

City of Fresno Fire and Police Retirement System

Actuarial Valuation and Review

As of June 30, 2023



This report has been prepared at the request of the Board of Retirement 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 Retirement 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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November 15, 2023

Board of Retirement
City of Fresno Fire and Police Retirement System
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Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of June 30, 2023. It summarizes the actuarial data used in the valuation, analyzes the preceding year's experience, and establishes the funding requirements for fiscal year 2024/2025.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist in administering the City of Fresno Fire and Police Retirement System. The census information and financial information on which our calculations were based was prepared by staff of the Retirement System. That assistance is gratefully acknowledged.

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.

The actuarial calculations were directed under the supervision of Andy Yeung, ASA, MAAA, FCA and Enrolled Actuary. We are members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the information supplied in this actuarial valuation is complete and accurate. Further, in our opinion, the assumptions as approved by the Board are reasonably related to the experience of and the expectations for the Retirement System.

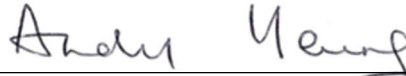
We look forward to reviewing this report at your next meeting and to answering any questions.

Sincerely,

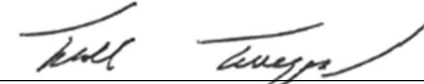
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Section 1: Actuarial Valuation Summary

Purpose and Basis

This report was prepared by Segal to present a valuation of the City of Fresno Fire and Police Retirement System (“the Retirement System” or “the System” or “the Plan”) as of June 30, 2023. The valuation was performed to determine whether the assets and contribution rates are sufficient to provide the prescribed benefits. The measurements shown in this actuarial valuation may not be applicable for other purposes. In particular, the measures herein are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan’s benefit obligations.

The contribution requirements presented in this report are based on:

- The benefit provisions of the pension plan, as administered by the Board of Retirement;
- The characteristics of covered active members, DROP participants, inactive vested members, and retired members and beneficiaries as of June 30, 2023, provided by the Retirement System;
- The assets of the Plan as of June 30, 2023, provided by the Retirement System;
- 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 of Retirement.

One of the general goals of an actuarial valuation is to establish contributions which fully fund the Retirement System’s liabilities, and which, as a percentage of payroll, remain as level as possible for each generation of active members. Annual actuarial valuations measure the progress toward this goal, as well as test the adequacy of the contribution rates.

In preparing this valuation, we have employed generally accepted actuarial methods and assumptions to evaluate the Retirement System’s liabilities and future contribution requirements. Our calculations are based upon member data and financial information provided to us by the Retirement System’s staff. This information has not been audited by us, but it has been reviewed and found to be consistent, both internally and with prior year’s information.

Section 1: Actuarial Valuation Summary

The contribution requirements are determined as a percentage of payroll. The Retirement System's employer rates provide for both Normal Cost and a contribution to amortize any unfunded or overfunded actuarial accrued liabilities. In this valuation, we have applied the funding policy adopted by the Board.¹ Details of the funding policy are provided in Section 4, Exhibit I on page 68.

The allocation of actuarial surplus may be found in Section 3, Exhibit H starting on page 49. A schedule of current amortization balances and payments may be found in Section 3, Exhibit I on page 56.

The rates calculated in this report may be adopted by the Board for the fiscal year that extends from July 1, 2024 through June 30, 2025.

The Actuarial Standard of Practice (ASOP) No. 4 provides guidelines for actuaries to follow when measuring pension obligations. For a plan such as that offered by the Retirement System that utilizes the actuarial surplus to provide contribution rate offsets and a Post Retirement Supplemental Benefit (PRSB) benefit, the valuation report must indicate that the impact of the application of any future actuarial surplus on the future financial condition of the plan has not been explicitly measured in the valuation. Furthermore, the actuary must consider using alternative procedures (such as stochastic modeling) for "gain sharing provisions that trigger benefit increases when investment returns are favorable but do not trigger benefit decreases when investment returns are unfavorable." Based on our analysis, we do not believe the System's actuarial surplus distribution provisions would necessarily fall under the guidelines of ASOP No. 4 so as to require quantification. This is based on the observation that only a portion of the surplus is available for distribution (on an amortized basis over 30 years) when the funded status of the System is over 110% in a particular valuation and that surplus distribution will be suspended immediately if the funded status falls below 110% in the following valuation. Nonetheless, it should be understood that there is still a potential financial impact associated with the surplus distribution provision. The Board may wish to consider authorizing a supplemental study so that the potential impact can be quantified.

¹ A "Comprehensive Actuarial Funding Policy" was jointly adopted on November 7, 2012 by the Retirement Boards for both the City of Fresno Employees Retirement System and the City of Fresno Fire and Police Retirement System. This policy was subsequently amended to lengthen the period used to amortize the actuarial surplus, when assets are greater than 110% of the actuarial accrued liabilities, from 25 years to 30 years starting with the June 30, 2018 valuations.

Section 1: Actuarial Valuation Summary

Valuation Highlights

- Pg. 34 1. The ratio of the Valuation Value of Assets to Actuarial Accrued Liabilities decreased from 120.5% to 116.7%. This ratio is one measure of funding status, and its history is a measure of funding progress. The ratio of the Market Value of Assets to the Actuarial Accrued Liability increased from 116.5% to 117.3%. These measurements are not necessarily appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligation or the need for of the amount of future contributions.
- Pg. 29 2. The Retirement System's prefunded actuarial accrued liability (PAAL), which is based on the Valuation Value of Assets, has decreased from \$304.9 million to \$268.8 million. The decrease in PAAL is primarily due to larger than expected COLA benefit increases for continuing retirees and DROP members, as well as individual salary increases greater than expected for active members. A reconciliation of the Retirement System's PAAL is provided in Section 2, Subsection E.
3. The actuarial loss of \$49.0 million, or 3.1% of the Actuarial Accrued Liability, is composed of an investment loss (after smoothing) of \$1.5 million, a net contribution gain of \$1.7 million¹, and a net experience loss from sources other than investments and contribution experiences of \$49.2 million. This loss from sources other than investment and contribution experience was primarily due to individual salary increases greater than expected for active members and COLA increases greater than expected for retirees and beneficiaries.
- Pg. 51 4. As of June 30, 2023, there is an actuarial surplus available for distribution as the Retirement System has Valuation Value of Assets that are in excess of 110% of the actuarial accrued liability. Such actuarial surplus in the Retirement System is used to reduce the City's contribution and to provide a PRSB. The determination and allocation of actuarial surplus as of June 30, 2023 as well as for the last valuation as of June 30, 2022 is provided in Section 3, Exhibit H of this report.
- Pg. 31 5. The aggregate employer rate increased from 21.08% of payroll to 23.09% of payroll. The reasons for this change in the employer rate are: (i) a smaller surplus offset than in the prior valuation, (ii) a negative balance projected in the City Surplus Reserve for the 2023/2024 fiscal year as compared to a positive balance for the 2022/2023 fiscal year, offset somewhat by (iii) a change in membership demographics among all active (DROP and non-DROP) members. A reconciliation of the Retirement System's aggregate employer rate is provided in Section 2, Subsection F.
- Pg. 32 6. The aggregate member rate calculated in this valuation has remained at 8.98% of payroll. This is based on the 9% contribution rate paid by all Tier 2 members, excluding those who are over age 60 with at least 10 years of service who are not required to make member contributions. A reconciliation of the Retirement System's aggregate member rate is provided in Section 2, Subsection F.
- Effective March 7, 2011, active members who signed up for the DROP are required to continue their employee contributions; however, those contributions are deposited into the members' DROP accounts and therefore not available to fund the value of the retirement benefit earned up to the date of the DROP. Therefore, those contributions that will be deposited into the DROP accounts are disregarded in this valuation.

¹ Without the large increase in active member compensation in 2022/23, we estimate that the net contribution gain would instead be a loss of approximately \$0.9 million.

Section 1: Actuarial Valuation Summary

7. The rate of return on the Market Value of Assets was 10.65% for the 2022-2023 plan year. The return on the Valuation Value of Assets was 6.67% for the same period due the recognition of prior years' investment gains and losses. This resulted in an actuarial loss when measured against the prior valuation's assumed rate of return of 6.75%.

Pg. 21 8. The total net unrecognized investment gain as of June 30, 2023 is \$8.4 million (as compared to a net unrecognized investment loss of \$59.6 million in the previous valuation. This deferred investment gain of \$8.4 million will be recognized in the determination of the Actuarial Value of Assets for funding purposes in the next few years as shown in *Section 2, Subsection B*.

The net deferred gains of \$8.4 million represent about 0.4% of the Market Value of Assets. Unless offset by future investment losses or other unfavorable experience, the recognition of the \$8.4 million market gains is expected to have an impact on the Retirement System's future funded ratio and the aggregate employer contributions. This potential impact may be illustrated as follows:

a. If the net deferred gains in this year's valuation were recognized immediately and entirely in the Valuation Value of Assets, the funded ratio would increase from 116.7% to 117.3%.

For comparison purposes, if the net deferred losses in the June 30, 2022 valuation had been recognized immediately in the June 30, 2022 valuation, the funded ratio would have decreased from 120.5% to 116.5%.

b. If the net deferred gains in this year's valuation were recognized immediately and entirely in the Valuation Value of Assets, the aggregate employer contribution rate would decrease from 23.09% to 22.88% of payroll.

For comparison purposes, if the net deferred losses in the June 30, 2022 valuation had been recognized immediately in the June 30, 2022 valuation, the aggregate employer contribution rate would have increased from 21.08% to 22.75% of payroll.

c. If the net deferred gains in this year's valuation were recognized immediately and entirely in the Valuation Value of Assets, the PRSB benefit of \$166.87 per month would increase to \$174.95 for the 2024 calendar year.

For comparison purposes, if the net deferred losses in the June 30, 2022 valuation had been recognized immediately in the June 30, 2022 valuation, the PRSB benefit of \$221.86 per month would have decreased to \$162.94 for the 2023 calendar year.

9. Actuarial Standard of Practice No. 51 (ASOP 51) requires actuaries to identify and assess risks that "may reasonably be anticipated to significantly affect the plan's future financial condition". Examples of key risks listed that are particularly relevant to the Retirement System are asset/liability mismatch risk, investment risk, and longevity risk. The standard also requires an actuary to consider if there is any ongoing contribution risk to the plan, however it does not require the actuary to evaluate the particular ability or willingness of contributing entities to make contributions when due, nor does it require the actuary to assess the likelihood or consequences of future changes in applicable law.

The actuary's initial assessment can be strictly a qualitative discussion about potential adverse experience and the possible effect on future results, but it may also include quantitative numerical demonstrations where informative. The actuary is also encouraged to consider a recommendation as to whether a more detailed assessment or risk report would be significantly beneficial for the intended

Section 1: Actuarial Valuation Summary

user in order to examine particular financial risks. When making that recommendation, the actuary will take into account such factors as the plan's design, risk profile, maturity, size, funded status, asset allocation, cash flow, possible insolvency and current market conditions.

Since the actuarial valuation results are dependent on a fixed set of assumptions and data as of a specific date, there is risk that emerging results may differ, perhaps significantly, as actual experience is fluid and will not exactly track current assumptions. This potential divergence may have a significant impact on the future financial condition of the plan. However, as we discussed with the Retirement System's staff, because the Plan is sufficiency well-funded (funded percentage of 116.7%), adverse experience for a short period of time is less likely to result immediately in an unfunded liability compared with plans whose funded percentage is closer to or below 100%. Accordingly, in Section 2, Subsection J of this valuation report we have only included a brief discussion of key risks that may affect the Retirement System. However, should the Plan's funded percentage fall closer to or below 100%, we will recommend that the Retirement System consider a stand-alone report with a more detailed analysis of the potential range of the impact of risk relative to the Plan's future financial condition. At that time, a more detailed assessment of the risks tailored to specific interests or concerns of the Board would provide the Board with a better understanding of the inherent risks and would further discuss and highlight information and risks particular to the Retirement System such as detailed historical experience and key events, growing plan maturity, heightened contribution sensitivity to asset and liability changes, and projected sensitivity to potential future investment returns through selected scenario or stress test and stochastic modeling.

Note that this year the risk assessment section includes the disclosure of a "Low-Default-Risk Obligation Measure" (LDRM). This disclosure, along with commentary on the significance of the LDRM, is a new requirement under Actuarial Standard of Practice No. 4 (ASOP 4) for all pension funding actuarial valuation reports.

10. It is important to note that this actuarial valuation is based on plan assets as of June 30, 2023. The plan's 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 June 30, 2023 due to COVID-19. Segal is available to prepare projections of potential outcomes of market conditions and other demographic experience upon request.

Section 1: Actuarial Valuation Summary

Summary of Key Valuation Results

		June 30, 2023		June 30, 2022	
		Total Rate	Estimated Annual Dollar Amount (\$ in '000s)	Total Rate	Estimated Annual Dollar Amount (\$ in '000s)
Employer Contribution Rates: ¹	• Tier 1 Normal Cost Rate	29.92%	\$218	30.25%	
	• Tier 2 Normal Cost Rate	25.34%	36,836	25.47%	
	• All Categories Combined	25.36%	37,054	25.51%	\$37,269
	• Surplus Offset	(2.73%)	(3,987)	(4.37%)	(6,384)
	• Contribution (Excess)/Shortfall from Prior Fiscal Year	0.46%	673	(0.06%)	(88)
	• Required Contributions	23.09%	\$33,740	21.08%	\$30,797
Aggregate Member Contributions Rates: ³	• Tier 1 ²	0.00%	\$0	0.00%	\$0
	• Tier 2 ²	8.98%	11,933	8.98%	11,933
	• All Categories Combined	8.98%	11,933	8.98%	11,933

¹ Based on projected fiscal year 2024/2025 annual payroll for active non-DROP and DROP members of \$146,096.

² Reflects that all active Tier 1 members are currently in the DROP and Tier 2 members over age 60 with at least 10 years of service do not have to make a member contribution.

³ Based on projected fiscal year 2023/2024 annual payroll for members not in the DROP of \$132,888.

Section 1: Actuarial Valuation Summary

Summary of Key Valuation Results (continued)

		June 30, 2023 (\$ in '000s)	June 30, 2022 (\$ in '000s)
Actuarial Accrued Liability as of June 30:	<ul style="list-style-type: none"> Active non-DROP members Active DROP members Retired members and beneficiaries Inactive vested members¹ Total Actuarial Accrued Liability (AAL) Normal Cost for plan year beginning June 30 	\$542,581 119,769 907,131 <u>37,805</u> \$1,607,286 \$47,559	\$503,920 111,298 837,110 <u>34,283</u> \$1,486,611 \$43,026
Assets as of June 30:	<ul style="list-style-type: none"> Market Value of Assets (MVA)² Valuation Value of Assets (VVA) 	\$1,884,566 \$1,876,149	\$1,731,900 \$1,791,487
Funded Status as of June 30:	<ul style="list-style-type: none"> Prefunded/(Unfunded) AAL on MVA basis Funded Percentage on MVA basis Prefunded/(Unfunded) AAL on VVA basis Funded Percentage on VVA basis 	\$277,280 117.3% \$268,863 116.7%	\$245,289 116.5% \$304,876 120.5%
Key Assumptions:	<ul style="list-style-type: none"> Net investment return Price inflation Payroll growth Amortization period on VVA Basis³ 	6.75% 2.50% 3.00% 30 years	6.75% 2.50% 3.00% 30 years

¹ Includes inactive members due a refund of contributions.

