made since the last reamortization will be reamortized with annual level-dollar payments over the remainder of the amortization period originally established. Such reamortizations do not apply to the bases listed in Exhibit V – Schedule C in this Fiscal 2019 valuation report, but this report not only determines the actuarially required employer contribution for Fiscal 2020, it uses these values to calculate the Minimum Recommended Net Direct Employer Contribution Rate for Fiscal 2021 within Exhibit I. Therefore, the estimated Fiscal 2021 Amortization Payments have been determined by applying the provision of R.S. 11:102.3 that requires the reamortization of such payments beginning with Fiscal 2020.

In each year, fifty percent of the asset gains which exceed the adjusted $15,000,000 threshold (or Priority Excess Allocation limit) are used to fund the system's Experience Account which may be allocated to future permanent benefit increases (commonly referred to cost of living adjustments), subject to certain limitations. Following the June 30, 2015 valuation, all allocations to the Experience Account have been amortized as a loss with level payments over ten years.

In addition, each year the balance in the account is credited with investment earnings or debited with investment losses, shown in this report as the rate of return on the Actuarial Value of Assets. The balance in the account cannot exceed the reserve necessary to grant one (two if the system is funded 80% or greater) cost-of-living adjustment (or permanent benefit increase) as otherwise authorized by law. Any funds credited to the Experience Account reduce those allocated to the Investment Gain/Loss Experience base. The funding methodology for the plan includes the system's "Experience Account" in the Actuarial Value of Assets.

The Priority Excess Allocation limit has been set at the following levels since its creation:

Fiscal 2015 –	$15,000,000
Fiscal 2016 –	$15,386,586
Fiscal 2017 –	$15,932,442
Fiscal 2018 –	$16,310,113
Fiscal 2019 –	$16,371,779

The Amortization Conversion Account was initially funded from the residual balance in the Experience Account as of June 30, 2013. Payments from the account were made as an offset to employer contributions based on the provisions of Act 478 of the 2014 Regular Legislative Session each year through Fiscal 2019. In accordance with Act 478, the residual balance in the account as of June 30, 2019 of $4,560,266 has been amortized as an experience gain over ten years, resulting in a reduction in interest adjusted amortization payments of $627,682, or 0.21% of payroll. Since the remaining balance in the Amortization Conversion Account has been amortized, no further exclusion from the Actuarial Value of Assets is necessary.

For the June 30, 2015 valuation, although the assumed rate of return was maintained at 7.25%, the interest rate used to discount plan liabilities was reduced to 7.00%. This reduction was made to implicitly account for administrative expenses as an offset to investment gains or an increase to investment losses. Based on Act 94 of the 2016 Regular Session of the Legislature, beginning with the June 30, 2016 actuarial valuation, the explicit cost of projected noninvestment related administrative expenses were included in the calculation of the actuarially required contribution for the system. With this change, the valuation of plan liabilities based on a valuation interest rate set 0.25% below the assumed long-term rate of return was no longer necessary. This would have resulted in an increase in the valuation interest rate of 0.25%. Instead, for the June 30, 2016 actuarial valuation, the assumed long-term rate of return was reduced from 7.25% to 7.125% and the valuation interest rate was set equal to the long-term rate of return. This resulted in an increase in the valuation interest rate from 7% to 7.125%. A reduction in the valuation interest rate to 7.0% was recommended in conjunction with the 2018 experience study. The Board of Trustees voted to accept the recommendation and elected to reduce the valuation interest rate over the following two years. Therefore, the Fiscal 2018 actuarial valuation was run at 7.0625% and the Fiscal 2019 actuarial valuation has been run at 7.0%. The reduction in the valuation interest rate from 7.0625% to 7.0% for Fiscal 2019 increased the actuarial accrued liability of the system by $14,364,127. When amortized over the next twenty years, this resulted in an additional interest adjusted amortization payment of $1,310,771 per year, or 0.45% of projected payroll. The remaining actuarial assumptions utilized for this report are based on the results of the 2018 experience study, unless otherwise specified in this report. Additional details are given in the complete 2018 Experience Study Report.

A liability is recognized for the existing balance in the Experience Account together with the present value of future contributions to the Account up to the maximum permissible value of the Account based upon current account limitations. This is in recognition of the fact the legal mechanism for credits to the Experience Account are substantively automatic up to the limit set on the account balance. However, contributions to this account in excess of the account limit will require a legislative act. Although the board of trustees has authority to recommend ad hoc Cost of Living Increases (COLAs) be approved by the legislature under limited circumstances, these COLAs have not 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 beyond the current account limitations of the Experience Account. Since a liability for future COLAs up to the authorized Experience Account balance has been included in the system's accrued liabilities, the assets in the Experience Account were included in the valuation assets for funding purposes.

For reports prior to 2017, the term "actuarial value of assets" referred to the smoothed asset value reduced by both the Experience Account and the Amortization Conversion Account, where applicable.

Beginning with the Fiscal 2018 valuation report, the term “actuarial value of assets” refers to the smoothed asset values, as calculated in Exhibit III – B, unreduced for any “side funds”.

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. Louisiana Constitutional and Statutory provisions greatly limit this risk by requiring that state and statewide plans maintain funding on an actuarial basis. The State Constitution sets forth general requirements with specific funding parameters specified in the state statutes.

All pension plans are subject to the uncertainty of asset performance. The total nominal rate of return on assets is comprised of the real rates of return earned on the portfolio of investments plus the underlying inflation rate. High levels of inflation are a risk to plan members in that they reduce purchasing power of plan benefits. As the plan attempts to offset inflation by cost of living adjustments, costs will inevitably increase unless provisions are made to prefund such adjustments. Very low inflation will generally reduce the nominal rate of return on assets; deflation can potentially reduce the capital value of trust assets. For the last decade, inflation levels have remained in a fairly narrow range. Current forecasts from investment professionals call for a continuation of this trend. There is always the possibility that high inflation will become a problem in the future or that the country will experience a deflationary period; however, most expert opinion currently assess both of these alternatives as unlikely in the near term.

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. Volatility of returns will be determined by both market conditions and the asset allocation of the investment portfolio. If the system’s investment portfolio has a substantial allocation to assets that have low price stability, the risk of portfolio volatility will increase, although low correlations among asset classes can mitigate this risk. Another element of asset risk is reinvestment risk. Interest rate declines can subject pension plans to an increase in this risk. As fixed income securities mature, investment managers may be forced to reinvest funds at decreasing rates of return. For the foreseeable future it is unlikely, though not impossible, that interest rates will steeply decline mitigating the reinvestment risk the plan currently faces.

The system is also exposed to risk related to cash flow. Where benefit payments exceed contributions to a plan, the plan will be required to use investment income or potentially investment capital to pay benefits. In cases where it is necessary to use investment income to pay retirement benefits, investment market downturns will place additional stress on the portfolio and make the recovery from such downturns more difficult since funds available for reinvestment are reduced by benefit payments. The historical cash flow graph and demonstration given in this report illustrates the noninvestment cash flow and benefit payments of the system over the last 10 years. Currently, annual benefit payments exceed annual contributions to the plan. Future net noninvestment cash flows for the system will be determined based upon both the system maturity and future contribution levels. Hence, increases in future contributions due to adverse actuarial experience will tend to mitigate the potential of negative cash flows arising from the natural maturation of the system whereas reduced contribution levels resulting from positive experience will tend to increase the extent of negative cash flows. Absent a significant increase in the active membership of the system, the trend of higher proportions of retired membership will continue and the current trend toward higher levels of negative noninvestment cash flows will continue in the near future.

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. In a general sense, the short term effects of these risks on the cost structure of the plan are somewhat limited since changes in these factors tend to be gradual and follow long term secular trends. Final average compensation plans are also vulnerable to unexpectedly large increases in salary for individual members near retirement. The effect of such events frequently relates to pay plan revisions where salaries "catch-up" after a number of years of slow growth. Revisions of this type usually depend on general economic conditions and can result in liability losses. However, they generally are infrequent and are more of a short term issue.

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. The risk associated with either of these factors can vary dependent upon the severity of the event, and cannot be easily forecasted.

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 74.39% for the plan as of June 30, 2019. This value gives some indication of the financial strength of the plan; however, it does not guarantee the ability of the fund to pay benefits in the future or indicate that in the future, contributions are likely to be less than or greater than current contributions. In addition, the ratio cannot be used in isolation to compare the relative strength of different retirement systems. However, the trend of this ratio over time can give some insight into the financial health of the plan. Even in this regard, caution is warranted since market fluctuations in asset values and changes in plan assumptions can distort underlying trends in this value. Exhibits IX gives a history of this value for the last ten years. Note that the underlying trend is somewhat disguised since the system has significantly reduced the valuation interest rate over this period. Absent the reduction in this rate, the current ratio would be significantly higher. One additional risk measure is the sensitivity of the plan's cost structure to asset gains and losses. We have determined that based on current assets and demographics, for each percentage under the assumed rate of return on the actuarial value of assets, there will be a corresponding increase in the actuarially required contribution as a percentage of projected payroll of 0.61% for the fund. For earnings above the assumed rate of return, the reduction in costs will generally be less than this amount due to the Priority Excess Allocation and the allocation of a portion of investment gains to the Experience Account.

Each pension plan has its own unique benefit structure and demographic profile. As a result each plan will respond to changes in interest rates in a unique way. As the expected rate of return on investments changes and the interest rate used to discount plan liabilities is adjusted, the shift in plan liabilities will depend upon the duration of the liabilities (which can be understood as the plan's sensitivity to the change in the interest rate). A slightly different measure of the duration for the plan can also be understood as an indicator of the plan's maturity. When a pension plan is first established, all of the participants are active members; as members retire and the plan matures, the duration of the plan decreases. A determination of the liability duration gives some insight into the investment time horizon of the plan. Thus the liability duration of a closed plan can be thought of as the weighted "center of gravity" of plan benefit cash flows with expected cash flows occurring both before and after the duration value. For open plans with a continuous flow of new entrants this measure is somewhat less informative since the duration horizon keeps changing as new members enter the plan. For this plan we have estimated the effective liability duration as 8.73.

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 vulnerable to asset and liability gains and losses than mature plans since changes in plan costs can be partially allocated to new members. If the plan has a large number of active members compared to retirees, asset or liability losses can be more easily addressed. As more members retire, contributions can only be collected from a smaller segment of the overall plan population. Often, population ratios of actives to annuitants are used to measure the plan's ability to adjust or recover from adverse events since contributions are made by or on behalf of active members but not for retirees. Thus, if the plan suffers a mortality loss through increased longevity, this will affect both actives and retirees, but the system can only fund this loss by contributions related to active members. A measure of risk related to plan maturity is the ratio of total benefit payments to active payroll. For Fiscal 2019 this ratio is 61%; ten years ago this ratio was 38%.

One other area of exposure the plan faces is the possibility that plan assumptions will need to be revised to conform to changing actual or expected plan experience. Such assumption revisions may relate to economic or demographic factors. With regard to the economic assumptions, there is always the possibility that market expectations will require an adjustment to the assumed rate of return. Current market expectations are that in this area a decrease in the assumptions is more probable than an increase. The magnitude of any potential such change will be related to future capital market expectations. 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 2020 by 8.4% of payroll. After accounting for the effect of the contribution shortfall, the recommended employer contribution rate for Fiscal 2021 would increase by 10.6%. Future adjustments to the future assumed rates of return may be required; however the likelihood of such an event is difficult to gauge since it requires assigning probabilities to future capital market scenarios.

Noneconomic assumptions such as mortality or other rates of decrement such as withdrawal, retirement, or disability are also subject to change. In general, such changes tend to effect plan costs less than adjustments to the assumed rates of return. Quantifying the probability or magnitude of such changes is beyond the scope of this report.

In summary, there is a risk that future actuarial measurements may differ significantly from current measurements presented in this report due to factors such as the following: plan experience differing from that anticipated by the economic or demographic assumptions, changes in economic or demographic assumptions, and changes in plan provisions or applicable law. 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, factors such as those outlined above have the potential on their own accord to pose a significant risk to future cost levels and solvency of the system.

CHANGES IN PLAN PROVISIONS

The following legislative changes directly affecting the retirement system were enacted during the 2019 Regular Session of the Louisiana Legislature.

Act 78 provides authorization for the Louisiana School Employees' Retirement System, Louisiana State Police Retirement System, and Municipal Police Employees' Retirement System to transfer lump sum distributions to a third-party investment services provider selected by the Board of Trustees. The third party investment services provider shall act as an agent of the system to allow for participants to self-direct the investing of their lump sum balances.

Act 90 clarifies that any member whose first employment making him eligible for membership in one of the state systems occurred on or after July 1, 2015, who has credit for five years or more of regular, full-time service may withdraw from service and elect to leave his accumulated contributions in the system, and be eligible for a vested deferred benefit due at age sixty-two.

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 †
2010	13.02%	0.55%
2011	23.28%	4.35%
2012	2.27%	9.07%
2013	13.73%	12.04%
2014	16.96%	13.63%
2015	3.00%	11.63%
2016	-0.59%	6.90%
2017	14.14%	8.47%
2018	6.41%	7.64%
2019	4.70%	5.37%

† Rates of return calculated based on assets inclusive of Amortization Conversion Account and Experience Account but exclusive of money market DROP assets and income.

