CHEIRON Classic Values, Innovative Advice

The Employees' Retirement System for the City of Norfolk

Actuarial Valuation Report as of June 30, 2022

The Seventy-Ninth Actuarial Valuation

Produced by Cheiron
September 2022

TABLE OF CONTENTS

September 13, 2022

Board of Trustees
Employees' Retirement System
City of Norfolk
Norfolk, Virginia 23510

Re: The Employees' Retirement System for the City of Norfolk
Actuarial Valuation as of June 30, 2022

Dear Members of the Board:

At your request, we have conducted an annual actuarial valuation of the Employees' Retirement System for the City of Norfolk as of June 30, 2022. The results of the valuation are contained in this report. The purpose of the valuation is discussed in the Foreword.

The actuarial assumptions used in performing this valuation have been recommended by the actuary and adopted by the Board of Trustees based on the actuary's most recent review of the System's experience completed in May 2022. We believe the assumptions used, in aggregate, reflect our best estimate of anticipated future experience of the System. The results of this report are only applicable to the contribution for the fiscal year ending June 30, 2024, and rely on future plan experience conforming to the underlying assumptions. Future valuation reports may differ significantly from the current results presented in this report due to such factors as the following: plan experience differing from that anticipated by the assumptions; changes in assumptions; and changes in plan provisions or applicable law.

The purpose of this report is to present the annual actuarial valuation of the Employees' Retirement System for the City of Norfolk. The report also provides information regarding employer contribution levels.

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

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

Sincerely,
Cheiron

Kevin J. Woodrich, FSA, EA, MAAA
Principal Consulting Actuary

Justin Runkel, ASA, EA, MAAA
Consulting Actuary

FOREWORD

Cheiron has performed the actuarial valuation of the Employees' Retirement System for the City of Norfolk as of June 30, 2022. The purpose of this report is to:

1) **Measure and disclose**, as of the valuation date, the financial condition of the System;
2) **Indicate trends** in the financial progress of the System;
3) **Determine the contribution rate** to be paid by the City on or around July 1, 2023 for fiscal year June 30, 2024; and
4) **Provide specific information** used in preparing the System's financial statement. All other disclosure information required under Governmental Accounting Standards Board (GASB) Statements No. 67 and 68 will be sent under separate cover.

An actuarial valuation establishes and analyzes the System's assets and liabilities on a consistent basis and traces the progress of both from one year to the next. It includes measurement of the System's investment performance as well as an analysis of actuarial liability gains and losses.

Section I presents a summary containing our findings and discloses important trends experienced by the System in recent years.

Section II assesses and discloses various actuarial risk measures of the System.

Section III contains details on various asset measures, together with pertinent performance measurements.

Section IV shows similar information on System liabilities, measured for actuarial, accounting, and government reporting purposes.

Section V develops the employer contribution rate used to calculate the amount of the contribution to be paid by the City effective July 1, 2023.

Section VI includes certain required disclosures for financial statements.

The appendices to this report contain a summary of the System's membership at the valuation date, the actuarial methods and assumptions used in the valuation, and a summary of the major provisions of the System.

In preparing our report, we relied without audit, on information (some oral and some written) supplied by the System's staff. This information includes, but is not limited to, the plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23 Data Quality.

SECTION I – BOARD SUMMARY

General Comments

The City Code states that each year the Board must certify to the City Manager the amount of appropriation required for the ensuing year to meet the normal and accrued liability contributions payable by the City. The results of this valuation determine the contribution rate to be used in calculating the City contribution amount to be paid for the fiscal year beginning July 1, 2023. The contribution rate for General Employees is determined to be 13.18%. The contribution rate for Public Safety Employees is determined to be 35.86%. The composite rate is equal to 20.96% of annual payroll. This is an increase from the composite rate of 15.72% determined in last year's valuation, which is applicable to the current fiscal year. The contribution rate increase is attributable to unfavorable investment returns and assumption changes from the recent experience study, driven primarily by the discount rate reduction from 7.00% to 6.75%.

Forecasts show that should all assumptions be realized, including the 6.75% assumed annual investment return, the System would reach 100% funding by 2035. Included in these projections are the following:

- Projected liabilities and contributions reflect the City's amendment to close the System effective January 1, 2022. No consideration has been given for any current active member who may port to VRS after June 30, 2022.
- The City's recent amendment to allow all members to participate in the Deferred Retirement Option Program (DROP) effective January 1, 2023, is reflected in the liabilities. Prior to this amendment, only firefighters and police could participate in DROP.
- Projected contributions reflect the City's pension funding policy to contribute the greater of the prior year's contributions and the current year's actuarially determined contribution. This contribution policy will continue until the System is fully funded. Upon being fully funded, we have assumed that contributions are equal to the actuarially determined contribution. Should the System approach fully funded status, the City may want to consider putting a minimum contribution equal to the value of the additional benefits being earned by actives for one more year of service.
- The projections also reflect the continued annual payments of $8.7 million from the Section 115 Trust held outside the System's assets.

Recent Experience

The financial markets performed worse than expected during the fiscal year ending June 30, 2022. The actual return on a market value basis was approximately -9.74%. The System also experienced a loss on the actuarial value of assets. On an actuarial value basis, the assets returned 3.73% compared with an assumed rate of return of 7.00%. The loss recognized for funding purposes was $44.5 million.

On the liability side, the System's experience resulted in an actuarial loss of $4.4 million, which represents roughly 0.31% of the prior year's liabilities. This liability loss was primarily due to salaries increasing more than expected. Valuation payroll reflects pay adjustments granted July 2022 of 7.5% for Public Safety members with over six years of service and 5.0% for all

SECTION I – BOARD SUMMARY

other members. Based on an experience study performed earlier this year, the Board adopted changes to several actuarial assumptions to better reflect anticipated experience. Whereas this resulted in an increase in liabilities of $77.2 million, the normal cost decreased which mitigated some of the impact on the City's contribution rate. Finally, the City is amending the plan to allow all members to participate in DROP. This plan change decreased liabilities by $0.9 million.

The combination of asset and liability losses produced a decrease in the System's funded ratio (actuarial value of assets over actuarial liability) from 90.6% as of June 30, 2021 to 84.2% as of June 30, 2022.

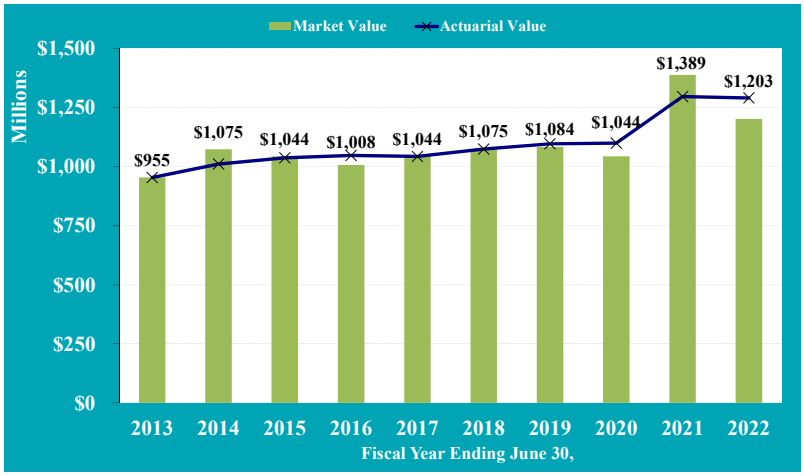
Effective Fiscal Year Ending 2023, the City of Norfolk began making separate contributions to the System from the Section 115 Trust that was previously established upon the bond issuance from June 2021. The first $8.7 million contribution made from the Trust in July 2022 is reflected in the current year receivable and is projected to continue at $8.7 million annually until the Section 115 Trust assets are depleted. As of June 30, 2022, the Trust held $76.5 million in assets. Had this entire amount been contributed on June 30, 2022 and recognized as part of System's assets, the System's funded ratios would be 89.2% on an actuarial value basis compared to 84.2%. On a market value basis, the System would be 83.3% instead of 78.4%.

SECTION I – BOARD SUMMARY

Trends

It is important to take a step back from the latest results and view them in the context of the System's recent history. Here we present a series of graphs that display key factors in the valuations over the last ten years.

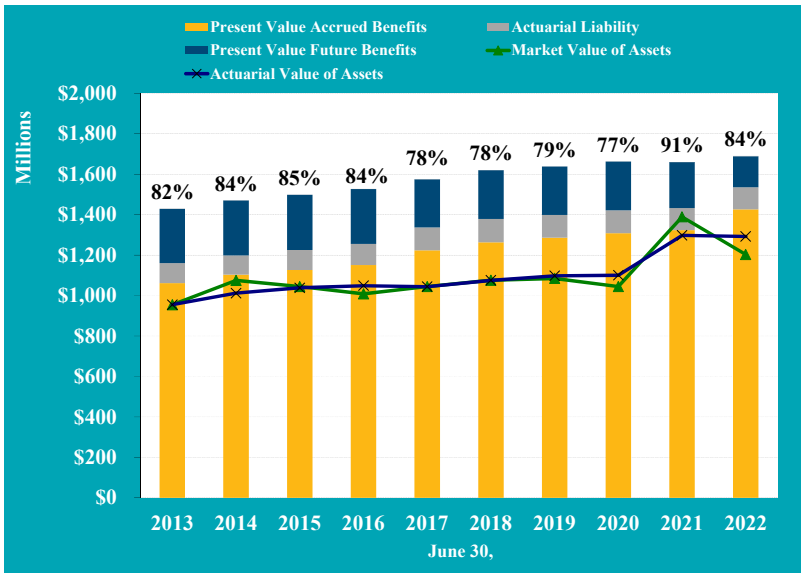
Growth in Assets



The market value of assets (MVA) experienced a return of -9.74% this year. The Actuarial Value of Assets (AVA) decreased by a relatively smaller amount due to the smoothing method in place, which recognizes historical gains and losses that have been deferred. The return on the AVA was 3.73%. Both the MVA and AVA decreased from last year due to unfavorable market conditions. The MVA is currently $89 million less than the AVA. This amount represents the stored net investment loss that will be recognized in the near-term and would offset the impact of future investment gains for the System.

Assets and Liabilities

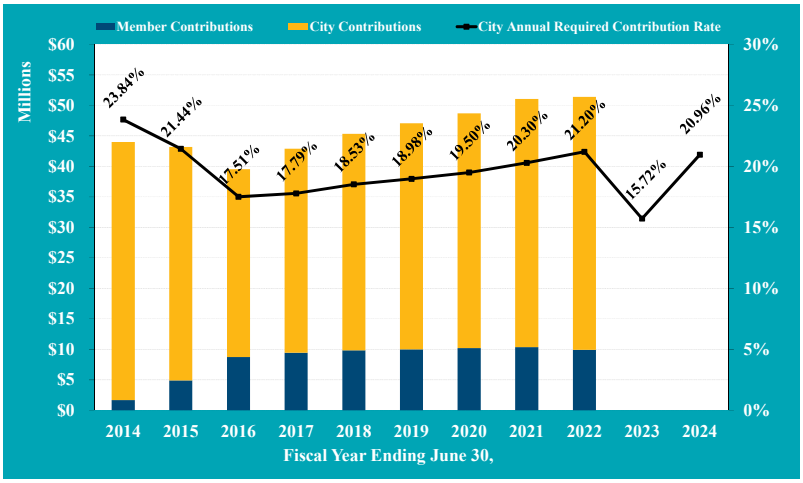
The bars represent the three different measures of liability mentioned in this report. For funding purposes, the target amount is the Actuarial Liability, represented by the top of the gray bar. We compare the Actuarial Value of Assets to this measure of liability in developing the funded ratio. These are the percentages shown in the graph labels.



The amount represented by the top of the blue bars, the Present Value of Future Benefits, is the amount needed to provide all benefits for the current participants and their beneficiaries. The top of the gold bars measures the liability attributable to benefits accrued to date.

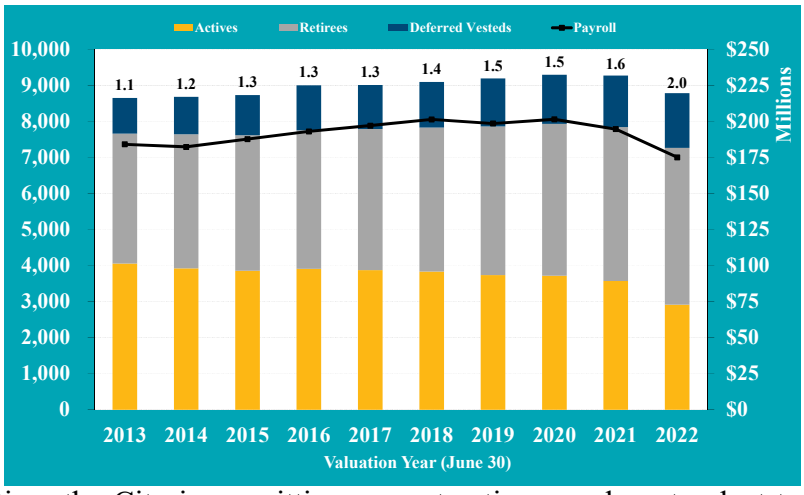
SECTION I – BOARD SUMMARY

Contribution Rates



The gold bars in this graph show the actual contribution amounts that have been paid by the City. The black line shows this contribution as a percent of payroll (right-hand scale). The City contribution rate is set by the actuarial process. Please note there is a lag in the rate. For example, the June 30, 2021 valuation determined the annual required contribution for the period July 1, 2022 to June 30, 2023. Although not shown in the chart above, this amount equaled $40.1 million and was paid by the City in July 2022 with $31.4 million from the actuarially determined contribution and $8.7 million from the Section 115 Trust. The large increase in the contribution rate from FYE 2023 to FYE 2024 is primarily attributable to the unfavorable investment performance and the increase in liabilities due to lowering the discount rate from 7.00% to 6.75%. With the System closing effective January 1, 2022, the City may consider having the actuary disclose future actuarial determined contributions as a dollar amount instead of as a percentage of pay.

Participant Trends



This graph shows the number of actives, retirees, and deferred vested members in the System as of each valuation date. The black line shows historic growth in the total covered payroll of the System (right-hand scale). As with any maturing pension plan, the number of retirees continues to increase, whereas the number of actives has declined – and will continue to do so – due to closing the plan to new hires effective January 1, 2022. In addition, the City is permitting current active members to elect to join VRS. For those members that elect to do so, they have the option of keeping their accrued benefit as of the transfer date within NERS and only participating in VRS on prospective basis. Based on the information provided, a total of 272 actives from last year's valuation had elected to join VRS by June 30, 2022, which contributed to the large decrease in actives from last year to this year.

The numbers above the bars on the graph indicate the ratio of inactive participants to active participants. Over the past ten years, this ratio has increased as the System continues to mature. When higher contributions are required to meet funding shortfalls caused by poor investment performance, the leveraging impact of a higher ratio becomes significant. This is because, though investment shortfalls impact total assets (i.e., impacting both participating actives and inactives), contributions are only made on behalf of the System's active participants. This support ratio can be expected to increase in the future as the System continues to mature without replenishing the active population with new hires and current actives potentially elect to port to VRS. In Section II of this report, we compare Norfolk's support ratio to other public plans.

