

The Employees' Retirement System for the City of Norfolk

**Actuarial Valuation Report
as of June 30, 2021**

**The Seventy-Eighth
Actuarial Valuation**

**Produced by Cheiron
October 2021**

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October 13, 2021

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, 2021***

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, 2021. The results of the valuation are contained in this report. The purpose of the valuation is discussed in the Foreword. This report replaces the one sent September 28, 2021 as it reflects updated information on participants due an account balance from the System.

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 July 2017. 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, 2023, 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.

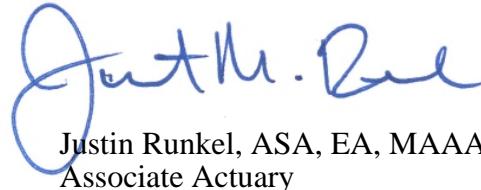
This report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board as well as applicable 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

A handwritten signature in blue ink that appears to read "Kevin J. Woodrich".

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

A handwritten signature in blue ink that appears to read "Justin Runkel".

Justin Runkel, ASA, EA, MAAA
Associate Actuary

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021**

FOREWORD

Cheiron has performed the actuarial valuation of the Employees' Retirement System for the City of Norfolk as of June 30, 2021. 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, 2022 for fiscal year June 30, 2023; 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, 2022.

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.

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
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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, 2022. The contribution rate for General Employees is determined to be 10.16%. The contribution rate for Firefighters and Police is determined to be 26.10%. The composite rate is equal to 15.72% of annual payroll. This is a decrease from the composite rate of 21.20% determined in last year's valuation, which is applicable to the current fiscal year. The decrease is primarily attributable to the favorable investment return and the monies received by the System from the proceeds generated by the issuance of pension obligation bonds. Since the City closed the System to new hires effective January 1, 2022, the method for amortizing the unfunded actuarial liability was changed from a level-percent of pay to a level-dollar method.

Forecasts show that should all assumptions be realized, including the 7.00% assumed annual investment return, the System would reach 100% funding by 2025. Please note that this projection does **not** recognize any future ad hoc COLAs the City may offer. If the assumptions were changed to recognize future COLAs upfront, the System's funded ratio would be significantly lower, but the System would no longer experience losses each time a COLA is granted. The projections reflect the City's recent amendment to close the System to new employees hired on or after January 1, 2022. Finally, the projections include the City's pension funding policy to contribute the greater of the prior year's contributions following the issuance of pension obligation bonds, as determined by this valuation, and the actuarially determined contribution until the System is fully funded. Upon being fully funded, we have assumed that contributions are equal to the actuarially determined contribution.

Recent Experience

The financial markets performed better than expected during the fiscal year ending June 30, 2021. The actual return on a market value basis was approximately 25.95%. The System also experienced a gain on the actuarial value of assets. On an actuarial value basis, the assets returned 11.82% compared with an assumed rate of return of 7.00%. The gain recognized for funding purposes was \$45.9 million.

On the liability side, the System's experience resulted in an actuarial gain of \$19.2 million, which represents roughly 1.35% of the prior year's liabilities. This liability gain was primarily due to salaries not increasing as much as assumed. Portions of this gain are also attributable to improvements in the data provided to us from the System switching to a different data provider.

On June 29, 2021, the City of Norfolk made a one-time contribution of \$119.6 million from proceeds generated by the issuance of Pension Obligation Bonds (POB). This recent cash infusion alongside the combination of asset and liability gains produced an increase in the System's funded ratio (actuarial value of assets over actuarial liability) from 77.4% as of June 30, 2020 to 90.6% as of June 30, 2021.

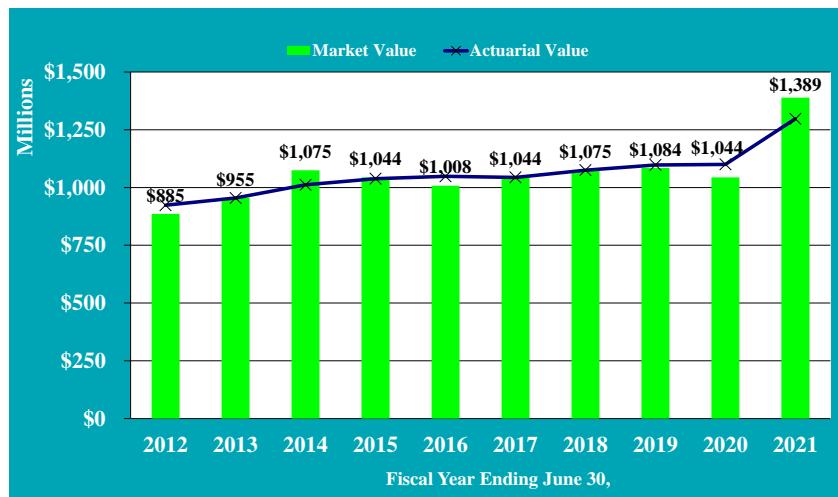
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SECTION I – BOARD SUMMARY

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



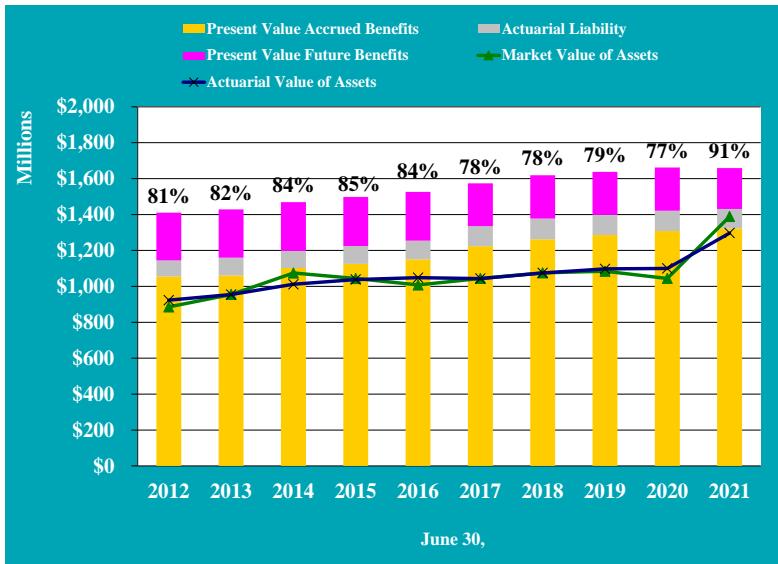
The market value of assets (MVA) experienced a return of 25.95% this year. The Actuarial Value of Assets (AVA) increased by a relatively smaller amount due to the smoothing method in place, which recognizes historical gains and losses that have been deferred. The return on the AVA was 11.82%. Both the MVA and AVA increased significantly from last year due to the

\$119.6 million received by the System from the issuance of pension obligation bonds. The MVA is currently \$92 million more than the AVA. This amount represents the stored net investment gain that will continue to be recognized in the future and would help mitigate the impact of unfavorable future investment returns on 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.

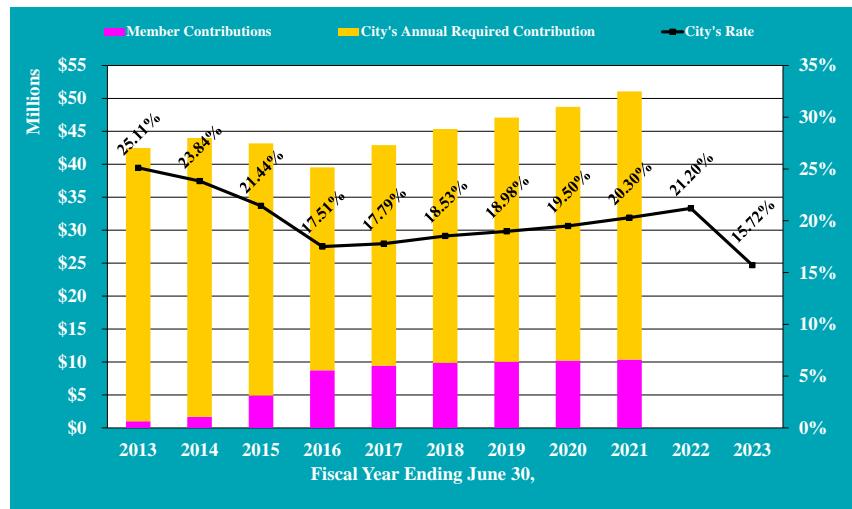
The amount represented by the top of the pink bars, the Present Value of Future Benefits, is the amount needed to provide all benefits for the current participants and their beneficiaries. The top of the yellow bars measures the liability attributable to benefits accrued to date.



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SECTION I – BOARD SUMMARY

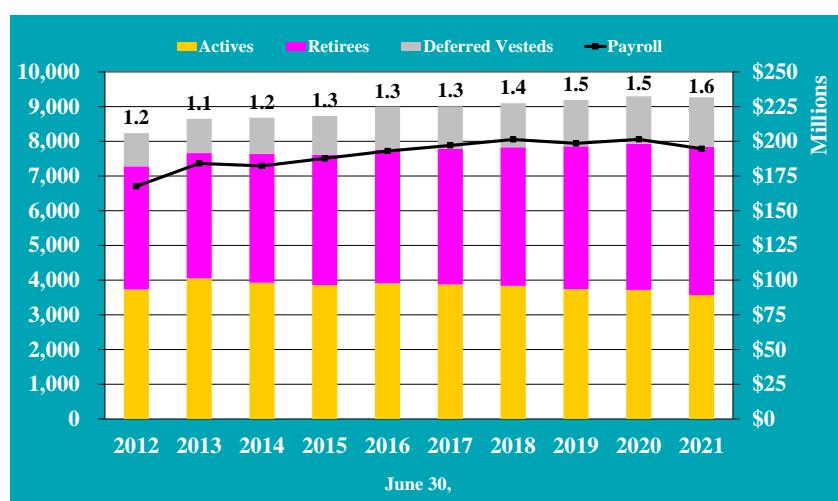
Contribution Rates



June 30, 2022. This amount equaled \$41.5 million and was paid by the City in July 2021. Effective January 8, 2015, all members are required to contribute 5% of pay, with the exception of City Council members hired before October 5, 2010. The large decline from FYE 2022 to FYE 2023 is attributable to the actuarial asset and liability gains as well as the \$119.6 million contribution from pension obligation bonds. The System was recently amended to close participation to new employees hired on or after January 1, 2022. Consistent with this plan change, the method used to amortize the unfunded actuarial liability (UAL) was changed from a level-percent of payroll to a level-dollar methodology. This change is first implemented with the FYE 2023 contribution rate. With this change in methodology, the City may consider having us 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 over the period whereas the number of actives have remained relatively stable. The



The yellow 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, 2020 valuation determined the annual required contribution for the period July 1, 2021 to

numbers above the bars on the graph indicate the ratio of inactive participants to active

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SECTION I – BOARD SUMMARY

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 but also due to employees hired on or after January 1, 2022 participating in VRS instead of this plan. 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 (on an Actuarial Value of Asset basis) and the expected City contributions. We present a baseline projection of these metrics based on all actuarial assumptions being exactly met during the projection period, including the assumed 7.00% investment return being achieved each year. 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 will be closed to new hires. New City employees will be required to join the Virginia Retirement System (VRS). The projections shown in this and future sections do not reflect any options the City is currently considering for current active members of the System to join VRS. These elections will be analyzed concurrent with the July 1, 2022 valuation after any official changes to the Ordinance have been adopted and experience has unfolded.

