

**FIREFIGHTERS'
RETIREMENT SYSTEM**

ACTUARIAL VALUATION AS OF
JUNE 30, 2020

G. S. CURRAN & COMPANY, LTD.

Actuarial Services

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November 2, 2020

Board of Trustees
Firefighters' Retirement System
3100 Brentwood Drive
Baton Rouge, LA 70809

Gentlemen:

We are pleased to present our report on the actuarial valuation of the Firefighters' Retirement System for the fiscal year ending June 30, 2020. 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 Firefighters' Retirement System of the State of Louisiana. The primary purpose of this report is to determine the actuarially required contribution for the retirement system for the fiscal year ending June 30, 2021 and to recommend the net direct employer contribution rate for Fiscal 2022. 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 Firefighters' Retirement System for a specific limited purpose. It is not for the use or benefit of any third party for any purpose.

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

Sincerely,

G. S. CURRAN & COMPANY, LTD.


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

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SUMMARY OF VALUATION RESULTS FIREFIGHTERS' RETIREMENT SYSTEM

Valuation Date:	June 30, 2020	June 30, 2019
Census Summary:		
Active Members	4,426	4,446
Retired Members and Survivors	2,497	2,407
DROP Participants	220	208
Terminated Due a Deferred Benefit	85	84
Terminated Due a Refund	763	671
Payroll (excluding DROP participants):	\$ 245,786,834	\$ 240,413,972
Benefits in Payment (excluding DROP accruals):	\$ 102,305,923	\$ 97,547,088
Present Value of Future Benefits	\$ 3,214,041,115	\$ 3,001,464,309
Actuarial Accrued Liability (EAN):	\$ 2,530,844,605	\$ 2,405,122,324
Frozen Unfunded Actuarial Accrued Liability:	\$ 554,826,689	\$ 584,081,420
Actuarial Value of Assets (AVA):	\$ 1,914,024,117	\$ 1,821,040,904
Market Value of Assets (MVA):	\$ 1,837,689,661	\$ 1,778,931,314
Ratio of AVA to Actuarial Accrued Liability:	75.63%	75.72%
	Fiscal 2020	Fiscal 2019
Market Rate of Return:	3.1%	4.4%
Actuarial Rate of Return:	4.9%	4.5%
	Fiscal 2021	Fiscal 2020
Employers' Normal Cost (Mid-year):	\$ 44,796,726	\$ 35,708,523
Amortization Cost (Mid-year):	\$ 67,464,313	\$ 68,606,220
Estimated Administrative Cost:	\$ 1,889,681	\$ 1,937,980
Projected Insurance Premium Taxes Due:	\$ 28,567,788	\$ 28,017,672
Net Direct Employer Actuarially Required Contributions:	\$ 85,582,932	\$ 78,235,051
Projected Payroll:	\$ 254,011,517	\$ 246,180,693
Statutory Employee Contribution Rate: *	10.00%	10.00%
Board Approved Net Direct Employer Contribution Rate: *	32.25%	27.75%
Actuarially Required Net Direct Employer Contribution Rate: *	33.69%	31.78%
	Fiscal 2022	Fiscal 2021
Minimum Recommended Net Direct Employer Cont. Rate: *	33.75%	32.25%

* The above rates are for members with earnings greater than the Department of HHS poverty guidelines. For members with earnings below the poverty guidelines, employer rates will be 2.0% higher and employee rates will be 2.0% lower.

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 administrator of the system furnished a census in electronic format derived from the system's master data processing file indicating each active covered employee's sex, date of birth, service credit, annual salary, and accumulated contributions. Information on retirees detailing dates of birth of retirees and beneficiaries, as well as option categories and benefit amounts, was provided in like manner. In addition, data was supplied on former employees who are vested or who have contributions remaining on deposit. As illustrated in Exhibit VIII, there are 4,426 active contributing members in the system of whom 2,175 have vested retirement benefits; in addition, there are 220 participants in the Deferred Retirement Option Plan (DROP); 2,497 former members or their beneficiaries are receiving retirement benefits. An additional 848 terminated members have contributions remaining on deposit with the system; of this number 85 have vested rights for future retirement benefits. All individuals submitted were included in the valuation.

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

In addition to the statistical information provided on the system's participants, the system's administrator furnished general information related to other aspects of the system's expenses, benefits and funding. Valuation asset values as well as income and expenses for the fiscal year were based on information furnished by the Louisiana Legislative Auditor's office. As indicated in the system's financial statements, the net market value of the system's assets was \$1,837,689,661 as of June 30, 2020. Net investment income for Fiscal 2020 measured on a market value basis was \$55,074,681. Contributions to the system for the fiscal year totaled \$123,301,126; benefits and expenses amounted to \$119,617,460.

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

COMMENTS ON ACTUARIAL METHODS AND ASSUMPTIONS

Prior to the 2019 actuarial valuation, all valuations of the Firefighters' Retirement System were based on the Entry Age Normal actuarial cost method. As of June 30, 1989, under the provisions of Louisiana R.S. 11:103, the funding excess for the plan which was determined to be \$239,425 was amortized over thirty years. Subsequent experience gains and losses were amortized over fifteen years. Contribution gains or losses arising from contributions in excess of or less than the required contributions were amortized over the same period as experience gains and losses. Further changes in the unfunded accrued liability generated by mergers of groups of firefighters into the system were amortized over thirty years. Act 620 of the 2003 Regular Session of the Louisiana Legislature changed the amortization of unfunded accrued liability. All non-merger amortization bases in existence on June 30, 2002, were combined, offset, and re-amortized through June 30, 2029, in accordance with R.S. 11:103(D). The aggregate value of the bases as of that date was \$175,578,584. Act 422 of the 2009 Regular Session of the Louisiana Legislature further changed the amortization of unfunded accrued liability. Beginning with Fiscal 2010, actuarial gains and losses, as well as contribution gains and losses, were amortized over a 20 year period. Each year thereafter, the amortization period was set to decrease by one year until attaining a 15 year amortization period. All changes in assumptions or the method of valuing assets were then amortized over 15 years. All amortization payments were set on a level dollar basis. Act 91 of the 2019 Regular Session of the Louisiana Legislature changed the funding method for use in actuarial valuations of the Firefighters' Retirement System from the Entry Age Normal actuarial cost method to the Frozen Initial Liability actuarial cost method. This change was effective with the 2019 valuation. Based upon this change, all non-merger outstanding balances on the system's entry age normal unfunded actuarial accrued liability as of June 30, 2019 were frozen, combined, and re-amortized over a fifteen year period with payments set to decrease by one percent each year. The remaining merger bases were not changed and will be paid off according to their original schedule. With this change, all actuarial experience gains and losses, contribution gains and losses, gains and losses arising from changes in benefits, and gains and losses arising from changes in assumptions which occur in fiscal years after 2019 will be included in the calculation of the plan's normal cost according to the Frozen Initial Liability funding method. This means that the impact of such gains and losses will be spread over the future working lifetime of current members rather than spread over a specified period of time.

Since the Frozen Initial Liability funding method spreads actuarial gains and losses over future normal costs, favorable plan experience will lower future normal costs while unfavorable plan experience will increase future normal costs. Overall costs may increase or decrease depending on payroll growth. Since payments on the frozen unfunded accrued liability are set to decrease by one percent per year over the next fourteen years, future amortization payments as a percentage of payroll will remain level should payroll decrease by one percent per year. Any reduction in payroll less than one percent or any increase in payroll will decrease the amortization costs as a percentage of payroll. Payroll reductions of greater than one percent will increase the amortization costs as a percentage of payroll.

In February of 2017, a recommendation was made to the Board of Trustees to reduce the long-term rate of return assumption. The recommendation was formed after an analysis of the system's portfolio along with expected long-term rates of return, standard deviations of return, and correlations between asset classes collected from a number of investment consulting firms in addition to the system's investment consultants, NEPC. Based on this analysis and after discussions with the Board, a plan was approved to reduce the 7.5% valuation interest rate in effect for the Fiscal 2016 actuarial valuation to 7.0% over the subsequent five actuarial valuations with reductions of 0.10% each year, beginning with the June 30, 2017 valuation. A review of the valuation interest rate for Fiscal 2019 based on updated

capital market assumptions found that the 7.20% valuation interest rate scheduled for use in the 2019 actuarial valuation was no longer inside the reasonable range determined by the actuary. Therefore, the assumed rate of return for the Fiscal 2019 valuation was set at 7.15%. For Fiscal 2020, an updated review of the system's valuation interest rate was performed using the latest target asset allocation. This review was based on capital market assumptions in the 2020 G. S. Curran & Company Consultant Average. Based upon this review, the Board elected to further reduce the valuation interest rate for use in the Fiscal 2020 valuation to 7.00% which was found to be within the reasonable range. The reasonable range was determined through the development of 10,000 trials spanning 30 years. These trials were performed by assuming that the expected returns on the portfolio as a whole are normally distributed and using a consultant average nominal mean rate of return of 7.04% and long-term portfolio standard deviation of 11.2780%. Based upon these assumptions and the stochastic simulations, we estimate that there is a 41% probability that the fund will have earnings at or above 7.00% in the long term and a 50% probability that the fund will have earnings at or above 6.50% in the long term.

The system's reductions in the valuation interest have been in part based upon a reduction in the expected long-term inflation rate. Therefore, the assumed long-term inflation rate has also been reduced over the same period. For 2020, an assumed rate of inflation of 2.5% was implicit in the assumed rate of return. This rate was unchanged from the rate assumed in the 2019 valuation.

The remaining actuarial assumptions utilized for this report are based on the results of an actuarial experience study for the period July 1, 2014 – June 30, 2019, unless otherwise specified in this report. This study included a review of all plan decrements in addition to salary scale experience and other demographic factors which impact plan costs. The Experience Study report contains details related to each assumption including the actuary's recommended changes. The Board of Trustees adopted the Experience Study report and authorized the actuary to utilize the new set of assumptions contained therein within the Fiscal 2020 actuarial valuation. The Experience Study report also includes further details on the review of the valuation interest rate.

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

The current year actuarial assumptions utilized for the report are outlined at the end of this report. All assumptions used are based on estimates of future long-term experience for the fund as described in the system's 2020 Experience Study report. All calculations, recommendations, and conclusions are based on the assumptions specified. To the extent that prospective experience differs from that assumed, adjustments to contribution levels will be required. Such differences will be revealed in future actuarial valuations. The net effect of the changes in assumptions on the normal cost accrual rate was an increase of 1.768% of the Fiscal 2021 projected payroll.

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 contributions slightly exceed annual benefit payments 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 system could experience negative noninvestment cash flows.

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 (such as pandemics like COVID-19) 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 depending upon the severity of the event, and cannot be easily forecast.

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. The ratio is 75.63% for the plan as of June 30, 2020. 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. Exhibit 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 (over) the assumed rate of return on the actuarial value of assets, there will be a corresponding increase (decrease) in the actuarially required contribution as a percentage of projected payroll of 0.71% for the fund.

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 11.17.

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 2020, this ratio is 42%; ten years ago this ratio was 30%.

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 related to the assumed rate of return suggest that a decrease in the assumption 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 Fiscal 2021 by 15.86% of payroll. 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 affect 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 changes were enacted during the 2020 Regular Session of the Louisiana Legislature:

ACT 2 provides that upon the death of a member who elects neither the maximum regular retirement benefit nor an optional retirement allowance prior to thirty days before the date that benefits are scheduled to commence, the surviving eligible spouse shall be paid benefits as though the member had elected Option 2 benefits naming the member's surviving eligible spouse as the option beneficiary. If a member has no surviving eligible spouse, the designated beneficiary shall be the option beneficiary.

Act 3 provides that any employee as defined in R.S. 11:2252 who is employed by any employer as defined in R.S. 11:2252 which has its employees covered under the federal Social Security program and which has not previously and specifically excluded its police officers or firefighters from coverage under this federal program may elect not to be or elect not to become a member of this retirement system; however, the employer shall enroll the employee in the applicable retirement system at the time of employment, and the employee shall remain enrolled until he fulfills the requirements set forth in R.S. 11:157(C)(1). Any employee who elects not to be a member of this system shall be refunded his employee contributions without interest for the period for which he contributed to the system.

Act 4 provides that a refund of accumulated employee contributions shall not be payable until the board of trustees approves the refund at a meeting that occurs at least thirty days after termination or resignation, and not until all employee contributions for the member have been received by the retirement system. The statutes previously required a ninety day wait.

Act 164 provides that upon returning to work as a full-time employee for a fire department of an employer covered by this system, retirement benefits shall cease and the employee and employer shall contribute to the system towards creditable service. The member may not change the option which was selected under the first retirement computation. When a person who is retired from this system returns to work on a part-time basis for a fire department of an employer covered by this system, employee and employer contributions shall be remitted to the system, but the retiree shall not accrue creditable service. Employee contributions shall be refunded, without interest, and the system shall retain the employer contributions.

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.

	<u>Market Value</u>	<u>Actuarial Value</u>
2011	17.4%	4.5%
2012	-4.1% †	-0.2% †
2013	10.5%	2.5%
2014	11.4%	8.8%
2015	-0.2%	6.7%
2016	-2.3%	3.1%
2017	13.6%	5.7%
2018	6.5%	5.6%
2019	4.4%	4.5%
2020	3.1%	4.9%

† Based on asset values which include unaudited estimates of a receivable related to the FIA Leveraged Fund.

