FIREFIGHTERS' RETIREMENT SYSTEM

ACTUARIAL VALUATION AS OF
JUNE 30, 2016

G. S. CURRAN & COMPANY, LTD.

Actuarial Services

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November 9, 2016

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, 2016. 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, 2017 and to recommend the net direct employer contribution rate for Fiscal 2018. 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.
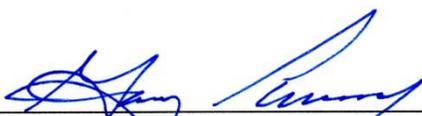
By: _____   _____
Gary Curran, F.C.A., M.A.A.A., A.S.A.   Gregory Curran, F.C.A., M.A.A.A., A.S.A.
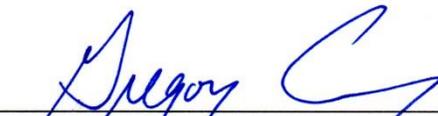
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SUMMARY OF VALUATION RESULTS
FIREFIGHTERS' RETIREMENT SYSTEM

Valuation Date:		June 30, 2016	June 30, 2015
Census Summary:	Active Members	4,362	4,192
	Retired Members and Survivors	2,213	2,139
	DROP Participants	173	166
	Terminated Due a Deferred Benefit	72	81
	Terminated Due a Refund	558	523
Payroll (excluding DROP participants)		$ 225,301,112	$ 211,963,892
Benefits in Payment (excluding DROP accruals):		$ 83,899,034	$ 79,924,818
Present Value of Future Benefits		$ 2,589,976,176	$ 2,461,842,971
Actuarial Accrued Liability (EAN):		$ 2,053,982,618	$ 1,958,850,006
Unfunded Actuarial Accrued Liability:		$ 503,720,873	$ 468,441,496
Actuarial Asset Value (AVA):		$ 1,550,261,745	$ 1,490,408,510
Market Value of Assets (MVA):		$ 1,399,892,212	$ 1,419,138,769
Ratio of AVA to Actuarial Accrued Liability:		75.48%	76.09%

	Fiscal 2016	Fiscal 2015
Market Rate of Return:	-2.3%	-0.2%
Actuarial Rate of Return:	3.1%	6.7%

	Fiscal 2017	Fiscal 2016
Employers' Normal Cost (Mid-year):	$ 30,801,348	$ 28,984,669
Amortization Cost (Mid-year):	$ 55,712,536	$ 50,028,917
Estimated Administrative Cost	$ 1,623,897	$ 1,556,661
Expected Insurance Premium Taxes Due	$ 25,310,647	$ 24,825,521
Net Direct Employer Actuarially Required Contributions:	$ 62,827,134	$ 55,744,725
Projected Payroll:	$ 231,928,094	$ 219,109,115
Actual Employee Contribution Rate*:	10.00%	10.00%
Actual Net Direct Employer Contribution Rate*:	25.25%	27.25%
Actuarially Required Net Direct Employer Contribution Rate*:	27.09%	25.44%

	Fiscal 2018	Fiscal 2017
Minimum Recommended Net Direct Employer Cont. Rate*:	26.50%	25.25%

* 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.

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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 ascribe absolute accuracy. In fact, neither of these descriptions 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 data used; 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 and 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 in such areas as expectation of population increase and turnover for the plan 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 amount 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 process 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. Fortunately, 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 level of funding and to provide for the future benefits of plan participants.

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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 4,362 active contributing members in the system of whom 1,993 have vested retirement benefits; in addition, there are 173 participants in the Deferred Retirement Option Plan (DROP); 2,213 former members or their beneficiaries are receiving retirement benefits. An additional 630 terminated members have contributions remaining on deposit with the system; of this number 72 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 system's auditor, the firm of Duplantier, Hrapmann, Hogan & Maher, LLP. As indicated in the system's financial statements, the net market value of the system's assets was $1,399,892,212 as of June 30, 2016. Net investment income for Fiscal 2016 measured on a market value basis amounted to a loss of $32,230,824. Contributions to the system for the fiscal year totaled $109,886,781; benefits and expenses amounted to $96,902,514.

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.

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COMMENTS ON ACTUARIAL METHODS AND ASSUMPTIONS

This valuation is based on the Entry Age Normal actuarial cost method. Under the provisions of Louisiana R.S. 11:103 the funding excess for the plan which was determined to be $239,425 as of June 30, 1989 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 are 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 are amortized over thirty years. 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. 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 are amortized over 15 years. All amortization payments are on a level dollar basis.

The cost method used for this valuation generally produces normal costs which are level as a percentage of pay if assumptions are met and the composition of the active group with regard to age, sex, and service is stable. Overall costs may increase or decrease depending on payroll growth. Since payments on all of the funds amortization bases are level any payroll growth will reduce future amortization payments as a percentage of payroll. Should overall payroll contract, amortization payments will increase as a percentage of payroll.

The current year actuarial assumptions utilized for this report are based on the results of an actuarial experience study for the period July 1, 2009 – June 30, 2014, unless otherwise specified in this report. In determining the valuation interest rate, consideration was given to several factors. First consensus estimates of rates of return, standard deviations, and correlation coefficients for asset classes derived from various asset consulting firms were developed. These factors were used to derive forward estimates of the Fund's portfolio earnings rate. Consideration was also given to the 2015 report of New England Pension Consultants on future expected rates of return for the current portfolio asset allocation. Based on the results of this interest rate assumption review, the assumed rate of return for the valuation was set at 7.50%. An inflation rate of 2.875% was implicit in both the assumed rate of return and rate of salary increases. Additional details are given in the complete Experience Report for fiscal years 2010 through 2014.

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

The current year actuarial assumptions utilized for the report are outlined on pages forty through forty-three. All assumptions used are based on estimates of future long-term experience for the fund. All calculations, recommendations, and conclusions are based on the assumptions specified. To the extent that prospective experience differs from that assumed, adjustments to contribution levels will be required. Such differences will be revealed in future actuarial valuations.

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RISK FACTORS

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

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

In addition to asset risk, the plan is also subject to risks related to liabilities. These risks include longevity risk (the risk that retirees will live longer than expected), termination risk (the risk that fewer than the anticipated number of members will terminate service prior to retirement), and other factors that may have an impact on the liability structure of the plan. Final average compensation plans are vulnerable to unexpectedly large increases in salary for individual members near retirement. Conversely, in cases where plans have large unfunded liabilities, payroll contraction is a risk insofar as contributions which are typically reported as a percentage of payroll may increase as payrolls decline.

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

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

Beyond identifying risk categories, it is possible to quantify some risk factors. One fairly well known risk metric is the funded ratio of the plan. The rate is given as plan assets divided by plan liabilities.

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However, the definition of each of these terms may vary. The two typical alternatives used for assets are the market and actuarial value of assets. There are a number of alternative measures of liability depending on the funding method employed. The Governmental Accounting Standards Board (GASB) specifies that for financial reporting purposes, the funded ratio is determined by using the market value of assets divided by the entry age normal accrued liability. This value is given in the system's financial report. Alternatively, we have calculated the ratio of the actuarial value of assets to the entry age normal accrued liability based on the funding methodology used to fund the plan. The ratio is 75.48% as of June 30, 2016. This value gives some indication of the financial strength of the plan; however, it does not guarantee the ability of the fund to pay benefits in the future or indicate that in the future, contributions are likely to be less than or greater than current contributions. In addition, the ratio cannot be used in isolation to compare the relative strength of different retirement systems. However, the trend of this ratio over time can give some insight into the financial health of the plan. Even in this regard, caution is warranted since market fluctuations in asset values and changes in plan assumptions can distort underlying trends in this value. One additional risk measure is the sensitivity of the plan's cost structure to asset gains and losses. For this plan, we have determined that based on current assets and demographics, for each percentage under (over) the assumed rate of return on the actuarial value of assets, there will be a corresponding increase (reduction) in the actuarially required contribution as a percentage of projected payroll of 0.70% for the fund.

The ability of a system to recover from adverse asset or liability performance is related to the maturity of the plan population. In general, plans with increasing active membership are less sensitive to asset and liability gains and losses than mature plans since changes in plan costs can be partially allocated to new members. If the plan has a large number of active members compared to retirees, asset or liability losses can be more easily addressed. As more members retire, contributions can only be collected from a smaller segment of the overall plan population. Often, population ratios of actives to annuitants are used to measure the plan's ability to adjust or recover from adverse events since contributions are made by or on behalf of active members but not for retirees. Thus, if the plan suffers a mortality loss through increased longevity, this will affect both actives and retirees, but the system can only fund this loss by contributions related to active members. A measure of risk related to plan maturity is the ratio of total benefit payments to active payroll. For Fiscal 2016, this ratio is 37.24%; ten years ago this ratio was 28.29%.

One other area of risk is the risk that plan assumptions will need to be revised to conform to changing actual or expected plan experience. Such assumption revisions could relate to demographic or economic factors. With regard to the economic assumptions, we have determined that a reduction in the valuation interest rate by 1% (without any change to other collateral factors) would increase the actuarially required employer contribution rate for Fiscal 2017 by 17.69% of payroll.

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

CHANGES IN PLAN PROVISIONS

The following changes to the system were enacted during the 2016 Regular Session of the Louisiana Legislature:

ACT 176 provides that the actuarial note for any bill prefiled at least 45 days prior to a regular session of the legislature shall be completed and filed at least five days prior to the convening of that session.

ACT 208 establishes a Funding Deposit Account (FDA) with Firefighters' Retirement System. Allows the Board to maintain the employer contributions at the existing rate if the minimum rate is set below the existing rate. The board may also set the employer rate at any rate between the existing rate and the recommended minimum rate. The funds in the FDA can be used to reduce the system's unfunded accrued liability or future employer contributions.

ACT 410 requires the executive director or person holding the equivalent position of each state or statewide retirement system to file a Tier 2.1 personal financial statement.

ACT 460 requires that at least every five years the legislative auditor report to the legislature comparative summaries of each system's reported actuarial assumptions and funded ratio and his findings as to the appropriateness of each system's assumptions.

ACT 621 places a member of the House Committee on Retirement appointed by the speaker of the House of Representatives as a trustee on each of the boards of the state and statewide retirement systems, instead of the chairman of the House Committee on Retirement.

ASSET EXPERIENCE

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

	Market Value	Actuarial Value
2007	17.2%	11.6%
2008	- 5.0%	9.0%
2009	-20.8%	-4.9% *
2010	12.2%	6.1%
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%

*   Includes the effect of a change in the method for calculating the actuarial value of assets. The actuarial value of assets is based on the market value of investment securities adjusted to phase in asset earnings above or below the assumed rate of return over a five-year period with limits set at 85% and 115% of the market value of assets. When the adjusted value falls outside of the limits, the actuarial value is set equal to the average of the limited and adjusted value.

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

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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 2016, the fund earned $14,562,976 of dividends, interest and other recurring income. During the same period, the Fund had net realized and unrealized capital losses on investments (offset by non-recurring income) of $40,618,004. The Fund also had investment expenses of $6,175,796. The geometric mean of the market value rates of return measured over the last ten years was 3.0%. For the last twenty-five years, the geometric mean return was 5.7%.