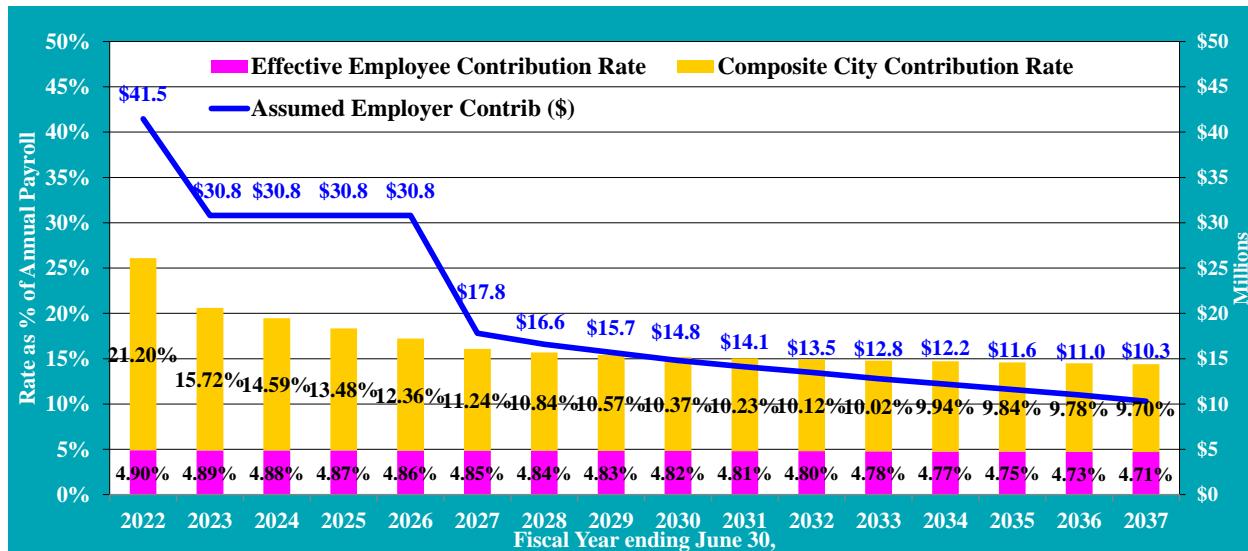
The projections reflect a change in the unfunded actuarial liability (UAL) amortization method from a level-percent of payroll to a level-dollar methodology.

Finally, the projections assume the City's contributions will be the greater of the prior year's contributions following the issuance of pension obligation bonds, as determined by this valuation, and the amount based on the composite contribution rate 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.

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



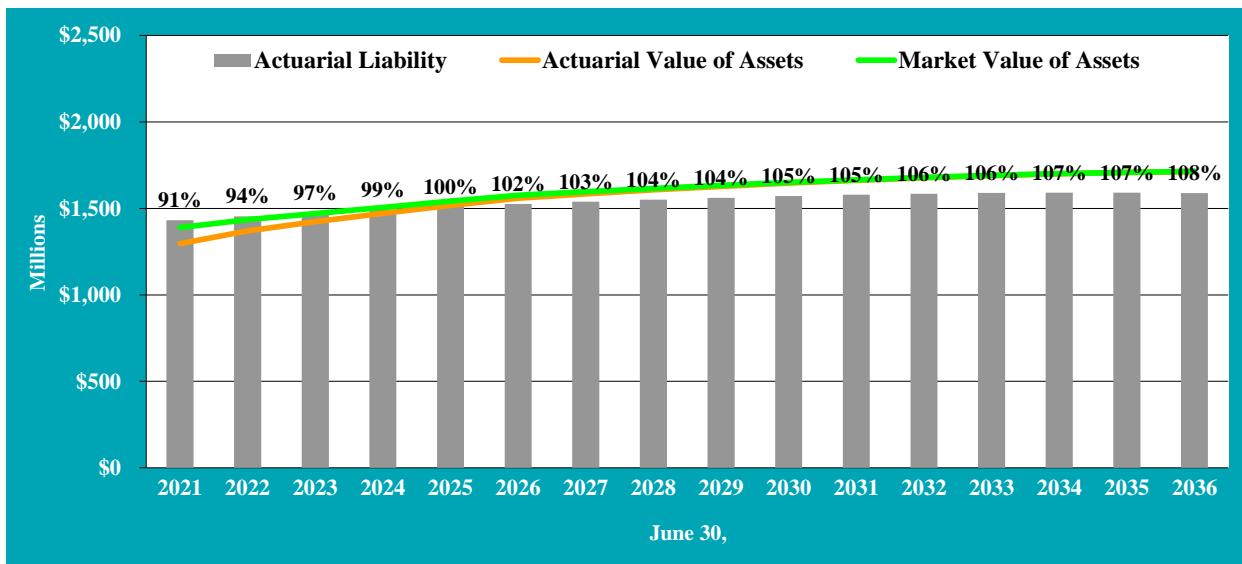
The preceding graph shows that the City's contribution rate as a percentage of payroll (left axis) is projected to decrease throughout the projection period. This is dependent upon the City making contributions (blue line associated with right axis) in accordance with its pension funding policy as previously outlined. Absent this funding policy, the City's contributions would be the same for fiscal year ending 2023 and projected to be lower than the amounts shown for fiscal years ending June 30, 2024 through 2026 but greater than the amount shown in all the years thereafter.

The decrease in the City's contribution rate is attributable to two key reasons. In the near term, the net investment gains due to recent investment performance will continue to be reflected when calculating the Actuarial Value of Assets which results in the funded status increasing even if future assets are equal to the assumed 7.00%. In addition, the normal cost rate component of the contribution rate will continue to decrease as participants subject to the higher Normal Retirement Age will gradually comprise a larger portion of the active population. The higher Normal Retirement Age results in the City having a longer period to fund their benefit and when results in the normal cost percentage being less.

The effective employee contribution rate is less than 5% due to both City Council members and those participants who have elected or are expected to elect the Deferred Retirement Option Program (DROP) but have yet to receive a monthly payment. However, because the City contributes to the System for these participants, their pay is included.

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SECTION I – BOARD SUMMARY



The preceding graph shows the projected funding status over the next 15 years. The System's funded ratio is projected to improve to 108% by the end of the period shown as contributions pay down the existing unfunded liability. These projections do not include any assumption for future ad hoc COLAs.

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
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SECTION I – BOARD SUMMARY

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

	June 30, 2020	June 30, 2021	% Change
<u>Participant Counts</u>			
Actives	3,719	3,569	(4.0%)
Leave of Absence ¹	42	18	(57.1%)
Terminated Vested Members	1,364	1,427	4.6%
Participants Due Account Balance	367	121	(67.0%)
In Pay Status Participants	4,212	4,272	1.4%
DROP Participants	43	46	7.0%
Total	9,747	9,453	(3.0%)
Annual Salaries of Active Members ²	\$ 201,420	\$ 194,653	(3.4%)
Annual Retirement Allowances ³	94,858	97,269	2.5%
<u>Assets and Liabilities</u>			
Actuarial Liability (AL)	\$ 1,421,028	\$ 1,431,515	0.7%
Assets for Valuation Purposes (AVA)	<u>1,100,046</u>	<u>1,297,114</u>	17.9%
Unfunded Actuarial Liability [AL - AVA]	\$ 320,982	\$ 134,401	
Funding Ratio (AVA ÷ AL)	77.41%	90.61%	
Funding Ratio (MVA ÷ AL)	73.47%	97.02%	
Present Value of Accrued Benefits	\$ 1,308,234	\$ 1,323,225	1.1%
Market Value of Assets (MVA)	<u>1,044,090</u>	<u>1,388,869</u>	33.0%
Unfunded Accrued Benefit Liability	\$ 264,144	\$ (65,644)	
Accrued Benefit Funding Ratio	79.81%	104.96%	
<u>City Contributions as a % of Payroll</u>			
	Fiscal Year 2022	Fiscal Year 2023	
Normal Cost Contribution	8.60%	8.44%	
Unfunded Actuarial Liability Contribution	12.25%	6.93%	
Expense Contribution	<u>0.35%</u>	<u>0.35%</u>	
Total Contribution	21.20%	15.72%	

¹ 20 and 13 participants on Leave of Absence as of June 30, 2020 and June 30, 2021, respectively, are entitled to a vested benefit.

² Includes salaries for the DROP participants.

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.

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
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SECTION I – BOARD SUMMARY

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

	June 30, 2020	June 30, 2021	% Change
<u>Participant Counts</u>			
Actives	2,591	2,492	(3.8%)
Leave of Absence ¹	34	9	(73.5%)
Terminated Vested Members	1,049	1,088	3.7%
Participants Due Account Balance	302	107	(64.6%)
In Pay Status Participants	<u>2,879</u>	<u>2,912</u>	1.1%
Total	6,855	6,608	(3.6%)
Annual Salaries of Active Members ²	\$ 130,005	\$ 126,671	(2.6%)
Annual Retirement Allowances ³	51,496	52,269	1.5%
<u>Assets and Liabilities</u>			
Actuarial Liability (AL)	\$ 744,920	\$ 744,286	(0.1%)
Assets for Valuation Purposes (AVA)	<u>602,255</u>	<u>693,320</u>	15.1%
Unfunded Actuarial Liability [AL - AVA]	\$ 142,665	\$ 50,966	
Funding Ratio (AVA ÷ AL)	80.85%	93.15%	
Funding Ratio (MVA ÷ AL)	76.74%	99.74%	
Present Value of Accrued Benefits	\$ 690,748	\$ 690,683	(0.0%)
Market Value of Assets (MVA)	<u>571,620</u>	<u>742,363</u>	29.9%
Unfunded Accrued Benefit Liability	\$ 119,128	\$ (51,680)	
Accrued Benefit Funding Ratio	82.75%	107.48%	
<u>City Contributions as a % of Payroll</u>		Fiscal Year 2022	Fiscal Year 2023
Normal Cost Contribution		5.81%	5.72%
Unfunded Actuarial Liability Contribution		8.43%	4.09%
Expense Contribution	<u>0.35%</u>	<u>0.35%</u>	
Total Contribution		14.59%	10.16%

¹ 16 and 4 participants on Leave of Absence as of June 30, 2020 and June 30, 2021, respectively, are entitled to a vested benefit.