² Excludes non-valuation reserves and other adjustments.

³ Change in Prefunded AAL or Unfunded AAL as a result of gains or losses for each valuation are amortized over 30 years (when the Plan has Prefunded AAL) or separate periods of 15 years (when the Plan has Unfunded AAL). Details on the funding policy are provided in Section 4, Exhibit 1.

Section 1: Actuarial Valuation Summary

Summary of Key Valuation Results (continued)

		June 30, 2023	June 30, 2022	Change From Prior Year
Demographic data as of June 30:	Active Non-DROP Members:			
	• Number of members	1,111	1,045	6.3%
	• Average age	39.3	40.2	-0.9
	• Average service	11.4	12.1	-0.7
	• Total projected compensation	\$129,017,259	\$115,913,278	11.3%
	• Average projected compensation ¹	\$116,127	\$110,922	4.7%
	Active DROP Members:			
	• Number of members	92	89	3.4%
	• Average age	58.0	57.6	0.4
	• Average service	23.0	23.1	-0.1
	• Total projected compensation	\$12,823,477	\$11,912,877	7.6%
	• Average projected compensation ¹	\$139,386	\$133,853	4.1%
	Retired Members and Beneficiaries:			
	• Number of members			
	– Service retired	393	384	2.3%
	– Disability retired	488	465	4.9%
	– Beneficiaries	<u>307</u>	<u>305</u>	0.7%
	– Total	1,188	1,154	2.9%
	• Average age	68.1	68.0	0.1
	• Average monthly benefit ²	\$4,545	\$4,352	4.4%
	Inactive Vested Members:			
• Number of members ³	162	138	17.4%	
• Average Age	41.6	42.2	-0.6	
Total Members:	2,553	2,426	5.2%	

¹ June 30, 2022 payroll was projected payroll for fiscal year 2022/2023. June 30, 2023 payroll was projected payroll for fiscal year 2023/2024.

² Excludes supplemental benefits (if any) paid from PRSB and benefits derived from DROP account balances.

³ Includes inactive members due a refund of member contributions.

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:

Plan Provisions	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.
Participant Information	An actuarial valuation for a plan is based on data provided to the actuary by the System. 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.
Financial Information	The valuation is based on the Market Value of Assets as of the valuation date, as provided by the System. The System uses a “Valuation Value of Assets” that differs from market value to gradually reflect year-to-year changes in the Market Value of Assets and excludes non-valuation reserves in determining the contribution requirements.
Actuarial Assumptions	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 (if any). 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.
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.

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 Retirement System. Segal is not responsible for the use or misuse of its report, particularly by any other party.

An actuarial valuation is a measurement of the plan's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. 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. Future contribution requirements may differ from those determined in the valuation because of:

- Differences between actual experience and anticipated experience;
- Changes in actuarial assumptions or methods;
- Changes in statutory provisions; and
- Differences between the contribution rates determined by the valuation and those adopted by the Board.

Some actuarial results in this report are not rounded, but that does not imply precision.

If the Retirement System 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's provisions, but they may be subject to alternative interpretations. The System 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 System upon delivery and review. The System 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 Plan, it is not a fiduciary in its capacity as actuaries and consultants with respect to the Plan.

Section 2: Actuarial Valuation Results

A. Member Data

The Actuarial Valuation and Review considers the number and demographic characteristics of covered members, including active members, inactive vested members, retired members and beneficiaries.

This section presents a summary of significant statistical data on these member groups.

More detailed information for this valuation year and the preceding valuation can be found in *Section 3, Exhibits A, B, and C.*

Member Population: 2014 – 2023

Year Ended June 30	Active Members ¹	Inactive Vested Members ²	Retired Members and Beneficiaries	Total Non-Actives	Ratio of Non-Actives to Actives	Ratio of Retired Members and Beneficiaries to Actives
2014	998	69	978	1,047	1.05	0.98
2015	993	87	1,005	1,092	1.10	1.01
2016	1,054	102	1,011	1,113	1.06	0.96
2017	1,086	117	1,046	1,163	1.07	0.96
2018	1,133	115	1,066	1,181	1.04	0.94
2019	1,123	121	1,085	1,206	1.07	0.97
2020	1,095	126	1,107	1,233	1.13	1.01
2021	1,082	124	1,126	1,250	1.16	1.04
2022	1,134	138	1,154	1,292	1.14	1.02
2023	1,203	162	1,188	1,350	1.12	0.99

¹ Includes DROP members.

² Includes inactive members due a refund of member contributions.

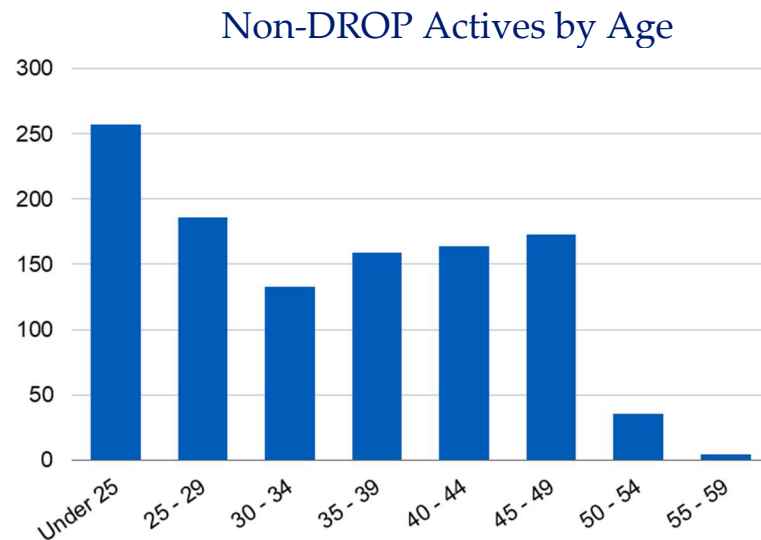
Section 2: Actuarial Valuation Results

Non-DROP Active Members

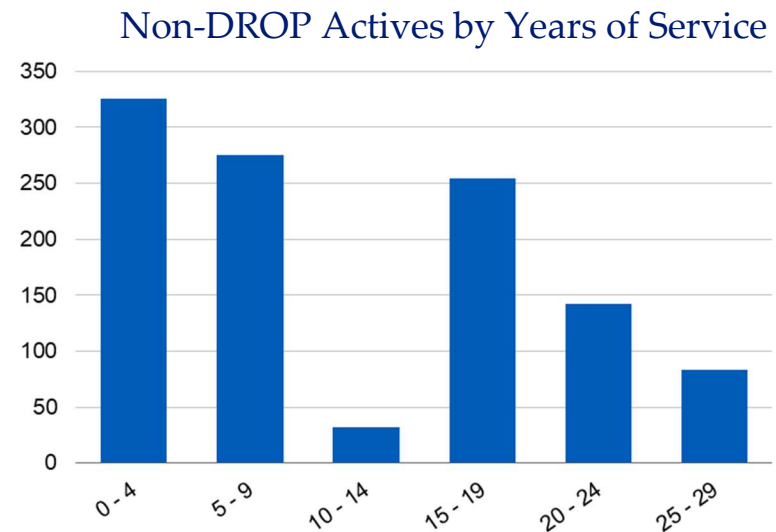
Plan costs are affected by the age, years of service and salaries of active members. In this year's valuation, there were 1,111 non-DROP active members with an average age of 39.3, average years of service of 11.4 years and average salary of \$116,127. The 1,045 non-DROP active members in the prior valuation had an average age of 40.2, average service of 12.1 years and average compensation of \$110,922.

Among the active members, there were none with unknown age information.

Distribution of Non-DROP Active Members as of June 30, 2023



Average age	39.3
Prior year average age	<u>40.2</u>
Difference	-0.9



Average years of service	11.4
Prior year average years of service	<u>12.1</u>
Difference	-0.7

Inactive Members

In this year's valuation, there were 162 members with a vested right to a deferred or immediate vested benefit versus 138 members in the prior valuation.

Section 2: Actuarial Valuation Results

DROP Active Members

In this year's valuation, there were 92 DROP active members with an average age of 58.0 years, average years of service of 23.0 and average compensation of \$139,386. The 89 DROP active members in the prior valuation had an average age of 57.6 years, average years of service of 23.1 and average compensation of \$133,853.

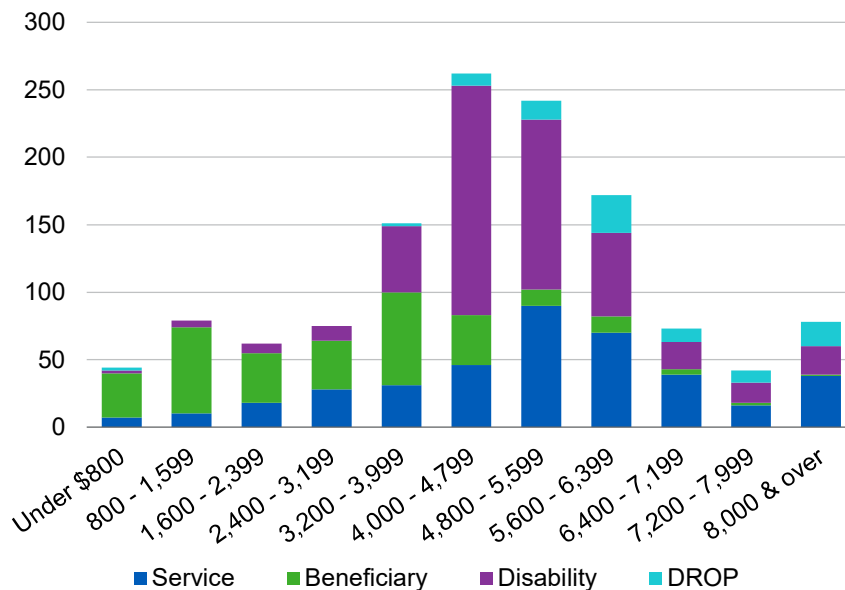
Retired Members and Beneficiaries

As of June 30, 2023, 881 retired members and 307 beneficiaries were receiving total monthly benefits of \$5,399,807. For comparison, in the previous valuation, there were 849 retired members and 305 beneficiaries receiving monthly benefits of \$5,021,885.

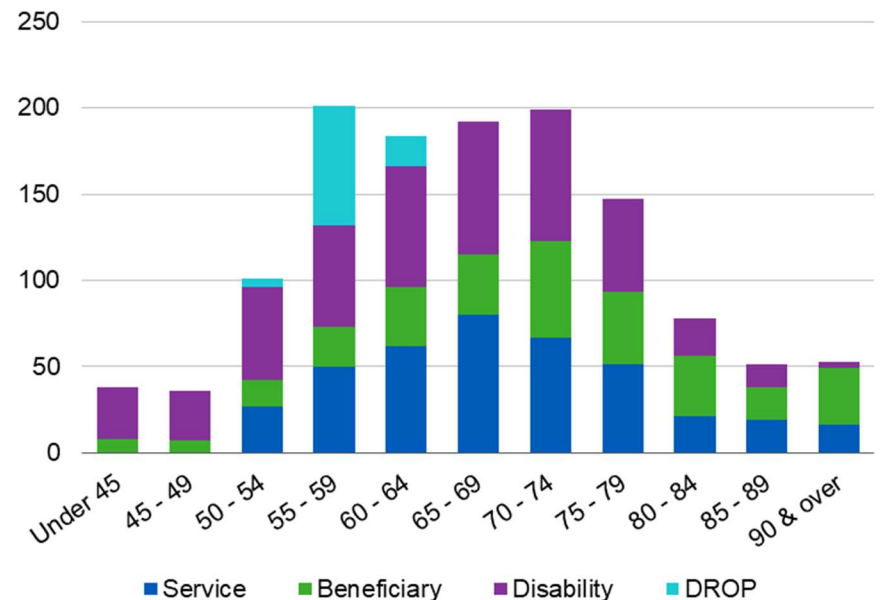
As of June 30, 2023, the average monthly benefit for retired members and beneficiaries is \$4,545, compared to \$4,352 in the previous valuation. The average age for retired members and beneficiaries is 68.1 in the current valuation, compared with 68.0 in the prior valuation.

Distribution of DROP Active Members, Retired Members and Beneficiaries as of June 30, 2023

DROP Active Members, Retired Members and Beneficiaries by Type and Monthly Amount



DROP Active Members, Retired Members and Beneficiaries by Type and Age



Section 2: Actuarial Valuation Results

Historical Plan Population

The chart below demonstrates the progression of the active non-DROP and DROP populations over the last ten years. The chart also shows the growth among the retired population over the same time period.

