

# City of Orlando Police Officers' Pension Fund

**Actuarial Valuation and Review as of October 1, 2023**



This report has been prepared at the request of the Board of Trustees to assist in administering the Fund. This valuation report may not otherwise be copied or reproduced in any form without the consent of the Board of Trustees and may only be provided to other parties in its entirety, unless expressly authorized by Segal. The measurements shown in this actuarial valuation may not be applicable for other purposes.

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**Segal**



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April 18, 2024

Board of Trustees  
City of Orlando Police Officers' Pension Fund  
Orlando, FL

Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of October 1, 2023. The census information on which our calculations were based was prepared by the City's Employee Benefits Department and the financial information was provided by the City's Office of Business and Financial Services. That assistance is gratefully acknowledged .

Statement by Enrolled Actuary: This actuarial valuation and/or cost determination was prepared and completed by me, or under my direct supervision, and I acknowledge responsibility for the results. To the best of my knowledge, the results are complete and accurate, and in my opinion, the techniques and assumptions used are reasonable and meet the requirements and intent of part VII, Chapter 112, Florida Statutes. There is no benefit or expense to be provided by the plan and/or paid from the plan's assets for which liabilities or current costs have not been established or otherwise taken into account in the valuation. All known events or trends which may require a material increase in plan costs or required contribution rates have been taken into account in the valuation.

Segal does not audit the data provided. The accuracy and comprehensiveness of the data is the responsibility of those supplying the data. To the extent we can, however, Segal does review the data for reasonableness and consistency. Based on our review of the data, we have no reason to doubt the substantial accuracy of the information on which we have based this report and we have no reason to believe there are facts or circumstances that would affect the validity of these results.

The measurements shown in this actuarial valuation may not be applicable for other purposes. 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; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law.

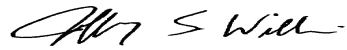
Board of Trustees  
April 18, 2024  
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The actuarial calculations were directed under the supervision of Jeffrey S. Williams. I am a member of the American Academy of Actuaries and I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. In addition, in my opinion, the combined effect of these assumptions is expected to have no significant bias.

We look forward to reviewing this report at your next meeting and to answering any questions.

Sincerely,

Segal



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Jeffrey S. Williams, FCA, ASA, MAAA  
Vice President and Consulting Actuary  
Enrolled Actuary No. 23-07009

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# Section 1: Actuarial Valuation Summary

## Purpose and basis

This report has been prepared by Segal to present a valuation of the City of Orlando Police Officers' Pension Fund as of October 1, 2023. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits.

The contribution requirements presented in this report are based on:

- The benefit provisions of the Police Fund, as administered by the Board;
- The characteristics of covered active participants, inactive vested participants, and retired participants and beneficiaries as of September 30, 2023, provided by the City's Employee Benefit Department;
- The assets of the Fund as of September 30, 2023, provided by the City's Office of Business and Financial Services;
- Economic assumptions regarding future salary increases and investment earnings;
- Other actuarial assumptions regarding employee terminations, retirement, death, etc. and
- The funding policy adopted by the Board, subject to the requirements of Part VII, Chapter 112, Florida Statutes.

Certain disclosure information required by GASB Statements No. 67 and 68 as of October 1, 2023 for the Fund is provided in separate reports.

## Section 1: Actuarial Valuation Summary

### Valuation highlights

1. Segal strongly recommends an actuarial funding method that targets 100% funding of the actuarial accrued liability. Generally, this implies payments that are ultimately at least enough to cover normal cost, interest on the unfunded actuarial accrued liability and the principal balance. The funding policy adopted by the Board meets this standard.
2. The actuarially determined contribution (ADC) for fiscal 2025 is \$42,261,648, an increase of \$4,904,479 from the contribution for fiscal 2024. The contribution as a percentage of payroll increased from 60.65% of payroll to 61.90% of payroll, based on a level percent-of-payroll amortization of the unfunded actuarial accrued liability.
3. The actuarially determined contribution is assumed to be paid at the beginning of the applicable plan year.
4. Actual employer contributions made during the year ending September 30, 2023 of \$33,951,061 were 100% of the actuarially determined contribution (ADC). In the prior year, actual contributions were 100% of the prior year ADC.
5. The pattern of scheduled payments on existing amortization bases may have a significant impact on changes in the ADC in upcoming valuations. The charge base of \$19,064,044 established October 1, 2008 has been fully recognized; the last amortization payment made on this base in the preceding year was \$2,547,710. In the five-year period beginning with the current valuation, an additional \$14,917,913 in current amortization payments will expire.
6. The net actuarial loss of \$47,937,273, or 5.28% of actuarial accrued liability, is due to an investment loss of \$25,837,991, or 2.85% of actuarial accrued liability, and a loss from sources other than investments of \$22,099,282, or 2.43% of the actuarial accrued liability. This non-investment loss was primarily due to salary increases greater than expected and unfavorable pay status experience.
7. The rate of return on the market value of assets was 9.90% for the year ending September 30, 2023. The return on the actuarial value of assets was 3.71% for the same period due to the recognition of prior years' investment gains and losses. This resulted in an actuarial loss when measured against the assumed rate of return of 7.25%. This actuarial investment loss increased the employer contribution rate by 3.92% of projected payroll. Given the low fixed income interest rate environment, target asset allocation and expectations of future investment returns for various asset classes, we advise the Board to continue to monitor actual and anticipated investment returns relative to the assumed long-term rate of return on investments of 7.25%.
8. The actuarial value of assets is 108.91% of the market value of assets. The investment experience in the past years has only been partially recognized in the actuarial value of assets. As the deferred net loss is recognized in future years, the cost of the Plan is likely to increase unless the net loss is offset by future experience. The recognition of the market losses of \$61,440,283 will also have an impact on the future funded ratio. If the net deferred losses were recognized immediately in the actuarial value of assets, the ADC would increase from 61.90% to 70.28% of projected payroll.

## Section 1: Actuarial Valuation Summary

### Changes from prior valuation

9. The funded ratio (the ratio of the actuarial value of assets to actuarial accrued liability) is 82.76%, compared to the prior year funded ratio of 85.67%. This ratio is one measure of funding status, and its history is a measure of funding progress. Using the market value of assets, the funded ratio is 75.99%, compared to 74.41% as of the prior valuation date. These measurements are not necessarily appropriate for assessing the sufficiency of the plan assets to cover the estimated cost of settling the Fund's benefit obligation or the need for or the amount of future contributions.
10. The unfunded actuarial accrued liability is \$156,393,680, which is an increase of \$32,934,718 since the prior valuation.

### Risk

11. It is important to note that this actuarial valuation is based on plan assets as of September 30, 2023. The funded status does not reflect short-term fluctuations of the market, but rather is based on the market values on the last day of the plan year. Moreover, this actuarial valuation does not include any possible short-term or long-term impacts on mortality of the covered population that may emerge after September 30, 2023 due to COVID-19. Segal is available to prepare projections of potential outcomes of market conditions and other demographic experience upon request.
12. Since the actuarial valuation results are dependent on a given set of assumptions, there is a risk that emerging results may differ significantly as actual experience proves to be different from the assumptions. We have not been engaged to perform a detailed analysis of the potential range of the impact of risk relative to the Plan's future financial condition but have included a brief discussion of some risks that may affect the Plan in *Section 2*. A more detailed assessment would provide the Board with a better understanding of the inherent risks and could be important for the Plan because:
  - a. Relatively small changes in investment performance can produce large swings in the unfunded liabilities since the assets and liabilities are of similar size.
  - b. Retired participants account for most of the Fund's liabilities, leaving limited options for reducing costs in the event of adverse experience.
  - c. The Board have not had a detailed risk assessment in several years.



## Section 1: Actuarial Valuation Summary

### Summary of key valuation results

Valuation Result	Current	Prior
<b>Contributions for fiscal year beginning</b>	<b>October 1, 2024</b>	<b>October 1, 2023</b>
• Actuarially determined employer contributions (ADC)	\$42,261,648	\$37,357,169
• Actuarially determined employer contributions as a percent of projected payroll	61.90%	60.66%
• Actual employer contributions including Chapter 185 tax money for fiscal years ending September 30, 2024 and September 30, 2023	—	\$33,951,061
<b>Actuarial accrued liability for plan year beginning</b>	<b>October 1, 2023</b>	<b>October 1, 2022</b>
• Retired participants and beneficiaries	\$617,478,981	587,460,604
• Inactive vested participants	1,467,369	1,279,448
• Inactive participants due a refund of employee contributions	500,529	602,526
• Active participants	287,828,925	272,183,768
• Total	907,275,804	861,526,346
• Normal cost including administrative expenses	22,356,628	19,271,911
<b>Assets for plan year beginning October 1</b>		
• Market value of assets (MVA)	\$689,441,841	\$641,053,761
• Actuarial value of assets (AVA)	750,882,124	738,067,384
• Actuarial value of assets as a percentage of market value of assets	108.91%	115.13%
<b>Funded status for plan year beginning October 1</b>		
• Unfunded actuarial accrued liability on market value of assets	\$217,833,963	\$220,472,585
• Funded percentage on MVA basis	75.99%	74.41%
• Unfunded actuarial accrued liability on actuarial value of assets	\$156,393,680	\$123,458,962
• Funded percentage on AVA basis	82.76%	85.67%
• Effective amortization period on an AVA basis	7	7

## Section 1: Actuarial Valuation Summary

Valuation Result	Current	Prior
<b>Key assumptions</b>		
• Net investment return	7.25%	7.25%
• Inflation rate	2.25%	2.25%
• Payroll increase for amortization purposes	2.25%	2.18%
<b>Demographic data for plan year beginning October 1</b>		
• Number of retired participants and beneficiaries	904	891
• Number of inactive vested participants	8	7
• Number of inactive participants due a refund of employee contributions	13	26
• Number of active participants	815	812
• Total payroll	\$66,776,946	\$60,269,102
• Average payroll	81,935	74,223
• Projected total payroll	68,279,427	61,582,968

## Section 1: Actuarial Valuation Summary

### Important information about actuarial valuations

An actuarial valuation is a budgeting tool with respect to the financing of future projected obligations of a pension plan. It is an estimated forecast – the actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

In order to prepare a valuation, Segal relies on a number of input items. These include:

Input Item	Description
<b>Plan provisions</b>	Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.
<b>Participant information</b>	An actuarial valuation for a plan is based on data provided to the actuary by the Fund. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
<b>Financial information</b>	Part of the cost of a plan will be paid from existing assets — the balance will need to come from future contributions and investment income. The valuation is based on the asset values as of the valuation date, typically reported by the Fund. A snapshot as of a single date may not be an appropriate value for determining a single year's contribution requirement, especially in volatile markets. Plan sponsors often use an "actuarial value of assets" that differs from market value to gradually reflect year-to-year changes in the market value of assets in determining the contribution requirements.
<b>Actuarial assumptions</b>	In preparing an actuarial valuation, Segal starts by developing a forecast of the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of participants in each year, as well as forecasts of the plan's benefits for each of those events. In addition, the benefits forecasted for each of those events in each future year reflect actuarial assumptions as to salary increases and cost-of-living adjustments. The forecasted benefits are then discounted to a present value, typically based on an estimate of the rate of return that will be achieved on the plan's assets. All of these factors are uncertain and unknowable. Thus, there will be a range of reasonable assumptions, and the results may vary materially based on which assumptions are selected within that range. That is, there is no right answer (except with hindsight). It is important for any user of an actuarial valuation to understand and accept this constraint. The actuarial model may use approximations and estimates that will have an immaterial impact on our results. In addition, the actuarial assumptions may change over time, and while this can have a significant impact on the reported results, it does not mean that the previous assumptions or results were unreasonable or wrong.