Geometric Average Market Rates of Return

5 year average	(Fiscal 2015 – 2019)	5.4%
10 year average	(Fiscal 2010 – 2019)	9.5%
15 year average	(Fiscal 2005 – 2019)	6.5%

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. The rate of return is calculated on assets invested in the system's portfolio. DROP and IBRP assets invested in money market investments have been excluded from the rate of return calculation. This rate of return gives an indication of performance for an actively managed portfolio where securities are bought and sold with the objective of producing the highest total rate of return. During 2019, the fund earned $15,202,910 of dividends, interest and other recurring income. In addition, the Fund had net realized and unrealized capital gains on investments of $79,155,745. In addition, the Fund had investment expenses of $6,023,286.

The actuarial rate of return is presented for comparison to the assumed long-term rate of return of 7.0625% for Fiscal 2019 (7.0% for Fiscal 2020.) DROP accounts that are credited with earnings based on the actuarial rate of return of the system should be credited with 4.87% (i.e. 5.37% less 0.50% as detailed in R.S. 11:1152(F)(3)). The actuarial rate of return is calculated based on the actuarial value of assets net of DROP and IBRP assets invested in money market accounts and includes all interest, dividends, and recognized capital gains as given in Exhibit VI net of money market income earned by DROP and IBRP assets. Investment income used to calculate this yield is based upon a smoothing of investment returns above or below the valuation interest rate over a five year period, subject to constraints. The difference between rates of return on an actuarial and market value basis results from the smoothing of gains or losses on investments relative to the valuation interest rate. Yields in excess of the applicable interest assumption will reduce future costs; yields below the applicable interest assumption will increase future costs. For Fiscal 2019, the system experienced actuarial investment earnings of $31,319,747 below the actuarial assumed earnings rate of 7.0625%. The interest adjusted amortization payment on this loss was $2,858,024, or 0.98% of projected payroll.

DEMOGRAPHICS AND LIABILITY EXPERIENCE

The average active contributing member is 52 years old with 9.6 years of service credit and an annual salary of $24,306. The system's active contributing membership experienced a decrease of 113 members during Fiscal 2019; over the last five years, the number of active contributing members decreased by 134. The number of DROP participants decreased by 26 during Fiscal 2019.

The average service retiree is 73 years old with a monthly benefit of $1,129. The number of retirees and beneficiaries receiving benefits from the system increased by 166 during the fiscal year. Over the last five years, the number of retirees increased by 937 with annual benefits in payment increasing by $30,294,564.

Liability experience for the year was favorable. The total number of retirements and salary increases were below expected levels. Withdrawals and retiree deaths were above projected levels. These factors tend to reduce costs. Partially offsetting these gains were disabilities and DROP entries above projected levels. Net plan liability experience gains totaled $16,145,429. The interest adjusted amortization credit on this gain was $1,473,320, or 0.50% of projected payroll.

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. These two components are the normal cost and the amortization payments on the unfunded actuarial accrued liability. The normal cost refers to the annual cost for active members allocated to each year by the particular cost method utilized. 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. In addition it may be increased or diminished by plan experience, changes in assumptions, or changes in benefits including COLA's. Contributions in excess of or less than the actuarially required amount can also decrease or increase the UAL balance. New entrants to the system can also increase or lower costs as a percent of payroll depending upon their demographic distribution. Finally, payroll growth affects plan costs since payments on the system's unfunded accrued liability are on a fixed, level dollar schedule. If payroll increases, these costs are reduced as a percentage of payroll. Conversely, if payroll decreases, these costs are increased as a percentage of payroll.

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.

An explanation of the change in costs related to asset and liability gains and losses as well as changes in demographics and assumptions is given in prior sections of the report. In addition to these components, variances in contribution levels and payroll also affect costs. For Fiscal 2019 contributions totaled $87,673 less than required; the interest-adjusted amortization expense based on the contribution deficit for Fiscal 2020 is $20,672, or 0.01% of projected payroll. In addition, for Fiscal 2020 the net effect of the change in payroll on amortization costs was to decrease such costs by 0.01% of projected payroll.

A reconciliation of the change in costs is given below. Values listed in dollars are interest adjusted for payment throughout the fiscal year. Percentages are based on the projected payroll for Fiscal 2020 except for those items labeled Fiscal 2019.

	Dollars	Percentage of Payroll
Employer Normal Cost for Fiscal 2019	$ 22,716,996	7.76%
Cost of Demographic and Salary Changes	(689,238)	(0.24%)
Change in Assumptions	$ 605,614	0.21%
Employer Normal Cost for Fiscal 2020	$ 22,633,372	7.73%
UAL Payments for Fiscal 2019	$ 58,007,423	19.82%
Change due to reduction in valuation interest rate	$ (315,508)	(0.11%)
Change due to change in payroll	N/A	(0.01%)
Change due to elimination of Amortization	$ 1,577,938	0.54%

Additional Amortization Expenses for Fiscal 2020:			
Liability Assumption Loss (Gain)	$	1,310,771	0.45%
Asset Experience Loss (Gain)	$	2,858,024	0.98%
Priority Excess Allocation	$	0	0.00%
Gains Allocated to the Experience Account	$	0	0.00%
Liability Experience Loss (Gain)	$	(1,473,320)	(0.50%)
Contribution Loss (Gain)	$	20,672	0.01%
Residual Balance of Amortization Conversion Acct.	$	(627,682)	(0.21%)
Total Amortization Expense (Credit) for Fiscal 2020	$	61,358,318	20.97%
Projected Adminstrative Expenses for Fiscal 2020	$	4,742,477	1.62%
Total Normal Cost & Amortization Payments	$	88,734,167	30.32%

The derivation of the actuarially required contribution for the current fiscal year is given in Exhibit I. The employer's normal cost for Fiscal 2020, interest adjusted for mid-year payment is $22,633,372. The amortization payments on the system's unfunded actuarial accrued liability total $61,358,318. The total actuarially required contribution is determined by adding these two values together with administrative expenses. The net direct actuarially required employer contribution for Fiscal 2020 is determined based on the sum of employer normal cost, amortization payments on the unfunded actuarial accrued liability, and projected administrative expenses. As given in line 14 of Exhibit I, the total actuarially required employer contribution for Fiscal 2020 is $88,734,167, or 30.3% of projected payroll.

Since the actual employer contribution rate for Fiscal 2020 is 29.4% of payroll, there will be a contribution deficit of 0.9% of payroll. This deficit will increase the actuarially required contribution recommended for Fiscal 2021. In order to determine a minimum recommended net direct employer contribution rate for Fiscal 2021, the Employer Normal Cost and Amortization Payments were estimated for Fiscal 2021 and adjusted for the impact of the estimated contribution shortfall for Fiscal 2020. Note that the estimated payment on the 2014 Cumulative Base was determined by reamortizing the expected outstanding balance over the remaining period in accordance with R.S. 11:102.3A(6). As given in line 25 of Exhibit I, the estimated actuarially required net direct employer contribution for Fiscal 2021 is $84,934,434, or 28.7% of projected payroll.

The reamortization of the 2014 Cumulative Base in accordance with R.S. 11:102.3 was a key factor leading to the 0.60% decrease in the recommended employer contribution rate for Fiscal 2021.

COST OF LIVING ADJUSTMENTS

During Fiscal 2019, the actual cost of living (as measured by the US Department of Labor CPI-U) increased by 1.6%. Cost of living provisions for the system are detailed in R.S. 11:1145.1 within the statutes relative to the Experience Account. The Experience Account cannot be credited with funds that would cause the balance in the account to exceed the reserve of one permanent benefit increase (PBI) if the system is less than 80% funded or two permanent benefit increases if the system is at least 80% funded. R.S. 11:1145.1(2) sets forth the basis for determining the maximum percentage increase in the benefits permissible. The maximum percentage increase is based upon the funded percentage of the system as of the most recent actuarial valuation, and is limited to 2.0% in any year in which the system does not earn an actuarial rate of return of at least 7.25%, according to the following:

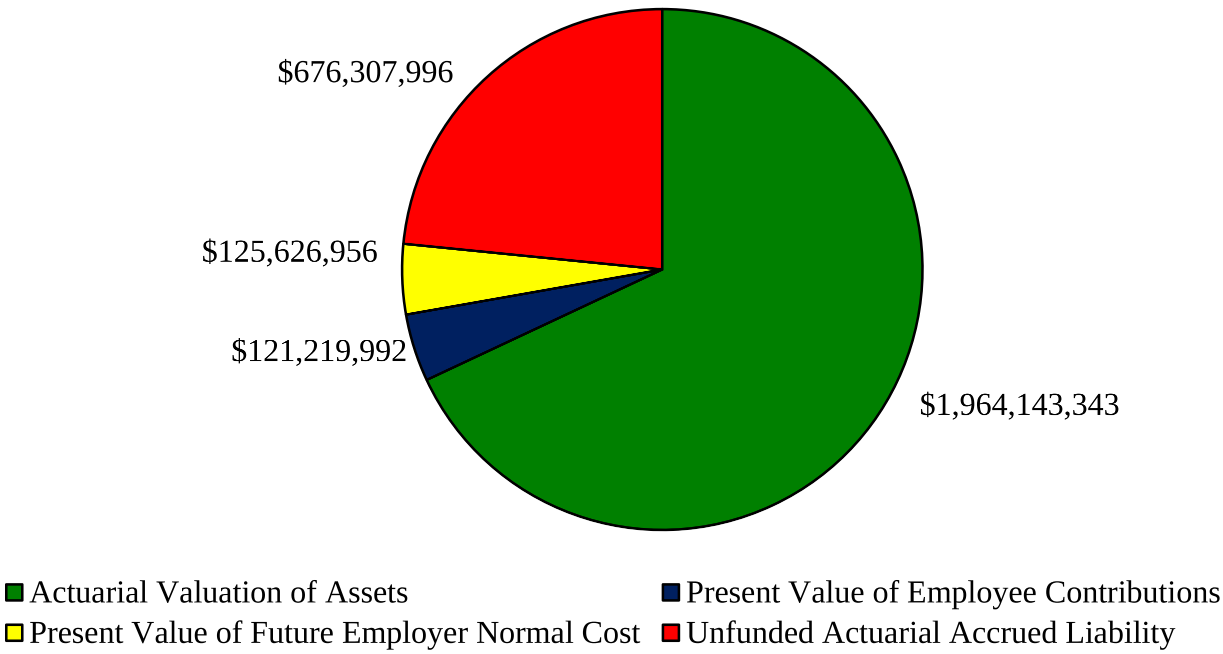
Funded Percentage of the System	Maximum Percent PBI
At least 80%	3.0%
At least 75% but less than 80%	2.5%
At least 65% but less than 75%	2.0%
At least 55% but less than 65%	1.5%
Less than 55%	No COLA permitted

In addition, if the fund is less than 85% funded and the legislature granted a permanent benefit increase in the preceding fiscal year, no increase may be granted.

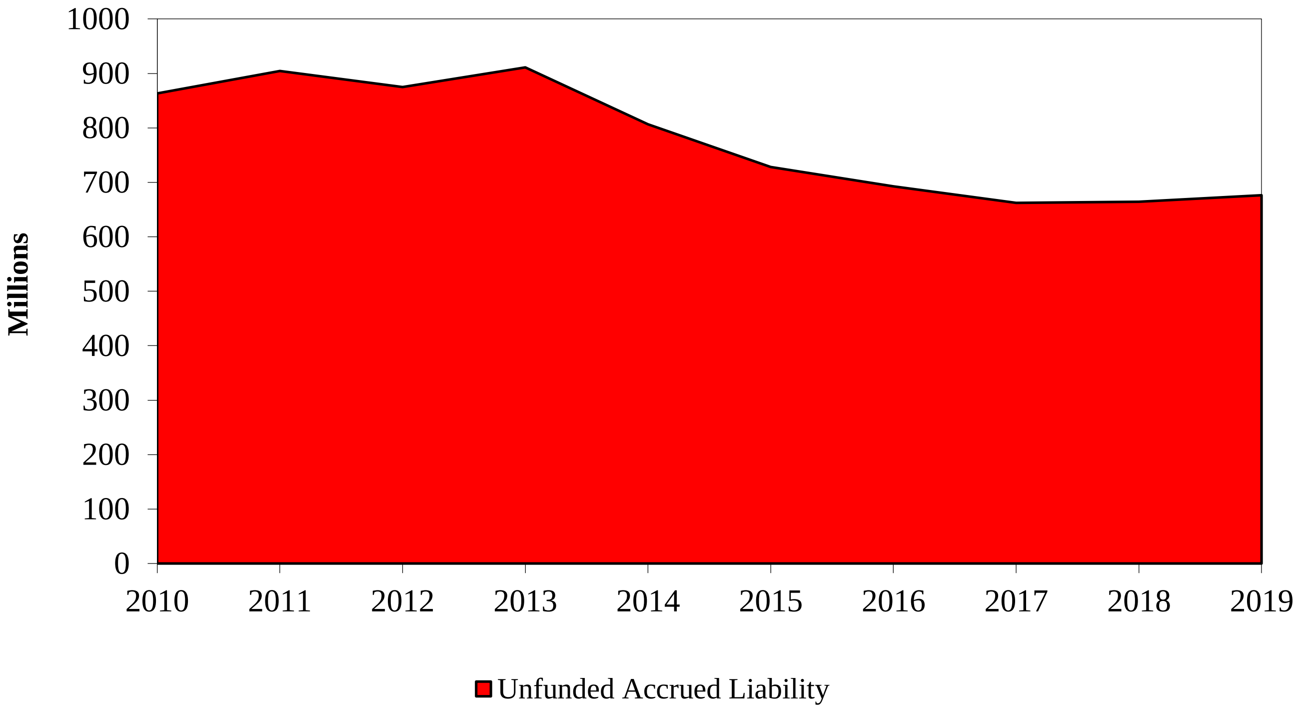
If there are sufficient funds in the Experience Account and the system met the necessary criteria to grant a PBI, the Board of Trustees may recommend to the President of the Senate and the Speaker of the House of Representatives that the system be permitted to grant a permanent benefit increase. Permanent benefit increases are based on the benefit in payment at the time the adjustment is approved with a maximum adjustment based on the first $60,000 of benefits, where the $60,000 limit is increased annually by the consumer price index for all urban consumers from July 1, 2019. No PBI can be paid in an amount greater than the increase in the Consumer Price Index for all urban consumers during the twelve month period ending on the system's valuation date. Permanent benefit increases may be provided only to retirees who have received benefits for at least one full year. In addition, non-disabled retirees may only receive a PBI if they have attained age sixty.