Member Data Statistics: 2014 – 2023

Year Ended June 30	Active Non-DROP Members			Active DROP Members			Retired Members and Beneficiaries		
	Count	Average Age	Average Service	Count	Average Age	Average Service	Count	Average Age	Average Monthly Amount
2014	872	40.8	12.4	126	55.6	23.8	978	66.7	\$3,597
2015	880	41.0	12.5	113	56.0	23.4	1,005	67.0	3,600
2016	947	40.6	11.9	107	56.5	23.4	1,011	67.0	3,580
2017	990	40.3	11.8	96	57.0	22.9	1,046	67.2	3,750
2018	1,043	40.0	11.6	90	57.4	22.8	1,066	67.0	3,827
2019	1,033	40.4	12.0	90	57.3	22.9	1,085	67.4	3,922
2020	999	40.8	12.5	96	57.3	23.3	1,107	67.7	4,018
2021	987	41.0	12.7	95	57.5	22.8	1,126	68.0	4,185
2022	1,045	40.2	12.1	89	57.6	23.1	1,154	68.0	4,352
2023	1,111	39.3	11.4	92	58.0	23.0	1,188	68.1	4,545

Section 2: Actuarial Valuation Results

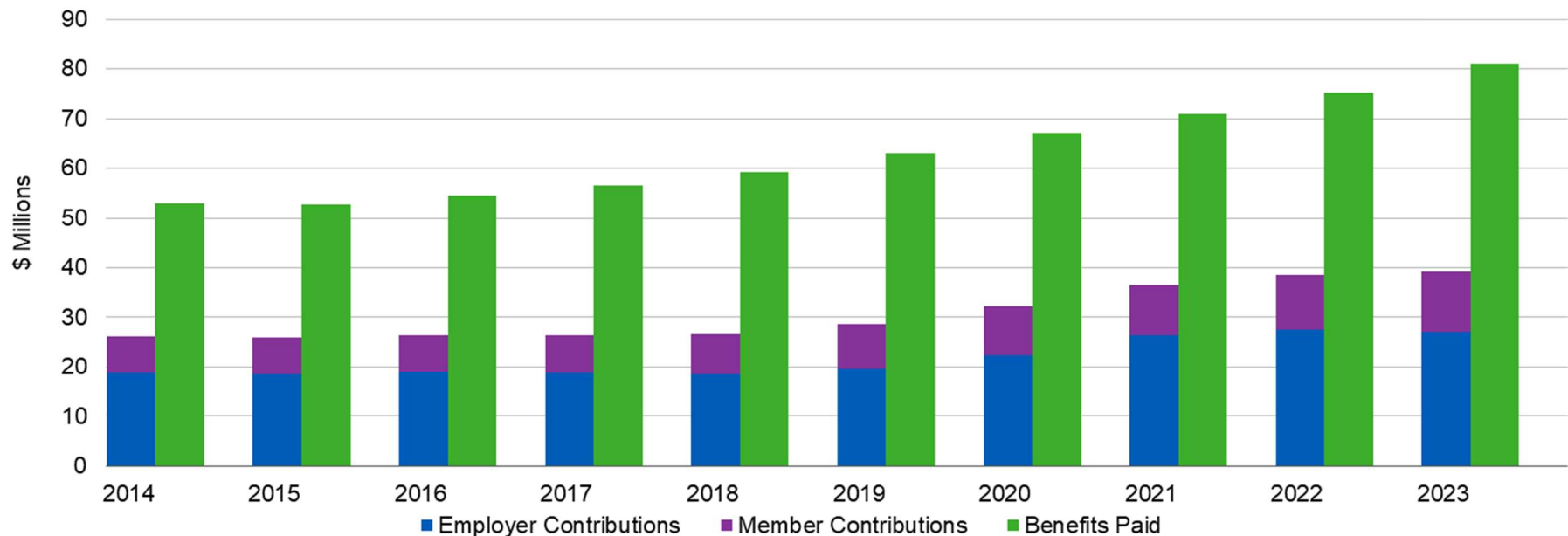
B. Financial Information

Retirement plan funding anticipates that, over the long term, both contributions and investment earnings (less investment fees and administrative expenses) 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, F and G.*

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.

Comparison of Contributions with Benefits and Expenses for Years Ended June 30, 2014 – 2023



Section 2: Actuarial Valuation Results

Determination of Actuarial Value of Assets for Year Ended June 30, 2023

1 Market Value of Assets						\$2,045,836,887
		Actual Return	Expected Return	Investment Gain/(Loss)¹	Deferred Factor	Deferred Return
2	Calculation of deferred return:					
a)	Year ended June 30, 2019	\$82,871,945	\$114,822,355	\$(31,950,410)	0.0	\$0
b)	Year ended June 30, 2020	24,205,522	114,061,286	(89,855,764)	0.2	(17,971,153)
c)	Year ended June 30, 2021	491,744,237	113,187,400	378,556,837	0.4	151,422,735
d)	Year ended June 30, 2022	(160,517,285)	144,968,761	(305,486,046)	0.6	(183,291,628)
e)	Year ended June 30, 2023	198,976,002	126,155,410	72,820,592	0.8	<u>58,256,473</u>
f)	Total deferred return ²					\$8,416,427
3	Actuarial Value of Assets (1) - (2f)					\$2,037,420,460
4	Actuarial Value of Assets as a percentage of Market Value of Assets					99.6%
5	Non-valuation reserves and other adjustments:					
a)	DROP reserve					\$158,724,000
b)	PRSB reserve					2,672,000
c)	City surplus reserve ³					<u>(125,000)</u>
d)	Total					161,271,000
6	Valuation Value of Assets (3) – (5d)					\$1,876,149,460

¹ Administrative expenses are treated as benefit payments and are excluded from the calculation of actual versus expected income.

² Deferred return as of June 30, 2023 recognized in each of the next four years:

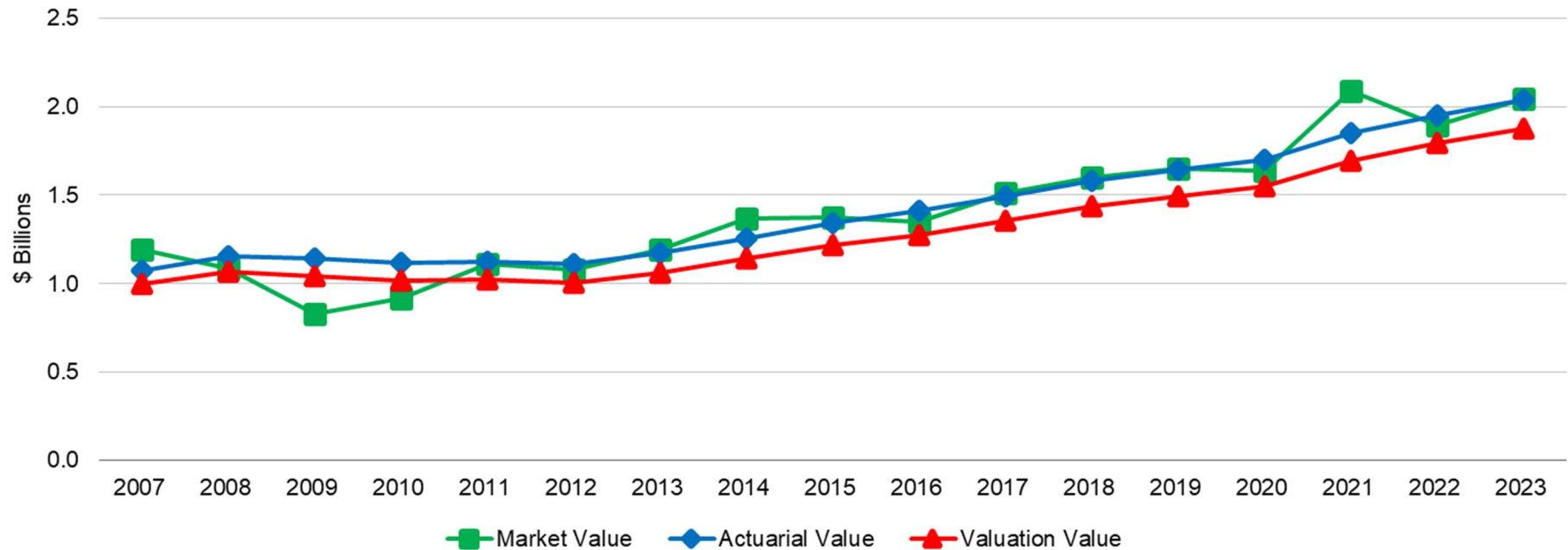
(a)	Amount recognized on June 30, 2024	\$11,207,123
(b)	Amount recognized on June 30, 2025	29,178,276
(c)	Amount recognized on June 30, 2026	(46,533,090)
(d)	Amount recognized on June 30, 2027	<u>14,564,118</u>
(e)	Total unrecognized return as of June 30, 2023	\$8,416,427

³ The City Surplus Reserve is treated as an asset; it represents the City's prior shortfall contributions due to the difference between the actual versus the estimated contributions for 2022/2023. This difference is taken into account in developing the contribution rate requirement for 2024/2025. See Steps (4) and (12) in Table 4 of Section 3, Exhibit H for these calculations.

Section 2: Actuarial Valuation Results

The Market Value, Actuarial Value and Valuation Value of Assets are representations of the Plan's financial status. As investment gains and losses are gradually taken into account, the Actuarial Value of Assets tracks the Market Value of Assets. The Valuation Value of Assets is the actuarial value, excluding any non-valuation reserves. The Valuation Value of Assets is significant because the Plan's liabilities are compared to these assets to determine what portion, if any, remains unfunded. Amortization of the unfunded actuarial accrued liability (or allocation of the Actuarial Surplus) is an important element in determining the contribution requirement.

Market Value, Actuarial Value, and Valuation Value of Assets as of June 30, 2007 – 2023



Section 2: Actuarial Valuation Results

C. Actuarial Experience

To calculate any actuarially determined contribution, assumptions are made about future events that affect the amount and timing of benefits to be paid and assets to be accumulated. Each year actual experience is measured against the assumptions. If overall experience is more favorable than anticipated (an actuarial gain), the actuarially determined contribution will decrease from the previous year. On the other hand, the actuarially determined contribution will increase if overall actuarial experience is less favorable than expected (an actuarial loss).

Taking account of experience gains or losses in one year without making a change in assumptions reflects the belief that the single year's experience was a short-term development and that, over the long term, experience will return to the original assumptions. For contribution requirements to remain stable, assumptions should approximate experience.

If assumptions are changed, the contribution requirement is adjusted to take into account a change in experience anticipated for all future years.

The total loss is \$49.0 million, including a loss of \$1.5 million from investments (after "smoothing"), a gain of \$1.7 million from contribution experience, and a loss of \$49.2 million from all other sources. The net loss from experience other than investments and contributions was 3.1% of the Actuarial Accrued Liability. A discussion of the major components of the actuarial experience is on the following pages.

Actuarial Experience for Year Ended June 30, 2023

1	Net loss from investments ¹	\$(1,458,000)
2	Net gain from contribution experience	1,686,000
3	Net loss from other experience ²	<u>(49,181,000)</u>
4	Net experience loss: 1 + 2 + 3	\$(48,953,000)

¹ Details on next page.

² See Subsection E for further details. Does not include the effect of plan or assumption changes, if any.

Section 2: Actuarial Valuation Results

Investment Experience

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the Plan's investment policy. The rate of return on the Market Value of Assets was 10.65% for the year ended June 30, 2023.

For valuation purposes, the assumed rate of return on the Valuation Value of Assets is 6.75% based on the assumptions used in the June 30, 2022 valuation. The actual rate of return on a valuation basis for the 2022/2023 plan year was 6.67%. Since the actual return for the year was less than the assumed return, the Plan experienced an actuarial gain during the year ended June 30, 2023 with regard to its investments.

Investment Experience for Year Ended June 30, 2023

	Market Value	Actuarial Value	Valuation Value
1 Net investment income	\$198,976,002	\$130,972,452	\$118,330,910
2 Average value of assets	\$1,868,969,041	\$1,928,556,164	\$1,774,652,935
3 Rate of return: 1 ÷ 2	10.65%	6.79%	6.67% ¹
4 Assumed rate of return	6.75%	6.75%	6.75%
5 Expected investment income: 2 x 4	\$126,155,410	\$130,177,541	\$119,789,073
6 Actuarial gain/(loss): 1 - 5	\$72,820,592	\$794,911	\$(1,458,163)

¹ The rate of return on the Valuation Value is "backed" into by using the change in the beginning of the year Valuation Value of Assets, contributions, benefit payments, and the end of year Valuation Value of Assets. The rate return is therefore sometimes different between what we calculated for the Employees and Fire and Police Systems.

Section 2: Actuarial Valuation Results

Because actuarial planning is long term, it is useful to see how the assumed investment rate of return has followed actual experience over time. The chart below shows the rate of return on an actuarial and valuation basis compared to the actual market value investment return for the last ten years, including averages over select time periods.

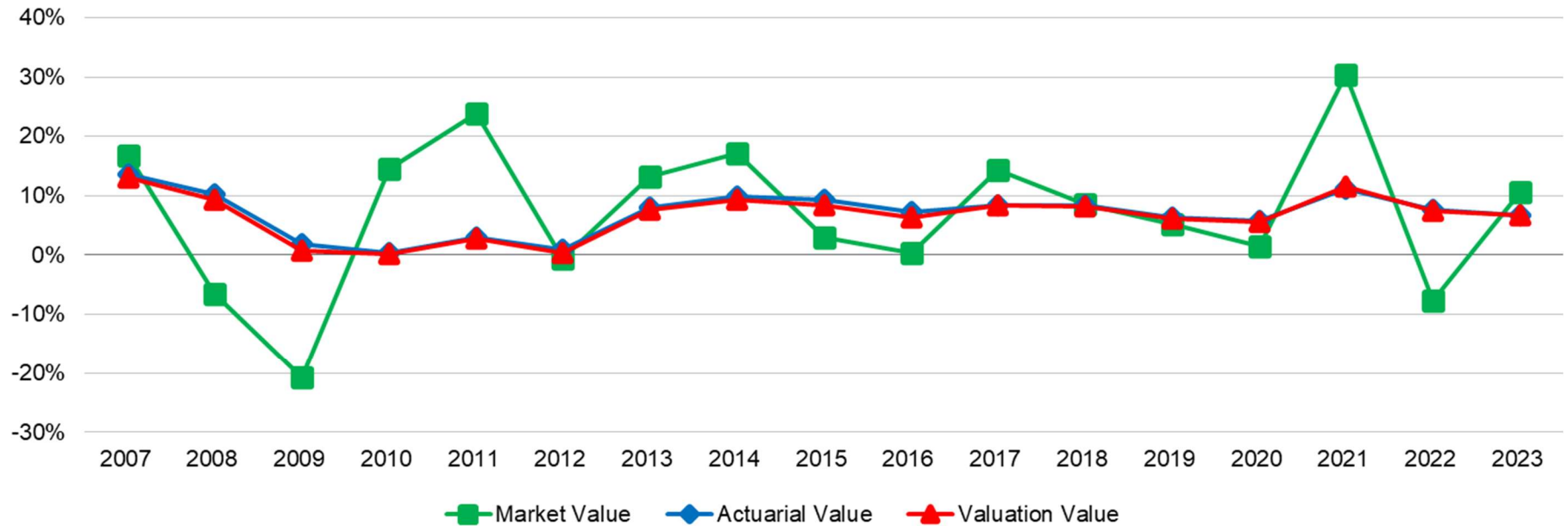
Investment Return – Market Value, Actuarial Value and Valuation Value: 2014 – 2023

Year Ended June 30	Market Value Investment Return		Actuarial Value Investment Return		Valuation Value Investment Return	
	Amount	Percent	Amount	Percent	Amount	Percent
2014	\$201,837,997	17.12%	\$114,397,808	9.88%	\$98,429,333	9.35%
2015	39,163,617	2.90%	114,934,646	9.24%	95,800,897	8.45%
2016	6,063,102	0.45%	96,387,718	7.26%	75,784,858	6.26%
2017	192,314,904	14.41%	117,957,029	8.47%	105,542,082	8.36%
2018	129,162,789	8.66%	122,483,565	8.30%	109,599,428	8.17%
2019	82,871,945	5.23%	100,101,769	6.41%	87,151,803	6.13%
2020	24,205,522	1.49%	93,820,390	5.78%	81,390,534	5.50%
2021	491,744,237	30.41%	187,859,826	11.18%	177,049,923	11.55%
2022	(160,517,285)	(7.75%)	139,427,742	7.62%	125,035,102	7.44%
2023	198,976,002	10.65%	130,972,452	6.79%	118,330,910	6.67%
Most recent five-year average return		7.29%	7.54%		7.44%	
Most recent ten-year average return		7.90%	8.08%		7.77%	

Section 2: Actuarial Valuation Results

Section 2, Subsection B described the actuarial asset valuation method that gradually recognizes fluctuations in the market value rate of return. The goal of this is to stabilize the actuarial rate of return and to produce more level pension plan costs.

