DISTRICT ATTORNEYS' RETIREMENT SYSTEM

ACTUARIAL VALUATION AS OF
JUNE 30, 2020

G. S. CURRAN & COMPANY, LTD.

Actuarial Services

10555 N. Glenstone Place • Baton Rouge, Louisiana 70810 • (225)769-4825

Gary S. Curran, FCA, MAAA, ASA, EA
Consulting Actuary

Gregory M. Curran, FCA, MAAA, ASA, EA
Consulting Actuary

November 10, 2020

Board of Trustees
District Attorneys' Retirement System
2525 Quail Drive
Baton Rouge, Louisiana 70808

Gentlemen:

We are pleased to present our report on the actuarial valuation of the District Attorneys' Retirement System for the fiscal year ending June 30, 2020. Our report is based on the actuarial assumptions specified and relies on the data supplied by the system's administrator and accountants. This report was prepared at the request of the Board of Trustees of the District Attorneys' Retirement System. The primary purpose of this report is to determine the actuarially required contribution for the retirement system for the fiscal year ending 2021, and to recommend the net direct employer contribution rate for Fiscal 2022. This report does not contain the information necessary for accounting disclosures as required by Governmental Accounting Standards Board (GASB) Statements 67 and 68; that information is included in a separate report. This report was prepared exclusively for the District Attorneys' Retirement System for a specific limited purpose. It is not for the use or benefit of any third party for any purpose.

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

Sincerely,

G. S. CURRAN & COMPANY, LTD.

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

TABLE OF CONTENTS

SUBJECT **PAGE**

SUMMARY OF VALUATION RESULTS
DISTRICT ATTORNEYS' RETIREMENT SYSTEM

Valuation Date:		June 30, 2020	June 30, 2019
Census Summary:	Active Members	731	734
	Retired Members and Survivors	386	357
	Terminated Due a Deferred Benefit	108	104
	Terminated Due a Refund	309	292
Payroll:		$ 61,509,353	$ 60,738,553
Benefits in Payment:		$ 20,476,692	$ 18,448,464
Present Value of Future Benefits:		$ 642,749,958	$ 610,944,112
Actuarial Accrued Liability (EAN):		$ 523,180,498	$ 468,110,361
Funding Deposit Account Credit Balance:		$ 0	$ 0
Actuarial Value of Assets (AVA):		$ 456,797,449	$ 440,451,633
Market Value of Assets (MVA):		$ 443,953,251	$ 435,940,046
Ratio of AVA to Actuarial Accrued Liability (EAN):		87.31%	94.09%

	Fiscal 2020	Fiscal 2019
Market Rate of Return:	3.1%	4.5%
Actuarial Rate of Return:	5.0%	4.9%

	Fiscal 2021	Fiscal 2020
Employers' Normal Cost (Mid-year):	$ 15,290,351	$ 11,103,944
Estimated Administrative Cost:	$ 597,914	$ 612,460
Projected Ad Valorem Tax Contributions:	$ 10,054,322	$ 9,398,856
Projected Revenue Sharing Funds:	$ 213,335	$ 213,317
Net Direct Employer Actuarially Required Contributions:	$ 5,620,608	$ 2,104,231
Projected Payroll:	$ 62,509,156	$ 62,201,433
Statutory Employee Contribution Rate:	8.00%	8.00%
Board Adopted Net Direct Employer Contribution Rate:	4.00%	4.00%
Actuarially Required Net Direct Employer Contribution Rate:	8.99%	3.38%

	Fiscal 2022	Fiscal 2021
Minimum Recommended Net Direct Employer Cont. Rate:	9.50%	3.25%
Ad Valorem Tax Rate †	0.20%	0.20%

† Percent of the aggregate amount of the ad valorem tax shown to be collected by the tax roll of each respective parish. State Revenue Sharing Funds are allocated based on the ad valorem tax rate.

GENERAL COMMENTS

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

Data quality varies from system to system and year to year. The data inputs involve both asset information and census information of plan participants. In both cases, the actuary must rely on third parties; nevertheless, steps are taken to reduce the probability and degree of errors. The development of assumptions is primarily the task of the actuary; however, information and advice from plan administrators, staff, and other professionals may be factored into the formation of assumptions. The process of setting assumptions is based primarily on analysis of past trends, but modification of historical experience is often required when the actuary has reason to believe that future circumstances may vary significantly from the past. Setting assumptions includes but is not limited to collecting past plan experience and studying general population demographics and economic factors from the past. The actuary will also consider current and future macro-economic and financial expectations as well as factors that are likely to impact the particular group under consideration. Hence, assumptions will also reflect the actuary's judgment with regard to future changes in plan population and decrements in view of the particular factors which impact participants. Thus, the process of setting assumptions is not mere "guess work" but rather a process of mathematical analysis of past experience and of those factors likely to impact the future.

One area where the actuary is limited in his ability to develop accurate estimates is the projection of future investment earnings. The difficulties here are significant. First, the future is rarely like the past, and the data points available to develop stochastic trials are far fewer than the number required for statistical significance. In this area, some guess work is inevitable. However, there are tools available to lay a foundation for making estimates with an expectation of reliability. Although past data is limited, that which is available is likely to provide some insight into the future. This data consists of general economic and financial values such as past rates of inflation, rates of return variance, and correlations of returns among various asset classes along with the actual asset experience of the plan. In addition, the actuary can review the current asset market environment as well as economic forecasts from governmental and investment research groups to form a reasonable opinion with regard to probable future investment experience for the plan.

All of the above efforts would be in vain if the assumption process was static, and the plan would have to deal with the consequences of actual experience differing from assumptions after forty or fifty years of compounded errors. However, actuarial funding methods for pension plans all allow for periodic corrections of assumptions to conform with reality as it unfolds. This process of repeated correction of estimates produces results which although imperfect are nevertheless a reasonable approach to determine the contribution levels which will provide for the future benefits of plan participants.

COMMENTS ON DATA

For the valuation, the administrative staff of the system furnished a census derived from the system's master data processing file indicating each active covered employee's sex, date of birth, service credit, annual salary, and accumulated contributions. Information on retirees detailing dates of birth of retirees and beneficiaries, as well as option categories and benefit amounts, was provided in like manner. In addition, data was supplied on former employees who are vested or who have contributions remaining on deposit. As illustrated in Exhibit IX, there are 731 active members in the system of whom 359 members have vested retirement benefits; 386 former members or their beneficiaries are receiving retirement benefits. An additional 417 former members have contributions remaining on deposit with the system; of this number, 108 former members 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 administrator for verification and/or correction. Once the identified data has been researched and verified or corrected, it is returned to us for use in the valuation. Occasionally some requested information is either unavailable or impractical to obtain. In such cases, values may be assigned to missing data. For this valuation, the number of such records with imputed data is de minimis. 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, Certified Public Accountants. As indicated in the system's audit report, the net market value of the system's assets was $443,953,251 as of June 30, 2020. Net investment income for Fiscal 2020 measured on a market value basis amounted to $13,623,812. Contributions to the system for the fiscal year totaled $18,225,024; benefits and expenses amounted to $23,835,631.

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

COMMENTS ON ACTUARIAL METHODS AND ASSUMPTIONS

This valuation is based on the Aggregate Actuarial Cost Method. This cost method generally produces normal costs which are level as a percentage of pay if assumptions are met and the composition of the active group with regard to age and service is stable. Overall costs may increase or decrease depending on payroll growth. Under the Aggregate Actuarial Cost Method, actuarial gains and losses are spread over future normal costs. Thus, favorable plan experience will lower future normal costs; unfavorable experience will cause future normal costs to increase. In addition, changes in benefits and assumptions are also spread over future normal costs.

The current year actuarial assumptions utilized for this report are based on the results of an actuarial experience study for the period July 1, 2014 – June 30, 2019, unless otherwise specified in this report. This study included a review of all plan decrements in addition to salary scale experience and other demographic factors which impact plan costs. Details related to the study are contained within the 2020 District Attorneys' Retirement System Experience Study Report.

In reviewing the valuation interest rate, consideration was given to several factors. The Fund's target asset allocation was reviewed based upon the G. S. Curran & Company consultant average return study for 2020. The study found that although the 6.5% assumed rate of return used in the 2019 valuation remains within the reasonable range, a further reduction was warranted to reduce plan risk and to improve the probability of achieving the long-term assumption. The reasonable range was set by developing 10,000 stochastic trials based on the expected long-term arithmetic return for the Fund's target allocation and the consultant average portfolio standard deviation.

In addition, changes were made to the system's demographic assumptions. This includes updated rates of withdrawal, rates of retirement, rates of disability, rates of annual salary increase, family statistics, and mortality rates. In addition to updating the base table for mortality to use the Pub-2010 Public Retirement Plans Mortality tables created by the Society of Actuaries, a change was made in the methodology used to model system mortality. This valuation was prepared based upon full generational mortality.

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

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

was an increase of 1.6958%. The net effect of the change in the valuation interest rate on the normal cost accrual rate was an increase of 3.8801%.

RISK FACTORS

Defined benefit pension plans are subject to a number of risks. These can be related either to plan assets or liabilities. In order to pay benefits, the plan must have sufficient assets. Several factors can lead to asset levels which are below those required to pay promised benefits. The first risk in this regard is the failure to contribute adequate funds to the plan. In some ways, this is the greatest risk, since other risks can usually be addressed by adequate actuarial funding. Louisiana constitutional and statutory provisions greatly limit this risk by requiring that state and statewide plans maintain funding on an actuarial basis. The State Constitution sets forth general requirements with specific funding parameters specified in the state statutes.

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

Asset performance over the long run depends not only on average returns but also on the volatility of returns. Two portfolios of identical size with identical average rates of return will accumulate different levels of assets if the volatility of returns differs since increased volatility reduces the accumulation of assets. Volatility of returns will be determined by both market conditions and the asset allocation of the investment portfolio. If the system's investment portfolio has a substantial allocation to assets that have low price stability, the risk of portfolio volatility will increase, although low correlations among asset classes can mitigate this risk. Another element of asset risk is reinvestment risk. Interest rate declines can subject pension plans to an increase in this risk. As fixed income securities mature, investment managers may be forced to reinvest funds at decreasing rates of return. For the foreseeable future it is unlikely, though not impossible, that interest rates will steeply decline mitigating the reinvestment risk the plan currently faces.

The system is also exposed to risk related to cash flow. Where benefit payments exceed contributions to a plan, the plan will be required to use investment income or potentially investment capital to pay benefits. In cases where it is necessary to use investment income to pay retirement benefits, investment market downturns will place additional stress on the portfolio and make the recovery from such downturns more difficult since funds available for reinvestment are reduced by benefit payments. The historical cash flow graph and demonstration given in this report illustrates the noninvestment cash flow and benefit payments of the system over the last 10 years. Currently, annual benefit payments exceed contributions to the plan. Future net noninvestment cash flows for the system will be determined based upon both the system maturity and future contribution levels. Hence, increases in

future contributions due to adverse actuarial experience will tend to mitigate the potential of negative cash flows arising from the natural maturation of the system whereas reduced contribution levels resulting from positive experience will tend to increase the extent of negative cash flows. Given the recommendation of a higher minimum employer contribution rate in this report, it is likely that contribution levels will increase over the coming years which could reduce or eliminate the negative cash flow situation. Conversely, a continued decrease in the active membership of the system would continue the trend of higher proportions of retired membership and would likely cause the plan to experience more negative noninvestment cash flows.