Although the system did not grant a PBI in the preceding fiscal year, the system did not reach the maximum reserve permitted in the Experience Account and thus does not qualify to request that the Louisiana Legislature grant a PBI under the provisions of R. S. 11:1145.1.

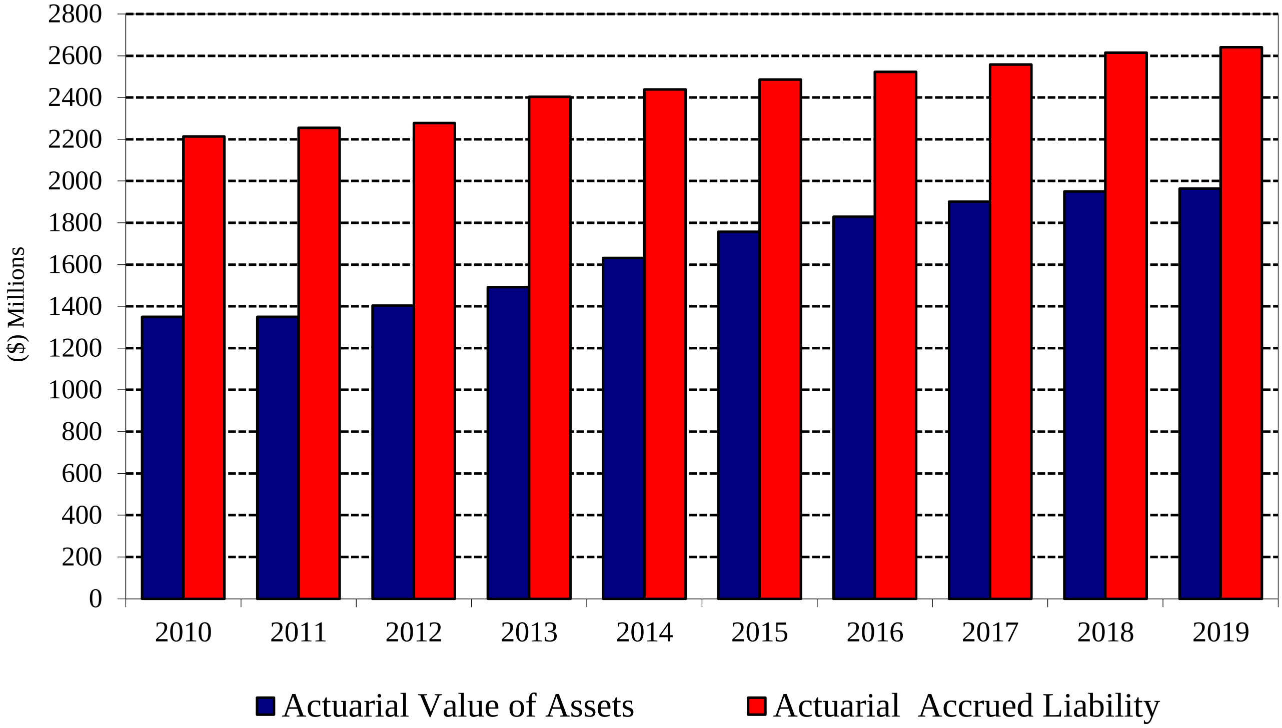
Components of Present Value of Future Benefits
June 30, 2019



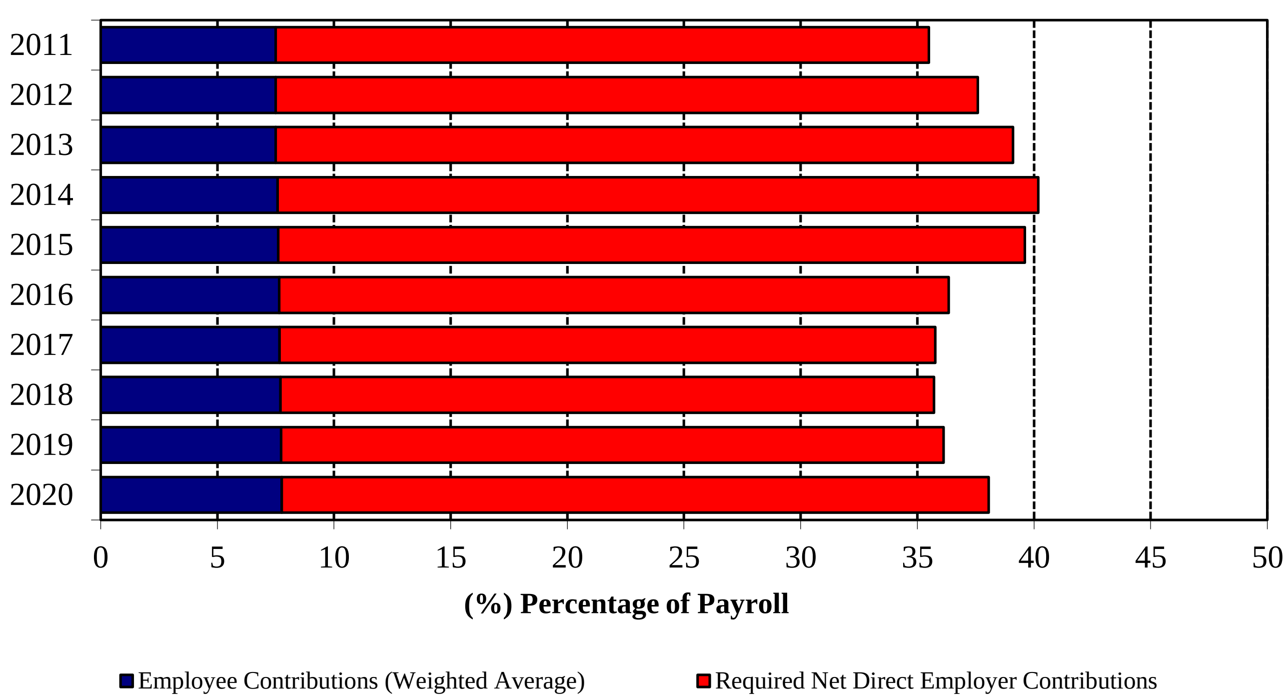
Unfunded Accrued Liability



Actuarial Value of Assets vs. Actuarial Accrued Liability

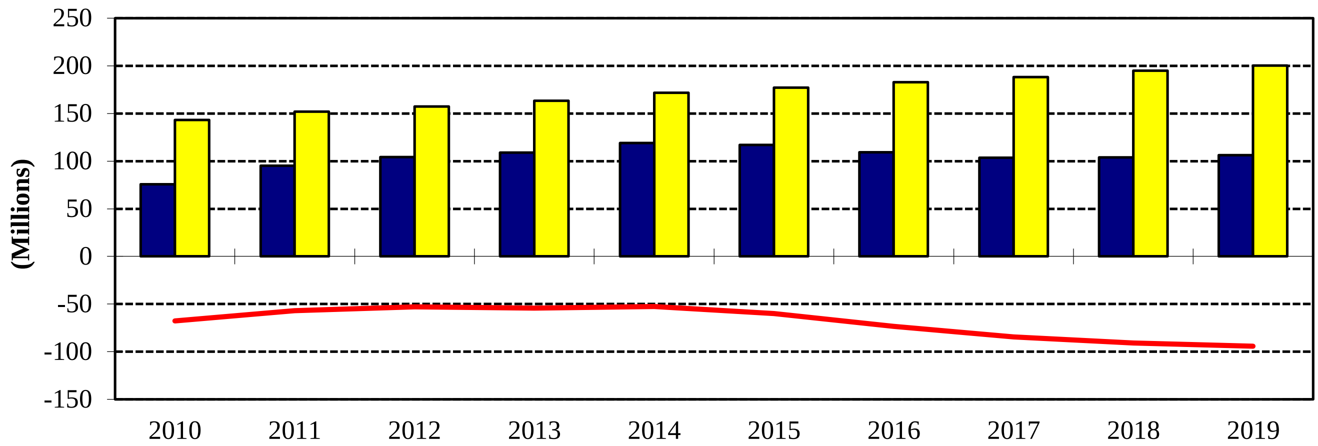


Components of Actuarial Funding



(2012 and later employee contribution level is a weighted average of rates paid by employees in different tiers)

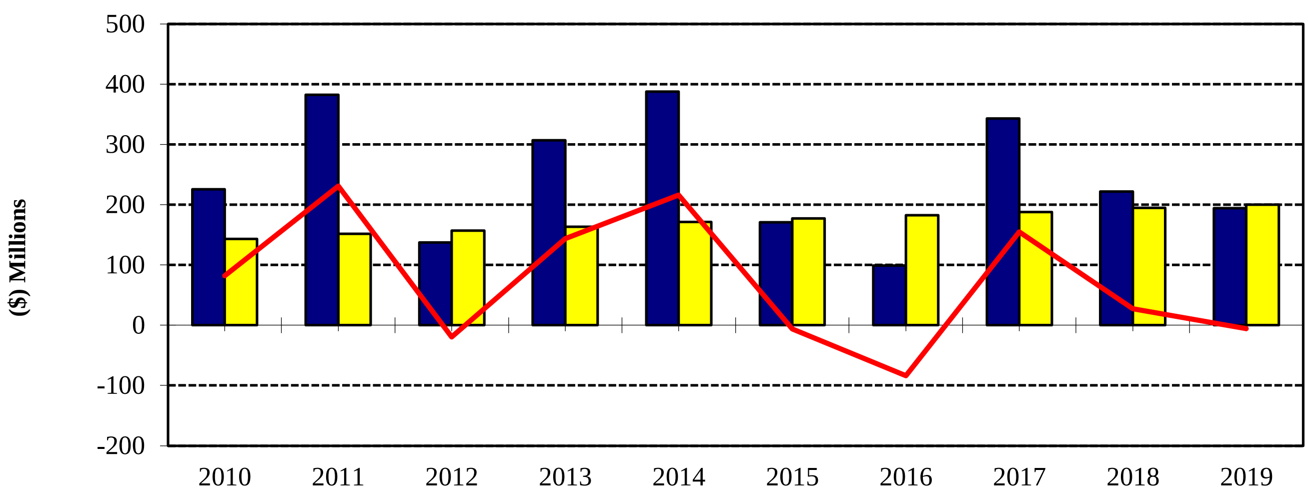
Net Non-Investment Income



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Non-Investment Income ($Mil)	75.6	95.1	104.3	109.0	118.9	117.1	109.4	103.6	104.0	106.2
Benefits and Expenses ($Mil)	143.3	151.9	157.2	163.3	171.6	177.1	182.7	188.1	195.0	200.3
Net Non-Investment Income ($Mil)	-67.7	-56.8	-52.9	-54.3	-52.7	-60.0	-73.3	-84.5	-91.0	-94.1

Total Income vs. Expenses

(Based on Market Value of Assets)



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total Income ($Mil)	225.5	382.7	137.7	307.3	387.8	171.2	99.0	343.0	222.1	194.6
Benefits and Expenses ($Mil)	143.3	151.9	157.2	163.3	171.6	177.1	182.7	188.1	195.0	200.3
Net Change in MVA ($Mil)	82.2	230.8	-19.5	144.0	216.2	-5.9	-83.7	154.9	27.1	-5.7

