

# Missouri Local Government Employees Retirement System

Compiled 55th Annual Actuarial Valuation  
as of February 28, 2023



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## Report of Compiled Actuarial Valuations of LAGERS

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September 13, 2023

Board of Trustees  
Missouri Local Government Employees Retirement System  
Jefferson City, Missouri

**Submitted in this report** are the compiled results of the **55th annual actuarial valuations** for the Missouri Local Government Employees Retirement System, as amended through February 28, 2023. **The date of the valuations** was February 28, 2023.

**Actuarial valuations** of individual participating employers are made for the purposes of (i) revising employer contribution rates and (ii) examining the reserve strength of each separately experience-rated group. These individual valuations are made annually for each employer who was participating as of the valuation date. Such valuations were made for **1,272 groups (829 employers)**. Actuarial valuations are also made of retired life benefits being paid from the Benefit Reserve Fund to determine the financial condition of this pooled Fund.

This report was prepared at the request of the Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided to parties other than the System only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

The signing actuaries are independent of the plan sponsor.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as: plan experience differing from that anticipated by the economic and demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of the actuary's assignment, the actuary did not perform an analysis of the potential range of such future measurements.

**The valuations were based upon data** furnished by LAGERS staff concerning members, retirees and beneficiaries.

**The financial assumptions** used in making the valuations are shown in the Appendix of this report. Assumptions concerning future experience are needed for computing employer contribution rates. As time passes and actual experience develops, assumed and actual experiences are compared. From time to time one or more of the assumptions about the future are changed by the Board after consulting with the actuary. The assumptions used in performing the 2023 valuations were adopted by the Board in conjunction with a five-year experience investigation for the period ending February 29, 2020.

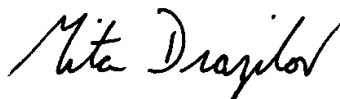
This report was prepared using our proprietary valuation model and related software which, in our professional judgment, has the capability to provide results that are consistent with the purposes of the valuation and has no material limitations or known weaknesses. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

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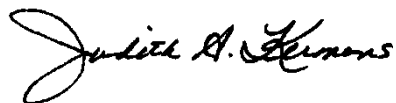
**Your attention is directed particularly** to pages 3 through 8, and to the Short Condition Test on page B-5. Based upon the 2023 valuations, it is our opinion that **LAGERS continues to satisfy the actuarial principles of level cost financing.**

Mita D. Drazilov and Judith A. Kermans are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,  
Gabriel, Roeder, Smith & Company



Mita D. Drazilov, ASA, FCA, MAAA



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MDD/JAK:rmg:ah



## Comments on Valuation Results

**Individual Valuations of Participating Employers.** There were 1,272 new employer contribution rates computed as of February 28, 2023. (Eighty-one groups had no active employees and a dollar contribution was calculated for groups that had a positive unfunded actuarial accrued liability. These eighty-one groups are excluded from the totals on this page.) Of the 1,272 new rates, 343 were decreases from the previous rates, 822 were increases from the previous rates and 107 were unchanged. Further detail is shown in Section G. A ten-year comparative schedule follows:

Valuation Date	Decreases	Unchanged	Increases	Total
2-28-2014	772	52	231	1,055
2-28-2015	738	80	244	1,062
2-29-2016*	255	53	759	1,067
2-28-2017	397	105	576	1,078
2-28-2018	494	135	487	1,116
2-28-2019	385	105	651	1,141
2-29-2020	342	94	771	1,207
2-28-2021*	659	97	469	1,225
2-28-2022	585	116	544	1,245
<b>2-28-2023</b>	<b>343</b>	<b>107</b>	<b>822</b>	<b>1,272</b>

\* Revised financial assumptions and/or funding method.

Decreases in employer contribution rates are seldom a problem. Increases can be a problem although increases are currently capped to a 1% increase each year. Employer contribution rates can increase due to changes in actuarial assumptions, benefit changes, actuarial losses and having a capped employer contribution rate in the previous year. Increases to employer contribution rates this year were primarily due to valuation groups having a capped contribution rate as of February 28, 2022 (219 valuation groups had a capped employer contribution rate as of February 28, 2022) and bigger than expected pay increases.

**Investment Experience During the Valuation Year.** The rate of investment return on an actuarial value of assets basis for the valuation year ending February 28, 2023 was above the assumed investment rate of return of 7.0%. The rate of investment return on a market value of assets basis for the valuation year ending February 28, 2023 was less the assumed investment rate of return of 7.0%. The actuarial value of assets is almost equal to the market value of assets. However, the unrecognized gains and losses are not evenly distributed over the next four years. There is expected to be slight downward pressure on contribution rates in the next two years and slight upward pressure on contribution rates in the following two years. (Beginning in 2003, the actuarial value of assets is not allowed to deviate from the market value of assets by more than 20%.) In addition, there is still upward pressure on capped employer contribution rates (378 valuation groups as of February 28, 2023).

## Comments on Valuation Results - Concluded

**Retired Life Experience.** The Benefit Reserve Fund (BRF) funded ratio decreased from 118.9% to 118.0% as of February 28, 2023. The recognized rate of investment return was more than the actuarial assumed rate of investment return which was offset by higher than expected cost-of-living increases. Please refer to pages B-10 and D-2 for detail.

**Funded Ratio.** As of February 28, 2023, the actuarial accrued liabilities of the System were \$10.7 billion. As of February 28, 2023, the actuarial value of assets of the System were \$10.1 billion and the market value of assets of the System were \$10.1 billion. The funded ratio for the System as of the valuation date is 95.1% based on the actuarial value of assets. If the market value of assets were used and the reserve for future experience in the BRF shown on page B-10 were unchanged, the funded ratio would be approximately 95.1%.

**Gain/Loss Analysis.** Section D of this report presents a summary of the analysis of the economic and non-economic risk areas. For the year ended February 28, 2023, the System experienced an actuarial loss of approximately \$173 million. This primarily consisted of pay increases higher than assumed offset slightly by better than assumed investment return as measured on an actuarial value of assets basis.

## Comments on Reserve Strength of Each Group Being Separately Experience-Rated

"Reserve strength" means the portion of accrued liabilities which are covered by accrued assets. The larger the portion covered, the greater the reserve strength.

At the time a local government joins LAGERS the reserve strength of that new employer is zero because there are no assets, while liabilities (for past service) have been generated.

Contributions to LAGERS are patterned so that reserve strength increases year by year.

However, this underlying pattern is being modified each year as actual financial experiences occur. Experiences more favorable than assumed cause reserve strength to increase more than planned, while less favorable experiences reduce reserve strength. Like snowflakes, no two groups have identical experiences.

In addition, reserve strength is lowered when a local government adopts a higher benefit formula (larger liabilities for past service are generated).

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The hundreds of separately experience-rated groups within LAGERS have considerable differences in reserve strength. These differences are summarized on page B-7.

Financially, LAGERS consists of a large number of diverse groups, not a large number of clones of a single LAGERS average.



## Summary of Risk Measures

Valuation Date	Funded Ratio	UAAL Amortization Period #	Dollar Standard Deviation of Investment Return/ Total Payroll *	UAAL/ Total Payroll	Actuarial Value of Assets/ Total Payroll	Total AAL/ Total Payroll
2-28-2014	91.7%	21	41.1%	33.4%	370.1%	403.4%
2-28-2015	94.4	21	43.6	24.0	408.5	432.5
2-29-2016	94.7	24	39.3	23.3	419.2	442.5
2-28-2017	94.8	19	43.2	23.9	434.8	458.7
2-28-2018	95.6	16	47.0	20.7	451.3	472.0
2-28-2019	94.9	15	46.0	24.7	457.5	482.1
2-29-2020	93.7	14	45.5	30.6	452.4	483.0
2-28-2021	95.6	12	50.9	22.3	483.1	505.4
2-28-2022	96.5	10	55.6	18.6	509.0	527.6
2-28-2023	95.1	11	49.9	25.5	498.7	524.2

# Aggregate amortization period for all employers combined.

\* Assumes System goal of a 10% standard deviation. Based upon the market value of assets.

**Funded ratio:** This is the most widely known measure of a plan’s financial strength. The trend in the funded ratio is generally more important than the absolute ratio. A trend approaching 100% is desirable.

**UAAL Amortization Period:** The aggregate amortization period is for all employers combined. Each employer has specific amortization periods for their respective amortization bases. Based upon a 7.00% investment return assumption and 2.75% payroll growth assumption, periods above 23 years indicate that the UAAL payment is less than the interest on the UAAL. This situation is referred to as “negative amortization.” Negative amortization is increasingly viewed as undesirable.

**Standard Deviation of Investment Return/Total Payroll:** The portfolio standard deviation measures the volatility of investment return. When divided by payroll it gives the effect of a one standard deviation asset gain or loss as a percent of payroll. A market value asset loss of this magnitude or larger has roughly a 16% chance of occurring in any particular year.

**UAAL/Total Payroll:** The ratio of the UAAL to payroll gives an indication of the plan sponsor’s ability to pay off the UAAL. A declining ratio is desirable. A percentage above approximately 300% or 400% may indicate difficulty in discharging the unfunded liability in some circumstances.

**Actuarial Value of Assets/Total Payroll:** The ratio of assets to payroll gives an indication of both maturity and volatility. Many systems have percentages between 500% and 700%. A high ratio can indicate volatility of contribution rates or amortization period.

**Total AAL/Total Payroll:** This is similar to the prior ratio. It illustrates the expected ratio of assets to payroll when the plan has a funded ratio of 100%.



## Risk Commentary

Determination of the accrued liability, the employer contribution, and the funded percent requires the use of assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in actuarial measurements that results from the differences between actual experience and the actuarial assumptions.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions due to changing conditions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period, or additional cost or contribution requirements based on the Plan's funded status); and changes in plan provisions or applicable law. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the plan's future financial condition include:

- (1) **Investment Risk** – The risk that actual investment returns may differ from the expected investment returns.
- (2) **Contribution Risk** – Under Section 70.730 of the Revised Statutes of Missouri, the computed employer contribution rate shall not exceed the contribution rate for the immediately preceding fiscal year by more than one percent (not including the effects of any benefit changes). Contribution risk is the risk that a group's uncapped computed employer contribution rate may be significantly greater than the capped employer contribution rate.
- (3) **Group Size Risk** – Generally speaking, the fewer active members in a valuation group, the more potential for volatility in the actuarial measurements for that group. Presented below are two examples illustrating this risk:
  - a. **Payroll** – If a valuation group has a prior service cost rate and the valuation group's payroll declined by 50% from one valuation to the next (e.g., 2 active members went down to 1 active member), the valuation group's prior service cost rate could double.
  - b. **Actuarial Gains/Losses** – Actuarial gains and losses will generally be a larger percentage of the total actuarial accrued liability for a smaller valuation group than a larger valuation group. This could lead to more volatility in the computed employer contribution rate and funded percent.

## Other Observations

### General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 7.00% on the actuarial value of assets), it is expected that:

- (1) Each employer's normal cost as a percentage of pay is expected to remain level in the absence of significant changes due to hiring patterns of each employer. However, given the small number of active members in many of the participating valuation groups, the employer normal cost may change significantly from one valuation to the next.
- (2) Positive unfunded actuarial accrued liabilities for each employer are expected to be fully amortized after completion of their respective amortization periods.
- (3) In general, the funded status for each employer is expected to trend gradually towards a 100% funded ratio.

When selecting a contribution allocation procedure, the following three items should be considered, including the balance amongst the three items:

- (1) Benefit security;
- (2) Intergenerational equity; and
- (3) Contribution stability and predictability.

Generally, given the nature of public employee retirement systems (e.g., level contribution financing objective and perceived ongoing nature of the plan or plan sponsor), intergenerational equity and contribution stability and predictability have received more consideration than benefit security when contribution allocation procedures are selected. However, given the importance of benefit security to any retirement system, we suggest that contributions to the System in excess of those presented in the annual valuation reports be considered.

### Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the actuarial value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

- (1) The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.
- (2) The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).
- (3) The measurement would produce a different result if the market value of assets were used instead of the actuarial value of assets, unless the market value of assets is used in the measurement.

## **SECTION A**

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### **FINANCIAL PRINCIPLES**

## Financial Principles and Operational Techniques of LAGERS

**Promises Made, and To Be Paid For.** As each year is completed, the System in effect hands an "IOU" to each member then acquiring a year of service credit -- the "IOU" says: "The Missouri Local Government Employees Retirement System owes you one year's worth of retirement benefits, payments in cash commencing when you qualify for retirement."

The related *key financial questions* are:

**Which generation of taxpayers contributes the money to cover the IOU?**

The present taxpayers, who receive the benefit of the member's present year of service?

**Or the future taxpayers,** who happen to be in Missouri at the time the IOU becomes a cash demand?

**LAGERS intends that this year's taxpayers contribute the money to cover the IOUs being handed out this year.** By following this principle, **the employer contribution rate is expected to remain approximately level from generation to generation** -- our children and our grandchildren will contribute the same percents of pay we contribute now.

(There are Systems which have a design for deferring contributions to future taxpayers lured by a lower contribution rate now and putting aside the fact that the contribution rate must relentlessly grow much greater over decades of time -- consume now, and let your children face your **financial pollution** after you have retired.)

An inevitable by-product of the level-cost design is the accumulation of reserve assets, for decades, and the income produced when the assets are invested. **Invested assets are a by-product and not the objective.** **Investment income** becomes in effect **the third contributor** for benefits to employees and is interlocked with the contribution amounts required from employees and employers.

Translated to actuarial terminology, this level-cost objective means that the contribution rates must total at least the following:

Normal Cost (the cost of members' service being rendered this year)

... plus ...

Interest on Unfunded Actuarial Accrued Liabilities (unfunded actuarial accrued liabilities are the difference between liabilities for members' service already rendered and the accrued assets of the governmental unit in the plan).



**Computing Contributions to Support System Benefits.** From a given schedule of benefits and from the employee data and asset data furnished, the actuary determines the contribution rates to support the benefits by means of **an actuarial valuation and a funding method.**

An actuarial valuation has a number of ingredients such as: the rate of investment return which plan assets will earn; the rates of withdrawal of active members who leave covered employment before qualifying for any monthly benefit; the rates of mortality; the rates of disability; the rates of pay increases; and the assumed age or ages at actual retirement.

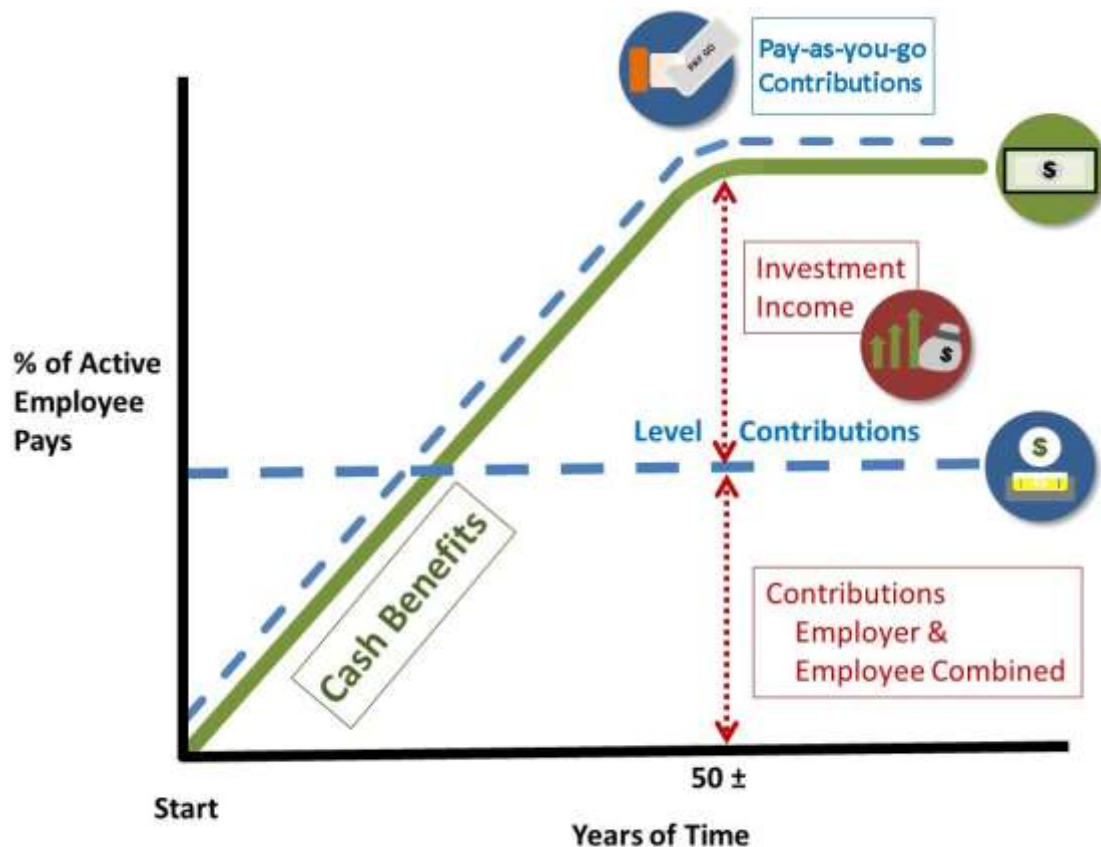
In making an actuarial valuation, the System must assume what the above experience will be for the next year and for decades in the future. Only the subsequent actual experience of the System can indicate the degree of accuracy of the assumptions.

**Reconciling Differences Between Assumed Experience and Actual Experience.** Once actual experience has occurred and been observed, it will not coincide exactly with assumed experience, regardless of the wisdom of the assumptions and regardless of the skill of the actuary and the calculations made. The future can be predicted with considerable but not complete precision, except that inflation seems to defy reliable prediction.

LAGERS copes with these continually changing differences by having **annual actuarial valuations**, separately for each participating employer group. Each annual actuarial valuation is a complete recalculation of assumed future experience, taking into account all past differences between assumed and actual experience. The result is continually changing employer contribution rates.

**Generally, the size of an annual change in an employer rate is less than one percent of payroll (up or down),** particularly for the larger groups, where activities of one or two employees have little effect on the group's status. In periods of volatile investment markets, groups with large Employer Accumulation Fund (EAF) balances may experience larger changes in computed rates.

To avoid causing employer budget problems, LAGERS provides a maximum annual increase of one percent of payroll for any one participating employer. Beginning with the February 28, 1999 valuations, the maximum allowed annual decrease in an employer contribution rate is also one percent of payroll, unless it is clear that a larger decrease will likely be long term in nature. (For example, if a change in active group size appears to not be temporary.)



