CHEIRON

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The Police Retirement System of St. Louis

Actuarial Valuation Report as of October 1, 2020

Produced by Cheiron

January 2021

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LETTER OF TRANSMITTAL

January 28, 2021

Board of Trustees
The Police Retirement System of St. Louis
2020 Market Street
St. Louis, Missouri 63101

Dear Members of the Board:

At your request, we have conducted an actuarial valuation of The Police Retirement System of St. Louis as of October 1, 2020. 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's:
  - Section II - Identification and Assessment of Risk
  - Section III - Assets
  - Section IV - Liabilities
  - Section V - Contributions
  - Section VI - Financial 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), a summary of pertinent Plan Provisions (Appendix C), and the System's historical information (Appendix D).

Information required by GASB Statements No. 67 and No. 68 for the year ending September 30, 2020 has been provided in a separate report.

The purpose of this report is to present the annual actuarial valuation of The Police Retirement System of St. Louis. This report is for the use of the Board of Trustees and its auditors in preparing financial reports in accordance with applicable law and accounting requirements.

In preparing our report, we relied on information (some oral and some written) supplied by The Police Retirement System of St. Louis staff. This information includes, but is not limited to the Plan Provisions, employee data, and financial information. In accordance with Actuarial Standard of Practice No. 23, we performed an informal examination of the obvious characteristics of the data for reasonableness and consistency and found the data to be appropriate for Actuarial Valuation purposes.

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.

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 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 report was prepared for The Police Retirement System of St. Louis for the purposes described herein and for the use by the Plan Auditor in completing an audit related to the matters herein. This valuation report is not intended to benefit any third party, and Cheiron assumes no duty or liability to any such party.

Sincerely,
Cheiron

Stephen T. McElhaney, FSA, FCA, EA
Principal Consulting Actuary

Michael J. Noble, FSA, FCA, EA
Principal Consulting Actuary

Patrick T. Nelson, FSA, CERA, EA
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 employer's contributions for the fiscal year ending 2020, and
- Information required by the financial statements.

In the balance of this Board Summary, we present the basis upon which this year's valuation was completed and the key findings of this valuation including a summary of all key financial results.

A. Valuation Basis

This October 1, 2020, valuation represents Cheiron's ninth valuation performed for The Police Retirement System of St. Louis (System). There were no changes to the actuarial methods, assumptions, or Plan Provisions since the October 1, 2019 valuation.

Whereas there remains a lot of uncertainty during the COVID-19 pandemic, we continue to monitor developments and the impact it may have on the System. Actual experience, both demographic and economic, will be reflected in subsequent valuations as experience emerges.

B. Key Findings of this Valuation

The key results of the October 1, 2020 actuarial valuation are as follows:

- The Funding Policy Contribution Requirement decreased from $35,335,830 as of October 1, 2019 to $32,839,034 as of October 1, 2020. This translates to a rate as a percent of total compensation decrease from 40.75% as of October 1, 2019 to 38.11% as of October 1, 2020. The primary reason for the decrease in contribution rate is an actuarial experience gain on liabilities. The Funding Policy Contribution is based on the Aggregate Funding Method which determines contributions based on the expected future salaries of the current active population.
- The unfunded Entry Age Normal (EAN) actuarial liability for The Police Retirement System of St. Louis decreased from $209 million on October 1, 2019 to $189 million on October 1, 2020. This is the amount of the EAN actuarial liability over the Actuarial Value of Assets.
- The System's funding ratio based on the Entry Age Normal actuarial liability, the ratio of actuarial asset value to the EAN actuarial liabilities, increased from 79.4% as of October 1, 2019 to 81.4% as of October 1, 2020. The reasons for this change are:
    - An expected decrease in the EAN unfunded actuarial liability of $8.4 million from the employer and employee contributions made during the Plan Year.
    - During the year ended September 30, 2020, the System's assets earned 5.69% on a market value basis, but due to smoothing of prior investment gains and losses, the return on the actuarial asset value was 6.84% (as compared to 7.50% assumed). This resulted in an actuarial loss on investments of $3.7 million.

SECTION I – BOARD SUMMARY

- On the liability side, the System experienced a gain on liabilities of $14.5 million due to Plan experience. A significant portion of this gain was due to both salary increases and cost-of-living adjustments (COLA) being less than expected during the Plan Year. Average valuation compensation decreased by 0.1% from the prior year compared to an assumed overall payroll increase of 3.0%. Actual COLAs as of October 1, 2020 were zero compared to an assumed increase of 2.5%.

SECTION I – BOARD SUMMARY

Table I-1 below summarizes 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
The Police Retirement System of St. Louis
Summary of Principal Results

Valuation as of October 1:	2019	2020	Change
Participant Counts			
Active Participants	1,195	1,229	2.85%
DROP Participants (active)	80	57	(28.75%)
Retired and Disabled Participants	1,444	1,439	(0.35%)
Surviving Spouses and Children	484	494	2.07%
Total	3,203	3,219	0.50%
Total Valuation Compensation[1]	$ 81,427,427	$ 81,849,783	0.52%
Average Valuation Compensation[2]	63,218	63,129	(0.14%)
Average Age[2]	39.43	39.42	(0.03%)
Average Service[2]	11.71	11.63	(0.68%)
Assets and Liabilities			
EAN Actuarial Liability	$ 1,011,520,173	$ 1,016,164,499	0.46%
Actuarial Value of Assets	802,729,613	826,704,556	2.99%
Unfunded Actuarial Liability	$ 208,790,560	$ 189,459,943	(9.26%)
Funded Ratio	79.4%	81.4%	
Market Value of Assets (MVA)	784,752,472	798,650,278	1.77%
Funded Ratio (MVA basis)	77.6%	78.6%	
Present Value of Future Benefits	1,132,291,499	1,140,227,347	0.70%
Present Value of Future Member Contributions	43,233,289	43,723,900	1.13%
Summary of Costs			
Total Expected Compensation	$ 80,666,728	$ 80,147,552	(0.64%)
Aggregate Normal Cost Rate	38.82%	36.33%	
Aggregate Normal Cost	$ 31,314,824	$ 29,117,606	(7.02%)
Expected Administrative Expenses	1,613,000	1,483,000	(8.06%)
Total Contribution Rate	40.75%	38.11%	
Funding Policy Contribution[3]	$ 35,335,830	$ 32,839,034	(7.07%)

[1] Total Valuation Compensation is the total annual compensation in effect for all employees (including DROP participants) as of the valuation date.

[2] Average Valuation Compensation, Average Age, and Average Service do not include current DROP participants but do include former DROP participants who have returned to active service.

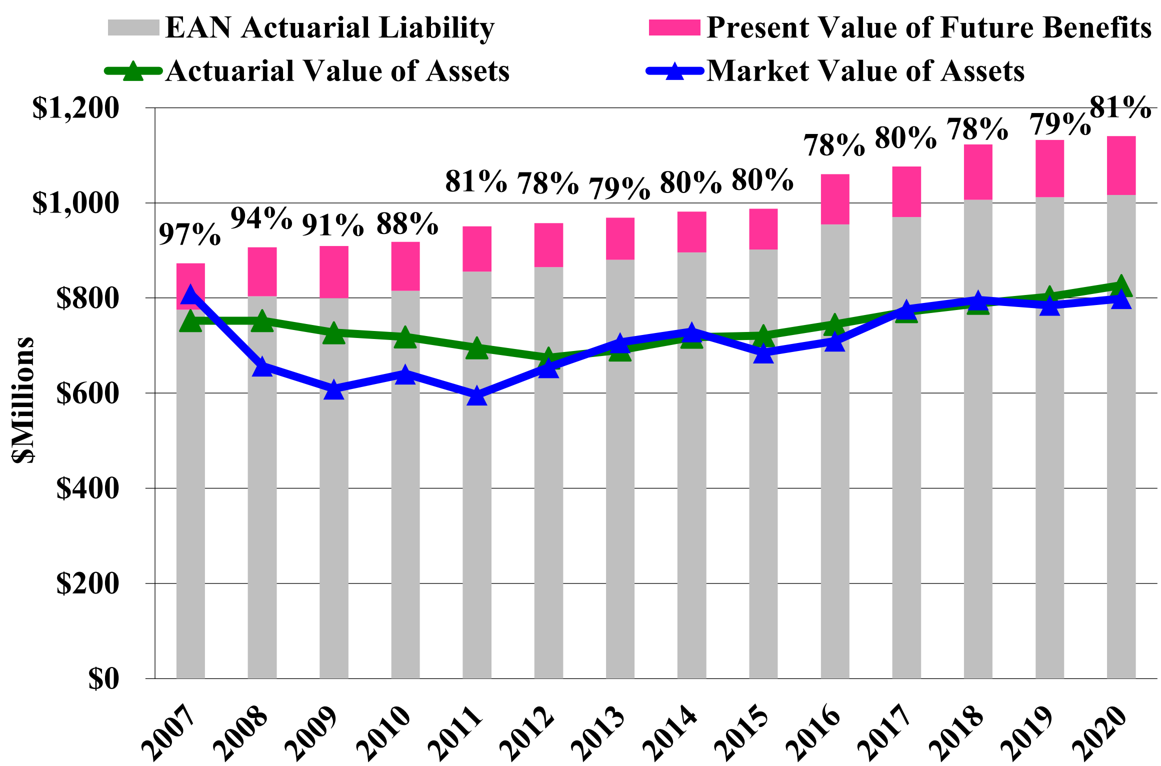
[3] Funding Policy Contribution includes interest to the end of year.

SECTION I – BOARD SUMMARY

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 results relative to historical trends, as well as trends expected into the future.