Historical Asset Yields

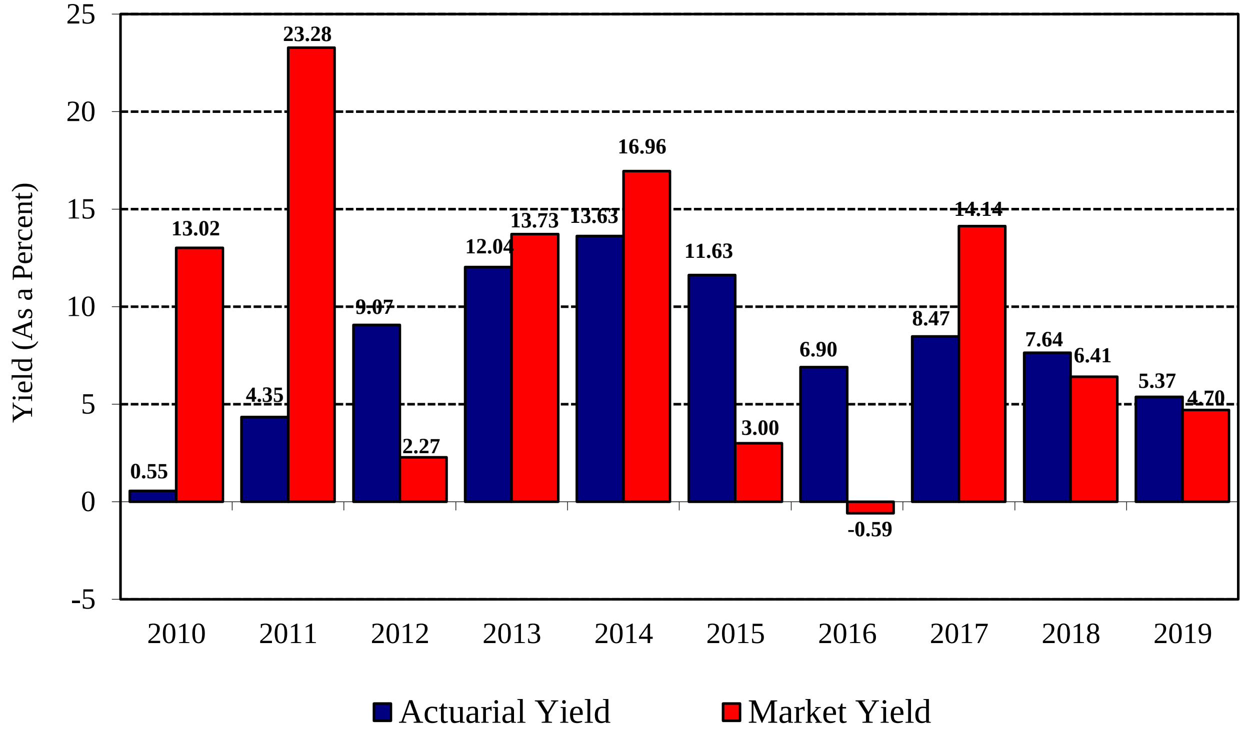


EXHIBIT I
ANALYSIS OF ACTUARIALLY REQUIRED CONTRIBUTIONS

1.	Normal Cost of Retirement Benefits	$	29,887,435
2.	Normal Cost of Death Benefits	$	1,645,319
3.	Normal Cost of Disability Benefits	$	3,118,849
4.	Normal Cost of Deferred Retirement Benefits	$	4,234,495
5.	Normal Cost of Contribution Refunds	$	4,560,925
6.	TOTAL Normal Cost as of July 1, 2019 (1 + 2 + 3 + 4 + 5)	$	43,447,023
7.	TOTAL Normal Cost Interest Adjusted for Midyear Payment	$	44,941,950
8.	Adjustment to Total Normal Cost for Employee Portion	$	22,308,578
9.	TOTAL Employer Normal Cost Adjusted for Midyear Payment (7 – 8)	$	22,633,372
10.	Amortization Payments on Unfunded Accrued Liability at Midyear	$	61,358,318
11.	Projected Administrative Expenses for Fiscal 2020	$	4,742,477
12.	TOTAL Normal Cost & Amortization Payments (9 + 10 + 11)	$	88,734,167
13.	Amortization Conversion Account Supplement for Fiscal 2020	$	0
14.	Net Direct Actuarially Required Employer Contribution for Fiscal 2020 (12 + 13)	$	88,734,167
15.	Projected Payroll for Contributing Members (Fiscal 2020)	$	292,615,645
16.	Net Direct Actuarially Required Employer Contribution as a Percentage of Projected Payroll for Fiscal 2020 (14 ÷ 15)		30.3%
17.	Actual Net Direct Employer Contribution Rate for Fiscal 2020		29.4%
18.	Projected Fiscal 2020 Contribution Loss (Gain) as a % of Payroll (16 – 17)		0.9%
19.	Projected Fiscal 2020 Employer Contribution Shortfall (Surplus) (15 × 18)	$	2,633,541
20.	Amortization of Interest Adjusted Fiscal 2020 Employer Contribution Shortfall (Surplus) Based on Midyear Payment in Fiscal 2021	$	642,296
21.	Estimated Fiscal 2021 Employer Normal Cost Adjusted for Midyear Payment	$	22,858,749
22.	Estimated Fiscal 2021 Amortization Payments	$	56,572,350
23.	Estimated Fiscal 2021 Administrative Expenses	$	4,861,039
24.	Estimated Actuarially Required Employer Contributions for Fiscal 2021 (20 + 21 + 22 + 23)	$	84,934,434
25.	Projected Payroll for Contributing Members (Fiscal 2021)	$	295,529,433
26.	Minimum Recommended Net Direct Employer Contribution Rate for Fiscal 2021 (24 ÷ 25, Rounded to nearest 0.10%)		28.7%

EXHIBIT II
PRESENT VALUE OF FUTURE BENEFITS

PRESENT VALUE OF FUTURE BENEFITS FOR ACTIVE MEMBERS:

Retirement Benefits	$ 1,007,582,635	
Survivor Benefits	24,429,060	
Disability Benefits	43,589,367	
Vested Termination Benefits	91,663,784	
Refunds of Contributions	20,876,655	
TOTAL Present Value of Future Benefits for Active Members		$ 1,188,141,501

PRESENT VALUE OF FUTURE BENEFITS FOR TERMINATED MEMBERS:

Terminated Vested Members Due Benefits at Retirement	$ 20,750,646	
Terminated Members with Reciprocals Due Benefits at Retirement	244,780	
Terminated Members Due a Refund	7,615,079	
TOTAL Present Value of Future Benefits for Terminated Members		$ 28,610,505

PRESENT VALUE OF FUTURE BENEFITS FOR RETIREES:

Regular Retirees	$ 1,449,035,708	
Disability Retirees	20,455,201	
Survivors & Widows	149,793,983	
Liability Attributable to the Experience Account	21,033,523	
DROP Account Balances Payable to Retirees	28,869,690	
IBRP Account Balance	1,358,176	
TOTAL Present Value of Future Benefits for Retirees & Survivors		$ 1,670,546,281

TOTAL Present Value of Future Benefits	$ 2,887,298,287

EXHIBIT III – SCHEDULE A
MARKET VALUE OF ASSETS

CURRENT ASSETS:				
Cash in Banks	$	53,387,673		
Contributions Receivable		15,685,198		
Accrued interest and dividends		3,000,213		
Investments Receivable		1,050,147		
Other Current Assets		1,741,729		
TOTAL CURRENT ASSETS			$	74,864,960
Property Plant & Equipment			$	3,301,851
INVESTMENTS:				
Cash Equivalents	$	38,005,237		
Equities		1,053,831,273		
Fixed Income		442,964,354		
Real Estate		122,004,053		
Alternative Investments		216,455,037		
Collateral for Securities Lending		101,205,264		
Other Investments		240,870		
TOTAL INVESTMENTS			$	1,974,706,088
DEFERRED OUTFLOWS OF RESOURCES			$	222,877
TOTAL ASSETS			$	2,053,095,776
CURRENT LIABILITIES:				
Accounts Payable	$	1,483,669		
Benefits Payable		742,078		
Refunds Payable		632,377		
Investments Payable		917,826		
Securities Lending Obligations		101,205,264		
Other Post-Employment Benefits		6,369,148		
Other Current Liabilities		406,430		
TOTAL CURRENT LIABILITIES			$	111,756,792
DEFERRED INFLOWS OF RESOURCES			$	949,410
TOTAL LIABILITIES			$	112,706,202
MARKET VALUE OF ASSETS			$	1,940,389,574

EXHIBIT III – SCHEDULE B
ACTUARIAL VALUE OF ASSETS

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

Fiscal year 2019	$ (44,094,322)
Fiscal year 2018	(13,290,517)
Fiscal year 2017	118,660,351
Fiscal year 2016	(139,840,706)
Fiscal year 2015	(76,298,518)
Total for five years	$ (154,863,712)

Deferral of excess (shortfall) of invested income:

Fiscal year 2019 (80%)	$ (35,275,458)
Fiscal year 2018 (60%)	(7,974,310)
Fiscal year 2017 (40%)	47,464,140
Fiscal year 2016 (20%)	(27,968,141)
Fiscal year 2015 (0%)	0
Total deferred for year	$ (23,753,769)

Market value of plan net assets, end of year	$ 1,940,389,574
Preliminary actuarial value of plan assets, end of year	$ 1,964,143,343
Actuarial value of assets corridor	
85% of market value, end of year	$ 1,649,331,138
115% of market value, end of year	$ 2,231,448,010
Actuarial Value of Plan Assets, end of year	$ 1,964,143,343
Amortization Conversion Account Balance, end of year	$ 0
Net Valuation Assets, end of year	$ 1,964,143,343

† Excess (shortfall) of actual investment income versus expected investment income is calculated based on assets and income adjusted to exclude the money market DROP accounts.

EXHIBIT IV
PRESENT VALUE OF FUTURE CONTRIBUTIONS

Employee Contributions to the Annuity Savings Fund	$	121,219,992
Employer Normal Contributions to the Pension Accumulation Fund		125,626,956
Employer Amortization Payments to the Pension Accumulation Fund		676,307,996
TOTAL PRESENT VALUE OF FUTURE CONTRIBUTIONS	$	923,154,944

EXHIBIT V – SCHEDULE A
ACTUARIAL ACCRUED LIABILITIES

LIABILITY FOR ACTIVE MEMBERS				
Accrued Liability for Retirement Benefits	$	846,533,320		
Accrued Liability for Survivor Benefits		15,839,459		
Accrued Liability for Disability Benefits		24,224,222		
Accrued Liability for Vested Termination Benefits		61,507,586		
Accrued Liability for Refunds of Contributions		(6,810,034)		
TOTAL Actuarial Accrued Liability for Active Members			$	941,294,553
LIABILITY FOR TERMINATED MEMBERS			$	28,610,505
LIABILITY FOR RETIREES AND SURVIVORS			$	1,670,546,281
TOTAL ACTUARIAL ACCRUED LIABILITY			$	2,640,451,339
NET VALUATION ASSETS			$	1,964,143,343
UNFUNDED ACTUARIAL ACCRUED LIABILITY			$	676,307,996

EXHIBIT V – SCHEDULE B
CHANGE IN UNFUNDED ACTUARIAL ACCRUED LIABILITY

PRIOR YEAR UNFUNDED ACCRUED LIABILITY			$	664,343,734
Interest on Unfunded Accrued Liability	$	46,919,277		
Asset Experience Loss		31,319,747		
Liability Assumption Loss		14,364,127		
Contribution Shortfall with Accrued Interest		87,673		
TOTAL Additions to UAL			$	92,690,824
Liability Experience Gain	$	16,145,429		
Interest Adjusted Amortization Payments		60,020,867		
Residual Balance of the Amortization Conversion Account		4,560,266		
TOTAL Reductions to UAL			$	80,726,562
NET Change in Unfunded Accrued Liability			$	11,964,262
CURRENT YEAR UNFUNDED ACCRUED LIABILITY			$	676,307,996

EXHIBIT V – SCHEDULE C
AMORTIZATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY
June 30, 2019