² Includes salaries for the DROP participants.

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.

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
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SECTION I – BOARD SUMMARY

Table I-3
Summary of Principal Plan Results
Firefighters and Police
(\$ in Thousands)

	June 30, 2020	June 30, 2021	% Change
<u>Participant Counts</u>			
Actives	1,128	1,077	(4.5%)
Leave of Absence ¹	8	9	12.5%
Terminated Vested Members	315	339	7.6%
Participants Due Account Balance	65	14	(78.5%)
In Pay Status Participants	1,333	1,360	2.0%
DROP Participants	43	46	7.0%
Total	2,892	2,845	(1.6%)
Annual Salaries of Active Members ²	\$ 71,415	\$ 67,982	(4.8%)
Annual Retirement Allowances ³	43,362	45,000	3.8%
<u>Assets and Liabilities</u>			
Actuarial Liability (AL)	\$ 676,108	\$ 687,229	1.6%
Assets for Valuation Purposes (AVA)	497,791	603,794	21.3%
Unfunded Actuarial Liability [AL - AVA]	\$ 178,317	\$ 83,435	
Funding Ratio (AVA ÷ AL)	73.63%	87.86%	
Funding Ratio (MVA ÷ AL)	69.88%	94.07%	
Present Value of Accrued Benefits	\$ 617,486	\$ 632,542	2.4%
Market Value of Assets (MVA)	472,470	646,506	36.8%
Unfunded Accrued Benefit Liability	\$ 145,016	\$ (13,964)	
Accrued Benefit Funding Ratio	76.52%	102.21%	
<u>City Contributions as a % of Payroll</u>			
	Fiscal Year 2022	Fiscal Year 2023	
Normal Cost Contribution	13.67%	13.52%	
Unfunded Actuarial Liability Contribution	19.20%	12.23%	
Expense Contribution	0.35%	0.35%	
Total Contribution	33.22%	26.10%	

¹ 4 and 9 participants on Leave of Absence as of June 30, 2020 and June 30, 2021, respectively, are entitled to a vested benefit.

² Includes salaries for the DROP participants.

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.

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021**

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,
- Plan change risk, and
- Assumption change risk.

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

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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 7.0% 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 gain of \$19.2 million and an actuarial investment gain of \$45.9 million. While the magnitude of liability gain is larger than usual, the historical trend of being a smaller portion of the overall gain or loss in a given year holds true.

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 2012 when the Board elected to reduce the assumed investment return from 7.5% to 7.0% and in 2017 when the Board made a multitude of assumption changes as a result of an experience study.

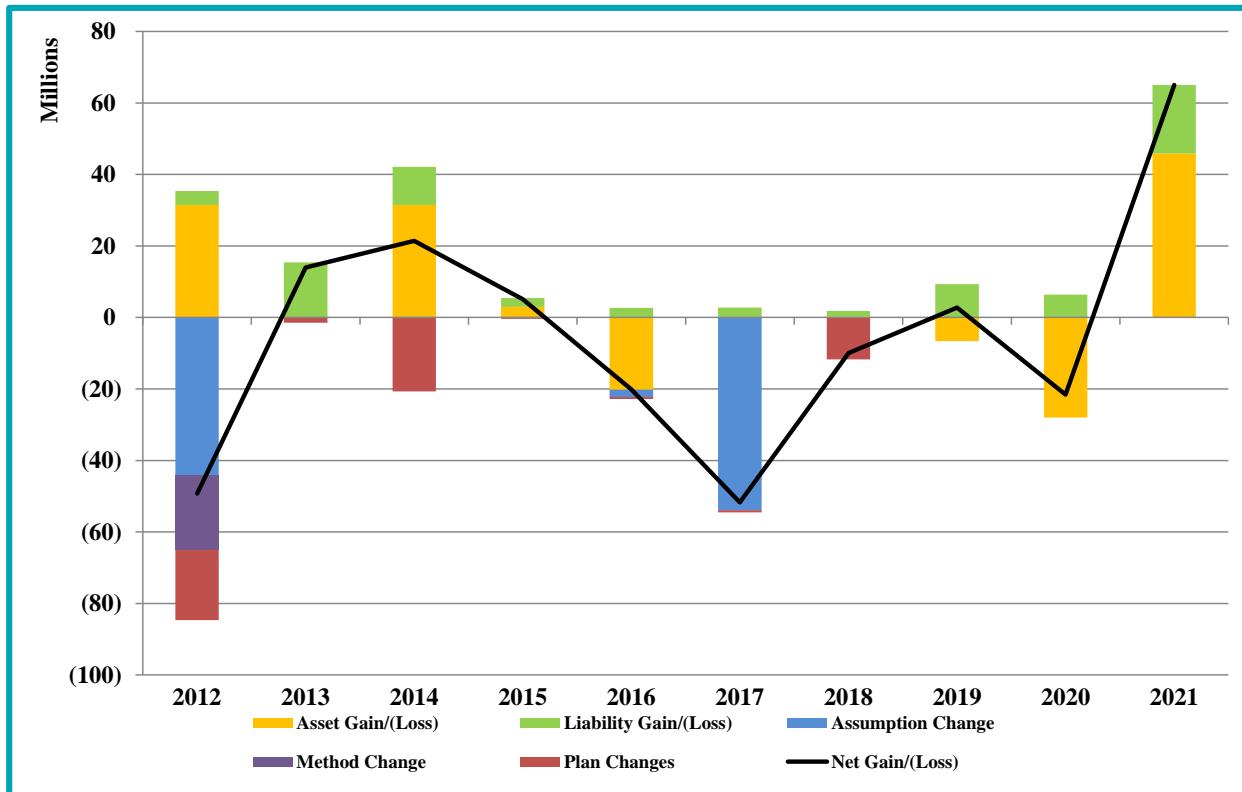
Plan Change Risk is the potential for the provisions of the System to be changed such that the funding or benefits are changed materially. In addition to the actual payments to and from the System being changed, future valuation measurements can also be impacted, with System changes leading to deviations between actual future measurements and those expected by the current valuation. One example of these plan changes is the cost-of-living adjustments awarded to retirees in the past as well as the City's amendment to change the Normal Retirement Age and definition of Final Average Earnings for new employers hired after June 30, 2018. The impact of these plan changes on the City's contribution rate will be slowly realized as more of the active population is impacted by these changes 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.

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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.

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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, excluding investment income.

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.

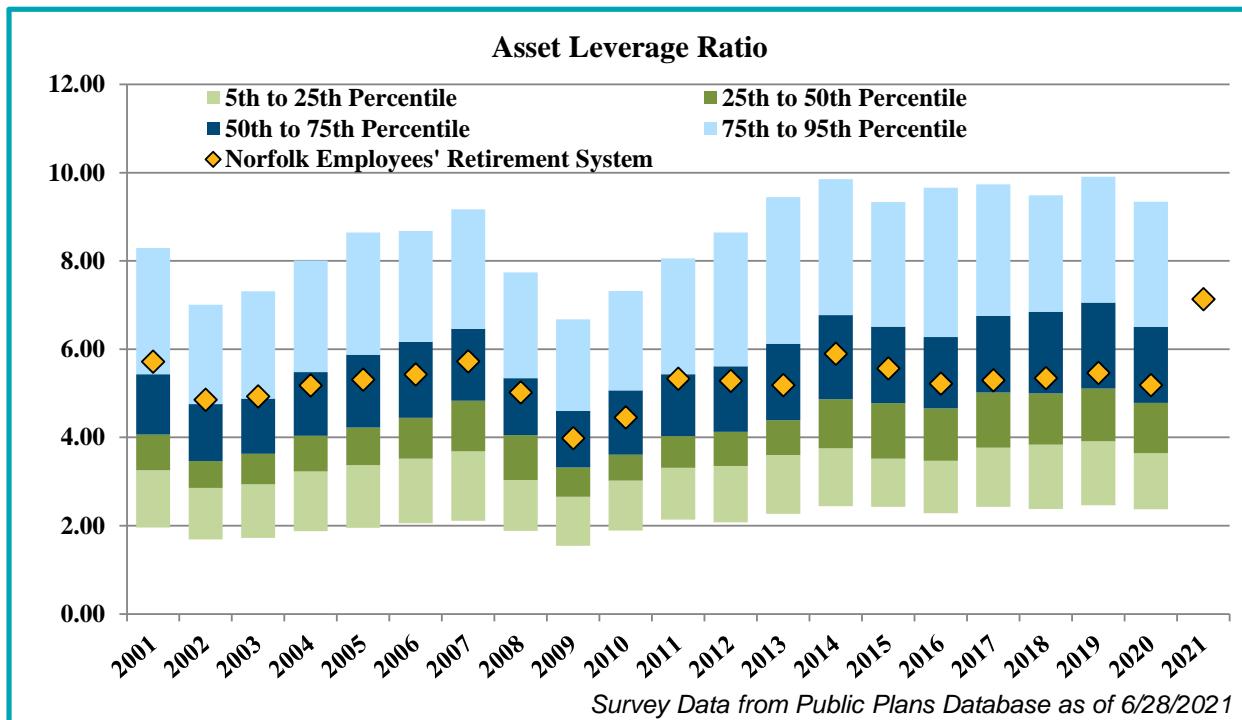
<i>(\$ in millions)</i>	Plan A	Plan B
Plan Assets	\$5,000	\$5,000
Payroll	\$500	\$1,000
Asset Leverage Ratio	10.0	5.0
10% Loss	\$500	\$500
10% Loss as % of Payroll	100%	50%

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.

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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 ratio is currently around 7.1 due to strong asset performance and the recent \$119.6 million contribution from Pension Obligation Bonds, putting the System likely closer to the 75th to 95th percentile range when the database has 2021 information available.