The actuarial rate of return is presented for comparison to the assumed long-term rate of return of 7.5% used for the valuation. 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 7.5% assumption will reduce future costs; yields below 7.5% will increase future costs. For Fiscal 2016, the system experienced net actuarial investment earnings of $65,389,778 below the actuarial assumed earnings rate of 7.50% which produced an actuarial loss and increasd the interest-adjusted amortization payments on the system's UAL by $7,144,743 or 3.08% of projected payroll.

DEMOGRAPHICS AND LIABILITY EXPERIENCE

A reconciliation of the census for the system is given in Exhibit X. The average active contributing member is 38 years old with 11.35 years of service credit and an annual salary of $51,651. The system's active contributing membership experienced an increase of 170 members during Fiscal 2016. The number of DROP participants increased by 7 during Fiscal 2016. Over the last five years active membership has increased by 342 members. A review of the active census by age indicates that over the last ten years the population in the thirty-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.

The average service retiree is 65 years old with a monthly benefit of $3,607. The number of retirees and beneficiaries receiving benefits from the system increased by 74 during the fiscal year. Over the last five years, the number has increased by 411; during the same period, the annual benefits in payment increased by $25,199,072.

The changes in the makeup of the population and changes in members' salaries increased the interest adjusted employer normal cost over the last year by $1,816,679; the employer normal cost percentage increased by 0.05% of payroll. Plan liability experience for Fiscal 2016 was favorable. Salary increase rates at most durations were slightly less than projected; retirements were below projections; and withdrawals and deaths were above projections. These factors tend to reduce costs. Partially offsetting these factors was a greater than anticipated number of DROP entrants. Net plan liability experience gains totaled $6,578,348. These gains decreased the interest-adjusted amortization payments on the system's unfunded accrued liability by $718,776, which corresponds to payments of 0.31% of Fiscal 2017 payroll.

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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 annual cost for active members allocated to each year by the particular cost method utilized. The term unfunded accrued liability (UAL) refers to the excess of the present value of plan benefits over the sum of current assets and future normal costs. Each year the UAL grows with interest and is reduced by payments. In addition it may be increased or diminished by plan experience, changes in assumptions, or changes in benefits including COLA's. Contributions in excess of or less than the actuarially required amount can also decrease or increase the UAL balance. New entrants to the system can also increase or lower costs as a percent of payroll depending upon their demographic distribution. Finally, payroll growth affects plan costs since payments on the system's unfunded liability are on a fixed, level schedule. 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.

An explanation of the change in costs related to asset and liability gains and losses as well as changes in demographics and assumptions is given in prior sections of the report. In addition to these components, variances in contribution levels and payroll also affect costs. For Fiscal 2016 contributions totaled $6,794,080 more than required; the interest-adjusted amortization credit on the contribution surplus for Fiscal 2017 is $742,348, or 0.32% of Fiscal 2017 projected payroll. In addition, for Fiscal 2017 the net effect of the change in payroll on amortization costs was to reduce such costs by 1.26% of projected payroll.

A reconciliation of the change in costs is given below. Values listed in dollars are interest adjusted for payment throughout the fiscal year. Percentages are based on the projected payroll for Fiscal 2017 except for those items labeled Fiscal 2016.

	Dollars	Percentage of Payroll
Employer Normal Cost for Fiscal 2016	$ 28,984,669	13.23%
Cost of Demographic and Salary Changes	$ 1,816,679	0.05%
Normal Cost for Fiscal 2017	$ 30,801,348	13.28%
UAL Amortization Payments for Fiscal 2016	$ 50,028,917	22.83%
Change due to change in payroll	N/A	(1.26%)
Additional Amortization Expenses for Fiscal 2017:		
Asset Experience Loss (Gain)	$ 7,144,743	3.08%

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Contribution Loss (Gain)	$ (742,348)	(0.32%)
Liability Loss (Gain)	$ (718,776)	(0.31%)
Total Amortization Expense (Credit) for Fiscal 2017	$ 55,712,536	24.02%
Estimated Administrative Cost for Fiscal 2017	$ 1,623,897	0.70%
Total Employer Normal Cost & Amortization Payments	$ 88,137,781	38.00%

The derivation of the actuarially required contribution for the current fiscal year is given in Exhibit I. The employer normal cost for Fiscal 2017, interest adjusted for mid-year payment is $30,801,348. The interest adjusted amortization payments on the system's unfunded actuarial accrued liability totaled $55,712,536. The total actuarially required contribution is determined by summing these two values together with estimated administrative expenses. As given in line 12 of Exhibit I the total actuarially required contribution for Fiscal 2017 is $88,137,781. We estimate insurance premium taxes of $25,310,647, or 10.91% of payroll, will be paid to the system in Fiscal 2017. This level of Insurance Premium Taxes represents a 0.42% decrease from the prior year as a percentage of payroll. Hence, the total actuarially required net direct employer contribution for Fiscal 2017 amounts to $62,827,134 or 27.09% of payroll.

Since the actual employer contribution rate for Fiscal 2017 is 25.25% of payroll, there will be a contribution shortfall of 1.84% of payroll. This shortfall will increase the actuarially required contribution recommended for Fiscal 2018. In order to determine a minimum recommended net direct employer contribution rate for Fiscal 2018, the Employer Normal Cost and Amortization Payments were estimated for Fiscal 2018, adjusted for the impact of the estimated contribution shortfall for Fiscal 2017 and the estimated Insurance Premium Taxes for Fiscal 2018. Therefore, as given in line 25 of Exhibit I, the estimated actuarially required net direct employer contribution for Fiscal 2018 is $63,535,578, or 26.50% of projected payroll (rounded to the nearest 0.25%) for members with earnings greater than the Department of HHS poverty guidelines. For members with earnings less than or equal to the Department of HHS poverty guidelines, employee contributions will be set equal to 8.00% of payroll. The employer contribution rate to be applied to the earnings of such members should be set equal to 28.50% of payroll.

COST OF LIVING INCREASES

During Fiscal 2016, the actual cost of living (as measured by the US Department of Labor CPI-U) increased by 1.01%. 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 that cost of living benefits shall be in the form (unless the Board otherwise specifies) of $X×(A+B) where X is at most $1 and "A" represents the number of years of credited service accrued at retirement or at death of the member or retiree and "B" is equal to the number of years since retirement or since death of the member or retiree to June 30th of the initial year of such increase. The provisions 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 77.89% and since the system granted a cost of living increase on January 1, 2015 which is within the three most recent fiscal years, we have determined that for Fiscal 2016 the plan does not meet the criteria set forth in R. S. 11:243 for granting a cost of living increase. In addition, the system failed to earn the 7.50% assumed rate of return on an actuarial basis and therefore has no "excess interest" for the fiscal year.

Components of Present Value of Future Benefits
June 30, 2016

$503,720,873

$1,550,261,745

$230,423,085

$305,570,473

- Actuarial Value of Assets
- Present Value of Future Employer Normal Cost
- Present Value of Employee Contributions
- Unfunded Actuarial Accrued Liability
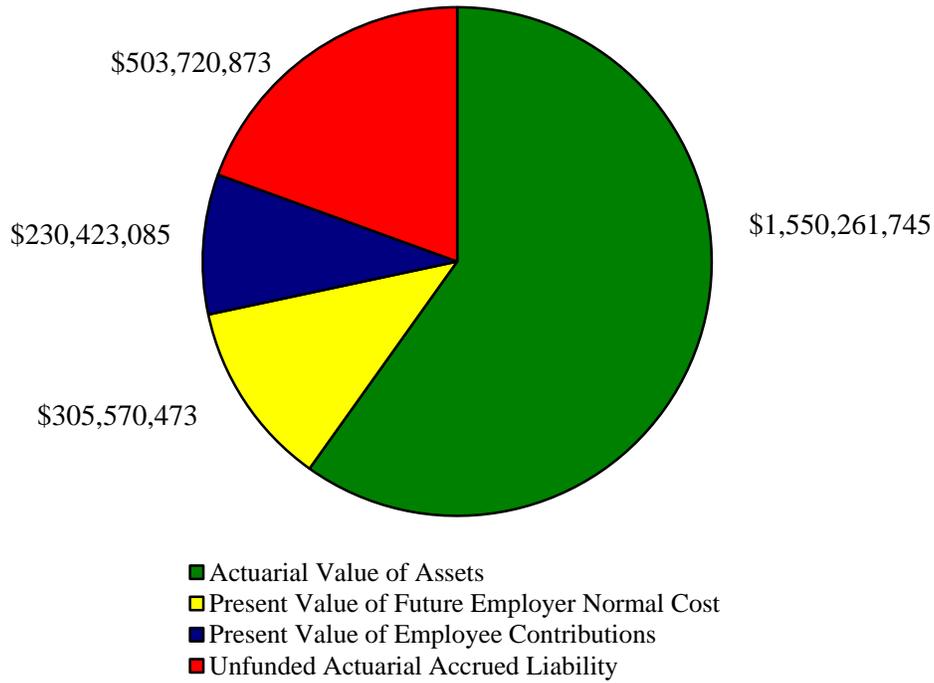
Components of Present Value of Future Benefits
Historical

($) Millions

3,000 · 2,500 · 2,000 · 1,500 · 1,000 · 500 · 0

2007 2008 2009 2010 2011 2012 2013 2014 2015 2016

- Actuarial Value of Assets
- Present Value of Future Employee Contributions
- Present Value of Future Employer Normal Cost
- Unfunded Accrued Liability