FISCAL YEAR	DESCRIPTION		AMORT. PERIOD	INITIAL BALANCE	YEARS REMAINING	REMAINING BALANCE	AMORT. PAYMENTS
2014	Cumulative Bases	†	30	$904,498,330	25	$787,163,328	$68,198,977
2014	Asset Experience Gain (Allocated by Act 399 of 2014)		5	(7,500,000)	0	0	
2014	Liability Experience Gain		30	(81,635,532)	25	(76,752,509)	(6,155,301)
2014	Contribution Loss		5	823,919	0	0	0
2015	Change in Data/Model Gain		30	(42,073,134)	26	(40,121,144)	(3,170,734)
2015	Liability Assumption Loss		30	53,611,596	26	51,124,277	4,040,300
2015	Asset Experience Gain		30	(32,513,380)	26	(31,004,918)	(2,450,288)
2015	Liability Experience Gain		30	(29,473,558)	26	(28,106,128)	(2,221,199)
2015	Contribution Gain		5	(3,883,540)	1	(886,409)	(886,409)
2016	Asset Experience Loss		30	7,620,492	27	7,365,659	574,286
2016	Liability Experience Gain		30	(366,508)	27	(354,253)	(27,620)
2016	Contribution Gain		5	(4,417,900)	2	(1,950,717)	(1,008,342)
2016	Liability Assumption Gain		30	(29,907,056)	27	(28,906,949)	(2,253,816)
2016	Asset Assumption Loss		30	211,528	27	204,454	15,941
2017	Asset Experience Gain		20	(24,634,307)	18	(23,402,486)	(2,174,301)
2017	Gains Allocated to Experience Account		10	3,875,934	8	3,297,529	516,103
2017	Priority Excess Allocation		20	15,932,442	18	15,135,752	1,406,247
2017	Liability Experience Gain		20	(19,955,111)	18	(18,957,269)	(1,761,300)
2017	Contribution Loss		5	3,079,929	3	1,972,861	702,581
2017	Liability Assumption Loss		20	20,126,949	18	19,120,515	1,776,467
2017	Asset Assumption Gain		20	(4,562,632)	18	(4,334,482)	(402,712)
2018	Asset Experience Gain		20	(10,056,996)	19	(9,813,346)	(887,356)
2018	Gains Allocated to Experience Account		10	0	9	0	0
2018	Priority Excess Allocation		20	9,415,089	19	9,186,990	830,719
2018	Liability Experience Gain		20	(14,310,770)	19	(13,964,063)	(1,262,678)
2018	Contribution Loss		5	4,655,410	4	3,846,886	1,061,410
2018	Liability Assumption Loss		20	32,157,641	19	31,378,559	2,837,355
2019	Asset Experience Loss		20	31,319,747	20	31,319,747	2,762,956
2019	Gains Allocated to Experience Account		10	0	10	0	0
2019	Priority Excess Allocation		20	0	20	0	0
2019	Liability Experience Gain		20	(16,145,429)	20	(16,145,429)	(1,424,312)
2019	Contribution Loss		5	87,673	5	87,673	19,984
2019	Liability Assumption Loss		20	14,364,127	20	14,364,127	1,267,170
2019	Residual Amort. Conversion Account		10	(4,560,266)	10	(4,560,266)	(606,803)

TOTAL Unfunded Actuarial Accrued Liability $ 676,307,996

TOTAL Fiscal 2020 Amortization Payments at Beginning of Year $ 59,317,325

TOTAL Fiscal 2020 Amortization Payments Adjusted to Mid-Year $ 61,358,318

† Balance reduced by application of investment gains assigned by Act 399 of 2014. See Exhibit V – Schedule D for a detailed calculation of the outstanding balance.

EXHIBIT V – SCHEDULE D
CUMULATIVE AMORTIZATION BASE ADJUSTMENT

2014 Initial Cumulative Amortization Base	$	905,696,581
2014 Applied Base Reduction for Privatization Liability		(1,198,251)
2014 Priority Excess Interest Applied to Base		(7,500,000)
2014 PBI Cap Excess Applied to Base		(3,252,257)
2014 Adjusted Initial Amortization Base	$	893,746,073
2015 Amortization Payment (Beginning of Year)		(69,677,675)
2015 Interest on Amortization Base net of Amortization Payment		59,744,957
2015 Priority Excess Interest Applied to Base		(15,000,000)
Net Balance as of June 30, 2015 on 2014 Cumulative Base	$	868,813,355
2016 Amortization Payment (Beginning of Year)		(68,153,884)
2016 Interest on Amortization Base net of Amortization Payment		56,046,163
2016 Priority Excess Interest Applied to Base		0
Net Balance as of June 30, 2016 on 2014 Cumulative Base	$	856,705,634
2017 Amortization Payment (Beginning of Year)		(68,897,690)
2017 Interest on Amortization Base net of Amortization Payment		56,131,316
2017 Priority Excess Interest Applied to Base		(15,932,442)
Net Balance as of June 30, 2017 on 2014 Cumulative Base	$	828,006,818
2018 Amortization Payment (Beginning of Year)		(68,897,690)
2018 Interest on Amortization Base net of Amortization Payment		54,086,525
2018 Priority Excess Interest Applied to Base		(9,415,089)
Net Balance as of June 30, 2018 on 2014 Cumulative Base	$	803,780,564
2019 Amortization Payment (Beginning of Year)		(68,543,363)
2019 Interest on Amortization Base net of Amortization Payment		51,926,127
2019 Priority Excess Interest Applied to Base		0
Net Balance as of June 30, 2019 on 2014 Cumulative Base	$	787,163,328

EXHIBIT VI
ANALYSIS OF CHANGE IN ASSETS

Net Valuation Assets (June 30, 2018)		$ 1,949,906,654
INCOME:		
Member Contributions	$ 22,382,628	
Employer Contributions	82,068,712	
Irregular Contributions	1,779,273	
Total Contributions		$ 106,230,613
Net Appreciation of Investments	$ 79,155,745	
Interest & Dividends	12,402,950	
Alternative Investment Income	2,435,157	
Miscellaneous Income	364,803	
Investment Expense	(6,023,286)	
Net Investment Income		$ 88,335,369
TOTAL Income		$ 194,565,982
EXPENSES:		
Retirement Benefits	$ 175,205,174	
DROP Disbursements	15,378,069	
Refunds of Contributions	5,711,862	
Transfers to Other Systems	127,512	
Administrative Expenses	3,866,831	
TOTAL Expenses		$ 200,289,448
Net Market Value Income for Fiscal 2019 (Income – Expenses)		$ (5,723,466)
Unadjusted Fund Balance as of June 30, 2019 (Fund Balance Previous Year + Net Income)		$ 1,944,183,188
Income Adjustment for Actuarial Smoothing		$ 13,121,580
Change in Side Fund Balances		$ 6,838,575
Net Valuation Assets: (June 30, 2019)		$ 1,964,143,343

EXHIBIT VII – SCHEDULE A
EXPERIENCE ACCOUNT

1.	Experience Account Balance – June 30, 2018	$	4,911,217
2.	Investment Gain, if any	$	0
3.	Priority Excess Interest Allocated to Reduce UAL	$	0
4.	Residual Investment Gain, if any (2 – 3)	$	0
5.	Investment Gain to Allocate to the Experience Account (50% × 4)	$	0
6.	Credit for Investment Earnings on Initial Balance based on AVA rate of return, if positive	$	263,732
7.	Total Preliminary Credits to be Allocated to Experience Account (5 + 6)	$	263,732
8.	Debit for Investment Losses on Initial Balance based on AVA rate of return, if negative	$	0
9.	Present Value of Permanent Benefit Increase Paid July 1, 2019	$	0
10.	Total Preliminary Debits to be Allocated to Experience Account (8 + 9)	$	0
11.	Total Net Credit/Debit to be Allocated to Experience Account (7 + 10)	$	263,732
12.	Limit to the Experience Account Balance – June 30, 2019 (Present Value of PBI at CPI-U for Fiscal 2019 or 2.00%)	$	21,033,523
13.	Experience Account Balance – June 30, 2019 (Lesser of 1+11 & 12 - at least 0)	$	5,174,949

EXHIBIT VII – SCHEDULE B
AMORTIZATION CONVERSION ACCOUNT

Amortization Conversion Account Balance as of June 30, 2018 .... $ 6,838,575

Fiscal Year Supplemental Contributions to be funded by the Amortization Conversion Account:

2014-15	$	560,927
2015-16		3,359,318
2016-17		4,613,318
2017-18		4,267,895
2018-19		2,278,309
Total	$	15,079,767

Residual balance as of June 30, 2019 to be amortized as a gain $ 4,560,266

Amortization Conversion Account Balance as of June 30, 2019 .... $ 0

EXHIBIT VIII
CENSUS DATA

	Active	Terminated with Funds on Deposit	DROP	Retired	Total
Number of members as of June 30, 2018	12,033	4,814	631	13,482	30,960
Additions to Census					
Initial membership	1,281	136			1,417
Omitted in error last year	1			3	4
Death of another member				137	137
Adjustment for multiple records	1			11	12
Change in Status during Year					
Actives terminating service	(523)	523			
Actives who retired	(429)			429	
Actives entering DROP	(230)		230		
Term. members rehired	79	(79)			
Term. members who retire		(41)		41	
Retirees who are rehired	0	25			25
Refunded who are rehired	23	4			27
DROP participants retiring			(119)	119	
DROP returned to work	134		(134)		
Omitted in error last year					
Eliminated from Census					
Refund of contributions	(407)	(526)			(933)
Deaths	(43)	(191)	(2)	(574)	(810)
Included in error last year		(4)	(1)		(5)
Adjustment for multiple records					
Number of members as of June 30, 2019	11,920	4,661	605	13,648	30,834

ACTIVES CENSUS BY AGE:

Age	Number Male	Number Female	Total Number	Average Salary	Total Salary
16 - 20	19	1	20	20,876	417,512
21 - 25	83	54	137	22,401	3,068,882
26 - 30	204	195	399	22,855	9,119,131
31 - 35	223	373	596	23,035	13,728,881
36 - 40	307	550	857	24,032	20,595,260
41 - 45	358	691	1,049	24,158	25,342,068
46 - 50	532	951	1,483	24,481	36,305,338
51 - 55	834	1,387	2,221	25,318	56,231,177
56 - 60	995	1,420	2,415	24,919	60,179,784
61 - 65	739	752	1,491	24,110	35,947,847
66 - 70	415	360	775	23,123	17,920,058
71 - 75	168	164	332	23,177	7,694,682
76 - 80	65	52	117	22,279	2,606,682
81 - 85	14	11	25	20,368	509,193
86 - 90	2	1	3	21,364	64,091
TOTAL	4,958	6,962	11,920	24,306	289,730,586

THE ACTIVE CENSUS INCLUDES 7,206 ACTIVES WITH VESTED BENEFITS, INCLUDING 558 ACTIVE FORMER DROP PARTICIPANTS. THE 605 CURRENT DROP PARTICIPANTS ARE EXCLUDED.

DROP PARTICIPANTS:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
46 - 50	2	0	2	41,147	82,294
51 - 55	12	12	24	28,271	678,509
56 - 60	67	112	179	21,689	3,882,303
61 - 65	138	210	348	13,726	4,776,501
66 - 70	15	16	31	7,054	218,661
71 - 75	6	5	11	5,065	55,715
76 - 80	6	4	10	5,464	54,637
TOTAL	246	359	605	16,113	9,748,620

TERMINATED MEMBERS DUE A DEFERRED RETIREMENT BENEFIT:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
26 - 30	2	0	2	4,475	8,949
31 - 35	7	4	11	7,894	86,836
36 - 40	14	9	23	7,466	171,712
41 - 45	12	10	22	8,823	194,108
46 - 50	23	24	47	7,611	357,726
51 - 55	26	47	73	10,595	773,418
56 - 60	50	57	107	9,413	1,007,240
61 - 65	8	19	27	8,264	223,116
66 - 70	3	6	9	4,492	40,425
71 - 75	2	6	8	5,642	45,135
76 - 80	1	2	3	4,680	14,041
81 - 85	0	1	1	199	199
TOTAL	148	185	333	8,777	2,922,905

TERMINATED MEMBERS DUE A REFUND OF CONTRIBUTIONS:

Contributions Ranging From		To	Number	Total Contributions
0	-	99	827	38,228
100	-	499	1,281	315,732
500	-	999	557	401,806
1000	-	1999	587	856,737
2000	-	4999	680	2,188,005
5000	-	9999	311	2,152,189
10000	-	19999	80	1,038,279
20000	-	99999	5	124,679
		TOTAL	4,328	7,115,655

REGULAR RETIREES:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
41 - 45	2	0	2	17,069	34,138
46 - 50	7	5	12	11,083	132,990
51 - 55	58	29	87	19,528	1,698,979
56 - 60	344	245	589	21,443	12,629,758
61 - 65	758	942	1,700	17,047	28,979,655
66 - 70	1,051	1,338	2,389	15,261	36,459,308
71 - 75	947	1,409	2,356	13,284	31,297,289
76 - 80	768	1,259	2,027	10,704	21,696,756
81 - 85	513	833	1,346	9,798	13,187,541
86 - 90	286	442	728	9,483	6,903,905
91 - 99	124	146	270	10,736	2,898,811
TOTAL	4,858	6,648	11,506	13,551	155,919,130

DISABILITY RETIREES:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
41 - 45	0	2	2	6,797	13,593
46 - 50	7	21	28	8,986	251,598
51 - 55	23	41	64	9,046	578,926
56 - 60	36	74	110	9,058	996,336
61 - 65	1	1	2	5,462	10,923
81 - 85	0	1	1	6,496	6,496
TOTAL	67	140	207	8,975	1,857,872

SURVIVORS:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
0 - 25	26	22	48	10,681	512,671
26 - 30	3	1	4	4,534	18,134
31 - 35	5	5	10	10,766	107,660
36 - 40	5	8	13	7,519	97,742
41 - 45	4	13	17	7,115	120,949
46 - 50	10	25	35	10,533	368,641
51 - 55	17	47	64	9,882	632,458
56 - 60	21	96	117	11,459	1,340,737
61 - 65	32	142	174	11,598	2,018,044
66 - 70	38	198	236	10,997	2,595,238
71 - 75	44	248	292	9,930	2,899,621
76 - 80	67	255	322	9,010	2,901,096
81 - 85	49	270	319	8,107	2,586,280
86 - 90	20	173	193	8,330	1,607,770
91 - 99	4	87	91	8,733	794,741
TOTAL	345	1,590	1,935	9,613	18,601,782