Market, Actuarial and Valuation Rates of Return for Years Ended June 30, 2007 – 2023



Section 2: Actuarial Valuation Results

Contributions

Contributions for the year ended June 30, 2023 totaled \$38.0 million, compared to the projected amount of \$36.4 million. This resulted in a loss of \$1.7 million for the year, when adjusted for timing.¹

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:

- the extent of turnover among participants,
- retirement experience (earlier or later than projected),
- mortality (more or fewer deaths than projected),
- the number of disability retirements (more or fewer than projected),
- salary increases (greater or smaller than projected),
- DROP experience different than assumed, and
- cost-of-living adjustments (COLAs) higher or lower than anticipated.

The net loss from this other experience for the year ended June 30, 2023 amounted to \$49.2 million, which is 3.1% of the Actuarial Accrued Liability. This net loss was mainly due to higher than expected COLA increases for retirees and beneficiaries and higher than expected individual salary increases for actives. See Subsection E for a detailed development of the Unfunded Actuarial Accrued Liability.

¹ Without the large increase in active member compensation in 2022/23, we estimate that the net contribution gain would instead be a loss of approximately \$0.9 million.

Section 2: Actuarial Valuation Results

D. Other Changes in the Actuarial Accrued Liability

The Actuarial Accrued Liability as of June 30, 2023 is \$1.61 billion, an increase of \$120.7 million, or 8.1%, from the Actuarial Accrued Liability as of the prior valuation date. The liability is expected to grow each year with Normal Cost and interest, and to decline due to benefit payments made. Additional fluctuations can occur due to actual experience that differs from expected (as discussed in the previous subsection).

Actuarial Assumptions

There were no changes in assumptions since the prior valuation.

Details on actuarial assumptions and methods are in Section 4, Exhibit I.

Plan Provisions

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

A summary of plan provisions is in Section 4, Exhibit II.

Section 2: Actuarial Valuation Results

E. Development of Unfunded/(Prefunded) Actuarial Accrued Liability

Development for Year Ended June 30, 2023

1	Unfunded/(Prefunded) actuarial accrued liability at beginning of year	\$(304,876,000)
2	Normal cost at middle of year	43,026,000
3	Expected employer and member contributions ¹	(36,409,000)
4	Expected 2022/2023 PRSB Allocation, excluding draw down of the PRSB reserve and non-valuation assets	2,342,000
5	Interest	<u>(20,277,000)</u>
6	Expected Unfunded/(Prefunded) Actuarial Accrued Liability at end of year	\$(316,194,000)
7	Changes due to:	
	a) Actual contributions greater than expected ²	\$(1,686,000) ³
	b) Investment return less than expected (after “smoothing”)	1,458,000
	c) Individual salary increases greater than expected	15,660,000
	d) COLA increases greater than expected	28,087,000
	e) Impact of explicit valuation of separate career rank and final 3 year COLAs ⁴	(1,622,000)
	f) Other experience losses	<u>5,434,000</u>
	Total changes	<u>\$47,331,000</u>
8	Unfunded/(Prefunded) actuarial accrued liability at end of year	\$(268,863,000)

Note: The sum of items 7c through 7e equals the “Net gain from other experience” shown in Subsection C.

¹ Expected employer and member contributions reflect amount required to be paid after allocation of actuarial surplus, if any.

² Without the large increase in active member compensation in 2022/23, we estimate that the net contribution gain would instead be a loss of approximately \$0.9 million.

³ The contribution loss due to the scheduled one-year delay in implementing contribution rates from the previous valuation is \$0.9 million.

⁴ As a result of the current higher inflation environment, we have asked CFRS to add a flag to the membership data file so that we could apply the July 1, 2023 actual COLA increases depending on which Tier 1 members retired with a career rank versus final 3-year average COLA.

Section 2: Actuarial Valuation Results

F. Recommended Contribution

The recommended contribution is equal to the employer Normal Cost payment, plus a payment on the Unfunded Actuarial Accrued Liability or the employer's share of the amortization of Actuarial Surplus, plus an adjustment for any contribution excess/shortfall in the prior year. As of June 30, 2023, the average recommended employer contribution is 23.09% of compensation.

The Board sets the funding policy used to calculate the recommended contribution based on layered amortization periods. See *Section 4, Exhibit I* for further details on the funding policy.

The contribution requirement as of June 30, 2023 for fiscal year 2024/2025 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.

Recommended Employer Contribution

	2023		2022	
	Amount (\$ in '000s)	% of Projected Compensation	Amount (\$ in '000s)	% of Projected Compensation
1 a) Tier 1 Normal Cost		29.92%		30.25%
b) Tier 2 Normal Cost		33.55%		33.69%
c) All Categories Combined	\$48,987	33.53%	\$49,176	33.66%
2 Expected employee contributions, ignoring surplus offset	<u>(11,933)</u>	<u>(8.17%)</u>	<u>(11,907)</u>	<u>(8.15%)</u>
3 Employer normal cost: (1c) + (2)	\$37,054	25.36%	\$37,269	25.51%
4 Surplus Offset	(3,987)	(2.73%)	(6,384)	(4.37%)
5 Contribution (excess)/shortfall from prior fiscal year	<u>673</u>	<u>0.46%</u>	<u>(88)</u>	<u>(0.06%)</u>
6 Total recommended employer contribution: (3) + (4) + (5)	\$33,740	23.09%	\$30,797	21.08%
7 Projected 2023/2024 compensation for non-DROP and DROP members	\$146,096		\$146,096	

Note: Contributions are assumed to be paid at the middle of the year.

Section 2: Actuarial Valuation Results

Reconciliation of Average Recommended Employer Contribution Rate

The chart below details the changes in the average recommended employer contribution rate from the prior valuation to the current year's valuation.

Reconciliation of Recommended Employer Contribution Rate from June 30, 2022 to June 30, 2023

	Contribution Rate	Estimated Annual Dollar Amount ¹ (\$ in '000s)
Recommended Employer Contribution as of June 30, 2022 (for 2023/2024 fiscal year)	21.08%	\$30,797
• Reverse effect of 2022/2023 fiscal year contribution offset included in the above rate (payable 2023/2024)	(0.06%)	(88)
• Reverse effect of surplus allocated to the City in the 6/30/2022 valuation for the 2023/2024 fiscal year	<u>(4.37%)</u>	<u>(6,384)</u>
Normal Cost Rate as of June 30, 2022	25.51%	\$37,269
Effect of actuarial experience during 2022/2023 on Normal Cost Rate		
• Effect of changes in membership demographics among all active (DROP and non- DROP) members	<u>(0.15%)</u>	<u>(215)</u>
Normal Cost Rate as of June 30, 2023	25.36%	\$37,054
• Credit for the difference between the actual and the estimated 2023/2024 fiscal year contributions	0.46%	673
• Credit for surplus allocated to the City in the 6/30/2023 valuation for the 2024/2025 fiscal year	<u>(2.73%)</u>	<u>(3,987)</u>
Recommended Contribution Rate as of June 30, 2023 (for 2024/2025 fiscal year)	23.09%	\$33,740

¹ Based on projected fiscal year 2024/2025 annual payroll of \$146,096 for active non-DROP and DROP members.

Section 2: Actuarial Valuation Results

Reconciliation of Average Recommended Member Contribution Rate

The chart below details the changes in the average recommended member contribution rate from the prior valuation to the current year's valuation.

Reconciliation of Average Recommended Member Contribution from June 30, 2022 to June 30, 2023

	Contribution Rate	Estimated Annual Dollar Amount ¹
Average Recommended Member Contribution as of June 30, 2022	8.98%	\$11,933
<ul style="list-style-type: none">• Effect of change in member demographics among active non-DROP members	<u>0.00%</u>	<u>0</u>
Average Recommended Member Contribution as of June 30, 2023	8.98%	\$11,933

¹ Based on projected fiscal year 2024/2025 annual payroll for active non-DROP members of \$132,888.

Section 2: Actuarial Valuation Results

Breakdown of Normal Cost Rate

As requested by the Retirement System, we have provided a breakdown of the Normal Cost to fund each type of benefit. This breakdown is provided for Tier 2 members only because all Tier 1 members are in the DROP. For reference, the total normal cost for Tier 1 members is 29.92% of pay as of June 30, 2023 compared with 30.25% of pay as of June 30, 2022.

Breakdown of Tier 2 Normal Cost Rate for Year Ending June 30

	2023	2022
Service Retirement	19.96%	20.08%
Vested Deferred Retirement and Contribution Refunds	2.69%	2.66%
Death-In-Service	0.60%	0.60%
Disability	10.30%	10.35%
Total Normal Cost	33.55%	33.69%
Less expected employee contributions, ignoring surplus offset ¹	(8.21%)	(8.22%)
Net Employer Normal Cost	25.34%	25.47%

¹ The offset for employee contributions is less than the aggregate member rate because it expresses the employee contribution dollar amount as a percent of projected fiscal year 2024/2025 annual payroll for all Tier 2 active members (non-DROP and DROP) of \$145,367 instead of annual payroll for only Tier 2 active non-DROP members of \$132,888 (dollars in thousands).

Section 2: Actuarial Valuation Results

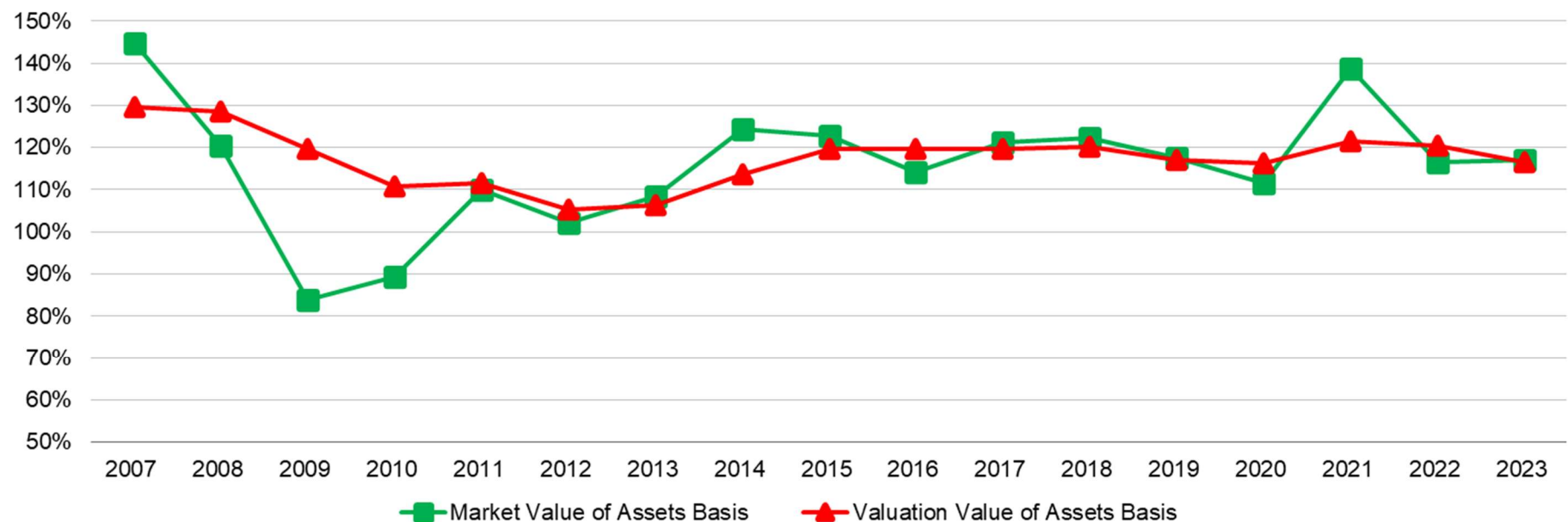
G. Funded Status

A commonly reported piece of information regarding the Plan's financial status is the funded ratio. These ratios compare the Market Value of Assets (excluding non-valuation reserves) and Valuation Value of Assets to the Actuarial Accrued Liability of the Plan. Higher ratios indicate a relatively well-funded plan, while lower ratios may indicate recent changes to actuarial assumptions, funding of the plan below actuarial requirements, poor asset performance, or a variety of other causes.

The chart below depicts a history of the funded ratio for the Plan. The chart on the next page shows the Plan's schedule of funding progress for the last ten years.

The funded status measures shown in this valuation are appropriate for assessing the need for or amount of future contributions. However, they are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations. As the chart below shows, the measures are different depending on whether the Valuation or Market Value of Assets is used.

Funded Ratio for Plan Years Ending June 30, 2007 – 2023



Section 2: Actuarial Valuation Results

Schedule of Funding Progress for Plan Years Ending June 30, 2014 – 2023 (\$ in '000s)

Actuarial Valuation Date as of June 30	Valuation Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Prefunded AAL (UAAL) (b) - (a)	Funded Ratio (%) (a) / (b)	Covered Payroll (c)	Prefunded AAL/(UAAL) as a Percentage of Projected Covered Payroll (%) [(b) - (a)] / (c)
2014	\$1,142,649	\$1,006,028	\$136,621	113.6	\$96,259	141.9
2015	1,220,269	1,019,916	200,353	119.6	95,262	210.3
2016	1,276,604	1,067,416	209,188	119.6	98,818	211.7
2017	1,354,974	1,131,348	223,626	119.8	102,679	217.8
2018	1,436,725	1,194,731	241,994	120.3	110,972	218.1
2019	1,495,023	1,277,749	217,274	117.0	115,073	188.8
2020	1,547,641	1,331,146	216,495	116.3	117,902	183.6
2021	1,695,906	1,395,140	300,766	121.6	120,177	250.3
2022	1,791,487	1,486,611	304,876	120.5	127,826	238.5
2023	1,876,149	1,607,286	268,863	116.7	141,841	189.6

Section 2: Actuarial Valuation Results

H. Actuarial Balance Sheet

An overview of the Plan'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 Plan 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 actuarial present value of future benefits of the Plan.

Second, this actuarial present value of future benefits is compared to the assets. The "assets" for this purpose include the net amount of assets already accumulated by the Plan, 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 for Year Ended June 30

	2023 (\$ in '000s)	2022 (\$ in '000s)
Actuarial present value of future benefits		
• Present value of benefits already granted, excluding current active DROP	\$907,131	\$837,110
• Present value of benefits for current active DROP	135,417	126,203
• Present value of benefits to be granted	<u>1,046,093</u>	<u>949,101</u>
Total actuarial present value of future benefits	\$2,088,641	\$1,912,414
Current and future assets		
• Total Valuation Value of Assets	\$1,876,149	\$1,791,487
• Present value of future member normal cost	101,380	87,838
• Present value of future employer normal cost	379,975	337,965
• Unfunded/(Prefunded) actuarial accrued liability	<u>(268,863)</u>	<u>(304,876)</u>
Total of current and future assets	\$2,088,641	\$1,912,414

Section 2: Actuarial Valuation Results

I. Volatility Ratios

Retirement plans are subject to volatility in the level of required contributions. This volatility tends to increase as retirement plans become more mature.