In addition to asset risk, the plan is also subject to risks related to liabilities. These risks include longevity risk (the risk that retirees will live longer than expected), termination risk (the risk that fewer than the anticipated number of members will terminate service prior to retirement), and other factors that may have an impact on the liability structure of the plan. In a general sense, the short term effects of these risks on the cost structure of the plan are somewhat limited since changes in these factors tend to be gradual and follow long-term secular trends. Final average compensation plans are also vulnerable to unexpectedly large increases in salary for individual members near retirement. The effect of such events frequently relates to pay plan revisions where salaries "catch-up" after a number of years of slow growth. Revisions of this type usually depend on general economic conditions and can result in liability losses. However, they generally are infrequent and are more of a short term issue.

Liability risk also includes items such as data errors. Significant errors in plan data can distort or disguise plan liabilities. When data corrections are made, the plan may experience unexpected increases or decreases in liabilities. Even natural disasters and dislocations in the economy or other unforeseen events (such as pandemics like COVID-19) can present risks to the plan. These events can affect member payroll and plan demographics, both of which impact costs. The risk associated with either of these factors can vary depending upon the severity of the event, and cannot be easily forecast.

Beyond identifying risk categories, it is possible to quantify some risk factors. One fairly well known risk metric is the funded ratio of the plan. The rate is given as plan assets divided by plan liabilities. However, the definition of each of these terms may vary. The two typical alternatives used for assets are the market and actuarial value of assets. There are a number of alternative measures of liability depending on the funding method employed. The Governmental Accounting Standards Board (GASB) specifies that for financial reporting purposes, the funded ratio is determined by using the market value of assets divided by the entry age normal accrued liability. This value is given in the system's financial report. Alternatively, we have calculated the ratio of the actuarial value of assets to the entry age normal accrued liability. The ratio is 87.31% for the plan as of June 30, 2020. This value gives some indication of the financial strength of the plan; however, it does not guarantee the ability of the fund to pay benefits in the future or indicate that in the future, contributions are likely to be less than or greater than current contributions. In addition, the ratio cannot be used in isolation to compare the relative strength of different retirement systems. However, the trend of this ratio over time can give some insight into the financial health of the plan. Even in this regard, caution is warranted since market fluctuations in asset values and changes in plan assumptions can distort underlying trends in this value. Exhibit X gives a history of this value for the last ten years. Note that the underlying trend is somewhat disguised since the system has significantly reduced the valuation interest rate over this period. Absent the reduction in this rate, the current ratio would be significantly higher. One additional risk measure is the sensitivity of the plan's cost structure to asset gains and losses. We have determined that based on current assets and demographics, for each percentage under (over) the assumed rate of return on the

actuarial value of assets, there will be a corresponding increase (decrease) in the actuarially required contribution as a percentage of projected payroll of 0.82% for the fund.

Each pension plan has its own unique benefit structure and demographic profile. As a result each plan will respond to changes in interest rates in a unique way. As the expected rate of return on investments changes and the interest rate used to discount plan liabilities is adjusted, the shift in plan liabilities will depend upon the duration of the liabilities (which can be understood as the plan's sensitivity to the change in the interest rate). A slightly different measure of the duration for the plan can also be understood as an indicator of the plan's maturity. When a pension plan is first established, all of the participants are active members; as members retire and the plan matures, the duration of the plan decreases. A determination of the liability duration gives some insight into the investment time horizon of the plan. Thus the liability duration of a closed plan can be thought of as the weighted "center of gravity" of plan benefit cash flows with expected cash flows occurring both before and after the duration value. For open plans with a continuous flow of new entrants this measure is somewhat less informative since the duration horizon keeps changing as new members enter the plan. For this plan we have estimated the effective liability duration as 11.50.

The ability of a system to recover from adverse asset or liability performance is related to the maturity of the plan population. In general, plans with increasing active membership are less vulnerable to asset and liability gains and losses than mature plans since changes in plan costs can be partially allocated to new members. If the plan has a large number of active members compared to retirees, asset or liability losses can be more easily addressed. As more members retire, contributions can only be collected from a smaller segment of the overall plan population. Often, population ratios of actives to annuitants are used to measure the plan's ability to adjust or recover from adverse events since contributions are made by or on behalf of active members but not for retirees. Thus, if the plan suffers a mortality loss through increased longevity, this will affect both actives and retirees, but the system can only fund this loss by contributions related to active members. A measure of risk related to plan maturity is the ratio of total benefit payments to active payroll. For Fiscal 2020, this ratio is 33%; ten years ago this ratio was 15%.

One other area of exposure the plan faces is the possibility that plan assumptions will need to be revised to conform to changing actual or expected plan experience. Such assumption revisions may relate to economic or demographic factors. With regard to the economic assumptions, there is always the possibility that market expectations will require an adjustment to the assumed rate of return. Current market expectations related to the assumed rate of return suggest that a decrease in the assumption is more probable than an increase. The magnitude of any potential such change will be related to future capital market expectations. With regard to the economic assumptions, we have determined that a reduction in the valuation interest rate by 1% (without any change to other collateral factors) would increase the actuarially required employer contribution rate for Fiscal 2021 by 15.10% of payroll. Future adjustments to the future assumed rates of return may be required; however the likelihood of such an event is difficult to gauge since it requires assigning probabilities to future capital market scenarios.

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

In summary, there is a risk that future actuarial measurements may differ significantly from current measurements presented in this report due to factors such as the following: plan experience differing from that anticipated by the economic or demographic assumptions, changes in economic or demographic assumptions, and changes in plan provisions or applicable law. Ordinarily, variations in these factors will offset to some extent. However, even with the expectation that not all variations in costs will likely travel in the same direction, factors such as those outlined above have the potential on their own accord to pose a significant risk to future cost levels and solvency of the system.

CHANGES IN PLAN PROVISIONS

The system had no changes enacted during the 2020 Regular Session of the Louisiana Legislature.

ASSET EXPERIENCE

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

	Market Value	Actuarial Value
2011	19.3%	4.4%
2012	1.6%	3.1%
2013	13.0%	6.0%
2014	16.2%	11.6%
2015	2.5%	9.8%
2016	1.8%	6.5%
2017	7.7%	7.2%
2018	8.9%	6.7%
2019	4.5%	4.9%
2020	3.1%	5.0%

Geometric Average Market Rates of Return

5 year average	(Fiscal 2016 – 2020)	5.2%
10 year average	(Fiscal 2011 – 2020)	7.7%
15 year average	(Fiscal 2006 – 2020)	5.9%
20 year average	(Fiscal 2001 – 2020)	4.4%
25 year average	(Fiscal 1996 – 2020)	6.4%
30 year average	(Fiscal 1991 – 2020)	7.1%

The market rate of return gives a measure of investment return on a total return basis and includes realized and unrealized capital gains and losses as well as interest income and dividends. This rate of return gives an indication of performance for an actively managed portfolio where securities are bought and sold with the objective of producing the highest total rate of return. During 2020, the fund earned $13,903,729 of dividends, interest and other recurring income. In addition, the Fund had net realized and unrealized capital gains on investments of $423,498. The Fund also had investment expenses of $703,276.

The actuarial rate of return is presented for comparison to the assumed long-term rate of return of 6.50% used for the prior valuation for Fiscal 2020 (6.25% beginning July 1, 2020). This rate is calculated based on the actuarial value of assets and all interest, dividends, and recognized capital gains as given in Exhibit VI. Investment income used to calculate this yield is based upon smoothing earnings above or below the assumed rate of return over a five-year period, subject to constraints as outlined in the section in the report describing actuarial assumptions. Since the valuation interest rate has been lowered several times since Fiscal 2015, smoothing was determined based on a comparison of actual returns to the appropriate valuation interest rate for each year in the smoothing period. The difference between rates of return on an actuarial and market value basis results from the smoothing of gains or losses on investments relative to the valuation interest rate over the five-year period. In the future, yields in excess of the 6.25% assumption will reduce future costs; yields below 6.25% will increase future costs. For Fiscal 2020, the system experienced net actuarial investment losses of $6,493,459 below the actuarial assumed earnings rate of 6.50% in effect for Fiscal 2020 (Beginning with Fiscal 2021, actuarial investment gains and losses will be measured against the 6.25% valuation interest rate). This shortfall in earnings produced an actuarial loss, which increased the normal cost accrual rate by 1.1640%.

DEMOGRAPHICS AND LIABILITY EXPERIENCE

A reconciliation of the census for the system is given in Exhibit IX. The average active member is 48 years old with 11.5 years of service and an annual salary of $84,144. The system's active contributing membership decreased by 3 members over the prior fiscal year. The plan has experienced a decrease in the active plan population of 54 members over the last five years. A review of the active census by age indicates that over the last ten years the active population below age 30 has declined with an increase in members between age 31 and 40. In addition, there has been some shift of population from the forty-one through sixty age group into the sixty-one through seventy age group. Over the same ten-year period the plan showed a decline in the percentage of members with less than five years of service.

The average service retiree is 71 years old with a monthly benefit of $4,682. The average age at retirement for service retirees is 62. The number of retirees and beneficiaries receiving benefits from the system increased by 29 during the last fiscal year. Over the last five years the number of retirees has increased by 94. During this same period, annual benefits in payment increased by $6,034,327.

Plan liability experience for Fiscal 2020 was unfavorable. Salary increases were below projected levels which tend to reduce plan costs. Offsetting this factor was deaths and withdrawals below projected levels. Other experience was near projected levels. In aggregate, plan liability losses increased the normal cost accrual rate by 0.6964%.

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 the normal cost, and the actuarially required contributions are based on the sum of this value and administrative expenses. Under the funding method used for the plan, changes in

plan experience, benefits, or assumptions increase or decrease future normal costs. In addition excess or deficient contributions can decrease or increase future costs.

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

The derivation of the actuarially required contribution for the current fiscal year is given in Exhibit I. The normal cost for Fiscal 2021 adjusted with interest for mid-year payment is $15,290,351. The total actuarially required contribution is determined by adjusting the value for interest (since payments are made throughout the fiscal year) and adding estimated administrative expenses. As given on line 12 of Exhibit I the total actuarially required contribution for Fiscal 2021 is $15,888,265. Required net direct employer contributions are also affected by the available ad valorem taxes and revenue sharing funds which the system receives each year. When these funds change as a percentage of payroll, net direct employer contributions are adjusted accordingly. We estimate that these funds will increase by 0.98% of payroll in Fiscal 2021. When the gross employer required contribution is reduced by projected tax contributions and revenue sharing funds, the resulting employers' net direct actuarially required contribution for Fiscal 2021 is $5,620,608. This is 8.99% of the projected payroll for Fiscal 2021.

Although the actuarially required net direct employer contribution rate for Fiscal 2021 is 8.99%, the Board adopted employer contribution rate for Fiscal 2021 is 4.00%. Since the contribution rate for Fiscal 2021 was 4.00%, the shortfall in employer contributions collected in the fiscal year will increase the Fund’s normal cost accrual rate in the following year. We estimate this shortfall will result in an increase of 0.52% to the normal cost accrual rate in Fiscal 2022. R.S. 11:103 requires that the net direct employer contributions be rounded to the nearest 0.25%, hence we are recommending a minimum net direct employer contribution rate of 9.50% for Fiscal 2022.