**CASH BENEFITS LINE.** This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).

**LEVEL CONTRIBUTION LINE.** Determining the level contribution line requires detailed assumptions concerning a variety of experiences in future decades, including:

- **Economic Risk Areas**
  - Rates of investment return
  - Rates of pay increase
  - Changes in active member group size
- **Non-Economic Risk Areas**
  - Ages at actual retirement
  - Rates of mortality
  - Rates of withdrawal of active members (turnover)
  - Rates of disability

## Actuarial Valuation Process

The **actuarial valuation** is the mathematical process by which the contribution rate is determined, and the flow of activity constituting the valuation may be summarized as follows:

- A. **Covered people data**, furnished by plan administrator, including:
  - Retired lives now receiving benefits
  - Former employees with vested benefits not yet payable
  - Active employees
- B. + **Asset data** (cash & investments), furnished by plan administrator
- C. + **Assumptions concerning future financial experiences in various risk areas**, which assumptions are established by the Board of Trustees after consulting with the actuary
- D. + **The funding method** for determining employer contributions (the long-term, planned pattern for employer contributions)
- E. + **Mathematically combining the assumptions, the funding method, and the data**
- F. = Determination of:

***Plan financial position***

and/or ***New Employer Contribution Rate.***



## **SECTION B**

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### **VALUATION RESULTS**

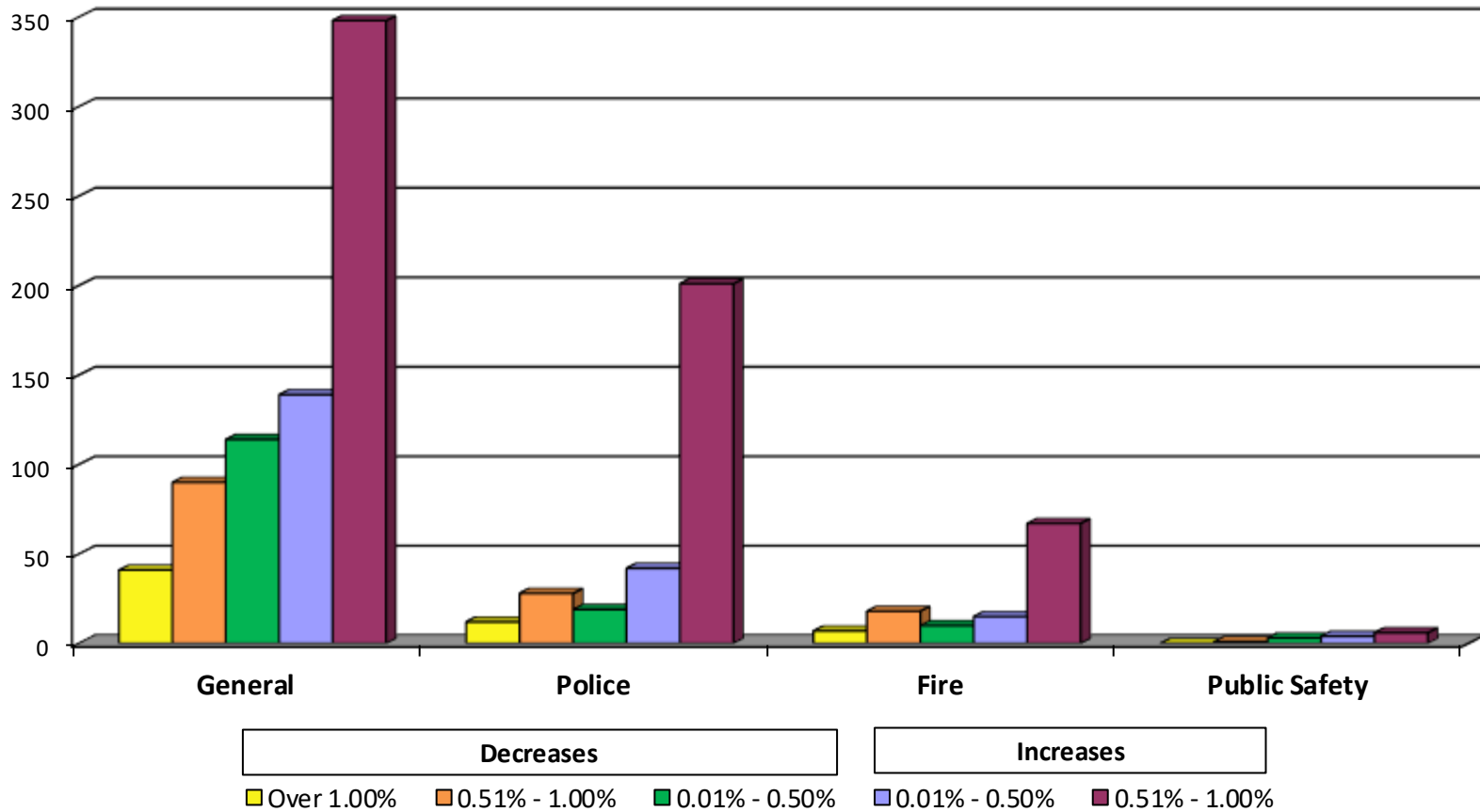
## Change in Employer Contributions\* by Valuation Groups as of February 28, 2023

Group	Number of Active Members	Number of Valuation Groups with Indicated Change in Employer Contribution Rate						Totals
		Decreases			Unchanged 0.00%	Increases		
		Over 1.00%	0.51% to 1.00%	0.01% to 0.50%		0.01% to 0.50%	0.51% to 1.00%	
General:	1 - 9	27	57	53	45	71	159	412
	10 - 49	14	25	49	22	43	122	275
	50 & up	<u>0</u>	<u>8</u>	<u>12</u>	<u>8</u>	<u>25</u>	<u>67</u>	<u>120</u>
	Totals	41	90	114	75	139	348	807
Police:	1 - 9	8	20	8	15	16	83	150
	10 - 49	4	8	10	6	25	91	144
	50 & up	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>1</u>	<u>27</u>	<u>29</u>
	Totals	12	28	19	21	42	201	323
Fire:	1 - 9	3	8	5	5	4	18	43
	10 - 49	4	9	3	5	10	42	73
	50 & up	<u>0</u>	<u>1</u>	<u>2</u>	<u>0</u>	<u>1</u>	<u>7</u>	<u>11</u>
	Totals	7	18	10	10	15	67	127
Public Safety:	1 - 9	0	0	0	1	0	5	6
	10 - 49	0	1	3	0	3	1	8
	50 & up	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>1</u>
	Totals	0	1	3	1	4	6	15
<b>Totals</b>		<b>60</b>	<b>137</b>	<b>146</b>	<b>107</b>	<b>200</b>	<b>622</b>	<b>1,272</b>

\* Includes changes in employer contribution rates due to actual experience, changes in actuarial assumptions and changes in actuarial methods. It does not include changes in employer contribution rates due to benefit program changes.

In broad terms, the smaller the group, the greater the chance of a relatively large change in employer rate from one year to the next.

## Change in Employer Contribution Rate\* by Valuation Group



\* Includes changes in employer contribution rates due to actual experience, changes in actuarial assumptions and changes in actuarial methods. It does not include changes in employer contribution rates due to benefit program changes. (LAGERS provides a maximum annual increase of one percent of payroll in the absence of benefit changes for any one participating employer.)

## Schedule of Funding Progress

Each time a new employer joins the System, or an employer adopts a higher level of benefits, unfunded actuarial accrued liabilities are created. The law governing the System requires that these additional obligations be financed systematically over a period of future years.

In an inflationary economy the value of dollars is decreasing. This environment results in employee pays increasing in dollar amounts, retirement benefits increasing in dollar amounts, and then, unfunded actuarial accrued liabilities, all at a time when the actual substance of these items may be decreasing. Looking at just the dollar amounts of unfunded actuarial accrued liabilities can be misleading. Unfunded actuarial accrued liability dollars divided by active employee payroll provides an index which helps understanding. The smaller the ratio of unfunded liabilities to active member payroll, the stronger the System.

Valuation Date	(a) Actuarial Value of Assets	(b) Entry Age Actuarial Accrued Liability	(b-a) Unfunded Accrued Liability (UAL)	(a/b) Funded Ratio	(c) Annual Payroll	[(b-a)/c] UAL as a % of Payroll
2-28-2014	\$ 5,388,198,677	\$ 5,873,910,959	\$ 485,712,282	91.7%	\$ 1,456,008,487	33.4%
2-28-2015	5,972,471,342	6,324,109,191	351,637,849	94.4	1,462,218,216	24.0
2-29-2016 #	6,320,171,438	6,671,352,337	351,180,899	94.7	1,507,588,470	23.3
2-28-2017	6,764,626,389	7,135,950,253	371,323,864	94.8	1,555,729,666	23.9
2-28-2018	7,297,699,793	7,631,702,645	334,002,852	95.6	1,616,895,524	20.7
2-28-2019	7,698,244,648	8,113,100,648	414,856,000	94.9	1,682,772,357	24.7
2-29-2020	8,083,990,980	8,630,842,143	546,851,163	93.7	1,787,038,817	30.6
2-28-2021 #	8,777,415,976	9,182,065,489	404,649,513	95.6	1,816,911,441	22.3
2-28-2022	9,571,802,740	9,921,792,457	349,989,717	96.5	1,880,488,829	18.6
2-28-2023	10,141,171,396	10,659,313,394	518,141,998	95.1	2,033,390,262	25.5

# Revised actuarial assumptions.

Each employer participating in the System is financially responsible for its own obligation. Accordingly, the aggregate numbers presented on this and the following pages are indicative only of the overall condition of the System and are not indicative of any one employer.

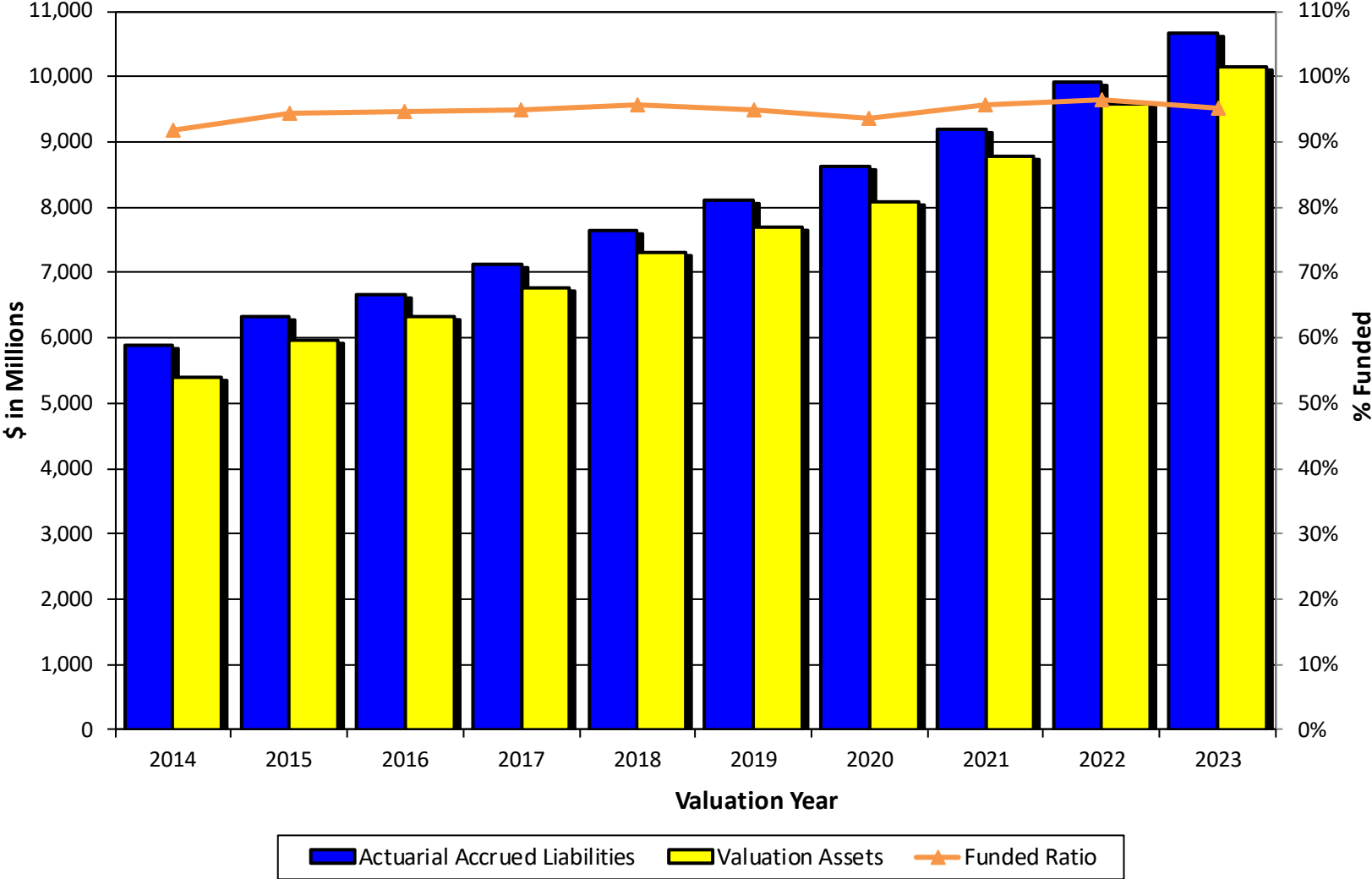
Factors that generally have a downward effect on the funded ratio include unfavorable experience and the following:

- Employers adopting new benefit programs. For example, before reflecting the benefit changes adopted by political subdivisions during the year, the February 28, 2022 and February 28, 2023 Funded Ratios would have been 97.0% (instead of 96.5%) and 95.5% (instead of 95.1%), respectively.
- New employers joining LAGERS (who at time of joining do not have assets on hand to cover actuarial accrued liabilities associated with past service). For example, before including new political subdivisions joining LAGERS during the year, the February 28, 2023 Funded Ratio would have been 95.3% (instead of 95.1%).
- The planned reduction in funding levels (through reduced employer contributions) for employers that are over 100% funded.

Factors that generally have an upward effect on the funded ratio include scheduled employer contributions for employers that are less than 100% funded and favorable experience.



## Portion of Actuarial Accrued Liabilities Covered by Valuation Assets



## Short Condition Test

The LAGERS funding objective is to meet long-term benefit promises through contributions that remain approximately level from year to year as a percent of member payroll. If the contributions to the System are level in concept and soundly executed, the System will **pay all promised benefits when due -- the ultimate test of financial soundness**. Testing for level contribution rates is the long-term test.

A short condition test is one means of checking a System's progress under its funding program. In a short condition test, the plan's present assets (cash and investments) are compared with the actuarial accrued liabilities for: (1) active member contributions on deposit; (2) future benefits to present retired lives; and (3) service already rendered by active members. In a System that has been following the discipline of level percent of payroll financing, the liabilities for active member contributions on deposit and for future benefits to present retired lives will be fully covered by present assets (except in rare circumstances). In addition, the liabilities for service already rendered by active members will be partially covered by the remainder of present assets. The larger the funded portion of liability 3, the stronger the condition of the System.

The schedule below illustrates the most recent 10-year history of the System's actuarial accrued liabilities and is indicative of the LAGERS policy of following the discipline of level percent-of-payroll financing.

### Comparative Schedule

Valuation Date	Entry Age Accrued Liability For			Actuarial Value of Assets	Portion of Accrued Liability Covered by Assets		
	(1)	(2)	(3)		(1)	(2)	(3)
	Active Member Contributions	Retirants and Beneficiaries*	Active Members (Employer Financed Portion)				
2-28-2014	\$ 129,399,490	\$ 2,401,194,322	\$ 3,343,317,147	\$ 5,388,198,677	100%	100%	85%
2-28-2015	133,985,740	2,797,401,342	3,392,722,109	5,972,471,342	100	100	90
2-29-2016 #	137,652,896	2,896,669,106	3,637,030,335	6,320,171,438	100	100	90
2-28-2017	144,754,979	3,195,680,396	3,795,514,878	6,764,626,389	100	100	90
2-28-2018	150,947,222	3,548,016,100	3,932,739,323	7,297,699,793	100	100	92
2-28-2019	162,317,487	3,840,475,375	4,110,307,786	7,698,244,648	100	100	90
2-29-2020	169,100,962	4,121,913,291	4,339,827,890	8,083,990,980	100	100	87
2-28-2021 #	175,917,043	4,615,234,881	4,390,913,565	8,777,415,976	100	100	91
2-28-2022	183,030,619	5,140,930,395	4,597,831,443	9,571,802,740	100	100	92
2-28-2023	194,809,810	5,572,532,340	4,891,971,244	10,141,171,396	100	100	89

# Revised actuarial assumptions.

\* Includes reserve for future experience.



## Employers Accumulation Fund

**The Employers Accumulation Fund** assets totaled \$4,348,793,258 as of February 28, 2023 based on the actuarial value of assets. The individual participating Employers Accumulation Fund accrued liabilities (entry age normal cost method) were computed to be \$4,866,935,256 as of that date.

Each time a new employer joins the System, or an employer adopts a higher level of benefit, unfunded accrued liabilities are created. The law governing the System requires that these additional EAF liabilities be financed systematically over a period of future years.

**Each employer is financially responsible for its own EAF liabilities.** Accordingly, the aggregate numbers presented for the Employers Accumulation Fund are indicative only of overall condition and not indicative of the status of any individual employer.

### Aggregate Accrued Liabilities and Actuarial Value of Assets Comparative Statement

Valuation Date	Actuarial Value of Assets	Aggregate Accrued Liabilities	Ratio of Assets to Liabilities*
2-28-2014	\$2,841,763,098	\$3,327,475,380	85.4%
2-28-2015	3,027,965,806	3,379,603,655	89.6
2-29-2016#	3,278,700,980	3,629,881,879	90.3
2-28-2017	3,408,020,661	3,779,344,525	90.2
2-28-2018	3,581,932,208	3,915,935,060	91.5
2-28-2019	3,676,379,143	4,091,235,143	89.9
2-29-2020	3,774,319,040	4,321,170,203	87.3
2-28-2021#	3,960,627,308	4,365,276,821	90.7
2-28-2022	4,223,392,457	4,573,382,174	92.3
2-28-2023	4,348,793,258	4,866,935,256	89.4

# Revised actuarial assumptions.

\* The larger the ratio of assets to liabilities, the greater the reserve strength of the Employers Accumulation Fund.