The Asset Volatility Ratio (AVR), which is equal to the Market Value of Assets divided by total payroll, provides an indication of the potential contribution volatility for any given level of investment volatility. A higher AVR indicates that the plan is subject to a greater level of contribution volatility. This is a current measurement since it is based on the current level of assets.

The current AVR¹ is about 14.4. This means that a 1% asset gain or loss (relative to the assumed investment return) translates to about 14.4% of one-year's payroll. Since actuarial gains and losses are amortized over 15 years, there would be a 1.2% of payroll decrease/(increase) in the required contribution for each 1% asset gain/(loss) if the Retirement System has an unfunded actuarial accrued liability.

The Liability Volatility Ratio (LVR), which is equal to the Actuarial Accrued Liability divided by payroll, provides an indication of the longer-term potential for contribution volatility for any given level of investment volatility. This is because, over an extended period of time, the plan's assets should track the plan's liabilities.

The LVR also indicates how volatile contributions will be in response to changes in the Actuarial Accrued Liability due to actual experience or to changes in actuarial assumptions. The current LVR is about 11.3. This is about 22% lower than the AVR.

The chart below shows how the asset and liability volatility ratios have varied over time.

Volatility Ratios for Years Ended 2014 – 2023

Year Ended June 30	Asset Volatility Ratio	Liability Volatility Ratio
2014	14.2	10.5
2015	14.5	10.7
2016	13.7	10.8
2017	14.7	11.0
2018	14.4	10.8
2019	14.3	11.1
2020	13.9	11.3
2021	17.4	11.6
2022	14.8	11.6
2023	14.4	11.3

¹ In developing the AVR, we have used the entire Market Value of Assets, including the non-valuation reserves and other adjustments.

Section 2: Actuarial Valuation Results

J. Risk Assessment

Since the actuarial valuation results are dependent on a fixed set of assumptions and data as of a specific date, there is risk that emerging results may differ, perhaps significantly, as actual experience is fluid and will not exactly track current assumptions. This potential divergence may have a significant impact on the future financial condition of the plan.

This section does not contain a detailed analysis of the potential range of future measurements, but does include a concise discussion of some of the primary risks that may affect the Plan's future financial condition. As we discussed with the Retirement System's staff, because the Plan is sufficiency well-funded (funded percentage of 116.7%), adverse experience for a short period of time is less likely to result immediately in an unfunded liability compared with plans whose funded percentage is closer to or below 100%. However, should the Plan's funded percentage fall closer to or below 100%, we will recommend that the Retirement System consider a stand-alone report with a more detailed analysis of the potential range of the impact of risk relative to the Plan's future financial condition. At that time, a more detailed assessment of the risks tailored to specific interests or concerns of the Board would provide the Board with a better understanding of the inherent risks and would further discuss and highlight information and risks particular to the Retirement System such as detailed historical experience and key events, growing plan maturity, heightened contribution sensitivity to asset and liability changes, and projected sensitivity to potential future investment returns through selected scenario or stress test and stochastic modeling.

This section provides descriptions and basic assessments of the primary risks that are likely to have an ongoing influence on the Plan's financial health, as well as a discussion of historical trends and maturity measures.

Risk Assessments

- Asset/Liability Mismatch Risk (the potential that future plan experience does not affect asset and liability values in the same way, causing them to diverge)

The most significant asset/liability mismatch risk to the Plan is investment risk, as discussed below. In fact, investment risk has the potential to impact asset/liability mismatch in two ways. The first mismatch is evident in annual valuations: when asset values deviate from assumptions they are typically independent from liability changes. The second mismatch can be caused when systemic asset deviations from assumptions may signal the need for an assumption change, which causes liability values and contribution rates to move in the opposite direction from any change in the expected experience of asset growth rates.

Asset/liability mismatch can also be caused by demographic assumption risk such as longevity, which affects liabilities but have no impact on asset levels. This risk is also discussed below.

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

Section 2: Actuarial Valuation Results

The investment return assumption is a long-term, static assumption for valuation purposes even though in reality market experience can be quite volatile in any given year. That volatility can cause significant changes in the financial condition of the plan, affecting both funded status and contribution rates. The inherent year-to-year volatility is reduced by smoothing through the Actuarial Value of Assets, however investment experience can still have a sizable impact. As discussed in Section 2, Subsection I, Volatility Ratios, on page 37, a 1% asset gain or loss (relative to the assumed investment return) translates to about 14.4% of one-year's payroll. Since actuarial gains and losses are amortized over 15 years, there would be a 1.2% of payroll decrease/(increase) in the required contribution for each 1% asset gain or loss if the Retirement System has an unfunded actuarial accrued liability.

The single year market value rate of return over the last 10 years has ranged from a low of -7.75% to a high of 30.41%.

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

The actuarial valuation includes current life expectancy assumptions and an expectation of future improvement in life expectancy, which are significant assumptions given the relatively long duration of liabilities for pension plans. Emerging plan experience that does not match these expectations will result in increases or decreases in the actuarially determined contribution over time. This risk can be reduced by using tables appropriate for the Plan (public experience tables) that are weighted by benefit levels, and by using generational mortality projections. The Board approved the use of such tables beginning with the June 30, 2019 valuation.

- Other Risks

In addition to longevity, the valuation includes a variety of other assumptions that are unlikely to match future experience exactly. One example is projected salary scales over time. As salary is central to the determination of benefits paid in retirement, deviations from the projected salary scales could have a material impact on the benefits anticipated for each member. Examples of demographic assumptions include DROP election, retirement, termination and disability assumptions, and will likely vary in significance for different demographic groups (for example, disability assumptions are typically more significant for older members).

Some plans also carry significant contribution risk, defined as the potential for actual future contributions deviating from expected future contributions. However, the City has a proven track-record of making the Actuarially Determined Contributions based on the Board's Actuarial Funding Policy, so contribution risk is minimal.

Evaluation of Historical Trends

Past experience can help demonstrate the sensitivity of key results to the Plan's actual experience. Over the past ten years:

- Over the past 10 years, the funded percentage on the Valuation Value of Assets basis has ranged from a low of 113.6% in 2014 to a high of 121.6% in 2021 (116.7% in this 2023 valuation). For a more detailed history see Section 2, Subsection G, Funded Status starting on page 34.

Section 2: Actuarial Valuation Results

- The average geometric investment return on the Valuation Value of Assets over the last 10 years was 7.77%. This includes a high of 11.55% and a low of 5.50%. The average over the last 5 years was 7.44%. For more details see the Investment Return table in Section 2, Subsection C on page 25.

Maturity Measures

In the last 10 years the ratio of members in pay status to active participants has ranged from 0.98 to 1.04. An increasing ratio would indicate that the plan was growing in maturity over time. An increasing ratio is generally expected over the longer term, and would be informative for understanding plan sensitivity to particular risks. For more details see Section 2, Subsection A, Member Data on page 16.

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 paid were \$42 million 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. For more details on historical cash flows see the Comparison of Contributions with Benefits in Section 2, Subsection B, Financial Information on page 20.

A further discussion of plan maturity measures and how they relate to changes in assets and liabilities is included in Section 2, Subsection I, Volatility Ratios starting on page 37.

Low-Default-Risk Obligation Measure (LDROM)

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 (LDROM) when performing a funding valuation. The LDROM 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 LDROM 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 LDROM 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 June of the measurement period, by The Bond Buyer, is 3.65% for use effective June 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 public pension plan liabilities. The LDROM is not used to determine a plan's

Section 2: Actuarial Valuation Results

funded status or Actuarially Determined Contribution Rate. The plan's expected return on assets, currently 6.75%, is used for these calculations.

As of June 30, 2023, the LDROM for the Plan is \$2.48 billion. The difference between the plan's AAL of \$1.61 billion and the LDROM 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 LDROM 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 3: Supplemental Information

Exhibit A: Table of Plan Coverage

Category	Tier 1 Year Ended June 30		Change From Prior Year
	2023	2022	
Active non-DROP members in valuation:			
• Number	0	0	N/A
• Average age	N/A	N/A	N/A
• Average years of service	N/A	N/A	N/A
• Total projected compensation	\$0	\$0	N/A
• Average projected compensation	N/A	N/A	N/A
• Account balances	\$0	\$0	N/A
• Total active vested members	0	0	N/A
Active DROP members in valuation:			
• Number	5	8	-37.5%
• Average age	58.0	57.7	0.3
• Average service	25.1	25.2	-0.1
• Projected total compensation	\$707,881	\$1,075,518	-34.2%
• Projected average compensation	\$141,576	\$134,440	5.3%
Inactive vested Members:			
• Number ¹	0	0	N/A
• Average age	N/A	N/A	N/A
Retired members:			
• Number in pay status	279	287	-2.8%
• Average age	73.6	72.7	0.9
• Average monthly benefit ²	\$5,756	\$5,511	4.4%
Disabled members:			
• Number in pay status	281	282	-0.4%
• Average age	72.0	71.3	0.7
• Average monthly benefit ²	\$5,670	\$5,379	5.4%
Beneficiaries:			
• Number in pay status	257	260	-1.2%
• Average age	75.7	75.1	0.6
• Average monthly benefit ²	\$2,968	\$2,855	4.0%

¹ Includes inactive members due a refund of member contributions.

² Excludes supplemental benefits paid from PRSB.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage (continued)

Category	Tier 2 Year Ended June 30		Change From Prior Year
	2023	2022	
Active non-DROP members in valuation			
• Number	1,111	1,045	6.3%
• Average age	39.3	40.2	-0.8
• Average years of service	11.4	12.1	-0.7
• Total projected compensation	\$129,017,259	\$115,913,278	11.3%
• Average projected compensation	\$116,127	\$110,922	4.7%
• Account balances	\$197,857,324	\$191,650,908	3.2%
• Total active vested members	786	765	2.7%
Active DROP members in valuation			
• Number	87	81	7.4%
• Average age	58.0	57.6	0.3
• Average service	22.9	22.9	0.1
• Projected total compensation	\$12,115,597	\$10,837,358	11.8%
• Projected average compensation	\$139,260	\$133,795	4.1%
Inactive vested Members			
• Number ¹	162	138	17.4%
• Average age	41.6	42.2	-0.5
Retired members:			
• Number in pay status	114	97	17.5%
• Average age	59.8	60.0	-0.2
• Average monthly benefit ²	\$4,274	\$3,883	10.1%
Disabled members:			
• Number in pay status	207	183	13.1%
• Average age	53.9	53.0	0.9
• Average monthly benefit ²	\$4,145	\$3,950	4.9%
Beneficiaries:			
• Number in pay status	50	45	11.1%
• Average age	54.0	53.3	0.8
• Average monthly benefit ²	\$1,850	\$1,807	2.4%

¹ Includes inactive members due a refund of member contributions.

² Excludes supplemental benefits paid from PRSB.

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of June 30, 2023 by Age, Years of Service, and Average Projected Compensation

Tier 1

Age	Years of Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	--	--	--	--	--	--	--	--	--	--
25 – 29	--	--	--	--	--	--	--	--	--	--
30 – 34	--	--	--	--	--	--	--	--	--	--
35 – 39	--	--	--	--	--	--	--	--	--	--
40 – 44	--	--	--	--	--	--	--	--	--	--
45 – 49	--	--	--	--	--	--	--	--	--	--
50 – 54	--	--	--	--	--	--	--	--	--	--
55 – 59	--	--	--	--	--	--	--	--	--	--
60 – 64	--	--	--	--	--	--	--	--	--	--
65 – 69	--	--	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
Total	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--

Note: Excludes 5 active members in DROP with a projected average compensation of \$141,576.

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of June 30, 2023 by Age, Years of Service, and Average Projected Compensation (continued)

Tier 2

Age	Years of Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	61	61	--	--	--	--	--	--	--	--
	\$77,596	\$77,596	--	--	--	--	--	--	--	--
25 – 29	196	156	40	--	--	--	--	--	--	--
	\$91,390	\$87,064	\$108,264	--	--	--	--	--	--	--
30 – 34	186	68	117	1	--	--	--	--	--	--
	\$104,859	\$89,894	\$113,350	\$128,970	--	--	--	--	--	--
35 – 39	133	26	68	20	19	--	--	--	--	--
	\$117,339	\$95,363	\$116,620	\$133,455	\$133,020	--	--	--	--	--
40 – 44	159	4	32	5	103	15	--	--	--	--
	\$128,956	\$80,192	\$121,614	\$127,925	\$131,296	\$141,894	--	--	--	--
45 – 49	164	2	14	3	70	61	14	--	--	--
	\$133,525	\$217,915	\$123,033	\$118,517	\$127,263	\$139,154	\$141,958	--	--	--
50 – 54	173	3	2	1	47	58	62	--	--	--
	\$138,005	\$66,426	\$132,691	\$130,218	\$131,472	\$142,148	\$142,843	--	--	--
55 – 59	35	3	1	2	15	7	7	--	--	--
	\$128,905	\$76,132	\$122,629	\$132,715	\$139,239	\$123,913	\$134,178	--	--	--
60 – 64	4	2	1	--	--	1	--	--	--	--
	\$118,240	\$98,220	\$130,765	--	--	\$145,758	--	--	--	--
65 – 69	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	1,111	325	275	32	254	142	83	--	--	--
	\$116,127	\$87,041	\$115,111	\$130,903	\$130,815	\$139,961	\$141,963	--	--	--

Note: Excludes 87 active members in DROP with a projected average compensation of \$139,260.

Section 3: Supplemental Information

Exhibit C: Reconciliation of Member Data

	Non-DROP Active Members	DROP Members	Inactive Vested Members	Retired Members	Disabled Members	Beneficiaries	Total
Number as of June 30, 2022	1,045¹	89¹	138	384	465	305	2,426
• New members	141	0	0	0	0	13	154
• Terminations – with vested rights	(37)	0	37	0	0	0	0
• Contribution refunds	(4)	0	0	0	0	0	(4)
• DROP entry	(15)	15	0	0	0	0	0
• Retirements	(18)	(13)	(6)	37	0	0	0
• New disabilities	(1)	0	(6)	(22)	29	0	0
• Return to work	1	0	0	(1)	0	0	0
• Died with or without beneficiary	(1)	(1)	0	(5)	(6)	(11)	(24)
• Data adjustments	0	2	(1)	0	0	0	1
Number as of June 30, 2023	1,111²	92²	162	393	488	307	2,553

¹ There was a total of 1,134 actives (including non-DROP and DROP members) at the beginning of the fiscal year.

² There was a total of 1,203 actives (including non-DROP and DROP members) at the end of the fiscal year.