Geometric Average Market Rates of Return

5 year average (Fiscal 2016 – 2020)	4.9%
10 year average (Fiscal 2011 – 2020)	5.8%
15 year average (Fiscal 2006 – 2020)	4.6%
20 year average (Fiscal 2001 – 2020)	4.4%
25 year average (Fiscal 1996 – 2020)	5.4%
30 year average (Fiscal 1991 – 2020)	6.0%

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. Asset and income values for merger notes were excluded from calculations in order to provide a measurement of the return on the portion of the portfolio under management. 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 2020 the fund earned \$20,430,825 of dividends, interest and other recurring income. During the same period, the Fund had net realized and unrealized capital gains on investments and non-recurring income of \$42,755,551. This income was offset by investment expenses of \$8,111,695.

The actuarial rate of return is presented for comparison to the assumed long-term rate of return of 7.15% used for the prior valuation (7.00% beginning with July 1, 2020). This rate is calculated based on the actuarial value of assets and the market value income adjusted for actuarial smoothing as given in Exhibit VI. Investment income used to calculate this yield is based upon a smoothing of investment income above or below the valuation interest rate over a five year period subject to constraints. The difference between rates of return on an actuarial and market value basis results from the smoothing utilized. Yields in excess of the applicable interest assumption will reduce future costs; yields below the applicable assumption will increase future costs. For Fiscal 2020, the system experienced net actuarial investment earnings of \$41,034,295 below the actuarial assumed earnings rate in effect for Fiscal 2020 of 7.15%. This shortfall in earnings produced an actuarial loss, which increased the normal cost accrual rate by 1.5219%.

DEMOGRAPHICS AND LIABILITY EXPERIENCE

A reconciliation of the census for the system is given in Exhibit VIII. The average active contributing member is 38 years old with 11.81 years of service credit and an annual salary of \$55,532. The system's active contributing membership experienced a decrease of 20 members during Fiscal 2020. The number of DROP participants increased by 12 during Fiscal 2020. Over the last five years active membership has increased by 234 members. A review of the active census by age indicates that over the last ten years the population in the under thirty age group and the forty-one to fifty age group has decreased while the proportion of active members over fifty increased. Over the same ten-year period the system's active census by service remained relatively stable, although members with less than five years of service did decrease.

The average service retiree is 66 years old with a monthly benefit of \$3,867. The average age of members at retirement is 53. The number of retirees and beneficiaries receiving benefits from the system increased by 90 during the fiscal year. Over the last five years, the number has increased by 358; during the same period, the annual benefits in payment increased by \$22,381,105.

Plan liability experience for Fiscal 2020 was favorable. Retirements and disabilities were slightly below projected levels. Salary increases were below projected levels at most durations. Withdrawals and retiree deaths exceeded projected levels. These items tend to reduce costs. Slightly offsetting the reduction were DROP entries above projected levels. In aggregate, plan liability gains decreased the normal cost accrual rate by 0.5692%.

FUNDING ANALYSIS AND RECOMMENDATIONS

Actuarial funding of a retirement system is a process whereby funds are accumulated over the working lifetimes of employees in such a manner as to have sufficient assets available at retirement to pay for the lifetime benefits accrued by each member of the system. The required contributions are determined by an actuarial valuation based on rates of mortality, termination, disability, and retirement, as well as investment return and other statistical measures specific to the particular group. Each year a determination is made of two cost components, and the actuarially required contributions are based on the sum of these two components plus administrative expenses. These two components are the normal cost and the amortization payments on the unfunded actuarial accrued liability. The normal cost refers to the portion of annual cost based on the salary of active participants. The term “unfunded accrued liability” (UAL) refers to the excess of the present value of plan benefits over the sum of current assets and future normal costs. Each year the UAL grows with interest and is reduced by payments. Under the funding method used for the plan since 2019, changes in plan experience, benefits, or assumptions do not affect the frozen unfunded actuarial accrued liability. These items increase or decrease future normal costs. Payroll growth affects plan costs since payments on the system’s frozen unfunded liability are set to decrease by 1% per year or are set based upon a level schedule. Therefore, if payroll increases, these costs are reduced 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.

Liability and asset experience as well as changes in assumptions and benefits can increase or decrease plan costs. In addition to these factors, any COLA granted in the prior fiscal year will increase required future contributions. New entrants to the system can also increase or decrease costs as a percent of payroll depending upon their demographic distribution and other factors related to prior plan experience. Finally, contributions above or below requirements may reduce or increase future costs.

The effects of various factors on the fund’s cost structure are outlined below:

Employer’s Normal Cost Accrual Rate – Fiscal 2020	14.5055%
Factors Increasing the Normal Cost Accrual Rate:	
Change in Valuation Interest Rate	2.2964%
Asset Experience Loss	1.5219%
Contribution Loss	0.3411%
New Member Loss	0.0704%

Factors Decreasing the Normal Cost Accrual Rate:

Plan Liability Experience Gain	0.5692%
Change in Demographic Assumptions	0.5284%
Employer's Normal Cost Accrual Rate – Fiscal 2021	17.6377%

In addition to the above factors, payroll growth affects plan costs to the extent that payments on the system's frozen unfunded liability are on a schedule that varies from actual trends in payroll growth or decline. If payroll changes at rates not consistent with the amortization schedule, the result will be costs that change as a percentage of payroll. For Fiscal 2021, the net effect of the change in projected payroll and a lower UAL payment on amortization costs was to decrease such costs by 1.31% of payroll.

The derivation of the actuarially required contribution for the current fiscal year is given in Exhibit I. The employer normal cost for Fiscal 2021, interest adjusted for mid-year payment is \$44,796,726. The interest adjusted amortization payments on the system's unfunded actuarial accrued liability totaled \$67,464,313. The total actuarially required contribution is determined by summing these two values together with estimated administrative expenses. As given in line 15 of Exhibit I the total actuarially required contribution for Fiscal 2021 is \$114,150,720. We estimate insurance premium taxes of \$28,567,788, or 11.25% of payroll, will be paid to the system in Fiscal 2021. This level of Insurance Premium Taxes represents a 0.13% decrease from the prior year as a percentage of payroll. Hence, the total actuarially required net direct employer contribution for Fiscal 2021 amounts to \$85,582,932 or 33.69% of payroll. Since the actual employer contribution rate for Fiscal 2021 is 32.25% of payroll, there will be a contribution shortfall of 1.44% of payroll. This shortfall will increase the actuarially required contribution recommended for Fiscal 2022. In order to determine a minimum recommended net direct employer contribution rate for Fiscal 2022, the Employers' Minimum Net Direct Actuarially Required Contribution for Fiscal 2021 was adjusted for the impact of the estimated contribution shortfall. R.S. 11:103 requires that the net direct employer contributions be rounded to the nearest 0.25%. The resulting Minimum Recommended Net Direct Employer Contribution Rate for Fiscal 2022 is 33.75%.

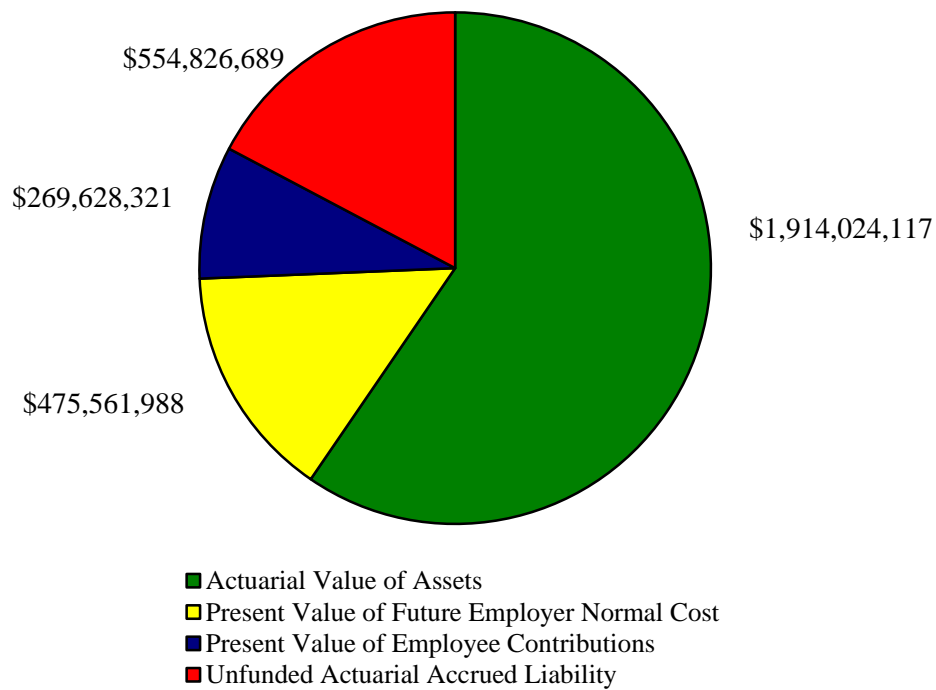
COST OF LIVING INCREASES

During Fiscal 2020, the actual cost of living (as measured by the US Department of Labor CPI-U) increased by 0.6%. Cost of living provisions for the system are detailed in R.S. 11:2260A(7) and R.S. 11:246. The former statute allows the Board to use interest earnings in excess of the normal requirements to grant annual cost of living increases of up to 3% of each retiree's current benefit. R.S. 11:246 provides cost of living increases to retirees and beneficiaries over the age of 65 equal to 2% of the benefit in payment on October 1, 1977, or the date the benefit was originally received if retirement commenced after that date. In addition, R.S. 11:241 provides for cost of living benefits payable based on a formula equal to up to \$1 times the total of the number of years of credited service accrued at retirement or at death of the member or retiree plus the number of years since retirement or since death of the member or retiree to the system's fiscal year end preceding the payment of the benefit increase. The provisions of R.S. 11:241 of this subpart do not repeal provisions relative to cost of living adjustments contained within the individual laws governing systems; however, they are to be controlling in cases of conflict.

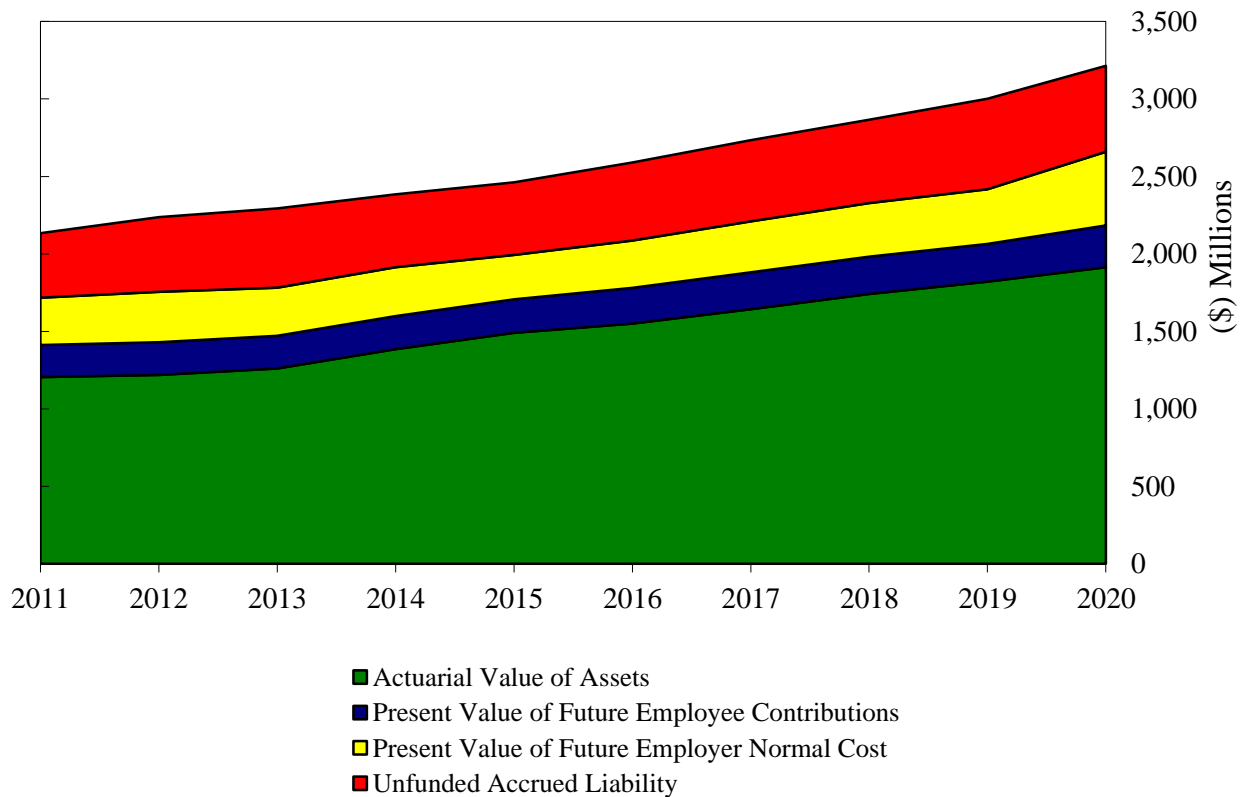
R.S. 11:243 sets forth the funding criteria necessary in order to grant cost of living adjustments to regular retirees and beneficiaries (who are neither the surviving spouse nor children of the retiree.) The criteria for the fund to qualify as eligible to grant any such increase is as follows: a funded ratio of at least 70% if the system has not granted a benefit increase to retirees, survivors, or beneficiaries in any of the three most recent fiscal years; a funded ratio of at least 80% if the system has not granted such an increase in any of the two most recent fiscal years; or a funded ratio of at least 90% if the system has not granted such an increase in the most recent fiscal year. The funded ratio at any fiscal year end is the ratio of the actuarial value of assets to the actuarial accrued liability under the funding method prescribed by the legislative auditor (currently the Projected Unit Credit Method for this system).

