CHEIRON

Classic Values, Innovative Advice

Employees Retirement System of the City of St. Louis

Actuarial Valuation as of October 1, 2019

Produced by Cheiron
January 2020

TABLE OF CONTENTS

Section		*Page*
Letter of Transmittal		i
Section I	Board Summary	1
Section II	Identification and Assessment of Risk	8
Section III	Assets	16
Section IV	Liabilities	21
Section V	Contributions	24
Section VI	Accounting Statement Information	26

Appendices

Appendix A	Membership Information	29
Appendix B	Actuarial Assumptions and Methods	32
Appendix C	Summary of Plan Provisions	38

LETTER OF TRANSMITTAL

January 22, 2020

Board of Pension Trustees
Employees Retirement System of the City of St. Louis
1114 Market Street, Suite 900
St. Louis, Missouri 63101

Dear Members of the Board:

At your request, we have conducted an actuarial valuation of the Employees Retirement System of the City of St. Louis as of October 1, 2019. The valuation is organized as follows:

- In Section I **Board Summary,** we describe the purpose of an actuarial valuation and summarize the key results found in this valuation.
- The **Main Body** of the report presents details on the System:
  - Section II Identification and Assessment of Risk
  - Section III - Assets
  - Section IV - Liabilities
  - Section V - Contributions
  - Section VI - Accounting Statement Information
- In the **Appendices,** we conclude our report with detailed information describing the System's membership (Appendix A), actuarial assumptions and methods employed (Appendix B), and a summary of pertinent plan provisions (Appendix C).

The results of this report rely on future System experience conforming to the underlying assumptions. To the extent that actual System experience deviates from the underlying assumptions, the results will vary accordingly. The actuarial assumptions were adopted by the Board based on our recommendations from the experience study performed for the period October 1, 2009 through September 30, 2014.

The purpose of this report is to present the annual actuarial valuation of the Employees Retirement System of the City of St. Louis. This report is for the use of the Board and its auditors in preparing financial reports in accordance with applicable law and accounting requirements. The report does not include calculations related to GASB Statements No. 67 and 68, which are provided in a separate report.

In preparing our report, we relied on information supplied by the Employees Retirement System of the City of St. Louis staff. This information includes, but is not limited to, plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standards of Practice No. 23.

This report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice as set out by the Actuarial Standards Board as well as applicable laws and regulations. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys, and our firm does not provide any legal services or advice.

This actuarial report was prepared exclusively for the Employees Retirement System of the City of St. Louis for the purpose described herein. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to any other user.

Sincerely,
Cheiron

Stephen T. McElhaney, FSA, FCA, EA	Michael J. Noble, FSA, FCA, EA
Principal Consulting Actuary	Principal Consulting Actuary

SECTION I – BOARD SUMMARY

The primary purpose of the actuarial valuation and this report is to measure, describe and identify as of the valuation date:

- The financial condition of the System,
- Past and expected trends in the financial progress of the System,
- The employers' contributions for Fiscal Year ending 2020, and
- Information required for accounting statements.

In the balance of this Board Summary, we present (A) the basis upon which this year's valuation was completed, (B) the key findings of this valuation including a summary of all key financial results, (C) an examination of the historical trends, and (D) the projected financial outlook for the System.

A. Valuation Basis

This October 1, 2019 valuation represents Cheiron's tenth valuation performed for the Employees Retirement System of the City of St. Louis.

B. Key Findings of this Valuation

The key results of the October 1, 2019 actuarial valuation are as follows:

- The actuarially determined employer contribution rate for the City as a percent of total compensation increased from 12.26% as of October 1, 2018 to 13.19% as of October 1, 2019.
- For the "Lawsuit Beneficiary Employers", the actuarially determined contribution rate has been decreased by 0.08% of compensation. Further information about this adjustment can be found in the description of the amortization method in Appendix B.
- The unfunded actuarial liability for the Employees Retirement System (ERS) increased from $166 million on October 1, 2018 to $185 million on October 1, 2019.
- The System's funded ratio, the ratio of actuarial asset value over liabilities decreased from 83.4% as of October 1, 2018 to 81.8% as of October 1, 2019.
- There was also an actuarial experience loss during the year of $23.1 million.
    - During the year ended September 30, 2019, the System's assets had a 1.17% return on a market value basis, but due to smoothing of prior investment gains and losses, the return on the actuarial asset value was 4.77% (as compared to 7.50% investment return assumption). This resulted in an actuarial loss on investments of $22.2 million.
    - On the liability side, the System experienced a total loss of $0.9 million. Notable gains or losses were a $3.4 million gain from the COLA increase for benefits being less than expected, a $1.6 million loss due to inactive mortality, and a $1.6 million loss from salary increases being greater than expected. Additionally, there was a $3.2 million gain from actives terminating earlier than expected, which was mostly offset by a $3.1 million loss from actives retiring earlier than expected when compared to the assumptions. New members in the System created an additional $0.7 million loss as there is no explicit assumption for new hires.
    - An additional reduction of UAL of $1.8 million was created because contributions were more than expected.

SECTION I – BOARD SUMMARY

Following is Table I-1 which summarizes all the key results of the valuation with respect to the System's membership, assets and liabilities, and contributions. The results are presented and compared for both the current and prior plan year.

Table I-1
Employees Retirement System of the City of St. Louis
Summary of Principal Results

Valuation as of:	October 1, 2018	October 1, 2019	% Change
Participant Counts			
Active Participants*	5,202	5,144	(1.11%)
Disabled Participants	187	187	0.00%
Retirees and Beneficiaries	4,491	4,595	2.32%
Terminated Vested Participants	2,512	2,561	1.95%
Total	**12,392**	**12,487**	**0.77%**
Annual Salaries of Active Members	$228,447,481	$ 228,673,586	0.10%
Annual Retirement Allowances for Retired Members and Beneficiaries	$ 57,019,734	$ 59,834,551	4.94%
Assets and Liabilities			
Actuarial Liability (AL)	$ 996,543,282	$ 1,015,454,744	1.90%
Actuarial Value of Assets (AVA)	831,005,302	830,686,015	(0.04%)
Unfunded Actuarial Liability (UAL)	$ 165,537,980	$ 184,768,729	11.62%
Funded Ratio (AVA / AL)	83.4%	81.8%	
Market Value of Assets (MVA)	827,355,133	797,777,721	(3.57%)
Funded Ratio (MVA / AL)	83.0%	78.6%	
Contributions as a Percentage of Payroll	**Fiscal Year 2019**	**Fiscal Year 2020**	
Normal Cost Rate	5.80%	5.85%	
Administrative Expense Rate	0.30%	0.30%	
City UAL Rate	6.16%	7.04%	
Total City Contribution Rate	12.26%	13.19%	
Reduction in UAL Rate for Lawsuit Beneficiary Employers	0.08%	0.08%	
Total Contribution Rate for Lawsuit Beneficiary Employers	12.18%	13.11%	
Actuarially Determined Contribution	$ 27,958,439	$ 30,122,002	7.74%

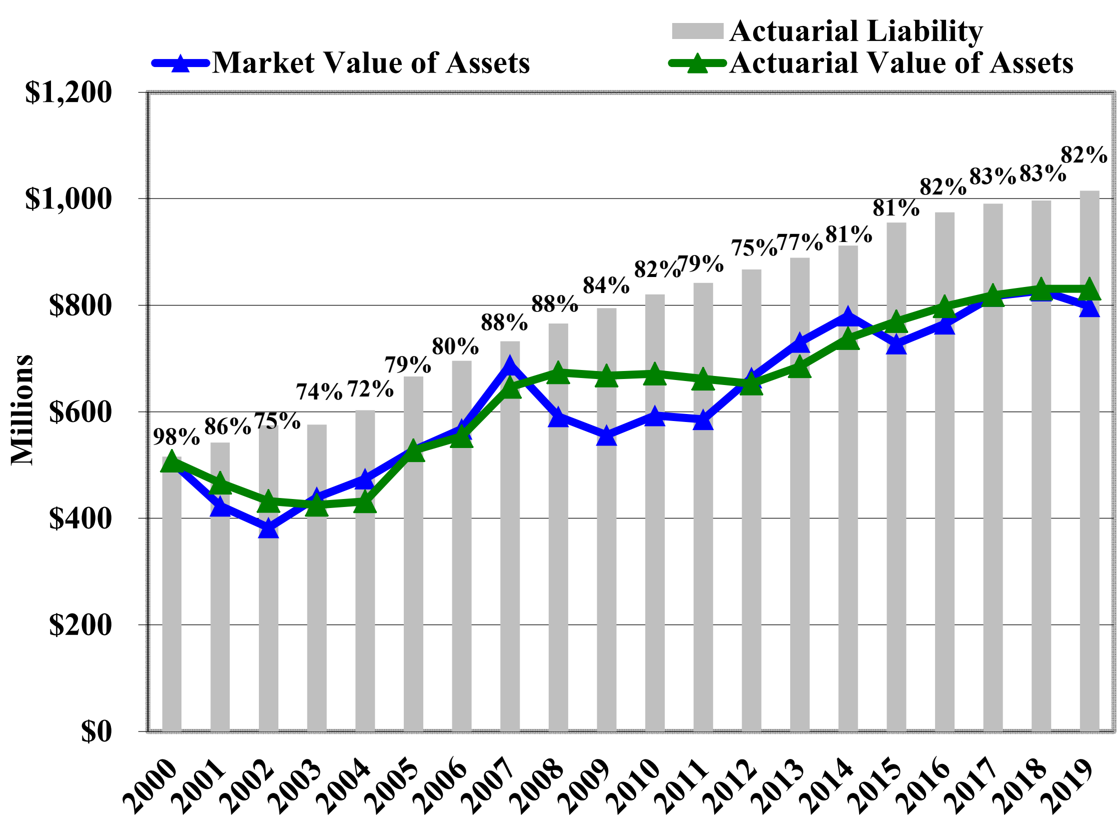
* Includes 391 DROP participants as of October 1, 2018 and 406 DROP participants as of October 1, 2019.

C. Historical Trends

Despite the fact that for most retirement systems the greatest attention is given to the current valuation results and in particular the size of the current unfunded actuarial liability and the employer's contribution, it is important to remember that each valuation is merely a snapshot in the long-term progress of a pension fund. It is more important to judge a current year's valuation result relative to historical trends, as well as trends expected into the future.