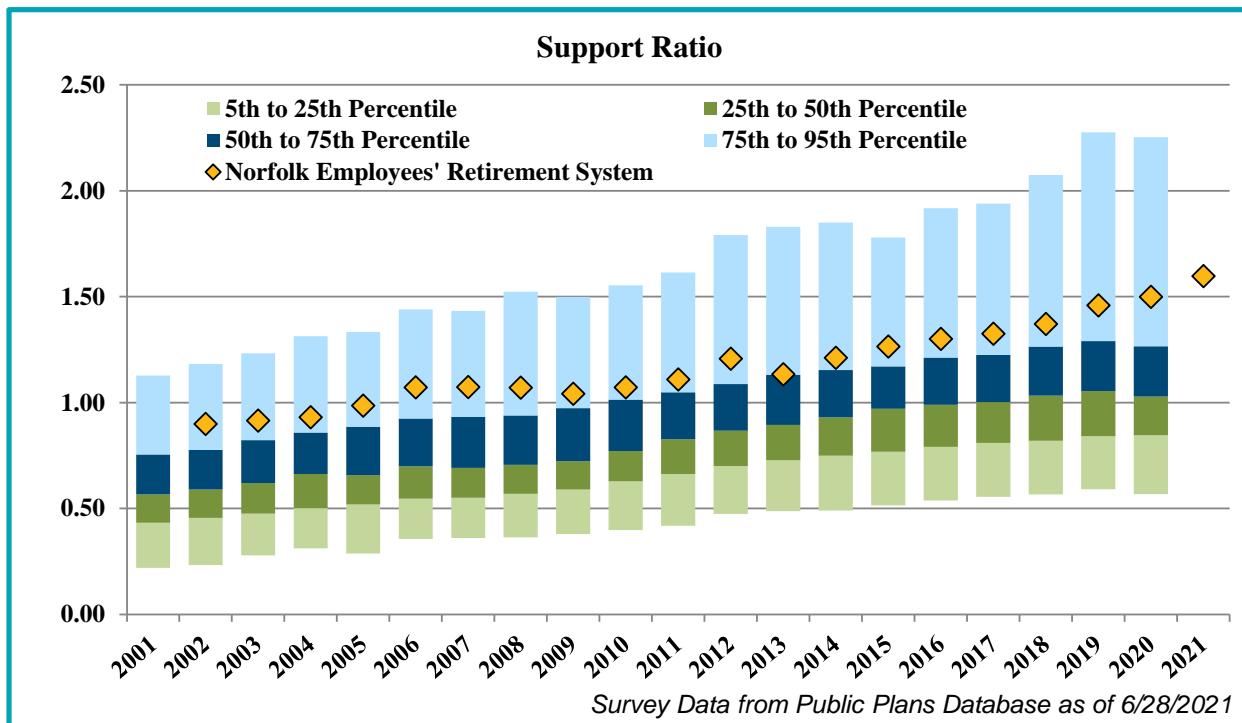
Support Ratio

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

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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, the support ratio can be expected to continue to increase.

Net Cash Flow Rate

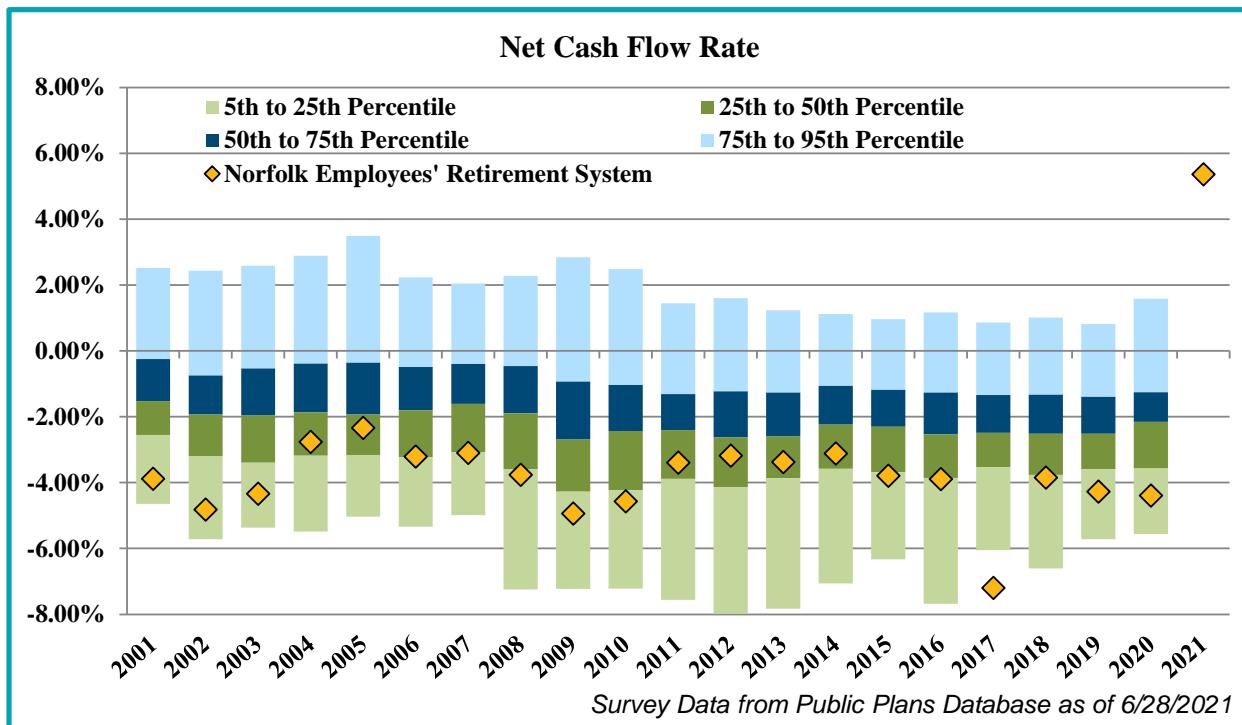
Another measure of plan maturity is the ratio of net cash flow – contributions less benefits and expenses – to the market value of plan assets. When this ratio is significantly negative, a plan is very vulnerable to market declines.

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.

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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.

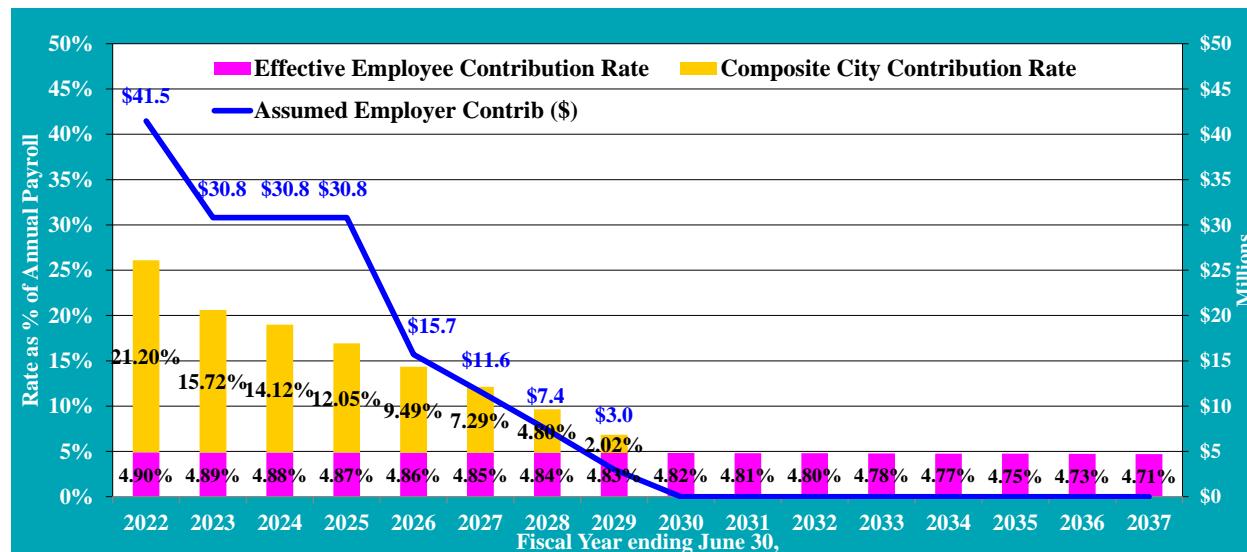
Pages 4 and 5 in the Board Summary have additional detail on the baseline projection. It is important to note that baseline projections, while valid, **are not going to occur** as experience never conforms exactly to assumptions every year. On the following pages, we have included scenarios that illustrate 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 7% 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.

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
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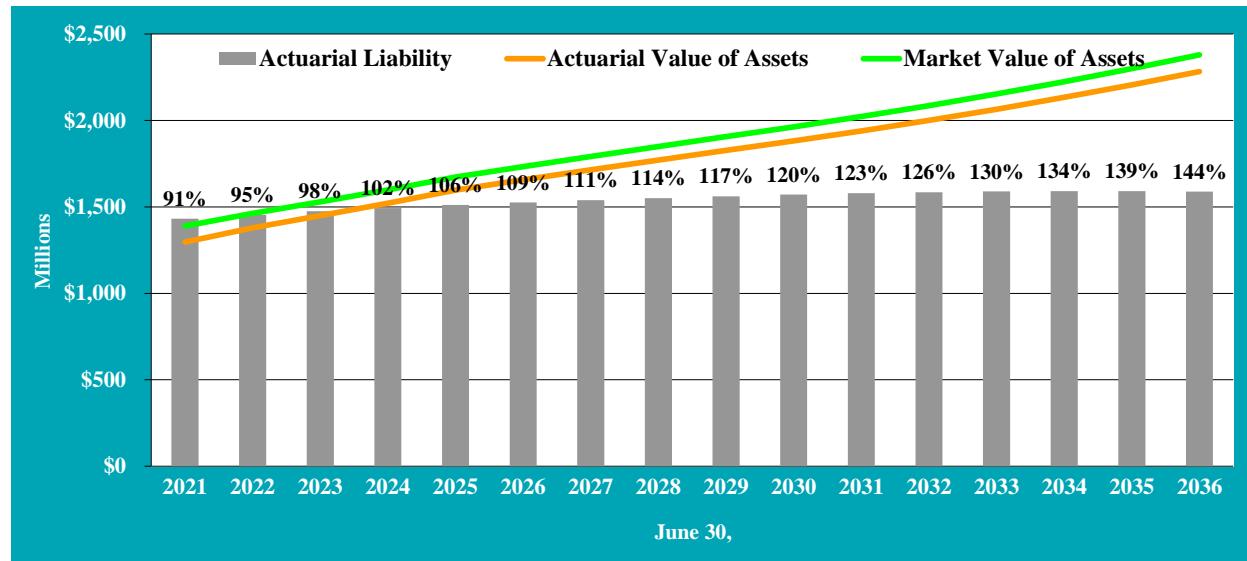
SECTION II – RISK ASSESSMENT AND DISCLOSURE

Projections with Asset Returns of 9.0%

The next two graphs show what the next 15 years would look like with a 9.0% annual return for all future years in lieu of the assumed 7.0%.



As shown above, the City's composite contribution rate would drop from its Fiscal Year 2023 level of 15.72% of payroll down to 0.00% of payroll by Fiscal Year 2030. The extra investment returns push the System into a surplus position by 2024 as shown in the graph below. The amortization of this growing surplus eventually exceeds the cost of new accruals and expenses.