With a funded ratio (as measured by the Actuarial Value of Assets divided by the Pension Benefit Obligation) of 77.54% and since the system granted a cost of living increase on January 1, 2015 which is not within the three most recent fiscal years, we have determined that for Fiscal 2020 the plan does meet the criteria set forth in R. S. 11:243 for granting a cost of living increase. However, the system failed to earn the 7.15% assumed rate of return on an actuarial basis and therefore has no “excess interest” for the fiscal year. Therefore, the system does not qualify for payment of a cost of living increase.

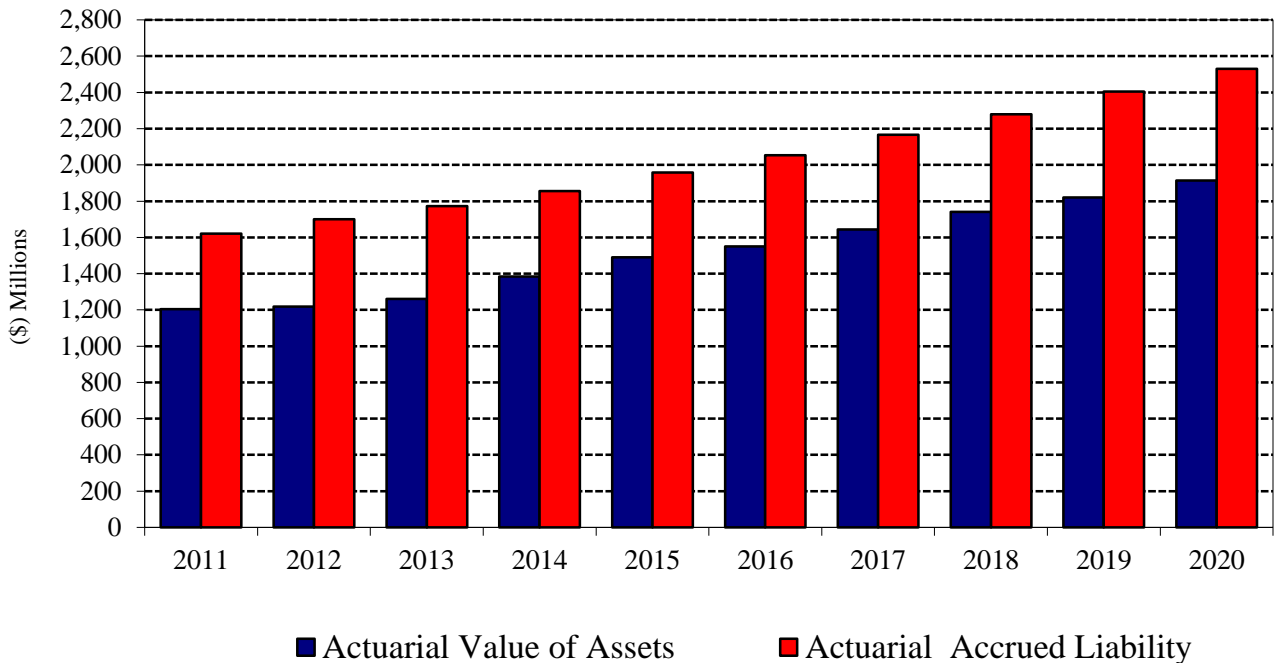
Components of Present Value of Future Benefits June 30, 2020



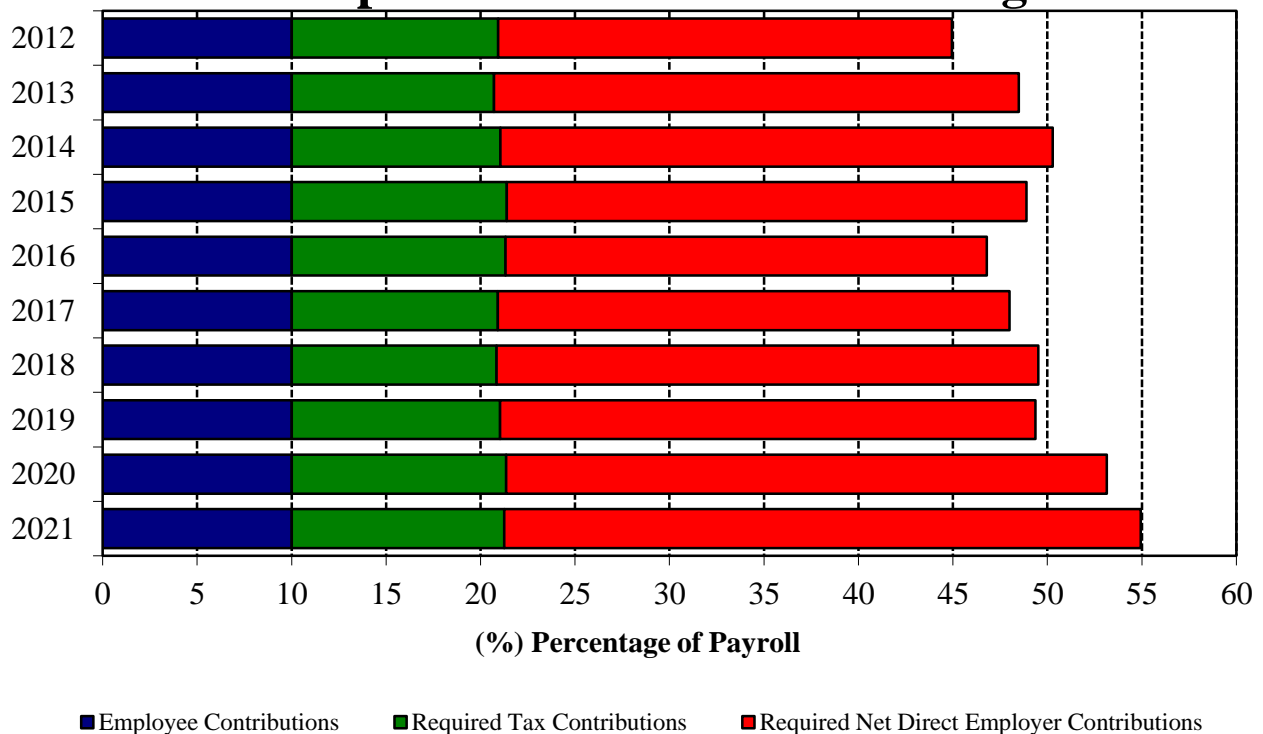
Components of Present Value of Future Benefits Historical



Actuarial Value of Assets vs. Actuarial Accrued Liability

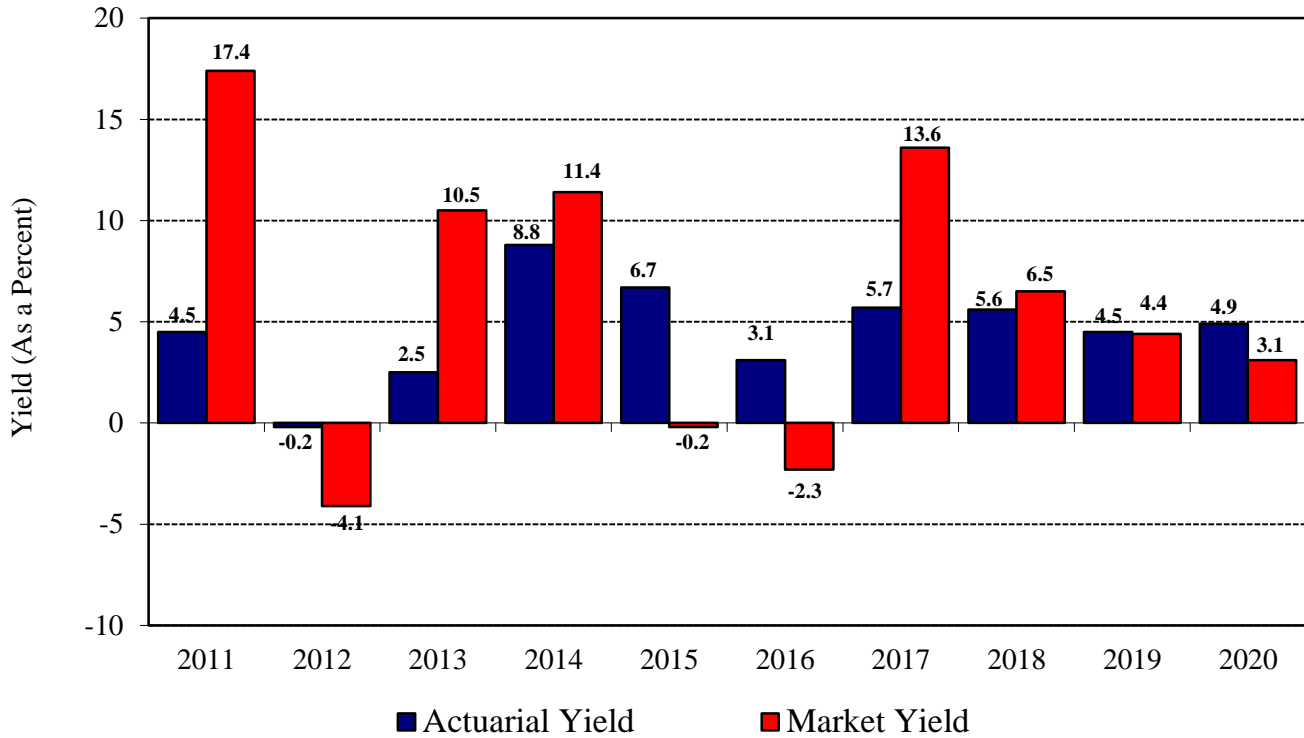


Components of Actuarial Funding

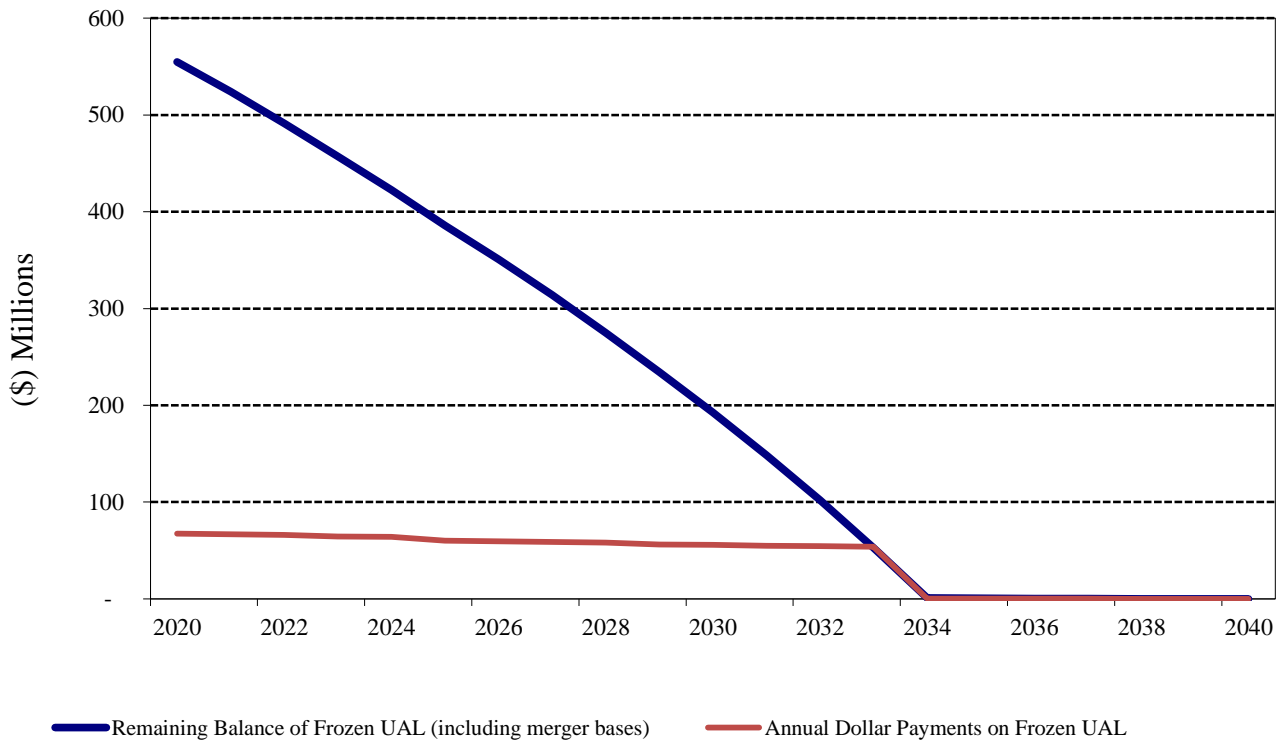


(2012 and later employee contribution level is based on members with earnings above the poverty level)