Assets and Liabilities



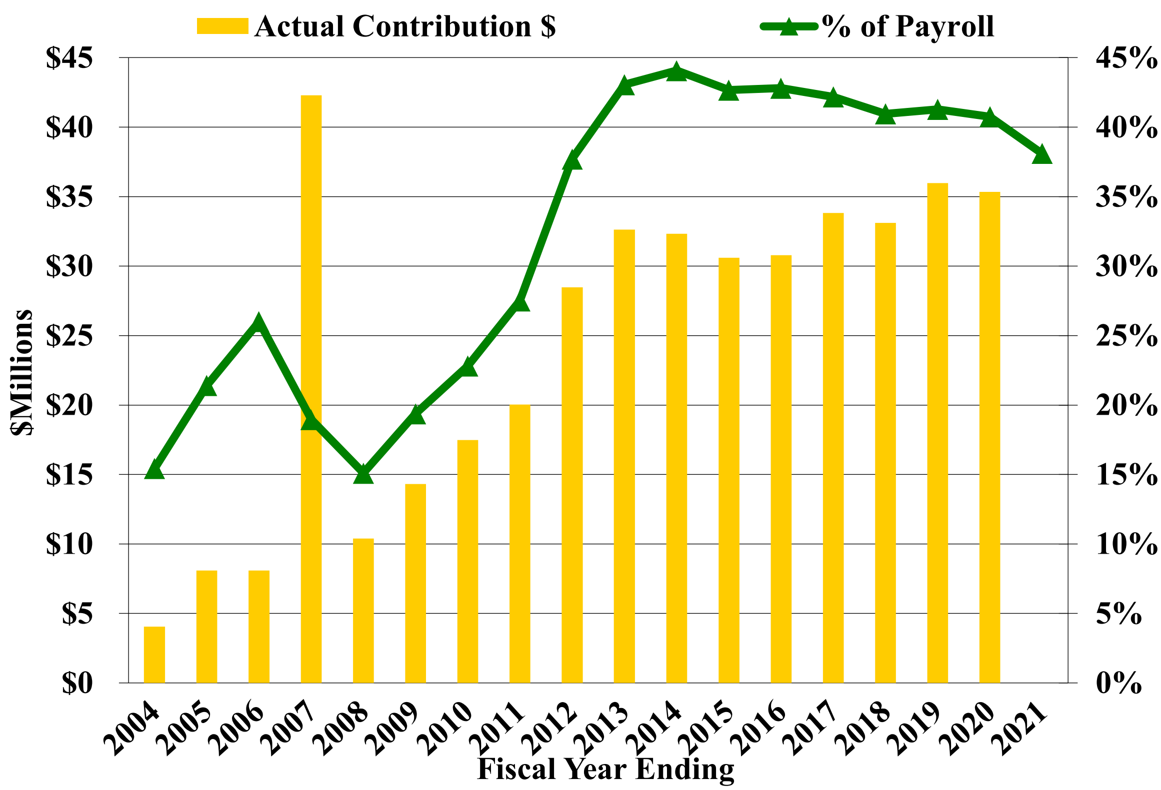
The above chart compares the Actuarial Value of Assets to the actuarial liabilities and shows the funded ratio, which is a comparison of the Actuarial Value of Assets and Entry Age Normal (EAN) Actuarial Liability. There was an increase in the Market Value of Assets from $785 million to $799 million, returning 5.69%. With the asset smoothing method in place, the Actuarial Value of Assets has tracked a smoother path through the volatility of the Market Value of Assets. As can be seen in the graph, the Actuarial Value of Assets increased from 2019 to 2020, returning 6.84%.

The top of the pink bar represents the Present Value of Future Benefits (PVFB), which is used in the calculation of the funding policy contribution under the Aggregate Cost Method.

SECTION I – BOARD SUMMARY

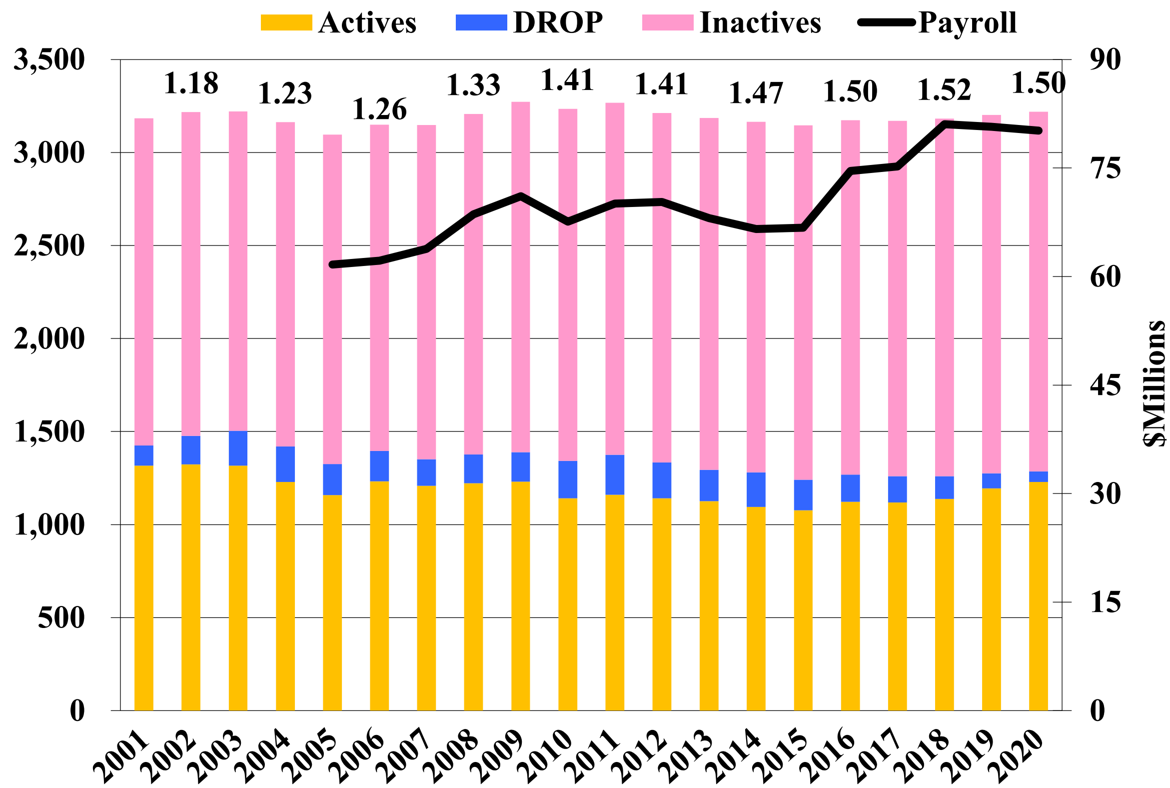
Contribution Rates

The yellow bars in this graph show the dollar amount of employer contributions made to the System (depicted on the left-hand scale) since Fiscal Year Ending 2004. The green line shows the actuarial contribution rate as a percent of payroll (depicted on the right hand scale). The 2007 contribution amount reflects special contributions made by the City in excess of that year's actuarial contribution. The sharp increases in contributions from 2008 to 2013 reflect the large investment losses that occurred in 2008 and 2009. The actuarial employer contribution rate decreased from 40.75% of payroll in 2019 to 38.11% of payroll for the fiscal year ending 2021.



SECTION I – BOARD SUMMARY

Participant Trends



The above chart provides a measure for the maturity of the System by comparing the ratio of inactive members (retirees and beneficiaries) to active members (including current DROP participants). The inactive-to-active ratio has generally increased since 2002 from 1.18 inactive participants per active to 1.50 inactive participants dependent on each active member today. This indicates a more mature plan and the Plan will experience more volatility in contribution rates when actuarial gains and losses are recognized. The black line represents the total plan payroll since the 2005 valuation.

SECTION I – BOARD SUMMARY

D. Future Expected Financial Trends

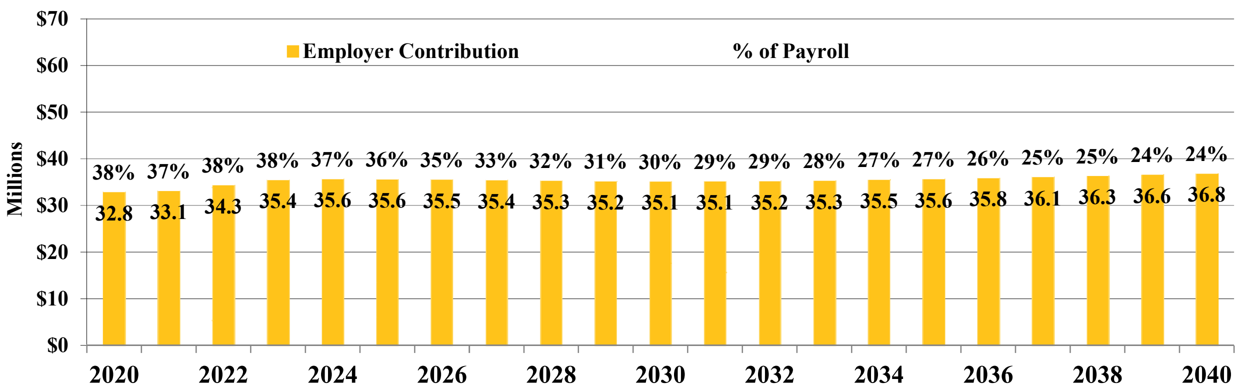
The analysis of projected financial trends is perhaps the most important component of this valuation. In this section, we present the implications of the October 1, 2020 valuation results in terms of (1) the projected employer contributions and (2) projected System's funded status (ratio of assets over liabilities). We assume future investment returns of 7.50% each year. The projections also assume that there will be no future gains or losses on the liability.

1. Contribution Rate Projections

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

Baseline Returns of 7.50%

The chart below shows that the Funding Policy Contribution Requirement will slowly decline from 38% to a level of 24% of pay by 2040. These projections assume that the System earns the assumed investment rate of 7.50% on market value. The expected contributions in dollars are relatively stable during this period with a slow increase in funded percentage.



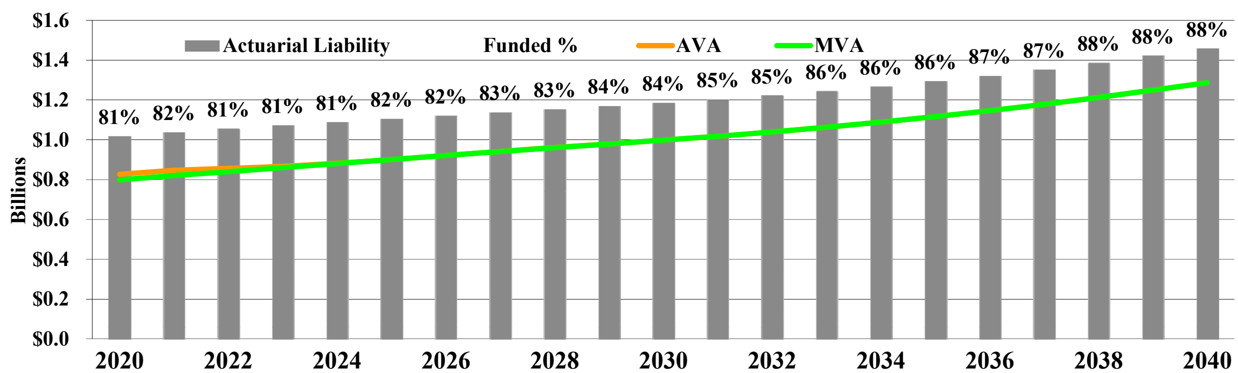
SECTION I – BOARD SUMMARY

2. Asset and Liability Projections

This next projection chart compares the Market Value of Assets (green line) and the actuarial or smoothed value of assets (gold line) to the System's Entry Age Normal actuarial liability (gray bars). In addition, at the top of each bar, we show the System's funded ratio (ratio of Actuarial Value of Assets to actuarial liability). 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 1.