Assets and Liabilities

There was a decrease in the market value of assets (MVA) from \$827 million to \$798 million, due to benefit payments being greater than contributions received and an investment return of 1.17% during the year, which is less than the assumption of 7.50%. With the asset smoothing method in place, the actuarial value of assets has tracked a slightly smoother path through the volatility of the market over recent years. The actuarial value of assets (AVA) decreased slightly from 2018 to 2019 returning 4.77% which reflects investment losses for the current and prior year as well as losses for 2015, partially offset by investment gains for 2016 and 2017.

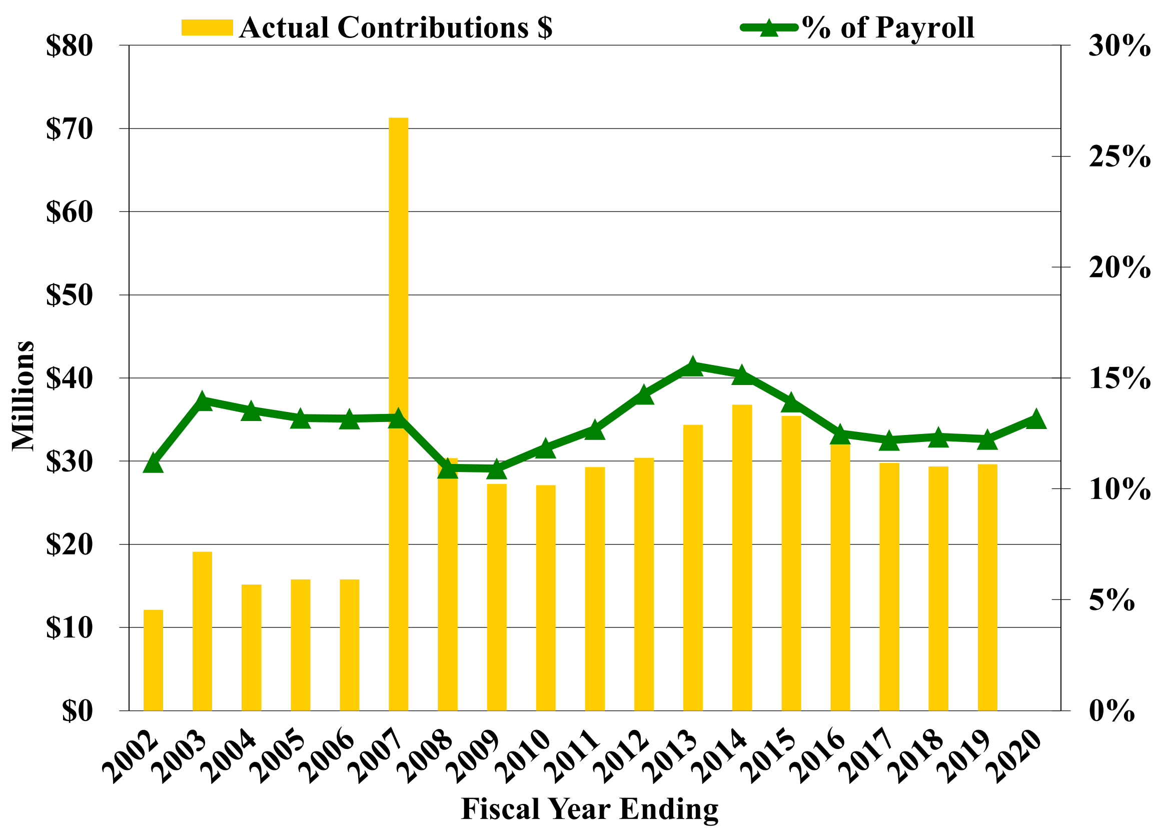


SECTION I – BOARD SUMMARY

The chart on the prior page compares the actuarial value of assets to the actuarial liabilities and shows the funded ratio, which is a comparison of the Actuarial Value of Assets and Actuarial Liability. This chart shows that the funded ratio had decreased for the four valuations prior to 2013 due to the delayed recognition of the substantial market losses in 2008 and 2009, but has slowly increased with the market rebounds since 2012 with a slight decline as of 2019.

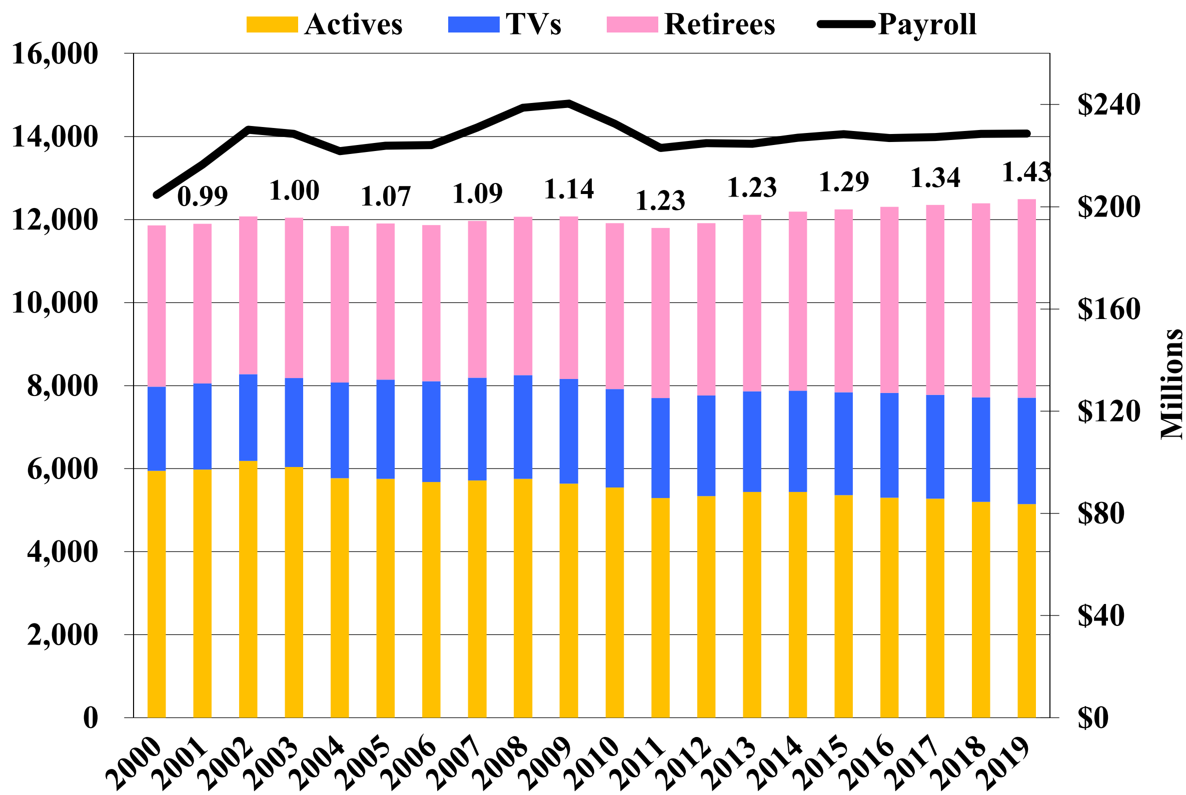
Contribution Rates

The yellow bars in the graph below show the dollar amount of contributions made to the System (depicted on the left-hand scale) since Fiscal Year Ending 2002. The green line shows the actuarial contribution rate (combined for all employers) as a percent of payroll (depicted on the right hand scale). Members do not make contributions to the System. The actuarial contribution rate increased from 12.26% of payroll in 2018 to 13.19% of payroll in 2019 primarily due to the poor asset return.



SECTION I – BOARD SUMMARY

Participant Trends



The above chart provides a measure for the maturity in the System, by comparing the ratio of inactive members (retirees and terminated-vesteds) to active members. The inactive-to-active ratio has generally increased since 2000 from 1.0 inactive dependent on each active member to 1.4 inactives dependent on each active member today. This increase is not necessarily bad in itself, but as more of the liability moves from actives to inactives, the plan will experience more volatility in contribution rates when actuarial gains and losses are recognized.

D. Future Expected Financial Trends

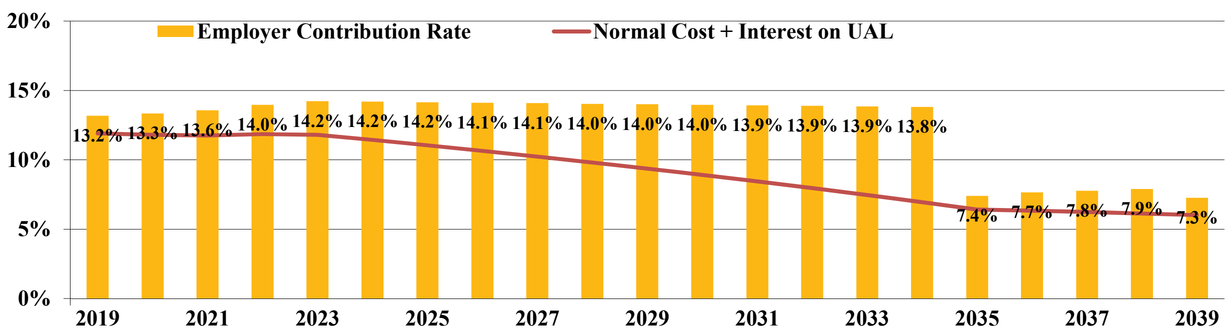
The analysis of projected financial trends is perhaps the most important component of this valuation. In this section, we present the implications of the October 1, 2019 valuation results in terms of (1) the projected employer contributions, and (2) projected System's funded status (ratio of assets over liabilities). We assume future investment returns of 7.50% each year. The projections assume there will be no future gains or losses on the liability.

1. <u>Contribution Rate Projection</u>

The chart shows the employer's projected actuarially determined combined contribution rates (gold bars). The years shown in the charts are plan years beginning October 1st.