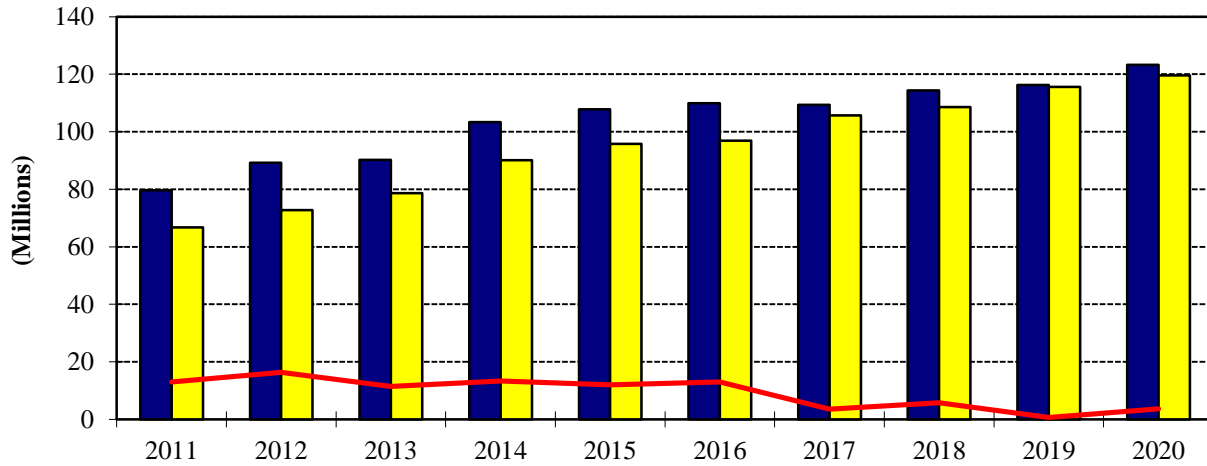
Historical Asset Yields



Frozen Unfunded Actuarial Accrued Liability

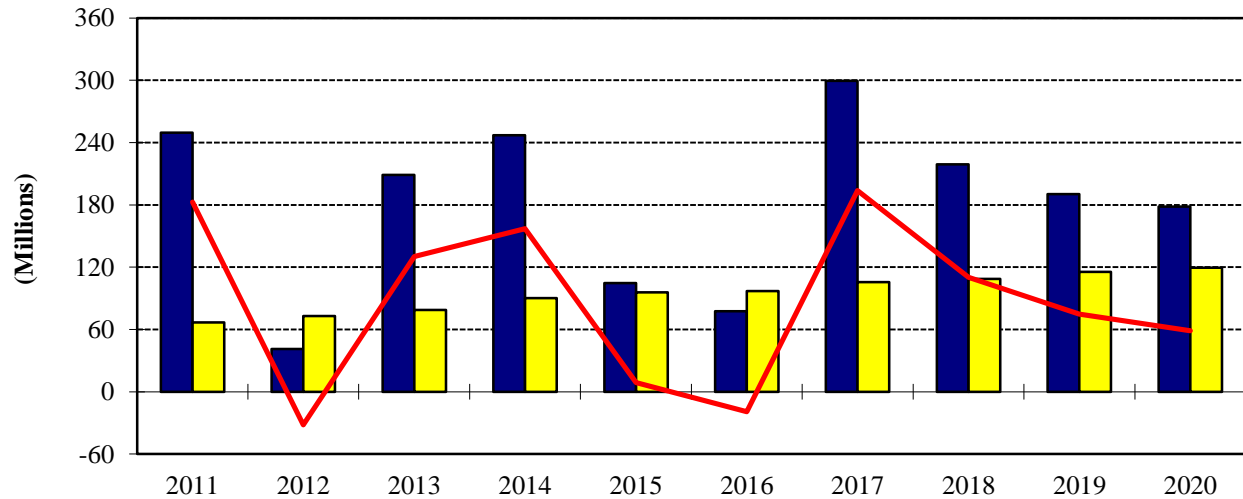


Net Non-Investment Income



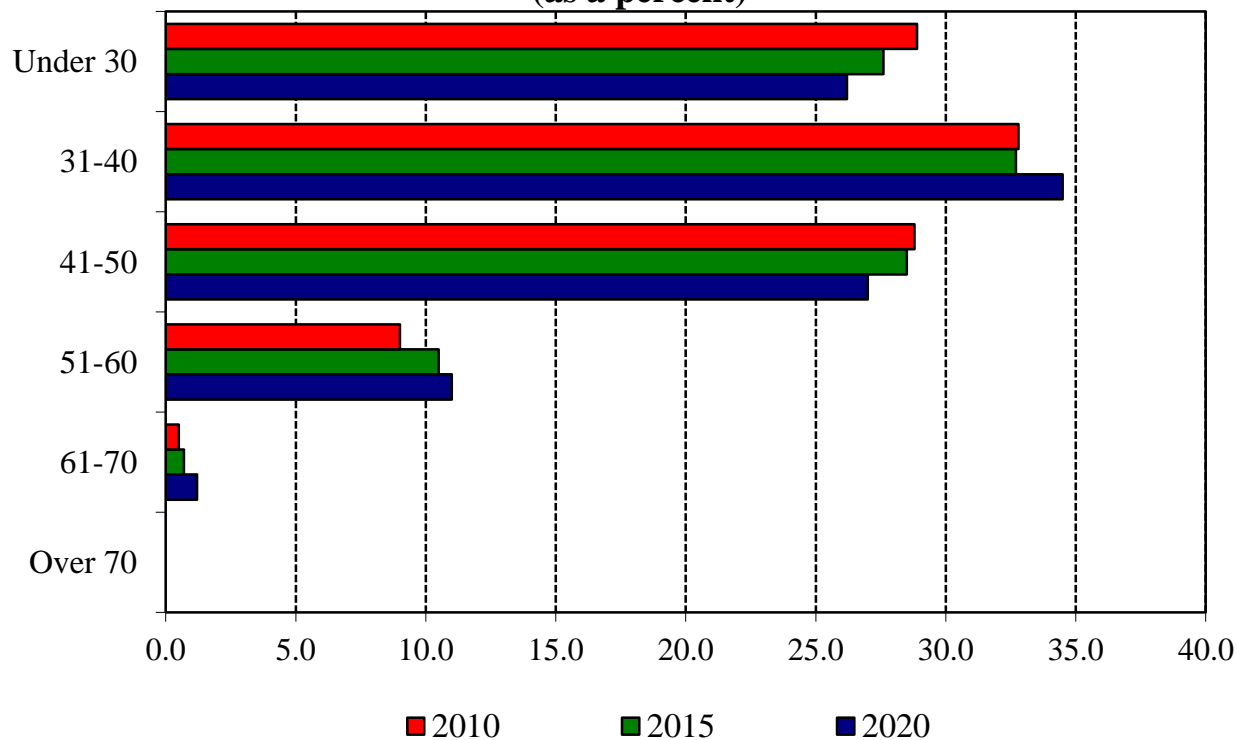
		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Non-Investment Income (\$Mil)	■	79.7	89.2	90.2	103.4	107.8	109.9	109.3	114.4	116.3	123.3
Benefits and Expenses (\$Mil)	■	66.7	72.8	78.7	90.1	95.8	96.9	105.7	108.6	115.6	119.6
Net Non-Investment Income (\$Mil)	—	13.0	16.4	11.5	13.3	12.0	13.0	3.6	5.8	0.7	3.7

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



		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total Income (\$Mil)	■	249.4	41.2	209.0	247.2	104.6	77.7	299.5	218.9	190.5	178.4
Benefits and Expenses (\$Mil)	■	66.7	72.8	78.7	90.1	95.8	96.9	105.7	108.6	115.6	119.6
Net Change in MVA (\$Mil)	—	182.7	-31.6	130.3	157.1	8.8	-19.2	193.8	110.3	74.9	58.8

Active – Census by Age (as a percent)



Active – Census by Service (as a percent)

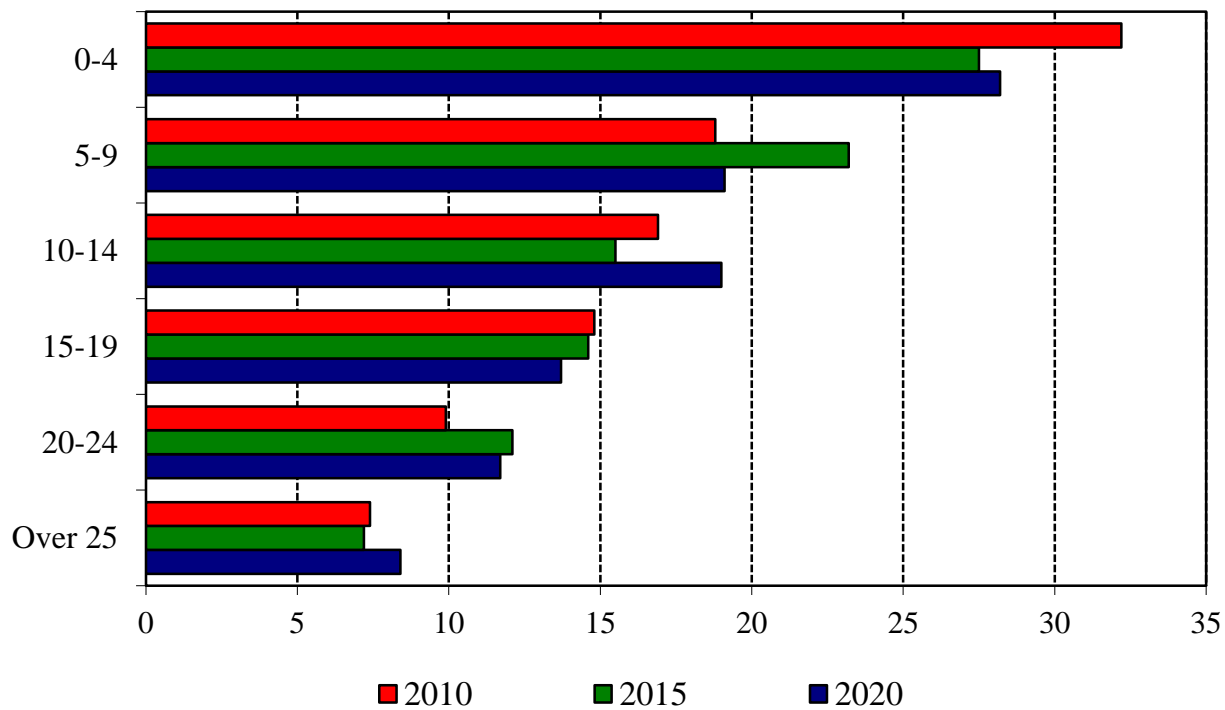


EXHIBIT I
ANALYSIS OF ACTUARIALLY REQUIRED CONTRIBUTIONS

1. Present Value of Future Benefits	\$ 3,214,041,115
2. Funding Deposit Account Credit Balance	\$ 0
3. Unfunded Actuarial Accrued Liability	\$ 554,826,689
4. Actuarial Value of Assets	\$ 1,914,024,117
5. Present Value of Future Employee Contributions	\$ 269,628,321
6. Present Value of Future Employer Normal Costs (1 + 2 – 3 – 4 – 5)	\$ 475,561,988
7. Present Value of Future Salaries.....	\$ 2,696,283,213
8. Employer Normal Cost Accrual Rate (6 ÷ 7)	17.637687%
9. Projected Fiscal 2021 Salary for Current Membership	\$ 245,534,633
10. Employer Normal Cost as of July 1, 2020 (8 × 9).....	\$ 43,306,630
11. Employer Normal Cost Interest Adjusted for Mid-year Payment	\$ 44,796,726
12. Amortization Payment on Remaining Frozen Unfunded Accrued Liability Interest Adjusted for Mid-year Payment	\$ 67,464,313
13. TOTAL Employer Normal Cost and Amortization Payment (11 + 12).....	\$ 112,261,039
14. Estimated Administrative Cost for Fiscal 2021	\$ 1,889,681
15. GROSS Employer Actuarially Required Contribution for Fiscal 2021 (13 + 14)	\$ 114,150,720
16. Projected Insurance Premium Taxes for Fiscal 2021	\$ 28,567,788
17. Net Direct Employer Actuarially Required Contribution for Fiscal 2021 (15 – 16)	\$ 85,582,932
18. Projected Payroll for Fiscal 2021	\$ 254,011,517
19. Employers' Minimum Net Direct Actuarially Required Contribution as a % of Projected Payroll for Fiscal 2021 (17 ÷ 18).....	33.69%
20. Board Adopted Employer Contribution Rate for Fiscal 2021	32.25%
21. Contribution Shortfall (Excess) as a Percentage of Payroll (19 – 20).....	1.44%
22. Increase (Reduction) to Following Year Payment for Contribution Shortfall (Excess).....	0.13%
23. Minimum Recommended Net Direct Employer Contribution Rate for Fiscal 2022 (19 + 22, Rounded to nearest 0.25%)	33.75%

* The above rates are for members with earnings greater than the Department of HHS poverty guidelines. For members with earnings below the poverty guidelines, employer rates will be 2.0% higher and employee rates will be 2.0% lower.