## Employers Accumulation Fund Portion of Liabilities Covered by Assets by Valuation Groups as of February 28, 2023

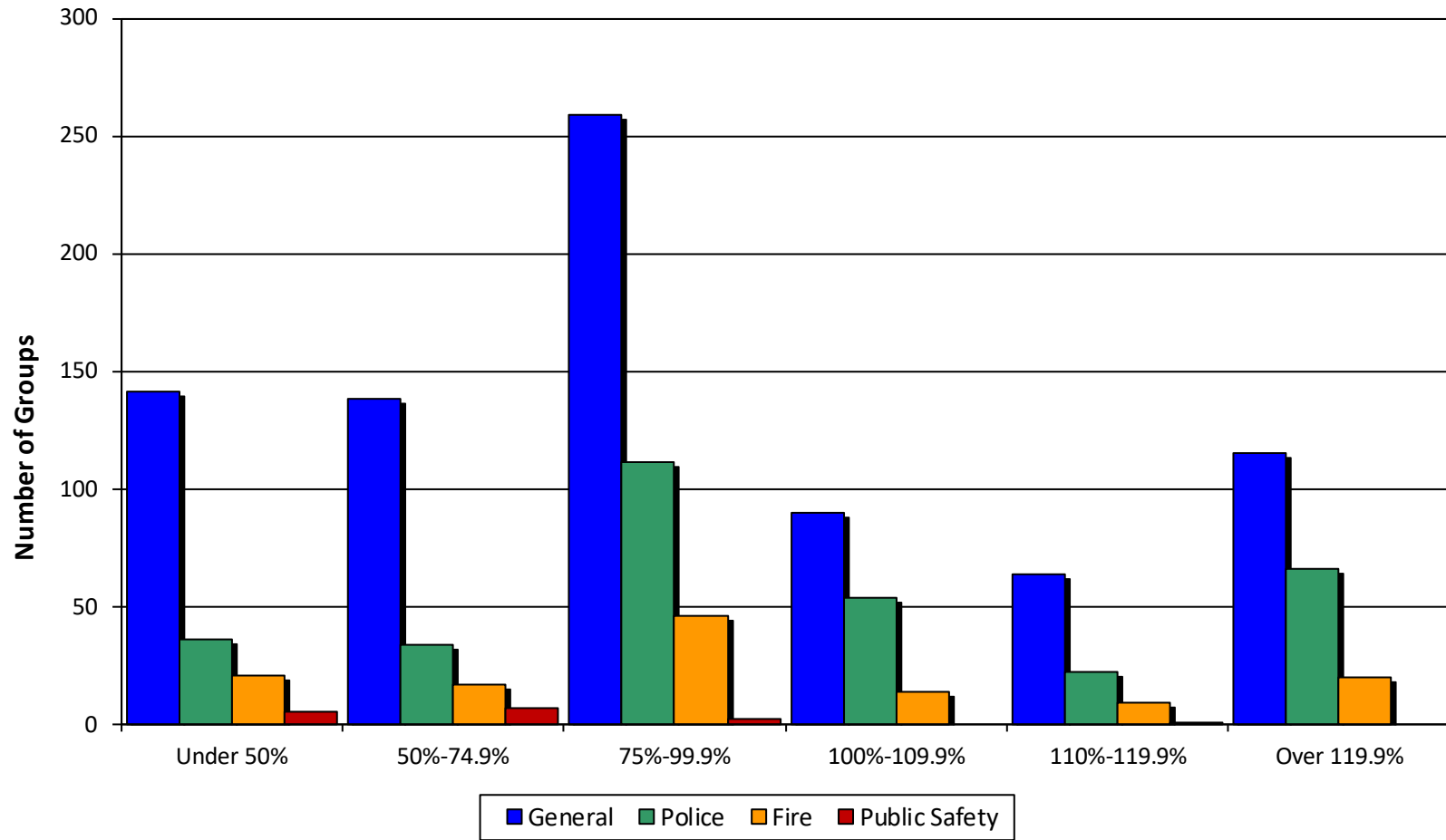
Group	Number of Active Members	Number of Valuation Groups with Assets as a Percent of Actuarial Accrued Liabilities						
		Under 50.0% #	50.0% - 74.9%	75.0% - 99.9%	100.0% - 109.9%	110.0% - 119.9%	Over 119.9%	Totals*
General:	1 - 9	115	83	102	31	18	63	412
	10 - 49	23	51	97	34	30	40	275
	50 & up	<u>3</u>	<u>4</u>	<u>60</u>	<u>25</u>	<u>16</u>	<u>12</u>	<u>120</u>
	Totals	141	138	259	90	64	115	807
Police:	1 - 9	25	17	34	19	7	48	150
	10 - 49	8	16	55	32	15	18	144
	50 & up	<u>3</u>	<u>1</u>	<u>22</u>	<u>3</u>	—	—	<u>29</u>
	Totals	36	34	111	54	22	66	323
Fire:	1 - 9	8	4	15	4	3	9	43
	10 - 49	12	10	27	8	5	11	73
	50 & up	<u>1</u>	<u>3</u>	<u>4</u>	<u>2</u>	<u>1</u>	—	<u>11</u>
	Totals	21	17	46	14	9	20	127
Public Safety:	1 - 9	3	3					6
	10 - 49	2	3	2		1		8
	50 & up	—	<u>1</u>	—	—	—	—	<u>1</u>
	Totals	5	7	2	0	1	0	15
<b>Totals*</b>		<b>203</b>	<b>196</b>	<b>418</b>	<b>158</b>	<b>96</b>	<b>201</b>	<b>1,272</b>

\* Not included in this tabulation are 81 groups which presently have no active members.

# Valuation groups included in these totals are generally from employers recently joining the System.



## Employers Accumulation Fund Portion of Liabilities Covered by Assets



## Members Deposit Fund

*The Members Deposit Fund* assets for active members totaled \$194,809,810 as of February 28, 2023. The Members Deposit Fund actuarial accrued liabilities are set equal to assets.

### Aggregate Actuarial Accrued Liabilities and Actuarial Value of Assets Comparative Statement

Valuation Date	Actuarial Value of Assets	Aggregate Accrued Liabilities	Ratio of Assets to Liabilities
2-28-2014	\$ 129,399,490	\$ 129,399,490	100.0%
2-28-2015	133,985,740	133,985,740	100.0
2-29-2016	137,652,896	137,652,896	100.0
2-28-2017	144,754,979	144,754,979	100.0
2-28-2018	150,947,222	150,947,222	100.0
2-28-2019	162,317,487	162,317,487	100.0
2-29-2020	169,100,962	169,100,962	100.0
2-28-2021	175,917,043	175,917,043	100.0
2-28-2022	183,030,619	183,030,619	100.0
2-28-2023	194,809,810	194,809,810	100.0

## Benefit Reserve Fund

*The Benefit Reserve Fund* assets as of February 28, 2023 totaled \$5,572,532,340 based on the actuarial value of assets. The present value of future benefits was computed to be \$4,721,626,315 as of that date.

When a member retires, there is transferred to the Benefit Reserve Fund a single sum reserve which is expected to cover all future pension benefits; this reserve is calculated based on assumptions about mortality and assumed annual investment return.

*Beginning in 1986*, each year LAGERS actual investment return rate is credited to the Benefit Reserve Fund. Investment return on BRF assets over an assumed rate of approximately 4.90% (1.0700 / 1.0200 - 1) provides the money from which the Board can grant benefit increases after retirement. Beginning in 1999, the investment return credit is limited if the funded ratio exceeds 140%. Beginning in 2002, the threshold was changed to 125%. Beginning in 2014, the investment return credit to the Employers Accumulation Fund is limited if the funded ratio of the benefit reserve fund is below 75%.

The most recent such benefit increase occurred October 1, 2022 and consisted of an overall increase of 4% or less.

### Actuarial Accrued Liabilities and Accrued Assets Comparative Statement

Annual Valuation Date	Pensions Being Paid	Benefit Increase % Last Oct. 1	Investment Return % Last June 30	Present Value of Future Benefits	Reserve for Future Experience	Accrued Liabilities	Actuarial Value of Assets	Ratio of Actuarial Value of Assets to PVFB
2-28-2014	\$199,601,520	4.0%	10.1%	\$2,304,570,607	\$ 96,623,715	\$2,401,194,322	\$2,401,194,322	104.2%
2-28-2015	218,892,566	4.0	14.1	2,523,309,015	274,092,327	2,797,401,342	2,797,401,342	110.9
2-29-2016 #	233,448,283	4.0	21.4	2,767,773,907	128,895,199	2,896,669,106	2,896,669,106	104.7
2-28-2017	251,511,120	4.0	(0.4)	2,981,680,216	214,000,180	3,195,680,396	3,195,680,396	107.2
2-28-2018	273,607,002	4.0	12.0	3,247,350,369	300,665,731	3,548,016,100	3,548,016,100	109.3
2-28-2019	299,644,108	4.0	12.4	3,556,662,590	283,812,785	3,840,475,375	3,840,475,375	108.0
2-29-2020	322,165,724	4.0	6.6	3,823,959,982	297,953,309	4,121,913,291	4,121,913,291	107.8
2-28-2021 #	343,884,272	4.0	1.2	3,942,806,637	672,428,244	4,615,234,881	4,615,234,881	117.1
2-28-2022	377,581,898	4.0	27.6	4,322,432,684	818,497,711	5,140,930,395	5,140,930,395	118.9
2-28-2023	413,516,133	4.0	0.1	4,721,626,315	850,906,025	5,572,532,340	5,572,532,340	118.0

# Revised actuarial assumptions.



## Casualty Reserve Fund

Beginning with the 1989 valuation, at the time a disability benefit becomes payable there is transferred from the Casualty Reserve Fund to the Benefit Reserve Fund the difference between (i) the full employer reserve covering the disability benefit and (ii) the accrued service liability of the Employer Accumulation Fund for the member who became disabled. Beginning September 2011, this procedure also occurs for duty related death-in-service cases.

Employer contributions to cover the transfers described above are determined on a pooled-group basis (not separately for each financing group). The contribution rates, varying by size of benefit formula, were last changed in 2016.

Benefit Formula	Employer Contribution Rate to the CRF		
	General/Public Safety	Police	Fire
L-1, LT-4	0.2%	0.4%	0.6%
L-3, LT-5	0.3%	0.5%	0.7%
L-7, LT-8	0.3%	0.6%	0.8%
L-9, LT-10, L-12, LT-14	0.4%	0.7%	0.9%
L-6	0.5%	0.8%	1.0%
L-11	0.6%	1.0%	1.2%

If there is a positive asset balance in the Casualty Reserve Fund at any time, it indicates that cumulative past contributions have fully funded the cumulative past obligations --- similarly, a negative balance would indicate that cumulative past contributions have fallen short of the target. For actuarial valuation purposes, actuarial accrued liabilities equal the actuarial value of assets.

### Actuarial Value of Assets at Valuation Dates Comparative Statement

Valuation Date	Employer L-1 Contributions*: Year Ended	Actuarial Value of Assets	Accrued Liabilities	Assets Expressed as Percents of Member Payroll	
				Total	Change
2-28-2014	0.2%	\$ 15,841,767	\$ 15,841,767	1.1%	-0.3%
2-28-2015	0.2	13,118,454	13,118,454	0.9	-0.2
2-29-2016	0.2	7,148,456	7,148,456	0.5	-0.4
2-28-2017 #	0.2	16,170,353	16,170,353	1.0	0.5
2-28-2018	0.2	16,804,263	16,804,263	1.0	0.0
2-28-2019	0.2	19,072,643	19,072,643	1.1	0.1
2-29-2020	0.2	18,657,687	18,657,687	1.0	-0.1
2-28-2021	0.2	25,636,744	25,636,744	1.4	0.4
2-28-2022	0.2	24,449,269	24,449,269	1.3	-0.1
2-28-2023	0.2	25,035,988	25,035,988	1.2	-0.1

# Reflects a special \$10 million transfer from the Income-Expense Fund to the Casualty Reserve Fund.

\* General group.



## **SECTION C**

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### **ASSET DATA USED IN THE VALUATIONS**

## Reported Accrued Assets Available for Benefits as of February 28, 2023

Statutory Funds	Reported Assets	Actuarial Value of Assets
Employers Accumulation Fund	\$ 4,324,839,101	\$4,348,793,258
Members Deposit Fund	194,809,810	194,809,810
Benefit Reserve Fund	5,543,153,626	5,572,532,340
Casualty Reserve Fund	24,903,997	25,035,988
<b>Total</b>	<b>\$10,087,706,534</b>	<b>\$10,141,171,396</b>

**The Actuarial Value of Assets** is based on market value, but with a 5-year smoothing of the difference between projected investment return, based on the actuarial assumptions, and actual market to market returns. The actuarial value of assets is not permitted to deviate from market value by more than 20%. The derivation of the actuarial value of assets (sometimes called the funding value of assets) is shown on pages C-3 and C-4. An actuarial value adjustment factor is applied to the reported value of assets of each employer (cost value for valuation years 2015 and prior; market value thereafter). The actuarial value adjustment factor serves two purposes:

- It incorporates the balance in the Income-Expense Fund for actuarial valuation purposes, since it is not allocated until June 30; and
- It converts the reported value of assets to the actuarial value of assets.

**The Employers Accumulation Fund** represents employer contributions accumulated for benefits to or on behalf of present active and deferred members.

**The Members Deposit Fund** represents employee contributions accumulated for (1) monthly benefits upon future retirements and (2) refunds upon termination if monthly benefits are not payable.

**The Benefit Reserve Fund** represents employer and employee reserves held for the monthly benefits being paid to present retired lives.

**The Casualty Reserve Fund** represents employer contributions accumulated for the added liability incurred when a member becomes a disability retirement.

**The Income-Expense Fund** represents investment income received less administrative expenses paid. At the end of the System's fiscal year, interest is paid to the other four Funds from this Fund. The February 28, 2023 balance in the Income-Expense Fund was used for valuation purposes.



## Investment Activities

A retirement system acquires and invests assets as the result of following the financial objective of level contribution rates. The Board of Trustees of LAGERS has the responsibility for seeing that the assets are invested effectively and within the limits imposed by law. The Board retains professional money managers to assist in the investment process, and reviews their activities throughout each year.

Presented below is a table showing investment credits to the various Funds of the System for the last 5 years.

### Rates of Investment Return Allocated to LAGERS Fund Accounts

Year Ended June 30	Investment Credits as % of Fund Balance				Inflation Loss % (CPI)
	Casualty Reserve Fund A	Members Deposit Fund B	Benefit Reserve Fund C	Employer Accumulation Fund D	
2019	7.25 %	0.5 %	6.6 %	6.8 %	1.6 %
2020	7.25	0.5	1.2	1.3	0.6
2021	7.00	0.5	27.6	28.9	5.4
2022	7.00	0.5	0.1	0.0	9.1
2023	7.00	2.0	3.6	3.6	3.0
<b>5-Year Compound Average</b>			<b>7.4 %</b>	<b>7.6 %</b>	<b>3.9 %</b>

- A. Casualty Reserve assets are for the non-accrued service portion of disability benefits to future disabled lives. The investment percent is the rate set for actuarial purposes.
- B. Member Deposit assets are the contributions of present members. The investment percent, set by the Board, affects amounts payable to members who request a refund. The percent does not affect the monthly benefit of a retiring member.
- C. Benefit Reserve assets are for benefits to present retired lives. The investment credit comes from the remainder of net investment return after crediting the Casualty Reserve assets. This revised allocation of investment credits is intended to provide the resources for additional benefit increases after retirement, and is based upon a 1986 change in the LAGERS law. Beginning in 1999, the investment credit to the Benefit Reserve Fund (BRF) is limited, if the funded ratio of the BRF exceeds 140%. Beginning in 2002, the threshold was changed to 125%. In addition, for the 2002 interest credits the BRF interest credit was further reduced to permit a 0.0% interest credit to the EAF. Beginning in 2014, the investment credit to the Employer Accumulation Fund is limited if the funded ratio of the BRF is below 75%.
- D. Employer Accumulation assets are for benefits to future retired lives including the accrued service portion of disability benefits. The investment credit is derived from the remainder of net investment return after crediting the Casualty Reserve assets, followed by a further adjustment for the investment credit to the Member Deposit assets (and beginning in 1999 for any reallocation of investment credits from the Benefit Reserve Fund). The Employer Accumulation Fund is responsible for covering liability increases resulting from inflation losses.



## Development of Actuarial Value of Retirement System Assets

Year Ending February 28:	2019	2020	2021	2022
A. Actuarial Value Beginning of Year	\$7,297,490,115	\$7,698,436,376	\$8,083,647,978	\$8,777,019,738
B. Market Value End of Year	7,749,029,831	8,137,172,285	9,246,453,190	10,456,648,587
C. Market Value Beginning of Year	7,591,902,046	7,749,029,831	8,137,172,285	9,246,453,190
D. Non-Investment/Administrative Net Cash Flow	(87,121,137)	(112,970,524)	(126,300,721)	(112,015,507)
E. Investment Income				
E1. Market Total: B-C-D	244,248,922	501,112,978	1,235,581,626	1,322,210,904
E2. Assumed Rate of Return	7.25%	7.25%	7.25%	7.00%
E3. Amount for Immediate Recognition	525,909,892	554,041,456	581,486,077	610,470,839
E4. Amount for Phased-In Recognition: E1-E3	(281,660,970)	(52,928,478)	654,095,549	711,740,065
F. Phased-In Recognition of Investment Income				
F1. Current Year: 0.20 x E4	(56,332,194)	(10,585,696)	130,819,110	142,348,013
F2. First Prior Year	90,578,486	(56,332,194)	(10,585,696)	130,819,110
F3. Second Prior Year	83,706,700	90,578,486	(56,332,194)	(10,585,696)
F4. Third Prior Year	(163,226,626)	83,706,700	90,578,486	(56,332,194)
F5. Fourth Prior Year	7,431,140	(163,226,626)	83,706,698	90,578,487
F6. Total Recognized Phase-Ins	(37,842,494)	(55,859,330)	238,186,404	296,827,720
G. <b>Actuarial Value End of Year</b>				
G1. Preliminary Actuarial Value End of Year: A+D+E3+F6	\$7,698,436,376	\$8,083,647,978	\$8,777,019,738	\$9,572,302,790
G2. Upper Corridor Limit: 120% x B	9,298,835,797	9,764,606,742	11,095,743,828	12,547,978,304
G3. Lower Corridor Limit: 80% x B	6,199,223,865	6,509,737,828	7,397,162,552	8,365,318,870
G4. Actuarial Value End of Year	\$7,698,436,376	\$8,083,647,978	\$8,777,019,738	\$9,572,302,790
H. Difference Between Market & Actuarial Value	50,593,455	53,524,307	469,433,452	884,345,797
I. Ratio of Actuarial Value to Market Value	99.3%	99.3%	94.9%	91.5%
J. Actuarial Value Adjustment Factor (ratio of actuarial value to EAF+MDF+CRF+BRF reported value)	0.9991	0.9977	1.0861	0.9368
K. Recognized Rate of Return	6.73%	6.52%	10.22%	10.40%
L. Market Rate of Return	3.24%	6.51%	15.30%	14.39%

The asset valuation method recognizes assumed investment income (line E3) fully each year. Differences between actual and expected investment income (line E4) are phased-in over a closed 5-year period. If in the future, total investment income (line E1) were always equal to assumed investment income (line E3), Actuarial Value and Market Value would be identical 4 years after the valuation date (line H).

Note: Asset values on this page differ slightly from asset values reported elsewhere in this report, due to a number of miscellaneous closing entries that are not included in the above amounts and rounding.





## Development of Actuarial Value of Retirement System Assets

Year Ending February 28:	2023	2024	2025	2026	2027
A. Actuarial Value Beginning of Year	\$9,572,302,790				
B. Market Value End of Year	10,141,460,660				
C. Market Value Beginning of Year	10,456,648,587				
D. Non-Investment/Administrative Net Cash Flow	(132,947,328)				
E. Investment Income					
E1. Market Total: B-C-D	(182,240,599)				
E2. Assumed Rate of Return	7.00%				
E3. Amount for Immediate Recognition	665,408,039				
E4. Amount for Phased-In Recognition: E1-E3	(847,648,638)				
F. Phased-In Recognition of Investment Income					
F1. Current Year: 0.20 x E4	(169,529,728)				
F2. First Prior Year	142,348,013	\$ (169,529,728)			
F3. Second Prior Year	130,819,110	142,348,013	\$ (169,529,728)		
F4. Third Prior Year	(10,585,696)	130,819,110	142,348,013	\$ (169,529,728)	
F5. Fourth Prior Year	(56,332,194)	(10,585,694)	130,819,109	142,348,013	\$ (169,529,726)
F6. Total Recognized Phase-Ins	36,719,505	93,051,701	103,637,394	(27,181,715)	(169,529,726)
G. <b>Actuarial Value End of Year</b>					
G1. Preliminary Actuarial Value End of Year: A+D+E3+F6	\$10,141,483,006				
G2. Upper Corridor Limit: 120% x B	12,169,752,792				
G3. Lower Corridor Limit: 80% x B	8,113,168,528				
G4. Actuarial Value End of Year	\$10,141,483,006				
H. Difference Between Market & Actuarial Value	(22,346)	(93,074,047)	(196,711,441)	(169,529,726)	
I. Ratio of Actuarial Value to Market Value	100.0%				
J. Actuarial Value Adjustment Factor (ratio of actuarial value to EAF+MDF+CRF+BRF reported value)	1.0053				
K. Recognized Rate of Return	7.39%				
L. Market Rate of Return	(1.75)%				

The asset valuation method recognizes assumed investment income (line E3) fully each year. Differences between actual and expected investment income (line E4) are phased-in over a closed 5-year period. If in the future, total investment income (line E1) were always equal to assumed investment income (line E3), Actuarial Value and Market Value would be identical 4 years after the valuation date (line H).