Baseline returns of 7.50%

The chart below shows that the actuarially determined contribution rate will initially increase from 13.2% to 14.2% by 2023 and then slowly decrease to 13.8% over a 15 year period until the 2015 unfunded liability base has been fully amortized. In 2035, the contribution rate drops to 7.4%. These projections assume that the System earns the assumed investment rate of 7.50% on market value. The expected increase in contributions next year is due to continued recognition of the recent investment losses into the actuarial value of assets.



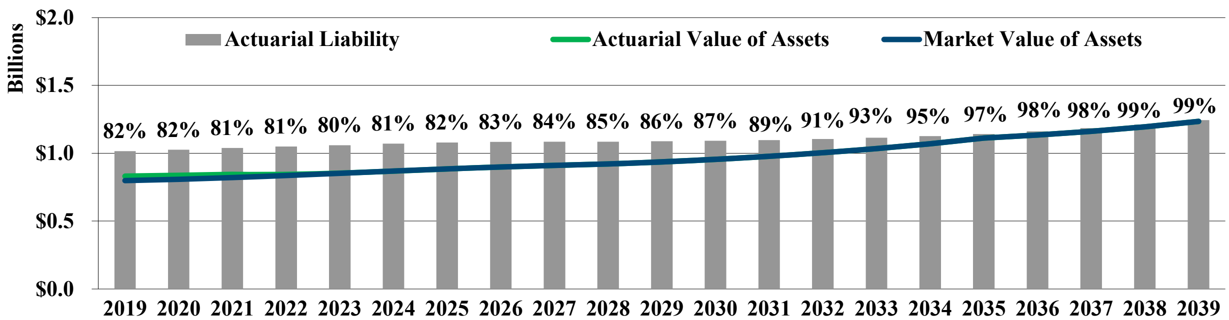
SECTION I – BOARD SUMMARY

2. Asset and Liability Projection

This next projection chart compares the market value of assets (blue line) and the actuarial or smoothed value of assets (green line) to the System's actuarial liabilities (gray bars). In addition, above the bars, we show the System's funded ratio (ratio of actuarial value of assets to actuarial liabilities). The projections assume that the actuarially determined contributions, as shown in the previous chart, are made each year. The years shown in the chart signify the valuation date as of October 1st.

Baseline returns of 7.50%

Assuming that the System earns the assumed investment rate of 7.50%, the funded ratio will increase from 82% to 99% during the 20 year projection period.



SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

Actuarial valuations are based on a set of assumptions about future economic and demographic experience. These assumptions represent a reasonable estimate of future experience, but actual future experience will undoubtedly be different and may be significantly different. This section of the report is intended to identify the primary risks to the System, provide some background information about those risks, and provide an assessment of those risks. Some of the charts within this section compare measures calculated for the Employees Retirement System of the City of St. Louis to plans within the Public Plans Database. Information regarding this data can be found at https://publicplansdata.org/.

Identification of Risks

The fundamental risk to a pension plan is that the contributions needed to pay the benefits become unaffordable. While we believe it is unlikely that the Plan by itself would become unaffordable, the contributions needed to support the Plan may differ significantly from expectations. While there are a number of factors that could lead to contribution amounts deviating from expectations, we believe the primary sources are:

- Investment risk,
- Interest rate risk,
- Longevity and other demographic risks, and
- Assumption change risk.

Other risks that we have not identified may also turn out to be important.

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

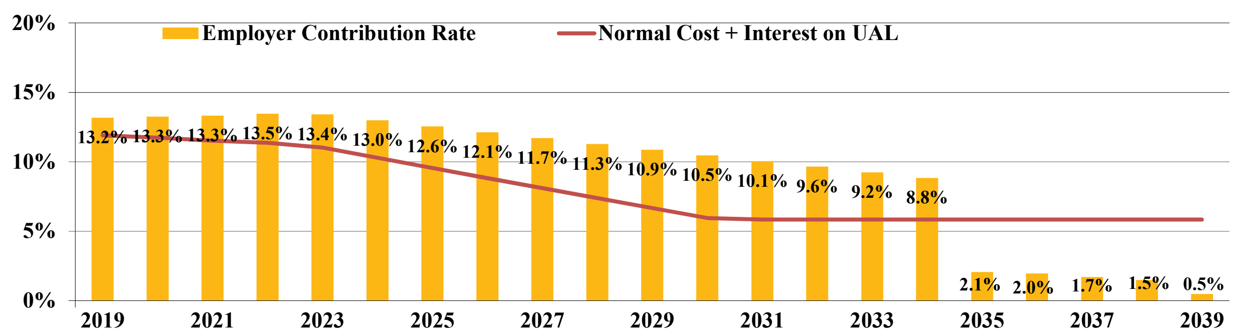
Investment Risk is the potential for investment returns to be different than expected. Lower investment returns than anticipated will increase the Unfunded Actuarial Liability necessitating higher contributions in the future unless there are other gains that offset these investment losses. The potential volatility of future investment returns is determined by the Plan's asset allocation, and the affordability of the investment risk is determined by the amount of assets invested relative to the size of the plan sponsor or other contribution base.

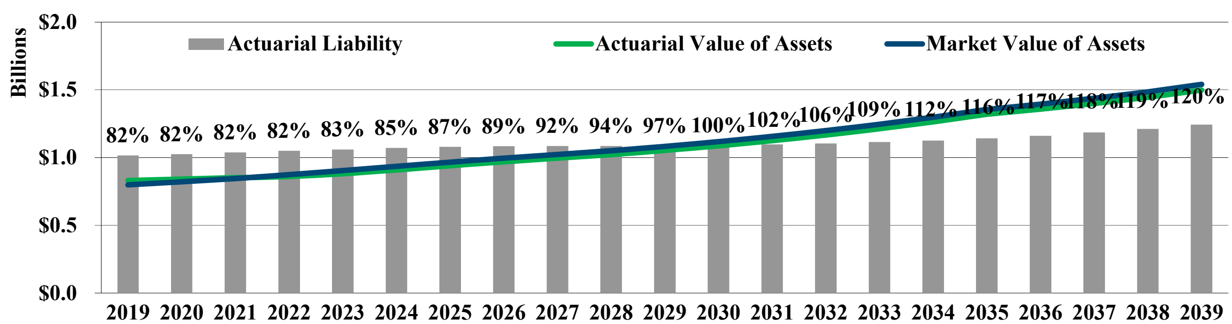
For stress testing purposes, we include two scenarios to illustrate the impact actual investment returns may have on future funded status and contribution amounts compared to the baseline scenario presented at the end of Section I of this report. The two scenarios are (1) optimistic returns of 9.00% each year and (2) pessimistic returns of 6.00% each year

As with the baseline, we present the implications of the October 1, 2019 valuation results in terms of the projected employer contributions, and projected System's funded status (ratio of assets over liabilities).

1. <u>Optimistic returns of 9.00%</u>

If the System earns 1.50% greater than the assumed rate in each year of the projection, the actuarially determined contribution rate will steadily decrease to about 8.8% in 15 years. In 2035, the contribution rate would drop to 2.1% and continue decreasing in future years. The funded ratio is projected to increase to 100% by 2030 and 120% by the end of the 20-year projection period.

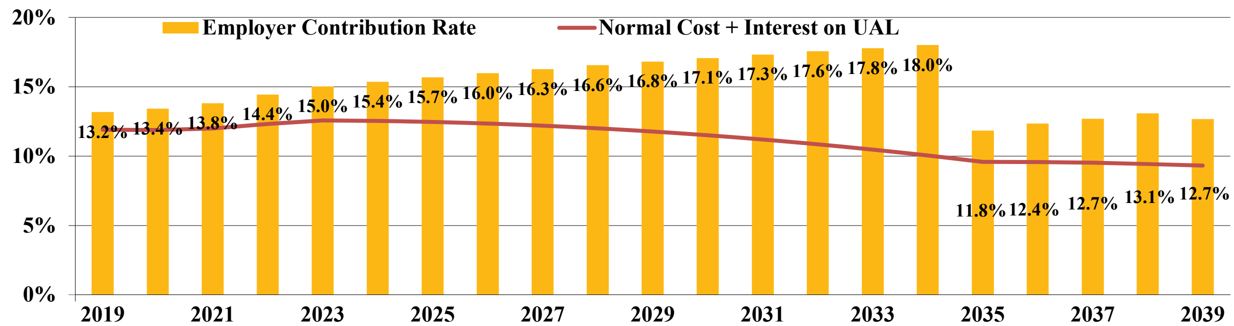


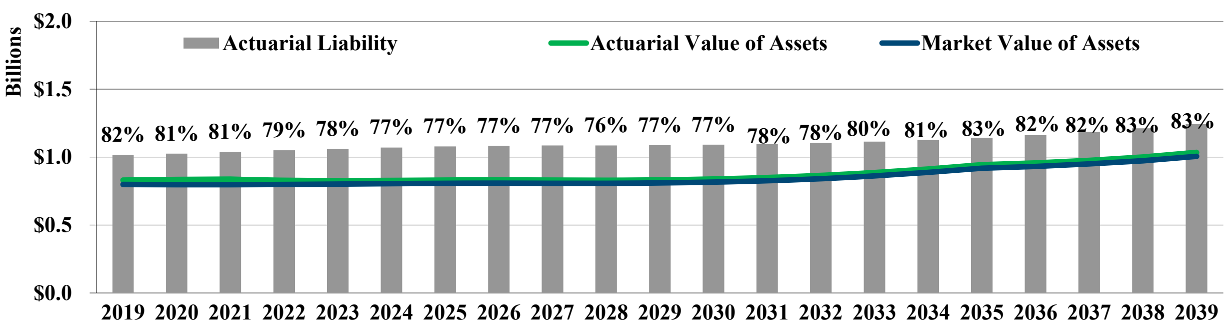


SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

2. Pessimistic returns of 6.00%

If the System earns 1.50% less than the assumed rate in each year of the projection, the actuarially determined contribution rate will steadily increase to 18.0% as of 2034 before dropping to a rate of 11.8% after the initial unfunded liability has been paid off. Conversely, the funded ratio will decrease to 77% by 2024 before recovering to 83% by the end of the 20-year projection period due to the significant increase in contributions attributable to the underfunding.