## Section 1: Actuarial Valuation Summary

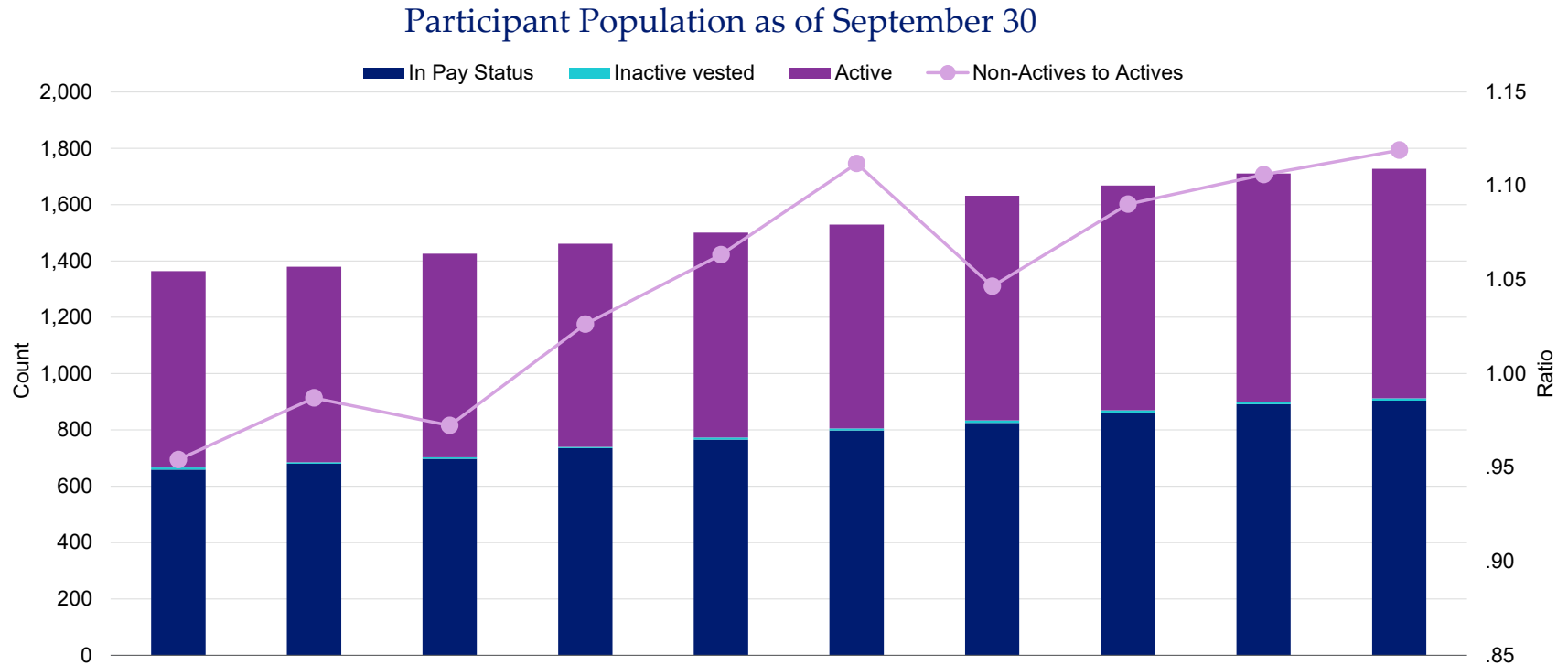
The user of Segal's actuarial valuation (or other actuarial calculations) should keep the following in mind:

- The actuarial valuation is prepared at the request of the Fund. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- An actuarial valuation is a measurement at a specific date — it is not a prediction of a plan's future financial condition. Accordingly, Segal did not perform an analysis of the potential range of financial measurements, except where otherwise noted.
- If the Fund is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
- Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan provisions, but they may be subject to alternative interpretations. The Fund should look to their other advisors for expertise in these areas.
- While Segal maintains extensive quality assurance procedures, an actuarial valuation involves complex computer models and numerous inputs. In the event that an inaccuracy is discovered after presentation of Segal's valuation, Segal may revise that valuation or make an appropriate adjustment in the next valuation.
- Segal's report shall be deemed to be final and accepted by the Fund upon delivery and review. Trustees should notify Segal immediately of any questions or concerns about the final content.

As Segal has no discretionary authority with respect to the management or assets of the Fund, it is not a fiduciary in its capacity as actuaries and consultants with respect to the Fund.

# Section 2: Actuarial Valuation Results

## Participant information



Legend	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
In Pay Status	659	680	698	735	766	798	825	862	891	904
Inactive Vested*	7	5	5	5	7	7	9	8	7	8
Active	698	694	723	721	727	724	797	798	812	815
Ratio	0.95	0.99	0.97	1.03	1.06	1.11	1.05	1.09	1.11	1.12

\* Excluding terminated participants due a refund of employee contributions.

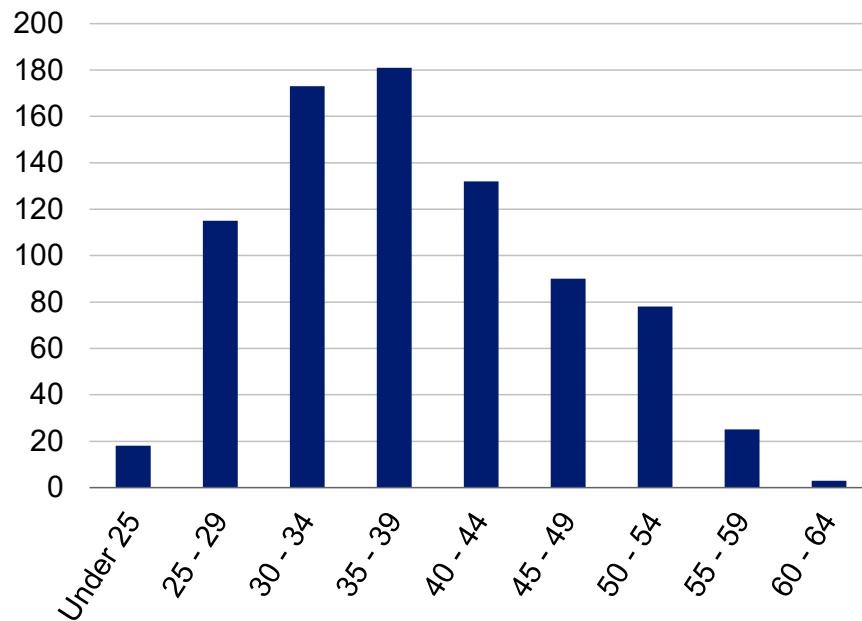
## Section 2: Actuarial Valuation Results

### Active participants

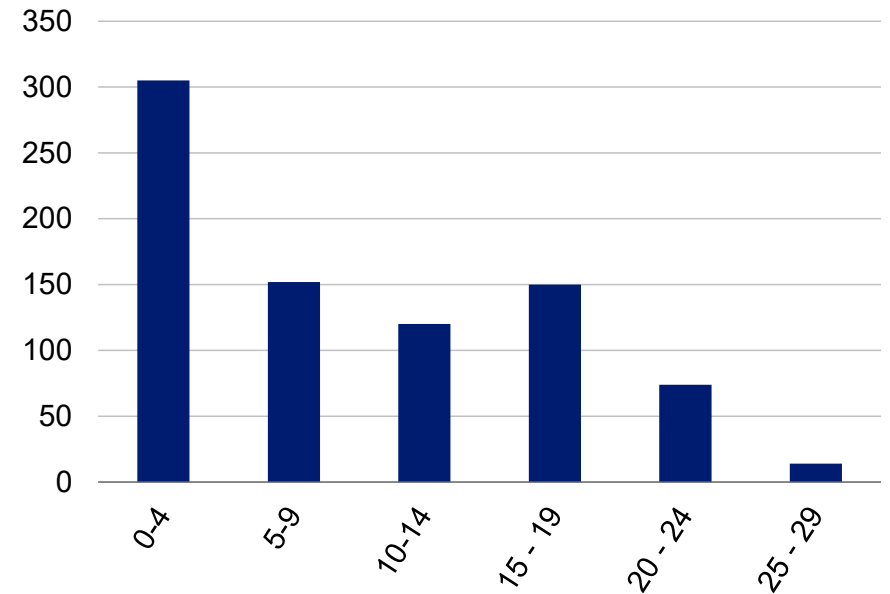
As of September 30,	2023	2022	Change
Active participants	815	812	0.4%
Average age	38.7	38.8	-0.1
Average years of service	9.7	9.7	0.0
Average compensation	\$81,935	\$74,223	10.4%

### Distribution of Active Participants as of September 30, 2023

Actives by Age



Actives by Years of Service



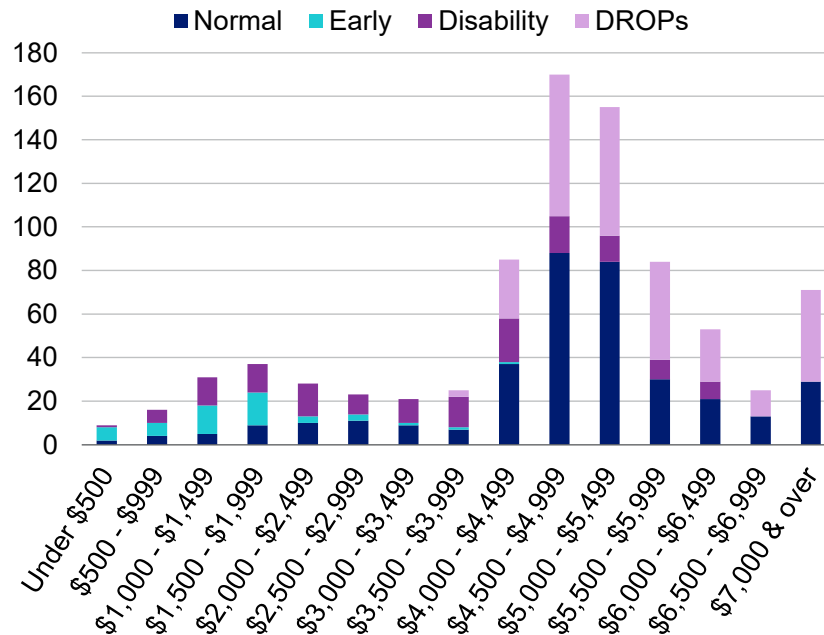
## Section 2: Actuarial Valuation Results