Baseline Projections

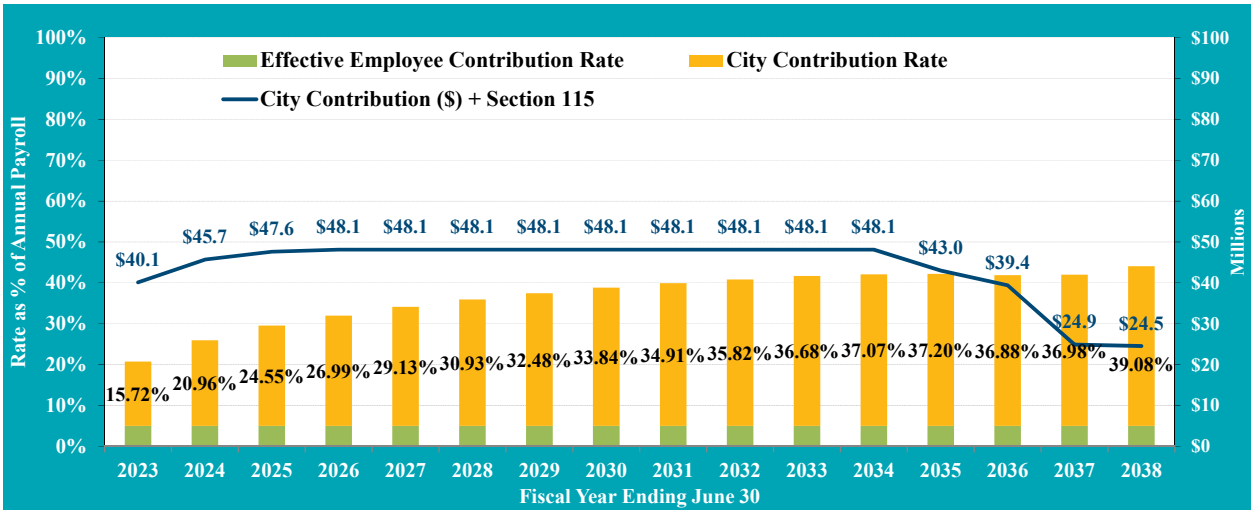
Our analysis of the projected financial trends for the System is an important part of this valuation. In this section we project future valuation results, focusing on the previously-referenced funded ratio (actuarial value basis) and the expected City contributions. We present a baseline scenario based on all actuarial assumptions being met exactly as assumed during the projection period, including the 6.75% investment return assumption. In the risk section of the report (Section II), we demonstrate how sensitive future valuation results are to deviations in actual returns from the assumed investment returns by presenting similar results with investment returns deviating from those assumed.

Effective January 1, 2022, the System was closed to new hires. New City employees will be required to join the Virginia Retirement System (VRS). Current members have until December 31, 2022 to make an election as to whether or not they want to remain in NERS or port to VRS. The projections shown in this and future sections do not reflect any assumption regarding the election for current members other than those who have transferred as of June 30, 2022. These additional elections will be reflected concurrent with the June 30, 2023 valuation after experience has unfolded.

Finally, the projections assume the City's contributions will be the greater of the prior year's contributions and the current year's amount based on the actuarially determined contribution rate. This policy will continue until the System is fully funded. Upon being fully funded, we have assumed that contributions are based on the projected actuarially determined composite contribution rate. As the System approaches fully funded status, the City may want to consider changing its funding policy to contribute an amount to cover the normal cost, the value of additional benefits being earned by active members for a year of service, and assumed administrative expenses. In addition to the City's annual contribution to satisfy the funding policy, projected contributions include an assumed $8.7 million annual contribution from the Section 115 Trust each July until those assets have been depleted.

SECTION I – BOARD SUMMARY

The two graphs below show the expected progress of the System over the next 15 years.

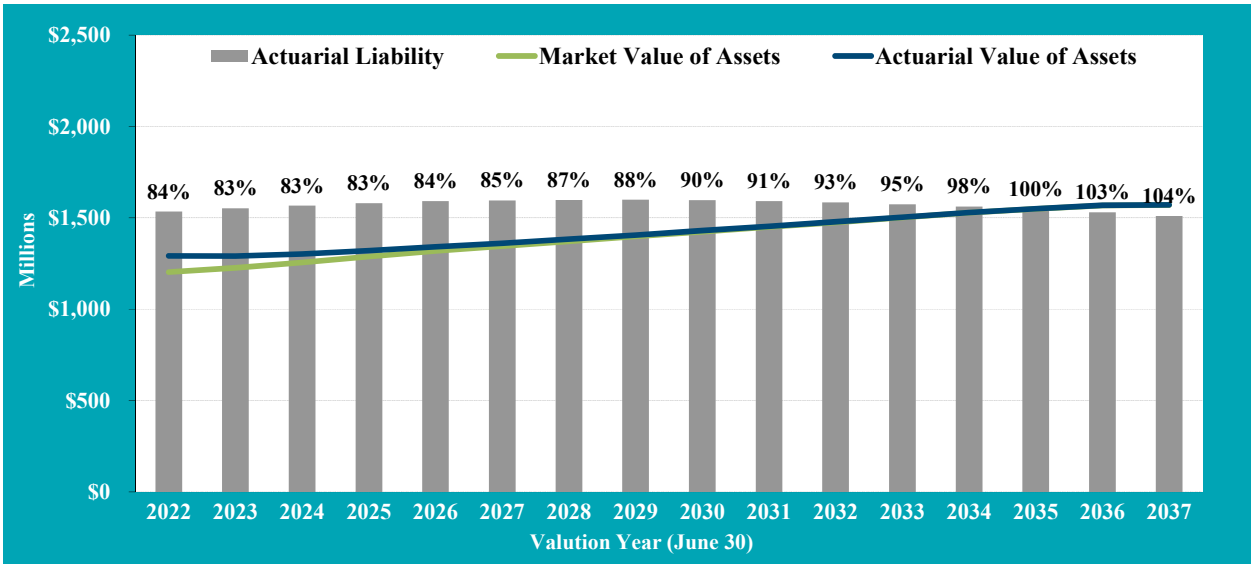


The preceding graph shows that the City's contribution rate as a percentage of payroll (left axis) is projected to increase to $48.1 million throughout the projection period. Upon Section 115 Trust assets depleting and the System becoming fully funded, the annual contribution starts to decline. This is dependent upon the City making contributions (blue line associated with right axis) in accordance with its pension funding policy as previously outlined. Absent this funding policy, the City's contributions would be slightly lower than the amount shown until the System reaches fully funded in 2027 and slightly higher in all years thereafter.

The increase in the City's contribution rate is attributable to two key reasons. In the near term, the net investment losses due to recent investment performance will continue to be phased in when calculating the Actuarial Value of Assets (AVA). Even if the System earns the assumed 6.75% return on a market value basis, the AVA would fall short of the assumption and trigger an investment loss due to continued recognition of the net investment losses. Additionally, the System's closure will cause total payroll of those actives participating in the plan to decline, leaving a smaller base upon which the City will be making contributions.

The following graph shows the projected funding status over the next 15 years. The System's funded ratio is projected to improve to 104% by the end of the period shown as contributions pay down the existing unfunded liability.

SECTION I – BOARD SUMMARY



SECTION I – BOARD SUMMARY

Table I-1
Summary of Principal Plan Results
Combined
($ in Thousands)

	June 30, 2021	June 30, 2022	% Change
Participant Counts			
Actives	3,569	2,914	(18.4%)
Leave of Absence[1]	18	18	0.0%
Terminated Vested Members	1,427	1,515	6.2%
Participants Due Account Balance	121	572	372.7%
In Pay Status Participants	4,272	4,351	1.8%
DROP Participants	46	52	13.0%
Total	9,453	9,422	(0.3%)
Annual Salaries of Active Members[2]	$ 194,653	$ 175,102	(10.0%)
Annual Retirement Allowances[3]	97,269	98,986	1.8%
Assets and Liabilities			
Actuarial Liability (AL)	$ 1,431,515	$ 1,534,614	7.2%
Assets for Valuation Purposes (AVA)	1,297,114	1,291,722	(0.4%)
Unfunded Actuarial Liability [AL - AVA]	$ 134,401	$ 242,892	
Funding Ratio (AVA ÷ AL)	90.61%	84.17%	
Funding Ratio (MVA ÷ AL)	97.02%	78.37%	
Present Value of Accrued Benefits	$ 1,323,225	$ 1,425,629	7.7%
Market Value of Assets (MVA)	1,388,869	1,202,663	(13.4%)
Unfunded Accrued Benefit Liability	$ (65,644)	$ 222,966	
Accrued Benefit Funding Ratio	104.96%	84.36%	
City Contributions as a % of Payroll	**Fiscal Year 2023**	**Fiscal Year 2024**	
Normal Cost Contribution	8.44%	7.13%	
Unfunded Actuarial Liability Contribution	6.93%	13.48%	
Expense Contribution	0.35%	0.35%	
Total Contribution	15.72%	20.96%	

1 *13 and 18 participants on Leave of Absence as of June 30, 2021 and June 30, 2022, respectively, are entitled to a vested benefit.*

2 *Due to recent funding policy clarification, salaries for DROP participants were included for June 30, 2021 but excluded for June 30, 2022.*

3 *Includes the monthly benefit amounts for the DROP participants. For those in the DROP period, the amount shown is 70% of the full monthly benefit.*

SECTION I – BOARD SUMMARY

Table I-2
Summary of Principal Plan Results
General Employees
($ in Thousands)

	June 30, 2021	June 30, 2022	% Change
Participant Counts			
Actives	2,492	2,022	(18.9%)
Leave of Absence[1]	9	10	11.1%
Terminated Vested Members	1,088	1,128	3.7%
Participants Due Account Balance	107	481	349.5%
In Pay Status Participants	2,912	2,956	1.5%
Total	6,608	6,597	(0.2%)
Annual Salaries of Active Members[2]	$ 126,671	$ 114,991	(9.2%)
Annual Retirement Allowances[3]	52,269	53,031	1.5%
Assets and Liabilities			
Actuarial Liability (AL)	$ 744,286	$ 786,958	5.7%
Assets for Valuation Purposes (AVA)	693,320	685,324	(1.2%)
Unfunded Actuarial Liability [AL - AVA]	$ 50,966	$ 101,634	
Funding Ratio (AVA ÷ AL)	93.15%	87.09%	
Funding Ratio (MVA ÷ AL)	99.74%	81.08%	
Present Value of Accrued Benefits	$ 690,683	$ 735,886	6.5%
Market Value of Assets (MVA)	742,363	638,074	(14.0%)
Unfunded Accrued Benefit Liability	$ (51,680)	$ 97,812	
Accrued Benefit Funding Ratio	107.48%	86.71%	
City Contributions as a % of Payroll	**Fiscal Year 2023**	**Fiscal Year 2024**	
Normal Cost Contribution	5.72%	4.25%	
Unfunded Actuarial Liability Contribution	4.09%	8.58%	
Expense Contribution	0.35%	0.35%	
Total Contribution	10.16%	13.18%	

[1] *4 and 10 participants on Leave of Absence as of June 30, 2021 and June 30, 2022, respectively, are entitled to a vested benefit.*

[2] *Due to recent funding policy clarification, salaries for DROP participants were included for June 30, 2021 but excluded for June 30, 2022.*

[3] *Includes the monthly benefit amounts for the DROP participants. For those in the DROP period, the amount shown is 70% of the full monthly benefit.*

SECTION I – BOARD SUMMARY

Table I-3
Summary of Principal Plan Results
Public Safety
($ in Thousands)

	June 30, 2021	June 30, 2022	% Change
Participant Counts			
Actives	1,077	892	(17.2%)
Leave of Absence[1]	9	8	(11.1%)
Terminated Vested Members	339	387	14.2%
Participants Due Account Balance	14	91	550.0%
In Pay Status Participants	1,360	1,395	2.6%
DROP Participants	46	52	13.0%
Total	2,845	2,825	(0.7%)
Annual Salaries of Active Members[2]	$ 67,982	$ 60,111	(11.6%)
Annual Retirement Allowances[3]	45,000	45,955	2.1%
Assets and Liabilities			
Actuarial Liability (AL)	$ 687,229	$ 747,656	8.8%
Assets for Valuation Purposes (AVA)	603,794	606,398	0.4%
Unfunded Actuarial Liability [AL - AVA]	$ 83,435	$ 141,258	
Funding Ratio (AVA ÷ AL)	87.86%	81.11%	
Funding Ratio (MVA ÷ AL)	94.07%	75.51%	
Present Value of Accrued Benefits	$ 632,542	$ 689,743	9.0%
Market Value of Assets (MVA)	646,506	564,589	(12.7%)
Unfunded Accrued Benefit Liability	$ (13,964)	$ 125,154	
Accrued Benefit Funding Ratio	102.21%	81.85%	
City Contributions as a % of Payroll	**Fiscal Year 2023**	**Fiscal Year 2024**	
Normal Cost Contribution	13.52%	12.65%	
Unfunded Actuarial Liability Contribution	12.23%	22.86%	
Expense Contribution	0.35%	0.35%	
Total Contribution	26.10%	35.86%	

[1] *9 and 8 participants on Leave of Absence as of June 30, 2021 and June 30, 2022, respectively, are entitled to a vested benefit.*

[2] *Due to recent funding policy clarification, salaries for DROP participants were included for June 30, 2021 but excluded for June 30, 2022.*

[3] *Includes the monthly benefit amounts for the DROP participants. For those in the DROP period, the amount shown is 70% of the full monthly benefit.*

SECTION II – RISK ASSESSMENT AND DISCLOSURE

Introduction

Actuarial Standard of Practice (ASOP) No. 51 was published by the Actuarial Standards Board to provide guidance to actuaries on the assessment and disclosure of risks related to the possibility that future pension plan experience will deviate from assumptions. This standard does not introduce new concepts to actuarial work; it simply attempts to provide some codification of the practice. Our reports have routinely included stress testing of the valuation results showing the impact of future experience deviating from the underlying assumptions as well as other communications related to the risks that the actual condition of the System will deviate from our valuation results. However, this section of the report consolidates the information regarding assessment and disclosure of the System's risks as well as add a number of additional items helping to communicate and understand these risks.

The System's actuarial valuation results are dependent on assumptions about future economic and demographic experience. Based on actuarial standards of practice, the assumptions represent a reasonable estimate for future experience. However, actual future experience will never conform exactly to the assumptions and may differ significantly from the assumptions. This deviation is the risk that pension plan sponsors undertake in relying on a pension plan's actuarial valuation results.

This section of this report is intended to identify the primary drivers of these risks, provide background information and assessments about these identified risks, and communicate the significance of these risks to this Program.