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

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

Employer’s Normal Cost Accrual Rate – Fiscal 2020	18.2066%
Factors Increasing the Normal Cost Accrual Rate:	
Change in Valuation Interest Rate	3.8801%
Demographic Assumption Changes	1.6958%
Asset Experience Loss	1.1640%
Plan Liability Experience Loss	0.6964%

Factors Decreasing the Normal Cost Accrual Rate:

New Members	0.1844%
Contribution Gain	0.1241%
Employer's Normal Cost Accrual Rate – Fiscal 2021	25.3344%

The balance in the Funding Deposit Account was zero as of June 30, 2019. Since the net direct employer contribution rate for Fiscal 2020 was set at the minimum actuarially required net direct employer contribution rate, no funds were added to the funding deposit account as of June 30, 2020.

R.S. 11:1658 provides that in years where the net direct employer contribution rate is set to decrease, the Board of Trustees may maintain the rate at the previous level, or set the rate at any level between the prior rate and the net direct employer contribution rate. In addition, the statute provides that the Board of Trustees may set a net direct employer contribution rate up to three percentage points more than the rate determined under R.S. 11:103. Under the provisions of R.S. 11:1658, the Board of Trustees may set the net direct employer contribution at any level between the minimum recommended employer contribution rate of 9.50% and 12.50%. Any excess funds resulting from the application of R.S. 11:1658 will be combined with any contribution surplus or offset by any contribution shortfall, and the resulting balance, if greater than zero, will be deposited into the system's Funding Deposit Account. Funds in this account can be used to reduce either future required contributions in a particular year or the normal cost accrual rate. In addition, if the system may grant a cost of living increase to retirees, such increase may be paid from funds in the Funding Deposit Account.

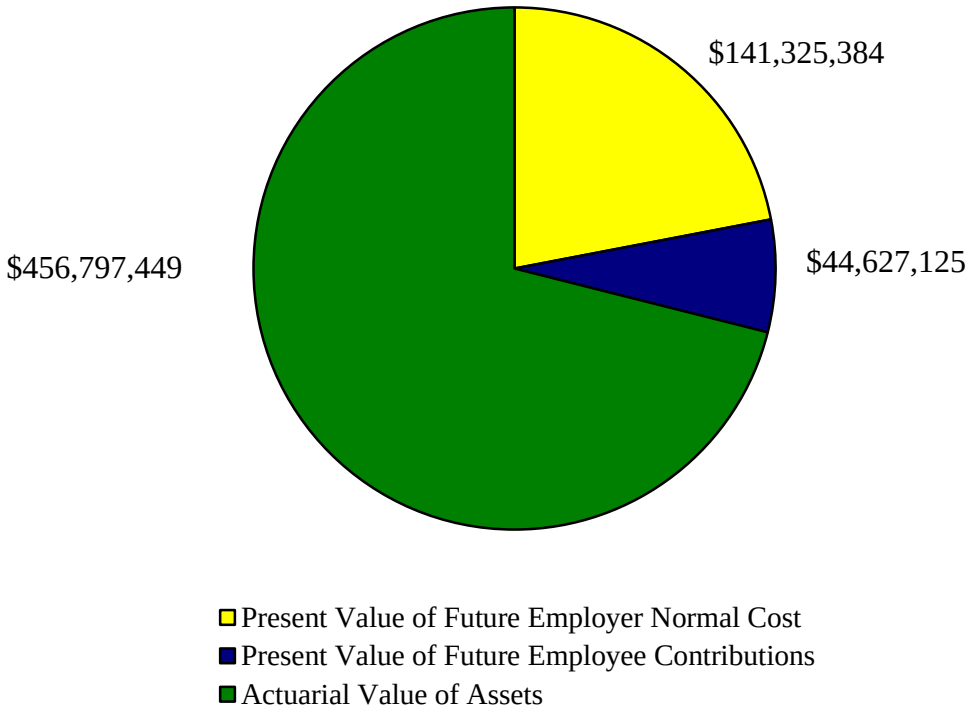
COST OF LIVING INCREASES

During Fiscal 2020 the actual cost of living (as measured by the US Department of Labor CPI-U) increased by 0.6%. Cost of living provisions for the system are detailed in R.S. 11:1638, R.S. 11:246, and R.S. 11:241. R.S. 11:1638 allows the board to grant annual cost of living increases of 3% of each retiree's original benefit subject to a limit of $60 per month. R.S. 11:246 provides cost of living increases of retirees and beneficiaries over the age of 65 equal to 2% of the benefit in payment on October 1, 1977, or the date the benefit was originally received if retirement commenced after that date (Both of these provisions only permit payment of such an increase if earnings exceed the system's valuation rate). R. S. 11:241 provides for cost of living benefits payable based on a formula equal to up to $1 times the total of the number of years of credited service accrued at retirement or at death of the member or retiree plus the number of years since retirement or since death of the member or retiree to the system's fiscal year end preceding the payment of the benefit increase.

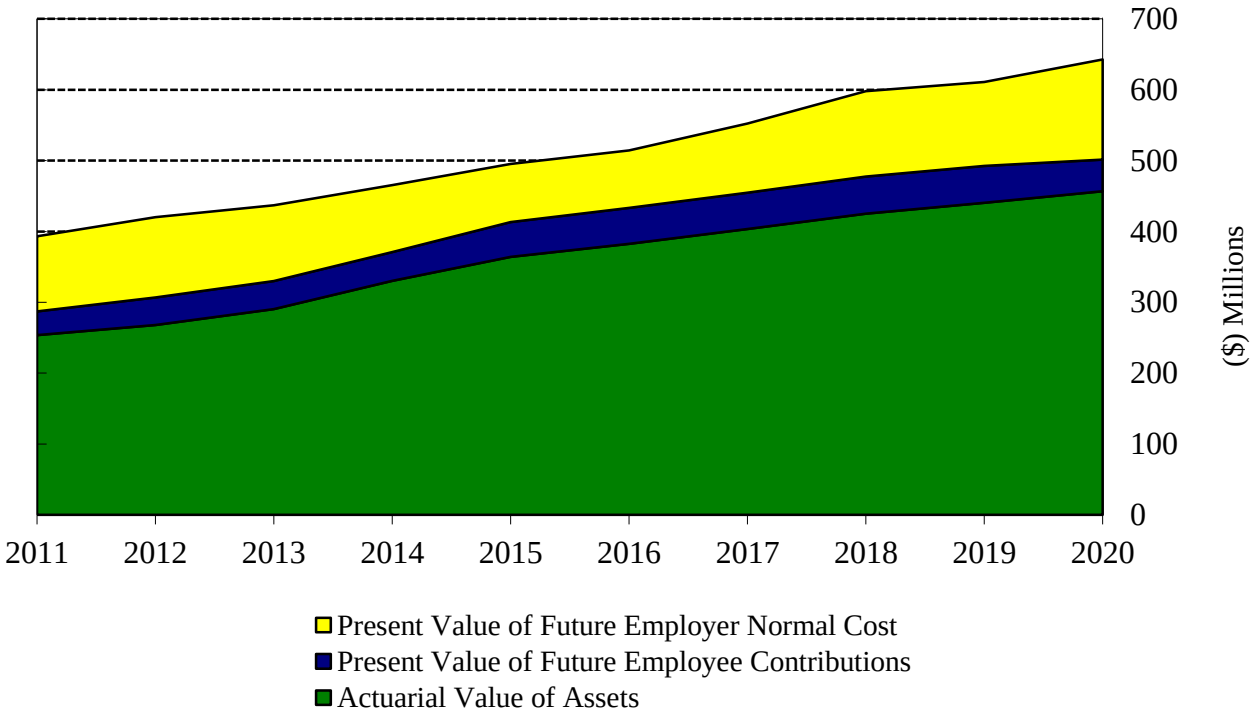
R.S. 11:243 sets forth the funding criteria necessary in order to grant cost of living adjustments to regular retirees and beneficiaries (who are neither the surviving spouse nor children of the retiree). The criteria for the fund to qualify as eligible to grant any such increase is as follows: a funded 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). For Fiscal 2020, this funded ratio is 92.32%.

In addition to the requirements stated in the preceding paragraph, statutory requirements require that in order to grant an increase authorized by these sections the system's earnings must exceed those which would be realized based on the valuation interest rate as applied to the actuarial value of assets in sufficient amount to offset the present value of the increase or alternatively to withdraw such funds from the system's Funding Deposit Account. For Fiscal 2020, there were no excess interest earnings and no available funds in the Funding Deposit Account; hence no COLA may be granted in Fiscal 2021.

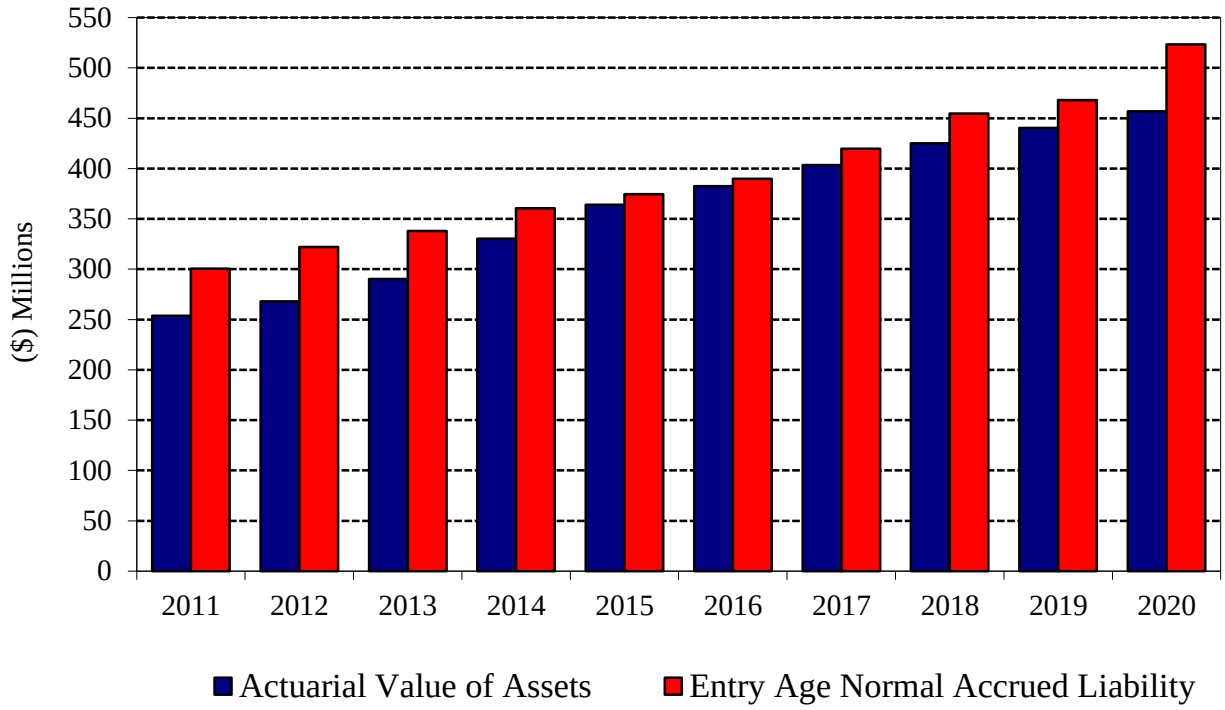
Components of Present Value of Future Benefits
June 30, 2020