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	17	3										20
21 - 25	70	42	11	6	6	2						137
26 - 30	122	88	67	46	32	42	2					399
31 - 35	144	90	70	64	47	121	57	3				596
36 - 40	159	97	86	91	56	209	128	30	1			857
41 - 45	145	116	89	74	96	216	213	73	24	3		1,049
46 - 50	146	139	104	105	79	295	284	193	102	36		1,483
51 - 55	163	146	147	95	113	421	466	327	244	92	7	2,221
56 - 60	183	159	140	133	134	435	477	387	303	43	21	2,415
61 - 65	109	115	87	125	90	343	230	141	117	93	41	1,491
66 - 70	58	69	40	40	36	155	102	88	80	58	49	775
71 & Over	17	31	21	29	27	78	75	53	49	37	60	477
Totals	1,333	1,095	862	808	716	2,317	2,034	1,295	920	362	178	11,920

AVERAGE ANNUAL SALARY OF 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	Average Salary
0 - 20	21,286	18,548										20,876
21 - 25	20,934	24,078	25,597	23,271	23,876	13,877						22,401
26 - 30	21,197	23,026	22,371	24,731	23,506	25,148	30,947					22,855
31 - 35	20,404	21,828	23,289	21,594	23,724	24,356	28,640	39,800				23,035
36 - 40	21,756	22,991	22,301	23,464	23,748	24,015	28,334	27,760	44,229			24,032
41 - 45	20,634	23,082	21,926	22,380	23,797	23,673	25,895	30,649	33,336	38,070		24,158
46 - 50	20,192	21,818	23,695	21,554	22,191	23,570	25,884	26,460	30,729	36,072		24,481
51 - 55	21,327	21,668	22,937	23,918	23,597	24,630	25,129	26,619	28,765	34,764	40,026	25,318
56 - 60	21,757	23,581	22,680	22,305	23,317	24,379	25,758	25,780	27,912	28,406	30,265	24,919
61 - 65	20,962	21,526	24,015	21,590	22,322	23,630	24,978	25,772	27,270	26,939	29,526	24,110
66 - 70	18,921	20,998	20,940	18,837	20,274	21,962	23,606	24,696	26,635	26,222	28,898	23,123
71 & Over	20,446	19,541	23,129	19,180	21,318	20,348	23,760	23,174	23,764	26,177	26,224	22,798
Average	20,959	22,321	22,858	22,229	23,021	23,818	25,624	26,265	28,196	29,910	28,740	24,306

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 - 25												0
26 - 30											2	2
31 - 35										11		11
36 - 40									23			23
41 - 45								22				22
46 - 50							47					47
51 - 55						73						73
56 - 60	22	18	25	17	25							107
61 - 65	27											27
66 - 70	9											9
71 - 75	8											8
76 - 80	3											3
81 - 85	1											1
86 & Over												0
Totals	70	18	25	17	25	73	47	22	23	11	2	333

AVERAGE ANNUAL BENEFITS OF 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	Average Benefit
0 - 25												0
26 - 30											4,474	4,474
31 - 35										7,894		7,894
36 - 40									7,466			7,466
41 - 45								8,823				8,823
46 - 50							7,611					7,611
51 - 55						10,595						10,595
56 - 60	9,946	6,886	10,826	8,829	9,749							9,413
61 - 65	8,264											8,264
66 - 70	4,492											4,492
71 - 75	5,642											5,642
76 - 80	4,680											4,680
81 - 85	199											199
86 & Over												0
Average	7,739	6,886	10,826	8,829	9,749	10,595	7,611	8,823	7,466	7,894	4,474	8,777

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	2	6	1	1	1	3						14
51 - 55	18	13	15	8	6	17	6	2	1	1		87
56 - 60	103	72	55	48	51	140	61	48	10		1	589
61 - 65	221	239	173	151	156	399	221	99	29	6	6	1,700
66 - 70	115	122	182	182	170	828	500	217	46	22	5	2,389
71 - 75	46	50	69	55	74	625	865	414	105	39	14	2,356
76 - 80	28	19	34	31	29	211	574	733	270	74	24	2,027
81 - 85	4	6	6	12	14	79	146	451	454	132	42	1,346
86 - 90			2	1	5	17	38	77	253	257	78	728
91 & Over						1	5	12	26	87	139	270
Totals	537	527	537	489	506	2,320	2,416	2,053	1,194	618	309	11,506

AVERAGE ANNUAL BENEFITS PAYABLE TO 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	Average Benefit
0 - 50	8,624	12,529	25,698	7,753	15,247	8,670						11,938
51 - 55	26,149	29,797	15,906	19,213	21,572	13,575	8,756	12,777	4,600	5,750		19,528
56 - 60	18,858	27,174	22,388	28,177	26,096	24,177	14,296	10,362	5,535		6,487	21,443
61 - 65	14,955	15,398	17,449	16,755	19,618	20,787	16,142	12,756	6,445	5,852	6,493	17,047
66 - 70	13,964	13,301	14,148	14,689	15,052	15,883	17,597	14,061	6,032	5,325	5,656	15,261
71 - 75	11,898	12,794	13,977	11,652	13,311	13,711	14,027	13,558	8,044	7,004	6,149	13,284
76 - 80	12,525	7,590	11,470	13,237	13,449	13,129	10,781	10,386	10,055	7,751	6,319	10,704
81 - 85	13,786	8,470	15,113	13,817	13,942	13,541	10,038	8,994	9,271	10,944	9,160	9,798
86 - 90			28,738	13,417	13,543	12,113	10,421	8,625	8,879	9,592	10,097	9,483
91 & Over						5,015	14,218	10,089	9,638	10,053	11,341	10,736
Average	15,446	16,236	16,000	16,253	17,259	16,253	13,885	11,156	9,037	9,367	9,903	13,551

DISABILITY RETIREES:

Attained Ages	Completed Years Since Retirement: 0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over	Total
0 - 40												0
41 - 45	1	1										2
46 - 50	5	2	4	3	3	10	1					28
51 - 55	7	5	7	8	6	22	6	2	1			64
56 - 60	16	11	17	7	7	36	13	3				110
61 - 65					1			1				2
66 - 70												0
71 - 75												0
76 - 80												0
81 - 85	1											1
86 & Over												0
Totals	30	19	28	18	17	68	20	6	1	0	0	207

AVERAGE ANNUAL BENEFITS PAYABLE TO DISABILITY RETIREES:

Attained Ages	Completed Years Since Retirement: 0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over	Average Benefit
0 - 40												0
41 - 45	6,428	7,165										6,797
46 - 50	8,934	9,744	10,344	9,241	8,728	8,743	4,723					8,986
51 - 55	9,049	10,850	11,602	9,458	10,014	8,652	6,220	6,237	4,247			9,046
56 - 60	9,282	8,933	12,665	8,540	10,806	8,611	5,912	3,993				9,058
61 - 65					9,034			1,889				5,462
66 - 70												0
71 - 75												0
76 - 80												0
81 - 85	6,496											6,496
86 & Over												0
Average	8,982	9,430	12,067	9,064	10,055	8,644	5,945	4,390	4,247	0	0	8,975

SURVIVING BENEFICIARIES OF FORMER MEMBERS:

Attained Ages	Completed Years Since Retirement: 0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over	Total
0 - 20	3		7	8	2	3	4	1				28
21 - 25	1	2		3		5	7	1	1			20
26 - 30							1		3			4
31 - 35						2	4	2	1	1		10
36 - 40	1				3		2	2	1	1	3	13
41 - 45			2			4	5	1	2	1	2	17
46 - 50		1	2	4		5	7	7	5	2	2	35
51 - 55	3	1	2	6		7	16	15	9	3	2	64
56 - 60		3	4	6	7	27	29	21	10	4	6	117
61 - 65	1	2	5	7	11	36	44	33	18	15	2	174
66 - 70	2	3	2	4	5	39	65	59	34	17	6	236
71 - 75	1	1	1	4	1	32	87	83	56	18	8	292
76 - 80		1		1	1	16	47	91	92	49	24	322
81 - 85				1		11	25	63	99	77	43	319
86 - 90						1	5	11	39	74	63	193
91 & Over						1	1	2	5	20	62	91
Totals	12	14	25	44	30	189	349	392	375	282	223	1,935

AVERAGE ANNUAL BENEFITS PAYABLE TO SURVIVORS 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	Average Benefit
0 - 20	14,263		14,447	11,618	19,180	4,452	8,967	13,135				12,057
21 - 25	81	4,730		7,599		13,723	8,419	7,431	7,766			8,754
26 - 30							2,574		5,187			4,534
31 - 35						16,988	11,030	7,224	11,970	3,146		10,766
36 - 40	6,113				9,789		9,456	6,917	1,280	10,921	5,771	7,519
41 - 45			5,037			8,312	9,821	8,594	3,385	4,435	4,361	7,115
46 - 50		27,402	9,550	10,492		13,458	13,356	7,774	6,712	5,639	10,069	10,533
51 - 55	9,008	15,574	12,954	7,941		16,514	9,440	10,160	6,378	8,192	7,643	9,882
56 - 60		23,917	12,102	12,418	16,608	13,761	10,815	10,271	6,935	3,194	7,801	11,459
61 - 65	9,716	10,580	13,065	17,467	12,480	15,420	11,518	10,712	7,312	6,047	12,285	11,598
66 - 70	21,126	11,118	10,673	12,777	15,235	12,970	12,993	10,341	7,355	7,467	5,587	10,997
71 - 75	16,718	8,196	10,931	6,766	22,154	11,651	10,412	9,907	8,688	9,193	7,700	9,930
76 - 80		9,483		4,886	9,734	12,700	9,385	8,552	8,907	9,017	8,050	9,010
81 - 85				9,678		9,003	10,179	6,822	8,174	8,496	7,672	8,107
86 - 90						9,002	12,693	6,587	7,609	8,542	8,475	8,330
91 & Over						4,356	11,383	15,501	7,502	9,724	8,323	8,733
Average	12,058	14,027	12,089	11,247	14,311	12,979	10,875	9,126	8,093	8,414	8,076	9,613

EXHIBIT IX
YEAR-TO-YEAR COMPARISON

	Fiscal 2019	Fiscal 2018	Fiscal 2017	Fiscal 2016
Number of Active Members	11,920	12,033	12,055	12,075
Number of Retirees & Survivors	13,648	13,482	13,354	13,148
DROP Participants	605	631	622	676
Number of Terminated Due Deferred Benefits	333	339	311	275
Number Terminated Due Refunds	4,328	4,475	4,268	3,898
Active Lives Payroll (excludes DROP participants)	$ 289,730,586	$ 288,861,936	$ 284,075,888	$ 284,835,111
Retiree Benefits in Payment	$ 176,378,784	$ 171,928,419	$ 167,428,815	$ 159,448,329
Market Value of Assets (Includes Side Funds)	$ 1,940,389,574	$ 1,946,113,040	$ 1,922,705,998	$ 1,767,810,247
Ratio of Actuarial Value of Assets to Actuarial Accrued Liability	74.39%	74.59%	74.16%	72.54%
Actuarial Accrued Liability (EAN) †	$ 2,640,451,339	$ 2,614,250,388	$ 2,562,633,003	$ 2,522,157,498
Actuarial Value of Assets (Net of Side Funds) †	$ 1,964,143,343	$ 1,949,906,654	$ 1,900,329,127	$ 1,829,595,670
UAL (Funding Excess)	$ 676,307,996	$ 664,343,734	$ 662,303,876	$ 692,561,828
Experience Account	$ 5,174,949	$ 4,911,217	$ 4,562,632	$ 633,076
Amortization Conversion Account	$ 0	$ 6,838,575	$ 11,106,470	$ 15,719,788

	Fiscal 2020	Fiscal 2019	Fiscal 2018	Fiscal 2017
Employee Contribution Rate For Employees Hired Before July 1, 2010	7.50%	7.50%	7.50%	7.50%
Employee Contribution Rate For Employees Hired On Or After July 1, 2010	8.00%	8.00%	8.00%	8.00%
Actuarially Required Employer Contribution as a Percentage of Projected Payroll	30.3%	28.4%	27.8%	27.9%
Actual Employer Contribution as a Percentage of Projected Payroll	29.4%	28.0%	27.6%	27.3%

† Beginning in Fiscal 2017, valuation assets and accrued liability include the Experience Account and exclude the Amortization Conversion Account.