EXHIBIT II
PRESENT VALUE OF FUTURE BENEFITS

PRESENT VALUE OF FUTURE BENEFITS FOR ACTIVE MEMBERS:

Retirement Benefits	\$ 1,894,096,746
Survivor Benefits.....	30,872,844
Disability Benefits.....	16,932,348
Vested Termination Benefits.....	20,973,577
Refunds of Contributions	13,698,230

TOTAL Present Value of Future Benefits for Active Members..... \$ 1,976,573,745

PRESENT VALUE OF FUTURE BENEFITS FOR TERMINATED MEMBERS:

Terminated Vested Members Due Benefits at Retirement..	\$ 19,477,990
Terminated Members with Reciprocals	
Due Benefits at Retirement	0
Terminated Members Due a Refund	4,419,016

TOTAL Present Value of Future Benefits for Terminated Members..... \$ 23,897,006

PRESENT VALUE OF FUTURE BENEFITS FOR RETIREES:

Regular Retirees

Maximum.....	\$ 245,358,205
Option 1	95,875,029
Option 2	489,019,095
Option 3	162,915,421
Option 4	4,904,034

TOTAL Regular Retirees..... \$ 998,071,784

Disability Retirees 35,045,380

Survivors 74,848,707

DROP Lifetime Annuities..... 883,485

DROP Account Balances Payable to Retirees 100,721,712

IBO Retirees' Account Balance 3,999,296

TOTAL Present Value of Future Benefits for Retirees & Survivors..... \$ 1,213,570,364

TOTAL PRESENT VALUE OF FUTURE BENEFITS..... \$ 3,214,041,115

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

CURRENT ASSETS:

Cash in Banks	\$ 10,773,703
Contributions and Taxes Receivable.....	7,879,748
Accrued Interest and Dividends.....	4,614,965
Receivable on Currency Contracts.....	795,609
Investments Receivable	406,848
Prepaid Expenses	3,568

TOTAL CURRENT ASSETS..... \$ 24,474,441

Property Plant & Equipment..... \$ 1,189,704

INVESTMENTS:

Cash Equivalents.....	\$ 51,664,726
Equities	862,577,951
Fixed Income	549,621,000
Real Estate	110,876,122
Alternative Investments	73,961,641
Tactical Allocation.....	165,366,190

TOTAL INVESTMENTS..... \$ 1,814,067,630

MERGER NOTES

\$ 0

TOTAL ASSETS

\$ 1,839,731,775

CURRENT LIABILITIES:

Accounts Payable	\$ 1,263,401
Investments Payable	112,188
Other Post-Employment Benefits	519,982

TOTAL CURRENT LIABILITIES

\$ 1,895,571

DEFERRED INFLOWS OF RESOURCES

\$ 146,543

TOTAL LIABILITIES.....

\$ 2,042,114

MARKET VALUE OF ASSETS

\$ 1,837,689,661

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

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

Fiscal year 2020	\$ (72,248,326)
Fiscal year 2019	(50,158,174)
Fiscal year 2018	(13,637,997)
Fiscal year 2017	85,071,538
Fiscal year 2016	(139,144,339)
Total for five years	\$ (190,117,298)

Deferral of excess (shortfall) of invested income:

Fiscal year 2020 (80%)	\$ (57,798,661)
Fiscal year 2019 (60%)	(30,094,904)
Fiscal year 2018 (40%)	(5,455,199)
Fiscal year 2017 (20%)	17,014,308
Fiscal year 2016 (0%)	0
Total deferred for year	\$ (76,334,456)

Market value of plan net assets, end of year..... \$ 1,837,689,661

Preliminary actuarial value of plan assets, end of year \$ 1,914,024,117

Actuarial value of assets corridor

85% of market value, end of year	\$ 1,562,036,212
115% of market value, end of year	\$ 2,113,343,110

Final actuarial value of plan net assets, end of year \$ 1,914,024,117

EXHIBIT IV
PRESENT VALUE OF FUTURE CONTRIBUTIONS

Employee Contributions to the Annuity Savings Fund	\$ 269,628,321
Employer Normal Contributions to the Pension Accumulation Fund	475,561,988
Employer Amortization Payments to the Pension Accumulation Fund	554,826,689
 TOTAL PRESENT VALUE OF FUTURE CONTRIBUTIONS	 \$ 1,300,016,998

EXHIBIT V - SCHEDULE A
ENTRY AGE NORMAL ACTUARIAL ACCRUED LIABILITIES

LIABILITY FOR ACTIVE MEMBERS	
Accrued Liability for Retirement Benefits	\$ 1,277,311,740
Accrued Liability for Survivor Benefits	12,176,777
Accrued Liability for Disability Benefits	3,855,898
Accrued Liability for Vested Termination Benefits	8,415,743
Accrued Liability for Refunds of Contributions	(8,382,923)
 TOTAL Actuarial Accrued Liability for Active Members	 \$ 1,293,377,235
 LIABILITY FOR TERMINATED MEMBERS	 \$ 23,897,006
 LIABILITY FOR RETIREES AND SURVIVORS	 \$ 1,213,570,364
 TOTAL ACTUARIAL ACCRUED LIABILITY (AAL)	 \$ 2,530,844,605
 ACTUARIAL VALUE OF ASSETS (AVA)	 \$ 1,914,024,117
 RATIO OF AVA TO ENTRY AGE NORMAL AAL	 75.63%

EXHIBIT V - SCHEDULE B
CHANGE IN FROZEN UNFUNDED ACTUARIAL ACCRUED LIABILITY

Prior Year Frozen Unfunded Accrued Liability	\$ 584,081,420
Interest on Frozen Unfunded Accrued Liability	\$ 41,761,821
 TOTAL Increase in Unfunded Accrued Liability	 \$ 41,761,821
Amortization Payment on Unfunded Accrued Liability	\$ 68,606,220
Interest on Amortization Payment	\$ 2,410,332
 TOTAL Decrease in Unfunded Accrued Liability	 \$ 71,016,552
 NET Change in Unfunded Accrued Liability	 \$ (29,254,731)
 CURRENT YEAR UNFUNDED ACCRUED LIABILITY	 \$ 554,826,689

EXHIBIT V - SCHEDULE C
AMORTIZATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY - June 30, 2020

FISCAL YEAR	DESCRIPTION	AMORT. PERIOD	INITIAL BALANCE	YEARS REMAINING	REMAINING BALANCE	AMORT. PAYMENTS (Mid-Year)
1993	Merger Loss	30	\$13,485,002	3	\$2,920,822	\$1,075,962
1995	Merger Loss	30	41,779,611	5	14,119,179	3,328,992
1996	Merger Loss	30	1,772,399	6	695,844	141,129
1997	Merger Loss	30	890,324	7	394,945	70,846
1998	Merger Loss	30	1,602,435	8	787,083	127,427
1999	Merger Loss	30	14,104,876	9	7,554,220	1,120,902
2001	Merger Loss	30	3,117,590	11	1,919,310	247,440
2007	Merger Loss	30	1,065,812	17	849,827	84,148
2008	Merger Loss	30	1,556,324	18	1,276,800	122,708
2011	Merger Loss	30	329,132	21	289,751	25,851
2019	Cumulative Non-Merger Bases	15	549,175,053	14	524,018,908	61,118,908

TOTAL Frozen Unfunded Actuarial Accrued Liability as of \$ 554,826,689

TOTAL Fiscal 2021 Amortization Payments Adjusted to Mid-Year \$ 67,464,313

EXHIBIT VI
ANALYSIS OF CHANGE IN ASSETS

Actuarial Value of Assets (June 30, 2019)		\$ 1,821,040,904
INCOME:		
Member Contributions	\$ 24,962,007	
Employer Contributions	69,270,625	
Irregular Contributions	135,029	
Insurance Premium Taxes	28,017,672	
Transfers From Other Systems.....	915,793	
Total Contributions		\$ 123,301,126
Net Appreciation of Investments	\$ 42,701,436	
Interest & Dividends	20,430,825	
Legal Settlement	54,115	
Investment Expense	(8,111,695)	
Net Investment Income		\$ 55,074,681
TOTAL Income		\$ 178,375,807
EXPENSES:		
Retirement Benefits.....	\$ 115,059,424	
Refunds of Contributions	2,384,014	
Transfers to Other Systems	315,383	
Administrative Expenses.....	1,858,639	
TOTAL Expenses		\$ 119,617,460
Net Market Value Income for Fiscal 2020 (Income - Expenses)		\$ 58,758,347
Unadjusted Assets as of June 30, 2020 (Assets Previous Year + Net Income)		\$ 1,879,799,251
Adjustment for Actuarial Smoothing.....		\$ 34,224,866
Actuarial Value of Assets: (June 30, 2020).....		\$ 1,914,024,117

EXHIBIT VII
PENSION BENEFIT OBLIGATION

Present Value of Credited Projected Benefits Payable to Current Employees.....	\$ 1,231,031,972
Present Value of Benefits Payable to Terminated Employees	23,897,006
Present Value of Benefits Payable to Current Retirees and Beneficiaries	1,213,570,364
 TOTAL PENSION BENEFIT OBLIGATION	 \$ 2,468,499,342
 NET ACTUARIAL VALUE OF ASSETS	 \$ 1,914,024,117
 Ratio of Net Actuarial Value of Assets to Pension Benefit Obligation.....	 77.54%

**EXHIBIT VIII
CENSUS DATA**

	Active	Terminated with Funds on Deposit	DROP	Retired	Total
Number of members as of June 30, 2019	4,446	755	208	2,407	7,816
Additions to Census					
Initial membership	250	34			284
Omitted in error last year				4	4
Death of another member				31	31
Adjustment for multiple records				2	2
Change in Status during Year					
Actives terminating service	(111)	111			
Actives who retired	(48)			48	
Actives entering DROP	(77)	(1)	78		
Term. members rehired	17	(17)			
Term. members who retire		(7)		7	
Retirees who are rehired	1			(1)	
Refunded who are rehired	7	4			11
DROP participants retiring			(55)	55	
DROP returned to work	10		(10)		
Omitted in error last year					
Eliminated from Census					
Refund of contributions	(64)	(31)			(95)
Deaths	(5)		(1)	(56)	(62)
Included in error last year					
Adjustment for multiple records					
Number of members as of June 30, 2020	4,426	848	220	2,497	7,991

ACTIVES CENSUS BY AGE:

Age	Number Male	Number Female	Total Number	Average Salary	Total Salary
16 - 20	37	1	38	32,769	1,245,218
21 - 25	369	15	384	37,813	14,520,126
26 - 30	690	47	737	42,634	31,421,565
31 - 35	760	37	797	48,721	38,830,594
36 - 40	685	47	732	55,181	40,392,490
41 - 45	591	34	625	61,776	38,610,132
46 - 50	524	47	571	69,904	39,915,400
51 - 55	307	27	334	74,194	24,780,962
56 - 60	130	21	151	74,701	11,279,861
61 - 65	36	9	45	80,546	3,624,581
66 - 70	8	2	10	92,950	929,498
71 - 75	2	0	2	118,204	236,407
TOTAL	4,139	287	4,426	55,532	245,786,834

THE ACTIVE CENSUS INCLUDES 2,175 ACTIVES WITH VESTED BENEFITS, INCLUDING 54 ACTIVE FORMER DROP PARTICIPANTS. THE 220 CURRENT DROP PARTICIPANTS ARE EXCLUDED.

DROP PARTICIPANTS:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
46 - 50	32	1	33	60,972	2,012,067
51 - 55	92	5	97	65,527	6,356,101
56 - 60	65	2	67	65,028	4,356,880
61 - 65	20	1	21	65,910	1,384,104
66 - 70	2	0	2	81,746	163,492
TOTAL	211	9	220	64,876	14,272,644

TERMINATED MEMBERS DUE A DEFERRED RETIREMENT BENEFIT:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
31 - 35	2	1	3	16,872	50,616
36 - 40	8	1	9	28,907	260,166
41 - 45	20	4	24	27,283	654,795
46 - 50	22	0	22	26,177	575,894
51 - 55	23	1	24	24,746	593,907
56 - 60	3	0	3	106,239	318,716
TOTAL	78	7	85	28,872	2,454,094

TERMINATED MEMBERS DUE A REFUND OF CONTRIBUTIONS:

Contributions Ranging From To	Number	Total Contributions
0 - 99	68	3,385
100 - 499	185	47,363
500 - 999	80	55,970
1,000 - 1,999	77	110,001
2,000 - 4,999	121	392,728
5,000 - 9,999	90	672,291
10,000 - 19,999	79	1,106,006
20,000 - 99,999	62	1,890,498
Greater than 99,999	1	107,007
TOTAL	763	4,385,249

REGULAR RETIREES:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
41 - 45	1	0	1	47,082	47,082
46 - 50	34	1	35	52,736	1,845,765
51 - 55	150	8	158	49,965	7,894,548
56 - 60	394	21	415	52,420	21,754,278
61 - 65	419	22	441	50,774	22,391,197
66 - 70	350	12	362	45,939	16,629,995
71 - 75	264	7	271	38,751	10,501,511
76 - 80	146	2	148	38,902	5,757,456
81 - 85	79	1	80	34,796	2,783,718
86 - 90	23	0	23	27,880	641,238
91 - 99	22	0	22	23,981	527,591
TOTAL	1,882	74	1,956	46,408	90,774,379

DISABILITY RETIREES:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
26 - 30	1	0	1	11,694	11,694
41 - 45	6	1	7	25,455	178,184
46 - 50	19	2	21	28,558	599,723
51 - 55	19	3	22	24,151	531,317
56 - 60	17	1	18	23,738	427,279
61 - 65	19	2	21	20,887	438,637
66 - 70	19	2	21	20,448	429,405
71 - 75	11	0	11	22,115	243,262
76 - 80	6	0	6	13,360	80,161
81 - 85	5	0	5	12,579	62,895
86 - 90	5	0	5	19,231	96,157
TOTAL	127	11	138	22,454	3,098,714