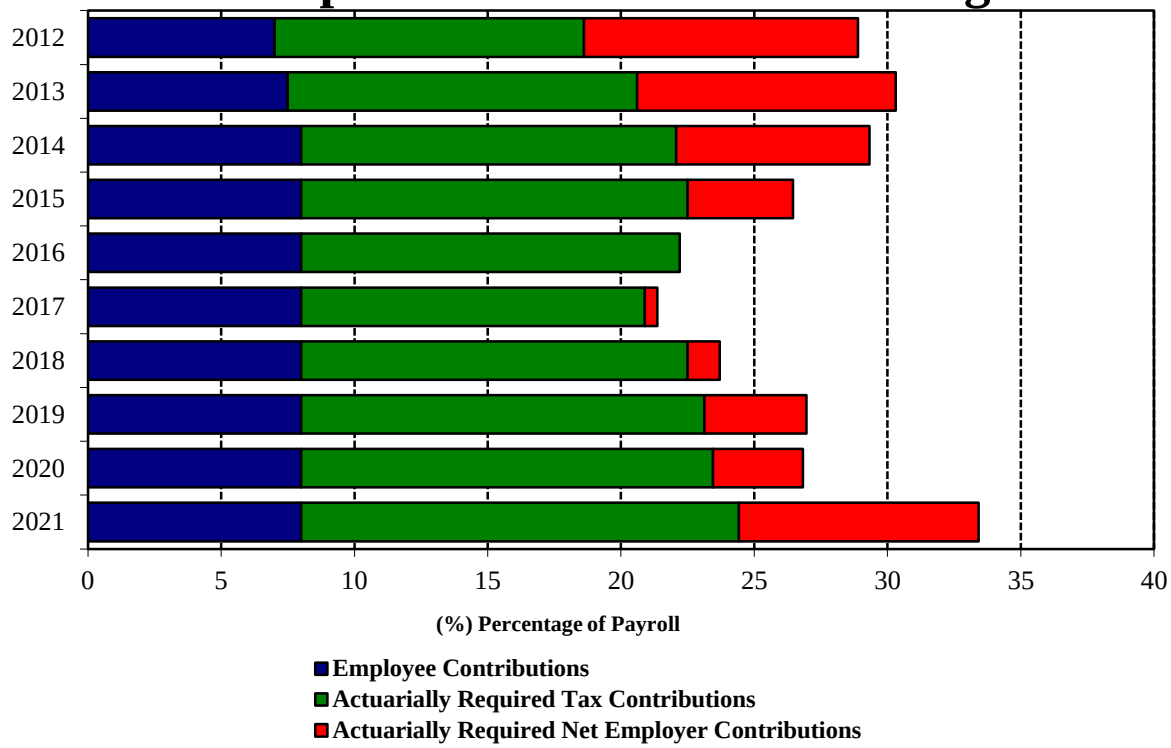
Components of Present Value of Future Benefits



Actuarial Value of Assets vs. EAN Accrued Liability

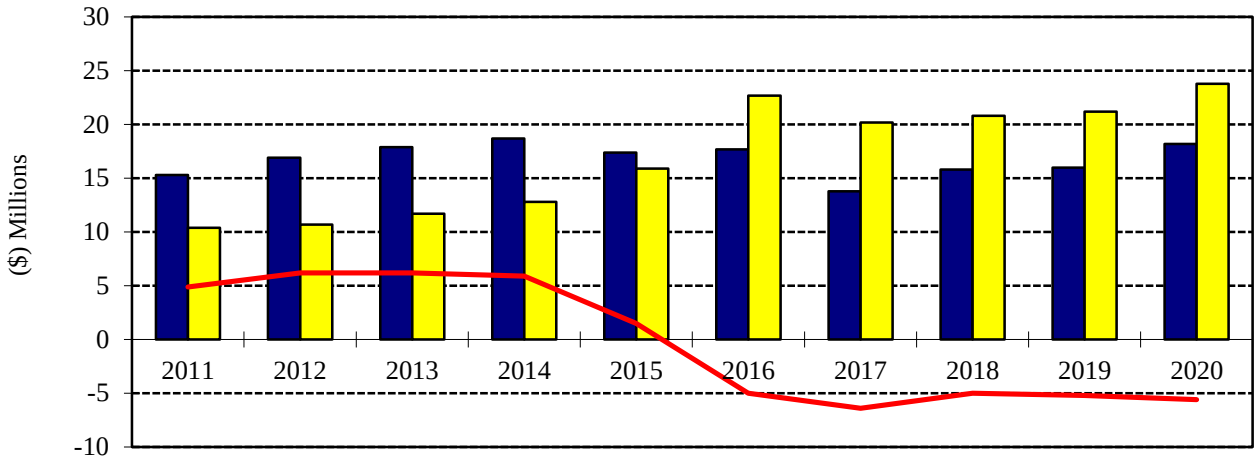


Components of Actuarial Funding



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

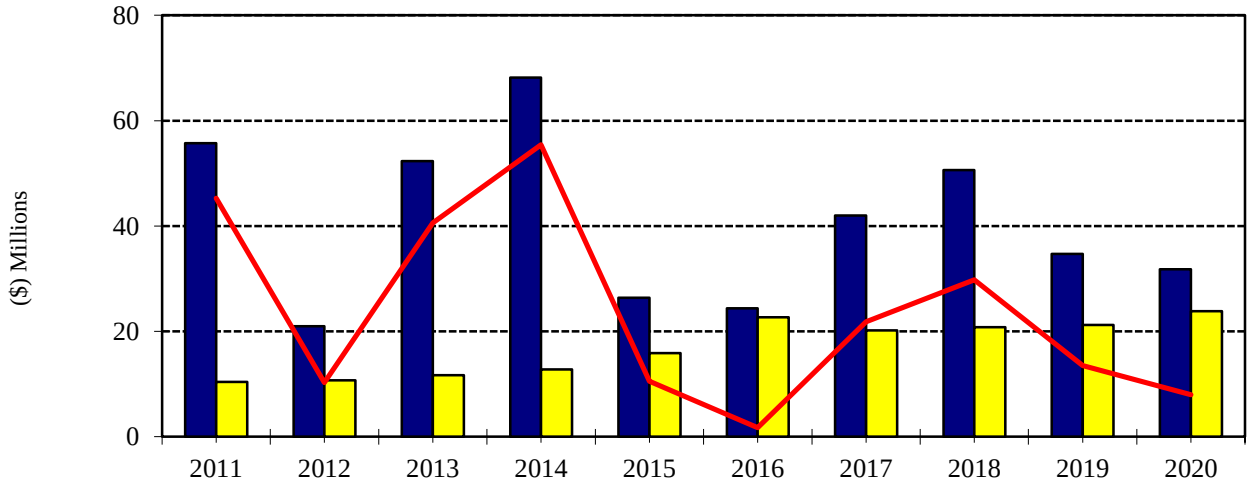
Net Non-Investment Income



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Non-Investment Income ($Mil)	15.3	16.9	17.9	18.7	17.4	17.7	13.8	15.8	16.0	18.2
Benefits and Expenses ($Mil)	10.4	10.7	11.7	12.8	15.9	22.7	20.2	20.8	21.2	23.8
Net Non-Investment Income ($Mil)	4.9	6.2	6.2	5.9	1.5	-5.0	-6.4	-5.0	-5.2	-5.6

Total Income vs. Expenses

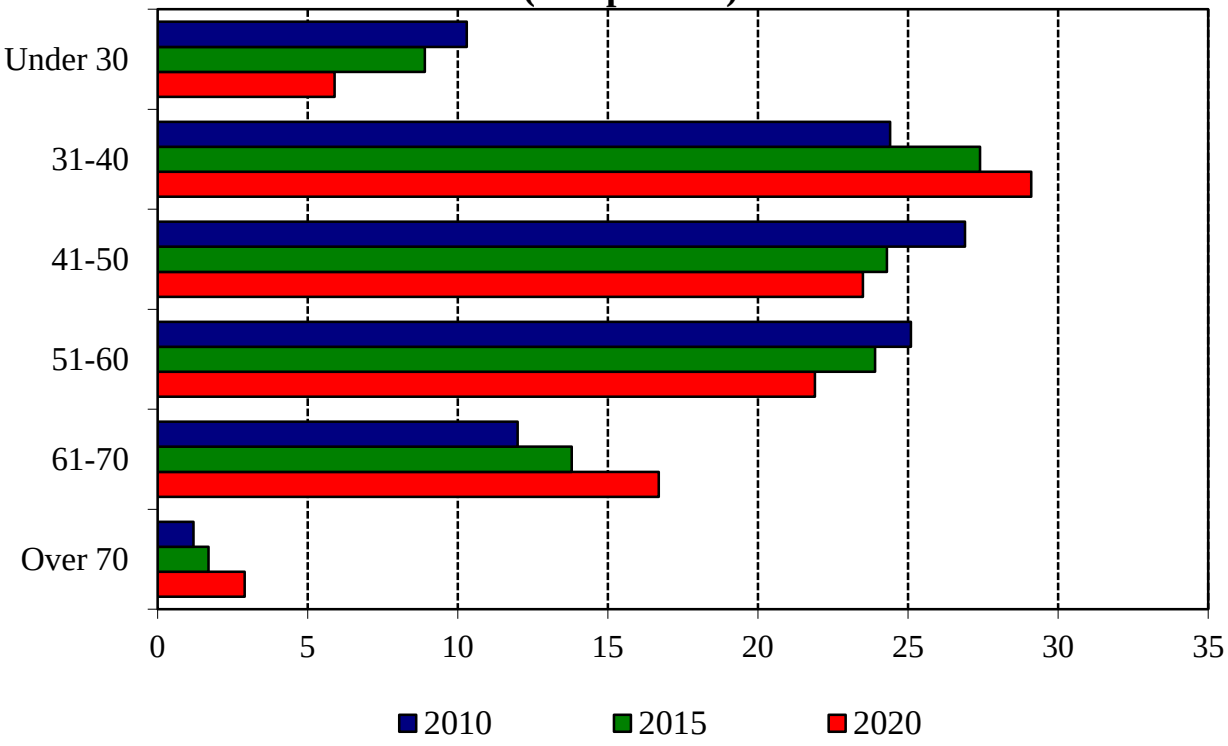
(Based on Market Value of Assets)



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total Income ($Mil)	55.7	21.0	52.3	68.2	26.4	24.4	42.0	50.6	34.7	31.8
Benefits and Expenses ($Mil)	10.4	10.7	11.7	12.8	15.9	22.7	20.2	20.8	21.2	23.8
Net Change in MVA ($Mil)	45.3	10.3	40.6	55.4	10.5	1.7	21.8	29.8	13.5	8.0