Identification of Risks

For this System, the three primary valuation results that can significantly differ from those expected are in the assets, liabilities, and employer contributions. While there are several factors that could lead to these results being different, we believe the primary risks for this System are:

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

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

SECTION II – RISK ASSESSMENT AND DISCLOSURE

Investment Risk is the potential for investment returns to deviate from what is expected. When actual investment returns are lower than the investment assumption used in the actuarial valuation (currently assume 6.75% per year), the unfunded liability will increase and will require higher contributions than otherwise anticipated. But, when actual returns exceed the assumption, the resulting unfunded liability measurements and actuarially determined contributions will be lower than anticipated. As seen in the historical section that follows, this has been a significant driver of deviations in the actual measurements for this System from those expected by the valuations.

Longevity and Other Demographic Risk is the potential for mortality or other demographic experience to be different than expected. Generally, longevity and other demographic risks emerge slowly over time as the actual experience deviates from expected. In addition, the extensive number of assumptions related to longevity and demographic experience often result in offsetting factors contributing to the System's overall liability experience. As such, these risks are often dwarfed by other risks, particularly those due to the investment returns. The historical section shows that the System has experienced liability gains in each of the last ten years. However, the amounts of these liability gains are small in many years, especially when compared to investment return experience. This year, the System experienced a liability loss of $3.5 million and an actuarial investment loss of $44.5 million.

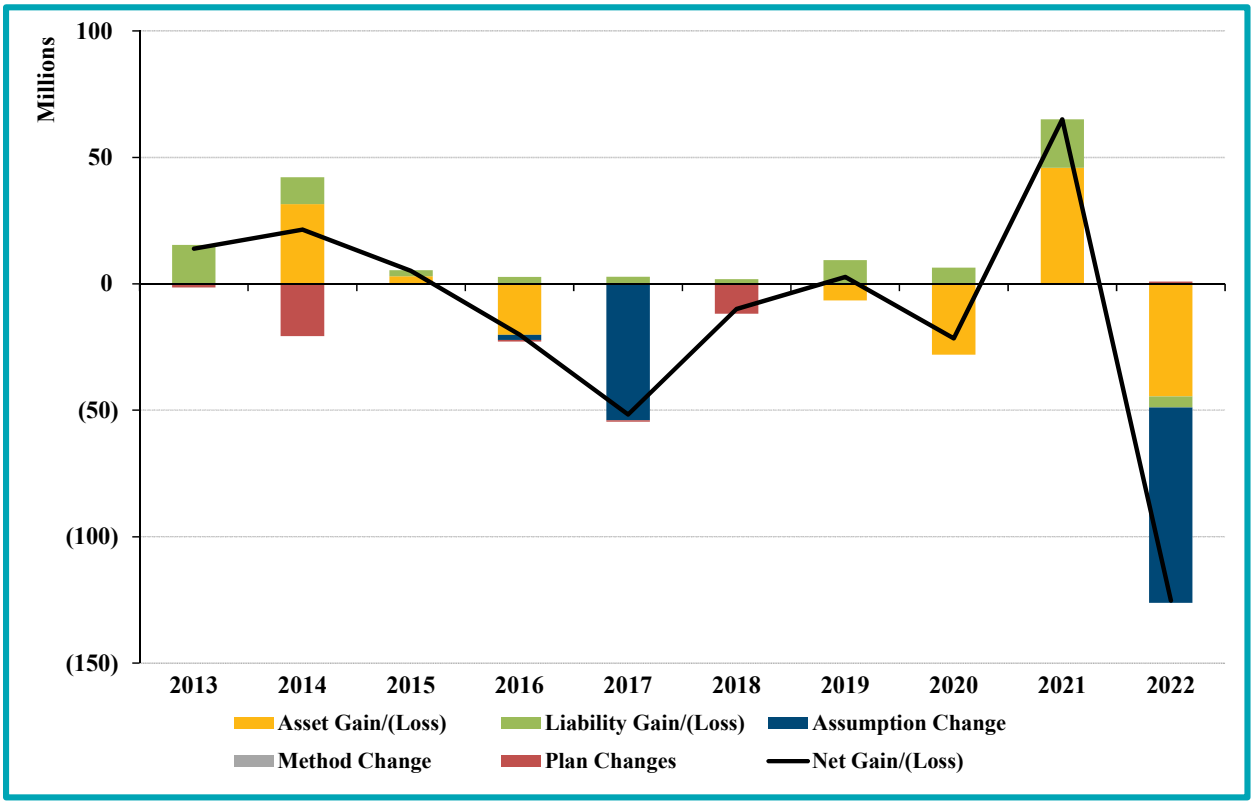
Assumption Change Risk is the potential for the environment to change such that future valuation assumptions are adjusted to be different than the current assumptions. For example, declines in interest rates over time may result in a change in the assumed rates of return used in the valuation. A healthier workforce may result in changes in employee behavior such that retirement rates are adjusted to reflect employees working longer. Assumption change risk is an extension of the risks previously identified, but rather than capturing the risk as it is experienced, it captures the cost of recognizing a change in the environment when the current assumption is no longer reasonable. The historical review section illustrates that assumption change risk has had a measurable impact in 2022 when the underlying assumptions were changed as a results of an experience study. The reduction in the discount rate assumption from 7.00% to 6.75% was particularly impactful, increasing liabilities by 2.6%.

Plan Change Risk is the potential for the provisions of the System to be changed such that the funding or benefits are changed materially. In addition to the actual payments to and from the System being changed, future valuation measurements can also be impacted, with System changes leading to deviations between actual future measurements and those expected by the current valuation. A recent example was the System's closure to new hires effective January 1, 2022. While this change is particularly impactful on the System's long-term funding, the immediate impact of these plan changes on the City's contribution rate is relatively small and will be slowly realized over time. The historical review section will show that plan change risk has resulted in deviations in the actual measurements for this System from those expected by the valuations.

SECTION II – RISK ASSESSMENT AND DISCLOSURE

Historical Experience Deviations

In understanding the impact of some of these risks, it is useful to look at past experience deviations. These deviations are commonly referred to as actuarial gains and losses. The following graph shows the gains/(losses) at each valuation date between the actual and expected experience broken down by cause. As described previously and is evident in this graph, assumption changes, asset gains/(losses) and liability gains/(losses) have been the most significant risks for the System.



SECTION II – RISK ASSESSMENT AND DISCLOSURE

Plan Maturity Measures

As pension plans become more mature, the primary risks of adverse investments, demographic deviations, plan changes, and assumption change experience become of more significant concern. As a result, it has become increasingly important to examine measures that indicate a pension plan's maturity level. With shrinking workforces, aging Baby Boomers, and retirees living longer, plans pay out more in benefits than they receive in contributions – leading to negative cash flows.

When plans with negative cash flows suffer investment losses, they need to liquidate enough assets to pay for benefits in excess of contributions. That means these plans will need to earn higher returns to rebuild their assets to the previous levels. Plans with negative cash flows exceeding five percent of assets are especially vulnerable to asset losses.

The balance of this section discloses and examines three maturity measures: the asset leverage ratio, the support ratio, and the net cash flow ratio.

Asset Leverage Ratio

One of the more important plan maturity measures is the asset leverage ratio – the market value of assets divided by the plan's payroll. As a plan matures, its assets increase. Once a plan is fully funded, contributions will decrease. The greater the plan's assets are relative to payroll, the more vulnerable the plan is to investment volatility.

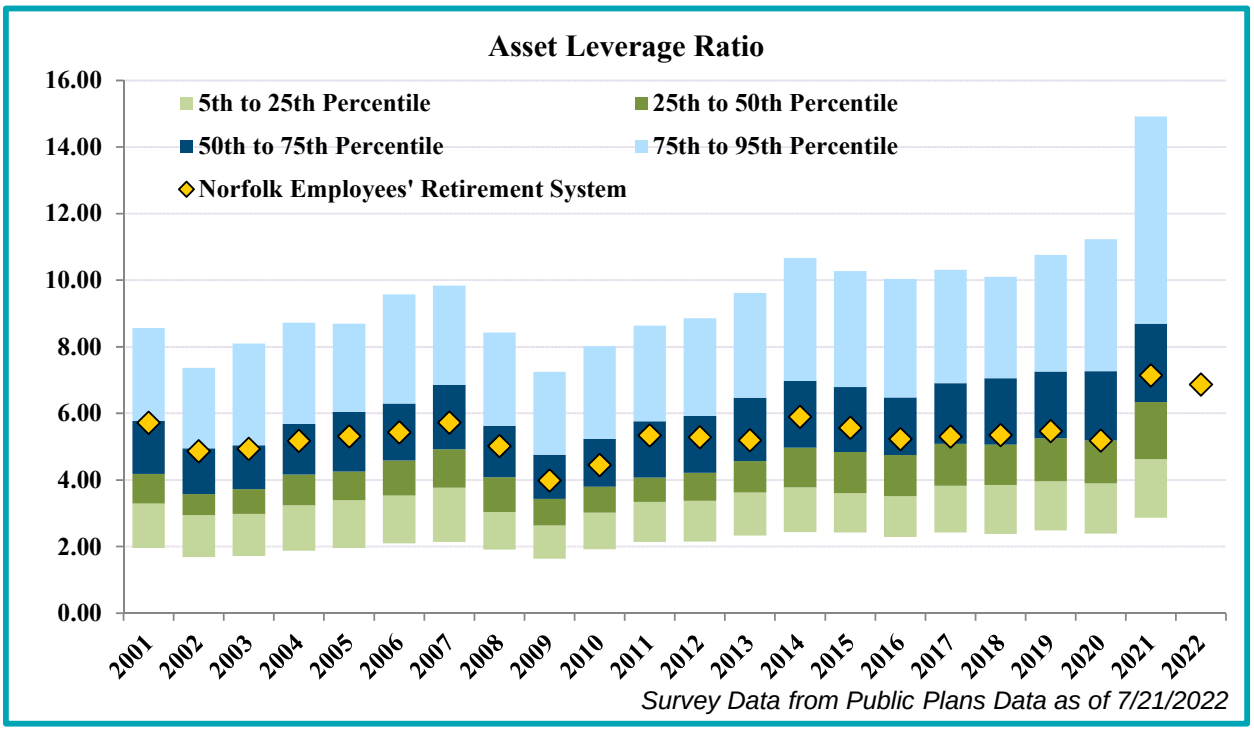
As an example, here are two plans that both experience a 10% investment loss equaling $500 million. Plan A's asset leverage ratio is 10 and Plan B's ratio is 5 – this means that Plan A has to spread or amortize that loss over a payroll that is half as large as Plan B's.

($ in millions)	Plan A	Plan B
Plan Assets	$5,000	$5,000
Payroll	$500	$1,000
Asset Leverage Ratio	10.0	5.0
10% Loss	$500	$500
10% Loss as % of Payroll	100%	50%

The Boston College's Center for Retirement Research, NASRA, and the Center for State and Local Government Excellence maintain the Public Plan Database that contains the majority of state plans as well as many large municipal plans. The chart shows the asset leverage ratios for all plans in this database since 2001. The colored bars represent the central 90% of the asset leverage ratios for the plans. The Employees' Retirement System for the City of Norfolk is represented by the orange diamonds.

SECTION II – RISK ASSESSMENT AND DISCLOSURE

Until recently, the System's asset leverage ratio was above the 50th percentile of all plans and even near the 75th percentile in some of the earliest years shown. The System's asset leverage ratio in recent years has been around 5.5 putting the System closer to the 50th percentile. The increase in 2021 was due to the recent $119.6 million contribution from the June 2021 bond issuance. The ratio is currently around 6.9, a decrease from the prior year due to the decline in assets.

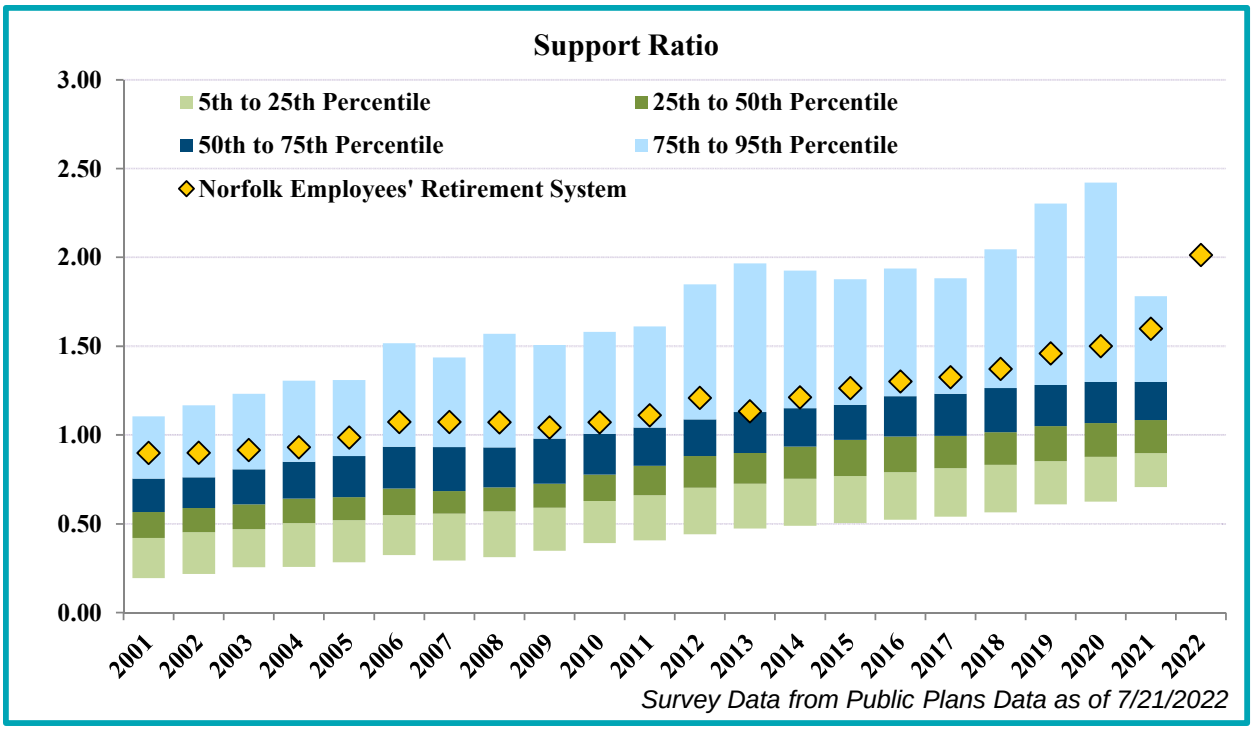


Support Ratio

A commonly used measure of plan maturity is the Support Ratio, which is the ratio of inactive members (participants currently receiving benefits or entitled to a future benefit) to the number of active members. The greater this ratio, the more likely that the plan will have or develop negative cash flows.

The following graph shows the support ratio over time for the System compared to the Public Plan database.

SECTION II – RISK ASSESSMENT AND DISCLOSURE



The orange diamonds in this graph shows that the System's support ratio for each year has generally increased over time and has remained above the 75th percentile level over the entire period. This indicates that the System is maturing, as have most plans in this database over the years and has done so at a slightly faster rate than the universe of plans. With the City amending the System to exclude new hires on or after January 1, 2022, from participating in this plan and with members porting service to VRS, the support ratio is expected to continue to increase at a higher rate than other public plans.