### Retired participants and beneficiaries

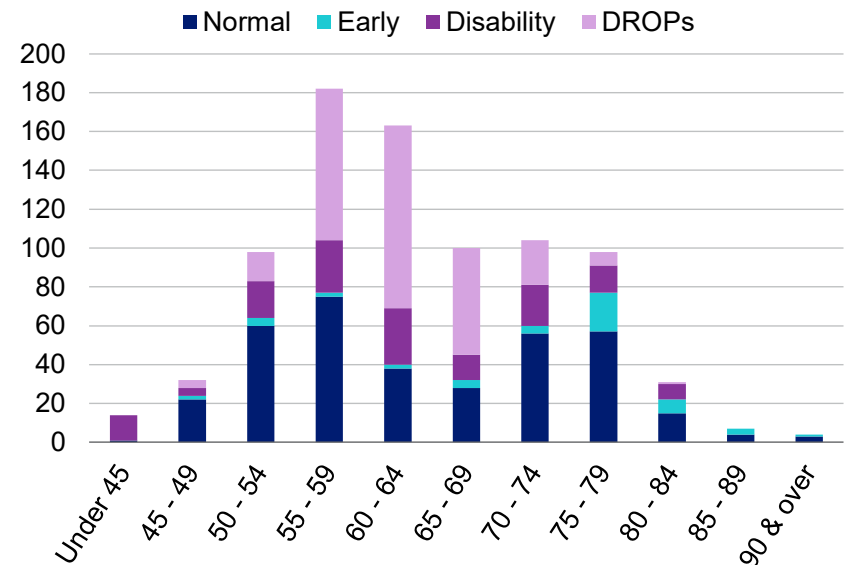
As of September 30,	2023	2022	Change
Retired participants	833	816	2.1%
Beneficiaries	71	75	-5.3%
Average age	64.2	63.7	0.5
Average amount	\$4,556	\$4,397	3.6%
Total monthly amount	4,118,318	3,900,238	5.6%

#### Distribution of Retired Participants and Beneficiaries as of September 30, 2023

By Type and Monthly Amount



By Type and Age



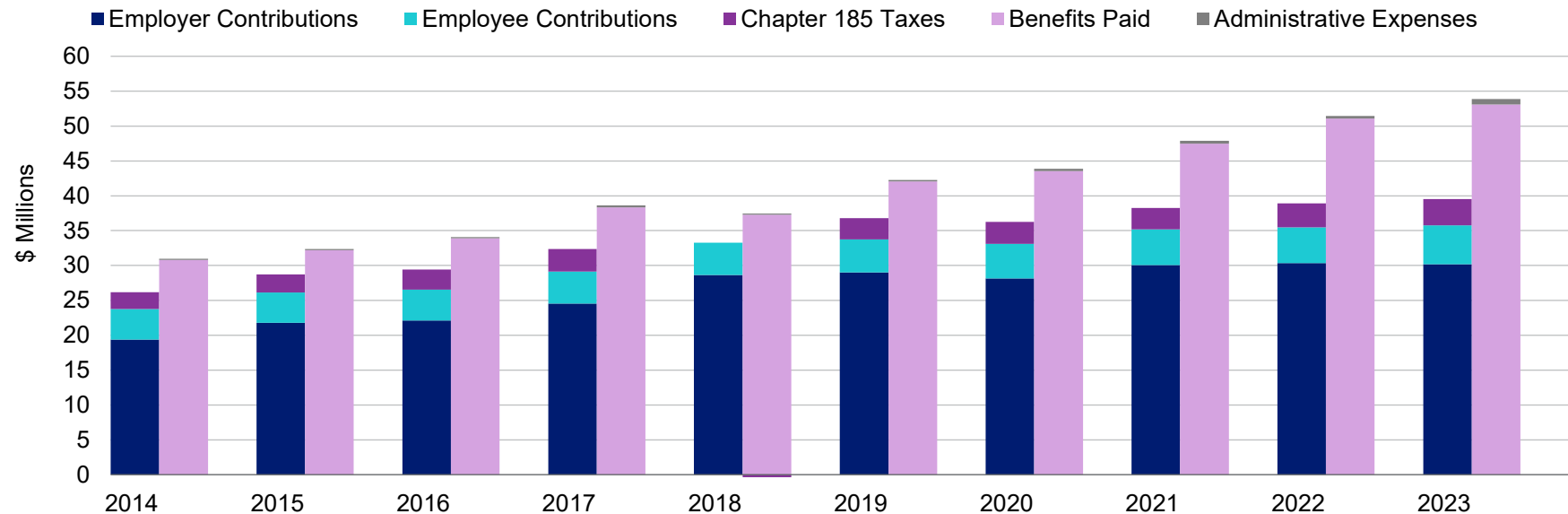
## Section 2: Actuarial Valuation Results

### Financial information

- Retirement plan funding anticipates that, over the long term, both contributions (less administrative expenses) and investment earnings (less investment fees) will be needed to cover benefit payments. Retirement plan assets change as a result of the net impact of these income and expense components.

Additional financial information, including a summary of transactions for the valuation year, is presented in Section 3, Exhibits D, E and F.

Comparison of Contributions with Benefits and Expenses  
for Years Ended September 30





## Section 2: Actuarial Valuation Results

It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board has approved an asset valuation method that gradually adjusts to market value. Under this valuation method, the full value of market fluctuations is not recognized in a single year and, as a result, the asset value and the plan costs are more stable. The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value.

### Determination of Actuarial Value of Assets for Year Ended September 30, 2023

Step	Original Amount*	Percent Deferred†	Unrecognized Amount‡	Amount
1. Market value of assets, September 30, 2023				\$689,441,841
<b>2. Calculation of unrecognized return</b>				
a. Year ended September 30, 2023	\$16,768,837	80%	\$13,415,070	
b. Year ended September 30, 2022	-172,984,739	60%	-103,790,844	
c. Year ended September 30, 2021	72,231,860	40%	28,892,744	
d. Year ended September 30, 2020	213,733	20%	42,747	
e. Year ended September 30, 2019	-10,252,211	0%	0	
f. Total unrecognized return				-\$61,440,283
3. Preliminary actuarial value: (1) - (2f)				750,882,124
4. Adjustment to be within 20% corridor				0
<b>5. Final actuarial value of assets as of September 30, 2023: (3) + (4)</b>				<b>\$750,882,124</b>
6. Actuarial value as a percentage of market value: (5) ÷ (1)				108.9%
7. Amount deferred for future recognition: (1) - (5)				-\$61,440,283

\* Total return minus expected return on a market value basis.

† Percent deferred applies to the current valuation year.

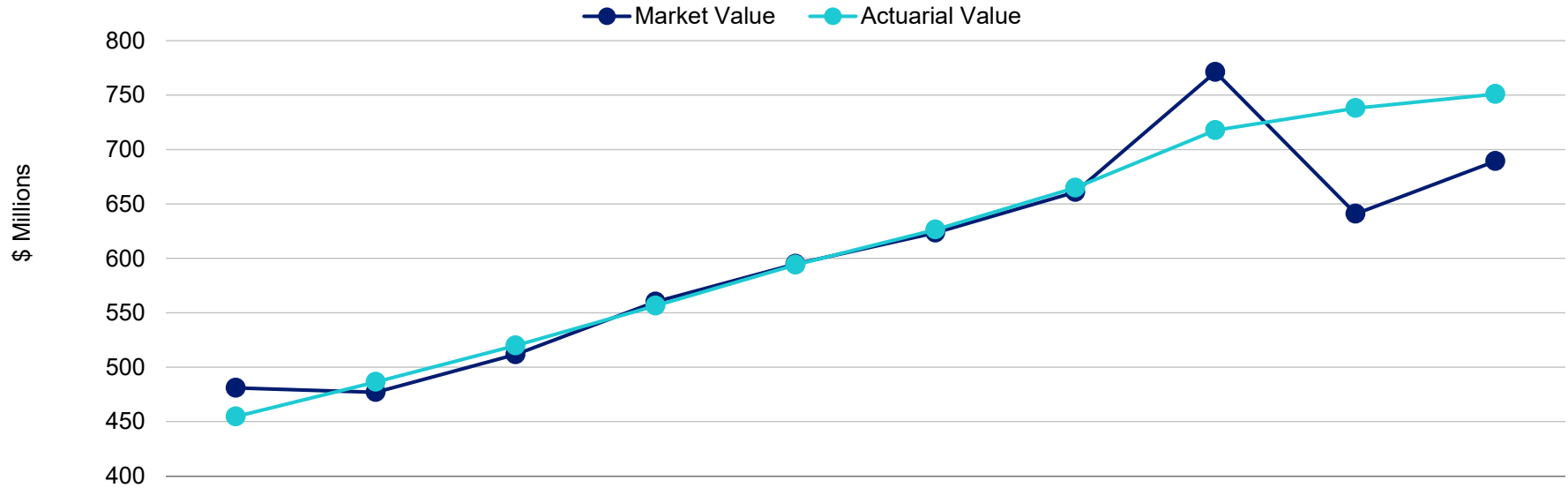
‡ Recognition at 20% per year over five years. Deferred return as of September 30, 2023 recognized in each of the next four years:

a. Amount recognized on September 30, 2024	-\$16,754,062
b. Amount recognized on September 30, 2025	-16,796,809
c. Amount recognized on September 30, 2026	-31,243,181
d. Amount recognized on September 30, 2027	3,353,769

## Section 2: Actuarial Valuation Results

### Asset history for years ended September 30

Actuarial Value of Assets vs Market Value of Assets



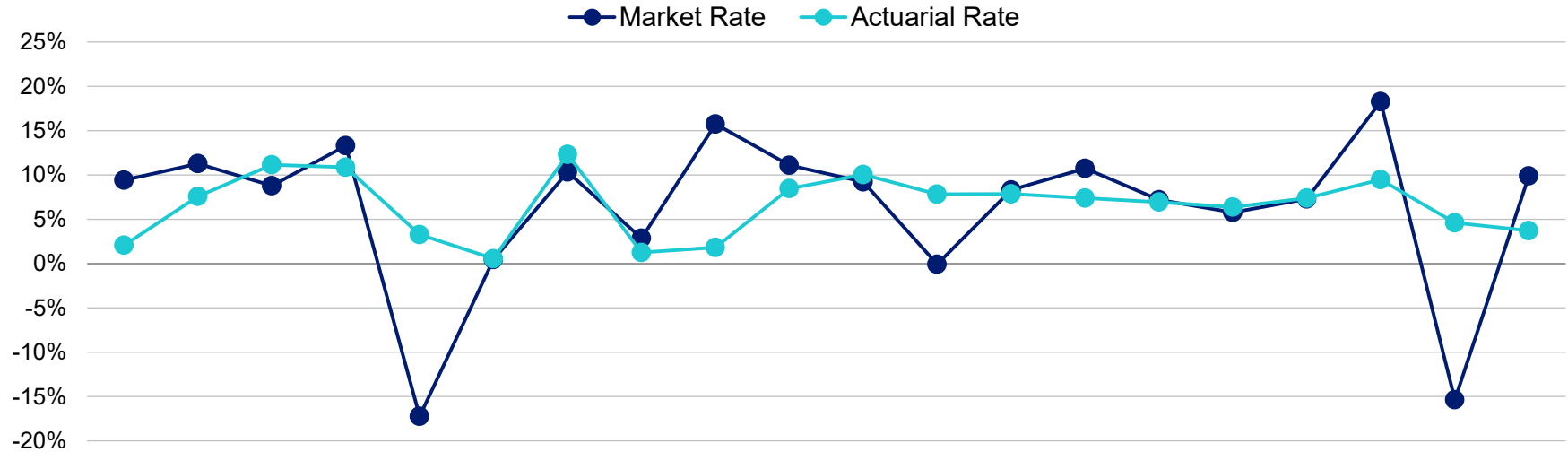
Legend	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Actuarial value*	\$454.61	\$486.60	\$519.86	\$556.58	\$594.08	\$626.35	\$664.78	\$717.74	\$738.07	\$750.88
Market value*	481.09	477.05	511.86	560.28	594.78	623.46	660.96	771.11	641.05	689.44
Ratio	0.94	1.02	1.02	0.99	1.00	1.00	1.01	0.93	1.15	1.09

\* In \$ millions

## Section 2: Actuarial Valuation Results

### Historical investment returns

Market and Actuarial Rates of Return for Years Ended September 30



Legend	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Market rate	9.42%	11.29%	8.77%	13.31%	-17.23%	0.45%	10.33%	2.88%	15.74%	11.10%	9.23%	-0.08%	8.32%	10.74%	7.20%	5.77%	7.28%	18.26%	-15.37%	9.90%
Actuarial rate	2.09%	7.59%	11.16%	10.88%	3.28%	0.55%	12.33%	1.25%	1.81%	8.45%	10.05%	7.85%	7.86%	7.40%	6.96%	6.38%	7.40%	9.49%	4.62%	3.71%
Assumed rate	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	7.75%	7.75%	7.60%	7.50%	7.25%	7.25%	7.25%	7.25%

Average Rates of Return	Actuarial Value	Market Value
Most recent five-year average return:	6.22%	4.42%
Most recent ten-year average return:	6.95%	5.57%
Most recent 15-year average return:	6.42%	6.21%
20-year average return:	6.52%	5.81%

## Section 2: Actuarial Valuation Results

### Actuarial experience

- Assumptions should consider experience and should be based on reasonable expectations for the future.
- Each year actual experience is compared to that projected by the assumptions. Differences are reflected in the actuarial valuation.
- Assumptions are not changed if experience is believed to be a short-term development that will not continue over the long term. On the other hand, if experience is expected to continue, assumptions are changed.