G. S. Curran & Company, Ltd.
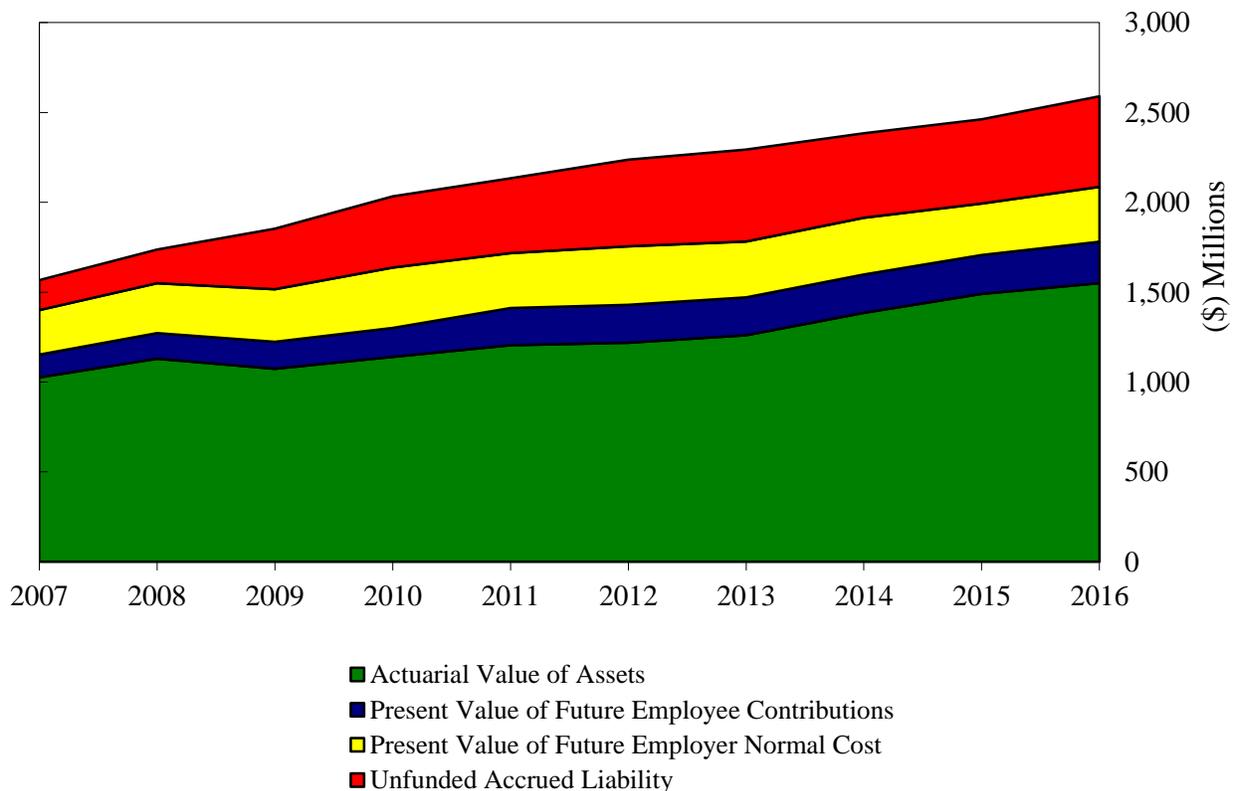
Actuarial Value of Assets vs. Actuarial Accrued Liability

■ Actuarial Value of Assets   ■ Actuarial Accrued Liability
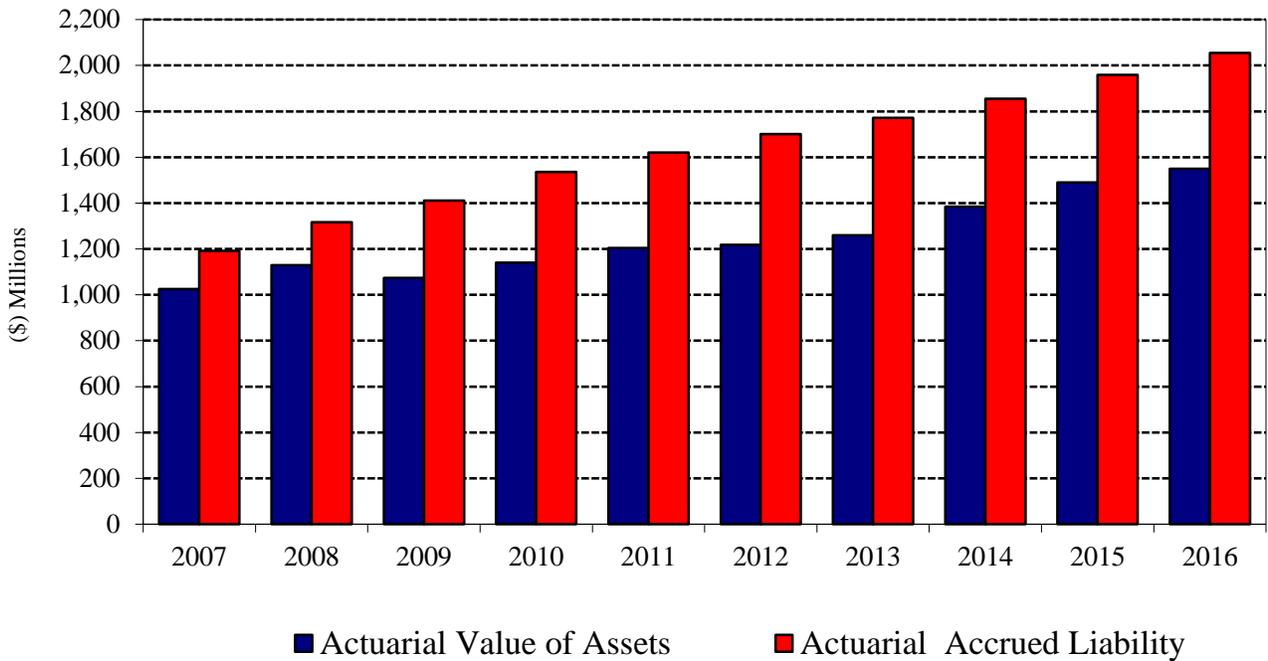
Components of Actuarial Funding

(%) Percentage of Payroll

■ Employee Contributions   ■ Required Tax Contributions   ■ Required Net Direct Employer Contributions
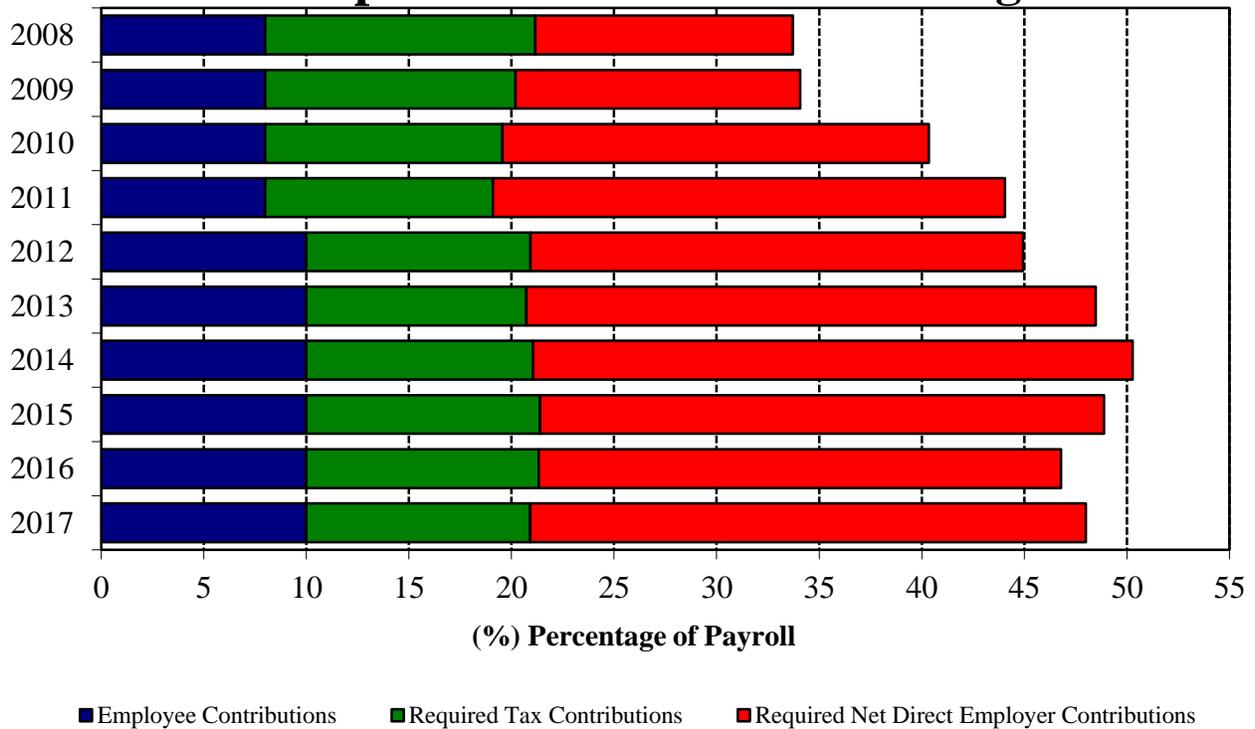
(2012 and later employee contribution level is based on members with earnings above the poverty level)

G. S. Curran & Company, Ltd.

Historical Asset Yields

Yield (As a Percent)

Year	Actuarial Yield	Market Yield
2007	11.6	17.2
2008	9.0	-5.0
2009	-4.9	-20.8
2010	6.1	12.2
2011	4.5	17.3
2012	-0.2	-4.1
2013	2.5	10.5
2014	8.8	11.4
2015	6.7	-0.2
2016	3.1	-2.3