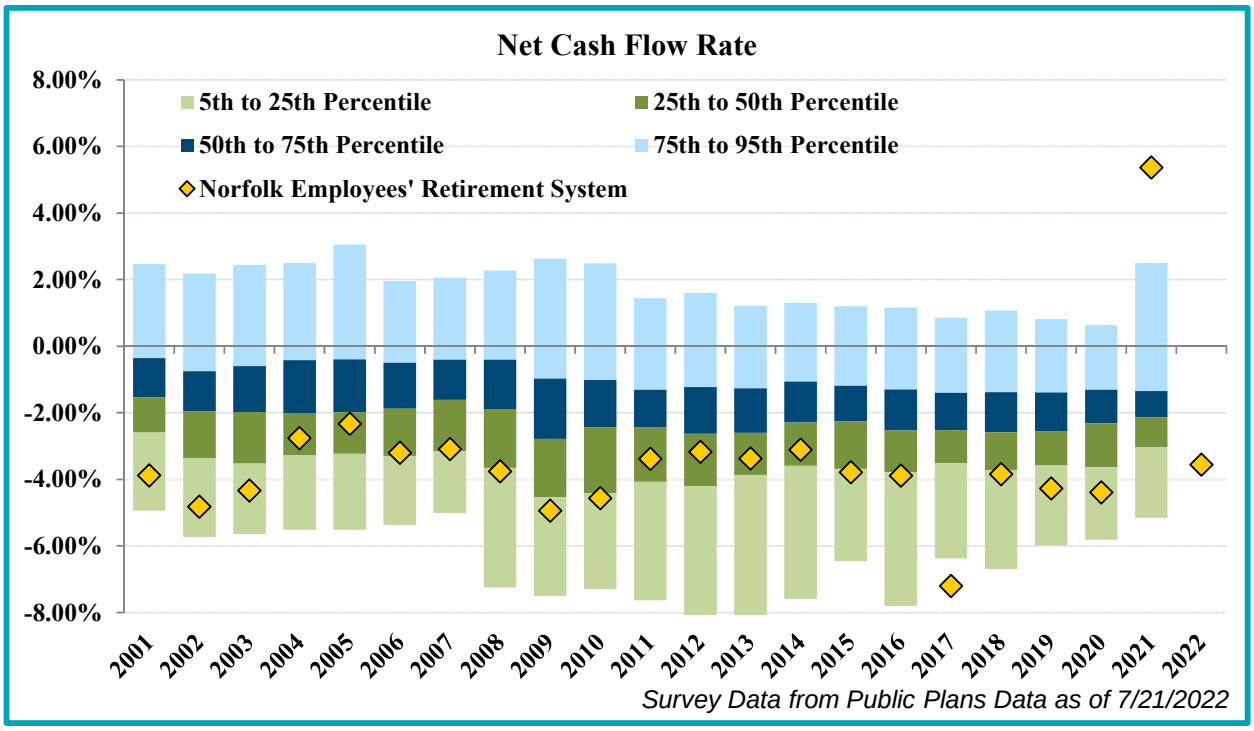
Net Cash Flow Rate

Another measure of plan maturity is the ratio of net cash flow – contributions less benefits and expenses – to the market value of plan assets. When this ratio is significantly negative, a plan is very vulnerable to market declines.

The following chart shows that the System's net cash flow rate has remained relatively stable over the last several years. The large negative percentage in 2017 was a result of the City changing how it reflects contributions in its financials. The large positive percentage in 2021 is attributable to the inclusion of the City's one-time $119.6 million contribution from pension obligation bonds.

Disregarding these outlier years, the System has had consistently more negative cash flows than the median plan in the public plan database. This measure again provides some indication that this System is more mature than the typical public plan.

SECTION II – RISK ASSESSMENT AND DISCLOSURE



Assessing Future Risk

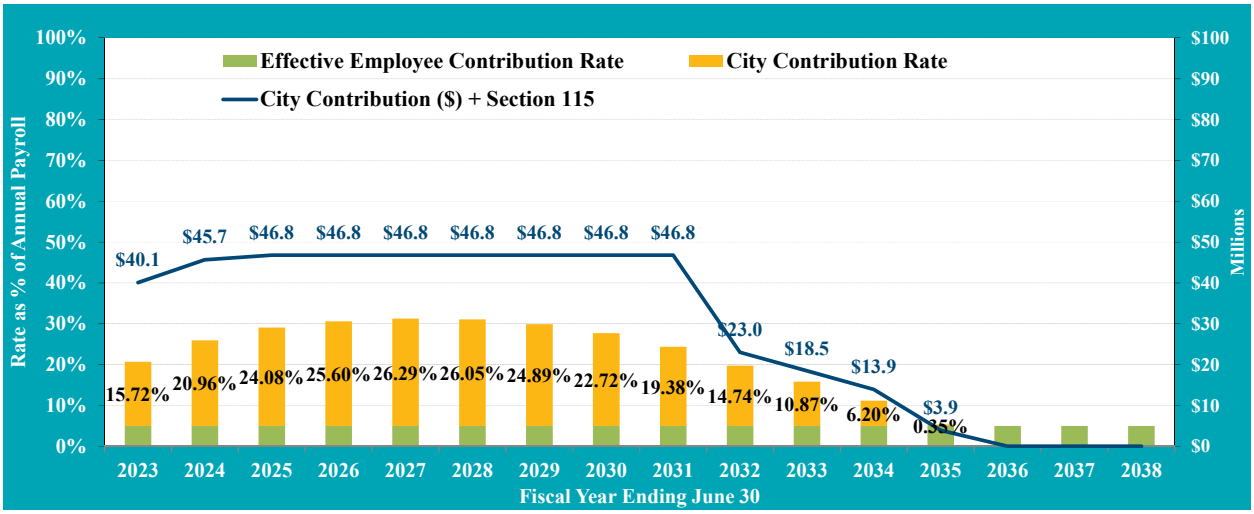
Assessing the future risk that the expected measurements produced by the actuarial valuations will deviate from the actual values over time is complex and can never be exactly known.

The Board Summary has additional detail on the baseline projection. It is important to note that baseline projections, while valid, **are not going to occur** as experience never conforms exactly to assumptions every year. On the following pages, we have included scenarios that illustrate what may happen if investment returns are consistently 2% higher or lower than assumed. We have also shown a scenario using historical market returns that averaged nearly 6.75% but with heavy volatility. As plans mature, it becomes more difficult to recover from market declines even when the average investment return over a long period is equal to the expected return.

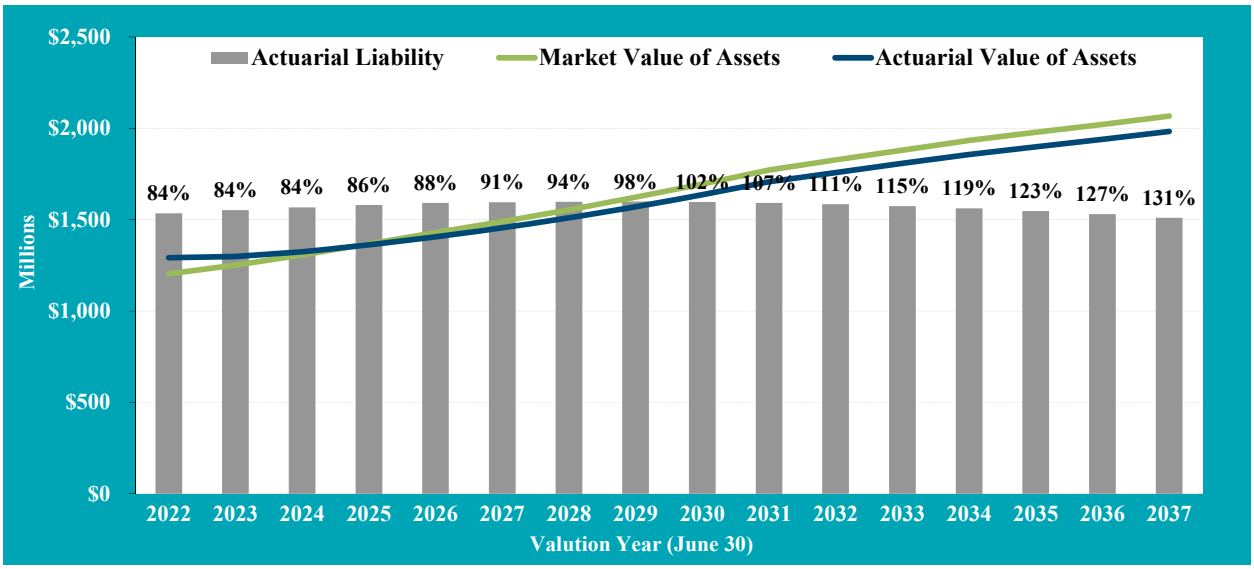
SECTION II – RISK ASSESSMENT AND DISCLOSURE

Projections with Asset Returns of 8.75%

The next two graphs show what the next 15 years would look like with an 8.75% annual return for all future years in lieu of the assumed 6.75%.



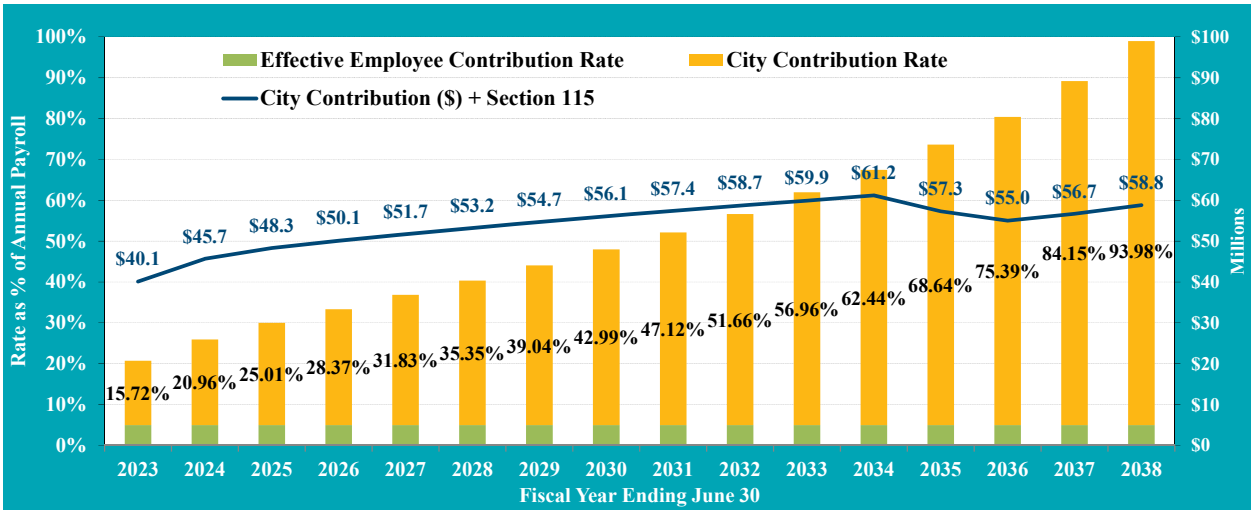
As shown above, the City's composite contribution rate would drop from its Fiscal Year 2023 level of 20.96% of payroll down to 0.00% of payroll by Fiscal Year 2036. Similar to before, the projection includes continuing contributions of $8.7 million per year from the Section 115 Trust until those assets have been exhausted. The extra investment returns push the System into a surplus position by 2030 as shown in the graph below, which is five years earlier than the baseline scenario. The amortization of this growing surplus eventually exceeds the cost of new accruals and expenses. If the System were to approach fully funded status, then the City may want to look at contributing an annual amount to cover the new accruals and expenses.



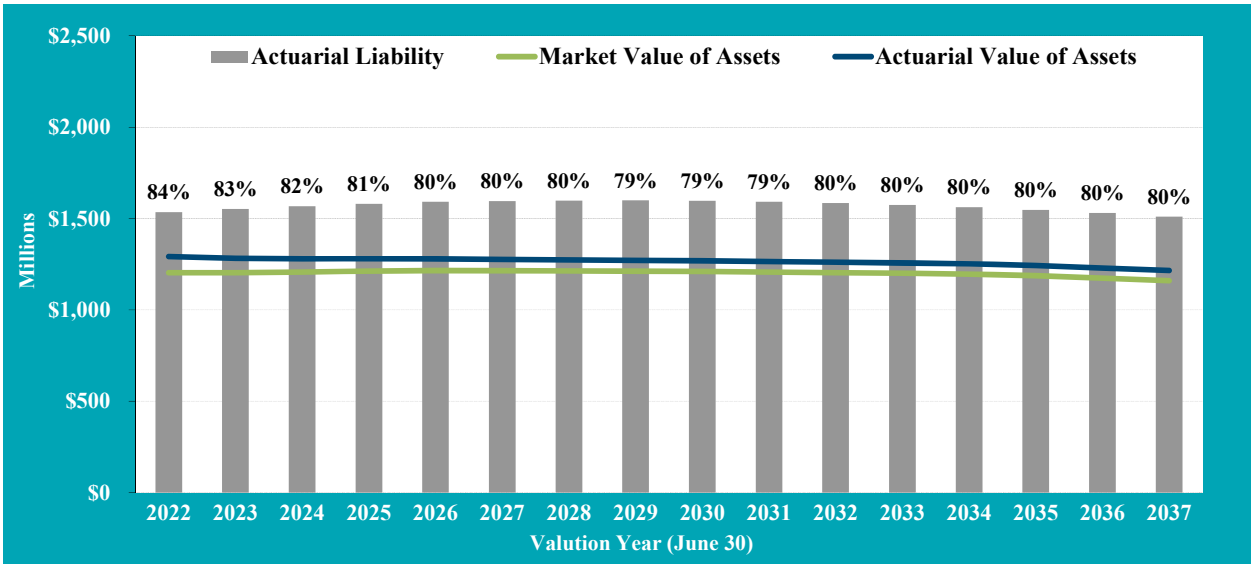
SECTION II – RISK ASSESSMENT AND DISCLOSURE

Projections with Asset Returns of 4.75%

The next two graphs show what the next 15 years would look like with a 4.75% annual return.



With assets projected to underperform the assumed 6.75% each and every year, the City's composite contribution rate would increase steadily through the 15-year period.



The System's funded level would ultimately decrease to 80%. While this is only a 4% decrease from the current 84% funded status, the City would be contributing at a much higher level over this period to make up for the lack of investment earnings. With declining payroll that stems from closing the System effective January 1, 2022, the City's contribution as a percent of payroll increases rapidly. However, there would still be little danger of benefit commitments going unmet over this period as the System would have roughly $1.2 billion in assets by the end of the period. Again, these projections are absent any additional ad hoc COLAs.