#### Actuarial Experience for Year Ended September 30, 2023

Assumption	Amount
1. Gain/(loss) from investments*	-\$25,837,991
2. Gain/(loss) from administrative expenses	-441,675
3. Net gain/(loss) from other experience	-21,657,607
<b>4. Net experience gain/(loss): 1 + 2 + 3</b>	<b>-\$47,937,273</b>

\* Details on next page

## Section 2: Actuarial Valuation Results

### Investment experience

Actuarial planning is long term. The obligations of a pension plan are expected to continue for the lifetime of all its participants.

The assumed long-term rate of return of 7.25% considers past experience, the asset allocation policy of the Board and future expectations.

#### Investment Experience *Year Ended September 30, 2023*

	Investment	Market Value	Actuarial Value
1.	Net investment income	\$62,725,503	\$27,152,163
2.	Average value of assets	633,885,050	730,898,673
3.	Rate of return: <b>1 ÷ 2</b>	9.90%	3.71%
4.	Assumed rate of return	7.25%	7.25%
5.	Expected investment income: <b>2 x 4</b>	45,956,666	52,990,154
6.	Investment gain/(loss): <b>1 – 5</b>	\$16,768,837	-\$25,837,991

## Section 2: Actuarial Valuation Results

### Non-investment experience

#### Administrative expenses

Administrative expenses for the year ended September 30, 2023 totaled \$791,996, as compared to the assumption of \$380,178. This resulted in an experience loss of \$441,675 for the year, including an adjustment for interest.

#### Other experience

There are other differences between the expected and the actual experience that appear when the new valuation is compared with the projections from the previous valuation. These include:

- Salary increases (greater or smaller than projected)
- Mortality experience (more or fewer than expected deaths)
- The extent of turnover among participants
- Retirement experience (earlier or later than projected)
- The number of disability retirements (more or fewer than projected)

The net loss from this other experience for the year ended September 30, 2023 amounted to \$21,657,607, which is 2.4% of the actuarial accrued liability.

### Actuarial assumptions

- The assumption changes reflected in this report are:
  - The administrative expense assumption was increased from \$380,178 to \$791,996 for the year beginning October 1, 2023.
  - The payroll growth assumption for amortization purposes changed from 2.18% to 2.25%, per Part VII, Chapter 112.64(5)(a) of Florida Statutes.

### Plan provisions

- There were no changes in plan provisions since the prior valuation.

## Section 2: Actuarial Valuation Results

### Analysis of financial experience

The chart below details the gain/(loss) experience of the Fund over the last four valuations.

	Gain/(Loss) for Year Ended September 30,			
	2023	2022	2021	2020
<b>Demographic</b>				
Retirement experience	-\$2,857,835	\$780,717	-\$566,744	-\$838,258
Disability retirements	-430,844	-35,120	-292,085	-1,216,743
Pre-retirement mortality	27,764	938,701	7,649	716,953
Turnover experience	1,907,941	352,159	91,409	181,242
Salary experience	-10,634,243	1,590,004	1,409,898	-175,357
Post-retirement mortality	-6,221,135	-1,378,504	-3,121,803	-4,037,567
New active participants	105,078	628,268	355,345	-316,545
Miscellaneous experience*	<u>114,972</u>	<u>311,469</u>	<u>69,632</u>	<u>6,904,600</u>
<b>Total demographic experience</b>	<b>-\$17,988,302</b>	<b>\$3,187,694</b>	<b>-\$2,046,699</b>	<b>\$1,218,325</b>
<b>Economic</b>				
Investment income	-\$25,837,991	-\$18,732,120	\$14,765,416	\$924,016
Administrative expenses	<u>-441,675</u>	<u>37,662</u>	<u>-67,977</u>	<u>-152,135</u>
<b>Total economic experience</b>	<b>-\$26,279,666</b>	<b>-\$18,694,458</b>	<b>\$14,697,439</b>	<b>\$771,881</b>
<b>Contribution timing†</b>	<b>-\$3,669,305</b>	<b>-\$676,173</b>	<b>-\$1,235,870</b>	<b>-\$2,362,933</b>
<b>Composite Gain/(Loss) During Year</b>	<b>-\$47,937,273</b>	<b>-\$16,182,937</b>	<b>\$11,414,870</b>	<b>-\$372,727</b>

\* Includes changes in excess reserve for state contributions

† Reflects effect of contribution deferral to following fiscal year

## Section 2: Actuarial Valuation Results

### Unfunded Actuarial Accrued Liability

#### Development of Unfunded Actuarial Accrued Liability for Year Ended September 30, 2023

Unfunded Actuarial Accrued Liability	Change	Amount
1. Unfunded actuarial accrued liability at beginning of year		\$123,458,962
2. Employer normal cost at beginning of year		14,226,050
3. Actuarially determined employer contribution at beginning of year		-36,560,158
4. Interest on 1, 2 & 3		<u>7,331,553</u>
<b>5. Expected unfunded actuarial accrued liability</b>		<b>\$108,456,407</b>
6. Changes due to:		
a. Net experience loss	\$47,937,273	
<b>Total changes</b>		<b>\$47,937,273</b>
7. Unfunded actuarial accrued liability at end of year		\$156,393,680



## Section 2: Actuarial Valuation Results

### Actuarially determined contribution

The actuarially determined contribution is equal to the employer normal cost payment and a payment on the unfunded actuarial accrued liability. As of October 1, 2023, the actuarially determined contribution is \$42,261,648, or 61.90% of projected payroll.

The Pension Board has adopted financing periods of 15 years for experience gains and losses and 25 years for benefit, assumption, and method changes. Actuarially determined required contribution amounts have been determined using those periods.

The contribution requirement as of October 1, 2023 is based on the data previously described, the actuarial assumptions and plan provisions described in *Section 4*, including all changes affecting future costs adopted at the time of the actuarial valuation, actuarial gains and losses, and changes in the actuarial assumptions. The contribution calculated as of October 1, 2023 is then projected to the following fiscal year and will be paid in the plan year beginning October 1, 2024.

#### Actuarially Determined Contribution

Contribution	2023 Amount	2023 Percent of Projected Payroll	2022 Amount	2022 Percent of Projected Payroll
1. Total normal cost	\$21,564,632	31.58%	\$18,891,733	30.68%
2. Administrative expenses	791,996	1.16%	380,178	0.62%
3. Expected employee contributions	-5,576,153	-8.17%	-5,045,861	-8.19%
<b>4. Employer normal cost: (1) + (2) + (3)</b>	<b>\$16,780,475</b>	<b>24.58%</b>	<b>\$14,226,050</b>	<b>23.10%</b>
5. Actuarial accrued liability	\$907,275,804		\$861,526,346	
6. Actuarial value of assets	750,882,124		738,067,384	
<b>7. Unfunded actuarial accrued liability: (5) - (6)</b>	<b>\$156,393,680</b>		<b>\$123,458,962</b>	
8. Employer normal cost projected to October 1, 2024 and 2023	17,158,036	25.13%	14,536,178	23.60%
9. Payment on projected unfunded actuarial accrued liability	25,103,612	36.77%	22,820,992	37.06%
<b>10. Actuarially determined contribution: (8) + (9)</b>	<b>\$42,261,648</b>	<b>61.90%</b>	<b>\$37,357,169</b>	<b>60.66%</b>
11. Projected payroll	\$68,279,427		\$61,582,968	

## Section 2: Actuarial Valuation Results

### Reconciliation of actuarially determined contribution

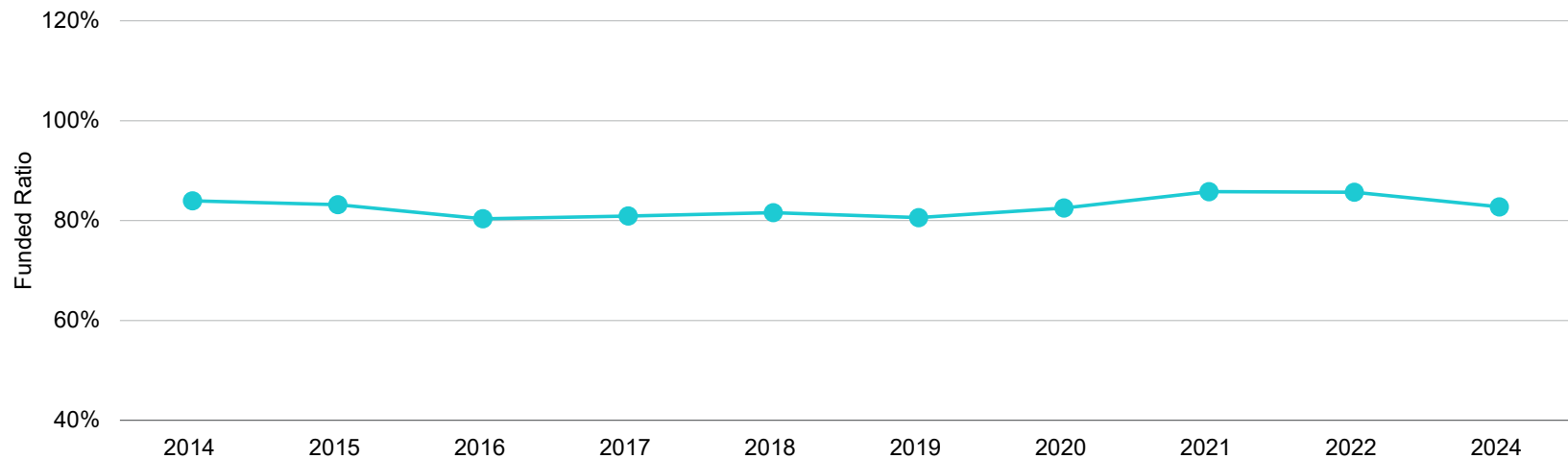
Reconciliation of Actuarially Determined Contribution  
from October 1, 2023 to October 1, 2024