Baseline Returns of 7.50%

Assuming that the System earns the assumed investment rate of 7.50%, the funded ratio will steadily increase from 81% to 88% during the 20-year 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 City of St. Louis Police Retirement System 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 System by itself would become unaffordable, the contributions needed to support the System 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

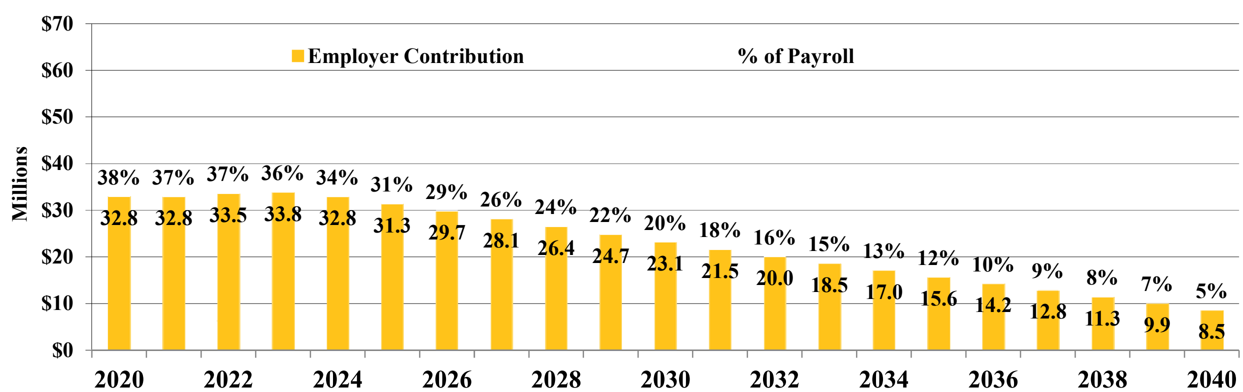
Investment Risk is the potential for investment returns to be different than expected. Lower investment returns than anticipated will increase the Unfunded Actuarial Liability necessitating higher contributions in the future unless there are other gains that offset these investment losses. The potential volatility of future investment returns is determined by the System'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.

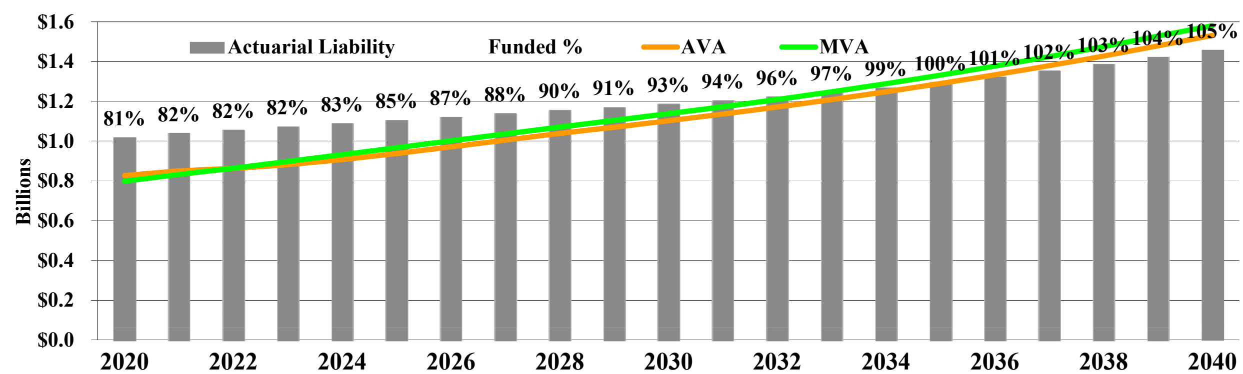
For stress testing purposes, we include two scenarios to illustrate the impact actual investment returns may have on future funded status and contribution amounts compared to the baseline scenario presented at the end of Section I of this report. The two scenarios are (1) optimistic returns of 9.00%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

Optimistic Returns of 9.00%

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 5% in 20 years. The funded ratio is projected to increase to 100% by 2035 and 105% by the end of the 20-year projection period.

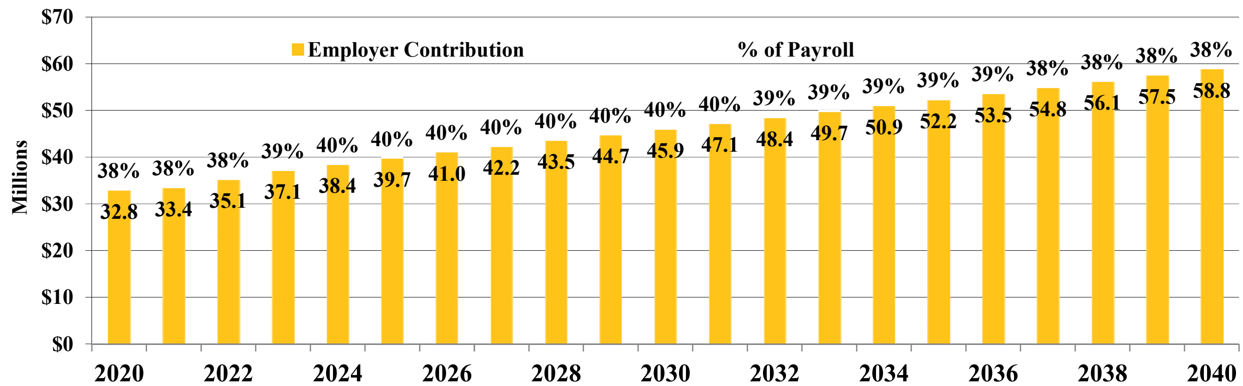


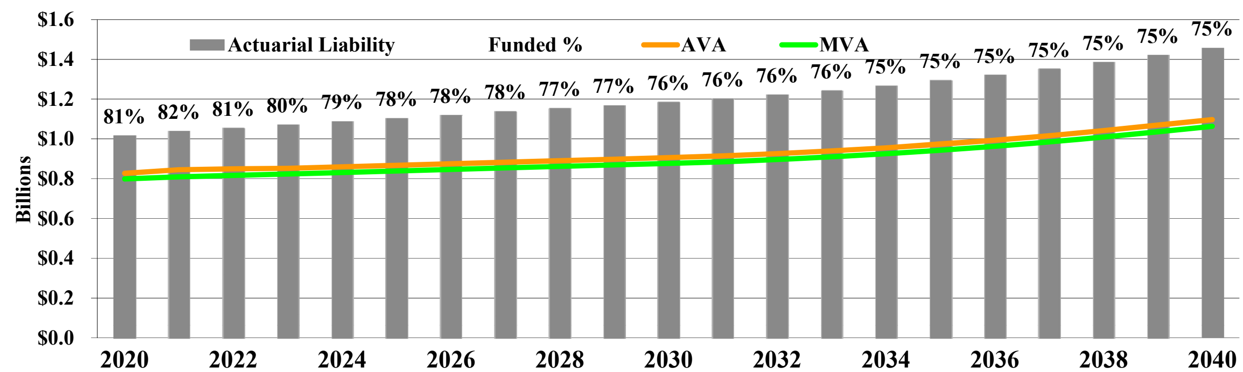


SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

Pessimistic Returns of 6.00%

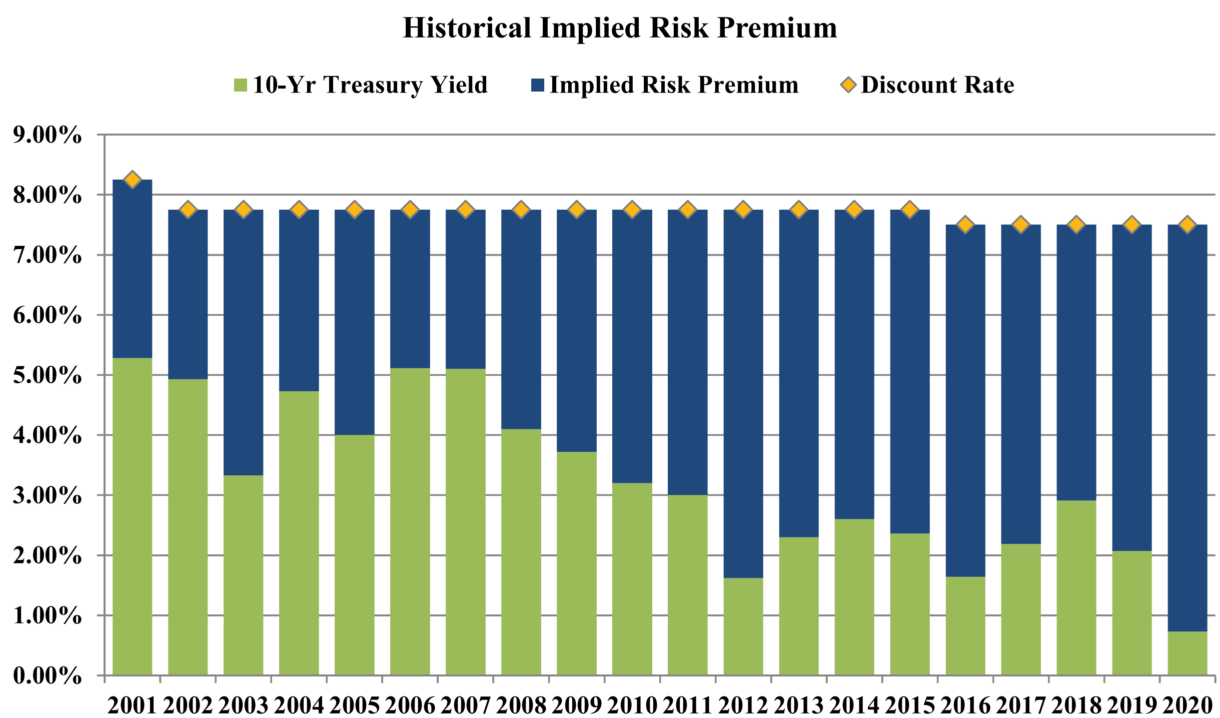
If the System earns 1.50% less than the assumed rate in each year of the projection, the actuarially determined contribution rate remains relatively steady for the next 20 years between 38% and 40% of projected payroll, while the dollar amount of the contribution continuously increases to make up for the annual investment losses. The funded ratio will decline to 75% by the end of the 20-year projection period as investment losses hinder the asset growth of the System.





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 because 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.