Note: Asset values on this page differ slightly from asset values reported elsewhere in this report, due to a number of miscellaneous closing entries that are not included in the above amounts and rounding.



## Summary of Current Asset Information Reported for Valuation

### Reported Assets (Including Income/Expense Fund)

Market Value - February 28, 2023	
Cash & leverage	\$(2,259,920,899)
Receivables & accruals	(4,131,241)
Stocks	3,627,602,877
Bonds & government securities	3,303,112,282
Real assets/alpha	4,577,897,654
Strategic assets	896,899,987
<b>Total Current Assets</b>	<b>\$10,141,460,660</b>

### Revenues and Expenses

Market Value	Year Ended February 28, 2022	Year Ended February 28, 2023
Balance - Beginning of year	\$ 9,246,453,189	\$ 10,456,648,587
Revenues:		
Employees' contributions	23,252,746	30,344,715
Employer contributions	276,125,685	286,038,227
Investment income	<u>1,524,307,691</u>	<u>45,763,770</u>
Total	1,823,686,122	362,146,712
Expenditures:		
Benefit payments	403,296,470	440,514,650
Refund of member contributions	2,657,284	2,626,061
Investment expenses	202,096,786	228,004,369
Administrative expenses	<u>5,440,184</u>	<u>6,189,559</u>
Total	613,490,724	677,334,639
Balance - End of Year	<u>\$ 10,456,648,587</u>	<u>\$ 10,141,460,660</u>

## SECTION D

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### GAIN/(LOSS) ANALYSIS

## Gain/(Loss) Analysis

**Purpose of Gain/(Loss) Analysis.** Regular actuarial valuations provide information about the composite change in unfunded actuarial accrued liabilities -- whether or not the liabilities are increasing or decreasing, and by how much.

However, valuations do not show the portion of the change attributable to each risk area within the Retirement System: the rate of investment income on plan assets; the rates of withdrawal of active members who leave covered employment; the rates of mortality; the rates of disability; the rates of salary increases; and the assumed ages at actual retirement. In an actuarial valuation, assumptions are made as to what these rates will be for the next year and for decades in the future.

***The objective of a gain and loss analysis is to determine the portion of the change in unfunded actuarial accrued liabilities attributable to each risk area.***

The fact that actual experience differs from assumed experience is to be expected. The future cannot be predicted with precision. Changes in the valuation assumption for a risk area should be made when the differences between assumed and actual experience have been observed to be sizable and persistent. One year's gain and loss analysis may or may not be indicative of ***long-term trends, which are the basis of financial assumptions.***

## Development of Total Gain/(Loss) March 1, 2022 to February 28, 2023

Unfunded Accrued Liabilities (UAL), March 1	\$ 349,989,717
Employer Normal Cost	200,569,477
Employer Contributions	286,038,227
Interest	21,507,874
Expected UAL Before Any Changes	286,028,841
Change from Benefit Changes Plus New Employers	58,675,292
Change from Revised Actuarial Assumptions	0
Expected UAL After All Changes	344,704,133
Actual UAL, February 28	518,141,998
<b>Gain/(Loss) for Year from Experience</b>	<b>\$(173,437,865)</b>

This schedule measures the actual gain or loss for the year after adjusting for the effect of benefit and assumption changes plus any new employers joining LAGERS during the year.

## Analysis of Changes in the BRF Reserve for Future Experience March 1, 2022 to February 28, 2023

Reserve for Future Experience, March 1	\$ 818,497,711
Investment Gain/(Loss)	20,049,629
Expected Investment Return on Reserve	57,294,840
Mortality Gain/(Loss)	30,139,201
Cost-of-Living Gain/(Loss)	(86,448,654)
Change from Revised Actuarial Assumptions	-
Other	11,373,298
Reserve for Future Experience, February 28	\$ 850,906,025

## Analysis of Financial Experience for the Year Ended February 28, 2023

### *Gains and Losses in Pension Accrued Liabilities Resulting from Differences Between Assumed Experience and Actual Experience*

Type of Activity	For Year Ended 2/28/2023	
	Gain or (Loss)	% of Liability
<b>Age &amp; Service Retirements.</b> If members retire at older ages or with lower final average pay than assumed, there is a gain. If younger ages or higher average pays, a loss.	\$ (8,411,639)	-0.08%
<b>Death-in-Service Benefits.</b> If more liabilities are released by deaths-in-service than assumed, there is a gain. If smaller releases, a loss.	674,331	0.01%
<b>Withdrawal From Employment.</b> If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	24,347,943	0.25%
<b>Disability Benefits.</b> If more liabilities are released by disabilities than assumed, there is a gain. If smaller releases, a loss.	(1,763,050)	-0.02%
<b>Pay Increases.</b> If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	(153,016,259)	-1.55%
<b>Investment Income.</b> If there is greater investment return on assets than assumed, there is a gain. If less return, a loss.	36,719,505	0.37%
<b>New Active Members.</b> Includes the hiring of existing LAGERS members by other employers ("linked" members).	(35,328,927)	-0.36%
<b>Benefit Reserve Fund.</b> The effect of the change in reserve for future experience and other retiree experience on system-wide UAAL.	(20,049,629)	-0.20%
<b>Other.</b> Miscellaneous gains and losses resulting from data adjustments, timing of financial transactions, valuation methods, etc.	(16,610,140)	-0.17%
<b>Gain or (Loss) During Year From Experience</b>	<b>\$(173,437,865)</b>	<b>-1.75%</b>



## Investment Gain/(Loss) for the Year Ended February 28, 2023

Assets, Beginning of Year	\$ 9,572,302,790
Net Cash Flow	(132,947,328)
Assumed Investment Return	665,408,039
Expected Assets End of Year	10,104,763,501
Actual Assets End of Year	10,141,483,006
<b>Gain/(Loss) for Year</b>	<b>\$ 36,719,505</b>

## Active Member Population Reconciliation March 1, 2022 to February 28, 2023

	Actual	Expected
Active Members Beginning of Year	35,029	
Plus New Hires	6,381	
Minus Retirements*	1,127	1,430.4
Minus Deaths	37	22.4
Minus Disabilities	48	56.0
Minus Other Terminations	4,507	2,349.8
<b>Active Members End of Year</b>	<b>35,691</b>	

\* Actual retirements include 136 retirees at or above the age where retirements are assumed to occur 100% of the time. Expected retirements include 521 retirees at or above the age where retirements are assumed to occur 100% of the time.



## **SECTION E**

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### **BENEFIT PROVISIONS CONSIDERED IN THE VALUATION**

# Missouri LocAI Government Employees Retirement System

## Brief Summary of LAGERS

### Benefits and Conditions Evaluated and/or Considered Through February 28, 2023 (Section References are to RSMo)

**Voluntary Retirement.** Sections 70.645 & 70.600. A member may retire with an age & service allowance after both (i) completing 5 years of credited service, and (ii) attaining the minimum service retirement age.

The minimum service retirement age is age 60 for a general employee and age 55 for a police, public safety or fire employee. Optionally, employers may also elect to provide for unreduced benefits for employees whose combination of years of age and years of service equals 80 or more.

**Final Average Salary.** Section 70.600. The average of a member's monthly compensation during the period of 60 consecutive months (or optionally, 36 consecutive months) of credited service producing the highest monthly average, which period is contained within the 120 consecutive months of credited service immediately preceding retirement.

**Age & Service Allowance.** Section 70.655. The allowance, payable monthly for life, equals a specified percent of a member's final average salary multiplied by the number of years of credited service. Each employer elects the percent applicable to its members, from the following programs:

L-1 Benefit Program:	1.00% for life
L-3 Benefit Program:	1.25% for life
L-7 Benefit Program:	1.50% for life
LT-4 Benefit Program:	1.00% for life, plus 1.00% to age 62
LT-5 Benefit Program:	1.25% for life, plus 0.75% to age 62
LT-8 Benefit Program:	1.50% for life, plus 0.50% to age 62
LT-4(65) Benefit Program:	1.00% for life, plus 1.00% to age 65
LT-5(65) Benefit Program:	1.25% for life, plus 0.75% to age 65
LT-8(65) Benefit Program:	1.50% for life, plus 0.50% to age 65
L-9 Benefit Program:	1.60% for life
LT-10(65) Benefit Program:	1.60% for life, 0.40% to age 65
L-12 Benefit Program:	1.75% for life
LT-14(65) Benefit Program:	1.75% for life, 0.25% to age 65
L-6 Benefit Program:	2.00% for life
L-11 Benefit Program:	2.50% for life

The only LT benefit programs available for adoption after August 1, 1994 are the LT(65) programs.

Benefit programs L-9 and LT-10(65) are unavailable for adoption after August 1, 2005.

Benefit program L-11 is only available to groups not covered by Social Security.

Subsequent to joining the System the governing body can elect to change benefit programs for the employees, but not more often than once every 2 years.



**Missouri Local Government Employees Retirement System**  
**Brief Summary of LAGERS**  
**Benefits and Conditions Evaluated and/or Considered**  
**Through February 28, 2023**  
**(Section References are to RSMo)**  
**(Continued)**

**Early Allowance.** Section 70.670. A member may retire with an early allowance after both (i) completing 5 years of credited service, and (ii) attaining age 55 if a general employee or age 50 if a police, public safety or fire employee.

The early allowance amount, payable monthly for life, is computed in the same manner as an age & service allowance, based upon the service and earnings record to time of early retirement, but reduced to reflect the fact that the age when payments begin is younger than the minimum service retirement age. The amount of the reduction is 1/2% of 1% (.005) for each month the age at retirement is younger than the minimum service retirement age.

**Deferred Allowance.** Section 70.675. If a member leaves LAGERS-covered employment (i) before attaining the early retirement age, and (ii) after completing 5 years of credited service, the member becomes eligible for a deferred allowance; provided the former member lives to the minimum service retirement age and does not withdraw the accumulated contributions.

The deferred allowance amount, payable monthly for life from the minimum service retirement age, is computed in the same manner as an age & service allowance, based upon the service and earnings record to time of leaving LAGERS coverage.

Deferred allowances are also payable any time after reaching the early retirement age, with the reduction for early retirement noted above.

**Non-Duty Disability Allowance.** Section 70.680. A member with 5 or more years of credited service who becomes totally and permanently disabled from other than duty-connected causes becomes eligible to receive a non-duty disability allowance computed in the same manner as an age & service allowance, based upon the service & earnings record to time of disability.

**Duty Disability Allowance.** Section 70.680. A member regardless of credited service who becomes totally and permanently disabled from duty-connected causes becomes eligible to receive a duty disability allowance computed in the same manner as an age & service allowance, based upon the earnings record to time of disability but based upon the years of credited service the member would have completed had the member continued in LAGERS-covered employment to age 60.

**Death-in-Service.** Section 70.661. Upon the death of a member who had completed 5 years of credited service, the eligible surviving dependents receive the following benefits:

- (a) The surviving spouse receives an allowance equal to the Option A allowance (joint and 75% survivor benefit) computed based upon the deceased members' service & earnings record to time of death.
- (b) When no spouse benefit is payable, the dependent children under age 18 (age 23 if they are full-time students) each receive an equal share of 60% of an age & service allowance computed based upon the deceased member's service & earnings record to time of death.



**Missouri Local Government Employees Retirement System**  
**Brief Summary of LAGERS**  
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**Through February 28, 2023**  
**(Section references are to RSMo)**  
**(Concluded)**

- (c) If the death is determined to be duty related, the 5-year service requirement is waived and the benefit is based on years of credited service the member would have completed had the member continued in LAGERS-covered employment to age 60.

***Benefit Changes After Retirement.*** Section 70.655. For retirements effective after September 28, 1975, there is an annual redetermination of monthly benefit amount, beginning the October first following 12 months of retirement. As of each October first, the amount of each eligible benefit is redetermined as follows:

- (a) Subject to the maximum in (b), the redetermined amount is the amount otherwise payable multiplied by: 100% plus up to 4%, as determined by the LAGERS Board of Trustees, for each full year of retirement.
- (b) The redetermined amount may not exceed the amount otherwise payable multiplied by the ratio of the Consumer Price Index for the immediately preceding month of June to the Consumer Price Index for the month of June immediately preceding retirement.

**Member Contributions.** Sections 70.690 & 70.705. Each member contributes a percent of compensation beginning after completion of sufficient employment for 6 months of credited service. The law governing LAGERS has a provision for the adoption of a 2%, 4% or 6% member contribution rate.

If a member leaves LAGERS-covered employment before an allowance is payable, the accumulated contributions are refunded to the member. If the member dies, his accumulated contributions are refunded to a designated beneficiary.

The law governing LAGERS also has a provision for the adoption of a 0% plan in which the full cost of LAGERS participation is paid by the employer. Adoption of the 0% plan may be done at the time of membership or a later date; however, a change in the member contribution rate may not be made more frequently than every 2 years. Under the 0% plan there is no individual account maintained for each employee and no refund of contributions if an employee terminates before being eligible for a benefit.

***Employer Contributions.*** Section 70.730. Each employer contributes the remainder amounts necessary to finance the employees' participation in LAGERS. Contributions to LAGERS are determined based upon level percent-of-payroll principles, so that contribution rates do not have to increase over decades of time.



## Benefit Programs in Effect as of February 28, 2023

**Benefit programs now available** to each employer are:

L-1, since 1967	L-6, since 1987	L-11, since 2000
L-3, since 1975	L-7, since 1988	L-12, since 2005
LT-4, since 1977	LT-8, since 1988	LT-14(65), since 2005
LT-4(65), since 1994	LT-8(65), since 1994	Non-Contributory, since 1983
LT-5, since 1977	L-9, since 1995	3-Year Final Average Salary (FAS), since 1984
LT-5(65), since 1994	LT-10(65) since 1995	Rule of 80, since 1988

The only LT benefit programs that can be adopted after August 1, 1994 are the LT(65) programs. Benefit programs L-9 and LT-10(65) are unavailable for adoption after August 1, 2005. Please see pages E-1 through E-3 for a summary of LAGERS provisions.

When the 2023 actuarial valuations were made, the Benefit Programs evaluated were as follows:

FAS	Groups	Benefit Programs																								Totals
		0% Member Contribution Rate												2% Member Contribution Rate												
		L-1	L-3	LT-4	LT-5	L-6	L-7	LT-8	L-9	LT-10	L-11	L-12	LT-14	L-1	L-3	LT-4	LT-5	L-6	L-7	LT-8	L-9	LT-10	L-11	L-12	LT-14	
5 yr.	General	33	32	1	2	47	49	6	2	2	10	2	1				1	1					1		190	
	Police	13	15	1	1	26	30	3	1		5		1					1							97	
	Fire		4			15	9	2			4						1							1	37	
	Public Safety		<u>1</u>		<u>1</u>	<u>1</u>	<u>1</u>																		<u>5</u>	
	Totals	46	52	2	4	89	89	12	3	2	19	2	1				2	2					2		329	
3 yr.	General	15	19		2	77	123	16	5	6	5	32	8		1									1	313	
	Police	4	10		2	39	21	13	3	2	1	18	4		1									1	122	
	Fire	2	4		1	16	4	9			7	7	2												53	
	Public Safety		<u>1</u>									<u>1</u>													<u>2</u>	
	Totals	21	34		5	132	148	38	8	8	13	58	14		2								2		490	
FAS	Groups	4% Member Contribution Rate												6% Member Contribution Rate												Totals
		L-1	L-3	LT-4	LT-5	L-6	L-7	LT-8	L-9	LT-10	L-11	L-12	LT-14	L-1	L-3	LT-4	LT-5	L-6	L-7	LT-8	L-9	LT-10	L-11	L-12	LT-14	
5 yr.	General	63	31	3	1	37	38	4	2			6	1					2	2					1	191	
	Police	24	13			19	16	2			1	2						1						1	79	
	Fire	4	5			14	9				1	1													34	
	Public Safety	<u>1</u>				<u>3</u>													<u>1</u>						<u>5</u>	
	Totals	92	49	3	1	73	63	6	2		2	9	1					3	3					2	309	
3 yr.	General	24	24	1		42	36	3	4	2	1	5							1						143	
	Police	12	6	1		21	11	2	2		2	2							1						60	
	Fire	1	2			9	2	1			2	1						1							19	
	Public Safety	<u>1</u>				<u>1</u>													<u>1</u>						<u>3</u>	
	Totals	38	32	2		73	49	6	6	2	5	8						1	3						225	

The above LT columns include both the LT(62) and LT(65) benefit programs. The table includes 81 groups with no active members. The table does not include 11 legacy plan groups.



## **SECTION F**

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### **PARTICIPANT DATA**

## Participating Employers Evaluated as of February 28, 2023

Type of Group	Number of Participating Employers
General Only	437
Police Only	1
Fire Only	21
Public Safety Only	7
General and Police	250
General and Fire	37
General and Public Safety	4
General, Police and Fire	68
General, Police and Public Safety	3
General, Police, Fire and Public Safety	1
<b>Total</b>	<b>829</b>

## Active and Inactive Members in Valuations as of February 28, 2023

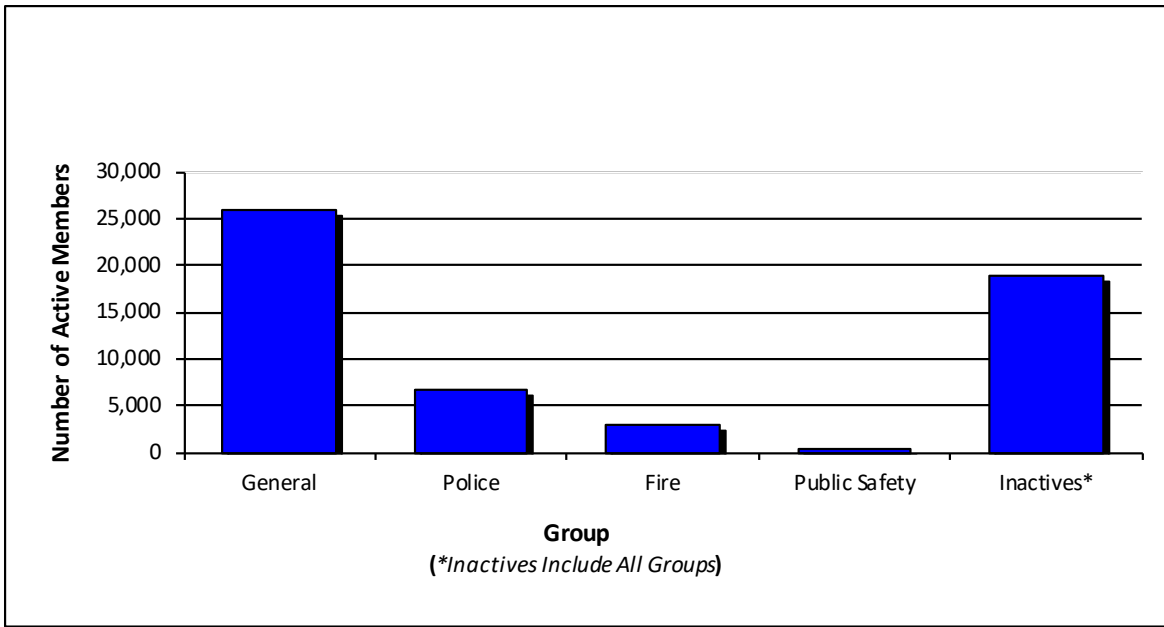
Classification	Number of		Annual Payroll
	Members	Valuation Groups*	
Active Members			
General	25,828	807	\$1,396,160,904
Police	6,696	323	425,274,205
Fire	2,906	127	195,415,238
Public Safety	<u>261</u>	<u>15</u>	<u>16,539,915</u>
Total Actives	35,691	1,272	\$2,033,390,262
Inactive Members #	<u>18,904</u>		
Total Members	54,595		

\* Each Police group, each Public Safety group and each Fire group is evaluated separately. Each General group is evaluated separately, but also may be broken into sub-groups for separate financial experience if the employer desires separate employer rates for internal accounting purposes.