Step	Amount
1. Actuarially determined contribution as of October 1, 2023	\$37,357,169
2. Effect of expected change in amortization payment due to payroll growth	-2,162,190
3. Effect of change in administrative expense assumption	421,084
4. Effect of change in other actuarial assumptions	-56,805
5. Effect of investment loss	2,417,069
6. Effect of other gains and losses on accrued liability	2,067,324
7. Net effect of other changes, including composition and number of participants	2,217,997
<b>8. Total change</b>	<b>\$4,904,479</b>
<b>9. Actuarially determined contribution as of October 1, 2024</b>	<b>\$42,261,648</b>

## Section 2: Actuarial Valuation Results

### Schedule of funding progress through September 30, 2023

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded/ (Overfunded) AAL (UAAL) (b) – (a)	Funded Ratio (a) / (b)	Covered Compensation (c)	UAAL as a Percentage of Covered Compensation [(b) – (a)] / (c)
10/01/2014	\$461,844,672	\$548,751,075	\$86,906,403	84.16%	\$49,185,208	176.69%
10/01/2015	494,270,063	594,279,035	100,008,972	83.17%	50,407,170	198.40%
10/01/2016	528,257,836	657,279,224	129,021,388	80.37%	54,920,286	234.92%
10/01/2017	560,866,460	693,030,939	132,164,479	80.93%	53,915,085	245.13%
10/01/2018	594,080,114	727,992,064	133,911,950	81.61%	54,593,265	245.29%
10/01/2019	626,354,874	777,120,827	150,765,953	80.60%	54,801,351	275.11%
10/01/2020	664,783,835	805,622,578	140,838,743	82.52%	59,432,600	236.97%
10/01/2021	717,743,211	836,798,261	119,055,050	85.77%	59,769,312	199.19%
10/01/2022	738,067,384	861,526,346	123,458,962	85.67%	60,269,102	204.85%
10/01/2023	750,882,124	907,275,804	156,393,680	82.76%	66,776,946	234.20%



## Section 2: Actuarial Valuation Results

### History of employer contributions

#### History of Employer Contributions: 2016– 2025

*Actuarially Determined Employer Contribution (ADC) versus Actual Employer Contribution (AEC)*

Fiscal Year Ended September 30	Valuation Date September 30	ADC Amount	ADC Percentage of Covered Compensation	AEC Amount	Percent Contributed
2016	2014	\$24,274,548	48.28%	\$24,274,548	100.00%
2017	2015	27,359,700	53.03%	27,359,700	100.00%
2018	2016	31,628,774	56.04%	31,628,775	100.00%
2019	2017	32,077,049	58.40%	32,077,049	100.00%
2020	2018	31,285,153	56.34%	31,285,153	100.00%
2021	2019	33,118,505	59.56%	33,118,505	100.00%
2022	2020	33,781,437	55.69%	33,781,437	100.00%
2023	2021	33,951,060	55.55%	33,951,061	100.00%
2024	2022	37,357,169	60.66%	--	--
2025	2023	42,261,648	61.90%	--	--

## Section 2: Actuarial Valuation Results

### Low-Default-Risk Obligation Measure (LDRM)

In December 2021, the Actuarial Standards Board issued a revision of Actuarial Standard of Practice No. 4 (ASOP 4) *Measuring Pension Obligations and Determining Pension Plan Costs or Contributions*. One of the revisions to ASOP 4 requires the disclosure of a Low-Default-Risk Obligation Measure (LDRM) when performing a funding valuation. The LDRM presented in this report is calculated using the same methodology and assumptions used to determine the Actuarial Accrued Liability (AAL) used for funding, except for the discount rate. The LDRM is required to be calculated using “a discount rate...derived from low-default-risk fixed income securities whose cash flows are reasonably consistent with the pattern of benefits expected to be paid in the future.”

The LDRM is a calculation assuming a plan’s assets are invested in an all-bond portfolio, generally lowering expected long-term investment returns. The discount rate selected and used for this purpose is the Bond Buyer General Obligation 20-year Municipal Bond Index Rate, published at the end of each week. The last published rate in September of the measurement period, by The Bond Buyer ([www.bondbuyer.com](http://www.bondbuyer.com)), is 4.09% for use effective September 30, 2023. This is the rate used to determine the discount rate for valuing reported public pension plan liabilities in accordance with Governmental Accounting Standards when plan assets are projected to be insufficient to make projected benefit payments, and the 20-year period reasonably approximates the duration of plan liabilities. The LDRM is not used to determine a plan’s funded status or Actuarially Determined Contribution. The plan’s expected return on assets, currently 7.25%, is used for these calculations.

As of September 30, 2023, the LDRM for the system is \$1,364,884,057. The difference between the plan’s AAL of \$907,275,804 and the LDRM can be thought of as the increase in the AAL if the entire portfolio were invested in low-default-risk securities. Alternatively, this difference could also be viewed as representing the expected savings from investing in the plan’s diversified portfolio compared to investing only in low-default-risk securities.

ASOP 4 requires commentary to help the intended user understand the significance of the LDRM with respect to the funded status of the plan, plan contributions, and the security of participant benefits. In general, if plan assets were invested exclusively in low-default-risk securities, the funded status would be lower and the Actuarially Determined Contribution would be higher. While investing in a portfolio with low-default-risk securities may be more likely to reduce investment volatility and the volatility of employer contributions, it also may be more likely to result in higher employer contributions or lower benefits.

## Section 2: Actuarial Valuation Results

### Risk

The actuarial valuation results are dependent on a single set of assumptions; however, there is a risk that emerging results may differ significantly as actual experience proves to be different from the current assumptions.

We have not been engaged to perform a detailed analysis of the potential range of the impact of risk relative to the Fund's future financial condition but have included a brief discussion of some risks that may affect the Fund.

- **Economic and Other Related Risks.** Potential implications for the Fund due to the following economic effects (that were not reflected as of the valuation date) include:

- Volatile financial markets and investment returns lower than assumed
- High inflationary environment impacting salary increases
- Lingering direct and indirect effects of the COVID-19 pandemic

- **Investment Risk** (the risk that returns will be different than expected)

If the actual return on market value for the prior plan year were 1% different (either higher or lower), the unfunded actuarial liability would change by 4.05%, or about \$6,338,850, disregarding the asset smoothing method.

Since the Plan's assets are much larger than contributions, investment performance may create volatility in the actuarially determined contribution requirements. For example, for the prior plan year, if the actual return on market value were 1% different, the actuarially determined contribution would increase or decrease by \$577,907, disregarding the effects of the 5-year phase-in of investment gains and losses.

The market value rate of return over the last 20 years has ranged from a low of -17.23% to a high of 18.26%.

- **Longevity Risk** (the risk that mortality experience will be different than expected)

The actuarial valuation includes an expectation of future improvement in life expectancy. Emerging plan experience that does not match these expectations will result in either an increase or decrease in the actuarially determined contribution.

- **Contribution Risk** (the risk that actual contributions will be different from actuarially determined contribution)

The Fund's funding policy requires payment of the actuarially determined contribution. As long as this policy is adhered to, contribution risk is negligible.

If contributions remain at current level and future experience matches the current assumptions, we project the unfunded actuarial accrued liability will be paid off in 7.4 years.

## Section 2: Actuarial Valuation Results

- **Demographic Risk** (the risk that participant experience will be different than assumed)

Examples of this risk include:

- Actual retirements occurring earlier or later than assumed. The value of retirement plan benefits is sensitive to the rate of benefit accruals and any early retirement subsidies that apply.
- More or less active participant turnover than assumed.
- There are external factors including legislative or financial reporting changes that could impact the Plan’s funding and disclosure requirements. While we do not assume any changes in such external factors, it is important to understand that they could have significant consequences for the Fund.
- **Actual Experience Over the Last 10 Years**

Past experience can help demonstrate the sensitivity of key results to the Fund’s actual experience. Over the past ten years: The non-investment gain(loss) for a year has ranged from a loss of \$22,099,282 to a gain of \$2,549,182.

Plan Year Ended	Market Value Investment Gain/(Loss)	All Other Gains and (Losses)
2014	\$8,651,720	-\$2,558,315
2015	-703,615	1,018,891
2016	531,962	-11,175,435
2017	15,234,143	123,205
2018	-2,215,757	-929,124
2019	-10,252,211	-9,713,222
2020	213,733	1,308,882
2021	72,231,860	-2,152,766
2022	-172,984,739	2,549,182
2023	16,768,837	-22,099,282

- The funded percentage on the actuarial value of assets has ranged from a low of 80.4% to a high of 85.8% since 2014.

## Section 2: Actuarial Valuation Results

### **Maturity Measures**

Currently the Plan has a non-active to active participant ratio of 1.14.

As pension plans mature, the cash needed to fulfill benefit obligations will increase over time. Therefore, cash flow projections and analysis should be performed to assure that the Plan's asset allocation is aligned to meet emerging pension liabilities.

For the prior year, benefits and administrative expenses paid were \$14,337,423 more than contributions received. Plans with high levels of negative cash flows may have a need for a larger allocation to income generating assets, which can create a drag on investment return.



## Section 2: Actuarial Valuation Results

### GFOA funded liability by type

The Actuarial Accrued Liability represents the present value of benefits earned, calculated using the Plan's actuarial cost method. The Actuarial Value of Assets reflects the financial resources available to liquidate the liability. The portion of the liability covered by assets reflects the extent to which accumulated plan assets are sufficient to pay future benefits, and is shown for liabilities associated with employee contributions, pensioner liabilities, and other liabilities. The Government Finance Officers Association (GFOA) recommends that the funding policy aim to achieve a funded ratio of 100 percent.

#### GFOA Funded Liability by Type as of September 30

Type	2023	2022
<b>Actuarial accrued liability (AAL)</b>		
Active member contributions	\$44,718,063	\$43,365,115
Retirees and beneficiaries	617,478,981	587,460,604
Active and inactive members (employer-financed)	245,078,760	230,700,627
<b>Total</b>	<b>\$907,275,804</b>	<b>\$861,526,346</b>
Actuarial value of assets	750,882,124	738,067,384
<b>Cumulative portion of AAL covered</b>		
Active member contributions	100.00%	100.00%
Retirees and beneficiaries	100.00%	100.00%
Active and inactive members (employer-financed)	36.19%	46.49%

## Section 2: Actuarial Valuation Results

### Actuarial balance sheet

An overview of the Fund’s funding is given by an Actuarial Balance Sheet. In this approach, first the amount and timing of all future payments that will be made by the Fund for current participants is determined. Then these payments are discounted at the valuation interest rate to the date of the valuation, thereby determining the present value, referred to as the “liability” of the Fund.

Second, this liability is compared to the assets. The “assets” for this purpose include the net amount of assets already accumulated by the Fund, the present value of future member contributions, the present value of future employer normal cost contributions, and the present value of future employer amortization payments for the unfunded actuarial accrued liability.

