

The Employees' Retirement System for the City of Norfolk

**Actuarial Valuation Report
as of June 30, 2020**

**The Seventy-Seventh
Actuarial Valuation**

**Produced by Cheiron
September 2020**

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September 29, 2020

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, 2020***

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, 2020. The results of the valuation are contained in this report. The purpose of the valuation is discussed in the Foreword.

The actuarial assumptions used in performing this valuation have been recommended by the actuary and adopted by the Board of Trustees based on the actuary's most recent review of the System's experience completed in July 2017. We believe the assumptions used, in aggregate, reflect our best estimate of anticipated future experience of the Plan. The results of this report are only applicable to the contribution for the fiscal year ending June 30, 2022, 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.

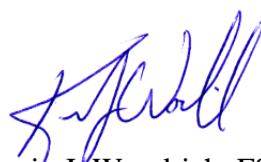
This report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board as well as applicable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

Fiona E. Liston, FSA, EA, MAAA
Principal Consulting Actuary

A handwritten signature in blue ink that reads "Kevin J. Woodrich".

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

cc: Justin Runkel, ASA, EA

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

FOREWORD

Cheiron has performed the actuarial valuation of the Employees' Retirement System for the City of Norfolk as of June 30, 2020. 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 for fiscal year June 30, 2022; 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, 2021.

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
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

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, 2021. The contribution rate for General Employees is determined to be 14.59%. The contribution rate for Firefighters and Police is determined to be 33.22%. The composite rate is equal to 21.20% of annual payroll. This is an increase from the composite rate of 20.30% determined in last year's valuation, which is applicable to the current fiscal year.

Forecasts show that should all assumptions be realized, including the 7.00% assumed annual investment return, the System's funded ratio would increase from 77% to 91% over the next 15 years. Please note that this projection does **not** recognize the City's tendency to offer ad hoc COLAs. 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.

Recent Experience

The financial markets performed worse than expected during the fiscal year ending June 30, 2020. The actual return on a market value basis was approximately 0.53%. The System also experienced a loss on the actuarial value of assets. On an actuarial value basis, the assets returned 4.69% compared with an assumed rate of return of 7.00%. The loss recognized for funding purposes was \$28.0 million.

On the liability side, the System's experience resulted in an actuarial gain of \$6.4 million, which represents roughly 0.46% of the prior year's liabilities. This liability gain was due primarily to salaries not increasing as much as assumed.

The combination of these changes produced a slight decrease in the System's funded ratio (actuarial value of assets over actuarial liability) from 78.5% as of June 30, 2019 to 77.4% as of June 30, 2020.

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020

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

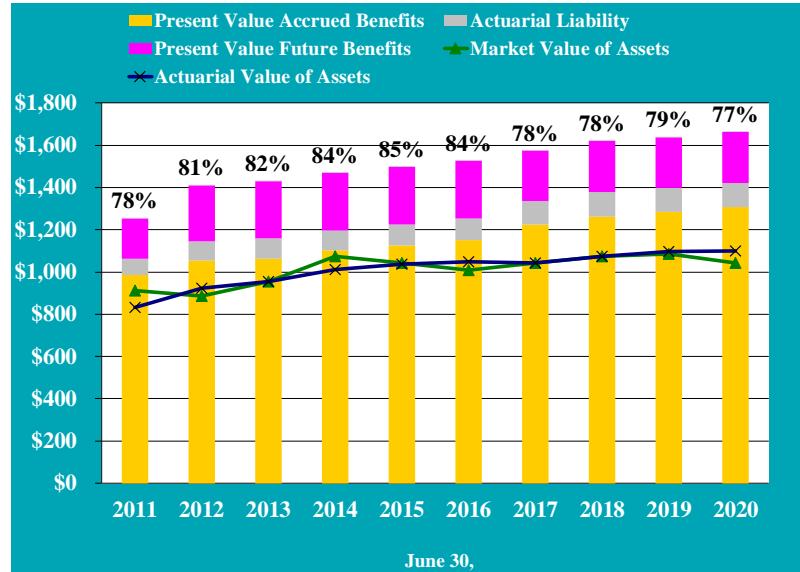


The market value of assets (MVA) experienced a return of 0.53% this year. Due to the asset smoothing method in place, the actuarial value of assets (AVA) remained relatively flat compared to last year as a result of recognizing historical gains that have been deferred. As a result, the return on the AVA was 4.69%. The numbers refer to the MVA as illustrated by the green bar.

Assets and Liabilities

The three colored bars represent the three different measures of liability mentioned in this report. For funding purposes, the target amount is 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.

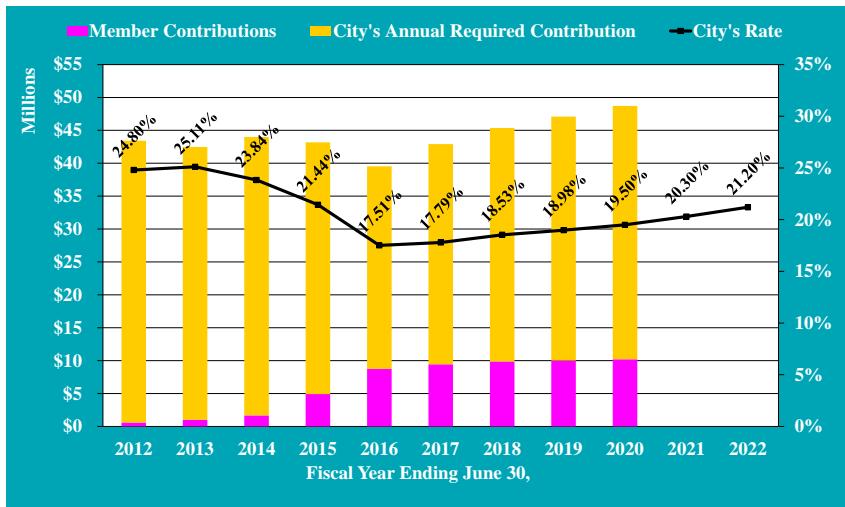
The amount represented by the top of the pink bars, the present value of future benefits, is the amount needed to provide all benefits for the current participants and their beneficiaries. The top of the yellow bars measures the liability attributable to benefits accrued to date.



THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020

SECTION I – BOARD SUMMARY

Contribution Rates

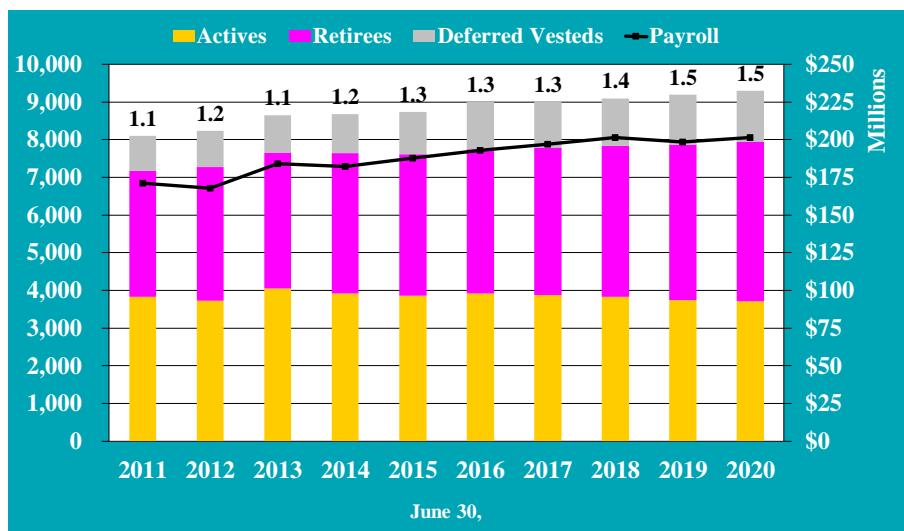


The yellow bars in this graph show the actual contribution amounts that have been paid by the City. The black line shows this contribution as a percent of payroll (right-hand scale). The City contribution rate is set by the actuarial process. Please note there is a lag in the rate. For example, the June 30, 2019 valuation determined the annual required contribution for the

period July 1, 2020 to June 30, 2021. This amount equaled \$40.7 million and was paid by the City in July 2020. 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.

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 numbers above the bars on the graph indicate the ratio of inactive participants to active participants. Over the past ten years, this ratio has increased as the System continues to mature. When higher contributions are required to meet funding shortfalls caused by poor investment performance, the leveraging impact of a higher ratio becomes significant. This is because, though investment shortfalls impact total assets (i.e., actives and inactives), contributions are only made on behalf of the System's active participants. In Section II of this report, we compare Norfolk's support ratio to other public plans.