SECTION II – RISK ASSESSMENT AND DISCLOSURE

Projections with Volatile Asset Returns

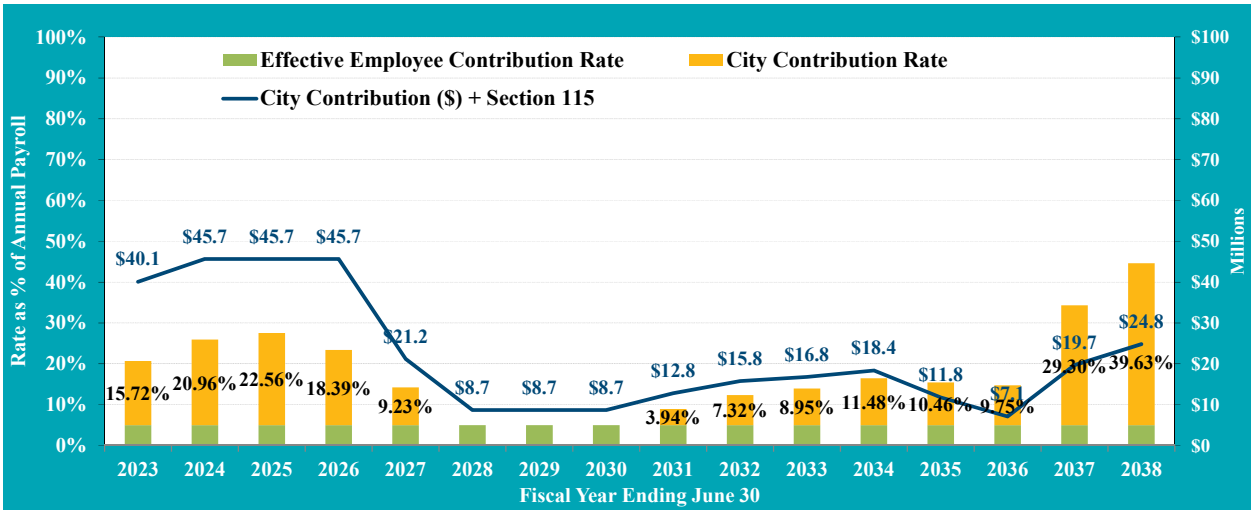
Similar to the baseline projection, the two projections in this section assumed a fixed return of 8.75% or 4.75% each and every year. While unlikely to occur, these scenarios provide perspective on the sensitivity of the funded status and City's contribution rate should asset returns routinely exceed or fall short of the assumed 6.75%.

The actual investment performance of the System is likely to be more volatile. The last projection shown below varies the returns for the next 15 years to those that actually occurred from 1996 to 2010 based on a portfolio invested in 60% equities and 40% fixed income, averaging 6.87% over the next 15 years, just above the current assumed return of 6.75%. The rates assumed for this scenario are shown in the following table.

FYE June 30,	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Return	15.30%	23.92%	20.64%	12.28%	(0.82%)	(3.78%)	(9.14%)	15.34%	8.26%	3.90%

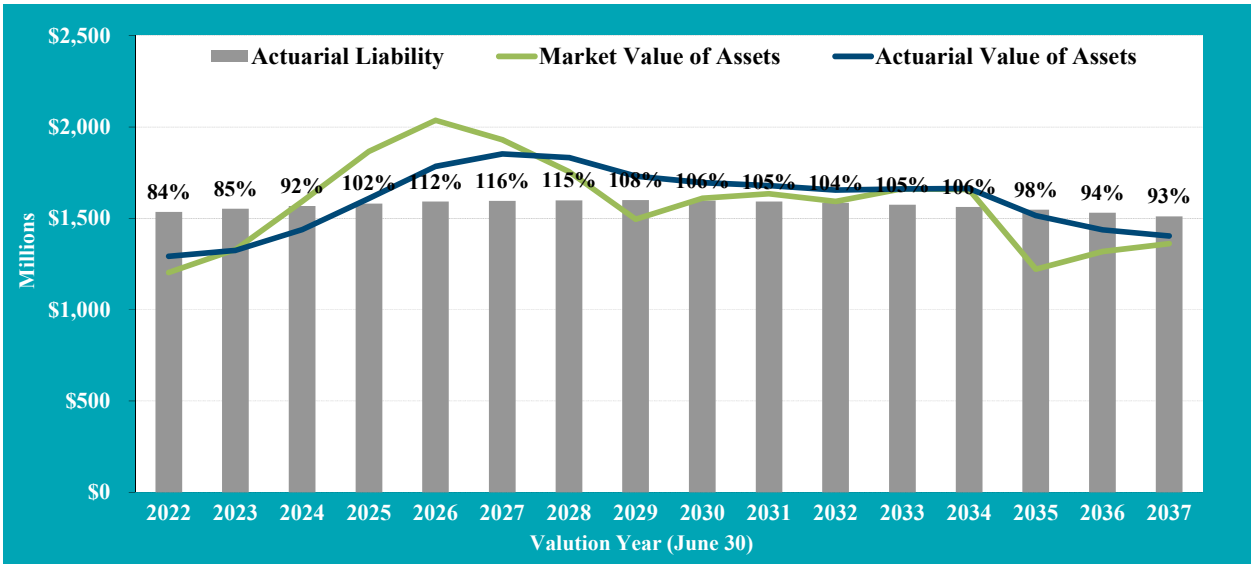
FYE June 30,	2033	2034	2035	2036	2037
Return	11.20%	6.10%	(20.12%)	18.26%	11.65%

With varying annual earnings, one can see the volatility in the employer contributions in the first chart. Note that this chart reflects an illustrative scenario and is not intended to reflect future expectations as the volatility of the contributions will vary with the volatility of the returns.



SECTION II – RISK ASSESSMENT AND DISCLOSURE

The funded ratio of the System is also more volatile with varied returns as seen in the following graph from this one illustrative scenario.



SECTION III – ASSETS

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

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

- **Disclosure** of system assets at June 30, 2021 and June 30, 2022;
- Statement of the **changes** in market values during the year;
- Development of the **actuarial value of assets**;
- An assessment of **investment performance**; and
- A projection of the System's expected **cash flows** for the next ten years.

Disclosure

The market value of assets represents "snap-shot" or "cash-out" values which provide the principal basis for measuring financial performance from one year to the next. Market values, however, can fluctuate widely with corresponding swings in the marketplace. As a result, market values are usually not suitable for long-range planning.

The actuarial value, or "carrying value," is the market value that has been smoothed based on actuarial methods used to estimate the long-term asset value. It is used for evaluating the System's ongoing liability to meet its obligations.

Current methods employed by this System determine the actuarial value of assets by first calculating the expected actuarial value of assets based on last year's valuation interest rate, last year's actuarial value of assets, and the net cash flow (contributions less benefit payments and assumed administrative expenses) of the System over the year prior to the valuation. One-third of the difference between the market value of assets and the expected actuarial value of assets is then added to the expected actuarial value of assets to determine the valuation assets.

The actuarial value of assets is then allocated between the General Employees' portion of the System and that covering Public Safety. The allocation is performed annually based on the actual contribution and benefit payments made on behalf of each type of employee. The investment returns for the year are allocated based on the starting balance and the cash flow of each portion of the fund.

SECTION III – ASSETS

Table III-1
Statement of Assets at Market Value
($ in Thousands)

	June 30, 2021	June 30, 2022
Assets		
Cash and Short-Term Investments	$ 37,958	$ 38,812
Receivables		
Accrued Investment Income	$ 1,093	$ 884
Accounts Receivable	0	2
Due from Broker for Securities Sold	41,922	60,237
Total	$ 43,015	$ 61,123
Investments, at Fair Value		
United States Treasury Securities	$ 71,863	$ 53,733
Fixed Income Securities	118,431	101,929
Derivative Securities	(281)	(1,097)
Equity Securities	111,244	114,671
Balanced Comingled Funds	1,105,288	944,700
Total	$ 1,406,545	$ 1,213,936
Total Assets	$ 1,487,518	$ 1,313,871
Liabilities		
Accounts Payable	$ 2,112	$ 3,927
Due to Broker for Securities Purchased	96,537	107,281
Total Liabilities	$ 98,649	$ 111,208
Net Assets Available for Benefits	**$ 1,388,869**	**$ 1,202,663**

SECTION III – ASSETS

Table III-2
Changes in Market Value of Assets
($ in Thousands)

Value of Assets at June 30, 2021	**$**	**1,388,869**
Additions		
Contributions		
Employer Contributions	$	41,457
Employee Contributions / Purchased Service		9,937
Total Contributions	$	51,394
Investment Income		
Net Appreciation (Depreciation)	$	(144,707)
Interest		2,766
Dividends		7,837
Other		2,188
Total Investment Income	$	(131,916)
Investment Expenses		(2,811)
Net Income from Investing Activities	$	(134,727)
Total Additions	$	(83,333)
Deductions		
Benefits Paid directly to Participants	$	(93,144)
Return of Contributions		(2,924)
Beneficiary Payments		(5,957)
Administrative Fees		(848)
Total Deductions	$	(102,873)
Total		
Net Increase/(Decrease)	$	(186,206)
Value of Assets at June 30, 2022	**$**	**1,202,663**

SECTION III – ASSETS

Actuarial Value of Assets

The actuarial value of assets represents a "smoothed" value developed by the actuary to reduce, or eliminate, erratic results which could develop from short-term fluctuations in the market value of assets. For this System, the actuarial value has been calculated by first calculating the expected actuarial value of assets based on last year's valuation interest rate, last year's actuarial value of assets, and the net cash flow (contributions less benefit payments and assumed administrative expenses) of the System over the year prior to the valuation. One-third of the market value of assets less the expected actuarial value of assets is then added to the expected actuarial value of assets to determine the valuation assets.

Table III-3
Development of the Actuarial Value of Assets
($ in Thousands)

1. Actuarial Value of Assets at June 30, 2021	$	1,297,114
Employer Contributions		41,457
Employee Contributions / Purchased Service		9,937
Benefit Payments		(102,025)
Assumed Administrative Expenses		(684)
Expected Return at 7.00%		90,453
2. Expected Value at June 30, 2022 (EV)	$	1,336,252
3. Actual Market Value at June 30, 2022 (AV)	$	1,202,663
4. One-Third of AV less EV	$	(44,530)
5. Actuarial Value of Assets at June 30, 2022 [2. + 4.]	**$**	**1,291,722**

SECTION III – ASSETS

Table III-4
Allocation of Actuarial Value of Assets as of June 30, 2022
($ in Thousands)

	General Employees	Public Safety	Total
1. Actuarial Value of Assets at June 30, 2021	$ 693,320	$ 603,794	$ 1,297,114
2. Contributions			
Employer Contributions	$ 18,275	$ 23,182	$ 41,457
Employee Contributions / Purchased Service	6,318	3,619	9,937
Total Contributions	$ 24,593	$ 26,801	$ 51,394
3. Benefit Payments[1]	$ (56,655)	$ (45,370)	$ (102,025)
4. Assumed Administrative Expenses	$ (440)	$ (244)	$ (684)
5. Investment Earnings, based on 3.73% return	$ 24,506	$ 21,417	$ 45,923
6. Actuarial Value of Assets at June 30, 2022	$ 685,324	$ 606,398	$ 1,291,722
7. Market Value of Assets at June 30, 2022[2]	$ 638,074	$ 564,589	$ 1,202,663

[1] *Projected Benefit Payments are allocated on the basis of FY 2022 expected payments.*
[2] *The allocation of Market Value of Assets is used only for comparison to the Present Value of Accrued Benefits.*

SECTION III – ASSETS

Investment Performance

The market value of assets (MVA) returned -9.74% during the fiscal year ending June 30, 2022, which is less than the expected 7.00% return (assumption in prior year's valuation) by 16.74%.

A return of 3.73% on the actuarial value of assets (AVA) is primarily the result of the asset smoothing method being utilized for the calculation of the actuarial value of assets. Since only a portion of the gain or loss from the performance of the System is recognized in a given year, in periods of very good performance, the AVA can lag significantly behind the MVA. In a period of negative returns, the AVA does not decline as rapidly as the MVA.

SECTION III – ASSETS

Table III-5
Annual Rates of Return

Year Ending June 30	Market Value	Actuarial Value
1999	9.9%	14.7%
2000	8.8%	11.9%
2001	(2.3%)	5.4%
2002	(7.6%)	(0.9%)
2003	5.4%	(2.5%)
2004	11.1%	9.5%
2005	6.7%	7.2%
2006	4.7%	6.2%
2007	15.1%	8.7%
2008	(5.2%)	4.9%
2009	(15.3%)	(2.1%)
2010	13.1%	(4.6%)
2011	20.2%	4.6%
2012	0.4%	11.2%
2013	11.8%	7.0%
2014	17.1%	10.5%
2015	1.2%	7.3%
2016	0.3%	5.0%
2017	11.4%	7.0%
2018	7.0%	7.1%
2019	5.1%	6.7%
2020	0.5%	4.7%
2021	25.9%	11.8%
2022	(9.7%)	3.7%

SECTION III – ASSETS

Table III-6
Projection of System's Benefit Payments and Contributions
($ in Thousands)

Fiscal Year Ending	Expected Benefit Payments and Admin Expenses	Expected City Contributions*	Expected Employee Contributions*
2023	$ 105,177	$ 40,117	$ 8,752
2024	106,814	45,674	7,859
2025	107,824	47,579	7,235
2026	110,632	48,054	6,702
2027	116,700	48,054	6,252
2028	117,478	48,054	5,845
2029	119,107	48,054	5,467
2030	120,660	48,054	5,132
2031	122,547	48,054	4,805
2032	123,853	48,054	4,463

** Includes $8.7 million annual distribution from Section 115 Trust until assets are depleted. Assumes City contributions are made on July 1 and employee contributions are made uniformly throughout the year.*

Expected benefit payments are projected for the closed group valued at June 30, 2022. Expected City contributions are shown on a cash basis and include anticipated annual contributions of $8.7 million from the Section 115 Trust. City contributions were assumed to be made in accordance with the pension funding policy stating that the City shall contribute the greater of the prior year's contribution or the current year's actuarial determined contribution rate. Upon attaining fully funded status, the contribution was assumed to be based on the actuarial determined contribution rate as described in Section V of this report.

SECTION IV – LIABILITIES

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

- **Disclosure** of System liabilities at June 30, 2021 and June 30, 2022; and
- Statement of **changes** in these liabilities during the year.

Disclosure

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

- **Present Value of Future Benefits:** Used for analyzing the financial outlook of the System, this represents the amount of money needed today to fund all future benefits and expenses of the System, assuming participants continue to accrue benefits.

- **Actuarial Liability:** Used for funding calculations, this liability is calculated taking the Present Value of Benefits above and subtracting the present value of future Employer Normal Costs under an acceptable actuarial funding method. This method is referred to as the **Entry Age Normal** funding method.

- **Present Value of Accrued Benefits:** Used for communicating the current level of liabilities, this liability reflects the total amount of money needed today to fully fund the current accrued obligations of the System, assuming no future accruals of benefits, assets continue to earn 6.75% per year and no ad hoc COLAs are awarded. These liabilities are also used to assess whether the System can meet its current benefit commitments.

None of the liabilities disclosed in this report is appropriate for use in settling the liabilities of the System.