#### Actuarial Balance Sheet

Description	Year Ended September 30, 2023	Year Ended September 30, 2022
<b>Liabilities</b>		
Present value of benefits for retired participants and beneficiaries	\$617,478,981	\$587,460,604
Present value of benefits for inactive vested participants	1,967,898	1,881,974
Present value of benefits for active participants	483,777,707	443,206,532
<b>Total liabilities</b>	<b>\$1,103,224,586</b>	<b>\$1,032,549,110</b>
<b>Assets</b>		
Total valuation value of assets	\$750,882,124	\$738,067,384
Present value of future contributions by members	50,815,605	45,661,471
Present value of future employer contributions for:		
• Entry age cost	145,133,177	125,361,293
• Unfunded actuarial accrued liability	156,393,680	123,458,962
<b>Total of current and future assets</b>	<b>\$1,103,224,586</b>	<b>\$1,032,549,110</b>

# Section 3: Supplemental Information

## Exhibit A: Table of Plan Demographics

Category	Year Ended September 30, 2023	Year Ended September 30, 2022	Change From Prior Year
<b>Active participants in valuation:</b>			
• Number	815	812	0.4%
• Average age	38.7	38.8	-0.1
• Average years of service	9.7	9.7	0.0
• Average compensation	\$81,935	\$74,223	10.4%
• Account balances	44,718,063	43,365,115	3.1%
• Total active vested participants	358	368	-2.7%
<b>Inactive participants</b>			
• Inactive vested participants	7	7	0.0%
• Inactive nonvested participants due a refund	13	26	-50.0%
<b>Retired participants:</b>			
• Number in pay status	685	671	2.1%
• Average age	63.9	63.6	0.3
• Average monthly benefit	\$5,021	\$4,848	3.6%
<b>Disabled participants:</b>			
• Number in pay status	148	145	2.1%
• Average age	61.9	61.4	0.5
• Average monthly benefit	\$3,546	\$3,507	1.1%

## Section 3: Supplemental Information

Category	Year Ended September 30, 2023	Year Ended September 30, 2022	Change From Prior Year
<b>Beneficiaries:</b>			
• Number in pay status	71	75	-5.3%
• Average age	72.2	69.5	2.7
• Average monthly benefit	\$2,172	\$1,949	11.4%

## Section 3: Supplemental Information

### Exhibit B: Participants in Active Service as of September 30, 2023 by Age, Years of Service, and Average Compensation\*

Age	Total	Years of Service					
		0-4	5-9	10-14	15 - 19	20 - 24	25 - 29
Under 25	18	18	--	--	--	--	--
	\$54,767	\$54,767	--	--	--	--	--
25 - 29	115	107	8	--	--	--	--
	61,082	60,228	72,506	--	--	--	--
30 - 34	173	115	50	8	--	--	--
	67,275	62,614	74,277	90,511	--	--	--
35 - 39	181	48	59	60	14	--	--
	80,273	62,520	75,269	93,026	107,578	--	--
40 - 44	132	12	21	29	67	3	--
	93,187	65,100	73,732	92,666	103,827	109,136	--
45 - 49	90	2	11	18	35	24	--
	101,109	60,732	78,118	91,834	104,825	116,547	--
50 - 54	78	1	2	1	26	37	11
	106,679	--	81,255	--	101,309	109,213	126,817
55 - 59	25	2	--	4	8	8	3
	100,890	--	--	96,802	99,681	106,843	115,675
60 - 64	3	--	1	--	--	2	--
	118,353	--	--	--	--	--	--
<b>Total</b>	<b>815</b>	<b>305</b>	<b>152</b>	<b>120</b>	<b>150</b>	<b>74</b>	<b>14</b>
	<b>\$81,935</b>	<b>\$61,228</b>	<b>\$75,430</b>	<b>\$92,645</b>	<b>\$103,752</b>	<b>\$111,012</b>	<b>\$124,429</b>

\* Compensation is annualized for those hired during the prior plan year

## Section 3: Supplemental Information

### Exhibit C: Reconciliation of Participant Data

	Active Participants	Inactive Vested Participants	Inactives Due Refund	Disableds	Retired Participants	Beneficiaries	Total
<b>Number as of October 1, 2022</b>	<b>812</b>	<b>7</b>	<b>26</b>	<b>145</b>	<b>671</b>	<b>75</b>	<b>1,736</b>
New participants	80	N/A	0	N/A	N/A	N/A	80
Terminations — with vested rights	-1	1	0	0	0	0	0
Terminations — without vested rights	-4	N/A	4	N/A	N/A	N/A	0
Retirements	-26	0	0	N/A	26	N/A	0
New disabilities	-2	0	-1	3	N/A	N/A	0
Return to work	0	0	0	0	0	N/A	0
New beneficiaries	0	0	0	0	0	6	6
Deceased	0	0	0	0	-12	-1	-13
Lump sum cash-outs	-46	0	-15	0	0	0	-61
Rehire	2	0	-1	N/A	0	N/A	1
Certain period expired	N/A	N/A	0	0	0	-5	-5
Data adjustments	0	0	0	0	0	-4	-4
<b>Number as of October 1, 2023</b>	<b>815</b>	<b>8</b>	<b>13</b>	<b>148</b>	<b>685</b>	<b>71</b>	<b>1,740</b>

## Section 3: Supplemental Information

### Exhibit D: Summary Statement of Income and Expenses on a Market Value Basis

Year Ended September 30, 2023 versus Year Ended September 30, 2022

Item	Income and Expenses	Assets as of YE 2023	Income and Expenses	Assets as of YE 2022
<b>Net assets at market value at the beginning of the year</b>		<b>\$641,053,761</b>		<b>\$771,112,905</b>
<b>Contribution and other income:</b>				
Employer contributions	\$30,177,852		\$30,347,884	
Employee contributions	5,593,672		5,126,113	
Chapter 185 taxes	3,773,209		3,433,553	
Total contribution income		\$39,544,733		\$38,907,550
<b>Investment income:</b>				
Interest, dividend, and other income	\$8,785,182		\$6,907,751	
Realized investment gains (losses)	32,913,145		36,468,214	
Unrealized investment gains (losses)	23,663,000		-157,572,335	
Less investment fees	-2,635,824		-3,336,752	
Net investment income		\$62,725,503		-\$117,533,122
Total income available for benefits		\$102,270,236		-\$78,625,572
<b>Less benefit payments and administrative expenses:</b>				
Administrative expenses	-\$791,996		-\$380,178	
Pension payments	-52,833,351		-50,623,878	
Refunds	-256,809		-429,516	
Net benefit payments and administrative expenses		-\$53,882,156		-\$51,433,572
<b>Change in market value of assets</b>		<b>\$48,388,080</b>		<b>-\$130,059,144</b>
<b>Net assets at market value at the end of the year</b>		<b>\$689,441,841</b>		<b>\$641,053,761</b>

## Section 3: Supplemental Information

### Exhibit E: Summary Statement of Plan Assets

Year Ended September 30, 2023 versus Year Ended September 30, 2022

Item	Investments	Assets as of YE 2023	Investments	Assets as of YE 2022
<b>Cash and accounts receivable</b>				
Cash equivalents		\$8,396,889		\$8,071,707
Total accounts receivable		0		0
<b>Investments:</b>				
Fixed income investments	\$160,818,658		\$160,330,653	
Equities	323,196,120		301,623,177	
Real estate	49,158,304		55,256,058	
Hedge funds	34,456,532		35,558,273	
Private equity and debt	<u>113,517,545</u>		<u>80,648,499</u>	
Total investments at market value		\$681,147,159		\$633,416,660
<b>Total assets</b>		<b>689,544,048</b>		<b>641,488,367</b>
Total accounts payable		-102,207		-434,606
<b>Net assets at market value</b>		<b>\$689,441,841</b>		<b>\$641,053,761</b>
<b>Net assets at actuarial value</b>		<b>\$750,882,124</b>		<b>\$738,067,384</b>



## Section 3: Supplemental Information

### Exhibit F: Development of the Fund through September 30, 2023

Year Ended September 30	Employer Contributions	Employee Contributions	Other Income	Net Investment Return*	Admin. Expenses	Benefit Payments	Market Value of Assets at Year-End	Actuarial Value of Assets at Year-End	Actuarial Value as a Percent of Market Value
2014	\$19,380,225	\$4,398,799	\$2,404,617	\$40,857,125	\$179,293	\$30,804,141	\$481,089,272	\$454,608,159	94.5%
2015	21,801,018	4,323,405	2,590,930	-366,265	161,254	32,225,798	477,051,308	486,597,949	102.0%
2016	22,119,219	4,423,731	2,876,417	39,481,720	190,320	33,898,235	511,863,840	519,864,633	101.6%
2017	24,532,910	4,632,008	3,195,287	54,661,401	261,309	38,348,962	560,275,175	556,582,618	99.3%
2018	28,645,381	4,645,418	-1,300,449	39,993,905	179,980	37,296,293	594,783,157	594,080,114	99.9%
2019	29,026,910	4,725,233	3,050,139	34,151,075	210,061	42,070,908	623,455,545	626,354,874	100.5%
2020	28,144,828	4,980,435	3,140,325	45,137,701	351,912	43,542,900	660,964,022	664,783,835	100.6%
2021	30,056,333	5,114,021	3,062,172	119,801,832	415,294	47,470,181	771,112,905	717,743,211	93.1%
2022	30,347,884	5,126,113	3,433,553	-117,533,122	380,178	51,053,394	641,053,761	738,067,384	115.1%
2023	30,177,852	5,593,672	3,773,209	62,725,503	791,996	53,090,160	689,441,841	750,882,124	108.9%

\* On a market basis, net of investment fees

## Section 3: Supplemental Information

### Exhibit G: Table of Amortization Bases

Type	Date Established	Initial Period	Initial Amount	Annual Payment*	Years Remaining	Outstanding Balance
Experience Loss	09/30/2009	15	\$27,132,541	\$3,571,256	1	\$3,571,256
Experience Loss	09/30/2010	15	31,909,744	4,054,016	2	7,919,034
Experience Loss	09/30/2011	15	24,998,822	3,069,803	3	8,786,738
Experience Loss	09/30/2012	15	23,907,604	2,837,481	4	10,580,604
Experience Loss	09/30/2013	15	3,062,719	351,308	5	1,600,219
Experience Gain	09/30/2014	15	-6,093,405	-679,287	6	-3,629,208
Experience Gain	09/30/2015	15	-315,275	-34,279	7	-208,882
Experience Loss	09/30/2016	15	10,643,473	1,128,850	8	7,686,925
Experience Loss	09/30/2017	15	1,715,898	177,087	9	1,326,748
Experience Loss	09/30/2018	15	4,484,146	453,022	10	3,688,854
Experience Loss	09/30/2019	15	16,118,251	1,596,275	11	13,988,412
Experience Loss	09/30/2020	15	372,727	36,273	12	339,316
Experience Gain	09/30/2021	15	-11,414,870	-1,087,588	13	-10,787,248
Experience Loss	09/30/2022	15	16,182,937	1,507,943	14	15,767,218
Experience Loss	09/30/2023	15	47,937,273	4,370,393	15	47,937,273
Change in Assumptions	09/30/2005	25	-9,957,731	-1,109,360	7	-6,759,994
Change in Assumptions	09/30/2010	25	8,852,866	824,151	12	7,709,624
Change in Assumptions	09/30/2015	25	21,030,032	1,674,168	17	19,961,344
Change in Assumptions	09/30/2016	25	28,931,535	2,247,362	18	27,793,767
Change in Assumptions	09/30/2017	25	11,851,074	895,776	19	11,457,620
Change in Assumptions	09/30/2018	25	8,400,148	621,887	20	8,205,444
Change in Assumptions	09/30/2019	25	10,584,641	768,620	21	10,437,314
Plan Amendment	09/30/2003	25	8,490,209	1,034,049	5	4,710,128
Plan Amendment	09/30/2004	25	1,143,022	133,153	6	711,395
Change in Asset Method	09/30/2010	25	-41,797,931	-3,891,149	12	-36,400,221
<b>Total</b>				<b>\$24,551,210</b>		<b>\$156,393,680</b>