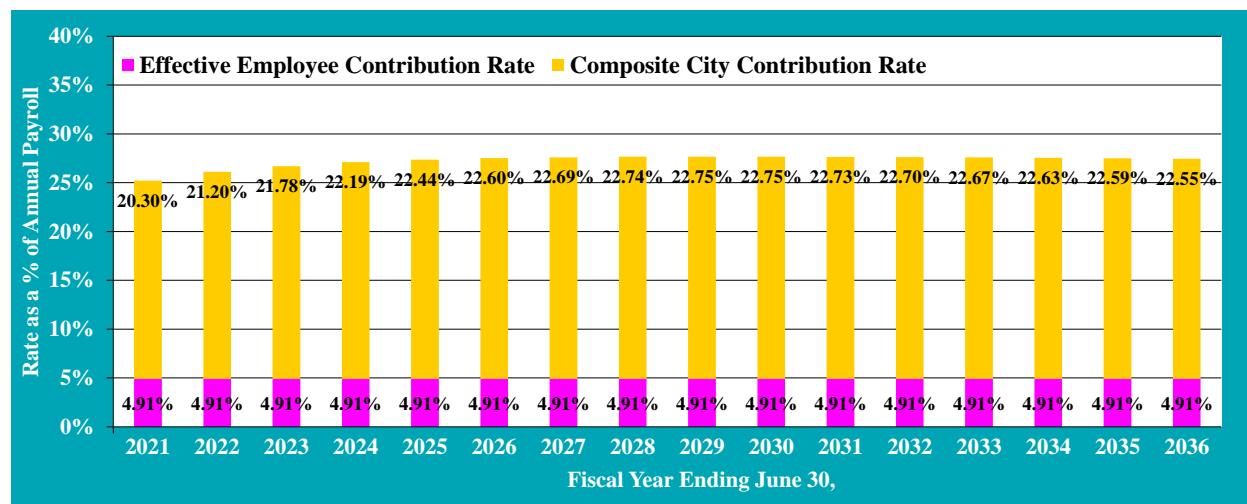
THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020

SECTION I – BOARD SUMMARY

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.

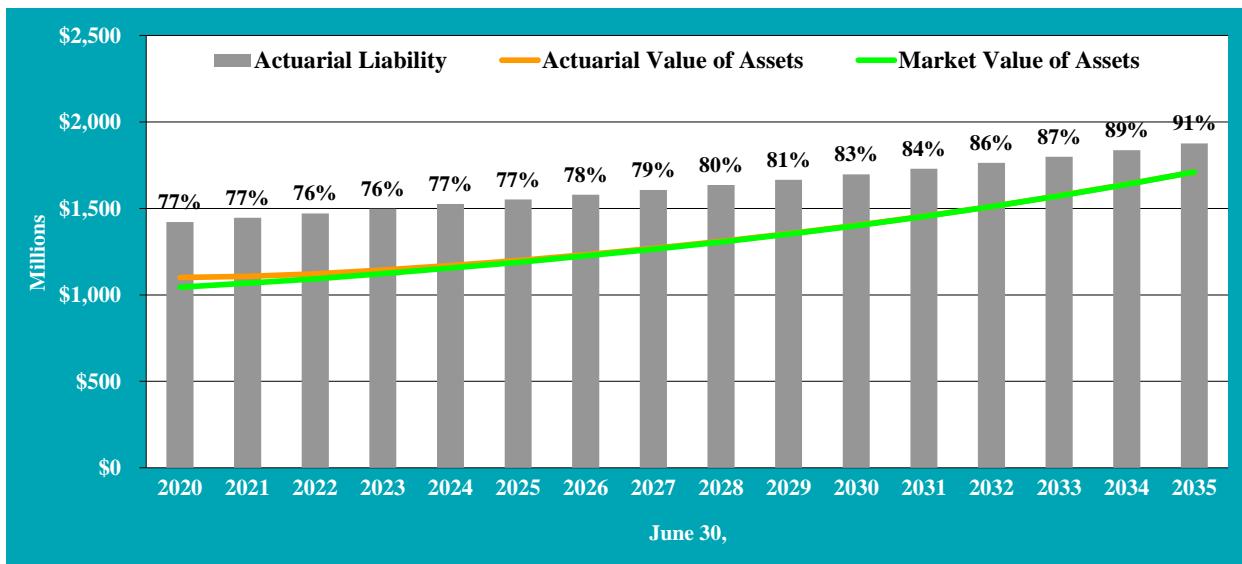
The two graphs below show the expected progress of the Plan over the next 15 years.



The preceding graph shows that the City's contribution rate as a percentage of payroll is projected to increase through FY 2029 before slowly decreasing over the remaining period. This slight decrease in the City's contribution rate occurs as new participants subject to the higher Normal Retirement Age become participants in the Plan. The higher Normal Retirement Age results in the City having a longer period to fund their benefit and thus the normal cost percentage will be less. The effective employee contribution rate is less than 5% due to both City Council members and those participants who have elected or 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.

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
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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 reach 91% 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
ACTUARIAL VALUATION AS OF JUNE 30, 2020

SECTION I – BOARD SUMMARY

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

	June 30, 2019	June 30, 2020	% Change
<u>Participant Counts</u>			
Actives	3,739	3,719	(0.5%)
Leave of Absence ¹	39	42	7.7%
Terminated Vested Members	1,333	1,364	2.3%
Participants Due Account Balance	498	367	(26.3%)
In Pay Status Participants	4,119	4,212	2.3%
DROP Participants	47	43	(8.5%)
Total	9,775	9,747	(0.3%)
Annual Salaries of Active Members ²	\$ 198,511	\$ 201,420	1.5%
Annual Retirement Allowances ³	91,549	94,858	3.6%
<u>Assets and Liabilities</u>			
Actuarial Liability (AL)	\$ 1,397,988	\$ 1,421,028	1.6%
Assets for Valuation Purposes (AVA)	<u>1,097,451</u>	<u>1,100,046</u>	0.2%
Unfunded Actuarial Liability [AL - AVA]	\$ 300,537	\$ 320,982	
Funding Ratio (AVA ÷ AL)	78.50%	77.41%	
Funding Ratio (MVA ÷ AL)	77.56%	73.47%	
Present Value of Accrued Benefits	\$ 1,285,635	\$ 1,308,234	1.8%
Market Value of Assets (MVA)	<u>1,084,248</u>	<u>1,044,090</u>	(3.7%)
Unfunded Accrued Benefit Liability	\$ 201,387	\$ 264,144	
Accrued Benefit Funding Ratio	84.34%	79.81%	
<u>City Contributions as a % of Payroll</u>			
Normal Cost Contribution	8.69%	8.60%	
Unfunded Actuarial Liability Contribution	11.26%	12.25%	
Expense Contribution	<u>0.35%</u>	<u>0.35%</u>	
Total Contribution	20.30%	21.20%	

¹ 23 and 20 participants on Leave of Absence as of June 30, 2019 and June 30, 2020, 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, 2020

SECTION I – BOARD SUMMARY

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

	June 30, 2019	June 30, 2020	% Change
<u>Participant Counts</u>			
Actives	2,599	2,591	(0.3%)
Leave of Absence ¹	27	34	25.9%
Terminated Vested Members	1,032	1,049	1.6%
Participants Due Account Balance	412	302	(26.7%)
In Pay Status Participants	<u>2,812</u>	<u>2,879</u>	2.4%
Total	6,882	6,855	(0.4%)
Annual Salaries of Active Members	\$ 127,569	\$ 130,005	1.9%
Annual Retirement Allowances	49,898	51,496	3.2%
<u>Assets and Liabilities</u>			
Actuarial Liability (AL)	\$ 737,771	\$ 744,920	1.0%
Assets for Valuation Purposes (AVA)	<u>606,236</u>	<u>602,255</u>	(0.7%)
Unfunded Actuarial Liability [AL - AVA]	\$ 131,535	\$ 142,665	
Funding Ratio (AVA ÷ AL)	82.17%	80.85%	
Funding Ratio (MVA ÷ AL)	81.18%	76.74%	
Present Value of Accrued Benefits	\$ 683,657	\$ 690,748	1.0%
Market Value of Assets (MVA)	<u>598,943</u>	<u>571,620</u>	(4.6%)
Unfunded Accrued Benefit Liability	\$ 84,714	\$ 119,128	
Accrued Benefit Funding Ratio	87.61%	82.75%	
<u>City Contributions as a % of Payroll</u>		Fiscal Year 2021	Fiscal Year 2022
Normal Cost Contribution		5.91%	5.81%
Unfunded Actuarial Liability Contribution		7.67%	8.43%
Expense Contribution	<u>0.35%</u>	<u>0.35%</u>	
Total Contribution	13.93%	14.59%	

¹ 17 and 16 participants on Leave of Absence as of June 30, 2019 and June 30, 2020, respectively, are entitled to a vested 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, 2019	June 30, 2020	% Change
<u>Participant Counts</u>			
Actives	1,140	1,128	(1.1%)
Leave of Absence ¹	12	8	(33.3%)
Terminated Vested Members	301	315	4.7%
Participants Due Account Balance	86	65	(24.4%)
In Pay Status Participants	1,307	1,333	2.0%
DROP Participants	47	43	(8.5%)
Total	2,893	2,892	(0.0%)
Annual Salaries of Active Members ²	\$ 70,942	\$ 71,415	0.7%
Annual Retirement Allowances ³	41,651	43,362	4.1%
<u>Assets and Liabilities</u>			
Actuarial Liability (AL)	\$ 660,217	\$ 676,108	2.4%
Assets for Valuation Purposes (AVA)	491,215	497,791	1.3%
Unfunded Actuarial Liability [AL - AVA]	\$ 169,002	\$ 178,317	
Funding Ratio (AVA ÷ AL)	74.40%	73.63%	
Funding Ratio (MVA ÷ AL)	73.51%	69.88%	
Present Value of Accrued Benefits	\$ 601,978	\$ 617,486	2.6%
Market Value of Assets (MVA)	485,305	472,470	(2.6%)
Unfunded Accrued Benefit Liability	\$ 116,673	\$ 145,016	
Accrued Benefit Funding Ratio	80.62%	76.52%	
<u>City Contributions as a % of Payroll</u>			
	Fiscal Year 2021	Fiscal Year 2022	
Normal Cost Contribution	13.68%	13.67%	
Unfunded Actuarial Liability Contribution	17.72%	19.20%	
Expense Contribution	0.35%	0.35%	
Total Contribution	31.75%	33.22%	

¹ 6 and 4 participants on Leave of Absence as of June 30, 2019 and June 30, 2020, 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, 2020**

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.