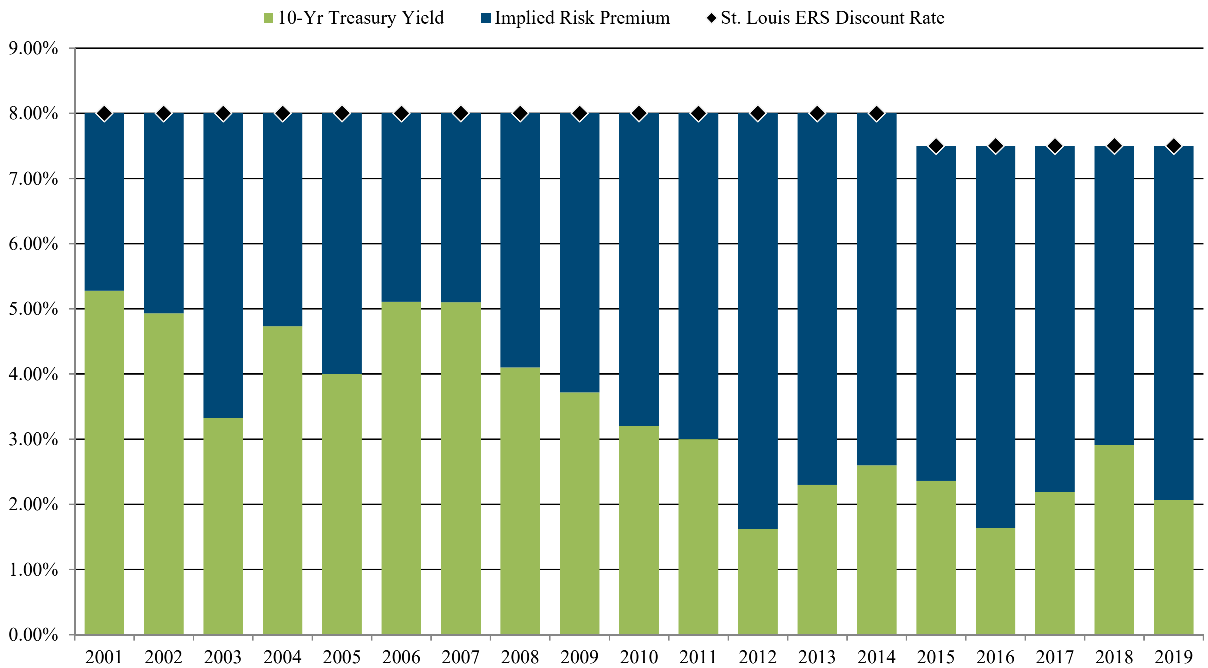




SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

Interest rate risk is the potential for interest rates to be different than expected. For public plans, short-term fluctuations in interest rates have little or no effect as the plan's liability is usually measured based on the expected return on assets. Longer-term trends in interest rates, however, can have a powerful effect. The chart below shows the yield on a 10-year Treasury security compared to the System's assumed rate of return. The difference is a simple measure of the amount of investment risk taken. As interest rates have declined, plans faced a choice: maintain the same level of risk and reduce the expected rate of return, maintain the same expected rate of return and take on more investment risk, or some combination of the two strategies.

Historical Implied Risk Premium



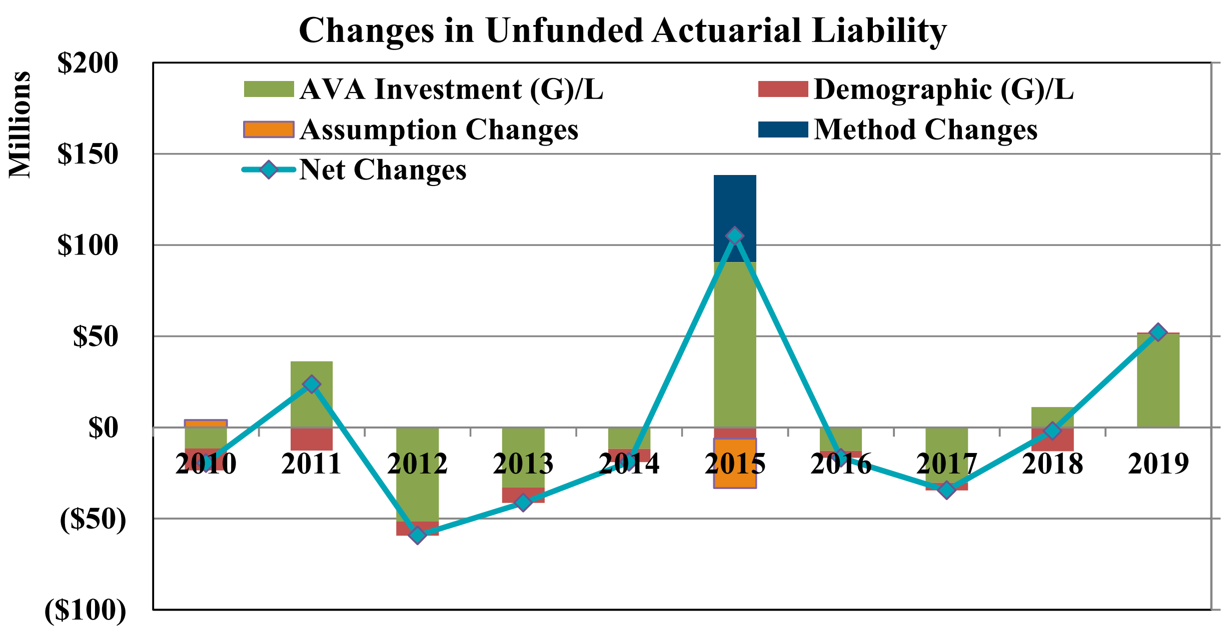
Survey Data from Public Plans Database as of 12/17/2019

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

Longevity and other demographic risks are the potential for mortality or other demographic experience to be different than expected. Generally, longevity and other demographic risks emerge slowly over time and are often dwarfed by other changes, particularly those due to investment returns. The System has experienced demographic gains every year since 2010 with the exception of the current year.

Assumption change risk is the potential for the environment to change such that future valuation assumptions are different than the current assumptions. Increases in UAL from assumption changes were related to experience studies in which demographic and economic assumptions were adjusted. Assumption change risk is an extension of the other risks identified, but rather than capturing the risk as it is experienced, it captures the cost of recognizing a change in environment when the current assumption is no longer reasonable.

The chart below shows how many of the risks mentioned impact the financial status of the System. While a lot of attention is given to the demographic assumptions, the primary force on the health of the System is the return on investment earned each year.



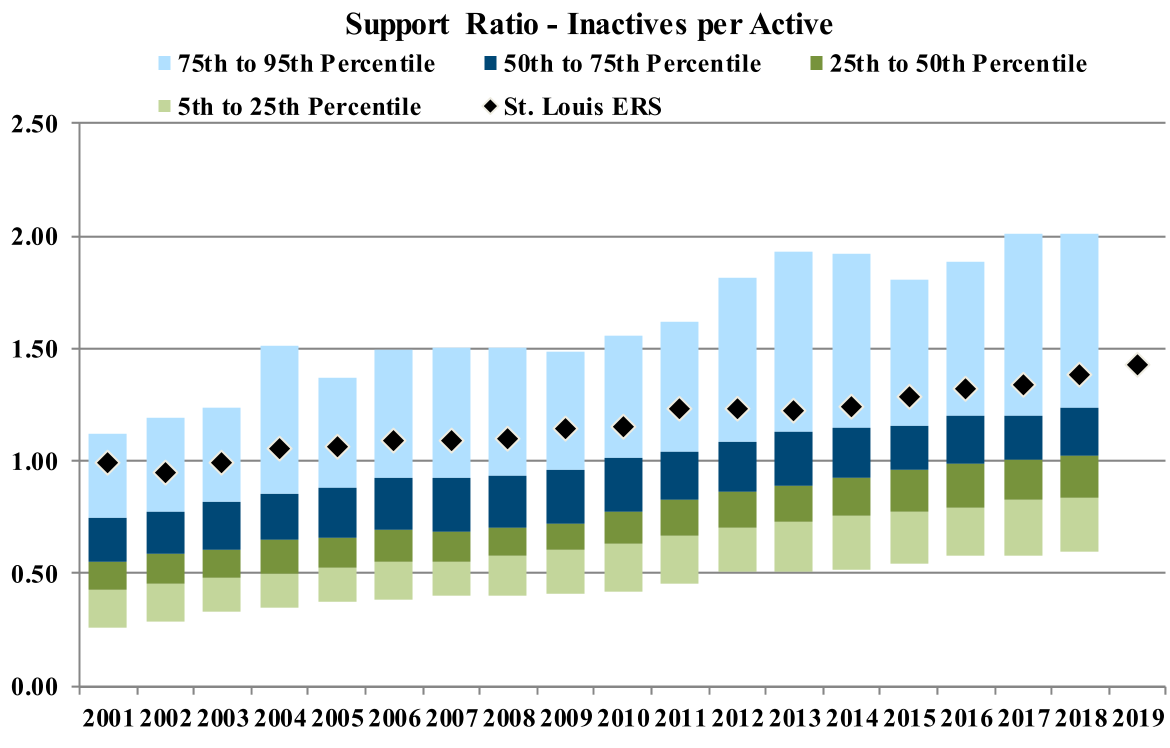
Plan Maturity Measures

The future financial condition of a mature pension plan is more sensitive to each of the risks identified above than a less mature plan. Before assessing each of these risks, it is important to understand the maturity of this system compared to other plans and how the maturity has changed over time.

Plan maturity can be measured in a variety of ways, but they all get at one basic dynamic – the larger the plan is compared to the contribution or revenue base that supports it, the more sensitive the plan will be to risk. The measures below have been selected as the most important in understanding the primary risks identified for this system.

Inactives per Active (Support Ratio)

One simple measure of plan maturity is the ratio of the number of inactive members (those receiving benefits or entitled to a deferred benefit) to the number of active members. The revenue base supporting the plan is usually proportional to the number of active members, so a relatively high number of inactives compared to actives indicates a larger plan relative to its revenue base as well.



Survey Data from Public Plans Database as 12/17/2019

The graph above shows the distribution from the 5th to 95th percentile of support ratios for the plans in the Public Plans Database. The black diamond shows how the Employees Retirement System of the City of St. Louis compares to the other plans.