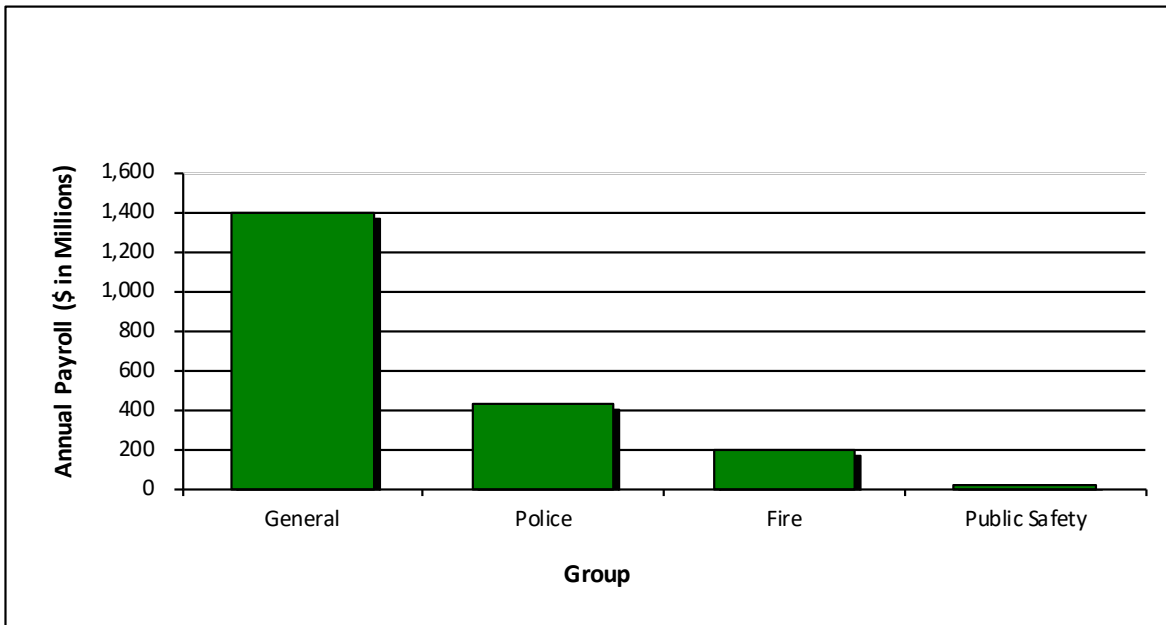
# Inactive members are individuals who terminated employment after 5 or more years of LAGERS service, with rights to a deferred benefit commencing at age 60 (age 55 for Police, Public Safety and Fire members). In addition, members who terminated with one employer and have worked or are now working for another LAGERS-covered employer are included in this number count ("linked members"). There are 13,397 linked records included in the above total.



## Active Members by Group

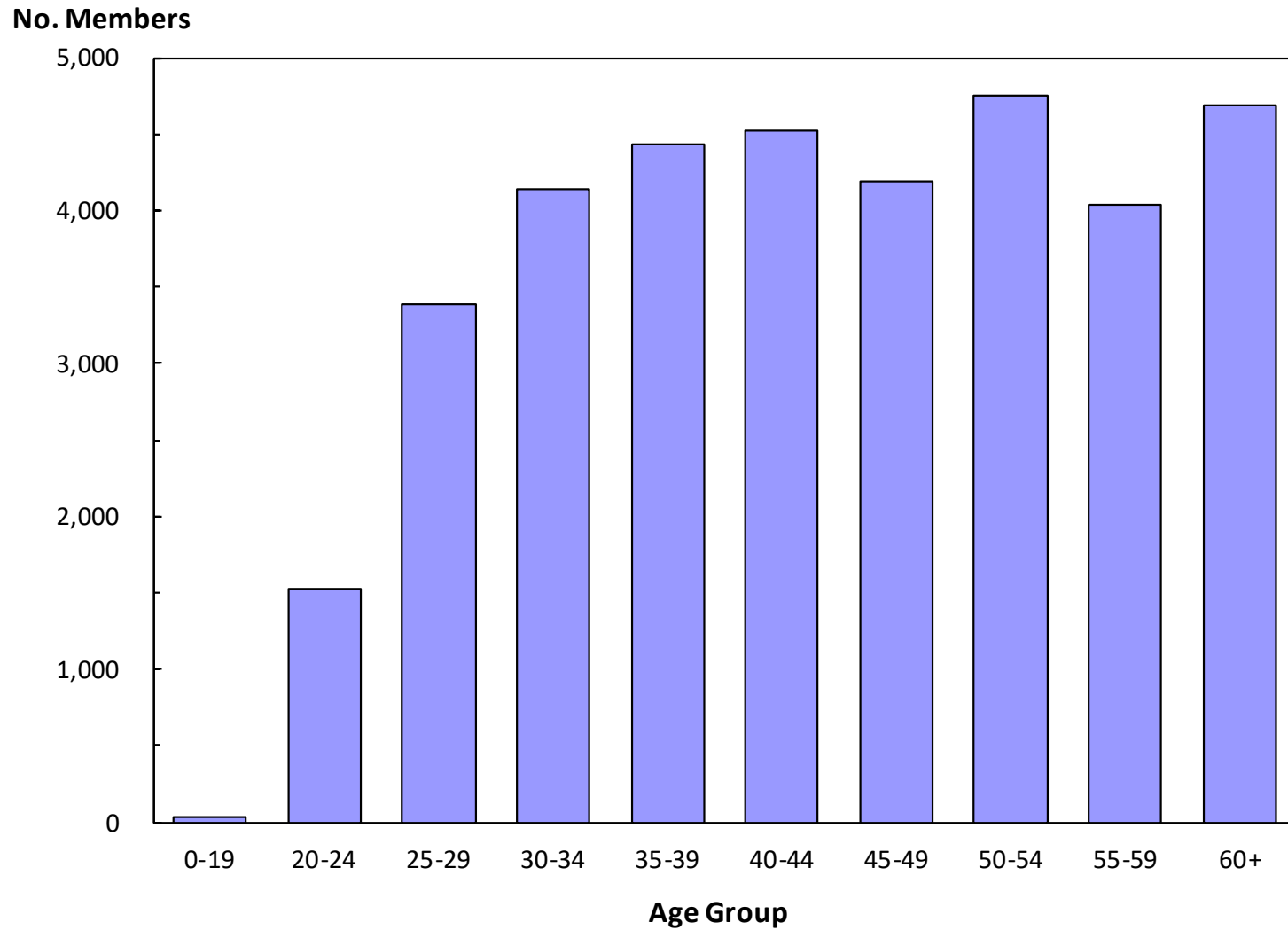


## Annual Payroll by Group

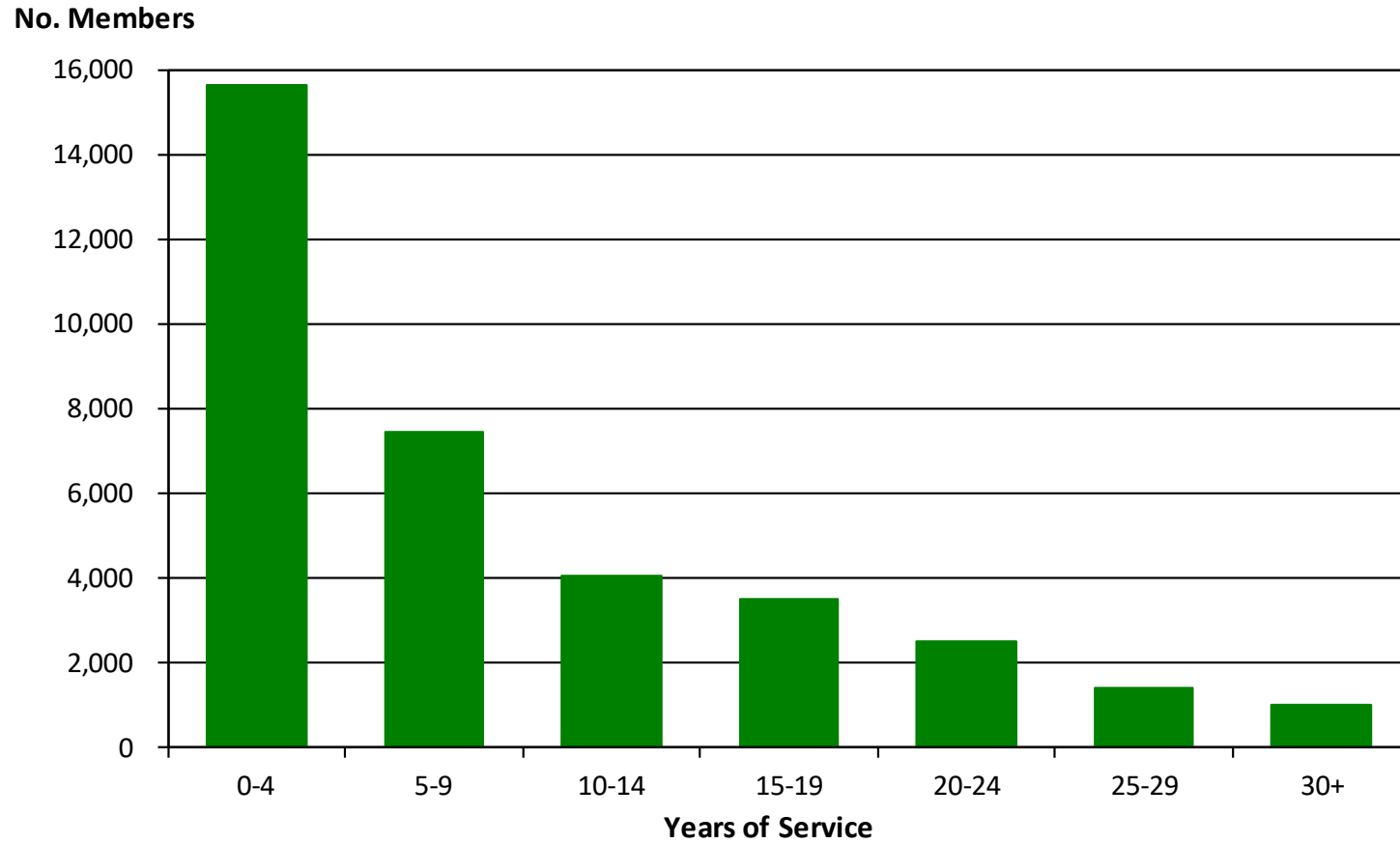




## Distribution of Active Members by Age as of February 28, 2023



## Distribution of Active Members by Service as of February 28, 2023



**General Members - Men**  
**Active as of February 28, 2023**  
**by Attained Age and Years of Service**

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	20							20	\$ 740,777
20-24	635	8						643	26,587,381
25-29	939	171	4					1,114	52,022,899
30-34	821	451	97	2				1,371	70,988,332
35-39	728	449	244	129	5			1,555	88,541,191
40-44	657	397	248	281	130	6		1,719	103,745,433
45-49	513	336	240	262	220	84	1	1,656	105,128,038
50-54	521	337	253	245	262	204	52	1,874	122,358,187
55-59	502	323	234	237	239	162	172	1,869	116,837,157
60	84	71	48	59	33	34	52	381	23,181,890
61	73	71	37	44	38	28	44	335	19,731,185
62	83	70	31	49	35	24	46	338	20,649,958
63	54	53	34	41	29	21	31	263	15,623,354
64	58	43	32	21	21	18	25	218	12,505,341
65	43	39	24	23	19	13	23	184	10,684,363
66	35	30	25	18	11	3	15	137	8,329,765
67	28	16	9	9	8	6	6	82	4,518,060
68	18	15	9	6	7	3	9	67	3,769,332
69	23	8	9	8	1	3	5	57	3,160,542
70 & Over	69	53	41	22	19	2	22	228	11,071,751
<b>Totals</b>	<b>5,904</b>	<b>2,941</b>	<b>1,619</b>	<b>1,456</b>	<b>1,077</b>	<b>611</b>	<b>503</b>	<b>14,111</b>	<b>\$820,174,936</b>

While not used in the financial computations, the following *group averages* are computed and shown because of their general interest.

Age: 45.9 years  
Benefit Service: 9.8 years  
Annual Pay: \$58,123



**General Members - Women**  
**Active as of February 28, 2023**  
**by Attained Age and Years of Service**

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	8							8	\$ 274,957
20-24	419	3						422	16,187,186
25-29	815	97	1					913	38,984,794
30-34	733	348	37	1				1,119	50,648,764
35-39	642	365	164	54	0			1,225	60,179,274
40-44	632	345	191	175	63	1		1,407	71,378,891
45-49	539	297	179	155	126	37	1	1,334	69,886,416
50-54	555	340	202	212	185	118	42	1,654	88,301,932
55-59	500	326	213	191	165	108	108	1,611	81,984,805
60	94	60	38	45	36	25	23	321	16,098,955
61	86	75	39	31	32	22	20	305	14,897,661
62	70	49	45	34	33	19	19	269	13,540,824
63	78	49	32	38	21	11	25	254	12,319,602
64	56	36	33	37	29	16	21	228	11,138,599
65	48	42	20	20	29	18	13	190	9,345,636
66	16	27	15	17	17	5	8	105	5,130,891
67	14	19	10	14	3	6	5	71	3,547,088
68	13	15	8	9	7	4	3	59	2,648,914
69	8	16	7	7	4	3	5	50	2,632,992
70 & Over	42	29	40	28	10	10	13	172	6,857,787
<b>Totals</b>	<b>5,368</b>	<b>2,538</b>	<b>1,274</b>	<b>1,068</b>	<b>760</b>	<b>403</b>	<b>306</b>	<b>11,717</b>	<b>\$575,985,968</b>

While not used in the financial computations, the following *group averages* are computed and shown because of their general interest.

Age: 46.5 years  
Benefit Service: 8.8 years  
Annual Pay: \$49,158



**Police Members**  
**Active as of February 28, 2023**  
**by Attained Age and Years of Service**

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	0							0	\$ 0
20-24	280	0						280	13,434,799
25-29	818	112	0					930	49,506,169
30-34	690	382	63	0				1,135	64,652,061
35-39	468	372	222	64	0			1,126	70,031,725
40-44	270	196	193	209	35	0		903	60,541,565
45-49	186	132	114	173	188	37	0	830	58,761,290
50-54	157	103	111	119	168	162	17	837	61,472,718
55-59	98	39	41	41	52	53	63	387	28,544,525
60	18	3	4	6	2	2	6	41	2,855,363
61	10	10	4	2	5	4	6	41	2,685,977
62	12	5	3	4	0	1	6	31	2,038,010
63	7	3	4	2	3	3	2	24	1,876,767
64	10	3	7	2	1	1	8	32	2,044,597
65	4	4	2	2	2	2	4	20	1,558,878
66	4	5	3	0	1	1	4	18	1,256,595
67	4	3	4	0	1	1	3	16	1,100,117
68	3	5	0	1	1	0	2	12	715,474
69	2	1	3	1	0	0	4	11	776,720
70 & Over	4	4	2	3	2	4	3	22	1,420,855
<b>Totals</b>	<b>3,045</b>	<b>1,382</b>	<b>780</b>	<b>629</b>	<b>461</b>	<b>271</b>	<b>128</b>	<b>6,696</b>	<b>\$425,274,205</b>

While not used in the financial computations, the following *group averages* are computed and shown because of their general interest.

Age: 40.2 years  
Benefit Service: 8.8 years  
Annual Pay: \$63,512



**Fire Members**  
**Active as of February 28, 2023**  
**by Attained Age and Years of Service**

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	4							4	\$ 131,283
20-24	158	0						158	7,327,974
25-29	320	61	0					381	19,970,261
30-34	298	146	25	0				469	26,816,437
35-39	183	155	121	40	0			499	33,044,358
40-44	111	118	117	104	14	0		464	32,610,620
45-49	62	31	58	96	68	21	0	336	26,115,913
50-54	55	25	33	78	81	67	11	350	28,863,023
55-59	22	6	14	22	27	29	34	154	12,884,098
60	4	3	0	4	1	2	4	18	1,567,776
61	1	0	3	3	4	3	5	19	1,743,821
62	2	2	2	3	3	2	3	17	1,357,651
63	1	1	0	2	0	1	5	10	817,393
64	5	0	1	0	1	0	1	8	705,434
65	0	1	2	0	0	0	1	4	392,652
66	2	0	0	1	0	1	3	7	517,533
67	0	0	0	0	0	0	1	1	115,578
68	0	0	0	1	0	0	0	1	91,941
69	0	0	0	0	0	0	0	0	0
70 & Over	0	0	1	2	0	0	3	6	341,492
<b>Totals</b>	<b>1,228</b>	<b>549</b>	<b>377</b>	<b>356</b>	<b>199</b>	<b>126</b>	<b>71</b>	<b>2,906</b>	<b>\$195,415,238</b>

While not used in the financial computations, the following **group averages** are computed and shown because of their general interest.

Age: 39.7 years  
Benefit Service: 9.5 years  
Annual Pay: \$67,245



**Public Safety Members**  
**Active as of February 28, 2023**  
**by Attained Age and Years of Service**

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	1							1	\$ 37,458
20-24	18	0						18	818,389
25-29	38	7	0					45	2,330,660
30-34	24	13	5	0				42	2,436,578
35-39	7	9	5	6	0			27	1,786,261
40-44	8	5	5	6	3	0		27	1,839,937
45-49	11	8	7	5	3	1	0	35	2,277,528
50-54	6	7	7	6	3	5	2	36	2,656,907
55-59	2	2	2	0	4	3	1	14	1,116,418
60	1	0	0	1	1	0	0	3	339,397
61	2	3	1	0	0	0	0	6	414,504
62	0	0	0	0	0	0	0	0	0
63	3	0	0	0	0	0	0	3	247,456
64	1	0	0	0	0	0	0	1	51,652
65	0	1	0	0	0	0	0	1	76,533
66	1	0	0	0	0	0	0	1	36,262
67	0	0	0	0	0	0	0	0	0
68	0	0	0	0	0	0	0	0	0
69	0	0	0	0	0	0	0	0	0
70 & Over	1	0	0	0	0	0	0	1	73,975
<b>Totals</b>	<b>124</b>	<b>55</b>	<b>32</b>	<b>24</b>	<b>14</b>	<b>9</b>	<b>3</b>	<b>261</b>	<b>\$16,539,915</b>

While not used in the financial computations, the following **group averages** are computed and shown because of their general interest.