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
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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 was true again with this year's valuation results – the System experienced a liability gain of \$6.4 million but an actuarial investment loss of \$28.0 million.

Assumption Change Risk is the potential for the environment to change such that future valuation assumptions are adjusted to be different than the current assumptions. For example, declines in interest rates over time may result in a change in the assumed rates of return used in the valuation. A healthier workforce may result in changes in employee behavior such that retirement rates are adjusted to reflect employees working longer. Assumption change risk is an extension of the risks previously identified, but rather than capturing the risk as it is experienced, it captures the cost of recognizing a change in the environment when the current assumption is no longer reasonable. The historical review section illustrates that assumption change risk has had a measurable impact in 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.

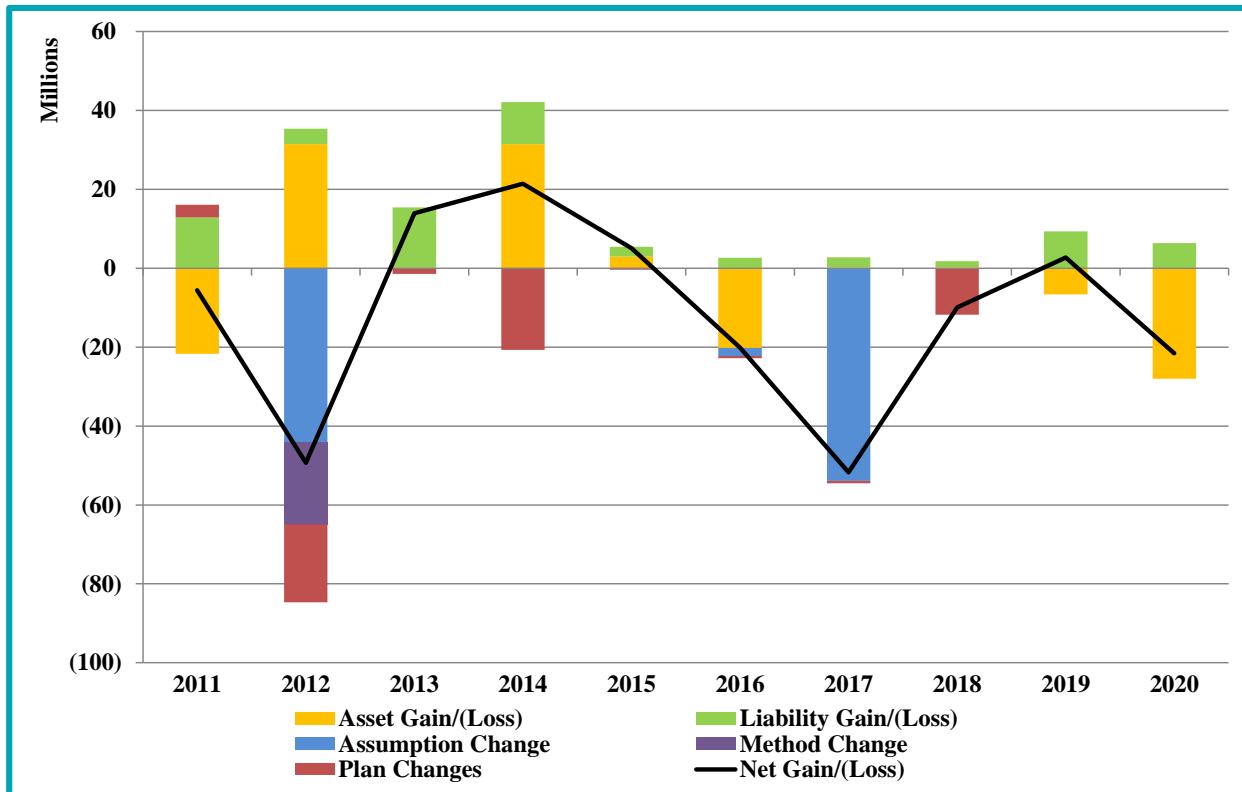
Plan Change Risk is the potential for the provisions of the System to be changed such that the funding or benefits are changed materially. In addition to the actual payments to and from the System being changed, future valuation measurements can also be impacted, with System changes leading to deviations 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.

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
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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.

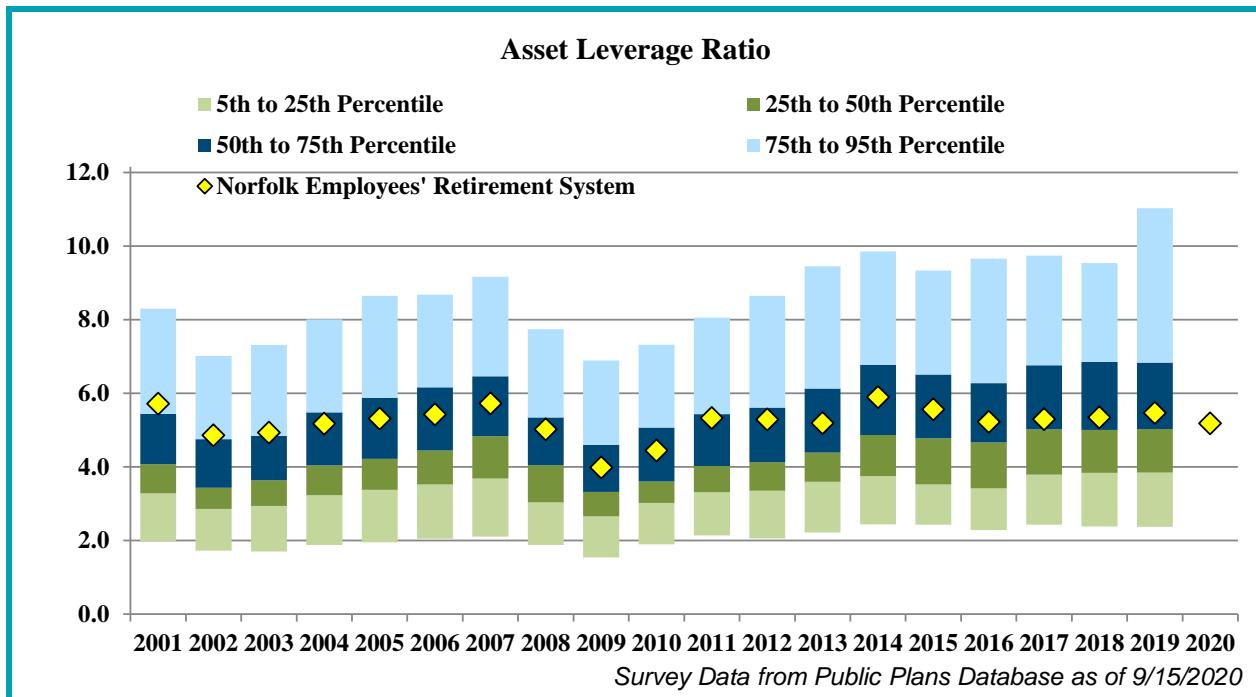
<i>(\$ in millions)</i>	Plan A	Plan B
Plan Assets	\$5,000	\$5,000
Payroll	\$500	\$1,000
Asset Leverage Ratio	10.0	5.0
10% Loss	\$500	\$500
10% Loss as % of Payroll	100%	50%

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 yellow 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.



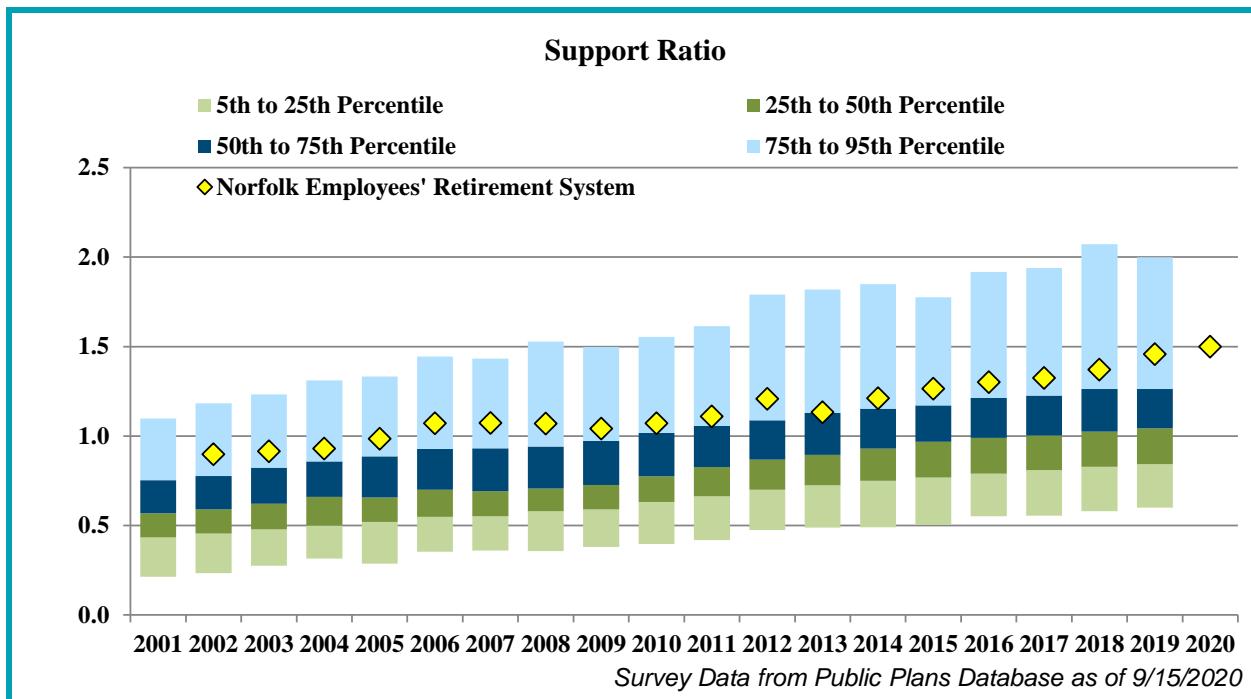
Support Ratios

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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SECTION II – RISK ASSESSMENT AND DISCLOSURE



The yellow 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.