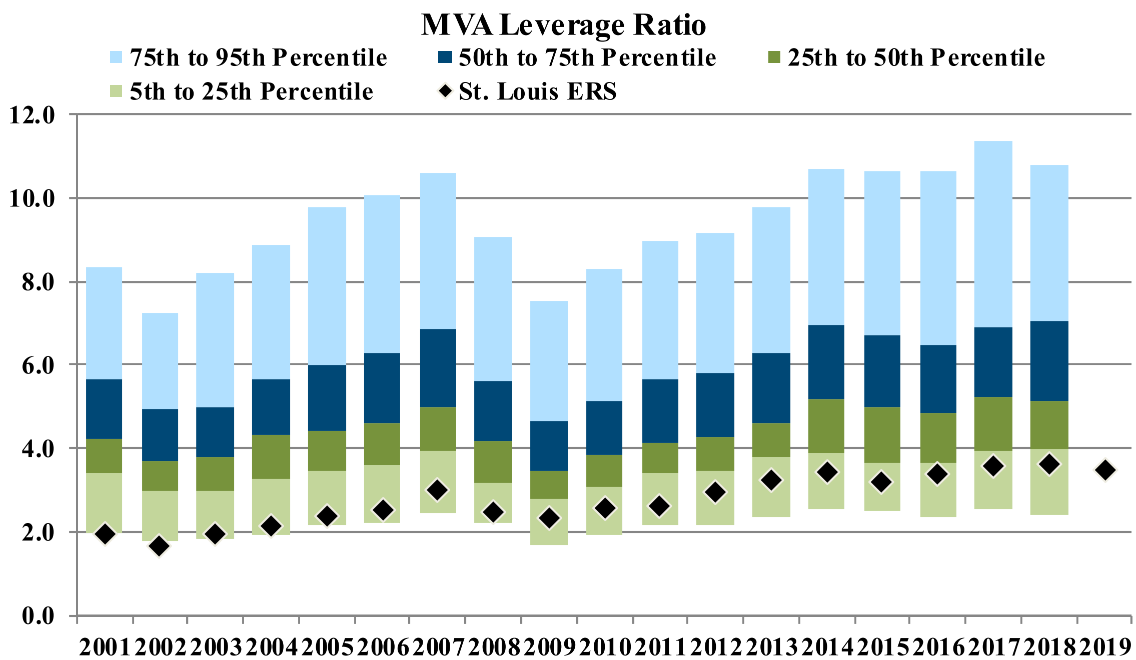
SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

Whereas the support ratios for the plans as a whole have increased over the period as they mature, the System's support ratio has increased over the period and is among the 75th to 95th percentile of the Public Plans Database meaning that the System is more mature than the average plan in the Database.

Leverage Ratios

Leverage or volatility ratios measure the size of the plan compared to its revenue base more directly. An asset leverage ratio of 5.0, for example, means that if the System experiences a 10% loss on assets compared to the expected return, the loss would be equivalent to 50% of payroll.

The same investment loss for a system with an asset leverage ratio of 10.0 would be equivalent to 100% of payroll. As the System becomes better funded, the asset leverage ratio will increase, and if it was 100% funded, the leverage ratio would equal the Actuarial Liability (AL) leverage ratio.

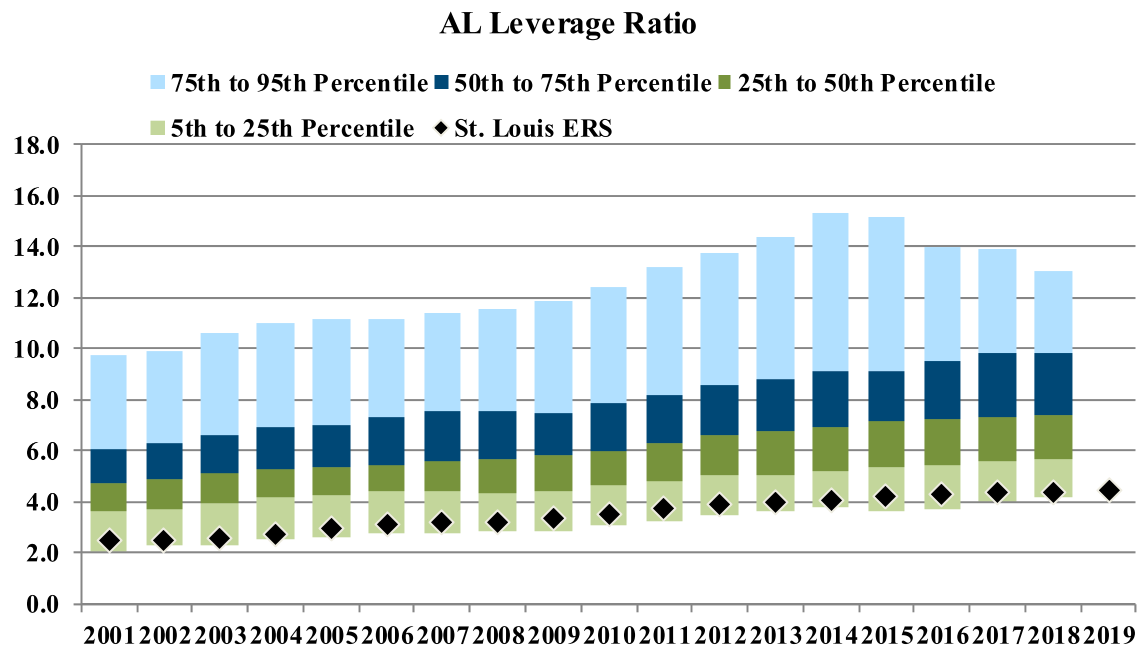


Survey Data from Public Plans Database as 12/17/2019

The chart above shows the distribution from the 5th to 95th percentile of asset leverage ratios for the plans in the Public Plans Database. The black diamond shows how the System compares. The System's asset leverage ratio has historically been in the 5th to 25th percentile compared to other plans. The asset leverage ratio will increase as the System approaches 100% funded.

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

An actuarial liability leverage ratio of 5.0 means that if the System experiences a 10% loss on assets compared to the expected return, the liability loss would be equivalent to 50% of payroll.



Survey Data from Public Plans Database as 12/17/2019

The chart above shows the distribution from the 5th to 95th percentile of Actuarial Liability leverage ratios for the plans in the Public Plans Database. The black diamond shows how the Plan compares.

The System's Actuarial Liability leverage ratio has historically been in the 5th to 25th percentile compared to other plans, meaning that the System may be less sensitive to risk compared to the plans in the Database. But as the Plan matures and more of the liability is due to inactive members, this ratio continues to increase. The ratio has increased from about 2.5 from the beginning of the period to a ratio of about 4.4 in 2019.

SECTION III – ASSETS

Pension Plan assets play a key role in the financial operation of the System and in the decisions, the Trustees may make with respect to future deployment of those assets. The level of assets, the allocation of assets among asset classes, and the methodology used to measure assets will likely impact benefit levels, employer contributions, and the ultimate security of participants' benefits.

In this section, we present detailed information on the System assets including:

- Disclosure of the System assets as of October 1, 2018 and October 1, 2019;
- Statement of the changes in market values during the year;
- Development of the Actuarial Value of Assets;
- An assessment of investment performance; and
- A projection of the System's expected cash flows for the next ten years.

Disclosure

There are two types of asset values disclosed in this valuation, the market value of assets and the actuarial value of assets. The market value represents a "snap-shot" or "cash-out" value which provides the principal basis for measuring financial performance from one year to the next. Market values, however, can fluctuate widely with corresponding swings in the marketplace. As a result, market values are usually not as suitable for long-range planning as are the actuarial value of assets which reflect the smoothing of annual investment returns.

Table III-1 below discloses and compares each asset value as of September 30, 2018 and 2019.

Table III-1
Statement of Assets at Market Value as of September 30,

Assets	2018	2019	% Change
Cash	$ 386,227	$ 59,712	(84.54%)
Receivables	846,933	899,167	6.17%
Temporary investments	5,700,414	9,819,140	72.25%
U.S Government Securities	23,744,120	38,948,605	64.03%
Corporate Bonds	29,520,269	33,710,451	14.19%
Global Bond Portfolio	32,303,782	39,889,358	23.48%
Stocks	216,847,893	216,696,469	(0.07%)
Energy Master Limited Partnerships	47,646,145	0	(100.00%)
Domestic Bond Funds	86,376,386	89,403,040	3.50%
Managed Real Estate Fund	89,869,706	95,225,746	5.96%
Managed International Equity Funds	215,527,892	212,900,826	(1.22%)
Managed Hedge Fund of Funds	79,444,239	60,873,063	(23.38%)
Accounts Payable	(858,873)	(647,856)	(24.57%)
Market Value of Assets	**$ 827,355,133**	$797,777,721	**(3.57%)**

Changes in Market Value

Table III-2 below shows the components of change between the market value of assets as of September 30, 2018 and September 30, 2019.

Table III-2
Changes in Market Values

Value of Assets – September 30, 2018		**$ 827,355,133**
Additions		
Payments from Members	$ 147,584	
Employer Contributions	29,629,568	
Interest and Dividends	9,686,379	
Investment Return	4,714,476	
Total Additions	**$ 44,178,007**	
Deductions		
Investment Expenses	$ 4,989,233	
Benefit Payments	67,890,918	
Administrative Expenses	875,268	
Total Deductions	**$ 73,755,419**	
Value of Assets – September 30, 2019		**$ 797,777,721**

SECTION III – ASSETS

Actuarial Value of Assets

The next table, Table III-3, shows how the actuarial value of assets is developed. The actuarial value of assets method was initialized at market value as of October 1, 2005.

The actuarial value of assets represents a "smoothed" value developed by the actuary to reduce, or eliminate, erratic results which could develop from short-term fluctuations in the market value of assets. For this System, the actuarial value has been calculated by taking the market value of assets less 80% of the investment gain (loss) during the preceding year, less 60% of the investment gain (loss) during the second preceding year, less 40% of the investment gain (loss) during the third preceding year, and less 20% of the investment gain (loss) in the fourth preceding year. The investment gain (loss) is calculated by taking the difference between the expected value of assets based on an expected return of 7.50% for the year ended September 30, 2019 and the actual value of assets. If the actuarial value of assets is less than 80% or more than 120% of the market value, an adjustment is made to the actuarial value to bring the value within this corridor. The table below illustrates the calculation of the actuarial value of assets for the October 1, 2019 valuation.