Fiscal 2015	Fiscal 2014	Fiscal 2013	Fiscal 2012	Fiscal 2011	Fiscal 2010
12,061	12,054	12,184	12,416	12,854	13,166
13,024	12,711	13,369	12,930	12,717	12,450
660	537	559	612	619	599
276	413	355	339	351	355
3,940	3,793	N/A	N/A	N/A	N/A
$ 276,949,800	$ 274,347,650	$ 290,013,756	$ 277,191,001	$ 296,693,950	$ 306,332,902
$ 154,831,625	$ 146,084,220	$ 142,752,516	$ 134,573,580	$ 128,989,260	$ 123,992,280
$ 1,851,456,181	$ 1,857,367,056	$ 1,641,164,883	$ 1,497,109,136	$ 1,516,634,590	$ 1,285,852,191
70.71%	66.92%	62.10%	61.60%	59.88%	61.00%
$ 2,485,583,187	$ 2,438,251,413	$ 2,404,014,249	$ 2,278,472,127	$ 2,254,351,456	$ 2,213,362,198
$ 1,757,432,206	$ 1,631,618,702	$ 1,492,914,745	$ 1,403,463,883	$ 1,349,829,757	$ 1,350,072,547
$ 728,150,981	$ 806,632,711	$ 911,099,504	$ 875,008,244	$ 904,521,699	$ 863,289,651
$ 23,058,055	$ 20,787,326	$ 31,668,697	$ 11,641,275	$ 0	$ 0
$ 19,079,106	$ 19,640,033	$ 0	$ 0	$ 0	$ 0

Fiscal 2016	Fiscal 2015	Fiscal 2014	Fiscal 2013	Fiscal 2012	Fiscal 2011
7.50%	7.50%	7.50%	7.50%	7.50%	7.50%
8.00%	8.00%	8.00%	8.00%	8.00%	8.00%
28.7%	32.0%	32.6%	31.6%	30.1%	28.0%
30.2%	33.0%	32.3%	30.8%	28.6%	24.3%

SUMMARY OF PRINCIPAL PLAN PROVISIONS

The Louisiana School Employees' Retirement System (LSERS) was established as of July 1, 1947, for the purpose of providing retirement allowances and other benefits as described under R.S. 11:1001 – 11:1206. The following summary of plan provisions covers many of the most important plan provisions covering LSERS, but is not a description of every plan provision and should only be used for general informational purposes. This summary does not constitute a guarantee of benefits. The provisions contained within this section are as of June 30, 2019.

MEMBERSHIP:

Any school bus operator, janitor, custodian, maintenance employee, bus aide, monitor or attendant or other regular school employee helping with the transportation of school children, and who is a legal employee of a parish or city school board of the State of Louisiana along with employees of the system.

CONTRIBUTION RATES:

Employees whose first employment making them eligible for membership in one of Louisiana's state retirement systems occurred before July 1, 2010 contribute 7.50% of salary and employees whose first employment making them eligible for membership in one of Louisiana's state retirement systems occurred on or after July 1, 2010 contribute 8.00% of salary. Employers contribute an actuarially determined "normal contribution" rate plus "accrued liability contribution" rate. Members are not required to contribute to the system once they have enough service to have accrued 100% of their final average compensation, but the employer is required to continue to contribute the employer's contribution until the member retires or enters DROP.

CONTRIBUTION REFUNDS:

Upon withdrawal from service, members not entitled to a retirement allowance may receive a refund of accumulated contributions. Refunds are payable ninety days after the effective date of withdrawal from service, if the member's employer has submitted all contributions. (Members who are entitled to a retirement allowance may waive their right to the benefit and accept a refund of accumulated contributions.)

FINAL AVERAGE COMPENSATION:

For members whose first employment making them eligible for membership in the system began on or before June 30, 2006, the final average compensation is based on the 36 highest successive or joined months of employment. The compensation used to determine the final average compensation cannot increase more than 10% per year, unless the raise is due to an increase in compensation by legislative act or city/parish system-wide salary increase.

For members whose first employment making them eligible for membership in the system began on or after July 1, 2006 and whose first employment making them eligible for membership in one of Louisiana's state retirement systems occurred on or before June 30, 2010, the final average compensation is based on the 60 highest successive or joined months of employment. The compensation used to determine the final average compensation cannot increase more than 10% per year, unless the raise is due to an increase in compensation by legislative act or city/parish system-wide salary increase.

For members whose first employment making them eligible for membership in one of Louisiana's state retirement systems began on or after July 1, 2010, the final average compensation is based on the 60 highest successive or joined months of employment. The compensation used to determine the final average compensation cannot increase more than 15% per year, unless the raise is due to an increase in compensation by legislative act or city/parish system-wide salary increase.

VESTED WITHDRAWAL BENEFITS:

Members whose first employment making them eligible for membership in one of Louisiana's state retirement systems occurred on or before June 30, 2010, who have ten or more years of creditable service, may elect to leave accumulated contributions on deposit and after withdrawal from service receive a retirement allowance based on the creditable service and accrual rate for their period of membership upon reaching age sixty.

Members whose first employment making them eligible for membership in one of Louisiana's state retirement systems occurred on or after July 1, 2010 and on or before June 30, 2015, who have five or more years of creditable service, may elect to leave accumulated contributions on deposit and after withdrawal from service receive a retirement allowance based on the creditable service and accrual rate for their period of membership upon reaching age sixty.

Members whose first employment making them eligible for membership in one of Louisiana's state retirement systems occurred on or after July 1, 2015, who have five or more years of creditable service, may elect to leave accumulated contributions on deposit and after withdrawal from service receive a retirement allowance based on the creditable service and accrual rate for their period of membership upon reaching age sixty-two.

NORMAL RETIREMENT BENEFITS:

For members whose first employment making them eligible for membership in one of Louisiana's state retirement systems occurred on or before June 30, 2010, eligibility for normal retirement occurs upon the attainment of age 60 and 10 years of accredited service, or age 55 and 25 years of accredited service, or at any age and 30 years of accredited service. The retirement allowance is equal to three and one-third percent of the member's final average compensation multiplied by his years of creditable service.

For members whose first employment making them eligible for membership in one of Louisiana's state retirement systems occurred on or after July 1, 2010 and on or before June 30, 2015, eligibility for normal retirement occurs upon the attainment of age 60 and 5 years of accredited service. The retirement allowance is equal to two and one-half percent of the member's final average compensation multiplied by his years of creditable service.

For members whose first employment making them eligible for membership in one of Louisiana's state retirement systems occurred on or after July 1, 2015, eligibility for normal retirement occurs upon the attainment of age 62 and 5 years of accredited service. The retirement allowance is equal to two and one-half percent of the member's final average compensation multiplied by his years of creditable service.

In addition to the normal retirement benefits, members receive a supplementary allowance equal to twenty-four dollars per annum, or two dollars per month, for each year of accredited service.

The retirement benefits provided by the system cannot annually exceed one hundred percent of average compensation.

EARLY RETIREMENT:

Members are eligible to retire under the early retirement provisions if they have at least twenty (20) years of service credit regardless of attained age, exclusive of military service and unused annual and sick leave.

The early retirement benefit is calculated, inclusive of military service credit and allowable unused annual and sick leave, actuarially reduced from the earliest age that the member would normally become eligible for a regular retirement benefit if they had continued in service to that age.

OPTIONAL ALLOWANCES:

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

Option 1 – If the retiree dies before receiving in annuity payments the present value of their 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 retiree's death, the designated beneficiary will continue to receive the same reduced benefit.

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

Option 4 – Upon retirement, the member elects to receive a reduced benefit and to provide a specified benefit to their designated beneficiary, which in total is actuarially equivalent to the maximum benefit. The form of benefit selected under Option 4 must be approved by the Board of Trustees.

NOTE: Under the legal construct for Option 4, the Board of Trustees has approved the "pop up" form of benefit which provides a benefit that reverts to the maximum benefit if the beneficiary predeceases the retiree. This feature requires additional reduction to the member's benefit. Members may select the "pop up" form with Option 2, Option 3 or Option 4 (where the member may specify a percentage benefit for their beneficiary other than 100% or 50%).

Self-Funded COLA Options: A member may also elect to receive an actuarially reduced benefit which provides for an automatic 2½% annual compound increase in monthly retirement benefits based on the reduced benefit and commencing on the later of age fifty-five or retirement anniversary; this COLA is in addition to any ad hoc COLAs which are payable.

Initial Benefit Retirement Plan (IBRP): This plan is available only to members who have not participated in the Deferred Retirement Option Plan (DROP) and who meet regular retirement eligibility requirements. Under this plan, members may receive an initial benefit plus a reduced monthly retirement allowance which, when combined, equal the actuarially equivalent amount of the maximum or optional retirement allowance. The reduced monthly retirement allowance can be paid in the form of a maximum benefit or according to options described above. The initial benefit may not exceed an amount equal to thirty-six payments of the member's maximum retirement allowance. The initial benefit is placed in an account called an "IBRP Account" where interest is credited annually and can be withdrawn as a lump-sum payment, monthly payments, or other periodic payments.

DISABILITY BENEFITS:

Any member who meets the minimum service requirement for disability and who has been officially certified as likely to be totally and permanently incapacitated, either mentally or physically, from the further performance of the duties being performed is entitled to disability benefits.

A member whose first employment making them eligible for membership in LSERS occurred on or before June 30, 2006, may apply for disability benefits if he is not eligible to receive a regular service retirement allowance and has five years of actual credited service. The disability retirement allowance is equal to two and one-half percent of final average compensation multiplied by the years of creditable service, but not less than thirty-three and one-third percent of final average compensation. Such members are not eligible to choose an optional allowance. Upon the death of such disability retiree who leaves a surviving spouse who had been married to the deceased for at least two years prior to death, the spouse receives a benefit equal to 75% of the benefit being received by the disability retiree at death. These benefits are payable for the life of the spouse unless the spouse remarries before age 55. In such a case, the benefit ceases upon the remarriage.

A member whose first employment making them eligible for membership in LSERS occurred on or after July 1, 2006 and whose first employment making them eligible for membership in one of Louisiana's state retirement systems occurred on or before June 30, 2010 may apply for disability benefits if he is not eligible to receive a regular service retirement allowance and has ten years of actual credited service. The disability retirement allowance is equal to three percent of final average compensation multiplied by the years of creditable service. Upon the death of such disability retiree who leaves a surviving spouse who had been married to the deceased for at least two years prior to the death of the disability retiree, the spouse receives a benefit equal to 75% of the benefit being received by the disability retiree at their death. These benefits are payable for the life of the spouse unless the spouse remarries before age 55. In such a case, the benefit ceases upon the remarriage.

A member whose first employment making them eligible for membership in one of Louisiana's state retirement systems occurred on or after July 1, 2010 may apply for disability benefits if he is not eligible to receive a regular service retirement allowance and has ten years of actual credited service. The disability retirement allowance is equal to the regular retirement formula without reduction by reason of age. A selection of retirement option must be made at the time of retirement and upon the death of the disabled retiree, the option amount selected is paid to the option beneficiary.

SURVIVOR BENEFITS:

For members whose first employment making them eligible for membership in one of Louisiana's state retirement systems occurred on or before June 30, 2010:

In the case of a death of an active member with 5 years of creditable service (at least 2 years earned immediately prior to death) or a member with 20 years of service at the time of death who has a surviving spouse with a minor child or children, the benefit payable is 75% of the deceased member's final average compensation or $300 per month, whichever is greater. One-third of this benefit is designated to the spouse and two-thirds to the minor child or children. Child benefits cease at attainment of eighteen years, or upon marriage, except that benefits may continue until age twenty-three if the child remains a full-time student at a high school, vocational school, college, or university.

In the case of a death of an active member with 5 years of creditable service (at least 2 years earned immediately prior to death) or a member with 20 years of service at the time of death who has no surviving spouse but has a minor child or children, the benefit payable is 75% of the deceased member's final average compensation or $300 per month, whichever is greater. These benefits are paid to the person having legal custody of the child and benefits cease at attainment of eighteen years, or upon marriage, except that benefits may continue until age twenty-three if the child remains a full-time student at a high school, vocational school, college, or university.

In the case of a death of an active member with 10 years of creditable service (at least 2 years earned immediately prior to death) or a member with 20 years of service at the time of death who has a surviving spouse but has no minor child or children, the benefit payable is 50% of the deceased member's final average compensation or $200 per month, whichever is greater. Such benefits will not be paid to any surviving spouse who has remarried since the death of the member prior to the age of 55 unless the member was eligible for regular retirement or had twenty years of service credit on the date of death.

Any surviving child of a deceased member, regardless of age, who has a total physical or mental disability and is dependent on the surviving spouse or other legal guardian, may continue to receive lifetime surviving child benefits equal to 75% of the deceased member's final average compensation or $300 per month, whichever is greater. The total benefits are reduced to an amount which, when added to the other state assistance being received, does not exceed the maximum survivor benefits payable.

In the event of death of a member with no surviving spouse or child due benefits, the accumulated contributions are payable to the designated beneficiaries, or estate.

For members whose first employment making them eligible for membership in one of Louisiana's state retirement systems occurred on or after July 1, 2010:

In the case of a death of an active member with 5 years of creditable service (at least 2 years earned immediately prior to death) or a member with 20 years of service at the time of death who has a surviving spouse with a minor child or children, a spousal survivor is paid a benefit equal to 50% of the benefit to which the member would have been entitled if he had retired on the date of his death using the member's applicable accrual rate regardless of years of service or age, or $600 per month, whichever is greater.

These benefits are payable for the life of the spouse unless the spouse remarries before age 55. In such a case, the benefit ceases upon the remarriage, and resumes payment upon a subsequent divorce or death of a new spouse.

When all surviving children cease to be eligible for benefits, the surviving spouse is paid the benefits due to a surviving spouse without minor children or disabled children, as described below.