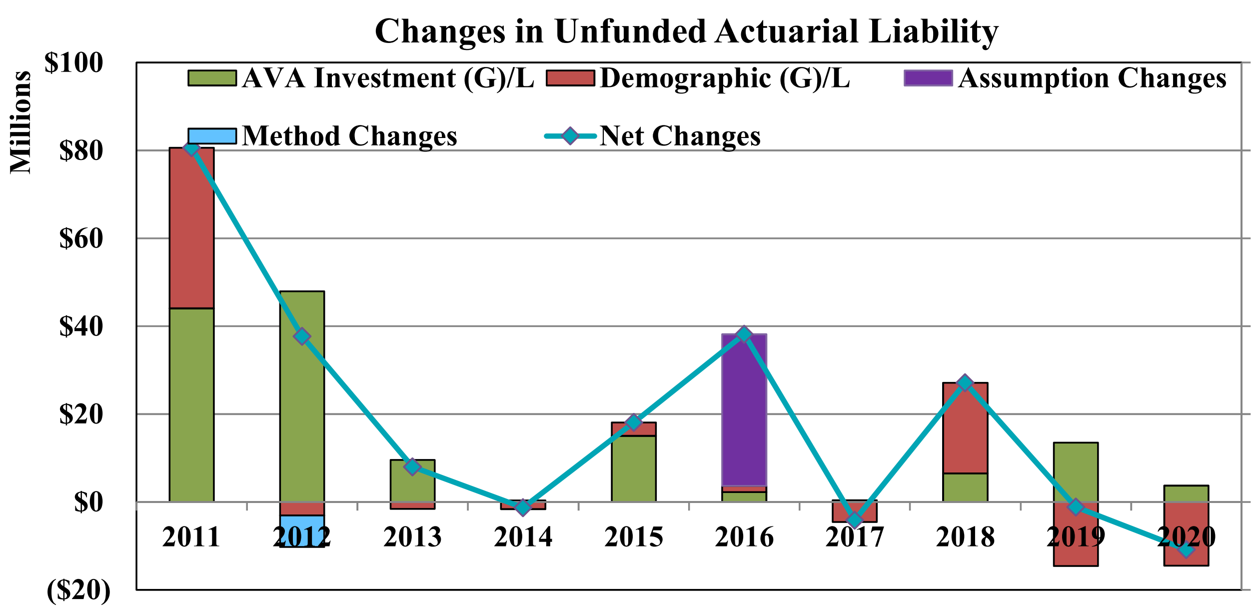


SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

Longevity and other demographic risks are the potentials for 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.

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. This is demonstrated in the chart below in 2016 when assumptions were changed. An experience study will be completed prior to the next valuation with any updated assumptions being reflected in the 2021 valuation.

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.



SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

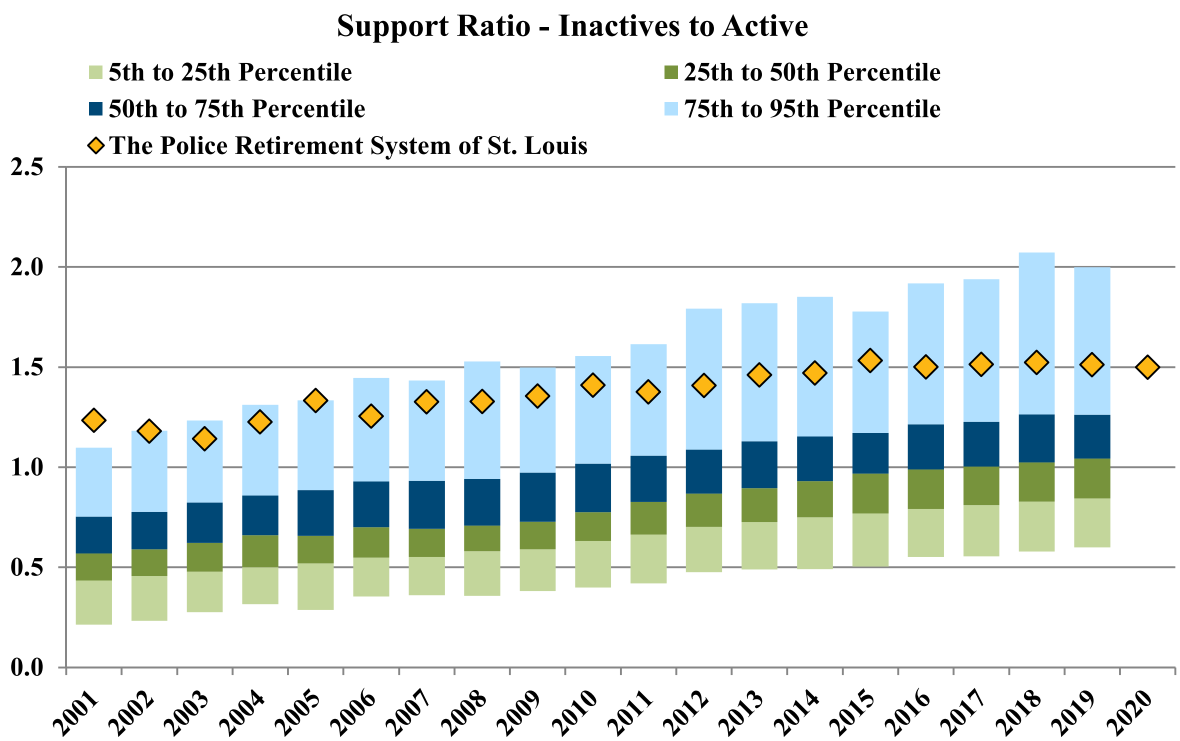
Plan Maturity Measures

The future financial condition of a mature pension plan is more sensitive to each of the risks identified above than a less mature plan. It is important to understand the maturity of this system compared to other plans and how 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 of 12/28/2020

The graph above shows the distribution from the 5th to 95th percentile of support ratios for the plans in the Public Plans Database. The yellow diamond shows that on this measure, The Police Retirement System of St. Louis is in the upper quartile when compared to the other plans in the database.

Whereas the support ratios for the plans as a whole have increased over the period as they mature, the System's support ratio has also increased over the period and has remained 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.

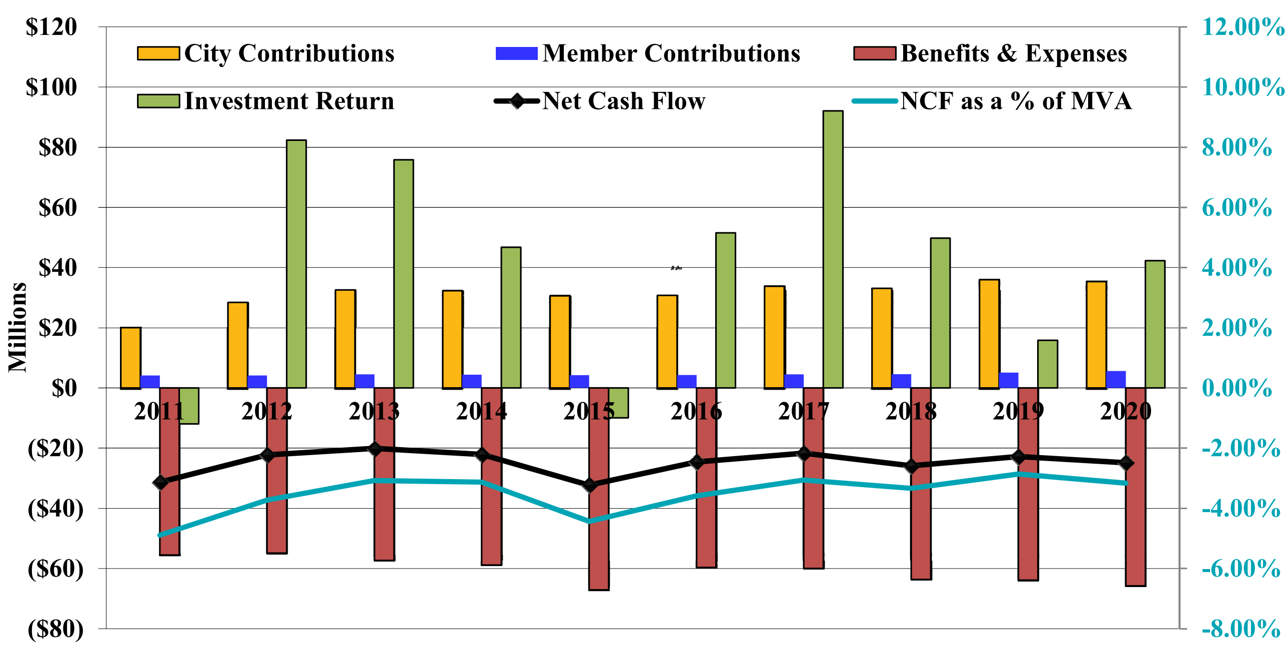
SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

Net Cash Flow

The net cash flow of the plan as a percentage of the beginning of year assets indicates the sensitivity of the plan to short-term investment returns. Net cash flow is equal to contributions less benefit payments and administrative expenses. Net cash flow is an important maturity measure, as it impacts the ability to have funds available to meet benefit payments without having to make difficult investment decisions, especially during volatile markets. Mature plans can have large amounts of benefit payments compared to contributions, particularly if they are well funded, because investment returns will keep assets growing. This has been the situation for the System, which has had a consistent small negative cash flow for the last ten plus years but has still had growth in assets due to positive investment returns.

However, when a plan has a large negative net cash flow, investment losses in the short-term are compounded by the net withdrawal from the plan leaving a smaller asset base to try to recover from the investment losses. Large negative cash flows can also create liquidity issues.

The following chart shows the City contributions (yellow bars) and member contributions (blue bars) coming into the System, compared to the benefits and expenses (red bars). As a result of increasing City and member contributions, the net cash flow (black line) has remained generally steady throughout this period between $20 and $25 million. The System thus relies on investment returns to make up the difference. As shown here, the actual investment returns (green bars) have fluctuated over time. Finally, the net cash flow as a percent of assets is shown by the teal line (right-hand axis).