■ Actuarial Yield   ■ Market Yield

Unfunded Accrued Liability

Millions
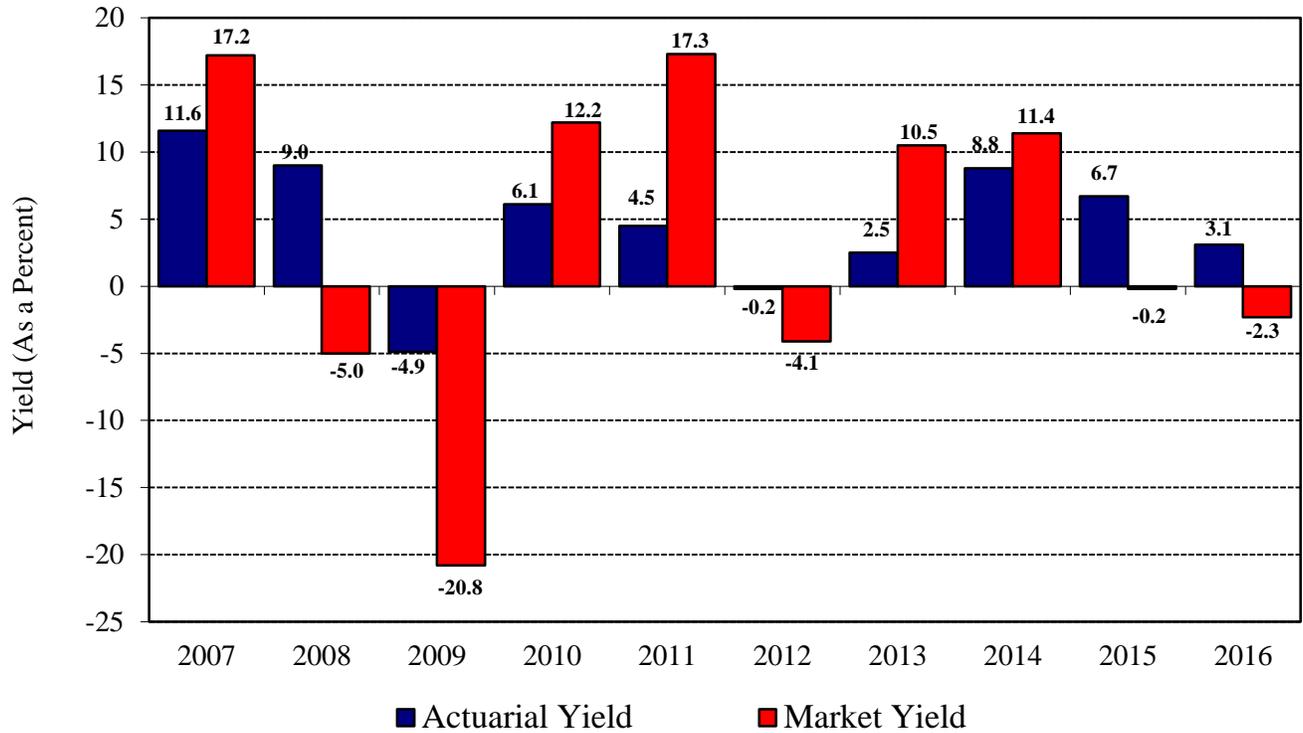
■ Unfunded Accrued Liability
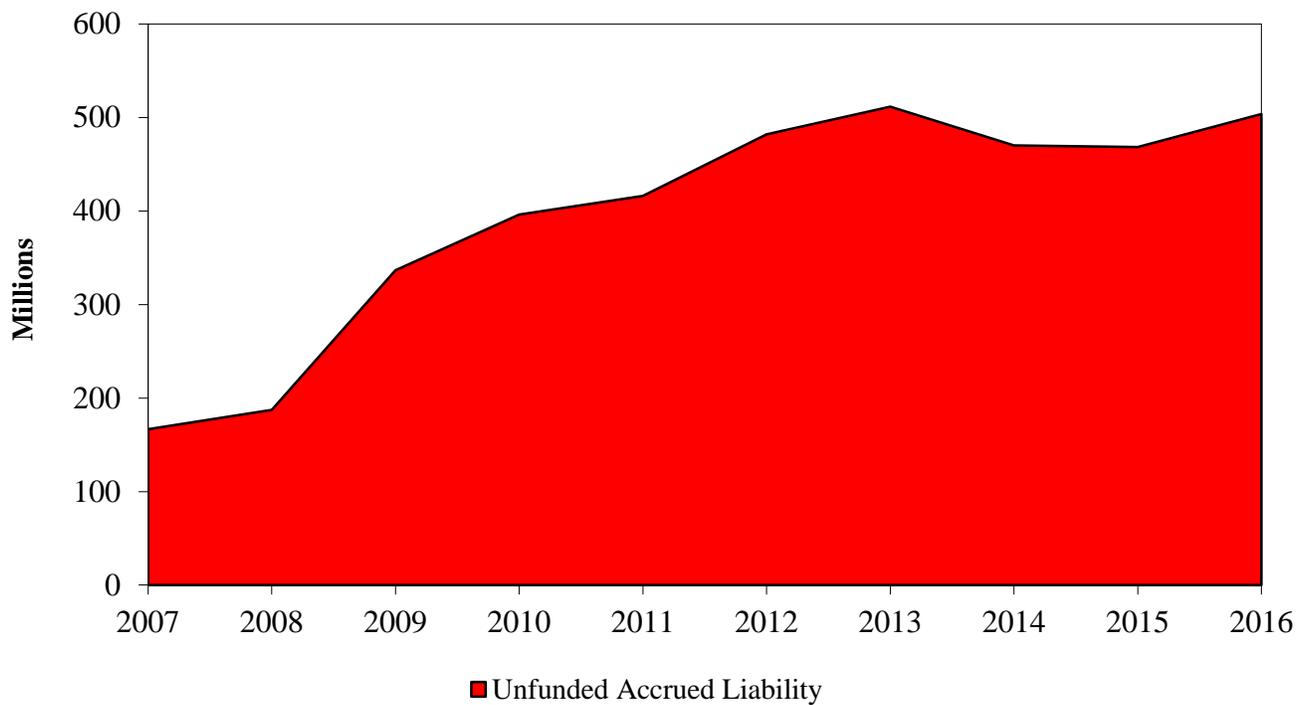
Net Non-Investment Income
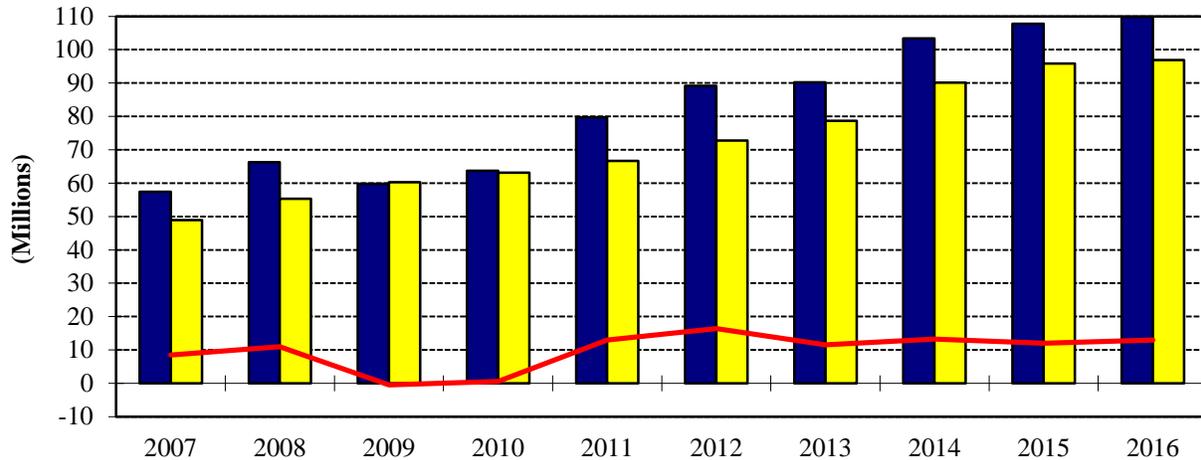
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Non-Investment Income ($Mil)	■	57.4	66.3	59.8	63.7	79.7	89.2	90.2	103.4	107.8	109.9
Benefits and Expenses ($Mil)	☐	48.9	55.3	60.3	63.1	66.7	72.8	78.7	90.1	95.8	96.9
Net Non-Investment Income ($Mil)	—	8.5	11.0	-0.5	0.6	13.0	16.4	11.5	13.3	12.0	13.0

Total Income vs. Expenses
(Based on Market Value of Assets)
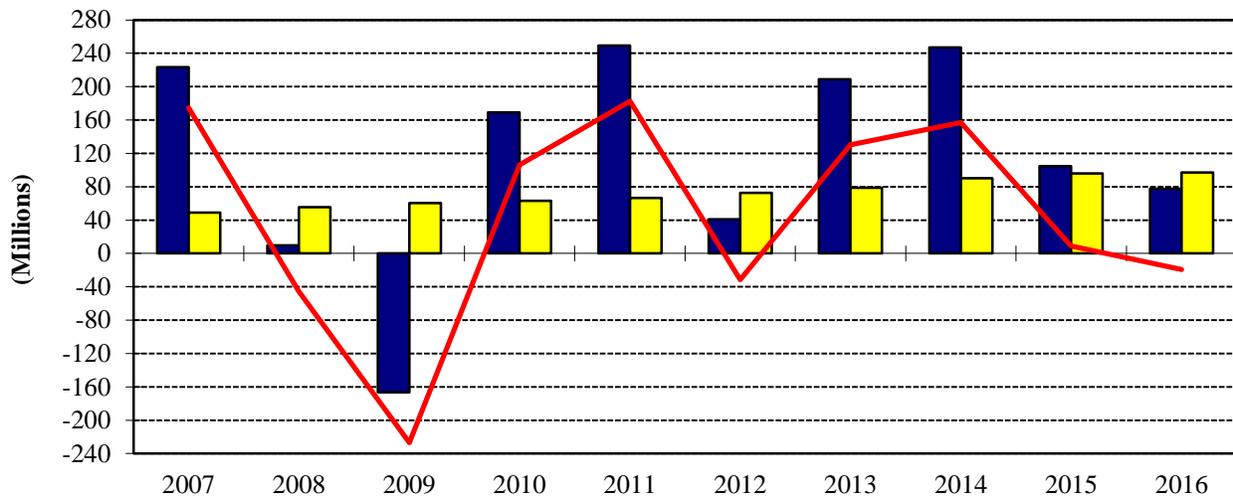
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total Income ($Mil)	■	223.3	9.5	-166.6	169.3	249.4	41.2	209.0	247.2	104.6	77.7
Benefits and Expenses ($Mil)	☐	48.9	55.3	60.3	63.1	66.7	72.8	78.7	90.1	95.8	96.9
Net Change in MVA ($Mil)	—	174.4	-45.8	-226.9	106.2	182.7	-31.6	130.3	157.1	8.8	-19.2

G. S. Curran & Company, Ltd.

Active – Census by Age
(as a percent)

Legend: 2006 (red) · 2011 (green) · 2016 (blue)
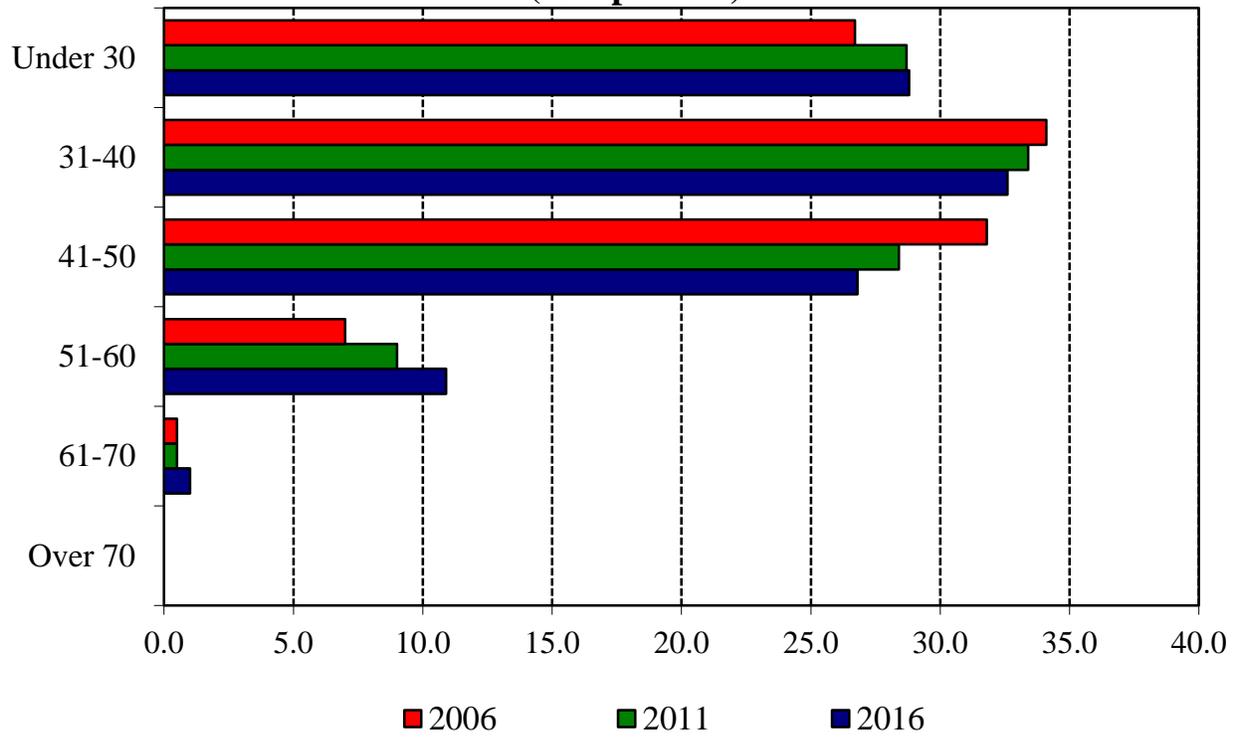
Active – Census by Service
(as a percent)