Table III-3
Development of Actuarial Value of Assets

Market value of assets at September 30, 2018		$ 827,355,133
Employer Contributions		29,629,568
Payments from Members		147,584
Benefit payments		(67,890,918)
Administrative Expenses		(875,268)
Expected return at 7.50%		60,615,978
Expected Value at September 30, 2019		$ 848,982,077
Actual Value at September 30, 2019		797,777,721
Investment (gain)/ loss		$ 51,204,356
	Total Gain/(Loss)	**Excluded Portion**
Exclude 0% of 2015 gain/(loss)	$ (90,682,656)	$ 0
Exclude 20% of 2016 gain/(loss)	12,949,499	2,589,900
Exclude 40% of 2017 gain/(loss)	30,292,586	12,117,034
Exclude 60% of 2018 gain/(loss)	(11,086,238)	(6,651,743)
Exclude 80% of 2019 gain/(loss)	(51,204,356)	(40,963,485)
Total excluded gain/(loss) for AVA calculation		$ (32,908,294)
Market value of assets at September 30, 2019		$ 797,777,721
Total gain/(loss) excluded		(32,908,294)
Actuarial value of assets at September 30, 2019		$ 830,686,015

SECTION III – ASSETS

Investment Performance

The market value of assets (MVA) returned 1.17% during the plan year ending September 30, 2019, which is less than the assumed 7.50% return. A return of 4.77% was experienced on the actuarial value of assets (AVA), resulting in an actuarial loss for the year. Below, we show additional historical returns.

Table III-4
Historical Returns

	MVA	AVA
2007	14.65%	10.17%
2008	-12.76%	5.85%
2009	-3.09%	1.52%
2010	10.11%	3.42%
2011	1.79%	1.25%
2012	16.95%	1.56%
2013	13.04%	7.99%
2014	9.63%	10.65%
2015	-3.79%	7.62%
2016	9.32%	7.58%
2017	11.55%	7.12%
2018	6.11%	6.31%
2019	1.17%	4.77%

Projection of System's Future Cash Flows

Table III-5
Projection of System's Expected Cash Flows

Year Beginning October 1,	Benefit Payments and Administrative Expenses	Contributions	Net Cash Flow
2019	$ 77,185,672	$ 30,122,000	$ (47,063,672)
2020	77,715,608	31,571,265	(46,144,343)
2021	78,934,137	33,240,931	(45,693,206)
2022	80,933,069	35,385,623	(45,547,445)
2023	82,064,916	37,358,662	(44,706,254)
2024	87,184,839	38,560,054	(48,624,785)
2025	89,896,862	39,800,311	(50,096,551)
2026	94,747,716	41,080,696	(53,667,020)
2027	96,883,213	42,402,516	(54,480,697)
2028	95,951,001	43,767,120	(52,183,881)

Expected contributions assume contribution rates as shown in the graph on page 6 and that payroll will increase at the actuarially assumed rate of 3.0% per year. Expected benefit payments are projected for the closed group valued at October 1, 2019. Projecting any farther than ten years using a closed-group would not yield reliable predictions due to the omission of new hires.

SECTION IV – LIABILITIES

In this section, we present detailed information on the System liabilities including:

- **Disclosure** of the System liabilities as of October 1, 2018 and October 1, 2019, and
- Statement of **changes** in these liabilities during the year.

Disclosure

Several types of liabilities are calculated and presented in this report. Each type is distinguished by the people ultimately using the figures and the purpose for which they are using them.

- **Present Value of All Future Benefits:** Used for measuring all future System obligations, represents the amount of money needed today to fully fund all benefits of the System both earned as of the valuation date and those to be earned in the future by current plan participants, under the current plan provisions.

- **Actuarial Liability:** Calculated as of the valuation date as the present value of benefits allocated to service prior to that date. Effective October 1, 2015, the actuarial liability is determined using the Entry Age Normal method.

These liabilities are for funding purposes and are not appropriate for measuring the cost of settling plan liabilities by purchasing annuities or paying lump sums.

Table IV-1, which follows, discloses each of these liabilities for the current and prior valuations. With respect to each disclosure, a subtraction of the appropriate value of plan assets yields, for each respective type, a **net surplus** or an **unfunded liability**.

Table IV-1
Liabilities/Net (Surplus)/Unfunded

	October 1, 2018	October 1, 2019
Present Value of Future Benefits		
Active Participant Benefits	$ 504,707,076	$ 498,458,410
Participants currently receiving payments	501,260,397	524,036,115
Participants with a deferred vested benefit	62,519,282	65,112,173
Present Value of Future Benefits (PVB)	**$ 1,068,486,755**	**$ 1,087,606,698**
Actuarial Liability		
Active Participant Benefits	$ 432,763,603	$ 426,306,456
Participants currently receiving payments	501,260,397	524,036,115
Participants with a deferred vested benefit	62,519,282	65,112,173
Actuarial Liability (AL)	**$ 996,543,282**	**$ 1,015,454,744**
Actuarial Value of Assets (AVA)	$ 831,005,302	$ 830,686,015
Net (Surplus)/Unfunded (AL – AVA)	**$ 165,537,980**	**$ 184,768,729**

SECTION IV – LIABILITIES

Changes in Liabilities

Each of the Liabilities disclosed in the prior table are expected to change at each valuation. The components of that change, depending upon which liability is analyzed, can include:

- New hires since the last valuation
- Benefits accrued since the last valuation
- Code changes impacting benefits
- Passage of time which adds interest to the prior liability
- Benefits paid to retirees since the last valuation
- Participants retiring, terminating, or dying at rates different than expected
- Change to actuarial or investment assumptions
- Changes to the actuarial funding method

Unfunded liabilities will change because of all of the above, and also due to changes in plan assets resulting from:

- Employer contributions different than expected
- Investment earnings different than expected
- A change in the method used to measure plan assets

In each valuation, we report on those elements of change that are of particular significance, potentially affecting the long-term financial outlook of the System. Below, we present key changes in liabilities since the last valuation.

In the table that follows, we show the components of change in the actuarial liability between October 1, 2018 and October 1, 2019.

Table IV-2

	Actuarial Liability
Liabilities October 1, 2018	$ 996,543,282
Liabilities October 1, 2019	1,015,454,744
Liability Increase (Decrease)	18,911,462
Change Due to:	
Plan Amendments	0
Method Changes	0
Assumption Changes	0
Experience (Gain)/Loss	872,215
Benefits Accumulated and Other Sources	18,039,247

SECTION IV – LIABILITIES

In addition, we breakdown the change in actuarial liability further by showing the total actuarial (gain)/loss by source, as shown in Table IV-3 below.

Table IV-3
(Gain)/Loss by Source as of October 1, 2019

COLA less than expected	$ (3,443,918)
Inactive mortality less than expected	1,592,043
Salary increase less than expected for continuing actives	1,559,910
Actives retiring later than expected	3,119,128
Actives terminating earlier than expected	(3,198,978)
New entrants	665,354
Change to retiree DROP balances	(253,987)
Other active decrements	(310,083)
Participant service purchases	147,584
Miscellaneous changes	995,162
Experience (Gain)/Loss	**$ 872,215**

SECTION V – CONTRIBUTIONS

In the process of evaluating the financial condition of any pension plan, the actuary analyzes the assets and liabilities to determine what level (if any) of contributions is needed to properly maintain the funding status of the System. Typically, the actuarial process will use a funding technique that will result in a pattern of contributions that are both stable and predictable.

For this System, the funding method employed as of the October 1, 2019 valuation is the **Entry Age Normal Actuarial Cost Method**. This method is used to determine the normal cost rate at which an average level percent of pay is required to fund the retirement benefits for all participants between their dates of hire and assumed dates of retirement. The EAN actuarial liability is the difference between the plan's total present value of future benefits and the present value of future normal costs. Effective October 1, 2015, an administrative expense rate of 0.30% of payroll was added to the normal cost. The difference between the Entry Age Normal actuarial liability and the actuarial value of assets is the unfunded actuarial liability.

The unfunded actuarial liability as of October 1, 2015 is amortized over a fixed 20-year period as a level percentage of payroll. Future gains and losses and changes in actuarial assumptions will be amortized in layers over separate 20 year periods.

Table V-1 below presents and compares the employer contribution rates for the System for this valuation and the prior one.

Table V-1
Employer Contribution Rate

	Fiscal Year Ending 2019	Fiscal Year Ending 2020
Normal Cost Rate	5.80%	5.85%
Administrative Expense Rate	0.30%	0.30%
UAL Amortization Payment for City	6.16%	7.04%
Actuarially Determined Contribution Rate for City	12.26%	13.19%
Reduction in UAL Amortization Payment for Lawsuit Beneficiary Employers	0.08%	0.08%
Actuarially Determined Contribution Rate for Lawsuit Beneficiary Employers	12.18%	13.11%

SECTION V – CONTRIBUTIONS

The Unfunded Actuarial Liability (UAL) is amortized over layered 20 year periods beginning with the total UAL as of October 1, 2015. The amortization payment as a percent of payroll is different for City Employers and for Lawsuit Beneficiary Employers. Table V-2 shows the detailed calculation of the current year UAL amortization rates for the City and Lawsuit Beneficiary Employers.

Table V-2 Amortization Schedule

	Date	Initial Amortization Period	Unamortized Amount	Remaining Amortization Period	Amortization Amount	Applicable Payroll	UAL Rate
2015 Initial Unfunded Actuarial Liability	10/1/2015	20	$ 179,599,109	16	$ 15,775,477		
2016 Actuarial (gain)/loss[1]	10/1/2016	20	(7,883,944)	17	(664,195)		
2017 Actuarial (gain)/loss[1]	10/1/2017	20	(3,592,435)	18	(291,243)		
2018 Actuarial (gain)/loss[1]	10/1/2018	20	(4,678,468)	19	(366,069)		
2019 Actuarial (gain)/loss[1]	10/1/2019	20	21,324,467	20	1,614,623		
Total UAL			$ 184,768,729		$ 16,068,593		
Unamortized Amounts from Library Settlement			$ (391,100)	16	$ (34,354)	$ 44,294,042 [2]	-0.08%
Total without regard to Library Settlement			**$ 185,159,829**		**$ 16,102,947**	$ 228,673,586 [3]	**7.04%**

[1] (Gain) or loss includes differences between actual and expected contributions
[2] Payroll for Lawsuit Beneficiary Employers
[3] Total payroll for all participating employers

SECTION VI – ACCOUNTING STATEMENT INFORMATION

GFOA Recommended Information

The Government Finance Officers Association (GFOA) maintains a checklist of items to be included in a public retirement system's Comprehensive Annual Financial Report (CAFR) in order to receive recognition for excellence in financial reporting. Although the Employees Retirement System does not issue a CAFR under GFOA guidelines, we have included certain schedules in this section for possible inclusion within the System's audited financial statements. These schedules are based on the funding actuarial liabilities.