SURVIVORS:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
0 - 25	23	26	49	5,672	277,928
26 - 30	0	1	1	1,638	1,638
31 - 35	1	3	4	23,598	94,391
36 - 40	0	7	7	24,332	170,323
41 - 45	1	8	9	26,788	241,088
46 - 50	1	13	14	32,256	451,588
51 - 55	0	15	15	23,641	354,618
56 - 60	1	25	26	30,351	789,116
61 - 65	2	30	32	30,817	986,133
66 - 70	1	45	46	24,381	1,121,515
71 - 75	1	44	45	21,549	969,711
76 - 80	0	46	46	22,821	1,049,780
81 - 85	0	44	44	18,966	834,491
86 - 90	0	44	44	17,818	784,013
91 - 99	0	21	21	14,595	306,497
TOTAL	31	372	403	20,925	8,432,830

ACTIVE MEMBERS:

Attained Ages	Completed Years of Service											Total	
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over		
0 - 20	35	3											38
21 - 25	87	98	79	50	48	22							384
26 - 30	73	84	74	95	101	272	38						737
31 - 35	36	41	32	51	68	262	295	12					797
36 - 40	16	26	16	30	24	156	269	181	14				732
41 - 45	6	11	6	12	5	67	136	195	173	14			625
46 - 50	7	7	4	3	10	37	55	117	214	116	1		571
51 - 55		1		2	4	23	27	60	80	118	19		334
56 - 60	1	1				5	20	25	27	41	31		151
61 - 65							2	13	7	9	14		45
66 - 70								3	1	1	5		10
71 & Over											2		2
Totals	261	272	211	243	260	844	842	606	516	299	72		4,426

AVERAGE ANNUAL SALARY OF ACTIVE MEMBERS:

Attained Ages	Completed Years of Service											Average Salary	
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over		
0 - 20	32,296	38,287											32,769
21 - 25	32,132	35,303	39,434	42,342	42,710	44,662							37,813
26 - 30	32,980	35,495	40,886	42,576	43,821	46,443	50,095						42,634
31 - 35	35,379	38,123	42,535	44,796	44,178	48,340	54,151	58,692					48,721
36 - 40	53,758	35,083	41,303	43,500	45,055	49,539	56,531	64,310	71,282				55,181
41 - 45	34,577	37,273	43,601	42,713	44,822	50,482	58,326	63,484	70,807	75,061			61,776
46 - 50	44,335	54,088	55,553	40,200	47,877	53,941	58,285	66,086	74,799	80,853	85,380		69,904
51 - 55		22,709		59,692	42,999	52,604	58,244	64,982	81,088	81,167	90,563		74,194
56 - 60	161,327	58,231				52,131	58,042	61,165	77,074	79,451	89,393		74,701
61 - 65							56,474	61,339	78,547	101,083	89,618		80,546
66 - 70								95,427	42,443	72,863	105,582		92,950
71 & Over											118,204		118,204
Average	35,043	36,400	40,979	43,226	43,986	48,409	55,902	64,303	74,447	81,096	91,614		55,532

TERMINATED MEMBERS DUE A DEFERRED RETIREMENT BENEFIT:

Attained Ages	Years Until Retirement Eligibility											Total
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over	
0 - 30												0
31 - 35									3			3
36 - 40								9				9
41 - 45						2	22					24
46 - 50	1	1			1	19						22
51 - 55	5	5	2	7	5							24
56 - 60	3											3
61 & Over												0
Totals	9	6	2	7	6	21	22	9	3	0	0	85

AVERAGE ANNUAL BENEFITS OF TERMINATED MEMBERS DUE A DEFERRED RETIREMENT BENEFIT:

Attained Ages	Years Until Retirement Eligibility											Average Benefit
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over	
0 - 30												0
31 - 35									16,872			16,872
36 - 40								28,907				28,907
41 - 45						41,419	25,998					27,283
46 - 50	43,869	73,304			54,830	21,257						26,177
51 - 55	20,432	32,078	21,604	21,215	27,929							24,746
56 - 60	106,239											106,239
61 & Over												0
Average	51,638	38,949	21,604	21,215	32,412	23,178	25,998	28,907	16,872	0	0	28,872

SERVICE RETIREES:

Attained Ages	Completed Years Since Retirement											Total			
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over				
0 - 50	20	6	3	4	2	1									36
51 - 55	31	36	16	25	22	27	1								158
56 - 60	38	36	32	42	27	164	67	9							415
61 - 65	12	25	19	20	30	180	120	33	2						441
66 - 70	4	6	5	5	6	72	111	117	23	13					362
71 - 75			2	2		14	36	91	97	14	15				271
76 - 80						4	11	21	59	33	20				148
81 - 85						1		4	16	23	35				80
86 - 90							1			1	19				23
91 & Over								2	1	2	20				22
Totals	105	109	77	98	87	463	347	277	198	86	109				1,956

AVERAGE ANNUAL BENEFITS PAYABLE TO SERVICE RETIREES:

Attained Ages	Completed Years Since Retirement											Average Benefit			
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over				
0 - 50	51,902	51,497	57,143	47,842	48,832	85,370									52,579
51 - 55	47,468	54,391	58,814	48,453	47,835	44,453	60,054								49,965
56 - 60	59,811	56,816	61,538	53,183	50,701	52,483	44,343	31,796							52,420
61 - 65	54,938	62,592	60,560	67,594	55,561	51,968	43,067	42,834	31,016						50,774
66 - 70	45,521	64,812	50,696	53,425	56,443	54,394	45,103	43,170	39,111	25,118					45,939
71 - 75			36,249	66,205		43,271	41,459	40,769	38,478	26,447	25,709				38,751
76 - 80						43,695	36,198	45,592	42,361	37,480	24,548				38,902
81 - 85						55,370	30,747	29,187	45,731	38,681	27,414				34,796
86 - 90								12,759	64,344	45,471	26,627				27,880
91 & Over										49,243	21,455				23,981
Average	53,559	57,487	59,199	54,977	52,005	51,834	43,594	41,734	40,350	34,503	25,423				46,408

DISABILITY RETIREES:

Completed Years Since Retirement

Attained Ages	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over	Total
0 - 30	1											1
31 - 35												0
36 - 40												0
41 - 45	1			1	2	2	4	1				7
46 - 50	2	2	2	3	4	5	8	2	1			21
51 - 55		1			1	2	4	6	2	2	1	22
56 - 60					1	2	4	7	4	2	3	18
61 - 65					2	2	1	2	5	3	9	21
66 - 70					2	1	1	2	2	4	4	21
71 - 75					1			1	2	4	4	11
76 - 80								1		1	4	6
81 - 85								2			3	5
86 - 90									1		4	5
91 & Over												0
Totals	4	3	2	4	8	16	18	27	15	13	28	138

AVERAGE ANNUAL BENEFITS PAYABLE TO DISABILITY RETIREES:

Completed Years Since Retirement

Attained Ages	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over	Average Benefit
0 - 30	11,694											11,694
31 - 35												0
36 - 40												0
41 - 45	38,173			27,476	30,233	18,513	22,347	15,044				25,455
46 - 50	40,007	35,658	39,718	26,275	26,923	31,517	24,872	10,414				28,558
51 - 55		30,874			24,479	32,965	25,826	15,284	18,561	17,180		24,151
56 - 60					60,242	16,411	34,667	26,810	16,514	11,323	14,379	23,738
61 - 65					28,951	23,088	22,259	22,259	13,818	19,453	16,633	20,887
66 - 70						42,439	22,691	30,361	20,390	15,686	17,172	20,448
71 - 75								28,054	19,082	21,564	22,697	22,115
76 - 80								9,952		17,762	13,112	13,360
81 - 85								9,396		14,701	14,701	12,579
86 - 90									36,337		14,955	19,231
91 & Over												0
Average	32,471	34,063	39,718	26,575	32,117	28,084	24,946	20,240	18,887	17,678	16,642	22,454

SURVIVING BENEFICIARIES OF FORMER MEMBERS:

Completed Years Since Retirement

Attained Ages	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over	Total
0 - 20	6	2	9	2		7	10	3	2			41
21 - 25		1	2			2	3					8
26 - 30							1					1
31 - 35	1		1			2						4
36 - 40	1	1	2	2		2	1					7
41 - 45		1	2			2	2					9
46 - 50		2	1			1	5	2	2		1	14
51 - 55						4	4	3	3	1		15
56 - 60		1			2	6	6	3	4		1	26
61 - 65				1		4	10	7	7	1	2	32
66 - 70	1					4	5	8	13	7	8	46
71 - 75	1		1				2	8	18	6	9	45
76 - 80							1	5	11	9	20	46
81 - 85								3	1	4	36	44
86 - 90								1	2	4	37	44
91 & Over								1		1	20	21
Totals	10	8	15	6	2	34	50	43	64	37	134	403

AVERAGE ANNUAL BENEFITS PAYABLE TO SURVIVORS OF FORMER MEMBERS:

Completed Years Since Retirement

Attained Ages	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over	Average Benefit
0 - 20	4,354	7,112	7,350	6,175		5,393	5,057	3,769	5,836			5,613
21 - 25		10,161	5,592			5,620	5,063					5,972
26 - 30							1,638					1,638
31 - 35	21,009		19,013			27,184	13,820					23,598
36 - 40	15,617	54,469	37,934	28,433		14,776	21,199					24,332
41 - 45		20,289	38,590			32,864	33,025					26,788
46 - 50		57,449				54,552	29,281					32,256
51 - 55						34,023	22,153					23,641
56 - 60		26,374				49,521	22,153	19,023		11,119		30,351
61 - 65					57,765	40,758	31,542	31,557	22,145	25,811	10,130	30,817
66 - 70	55,571			86,771		34,957	29,781	27,385	20,684	22,695	16,298	24,381
71 - 75	30,481			15,421			35,339	16,748	23,950	25,461	15,031	21,549
76 - 80							46,572	42,171	23,946	28,600	13,578	22,821
81 - 85								5,780	57,977	29,911	17,765	18,966
86 - 90								2,962	21,559	31,061	16,586	17,818
91 & Over										18,777	14,386	14,595
Average	14,880	30,052	14,054	28,568	57,765	29,096	22,407	23,470	21,879	24,797	15,741	20,925

EXHIBIT IX YEAR-TO-YEAR COMPARISON

	Fiscal 2020	Fiscal 2019	Fiscal 2018	Fiscal 2017
Number of Active Members	4,426	4,446	4,424	4,429
Number of Retirees & Survivors	2,497	2,407	2,327	2,289
DROP Participants	220	208	192	173
Number of Terminated Due Deferred Benefits	85	84	76	72
Number Terminated Due Refunds	763	671	656	597
Active Lives Payroll (excludes DROP participants)	\$ 245,786,834	\$ 240,413,972	\$ 236,005,445	\$ 232,500,397
Retiree Benefits in Payment	\$ 102,305,923	\$ 97,547,088	\$ 91,808,883	\$ 88,444,685
Market Value of Assets	\$ 1,837,689,661	\$ 1,778,931,314	\$ 1,704,049,168	\$ 1,593,696,648
Ratio of Actuarial Value of Assets to Actuarial Accrued Liability	75.63%	75.72%	76.40%	75.82%
Actuarial Accrued Liability (EAN)	\$ 2,530,844,605	\$ 2,405,122,324	\$ 2,279,256,967	\$ 2,166,881,556
Actuarial Value of Assets	\$ 1,914,024,117	\$ 1,821,040,904	\$ 1,741,451,961	\$ 1,643,007,075
UAL (Funding Excess)	\$ 554,826,689	\$ 584,081,420	\$ 537,805,006	\$ 523,874,481
P.V. of Future Employer Normal Contributions	\$ 475,561,988	\$ 352,991,474	\$ 346,076,765	\$ 328,942,059
Present Value of Future Employee Contrib.	\$ 269,628,321	\$ 243,350,511	\$ 240,713,969	\$ 238,106,260
Present Value of Future Benefits	\$ 3,214,041,115	\$ 3,001,464,309	\$ 2,866,047,701	\$ 2,733,929,875
	Fiscal 2021	Fiscal 2020	Fiscal 2019	Fiscal 2018
Employee Contribution Rate Above Poverty Level	10.00%	10.00%	10.00%	10.00%
Required Tax Contributions as a Percentage of Projected Payroll	11.25%	11.38%	11.04%	10.85%
Actuarially Required Employer Contribution as a Percentage of Projected Payroll	33.69%	31.78%	28.32%	28.67%
Actual Employer Contribution as a Percentage of Projected Payroll	32.25%	27.75%	26.50%	26.50%

* The above rates are for members with earnings greater than the Department of HHS poverty guidelines. For members with earnings below the poverty guidelines, employer rates will be 2.0% higher and employee rates will be 2.0% lower.