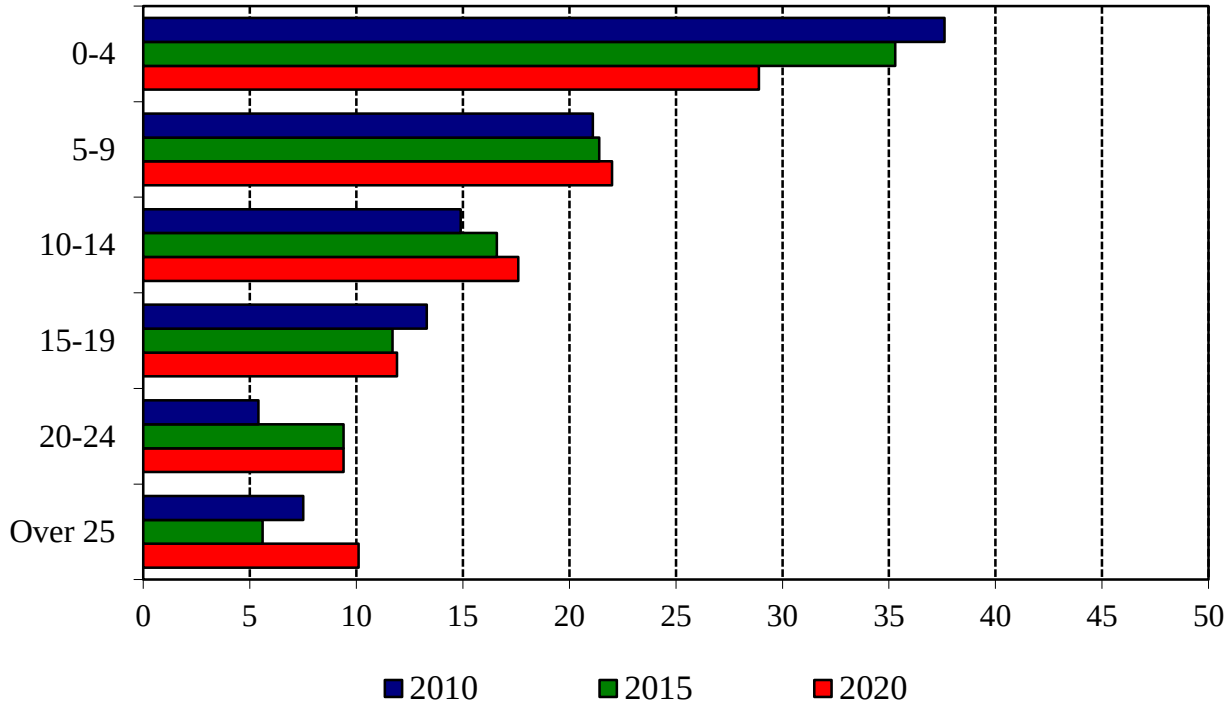
Active – Census By Age

(as a percent)



Active – Census By Service

(as a percent)



Historical Asset Yield

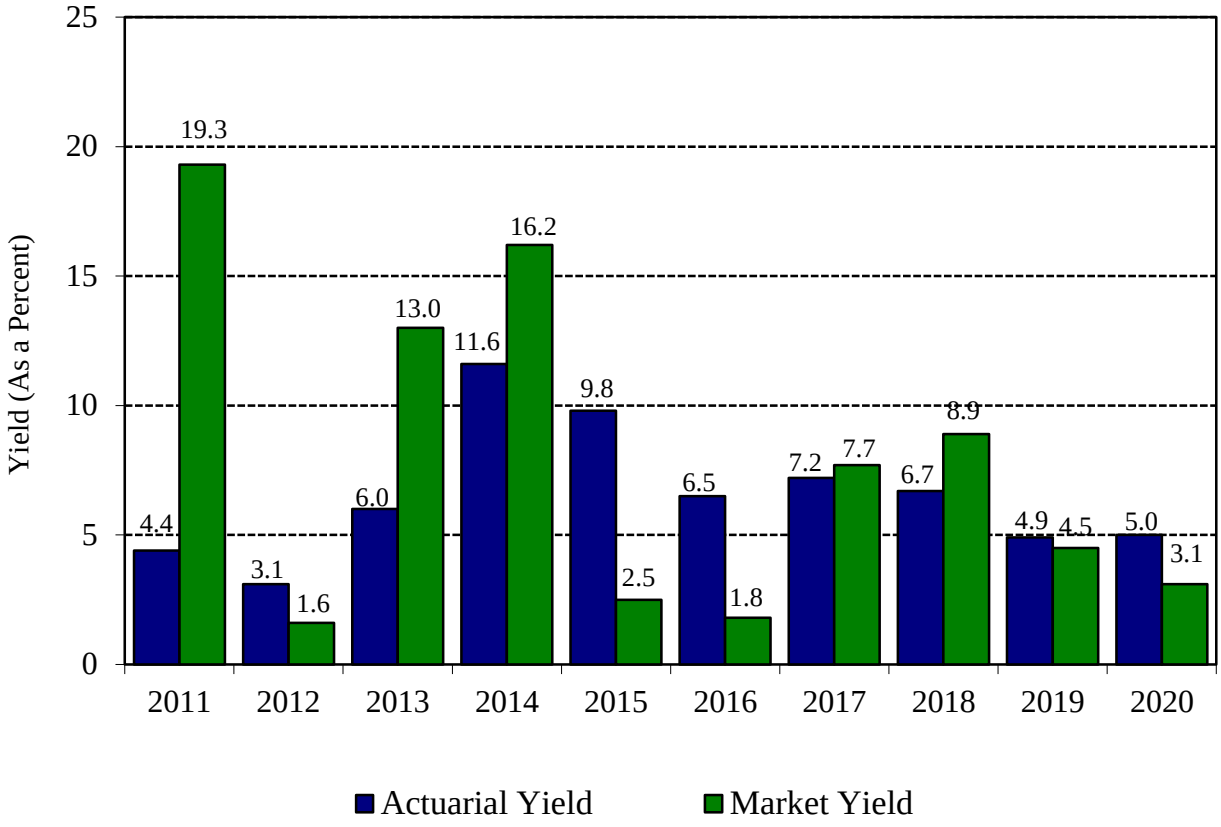


EXHIBIT I
ANALYSIS OF ACTUARIALLY REQUIRED CONTRIBUTIONS

1.	Present Value of Future Benefits	$	642,749,958
2.	Funding Deposit Account Credit Balance	$	0
3.	Actuarial Value of Assets	$	456,797,449
4.	Present Value of Future Employee Contributions	$	44,627,125
5.	Present Value of Future Employer Normal Costs (1 + 2 – 3 – 4)	$	141,325,384
6.	Present Value of Future Salaries	$	557,839,119
7.	Employer Normal Cost Accrual Rate (5 ÷ 6)		25.334434%
8.	Projected Fiscal 2021 Salary for Current Membership	$	58,552,006
9.	Employer Normal Cost as of July 1, 2020 (7 × 8)	$	14,833,819
10.	Employer Normal Cost Interest Adjusted for Mid-year Payment	$	15,290,351
11.	Estimated Administrative Cost for Fiscal 2021	$	597,914
12.	GROSS Employer Actuarially Required Contribution for Fiscal 2021 (10 + 11)	$	15,888,265
13.	Projected Ad Valorem Tax Contributions for Fiscal 2021	$	10,054,322
14.	Projected Revenue Sharing Funds for Fiscal 2021	$	213,335
15.	Net Direct Employer Actuarially Required Contribution For Fiscal 2021 (12 – 13 – 14)	$	5,620,608
16.	Projected Payroll for Fiscal 2021	$	62,509,156
17.	Employers' Minimum Net Direct Actuarially Required Contribution as a % of Projected Payroll for Fiscal 2021 (15 ÷ 16)		8.99%
18.	Board Adopted Employer Contribution Rate for Fiscal 2021		4.00%
19.	Contribution Shortfall (Excess) as a Percentage of Payroll (17 – 18)		4.99%
20.	Increase (Reduction) to Following Year Payment for Contribution Shortfall (Excess)		0.52%
21.	Minimum Recommended Net Direct Employer Contribution Rate for Fiscal 2022 (17 + 20; rounded to the nearest 0.25%)		9.50%

EXHIBIT II
PRESENT VALUE OF FUTURE BENEFITS

PRESENT VALUE OF FUTURE BENEFITS FOR ACTIVE MEMBERS:

Retirement Benefits	$ 331,478,033	
Survivor Benefits	8,708,788	
Disability Benefits	663,343	
Vested Termination Benefits	34,880,916	
Refunds of Contributions	5,195,155	
TOTAL Present Value of Future Benefits for Active Members		$ 380,926,235

PRESENT VALUE OF FUTURE BENEFITS FOR TERMINATED MEMBERS:

Terminated Vested Members		
Due Benefits at Retirement	$ 28,233,809	
Terminated Members with Reciprocals		
Due Benefits at Retirement	713,706	
Terminated Members Due a Refund	2,972,358	
TOTAL Present Value of Future Benefits for Terminated Members		$ 31,919,873

PRESENT VALUE OF FUTURE BENEFITS FOR RETIREES:

Regular Retirees			
Maximum	$ 64,776,466		
Option 1	2,276,054		
Option 2	108,277,761		
Option 3	26,812,890		
Option 4	2,804,247		
TOTAL Regular Retirees		$ 204,947,418	
Disability Retirees		634,691	
Survivors & Widows		17,908,393	
DROP/Back-DROP Deposits		6,413,348	
TOTAL Present Value of Future Benefits for Retirees & Survivors			$ 229,903,850
TOTAL Present Value of Future Benefits			$ 642,749,958

EXHIBIT III – SCHEDULE A
MARKET VALUE OF ASSETS

CURRENT ASSETS:		
Cash in Banks	$ 2,078,208	
Contributions and Taxes Receivable	3,005,284	
Prepaid Expenses	21,000	
TOTAL CURRENT ASSETS		$ 5,104,492
INVESTMENTS:		
Cash Equivalents	$ 19,858,471	
Equities	198,600,289	
Fixed Income	156,351,836	
Real Estate	45,659,105	
Alternative Investments	14,948,869	
DROP Balances Held Outside System Assets	6,869,988	
Other Investments	1,496,499	
TOTAL INVESTMENTS		$ 443,785,057
TOTAL ASSETS		$ 448,889,549
CURRENT LIABILITIES:		
Investments Payable	$ 4,931,715	
Other Current Liabilities	4,583	
TOTAL CURRENT LIABILITIES		$ 4,936,298
MARKET VALUE OF ASSETS		$ 443,953,251

EXHIBIT III – SCHEDULE B
ACTUARIAL VALUE OF ASSETS

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

Fiscal year 2020	$	(14,532,817)
Fiscal year 2019		(8,507,803)
Fiscal year 2018		8,468,886
Fiscal year 2017		2,495,921
Fiscal year 2016		(18,925,223)
Total for Five Years	$	(31,001,036)

Deferral of Excess (Shortfall) of Invested Income:

Fiscal year 2020 (80%)	$	(11,626,254)
Fiscal year 2019 (60%)		(5,104,682)
Fiscal year 2018 (40%)		3,387,554
Fiscal year 2017 (20%)		499,184
Fiscal year 2016 (0%)		0
Total Deferred for Year	$	(12,844,198)

Market Value of Plan Net Assets, End of Year	$	443,953,251
Preliminary Actuarial Value of Plan Assets, End of Year	$	456,797,449

Actuarial Value of Assets Corridor

85% of Market Value, End of Year	$	377,360,263
115% of Market Value, End of Year	$	510,546,239
Final Actuarial Value of Plan Net Assets, End of Year	$	456,797,449

EXHIBIT IV
PRESENT VALUE OF FUTURE CONTRIBUTIONS

Employee Contributions to the Annuity Savings Fund	$	44,627,125
Employer Normal Contributions to the Pension Accumulation Fund		141,325,384
Funding Deposit Account Credit Balance		0
TOTAL PRESENT VALUE OF FUTURE CONTRIBUTIONS	$	185,952,509