\* Level percentage of payroll

## Section 3: Supplemental Information

### Exhibit H: Supplementary State of Florida Information Summary of Salary Changes

Year Ended September 30	Total Salary	Percent Change in Total Salary	Percent Change in Salary of Employees Remaining Active	Expected Percent Change in Salary of Employees Remaining Active
2013	\$48,942,003	0.75%	5.14%	5.23%
2014	49,185,208	0.50%	5.07%	5.26%
2015	50,407,170	2.48%	4.66%	5.47%
2016	54,920,286	8.95%	6.78%	4.47%
2017	53,915,085	-1.83%	1.61%	4.65%
2018	54,593,265	1.26%	3.44%	4.59%
2019	54,801,351	0.38%	3.86%	4.41%
2020	59,432,600	8.45%	6.27%	4.03%
2021	59,769,312	0.57%	2.94%	4.40%
2022	60,269,102	0.84%	4.77%	4.31%
2023	66,776,946	10.80%	15.20%	4.23%

**Note:** The average total payroll growth for the most recent ten years was 3.16% per year.

## Section 3: Supplemental Information

### Exhibit (continued): Supplementary State of Florida Information Recent History of Recommended and Actual Contributions

Plan Year Ended	Valuation Year	State Contribution	Enhancements to State Increase	Enhancements to Amount Made	Enhancements to Amount Available	Base Amount	Recommended Contribution Allowable Offset	Recommended Contribution Total	Recommended Contribution City	Actual City Contribution
2001	2003	\$2,796,637	--	--	--	--	\$2,155,329	\$8,563,344	\$6,498,015	\$6,498,015
2002	2004	3,007,391	--	--	\$852,062	\$2,155,329	2,155,329	10,431,649	8,276,320	8,276,320
2003	2005	2,996,307	--	--	840,978	2,155,329	2,155,329	12,761,867	10,606,538	10,606,538
2004	2006	3,049,462	--	--	894,133	2,155,329	2,155,329	11,999,364	9,844,035	9,844,035
2005	2007	2,996,308	--	--	840,979	2,155,329	2,155,329	11,141,639	8,986,310	8,986,310
2006	2008	2,996,308	--	--	840,979	2,155,329	2,155,329	11,671,593	9,516,264	9,516,264
2007	2009	2,678,282	--	--	522,953	2,155,329	2,155,329	13,584,411	11,429,082	11,429,082
2008	2010	2,421,496	--	--	266,167	2,155,329	2,155,329	13,816,829	11,661,500	11,661,500
2009	2011	2,403,427	--	--	248,098	2,155,329	2,155,329	15,295,353	13,140,024	13,140,024
2010	2012	2,361,934	--	--	206,604	2,155,329	2,155,329	17,101,951	14,946,622	14,946,622
2011	2013	2,458,292	--	--	302,963	2,155,329	2,155,329	18,528,794	16,373,465	16,373,465
2012	2014	2,404,617	--	--	249,288	2,155,329	2,155,329	21,535,554	19,380,225	19,380,225
2013	2015	2,590,930	--	--	435,601	2,155,329	2,155,329	23,956,347	21,801,018	21,801,018
2014	2016	2,876,417	--	--	721,088	2,155,329	2,155,329	24,274,548	22,119,219	22,119,219
2015	2017	3,195,287	--	--	736,994	2,458,293	2,458,293	27,359,700	24,532,910	24,532,910
2016	2018	2,893,394	--	\$525,101	525,101	2,458,293	2,458,293	31,628,774	29,170,481	29,170,482
2017	2019	3,050,139	--	591,846	591,846	2,458,293	2,458,293	32,077,049	29,618,756	29,618,756
2018	2020	3,140,325	--	682,032	682,032	2,458,293	2,458,293	31,285,153	28,144,828	28,144,828
2019	2021	3,062,172	--	603,879	603,879	2,458,293	2,458,293	33,118,505	30,056,333	30,056,333
2020	2022	3,433,553	--	975,260	975,260	2,458,293	2,458,293	33,781,437	30,347,884	30,347,884
2021	2023	3,773,209	--	1,314,916	1,314,916	2,458,293	2,458,293	33,951,060	30,177,851	30,177,852
2022	2024		--			2,458,293	2,458,293	37,357,169		
2023	2025		--					42,261,648		

## Section 3: Supplemental Information

### Exhibit H (continued): Supplementary State of Florida information

Item	Year Ended September 30, 2023	Year Ended September 30, 2022
<b>Participant data</b>		
Active members	815	812
Total annual payroll	\$66,776,946	\$60,269,102
Retired members and beneficiaries	904	891
Total annualized benefit	\$49,419,816	\$46,802,856
Terminated vested members	8	7
Total annualized benefit	\$145,812	\$129,684
Members entitled to a return of employee contributions	13	26
<b>Actuarial value of assets</b>	<b>\$750,882,124</b>	<b>\$738,067,384</b>
<b>Present value of all future expected benefit payments:</b>		
Active members:		
Retirement benefits	\$407,983,072	\$371,676,593
Vesting benefits	2,452,421	2,218,472
Disability benefits	23,522,816	21,290,792
Death benefits	5,101,335	4,655,559
Return of contributions	<u>44,718,063</u>	<u>43,365,115</u>
Total	\$483,777,707	\$443,206,531
Terminated vested members	1,967,898	1,881,974
Retired members and beneficiaries	617,478,981	587,460,604
<b>Total</b>	<b>\$1,103,224,586</b>	<b>\$1,032,549,109</b>

## Exhibit H (continued): Supplementary State of Florida Information

Item	Year Ended September 30, 2023 New Assumptions	Year Ended September 30, 2023 Old Assumptions	Year Ended September 30, 2022
<b>Unfunded actuarial accrued liability</b>	\$156,393,680	\$156,393,680	\$123,458,962
<b>Actuarial present value of accrued benefits</b>			
Vested accrued benefits			
Active members	\$146,445,522	\$146,445,522	\$146,466,401
Inactive members	1,967,898	1,967,898	1,881,974
Retirees and beneficiaries	617,478,981	617,478,981	587,460,604
Nonvested active members	<u>45,710,891</u>	<u>45,710,891</u>	<u>43,848,207</u>
Total	\$811,603,292	\$811,603,292	\$779,657,186
<b>Pension cost</b>			
Normal cost, including administrative expenses	\$22,356,628	\$21,944,810	\$19,271,911
Expected employee contributions	-5,576,153	-5,576,153	-5,045,861
Level % of payroll payment to amortize unfunded actuarial accrued liability	<u>24,551,210</u>	<u>24,606,765</u>	<u>22,334,108</u>
Total minimum annual cost payable monthly at valuation date	\$41,331,685	\$40,975,422	\$36,560,158
Total payroll	66,776,946	66,776,946	60,269,102
Total employer cost projected to budget year	42,261,648	41,868,686	37,357,169
Total projected payroll	68,279,427	68,232,683	61,582,968
As % of projected payroll	61.90%	61.36%	60.66%
Present value of active members' future salaries at attained age	\$606,340,822	\$606,340,822	\$544,788,615
Present value of expected future employee contributions	\$50,815,605	\$50,815,605	\$45,661,471

## Section 3: Supplemental Information

### Exhibit H (continued): Supplementary State of Florida Information Actuarial Present Value of Accumulated Plan Benefits

Factors	Change in Actuarial Present Value of Accumulated Plan Benefits
<b>Actuarial present value of accumulated benefits as of October 1, 2022</b>	\$779,657,186
Benefits accumulated, net experience gain or loss, changes in data	\$30,435,638
Benefits paid	-53,090,160
Interest	<u>54,600,628</u>
Net increase	\$31,946,106
As % of payroll	47.84%
<b>Actuarial present value of accumulated benefits as of October 1, 2023</b>	\$811,603,292

# Section 4: Actuarial Valuation Basis

## Exhibit 1: Actuarial Assumptions, Methods and Models

### Rationale for assumptions

The information and analysis used in selecting each assumption that has a significant effect on this actuarial valuation is shown in the Actuarial Experience Review for the five-year period ended September 30, 2019. Current data is reviewed in conjunction with each annual valuation. Changes from the prior year are listed at the end of this exhibit.

### Net investment return

7.25%, net of investment expenses.

The net investment return assumption was chosen by the Pension Fund's Board Members, with input from the actuary. The assumption is a long-term estimate derived from historical data, current and recent market expectations, and professional judgment. As part of the analysis, a building block approach was used that reflects inflation expectations and anticipated risk premiums for each of the portfolio's asset classes, as well as the Fund's target asset allocation.

### Salary increases

Years of Service	Rate (%)
0-1	8.00
1-2	7.50
2-11	5.50
11 or more	3.00

Note: Rates above reflect a 2.25% inflation assumption

The salary scale assumption is based on the City's pay plan, along with analysis completed in conjunction with an Actuarial Experience Review for the five-year period ended September 30, 2019

### Payroll growth

2.25%, used to amortize the unfunded actuarial accrued liability as a level percentage of payroll.



## Section 4: Actuarial Valuation Basis

### Mortality rates

#### Pre-retirement:

**Male** - Pub2010 Male Public Safety Employee Headcount-weighted Below-median Mortality Table set forward 1 Year and projected generationally with scale MP2018

**Female** - Pub2010 Female Public Safety Employee Headcount-weighted Mortality Table set forward 1 Year and projected generationally with scale MP2018

#### Healthy:

**Male** – Pub2010 Male Public Safety Healthy Retiree Headcount-weighted Below-median Mortality Table set forward 1 Year and projected generationally with scale MP2018

**Female** - Pub2010 Female Public Safety Healthy Retiree Headcount-weighted Mortality Table set forward 1 Year and projected generationally with scale MP2018

#### Disabled:

**Male** - 80% Pub2010 Male Non-Public Safety Disabled Retiree Headcount-weighted Mortality Table and 20% Pub2010 Male Public Safety Disabled Retiree Headcount-weighted Mortality Table projected generationally with scale MP2018

**Female** - 80% Pub2010 Female Non-Public Safety Disabled Retiree Headcount-weighted Mortality Table and 20% Pub2010 Female Public Safety Disabled Retiree Headcount-weighted Mortality Table projected generationally with scale MP2018

As prescribed in Florida Statute Section 112.63(f), the mortality tables and mortality projection scale used are the same as those used in one of the two most recent valuations for the Florida Retirement System.

## Section 4: Actuarial Valuation Basis

### Annuitant mortality rates

Age	Rate (%) <sup>*</sup>			
	Healthy		Disabled	
	Male	Female	Male	Female
55	0.58	0.34	1.91	1.50
60	0.90	0.58	2.37	1.81
65	1.31	0.96	3.00	2.21
70	2.22	1.61	3.91	2.90
75	3.92	2.69	5.30	4.13
80	6.99	4.49	7.66	6.21
85	12.10	7.63	11.48	9.56
90	19.05	13.12	16.95	14.11

\* Rates shown do not include generational projection.