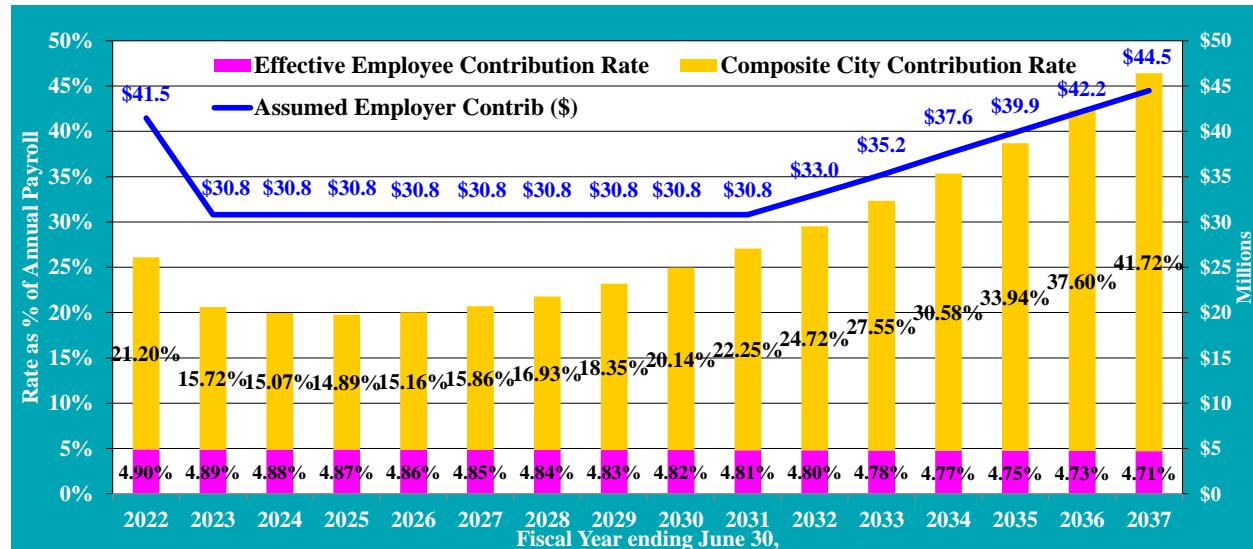
The System would reach a fully funded position by 2024 versus 2025 under the baseline projections. Again, these projections are absent any additional ad hoc COLAs.

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
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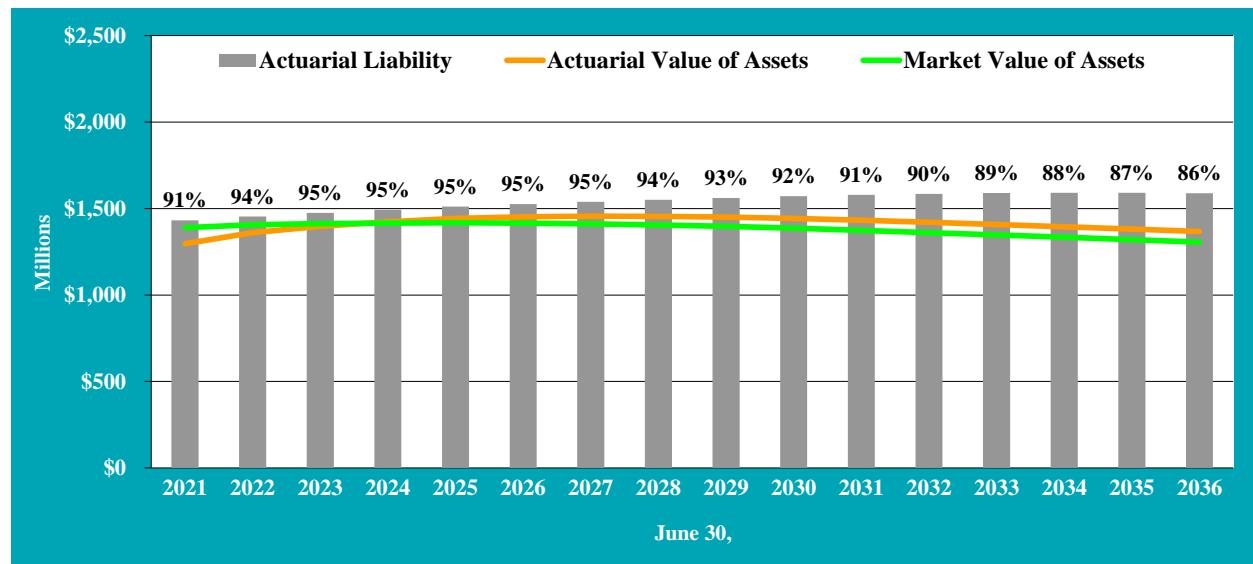
SECTION II – RISK ASSESSMENT AND DISCLOSURE

Projections with Asset Returns of 5.0%

The next two graphs show what the next 15 years would look like with a 5% annual return.



With assets projected to underperform, the City's composite contribution rate would decrease in the first couple of years due to past net investment gains yet to be recognized but increase steadily through the rest of the 15-year period.



The System's funded level would ultimately decrease to 86%. This is only a 5% decrease from the current 91% funded status, but 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 in 2022 to new hires, the City's contribution as a percent of payroll would increase rapidly. However, there would still be little danger of benefit commitments going unmet over this period as the System would have over \$1.3 billion in assets by the end of the period. Again, these projections are absent any additional ad hoc COLAs.

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
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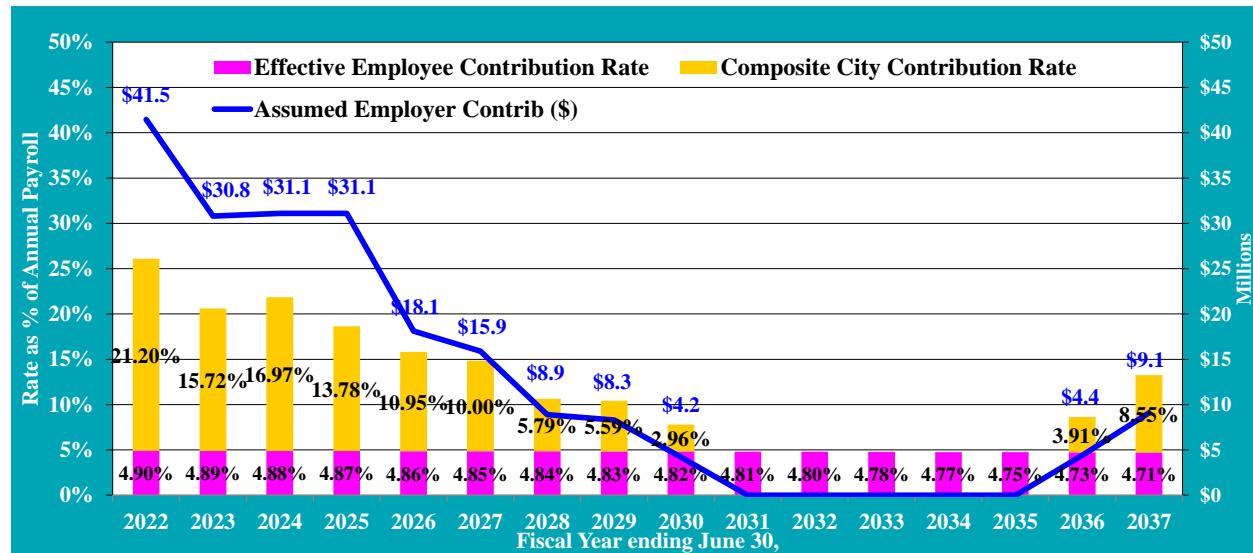
SECTION II – RISK ASSESSMENT AND DISCLOSURE

Projections with Volatile Asset Returns

Similar to the baseline projection, the two projections in this section assumed a fixed return of 9% or 5% each and every year. Whereas this is unlikely, this gives the Board and the City information as to how sensitive the funded status and City's contribution rate is should asset returns routinely exceed or fall short of the assumed 7%. 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 1957 to 1971 based on a portfolio invested in 60% equities and 40% fixed income, averaging 7.04% over the next 15 years, just above the current assumed return of 7.00%. The rates assumed for this scenario are shown in the following table.

FYE June 30,	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Return	(3.00%)	25.16%	6.80%	3.94%	18.06%	(2.06%)	14.56%	11.82%	7.34%	(5.98%)
FYE June 30,	2031	2032	2033	2034	2035					
Return	12.44%	7.70%	(8.34%)	9.76%	12.98%					

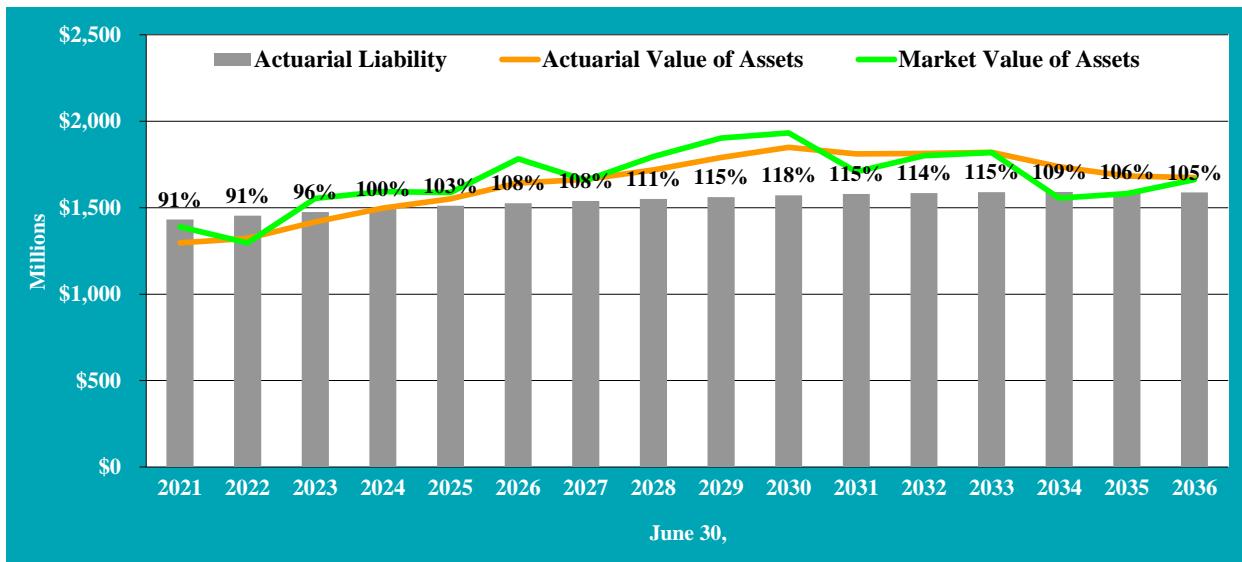
With varying annual earnings, one can see the volatility in the employer contributions in the first chart. Note that this chart reflects an illustrative scenario and is not intended to reflect future expectations as the volatility of the contributions will vary with the volatility of the returns.



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



**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
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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, 2020 and June 30, 2021;
- 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 Firefighters and Police. 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.