Section 3: Supplemental Information

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

	Year Ended June 30, 2023	Year Ended June 30, 2022
Net assets at market value at the beginning of the year	\$1,891,077,196	\$2,090,370,123
Contribution income:		
• Employer contributions	\$27,067,935	\$27,555,587
• Member contributions	12,053,687	10,973,174
• Less administrative expenses	<u>(2,401,043)</u>	<u>(2,126,286)</u>
<i>Net contribution income</i>	\$36,720,579	\$36,402,475
Investment income:		
• Interest, dividends and other income	\$22,900,787	\$27,403,443
• Asset appreciation	206,516,294	(167,440,277)
• Less investment fees	<u>(30,441,079)</u>	<u>(20,480,451)</u>
<i>Net investment income</i>	\$198,976,002	\$(160,517,285)
Total income available for benefits	\$235,696,581	\$(124,114,810)
Less benefit payments:		
• Benefits paid	\$(77,661,978)	\$(72,785,132)
• Post retirement supplemental benefits	(2,652,886)	(2,024,479)
• Refunds of contributions	<u>(622,026)</u>	<u>(368,506)</u>
<i>Net benefit payments</i>	\$(80,936,890)	\$(75,178,117)
Change in net assets at market value	\$154,759,691	\$(199,292,927)
Net assets at market value at the end of the year	\$2,045,836,887	\$1,891,077,196

Note: Results may be slightly off due to rounding.

Section 3: Supplemental Information

Exhibit E: Summary Statement of Plan Assets

	June 30, 2023	June 30, 2022
<i>Cash equivalents</i>	\$704,447	\$1,094,989
Accounts receivable:		
• Receivables for investments sold	\$21,374,870	\$15,857,861
• Interest and dividends	2,042,912	3,066,370
• Others receivables	<u>6,006,906</u>	<u>1,281,018</u>
Total accounts receivable	\$29,424,688	\$20,205,249
Investments:		
• Domestic and international equity	\$963,477,965	\$820,770,153
• Government and corporate bonds	247,962,050	315,779,729
• Real assets	430,096,804	291,143,285
• Collateral held for securities lent	27,067,056	71,908,913
• Other investments	<u>406,448,763</u>	<u>472,444,242</u>
Total investments at market value	\$2,075,052,638	\$1,972,046,322
<i>Other Assets</i>	<u>134,932</u>	<u>156,478</u>
<i>Total assets</i>	\$2,105,316,705	\$1,993,503,038
Accounts payable:		
• Collateral held for securities lent	\$(27,067,056)	\$(71,908,913)
• Payable for investments and foreign currency purchased	(23,104,845)	(28,552,392)
• Other liabilities	<u>(9,307,917)</u>	<u>(1,964,537)</u>
<i>Total accounts payable</i>	\$(59,479,818)	\$(102,425,842)
Net assets at market value	\$2,045,836,887	\$1,891,077,196
Net assets at actuarial value	\$2,037,420,460	\$1,950,664,319
Net assets at valuation value	\$1,876,149,460	\$1,791,487,319

Note: Results may be slightly off due to rounding.

Section 3: Supplemental Information

Exhibit F: Summary of Reported Reserve Information as of June 30, 2023

	Reserves (\$ in '000s)
Used in Development of Valuation Value of Assets:	
• Employer Reserves	\$1,665,409
• Active Member Reserves	<u>219,157</u>
<i>Subtotal</i>	1,884,566
Not Used in Development of Valuation Value of Assets:	
• DROP Reserves	158,724
• Reserves for PRSB	2,672
• City Surplus Reserve ¹	<u>(125)</u>
<i>Subtotal</i>	\$161,271
Total Market Value of Assets	\$2,045,837

Note: Results may be slightly off due to rounding.

¹ The City Surplus Reserve is treated as an asset; it represents the City's prior shortfall contributions due to the difference between the actual versus the estimated contributions for 2022/2023. This difference is taken into account in developing the contribution rate requirement for 2024/2025.

Section 3: Supplemental Information

Exhibit G: Development of the Fund through June 30, 2023

Year Ended June 30	Employer Contributions	Member Contributions	Administrative Expenses	Net Investment Return ¹	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	\$18,574,840	\$7,294,314	\$1,119,495	\$201,837,997	\$52,719,887	\$1,366,921,699	\$1,258,544,968	92.1%
2015	18,966,930	7,385,169	1,107,741	39,163,617	54,612,011	1,376,717,663	1,344,111,961	97.6%
2016	18,737,948	7,747,808	1,397,068	6,063,102	56,580,813	1,351,288,640	1,409,007,554	104.3%
2017	18,543,308	8,169,019	1,500,145	192,314,904	59,272,938	1,509,542,788	1,492,903,827	98.9%
2018	19,696,957	8,963,672	1,709,614	129,162,789	63,070,998	1,602,585,594	1,579,267,409	98.5%
2019	20,604,377	9,597,068	1,897,247	82,871,945	65,962,135	1,647,799,602	1,641,711,241	99.6%
2020	22,324,019	10,011,831	1,839,271	24,205,522	67,201,890	1,635,299,813	1,698,826,320	103.9%
2021	26,314,815	10,256,470	2,282,297	491,744,237	70,962,915	2,090,370,123	1,850,012,219	88.5%
2022	27,555,587	10,973,174	2,126,286	(160,517,285)	75,178,117	1,891,077,196	1,950,664,319	103.2%
2023	27,067,935	12,053,687	2,401,043	198,976,002	80,936,890	2,045,836,887	2,037,420,460	99.6%

¹ On a market basis, net of investment fees.

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Exhibit H: Allocation of Actuarial Surplus

	June 30, 2023	June 30, 2022
Surplus as of Date of Valuation (Table 1)	\$268,863,460	\$304,876,319
• Actuarial Surplus (Table 1)	\$108,134,860	\$156,215,219
• Distributable Actuarial Surplus as of date of valuation (Table 2)	\$5,981,007	\$8,640,363
Allocation of Distributable Surplus as of Date of Valuation:		
• City COLA Contribution Offset (Table 3)	\$3,987,338	\$5,760,242
• PRSB Allocation (Table 3)	\$1,993,669	\$2,880,121
Total	\$5,981,007	\$8,640,363

The Allocation of Distributable Actuarial Surplus is sufficient to:

- Only partially offset the City's contribution requirement for the 2024-2025 fiscal year from \$37,054,184 to \$33,066,846 (see Table 4);
- Provide a PRSB benefit of \$166.87 per month over the 2024 calendar year (see Table 5) under the current policy of 80% distribution.

Section 3: Supplemental Information

Exhibit H: Allocation of Actuarial Surplus (continued)

Table 1: Calculation of Actuarial Surplus

	June 30, 2023	June 30, 2022
1 Valuation Value of Assets	\$1,876,149,460	\$1,791,487,319
2 Actuarial Accrued Liability	\$1,607,286,000	\$1,486,611,000
3 Surplus: 1 – 2, not less than zero	\$268,863,460	\$304,876,319
4 Contingency Reserve: 10% of 2, not more than 3	\$160,728,600	\$148,661,100
5 Actuarial Surplus: 3 – 4	\$108,134,860	\$156,215,219

Table 2: Determination of Distributable Actuarial Surplus

	June 30, 2023	June 30, 2022
1 Actuarial Surplus (Table 1)	\$108,134,860	\$156,215,219
2 Amortization of Balance of Actuarial Surplus:		
a) Amortization Period	30	30
b) Amortization Factor	0.055311	0.055311
c) Amortization of Balance of Actuarial Surplus: 1 x 2b	\$5,981,007	\$8,640,363

Section 3: Supplemental Information

Exhibit H: Allocation of Actuarial Surplus (continued)

Table 3: Allocation of Distributable Actuarial Surplus

	June 30, 2023	June 30, 2022
1 Distributable Actuarial Surplus	\$5,981,007	\$8,640,363
2 Additional City Allocation: 1 x 2/3	\$3,987,338	\$5,760,242
3 PRSB Allocation: 1 – 2 <p>The City Allocation (2) (along with any City Surplus Reserve and City Prepaid Contribution Accounts) is available to reduce the City's contributions for the fiscal year that commences one year following the date of the valuation.</p> <p>The PRSB Allocations (along with the PRSB Reserve Account) is available to provide retirees, beneficiaries and DROP participants a monthly PRSB benefit during the calendar year that commences 6 months following the date of the valuation. The benefit is derived in Table 5.</p>	\$1,993,669	\$2,880,121

Section 3: Supplemental Information

Exhibit H: Allocation of Actuarial Surplus (continued)

Table 4: City Contribution Requirements

	Fiscal Year 2024/2025			Fiscal Year 2023/2024		
	Tier 1	Tier 2	Total	Tier 1	Tier 2	Total
1 City Normal Cost Rate	29.92%	25.34%	25.36%	30.25%	25.47%	25.51%
2 Projected Annual Payroll	\$729,240	\$145,366,990	\$146,096,230	\$708,000	\$141,133,000	\$141,841,000
3 City Allocation of Fiscal Year Distributable Actuarial Surplus	23,479	3,963,859	3,987,338	34,116	5,726,126	5,760,242
4 City Surplus Reserve Account (From Prior Years)	0	0	0	(740)	(124,260)	(125,000)
5 ½ Year Interest on 4	0	0	0	(25)	(4,194)	(4,219)
6 Total Contribution Offsets Available: 3 + 4 + 5	23,479	3,963,859	3,987,338	33,351	5,597,672	5,631,023
7 Total Contribution Required 1 x 2	218,189	36,835,995	37,054,184	214,170	35,946,575	36,160,745
8 City Contribution Requirement Prior to Application of Prepaid Employer Contribution Account: 7 – 6, not less than Zero	194,710	32,872,136	33,066,846	180,819	30,348,903	30,529,722
9 Contribution Rate Adopted by the City for FY 2023/2024						21.08%
10 Projected City Contributions Based on Rate Adopted by the City: 9 x 2				149,246	29,750,836	29,900,083
11 Net Additional City Contribution Before Application of Prepaid Employer Contribution Account: 8 – 10	194,710	32,872,136	33,066,846	31,573	598,067	629,639
12 City's Prepaid Employer Contribution Account Balance (Negative Account Balance Represents Contribution Shortfall) ¹			(650,890)			0
13 ½ Year Interest on 12			(21,968)			0
14 City's Fiscal Year Contribution After Application of Prepaid Employer Contribution Account: 11 – 12 – 13, not less than Zero	198,672	33,541,031	33,739,703	31,573	598,067	629,639
15 Projected Residual Prepaid Employer Contribution Account at Year End (Negative Account Balance Represents Contribution Shortfall): 12 + 13 – 11, Adjusted with ½ Year Interest			0			(650,890)

¹ Contribution excess based on the projection of the prepaid contribution account balance.

Section 3: Supplemental Information

Exhibit H: Allocation of Actuarial Surplus (continued)

Table 5: Calculations for PRSB and PRSB Reserve Account

	June 30, 2023	June 30, 2022
1 PRSB Allocation of Distributable Actuarial Surplus	\$1,993,669	\$2,880,121
2 Distribution percentage	80%	80%
3 Preliminary PRSB distribution: 1 x 2	\$1,594,935	\$2,304,097
4 Number of eligible participants (Retirees, Beneficiaries & DROP Participants)	1,280	1,243
5 Preliminary Monthly PRSB Benefit: One-Twelfth of 3 ÷ 4	\$103.84	\$154.47
6 Monthly Retiree Medical Trust Premium for the calendar year that commences 6 months following the date of valuation	\$1,428.00	\$1,350.00
7 Benefit Shortfall: 6 – 5	\$1,324.16	\$1,195.53
8 PRSB Reserve Account	\$2,672,000	\$2,487,000
9 Estimated July 1 to December 31 PRSB Payments	<u>\$1,703,885</u>	<u>\$1,481,830</u>
10 Net PRSB Reserve Account 6 months following the date of valuation	\$968,115	\$1,005,170
11 Draw from PRSB Reserve Account: Lesser of: One-Twelfth of 10 ÷ 4, or 7	\$63.03	\$67.39
12 Final monthly PRSB Benefit for next calendar year: 5 + 11	\$166.87	\$221.86
13 Estimated PRSB Reserve Account at the end of the next calendar year: 1 + 10 – 12 x 4 x Twelve	\$398,661	\$576,027

Note: The actual, rather than the projected 2024 surplus, will be used to determine the 2025 calendar year PRSB benefit.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases

Type	Date Established	Initial Amount (\$ in '000s)	Initial Period	Outstanding Balance (\$ in '000s)	Years Remaining	Annual Payment (\$ in '000s)
UAAL	June 30, 2023	N/A	N/A	N/A	N/A	N/A
Total				N/A		N/A

Section 3: Supplemental Information

Exhibit J: Definition of Pension Terms

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

Actuarial Accrued Liability for Non-DROP and DROP Actives:	The equivalent of the accumulated normal costs allocated to the years before the valuation date.
Actuarial Accrued Liability for Pensioners and Beneficiaries:	The single-sum value of lifetime benefits to existing pensioners 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. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. 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 in actuarial liabilities that are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.
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 (APV):	<p>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:</p> <p>Adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.)</p> <p>Multiplied by the probability of the occurrence of an event (such as survival, death, disability, withdrawal, etc.) on which the payment is conditioned, and</p> <p>Discounted according to an assumed rate (or rates) of return to reflect the time value of money.</p>

Section 3: Supplemental Information

Actuarial Present Value of Future Plan 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 Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive members entitled to either a refund 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. An Actuarial Valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB, such as the Actuarially Determined Contribution (ADC) and the Net Pension Liability (NPL).
Actuarial Value of Assets (AVA):	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 law.
Actuarially Determined Contribution (ADC):	The employer's periodic required 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 UAAL. 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 UAAL. 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 designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

Section 3: Supplemental Information

Assumptions or Actuarial Assumptions:	<p>The estimates upon which the cost of the Fund is calculated, including:</p> <p><u>Investment return</u> - the rate of investment yield that the Fund will earn over the long-term future;</p> <p><u>Mortality rates</u> - the death rates of employees and pensioners; life expectancy is based on these rates;</p> <p><u>Retirement rates</u> - the rate or probability of retirement at a given age or service;</p> <p><u>DROP entry rates</u> - the rate or probability of DROP entry at a given age or service;</p> <p><u>Disability rates</u> – the probability of disability retirement at a given age;</p> <p><u>Withdrawal rates</u> - the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement;</p> <p><u>Salary increase rates</u> - the rates of salary increase due to inflation and productivity growth.</p>
Closed Amortization Period:	<p>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 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Open Amortization Period.</p>
Decrements:	<p>Those causes/events due to which a member’s status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or withdrawal.</p>
Defined Benefit Plan:	<p>A retirement plan in which benefits are defined by a formula applied to the member’s compensation and/or years of service.</p>
Defined Contribution Plan:	<p>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.</p>
Employer Normal Cost:	<p>The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions.</p>
Experience Study:	<p>A periodic review and analysis of the actual experience of the Fund 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 as deemed appropriate by the Actuary.</p>
Funded Ratio:	<p>The ratio of the Actuarial Value of Assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the Market Value of Assets (MVA), rather than the AVA.</p>
Investment Return:	<p>The rate of earnings of the Fund 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.</p>

Section 3: Supplemental Information

Normal Cost:	That portion of the Actuarial Present Value of pension plan benefits and expenses allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits that are provided in part by employee contributions, Normal Cost refers to the total of employee 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 determining the Amortization Period each year. In theory, if an Open Amortization Period with level percentage of payroll is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never decrease, but will become smaller each year, in relation to covered payroll, if the actuarial assumptions are realized.
Unfunded Actuarial Accrued Liability:	The excess of the Actuarial Accrued Liability over the Valuation 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 Surplus or a Prefunded 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 Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.
Valuation Value of Assets:	The Actuarial Value of Assets reduced by the value of non-valuation reserves.