- Table VI-1: Analysis of Financial Experience
- Table VI-2: Schedule of Funded Liabilities by Type
- Table VI-3: Schedule of Funding Progress

Table VI-1
Analysis of Financial Experience
Gain and Loss in Unfunded Actuarial Liability During Years Ended September 30
Resulting from Differences Between Assumed Experience and Actual Experience

	Gain (or Loss) for Year ending September 30,					
Type of Activity	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Investment Experience	$ 17,899,526	$ (2,743,842)	$ 553,258	$ (3,004,069)	$(9,504,274)	$ (22,219,993)
Liability Experience	7,265,891	6,114,189	3,695,678	4,322,571	13,001,556	(872,215)
Gain (or Loss) During Year from Combined Experience	$ 25,165,417	$ 3,370,347	$ 4,248,936	$ 1,318,502	$ 3,497,282	$ (23,092,208)
Non-Recurring Gain (or Loss) Items	0	20,389,054	0	0	0	0
Composite Gain (or Loss) During Year	$ 25,165,417	$ 23,759,401	$ 4,248,936	$ 1,318,502	$ 3,497,282	$ (23,092,208)

SECTION VI – ACCOUNTING STATEMENT INFORMATION

Table VI-2
Schedule of Funded Liabilities by Type

	Aggregate Actuarial Liabilities for						
Actuarial Valuation Date October 1	Active Member Contributions	Retirees & Beneficiaries	Active Member Employer Financed Contributions	Actuarial Value of Reported Assets	Portion of Actuarial Liabilities Covered by Reported Assets		
	(1)	(2)	(3)		(1)	(2)	(3)
2019	$ 0	$ 589,148,288	$ 426,306,456	$ 830,686,015	100%	100%	57%
2018	0	563,779,679	432,763,603	831,005,302	100%	100%	62%
2017	0	540,747,179	449,883,176	818,839,562	100%	100%	62%
2016	0	517,161,890	456,981,189	797,664,391	100%	100%	61%
2015	0	501,123,197	453,997,444	770,006,025	100%	100%	59%
2014	0	494,664,459	417,314,687	737,967,928	100%	100%	58%
2013	0	475,937,321	413,511,258	685,397,323	100%	100%	51%
2012	0	460,581,077	406,310,985	653,001,852	100%	100%	47%
2011	0	441,520,555	400,242,766	661,932,240	100%	100%	55%
2010	0	419,717,802	400,951,838	671,608,995	100%	100%	63%

SECTION VI – ACCOUNTING STATEMENT INFORMATION

Table VI-3
Schedule of Funding Progress

Actuarial Valuation Date October 1	Actuarial Value of Assets (a)	Actuarial Liability (b)	Unfunded Actuarial Liability (b) - (a)	Funded Ratio (a) / (b)	Covered Payroll (c)	Percentage of Covered Payroll [(b) - (a)] / (c)
2019	$ 830,686,015	$1,015,454,744	$ 184,768,729	81.80%	$ 228,673,586	80.80%
2018	831,005,302	996,543,282	165,537,980	83.39%	228,447,481	72.46%
2017	818,839,562	990,630,355	171,790,793	82.66%	227,253,901	75.59%
2016	797,664,391	974,143,079	176,478,688	81.88%	226,907,701	77.78%
2015	770,006,025	955,120,641	185,114,616	80.62%	228,422,585	81.04%
2014	737,967,928	911,979,146	174,011,218	80.92%	227,039,143	76.64%
2013	685,397,323	889,448,579	204,051,256	77.06%	224,623,445	90.84%
2012	653,001,852	866,890,445	213,888,593	75.33%	224,822,252	95.14%
2011	661,932,240	841,763,321	179,831,081	78.64%	223,060,719	80.62%
2010	671,608,995	820,669,641	149,060,646	81.84%	232,451,661	64.13%
2009	667,667,205	794,686,379	127,019,174	84.02%	240,409,390	52.83%

APPENDIX A – MEMBERSHIP INFORMATION

Table of Plan Coverage	October 1, 2018	October 1, 2019	% change
Active Members in Valuation[1]			
Count	5,202	5,144	-1.1%
Average Age	48.6	48.6	0.0%
Average Service	12.0	11.7	-2.8%
Total Payroll	$ 228,447,481	$ 228,673,586	0.1%
Average Anticipated Payroll	$ 43,915	$ 44,454	1.2%
Total Active Vested Members	3,572	3,587	0.4%
DROP Members in Valuation			
Count	391	406	3.8%
Average Age	61.7	61.5	-0.3%
Average Service	24.7	24.9	0.9%
Total DROP Account Balances	$ 15,670,204	$ 15,670,535	0.0%
Average DROP Account Balances	$ 40,077	$ 38,597	-3.7%
Vested Terminated Members	2,512	2,561	2.0%
Average Age	51.8	51.8	0.0%
Average Monthly Benefit	$ 375	$ 382	2.0%
Pensioners			
Number in Pay Status			
Retirees	3,978	4,087	2.7%
Disabled Retirees	187	187	0.0%
Total	4,165	4,274	2.6%
Average Age	72.9	73.0	0.1%
Average Monthly Benefit	$ 1,030	$ 1,056	2.5%
Beneficiaries in Pay Status			
Number in Pay Status	513	508	-1.0%
Number with Deferred Benefits	0	0	N/A

[1]Includes Current DROP Members

APPENDIX A – MEMBERSHIP INFORMATION

Inactive Participants by Type and Monthly Benefit Amount

Monthly Amount	Total	Retirees	Terminated Vested	Disability	Beneficiaries
Total	7,343	4,087	2,561	187	508
Under $500	3,915	1,672	1,993	58	192
$500-1,000	1,533	848	466	86	133
$1,000-1,500	755	579	69	30	77
$1,500-2,000	521	428	23	11	59
$2,000-2,500	238	211	4	1	22
$2,500-3,000	140	123	6	1	10
$3,000-3,500	69	61	0	0	8
$3,500-4,000	45	43	0	0	2
$4,000-4,500	39	38	0	0	1
$4,500-5,000	31	30	0	0	1
$5,000 & over	57	54	0	0	3

APPENDIX A – MEMBERSHIP INFORMATION

Status Reconciliation

	Active	Leave of Absence	DROP	Disabled	Retired	Beneficiary	Terminated Vested	Deferred Beneficiary	Total
Participant Count as of October 1, 2018	**4,799**	**12**	**391**	**187**	**3,978**	**513**	**2,512**	**0**	**12,392**
New hires	684	2							686
Leave of Absence	(6)	7	(1)						0
Rehires	26	(6)			(2)		(7)		11
Enter DROP	(114)		114				0		0
Return from DROP	50		(50)						0
Term Vested	(168)	(1)	(1)				170		0
Retired	(142)		(44)		270		(84)		0
Disabled	(11)		(1)	12					0
Deceased (with Beneficiary)	(4)			(4)	(24)	32			0
Deceased (without Beneficiary)	(6)		(2)	(8)	(138)	(23)	(19)		(196)
Transfer Out							(2)		(2)
Term Not Vested	(383)	(1)							(384)
Benefits Expired						(15)			(15)
Status Correction	0				3	1	(9)	0	(5)
Net Change	(74)	1	15	0	109	(5)	49	0	95
Participant Count as of October 1, 2019	**4,725**	**13**	**406**	**187**	**4,087**	**508**	**2,561**	**0**	**12,487**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

A. Actuarial Assumptions

1. **Mortality Rates:**
   Healthy: RP-2000 Healthy Mortality with 3-year set-forward with generational projections using Scale AA
   Disabled: RP-2000 Disabled Mortality with 3-year set-forward with generational projections using Scale AA

   The table below shows the probability of death at sample ages with the mortality table described above projected to the year 2019. A generational table is projected forward each year to account for continuous mortality improvements.

	Healthy Mortality (%)		Disabled Mortality (%)	
Age	Male	Female	Male	Female
20	0.0259	0.0145	1.5677	0.5484
25	0.0325	0.0180	1.8647	0.5699
30	0.0574	0.0326	2.0521	0.6155
35	0.0876	0.0485	2.0521	0.6038
40	0.1115	0.0703	1.9376	0.5590
45	0.1451	0.1055	2.0592	0.7195
50	0.2065	0.1593	2.3269	1.0443
55	0.3662	0.3368	2.7320	1.6920
60	0.7369	0.6953	3.4288	2.2995
65	1.3671	1.2224	4.3535	3.0215
70	2.2802	2.0883	5.4998	4.1611
75	3.9874	3.2274	7.4695	5.4551
80	7.4122	5.4696	10.6033	7.6863
85	13.1775	9.5709	14.1922	10.9232
90	21.6529	16.0976	21.6529	16.0976
95	30.3528	21.5588	30.3528	21.5588
100	37.5827	26.1034	37.5827	26.1034

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

2. Disability Rates before Retirement:

	Disability (%)	
Age	Male	Female
20	0.0200	0.0200
25	0.0200	0.0200
30	0.0200	0.0200
35	0.0200	0.0200
40	0.0560	0.0480
45	0.1000	0.0960
50	0.3528	0.2400
55	0.5000	0.3360
60	0.7500	0.3500

3. Withdrawal Rates before Retirement:

Creditable Service	Withdrawal (%)	Creditable Service	Withdrawal (%)
0	20.00	11	3.25
1	17.50	12	3.00
2	15.00	13	2.75
3	12.50	14	2.50
4	10.00	15	2.25
5	9.00	16	2.00
6	8.00	17	1.75
7	7.50	18	1.50
8	7.00	19	1.25
9	4.50	20+	1.25
10	3.50		

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

4. Retirement Rates:

Age	Retirement Rate (%)	Age	DROP Rate (%)
50 and under	2.00	50 and under	12.50
51	2.00	51	12.50
52	2.00	52	12.50
53	2.00	53	12.50
54	2.00	54	12.50
55	2.00	55	20.00
56	2.00	56	20.00
57	2.00	57	20.00
58	5.00	58	20.00
59	5.00	59	20.00
60	10.00	60	20.00
61	10.00	61	10.00
62	25.00	62	10.00
63	10.00	63	10.00
64	10.00	64	10.00
65	30.00	65	10.00
66	25.00	66	10.00
67	25.00	67	10.00
68	25.00	68	10.00
69	25.00	69	10.00
70	100.00	70	100.00

In addition, in the first year that a participant satisfies the requirements under the "Rule of 85," the DROP rate is assumed to be 75% if the age in the first year of eligibility is 56 or younger, 60% for ages 57 to 60, 50% for ages 61 to 65, and 15% for ages greater than 65 (100% at age 70).