The tables on the next pages disclose each of these liabilities for the current and prior valuations. With respect to each disclosure, a subtraction of the appropriate value of System assets yields, for each respective type, a **net surplus** or **unfunded liability**.

SECTION IV – LIABILITIES

Table IV-1
Liabilities & Net (Surplus)/Unfunded
Combined
($ in Thousands)

	June 30, 2021	June 30, 2022
Present Value of Future Benefits		
Active Participant Benefits	$ 634,752	$ 594,050
Retiree Benefits	931,297	978,800
DROP Participants	28,263	34,141
Terminated Vested and Inactive Members	64,842	81,922
Present Value of Future Benefits (PVFB)	**$ 1,659,154**	**$ 1,688,913**
Employer Normal Cost[1]	$ 16,437	$ 12,491
Actuarial Liability		
Active Participant Benefits	$ 407,113	$ 439,752
Retiree Benefits	931,297	978,800
DROP Participants	28,263	34,141
Terminated Vested and Inactive Members	64,842	81,922
Actuarial Liability (AL)	**$ 1,431,515**	**$ 1,534,615**
Actuarial Value of Assets (AVA)	1,297,114	1,291,722
Net (Surplus)/Unfunded (AL – AVA)	**$ 134,401**	**$ 242,893**
Present Value of Accrued Benefits		
Present Value of Accrued Benefits (PVAB)	**$ 1,323,225**	**$ 1,425,629**
Market Value of Assets (MVA)	1,388,869	1,202,663
Net (Surplus)/Unfunded (PVAB – MVA)	**$ (65,644)**	**$ 222,966**

[1] *Net of employee contributions*

SECTION IV – LIABILITIES

Table IV-2
Liabilities & Net (Surplus)/Unfunded
General Employees
($ in Thousands)

	June 30, 2021	June 30, 2022
Present Value of Future Benefits		
Active Participant Benefits	$ 310,886	$ 287,046
Retiree Benefits	490,078	509,777
Terminated Vested and Inactive Members	44,603	51,451
Present Value of Future Benefits (PVFB)	**$ 845,567**	**$ 848,274**
Employer Normal Cost[1]	$ 7,246	$ 4,887
Actuarial Liability		
Active Participant Benefits	$ 209,604	$ 225,730
Retiree Benefits	490,078	509,777
Terminated Vested and Inactive Members	44,603	51,451
Actuarial Liability (AL)	**$ 744,285**	**$ 786,958**
Actuarial Value of Assets (AVA)	693,320	685,324
Net (Surplus)/Unfunded (AL – AVA)	**$ 50,965**	**$ 101,634**
Present Value of Accrued Benefits (PVAB)	**$ 690,683**	**$ 735,886**

[1] *Net of employee contributions*

SECTION IV – LIABILITIES

Table IV-3
Liabilities & Net (Surplus)/Unfunded
Public Safety
($ in Thousands)

	June 30, 2021	June 30, 2022
Present Value of Future Benefits		
Active Participant Benefits	$ 323,866	$ 307,004
Retiree Benefits	441,219	469,023
DROP Participants	28,263	34,141
Terminated Vested and Inactive Members	20,239	30,471
Present Value of Future Benefits (PVFB)	**$ 813,587**	**$ 840,639**
Employer Normal Cost[1]	$ 9,191	$ 7,604
Actuarial Liability		
Active Participant Benefits	$ 197,509	$ 214,022
Retiree Benefits	441,219	469,023
DROP Participants	28,263	34,141
Terminated Vested and Inactive Members	20,239	30,471
Actuarial Liability (AL)	**$ 687,230**	**$ 747,657**
Actuarial Value of Assets (AVA)	603,794	606,398
Net (Surplus)/Unfunded (AL – AVA)	**$ 83,436**	**$ 141,259**
Present Value of Accrued Benefits (PVAB)	**$ 632,542**	**$ 689,743**

[1] *Net of employee contributions*

SECTION IV – LIABILITIES

Changes in Liabilities

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

- New hires since the last valuation
- Benefits accrued since the last valuation
- Plan amendments increasing benefits
- Passage of time which adds interest to the prior liability
- Benefits paid to retirees since the last valuation
- Participants retiring, terminating, or dying at rates different than expected
- A change in actuarial or investment assumptions
- A change in the actuarial funding method

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

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

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

Table IV-4
Changes in Liabilities
($ in Thousands)

	Actuarial Liability	Present Value of Accrued Benefits
Liabilities as of June 30, 2021	$ 1,431,515	$ 1,323,225
Liabilities as of June 30, 2022	$ 1,534,615	$ 1,425,629
Liability Increase/(Decrease)	$ 103,100	$ 102,404
Change Due to:		
Plan Amendments	$ (880)	$ 5,251
Assumption and Method Change	77,210	70,351
Actuarial (Gain)/Loss	4,369	NC
Benefits Accumulated and Other Sources	22,401	26,802

NC = not calculated

SECTION V – CONTRIBUTIONS

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

For this System, the actuarial funding method employed is the **Entry Age Actuarial Cost Method**. Under this method, there are three components to the total contribution: the **normal cost rate**, the **unfunded actuarial liability rate** (UAL rate), and the **expense rate**.

The normal cost rate is determined by taking the value, as of entry age into the System, of each member's projected future benefits. This value is then divided by the value, also at entry age, of the member's expected future salary.

The second part is an amortization payment to pay off the unfunded actuarial liability (UAL). The unfunded actuarial liability is the difference between the actuarial assets of the System at the valuation date and the assets the System should hold as determined by the actuarial cost method. The UAL is adjusted for one year, by increasing it at the assumed interest rate and reducing it by the portion of the City's scheduled contribution not attributable to the value of additional benefits earned (i.e., normal cost) or administrative expenses. The resulting projected UAL is then amortized over a 20-year period and turned into a rate using the projected payroll three months after the valuation date when the City's contribution amount is budgeted. The initial UAL established concurrent with the June 30, 2017 valuation is being amortized over a closed 20-year period. Subsequent changes to the UAL due to plan changes, assumption changes, gains and losses, including those established as a result of this valuation, will be amortized over their own closed 20-year period. All rates are developed using a level-dollar amortization method. Please see Table V-3 for details.

The third piece of the contribution rate accounts for anticipated administrative expenses in the upcoming fiscal year. This rate was first incorporated with the July 1, 2019 valuation to better align with new accounting standards under GASB No. 67 and 68.

SECTION V – CONTRIBUTIONS

Actuarially Determined Rate

The employer's normal cost rate is 4.25% for General Employees and 12.65% for Public Safety for the fiscal year beginning July 1, 2022. The composite rate is shown in the table below.

The UAL rate is the level-dollar amortization of the UAL represented as a percent of member payroll projected three months after the valuation date. When applied to each year's projected payroll, this rate will be sufficient to amortize the various layers of unfunded actuarial liability over their respective 20-year periods.

The table below presents and compares the actuarially determined contributions for the System for this valuation and the prior one. The net increase in the contribution rate was primarily attributable to unfavorable investment experience and the reduction in the discount rate from 7.00% to 6.75%.

Table V-1
Actuarially Determined Rate

	June 30, 2021	June 30, 2022
Normal Cost Rate	8.44%	7.13%
UAL Rate	6.93%	13.48%
Expense Rate	0.35%	0.35%
Total City Rate	15.72%	20.96%

SECTION V – CONTRIBUTIONS

Table V – 2
Development of UAL Amortization Layer for FYE 2024
($ in Thousands)

		General	Public Safety	Total
a.	June 30, 2022 Unfunded Actuarial Liability (UAL)	$ 101,634	$ 141,258	$ 242,892
b.	Expected Employer Contribution on July 1, 2022[1]	$ 17,380	$ 22,737	$ 40,117
c.	Employer Normal Cost and Expenses	(5,290)	(7,814)	(13,104)
d.	Interest on b. and c. to June 30, 2023	498	638	1,136
e.	Net Contribution to apply to UAL	$ 12,588	$ 15,561	$ 28,149
f.	Interest on UAL to June 30, 2023	$ 6,860	$ 9,535	$ 16,395
g.	June 30, 2023 Expected Unfunded Actuarial Liability (a. – e. + f.)	$ 95,906	$ 135,232	$ 231,138
h.	Outstanding Balances for Amortization Bases as of June 30, 2023	$ 73,408	$ 120,107	$ 193,515
i.	June 30, 2023 Experience UAL Layer [g. – h.]	$ 22,498	$ 15,125	$ 37,623
j.	FYE 2024 Amortization Payment[2]	$ 1,950	$ 1,312	$ 3,262

[1] *Includes $8.7 million contribution from the Section 115 Trust.*

[2] *Since contributions are payable a year after they are developed, the UAL is amortized over 20 years on July 1, 2023.*

SECTION V – CONTRIBUTIONS

Table V-3
Schedule of Amortization Bases

Type of Base	Date Established	June 30, 2022 Initial Amount	FYE 2023 Amortization Payment	June 30, 2023 Outstanding Balance	Remaining Amortization Years	FYE 2024 Amortization Payment
GENERAL EMPLOYEES						
1. 2017 Initial Unfunded Base	7/1/2017	$ 125,178	$ 12,384	$ 120,690	15	$ 12,218
2. 2018 Plan Change	7/1/2018	6,839	655	6,617	16	645
3. 2018 Experience Base	7/1/2018	(5,068)	(485)	(4,904)	16	(478)
4. 2019 Experience Base	7/1/2019	891	83	865	17	82
5. 2020 Experience Base	7/1/2020	12,522	1,132	12,187	18	1,115
6. 2021 Experience Base	7/1/2021	(96,928)	(8,551)	(94,564)	19	(8,411)
7. 2022 Assumption Change	7/1/2022	31,319	N/A	33,433	20	2,899
8. 2022 Plan Change	7/1/2022	(857)	N/A	(916)	20	(79)
9. 2022 Experience Base	7/1/2022	27,738	N/A	22,498	20	1,950
General Employees Total		$ 101,634	$ 5,218	$ 95,906		$ 9,941
PUBLIC SAFETY						
1. 2017 Initial Unfunded Base	7/1/2017	$ 158,440	$ 15,675	152,759	15	$ 15,464
2. 2018 Plan Change	7/1/2018	5,452	522	5,275	16	514
3. 2018 Experience Base	7/1/2018	3,114	298	3,013	16	294
4. 2019 Experience Base	7/1/2019	(2,833)	(263)	(2,749)	17	(259)
5. 2020 Experience Base	7/1/2020	10,895	985	10,603	18	970
6. 2021 Experience Base	7/1/2021	(100,203)	(8,840)	(97,758)	19	(8,695)
7. 2022 Assumption Change	7/1/2022	45,891	N/A	48,989	20	4,248
8. 2022 Plan Change	7/1/2022	(23)	N/A	(25)	20	(2)
9. 2022 Experience Base	7/1/2022	20,525	N/A	15,125	20	1,312
Public Safety Total		$ 141,258	$ 8,377	$ 135,232		$ 13,846
Combined Total				**$ 231,138**		**$ 23,787**

SECTION V – CONTRIBUTIONS

Table V-4
Development of Actuarially Determined Contribution Rate
Composite Rate
($ in Thousands)

	June 30, 2021 (expensed FYE 2022) (paid FYE 2023)	June 30, 2022 (expensed FYE 2023) (paid FYE 2024)
1. Actuarial Liability		
a. Active Employees	$ 407,113	$ 439,752
b. Retired Members	931,297	978,800
c. DROP Participants	28,263	34,141
d. Vested Terminated Members	64,842	81,922
e. Total Actuarial Liability	$ 1,431,515	$ 1,534,615
2. Actuarial Value of Assets	$ 1,297,114	$ 1,291,722
3. Unfunded Actuarial Liability (UAL) [1. - 2.]	$ 134,401	$ 242,893
4. UAL Amortization Payments	$ 13,595	$ 23,787
5. Active Member Payroll for UAL Amortization	$ 196,097	$ 176,401
6. Employer Contribution Results		
a. Employer Normal Cost Rate	8.44%	7.13%
b. Amortization of UAL [4. ÷ 5.]	6.93%	13.48%
c. Administrative Expenses	0.35%	0.35%
d. Total Employer Contribution Rate	15.72%	20.96%

SECTION V – CONTRIBUTIONS

Table V-5
Development of Actuarially Determined Contribution Rate
General Employees
($ in Thousands)

	June 30, 2021 (expensed FYE 2022) (paid FYE 2023)	June 30, 2022 (expensed FYE 2023) (paid FYE 2024)
1. Actuarial Liability		
a. Active Employees	$ 209,604	$ 225,730
b. Retired Members	490,078	509,777
c. DROP Participants	0	0
d. Vested Terminated Members	44,603	51,451
e. Total Actuarial Liability	$ 744,285	$ 786,958
2. Actuarial Value of Assets	$ 693,320	$ 685,324
3. Unfunded Actuarial Liability (UAL) [1. - 2.]	$ 50,965	$ 101,634
4. UAL Amortization Payments	$ 5,218	$ 9,941
5. Active Member Payroll for UAL Amortization	$ 127,611	$ 115,843
6. Employer Contribution Results		
a. Employer Normal Cost Rate	5.72%	4.25%
b. Amortization of UAL [4. ÷ 5.]	4.09%	8.58%
c. Administrative Expenses	0.35%	0.35%
d. Total Employer Contribution Rate	10.16%	13.18%

SECTION V – CONTRIBUTIONS

Table V-6
Development of Actuarially Determined Contribution Rate
Public Safety
($ in Thousands)

	June 30, 2021 (expensed FYE 2022) (paid FYE 2023)	June 30, 2022 (expensed FYE 2023) (paid FYE 2024)
1. Actuarial Liability		
a. Active Employees	$ 197,509	$ 214,022
b. Retired Members	441,219	469,023
c. DROP Participants	28,263	34,141
d. Vested Terminated Members	20,239	30,471
e. Total Actuarial Liability	$ 687,230	$ 747,657
2. Actuarial Value of Assets	$ 603,794	$ 606,398
3. Unfunded Actuarial Liability (UAL) [1. - 2.]	$ 83,436	$ 141,259
4. UAL Amortization Payments	$ 8,377	$ 13,846
5. Active Member Payroll for UAL Amortization	$ 68,486	$ 60,557
6. Employer Contribution Results		
a. Employer Normal Cost Rate	13.52%	12.65%
b. Amortization of UAL [4. ÷ 5.]	12.23%	22.86%
c. Administrative Expenses	0.35%	0.35%
d. Total Employer Contribution Rate	26.10%	35.86%

SECTION VI – FINANCIAL STATEMENT INFORMATION

Accounting Standard Codification Topic No. 960 of the Financial Accounting Standards Board specifies certain information for a plan to disclose regarding its funded status. FASB ASC Topic No. 960 disclosures provide a quasi "snapshot" view of how the System's assets compared to its liabilities if contributions stopped and accrued benefit claims had to be satisfied. However, due to potential legal requirements and the possibility that alternative interest rates would have to be used to determine the liabilities, these values may not be a good indication of the amount of money it would take to buy the benefits for all members if the System were to terminate.