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
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SECTION III – ASSETS

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

	June 30, 2020	June 30, 2021
Assets		
Cash and Short-Term Investments	\$ 5,971	\$ 37,958
Receivables		
Accrued Investment Income	\$ 936	\$ 1,093
Accounts Receivable	2	0
Due from Broker for Securities Sold	<u>72,635</u>	<u>41,922</u>
Total	\$ 73,573	\$ 43,015
Investments, at Fair Value		
United States Treasury Securities	\$ 74,138	\$ 71,863
Fixed Income Securities	117,708	118,431
Derivative Securities	(160)	(281)
Equity Securities	51,945	111,244
Balanced Comingled Funds	<u>857,422</u>	<u>1,105,288</u>
Total	\$ 1,101,053	\$ 1,406,545
Total Assets	\$ 1,180,597	\$ 1,487,518
Liabilities		
Accounts Payable	\$ 2,294	\$ 2,112
Due to Broker for Securities Purchased	<u>134,213</u>	<u>96,537</u>
Total Liabilities	\$ 136,507	\$ 98,649
Net Assets Available for Benefits	\$ 1,044,090	\$ 1,388,869

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
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SECTION III – ASSETS

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

Value of Assets at June 30, 2020	$\\$	1,044,090
<u>Additions</u>		
Contributions		
Employer Contributions	$\$$	40,698
Employee Contributions / Purchased Service	$\$$	10,367
Pension Obligation Bonds	$\$$	<u>119,554</u>
Total Contributions	$\$$	170,619
Investment Income		
Net Appreciation (Depreciation)	$\$$	260,275
Interest	$\$$	5,264
Dividends	$\$$	6,014
Other	$\$$	<u>939</u>
Total Investment Income	$\$$	272,492
Investment Expenses	$\$$	<u>(2,140)</u>
Net Income from Investing Activities	$\$$	270,352
Total Additions	$\$$	440,971
<u>Deductions</u>		
Benefits Paid directly to Participants	$\$$	(89,027)
Return of Contributions	$\$$	(923)
Beneficiary Payments	$\$$	(5,622)
Administrative Fees	$\$$	<u>(620)</u>
Total Deductions	$\$$	(96,192)
<u>Total</u>		
Net Increase/(Decrease)	$\$$	344,779
Value of Assets at June 30, 2021	$\\$	1,388,869

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
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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, 2020	\$	1,100,046
Employer Contributions		40,698
Employee Contributions / Purchased Service		10,367
Pension Obligation Bonds		119,554
Benefit Payments		(95,572)
Assumed Administrative Expenses		(702)
Expected Return at 7.0%		<u>76,845</u>
2. Expected Value at June 30, 2021 (EV)	\$	1,251,236
3. Actual Market Value at June 30, 2021 (AV)	\$	1,388,869
4. One-Third of AV less EV	\$	45,878
5. Actuarial Value of Assets at June 30, 2021 [2. + 4.]	\$	1,297,114

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
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SECTION III – ASSETS

Table III-4
Allocation of Actuarial Value of Assets as of June 30, 2021
(\$ in Thousands)

	General Employees	Firefighters and Police	Total
1. Actuarial Value of Assets at June 30, 2020	\$ 602,255	\$ 497,791	\$ 1,100,046
2. Contributions			
Employer Contributions	\$ 17,946	\$ 22,752	\$ 40,698
Employee Contributions / Purchased Service	7,016	3,351	10,367
Pension Obligation Bonds	<u>52,717</u>	<u>66,837</u>	<u>119,554</u>
Total Contributions	\$ 77,679	\$ 92,940	\$ 170,619
3. Benefit Payments ¹	\$ (53,291)	\$ (42,281)	\$ (95,572)
4. Assumed Administrative Expenses	\$ (451)	\$ (251)	\$ (702)
5. Investment Earnings, based on 11.82% return	\$ 67,128	\$ 55,595	\$ 122,723
6. Actuarial Value of Assets at June 30, 2021	\$ 693,320	\$ 603,794	\$ 1,297,114
7. Market Value of Assets at June 30, 2020 ²	\$ 742,363	\$ 646,506	\$ 1,388,869

¹ Projected Benefit Payments are allocated on the basis of FY 2021 expected payments.

² The allocation of Market Value of Assets is used only for comparison to the Present Value of Accrued Benefits.

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
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SECTION III – ASSETS

Investment Performance

The market value of assets (MVA) returned 25.95% during the fiscal year ending June 30, 2021, which is more than the expected 7.00% return (assumption in prior year's valuation) by 18.95%.

A return of 11.82% 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.

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%

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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*
2022	\$ 102,061	\$ 41,457	\$ 9,541
2023	103,460	30,826	8,909
2024	105,777	30,826	8,411
2025	106,534	30,826	8,017
2026	110,723	30,826	7,665
2027	112,382	17,846	7,389
2028	113,655	16,621	7,124
2029	114,926	15,658	6,860
2030	116,261	14,824	6,619
2031	118,310	14,142	6,380

* 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, 2021. These projections do not include additional ad hoc COLAs, which may be granted by the City Council in future years.

Expected City contributions are shown on a cash basis. Employer 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, following the issuance of the pension obligation bonds, or the 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.

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
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SECTION IV – LIABILITIES

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

- **Disclosure** of System liabilities at June 30, 2020 and June 30, 2021; 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 7.00% 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**.

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021

SECTION IV – LIABILITIES

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

	June 30, 2020	June 30, 2021
Present Value of Future Benefits		
Active Participant Benefits	\$ 660,093	\$ 634,752
Retiree Benefits	911,307	931,297
DROP Participants	26,249	28,263
Terminated Vested and Inactive Members	<u>64,383</u>	<u>64,842</u>
Present Value of Future Benefits (PVFB)	\$ 1,662,032	\$ 1,659,154
Market Value of Assets (MVA)	\$ 1,044,090	\$ 1,388,869
Future Member Contributions	86,537	82,918
Future City Contributions	<u>531,405</u>	<u>187,367</u>
Total Resources	\$ 1,662,032	\$ 1,659,154
Employer Normal Cost ¹	\$ 17,316	\$ 16,437
Actuarial Liability		
Active Participant Benefits	\$ 419,089	\$ 407,113
Retiree Benefits	911,307	931,297
DROP Participants	26,249	28,263
Terminated Vested and Inactive Members	<u>64,383</u>	<u>64,842</u>
Actuarial Liability (AL)	\$ 1,421,028	\$ 1,431,515
Actuarial Value of Assets (AVA)	1,100,046	1,297,114
Net (Surplus)/Unfunded (AL – AVA)	\$ 320,982	\$ 134,401
Present Value of Accrued Benefits		
Present Value of Accrued Benefits (PVAB)	\$ 1,308,234	\$ 1,323,225
Market Value of Assets (MVA)	1,044,090	1,388,869
Net (Surplus)/Unfunded (PVAB – MVA)	\$ 264,144	\$ (65,644)

¹ Net of employee contributions

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
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SECTION IV – LIABILITIES

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

	June 30, 2020	June 30, 2021
Present Value of Future Benefits		
Active Participant Benefits	\$ 318,576	\$ 310,886
Retiree Benefits	485,678	490,078
Terminated Vested and Inactive Members	<u>45,057</u>	<u>44,603</u>
Present Value of Future Benefits (PVFB)	\$ 849,311	\$ 845,567
 Employer Normal Cost ¹	 \$ 7,554	 \$ 7,246
 Actuarial Liability		
Active Participant Benefits	\$ 214,185	\$ 209,604
Retiree Benefits	485,678	490,078
Terminated Vested and Inactive Members	<u>45,057</u>	<u>44,603</u>
Actuarial Liability (AL)	\$ 744,920	\$ 744,285
Actuarial Value of Assets (AVA)	602,255	693,320
Net (Surplus)/Unfunded (AL – AVA)	\$ 142,665	\$ 50,965
 Present Value of Accrued Benefits (PVAB)	 \$ 690,748	 \$ 690,683

¹ Net of employee contributions

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
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SECTION IV – LIABILITIES

Table IV-3
Liabilities & Net (Surplus)/Unfunded
Firefighters and Police
*(**\$ in Thousands**)*

	June 30, 2020	June 30, 2021
Present Value of Future Benefits		
Active Participant Benefits	\$ 341,517	\$ 323,866
Retiree Benefits	425,629	441,219
DROP Participants	26,249	28,263
Terminated Vested and Inactive Members	<u>19,326</u>	<u>20,239</u>
Present Value of Future Benefits (PVFB)	\$ 812,721	\$ 813,587
 Employer Normal Cost ¹	 \$ 9,762	 9,191
 Actuarial Liability		
Active Participant Benefits	\$ 204,904	\$ 197,509
Retiree Benefits	425,629	441,219
DROP Participants	26,249	28,263
Terminated Vested and Inactive Members	<u>19,326</u>	<u>20,239</u>
Actuarial Liability (AL)	\$ 676,108	\$ 687,230
Actuarial Value of Assets (AVA)	497,791	603,794
Net (Surplus)/Unfunded (AL – AVA)	\$ 178,317	\$ 83,436
 Present Value of Accrued Benefits (PVAB)	 \$ 617,486	 \$ 632,542

¹ *Net of employee contributions*

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021

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**)*

	Present Value of Benefits	Actuarial Liability	Present Value of Accrued Benefits
Liabilities as of June 30, 2020	\$ 1,662,032	\$ 1,421,028	\$ 1,308,234
Liabilities as of June 30, 2021	\$ 1,659,154	\$ 1,431,515	\$ 1,323,225
Liability Increase/(Decrease)	\$ (2,878)	\$ 10,487	\$ 14,991
Change Due to:			
Plan Amendments	\$ 0	\$ 0	\$ 0
Assumption and Method Change	0	0	0
Actuarial (Gain)/Loss	NC	(19,181)	NC
Benefits Accumulated and Other Sources	(2,878)	29,668	14,991

NC = not calculated

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021**

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. Concurrent with this valuation, 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.

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021**

SECTION V – CONTRIBUTIONS

Actuarially Determined Rate

The employer's normal cost rate is 5.72% for General Employees and 13.52% for Firefighters and Police for the fiscal year beginning July 1, 2021. 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.

Table V-1		
Actuarially Determined Rate		
	June 30, 2020	June 30, 2021
Normal Cost Rate	8.60%	8.44%
UAL Rate	12.25%	6.93%
Expense Rate	0.35%	0.35%
Total City Rate	21.20%	15.72%

The net decrease in the contribution rate was primarily attributable to the combination of favorable investment performance during the year as well as the \$119.6 million contribution from Pension Obligation Bonds. Since the City closed the System to new hires effective January 1, 2022, the method for amortizing the unfunded actuarial liability was changed from a level-percent of pay to a level-dollar methodology.