Legend: 2006 (red) · 2011 (green) · 2016 (blue)
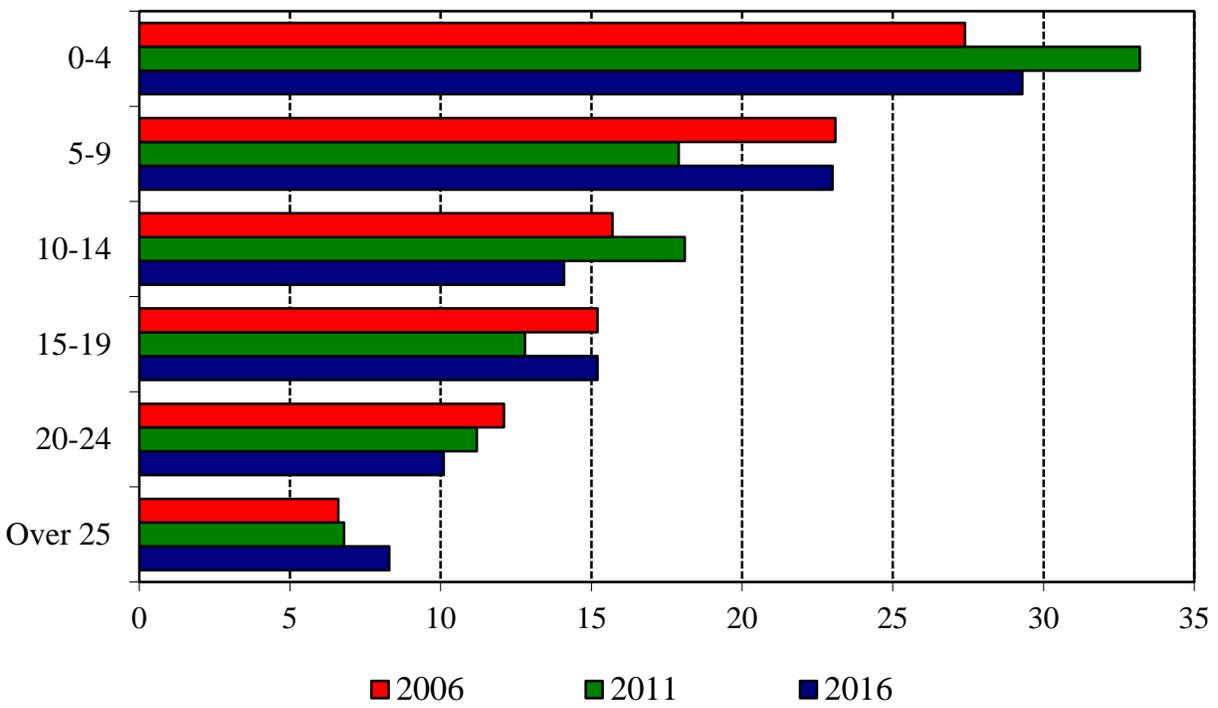
EXHIBIT I
ANALYSIS OF ACTUARIALLY REQUIRED CONTRIBUTIONS

1.	Normal Cost of Retirement Benefits	$	45,563,915
2.	Normal Cost of Death Benefits	$	1,484,910
3.	Normal Cost of Disability Benefits	$	1,309,113
4.	Normal Cost of Deferred Retirement Benefits	$	1,589,014
5.	Normal Cost of Contribution Refunds	$	2,129,637
6.	TOTAL Normal Cost as of July 1, 2016 (1+2+3+4+5)	$	52,076,589
7.	TOTAL Normal Cost Interest Adjusted for Mid-year Payment	$	53,994,157
8.	Adjustment to Total Normal Cost for Employee Portion	$	23,192,809
9.	Employer Normal Cost, Adjusted for Midyear Payment	$	30,801,348
10.	Amortization Payments on Unfunded Accrued Liability at Midyear	$	55,712,536
11.	Projected Administrative Expenses for Fiscal 2017	$	1,623,897
12.	TOTAL Employer Cost (9 + 10 + 11)	$	88,137,781
13.	Expected Insurance Premium Taxes due in Fiscal 2017	$	25,310,647
14.	Net Direct Actuarially Required Employer Contribution for Fiscal 2017 (12 − 13)	$	62,827,134
15.	Projected Payroll for Contributing Members (Fiscal 2017)	$	231,928,094
16.	Net Direct Actuarially Required Employer Contribution as a Percentage of Projected Payroll for Fiscal 2017 (14 ÷ 15)		27.09%*
17.	Actual Net Direct Employer Contribution Rate for Fiscal 2017		25.25%*
18.	Projected Fiscal 2017 Contribution Loss (Gain) as a % of Payroll (16 − 17)		1.84%
19.	Projected Fiscal 2017 Employer Contribution Shortfall (Surplus) (15 × 18)	$	4,267,477
20.	Estimated Amortization of Fiscal 2017 Employer Contribution Shortfall (Surplus) Based on Midyear Payment in Fiscal 2018	$	483,451
21.	Estimated Fiscal 2018 Employer Normal Cost Adjusted for Midyear Payment	$	31,707,335
22.	Estimated Fiscal 2018 Amortization Payments based on Fiscal 2017 UAL	$	55,712,536
23.	Estimated Fiscal 2018 Administrative Expenses	$	1,670,584
24.	Estimated Insurance Premium Taxes due in Fiscal 2018	$	26,038,328
25.	Estimated Actuarially Required Net Direct Employer Contributions for Fiscal 2018 (20 + 21 + 22 + 23 − 24)	$	63,535,578
26.	Projected Payroll for Contributing Members (Fiscal 2018)	$	238,750,001
27.	Minimum Recommended Net Direct Employer Contribution Rate for Fiscal 2018 (25 ÷ 26, Rounded to nearest 0.25%)		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.

G. S. Curran & Company, Ltd.

EXHIBIT II
PRESENT VALUE OF FUTURE BENEFITS

PRESENT VALUE OF FUTURE BENEFITS FOR ACTIVE MEMBERS:

Retirement Benefits	$ 1,516,756,243
Survivor Benefits	25,058,863
Disability Benefits	18,715,994
Vested Termination Benefits	29,442,281
Refunds of Contributions	13,815,952

TOTAL Present Value of Future Benefits for Active Members .... $ 1,603,789,333

PRESENT VALUE OF FUTURE BENEFITS FOR TERMINATED MEMBERS:

Terminated Vested Members Due Benefits at Retirement.. $	13,892,843
Terminated Members with Reciprocals Due Benefits at Retirement	0
Terminated Members Due a Refund	2,803,856

TOTAL Present Value of Future Benefits for Terminated Members .... $ 16,696,699

PRESENT VALUE OF FUTURE BENEFITS FOR RETIREES:

Regular Retirees

Maximum	$ 223,925,995
Option 1	71,399,569
Option 2	338,820,935
Option 3	142,390,839
Option 4	10,846,023
Option 5	0

TOTAL Regular Retirees .... $ 787,383,361

Disability Retirees 29,315,697

Survivors & Widows 60,968,819

DROP Account Balances Payable to Retirees 88,773,732

IBO Retirees' Account Balance 3,048,535

TOTAL Present Value of Future Benefits for Retirees & Survivors .... $ 969,490,144

TOTAL PRESENT VALUE OF FUTURE BENEFITS .... $ 2,589,976,176

G. S. Curran & Company, Ltd.

EXHIBIT III – SCHEDULE A
MARKET VALUE OF ASSETS

CURRENT ASSETS:

Cash in Banks	$ 9,951,175	
Contributions and Taxes Receivable	7,122,164	
Accrued Interest and Dividends	3,071,975	
Investments Receivable	2,183,754	
Prepaid Expenses	2,003	
Receivable on Currency Contracts	17,773,710	
TOTAL CURRENT ASSETS		$ 40,104,781

Property Plant & Equipment .... $ 691,145

INVESTMENTS:

Cash Equivalents	$ 28,945,286	
Equities	733,833,718	
Fixed Income	314,134,536	
Real Estate	115,168,700	
Alternative Investments	45,696,756	
Tactical Allocation	137,316,166	
TOTAL INVESTMENTS		$ 1,375,095,162
MERGER NOTES		$ 2,824,392
TOTAL ASSETS		$ 1,418,715,480

CURRENT LIABILITIES:

Accounts Payable	$ 1,015,003	
Investments Payable	422,199	
Payable on Currency Contracts	17,386,066	
TOTAL CURRENT LIABILITIES		$ 18,823,268
MARKET VALUE OF ASSETS		$ 1,399,892,212

G. S. Curran & Company, Ltd.

EXHIBIT III – SCHEDULE B
ACTUARIAL VALUE OF ASSETS

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

Fiscal year 2016	$ (139,144,339)
Fiscal year 2015	(109,387,912)
Fiscal year 2014	49,370,553
Fiscal year 2013	34,152,321
Fiscal year 2012	(135,213,355)
Total for five years	$ (300,222,732)

Deferral of excess (shortfall) of invested income:

Fiscal year 2016 (80%)	$ (111,315,471)
Fiscal year 2015 (60%)	(65,632,747)
Fiscal year 2014 (40%)	19,748,221
Fiscal year 2013 (20%)	6,830,464
Fiscal year 2012 (0%)	0
Total deferred for year	$ (150,369,533)

Market value of plan net assets, end of year	$ 1,399,892,212
Preliminary actuarial value of plan assets, end of year	$ 1,550,261,745

Actuarial value of assets corridor

85% of market value, end of year	$ 1,189,908,380
115% of market value, end of year	$ 1,609,876,044

Final actuarial value of plan net assets, end of year	$ 1,550,261,745

G. S. Curran & Company, Ltd.

EXHIBIT IV
PRESENT VALUE OF FUTURE CONTRIBUTIONS

Employee Contributions to the Annuity Savings Fund	$ 230,423,085
Employer Normal Contributions to the Pension Accumulation Fund	305,570,473
Employer Amortization Payments to the Pension Accumulation Fund	503,720,873
TOTAL PRESENT VALUE OF FUTURE CONTRIBUTIONS	$ 1,039,714,431

EXHIBIT V - SCHEDULE A
ACTUARIAL ACCRUED LIABILITIES

LIABILITY FOR ACTIVE MEMBERS

Accrued Liability for Retirement Benefits	$ 1,047,434,619	
Accrued Liability for Survivor Benefits	9,840,960	
Accrued Liability for Disability Benefits	5,310,401	
Accrued Liability for Vested Termination Benefits	13,149,167	
Accrued Liability for Refunds of Contributions	(7,939,372)	
TOTAL Actuarial Accrued Liability for Active Members		$ 1,067,795,775
LIABILITY FOR TERMINATED MEMBERS		$ 16,696,699
LIABILITY FOR RETIREES AND SURVIVORS		$ 969,490,144
TOTAL ACTUARIAL ACCRUED LIABILITY		$ 2,053,982,618
ACTUARIAL VALUE OF ASSETS		$ 1,550,261,745
UNFUNDED ACTUARIAL ACCRUED LIABILITY		$ 503,720,873