EXHIBIT V
RECONCILIATION OF CONTRIBUTIONS

Employer Normal Cost for Prior Year	$	10,759,757	
Interest on the Normal Cost		699,384	
Administrative Expenses		614,687	
Interest on Expenses		19,663	
TOTAL Interest Adjusted Actuarially Required Contributions			$ 12,093,491
Direct Employer Contributions	$	2,492,875	
Interest on Employer Contributions		79,743	
Ad Valorem Taxes and Revenue Sharing		9,896,394	
Interest on Ad Valorem Taxes and Revenue Sharing Funds		316,570	
TOTAL Interest Adjusted Employer Contributions			$ 12,785,582
CONTRIBUTION SURPLUS			$ 692,091

EXHIBIT VI
ANALYSIS OF CHANGE IN ASSETS

Actuarial Value of Assets (June 30, 2019)		$ 440,451,633
INCOME:		
Member Contributions	$ 4,991,814	
Employer Contributions	2,492,875	
Irregular Contributions	843,941	
Tax Revenue	9,896,394	
Total Contributions		$ 18,225,024
Net Appreciation of Investments	$ 423,359	
Interest & Dividends	11,296,736	
Alternative Investment Income	2,606,854	
Class Action Settlement	139	
Investment Expense	(703,276)	
Net Investment Income		$ 13,623,812
TOTAL Income		$ 31,848,836
EXPENSES:		
Retirement Benefits	$ 19,594,650	
DROP Disbursements	2,803,775	
Refunds of Contributions	421,866	
Transfers to Other Systems	400,653	
Administrative Expenses	614,687	
TOTAL Expenses		$ 23,835,631
Net Market Value Income for Fiscal 2020 (Income – Expenses)		$ 8,013,205
Unadjusted Fund Balance as of June 30, 2020 (Fund Balance Previous Year + Net Income)		$ 448,464,838
Adjustment for Actuarial Smoothing		$ 8,332,611
Actuarial Value of Assets: (June 30, 2020)		$ 456,797,449

EXHIBIT VII
FUNDING DEPOSIT ACCOUNT

Funding Deposit Account Balance as of June 30, 2019	$	0
Interest on Opening Balance at 6.50%		0
Contributions to the Funding Deposit Account		0
Withdrawals from the Funding Deposit Account		0
Funding Deposit Account Balance as of June 30, 2020	$	0

EXHIBIT VIII – Schedule A
PENSION BENEFIT OBLIGATION

Present Value of Credited Projected Benefits Payable to Current Employees	$	232,957,442
Present Value of Benefits Payable to Terminated Employees		31,919,873
Present Value of Benefits Payable to Current Retirees and Beneficiaries		229,903,850
TOTAL PENSION BENEFIT OBLIGATION	$	494,781,165
NET ACTUARIAL VALUE OF ASSETS	$	456,797,449
Ratio of Net Actuarial Value of Assets to Pension Benefit Obligation		92.32%

EXHIBIT VIII – Schedule B
ENTRY AGE NORMAL ACCRUED LIABILITIES

Accrued Liability for Active Employees	$	261,356,775
Accrued Liability for Terminated Employees		31,919,873
Accrued Liability for Current Retirees and Beneficiaries		229,903,850
TOTAL ENTRY AGE NORMAL ACCRUED LIABILITY	$	523,180,498
NET ACTUARIAL VALUE OF ASSETS	$	456,797,449
Ratio of Net Actuarial Value of Assets to Entry Age Normal Accrued Liability		87.31%

EXHIBIT IX
CENSUS DATA

	Active	Terminated with Funds on Deposit	Retired	Total
Number of members as of June 30, 2019	734	396	357	1,487
Additions to Census				
Initial membership	48	8		56
Omitted in error last year			1	1
Death of another member			4	4
Adjustment for multiple records			6	6
Change in Status during Year				
Actives terminating service	(45)	45		
Actives who retired	(17)		17	
Actives entering DROP				
Term. members rehired	12	(12)		
Term. members who retire		(9)	9	
Retirees who are rehired	2		(2)	
Refunded who are rehired				
DROP participants retiring				
DROP returned to work				
Omitted in error last year				
Eliminated from Census				
Refund of contributions	(1)	(11)		(12)
Deaths	(2)		(6)	(8)
Included in error last year				
Adjustment for multiple records				
Number of members as of June 30, 2020	731	417	386	1,534

ACTIVES CENSUS BY AGE:

Age	Number Male	Number Female	Total Number	Average Salary	Total Salary
21 - 25	0	1	1	49,885	49,885
26 - 30	18	24	42	56,648	2,379,224
31 - 35	53	52	105	64,238	6,744,980
36 - 40	54	54	108	72,959	7,879,527
41 - 45	42	45	87	76,063	6,617,444
46 - 50	52	33	85	90,426	7,686,188
51 - 55	49	35	84	93,220	7,830,503
56 - 60	53	23	76	107,109	8,140,250
61 - 65	56	18	74	97,353	7,204,100
66 - 70	40	8	48	104,738	5,027,426
71 - 75	16	0	16	96,947	1,551,152
76 - 80	4	0	4	84,686	338,744
81 - 85	1	0	1	59,930	59,930
TOTAL	438	293	731	84,144	61,509,353

THE ACTIVE CENSUS INCLUDES 359 ACTIVES WITH VESTED BENEFITS, INCLUDING 2 ACTIVE FORMER DROP PARTICIPANTS.

TERMINATED MEMBERS DUE A DEFERRED RETIREMENT BENEFIT:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
36 - 40	2	5	7	25,832	180,821
41 - 45	5	7	12	32,405	388,859
46 - 50	17	10	27	34,906	942,464
51 - 55	19	8	27	34,285	925,697
56 - 60	20	8	28	38,567	1,079,885
61 - 65	4	2	6	22,033	132,195
66 - 70	0	1	1	5,863	5,863
TOTAL	67	41	108	33,850	3,655,784

TERMINATED MEMBERS DUE A REFUND OF CONTRIBUTIONS:

Contributions Ranging From		To	Number	Total Contributions
0	-	99	18	722
100	-	499	31	8,493
500	-	999	34	24,930
1000	-	1999	26	36,642
2000	-	4999	56	186,229
5000	-	9999	40	302,784
10000	-	19999	50	703,651
20000	-	99999	54	1,677,627
TOTAL			309	2,941,078

REGULAR RETIREES:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
56 - 60	14	11	25	51,856	1,296,391
61 - 65	37	12	49	52,677	2,581,174
66 - 70	83	17	100	54,034	5,403,430
71 - 75	75	9	84	67,091	5,635,654
76 - 80	45	5	50	52,734	2,636,720
81 - 85	15	0	15	46,790	701,849
86 - 90	4	0	4	44,778	179,111
91 - 99	3	0	3	35,694	107,081
TOTAL	276	54	330	56,186	18,541,410

DISABILITY RETIREES:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
61 - 65	0	1	1	44,228	44,228
71 - 75	1	0	1	25,410	25,410
TOTAL	1	1	2	34,819	69,638

SURVIVORS:

Age	Number Male	Number Female	Total Number	Average Benefit	Total Benefit
46 - 50	0	1	1	21,789	21,789
51 - 55	0	1	1	52,452	52,452
56 - 60	0	4	4	43,663	174,651
61 - 65	0	8	8	47,633	381,066
66 - 70	0	8	8	33,492	267,932
71 - 75	0	14	14	27,664	387,297
76 - 80	0	5	5	17,266	86,330
81 - 85	0	7	7	23,554	164,878
86 - 90	0	6	6	54,875	329,249
TOTAL	0	54	54	34,549	1,865,644

ACTIVE MEMBERS:

Attained Ages	Completed Years of Service											
	0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over	Total
0 - 20												0
21 - 25	1											1
26 - 30	15	8	11	5	3							42
31 - 35	12	14	9	12	17	40	1					105
36 - 40	12	8	2	4	7	44	31					108
41 - 45	1	4	6	6	5	18	27	20				87
46 - 50	2	7	2	1	4	16	17	27	9			85
51 - 55	3	1		2	4	9	12	19	19	14	1	84
56 - 60	2		1		2	8	10	7	21	20	5	76
61 - 65			1	1	6	18	12	6	11	16	3	74
66 - 70	1		1	1	2	7	13	4	6	8	5	48
71 & Over		2	1	2		1	6	4	3	1	1	21
Totals	49	44	34	34	50	161	129	87	69	59	15	731

AVERAGE ANNUAL SALARY OF ACTIVE MEMBERS:

Attained Ages	Completed Years of Service											Average Salary
	0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over	
0 - 20												0
21 - 25	49,885											49,885
26 - 30	52,386	52,167	59,302	65,777	64,963							56,648
31 - 35	52,010	59,261	55,156	63,275	65,510	70,688	94,311					64,238
36 - 40	59,176	56,873	37,500	54,777	65,416	73,393	88,165					72,959
41 - 45	49,885	64,586	68,593	60,016	63,235	83,231	72,852	87,811				76,063
46 - 50	63,592	77,649	75,708	44,656	84,402	79,354	87,061	105,061	99,494			90,426
51 - 55	55,388	43,269		74,020	87,389	63,915	88,949	98,333	104,623	105,107	153,192	93,220
56 - 60	91,981		80,000		36,572	103,390	77,886	93,781	116,018	125,076	120,564	107,109
61 - 65			90,000	80,000	112,383	90,546	85,508	95,700	72,736	123,494	117,888	97,353
66 - 70	49,885		132,766	53,000	108,822	116,008	101,667	86,195	86,393	97,355	159,687	104,738
71 & Over		73,271	74,998	71,336		100,585	107,578	71,168	121,944	121,132	67,927	92,849
Average	56,061	61,220	63,661	62,816	74,698	79,313	86,155	95,647	101,506	116,083	131,736	84,144

TERMINATED MEMBERS DUE A DEFERRED RETIREMENT BENEFIT:

Attained Ages	Years Until Retirement Eligibility											
	0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over	Total
0 - 35												0
36 - 40									7			7
41 - 45								12				12
46 - 50							27					27
51 - 55			1			26						27
56 - 60	4	5	4	7	8							28
61 - 65	6											6
66 - 70	1											1
71 & Over												0
Totals	11	5	5	7	8	26	27	12	7	0	0	108

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

Attained Ages	Years Until Retirement Eligibility											Average Benefit
	0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over	
0 - 35												0
36 - 40									25,832			25,832
41 - 45								32,405				32,405
46 - 50							34,906					34,906
51 - 55			72,390			32,819						34,285
56 - 60	38,963	40,540	38,834	40,347	35,446							38,567
61 - 65	22,033											22,033
66 - 70	5,863											5,863
71 & Over												0
Average	26,719	40,540	45,545	40,347	35,446	32,819	34,906	32,405	25,832	0	0	33,850

SERVICE RETIREES:

Attained Ages	Completed Years Since Retirement											
	0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over	Total
0 - 55												0
56 - 60	5	8	7	2	2	1						25
61 - 65	11	4	5	5	7	15	2					49
66 - 70	9	6	5	5	6	49	19	1				100
71 - 75		1	4	6	8	29	26	10				84
76 - 80	1		2			16	7	16	8			50
81 - 85	1					2		5	4	3		15
86 - 90									2	1	1	4
91 & Over								1		1	1	3
Totals	27	19	23	18	23	112	54	33	14	5	2	330

AVERAGE ANNUAL BENEFITS PAYABLE TO SERVICE RETIREES:

Attained Ages	Completed Years Since Retirement											Average Benefit
	0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over	
0 - 55												0
56 - 60	31,424	73,763	46,191	55,145	44,499	26,542						51,856
61 - 65	58,148	21,534	48,617	88,871	30,003	57,694	46,266					52,677
66 - 70	88,612	44,294	53,726	53,903	76,595	44,220	60,829	19,908				54,034
71 - 75		49,037	96,609	84,084	49,540	75,975	62,038	48,310				67,091
76 - 80	41,348		28,727			61,230	75,019	43,437	42,263			52,734
81 - 85	155,094					52,921		27,781	56,815	24,915		46,790
86 - 90									66,153	29,997	16,808	44,778
91 & Over								56,548		39,139	11,394	35,694
Average	66,322	52,160	55,606	73,815	50,213	56,674	62,711	42,226	49,834	28,776	14,101	56,186

DISABILITY RETIREES:

Attained Ages	Completed Years Since Retirement											
	0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over	Total
0 - 60												0
61 - 65								1				1
66 - 70												0
71 - 75										1		1
76 & Over												0
Totals	0	0	0	0	0	0	0	1	0	1	0	2

AVERAGE ANNUAL BENEFITS PAYABLE TO DISABILITY RETIREES:

Attained Ages	Completed Years Since Retirement											
	0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over	Average Benefit
0 - 60												0
61 - 65								44,228				44,228
66 - 70												0
71 - 75										25,410		25,410
76 & Over												0
Average	0	0	0	0	0	0	0	44,228	0	25,410	0	34,819

SURVIVING BENEFICIARIES OF FORMER MEMBERS:

Attained Ages	Completed Years Since Retirement											
	0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over	Total
0 - 45												0
46 - 50											1	1
51 - 55					1							1
56 - 60	1			1		1	1					4
61 - 65		1			2	2	2	1				8
66 - 70			1			2	3		2			8
71 - 75						3	4	1	1	4	1	14
76 - 80										2	3	5
81 - 85							1	1	3		2	7
86 - 90						1			1	1	3	6
91 & Over												0
Totals	1	1	1	1	3	9	11	3	7	7	10	54

AVERAGE ANNUAL BENEFITS PAYABLE TO SURVIVORS OF FORMER MEMBERS:

Attained Ages	Completed Years Since Retirement											Average Benefit
	0	1	2	3	4	5- 9	10-14	15-19	20-24	25-29	30&Over	
0 - 45												0
46 - 50											21,789	21,789
51 - 55					52,452							52,452
56 - 60	50,361			50,993		46,868	26,429					43,663
61 - 65		26,517			54,378	69,693	45,635	15,136				47,633
66 - 70			33,784			36,974	32,696		31,056			33,492
71 - 75						28,540	48,772	8,090	32,419	16,256	1,055	27,664
76 - 80										12,399	20,511	17,266
81 - 85							33,346	63,591	16,167		9,720	23,554
86 - 90						121,238			77,374	23,616	35,674	54,875
91 & Over												0
Average	50,361	26,517	33,784	50,993	53,736	51,896	40,384	28,939	31,487	16,205	21,084	34,549

EXHIBIT X
YEAR-TO-YEAR COMPARISON

	Fiscal 2020	Fiscal 2019	Fiscal 2018	Fiscal 2017
Number of Active Members	731	734	744	755
Number of Retirees & Survivors	386	357	349	329
Number of Terminated Due Deferred Benefits	108	104	94	96
Number Terminated Due Refunds	309	292	270	266
Active Lives Payroll	$ 61,509,353	$ 60,738,553	$ 60,501,312	$ 60,086,832
Retiree Benefits in Payment	$ 20,476,692	$ 18,448,464	$ 17,914,111	$ 16,725,377
Market Value of Assets	$ 443,953,251	$ 435,940,046	$ 422,384,994	$ 392,603,825
Entry Age Normal Accrued Liability				
Active Lives	$ 261,356,775	$ 234,026,312	$ 226,631,689	$ 208,049,012
Retired Lives	$ 229,903,850	$ 204,630,972	$ 201,812,879	$ 185,685,403
Terminated Members	$ 31,919,873	$ 29,453,077	$ 26,119,629	$ 25,841,592
Total EAN Accrued Liability	$ 523,180,498	$ 468,110,361	$ 454,564,197	$ 419,576,007
Ratio of AVA to EAN Accrued Liability	87.31%	94.09%	93.51%	96.15%
Actuarial Value of Assets	$ 456,797,449	$ 440,451,633	$ 425,079,441	$ 403,428,322
Present Value of Future Employer Normal Cost	$ 141,325,384	$ 118,446,881	$ 120,523,030	$ 97,589,720
Present Value of Future Employee Contrib.	$ 44,627,125	$ 52,045,598	$ 52,395,819	$ 51,278,304
Present Value of Future Benefits	$ 642,749,958	$ 610,944,112	$ 597,998,290	$ 552,296,346

	Fiscal 2021	Fiscal 2020	Fiscal 2019	Fiscal 2018
Employee Contribution Rate	8.00%	8.00%	8.00%	8.00%
Estimated Tax Contribution as a % of Payroll	16.43%	15.45%	15.13%	14.51%
Actuarially Required Net Direct Employer Contribution Rate	8.99%	3.38%	3.83%	1.20%
Actual Employer Contribution Rate	4.00%	4.00%	1.25%	0.00%

* Employee Rate changed effective January 1, 2013

Fiscal 2016	Fiscal 2015	Fiscal 2014	Fiscal 2013	Fiscal 2012	Fiscal 2011
784	785	773	756	759	761
311	292	250	237	219	201
93	86	89	92	89	91
223	198	178	179	177	174
$ 60,325,526	$ 58,474,383	$ 58,331,096	$ 56,707,928	$ 55,977,999	$ 55,359,672
$ 15,461,663	$ 14,442,365	$ 11,477,547	$ 10,723,143	$ 9,778,123	$ 8,817,160
$ 370,742,452	$ 369,054,289	$ 358,527,405	$ 303,073,552	$ 262,386,314	$ 252,070,535
$ 194,383,880	$ 186,222,204	$ 216,200,259	$ 203,424,092	$ 199,854,225	$ 192,401,223
$ 171,716,093	$ 165,495,344	$ 124,365,651	$ 115,730,395	$ 104,607,659	$ 91,852,188
$ 23,783,204	$ 22,723,280	$ 19,955,780	$ 18,805,149	$ 17,580,426	$ 16,114,427
$ 389,883,177	$ 374,440,828	$ 360,521,690	$ 337,959,636	$ 322,042,310	$ 300,367,838
98.11%	97.24%	91.61%	85.93%	83.20%	84.45%
$ 382,512,520	$ 364,107,538	$ 330,282,320	$ 290,413,251	$ 267,941,755	$ 253,675,141
$ 81,119,123	$ 82,050,485	$ 94,513,585	$ 106,937,635	$ 113,325,975	$ 106,036,822
$ 50,725,195	$ 49,134,254	$ 40,605,011	$ 39,604,622	$ 38,884,396	$ 33,437,115
$ 514,356,838	$ 495,292,277	$ 465,400,916	$ 436,955,508	$ 420,152,126	$ 393,149,078

Fiscal 2017	Fiscal 2016	Fiscal 2015	Fiscal 2014	Fiscal 2013	Fiscal 2012
8.00%	8.00%	8.00%	8.00%	8.00% *	7.00%
12.90%	14.20%	14.51%	14.07%	13.11%	11.61%
0.46%	0.00%	3.95%	7.25%	9.70%	10.28%
0.00%	3.50%	7.00%	9.75%	10.25%	9.75%

SUMMARY OF PRINCIPAL PLAN PROVISIONS

The District Attorneys' Retirement System is a defined benefit pension plan that provides retirement allowances and other benefits. The following summary of plan provisions is for general informational purposes only and does not constitute a guarantee of benefits.

MEMBERSHIP – All District Attorneys, Assistant District Attorneys, (who earn more than the minimum salary specified by the board), and persons employed by this retirement system and the Louisiana District Attorneys' Association, are required to be members of the system as a condition of their employment.

CONTRIBUTION RATES – The fund is financed by employee contributions of 8.0% of salary for active members. In addition, the fund receives revenue sharing funds as appropriated by the legislature and ad valorem taxes as determined by the Public Retirement Systems' Actuarial Committee up to a maximum of 0.2% of the ad valorem taxes shown to be collected. In the event that the contributions from ad valorem taxes and revenue sharing funds are insufficient to provide for the gross employer actuarially required contribution, the employer is required to make direct contributions as determined by the Public Retirement Systems' Actuarial Committee.

CONTRIBUTION REFUNDS – Upon withdrawal from service, members not entitled to a retirement allowance are paid a refund of accumulated contributions upon request. Receipt of such a refund cancels all accrued rights in the system.

RETIREMENT BENEFITS – For members who joined the system before July 1, 1990, and who have elected not to be covered by the new provisions – Members are eligible to receive a normal retirement benefit if they have ten or more years of creditable service and are at least age sixty-two, or if they have eighteen or more years of service and are at least age sixty, or if they have twenty-three or more years of service and are at least age fifty-five, of if they have thirty years of service regardless of age. The normal retirement benefit is equal to 3% of the member's average final compensation for each year of creditable service. Members are eligible for early retirement at age sixty if they have at least ten years of creditable service or at age fifty-five with at least eighteen years of creditable service. Members who retire prior to age sixty with less than twenty-three years of service credit receives a retirement benefit reduced 3% for each year of age below sixty. Members who retire prior to age sixty-two who have less than eighteen years of service receive a retirement benefit reduced 3% for each year of age below sixty-two. Retirement benefits may not exceed 100% of final average compensation.

For members who joined the system after July 1, 1990, or who elected to be covered by the new provisions – Members are eligible to receive normal retirement benefits if they are age sixty and have ten years of service credit, are age fifty-five and have twenty-four years of service credit, or have thirty years of service credit regardless of age. The normal retirement benefit is equal to 3.5% of the member's final average compensation multiplied by years of membership service. A member is eligible for an early retirement benefit if he is age fifty-five and has at least eighteen years of service credit. The early retirement benefit is equal to the normal retirement benefit reduced 3% for each year the member retires in advance of normal retirement age. Benefits may not exceed 100% of average final compensation.

FINAL AVERAGE COMPENSATION – The period of final average compensation is thirty-six months plus the number of whole months elapsed since January 1, 2013, not to exceed sixty months, subject to

the limitation that the final average compensation shall not be less than the highest thirty-six month final average compensation as of January 1, 2013.

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

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

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

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

Option 4 – Upon retirement, the member elects to receive a board-approved benefit which is actuarially equivalent to the maximum benefit.

A member may also elect to receive an actuarially reduced benefit which provides for an automatic 2½% annual compound increase in monthly retirement benefits based on the reduced benefit and commencing on the later of age fifty-five or retirement anniversary; this COLA is in addition to any ad hoc COLAs which are payable. This is not available to members who select a Back-DROP benefit.

DISABILITY BENEFITS – Disability benefits are awarded to active contributing members with at least ten years of service who are found to be totally disabled as a result of injuries incurred while in active service. The member receives a benefit equal to 3.5% (3% for members covered under the old retirement benefit provisions) of his average final compensation multiplied by the lesser of his actual service (not to be less than fifteen years) or projected continued service to age sixty.