## Section 4: Actuarial Valuation Basis

### Mortality and Disability Rates before Retirement

Rate (%)				
Mortality <sup>1</sup>				
Age	Male	Female	Disability	Withdrawal <sup>2</sup>
20	0.05	0.02	0.09	0.09
25	0.06	0.02	0.09	0.09
30	0.06	0.03	0.09	0.09
35	0.07	0.04	0.25	0.25
40	0.09	0.06	0.29	0.29
45	0.12	0.08	0.33	0.33
50	0.18	0.11	0.44	0.44
55	0.27	0.15	0.70	0.70
60	0.42	0.21	0.70	0.70

<sup>1</sup>95% of deaths are assumed to be duty-related; rates shown do not include generational projection

<sup>2</sup>90% of disabilities are assumed to be duty-related

### Termination rates before retirement

Years of Service	Rate (%)
Less than 2	4.50
2-10	1.25
10-20	0.25
20+	0.00

*Note: Rates cut off at eligibility for earliest retirement*

## Section 4: Actuarial Valuation Basis

### Retirement rates

Years of Service	Rate (%)
20-27	25
27-29	50
29+	100

*\*Retirement is assumed to occur no later than age 65*

### Retirement rates for inactive vested participants

Former employees with rights to deferred benefits are assumed to retire at earliest eligibility.

### Weighted Average Retirement Age

Age 52.3, determined as follows: The weighted average retirement age for each participant is calculated as the sum of the product of each potential current or future retirement age times the probability of surviving from current age to that age and then retiring at that age, assuming no other decrements. The overall weighted retirement age is the average of the individual retirement ages based on all the active participants included in the October 1, 2023 actuarial valuation.

### Percent married

80% for males, 65% for females.

### Percentage of Beneficiaries Paid

It is assumed that for retirees currently in pay status with a Joint and Survivor form of benefit, 60% of beneficiaries will ultimately receive a survivor benefit.

### Age of spouse

Females 3 years younger than males.

## Section 4: Actuarial Valuation Basis

### Actuarial value of assets

The market value of assets less unrecognized returns in each of the last five years. Unrecognized return is equal to the difference between the actual market return and the projected market return based on the assumed investment rate of return and is recognized over a five-year period. The actuarial value is further adjusted, if necessary, to be within 20% of the market value.

### Actuarial cost method

Entry Age Normal Actuarial Cost Method. Entry Age is current age minus years of service. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are allocated by service, with Normal Cost determined using the plan of benefits applicable to each participant.

### Models

Segal valuation results are based on proprietary actuarial modeling software. The actuarial valuation models generate a comprehensive set of liability and cost calculations that are presented to meet regulatory, legislative and client requirements. Our Actuarial Technology and Systems unit, comprised of both actuaries and programmers, is responsible for the initial development and maintenance of these models. The models have a modular structure that allows for a high degree of accuracy, flexibility and user control. The client team programs the assumptions and the plan provisions, validates the models, and reviews test lives and results, under the supervision of the responsible actuary.

### Justification for change in actuarial assumptions

The following assumptions have been changed with this valuation:

- Administrative expenses increased from \$380,178 to \$791,996.
- The payroll growth assumption for amortization purposes changed from 2.18% to 2.25%, per Part VII, Chapter 112.64(5)(a) of Florida Statutes.

## Section 4: Actuarial Valuation Basis

### Exhibit 2: Summary of Plan Provisions

This exhibit summarizes the major provisions of the Plan included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions.

#### Plan Year

October 1 through September 30

#### Plan Status

Ongoing

#### Normal Retirement

Age Requirement	None
Service Requirement	20 years of credited service
Amount	70% of average monthly salary plus 2% of average monthly salary for each year of credited service in excess of 20 years (to a maximum of 5 years), plus additional 2% of average monthly salary for each year of credited service in excess of 40 years. Annual cost-of-living adjustment of 2% beginning at age 55

#### Early Retirement

Age Requirement	47
Service Requirement	10 years of credited service
Amount	2% of average monthly salary multiplied by years of service. If service is 20 years or more, normal pension amount.

## Section 4: Actuarial Valuation Basis

### Disability

#### On Duty

Age Requirement	None
Service Requirement	None
Amount	80% of average monthly salary; effective July 1, 1995, an annual cost-of-living adjustment of 2% beginning at age 55.

#### Off Duty

Age Requirement	None
Service Requirement	None
Amount	Service less than 10 years: 3% of average monthly salary times years of service 10-15 years of service: 4% of average monthly salary times years of service 16-20 years of service: 60% of average monthly salary  20+ years: 60% of average monthly salary plus an additional 4% for each additional year of service over 20 years, to a maximum of 80% of average monthly salary.

### Vesting

Age Requirement	None
Service Requirement	10 years
Monthly Amount	Less than 10 years of service: Return of Contributions Less than 20 years of service: 2% of average monthly salary times years of service; payable at age 47.  20 or more years: Normal pension accrued

## Section 4: Actuarial Valuation Basis

### Pre-Retirement Death Benefit

#### On Duty

Retirement	Death while in active service
Monthly Amount	80% of average monthly salary

#### Off Duty

Retirement	Death from causes unconnected with and not a direct result of the performance of duties while in active service
Monthly Amount	Service less than 10 years: Refund of contributions.  10 years or more years of service: 65% of amount of pension computed as if the decedent had retired under the off-duty disability provision, payable monthly

### Post-Retirement Death Benefit(s)

#### On Duty Disability or Service Requirement

Monthly Amount	The surviving spouse is paid 75% of the decedent's pension.
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#### Off Duty Disability Requirement

Monthly Amount	The surviving spouse is paid 65% of the decedent's pension.
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### Optional forms of benefits

Single Life Annuity; Life Annuity with 120 months guaranteed; 75% Joint and Survivor Pension.

### Average Monthly Salary

Average of the last 36 months of credited service. If total credited service is less than 3 years, the monthly average of total salary paid shall be used. Salary includes base pay, differential pay, longevity pay, incentive pay and career development pay. Salary does not include overtime pay, education advancement pay, firearm's qualification pay or any item not specifically included.



## Section 4: Actuarial Valuation Basis

### **Participation**

All police officers and managers regularly and continually employed in the Orlando Police department.

### **Cost of living adjustments (COLAs)**

2% per year beginning at age 55.

### **DROP**

A participant may retire at any time after completing 21 years of service with the option to BACKDROP for up to three years but not prior to the date the participant became eligible for a service pension. The retirement benefit amount is calculated based upon service and salary at the retroactive BACKDROP date. Up to 36 months of this benefit amount will be used in determining the BACKDROP lump-sum which shall accrue earnings at 8% interest, compounded annually from the retroactive retirement date. The BACKDROP account is payable to the participant upon termination of employment. A BACKDROP participant will not be eligible to participate in cost-of-living increases during the BACKDROP period.

### **Employee contribution rates**

1% of salary for management employees

2% of salary for non-management employees

0.40% of salary to finance the 1998 removal of the age 47 requirement for normal retirement

3.33% of salary to finance cost-of-living adjustment, effective October 1, 1995

2.74% of salary to finance BACKDROP and other benefit enhancements effective July 1, 2003.

### **Changes in plan provisions**

There were no changes in plan provisions since the last valuation.

# Appendix A: Definition of Pension Terms

The following list defines certain technical terms for the convenience of the reader:

Term	Definition
Actuarial accrued liability for actives	The equivalent of the accumulated normal costs allocated to the years before the valuation date.
Actuarial accrued liability for retirees and beneficiaries	Actuarial Present Value of lifetime benefits to existing retirees and beneficiaries. This sum takes account of life expectancies appropriate to the ages of the annuitants and the interest that the sum is expected to earn before it is entirely paid out in benefits.
Actuarial cost method	A procedure allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability that are used to determine the actuarially determined contribution.
Actuarial gain or loss	A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., assets earn more than projected, salary increases are less than assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results yield actuarial liabilities that are larger than projected.
Actuarially equivalent	Of equal Actuarial Present Value, determined as of a given date and based on a given set of Actuarial Assumptions.
Actuarial present value	The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. Each such amount or series of amounts is: Adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.) Multiplied by the probability of the occurrence of an event (such as survival, death, disability, withdrawal, etc.) on which the payment is conditioned, and discounted according to an assumed rate (or rates) of return to reflect the time value of money.

## Appendix A: Definition of Pension Terms

Term	Definition
Actuarial present value of future benefits	The Actuarial Present Value of benefit amounts expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age, anticipated future compensation, and future service credits. The Actuarial Present Value of Future Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive members entitled to either a refund of member contributions or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.
Actuarial valuation	The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan, as well as Actuarially Determined Contributions.
Actuarial value of assets	The value of the Plan's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly plans use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the Actuarially Determined Contribution.
Actuarially determined	Values that have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the Plan.
Actuarially determined contribution	The employer's contributions, expressed as a dollar amount or a percentage of covered plan compensation, determined under the Plan's funding policy. The ADC consists of the Employer Normal Cost and the Amortization Payment.
Amortization method	A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the Unfunded Actuarial Accrued Liability. Under the Level Percentage of Pay method, the Amortization Payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the Unfunded Actuarial Accrued Liability. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.
Amortization payment	The portion of the pension plan contribution, or ADC, that is intended to pay off the Unfunded Actuarial Accrued Liability.

## Appendix A: Definition of Pension Terms

Term	Definition
Assumptions or actuarial assumptions	The estimates upon which the cost of the Plan is calculated, including: <b>Investment return</b> — the rate of investment yield that the Plan will earn over the long-term future; <b>Mortality rates</b> — the rate or probability of death at a given age for employees and retirees; <b>Retirement rates</b> — the rate or probability of retirement at a given age or service; <b>Disability rates</b> — the rate or probability of disability retirement at a given age; <b>Withdrawal rates</b> — the rate or probability at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement; <b>Salary increase rates</b> — the rates of salary increase due to inflation, real wage growth and merit and promotion increases.
Closed amortization period	A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example, if the amortization period is initially set at 20 years, it is 19 years at the end of one year, 18 years at the end of two years, etc. See Open Amortization Period.
Decrements	Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or withdrawal.
Defined benefit plan	A retirement plan in which benefits are defined by a formula based on the member's compensation, age and/or years of service.
Defined contribution plan	A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.
Employer normal cost	The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions.
Experience study	A periodic review and analysis of the actual experience of the Plan that may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified based on recommendations from the Actuary.
Funded ratio	The ratio of the Actuarial Value of Assets (AVA) to the Actuarial Accrued Liability (AAL). Plans sometimes also calculate a market funded ratio, using the Market Value of Assets (MVA), rather than the AVA.
GASB 67 and GASB 68	Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68. These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 68 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 67 sets the rules for the systems themselves.

## Appendix A: Definition of Pension Terms

Term	Definition
Investment return	The rate of earnings of the Plan from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.
Net Pension Liability (NPL)	The Net Pension Liability is equal to the Total Pension Liability minus the Plan Fiduciary Net Position.
Normal cost	The portion of the Actuarial Present Value of Future Benefits and expenses, if applicable, allocated to a valuation year by the Actuarial Cost Method. Any payment with respect to an Unfunded Actuarial Accrued Liability is not part of the Normal Cost (see Amortization Payment). For pension plan benefits that are provided in part by employee contributions, Normal Cost refers to the total of member contributions and employer Normal Cost unless otherwise specifically stated.
Open amortization period	An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. If the initial period is set as 30 years, the same 30-year period is used in each future year in determining the Amortization Period.
Plan Fiduciary Net Position	Market value of assets.
Service costs	The portions of the actuarial present value of projected benefit payments that are attributed to valuation years.
Total Pension Liability (TPL)	The actuarial accrued liability under the entry age normal cost method and based on the blended discount rate as described in GASB 67 and 68.
Unfunded actuarial accrued liability	The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative, in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus or an Overfunded Actuarial Accrued Liability.
Valuation date or actuarial valuation date	The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Benefits is determined. The expected benefits to be paid in the future are discounted to this date.