EXHIBIT V - SCHEDULE B
CHANGE IN UNFUNDED ACTUARIAL ACCRUED LIABILITY

PRIOR YEAR UNFUNDED ACCRUED LIABILITY		$ 468,441,496
Interest on Unfunded Accrued Liability	$ 35,133,112	
Investment Experience Loss	65,389,778	
TOTAL Additions to UAL		$ 100,522,890
Liability Experience Gain	$ 6,578,348	
Contribution Excess with Accrued Interest	6,794,080	
Interest Adjusted Amortization Payments	51,871,085	
TOTAL Reductions to UAL		$ 65,243,513
NET Change in Unfunded Accrued Liability		$ 35,279,377
CURRENT YEAR UNFUNDED ACCRUED LIABILITY		$ 503,720,873

G. S. Curran & Company, Ltd.

EXHIBIT V - SCHEDULE C
AMORTIZATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY - June 30, 2016

FISCAL YEAR	DESCRIPTION	AMORT. PERIOD	INTIAL BALANCE	YEARS REMAINING	REMAINING BALANCE	AMORT. PAYMENTS
1993	Merger Loss (Gain)	30	$13,485,002	7	$5,965,241	$1,047,664
1995	Merger Loss (Gain)	30	41,779,611	9	22,318,554	3,254,713
1996	Merger Loss (Gain)	30	1,772,399	10	1,020,141	138,251
1997	Merger Loss (Gain)	30	890,324	11	546,819	69,534
1998	Merger Loss (Gain)	30	1,602,435	12	1,041,919	125,299
1999	Merger Loss (Gain)	30	14,104,876	13	9,645,347	1,104,183
2001	Merger Loss (Gain)	30	3,117,590	15	2,320,977	244,593
2002	Cumulative Non-Merger Bases	27	175,578,584	13	124,296,354	14,229,238
2003	Contribution Loss (Gain)	15	2,678,010	2	543,014	281,320
2003	Assumption Loss (Gain)	15	(3,248,077)	2	(658,604)	(341,205)
2003	Experience Loss (Gain)	15	44,477,780	2	9,018,645	4,672,310
2004	Contribution Loss (Gain)	15	2,129,874	3	626,491	224,102
2004	Experience Loss (Gain)	15	1,570,785	3	462,038	165,275
2005	Experience Loss (Gain)	15	(24,922,321)	4	(9,456,423)	(2,626,401)
2005	Assumption Loss (Gain)	15	(57,207,831)	4	(21,706,706)	(6,028,760)
2005	Contribution Loss (Gain)	15	(2,457,193)	4	(932,346)	(258,948)
2006	Experience Loss (Gain)	15	(30,043,731)	5	(13,770,458)	(3,166,113)
2006	Benefits/COLA Loss (Gain)	15	12,495,729	5	5,727,382	1,316,843
2006	Assumption Loss (Gain)	15	7,880,410	5	3,611,963	830,465
2006	Contribution Loss (Gain)	15	(3,044,474)	5	(1,395,426)	(320,837)
2007	Contribution Loss (Gain)	15	(3,684,696)	6	(1,959,348)	(388,306)
2007	Merger Loss (Gain)	30	1,065,812	21	939,750	83,948
2007	Experience Loss (Gain)	15	(19,348,466)	6	(10,288,602)	(2,039,009)
2007	Benefits/COLA Loss (Gain)	15	13,421,495	6	7,136,919	1,414,404
2008	Assumption Loss (Gain)	15	(138,425)	7	(83,060)	(14,588)
2008	Contribution Loss (Gain)	15	(4,399,499)	7	(2,639,864)	(463,635)
2008	Merger Loss (Gain)	30	1,556,324	22	1,399,090	122,582
2008	Experience Loss (Gain)	15	11,244,458	7	6,747,095	1,184,980
2008	Benefits/COLA Loss (Gain)	15	15,006,752	7	9,004,611	1,581,464
2009	Asset Assumption Loss (Gain)	15	(121,695,690)	8	(80,752,116)	(12,824,715)
2009	Asset Experience Loss (Gain)	20	261,874,151	13	208,735,035	23,895,637
2009	COLA Loss (Gain)	20	15,784,880	13	12,581,835	1,440,347
2009	Experience Loss (Gain)	20	(3,921,422)	13	(3,125,693)	(357,824)
2009	Contribution Loss (Gain)	20	993,536	13	791,929	90,659
2010	Liability Assumption Loss(Gain)	15	37,843,942	9	27,347,791	3,988,126
2010	Asset Experience Loss (Gain)	19	14,930,089	13	12,181,802	1,394,552
2010	Experience Loss (Gain)	19	985,441	13	804,043	92,046
2010	Contribution Loss (Gain)	19	11,264,571	13	9,191,021	1,052,173
2011	Merger Loss (Gain)	30	329,132	25	310,643	25,924
2011	Asset Experience Loss (Gain)	18	34,204,316	13	28,635,746	3,278,172
2011	Experience Loss (Gain)	18	(13,197,519)	13	(11,048,921)	(1,264,862)
2011	Contribution Loss (Gain)	18	6,777,563	13	5,674,154	649,568
2012	Asset Experience Loss (Gain)	17	93,583,915	13	80,607,503	9,227,812

FISCAL YEAR	DESCRIPTION	AMORT. PERIOD	INITIAL BALANCE	YEARS REMAINING	REMAINING BALANCE	AMORT. PAYMENTS
2012	Experience Loss (Gain)	17	(21,072,289)	13	(18,150,391)	(2,077,826)
2012	Contribution Loss (Gain)	17	2,867,982	13	2,470,306	282,796
2013	Asset Experience Loss (Gain)	16	61,647,815	13	54,798,439	6,273,233
2013	Experience Loss (Gain)	16	(30,226,604)	13	(26,868,279)	(3,075,836)
2013	Contribution Loss (Gain)	16	9,431,584	13	8,383,689	959,751
2013	Assumption Loss (Gain)	15	1,290,257	12	1,130,662	135,972
2014	Asset Experience Loss (Gain)	15	(16,528,266)	13	(15,215,162)	(1,741,806)
2014	Experience Loss (Gain)	15	(12,708,035)	13	(11,698,432)	(1,339,217)
2014	Contribution Loss (Gain)	15	3,117,549	13	2,869,873	328,538
2014	Liability Assumption Loss (Gain)	15	(318,965)	13	(293,623)	(33,614)
2015	Asset Experience Loss (Gain)	15	11,058,278	14	10,634,887	1,165,360
2015	Experience Loss (Gain)	15	(18,187,590)	14	(17,491,238)	(1,916,671)
2015	Contribution Loss (Gain)	15	(5,158,272)	14	(4,960,776)	(543,597)
2015	Liability Assumption Loss (Gain)	15	7,891,805	14	7,589,649	831,666
2015	COLA Loss	15	17,767,886	14	17,087,602	1,872,442
2016	Asset Experience Loss (Gain)	15	65,389,778	15	65,389,778	6,891,002
2016	Experience Loss (Gain)	15	(6,578,348)	15	(6,578,348)	(693,249)
2016	Contribution Loss (Gain)	15	(6,794,080)	15	(6,794,080)	(715,984)

TOTAL Unfunded Actuarial Accrued Liability $503,720,873*

TOTAL Fiscal 2017 Amortization Payments at Beginning of Year $53,733,941

TOTAL Fiscal 2017 Amortization Payments Adjusted to Mid-Year $55,712,536

* Does not equal sum of remaining balances due to rounding.

EXHIBIT VI
ANALYSIS OF CHANGE IN ASSETS

Actuarial Value of Assets (June 30, 2015) .... $ 1,490,408,510

INCOME:

Member Contributions	$	22,579,714
Employer Contributions		61,537,449
Irregular Contributions		944,097
Insurance Premium Taxes		24,825,521

Total Contributions... $ 109,886,781

Net Depreciation of Investments..	$	(41,242,270)
Interest & Dividends		14,562,976
Legal Settlement		624,266
Investment Expense		(6,175,796)

Net Investment Income.. $ (32,230,824)

TOTAL Income .... $ 77,655,957

EXPENSES:

Retirement Benefits	$	94,078,659
Refunds of Contributions..		1,358,460
Administrative Expenses		1,465,395

TOTAL Expenses .... $ 96,902,514

Net Market Value Income for Fiscal 2016 (Income - Expenses) .... $ (19,246,557)

Unadjusted Assets as of June 30, 2016
(Assets Previous Year + Net Income) .... $ 1,471,161,953

Adjustment for Actuarial Smoothing.. $ 79,099,792

Actuarial Value of Assets: (June 30, 2016)... $ 1,550,261,745

G. S. Curran & Company, Ltd.

EXHIBIT VII
PENSION BENEFIT OBLIGATION

Present Value of Credited Projected Benefits Payable to Current Employees............. $ 1,004,213,221

Present Value of Benefits Payable to Terminated Employees 16,696,699

Present Value of Benefits Payable to Current Retirees and Beneficiaries 969,490,144

TOTAL PENSION BENEFIT OBLIGATION .... $ 1,990,400,064

NET ACTUARIAL VALUE OF ASSETS .... $ 1,550,261,745

Ratio of Net Actuarial Value of Assets to Pension Benefit Obligation....................... 77.89%

EXHIBIT VIII
CENSUS DATA

	Active	Terminated with Funds on Deposit	DROP	Retired	Total
Number of members as of June 30, 2015	4,192	604	166	2,139	7,101
Additions to Census					
Initial membership	370	31			401
Omitted in error last year					
Death of another member				25	25
Adjustment for multiple records				4	4
Change in Status during Year					
Actives terminating service	(86)	86			
Actives who retired	(44)			44	
Actives entering DROP	(73)		73		
Term. members rehired	33	(33)			
Term. members who retire		(7)		7	
Retirees who are rehired					
Refunded who are rehired	3				3
DROP participants retiring			(45)	45	
DROP returned to work	21		(21)		
Omitted in error last year					
Eliminated from Census					
Refund of contributions	(49)	(51)			(100)
Deaths	(5)			(51)	(56)
Included in error last year					
Adjustment for multiple records					
Number of members as of June 30, 2016	4,362	630	173	2,213	7,378

G. S. Curran & Company, Ltd.

ACTIVES CENSUS BY AGE:

Age	Number Male	Number Female	Total Number	Average Salary	Total Salary
16 - 20	36	0	36	29,697	1,069,077
21 - 25	436	19	455	35,507	16,155,493
26 - 30	735	29	764	40,238	30,741,641
31 - 35	707	42	749	45,866	34,353,537
36 - 40	633	39	672	51,940	34,903,724
41 - 45	599	35	634	59,218	37,544,480
46 - 50	492	41	533	63,948	34,084,263
51 - 55	306	37	343	68,965	23,655,147
56 - 60	112	20	132	71,101	9,385,269
61 - 65	30	5	35	76,746	2,686,107
66 - 70	6	2	8	79,448	635,587
71 - 75	1	0	1	86,787	86,787
TOTAL	4,093	269	4,362	51,651	225,301,112

THE ACTIVE CENSUS INCLUDES 1,993 ACTIVES WITH VESTED BENEFITS, INCLUDING 68 ACTIVE FORMER DROP PARTICIPANTS. THE 173 CURRENT DROP PARTICIPANTS ARE EXCLUDED.