Section 4: Actuarial Valuation Basis

Exhibit I: Actuarial Assumptions and Methods

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 July 1, 2018 through June 30, 2021 Actuarial Experience Study and June 30, 2022 Economic Actuarial Assumptions Report, both dated May 3, 2022. Unless otherwise noted, all actuarial assumptions and methods shown below apply to all tiers. These assumptions were adopted by the Board.																						
<u>Economic Assumptions</u>																							
Net Investment Return:	6.75%; net of administrative and investment expenses. Based on the Actuarial Experience Study reference above, expected administrative and investment expenses represent about 1.00% of the Actuarial Value of Assets.																						
Employee Contribution Crediting Rate:	6.75%, compounded semi-annually.																						
Consumer Price Index:	Increase of 2.50% per year. Tier 1 retiree COLA increases due to changes in average compensation or new salaries adopted are equal to total wage growth of 3.00% per year (composed of 2.50% CPI plus 0.50% across-the-board salary increase), limited to maximum of 5.00% per year.																						
Payroll Growth:	Inflation of 2.50% per year plus real “across the board” salary increases of 0.50% per year, used to amortize the Prefunded/Unfunded Actuarial Accrued Liability as a level percentage of payroll.																						
Salary Increase:	The annual rate of compensation increase includes: inflation at 2.50%, plus “across the board” salary increases of 0.50% per year, plus the following merit and promotion increases: <table border="1" data-bbox="802 1084 1759 1461"> <thead> <tr> <th colspan="2">Merit and Promotion Increases</th> </tr> <tr> <th>Years of Service</th> <th>Rate (%)</th> </tr> </thead> <tbody> <tr> <td>Less Than 1</td> <td>10.00</td> </tr> <tr> <td>1 – 2</td> <td>10.00</td> </tr> <tr> <td>2 – 3</td> <td>5.00</td> </tr> <tr> <td>3 – 4</td> <td>4.00</td> </tr> <tr> <td>4 – 5</td> <td>4.00</td> </tr> <tr> <td>5 – 6</td> <td>4.00</td> </tr> <tr> <td>6 – 7</td> <td>1.75</td> </tr> <tr> <td>7 – 10</td> <td>1.00</td> </tr> <tr> <td>10 & Over</td> <td>1.00</td> </tr> </tbody> </table>	Merit and Promotion Increases		Years of Service	Rate (%)	Less Than 1	10.00	1 – 2	10.00	2 – 3	5.00	3 – 4	4.00	4 – 5	4.00	5 – 6	4.00	6 – 7	1.75	7 – 10	1.00	10 & Over	1.00
Merit and Promotion Increases																							
Years of Service	Rate (%)																						
Less Than 1	10.00																						
1 – 2	10.00																						
2 – 3	5.00																						
3 – 4	4.00																						
4 – 5	4.00																						
5 – 6	4.00																						
6 – 7	1.75																						
7 – 10	1.00																						
10 & Over	1.00																						

Section 4: Actuarial Valuation Basis

Salary Increases: (continued)

Ongoing Pay Elements

To reflect the cash-out of holiday leave to increase salary on an ongoing basis for Fire employees, we have increased the salary for all active Tier 1 employees and Tier 2 management employees by 3.6% and we have increased the salary for all active Tier 2 non-management employees by 1.8%.

Since the salary data provided by the System already reflects the ongoing cash-out of holiday leave for Police employees, no assumption for Police employees is necessary.

Cash Out Elements

There is an additional 1.00% increase for Tier 1 Fire and Police management employees and an additional 0.25% increase for Tier 1 Fire and Police non-management employees to reflect the average leave time cash-outs for management employees to increase final average salary at retirement.

There is an additional 6.00% increase for all Fire and Police employees to reflect the conversion of sick leave to increase final average salary at retirement.

To reflect the cash-out of additional holiday leave balance to increase final average salary at retirement for non-management Tier 2 Police employees, there is an additional increase equal to the actual hours reported in an employee's holiday balance if that balance is greater than 96 hours and for those with a balance less than 96 hours the additional increase is equal to 1.5%.

Demographic Assumptions:

Post-Retirement Mortality Rates:

Healthy Members

- Pub-2010 Safety Healthy Retiree Amount-Weighted Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2021.

Disabled Members

- Pub-2010 Safety Disabled Retiree Amount-Weighted Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2021.

Beneficiaries not currently in Pay Status

- Pub-2010 General Healthy Retiree Amount-Weighted Mortality Table (separate tables for males and females) with rates increased by 5%, projected generationally with the two-dimensional mortality improvement scale MP-2021.

Beneficiaries in Pay Status

- Pub-2010 Contingent Survivor Amount-Weighted Mortality Table (separate tables for males and females) with rates increased by 5%, projected generationally with the two-dimensional mortality improvement scale MP-2021.

The Pub-2010 mortality tables and adjustments as shown above reasonably reflect the mortality experience as of the measurement date. These mortality tables were adjusted to future years using the generational projection to reflect future mortality improvement between the measurement date and those years.

Section 4: Actuarial Valuation Basis

Pre-Retirement Mortality Rates:

Pub-2010 Safety Employee Amount-Weighted Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2021.

Age	Rate (%)	
	Male	Female
25	0.04	0.02
30	0.04	0.03
35	0.05	0.04
40	0.06	0.05
45	0.08	0.07
50	0.12	0.09
55	0.18	0.12
60	0.26	0.17
65	0.41	0.23
70	0.77	0.45

All pre-retirement deaths are assumed to be duty.

Generational projections beyond the base year (2010) are not reflected in the above mortality rates.

Employee Contribution Rates:

Healthy Members

- Pub-2010 Safety Healthy Retiree Amount-Weighted Mortality Table (separate tables for males and females), projected 30 years with the two-dimensional mortality improvement scale MP-2021, weighted 90% male and 10% female.

Beneficiaries

- Pub-2010 General Healthy Retiree Amount-Weighted Mortality Table (separate tables for males and females) with rates increased by 5%, projected 30 years with the two-dimensional mortality improvement scale MP-2021, weighted 10% male and 90% female.

Optional Benefits:

Healthy Members

- Pub-2010 Safety Healthy Retiree Amount-Weighted Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2021, weighted 90% male and 10% female.

Beneficiaries

- Pub-2010 General Healthy Retiree Amount-Weighted Mortality Table (separate tables for males and females) with rates increased by 5%, projected generationally with the two-dimensional mortality improvement scale MP-2021, weighted 10% male and 90% female.

Disabled Members

- Pub-2010 Safety Disabled Retiree Amount-Weighted Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2021, weighted 90% male and 10% female.

Section 4: Actuarial Valuation Basis

Disability Incidence:

Age	Rate (%)			
	Tier 1		Tier 2	
	Duty	Ordinary	Duty	Ordinary
20	0.02	0.00	0.06	0.00
25	0.14	0.01	0.10	0.01
30	0.26	0.01	0.40	0.01
35	0.39	0.03	0.72	0.03
40	0.60	0.12	1.04	0.14
45	0.88	0.25	1.20	0.23
50	2.80	0.20	1.32	0.16
55	8.20	0.00	3.86	0.00
60	0.00	0.00	11.38	0.00
65	0.00	0.00	0.00	0.00

Section 4: Actuarial Valuation Basis

Termination:

Less Than Five Years of Service

Years of Service	Rate (%)	
	Tier 1	Tier 2
0 – 1	4.47	10.00
1 – 2	4.47	6.00
2 – 3	4.47	4.00
3 – 4	4.47	3.00
4 – 5	4.47	2.00

100% of members are assumed to elect a withdrawal of contributions. No termination is assumed after a member is assumed to retire.

Five or More Years of Service

Age	Rate (%)		
	Tier 1		Tier 2
	5 – 10 Years	10+ Years	
20	2.87	3.57	2.00
25	2.87	3.57	2.00
30	1.88	2.63	2.00
35	0.87	1.44	2.00
40	0.44	0.92	1.50
45	0.19	0.63	1.50
50	0.00	0.00	0.00

100% of Tier 1 members with 5 - 10 years of service, 0% of Tier 1 members with 10+ years of service and 30% of Tier 2 members with 5+ years of service are assumed to elect a withdrawal of contributions. The remaining members are assumed to elect a deferred vested benefit. No termination is assumed after a member is assumed to retire.

Section 4: Actuarial Valuation Basis

Retirement Rates:

Years of Service	Rate (%)	
	Tier 1	Tier 2
50	12.72	4.00
51	7.63	2.00
52	7.63	2.00
53	5.09	3.00
54	5.09	3.00
55	10.60	10.00
56	13.77	10.00
57	14.03	5.00
58	16.66	5.00
59	29.67	5.00
60	100.00	30.00
61	100.00	30.00
62	100.00	30.00
63	100.00	50.00
64	100.00	50.00
65 and over	100.00	100.00

Retirement rates only apply to members that are eligible to retire at the age shown.

DROP Assumptions:

Tier 1

Year Eligible	Rate (%)
First	100.0
Second	0.0
Third	0.0
Thereafter	0.0

Section 4: Actuarial Valuation Basis

Drop Assumptions: (continued)	Tier 2	Rate (%)		
		Years of Service		
		Age	5 – 14	15 – 19
	50	1.0	1.0	6.0
	51	1.0	1.0	6.0
	52	1.0	1.0	6.0
	53	1.0	1.0	6.0
	54	1.0	15.0	35.0
	55	1.0	50.0	70.0
	56	1.0	25.0	25.0
	57	1.0	25.0	25.0
	58	1.0	25.0	25.0
	59	1.0	25.0	25.0
	60	1.0	25.0	25.0
	61	1.0	25.0	25.0
	62	1.0	25.0	25.0
	63 & Above	0.0	0.0	0.0
	Members are assumed to remain in DROP for 7 years.			
Retirement Age and Benefit for Inactive Vested Members:	<p>For current inactive vested members, the retirement assumptions are as follows:</p> <p>Tier 1: N/A</p> <p>Tier 2: Age 53</p> <p>It is assumed that 45% of future inactive vested members will continue to work for a reciprocal employer. For those that continue to work for a reciprocal employer, a 4.0% compensation increase per annum is assumed.</p>			
Future Benefit Accruals:	1.0 year of service per year.			
Unknown Data for Members:	Same as those exhibited by members with similar known characteristics. If not specified, members are assumed to be male.			

Section 4: Actuarial Valuation Basis

Inclusion of Inactive Vested Members:	All inactive vested members are included in the valuation.																						
Percent with Survivor:	85% of male members and 75% of female members.																						
Age and Gender of Spouse:	Male members are three years older than their spouses. Female members are two years younger than their spouses.																						
Election of Optional Forms of Benefit at Retirement:	<table border="1"> <thead> <tr> <th></th> <th colspan="2">Members with Survivor</th> <th>Members without Survivor</th> </tr> <tr> <th></th> <th>Male</th> <th>Female</th> <th></th> </tr> </thead> <tbody> <tr> <td>Unmodified</td> <td>30%</td> <td>45%</td> <td>100%</td> </tr> <tr> <td>Option 2 (A/B)</td> <td>55%</td> <td>25%</td> <td></td> </tr> <tr> <td>Option 3 (A/B)</td> <td>15%</td> <td>30%</td> <td></td> </tr> </tbody> </table>				Members with Survivor		Members without Survivor		Male	Female		Unmodified	30%	45%	100%	Option 2 (A/B)	55%	25%		Option 3 (A/B)	15%	30%	
	Members with Survivor		Members without Survivor																				
	Male	Female																					
Unmodified	30%	45%	100%																				
Option 2 (A/B)	55%	25%																					
Option 3 (A/B)	15%	30%																					
<u>Actuarial Funding Policy</u>																							
Actuarial Cost Method:	Entry Age Actuarial Cost Method. Entry Age is the age on the valuation date minus years of service. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are based on costs allocated as a level percentage of compensation, as if the current benefit formula for each individual has always been in effect (i.e., “replacement life within a tier”).																						
Actuarial Value of Assets:	Market value of assets (MVA) less unrecognized returns in each of the last four annual accounting periods. Unrecognized returns are equal to the difference between the actual market return and the expected return on the market value, and are recognized annually over a five-year period.																						
Valuation Value of Assets:	The Actuarial Value of Assets reduced by the value of the non-valuation reserves.																						
Amortization Policy:	<p>If the Valuation Value of Assets (VVA) is greater than 110% of the Actuarial Accrued Liability (AAL), the difference (“actuarial surplus”) is amortized over a 30-year rolling amortization period.</p> <p>If the VVA is less than the AAL, any new Unfunded Actuarial Accrued Liability (UAAL) resulting from plan amendments are amortized over separate decreasing 15-year periods; early retirement incentive programs (ERIPs) are amortized over separate decreasing 5-year periods; assumption and method changes are amortized over separate decreasing 25-year periods; and experience gains/losses are also amortized over separate decreasing 15-year periods.</p> <p>The amortization periods include annual crediting of interest at the assumed investment earning rate. The payments (credits) are calculated to remain as a level percentage of future active member payroll (including payroll for new members as they enter the Retirement System) assuming a constant number of active members. In order to remain as a level percentage of payroll, amortization payments (credits) are scheduled to increase at the annual rate of 3.00% (i.e., 2.50% inflation plus 0.50% across-the-board salary increase).</p>																						

Section 4: Actuarial Valuation Basis

Other Actuarial Methods

Employer Contributions:

Employer contributions consist of two components:

Normal Cost

The annual contribution rate that, if paid annually from a member's first year of membership through the year of retirement, would, together with the member's contributions, accumulate to the amount necessary to fully fund the member's retirement-related benefits. Accumulation includes annual crediting of interest at the assumed investment earning rate. The contribution rate is expressed as a level percentage of the member's compensation.

Adjustment for Prepaid Contributions / Contribution Shortfall

The accumulated difference between the City contribution rate adopted for the prior fiscal year (determined using projected annual payroll) and the required City contribution rate for that same fiscal year (determined using actual payroll), arising due to the one-year delay in implementing the City contribution rate.

Contribution to the Unfunded Actuarial Accrued Liability (UAAL) / Allocation of the Actuarial Surplus

In the case of a UAAL, the annual contribution rate that, if paid annually over the UAAL amortization period, would accumulate to the amount necessary to fully fund the UAAL.

In the case of an actuarial surplus, the City's share of the Distributable Actuarial Surplus determined pursuant to Section 3-354(f) of the Municipal Code.

The amortization policy is described on the previous page.

The recommended City contributions are provided in Section 2, Subsection F.