The present value of accrued benefits (FASB ASC Topic No. 960) is determined assuming that the System is ongoing and participants continue to terminate employment, retire, etc., in accordance with the actuarial assumptions. Liabilities are discounted at the assumed valuation interest rate of 6.75% per annum.

FASB ASC Topic No. 960 specifies that a comparison of the present value of accrued (accumulated) benefits with the market value of the assets as of the valuation date must be provided. Table VI-1 shows the FASB liabilities as of June 30, 2021 and June 30, 2022. Table VI-2 then reconciles the FASB ASC Topic No. 960 liabilities determined as of the prior valuation, June 30, 2021, to the liabilities as of June 30, 2022.

Table VI-3 is the Schedule of Funded Liabilities by Type which shows the portion of Accrued Liability covered by Assets. This exhibit can be used with the City's Annual Comprehensive Financial Report.

SECTION VI – FINANCIAL STATEMENT INFORMATION

Table VI-1
Accounting Statement Information
($ in Thousands)

FASB ASC Topic No. 960	June 30, 2021	June 30, 2022
1. Present Value of Benefits Accrued and Vested to Date		
a. Members Currently Receiving Payments	$ 931,297	$ 978,800
b. Vested Terminated Members	93,106	116,063
c. Active Members	288,378	314,922
d. Total PVVB	$ 1,312,781	$ 1,409,785
2. Present Value of Non-Vested Accrued Benefits for Active Members	10,444	15,844
3. Total Present Value of Accrued Benefits	$ 1,323,225	$ 1,425,629
4. Assets at Market Value	$ 1,388,869	$ 1,202,663
5. Unfunded Present Value of Accrued Benefits [3. - 4., not less than 0]	$ (65,644)	$ 222,966
6. Ratio of Assets to Value of Benefits [4. ÷ 3.]	105.0%	84.4%

SECTION VI – FINANCIAL STATEMENT INFORMATION

Table VI-2
Statement of Changes in Total Actuarial Present Value of Accrued Benefits
($ in Thousands)

FASB ASC Topic No. 960		**Accumulated Benefit Obligation**
Actuarial Present Value of Accrued Benefits as of June 30, 2021	$	1,323,225
Increase/(Decrease) During Years Attributable to:		
Passage of Time	$	89,055
Benefits Paid during FYE 2022		(102,025)
Change in Assumptions		70,351
Plan Changes		5,251
Benefits Accrued, Other Gains/Losses		39,772
Net Increase/(Decrease)	$	102,404
Actuarial Present Value of Accrued Benefits as of June 30, 2022	$	1,425,629

SECTION VI – FINANCIAL STATEMENT INFORMATION

Table VI-3
Schedule of Funded Liabilities by Type
Aggregate Accrued Liabilities
($ in Thousands)

Valuation Date July 1	(1) Active Member Contributions	(2) Retirees, Vested Terms, Beneficiaries	(3) Active Members (Employer Financed Portion)	Reported Assets[1]	Portion of Accrued Liabilities Covered by Reported Assets (1)	(2)	(3)
2002	N/A	$ 372,748	$ 411,905	$ 798,071	100%	100%	100%
2003	N/A	397,311	415,926	760,503	100%	100%	87%
2004	$ 215	421,471	423,984	816,120	100%	100%	93%
2005	198	469,436	414,296	854,146	100%	100%	93%
2006	84	566,233	372,780	881,036	100%	100%	84%
2007	83	585,584	386,564	925,821	100%	100%	88%
2008	79	605,567	403,409	937,767	100%	100%	82%
2009	72	617,813	411,732	885,609	100%	100%	65%
2010	55	637,489	409,218	817,698	100%	100%	44%
2011	197	658,832	404,945	831,975	100%	100%	43%
2012	770	768,508	375,129	923,199	100%	100%	41%
2013	1,780	782,860	375,074	954,499	100%	100%	45%
2014	3,451	816,288	377,728	1,011,523	100%	100%	51%
2015	8,425	850,742	365,456	1,038,059	100%	100%	49%
2016	15,493	877,143	361,774	1,048,346	100%	100%	43%
2017	21,937	921,087	392,802	1,043,620	100%	100%	26%
2018	29,427	950,489	397,973	1,074,892	100%	100%	24%
2019	34,844	979,721	383,423	1,097,451	100%	100%	22%
2020	40,701	1,001,938	378,389	1,100,046	100%	100%	15%
2021	45,445	1,024,402	361,668	1,297,114	100%	100%	63%
2022	45,687	1,094,862	394,066	1,291,722	100%	100%	38%

[1] *Reported assets are actuarial value of assets. If assets were the market value of assets, results would differ.*

APPENDIX A – MEMBERSHIP INFORMATION

Table A-1
Summary of Active Membership as of June 30, 2022 [1]

Plan	Count	Average Age	Average Service	Average Salary
General	2,022	49.0	10.9	$ 56,870
Public Safety	892	40.9	13.0	67,390
Total System	**2,914**	**46.5**	**11.5**	**60,090**

[1] *Excludes those on Leave of Absence*

APPENDIX A – MEMBERSHIP INFORMATION

Table A-2
Summary of Inactive Membership as of June 30, 2022
($ in Thousands)

	Count	Annual Benefit	Average Annual Benefit
Service Retirements			
General	2,401	$ 46,618	$ 19.4
Public Safety	1,033	37,219	36.0
Total	3,434	$ 83,837	24.4
DROP Participants[1]			
General	0	$ 0	$ 0
Public Safety	52	1,841	35.4
Total	52	$ 1,841	35.4
Contingent Annuitants			
General	383	$ 3,772	$ 9.8
Public Safety	233	3,418	14.7
Total	616	$ 7,190	11.7
Disableds			
General	172	$ 2,641	$ 15.4
Public Safety	129	3,477	27.0
Total	301	$ 6,118	20.3
Vested Former Members[2]			
General	1,138	$ 6,929	$ 6.1
Public Safety	395	6,157	15.6
Total	1,533	$ 13,086	8.5

1 *For those in the DROP period, the amount shown is 70% of the full monthly benefit.*
2 *Benefits are assumed payable at Normal Retirement Age. Includes 18 participants on leave of absence that are currently vested.*

APPENDIX A – MEMBERSHIP INFORMATION

Table A-3
Data Reconciliation[1]

	Actives	Vested Former Members[2]	Service Retirements	DROP Participants	Contingent Annuitants	Disableds	Total
Count as of June 30, 2021	3,569	1,440	3,375	46	594	303	9,327
New Entrants	173	0	0	0	11	2	186
Terminations/Retirements							
- Vested	(299)	165	112	22	0	0	0
- Non-Vested	(259)	(3)	0	0	0	0	(262)
Transfer to VRS	(272)	0	0	0	0	0	(272)
Disablements	(4)	(2)	(3)	0	0	9	0
Vested							
- that Retired	0	(50)	50	0	0	0	0
- that Returned to Work	14	(14)	0	0	0	0	0
DROP Retirements	0	0	16	(16)	0	0	0
Benefits Expired	0	0	0	0	0	0	0
Deaths							
- With a Beneficiary	(3)	0	(41)	0	47	(3)	0
- Without a Beneficiary	(5)	(3)	(75)	0	(36)	(10)	(129)
Data Corrections	0	0	0	0	0	0	0
Count as of June 30, 2022	2,914	1,533	3,434	52	616	301	8,850

[1] *Reconciliation excludes participants due an account balance and non-vested participants on Leave of Absence.*

[2] *13 and 18 participants on Leave of Absence as of June 30, 2021 and June 30, 2022, respectively, are entitled to a vested benefit and thus included as Vested Former Members.*

APPENDIX A – MEMBERSHIP INFORMATION

Table A-4
Distribution of Active Participants - General Employees
($ in Thousands)

COUNTS BY AGE/SERVICE

Age	Service										Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	7	20	1	0	0	0	0	0	0	0	28
25 to 29	25	67	12	0	0	0	0	0	0	0	104
30 to 34	20	83	57	11	2	0	0	0	0	0	173
35 to 39	19	71	90	39	12	1	0	0	0	0	232
40 to 44	19	76	74	32	32	11	0	0	0	0	244
45 to 49	10	66	44	36	38	31	4	1	0	0	230
50 to 54	19	45	68	43	50	48	22	6	0	0	301
55 to 59	4	51	58	40	45	40	30	15	10	0	293
60 to 64	4	33	36	32	46	33	24	22	20	6	256
65 to 69	0	10	20	22	20	13	12	6	8	4	115
70 & up	1	5	7	8	7	3	3	2	3	7	46
Total	128	527	467	263	252	180	95	52	41	17	2,022

TOTAL SALARY BY AGE/SERVICE

Age	Service										Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	$ 234	$ 800	$ 41	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 1,075
25 to 29	956	2,876	505	0	0	0	0	0	0	0	4,336
30 to 34	867	4,025	2,785	510	82	0	0	0	0	0	8,270
35 to 39	815	3,425	5,067	1,994	724	45	0	0	0	0	12,069
40 to 44	811	3,865	4,248	1,901	2,004	600	0	0	0	0	13,428
45 to 49	422	3,329	2,515	2,431	2,261	2,002	218	61	0	0	13,239
50 to 54	815	2,100	4,113	2,807	3,166	2,982	1,686	382	0	0	18,052
55 to 59	193	2,771	3,308	2,396	2,636	2,200	2,138	1,137	686	0	17,465
60 to 64	532	2,104	1,945	1,912	2,674	2,037	1,437	1,455	1,390	411	15,897
65 to 69	0	567	1,735	1,397	1,396	782	809	448	722	306	8,161
70 & up	28	410	499	416	364	200	157	142	216	566	2,998
Total	$ 5,673	$ 26,273	$ 26,759	$ 15,765	$ 15,307	$ 10,846	$ 6,444	$ 3,626	$ 3,015	$ 1,283	$ 114,990

APPENDIX A – MEMBERSHIP INFORMATION

Table A-5
Distribution of Active Participants - Public Safety
($ in Thousands)

COUNTS BY AGE/SERVICE

	Service										
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	Total
Under 25	10	30	1	0	0	0	0	0	0	0	41
25 to 29	9	53	36	0	0	0	0	0	0	0	98
30 to 34	7	45	61	23	3	0	0	0	0	0	139
35 to 39	1	17	28	66	34	0	0	0	0	0	146
40 to 44	0	7	19	33	69	21	0	0	0	0	149
45 to 49	0	3	7	16	45	49	12	0	0	0	132
50 to 54	0	2	3	18	22	37	23	3	0	0	108
55 to 59	0	2	2	5	14	12	13	12	3	1	64
60 to 64	0	0	0	0	3	2	1	4	1	3	14
65 to 69	0	0	0	0	0	0	0	0	0	0	0
70 & up	0	0	0	0	0	0	0	1	0	0	1
Total	27	159	157	161	190	121	49	20	4	4	892

TOTAL SALARY BY AGE/SERVICE

	Service										
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	Total
Under 25	$ 479	$ 1,548	$ 48	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 2,075
25 to 29	429	2,678	2,060	0	0	0	0	0	0	0	5,168
30 to 34	334	2,278	3,572	1,496	210	0	0	0	0	0	7,889
35 to 39	46	876	1,747	4,408	2,559	0	0	0	0	0	9,636
40 to 44	0	353	1,087	2,229	5,089	1,745	0	0	0	0	10,503
45 to 49	0	147	441	1,052	3,356	4,024	994	0	0	0	10,013
50 to 54	0	93	165	1,133	1,592	3,028	2,095	282	0	0	8,390
55 to 59	0	73	55	317	980	985	1,046	1,310	294	125	5,184
60 to 64	0	0	0	0	228	150	91	373	74	311	1,227
65 to 69	0	0	0	0	0	0	0	0	0	0	0
70 & up	0	0	0	0	0	0	0	26	0	0	26
Total	$ 1,288	$ 8,047	$ 9,175	$ 10,635	$ 14,014	$ 9,932	$ 4,225	$ 1,991	$ 368	$ 437	$ 60,111

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

A. Actuarial Assumptions

Interest Rate

6.75% per annum, compounded annually (originally adopted as of June 30, 2022).

Mortality

Pre-Retirement

General: Pub-2010(B) General Employee Below-Median Table with fully generational improvements using Scale MP-2021, with 5% of deaths assumed accidental

Public Safety: Pub-2010 Safety Employee Table with fully generational improvements using Scale MP-2021, with 60% of deaths assumed accidental

Healthy Annuitant

General: Pub-2010(B) General Healthy Annuitant Below-Median Table with fully generational improvements using Scale MP-2021

Public Safety: Pub-2010 Safety Healthy Annuitant Table with fully generational improvements using Scale MP-2021

Disabled

General: Pub-2010 General Disabled Annuitant Table with fully generational improvements using Scale MP-2021

Public Safety: Pub-2010 Safety Disabled Annuitant Table with fully generational improvements using Scale MP-2021

Salary Increase

Annual rates of salary increases are as follows:

Service	General	Public Safety
0	6.09%	9.18%
1	5.94	5.58
2	5.78	5.32
3	5.63	5.32
4	5.47	5.32
5	5.32	5.32
10	4.55	5.32
15	4.03	5.32
20	4.03	4.65
25	4.03	4.03
30	3.71	4.03

The table above includes an annual inflation rate of 3.00%.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Withdrawal

Service	General	Public Safety
0	23.00%	12.50%
1	20.00	12.00
2	18.00	11.00
3	16.00	10.00
4	15.00	9.00
5	14.00	8.00
10	8.00	3.00
15	3.00	1.00
20	3.00	1.00
25	3.00	1.00

Disability

	General*		Public Safety**
Age	Male	Female	Unisex
20	0.02%	0.02%	0.02%
25	0.03	0.02	0.02
30	0.03	0.02	0.04
35	0.05	0.03	0.05
40	0.06	0.05	0.09
45	0.09	0.07	0.18
50	0.16	0.12	0.30
54	0.21	0.16	0.41
55	0.25	0.19	0.43
59	0.37	0.28	0.57

** 25% of General disabilities are assumed to be accidental*

***70% of Public Safety disabilities are assumed to be accidental*

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Retirement

General

		Hired On or After July 1, 2018		
Age	Hired Before 7/1/2018	Social Security NRA 65	Social Security NRA 66	Social Security NRA 67
50	10.00 %	10.00 %	10.00 %	10.00 %
51	10.00	10.00	10.00	10.00
52	10.00	10.00	10.00	10.00
53	10.00	10.00	10.00	10.00
54	10.00	10.00	10.00	10.00
55	10.00	10.00	10.00	10.00
56	10.00	10.00	10.00	10.00
57	10.00	10.00	10.00	10.00
58	10.00	10.00	10.00	10.00
59	10.00	10.00	10.00	10.00
60	22.50	12.50	12.50	12.50
61	22.50	12.50	12.50	12.50
62	30.00	12.50	12.50	12.50
63	22.50	12.50	12.50	12.50
64	25.00	15.00	15.00	15.00
65	35.00	35.00	15.00	15.00
66	35.00	35.00	35.00	15.00
67	35.00	35.00	35.00	35.00
68	25.00	25.00	25.00	25.00
69	25.00	25.00	25.00	25.00
70	100.00	100.00	100.00	100.00

For those hired before July 1, 2018, the retirement rates at ages before 60 are 10% higher than those shown above if the participant has at least 30 years of service. For those hired on or after July 1, 2018, the retirement rate is 10% higher than shown above at ages before Social Security Normal Retirement Age (SSNRA) if the participant is eligible for an unreduced benefit under the "Rule of 90."