In addition to any benefits payable to a spouse or in cases where only surviving minor or disabled children are due benefits, each surviving eligible child, subject to a maximum of two children, is paid 50% percent of the benefit to which a spouse with children is entitled. These benefits are payable even if a member dies after retirement leaving an eligible minor or disabled child.

Any surviving child of a deceased member, regardless of age, who has a total physical or mental disability and is dependent on the surviving spouse or other legal guardian may continue to receive surviving child benefits. The total benefits paid are reduced to an amount which, when added to the other state assistance being received does not exceed the maximum survivor benefits payable.

In the case of a death of an active member with 10 years of creditable service (at least 2 years earned immediately prior to death) or a member with 20 years of service at the time of death who has a surviving spouse to whom they were married for at least one year prior to their death who has no minor child or children, a spousal survivor benefit equal to the accrued benefit that would have been due under option 2, or $600 per month, whichever is greater, is payable. Unless the member was eligible to retire at the time of death, such spousal benefits cease upon remarriage and resume upon a subsequent divorce or death of the new spouse.

In the event of death of a member with no surviving spouse or child due benefits, the accumulated contributions are payable to the designated beneficiaries, or estate.

DEFERRED RETIREMENT OPTION PLAN (DROP):

In lieu of terminating employment and accepting a service retirement allowance, any member of the system who is eligible to receive a regular retirement allowance may elect to participate in the DROP and defer the receipt of benefits. An election to participate may be made only once and the duration of participation shall be specified and shall not exceed three years. The three year period begins within sixty calendar days after the member reaches eligibility. The participation period must end not more than three years and sixty calendar days from the date the member reaches eligibility. Upon commencement of participation in the plan, active membership in the system terminates and neither the employee nor employer contributions are payable. Compensation and creditable service remain as they existed on the effective date of commencement of participation in the plan and creditable service excludes conversion of sick and annual leave. The monthly retirement benefits that would have been payable, had the member elected to cease employment and receive a service retirement allowance, are paid into the DROP account. Upon termination of employment at the end of the specified period of participation, a participant in the program may receive, at his option, a lump sum payment from the DROP account equal to the payments to the account or systematic disbursements based on the individual's subaccount in any manner approved by the Board. The monthly benefits that were being paid into the fund during the period of participation will begin to be paid to the retiree based on the option selected at DROP entry. If employment is not terminated at the end of the DROP period, payments into the account cease and employee and employer contributions resume. Monthly retirement benefits payable after termination of participation in the plan and employment include a "base benefit" equal to the participant's monthly credit to the account plus conversion of sick and annual leave, if any, based on the final average compensation rate used to calculate the monthly credit and an additional benefit if employment continues. The additional benefit is based on service credit for the period after plan participation. If the participant dies while still employed, the credits and benefits, if any, due beneficiaries are payable as if the member retired immediately prior to death.

NOTE: For anyone eligible to enter DROP prior to January 1, 2004, the DROP Account Balance earns interest at a rate of one-half of one percentage point below the percentage rate of return of the System's investment portfolio as certified by the actuary on an annual basis. For all others, DROP accounts are placed in liquid asset money market investments approved by the Board of Trustees.

COST OF LIVING ADJUSTMENTS:

Act 333 of 2007 established an Experience Account to be used to pay cost of living adjustments (COLAs), or permanent benefit increases (PBIs). The Experience Account is credited with 50% of the investment experience gain in excess of $15 million (indexed based on increases in the actuarial value of assets after June 30, 2015) along with that portion of the net investment income, if any, attributable to the prior year balance, subject to maximum accumulation limitation based upon the Plan's funded percentage. The account is also debited with that portion of the system's net investment loss, if any, attributable to the prior year balance. In no event may the amount in the Experience Account fall below zero. Once the balance of the Experience Account accumulates a sum sufficient to grant retirees a PBI, the Board may recommend the granting of a PBI on benefits up to $60,000 (indexed), not to exceed the lesser of the CPI-U or a percentage determined based on the funded level percentage attained by the system as described in R. S. 11:1145.1(C)(2), provided a PBI had not been granted in the prior year. Benefits are restricted to disability retirees and those retirees and beneficiaries who have attained the age of 60 and have been retired for at least one year. Maximum limitations are outlined in ACT 399 of 2014.

ACTUARIAL ASSUMPTIONS

In determining actuarial costs, certain assumptions must be made regarding future experience under the plan. These assumptions include the rate of investment return, mortality of plan members, rates of salary increase, rates of retirement, rates of termination, rates of disability, and various other factors that have an impact on the cost of the plan. To the extent that future experience varies from the assumptions selected for valuation, future costs will be either higher or lower than anticipated. The following chart illustrates the effect of emerging experience on the plan.

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

ACTUARIAL COST METHOD: Individual Entry Age Normal With Allocation of Cost Based on Earnings. Entry and Attained Ages Calculated on an Age Near Birthday Basis.

VALUATION INTEREST RATE: 7.0% (Net of investment expenses)

ACTUARIAL ASSET VALUES: All 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.

ACTIVE MEMBER MORTALITY: 130% of the RP2014 Employee Table with Blue Collar Adjustment for males and 115% of the RP2014 Employee Table with Blue Collar Adjustment for females, each with the full generational MP2017 scale.

ANNUITANT AND BENEFICIARY MORTALITY: 130% of the RP2014 Healthy Annuitant Table with Blue Collar Adjustment for males and 115% of the RP2014 Healthy Annuitant Table with Blue Collar Adjustment for females, each with the full generational MP2017 scale.

DISABLED LIVES MORTALITY:	RP2014 Disabled Tables for Males and Females, with the full generational MP2017 scale.
RETIREE COST OF LIVING INCREASES:	Although the board of trustees has authority to recommend ad hoc Cost of Living Increases (COLAs) be approved by the legislature under limited circumstances, these COLAs have not been shown to have a historical pattern, the amounts of the COLAs have not been relative to a defined cost-of-living or inflation index, and there is no evidence to conclude that COLAs will be granted on a predictable basis in the future. In particular, since the Experience Account balance cannot exceed the value of one COLA authorized under R.S. 11:1145.1, COLAs beyond that which can be funded by the current balance and future contributions sufficient to grant a single payment of this COLA were deemed not to be substantively automatic and therefore were not included in the present value of future benefits.
ANNUAL SALARY INCREASE RATE:	3.25% (2.50% inflation /0.75% merit)
RETIREMENT RATES:	The table of these rates through age 75 is included later in the report. These rates apply only to those individuals eligible to retire.
ACCUMULATED LEAVE POLICIES:	Retirements are monitored to determine the amount of leave converted to service credit. Leave credit is accrued throughout the duration of the member's career. The average service credit converted is expressed as 1% percent of the accrued benefit.
RETIREMENT LIMITATIONS:	Projected retirement benefits are not subject to IRS Section 415 limits.
DROP ENTRY RATES:	The table of these rates is included later in the report. These rates apply only to those individuals eligible to enter the DROP plan and are applied only in the year of earliest DROP eligibility.
DROP PARTICIPATION PERIOD:	All DROP participants are assumed to participate for 3 years and retire at the end of this participation period.
RETIREMENT RATES FOR ACTIVE FORMER DROP PARTICIPANTS:	Active former DROP participants retire according to the rates listed for all actives. The table of these rates through age 75 is included later in the report.

DISABILITY RATES: The table of these rates through age 75 is included later in this report. 55% 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.

WITHDRAWAL RATES: The following rates of withdrawal are applied based upon completed years of service:

Service Duration (≤)	Rate	Service Duration (≤)	Rate
1	0.07	16	0.01
2	0.13	17	0.01
3	0.12	18	0.02
4	0.09	19	0.03
5	0.07	20	0.05
6	0.06	21	0.05
7	0.06	22	0.05
8	0.06	23	0.04
9	0.06	24	0.05
10	0.05	25	0.05
11	0.04	26	0.05
12	0.04	27	0.03
13	0.03	28	0.02
14	0.03	29	0.10
15	0.02	>29	0.01

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

MARRIAGE STATISTICS: 70% of the members are assumed to be married; husbands are assumed to be three years older than wives.

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

Member's Age	% With Children	Number of Children	Average Age	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

VESTING ELECTING PERCENTAGE: For members terminating with less than twenty years of service, it is assumed that 60% will withdraw their accumulated employee contributions. For members terminating with twenty or more years of service, it is assumed that only 2% will withdraw their accumulated employee contributions. The remaining are assumed to receive a deferred vested retirement benefit.

ACTUARIAL TABLES AND RATES

Age	Retirement Rates	Post-DROP Retirement Rates	DROP Rates	Disability Rates
18	0.00000	0.00000	0.00000	0.00083
19	0.00000	0.00000	0.00000	0.00083
20	0.00000	0.00000	0.00000	0.00083
21	0.00000	0.00000	0.00000	0.00083
22	0.00000	0.00000	0.00000	0.00083
23	0.00000	0.00000	0.00000	0.00083
24	0.00000	0.00000	0.00000	0.00083
25	0.00000	0.00000	0.00000	0.00083
26	0.00000	0.00000	0.00000	0.00083
27	0.00000	0.00000	0.00000	0.00083
28	0.00000	0.00000	0.00000	0.00083
29	0.00000	0.00000	0.00000	0.00083
30	0.00000	0.00000	0.00000	0.00083
31	0.00000	0.00000	0.00000	0.00083
32	0.00000	0.00000	0.00000	0.00083
33	0.00000	0.00000	0.00000	0.00083
34	0.00000	0.00000	0.00000	0.00083
35	0.00000	0.00000	0.00000	0.00094
36	0.00000	0.00000	0.00000	0.00105
37	0.00000	0.00000	0.00000	0.00116
38	0.00000	0.00000	0.00000	0.00132
39	0.00000	0.00000	0.00000	0.00149
40	0.00000	0.00000	0.00000	0.00171
41	0.00000	0.00000	0.00000	0.00193
42	0.00000	0.00000	0.00000	0.00215
43	0.00000	0.00000	0.00000	0.00242
44	0.00000	0.00000	0.00000	0.00275
45	0.00000	0.00000	0.00000	0.00314
46	0.17000	0.00000	0.83000	0.00358
47	0.17000	0.50000	0.83000	0.00402
48	0.17000	0.50000	0.83000	0.00457
49	0.17000	0.50000	0.83000	0.00517
50	0.17000	0.50000	0.83000	0.00589
51	0.25000	0.50000	0.75000	0.00671
52	0.28000	0.50000	0.72000	0.00759
53	0.33000	0.50000	0.67000	0.00864
54	0.17000	0.50000	0.83000	0.00979
55	0.19000	0.37000	0.81000	0.01111
56	0.36000	0.28000	0.64000	0.01265
57	0.18000	0.23000	0.82000	0.01436
58	0.40000	0.22000	0.60000	0.01628
59	0.33000	0.24000	0.67000	0.01854
60	0.23000	0.26000	0.61000	0.02684
61	0.18000	0.23000	0.49000	0.02684
62	0.16000	0.19000	0.44000	0.02684
63	0.17000	0.17000	0.42000	0.02684
64	0.22000	0.18000	0.38000	0.02684
65	0.27000	0.22000	0.32000	0.02684
66	0.31000	0.24000	0.24000	0.02684
67	0.31000	0.23000	0.20000	0.02684
68	0.28000	0.20000	0.20000	0.02684
69	0.24000	0.18000	0.21000	0.02684
70	0.22000	0.19000	0.22000	0.02684
71	0.22000	0.21000	0.21000	0.02684
72	0.23000	0.24000	0.21000	0.02684
73	0.22000	0.24000	0.25000	0.02684
74	0.22000	0.22000	0.33000	0.02684
75	0.23000	0.24000	0.39000	0.02684

PRIOR YEAR ASSUMPTIONS

VALUATION INTEREST RATE: 7.0625% (Net of investment expenses)

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 – A value of assets that reflects averaged (or smoothed) investment returns over a specified period of time. The actuarial value of assets is used to determine the required plan contributions. The use of smoothed asset values is meant to reduce contribution volatility.

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.

Deferred Retirement Option Plan (DROP) Account – The account into which DROP accruals are paid and from which DROP lump sum balances are disbursed.

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.

Initial Benefit Retirement Plan (IBRP) Account – The account into which the initial benefit is deposited. Interest is credited thereto and monthly payments made from this account.

Net Valuation Assets – Refers to the actuarial value of assets, determined based upon the smoothing technique described in the section on Actuarial Assumptions within this report, reduced by the Amortization Conversion Account balance, if any.

Normal Cost – That portion of the actuarial present value of pension plan benefits and expenses allocated to a valuation year by the actuarial cost method. This is analogous to one year's insurance premium.

Pension Benefit Obligation – The actuarial present value of benefits earned or credited to date based on the members expected final average compensation at retirement. For current retirees or terminated members this is equivalent to the actuarial present value of their accrued benefit.

Projected Benefits – The benefits expected to be paid in the future based on the provisions of the plan and the actuarial assumptions. The projected values are based on anticipated future advancement in age and accrual of service as well as increases in salary paid to the participant.

Unfunded Actuarial Accrued Liability – The excess of the actuarial accrued liability over the actuarial value of assets.

Vested Benefits – Benefits that the members are entitled to even if they withdraw from service.

NOTES