Age: 40.0 years  
Benefit Service: 8.0 years  
Annual Pay: \$63,371



## Participating Employers and Members in Valuations 10-Year Comparative Statement

Valuation Date	Number of		Active Members				Inflation Increase % (C.P.I.)
	Participating Employers	Valuation Groups	Number	Annual Payroll	Average Pay	% Increase	
2-28-2014	654	1,055	33,205	\$1,456,008,487	\$43,849	3.2%	1.1%
2-28-2015	663	1,062	33,104	1,462,218,216	44,170	0.7	0.0
2-29-2016	667	1,067	33,335	1,507,588,470	45,225	2.4	1.0
2-28-2017	681	1,078	33,633	1,555,729,666	46,256	2.3	2.7
2-28-2018	704	1,116	34,053	1,616,895,524	47,482	2.7	2.2
2-28-2019	730	1,141	34,523	1,682,772,357	48,744	2.7	1.5
2-29-2020	789	1,207	35,248	1,787,038,817	50,699	4.0	2.3
2-28-2021	801	1,225	35,380	1,816,911,441	51,354	1.3	1.7
2-28-2022	812	1,245	35,029	1,880,488,829	53,684	4.5	7.9
2-28-2023	829	1,272	35,691	2,033,390,262	56,972	6.1	6.0
<b>10-Year Compound Average</b>						<b>3.0%</b>	<b>2.6%</b>



## Active Members in Valuations - Group Averages (Averages Not Used in Valuations; Computed and Shown Because of General Information Value)

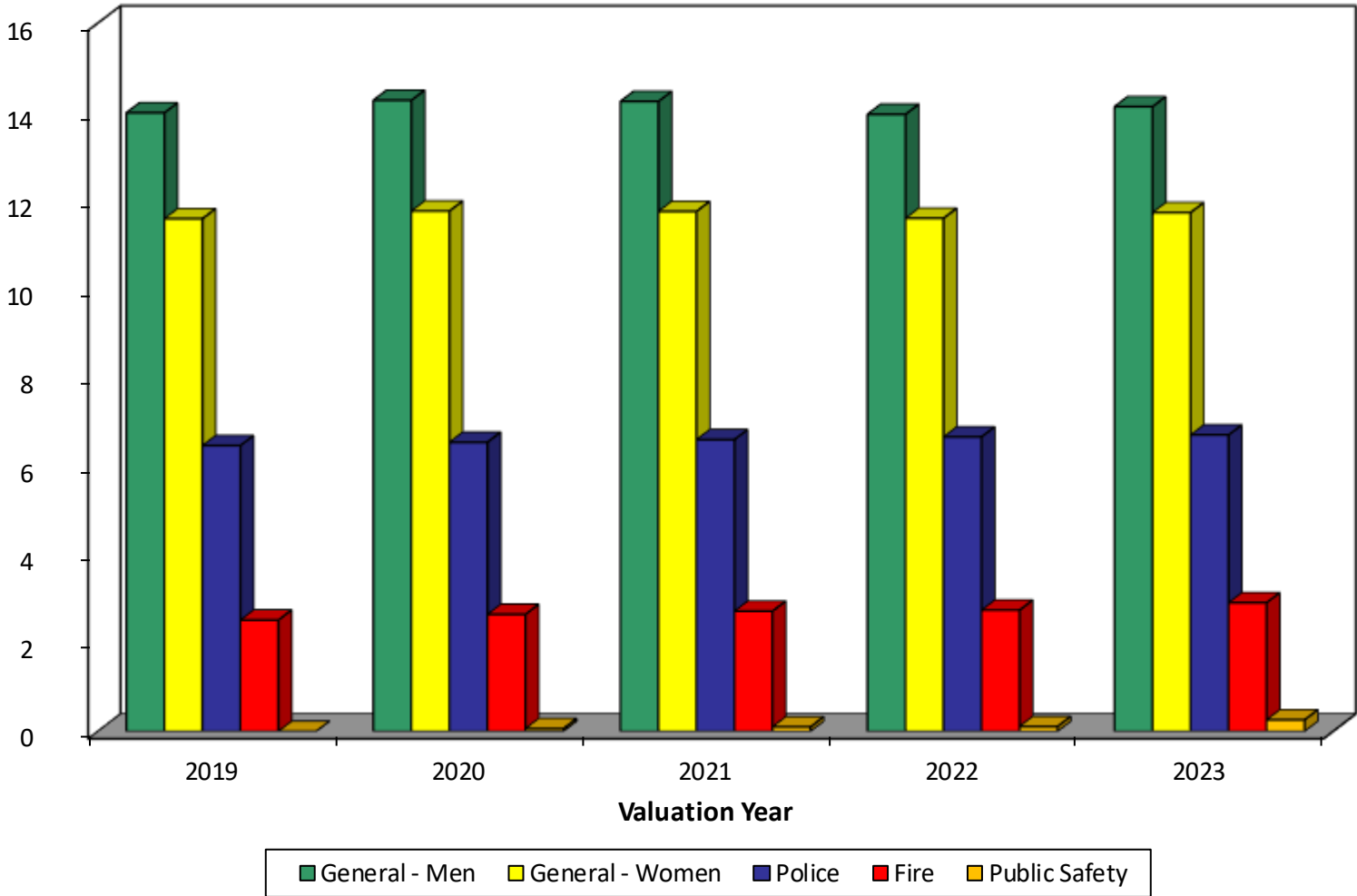
Group	Valuation at 2-28	No. of Members	----- Group Averages -----				Inflation Increase % (C.P.I.)
			(In Years)		Annual Payroll		
			Age	Service	Average	Change	
General - Men	2014	13,761	46.5	11.0	\$ 46,048	+3.4	+1.1
	2015	13,712	46.4	11.0	46,269	+0.5	+0.0
	2016	13,800	46.5	11.0	47,395	+2.4	+1.0
	2017	13,906	46.4	10.8	48,193	+1.7	+2.7
	2018	14,010	46.4	10.6	49,407	+2.5	+2.2
	2019	13,972	46.3	10.6	50,592	+2.4	+1.5
	2020	14,257	46.2	10.3	52,495	+3.8	+2.3
	2021	14,230	46.1	10.3	53,051	+1.1	+1.7
	2022	13,939	46.2	10.3	55,204	+4.1	+7.9
	2023	14,111	45.9	9.8	58,123	+5.3	+6.0
General - Women	2014	11,291	47.1	9.9	37,442	+2.8	+1.1
	2015	11,268	47.0	9.9	37,821	+1.0	+0.0
	2016	11,316	46.9	9.9	38,819	+2.6	+1.0
	2017	11,313	46.9	9.8	39,875	+2.7	+2.7
	2018	11,441	46.8	9.7	41,008	+2.8	+2.2
	2019	11,579	46.7	9.5	42,086	+2.6	+1.5
	2020	11,753	46.6	9.3	43,675	+3.8	+2.3
	2021	11,744	46.7	9.3	44,356	+1.6	+1.7
	2022	11,591	46.7	9.1	46,422	+4.7	+7.9
	2023	11,717	46.5	8.8	49,158	+5.9	+6.0

## Active Members in Valuations - Group Averages (Averages Not Used in Valuations; Computed and Shown Because of General Information Value) - Concluded

Group	Valuation at 2-28	No. of Members	----- Group Averages -----				Inflation Increase % (C.P.I.)
			(In Years)		Annual Payroll		
			Age	Service	Average	Change	
Police	2014	5,982	40.4	9.3	\$ 47,279	+3.0	+1.1
	2015	5,956	40.4	9.4	47,742	+1.0	+0.0
	2016	6,057	40.3	9.4	48,600	+1.8	+1.0
	2017	6,101	40.2	9.3	49,765	+2.4	+2.7
	2018	6,181	40.3	9.2	51,151	+2.8	+2.2
	2019	6,456	40.2	9.3	52,767	+3.2	+1.5
	2020	6,530	40.3	9.4	55,450	+5.1	+2.3
	2021	6,591	40.3	9.2	55,939	+0.9	+1.7
	2022	6,652	40.2	8.9	58,800	+5.1	+7.9
	2023	6,696	40.2	8.8	63,512	+8.0	+6.0
Fire	2014	2,171	40.8	11.2	53,782	+2.9	+1.1
	2015	2,168	40.7	11.2	54,088	+0.6	+0.0
	2016	2,162	40.8	11.2	55,456	+2.5	+1.0
	2017	2,313	40.6	10.8	56,569	+2.0	+2.7
	2018	2,421	40.2	10.4	57,563	+1.8	+2.2
	2019	2,516	40.2	10.6	58,795	+2.1	+1.5
	2020	2,645	40.1	10.3	60,706	+3.3	+2.3
	2021	2,715	40.0	10.0	61,711	+1.7	+1.7
	2022	2,739	40.0	10.1	64,423	+4.4	+7.9
	2023	2,906	39.7	9.5	67,245	+4.4	+6.0
Public Safety	2020	63	38.8	8.0	42,150	+0.0	+2.3
	2021	100	39.2	7.2	48,285	+14.6	+1.7
	2022	108	38.6	6.5	49,455	+2.4	+7.9
	2023	261	40.0	8.0	63,371	+28.1	+6.0

# Active Members by Group 2019-2023

Members (Thousands)



## Retirants and Beneficiaries Added to and Removed from Rolls 10-Year Comparative Statement

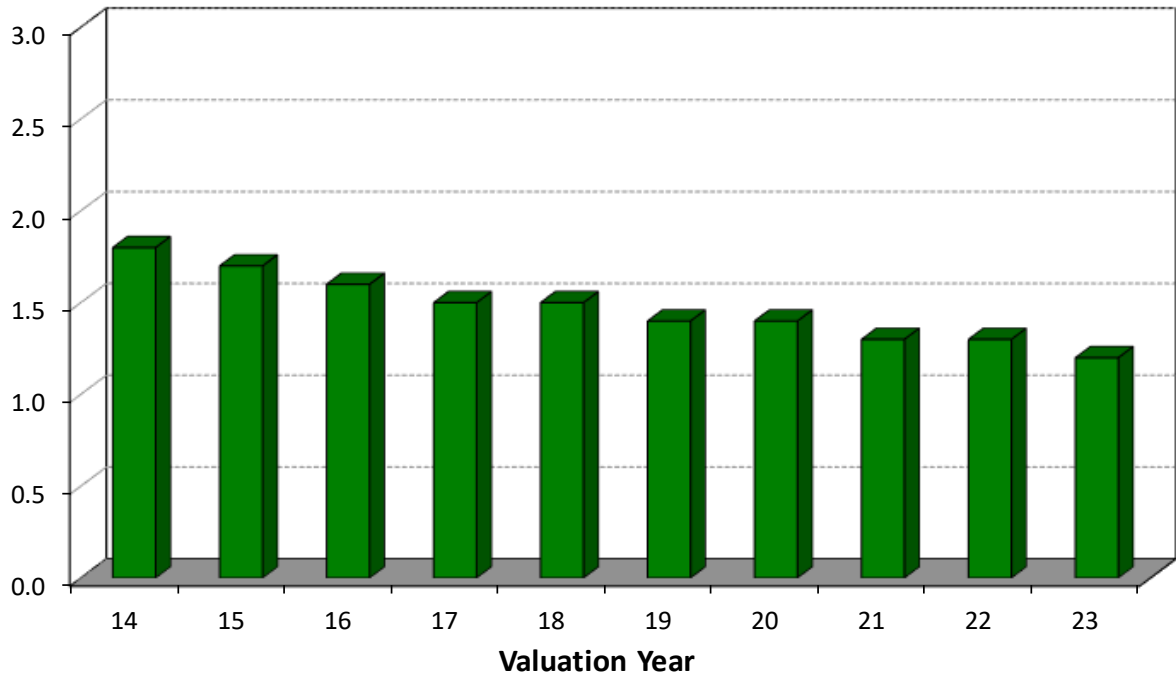
Year Ended	Added to Rolls		Removed from Rolls		Rolls End of Year		% Incr. in Annual Allowances	Average Annual Allowances	Retired Lives in Relation to Active Members	
	No.	Annual Allowances*	No.	Annual Allowances	No.	Annual Allowances			Active Members Per Benefit Recipient	Allowances as Percents of Active Payroll
2-28-2014	1,586	\$20,455,414	587	\$ 5,265,017	18,502	\$199,601,520	8.2%	\$ 10,788	1.8	13.7%
2-28-2015	1,698	25,056,006	632	5,764,961	19,568	218,892,566	9.7	11,186	1.7	15.0
2-29-2016	1,715	21,160,239	634	6,604,522	20,649	233,448,283	6.6	11,306	1.6	15.5
2-28-2017	1,817	24,889,736	686	6,826,899	21,780	251,511,120	7.7	11,548	1.5	16.2
2-28-2018	1,898	30,005,238	760	7,909,356	22,918	273,607,002	8.8	11,939	1.5	16.9
2-28-2019	1,909	33,269,236	691	7,232,130	24,136	299,644,108	9.5	12,415	1.4	17.8
2-29-2020	1,914	30,831,382	762	8,309,766	25,288	322,165,724	7.5	12,740	1.4	18.0
2-28-2021	2,105	32,183,547	972	10,464,999	26,421	343,884,272	6.7	13,016	1.3	18.9
2-28-2022	2,200	44,035,181	908	10,337,555	27,713	377,581,898	9.8	13,625	1.3	20.1
2-28-2023	2,151	46,643,689	869	10,709,454	28,995	413,516,133	9.5	14,262	1.2	20.3

\* Includes post-retirement adjustments.

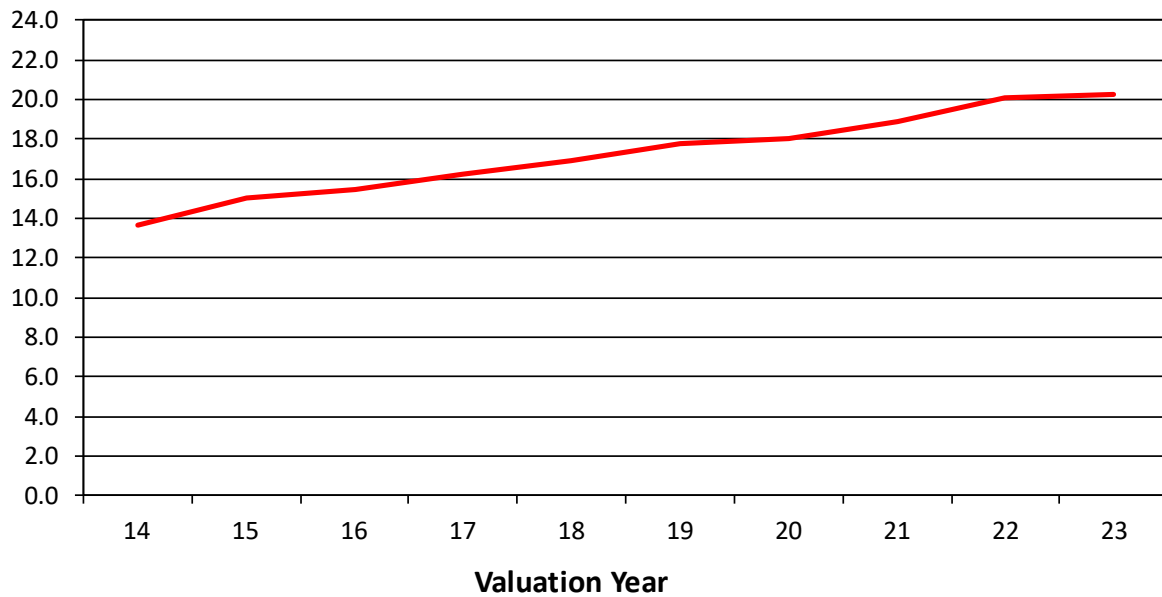


# Retirants and Beneficiaries Comparative Data

## Active Members Per Benefit Recipient



## Allowances as % of Active Pay



## Retirants and Beneficiaries on Rolls as of February 28, 2023 by Disbursing Fund and Type of Benefit Being Paid

Type of Benefit	Number#	Annual Allowances
Service Early & Deferred		
Life Option	12,783	\$177,287,561
Option A	5,113	80,366,087
Option B	3,499	71,943,285
Option C	3,016	30,570,445
Beneficiary Receiving	<u>1,903</u>	<u>17,493,439</u>
Totals	26,314	377,660,817
Duty Disability		
Life Option	467	10,897,874
Option A	150	3,025,913
Option B	104	2,429,159
Option C	<u>73</u>	<u>1,201,302</u>
Totals	794	17,554,248
Non-Duty Disability		
Life Option	379	4,437,406
Option A	193	2,145,451
Option B	89	1,224,307
Option C	<u>82</u>	<u>849,119</u>
Totals	743	8,656,283
Beneficiary Receiving	<u>286</u>	<u>2,484,594</u>
Total Disability	1,823	28,695,125
Death-In-Service		
Spouse Receiving	853	7,151,168
Children Receiving	<u>5</u>	<u>9,023</u>
Totals	858	7,160,191
<b>Totals</b>	<b>28,995</b>	<b>\$413,516,133</b>

# Legacy retirees with optional forms of payment not typical to LAGERS are included above with similar benefit types. Currently, there are seventeen service retirees with 100% Joint and Survivor included with Option A, two service retirees with 66 2/3% Joint and Survivor included with Option B and one service retiree with a 20-Year Certain Only included with Option C.