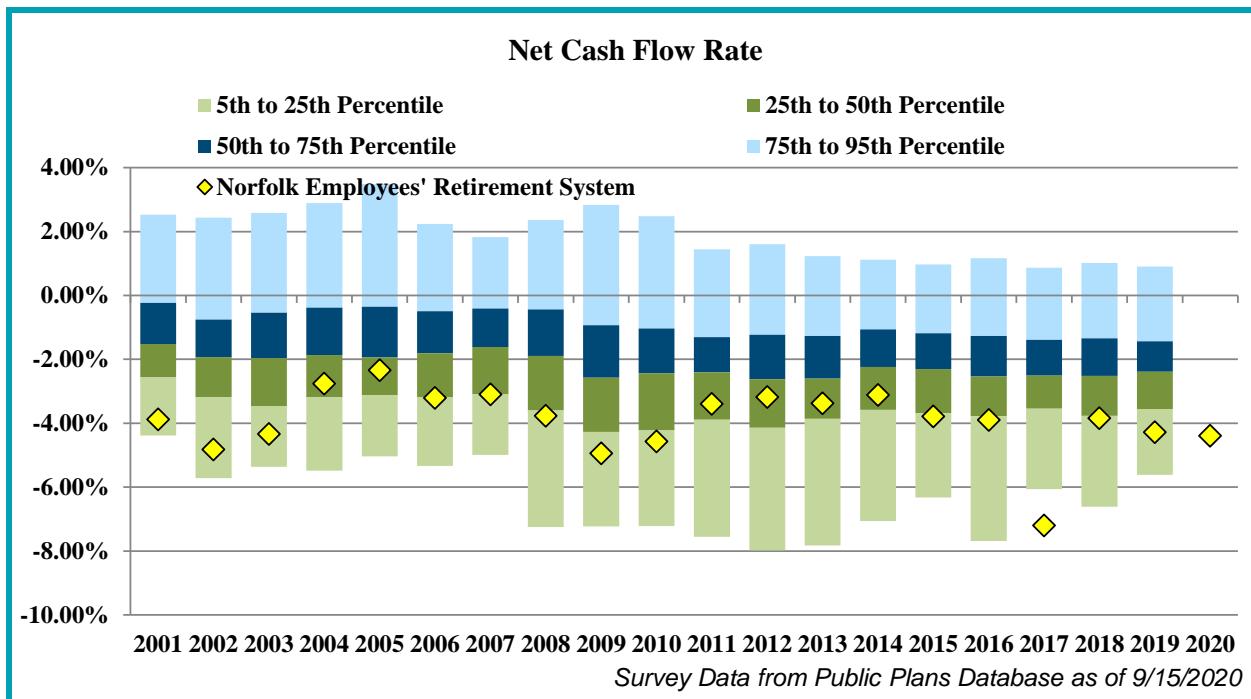
Net Cash Flow Ratio

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 ratio 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 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.

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
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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.

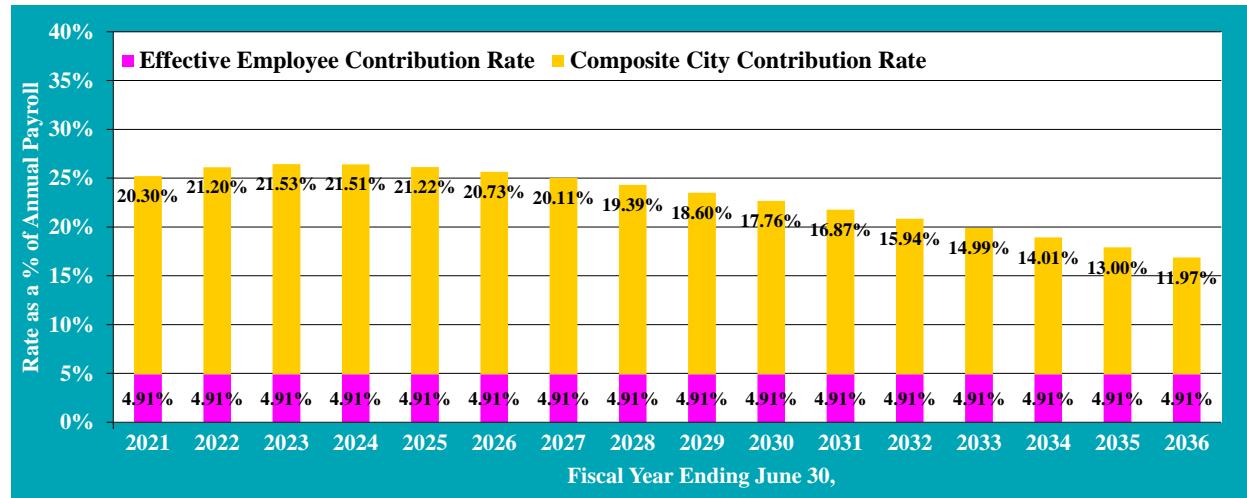
Pages 4 and 5 in the Board Summary have additional detail on the baseline projection. It is important to note that baseline projections, while valid, **are not going to occur** as experience never conforms exactly to assumptions every year. On the following pages, we have included scenarios that illustrate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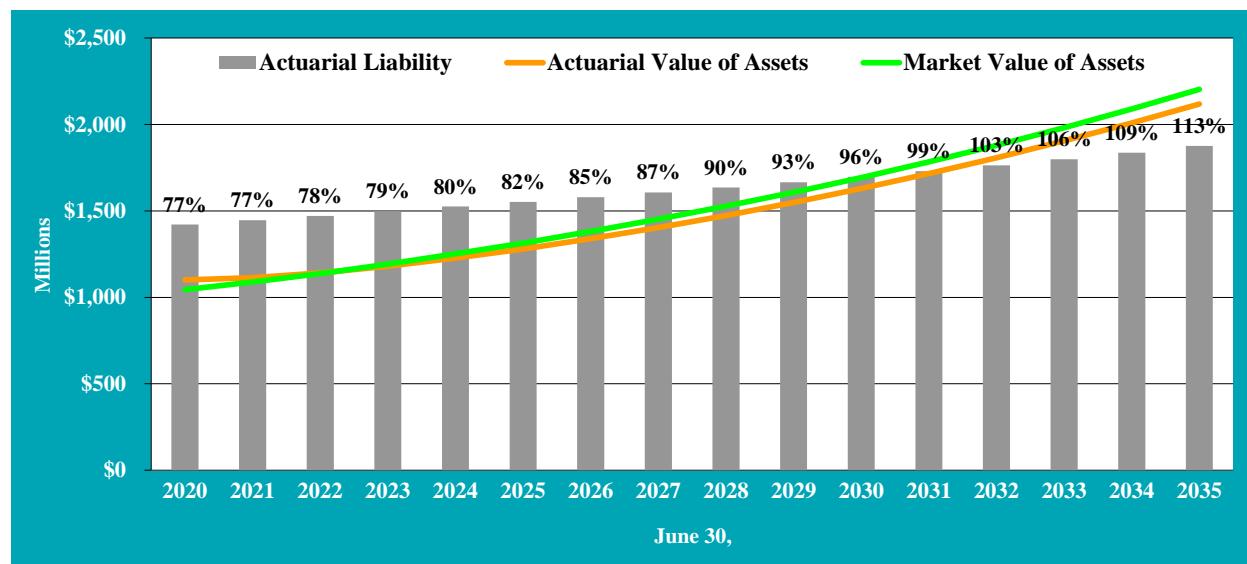
SECTION II – RISK ASSESSMENT AND DISCLOSURE

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 you can see, the City's composite contribution rate would drop from its Fiscal Year 2022 level of 21.20% of payroll down to 11.97% of payroll by the end of the 15-year period.