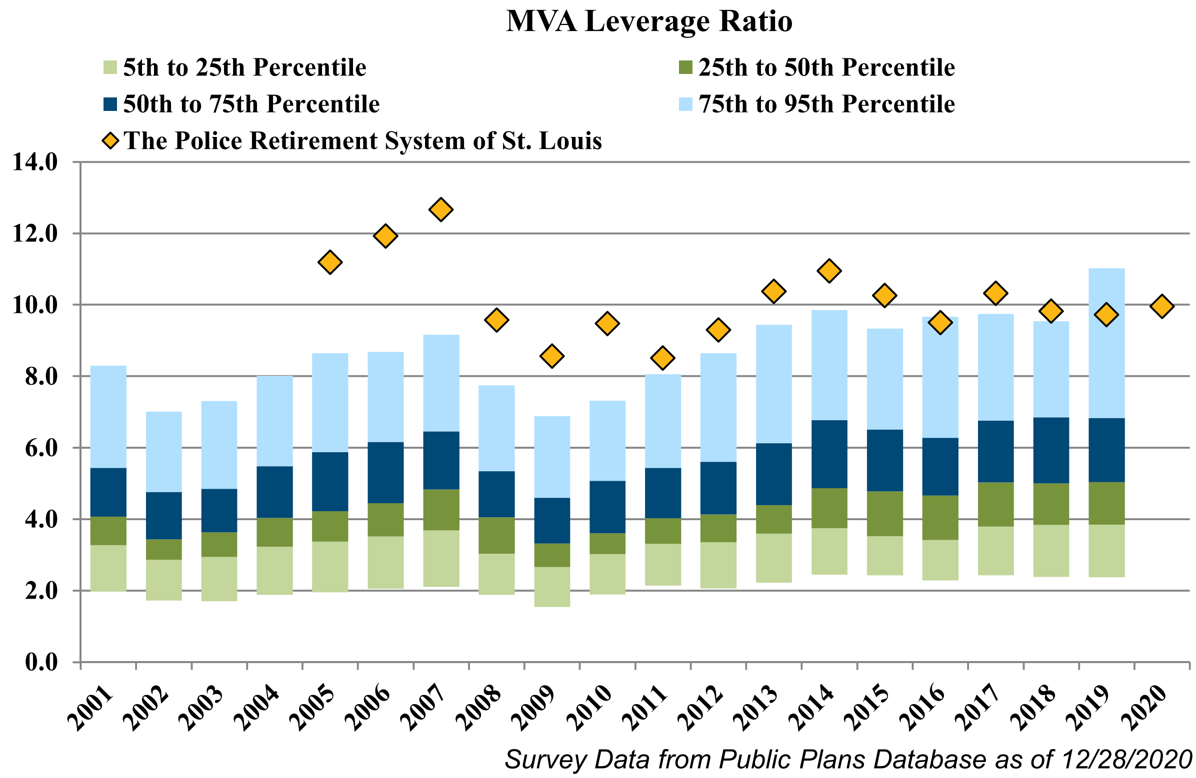


In our opinion and based on our experience dealing with pension plans having negative cash flows, negative cash flows start becoming a concern once they exceed 5% of plan assets. The System is currently above this concerning level at a negative net cash flow of about 3% per year, however, it remains an important metric to monitor as the System continues to mature.

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

Leverage Ratios

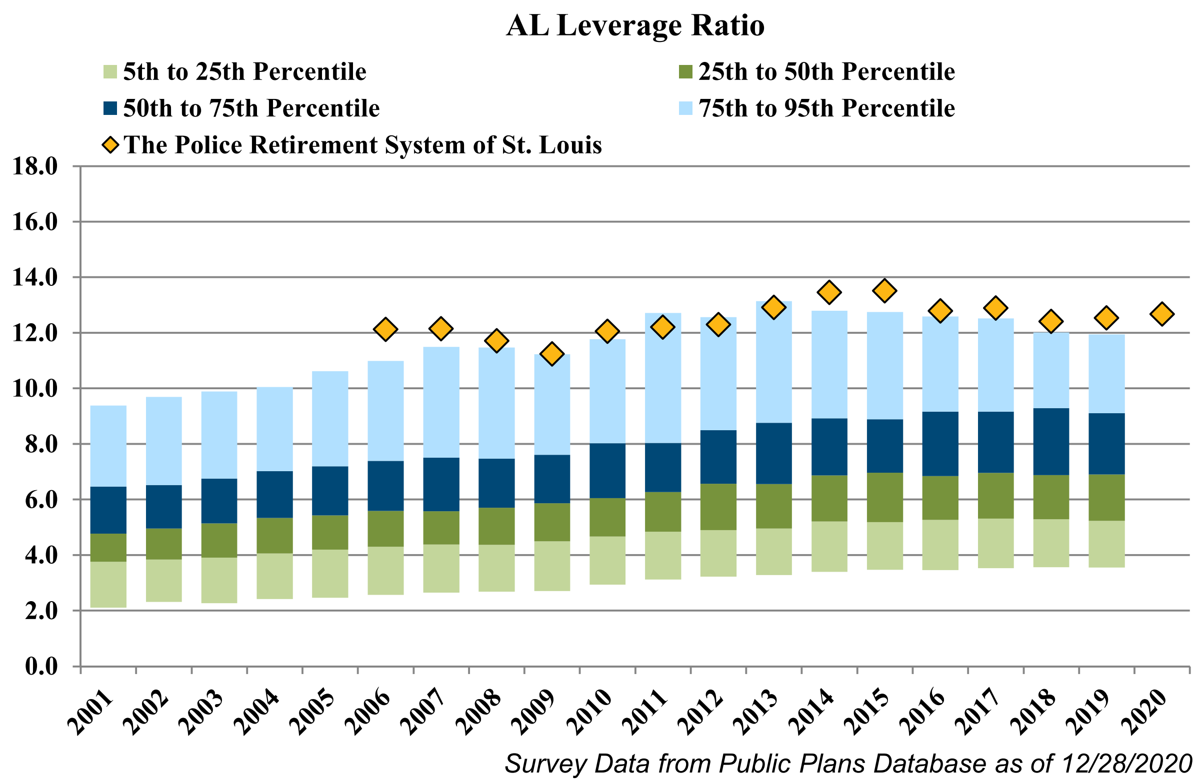
Leverage or volatility ratios measure the size of the System compared to its revenue base more directly. The Market Value of Asset (MVA) leverage ratio compares the MVA of the system to the payroll, which is the base for generating contributions. A MVA leverage ratio of 10.0, for example, means that if the System experiences a 10% loss on assets compared to the expected return, the loss would be equivalent to 100% of payroll. The same investment loss for a system with an asset leverage ratio of 5.0 would be equivalent to 50% 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.



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 System's asset leverage ratio, as shown by the yellow diamond, has frequently exceeded the 95th percentile in comparison with other plans in the Database. This means unexpected investment returns will have a larger impact on contributions for the System than it would for plans with a lower ratio.

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

Similar the MVA leverage ratio, the Actuarial Liability (AL) leverage ratio compares the AL of the System to its payroll. An actuarial liability leverage ratio of 10.0 means that if the System experiences a 2% loss on liabilities, the liability loss would be equivalent to 20% of payroll.



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 System's Actuarial Liability leverage ratio, as shown by the yellow diamond, has historically been above the 95th percentile compared to other plans. The higher liability leverage ratio means that the System may be more sensitive to liability risk compared to the plans in the Database. As the System continues to mature, more of the liability will be due to inactive members, and this ratio may increase. The ratio has remained relatively steady between 12 and 13 since 2006.

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's assets including:

- **Disclosure** of the System's assets as of October 1, 2019 and October 1, 2020,
- Statement of the **changes** in market values during the year,
- Development of the **Actuarial Value of Assets**, and
- An estimate of **investment return**.

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 that 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, the Actuarial Value of Assets that reflect smoothing of annual investment returns is more suitable for determining relatively stable contribution rates.

Table III-1 below discloses and compares each asset value as of September 30, 2019 and 2020.

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

Assets	2019	2020	% Change
Cash	$ 8,512,063	$ 9,368,937	10.07%
Money market funds	37,390,955	54,696,080	46.28%
Collective equity investment funds	260,234,083	116,112,753	(55.38%)
Corporate stocks	121,305,263	279,316,620	130.26%
Real estate securities fund	72,344,595	46,246,244	(36.08%)
Collective fixed income investment funds	6,251,210	5,118,575	(18.12%)
Corporate bonds	45,160,644	51,282,876	13.56%
Government securities	12,179,635	13,489,612	10.76%
Mortgage backed securities	25,261,979	20,111,855	(20.39%)
Hedge funds	19,251,927	21,987,824	14.21%
Partnership interest	168,736,440	182,270,717	8.02%
Investment property	864,400	876,500	1.40%
Receivables	18,491,992	841,833	(95.45%)
Capital assets, net of depreciation	139,234	111,663	(19.80%)
Misc. Liabilities	(11,371,948)	(3,181,811)	(72.02%)
Market Value of Assets	$ 784,752,472	$ 798,650,278	1.77%

SECTION III – ASSETS

Changes in Market Value

Table III-2 below shows the components of change between the Market Value of Assets as of September 30, 2019 and September 30, 2020.

Table III-2 Changes in Market Values		
Value of assets --September 30, 2019		**$ 784,752,472**
Additions		
Payments from Members	$ 6,169,551	
Employer Contributions	35,335,830	
Interest and Dividends	5,877,842	
Investment Return	40,081,795	
Total Additions	87,465,018	
Deductions		
Investment Expenses	$ 2,157,204	
Benefit Payments	65,762,646	
Refunds of Employee Contributions	4,201,135	
Administrative Expenses	1,446,227	
Total Deductions	73,567,212	
Value of assets --September 30, 2020		**$ 798,650,278**

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, volatile 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. 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, 2020 valuation.

Table III-3
Development of Actuarial Value of Assets

1. Actuarial Value of Assets at September 30, 2019		$ 802,729,613
2. Employer contributions		35,335,830
3. Payments from members		6,169,551
4. Benefit payments and administrative expenses		(71,410,008)
5. Expected return at 7.50%		57,564,267
6. Expected value at September 30, 2020		$ 830,389,253
7. Actual return on assets at September 30, 2020		43,802,433
8. Investment (gain)/ loss [5. – 7.]		$ 13,761,834
	Total Gain/(Loss)	**Excluded Portion**
Exclude 0% of 2016 gain/(loss)	$ (1,606,015)	$ 0
Exclude 20% of 2017 gain/(loss)	40,104,251	8,020,850
Exclude 40% of 2018 gain/(loss)	(4,151,326)	(1,660,530)
Exclude 60% of 2019 gain/(loss)	(39,008,552)	(23,405,131)
Exclude 80% of 2020 gain/(loss)	(13,761,834)	(11,009,467)
Total excluded gain/(loss) for AVA calculation		$ (28,054,278)
Market Value of Assets at September 30, 2020		$ 798,650,278
Total gain/(loss) excluded		(28,054,278)
9. Actuarial Value of Assets at September 30, 2020		$ 826,704,556
10. Actuarial Value of Assets gain / (loss) [9. – 6.]		$ (3,684,697)

SECTION III – ASSETS

Investment Performance

The Market Value of Assets (MVA) returned 5.69% during the plan year ending September 30, 2020, which is less than the assumed 7.50% return. A return of 6.84% 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
2008	-14.10%	6.30%
2009	0.80%	4.30%
2010	11.70%	3.50%
2011	-1.87%	2.00%
2012	14.34%	0.13%
2013	12.02%	5.54%
2014	6.93%	7.17%
2015	-1.17%	5.41%
2016	7.89%	7.24%
2017	13.43%	7.08%
2018	6.71%	6.29%
2019	2.24%	5.56%
2020	5.69%	6.84%

SECTION IV – LIABILITIES

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

- **Disclosure** of the System's liabilities as of October 1, 2019 and October 1, 2020 and
- Statement of **changes** in these liabilities during the year.

Disclosure

Several types of measures of liability are calculated and presented in this report. Each type is distinguished by the purpose for which the measure is used.