5. Retirement Age for Inactive Vested Participants

For members who terminate employment with 30 or more years of creditable service or are eligible for a Rule of 85 pension, immediate commencement of benefits is assumed. All others are assumed to retire at age 61.

6. DROP Participants

Participants in the DROP are assumed to remain in the DROP for 5 years. Interest to the DROP account is assumed to be credited at 6% per annum for those participants who enter the DROP after January 21, 2003. 50% of those participants electing DROP are expected to return to active employment for two years before retiring.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

7. Unknown Data for Participants

Same as those exhibited by participants with similar known characteristics. For inactive vested participants with unknown benefit amounts, $250 per month is assumed.

8. Rehires

No explicit assumption or load

9. Sick Leave

Sick leave may be used to increase either Final Average Compensation, Creditable Service, or both. Starting with the October 1, 2010 valuation, the actual unused credited sick leave hours on file were used in the valuation. Effective in July 2010, the accumulation of unused sick leave hours that can be used for benefit purposes was frozen.

10. Percent Married

80% for all participants

11. Age of Spouse

Females (or males) are three years younger (or older) than their spouses.

12. Net Investment Return

7.50% per year, net of investment expenses

13. Administrative Expenses

0.30% of payroll

14. Cost-of-Living Adjustment

2.5% per year for 10 years and 0% thereafter

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

15. Salary Increases

Varies by service, ranging from 3.00% to 4.25%.

Service	Salary Increase (%)
0	4.25
1	4.07
2	3.92
3	3.79
4	3.69
5	3.61
6	3.53
7	3.46
8	3.36
9	3.29
10	3.23
11	3.18
12	3.14
13	3.10
14	3.08
15	3.05
16	3.03
17	3.02
18	3.01
19	3.01
20	3.00

16. Increases in Social Security Table Wage Base

3.0% per year

17. Increase in Section 415 and Section 401(a)(17) limits

2.5% per year

18. Rationale for actuarial assumptions

The actuarial assumptions were adopted by the Board of Trustees based upon recommendations made in an actuarial experience study covering the years 2009 through 2014.

19. Changes in actuarial assumptions since last valuation

No changes

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

B. Actuarial Methods

1. Actuarial Value of Assets

The market value of assets less unrecognized returns in each of the last five years, but no earlier than October 1, 2005. Initial unrecognized return is equal to the difference between the actual market return and expected market return, and is recognized over a five-year period. The actuarial value is further adjusted, if necessary, to be within 20% of the market value. The actuarial asset value was initialized at the market value as of October 1, 2005.

2. Actuarial Cost Method

The cost method for valuation of liabilities used for this valuation is the Entry Age Normal (EAN) method. This method is used to determine the normal cost rate at which an average level percent of pay is required to fund the retirement benefits for all Participants between their dates of hire and assumed dates of retirement. The EAN actuarial liability is the difference between the plan's total present value of future benefits and the present value of future normal costs. The unfunded actuarial liability is the difference between the actuarial liability and the actuarial value of assets.

3. Amortization Method

The unfunded actuarial liability as of October 1, 2015, is amortized over a fixed 20-year period as a level percentage of payroll. Future gains and losses and changes in actuarial assumptions will be amortized in layers over separate 20 year periods.

To reflect the settlement between the Library, the Board of Trustees and the City of St. Louis, two Unfunded Accrued Liability Amortization rates are calculated. The Library, Zoo, Art Museum, Tower Grove Park, Taxicab Commission, and Mental Health Board, collectively called the "Lawsuit Beneficiary Employers", have a reduced UAL Amortization rate to reflect the payments received due to the settlement as of the valuation date. First, the UAL amortization payment is determined for the combined plan (base payment). Second, the value of settlement payments made by the City are set up as gain bases and the Lawsuit Beneficiary Employers have a reduction in the contribution rate determined from the payment on these gain bases and their projected payroll. The City's UAL amortization payment is determined only on the base payment. The Lawsuit Beneficiary Employers' UAL amortization payment is the base payment minus the amortization of the gain bases that result from settlement payments.

4. Changes in Actuarial Methods Since Last valuation

None

APPENDIX C – SUMMARY OF PLAN PROVISIONS

1. Plan Year

October 1 through September 30

2. Final Average Compensation

One-half the sum of:
(a) The total compensation earned during the last two highest consecutive years of Creditable Service prior to termination (subject to the Section 401(a)(17) limit); and
(b) The balance of sick leave pay as of the date of retirement less sick leave hours paid upon termination and less sick leave hours considered as Creditable Service. Said balance cannot exceed 25% of a member's total sick leave pay as of the date of retirement. The amount of credited sick leave was frozen on July 17, 2010.

3. Benefit Compensation Base

Amount of annual compensation with respect to which old age and survivor's insurance benefits would be provided to the member under the Social Security Act in effect on the date the Benefit Compensation Base is determined calculated when the member terminates employment.

4. Normal Retirement

Age Requirement: 65

Service Requirement: Five years of Creditable Service.

Amount: The product of:
(a) 1.30% of Final Average Compensation up to the Benefit Compensation Base, plus 2.05% of Final Average Compensation in excess of the Benefit Compensation Base, and
(b) Creditable Service:
Minimum $200 per month for retirees with 12 or more years of creditable service.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

5. Rule of 85 Retirement

Age/Service Requirement:	Sum of age and Creditable Service at date of termination equals or exceeds 85.
Amount:	The product of: (a) 1.30% of Final Average Compensation up to the Benefit Compensation Base, plus 2.05% of Final Average Compensation in excess of the Benefit Compensation Base, and (b) Creditable Service.

6. Early Retirement

Age/Service Requirement:	Age 60 with five years of Creditable Service; or age 55 with 20 years of Creditable Service; or any age with 30 years of Creditable Service.
Amount:	Normal retirement amount reduced by 1/3% for each month benefit begins before age 65.

7. Disability

Age Requirement	None
Service Requirement	Five years of Creditable Service and an active employee at disablement.
Amount	Normal retirement amount based on Creditable Service and Final Average Compensation at disability, payable immediately.

8. DROP (Deferred Retirement Option Plan)

Members who have achieved eligibility for retirement can continue active employment and defer receipt of their retirement allowance for a period not to exceed five years. During the DROP period, the member's retirement allowance will be paid directly into a separate account.

Service during the DROP period shall not be counted as Creditable Service, nor shall it count toward determination of retirement allowance. A member's DROP account shall not be adjusted for any cost-of-living increases during participation in the DROP. No member returning to non-DROP status shall make any withdrawal from his/her DROP account until after termination of employment.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

The account balance is credited with interest annually. In no event does the total account balance exceed the accumulated value of five-years-payments with interest.

The annuity awarded upon full termination and subsequent benefit receipt reflects the unused sick-leave conversion to Creditable Service and/or Final Average compensation. During participation in the DROP, the annual deposit to the account does not reflect any conversion of unused sick leave as each participant continues to accrue sick leave hours. The unused credited sick leave hours were frozen as of July 17, 2010.

9. Vesting

Age Requirement:	None
Service Requirement:	Five years of Creditable Service
Amount:	Normal or early service retirement amount

10. Spouse Pre-Retirement Death Benefit

Age Requirement:	None
Service Requirement:	Five years of Creditable and an active employee
Amount:	If married, 100% of the benefit the employee would have received had he or she retired the day before he or she died and elected the joint and 100% survivor option. If the employee died prior to eligibility for early service retirement, the spouse's benefit is deferred to the employee's earliest retirement date. Death benefits may also be payable to members who have terminated employment. The costs of those benefits are paid for by the reduction of the accrued benefit payable to the inactive vested participant.

11. Post-Retirement Death Benefit

If married, the employee and spouse may elect to have pension benefits paid in the form of a 100% joint and survivor annuity. A member may also elect a ten year certain and life equivalent form of benefit. If any one of these options is elected, the benefit amount otherwise payable is reduced to reflect the coverage. If not elected, benefits are payable for the life of the employee without reduction.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

12. Cost-of-Living Adjustment (COLA)

Based on the change in the Consumer Price Index (CPI) for the fiscal year, subject to a maximum increase of 3.125% per year (3.0% for retirements between March 21, 1972 and March 26, 1974; none for retirements prior to March 21, 1972), with a cumulative percentage increase (equal to the sum of the annual percentage increases) limited to 25%. If the increase in CPI is less than 1.0%, no adjustment is made. If the change is a decrease, the cost-of-living adjustment shall be zero unless the decrease is 3.125% or more. Adjustments begin on the second January 1 after payments begin.

13. Creditable Service

Number of years and completed months of service during which the member receives compensation after April 1, 1960. Creditable Service for employment prior to April 1, 1960 is granted only if the member was an employee of an employer of the System on April 1, 1960. Unused credited sick leave shall be considered as Creditable Service provided the member does not receive payment for the sick leave. The amount of credited sick leave was frozen on July 17, 2010.

14. Membership

Immediate upon employment

15. Section 415 limit

$225,000, effective January 1, 2019

16. Section 401(a)(17) limit

$280,000, effective January 1, 2019

17. Changes Since Last Valuation

None

CHEIRON

Classic Values, Innovative Advice