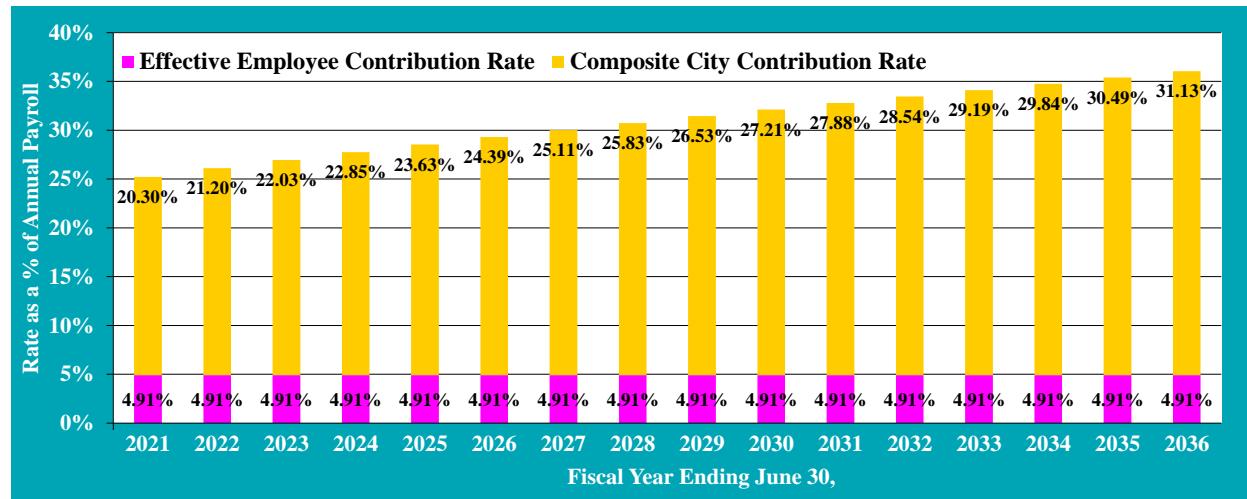
The System would reach a fully funded position by 2032 versus 2045 under the baseline projections. Again, these projections are absent any additional ad hoc COLAs.

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020

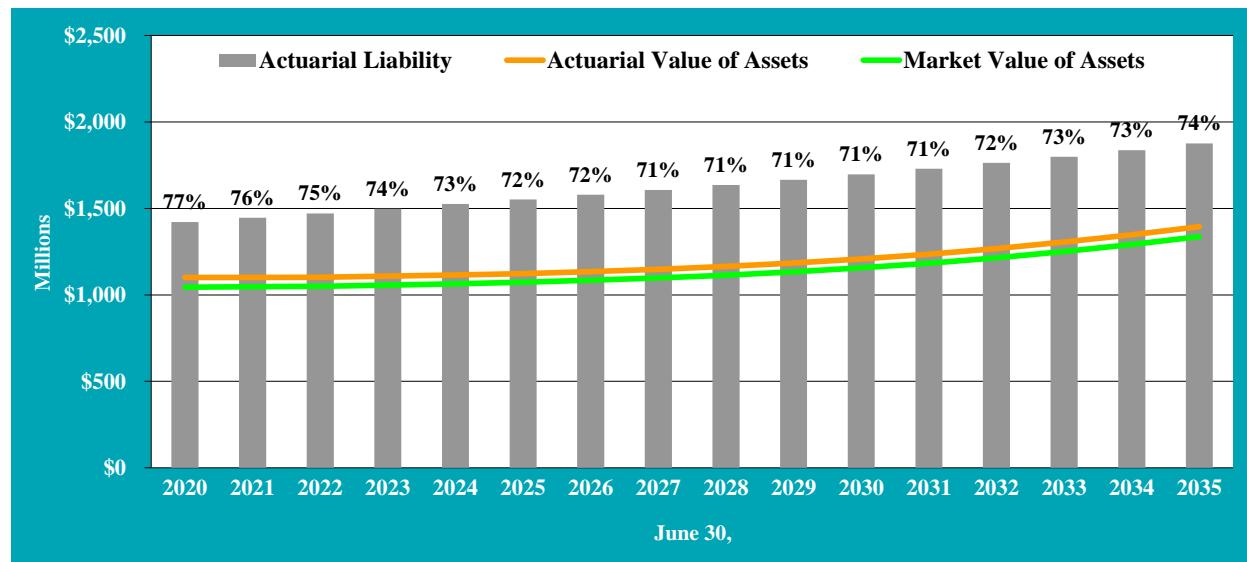
SECTION II – RISK ASSESSMENT AND DISCLOSURE

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 increase steadily from now through the end of the 15-year period.



The System's funded level would ultimately decrease to 74%. This is only a small decrease from the current 77% 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. There would still be little danger of benefit commitments going unmet over this period as the System would have nearly \$1.5 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

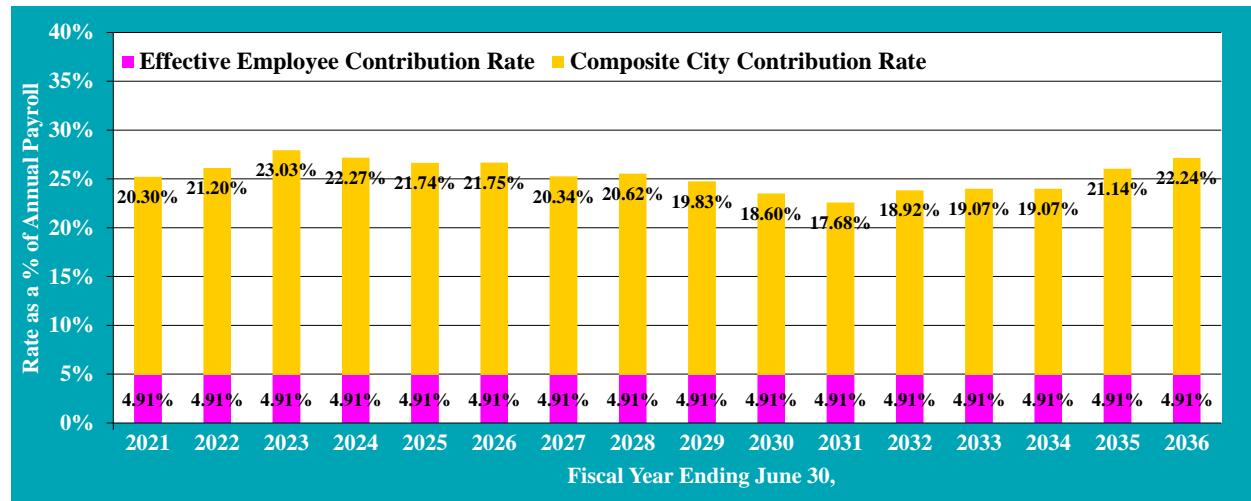
Projections with Volatile Asset Returns

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%

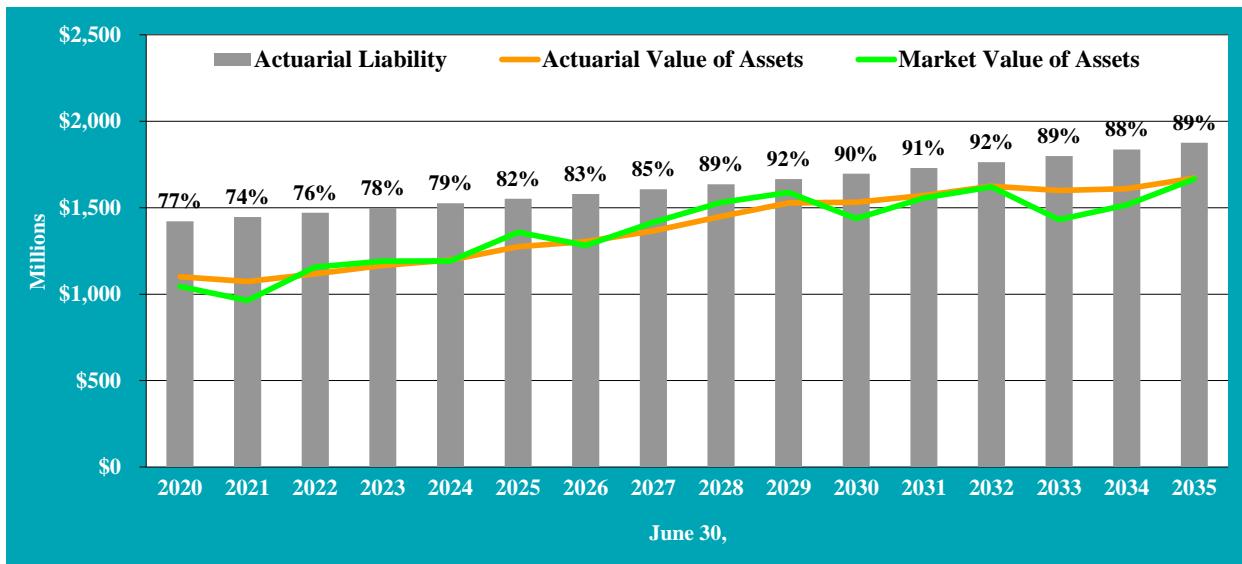
With varying annual earnings, one can see the volatility in the employer contributions in the first chart. Note that this chart reflects an illustrative scenario and is not intended to reflect future expectations as the volatility of the contributions will vary with the volatility of the returns.