- **Present Value of Future Benefits:** This measure represents the amount of money needed today to fully fund all benefits of the System both earned as of the valuation date and those expected to be earned in the future by current plan participants, under the current plan provisions if all assumptions are met. This measure of liability is used under the Aggregate Cost Method in the calculation of the required contribution.
- **Entry Age Normal Actuarial Liability:** Calculated as of the valuation date as the present value of benefits allocated to service prior to that date. This liability is used for disclosure of the unfunded actuarial liability in financial statements.

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 measures of liability for the current and prior valuations.

Table IV-1
Measures of Liability

	October 1, 2019	October 1, 2020
Present Value of Future Benefits		
Active Participants	$ 309,952,584	$ 316,549,350
DROP and Re-entered Participants	189,523,287	182,960,771
Retired, Disabled, and Beneficiaries	632,815,628	640,717,226
Present Value of Future Benefits (PVB)	**$ 1,132,291,499**	**$ 1,140,227,347**
Entry Age Normal Actuarial Liability		
Active Participants	$ 189,181,258	$ 192,486,502
DROP and Re-entered Participants	189,523,287	182,960,771
Retired, Disabled, and Beneficiaries	632,815,628	640,717,226
Entry Age Normal Actuarial Liability (EAN AL)	**$ 1,011,520,173**	**$ 1,016,164,499**

SECTION IV – LIABILITIES

Changes in Entry Age Normal (EAN) Actuarial Liability

Each of the measures of liability disclosed in the prior table is 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
- System amendments changing 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
- A change in actuarial or investment assumptions
- A change in the actuarial funding method

The unfunded EAN actuarial liability will change because of all of the above and also due to changes in plan assets resulting from:

- Employer contributions
- Investment earnings
- 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, 2019 and October 1, 2020.

Table IV-2

	EAN Actuarial Liability
Liabilities as of October 1, 2019	$ 1,011,520,173
Liabilities as of October 1, 2020	1,016,164,499
Liability Increase/(Decrease)	4,644,326
Change Due to:	
Plan Amendments	$ 0
Assumption Changes	0
Experience (Gain)/Loss	(14,526,008)
Benefits Accumulated and Other Sources	19,170,334

SECTION IV – LIABILITIES

In addition, we break down 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, 2020

Inactive mortality less than expected	$ 892,218
Salary increase less than expected for continuing actives	(6,888,231)
COLA increase less than expected	(4,516,956)
Actives retiring less than expected	(1,016,848)
Actives terminating earlier than expected	(1,659,172)
Active mortality/disability	(254,229)
Change to retiree DROP balances	(4,780,503)
Future benefit for DROP participants more than expected	3,184,903
Benefit payments more than expected	1,995,962
Miscellaneous changes	(1,483,153)
Total Liability (Gain)/Loss	**$ (14,526,008)**

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 is the **Aggregate Actuarial Cost Method**. This method is known as a spread-gain method. The chief characteristic of a spread-gain method is that the difference between the Actuarial Value of Assets and the present value of total benefit obligations is funded over the future working lifetime of current participants in the form of a continually resetting normal cost.

Table V-1 below presents and compares the employer contribution rates for the System for this valuation and the prior one. The Funding Policy Contribution is the end of year value of the calculated Normal Cost.

Table V-1
Employer Contribution Rate

	October 1, 2019	October 1, 2020
1. Present Value of Future Benefits	$ 1,132,291,499	$ 1,140,227,347
2. Actuarial Value of Assets (AVA)	$ 802,729,613	$ 826,704,556
3. Present Value of Future Member Contributions	43,233,289	43,723,900
4. Total Assets (2. + 3.)	$ 845,962,902	$ 870,428,456
5. Present Value of Future Normal Contributions (1. – 4.)	$ 286,328,597	$ 269,798,891
6. Present Value of Future Salaries	$ 737,551,915	$ 742,607,022
7. Normal Cost Rate (5. ÷ 6.)	38.82%	36.33%
8. Expected Salaries of Active Participants	$ 80,666,728	$ 80,147,552
9. Normal Cost (7. × 8.)	31,314,824	29,117,606
10. Expected Administrative Expenses	$ 1,613,000	$ 1,483,000
11. Funding Policy Contribution Requirement (9. × 1.075 + 10. × 1.075^0.5)	$ 35,335,830	$ 32,839,034

SECTION VI – FINANCIAL STATEMENT 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 Police 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.

Table VI-1 is a history of gains and losses in actuarial liability, Table VI-2 shows the funding progress of EAN actuarial liability using the Actuarial Value of Assets, and Table VI-3 shows the funding progress using the Market Value of Assets.

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	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Investment Income	$(15,009,015)	$ (2,248,723)	$ (411,581)	$ (6,486,855)	$(13,454,291)	$ (3,684,697)
Combined Liability Experience	3,094,431	(1,379,642)	4,558,216	(20,632,739)	14,608,527	14,526,008
Gain (or Loss) During Year from Financial Experience	$(11,914,584)	$ (3,628,365)	$ 4,146,635	$(27,119,594)	$ 1,154,236	$ 10,841,311
Non-Recurring Gain (or Loss) Items	0	(34,511,183)	0	0	0	0
Composite Gain (or Loss) During Year	$(11,914,584)	$(38,139,548)	$ 4,146,635	$(27,119,594)	$ 1,154,236	$ 10,841,311

SECTION VI – FINANCIAL STATEMENT INFORMATION

Table VI-2
Schedule of Funding Progress under Entry Age Normal Method – AVA

Valuation Date October 1,	Actuarial Value of Assets (a)	Actuarial Liability (AL) Entry Age (b)	Unfunded AL (UAL) (c)	Funded Ratio (a) / (b)	Covered Payroll[1] (c)	UAL as a Percent of Covered Payroll [(b) – (a)] / (c)
2006	$709,290,911	$ 754,021,412	$ 44,730,501	94.1%	$ 62,178,772	71.9%
2007	752,501,900	775,668,726	23,166,826	97.0%	63,834,814	36.3%
2008	752,273,226	803,417,002	51,143,776	93.6%	68,572,905	74.6%
2009	727,139,060	799,587,050	72,447,990	90.9%	71,095,081	101.9%
2010	718,136,742	814,926,868	96,790,126	88.1%	67,593,989	143.2%
2011	695,421,570	855,617,994	160,196,424	81.3%	70,076,650	228.6%
2012	674,080,072	864,762,285	190,682,213	77.9%	70,327,982	271.1%
2013	690,731,190	879,906,781	189,175,591	78.5%	68,073,148	277.9%
2014	717,381,498	895,655,967	178,274,469	80.1%	66,555,276	267.9%
2015	720,811,717	901,758,011	180,946,294	79.9%	66,724,796	271.2%
2016	744,511,885	954,458,462	209,946,577	78.0%	74,596,522	281.4%
2017	771,337,887	969,815,612	198,477,725	79.5%	75,188,904	264.0%
2018	788,583,290	1,006,338,776	217,755,486	78.4%	81,052,498	268.7%
2019	802,729,613	1,011,520,173	208,790,560	79.4%	80,666,728	258.8%
2020	826,704,556	1,016,164,499	189,459,943	81.4%	80,147,552	236.4%

[1] Covered payroll is the total compensation expected to be paid during the valuation year.

SECTION VI – FINANCIAL STATEMENT INFORMATION

Table VI-3
Schedule of Funding Progress under Entry Age Normal Method – MVA

Valuation Date October 1,	Market Value of Assets (a)	Actuarial Liability (AL) Entry Age (b)	Unfunded AL (UAL) (b) – (a)	Funded Ratio (a) / (b)	Covered Payroll[1] (c)	UAL as a Percent of Covered Payroll [(b) – (a)] / (c)
2006	$ 741,695,643	$ 754,021,412	$ 12,325,769	98.4%	$ 62,178,772	19.8%
2007	808,886,286	775,668,726	(33,217,560)	104.3%	63,834,814	-52.0%
2008	656,903,659	803,417,002	146,513,343	81.8%	68,572,905	213.7%
2009	608,956,042	799,587,050	190,631,008	76.2%	71,095,081	268.1%
2010	640,405,653	814,926,868	174,521,215	78.6%	67,593,989	258.2%
2011	596,324,758	855,617,994	259,293,236	69.7%	70,076,650	370.0%
2012	653,862,993	864,762,285	210,899,292	75.6%	70,327,982	299.9%
2013	706,276,668	879,906,781	173,630,113	80.3%	68,073,148	255.1%
2014	729,065,355	895,655,967	166,590,612	81.4%	66,555,276	250.3%
2015	684,894,768	901,758,011	216,863,243	76.0%	66,724,796	325.0%
2016	709,237,644	954,458,462	245,220,818	74.3%	74,596,522	328.7%
2017	776,579,478	969,815,612	193,236,134	80.1%	75,188,904	257.0%
2018	796,160,410	1,006,338,776	210,178,366	79.1%	81,052,498	259.3%
2019	784,752,472	1,011,520,173	226,767,701	77.6%	80,666,728	281.1%
2020	798,650,278	1,016,164,499	217,514,221	78.6%	80,147,552	271.4%

[1] Covered payroll is the total compensation expected to be paid during the valuation year.

APPENDIX A – MEMBERSHIP INFORMATION

Participant Data Reconciliation	Actives	DROP	Retirees	Surviving Spouses and Children	Total
Participants as of October 1, 2019	**1,195**	**80**	**1,444**	**484**	**3,203**
New Entrants	117				117
Return to Active	1		(1)		0
Nonvested terminations	(64)				(64)
Retired	(29)	(4)	33		0
Entered into DROP	(7)	7			0
Re-Entry from DROP	25	(25)			0
Deaths without beneficiary			(17)	(20)	(37)
Deaths with Beneficiary	(1)	(1)	(28)	31	1
Disabled	(8)		8		0
Benefits Expired				(1)	(1)
Data Correction					0
Net Change	34	(23)	(5)	10	16
Participants as of October 1, 2020	**1,229**	**57**	**1,439**	**494**	**3,219**

APPENDIX A – MEMBERSHIP INFORMATION

Distribution of Active Participants									
	Years of Service								
Age	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 +	Total
Under 20									**0**
20 – 24	68 $46,700								**68 $46,700**
25 – 29	191 $51,241	13 $55,335							**204 $51,502**
30 – 34	94 $50,964	61 $60,487	27 $65,151						**182 $56,260**
35 – 39	42 $51,399	35 $62,420	144 $67,486	17 $68,361					**238 $63,965**
40 – 44	15 $53,483	13 $62,305	63 $68,142	83 $70,578	4 $72,995				**178 $67,725**
45 – 49	6 $52,313	5 $61,720	19 $69,168	34 $69,025	50 $74,240	6 $74,883			**120 $70,373**
50 – 54	2 $44,731		7 $69,114	20 $68,756	65 $74,926	32 $78,434	1 $69,387		**127 $73,999**
55 – 59	1 $47,815		1 $83,490	5 $73,521	31 $73,534	50 $76,771			**88 $75,193**
60 – 64			2 $66,036	1 $66,913	7 $76,383	9 $79,925	3 $106,893	2 $76,006	**24 $80,237**
65 +									**0**
Total	**419 $50,514**	**127 $60,727**	**263 $67,618**	**160 $69,854**	**157 $74,448**	**97 $77,496**	**4 $97,516**	**2 $76,006**	**1,229 $63,129**