Member Contributions:

Tier 1

Provide 1/3 of the funding required to pay a benefit equal to 50% of FAS at age 50 (or when a member has 20 years of service if later but not later than age 60) to a member with 66-2/3% automatic continuance payable to his/her eligible spouse/domestic partner (§3-319). The contribution will be prorated if the member has less than 20 years of service at age 60.

Tier 2

9% pay (§3-405).

Section 4: Actuarial Valuation Basis

Internal Revenue Code Section 415:

Section 415 of the Internal Revenue Code (IRC) specifies the maximum benefits that may be paid to an individual from a defined benefit plan and the maximum amounts that may be allocated each year to an individual's account in a defined contribution plan.

A qualified pension plan may not pay benefits in excess of the Section 415 limits. The ultimate penalty for non-compliance is disqualification: active participants could be taxed on their vested benefits and the IRS may seek to tax the income earned on the plan's assets.

In particular, Section 415(b) of the IRC limits the maximum annual benefit payable at the Normal Retirement Age to a dollar limit of \$160,000 indexed for inflation. That limit is \$265,000 for 2023 and \$275,000 for 2024. Normal Retirement Age for these purposes is age 62. These are the limits in simplified terms. They must be adjusted based on each participant's circumstances, for such things as age at retirement, form of benefits chosen and after tax contributions.

Benefits in excess of the limits may be paid through a qualified governmental excess plan that meets the requirements of Section 415(m).

Legal Counsel's review and interpretation of the law and regulations should be sought on any questions in this regard.

Contribution rates determined in this valuation reflect Section 415 limitations for members who became members in the Retirement System after June 28, 1991 and are therefore ineligible to participate in the Qualified Excess Governmental Benefit Arrangement pursuant to Section 3-356 of the municipal code.

Changed Actuarial Assumptions:

There have been no changes in actuarial assumptions or methods since the last valuation.

Section 4: Actuarial Valuation Basis

Exhibit II: 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:	July 1 through June 30
Membership Eligibility:	All sworn Fire, Police, and Airport Public Safety personnel are eligible.
<i>Tier 1</i>	Safety members hired before August 27, 1990.
<i>Tier 2</i>	Safety members hired on or after August 27, 1990.
Final Compensation for Benefit Determination:	
<i>Tier 1</i>	Final highest consecutive thirty-six months of compensation earnable calculated using the rate of pay actually earned by the member in effect at the time of retirement. Some members are also entitled to final compensation determined based on a rank average (§3-301 and §3-302).
<i>Tier 2</i>	Highest consecutive thirty-six months of compensation earnable during any thirty-six months of service before the date of retirement (§3-401).
Service:	Years of service (Yrs)

Section 4: Actuarial Valuation Basis

Service Retirement:

Eligibility

Tier 1 Age 50 with 10 years of service (§3-332).

Tier 2 Age 50 with 5 years of service (§3-410).

Benefit Formula

Tier 1 *If a member has at least 20 years of service at retirement from active status:*

- $55\% \times \text{FAS} +$
Yrs of service in excess of 20 completed after age 50 $\times 2.00\% \times \text{FAS}$

If a member has less than 20 years of service at retirement from active status:

- $55\% \times \text{FAS} \times \text{Yrs of service} / 20$

If a member retires from deferred status:

- $55\% \times \text{FAS} \times \text{Yrs of service} / (\text{Greater of } 20 \text{ Yrs or Yrs of service member would have completed if the member had remained in City service until age } 50)$

Tier 2

Retirement Age	Benefit Formula
50	$2.00\% \times \text{FAS} \times \text{Yrs}$
51	$2.14\% \times \text{FAS} \times \text{Yrs}$
52	$2.28\% \times \text{FAS} \times \text{Yrs}$
53	$2.42\% \times \text{FAS} \times \text{Yrs}$
54	$2.56\% \times \text{FAS} \times \text{Yrs}$
55+	$2.70\% \times \text{FAS} \times \text{Yrs}$

Maximum Benefit

75% of FAS

Section 4: Actuarial Valuation Basis

Deferred Retirement Option Program (DROP):

Eligibility

Same as Service Retirement.

Benefit under DROP

DROP benefits (calculated using age, service and salary at the commencement date of participation in DROP) will be credited to a DROP account with interest at rates determined by the Board. Members will no longer be required to make member contributions. Effective March 7, 2011, active members who signed up for the DROP are required to continue their employee contributions; however, those contributions are deposited into the members' DROP accounts and therefore not available to fund the value of the retirement benefit earned up to the date of the DROP. Therefore, those contributions that will be deposited into the DROP accounts are disregarded in this valuation. Members may participate in DROP for up to ten years (§3-353 and §3-424).

Ordinary Disability:

Eligibility

Ten years of service (§3-335 and §3-412 for Tier 1 and Tier 2, respectively).

Benefit Formula

Tier 1

Greater of $1.65\% \times \text{FAS} \times \text{Yrs}$, 36.67% of FAS or Service Retirement benefit (§3-336).

Tier 2

Greater of $1.5\% \times \text{FAS} \times \text{Yrs}$, 33.00% of FAS or Service Retirement benefit (§3-413).

Duty Disability

Eligibility

No age or service requirements (§3-335 and §3-412 for Tier 1 and Tier 2, respectively).

Benefit Formula

Tier 1

55% of FAS or Service Retirement benefit, if greater (§3-336).

Tier 2

50% of FAS or Service Retirement benefit, if greater (§3-413).

Section 4: Actuarial Valuation Basis

Pre-Retirement Death:

All Members

Eligibility	None.
Basic lump sum benefit	Refund of employee contributions with interest, plus one month's compensation for each year of service, to a maximum of six month's compensation (§3-330 and §3-408 for Tier 1 and Tier 2, respectively).
Death in Line of Duty	55% (50% for Tier 2) of FAS or Service Retirement benefit, if greater and, payable to eligible spouse/domestic partner or minor children (§3-330 and 3-408 for Tier 1 and Tier 2, respectively).

Active Vested Members

Eligibility	Ten (five for Tier 2) years of service.
Basic benefit	66-2/3% of member's unmodified allowance continued to eligible spouse/domestic partner (§3-338 and §3-415 for Tier 1 and Tier 2, respectively).

Death After Retirement:

All Members

Service Retirement or Disability Retirement	66-2/3% of member's unmodified allowance continued to eligible spouse/domestic partner (§3-338 and §3-415 for Tier 1 and Tier 2, respectively).
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Withdrawal Benefits:

Less than Five Years of Service (Ten Years for Tier 1)

Refund of accumulated employee contributions with interest.

Five or More Years of Service (Ten Years for Tier 1)

If contributions left on deposit, entitled to earned benefits commencing at any time after eligible to retire (§3-344 and §3-420 for Tier 1 and Tier 2, respectively).

Post-retirement Cost-of-Living Benefits:

Tier 1

Based on the method chosen by the employee at retirement:
 For members who chose the final 3-year method, future changes based on the change in the weighted mean average compensation attached to all ranks in the department, to a maximum of 5% per year, excess banked (§3-302).
 For members who chose the Career Rank method, future changes based on a recalculation of retirement based on the new salaries adopted for the current year (§3-301).

Tier 2

Future changes based on Consumer Price Index to a maximum of 3% per year, excess banked (§3-411).

Section 4: Actuarial Valuation Basis

Member Contributions:	Please refer to Section 4, Exhibit III for specific rates.
<i>Tier 1</i>	Provide 1/3 of the funding required to pay a benefit equal to 55% of FAS at age 50 (or when a member has 20 years of service if later but not later than age 60) to a member with 66-2/3% automatic continuance payable to his/her eligible spouse/domestic partner (§3-319). The contribution will be prorated if the member has less than 20 years of service at age 60. Members who are over age 60 with at least 20 years of service do not have to make member contributions (§3-332). Refund of contribution paid for 66-2/3% automatic continuance. Provide a refund of contributions at service or disability retirement for those members without an eligible spouse/domestic partner (§3-319).
<i>Tier 2</i>	9% of pensionable pay (§3-405). Members who are over age 60 with at least 10 years of service do not have to make member contributions (§3-410).
City Contributions:	Effective with the June 30, 2013 valuation, any new UAAL established on each subsequent valuation as a result of actuarial gains or losses or plan amendments are amortized over separate 15-year declining periods (with the exception of temporary retirement incentives which are amortized over its own declining period of up to 5 years). Any new UAAL established as a result of changes in actuarial assumptions or methods at each valuation is amortized over separate 25-year declining periods. Effective with the June 30, 2018 valuation, when there is any “actuarial surplus” (the funded ratio is over 110%) the portion of surplus in excess of 110% will be amortized over a non-declining 30-year period (prior to June 30, 2018, this was a non-declining 25-year period).
Post Retirement Supplemental Benefits (PRSB):	PSRB may be paid to active and retired DROP participants and eligible retirees and beneficiaries (§3-354). This benefit has been excluded from this valuation.
Changes in Plan Provisions:	There were no changes in plan provisions since the prior valuation.

Note: The summary of major plan provisions is designed to outline principal plan benefits as interpreted for purposes of the actuarial valuation. If the Retirement System should find the plan summary not in accordance with the actual provisions, the Retirement System should alert the actuary so they can both be sure the proper provisions are valued.

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates

Comparison of member rates calculated in the June 30, 2023 and June 30, 2022 valuations:

	June 30, 2023		June 30, 2022	
	Rate	Estimated Annual Amount (\$ in '000s)	Rate	Estimated Annual Amount (\$ in '000s)
1 Tier 1 Members	0.00%	\$0	0.00%	\$0
2 Tier 2 Members	8.98%	\$11,933	8.98%	\$11,933
3 All Member Categories Combined: 1 + 2	8.98%	\$11,933	8.98%	\$11,933
4 Projected 2024/2025 compensation, excluding DROP members ¹		\$132,888		\$132,888

¹ Includes projected compensation for Tier 2 members only because all Tier 1 members are in the DROP.

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

Tier 1 Members' Contribution Rates Based on the June 30, 2023 Actuarial Valuation as a Percentage of Payroll

Entry Age	Exact Age		$\frac{1}{4}$ Age		$\frac{1}{2}$ Age		$\frac{3}{4}$ Age	
	Rate	Dependent Portion	Rate	Dependent Portion	Rate	Dependent Portion	Rate	Dependent Portion
20	5.01%	0.04372	5.07%	0.04372	5.13%	0.04372	5.20%	0.04372
21	5.26%	0.04372	5.33%	0.04372	5.40%	0.04372	5.47%	0.04372
22	5.53%	0.04372	5.61%	0.04372	5.68%	0.04372	5.76%	0.04372
23	5.83%	0.04372	5.91%	0.04372	5.99%	0.04372	6.07%	0.04372
24	6.15%	0.04372	6.24%	0.04372	6.32%	0.04372	6.41%	0.04372
25	6.50%	0.04372	6.59%	0.04372	6.68%	0.04372	6.78%	0.04372
26	6.87%	0.04372	6.98%	0.04372	7.08%	0.04372	7.18%	0.04372
27	7.29%	0.04372	7.40%	0.04372	7.51%	0.04372	7.63%	0.04372
28	7.74%	0.04372	7.87%	0.04372	7.99%	0.04372	8.11%	0.04372
29	8.24%	0.04372	8.38%	0.04372	8.52%	0.04372	8.65%	0.04372
30	8.79%	0.04372	8.78%	0.04432	8.77%	0.04492	8.75%	0.04552
31	8.74%	0.04612	8.72%	0.04675	8.71%	0.04738	8.70%	0.04801
32	8.68%	0.04864	8.67%	0.04931	8.65%	0.04997	8.64%	0.05064
33	8.62%	0.05130	8.61%	0.05200	8.59%	0.05270	8.57%	0.05339
34	8.56%	0.05409	8.54%	0.05482	8.52%	0.05555	8.51%	0.05629
35	8.49%	0.05702	8.47%	0.05779	8.45%	0.05855	8.44%	0.05932
36	8.42%	0.06009	8.40%	0.06089	8.38%	0.06169	8.36%	0.06249
37	8.34%	0.06329	8.32%	0.06413	8.30%	0.06497	8.28%	0.06580
38	8.27%	0.06664	8.24%	0.06751	8.22%	0.06838	8.20%	0.06924
39	8.18%	0.07011	8.16%	0.07102	8.14%	0.07192	8.12%	0.07282
40	8.09%	0.07372	8.13%	0.07372	8.16%	0.07372	8.19%	0.07372
41	8.23%	0.07372	8.26%	0.07372	8.30%	0.07372	8.33%	0.07372
42	8.36%	0.07372	8.40%	0.07372	8.43%	0.07372	8.47%	0.07372
43	8.50%	0.07372	8.54%	0.07372	8.58%	0.07372	8.61%	0.07372
44	8.65%	0.07372	8.69%	0.07372	8.73%	0.07372	8.76%	0.07372
45	8.80%	0.07372	8.84%	0.07372	8.88%	0.07372	8.92%	0.07372

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

Tier 1 Members' Contribution Rates Based on the June 30, 2023 Actuarial Valuation as a Percentage of Payroll
(continued)

Entry Age	Exact Age		$\frac{1}{4}$ Age		$\frac{1}{2}$ Age		$\frac{3}{4}$ Age	
	Rate	Dependent Portion	Rate	Dependent Portion	Rate	Dependent Portion	Rate	Dependent Portion
46	8.96%	0.07372	9.00%	0.07372	9.04%	0.07372	9.08%	0.07372
47	9.13%	0.07372	9.17%	0.07372	9.21%	0.07372	9.25%	0.07372
48	9.29%	0.07372	9.34%	0.07372	9.38%	0.07372	9.42%	0.07372
49	9.47%	0.07372	9.51%	0.07372	9.56%	0.07372	9.60%	0.07372
50	9.65%	0.07372	9.69%	0.07372	9.74%	0.07372	9.79%	0.07372
51	9.83%	0.07372	9.86%	0.07372	9.89%	0.07372	9.93%	0.07372
52	9.96%	0.07372	9.97%	0.07372	9.99%	0.07372	10.01%	0.07372
53	10.03%	0.07372	10.03%	0.07372	10.04%	0.07372	10.05%	0.07372
54	10.06%	0.07372	10.07%	0.07372	10.07%	0.07372	10.08%	0.07372
55	10.08%	0.07372	10.05%	0.07372	10.03%	0.07372	10.00%	0.07372
56	9.97%	0.07372	9.91%	0.07372	9.86%	0.07372	9.80%	0.07372
57	9.74%	0.07372	9.82%	0.07372	9.89%	0.07372	9.97%	0.07372
58	10.04%	0.07372	10.12%	0.07372	10.20%	0.07372	10.28%	0.07372
59	10.36%	0.07372	10.36%	0.07372	10.36%	0.07372	10.36%	0.07372

Interest: 6.75% per annum
 COLA: 2.50%
 Mortality: See Section 4, Exhibit I
 Salary Increase: Inflation (2.50%) + Across-the-Board Increase (0.50%) + Merit (See Section 4, Exhibit I)

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