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

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



**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, 2019 and June 30, 2020;
- 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. They are 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
ACTUARIAL VALUATION AS OF JUNE 30, 2020

SECTION III – ASSETS

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

	June 30, 2019	June 30, 2020
<u>Assets</u>		
Cash and Short-Term Investments	\$ 16,434	\$ 5,971
Receivables		
Accrued Investment Income	\$ 1,202	\$ 936
Accounts Receivable	378	2
Due from Broker for Securities Sold	<u>72,934</u>	<u>72,635</u>
Total	\$ 74,514	\$ 73,573
Investments, at Fair Value		
United States Treasury Securities	\$ 90,301	\$ 74,138
Fixed Income Securities	116,275	117,708
Derivative Securities	(1,442)	(160)
Equity Securities	65,957	51,945
Balanced Comingled Funds	<u>877,709</u>	<u>857,422</u>
Total	\$ 1,148,800	\$ 1,101,053
Total Assets	\$ 1,239,748	\$ 1,180,597
<u>Liabilities</u>		
Accounts Payable	\$ 2,581	\$ 2,294
Due to Broker for Securities Purchased	<u>152,919</u>	<u>134,213</u>
Total Liabilities	\$ 155,500	\$ 136,507
Net Assets Available for Benefits	\$ 1,084,248	\$ 1,044,090

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020

SECTION III – ASSETS

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

Value of Assets at June 30, 2019	$\\$	1,084,248
<u>Additions</u>		
Contributions		
Employer Contributions	$\$$	38,494
Employee Contributions / Purchased Service		10,209
Total Contributions	$\$$	48,703
Investment Income		
Net Appreciation (Depreciation)	$\$$	(4,762)
Interest		4,311
Dividends		6,455
Other		1,919
Total Investment Income	$\$$	7,923
Investment Expenses		(2,186)
Net Income from Investing Activities	$\$$	5,737
Total Additions	$\$$	54,440
<u>Deductions</u>		
Benefits Paid directly to Participants	$\$$	(87,695)
Return of Contributions		(920)
Beneficiary Payments		(5,383)
Administrative Fees		(600)
Total Deductions	$\$$	(94,598)
<u>Total</u>		
Net Increase/(Decrease)	$\$$	(40,158)
Value of Assets at June 30, 2020	$\\$	1,044,090

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020

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, 2019	\$	1,097,451
Employer Contributions		38,494
Employee Contributions / Purchased Service		10,209
Benefit Payments		(93,998)
Assumed Administrative Expenses		(691)
Expected Return at 7.0%		<u>76,559</u>
2. Expected Value at June 30, 2020 (EV)	\$	1,128,024
3. Actual Market Value at June 30, 2020 (AV)	\$	1,044,090
4. One-Third of AV less EV	\$	(27,978)
5. Actuarial Value of Assets at June 30, 2020 [2. + 4.]	\$	1,100,046

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020

SECTION III – ASSETS

Table III-4
Allocation of Actuarial Value of Assets as of June 30, 2020
(\$ in Thousands)

	General Employees	Firefighters and Police	Total
1. Actuarial Value of Assets at June 30, 2019	\$ 606,236	\$ 491,215	\$ 1,097,451
2. Contributions			
Employer Contributions	\$ 16,808	\$ 21,686	\$ 38,494
Employee Contributions / Purchased Service	<u>5,945</u>	<u>4,264</u>	<u>10,209</u>
Total Contributions	\$ 22,753	\$ 25,950	\$ 48,703
3. Benefit Payments ¹	\$ (53,098)	\$ (40,900)	\$ (93,998)
4. Assumed Administrative Expenses	\$ (443)	\$ (248)	\$ (691)
5. Investment Earnings, based on 4.69% return	\$ 26,807	\$ 21,774	\$ 48,581
6. Actuarial Value of Assets at June 30, 2020	\$ 602,255	\$ 497,791	\$ 1,100,046
7. Market Value of Assets at June 30, 2020 ²	\$ 571,620	\$ 472,470	\$ 1,044,090

¹ Projected Benefit Payments are allocated on the basis of FY 2020 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
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

SECTION III – ASSETS

Investment Performance

The market value of assets (MVA) returned 0.53% during the fiscal year ending June 30, 2020, which is less than the expected 7.00% return (assumption in prior year's valuation) by 6.47%.

A return of 4.69% 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%

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020

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*
2021	\$ 99,941	\$ 40,698	\$ 9,894
2022	101,862	43,018	10,192
2023	102,743	45,521	10,498
2024	104,948	47,769	10,813
2025	108,444	49,756	11,137
2026	109,567	51,614	11,471
2027	112,714	53,374	11,815
2028	114,133	55,097	12,170
2029	115,707	56,775	12,535
2030	117,186	58,478	12,911

* 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, 2020. Projecting any further than ten years using a closed group would not yield reliable predictions due to the omission of new hires. 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 contribution policy adopted by the Board at the July 12, 2017 meeting. That policy includes contributions equal to the employer portion of the Entry Age normal cost for members as of the valuation date (projected based on a current employer normal cost rate of 8.60% with a continued gradual decrease for the plan changes applicable to new hires after June 30, 2018) plus an amortization of the unfunded actuarial liability (UAL) and a load for administrative expenses. The UAL is based on an actuarial value of assets that smooths investment gains and losses over three years and a measurement of the actuarial liability. 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) and expected administrative expenses. The resulting projected UAL is then amortized over a 20-year period and turned into a rate by using the anticipated payroll for the plan year commencing one year after the valuation date. The initial UAL, set up concurrent with the June 30, 2017 valuation, is being amortized over a closed 20-year period. Future annual changes to the UAL due to plan changes, assumption changes, gains and losses, including those that arose as a result of this valuation, will be amortized over their own closed 20-year period. All rates are developed using a level-percent of pay amortization method with a 3% per year increase. The FY 2022 contribution to be paid July 1, 2021 should be based on the 2020 valuation rate of 21.20%.

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

SECTION IV – LIABILITIES

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

- **Disclosure** of System liabilities at June 30, 2019 and June 30, 2020; 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 Plan 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, 2020

SECTION IV – LIABILITIES

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

	June 30, 2019	June 30, 2020
Present Value of Future Benefits		
Active Participant Benefits	\$ 657,876	\$ 660,093
Retiree Benefits	889,742	911,307
DROP Participants	26,583	26,249
Terminated Vested and Inactive Members	<u>63,396</u>	<u>64,383</u>
Present Value of Future Benefits (PVFB)	\$ 1,637,597	\$ 1,662,032
Market Value of Assets (MVA)	\$ 1,084,248	\$ 1,044,090
Future Member Contributions	85,172	86,537
Future City Contributions	<u>468,177</u>	<u>531,405</u>
Total Resources	\$ 1,637,597	\$ 1,662,032
Employer Normal Cost ¹	\$ 17,244	\$ 17,316
Actuarial Liability		
Active Participant Benefits	\$ 418,267	\$ 419,089
Retiree Benefits	889,742	911,307
DROP Participants	26,583	26,249
Terminated Vested and Inactive Members	<u>63,396</u>	<u>64,383</u>
Actuarial Liability (AL)	\$ 1,397,988	\$ 1,421,028
Actuarial Value of Assets (AVA)	1,097,451	1,100,046
Net (Surplus)/Unfunded (AL – AVA)	\$ 300,537	\$ 320,982
Present Value of Accrued Benefits		
Present Value of Accrued Benefits (PVAB)	\$ 1,285,635	\$ 1,308,234
Market Value of Assets (MVA)	<u>1,084,248</u>	<u>1,044,090</u>
Net (Surplus)/Unfunded (PVAB – MVA)	\$ 201,387	\$ 264,144

¹ Net of employee contributions

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020

SECTION IV – LIABILITIES

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

	June 30, 2019	June 30, 2020
Present Value of Future Benefits		
Active Participant Benefits	\$ 319,925	\$ 318,576
Retiree Benefits	475,444	485,678
Terminated Vested and Inactive Members	<u>45,045</u>	<u>45,057</u>
Present Value of Future Benefits (PVFB)	\$ 840,414	\$ 849,311
 Employer Normal Cost ¹	 \$ 7,539	 \$ 7,554
 Actuarial Liability		
Active Participant Benefits	\$ 217,283	\$ 214,185
Retiree Benefits	475,444	485,678
Terminated Vested and Inactive Members	<u>45,045</u>	<u>45,057</u>
Actuarial Liability (AL)	\$ 737,772	\$ 744,920
Actuarial Value of Assets (AVA)	606,236	602,255
Net (Surplus)/Unfunded (AL – AVA)	\$ 131,536	\$ 142,665
 Present Value of Accrued Benefits (PVAB)	 \$ 683,657	 \$ 690,748

¹ *Net of employee contributions*

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020

SECTION IV – LIABILITIES

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

	June 30, 2019	June 30, 2020
Present Value of Future Benefits		
Active Participant Benefits	\$ 337,951	\$ 341,517
Retiree Benefits	414,298	425,629
DROP Participants	26,583	26,249
Terminated Vested and Inactive Members	<u>18,351</u>	<u>19,326</u>
Present Value of Future Benefits (PVFB)	\$ 797,183	\$ 812,721
 Employer Normal Cost ¹	 \$ 9,705	 9,762
 Actuarial Liability		
Active Participant Benefits	\$ 200,984	\$ 204,904
Retiree Benefits	414,298	425,629
DROP Participants	26,583	26,249
Terminated Vested and Inactive Members	<u>18,351</u>	<u>19,326</u>
Actuarial Liability (AL)	\$ 660,216	\$ 676,108
Actuarial Value of Assets (AVA)	491,215	497,791
Net (Surplus)/Unfunded (AL – AVA)	\$ 169,001	\$ 178,317
 Present Value of Accrued Benefits (PVAB)	 \$ 601,978	 \$ 617,486

¹ *Net of employee contributions*

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020

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, 2019	\$ 1,637,597	\$ 1,397,988	\$ 1,285,635
Liabilities as of June 30, 2020	\$ 1,662,032	\$ 1,421,028	\$ 1,308,234
Liability Increase/(Decrease)	\$ 24,435	\$ 23,040	\$ 22,599
Change Due to:			
Plan Amendments	\$ 0	\$ 0	\$ 0
Assumption and Method Change	0	0	0
Actuarial (Gain)/Loss	NC	(6,398)	NC
Benefits Accumulated and Other Sources	24,435	29,438	22,599

NC = not calculated

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

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 a funding scheme that will result in a pattern of contributions that are both stable and predictable.