APPENDIX A – MEMBERSHIP INFORMATION

Statistics for Active Participants

		Average		
	Count	Age	Service	Compensation
As of October 1, 2020				
Continuing	1,112	40.6	12.8	$ 64,889
New	117	27.8	0.5	46,398
Total	1,229	39.4	11.6	63,129
As of October 1, 2019				
Continuing	1,089	40.4	12.8	$ 64,972
New	106	29.6	0.5	45,203
Total	1,195	39.4	11.7	63,218

Statistics for DROP Participants

		Average				
	Count	Age	Service	Compensation	DROP Account Balance	Monthly Benefit Amount
As of October 1, 2020	57	52.5	23.2	$ 74,814	$ 87,011	$ 3,069
As of October 1, 2019	80	51.3	21.5	$ 73,521	$ 86,369	$ 2,584

APPENDIX A – MEMBERSHIP INFORMATION

Statistics for Inactive Participants

	Count	Total Monthly Benefits	Average Monthly Benefits
As of October 1, 2020			
Service Retirees	1,271	$ 3,744,775	$ 2,946
Ordinary Disabilities	20	28,362	1,418
Accidental Disabilities	148	414,364	2,800
Surviving Spouses	448	671,853	1,500
Children	46	27,500	598
Total	1,933	$ 4,886,854	$ 2,528
As of October 1, 2019			
Service Retirees	1,278	$ 3,727,111	$ 2,916
Ordinary Disabilities	21	28,124	1,339
Accidental Disabilities	145	393,560	2,714
Surviving Spouses	437	643,153	1,472
Children	47	27,410	583
Total	1,928	$ 4,819,358	$ 2,500

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

A. Actuarial Assumptions

1. Mortality Rates

Healthy Retirees:	RP-2014 Blue Collar Healthy Annuitant Table, with a 1.15 adjustment to base tables for males and females, and fully generational mortality improvements using Scale MP-2015
Disabled Retirees:	RP-2014 Disabled Annuitant Table, with 0.90 adjustment to the base table for males and no adjustment to the base table for females, and fully generational mortality improvements using Scale MP-2015
Actives, Ordinary:	RP-2014 Blue Collar Healthy Annuitant Table, with no adjustment to base tables for males and females, and fully generational mortality improvements using Scale MP-2015
Actives, Accidental:	0.0003 per year for all ages in addition to ordinary mortality rates

2. Disability

CCA 1985 Unisex Class 4 table; see the table of sample rates
10% of disabilities are assumed ordinary and the remaining 90% are accidental disabilities.

Age	Disability (%)
25	0.0256
35	0.508
45	0.940
55	2.288
60	3.434

3. Withdrawal Rates before Retirement

Years of Service	Withdrawal (%)
1-4	6.00
5-9	4.00
10-18	1.00
19+	0.00

4. DROP Rates

Years of Service	DROP Rate (%)
20	60
21	30
22-27	5
28	5
29	5
30	80

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

5. Retirement Rates

Years of Service	Retirement Rate (%)
20-21	12
22-24	6
25	5
26-29	2
30	20

DROP and retirement rates are additive, so at 30 years of service, the chance of either entering DROP or retirement is 100%. All members are assumed to retire by age 65.

6. Marriage

75% of male active members and 25% of female active members are assumed to be married. The male spouse is assumed to be three years older than the female.

7. Children

Each member is assumed to have 1.5 children at retirement, disability or death; the child is assumed to be 30 years younger than the member and to receive benefits until he or she is 20 years old.

8. DROP Participation

Members participate in DROP based on their completed service; see table for rates

- No disability is assumed while in DROP
- One-third of participants are expected to retire from DROP after four years
- One-third of participants are expected to re-enter the plan after five years in DROP, remain active in the plan for two years, and then retire
- One-third of participants are expected to re-enter the plan after five years in DROP, remain active in the plan for eight years, and then retire

9. Special Advisor and Consultant Benefits

Assumed to be paid to all eligible members

10. Form of Payment

There are no optional forms of payment; automatic survivor benefits are paid to all members.

11. Net Investment Return

7.50% compounded annually for funding purposes

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

12. Salary Increases

Wage inflation is assumed to be 3.0%. Individual salaries are expected to increase according to the following table, which includes wage inflation and promotion.

Service	Salary Increase (%)
0-9	6.25
10-19	3.50
20+	3.00

13. Cost of Living Adjustments

2.5% per year

14. Expenses

Prior year actual expenses increased by the assumed inflation rate (2.5%) rounded up to the nearest $1,000.

15. Interest on Member Contributions

4% per year

16. Rationale for Actuarial Assumptions

The actuarial assumptions were adopted by the Board of Trustees based upon recommendations made in an actuarial experience study performed by Cheiron covering the years 2010 through 2015 subsequent to the October 1, 2015 valuation.

17. Changes in Actuarial Assumptions since last actuarial valuation

None

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 return on the Actuarial Value of Assets 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

For determining contributions, the cost method used in this valuation is the Aggregate Cost method. Under this method, the difference between the present value of future benefits and the Actuarial Value of Assets is allocated as a level percentage over the future salary of the participants.

There is no actuarial accrued liability with this method. For accounting purposes, the actuarial accrued liability is determined under the entry age normal method.

3. Valuation Software

Cheiron utilizes ProVal, an actuarial valuation software leased from Winklevoss Technologies (WinTech) to calculate liabilities and project benefit payments. We have relied on WinTech as the developer of ProVal. We have examined the reasonableness of the input data and assumptions, reviewed sample calculations for accuracy, reconciled the actuarial gain loss, and find the aggregate results reasonable and appropriate. We are not aware of any material inconsistencies, unreasonable output resulting from the aggregation of assumptions, material limitations or known weaknesses that would affect this actuarial valuation.

Projections in this valuation were developed using P-scan, our proprietary tool for the intended purpose of developing projections. The projections shown in this report cover multiple individual scenarios and the variables are not necessarily correlated. We are not aware of any material inconsistencies, unreasonable output resulting from the aggregation of assumptions, material limitations or known weaknesses that would affect the projections shown in this report.

4. Changes in Actuarial Methods since Last Valuation

None

APPENDIX C – SUMMARY OF PLAN PROVISIONS

1. Effective Date and Plan Year

The Plan was established on October 1, 1929, under the provisions of what are now Sections 86.010 to 86.193 inclusive, R.S. Mo. 1969. The Alternative Police Retirement System of St. Louis was established on October 1, 1957, under the provisions of Sections 86.2000 to 86.366 inclusive, R.S. Mo. 1969.

2. Participation

All persons who become police officers in the City of St. Louis will become members as a condition of their employment.

3. Employer Contributions

The City makes annual contributions, which together with the contributions of the members, are sufficient to provide for the benefits payable by the System.

The City also contributes the amount needed, in addition to the existing assets of the former Police Pension Fund Association and Police Retirement System, to continue the benefits granted by the former system which were in force at the establishment of the new system and to pay certain additional pensions to surviving spouses of members who had belonged to the former systems and who were previously on the pension payroll of the former systems.

4. Participant Contributions

Members contribute at the rate of 7% of their compensation. The Board of Trustees shall annually determine the interest rate to be credited on members' contributions.

5. Service Considered

Creditable Service at retirement shall consist of service rendered by the member as a police officer since last becoming a member, plus any prior service certified on a prior service certificate. No service is included for periods that a member participates in DROP.

6. Compensation Considered

The annual salary that a member earns based on the member's rank or position as defined in the applicable salary matrix, plus additional compensation for academic work and shift differential. Earnable compensation shall not include overtime, standby time, court time, non-uniform time, or unused vacation time.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

7. Average Annual Compensation

The average earnable compensation of the member during the member's last two years of creditable service.

8. Normal Retirement Age

Effective August 1, 1979, a member may retire upon completion of 20 years of service, regardless of age, or upon attainment of age 55. Retirement is compulsory at age 65. Upon request of the Board of Police Commissioners, the Board of Trustees may permit a member to defer retirement up to one year at a time.

9. Normal Retirement Benefit (Service Retirement Allowance)

The monthly retirement allowance consists of 2% of the Average Annual Compensation for each year of service up to 25 years, plus 4% of such Average Annual Compensation for each additional year of service up to five additional years. Upon completion of at least 30 years of service, the monthly retirement allowance will be 75% of the Average Annual Compensation.

Allowances will be increased up to 3% annually. The annual increase is limited to the lesser of 3% or the increase in the Consumer Price Index City Average (CPI) for all urban consumers for the 12-month period ending in June (four months prior to the beginning of the Plan Year). Historical cumulative increases in the CPI in excess of the 3% annual limit may be added to the current year increase when necessary to bring the current year increase up to the 3% limit. Cumulative increases for retirees and surviving spouses cannot exceed 30%.

10. Disability Benefit

Ordinary Causes
Upon the occurrence of a disability due to causes that are not the result of an accident in the actual performance of duty, a member who has completed five years of Creditable Service is eligible to receive a retirement allowance.

In the event of ordinary disability before being eligible for service retirement, a member receives a retirement allowance of 90% of his accrued service retirement allowance. The minimum allowance payable is 25% of his Average Annual Compensation. An additional 15% of his Average Annual Compensation is paid for each unmarried dependent child under age 18. If disabled after eligibility for service retirement, the service retirement is still payable.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Accident in the Actual Performance of Duty
Upon the occurrence of disability due to causes resulting from an accident in the actual performance of duty, regardless of the age or length of service of the member, a member is eligible to receive a retirement allowance equal to 75% of his Average Annual Compensation. At the discretion of the Board of Trustees, if the member is unable to perform any work of any kind, he may receive an annual pension not to exceed his annual compensation at the date of disablement. In addition, an allowance may be granted to cover surgical, medical, and hospital expenses resulting from the accident.

11. Death Benefit

Ordinary Causes Prior to Retirement
Upon the death of a member in service which is not the result of an accident in the actual performance of duty, a benefit is paid to the member's dependents.

The surviving spouse receives an annuity after the member's death of 40% of the Average Annual Compensation of the deceased member plus 15% additional for each unmarried dependent child under age 18. If no surviving spouse, the benefit is shared by the dependent children, but not more than one-half of the surviving spouse's benefit shall be paid for one child. If no surviving spouse or dependent children, accumulated member contributions are returned to the designated beneficiary.

Accident in the Actual Performance of Duty Prior to Retirement
Upon the death of a member as a result of an accident in the actual performance of duty, a benefit is paid to the member's dependents. The surviving spouse receives an annuity after the member's death of 75% of the Average Annual Compensation of the deceased member plus 15% additional for each unmarried dependent child under age 18. If no surviving spouse, the benefit is shared by the dependent children, but not more than one-half of the surviving spouse's benefit shall be paid for one child. If no surviving spouse or dependent child, an amount equal to the surviving spouse's benefit is paid to a dependent father or mother of a deceased member until remarriage or death.