## **SECTION G**

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### **COMPUTED EMPLOYER CONTRIBUTIONS: SUMMARY OF COMPUTED INDIVIDUAL RATES**

**Computed Employer Contributions: 0% Member Contribution Rate  
by Valuation Groups as of February 28, 2023**

Group	Number of Valuation Groups				Totals
	Under 2.00%	2.00- 4.99%	5.00- 7.99%	Over 8.00%	
<b>Benefit Program L-1</b>					
General	5	5	12	22	44
Police	1	2	2	8	13
Fire	0	0	0	2	2
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	6	7	14	32	59
<b>Benefit Program L-3</b>					
General	6	5	7	29	47
Police	1	1	8	13	23
Fire	0	1	1	3	5
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>2</u>	<u>2</u>
Total	7	7	16	47	77
<b>Benefit Program LT-4(62)</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0
<b>Benefit Program LT-4(65)</b>					
General	0	0	0	1	1
Police	0	0	1	0	1
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	1	1	2
<b>Benefit Program LT-5(62)</b>					
General	1	0	0	0	1
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	1	0	0	0	1
<b>Benefit Program LT-5(65)</b>					
General	0	2	0	1	3
Police	1	0	1	1	3
Fire	1	0	0	0	1
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>1</u>
Total	2	2	1	3	8



**Computed Employer Contributions: 0% Member Contribution Rate  
by Valuation Groups as of February 28, 2023  
(Continued)**

Group	Number of Valuation Groups				Totals
	Under 2.00%	2.00- 4.99%	5.00- 7.99%	Over 8.00%	
<b>Benefit Program L-6</b>					
General	3	1	3	117	124
Police	2	0	1	62	65
Fire	0	1	1	25	27
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>1</u>
Total	5	2	5	205	217
<b>Benefit Program L-7</b>					
General	4	11	28	123	166
Police	1	5	10	30	46
Fire	0	2	1	7	10
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>1</u>
Total	5	18	39	161	223
<b>Benefit Program LT-8(62)</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0
<b>Benefit Program LT-8(65)</b>					
General	0	2	7	11	20
Police	1	0	2	12	15
Fire	1	1	1	8	11
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>1</u>
Total	2	3	10	32	47
<b>Benefit Program L-9</b>					
General	2	1	0	4	7
Police	0	1	0	2	3
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	2	2	0	6	10
<b>Benefit Program LT-10(65)</b>					
General	0	2	1	5	8
Police	1	0	0	1	2
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	1	2	1	6	10

**Computed Employer Contributions: 0% Member Contribution Rate  
by Valuation Groups as of February 28, 2023  
(Concluded)**

Group	Number of Valuation Groups				Totals
	Under 2.00%	2.00- 4.99%	5.00- 7.99%	Over 8.00%	
<b>Benefit Program L-11</b>					
General	0	0	0	5	5
Police	0	0	0	2	2
Fire	0	0	0	8	8
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	15	15
<b>Benefit Program L-12</b>					
General	2	1	4	35	42
Police	2	0	3	16	21
Fire	1	0	2	7	10
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>1</u>
Total	5	1	9	59	74
<b>Benefit Program LT-14(65)</b>					
General	0	0	1	8	9
Police	1	1	0	2	4
Fire	0	0	1	1	2
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	1	1	2	11	15
<b>Totals*</b>	<b>37</b>	<b>45</b>	<b>98</b>	<b>578</b>	<b>758</b>

\* There are forty-three 0% Member Contribution Rate groups presently without active members. They are not included in the totals.

**Computed Employer Contributions: 2% Member Contribution Rate  
by Valuation Groups as of February 28, 2023**

Group	Number of Valuation Groups				Totals
	Under 2.00%	2.00- 4.99%	5.00- 7.99%	Over 8.00%	
<b>Benefit Program L-1</b>					
General	0	1	0	0	1
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	1	0	0	1
<b>Benefit Program L-3</b>					
General	0	0	0	1	1
Police	0	0	0	1	1
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	2	2
<b>Benefit Program LT-4(62)</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0
<b>Benefit Program LT-4(65)</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0
<b>Benefit Program LT-5(62)</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0
<b>Benefit Program LT-5(65)</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0

**Computed Employer Contributions: 2% Member Contribution Rate  
by Valuation Groups as of February 28, 2023  
(Continued)**

Group	Number of Valuation Groups				Totals
	Under 2.00%	2.00- 4.99%	5.00- 7.99%	Over 8.00%	
<b>Benefit Program L-6</b>					
General	0	0	1	2	3
Police	0	0	0	2	2
Fire	0	0	0	2	2
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	1	6	7
<b>Benefit Program L-7</b>					
General	0	0	1	1	2
Police	0	1	0	1	2
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	1	1	2	4
<b>Benefit Program LT-8(62)</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0
<b>Benefit Program LT-8(65)</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0
<b>Benefit Program L-9</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0
<b>Benefit Program LT-10(65)</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0

**Computed Employer Contributions: 2% Member Contribution Rate  
by Valuation Groups as of February 28, 2023  
(Concluded)**

Group	Number of Valuation Groups				Totals
	Under 2.00%	2.00- 4.99%	5.00- 7.99%	Over 8.00%	
<b>Benefit Program L-11</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0
<b>Benefit Program L-12</b>					
General	0	0	0	2	2
Police	0	0	0	1	1
Fire	0	0	0	1	1
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	4	4
<b>Benefit Program LT-14(65)</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0
<b>Totals</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>14</b>	<b>18</b>

**Computed Employer Contributions: 4% Member Contribution Rate  
by Valuation Groups as of February 28, 2023**

Group	Number of Valuation Groups				Totals
	Under 2.00%	2.00- 4.99%	5.00- 7.99%	Over 8.00%	
<b>Benefit Program L-1</b>					
General	28	19	18	13	78
Police	12	6	6	2	26
Fire	1	2	0	2	5
Public Safety	<u>0</u>	<u>0</u>	<u>2</u>	<u>0</u>	<u>2</u>
Total	41	27	26	17	111
<b>Benefit Program L-3</b>					
General	13	12	10	19	54
Police	6	4	3	2	15
Fire	1	1	3	1	6
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	20	17	16	22	75
<b>Benefit Program LT-4(62)</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0
<b>Benefit Program LT-4(65)</b>					
General	1	1	1	1	4
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	1	1	1	1	4
<b>Benefit Program LT-5(62)</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0
<b>Benefit Program LT-5(65)</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0

**Computed Employer Contributions: 4% Member Contribution Rate  
by Valuation Groups as of February 28, 2023  
(Continued)**

Group	Number of Valuation Groups				Totals
	Under 2.00%	2.00- 4.99%	5.00- 7.99%	Over 8.00%	
<b>Benefit Program L-6</b>					
General	2	5	10	61	78
Police	6	2	4	26	38
Fire	2	1	0	17	20
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	4	<u>4</u>
Total	10	8	14	108	140
<b>Benefit Program L-7</b>					
General	12	20	19	22	73
Police	6	5	8	7	26
Fire	0	2	1	7	10
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	18	27	28	36	109
<b>Benefit Program LT-8(62)</b>					
General	1	0	0	0	1
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	1	0	0	0	1
<b>Benefit Program LT-8(65)</b>					
General	2	0	2	2	6
Police	1	1	1	0	3
Fire	0	1	0	0	1
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	3	2	3	2	10
<b>Benefit Program L-9</b>					
General	2	1	0	3	6
Police	0	1	0	0	1
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	2	2	0	3	7
<b>Benefit Program LT-10(65)</b>					
General	0	0	1	1	2
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	1	1	2

**Computed Employer Contributions: 4% Member Contribution Rate  
by Valuation Groups as of February 28, 2023  
(Concluded)**

Group	Number of Valuation Groups				Totals
	Under 2.00%	2.00- 4.99%	5.00- 7.99%	Over 8.00%	
<b>Benefit Program L-11</b>					
General	0	0	0	1	1
Police	0	0	0	3	3
Fire	0	0	0	3	3
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	7	7
<b>Benefit Program L-12</b>					
General	0	1	2	8	11
Police	0	1	2	1	4
Fire	0	0	0	2	2
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	2	4	11	17
<b>Benefit Program LT-14(65)</b>					
General	0	0	1	0	1
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	1	0	1
<b>Totals*</b>	<b>96</b>	<b>86</b>	<b>94</b>	<b>208</b>	<b>484</b>

\* There are thirty-eight 4% Member Contribution Rate groups presently without active members. They are not included in the totals.



**Computed Employer Contributions: 6% Member Contribution Rate  
by Valuation Groups as of February 28, 2023**

Group	Number of Valuation Groups				Totals
	Under 2.00%	2.00- 4.99%	5.00- 7.99%	Over 8.00%	
<b>Benefit Program L-1</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0
<b>Benefit Program L-3</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0
<b>Benefit Program LT-4(62)</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0
<b>Benefit Program LT-4(65)</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0
<b>Benefit Program LT-5(62)</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0
<b>Benefit Program LT-5(65)</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0

**Computed Employer Contributions: 6% Member Contribution Rate  
by Valuation Groups as of February 28, 2023  
(Continued)**

Group	Number of Valuation Groups				Totals
	Under 2.00%	2.00- 4.99%	5.00- 7.99%	Over 8.00%	
<b>Benefit Program L-6</b>					
General	0	0	1	1	2
Police	0	0	0	1	1
Fire	0	0	0	1	1
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	1	3	4
<b>Benefit Program L-7</b>					
General	0	1	1	1	3
Police	0	1	0	0	1
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>1</u>	<u>0</u>	<u>1</u>	<u>2</u>
Total	0	3	1	2	6
<b>Benefit Program LT-8(62)</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0
<b>Benefit Program LT-8(65)</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0
<b>Benefit Program L-9</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0
<b>Benefit Program LT-10(65)</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0

**Computed Employer Contributions: 6% Member Contribution Rate  
by Valuation Groups as of February 28, 2023  
(Concluded)**

Group	Number of Valuation Groups				Totals
	Under 2.00%	2.00- 4.99%	5.00- 7.99%	Over 8.00%	
<b>Benefit Program L-11</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0
<b>Benefit Program L-12</b>					
General	0	0	0	1	1
Police	0	0	0	1	1
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	2	2
<b>Benefit Program LT-14(65)</b>					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0
<b>Totals</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>7</b>	<b>12</b>

## SECTION H

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### LOW-DEFAULT-RISK OBLIGATION MEASURE

# Low-Default-Risk Obligation Measure

## INTRODUCTION

In December 2021, the Actuarial Standards Board (ASB) adopted a revision to Actuarial Standard of Practice (ASOP) No. 4, *Measuring Pension Obligations and Determining Pension Plan Costs or Contributions*. The revised ASOP No. 4 requires the calculation and disclosure of a liability referred to by the ASOP as the “Low-Default-Risk Obligation Measure” (LDROM). The rationale that the ASB cited for the calculation and disclosure of the LDROM was included in the Transmittal Memorandum of ASOP No. 4 and is presented below (emphasis added):

“The ASB believes that the calculation and disclosure of this measure provides **appropriate, useful information for the intended user regarding the funded status of a pension plan**. The calculation and disclosure of this additional measure is **not intended to suggest that this is the “right” liability measure** for a pension plan. However, the ASB does believe that **this additional disclosure provides a more complete assessment of a plan’s funded status and provides additional information regarding the security of benefits that members have earned as of the measurement date.**”

## COMPARING THE ACCRUED LIABILITIES AND THE LDROM

One of the fundamental financial objectives of LAGERS is to finance each member’s retirement benefits over the period from the member’s date of hire until the member’s projected date of retirement (entry age actuarial cost method) as a level percentage of payroll. To fulfill this objective, the discount rate that is used to value the accrued liabilities of LAGERS is set equal to the **expected return** on the System’s diversified portfolio of assets (referred to sometimes as the investment return assumption). For LAGERS, the investment return assumption is 7.00%.

The LDROM is meant to approximately represent the lump sum cost to a plan to purchase low-default-risk fixed income securities whose resulting cash flows essentially replicate in timing and amount the benefits earned (or the costs accrued) as of the measurement date. **The LDROM is very dependent upon market interest rates at the time of the LDROM measurement. The lower the market interest rates, the higher the LDROM, and vice versa.** The LDROM results presented in this report are based on the projected unit credit actuarial cost method and discount rates based upon the February 2023 Treasury Yield Curve Spot Rates (end of month). The 1-, 5-, 10- and 30-year rates follow: 5.02%, 3.97%, 3.61% and 3.79%.

Presented below are the actuarial accrued liability and the LDROM as of February 28, 2023 for LAGERS:

<b>Benefits Financed by Type of Fund</b>	<b>Valuation Accrued Liabilities</b>	<b>LDROM</b>
EAF and MDF	\$ 5,061,745,066	\$ 8,064,163,596
CRF*	44,714,227	99,175,286
BRF#	4,721,626,315	6,386,719,945

\* Valuation accrued liabilities represents entry age actuarial accrued liability.

# Valuation accrued liabilities excludes any reserve for future adverse experience.



# Low-Default-Risk Obligation Measure

## COMMENTARY REGARDING THE LDROM

Some ways in which the LDROM can assist the LAGERS Board of Trustees and participating employers in a decision-making process include:

- (1) It provides information to potentially allow for better risk management for LAGERS;
- (2) It places the appropriateness of potential employer contribution rate reductions or benefit enhancements in a better context.
- (3) It provides more complete information regarding the benefit security of the membership's benefits earned as of the measurement date.

Given the structure of LAGERS, bullet (2) most likely has the greatest decision useful aspect for employers. For example, given the importance of benefit security to any retirement system, an employer may wish to consider the difference between the LDROM and the valuation accrued liabilities in determining if additional contributions to LAGERS in excess of those presented in this report are reasonable.

**Potentially Allows for Better Risk Management:** Once a member retires, assets are transferred from an individual employer's EAF (and potentially the MDF and/or the CRF) to the BRF. At this point, any deviations between actual and assumed experience becomes the responsibility of all of the employers. This is one of the reasons that the Board maintains a Reserve for Future Experience for the BRF. If the BRF has a UAAL (e.g., February 28, 2009), in the absence of any investment, mortality or COLA gains, a portion of future interest credits to the EAF would need to be redirected to the BRF if the BRF's UAAL were to be financed. The LDROM and liability driven investing (LDI) are closely related concepts. One way to reduce the potential of a UAAL in the BRF is to immunize (i.e., LDI) a portion of the BRF's liability. This would require a cash flow matching method to value that portion of the BRF's liability. This means that the actuary would not use the System's investment return assumption for this portion of the liability, but the yield curve resulting from the fixed income portfolio that is being used to immunize the liability. The value of the assets (i.e., fixed income portfolio) and the value of the immunized liability would move in tandem with any changes (up or down) in future interest rates. The result being that the immunized portion of the BRF's liability would reduce the potential of producing a new UAAL in the BRF. However, the fixed income portfolio would still have the minor potential for credit default risk.

### **Places the Appropriateness of Potential Employer Contribution Rate Reductions or Benefit**

**Enhancements in a Better Context:** Many PERS have adopted a funding policy. Many funding policies already take into account the System's funded ratio (based upon the AAL) when considering whether to allow for benefit enhancements or contribution rate reductions. For example, a System may not allow for a benefit enhancement if the funded ratio does not exceed a certain threshold. Similarly, a System may not allow for an employer contribution rate reduction in some circumstances. For example, a reduction to the employer normal cost contribution may not be allowed until the System reaches a funded ratio of 120%. Given the fact that most criteria are based upon the expectation of earning the investment return assumption, a System may want to consider extending these criteria to a funded ratio based upon the LDROM in addition to the AAL.

### **Provides more Complete Information Regarding the Benefit Security of the Membership's Benefits**

**Earned as of the Measurement Date:** Too often a high funded ratio (e.g., 100% funded) on an AAL basis is interpreted as benefit security for the participants. The fact that this funded ratio is based upon an expected measure is many times overlooked. If the AAL and LDROM measures are relatively close, then the System at least has the opportunity to make benefits payable in the future more secure.



**SECTION I**

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**APPENDIX**

# Summary of Assumptions Used For LAGERS Actuarial Valuations Assumptions Adopted By LAGERS Board After Consulting With Actuary

**The actuarial assumptions used** in making the valuations are shown in this Appendix of the report. In accordance with Section 70.605, subsection 14 of the Revised Statutes of Missouri, the Board adopts the actuarial assumptions after receiving the advice of its actuary. The assumptions used in performing the valuations were adopted by the Board in conjunction with a five-year investigation for the period ending February 29, 2020. A report of this investigation was issued March 9, 2021. The actuarial assumptions represent estimates of future experience.

## ECONOMIC ASSUMPTIONS -----

**The investment return rate** used in making the valuations was 7.00% per year, compounded annually (net after investment expenses). The real rate of return is the portion of total investment return which is more than the wage inflation rate. Considering wage inflation recognition of 2.75%, the 7.00% investment return rate translates to an assumed real rate of return of 4.25%. The price inflation component of the investment return rate and the wage inflation rate is assumed to be 2.25%. Adopted 2021.

**Pay increase assumptions** for individual active members are shown for sample ages on pages I-4 and I-5. Part of the assumption for each age is for merit and/or seniority increase, and the other 2.75% recognizes wage inflation. Adopted 2021.

**The active member payroll** is assumed to increase 2.75% annually, which is the portion of the individual pay increase assumptions attributable to wage inflation. Adopted 2021.

**Post-retirement increases** are assumed to be 2.00%, compounded annually.

**The number of active members** per employer is assumed to continue at the present number. Adopted 1967.

## NON-ECONOMIC ASSUMPTIONS -----

The **healthy retiree mortality tables**, for post-retirement mortality, used in evaluating allowances to be paid were 115% of the PubG-2010 Retiree Mortality Table for males and females. The **disabled retiree mortality tables**, for post-retirement mortality, used in evaluating allowances to be paid were 115% of the PubNS-2010 Disabled Retiree Mortality Table for males and females. The **pre-retirement mortality tables** used were 75% of the PubG-2010 Employee Mortality Table for males and females of General groups and 75% of the PubS-2010 Employee Mortality Table for males and females of Police, Fire and Public Safety groups. Mortality rates for a particular calendar year are determined by applying the MP-2020 mortality improvement scale to the above described tables. Related values are shown on page I-3. Adopted 2021.

**The probabilities of age and service retirement** are shown on page I-3. Adopted 2021.

**The probabilities of withdrawal from service and death-in-service** are shown for sample ages on pages I-4 and I-5. It is assumed that all members contributing the 2% member contribution rate and terminating with less than 5 years of service, and a percentage (General and Public Safety: 40% grading to 10%, Other: 40% grading to 5%; grading from age 25 to early retirement age) of members terminating after attaining 5 or more years of service, withdraw their contributions and forfeit any vested employer-financed benefit. It is assumed that all members contributing the 4% member contribution rate and terminating with less than 5 years of service, and a percentage (General and Public Safety: 50% grading to 15%, Other: 45% grading to 10%; grading from age 25 to early retirement age) of members terminating after attaining 5 or more years of service, withdraw their contributions and forfeit any vested employer-financed benefit. It is assumed that all members contributing the 6% member





contribution rate and terminating with less than 5 years of service, and a percentage (General and Public Safety: 60% grading to 20%, Other: 50% grading to 15%; grading from age 25 to early retirement age) of members terminating after attaining 5 or more years of service, withdraw their contributions and forfeit any vested employer-financed benefit. Adopted 2021.

**An individual entry age normal cost method of valuation** was used in determining age & service allowance normal costs and the allocation of actuarial present values between service rendered before and after the valuation date. The entry age normal cost method has the following characteristics:

- (i) The annual normal costs for each individual active member, payable from the member's actual date of employment to the member's projected date of retirement are sufficient to accumulate the actuarial present value of the member's benefit at the time of retirement; and
- (ii) Each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Unfunded accrued liabilities (UAL) are amortized by level (principal & interest) percent-of-payroll contributions. Actuarial gains or losses for each employer resulting from experience prior to February 28, 2014 are amortized over various closed periods ranging from 15 to 30 years. Actuarial gains or losses for each employer resulting from experience on or after February 28, 2014 are amortized over closed 15-year periods. Benefit changes adopted by employers are amortized over a closed 20-year period. Adoption of the Non-Contributory Refund provision is amortized over a closed 15-year period. Initial unfunded accrued liabilities for new employers joining LAGERS are amortized over closed 30-year periods. If a valuation group's UAL (excluding the UAL associated with benefit changes) is negative, the valuation group's separate amortization bases (excluding the amortization bases associated with benefit changes) will be combined into one amortization base. This amortization base will be amortized over the greater of (i) the valuation group's remaining initial amortization period and (ii) 15 years. Adopted 2017.