For this System, the funding scheme 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 Plan, 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 by using the anticipated payroll for the plan year commencing one year after the valuation date. The initial UAL established concurrent with the June 30, 2017 valuation is being amortized over a closed 20-year period. Future annual changes to the UAL due to plan changes, assumption changes, gains and losses, including those established as a result of this valuation, will be amortized over their own closed 20-year period. All rates are developed using a level-percent of pay amortization method with a 3% per year increase. 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, 2020**

SECTION V – CONTRIBUTIONS

Actuarially Determined Rate

The employer's normal cost rate is 5.81% for General Employees and 13.67% for Firefighters and Police for the fiscal year beginning July 1, 2020. The composite rate is shown in the table below.

The UAL rate is the level percent of member payroll which, when applied to each year's payroll, 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, 2019	June 30, 2020
Normal Cost Rate	8.69%	8.60%
UAL Rate	11.26%	12.25%
Expense Rate	<u>0.35%</u>	<u>0.35%</u>
Total City Rate	20.30%	21.20%

The net increase in the contribution rate was primarily attributable to unfavorable investment performance during the year.

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020

SECTION V – CONTRIBUTIONS

Table V – 2
Development of UAL Amortization Layer for FY 2022
(\$ in Thousands)

		General	Firefighters & Police	Total
a.	June 30, 2020 Unfunded Actuarial Liability (UAL)	\$ 142,665	\$ 178,317	\$ 320,982
b.	Expected Employer Contribution on July 1, 2020	\$ 17,946	\$ 22,752	\$ 40,698
c.	Employer Normal Cost Payments and Expenses	(8,008)	(10,012)	(18,020)
d.	Interest on b. and c. to June 30, 2021	<u>499</u>	<u>633</u>	<u>1,132</u>
e.	Net Contribution to apply to UAL	\$ 10,437	\$ 13,373	\$ 23,810
f.	Interest on UAL to June 30, 2021	\$ 9,987	\$ 12,482	\$ 22,469
g.	June 30, 2021 Expected Unfunded Actuarial Liability (a. – e. + f.)	\$ 142,215	\$ 177,426	\$ 319,641
h.	Outstanding Balances for Amortization Bases as of June 30, 2021	\$ 129,630	\$ 166,477	\$ 296,107
i.	June 30, 2021 Experience UAL Layer [g. – h.]	\$ 12,585	\$ 10,949	\$ 23,534
j.	FY 2022 Amortization Payment (Layer Amortized Over 20 Years)	\$ 882	\$ 767	\$ 1,649

Since contributions are payable a year after they are developed, the UAL is amortized over 20 years on July 1, 2021.

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020

SECTION V – CONTRIBUTIONS

Type of Base	Table V-3						Remaining Amortization Years	FY 2022 Amortization Payment
	Date Established	Initial Amount	FY 2021 Amortization Payment	June 30, 2021 Outstanding Balance	June 30, 2020	FY 2021		
GENERAL EMPLOYEES								
1. 2017 Initial Unfunded Base	7/1/2017	\$ 128,302	\$ 9,664	\$ 126,943			17	\$ 9,954
2. 2018 Plan Change	7/1/2018	6,965	505	6,912			18	521
3. 2018 Experience Base	7/1/2018	(5,162)	(375)	(5,123)			18	(386)
4. 2019 Experience Base	7/1/2019	902	63	898			19	65
5. 2020 Experience Base	7/1/2020	11,658	N/A	12,585			20	882
General Employees Total		\$ 142,665	\$ 9,857	\$ 142,215				\$ 11,036
FIREFIGHTERS AND POLICE								
1. 2017 Initial Unfunded Base	7/1/2017	\$ 162,394	\$ 12,232	\$ 160,675			17	\$ 12,599
2. 2018 Plan Change	7/1/2018	5,553	403	5,510			18	415
3. 2018 Experience Base	7/1/2018	3,171	230	3,147			18	237
4. 2019 Experience Base	7/1/2019	(2,868)	(201)	(2,855)			19	(207)
5. 2020 Experience Base	7/1/2020	10,067	N/A	10,949			20	767
Firefighters and Police Total		\$ 178,317	\$ 12,664	\$ 177,426				\$ 13,811
Combined Total				\$ 319,641				\$ 24,847

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020

SECTION V – CONTRIBUTIONS

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

	June 30, 2019 (expensed FY 2020)	June 30, 2020 (expensed FY 2021)
	(paid FY 2021)	(paid FY 2022)
1. Actuarial Liability		
a. Active Employees	\$ 418,267	\$ 419,089
b. Retired Members	889,742	911,307
c. DROP Participants	26,583	26,249
d. Vested Terminated Members	<u>63,396</u>	<u>64,383</u>
e. Total Actuarial Liability	\$ 1,397,988	\$ 1,421,028
2. Actuarial Value of Assets	\$ 1,097,451	\$ 1,100,046
3. Unfunded Actuarial Liability (UAL) [1. - 2.]	\$ 300,537	\$ 320,982
4. UAL Amortization Payments	\$ 22,522	\$ 24,847
5. Active Member Payroll for UAL Amortization	\$ 199,983	\$ 202,914
6. Employer Contribution Results		
a. Employer Normal Cost Rate	8.69%	8.60%
b. Amortization of UAL [4. ÷ 5.]	11.26%	12.25%
c. Administrative Expenses	<u>0.35%</u>	<u>0.35%</u>
d. Total Employer Contribution Rate	20.30%	21.20%

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020

SECTION V – CONTRIBUTIONS

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

		June 30, 2019 (expensed FY 2020)	June 30, 2020 (expensed FY 2021)
		(paid FY 2021)	(paid FY 2022)
1. Actuarial Liability			
a. Active Employees	\$	217,283	\$ 214,185
b. Retired Members		475,444	485,678
c. Vested Terminated Members		<u>45,045</u>	<u>45,057</u>
d. Total Actuarial Liability	\$	737,772	\$ 744,920
2. Actuarial Value of Assets	\$	606,236	\$ 602,255
3. Unfunded Actuarial Liability (UAL) [1. - 2.]	\$	131,536	\$ 142,665
4. UAL Amortization Payments	\$	9,858	\$ 11,036
5. Active Member Payroll for UAL Amortization	\$	128,515	\$ 130,969
6. Employer Contribution Results			
a. Employer Normal Cost Rate		5.91%	5.81%
b. Amortization of UAL [4. ÷ 5.]		7.67%	8.43%
c. Administrative Expenses		<u>0.35%</u>	<u>0.35%</u>
d. Total Employer Contribution Rate		13.93%	14.59%

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020

SECTION V – CONTRIBUTIONS

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

	June 30, 2019 (expensed FY 2020)	June 30, 2020 (expensed FY 2021)
	(paid FY 2021)	(paid FY 2022)
1. Actuarial Liability		
a. Active Employees	\$ 200,984	\$ 204,904
b. Retired Members	414,298	425,629
c. DROP Participants	26,583	26,249
d. Vested Terminated Members	<u>18,351</u>	<u>19,326</u>
e. Total Actuarial Liability	\$ 660,216	\$ 676,108
2. Actuarial Value of Assets	\$ 491,215	\$ 497,791
3. Unfunded Actuarial Liability (UAL) [1. - 2.]	\$ 169,001	\$ 178,317
4. UAL Amortization Payments	\$ 12,664	\$ 13,811
5. Active Member Payroll for UAL Amortization	\$ 71,468	\$ 71,945
6. Employer Contribution Results		
a. Employer Normal Cost Rate	13.68%	13.67%
b. Amortization of UAL [4. ÷ 5.]	17.72%	19.20%
c. Administrative Expenses	<u>0.35%</u>	<u>0.35%</u>
d. Total Employer Contribution Rate	31.75%	33.22%

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

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 Plan’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 Plan 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, 2019 and June 30, 2020. Table VI-2 then reconciles the FASB ASC Topic No. 960 liabilities determined as of the prior valuation, June 30, 2019, to the liabilities as of June 30, 2020.

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 CAFR.