DROP PARTICIPANTS:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
46 - 50	25	1	26	54,401	1,414,436
51 - 55	84	2	86	58,510	5,031,848
56 - 60	45	1	46	66,926	3,078,581
61 - 65	11	2	13	63,203	821,645
66 - 70	2	0	2	41,401	82,802
TOTAL	167	6	173	60,285	10,429,312

G. S. Curran & Company, Ltd.

TERMINATED MEMBERS DUE A DEFERRED RETIREMENT BENEFIT:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
36 - 40	7	2	9	25,960	233,640
41 - 45	16	0	16	21,481	343,701
46 - 50	23	1	24	27,271	654,496
51 - 55	20	1	21	27,888	585,640
56 - 60	1	0	1	44,344	44,344
66 - 70	1	0	1	23,393	23,393
TOTAL	68	4	72	26,184	1,885,214

TERMINATED MEMBERS DUE A REFUND OF CONTRIBUTIONS:

Contributions Ranging From	To	Number	Total Contributions
0 -	99	57	2,843
100 -	499	146	37,904
500 -	999	65	46,676
1000 -	1999	56	78,735
2000 -	4999	80	261,194
5000 -	9999	68	494,402
10000 -	19999	38	554,936
20000 -	99999	48	1,327,166
	TOTAL	558	2,803,856

REGULAR RETIREES:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
46 - 50	27	2	29	48,281	1,400,157
51 - 55	204	5	209	49,532	10,352,217
56 - 60	373	17	390	48,813	19,037,147
61 - 65	345	11	356	45,845	16,320,666
66 - 70	319	5	324	40,529	13,131,465
71 - 75	173	4	177	36,735	6,502,107
76 - 80	119	2	121	35,447	4,289,051
81 - 85	49	0	49	29,268	1,434,118
86 - 90	39	0	39	26,750	1,043,257
91 - 99	11	0	11	26,678	293,458
TOTAL	1,659	46	1,705	43,287	73,803,643

DISABILITY RETIREES:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
36 - 40	4	1	5	22,507	112,535
41 - 45	6	2	8	23,648	189,187
46 - 50	21	1	22	25,374	558,227
51 - 55	19	2	21	24,998	524,951
56 - 60	23	3	26	20,756	539,645
61 - 65	21	1	22	21,867	481,081
66 - 70	13	1	14	21,745	304,430
71 - 75	10	0	10	16,063	160,627
76 - 80	8	0	8	12,297	98,372
81 - 85	6	0	6	16,537	99,223
86 - 90	1	0	1	13,830	13,830
TOTAL	132	11	143	21,553	3,082,108

SURVIVORS:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
0 - 25	17	22	39	5,283	206,026
26 - 30	0	1	1	22,222	22,222
31 - 35	1	3	4	18,880	75,518
36 - 40	1	3	4	17,362	69,448
41 - 45	1	8	9	22,007	198,064
46 - 50	0	12	12	28,012	336,138
51 - 55	0	19	19	24,842	472,004
56 - 60	0	24	24	28,598	686,340
61 - 65	2	30	32	24,664	789,252
66 - 70	0	35	35	20,485	716,967
71 - 75	1	46	47	21,040	988,880
76 - 80	0	41	41	19,856	814,087
81 - 85	0	47	47	19,354	909,657
86 - 90	0	45	45	14,113	635,073
91 - 99	0	6	6	15,601	93,607
TOTAL	23	342	365	19,214	7,013,283

G. S. Curran & Company, Ltd.

ACTIVE MEMBERS:

Completed Years of Service

Attained Ages	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over	Total
0 - 20	26	10										36
21 - 25	149	96	86	60	35	29						455
26 - 30	110	86	90	76	56	329	17					764
31 - 35	46	55	29	43	50	324	192	10				749
36 - 40	19	13	19	22	14	173	196	207	9			672
41 - 45	10	8	7	6	13	82	108	238	151	11		634
46 - 50	8	11	7	3	7	37	55	107	193	104	1	533
51 - 55	3		1	2	2	23	28	65	63	116	40	343
56 - 60						8	16	25	15	44	24	132
61 - 65		1					2	10	5	7	10	35
66 - 70								2	3		3	8
71 & Over											1	1
Totals	371	280	239	212	177	1,005	614	664	439	282	79	4,362

AVERAGE ANNUAL SALARY OF ACTIVE MEMBERS:

Completed Years of Service

Attained Ages	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over	Average Salary
0 - 20	29,545	30,090										29,697
21 - 25	30,629	34,436	37,714	39,996	40,835	41,848						35,507
26 - 30	31,139	36,424	37,939	40,581	40,878	44,247	49,337					40,238
31 - 35	35,340	36,838	39,431	39,292	42,953	46,277	52,984	55,439				45,866
36 - 40	31,982	42,781	35,823	42,866	38,459	48,786	52,743	58,843	68,853			51,940
41 - 45	40,484	36,824	36,417	40,871	43,562	47,467	54,950	62,338	68,404	71,463		59,218
46 - 50	36,087	42,291	38,519	43,408	48,807	49,404	54,358	64,454	68,509	72,735	87,968	63,948
51 - 55	47,476		30,764	27,011	51,493	47,046	54,805	65,173	69,394	74,106	87,599	68,965
56 - 60						59,152	49,696	67,469	73,796	72,468	88,944	71,101
61 - 65		59,499					70,155	67,662	68,760	87,176	85,564	76,746
66 - 70								63,672	47,235		122,179	79,448
71 & Over											86,787	86,787
Average	31,877	36,217	37,813	40,311	41,895	46,249	53,328	62,041	68,645	73,566	89,058	51,651

TERMINATED MEMBERS DUE A DEFERRED RETIREMENT BENEFIT:

Years Until Retirement Eligibility

Attained Ages	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over	Total
0 - 35												0
36 - 40								9				9
41 - 45							16					16
46 - 50		1			2	21						24
51 - 55	3	4	2	3	9							21
56 - 60	1											1
61 - 65												0
66 - 70	1											1
71 & Over												0
Totals	5	5	2	3	11	21	16	9	0	0	0	72

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

Years Until Retirement Eligibility

Attained Ages	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30&Over	Average Benefit
0 - 35												0
36 - 40								25,960				25,960
41 - 45							21,481					21,481
46 - 50		43,629			42,567	25,035						27,271
51 - 55	48,430	19,881	27,915	28,138	24,509							27,888
56 - 60	44,344											44,344
61 - 65												0
66 - 70	23,393											23,393
71 & Over												0
Average	42,605	24,631	27,915	28,138	27,792	25,035	21,481	25,960	0	0	0	26,184

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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 - 50	14	4	5	2	1	3						29
51 - 55	32	38	30	38	18	49	4					209
56 - 60	33	42	54	36	39	145	40	1				390
61 - 65	7	17	17	20	32	108	118	29	8			356
66 - 70	1	1	4	4	4	45	101	125	27	9	3	324
71 - 75				1	1	11	26	59	54	15	10	177
76 - 80					2	1	6	22	36	28	26	121
81 - 85							1	3	3	11	31	49
86 - 90								1	3	9	26	39
91 & Over								1		1	9	11
Totals	87	102	110	101	97	362	296	241	131	73	105	1,705

AVERAGE ANNUAL BENEFITS PAYABLE TO SERVICE 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 - 50	50,598	47,332	42,264	32,801	40,028	61,837						48,281
51 - 55	52,592	54,565	54,017	48,059	46,656	44,671	30,081					49,532
56 - 60	52,199	50,491	55,999	57,843	52,943	43,987	40,352	30,629				48,813
61 - 65	45,905	50,497	62,876	52,595	53,891	44,059	44,575	37,236	24,696			45,845
66 - 70	130,540	34,754	40,190	58,010	47,454	46,382	41,093	39,792	31,780	28,030	20,546	40,529
71 - 75				39,875	28,500	40,979	35,840	41,300	37,125	23,641	25,506	36,735
76 - 80					46,297	24,473	53,260	37,915	43,279	32,473	21,192	35,447
81 - 85							19,390	47,453	41,329	42,865	21,834	29,268
86 - 90								64,344	34,198	39,561	20,010	26,750
91 & Over								26,928		28,910	26,402	26,678
Average	52,480	51,732	55,322	52,456	51,340	44,401	41,944	39,788	36,985	32,502	21,928	43,287

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 – 35												0
36 – 40	2				1	1	1					5
41 – 45		1	1	1		1	1	2	1			8
46 – 50	2		3	1	1	7	5	2	1			22
51 – 55	1		1	1		5	9	2	2			21
56 – 60	2		2			4	9	2	3	4		26
61 – 65					1		2	5	5	6	3	22
66 – 70							1	5	2	3	3	14
71 – 75								2		4	4	10
76 – 80									2		6	8
81 – 85										3	3	6
86 – 90											1	1
91 & Over												0
Totals	7	1	7	3	3	18	28	20	16	20	20	143

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 – 35												0
36 – 40	30,233				9,574	20,390	15,044					22,507
41 – 45		32,640	36,882	29,789		27,849	8,318	16,353	17,204			23,648
46 – 50	22,286		45,230	30,851	25,404	25,335	15,371	17,162	15,560			25,374
51 – 55	60,242		21,718	9,416		19,788	26,650	12,287	15,878			24,998
56 – 60	28,951		26,387			22,691	27,659	18,300	17,839	15,423		20,756
61 – 65					41,823		31,467	26,417	20,131	18,188	27,139	21,867
66 – 70							26,091	11,668	17,762	24,797	16,820	21,745
71 – 75								9,396		20,768	14,306	16,063
76 – 80									34,206		13,264	12,297
81 – 85										17,903	9,737	16,537
86 – 90											13,830	13,830
91 & Over												0
Average	31,883	32,640	35,447	23,352	25,600	24,759	24,215	15,689	18,901	18,985	15,586	21,553

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	2	4	3			17	3	2				31
21 – 25						4	1	2	1			8
26 – 30		1										1
31 – 35			1			2				1		4
36 – 40	1		1			1				1		4
41 – 45			1			4	2	2				9
46 – 50		1	1			6	1	2	1			12
51 – 55			2	1		7	1	5	3			19
56 – 60		1		1	1	7	7	4	1		2	24
61 – 65			1			3	6	9	4	6	3	32
66 – 70		1	1			2	4	10	9	2	6	35
71 – 75						1	5	13	9	4	15	47
76 – 80							2	4	3	15	17	41
81 – 85								3	3	11	30	47
86 – 90									3	3	39	45
91 & Over										1	5	6
Totals	3	8	11	2	1	54	32	56	37	44	117	365