SURVIVOR BENEFITS – Upon the death of a member with less than five years of creditable service, his accumulated contributions and interest thereon are paid to his spouse, if he is married, or to his designated beneficiary, if he is not married. Upon the death of any active, contributing member with five or more years of service or any member with twenty-three years of service who has not retired, automatic option 2 benefits are payable to the surviving spouse. These benefits are based on the retirement benefits accrued at the member's date of death with option factors used as if the member had continued in service to earliest normal retirement age. If a member has no surviving spouse, the surviving minor children under eighteen or disabled children are paid 80% of the member's accrued retirement benefit divided into equal shares. If a member has no surviving spouse or children, his accumulated contributions and interest are paid to his designated beneficiary. In lieu of periodic payments, the surviving spouse or children may receive a refund of the member's accumulated contributions with interest.

DEFERRED RETIREMENT OPTION PLAN – **The following provisions only apply to those members of the retirement system who elected to participate in the Deferred Retirement Option Plan prior to January 1, 2009.** In lieu of terminating employment and accepting a service retirement allowance, any member in the New Plan who is eligible for normal retirement or any member of the Old Plan who is eligible for unreduced benefits may elect to participate in the Deferred Retirement Option Plan (DROP) for up to three years and defer the receipt of benefits. Upon commencement of participation in the plan, membership in the system continues and the member's status changes to inactive. During

participation in the plan, employer contributions are payable but employee contributions are reduced to one-half of one percent. The monthly retirement benefits that would have been payable, had the person elected to cease employment and receive a service retirement allowance, are paid into the DROP account. This fund does not earn interest while a person is participating in the DROP. In addition, no cost of living increases are payable to participants until employment which made them eligible to become members of the system has been terminated for at least one full year.

Upon termination of employment prior to or at the end of the specified period of participation, a participant in the plan may receive, at his option, a lump sum from the account equal to the payments into the account or systematic disbursements from his account in any manner approved by the board of trustees. The monthly benefits that were being paid into the deferred retirement option plan fund will begin to be paid to the retiree. If a participant dies during the participation in the plan, a lump sum equal to his account balance in the plan fund is paid to his named beneficiary or, if none, to his estate. If employment is not terminated at the end of the three years, payments into the plan fund cease and the person resumes active contributing membership in the system. All amounts which remain credited to the individual's sub-account after termination of participation in the plan are invested in liquid money market funds. Interest is credited thereon as actually earned.

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

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 3% of their original benefit, (not to exceed sixty dollars per month) and all retired members and widows who are sixty-five years of age and older a 2% increase in their original benefit. In lieu of the prior provisions, R.S. 11:241 provides for cost of living benefits payable based on a formula equal to up to $1 times the total of the number of years of credited service accrued at retirement or at death of the member or retiree plus the number of years since retirement or since death of the member or retiree to the system's fiscal year end preceding the payment of the benefit increase. In order for the board to grant any of these increases, the system must meet certain criteria detailed in the statute related to funding status and interest earnings.

ACTUARIAL ASSUMPTIONS

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

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

ACTUARIAL COST METHOD:	The Aggregate Actuarial Cost Method with allocation based on earnings.
VALUATION INTEREST RATE:	6.25% (Net of Investment Expense)
ACTUARIAL ASSET VALUES:	Assets are valued at market value adjusted to defer four-fifths of all earnings above or below the valuation interest rate in the valuation year, three-fifths of all earnings above or below the valuation interest rate in the prior year, two-fifths of all earnings above or below the valuation interest rate from two years prior, and one-fifth of all earnings above or below the valuation interest rate from three years prior. The resulting smoothed values are subject to a corridor of 85% to 115% of the market value of assets. If the smoothed value falls outside the corridor, the actuarial value is set equal to the average of the corridor limit and the smoothed value.
ANNUAL SALARY INCREASE RATE:	5.00% (2.30% inflation / 2.70% merit)
ACTIVE MEMBER MORTALITY:	Pub-2010 Public Retirement Plans Mortality Table for General Above-Median Employees multiplied by 115% for males and 115% for females, each with full generational projection using the MP2019 scale.

ANNUITANT AND BENEFICIARY MORTALITY: Pub-2010 Public Retirement Plans Mortality Table for General Above-Median Healthy Retirees multiplied by 115% for males and 115% for females, each with full generational projection using the MP2019 scale.

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

INTEREST RATE ON CONTRIBUTION REFUNDS: 2%

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

Service Duration ≤	Factor	Service Duration ≤	Factor
1	0.12	16	0.04
2	0.12	17	0.04
3	0.11	18	0.05
4	0.11	19	0.05
5	0.10	20	0.05
6	0.10	21	0.05
7	0.09	22	0.05
8	0.08	23	0.05
9	0.07	24	0.04
10	0.07	25	0.04
11	0.06	26	0.03
12	0.05	27	0.02
13	0.05	28	0.02
14	0.04	29	0.02
15	0.04	30 & Over	0.01

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

RATES OF RETIREMENT: The table of these rates is included later in the report. These rates apply only to those individuals eligible to retire. Retirement rates for members who have completed DROP participation and are currently active are 0.33.

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

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

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

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

DISABILITY RATES: The table of these rates is included later in the report. These rates are based on 10% of the disability rates used for the 27th valuation of the Railroad Retirement System for individuals with 10-19 years of service.

DISABLED LIVES MORTALITY: Pub-2010 Public Retirement Plans Mortality Table for General Disabled Retirees multiplied by 115% for males and 115% for females, each with full generational projection using the MP2019 scale.

VESTING ELECTING PERCENTAGE: 90% of those vested elect deferred benefits in lieu of contribution refunds.

ACTUARIAL TABLES AND RATES

Age	Retirement Rates	Disability Rates
18	0.00000	0.00012
19	0.00000	0.00012
20	0.00000	0.00012
21	0.00000	0.00012
22	0.00000	0.00012
23	0.00000	0.00012
24	0.00000	0.00012
25	0.00000	0.00012
26	0.00000	0.00012
27	0.00000	0.00012
28	0.00000	0.00012
29	0.00000	0.00012
30	0.00000	0.00012
31	0.00000	0.00012
32	0.00000	0.00012
33	0.00000	0.00012
34	0.00000	0.00012
35	0.00000	0.00013
36	0.00000	0.00013
37	0.00000	0.00013
38	0.00000	0.00014
39	0.00000	0.00015
40	0.00000	0.00016
41	0.00000	0.00017
42	0.00000	0.00018
43	0.00000	0.00020
44	0.00000	0.00021
45	0.00000	0.00024
46	0.15000	0.00026
47	0.15000	0.00029
48	0.15000	0.00033
49	0.15000	0.00038
50	0.15000	0.00043
51	0.15000	0.00049
52	0.15000	0.00057
53	0.15000	0.00066
54	0.15000	0.00077
55	0.08000	0.00090
56	0.08000	0.00106
57	0.08000	0.00125
58	0.08000	0.00148
59	0.08000	0.00175
60	0.08000	0.00239
61	0.08000	0.00291
62	0.08000	0.00322
63	0.16000	0.00338
64	0.16000	0.00257
65	0.16000	0.00207
66	0.16000	0.00052
67	0.16000	0.00052
68	0.16000	0.00052
69	0.16000	0.00052
70	0.16000	0.00052
71	0.18000	0.00052
72	0.18000	0.00052
73	0.18000	0.00052
74	0.18000	0.00052
75	0.18000	0.00052

PRIOR YEAR ASSUMPTIONS

VALUATION INTEREST RATE: 6.50% (Net of Investment Expense)

ANNUAL SALARY INCREASE RATE: 5.50% (2.40% inflation / 3.10% merit)

ACTIVE, ANNUITANT AND BENEFICIARY MORTALITY: RP-2000 Combined Healthy with White Collar Adjustment Sex Distinct Tables Projected to 2032 (Female table set back one year)

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

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

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

Service	Factor
≤5	0.095
6 - 20	0.045
>20	0.025

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

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

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

DISABILITY RATES: The table of these rates is included later in the report. These rates are based on 5% of the disability rates used for the 21st valuation of the Railroad Retirement System for individuals with 10-19 years of service.

PRIOR YEAR ACTUARIAL TABLES AND RATES

Age	Male Mortality Rates	Female Mortality Rates	Retirement Rates	Disability Rates
18	0.00017	0.00012	0.00000	0.00008
19	0.00018	0.00012	0.00000	0.00008
20	0.00019	0.00011	0.00000	0.00008
21	0.00020	0.00011	0.00000	0.00008
22	0.00021	0.00011	0.00000	0.00008
23	0.00023	0.00012	0.00000	0.00008
24	0.00025	0.00012	0.00000	0.00008
25	0.00027	0.00013	0.00000	0.00008
26	0.00031	0.00014	0.00000	0.00008
27	0.00033	0.00015	0.00000	0.00008
28	0.00033	0.00015	0.00000	0.00008
29	0.00035	0.00016	0.00000	0.00008
30	0.00030	0.00018	0.00000	0.00008
31	0.00033	0.00022	0.00000	0.00008
32	0.00037	0.00025	0.00000	0.00008
33	0.00041	0.00027	0.00000	0.00008
34	0.00045	0.00029	0.00000	0.00008
35	0.00050	0.00031	0.00000	0.00009
36	0.00055	0.00032	0.00000	0.00010
37	0.00060	0.00033	0.00000	0.00011
38	0.00063	0.00034	0.00000	0.00012
39	0.00066	0.00035	0.00000	0.00014
40	0.00069	0.00037	0.00000	0.00016
41	0.00072	0.00040	0.00000	0.00018
42	0.00075	0.00043	0.00000	0.00020
43	0.00079	0.00047	0.00000	0.00022
44	0.00083	0.00052	0.00000	0.00025
45	0.00088	0.00055	0.00000	0.00029
46	0.00093	0.00059	0.25000	0.00033
47	0.00098	0.00063	0.25000	0.00037
48	0.00102	0.00069	0.25000	0.00042
49	0.00106	0.00075	0.25000	0.00047
50	0.00111	0.00085	0.25000	0.00054
51	0.00125	0.00095	0.25000	0.00061
52	0.00131	0.00113	0.25000	0.00069
53	0.00142	0.00131	0.25000	0.00079
54	0.00154	0.00152	0.25000	0.00089
55	0.00179	0.00178	0.10000	0.00101
56	0.00210	0.00213	0.10000	0.00115
57	0.00236	0.00251	0.10000	0.00131
58	0.00268	0.00282	0.10000	0.00148
59	0.00296	0.00317	0.10000	0.00169
60	0.00333	0.00355	0.10000	0.00244
61	0.00392	0.00398	0.10000	0.00244
62	0.00451	0.00451	0.10000	0.00244
63	0.00540	0.00510	0.10000	0.00244
64	0.00617	0.00580	0.10000	0.00244
65	0.00704	0.00653	0.10000	0.00244
66	0.00828	0.00737	0.10000	0.00244
67	0.00923	0.00834	0.10000	0.00244
68	0.00992	0.00932	0.10000	0.00244
69	0.01095	0.01036	0.10000	0.00244
70	0.01188	0.01151	0.10000	0.00244
71	0.01319	0.01253	0.10000	0.00244
72	0.01472	0.01391	0.10000	0.00244
73	0.01647	0.01500	0.10000	0.00244
74	0.01848	0.01669	0.10000	0.00244
75	0.02142	0.01796	0.10000	0.00244

GLOSSARY

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

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

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

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

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

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

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

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

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

Amortization Payment – That portion of the pension plan contribution designated to pay interest and reduce the outstanding principal balance of unfunded actuarial accrued liability. If the amortization

payment is less than the accrued interest on the unfunded actuarial accrued liability the outstanding principal balance will increase.

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

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

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

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

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

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

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

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

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