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021

SECTION V – CONTRIBUTIONS

Table V – 2
Development of UAL Amortization Layer for FY 2023
(\$ in Thousands)

		General	Firefighters & Police	Total
a.	June 30, 2021 Unfunded Actuarial Liability (UAL)	\$ 50,966	\$ 83,435	\$ 134,401
b.	Expected Employer Contribution on July 1, 2021	\$ 18,275	\$ 23,182	\$ 41,457
c.	Employer Normal Cost Payments and Expenses	(7,689)	(9,429)	(17,118)
d.	Interest on b. and c. to June 30, 2022	<u>514</u>	<u>657</u>	<u>1,171</u>
e.	Net Contribution to apply to UAL	\$ 11,100	\$ 14,410	\$ 25,510
f.	Interest on UAL to June 30, 2022	\$ 3,568	\$ 5,840	\$ 9,408
g.	June 30, 2022 Expected Unfunded Actuarial Liability (a. – e. + f.)	\$ 43,434	\$ 74,865	\$ 118,299
h.	Outstanding Balances for Amortization Bases as of June 30, 2022	\$ 140,362	\$ 175,068	\$ 315,430
i.	June 30, 2022 Experience UAL Layer [g. – h.]	\$ (96,928)	\$ (100,203)	\$ (197,131)
j.	FY 2023 Amortization Payment (Layer Amortized Over 20 Years)	\$ (8,551)	\$ (8,840)	\$ (17,391)

Since contributions are payable a year after they are developed, the UAL is amortized over 20 years on July 1, 2022.

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021

SECTION V – CONTRIBUTIONS

Type of Base	Date Established	June 30, 2021		FY 2022 Amortization Payment	June 30, 2022 Outstanding Balance	Remaining Amortization Years	FY 2023 Amortization Payment
		Initial Amount					
GENERAL EMPLOYEES							
1. 2017 Initial Unfunded Base	7/1/2017	\$ 126,943	\$ 9,954	\$ 125,178	16	\$ 12,384	
2. 2018 Plan Change	7/1/2018	6,912	521	6,839	17	655	
3. 2018 Experience Base	7/1/2018	(5,123)	(386)	(5,068)	17	(485)	
4. 2019 Experience Base	7/1/2019	898	65	891	18	83	
5. 2020 Experience Base	7/1/2020	12,585	882	12,522	19	1,132	
6. 2021 Experience Base	7/1/2021	(91,249)	N/A	(96,928)	20	(8,551)	
General Employees Total		\$ 50,966	\$ 11,036	\$ 43,434		\$ 5,218	
FIREFIGHTERS AND POLICE							
1. 2017 Initial Unfunded Base	7/1/2017	\$ 160,675	\$ 12,599	\$ 158,440	16	\$ 15,675	
2. 2018 Plan Change	7/1/2018	5,510	415	5,452	17	522	
3. 2018 Experience Base	7/1/2018	3,147	237	3,114	17	298	
4. 2019 Experience Base	7/1/2019	(2,855)	(207)	(2,833)	18	(263)	
5. 2020 Experience Base	7/1/2020	10,949	767	10,895	19	985	
6. 2021 Experience Base	7/1/2021	(93,991)	N/A	(100,203)	20	(8,840)	
Firefighters and Police Total		\$ 83,435	\$ 13,811	\$ 74,865		\$ 8,377	
Combined Total				\$ 118,299		\$ 13,595	

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021

SECTION V – CONTRIBUTIONS

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

	June 30, 2020 (expensed FY 2021)	June 30, 2021 (expensed FY 2022)
	(paid FY 2022)	(paid FY 2023)
1. Actuarial Liability		
a. Active Employees	\$ 419,089	\$ 407,113
b. Retired Members	911,307	931,297
c. DROP Participants	26,249	28,263
d. Vested Terminated Members	<u>64,383</u>	<u>64,842</u>
e. Total Actuarial Liability	\$ 1,421,028	\$ 1,431,515
2. Actuarial Value of Assets	\$ 1,100,046	\$ 1,297,114
3. Unfunded Actuarial Liability (UAL) [1. - 2.]	\$ 320,982	\$ 134,401
4. UAL Amortization Payments	\$ 24,847	\$ 13,595
5. Active Member Payroll for UAL Amortization	\$ 202,914	\$ 196,097
6. Employer Contribution Results		
a. Employer Normal Cost Rate	8.60%	8.44%
b. Amortization of UAL [4. ÷ 5.]	12.25%	6.93%
c. Administrative Expenses	<u>0.35%</u>	<u>0.35%</u>
d. Total Employer Contribution Rate	21.20%	15.72%

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021

SECTION V – CONTRIBUTIONS

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

	June 30, 2020 (expensed FY 2021)	June 30, 2021 (expensed FY 2022)	June 30, 2021 (paid FY 2022)	June 30, 2021 (paid FY 2023)
1. Actuarial Liability				
a. Active Employees	\$ 214,185	\$ 209,604		
b. Retired Members	485,678	490,078		
c. DROP Participants	0	0		
d. Vested Terminated Members	45,057	44,603		
e. Total Actuarial Liability	\$ 744,920	\$ 744,285		
2. Actuarial Value of Assets	\$ 602,255	\$ 693,320		
3. Unfunded Actuarial Liability (UAL) [1. - 2.]	\$ 142,665	\$ 50,965		
4. UAL Amortization Payments	\$ 11,036	\$ 5,218		
5. Active Member Payroll for UAL Amortization	\$ 130,969	\$ 127,611		
6. Employer Contribution Results				
a. Employer Normal Cost Rate	5.81%	5.72%		
b. Amortization of UAL [4. ÷ 5.]	8.43%	4.09%		
c. Administrative Expenses	0.35%	0.35%		
d. Total Employer Contribution Rate	14.59%	10.16%		

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021

SECTION V – CONTRIBUTIONS

Table V-6
Development of Actuarially Determined Contribution Rate
Firefighters and Police
(\$ in Thousands)

	June 30, 2020 (expensed FY 2021)	June 30, 2021 (expensed FY 2022)
1. Actuarial Liability		
a. Active Employees	\$ 204,904	\$ 197,509
b. Retired Members	425,629	441,219
c. DROP Participants	26,249	28,263
d. Vested Terminated Members	<u>19,326</u>	<u>20,239</u>
e. Total Actuarial Liability	\$ 676,108	\$ 687,230
2. Actuarial Value of Assets	\$ 497,791	\$ 603,794
3. Unfunded Actuarial Liability (UAL) [1. - 2.]	\$ 178,317	\$ 83,436
4. UAL Amortization Payments	\$ 13,811	\$ 8,377
5. Active Member Payroll for UAL Amortization	\$ 71,945	\$ 68,486
6. Employer Contribution Results		
a. Employer Normal Cost Rate	13.67%	13.52%
b. Amortization of UAL [4. ÷ 5.]	19.20%	12.23%
c. Administrative Expenses	<u>0.35%</u>	<u>0.35%</u>
d. Total Employer Contribution Rate	33.22%	26.10%

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021**

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 7.0% 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, 2020 and June 30, 2021. Table VI-2 then reconciles the FASB ASC Topic No. 960 liabilities determined as of the prior valuation, June 30, 2020, to the liabilities as of June 30, 2021.

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 Comprehensive Annual Financial Report.

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021

SECTION VI – FINANCIAL STATEMENT INFORMATION

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

	June 30, 2020	June 30, 2021
FASB ASC Topic No. 960		
1. Present Value of Benefits Accrued and Vested to Date		
a. Members Currently Receiving Payments	\$ 911,307	\$ 931,297
b. Vested Terminated Members	90,632	93,106
c. Active Members	<u>295,423</u>	<u>288,378</u>
d. Total PVVB	<u>\$ 1,297,362</u>	<u>\$ 1,312,781</u>
2. Present Value of Non-Vested Accrued Benefits for Active Members	<u>10,872</u>	<u>10,444</u>
3. Total Present Value of Accrued Benefits	<u>\$ 1,308,234</u>	<u>\$ 1,323,225</u>
4. Assets at Market Value	\$ 1,044,090	\$ 1,388,869
5. Unfunded Present Value of Accrued Benefits [3. - 4., not less than 0]	\$ 264,144	\$ (65,644)
6. Ratio of Assets to Value of Benefits [4. ÷ 3.]	79.8%	105.0%

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021

SECTION VI – FINANCIAL STATEMENT INFORMATION

Table VI-2 Statement of Changes in Total Actuarial Present Value of All Accrued Benefits <i>(\$ in Thousands)</i>		
		Accumulated Benefit Obligation
FASB ASC Topic No. 960		
Actuarial Present Value of Accrued Benefits as of June 30, 2020	\$	1,308,234
Increase/(Decrease) During Years Attributable to:		
Passage of Time	\$	88,231
Benefits Paid during FY 2020-2021		(95,572)
Change in Assumptions		0
Plan Changes		0
Benefits Accrued, Other Gains/Losses		<u>22,332</u>
Net Increase/(Decrease)	\$	14,991
Actuarial Present Value of Accrued Benefits as of June 30, 2021	\$	1,323,225

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021

SECTION VI – FINANCIAL STATEMENT INFORMATION

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

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

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

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021

APPENDIX A – MEMBERSHIP INFORMATION

Table A-1
Summary of Active Membership as of June 30, 2021¹

Plan	Count	Average Age	Average Service	Average Salary
General	2,492	47.4	9.6	\$ 50,831
Firefighters and Police	1,077	40.0	12.1	63,122
Total System	3,569	45.2	10.3	54,540

¹ Excludes those on Leave of Absence

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021

APPENDIX A – MEMBERSHIP INFORMATION

Table A-2
Summary of Inactive Membership as of June 30, 2021
(\$ in Thousands)

	Count	Annual Benefit		Average Annual Benefit
Service Retirements				
General	2,365	\$ 46,093	\$	19.5
Firefighters and Police	1,010	36,753		36.4
Total	3,375	\$ 82,846		24.5
DROP Participants¹				
General	0	\$ 0	\$	0
Firefighters and Police	46	1,600		34.8
Total	46	\$ 1,600		34.8
Contingent Annuitants				
General	371	\$ 3,540	\$	9.5
Firefighters and Police	223	3,355		15.0
Total	594	\$ 6,895		11.6
Disableds				
General	176	\$ 2,636	\$	15.0
Firefighters and Police	127	3,292		25.9
Total	303	\$ 5,928		19.6
Vested Former Members²				
General	1,092	\$ 225	\$	0.2
Firefighters and Police	348	1,708		4.9
Total	1,440	\$ 1,932		1.3

¹ For those in the DROP period, the amount shown is 70% of the full monthly benefit.

² Benefits are payable at age 60 for General Employees and age 55 for Firefighters and Police. Includes 13 participants on leave of absence that are currently vested.