**Contribution rates for the Casualty Reserve Fund (CRF)** are determined using a modified terminal funding method. Contribution rates are periodically adjusted based on the trend of the balance of the CRF. The funding objective of the CRF is to finance disability and death-in-service benefits not covered by the entry age normal cost financing of these benefits. The CRF is expected to represent 37% of the financing of the benefits. Adopted 2016.

**Future service credit** is always assumed to accrue at the rate of 1 year of credit every 12 calendar months. Lower service accrual rates (service breaks or less-than-full-time employment) or higher service accrual rates (addition of military credit or reinstatement of prior service) are reflected as they are reported. Any lower or higher accrual rates may result in small financial gains or losses when reported. Adopted 1967.

**The form of benefit payment** assumed in the valuation is the Life Option. However, for members with accumulated member contributions, the residual refund available upon an early death after retirement is approximated by assuming pension payments are made for at least 3 years. Adopted 1967.

**Employer contribution dollars** were assumed to be **paid in equal installments** throughout the employer fiscal year. Adopted 1967.

**The Actuarial Value of Assets** recognizes assumed investment return fully each year. Differences between actual and assumed investment return are phased-in over a closed 5-year period. The actuarial value of assets is not permitted to deviate from the market value of assets by more than 20%. Adopted 1995 and 2003, respectively.

**The data about persons now covered and about present assets** were furnished by the System's administrative staff. Although examined for general reasonableness, the data was not audited by the Actuary.

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The actuarial valuation computations were made by or under the supervision of a Member of the American Academy of Actuaries (MAAA).



## Future Life Expectancy (115% of the PubG-2010 Healthy Retiree Mortality Table)

Sample Ages	Future Life Expectancy (Years)*	
	Men	Women
50	34.17	37.11
55	29.33	32.18
60	24.67	27.37
65	20.25	22.70
70	16.08	18.24
75	12.26	14.09
80	8.92	10.38

\* Applicable to calendar year 2023. Values for future years are determined by the above rates and the MP-2020 scale.

## Percent of Eligible Active Members Retiring within the Next Year

Ages	Without Rule of 80 Eligibility				With Rule of 80 Eligibility			
	General*		Police/Public		General		Police/Public	
	Men	Women	Safety*	Fire*	Men	Women	Safety	Fire
50			2.50%	2.25%	20.0%	15.0%	25.0%	25.0%
51			2.50	2.25	20.0	15.0	25.0	20.0
52			3.00	2.25	15.0	15.0	15.0	20.0
53			3.00	2.25	15.0	15.0	15.0	20.0
54			3.50	2.25	15.0	15.0	15.0	20.0
55	3.00%	3.00%	11.0	13.0	15.0	15.0	15.0	20.0
56	3.00	3.00	11.0	13.0	15.0	15.0	15.0	20.0
57	3.00	3.00	11.0	13.0	15.0	15.0	15.0	25.0
58	3.00	3.00	11.0	13.0	15.0	15.0	15.0	25.0
59	3.00	3.00	11.0	13.0	15.0	15.0	15.0	25.0
60	10.0	10.0	11.0	15.0	15.0	15.0	15.0	35.0
61	10.0	10.0	11.0	20.0	15.0	15.0	25.0	35.0
62	25.0	15.0	22.0	20.0	25.0	15.0	20.0	45.0
63	20.0	15.0	18.0	20.0	25.0	15.0	20.0	45.0
64	20.0	15.0	18.0	20.0	25.0	20.0	20.0	45.0
65	25.0	25.0	100.0	100.0	30.0	25.0	100.0	100.0
66	25.0	30.0			30.0	25.0		
67	20.0	25.0			20.0	25.0		
68	20.0	25.0			20.0	25.0		
69	20.0	20.0			20.0	25.0		
70	100.0	100.0			100.0	100.0		

\* First 5 years of retirement pattern only apply to early retirement. Early retirement rates are also applicable if Rule of 80 is adopted.



## General/Public Safety (Excluding Death-in-Service) - Men Separations from Active Employment Before Age & Service Retirement & Individual Pay Increase Assumptions

Sample Ages	Years of Service	Percent of Active Members Separating within the Next Year			Pay Increase Assumptions for an Individual Employee		
		Death*	Disability	Other	Merit & Seniority	Base (Economy)	Increase Next Year
ALL	0			20.00%			
	1			18.00			
	2			16.00			
	3			13.00			
	4			12.00			
25	5 & Over	0.03%	0.07%	8.80	4.00%	2.75%	6.75%
30		0.04	0.10	7.10	3.20	2.75	5.95
35		0.05	0.13	5.60	2.60	2.75	5.35
40		0.07	0.18	4.10	2.10	2.75	4.85
45		0.08	0.25	3.10	1.50	2.75	4.25
50		0.11	0.37	2.40	1.10	2.75	3.85
55		0.16	0.57	1.70	0.90	2.75	3.65
60		0.25	0.86	1.10	0.70	2.75	3.45
65		0.35		0.00	0.40	2.75	3.15

\* Applicable to calendar year 2023. Rates in future years are determined by the above rates and the MP-2020 scale.

## General/Public Safety (Excluding Death-in-Service) - Women Separations from Active Employment Before Age & Service Retirement & Individual Pay Increase Assumptions

Sample Ages	Years of Service	Percent of Active Members Separating within the Next Year			Pay Increase Assumptions for an Individual Employee		
		Death*	Disability	Other	Merit & Seniority	Base (Economy)	Increase Next Year
ALL	0			23.00%			
	1			21.00			
	2			18.00			
	3			15.00			
	4			13.00			
25	5 & Over	0.01%	0.02%	12.40	4.00%	2.75%	6.75%
30		0.02	0.03	10.20	3.20	2.75	5.95
35		0.02	0.06	7.80	2.60	2.75	5.35
40		0.03	0.09	5.80	2.10	2.75	4.85
45		0.04	0.15	4.40	1.50	2.75	4.25
50		0.06	0.22	3.50	1.10	2.75	3.85
55		0.09	0.32	2.50	0.90	2.75	3.65
60		0.15	0.45	1.40	0.70	2.75	3.45
65		0.21		0.00	0.40	2.75	3.15

\* Applicable to calendar year 2023. Rates in future years are determined by the above rates and the MP-2020 scale.

The pay increase assumptions are age based only, and not service based.



## Police/Public Safety (Death-in-Service Only) Separations from Active Employment Before Age & Service Retirement & Individual Pay Increase Assumptions

Sample Ages	Years of Service	Percent of Active Members Separating within the Next Year			Pay Increase Assumptions for an Individual Employee		
		Death*	Disability	Other	Merit & Seniority	Base (Economy)	Increase Next Year
ALL	0			18.00%			
	1			17.00			
	2			16.00			
	3			14.00			
	4			13.00			
25	5 & Over	0.03%	0.10%	10.80	3.80%	2.75%	6.55%
30		0.04	0.11	8.50	3.00	2.75	5.75
35		0.05	0.16	6.30	2.50	2.75	5.25
40		0.06	0.22	4.60	2.00	2.75	4.75
45		0.07	0.34	3.40	1.50	2.75	4.25
50		0.08	0.53	2.10	1.10	2.75	3.85
55		0.13	0.88	1.10	0.90	2.75	3.65

\* Male rates applicable to calendar year 2023. Rates in future years are determined by the above rates and the MP-2020 scale.

## Fire Separations from Active Employment Before Age & Service Retirement & Individual Pay Increase Assumptions

Sample Ages	Years of Service	Percent of Active Members Separating within the Next Year			Pay Increase Assumptions for an Individual Employee		
		Death*	Disability	Other	Merit & Seniority	Base (Economy)	Increase Next Year
ALL	0			12.00%			
	1			10.00			
	2			8.00			
	3			8.00			
	4			7.00			
25	5 & Over	0.03%	0.07%	6.00	4.40%	2.75%	7.15%
30		0.04	0.11	4.50	3.30	2.75	6.05
35		0.05	0.25	3.20	2.40	2.75	5.15
40		0.06	0.39	2.40	1.70	2.75	4.45
45		0.07	0.62	1.90	1.30	2.75	4.05
50		0.08	0.95	1.30	1.10	2.75	3.85
55		0.13	1.46	0.70	0.70	2.75	3.45

\* Male rates applicable to calendar year 2023. Rates in future years are determined by the above rates and the MP-2020 scale.

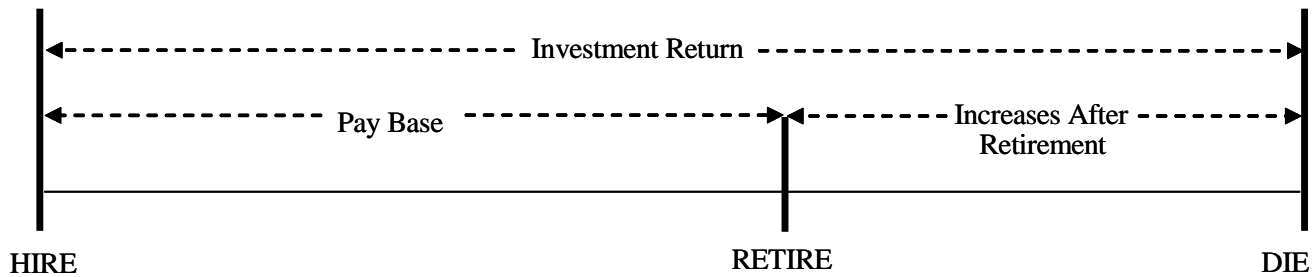
The pay increase assumptions are age based only, and not service based. It was assumed the 25% of General and Public Safety members, 60% of Police members and 75% of Fire members becoming disabled were duty related.



## Miscellaneous and Technical Assumptions

<b>Benefit Service</b>	Exact fractional service on the decrement date is used to determine the amount of benefit payable.
<b>Decrement Operation</b>	The mortality and disability decrements do not operate during the first 5 years of service. The withdrawal decrement does not operate during retirement eligibility. The disability decrement does not operate during normal retirement eligibility.
<b>Decrement Relativity</b>	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
<b>Decrement Timing</b>	Decrements of all types are assumed to occur mid-year.
<b>Deferred Members' Retirement Age</b>	It was assumed that deferred members would retire at the later of age 60 (55 for police, public safety or fire) or their attained age.
<b>Eligibility Testing</b>	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
<b>Expenses</b>	Assumed investment return is net of investment expenses. Assumed administrative expenses are added to the Normal Cost and were 0.4% of payroll.
<b>Incidence of Contributions</b>	Contributions are assumed to be received continuously throughout the employer's applicable fiscal year based upon the computed percent of payroll shown in each employer's individual report, and the actual payroll payable at the time contributions are made.
<b>Marriage Assumption</b>	90% of male and 90% of female participants are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses for active member valuation purposes.
<b>Pay Increase Timing</b>	Beginning of year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
<b>Post-Retirement Increases</b>	Assumed to be 2.00%, compounded annually.

# Relationship of Economic Assumptions in Computing Contributions to a Retirement System



## Investment Return

An increase in this assumption reduces computed contributions. The assumption operates over all parts of an employee's lifetime.

## Pay Base

An increase in this assumption increases computed contributions. However, a 1% increase in this assumption, coupled with a 1% increase in Investment Return reduces computed contributions. This is because the Pay Base assumption operates only over an employee's working lifetime, while the Investment Return assumption operates over the employee's entire lifetime.

## Increases After Retirement

An increase in this element increases computed contributions.

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If Investment Return, Pay Base, and Increases After Retirement are each increased by equal amounts, computed contributions remain the same (except in plans using Final Average Pay as a factor in computing benefits; the multi-year average used for Final Average Pay causes computed contributions to decrease slightly).

If Investment Return and Pay Base are increased by equal amounts, with no change in Increases After Retirement, computed contributions decrease – sometimes significantly. The decreases represent the projected devaluation of an employee's benefits following retirement.

# Investment Return and Inflation: Past and Future

## Inflation Distortions

Inflation's impact on investment return is not uniform from year to year. A common expectation for real investment return (which is the portion of total return remaining after price inflation) is in the area of 3% to 5% annually.

## Historical Economic Data

Over the last 30 years, for the sample funds A, B, and C that are listed below, real return on average has exceeded the 3% to 5% range. However, for parts of this period, real return was actually negative. It is difficult to maintain a long-term portfolio allocation during periods of negative real return.

### Annual Investment Return % (including Income) expressed as Real Return (Remainder after Price Inflation)

No. Years Ended December	Inflation (CPI)	Cash Equiv. (T-Bills)	Bonds (Long Term)		Stocks (S & P 500)	Real Return for Sample Fund		
			US Treasury	Corporate (VCLT)		A	B	C
1/2018	1.9	(0.1)	(3.4)	(8.9)	(6.3)	(5.6)	(5.6)	(5.8)
1/2019	2.3	(0.2)	12.0	21.6	29.2	18.8	21.3	23.4
1/2020	1.4	(0.9)	16.2	11.9	17.0	13.4	14.0	14.4
1/2021	7.0	(7.0)	(12.0)	(8.7)	21.7	(0.4)	6.0	10.9
1/2022	6.5	(5.0)	(35.9)	(32.0)	(24.6)	(28.2)	(26.4)	(24.9)
5/1990	4.1	2.6	6.4	6.1	8.6	6.7	7.2	7.6
5/1995	2.8	1.5	10.0	9.1	13.4	10.0	10.8	11.3
5/2000	2.5	2.6	4.9	3.2	15.4	7.7	10.0	11.7
5/2005	2.5	(0.4)	5.1	6.6	(2.0)	3.4	2.0	0.7
5/2010	2.2	0.0	3.3	3.6	0.1	3.1	2.6	2.0
5/2015	1.5	(1.5)	6.0	4.8	11.1	6.8	8.0	8.7
5/2020	1.9	(0.8)	5.9	8.1	13.3	8.2	9.5	10.5
5/2022	3.8	(2.6)	(6.1)	(4.7)	5.6	(1.6)	0.7	2.3
<b>30/2022</b>	<b>2.5</b>	<b>(0.3)</b>	<b>3.3</b>	<b>3.6</b>	<b>7.1</b>	<b>4.7</b>	<b>5.5</b>	<b>6.0</b>

### Sample Funds (only three of many reasonable samples)

	A	B	C
Cash Equiv.: T-Bills	10 %	10 %	10 %
Bonds: US Treasury	30	20	10
Bonds: Corporate	30	20	15
Stock	30	50	65

For many pension plans, benefit increases after retirement have fallen short of keeping up with inflation. The retired life group has been affected more than the active life group. The investment return that would be necessary for the indexing of benefits with inflation after retirement probably cannot be realized during periods of high inflation.

## Forward-Looking Economic Data

The assumed rate of price inflation should not give undue weight to recent experience. Some historical economic data may not be appropriate for use in developing assumptions for future periods due to changes in the underlying economic environment. Professional forecasters, economists, and investors are reliable sources to guide in the selection and evaluation of expected future price inflation rates.



## Investment Return and Inflation: Past and Future - Concluded

The Survey of Professional Forecasters, which is maintained by the Federal Reserve Bank of Philadelphia, is the longest running quarterly survey of macroeconomic forecasts in the U.S. Over 50 forecasters from industry, government, banking, and academics are included in this Survey. With respect to price inflation, their median projections are published quarterly for the annual-average Headline CPI over the next 10 years. Headline CPI is the total CPI, as opposed to Core CPI, which excludes food and energy prices. The following table presents the Survey's quarterly projections through the first quarter of 2023.

**Quarterly Median Projections of the 10-Year Annual-Average Headline CPI-U Inflation (Philadelphia Federal Reserve)**

2020-2	2020-3	2020-4	2021-1	2021-2	2021-3	2021-4	2022-1	2022-2	2022-3	2022-4	2023-1
2.14%	2.03%	2.12%	2.20%	2.30%	2.44%	2.55%	2.50%	2.80%	2.80%	2.95%	2.37%

Source: Federal Reserve Bank of Philadelphia – Survey of Professional Forecasters Quarterly (Median\_CPI10\_Level.xlsx)

The Congressional Budget Office (CBO) regularly publishes its Budget and Economic Outlook. This report includes a forecast of annual CPI-U (All Urban Consumers). The following table presents the CBO's forecast for calendar years 2022 – 2032, as published in its report dated May, 2022.

**Consumer Price Index Forecast (CBO)**

2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Compound Average
4.70%	2.70%	2.30%	2.30%	2.30%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.61%

Source: Congressional Budget Office – The Budget and Economic Outlook: 2022 to 2032, Table 2-1 (p. 23)

The Trustees of the Social Security system prepare and publish an annual report. Social Security's economists develop a forecast of future CPI-W (for Urban Wage Earners and Clerical Workers). The following table presents their forecasts in the 2022 annual report.

**Social Security Trustees' Ultimate CPI-W Assumption for 2026 and later**

Low-cost	3.00%
Intermediate	2.40%
High-cost	1.80%

Source: 2022 Social Security Trustees' Report (p. 10)

Another source of information about future price inflation is the market for U.S. Treasury bonds. Comparing spreads between nominal and inflation-indexed treasury securities (TIPS) provides an estimate of the bond market's expectation of inflation over the next decade or more. However, this analysis ignores the inflation risk premium that buyers of U.S. Treasury bonds often demand, and it ignores the differences in liquidity between U.S. Treasury bonds and TIPS.

**Treasury Constant Maturities (2022 Annual Yields)**

Term	Nominal	Inflation-Indexed	Implied Inflation
10-year	2.95%	0.43%	2.52%
20-year	3.30%	0.64%	2.66%
30-year	3.11%	0.76%	2.35%

Source: Board of Governors of the Federal Reserve System, H.15 Selected Interest Rates for April 21, 2023





## LAGERS Retainer Actuarial Fees 10-Year Comparative Statement

Valuation Date as of	Number of Valuation Groups	Annual Actuarial Fees (Nearest \$1)	Consumer Price Index (1967 is 100)	Average Fee per Group	
				Unadjusted Dollars	1967* Dollars
2-28-2014	1,055	\$297,900	703.300	\$282	\$40
2-28-2015	1,062	296,000	703.122	279	40
2-29-2016	1,067	305,000	710.278	286	40
2-28-2017	1,078	314,000	729.727	291	40
2-28-2018	1,116	323,000	745.866	289	39
2-28-2019	1,141	332,000	757.204	291	38
2-29-2020	1,207	341,000	774.886	283	37
2-28-2021	1,225	350,000	787.872	286	36
2-28-2022	1,245	359,000	849.887	288	34
2-28-2023	1,272	368,000	901.182	289	32

\* A goal for LAGERS during the initial design activity in 1966 and 1967 was that the actuarial retainer fee be approximately \$100 annually per valuation group - - - an amount substantially less than the amount the municipality would pay if it arranged independently for an actuarial valuation of comparable quality.





September 13, 2023

Mr. Bill Betts  
Executive Director  
Missouri Local Government  
Employees Retirement System  
701 West Main Street  
Jefferson City, Missouri 65102

Dear Mr. Betts:

Please find enclosed 15 copies of the ***Compiled Report of the February 28, 2023 annual actuarial valuations*** for the participating employers of the Missouri Local Government Employees Retirement System.

Sincerely,  
Gabriel, Roeder, Smith & Company

A handwritten signature in black ink that reads "Mita Drazilov". The signature is written in a cursive, flowing style.

Mita D. Drazilov, ASA, FCA, MAAA

MDD:rmg:mdd  
Enclosures

cc: Kimberly Skarda, Williams-Keepers, LLC