Death Benefit after Retirement
Upon the death of a member retired from service, ordinary disability or accidental disability, the surviving spouse receives an annuity after the member's death of 40% of the deceased member's Average Annual Compensation plus an additional 15% for each unmarried dependent child under age 18. If there is no surviving spouse, the entire death benefit is shared by the dependent children, but one child may not be paid more than one-half of the surviving spouse's benefit. The surviving spouse of a service retiree will receive an increase of up to 3% annually, subject to the same conditions as the increases to service retirees.

If a member, retired because of the accidental disability, dies before receiving benefits for five years, the surviving spouse receives an additional pension of 10% of the deceased member's Average Annual Compensation.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

12. Disabled Child Over Age 18

Whenever benefits are provided for an unmarried dependent child under age 18, such child who was disabled prior to age 18 will receive benefits after age 18 as long as disabled and not confined to a public institution.

13. Student Benefits Ages 18 to 22

Whenever benefits are provided for an unmarried dependent child under age 18, such child may receive benefits through age 22 as long as he or she remains a full-time student.

14. Special Consultant Benefits

Any retiree or any surviving spouse of a retiree or active member whose benefit is less than $650 per month upon application will be employed by the Board of Trustees and paid a consultant's benefit such that his or her total benefit will equal $650.

15. Special Advisor Benefits

Any retiree or any surviving spouse who is older than age 60 can become a special advisor and be eligible for an additional benefit equal to $10 per month for each full year over age 60.

16. Return of Contributions

Upon service retirement or death while active or disability due to an accident in the actual performance of duty or ordinary disability, contributions without interest are refunded. Upon the withdrawal from service of a member prior to retirement, the entire amount of the member's contributions with interest accumulation is returned to the member. If at the termination of all benefits with respect to a member, the total of all benefit payments to date is less than the member's accumulated contributions at retirement or prior to death, the difference is paid to his or her beneficiary, or if no such beneficiary is living, to the estate of the beneficiary last entitled to benefits. Upon death, member contributions are returned to the surviving spouse of the member who died prior to receiving a refund of their contributions.

17. Form of Payment

There are no optional forms of payment; automatic survivor benefits are paid to all members.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

18. Deferred Retirement Option Plan (DROP)

Any member who has at least 20 years of service or has attained the age of 55 may elect to participate in the DROP. A member electing to participate in the DROP will continue in active employment and will not receive any direct retirement allowance payments during participation in the DROP. No one may participate in the DROP for a period exceeding five years.

Upon the start of the participation in the DROP, the member's contributions will cease. During the period of participation in the DROP, the amount that the member would have received as a service retirement allowance, if the member had retired, is deposited monthly in the member's DROP account. A member's DROP account earns interest equal to the rate of return earned by the System's investment portfolio (net of investment expenses) during the prior plan year on a market value basis, beginning in the first plan year after the member begins DROP participation. The DROP account is paid in a lump sum or a series of 120 monthly installments when a member retires.

The member's service retirement allowance is not adjusted for any cost-of-living increases for any period prior to the member's retirement. Service earned during the period of participation in DROP is not creditable service and is not counted in the determination of any service retirement allowance or surviving spouse's or dependents' benefits. A member who has elected to participate in DROP may re-enter the System.

Upon re-entry, a member is no longer eligible to participate in the DROP and will be required to make contributions of 7% of compensation. If the member remains active for at least two years following re-entry and retires, or if the member terminates due to death or disability at any time following re-entry, the member's benefit upon retirement will be based on creditable service and Plan provisions in effect at retirement. If the member terminates other than due to death or disability within two years following re-entry, the member's benefit upon retirement will be equal to the member's benefit at the time of entry into DROP plus any benefit accruals since re-entry. Additional benefit accruals will be based on the member's Average Annual Compensation earned while in DROP and Plan provisions in effect at retirement.

The member's contributions without interest will be paid to the member upon retirement or to the member's surviving spouse if the member dies before retirement.

19. Changes Since Last Valuation

None

APPENDIX D – HISTORICAL INFORMATION

The Police Retirement System of St. Louis became operative on October 1, 1929, under the provisions of what are now Sections 86.010 to 86.193 inclusive, R.S. Mo. 1969. The Alternative Police Retirement System of St. Louis became operative on October 1, 1957, under the provisions of Sections 86.200 to 86.366 inclusive, R.S. Mo. 1969.

The administration and operation of the Retirement System are under the direction of a 10-member Board of Trustees. There are two ex-officio members, three members appointed by the mayor, three members elected by the employees, and two members elected by the retirees. All applications for benefits are passed upon by the Board. The methods used to determine the funding policy requirement are specified by State statute.

As of December 1, 2019, Mr. Mark Lawson is employed as the Executive Director to the Board of Trustees. The Board of Trustees has appointed a Medical Board and has appointed Dr. Russell C. Cantrell as its chairman. This Medical Board passes on all medical examinations as required by law.

The Board of Trustees has employed Cheiron as actuaries for the System.

The Board of Trustees has employed Hochschild, Bloom & Company LLP, Certified Public Accountants, to audit the operation of the System.

The 69th General Assembly of the Missouri State Legislature adopted legislation which created the Alternative Police Retirement System of St. Louis, which began operation as of October 1, 1957. All police officers in service on that date became members of the alternative system unless they filed a notice of election to remain under the old system.

APPENDIX D – HISTORICAL INFORMATION

Subsequent changes in the System are outlined in the table below:

Session of General Assembly	Year	Change
73rd	1965	Increase in benefits by change in formula from 1/70 to 1/60 of average compensation for each year of service.
74th	1967	a) Increases in service retirement allowances based on increases in the Consumer Price Index (cap of 10%); b) Increases in ordinary disability allowances of members with dependent children; and c) Increases in allowances to survivors of retired members.
75th	1969	a) Lowering retirement age in steps until it reaches 55 in 1973; and b) Increase in benefits by a gradual change in formula until it reaches 1/55 in 1973.
76th	1972	a) Benefits based on 3-year final average salary, rather than 5 years; and b) Increase in benefits to surviving spouses of service retirees, based on cost-of-living, on the same basis as an increase to service retirees.
77th	1973	Increase in cost-of-living adjustments to service retirees and their surviving spouses, from 1% to 3% (cap of 25%).
78th	1975	Increase in benefits to 1/50.
79th	1977	Allowing normal retirement after 25 years of service.
80th	1979	a) Increasing benefits by 2% for each year of service greater than 25 years with a 70% overall maximum; and b) Allowing normal retirement after 20 years of service.
81st	1981	a) Allowing refund of member contributions without interest upon service retirement, and b) Special consultant allowance for retirees added to provide a minimum monthly retirement income of $350.
82nd	1983	a) Allowing refund of member contributions without interest upon death while active after completing 20 years of service;

APPENDIX D – HISTORICAL INFORMATION

Session of General Assembly	Year	Change
		b) Special consultant allowance for surviving spouses added to provide a minimum monthly surviving spouse's income of $200, and
		c) Name changed to the Police Retirement System of St. Louis.
82nd	1984	Upon approval of the Board, allowing refund of member contributions without interest to those who are receiving a service retirement benefit and retired prior to September 28, 1981.
83rd	1986	Special consultant allowance for retirees to provide a minimum monthly retirement benefit of $400. Special consultants for surviving spouses to provide a minimum monthly retirement benefit of $250.
*	1989	Special consultant allowance for surviving spouses to provide a minimum monthly retirement benefit of $400.
85th	1990	a) An additional monthly benefit to current and future retirees of $10 per month for each year past age 60. The effective date for this improvement is July 1, 1994.
		b) Provides for the addition of two retirees to the Board of Trustees and an additional Board member appointed by the mayor.
		c) Provides for the refund of member contributions for retirees prior to September 28, 1981.
87th	1993	Special consultant allowance for retirees and surviving spouses to provide a minimum monthly retirement benefit of $550.
87th	1994	Allows for the return of employee contributions to all surviving spouses of members who die prior to receiving a refund of their contributions.
88th	1995	Adoption of the Deferred Retirement Option Plan.
89th	1997	a) Maximum cumulative cost of living allowance for retirees and beneficiaries increased from 25% to 30% beginning with October 1, 1997 increases.
		b) Effective August 28, 1997, upon approval of the Board, allowing refund of member contributions without interest to retirees deemed to be 100% disabled due to an accident in the actual performance of duty.

* Revised interpretation of state statutes by System's Legal Advisor.

APPENDIX D – HISTORICAL INFORMATION

Session of General Assembly	Year	Change
90th	1999	a) Special consultant allowance for current and future retirees and surviving spouses to provide a minimum monthly retirement benefit of $650 effective August 18, 1999.
		b) An additional monthly benefit to current and future surviving spouses of $10 per month for each year past age 60 effective August 12, 1999.
		c) Increase benefit to future surviving spouses of service and disability retirees to 40% of Average Annual Compensation effective October 1, 1999. Special consultant allowance to current surviving spouses of service and disability retirees to increase benefit to 40% of Average Annual Compensation effective October 1, 1999.
		d) Increase benefit to future dependent children of members to 15% of Average Annual Compensation effective October 1, 1999. Special consultant allowance to current dependent children of members equal to the greater of $100 per month or 5% of Average Annual Compensation effective October 1, 1999.
		e) Increase service retirement allowance to 75% of Average Annual Compensation for members with at least 30 years of service effective August 12, 1999.
		f) Increase benefit to future accidental death surviving spouses to 75% of Average Annual Compensation effective October 1, 1999. Special consultant allowance to current accidental death surviving spouses to increase benefit to 75% of Average Annual Compensation.
91st	2001	a) Benefits based on 2-year Average Annual Compensation effective October 1, 2001.
		b) Allow for a refund of member contributions without interest for any member who becomes disabled in the line of duty effective October 1, 2001.
		c) Allow one-time re-entry into the System from DROP effective October 1, 2001.
91st	2002	Allow retiree organizations to request information and internal administration change regarding rulemaking by the Plan.
92nd	2003	Technical corrections to DROP.

APPENDIX D – HISTORICAL INFORMATION

Session of General Assembly	Year	Change
92nd	2004	Redefine quorum.
93rd	2005	Remove limit of three children for disability and death benefits.
93rd	2006	Add the required compliance language for minimum distributions and direct rollovers.
94th	2007	Add a fiduciary education requirement.
96th	2011	Update required compliance language for minimum distributions, limit on benefits, direct rollovers and death while on military leave.
		Permit System to accept rollovers of after-tax amounts from other plans.
98th	2013	Reduce service requirement for ordinary disability to five years upon reaching 80% funded ratio (this provision was triggered October 1, 2014).

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