Fiscal 2016	Fiscal 2015	Fiscal 2014	Fiscal 2013	Fiscal 2012	Fiscal 2011
4,362	4,192	4,098	4,063	4,056	4,020
2,213	2,139	2,057	1,958	1,875	1,802
173	166	185	221	217	225
72	81	9	71	70	68
558	523	472	450	398	418
\$ 225,301,112	\$ 211,963,892	\$ 203,333,976	\$ 199,129,982	\$ 198,112,999	\$ 193,136,985
\$ 83,899,034	\$ 79,924,818	\$ 73,404,453	\$ 67,678,016	\$ 62,975,274	\$ 58,699,965
\$ 1,399,892,212	\$ 1,419,138,769	\$ 1,410,307,198	\$ 1,253,213,084	\$ 1,122,864,548	\$ 1,154,482,040
75.48%	76.09%	74.66%	71.13%	71.66%	74.33%
\$ 2,053,982,618	\$ 1,958,850,006	\$ 1,855,298,538	\$ 1,771,931,777	\$ 1,700,643,083	\$ 1,621,007,988
\$ 1,550,261,745	\$ 1,490,408,510	\$ 1,385,135,204	\$ 1,260,348,240	\$ 1,218,618,308	\$ 1,204,830,245
\$ 503,720,873	\$ 468,441,496	\$ 470,163,334	\$ 511,583,537	\$ 482,024,775	\$ 416,177,743
\$ 305,570,473	\$ 286,640,979	\$ 315,734,786	\$ 310,702,226	\$ 325,616,184	\$ 305,540,215
\$ 230,423,085	\$ 216,351,986	\$ 213,279,261	\$ 210,842,508	\$ 211,015,125	\$ 206,989,105
\$ 2,589,976,176	\$ 2,461,842,971	\$ 2,384,312,585	\$ 2,294,778,794	\$ 2,223,486,329	\$ 2,133,537,308

Fiscal 2017	Fiscal 2016	Fiscal 2015	Fiscal 2014	Fiscal 2013	Fiscal 2012
10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
10.91%	11.33%	11.39%	11.05%	10.72%	10.93%
27.09%	25.44%	27.50%	29.23%	27.77%	24.02%
25.25%	27.25%	29.25%	28.25%	24.00%	23.25%

SUMMARY OF PRINCIPAL PLAN PROVISIONS

The Firefighters' Retirement System was established as of January 1, 1980, for the purpose of providing retirement allowances and other benefits as described under R.S. 11:2256 - 11:2259. The following summary of plan provisions is for general informational purposes only and does not constitute a guarantee of benefits.

MEMBERSHIP - All full time firefighters or any person in a position as defined in the municipal fire and police civil service system who is employed by a fire department of any municipality, parish, or fire protection district of the State of Louisiana, except Orleans, and East Baton Rouge Parishes, who earns at least three hundred seventy-five dollars per month excluding state supplemental pay are required to be members of this retirement system. Employees of the system are eligible, at their option to become members of the system. Persons must be under the age of fifty to be eligible for system membership unless they become members through merger.

CONTRIBUTION RATES - Under the provisions of R.S. 11:62, 11:103, and 22:1476A(3), the fund is financed by a combination of employee contributions, employer contributions, and insurance premium taxes. The employee contribution rate is set by R.S. 11:62 but cannot be less than 8% or more than 10% of earnable compensation. The employee contribution rate is fixed at 8% for members whose earnable compensation is less than or equal to the poverty guidelines issued by the U. S. Department of Health and Human Services. Gross employer contributions are determined by actuarial valuation and are subject to change each year in accordance with R.S. 11:103, 11:105, 11:107 and 11:107.1. The employee contribution rate is set at 8% when gross employer contributions total 25% or less of earnable compensation. The employee rate then increases 0.25% for each 0.75% increase in the total rate, subject to a maximum rate of 10%. Insurance premium taxes are allocated to the system based on available funds and the statutory provisions as described in R.S. 22:1476A(3).

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.

RETIREMENT BENEFITS - Members with twelve years of creditable service may retire at age fifty-five; members with twenty years of service may retire at age fifty; members with twenty-five years of service may retire regardless of age, provided that they have been a member of this system for at least one year. The retirement allowance is equal to three and one-third percent of the member's average final compensation multiplied by his years of creditable service, not to exceed one hundred percent of his average final compensation.

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

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

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

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

Option 4 - Upon retirement, the member elects to receive a board approved benefit payable to the member, the member's spouse, or the member's dependent child, which is actuarially equivalent to the maximum benefit.

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

Initial Benefit Option – This option is available only to regular retirees who have not participated in the Deferred Retirement Option Plan. Under this option members may receive an initial benefit plus a reduced monthly retirement allowance which, when combined, equal the actuarially equivalent amount of the maximum retirement allowance. The initial benefit may not exceed an amount equal to thirty-six payments of the member's maximum retirement allowance. The initial benefit can be paid either as a lump-sum payment or placed in an account called an "initial benefit account" with interest credited thereto and monthly payments made from the account.

DISABILITY BENEFITS - Any member who has been officially certified as totally disabled solely as the result of injuries sustained in the performance of his official duties, or for any cause, provided the member has a least five years of creditable service and provided that the disability was incurred while the member was an active contributing member, is entitled to disability benefits. Any member under the age of fifty who becomes totally disabled will receive a disability benefit equal to 60% of final compensation for an injury received in the line of duty; or 75% of his accrued retirement benefit with a minimum of 25% of average salary for any injury received, even though not in the line of duty. Any member age fifty or older who becomes totally disabled from an injury sustained in the line of duty is entitled to a disability benefit equal to the greater of 60% of final compensation or his accrued retirement benefit. Any member age fifty or older who becomes totally disabled as a result of any injury, even though not in the line of duty, is entitled to a disability benefit equal to his accrued retirement benefit with a minimum of 25% of average salary. The surviving spouse of a member who was on disability retirement at the time of death receives a benefit of \$200 per month. When the member takes disability retirement, he may in addition take an actuarially reduced benefit in which case the member's surviving spouse receives 50% of the disability benefit being paid immediately prior to the death of the disability retiree. The retirement system may reduce benefits paid to a disability retiree who is also receiving workers compensation payments.

SURVIVOR BENEFITS - Benefits are payable to survivors of a deceased member who dies and is not eligible for retirement as follows. If any member is killed in the line of duty and leaves a surviving eligible spouse, the spouse is entitled to an annual benefit equal to two-thirds of the deceased member's final compensation. If any member dies from a cause not in the line of duty, the surviving spouse is entitled to an annual benefit equal to 3% of the deceased member's average final compensation multiplied by his total years of creditable service; however, in no event is the annual benefit less than 40% nor more than 60% of the deceased member's average final compensation. Children of the deceased member who are under the age of eighteen years are entitled to the greater of \$200 per month or 10% of average final compensation (not to exceed 100% of average final compensation) until reaching the age of eighteen or until the age of twenty-two if enrolled full-time in

an institution of higher learning, unless the surviving child is physically handicapped or mentally retarded in which case the benefit is payable regardless of age. If a deceased member dies leaving no surviving spouse, but at least one minor child, each child is entitled to receive forty percent of the deceased's average final compensation, not to exceed an aggregate of sixty percent of average final compensation.

DEFERRED RETIREMENT OPTION PLAN - In lieu of terminating employment and accepting a service retirement allowance, any member of the system who has at least twenty years of creditable service and who is eligible to receive a service retirement allowance may elect to participate in the deferred retirement option plan for up to thirty-six months and defer the receipt of benefits. Upon commencement of participation in the plan, membership in the system terminates and neither the employee nor employer contributions are payable. Compensation and creditable service will remain as they existed on the effective date of commencement of participation in the plan. 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 deferred retirement option plan 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 account equal to the payments to the account, or a true annuity based upon his account, or he may elect any other method of payment if approved by the Board of Trustees. The monthly benefits that were being paid into the fund during the period of participation will begin to be paid to the retiree. If employment is not terminated at the end of the thirty-six months, payments into the account cease and the member resumes active contributing membership in the system. If the participant dies during the period of participation in the program, a lump sum payment equal to his account balance is paid to his named beneficiary or, if none, to his estate; in addition, normal survivor benefits are payable to survivors of retirees.

COST OF LIVING INCREASES - The Board of Trustees is authorized to grant retired members and widows of members who have retired an annual cost of living increase of up to 3% of their current benefit, and all retired members and widows who are sixty-five years of age and older a 2% increase in their original benefit. In order for the Board to grant either of these increases the system must meet certain criteria detailed in the statute related to funding status and interest earnings. In lieu of these cost of living adjustments the Board may also grant an increase in the form based on a formula equal to up to \$1 times the total of the number of years of credited service accrued at retirement or at death of the member or retiree plus the number of years since retirement or since death of the member or retiree to the system's fiscal year end preceding the payment of the benefit increase.

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:	 7.00% (Net of investment expense)
 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:	 Pub-2010 Public Retirement Plans Mortality Table for Safety Below-Median Employees multiplied by 105% for males and 115% for females, each with full generational projection using the MP2019 scale.

ANNUITANT AND BENEFICIARY MORTALITY:	Pub-2010 Public Retirement Plans Mortality Table for Safety Below-Median Healthy Retirees multiplied by 105% for males and 115% for females, each with full generational projection using the MP2019 scale.						
DISABLED LIVES MORTALITY:	Pub-2010 Public Retirement Plans Mortality Table for Safety Disabled Retirees multiplied by 105% for males and 115% for females, each with full generational projection using the MP2019 scale.						
RETIREE COST OF LIVING INCREASES:	The present value of future retirement benefits is based on benefits currently being paid by the system and includes previously granted cost of living increases. The present values do not include provisions for potential future increases not yet authorized by the Board of Trustees.						
ANNUAL SALARY INCREASE RATE:	Salary increases include 2.5% inflation and merit increases. The gross rates including inflation and merit increases are as follows: <table border="0" style="margin-left: 40px;"> <tr> <td style="padding-right: 20px;">Years of Service</td> <td>Salary Growth Rate</td> </tr> <tr> <td style="padding-right: 20px;">1 – 2</td> <td>14.10%</td> </tr> <tr> <td style="padding-right: 20px;">3 & over</td> <td>5.20%</td> </tr> </table>	Years of Service	Salary Growth Rate	1 – 2	14.10%	3 & over	5.20%
Years of Service	Salary Growth Rate						
1 – 2	14.10%						
3 & over	5.20%						
RETIREMENT RATES:	The table of these rates is included later in the report. These rates apply only to those individuals eligible to retire.						
RETIREMENT LIMITATIONS:	Projected retirement benefits are not 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 participate.						
DROP PARTICIPATION PERIOD:	All DROP participants are assumed to participate for 3 years and 75% are assumed to retire at the end of this participation period with 25% assumed to work 2 years post-DROP and then retire.						
RETIREMENT RATES FOR ACTIVE FORMER DROP PARTICIPANTS:	The rates of retirement for active former DROP participants are included later in this report.						
DISABILITY RATES:	75% of the disability rates used for the 27 th 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 rates of withdrawal are applied based upon completed years of service according to the following table:

<u>Service Duration ≤</u>	<u>Factor</u>	<u>Service Duration ≤</u>	<u>Factor</u>
1	0.095	9	0.029
2	0.079	10	0.025
3	0.066	11	0.022
4	0.055	12	0.018
5	0.047	13	0.015
6	0.040	14	0.013
7	0.036	15	0.010
8	0.032	16 & Over	0.005

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.

SERVICE RELATED DEATH: 20% of Total Deaths

FAMILY STATISTICS: Assumptions utilized in determining the costs of various survivor benefits as listed below, are derived from the information provided in the 2019 Table F1: Family Households, by Type, Age of Own Children, Age of Family Members, and Age of Householder provided by the U.S. Census Bureau:

<u>Member's Age</u>	<u>% With Children</u>	<u>Number of Children</u>	<u>Average Age</u>
25	60%	1.77	4
35	82%	2.11	8
45	63%	1.75	11
55	11%	1.42	14
65	2%	1.50	14

IN THE LINE OF DUTY DISABILITY: 20% of Total Disabilities

VESTING ELECTING PERCENTAGE: 70% of those vested elect deferred benefits in lieu of contribution refunds.