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020

SECTION VI – FINANCIAL STATEMENT INFORMATION

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

	June 30, 2019	June 30, 2020
FASB ASC Topic No. 960		
1. Present Value of Benefits Accrued and Vested to Date		
a. Members Currently Receiving Payments	\$ 889,742	\$ 911,307
b. Vested Terminated Members	89,979	90,632
c. Active Members	<u>295,546</u>	<u>295,423</u>
d. Total PVVB	\$ 1,275,267	\$ 1,297,362
2. Present Value of Non-Vested Accrued Benefits for Active Members	<u>10,368</u>	<u>10,872</u>
3. Total Present Value of Accrued Benefits	\$ 1,285,635	\$ 1,308,234
4. Assets at Market Value	\$ 1,084,248	\$ 1,044,090
5. Unfunded Present Value of Accrued Benefits [3. - 4., not less than 0]	\$ 201,387	\$ 264,144
6. Ratio of Assets to Value of Benefits [4. ÷ 3.]	84.3%	79.8%

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020

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, 2019	\$	1,285,635
Increase/(Decrease) During Years Attributable to:		
Passage of Time	\$	86,705
Benefits Paid during FY 2019-2020	\$	(93,998)
Change in Assumptions	\$	0
Plan Changes	\$	0
Benefits Accrued, Other Gains/Losses	<u>\$</u>	<u>29,892</u>
Net Increase/(Decrease)	\$	22,599
Actuarial Present Value of Accrued Benefits as of June 30, 2020	\$	1,308,234

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020

SECTION VI – FINANCIAL STATEMENT INFORMATION

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

Valuation Date	Active Member Contributions	Retirees, Vested Terms, Beneficiaries	Active Members (Employer Financed Portion)	Reported Assets¹	Portion of Accrued Liabilities		
					Covered by Reported Assets (1)	(2)	(3)
July 1 2002	N/A	\$ 372,748	\$ 411,905	\$ 798,071	100%	100%	100%
2003	N/A	397,311	415,926	760,503	100%	100%	87%
2004	\$ 215	421,471	423,984	816,120	100%	100%	93%
2005	198	469,436	414,296	854,146	100%	100%	93%
2006	84	566,233	372,780	881,036	100%	100%	84%
2007	83	585,584	386,564	925,821	100%	100%	88%
2008	79	605,567	403,409	937,767	100%	100%	82%
2009	72	617,813	411,732	885,609	100%	100%	65%
2010	55	637,489	409,218	817,698	100%	100%	44%
2011	197	658,832	404,945	831,975	100%	100%	43%
2012	770	768,508	375,129	923,199	100%	100%	41%
2013	1,780	782,860	375,074	954,499	100%	100%	45%
2014	3,451	816,288	377,728	1,011,523	100%	100%	51%
2015	8,425	850,742	365,456	1,038,059	100%	100%	49%
2016	15,493	877,143	361,774	1,048,346	100%	100%	43%
2017	21,937	921,087	392,802	1,043,620	100%	100%	26%
2018	29,427	950,489	397,973	1,074,892	100%	100%	24%
2019	34,844	979,721	383,423	1,097,451	100%	100%	22%
2020	40,701	1,001,938	378,389	1,100,046	100%	100%	15%

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, 2020

APPENDIX A – MEMBERSHIP INFORMATION

Table A-1
Summary of Active Membership as of June 30, 2020 ¹

Plan	Count	Average Age	Average Service	Average Salary
General	2,591	47.1	9.5	\$ 50,176
Firefighters and Police	<u>1,128</u>	39.8	11.9	63,312
Total System	3,719	44.9	10.2	54,160

¹ Excludes those on Leave of Absence

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020

APPENDIX A – MEMBERSHIP INFORMATION

Table A-2
Summary of Inactive Membership as of June 30, 2020
(\$ in Thousands)

	Count	Annual Benefit		Average Annual Benefit
Service Retirements				
General	2,344	\$ 45,553	\$	19.4
Firefighters and Police	986	35,488		36.0
Total	3,330	\$ 81,041		24.3
DROP Participants¹				
General	0	\$ 0	\$	0
Firefighters and Police	43	1,457		33.9
Total	43	\$ 1,457		33.9
Contingent Annuitants				
General	352	\$ 3,244	\$	9.2
Firefighters and Police	212	2,840		13.4
Total	564	\$ 6,084		10.8
Disableds				
General	183	\$ 2,699	\$	14.7
Firefighters and Police	135	3,577		26.5
Total	318	\$ 6,276		19.7
Vested Former Members²				
General	1,065	\$ 6,310	\$	5.9
Firefighters and Police	319	4,421		13.9
Total	1,384	\$ 10,731		7.8

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 20 participants on leave of absence that are currently vested.

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020

APPENDIX A – MEMBERSHIP INFORMATION

Table A-3
Data Reconciliation¹

	Vested							
	Actives	Former Members²	Service Retirements	DROP Participants	Contingent Annuitants	Disableds	Total	
Count as of June 30, 2019	3,739	1,356	3,240	47	557	322	9,261	
New Entrants	435	2	3	0	11	0	451	
Terminations/Retirements								
- Vested	(230)	102	118	10	0	0	0	
- Non-Vested	(226)	0	0	0	0	0	(226)	
Disablements	(4)	(4)	0	(1)	0	9	0	
Vested								
- that Retired	0	(52)	52	0	0	0	0	
- that Returned to Work	11	(11)	0	0	0	0	0	
DROP Retirements	0	0	12	(12)	0	0	0	
Benefits Expired	0	0	0	0	(3)	0	(3)	
Deaths								
- With a Beneficiary	(1)	0	(24)	(1)	32	(6)	0	
- Without a Beneficiary	(5)	(9)	(71)	0	(33)	(7)	(125)	
Count as of June 30, 2020	3,719	1,384	3,330	43	564	318	9,358	

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

² 23 and 20 participants on Leave of Absence as of June 30, 2019 and June 30, 2020, 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, 2020

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	32	27	0	0	0	0	0	0	0	0	59
25 to 29	70	102	12	0	0	0	0	0	0	0	184
30 to 34	63	147	62	18	1	0	0	0	0	0	291
35 to 39	50	110	92	42	10	0	0	0	0	0	304
40 to 44	40	109	70	43	26	11	0	0	0	0	299
45 to 49	38	89	55	32	58	25	7	0	0	0	304
50 to 54	24	77	80	35	50	37	25	8	1	0	337
55 to 59	20	61	64	60	50	42	28	32	8	0	365
60 to 64	9	39	49	37	52	40	16	24	18	11	295
65 to 69	1	10	22	20	11	10	5	17	4	11	111
70 & up	3	3	8	4	5	7	1	3	5	3	42
Total	350	774	514	291	263	172	82	84	36	25	2,591

TOTAL SALARY BY AGE/SERVICE

Age	Service										Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	1,062	965	0	0	0	0	0	0	0	0	2,027
25 to 29	2,625	3,861	514	0	0	0	0	0	0	0	6,999
30 to 34	2,605	6,046	2,864	777	41	0	0	0	0	0	12,333
35 to 39	2,246	5,162	4,474	2,112	471	0	0	0	0	0	14,465
40 to 44	1,793	4,980	3,802	2,269	1,292	549	0	0	0	0	14,686
45 to 49	1,911	4,067	3,283	1,656	3,571	1,490	374	0	0	0	16,353
50 to 54	1,068	3,806	3,976	2,012	2,443	2,214	1,539	507	87	0	17,652
55 to 59	955	2,900	3,492	3,141	2,578	2,380	1,703	1,886	443	0	19,478
60 to 64	432	2,010	3,235	1,856	2,818	2,233	986	1,373	1,294	662	16,900
65 to 69	41	716	1,425	1,113	550	508	369	1,080	392	693	6,887
70 & up	186	127	319	173	259	376	87	178	310	210	2,224
Total	14,926	34,639	27,383	15,109	14,023	9,751	5,058	5,024	2,526	1,565	130,005

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020

APPENDIX A – MEMBERSHIP INFORMATION

Table A-4
Distribution of Active Participants (including DROP) - Firefighters & Police
(\$ in Thousands)

Age	Service										Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	28	40	0	0	0	0	0	0	0	0	68
25 to 29	23	102	48	0	0	0	0	0	0	0	173
30 to 34	13	47	82	34	2	0	0	0	0	0	178
35 to 39	4	15	42	76	41	0	0	0	0	0	178
40 to 44	1	11	16	38	67	16	1	0	0	0	150
45 to 49	0	3	8	33	46	63	15	0	0	0	168
50 to 54	0	4	7	21	31	57	22	8	0	0	150
55 to 59	0	0	0	2	11	21	17	16	8	1	76
60 to 64	1	0	0	1	2	6	5	6	4	4	29
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	70	222	203	205	200	163	61	30	12	5	1,171

Age	Service										Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	1,185	1,791	0	0	0	0	0	0	0	0	2,976
25 to 29	966	4,784	2,549	0	0	0	0	0	0	0	8,299
30 to 34	539	2,208	4,496	2,021	136	0	0	0	0	0	9,400
35 to 39	166	699	2,308	4,763	2,742	0	0	0	0	0	10,678
40 to 44	40	519	857	2,304	4,626	1,221	78	0	0	0	9,646
45 to 49	0	131	406	1,931	3,152	4,652	1,196	0	0	0	11,468
50 to 54	0	185	370	1,209	2,052	4,226	1,718	752	0	0	10,513
55 to 59	0	0	0	120	736	1,463	1,360	1,586	773	79	6,116
60 to 64	49	0	0	60	139	429	345	536	347	388	2,293
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	2,945	10,316	10,987	12,407	13,584	11,992	4,723	2,875	1,120	467	71,415

* Tables above include 43 participants in DROP

THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
ACTUARIAL VALUATION AS OF JUNE 30, 2020

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, 2020**

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
ACTUARIAL VALUATION AS OF JUNE 30, 2020

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
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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
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APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Marital Status

65% of the General Employees and 75% of the Firefighters and Police are assumed to be married, with males three years older than females.

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, 2020**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

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. Future 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 by using the anticipated payroll for the plan year commencing one year after the valuation date. All rates are developed using a level-percent of pay amortization method with a 3% per annum increase in the payments.

City contributions 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.

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.

Changes in Actuarial Methods

None

**THE EMPLOYEES' RETIREMENT SYSTEM FOR THE CITY OF NORFOLK
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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 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
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

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, 2020**

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
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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
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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
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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
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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

None.