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Public Safety

Service	Rate of Retirement*
20	5.00%
21	7.50
22	7.50
23	10.00
24	30.00
25	30.00
26	30.00
27 and up	20.00

** In lieu of the rates above, any active participant at least age 65 is assumed to retire immediately.*

Future Expenses

Administrative expenses are assumed to be 0.35% of payroll. The assumed interest rate is net of the anticipated investment expenses of the Employees' Retirement System.

Loading or Contingency Reserves

A load of 1.00% for General Employees and 1.15% for Public Safety is applied to retirement benefits for active employees to account for unused sick leave balances at the time of retirement.

Marital Status

For active members, 65% of Public Safety and 55% of General Employees are assumed to be married, with males three years older than females.

For inactive participants, those with "unknown" marital status were updated to use data from the prior year.

Form of Payment Election

For retirees with a specified optional form of payment, the raw data was used. For all other retirees and beneficiaries, the form of payment is determined by marital status. Those with a marital status of "married" are assumed to receive their benefit as a 50% Joint & Survivor, and all unmarried participants are assumed to receive a Single Life Annuity.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

DROP Election

70% of members that have reached the maximum pensionable service (26 years for Public Safety, 35 years for General) and 30% of members with less than the maximum pensionable service are assumed to elect to enter DROP in lieu of immediate retirement.

Rationale for Economic and Demographic Assumptions

Assumptions were set by the Board of Trustees on the basis of recommendations made by Cheiron as a result of an experience study covering the period from July 1, 2016 through June 30, 2021.

Changes in Assumptions

Using data provided between July 1, 2016 and June 30, 2021, a review of all economic and demographic assumptions was performed in May 2022. The experience study yielded a reduction to the assumed interest rates from 7.00% to 6.75%. Other changes to rates of mortality, withdrawal, disability, retirement, salary increases, and DROP election were also made.

Subsequent to the experience study, the City of Norfolk amended the System to allow all NERS active participants to participate in DROP effective January 1, 2023. To account for this change, we increased retirement rates by 10% at each age upon reaching Normal Retirement eligibility as described earlier.

B. Actuarial Methods

Actuarial Cost Method

Entry Age Normal Cost Method. The unfunded actuarial liability (UAL) as of June 30, 2017, is being amortized over a closed 20-year period. Subsequent annual changes in the UAL are amortized over their own closed 20-year periods calculated as follows: The UAL is adjusted for one year, by increasing it at the assumed interest rate and reducing it by the portion of the City's scheduled contribution not attributable to the value of additional benefits earned (i.e., normal cost) or administrative expenses. The resulting projected UAL is then amortized over a 20-year period and turned into a rate using the projected payroll three months after the valuation date when the City's contribution amount is budgeted. All rates are developed using a level-dollar amortization.

City contributions are assumed to occur on the July 1 following the valuation date to be made on the basis of the rates developed in this valuation applied to actual covered payroll of the City during the previous October.

In accordance with the pension funding policy, City contributions in the first year after the issuance of pension obligation bonds (POB) will be based on the actuarial determined contribution rate. With the most recent POB issuance on June 29, 2021, the July 1, 2022 contribution amount is set through the actuarial process. For all subsequent fiscal years, City contributions cannot be less than the preceding year until the System reaches 100% funding. Other conditions that would provide consideration to adjust the contribution amount would be if the total contribution exceeds a 6% increase from the preceding year or if the total contribution exceeds $80 million.

Asset Valuation Method

The actuarial value of assets is determined by first calculating the expected actuarial value of assets based on last year's valuation interest rate, last year's actuarial value of assets, and the net cash flow (contributions less benefit payments and assumed administrative expenses) of the System over the year prior to the valuation. One-third of the market value of assets less the expected actuarial value of assets is then added to the expected actuarial value of assets to determine the valuation assets.

Valuation Software

Cheiron utilizes ProVal, an actuarial valuation software leased from Winklevoss Technologies (WinTech) to calculate liabilities and project benefit payments. We have relied on WinTech as the developer of ProVal. We have reviewed ProVal and have a basic understanding of it and have used ProVal in accordance with its original intended purpose. We have not identified any material inconsistencies in assumptions or output of ProVal that would affect this actuarial valuation.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Projection Software

Projected expected results of future valuations in this valuation were developed using P-Scan, our proprietary tool for the intended purpose of developing projections. As part of the review process for this valuation, we have performed several tests to verify that the results are reasonable and appropriate. We are not aware of any material inconsistencies, unreasonable output resulting from the aggregation of assumptions, material limitations, or known weaknesses that would affect this valuation and the projections contained within.

Changes in Actuarial Methods

None.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

The following is intended to summarize the key benefits valued in this valuation. Members of the System and other parties should not rely on this summary as a substitute for or interpretation of the laws and ordinances of the Norfolk City Code covering this retirement plan.

1. Membership

Any permanent regular full-time employee entering the service of the City of Norfolk prior to January 1, 2022 is required to become a member of the Retirement System. Upon entering the System, members are classified according to their occupational group, either as General Employees, Firefighters, Police Officers, or Paramedics.

Paramedics, formerly members of the General Employees Group, were reclassified as members of Public Safety effective June 9, 1992. City Council members on or after July 1, 2001, are classified as members of Public Safety.

For each full calendar year beginning on or after January 1, 1997, any permanent part-time employees shall be members of and entitled to benefits in proportion to which their annual hours bear to that of full-time employees.

A member, who was a Norfolk Community Services Board employee on June 30, 2012, who became a City employee on July 1, 2012, began participating in this retirement plan on such date. Prior service for these employees was credited towards benefit eligibility only. Lastly, these employees were exempt from the member's mandatory contributions applicable to anyone hired on or after October 5, 2010 until January 8, 2015.

2. Normal Service Retirement Allowance

Eligibility

Employees Hired Before July 1, 2018

For General Employees, the earlier of age 60 or 30 years of creditable service.

For Firefighters, Police Officers, and Paramedics, the earlier of age 55 or 25 years of creditable service. Mandatory retirement is age 65 for Firefighters and Police Officers.

Employees Hired On or After July 1, 2018

For General Employees, the earlier of the retirement age as defined under the Social Security Act (42 U.S.C §416) or the age at which the combination of a participant's age and service sums to at least 90.

For Firefighters, Police Officers, and Paramedics, the earlier of age 60 or age 50 with 25 years of creditable service. Mandatory retirement is age 65 for Firefighters and Police Officers.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Amount

Employees Hired Before July 1, 1980

For General Employees, the pension earned is 2% of average final compensation for each year of creditable service.

Effective January 1, 1997 for General Employees, the maximum number of years of creditable service is the greater of 35 years or the number of years of service as of December 31, 1996.

For Firefighters, Police Officers, and Paramedics, the pension earned is 2.5% of average final compensation for each year of creditable service up to a maximum of 65% of average final compensation.

Employees Hired Between July 1, 1980 and June 30, 2018

For General Employees, the pension earned is 1.75% of average final compensation for each year of creditable service up to a maximum of 35 years.

For Firefighters, Police Officers, and Paramedics, the pension earned is 2.5% of average final compensation for each year of creditable service up to a maximum of 65% of average final compensation.

"Average Final Compensation" means the average annual earnable compensation for the three years of creditable service which produces the highest average. Creditable service consists of membership service plus 100% of accumulated unused sick leave for all employees except Firefighters. For Firefighters, 46% of unused sick leave accumulated prior to July 1, 1985 and 100% of unused sick leave accumulated on and after July 1, 1985 is included.

Employees Hired On or After July 1, 2018

For General Employees, the pension earned is 1.75% of average final compensation for each year of creditable service up to a maximum of 35 years.

For Firefighters, Police Officers, and Paramedics, the pension earned is 2.5% of average final compensation for each year of creditable service up to a maximum of 65% of average final compensation.

"Average Final Compensation" means the average annual earnable compensation for the five years of creditable service which produces the highest average. Creditable service consists of membership service plus 100% of accumulated unused sick leave for all employees except Firefighters. For Firefighters, 46% of unused sick leave accumulated prior to July 1, 1985 and 100% of unused sick leave accumulated on and after July 1, 1985 is included.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

3. Early Service Retirement Allowance

Eligibility

Within five years of eligibility for normal service retirement.

Amount

Accrued service retirement allowance deferred to normal service retirement age. A member may elect to receive an immediate benefit equal to the accrued service retirement allowance reduced by ¼ of 1% for each month commencement date precedes the normal retirement date for General Employees, and ½ of 1% for each month commencement date precedes the normal retirement date for firefighters, police officers, and paramedics.

4. Vested Allowance

Eligibility

Five years of creditable service.

Amount

Accrued service retirement allowance deferred to normal retirement age. If not eligible for retirement, a member may elect to leave their contributions made prior to July 1, 1972 with interest, if any, in the System until normal service retirement date.

5. Ordinary Disability Retirement Allowance

Eligibility

Five years of creditable service and total and permanent disability not due to an accident in the performance of duty.

Amount

Accrued service retirement allowance with a minimum of 25% of average final compensation. The minimum cannot exceed the normal service retirement allowance based on average final compensation and creditable service projected to normal service retirement date.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

6. Accidental Disability Retirement Allowance

Eligibility

Total and permanent disability as a result of an accident in the performance of duty, regardless of length of service. Applications must be filed within six years from the date of accident.

The disability of a firefighter, police officer, sheriff, or deputy sheriff caused by hypertension, heart disease, or respiratory disease is presumed to have been suffered in the line of duty unless the contrary is shown by medical evidence.

Amount

The amount payable is 66⅔% of average final compensation.

7. Ordinary Death Benefit

Eligibility

Death in active service due to causes not the result of an accident in the performance of duty. Benefits are paid to a designated beneficiary or estate.

Amount

All contributions, if any, made by the member with not less than one-half of the interest credited are paid. In addition, if the member had one year of creditable service if he became a member prior to July 1, 1979 and five years of creditable service if he became a member on or after July 1, 1979, an additional lump-sum benefit equal to 50% of their earnable compensation during the year immediately preceding their death is payable. If a member dies in service after the earlier of completion of 10 years of service or early service retirement eligibility and if the designated beneficiary for the lump-sum death benefit is the spouse, the spouse may elect to receive, in lieu of the lump sum death benefit, a monthly pension payable until death or remarriage. If the member was eligible for early or normal service retirement, the spouse's benefit is equal to one-half of the retirement allowance that would have been payable to the member had the member retired and immediately commenced payment. If the member was not eligible for early or normal service retirement, the spouse's benefit is equal to one-half of the normal service retirement allowance, which would have been payable to the member if he or she had been vested, such benefit to commence at the same time as the vested benefit would have been paid to the member. If the spouse dies or remarries before the youngest unmarried child attains age 18, the pension shall continue to the date that all the children have died, married, or attained age 18, whichever occurs first. If the spouse was receiving benefits on or before June 30, 1978, payments shall continue after remarriage with no further payments after death.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

8. Accidental Death Benefit

Eligibility

Death in active service resulting from an accident in the performance of duty within six years from the date of the accident. The death of a firefighter, police officer, sheriff, or deputy sheriff caused by hypertension, heart disease, or respiratory disease in the case of firefighters is presumed to have been suffered in the line of duty unless the contrary is shown by medical evidence.

Amount

Fifty percent of average final compensation is payable to the spouse until death or remarriage. If there is no spouse or if the spouse dies or remarries, the benefit is payable to children under age 18 or dependent parents. In addition, all contributions, if any, made by the member with interest credited are paid to their designated recipient or estate. If there is no spouse, a lump-sum benefit equal to 50% of their earnable compensation during the year immediately preceding their death is payable.

Offset on Account of Workers' Compensation

All benefits paid under the provisions of any workers' compensation act or any similar law to any member or beneficiary, or to the dependents of any member or beneficiary on account of any disability or death are in such manner as the Board determines, offset against any benefits provided from City contributions to the Employees' Retirement System.

9. Death Benefit After Retirement

Eligibility

Death of a retired member receiving retirement allowance payments and who completed five years of creditable service, if they became a member after July 1, 1979, or of a spouse receiving an accidental death benefit.

Amount

Lump-sum equal to one-half of the average final compensation on which the retirement allowance of the deceased retired member or spouse was based. The lump-sum is payable to the surviving spouse, to unmarried children under age 18, or unmarried children over age 18 who are physically or mentally unable to make a living.

In the case of a retired member who dies and leaves a surviving spouse, the spouse may elect to receive, in lieu of the lump-sum death benefit, a monthly benefit payable until death or remarriage, which is equal to one-half of the retirement allowance, which the deceased member was receiving at the time of their death, provided the member had not made an

optional election. If the spouse dies or remarries before the youngest unmarried child attains age 18, the pension will continue to the date that all the children have died, married, or attained age 18, whichever occurs first. If the spouse was receiving payments on or before June 30, 1978, payments shall continue after remarriage with no further payments after death.

10. Return of Contributions

Eligibility

Termination of membership prior to death.

Amount

If not eligible for a retirement allowance, all contributions with interest credited. If eligible for normal or early service, ordinary disability, accidental disability, or vested retirement allowance, their contributions, if any, is not less than the interest credited. The member may elect, prior to the commencement of their retirement allowance, to receive an annuity which is the actuarial equivalent of their accumulated contributions.

11. Normal and Optional Forms of Benefits

Normal Life	Life Annuity
Option A	A reduced pension with the provision that at death the reduced pension will be continued throughout the life of the designated beneficiary.
Option B	A reduced pension with the provision that at death, one-half of the reduced pension will be continued throughout the life of the designated beneficiary.
Option C	A reduced pension with the provision that at death some other benefit approved by the Board of Trustees will be payable.

12. Contributions

By Members	5% of pay for anyone hired on or after October 5, 2010. Effective January 8, 2015, all members (except City Council members hired before October 5, 2010) will be required to contribute 5% of pay.
By City	Annual contributions actuarially computed to be required to cover the cost of benefits of the System.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

13. Deferred Retirement Option Program (DROP)

Eligibility

Effective January 1, 2023, any active member of the System who reaches Normal Retirement eligibility may elect to participate. Prior to this change, only Police and Firefighters were eligible to participate. All results included herein assume that both General and Public Safety employees may elect DROP.

Amount

The DROP period may be elected by the member but shall not exceed four years. During the DROP period, 70% of the participant's monthly retirement allowance shall be paid to the DROP account. No interest shall accrue on this account during the DROP period. At the end of the DROP period, the participant will receive a lump sum of the DROP account and shall begin receiving his or her full monthly benefit payment as a retired member.

14. Changes in Plan Provisions

Effective January 1, 2023, all employees who attain his or her Normal Retirement Age may elect to participate in DROP.