ACTUARIAL TABLES AND RATES

Age	Retirement Rates	DROP Entry Rates	Post-DROP Retirement Rates	Disability Rates
18	0.000000	0.000000	0.000000	0.000900
19	0.000000	0.000000	0.000000	0.000900
20	0.000000	0.000000	0.000000	0.000900
21	0.000000	0.000000	0.000000	0.000900
22	0.000000	0.000000	0.000000	0.000900
23	0.000000	0.000000	0.000000	0.000900
24	0.000000	0.000000	0.000000	0.000900
25	0.000000	0.000000	0.000000	0.000900
26	0.000000	0.000000	0.000000	0.000900
27	0.000000	0.000000	0.000000	0.000900
28	0.000000	0.000000	0.000000	0.000900
29	0.000000	0.000000	0.000000	0.000900
30	0.000000	0.000000	0.000000	0.000900
31	0.000000	0.000000	0.000000	0.000900
32	0.000000	0.000000	0.000000	0.000900
33	0.000000	0.000000	0.000000	0.000900
34	0.000000	0.000000	0.000000	0.000900
35	0.000000	0.000000	0.000000	0.000980
36	0.000000	0.000000	0.000000	0.000980
37	0.000000	0.000000	0.000000	0.000980
38	0.000000	0.000000	0.000000	0.001050
39	0.000000	0.000000	0.000000	0.001130
40	0.000000	0.000000	0.000000	0.001200
41	0.020000	0.000000	0.000000	0.001280
42	0.020000	0.000000	0.000000	0.001350
43	0.040000	0.000000	0.000000	0.001500
44	0.060000	0.050000	0.000000	0.001580
45	0.070000	0.060000	0.000000	0.001800
46	0.070000	0.070000	0.000000	0.001950
47	0.070000	0.080000	0.000000	0.002180
48	0.060000	0.090000	0.040000	0.002480
49	0.050000	0.100000	0.040000	0.002850
50	0.050000	0.120000	0.100000	0.003230
51	0.040000	0.130000	0.150000	0.003680
52	0.040000	0.150000	0.190000	0.004280
53	0.040000	0.170000	0.230000	0.004950
54	0.040000	0.180000	0.250000	0.005780
55	0.040000	0.190000	0.270000	0.006750
56	0.040000	0.210000	0.270000	0.007950
57	0.040000	0.220000	0.270000	0.009380
58	0.040000	0.230000	0.270000	0.011100
59	0.050000	0.230000	0.260000	0.013130
60	0.060000	0.230000	0.250000	0.017930
61	0.070000	0.220000	0.240000	0.021830
62	0.080000	0.200000	0.230000	0.024150
63	0.100000	0.200000	0.230000	0.025350
64	0.120000	0.200000	0.240000	0.019280
65	0.140000	0.200000	0.250000	0.015530
66	0.170000	0.200000	0.250000	0.003900
67	0.210000	0.200000	0.260000	0.003900
68	0.250000	0.200000	0.260000	0.003900
69	0.300000	0.200000	0.250000	0.003900
70	0.500000	0.000000	0.220000	0.003900
71	0.500000	0.000000	0.180000	0.003900
72	0.500000	0.000000	0.110000	0.003900
73	0.500000	0.000000	0.020000	0.003900
74	0.500000	0.000000	0.020000	0.003900
75	0.500000	0.000000	1.000000	0.003900

PRIOR YEAR ASSUMPTIONS

VALUATION INTEREST RATE:	7.15% (Net of investment expense)										
ACTIVE, ANNUITANT AND BENEFICIARY MORTALITY:	RP-2000 Combined Healthy with Blue Collar Adjustment Sex Distinct Mortality Tables Projected to 2031 using Scale AA										
DISABLED LIVES MORTALITY:	RP-2000 Disabled Lives Mortality Tables set back 5 years for males and set back 3 years for females										
ANNUAL SALARY INCREASE RATE:	Salary increases include 2.5% inflation and merit increases. The gross rates including inflation and merit increases are as follows:										
	<table border="0"> <thead> <tr> <th style="text-align: center;"><u>Years of Service</u></th> <th style="text-align: center;"><u>Salary Growth Rate</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1 – 2</td> <td style="text-align: center;">14.75%</td> </tr> <tr> <td style="text-align: center;">3 – 14</td> <td style="text-align: center;">5.50%</td> </tr> <tr> <td style="text-align: center;">15 – 24</td> <td style="text-align: center;">5.00%</td> </tr> <tr> <td style="text-align: center;">25 & over</td> <td style="text-align: center;">4.50%</td> </tr> </tbody> </table>	<u>Years of Service</u>	<u>Salary Growth Rate</u>	1 – 2	14.75%	3 – 14	5.50%	15 – 24	5.00%	25 & over	4.50%
<u>Years of Service</u>	<u>Salary Growth Rate</u>										
1 – 2	14.75%										
3 – 14	5.50%										
15 – 24	5.00%										
25 & over	4.50%										
RETIREMENT RATES:	The table of these rates is included later in the report. These rates apply only to those individuals eligible to retire.										
DROP ENTRY RATES:	The table of these rates is included later in the report. These rates apply only to those individuals eligible to participate.										
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:	Retirement rates for active former DROP participants are as follows:										
	<table border="0"> <thead> <tr> <th style="text-align: center;"><u>Ages</u></th> <th style="text-align: center;"><u>Retirement Rates</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Under 75</td> <td style="text-align: center;">0.25</td> </tr> <tr> <td style="text-align: center;">75 & Over</td> <td style="text-align: center;">1.00</td> </tr> </tbody> </table>	<u>Ages</u>	<u>Retirement Rates</u>	Under 75	0.25	75 & Over	1.00				
<u>Ages</u>	<u>Retirement Rates</u>										
Under 75	0.25										
75 & Over	1.00										
DISABILITY RATES:	55% of the disability rates used for the 21 st 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. 20% of total disabilities are assumed to be in the line of duty.										

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

Service		Service	
<u>Duration (≤)</u>	<u>Factor</u>	<u>Duration(≤)</u>	<u>Factor</u>
1	0.075	7	0.050
2	0.065	8	0.040
3	0.065	9	0.030
4	0.065	10	0.020
5	0.050	>10	0.010
6	0.050		

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

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:

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

PRIOR YEAR ACTUARIAL TABLES AND RATES

Age	Male Mortality Rates	Female Mortality Rates	Male Disabled Mortality Rates	Female Disabled Mortality Rates	Retirement Rates	DROP Entry Rates	Disability Rates
18	0.00017	0.00012	0.02257	0.00745	0.000000	0.000000	0.000825
19	0.00018	0.00012	0.02257	0.00745	0.000000	0.000000	0.000825
20	0.00019	0.00012	0.02257	0.00745	0.000000	0.000000	0.000825
21	0.00020	0.00011	0.02257	0.00745	0.000000	0.000000	0.000825
22	0.00022	0.00011	0.02257	0.00745	0.000000	0.000000	0.000825
23	0.00023	0.00012	0.02257	0.00745	0.000000	0.000000	0.000825
24	0.00025	0.00013	0.02257	0.00745	0.000000	0.000000	0.000825
25	0.00028	0.00013	0.02257	0.00745	0.000000	0.000000	0.000825
26	0.00031	0.00015	0.02257	0.00745	0.000000	0.000000	0.000825
27	0.00033	0.00015	0.02257	0.00745	0.000000	0.000000	0.000825
28	0.00034	0.00016	0.02257	0.00745	0.000000	0.000000	0.000825
29	0.00035	0.00017	0.02257	0.00745	0.000000	0.000000	0.000825
30	0.00062	0.00021	0.02257	0.00745	0.000000	0.000000	0.000825
31	0.00068	0.00026	0.02257	0.00745	0.000000	0.000000	0.000825
32	0.00075	0.00029	0.02257	0.00745	0.000000	0.000000	0.000825
33	0.00081	0.00031	0.02257	0.00745	0.000000	0.000000	0.000825
34	0.00087	0.00034	0.02257	0.00745	0.000000	0.000000	0.000825
35	0.00093	0.00037	0.02257	0.00745	0.000000	0.000000	0.000935
36	0.00098	0.00040	0.02257	0.00745	0.000000	0.000000	0.001045
37	0.00103	0.00043	0.02257	0.00745	0.000000	0.000000	0.001155
38	0.00105	0.00046	0.02257	0.00745	0.000000	0.000000	0.001320
39	0.00106	0.00050	0.02257	0.00745	0.000000	0.000000	0.001485
40	0.00107	0.00055	0.02257	0.00745	0.000000	0.000000	0.001705
41	0.00108	0.00061	0.02257	0.00745	0.060000	0.150000	0.001925
42	0.00110	0.00067	0.02257	0.00745	0.060000	0.150000	0.002145
43	0.00113	0.00074	0.02257	0.00745	0.060000	0.150000	0.002420
44	0.00116	0.00080	0.02257	0.00745	0.060000	0.150000	0.002750
45	0.00120	0.00084	0.02257	0.00745	0.060000	0.150000	0.003135
46	0.00122	0.00088	0.02257	0.00745	0.060000	0.150000	0.003575
47	0.00126	0.00091	0.02257	0.00745	0.060000	0.150000	0.004015
48	0.00129	0.00097	0.02257	0.00745	0.060000	0.150000	0.004565
49	0.00133	0.00104	0.02257	0.00818	0.060000	0.150000	0.005170
50	0.00137	0.00115	0.02257	0.00896	0.060000	0.170000	0.005885
51	0.00151	0.00127	0.02385	0.00978	0.060000	0.170000	0.006710
52	0.00160	0.00145	0.02512	0.01063	0.060000	0.170000	0.007590
53	0.00176	0.00166	0.02640	0.01154	0.060000	0.170000	0.008635
54	0.00195	0.00190	0.02769	0.01248	0.060000	0.170000	0.009790
55	0.00232	0.00218	0.02897	0.01346	0.060000	0.170000	0.011110
56	0.00283	0.00254	0.03027	0.01446	0.060000	0.170000	0.012650
57	0.00331	0.00290	0.03156	0.01550	0.060000	0.170000	0.014355
58	0.00388	0.00325	0.03286	0.01654	0.060000	0.170000	0.016280
59	0.00440	0.00369	0.03415	0.01760	0.060000	0.170000	0.018535
60	0.00502	0.00424	0.03544	0.01865	0.060000	0.170000	0.026840
61	0.00590	0.00496	0.03673	0.01971	0.060000	0.170000	0.026840
62	0.00674	0.00581	0.03803	0.02077	0.060000	0.170000	0.026840
63	0.00795	0.00683	0.03933	0.02184	0.060000	0.170000	0.026840
64	0.00892	0.00782	0.04067	0.02294	0.060000	0.170000	0.026840
65	0.01004	0.00890	0.04204	0.02408	0.500000	0.170000	0.026840
66	0.01170	0.01013	0.04347	0.02529	0.500000	0.170000	0.026840
67	0.01303	0.01131	0.04498	0.02660	0.500000	0.170000	0.026840
68	0.01400	0.01260	0.04658	0.02803	0.500000	0.170000	0.026840
69	0.01547	0.01403	0.04831	0.02959	0.500000	0.170000	0.026840
70	0.01675	0.01595	0.05017	0.03132	0.500000	0.000000	0.026840
71	0.01836	0.01721	0.05221	0.03323	0.500000	0.000000	0.026840
72	0.02015	0.01914	0.05445	0.03533	0.500000	0.000000	0.026840
73	0.02216	0.02056	0.05691	0.03764	0.500000	0.000000	0.026840
74	0.02444	0.02267	0.05961	0.04014	0.500000	0.000000	0.026840
75	0.02786	0.02408	0.06258	0.04285	0.500000	0.000000	0.026840

GLOSSARY

Accrued Benefit – The pension benefit that an individual has earned as of a specific date based on the provisions of the plan and the individual's age, service, and salary as of that date.

Actuarial Accrued Liability – The actuarial present value of benefits payable to members of the fund less the present value of future normal costs attributable to the members.

Actuarial Assumptions - Assumptions as to the occurrence of future events affecting pension costs. These assumptions include rates of mortality, withdrawal, disablement, and retirement. Also included are rates of investment earnings, changes in compensation, as well as statistics related to marriage and family composition.

Actuarial Cost Method – A procedure for determining the portion of the cost of a pension plan to be allocated to each year. Each cost method allocates a certain portion of the actuarial present value of benefits between the actuarial accrued liability and future normal costs. Once this allocation is made, a determination of the normal cost attributable to a specific year can be made along with the payment to amortize any unfunded actuarial accrued liability. To the extent that a particular funding method allocates a greater (lesser) portion of the actual present value of benefits to the actuarial accrued liability it will allocate less (more) to future normal costs.

Actuarial Equivalence – Payments or receipts with equal actuarial value on a given date when valued using the same set of actuarial assumptions.

Actuarial Gain (Loss) – The financial effect on the fund of the difference between the expected and actual experience of the fund. The experience may be related to investment earnings above (or below) those expected or changes in the liability structure due to fewer (or greater) than the expected numbers of retirements, deaths, disabilities, or withdrawals. In addition, other factors such as pay increases above (or below) those forecast can result in actuarial gains or losses. The effect of such gains (or losses) is to decrease (or increase) future costs.

Actuarial Present Value - The value, as of a specified date, of an amount or series of amounts payable or receivable thereafter, with each amount adjusted to reflect the time value of money (through accrual of interest) and the probability of payments. For example: if \$600 invested today will be worth \$1,000 in 10 years and there is a 50% probability that a person will live 10 years, then the actuarial present value of \$1,000 payable to that person if he should survive 10 years is \$300.

Actuarial Value of Assets - The value of cash, investments, and other property belonging to the pension plan as used by the actuary for the purpose of the actuarial valuation. This may correspond to the book value, market value, or some modification involving either or both book and market value. Adjustments to market values are often made to reduce the volatility of asset values.

Asset Gain (Loss) - That portion of the actuarial gain attributable to investment performance above (below) the expected rate of return in the actuarial assumptions.

Amortization Payment - That portion of the pension plan contribution designated to pay interest and reduce the outstanding principal balance of unfunded actuarial accrued liability. If the amortization payment is less than the accrued interest on the unfunded actuarial accrued liability the outstanding principal balance will increase.

Contribution Shortfall (Excess) - The difference between contributions recommended in the prior valuation and the actual amount received.

Decrements – Events which result in the termination of membership in the system such as retirement, disability, withdrawal, or death.

Employer Normal Cost - That portion of the normal cost not attributable to employee contributions. It includes both direct contributions made by the employer and contributions from other non-employee sources such as revenue sharing and revenues related to taxes.

Funded Ratio – A measure of the ratio of assets to liabilities of the system according to a specific definition of those two values. Typically the assets used in the measure are the actuarial value of assets; the liabilities are defined by reference to some recognized actuarial funding method. Thus the funded ratio of a plan depends not only on the financial strength of the plan but also on the funding method used to determine the liabilities and the asset valuation method used to determine the assets in the ratio.

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

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

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

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

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