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021

APPENDIX A – MEMBERSHIP INFORMATION

Table A-3
Data Reconciliation¹

	Actives	Vested Former Members²	Service Retirements	DROP Participants	Contingent Annuitants	Disableds	Total
Count as of June 30, 2020	3,719	1,384	3,330	43	564	318	9,358
New Entrants	369	27	1	0	7	1	405
Terminations/Retirements							
- Vested	(245)	107	123	15	0	0	0
- Non-Vested	(283)	(12)	0	0	0	0	(295)
Disablements	(2)	(3)	(1)	0	0	6	0
Vested							
- that Retired	0	(43)	43	0	0	0	0
- that Returned to Work	14	(14)	0	0	0	0	0
DROP Retirements	0	0	13	(13)	0	0	0
Benefits Expired	0	0	0	0	0	0	0
Deaths							
- With a Beneficiary	(1)	0	(44)	0	52	(7)	0
- Without a Beneficiary	(2)	(6)	(88)	0	(29)	(15)	(140)
Data Corrections	0	0	(2)	1	0	0	(1)
Count as of June 30, 2021	3,569	1,440	3,375	46	594	303	9,327

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

² 20 and 13 participants on Leave of Absence as of June 30, 2020 and June 30, 2021, respectively, are entitled to a vested benefit and thus included as Vested Former Members.

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021

APPENDIX A – MEMBERSHIP INFORMATION

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

Age	COUNTS BY AGE/SERVICE										Total
	Service										
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	31	25	0	0	0	0	0	0	0	0	56
25 to 29	55	105	16	0	0	0	0	0	0	0	176
30 to 34	50	120	59	13	1	0	0	0	0	0	243
35 to 39	36	117	104	41	11	0	0	0	0	0	309
40 to 44	40	107	80	34	24	9	0	0	0	0	294
45 to 49	28	81	63	35	40	33	4	0	0	0	284
50 to 54	19	73	81	36	52	49	23	4	1	0	338
55 to 59	21	54	68	49	44	35	35	23	11	0	340
60 to 64	9	42	55	33	48	47	17	20	18	8	297
65 to 69	0	12	24	18	13	13	10	11	4	8	113
70 & up	1	3	12	4	4	4	2	4	3	5	42
Total	290	739	562	263	237	190	91	62	37	21	2,492

Age	TOTAL SALARY BY AGE/SERVICE										Total
	Service										
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	1,074	878	0	0	0	0	0	0	0	0	1,952
25 to 29	2,005	4,092	674	0	0	0	0	0	0	0	6,770
30 to 34	2,082	5,462	2,756	535	41	0	0	0	0	0	10,876
35 to 39	1,533	5,220	5,026	1,906	645	0	0	0	0	0	14,330
40 to 44	1,590	5,159	4,254	2,055	1,227	446	0	0	0	0	14,731
45 to 49	1,048	3,834	3,383	2,283	2,253	2,018	201	0	0	0	15,019
50 to 54	775	3,587	4,242	1,978	2,817	2,956	1,476	297	87	0	18,216
55 to 59	933	2,723	3,691	2,646	2,196	1,901	2,191	1,359	610	0	18,250
60 to 64	529	2,440	3,131	1,746	2,562	2,537	1,055	1,186	1,171	567	16,924
65 to 69	0	966	1,494	952	888	752	627	648	480	473	7,278
70 & up	55	174	546	175	242	252	86	244	194	357	2,325
Total	11,625	34,534	29,198	14,275	12,870	10,861	5,636	3,734	2,542	1,397	126,671

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021

APPENDIX A – MEMBERSHIP INFORMATION

Table A-5
Distribution of Active Participants (including DROP) - Firefighters & Police
(\$ in Thousands)

Age	Counts by Age/Service											Total
	Service											
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	11	46	1	0	0	0	0	0	0	0	58	
25 to 29	11	100	38	1	0	0	0	0	0	0	150	
30 to 34	6	60	81	26	1	0	0	0	0	0	174	
35 to 39	1	19	43	69	41	0	0	0	0	0	173	
40 to 44	0	13	21	32	69	21	0	0	0	0	156	
45 to 49	1	4	5	29	54	44	16	0	0	0	153	
50 to 54	0	4	6	16	33	37	43	4	0	0	143	
55 to 59	0	1	1	7	11	21	18	15	7	2	83	
60 to 64	0	0	0	1	4	6	9	6	2	4	32	
65 to 69	0	0	0	0	0	0	0	0	0	0	0	
70 & up	0	0	0	0	0	0	1	0	0	0	1	
Total	30	247	196	181	213	129	87	25	9	6	1,123	

Age	Total Salary by Age/Service										Total
	Service										
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	440	2,011	52	0	0	0	0	0	0	0	2,503
25 to 29	448	4,481	1,944	59	0	0	0	0	0	0	6,932
30 to 34	227	2,702	4,337	1,536	69	0	0	0	0	0	8,871
35 to 39	44	847	2,419	4,240	2,737	0	0	0	0	0	10,287
40 to 44	0	558	1,099	1,930	4,624	1,589	0	0	0	0	9,800
45 to 49	42	174	284	1,688	3,690	3,340	1,196	0	0	0	10,413
50 to 54	0	179	274	922	2,150	2,790	3,392	425	0	0	10,132
55 to 59	0	25	25	398	732	1,513	1,435	1,533	649	159	6,469
60 to 64	0	0	0	60	269	428	646	514	213	422	2,552
65 to 69	0	0	0	0	0	0	0	0	0	0	0
70 & up	0	0	0	0	0	0	25	0	0	0	25
Total	1,202	10,978	10,434	10,830	14,269	9,660	6,694	2,472	862	580	67,982

* Tables above include 46 participants in DROP

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

A. Actuarial Assumptions

Interest Rate

7.0% per annum, compounded annually (originally adopted as of June 30, 2012).

Mortality

Pre-Retirement: 108% of RP-2014 adjusted back to 2006 using MP-2014 and brought forward to 2016 using MP-2016 and generational improvements of 0.75% per year (ages < 86) thereafter*

Healthy Annuitants: 108% of RP-2014 adjusted back to 2006 using MP-2014 and brought forward to 2016 using MP-2016 and generational improvements of 0.75% per year (ages < 86) thereafter

Disableds: 100% of RP-2014 Disability Mortality adjusted back to 2006 using MP-2014 and brought forward to 2016 using MP-2016 and generational improvements of 0.75% per year (ages < 86) thereafter

* 5% of deaths are assumed to be accidental for general employees.
60% of deaths are assumed to be accidental for firefighters and police.

Salary Increase

Annual rates of salary increases are as follows:

Service	General	Firefighters and Police
0	6.60 %	9.69 %
1	6.45	6.60
2	6.30	6.60
3	6.14	6.60
4	5.99	6.60
5	5.83	6.60
10	5.34	6.60
15	5.18	6.60
20	4.74	5.68
25	4.23	5.06
30	3.71	5.06

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

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Withdrawal

Service	General	Firefighters and Police
0	19.00 %	10.00 %
1	17.00	9.00
2	15.00	8.00
3	13.00	7.00
4	11.00	6.00
5	9.50	5.00
10	4.70	2.80
15	3.00	1.00
20	2.50	1.00
25	1.00	1.00
30	1.00	1.00

Disability

Age	General*		Firefighters and Police**
	Male	Female	Unisex
20	0.06%	0.05%	0.04%
25	0.07	0.05	0.06
30	0.08	0.06	0.08
35	0.13	0.10	0.11
40	0.20	0.15	0.22
45	0.31	0.23	0.40
50	0.46	0.35	0.67
54	0.59	0.45	0.90
55	0.63	0.48	0.96
59	0.92	0.70	1.26

* 25% of General disabilities are assumed to be accidental

**70% of Police & Fire disabilities are assumed to be accidental

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
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APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Retirement

General:

Age	<i>Hired On or After July 1, 2018</i>			
	Hired Before 7/1/2018	Social Security NRA 65	Social Security NRA 66	Social Security NRA 67
50	7.50 %	7.50 %	7.50 %	7.50 %
51	7.50	7.50	7.50	7.50
52	7.50	7.50	7.50	7.50
53	7.50	7.50	7.50	7.50
54	7.50	7.50	7.50	7.50
55	7.50	7.50	7.50	7.50
56	7.50	7.50	7.50	7.50
57	7.50	7.50	7.50	7.50
58	7.50	7.50	7.50	7.50
59	7.50	7.50	7.50	7.50
60	15.00	7.50	7.50	7.50
61	15.00	7.50	7.50	7.50
62	15.00	7.50	7.50	7.50
63	15.00	7.50	7.50	7.50
64	15.00	7.50	7.50	7.50
65	25.00	25.00	7.50	7.50
66	15.00	15.00	25.00	7.50
67	15.00	15.00	15.00	25.00
68	15.00	15.00	15.00	15.00
69	15.00	15.00	15.00	15.00
70	100.00	100.00	100.00	100.00

For those hired on or after July 1, 2018, the retirement rate at the first year of eligibility (earlier of Social Security Normal Retirement Age as shown above or “Rule of 90”) is 25%. In subsequent years, the rate of retirement is 15% per year until age 70 (100% retirement rate).

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Firefighters and Police:

For those eligible for the Deferred Retirement Option Program (DROP):

Service	Rate of Retirement*
20	2.50 %
21	3.00
22	3.50
23	4.00
24	15.00
25	30.00
26	30.00
27 and up	30.00

For those not eligible for the Deferred Retirement Option Program (DROP):

Service	Rate of Retirement*
20	2.50 %
21	3.00
22	3.50
23	4.00
24	15.00
25	20.00
26	20.00
27 and up	20.00

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

NOTE: Rates apply to each member based on eligibility requirements as defined in the Summary of Benefit and Contribution Provisions.

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 Firefighters and Police is applied to retirement benefits for active employees to account for unused sick leave balances at the time of retirement.

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Marital Status

For active members, 65% of the General Employees and 75% of the Firefighters and Police 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.

DROP Election

All Firefighters and Police who are eligible to elect DROP are assumed to do so in lieu of 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, 2011 through June 30, 2016.

Changes in Assumptions

None

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

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 (including DROP 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 will be 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.

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
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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

Due to the System being closed to employees hired after January 1, 2022, the unfunded actuarial liability amortization method was changed from a level-percent of pay to a level-dollar methodology.

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021**

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 Firefighters and Police effective June 9, 1992. City Council members on or after July 1, 2001, are classified as members of Firefighters and Police.

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.

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
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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.

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021**

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 $\frac{1}{4}$ of 1% for each month commencement date precedes the normal retirement date for General Employees, and $\frac{1}{2}$ 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.

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021**

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 66 $\frac{2}{3}$ % 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.

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021**

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

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021**

APPENDIX C – SUMMARY OF PLAN PROVISIONS

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.

Only City contributions will continue to be made throughout the DROP period for any eligible participant who has elected to participate in DROP.

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2021**

APPENDIX C – SUMMARY OF PLAN PROVISIONS

13. Deferred Retirement Option Program (DROP)

Eligibility

Any police officer or fireman member in service who attains his or her Normal Retirement Age may elect to participate.

Amount

The DROP period may be elected by the police officer or fireman 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.

Only City contributions will continue to be made throughout the DROP period.

14. Changes in Plan Provisions

The City closed the plan to new hires effective January 1, 2022. These new employees will participate in VRS. This change had no impact on the liabilities as of June 30, 2021 but was reflected in the projections shown within this report.