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		5,459	5,874			5,363	3,861	3,436				5,155
21 – 25						7,911	3,519	3,079	4,894			5,777
26 – 30		22,222										22,222
31 – 35			32,146			14,457				1,791		18,880
36 – 40			25,259			21,199				11,119		17,362
41 – 45			40,469			26,391	19,023	14,628				22,007
46 – 50		34,468	31,539			36,218	11,160	14,539	12,585			28,011
51 – 55			36,256	87,798		25,761	21,115	14,793	12,096			24,842
56 – 60		58,647		42,895	47,749	30,247	31,140	15,586	25,811		9,595	28,598
61 – 65			27,230			29,162	28,040	22,640	29,797	20,998	19,120	24,664
66 – 70		64,092	36,958			24,197	20,425	20,678	18,411	16,769	13,302	24,485
71 – 75						27,789	36,827	24,118	27,262	22,709	8,482	21,040
76 – 80							35,196	5,075	26,973	30,067	11,263	19,856
81 – 85								23,716	32,431	23,795	15,983	19,354
86 – 90									17,528	16,675	13,653	14,113
91 & Over										36,032	11,515	15,601
Average		25,158	25,794	65,346	47,749	18,799	25,246	18,271	22,719	24,138	13,201	19,214

G. S. Curran & Company, Ltd.

EXHIBIT IX
YEAR-TO-YEAR COMPARISON

	Fiscal 2016	Fiscal 2015	Fiscal 2014	Fiscal 2013
Number of Active Members	4,362	4,192	4,098	4,063
Number of Retirees & Survivors	2,213	2,139	2,057	1,958
DROP Participants	173	166	185	221
Number of Terminated Due Deferred Benefits	72	81	9	71
Number Terminated Due Refunds	558	523	472	450
Active Lives Payroll (excludes DROP participants)	$ 225,301,112	$ 211,963,892	$ 203,333,976	$ 199,129,982
Retiree Benefits in Payment	$ 83,899,034	$ 79,924,818	$ 73,404,453	$ 67,678,016
Market Value of Assets	$ 1,399,892,212	$ 1,419,138,769	$ 1,410,307,198	$ 1,253,213,084
Ratio of Actuarial Value of Assets to Actuarial Accrued Liability	75.48%	76.09%	74.66%	71.13%
Actuarial Accrued Liability (EAN)	$ 2,053,982,618	$ 1,958,850,006	$ 1,855,298,538	$ 1,771,931,777
Actuarial Value of Assets	$ 1,550,261,745	$ 1,490,408,510	$ 1,385,135,204	$ 1,260,348,240
UAL (Funding Excess)	$ 503,720,873	$ 468,441,496	$ 470,163,334	$ 511,583,537
P.V. of Future Employer Normal Contributions	$ 305,570,473	$ 286,640,979	$ 315,734,786	$ 310,702,226
Present Value of Future Employee Contrib.	$ 230,423,085	$ 216,351,986	$ 213,279,261	$ 210,842,508
Present Value of Future Benefits	$ 2,589,976,176	$ 2,461,842,971	$ 2,384,312,585	$ 2,294,778,794

	Fiscal 2017	Fiscal 2016	Fiscal 2015	Fiscal 2014
Employee Contribution Rate Above Poverty Level	10.00%	10.00%	10.00%	10.00%
Required Tax Contributions as a Percentage of Projected Payroll	10.91%	11.33%	11.39%	11.05%
Actuarially Required Employer Contribution as a Percentage of Projected Payroll	27.09%	25.44%	27.50%	29.23%
Actual Employer Contribution as a Percentage of Projected Payroll	25.25%	27.25%	29.25%	28.25%

* 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.

Fiscal 2012	Fiscal 2011	Fiscal 2010	Fiscal 2009	Fiscal 2008	Fiscal 2007
4,056	4,020	3,989	3,882	3,821	3,632
1,875	1,802	1,749	1,688	1,631	1,555
217	225	162	147	130	134
70	68	59	55	55	54
398	418	442	407	350	298
$ 198,112,999	$ 193,136,985	$ 189,542,210	$ 178,913,097	$ 169,401,716	$ 150,960,665
$ 62,975,274	$ 58,699,965	$ 56,056,554	$ 53,031,851	$ 48,416,581	$ 43,972,738
$ 1,122,864,548	$ 1,154,482,040	$ 971,775,080	$ 865,547,030	$ 1,092,459,674	$ 1,138,227,081
71.66%	74.33%	74.21%	76.13%	85.78%	86.02%
$ 1,700,643,083	$ 1,621,007,988	$ 1,536,258,543	$ 1,410,559,615	$ 1,317,161,382	$ 1,192,323,327
$ 1,218,618,308	$ 1,204,830,245	$ 1,140,054,175	$ 1,073,797,423	$ 1,129,809,421	$ 1,025,656,019
$ 482,024,775	$ 416,177,743	$ 396,204,368	$ 336,762,192	$ 187,351,961	$ 166,667,308
$ 325,616,184	$ 305,540,215	$ 335,984,027	$ 292,585,945	$ 277,566,364	$ 247,631,617
$ 211,015,125	$ 206,989,105	$ 160,939,180	$ 150,094,699	$ 142,412,175	$ 126,968,955
$ 2,223,486,329	$ 2,133,537,308	$ 2,033,181,750	$ 1,853,240,259	$ 1,737,139,921	$ 1,566,923,899

Fiscal 2013	Fiscal 2012	Fiscal 2011	Fiscal 2010	Fiscal 2009	Fiscal 2008
10.00%	10.00%	8.00%	8.00%	8.00%	8.00%
10.72%	10.93%	11.09%	11.56%	12.20%	13.16%
27.77%	24.02%	24.97%	20.79%	13.89%	12.56%
24.00%	23.25%	21.50%	14.00%	12.50%	13.75%

G. S. Curran & Company, Ltd.

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 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.

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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 of "X×(A+B)" where "X" is any amount up to $1 per month, and "A" is equal to the number of years of credited service accrued at retirement or at death of the member of retiree, and "B" is equal to the number of years since retirement or since death of the member or retiree to June thirtieth of the initial year of such 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: 7.5% (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, ANNUITANT AND BENEFICIARY MORTALITY: RP-2000 Combined Healthy with Blue Collar Adjustment Sex Distinct Mortality Tables Projected to 2031 using Scale AA

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.

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ANNUAL SALARY INCREASE RATE:	Salary increases include 2.875% inflation and merit increases. The gross rates including inflation and merit increases are as follows:

Years of Service	Salary Growth Rate
1 – 2	15.000%
3 – 14	5.750%
15 – 24	5.250%
25 & over	4.750%

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 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:

Ages	Retirement Rates
74 & Under	0.25
75 & Over	1.00

DISABILITY RATES: 55% of the disability rates used for the 21st valuation of the Railroad Retirement System for individuals with 10-19 years of service. The table of these rates is included later in the report. 20% of total disabilities are assumed to be in the line of duty.

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

Service	Factor	Service	Factor
<1	0.075	6	0.050
1	0.065	7	0.040
2	0.065	8	0.030
3	0.065	9	0.020
4	0.050	>9	0.010
5	0.050		

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 2010 U. S. Census:

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

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

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

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ACTUARIAL TABLES AND RATES

Age	Male Mortality Rates	Female Mortality Rates	Retirement Rates	DROP Entry Rates	Disability Rates
18	0.00017	0.00012	0.000000	0.000000	0.000830
19	0.00018	0.00012	0.000000	0.000000	0.000830
20	0.00019	0.00012	0.000000	0.000000	0.000830
21	0.00020	0.00011	0.000000	0.000000	0.000830
22	0.00022	0.00011	0.000000	0.000000	0.000830
23	0.00023	0.00012	0.000000	0.000000	0.000830
24	0.00025	0.00013	0.000000	0.000000	0.000830
25	0.00028	0.00013	0.000000	0.000000	0.000830
26	0.00031	0.00015	0.000000	0.000000	0.000830
27	0.00033	0.00015	0.000000	0.000000	0.000830
28	0.00034	0.00016	0.000000	0.000000	0.000830
29	0.00035	0.00017	0.000000	0.000000	0.000830
30	0.00062	0.00021	0.000000	0.000000	0.000830
31	0.00068	0.00026	0.000000	0.000000	0.000830
32	0.00075	0.00029	0.000000	0.000000	0.000830
33	0.00081	0.00031	0.000000	0.000000	0.000830
34	0.00087	0.00034	0.000000	0.000000	0.000830
35	0.00093	0.00037	0.000000	0.000000	0.000940
36	0.00098	0.00040	0.000000	0.000000	0.001050
37	0.00103	0.00043	0.000000	0.000000	0.001160
38	0.00105	0.00046	0.000000	0.000000	0.001320
39	0.00106	0.00050	0.000000	0.000000	0.001490
40	0.00107	0.00055	0.000000	0.000000	0.001710
41	0.00108	0.00061	0.060000	0.150000	0.001930
42	0.00110	0.00067	0.060000	0.150000	0.002150
43	0.00113	0.00074	0.060000	0.150000	0.002420
44	0.00116	0.00080	0.060000	0.150000	0.002750
45	0.00120	0.00084	0.060000	0.150000	0.003140
46	0.00122	0.00088	0.060000	0.150000	0.003580
47	0.00126	0.00091	0.060000	0.150000	0.004020
48	0.00129	0.00097	0.060000	0.150000	0.004570
49	0.00133	0.00104	0.060000	0.150000	0.005170
50	0.00137	0.00115	0.060000	0.170000	0.005890
51	0.00151	0.00127	0.060000	0.170000	0.006710
52	0.00160	0.00145	0.060000	0.170000	0.007590
53	0.00176	0.00166	0.060000	0.170000	0.008640
54	0.00195	0.00190	0.060000	0.170000	0.009790
55	0.00232	0.00218	0.060000	0.170000	0.011110
56	0.00283	0.00254	0.060000	0.170000	0.012650
57	0.00331	0.00290	0.060000	0.170000	0.014360
58	0.00388	0.00325	0.060000	0.170000	0.016280
59	0.00440	0.00369	0.060000	0.170000	0.018540
60	0.00502	0.00424	0.060000	0.170000	0.026840
61	0.00590	0.00496	0.060000	0.170000	0.026840
62	0.00674	0.00581	0.060000	0.170000	0.026840
63	0.00795	0.00683	0.060000	0.170000	0.026840
64	0.00892	0.00782	0.060000	0.170000	0.026840
65	0.01004	0.00890	0.500000	0.170000	0.026840
66	0.01170	0.01013	0.500000	0.170000	0.026840
67	0.01303	0.01131	0.500000	0.170000	0.026840
68	0.01400	0.01260	0.500000	0.170000	0.026840
69	0.01547	0.01403	0.500000	0.170000	0.026840
70	0.01675	0.01595	0.500000	0.000000	0.026840
71	0.01836	0.01721	0.500000	0.000000	0.026840
72	0.02015	0.01914	0.500000	0.000000	0.026840
73	0.02216	0.02056	0.500000	0.000000	0.026840
74	0.02444	0.02267	0.500000	0.000000	0.026840
75	0.02786	0.02408	0.500000	0.000000	0.026840

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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.

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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.

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NOTES