

## **Fairfax County Employees' Retirement System**

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

**Produced by Cheiron**

**October 2020**

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October 13, 2020

Board of Trustees  
Fairfax County Employees' Retirement System  
12015 Lee Jackson Memorial Highway, Suite 350  
Fairfax, Virginia 22033

**Re: *Fairfax County Employees' Retirement System  
Actuarial Valuation as of June 30, 2020***

Dear Members of the Board:

At your request, we have conducted our annual actuarial valuation of the Fairfax County Employees' Retirement System as of June 30, 2020. The results of the valuation are contained in this report. The purpose of this report is to present the annual actuarial valuation of the Fairfax County Employees' Retirement System. This report is for the use of the Fairfax County Employees' Retirement System Board of Trustees and its auditors in preparing financial reports in accordance with applicable law and accounting requirements.

Your attention is called to the Foreword in which we refer to the general approach employed in the preparation of this report. We also comment on the sources and reliability of both the data and the actuarial assumptions on which our findings are based. Those comments are the basis for our certification that this report is complete to the best of our knowledge and belief. The results of this report are only applicable to the employer contribution for Fiscal Year 2022 and rely on future plan experience conforming to the underlying assumptions. To the extent that actual plan experience deviates from the underlying assumptions, the results would vary accordingly.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the assumptions, changes in assumptions, and changes in plan provisions or applicable law.

In preparing our report, we relied on information (some oral and some written) supplied by the Retirement System. This information includes, but is not limited to, 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 Standards of Practice No. 23.

This report was prepared exclusively for the Fairfax County Employees' Retirement System for the purpose described herein. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to any other user.

Board of Trustees  
Fairfax County Employees' Retirement System  
October 13, 2020

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 opinions 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.

Sincerely,  
Cheiron



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



Coralie A. Taylor, FSA, MAAA, EA  
Consulting Actuary

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**FOREWORD**

Cheiron has performed the actuarial valuation of the Fairfax County Employees' Retirement System 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 County for Fiscal Year 2022, and
- 4) Provide specific information** and documentation required for the System's financial reporting.

An actuarial valuation establishes and analyzes system 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 disclosing important trends experienced by the System in recent years.

**Section II** presents risk factors to consider in the future outlook of the Plan.

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

**Section IV** shows similar information on the System's liabilities, measured for actuarial, accounting, and governmental reporting purposes.

**Section V** develops the County contribution rate, determined using actuarial techniques.

**Section VI** includes the required items to be included in the System's Comprehensive Annual Financial Report (CAFR).

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

In preparing our report, we relied on information (some oral and some written) supplied by the System's staff. This information includes, but is not limited to, 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 Standards of Practice No. 23.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**FOREWORD**

The actuarial assumptions reflect our understanding of the likely future experience of the System, and the assumptions taken individually represent our best estimate for the future experience of the System. The results of this report are dependent upon future experience conforming to these assumptions. To the extent that future experience deviates from the actuarial assumptions, the true cost of the System could vary from our results.

Finally, in preparing this report, we have conformed to generally 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.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION I - BOARD SUMMARY**

**General Comments**

The employer's annual contribution to this System is determined by using an amortization layer method. Under this funding approach, the employer's contribution rate consists of the normal cost rate plus expense rate plus layered amortization UAL bases. The UAL rates are summarized in Section V. The normal cost rate and actuarial accrued liability will be measured using the entry age funding method. The UAL is amortized over a series of fixed 15-year periods as a level percentage of payroll. Future gains and losses and changes in actuarial assumptions will be amortized in layers over separate 15-year periods.

The employer contribution rate for Fiscal Year (FY) 2022, as calculated under this method, increased from 28.35% for FY 2021 to 28.88% of payroll.

This valuation contains information reported in the June 30, 2020 Comprehensive Annual Financial Report (CAFR) of the System. Additional information regarding GASB Statement No. 67 can be found in a separate report.

**Trends**

The System underperformed the investment assumption during the fiscal year ending in 2020, causing an actuarial loss on the asset side of the System. The actual return on a market value basis was 2.74%. On an actuarial value basis, the assets returned 4.78% compared with an assumed rate of return of 7.25%. The actuarial loss recognized for funding purposes was \$103.6 million.

The measurement of liabilities produced a gain this year in the amount of \$5 million. This gain was due to experience compared to our assumptions about salary increases, retirement behavior, COLA, and death, etc. Specific components of the gain include:

- The average salary increase was 5.1% for active County participants who were in both the June 30, 2019 and June 30, 2020 valuations. This was more than expected based on the actuarial assumption, creating a liability loss of \$7 million.
- The valuation assumed a 2.50% cost-of-living adjustment in 2019 for benefits in pay status. The actual CPI-based COLA was 0.40% last year, creating a liability gain of \$56 million.
- An annual component of liability loss is the delayed recognition of new hires throughout the year. This does not contribute to an increase in the System's unfunded liability because both the member and employer contribute from the date of hire. However, when we look only at the liability side, they are a component of the annual liability loss. This accounts for a \$10 million loss this year.
- Finally, there was a \$34 million liability loss component that is made up of various other causes such as members terminating, retiring, dying, or becoming disabled in a way contrary to the assumption, and on retirees and terminated vested members who were not in the 2019 data in that status in last year's valuation.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION I - BOARD SUMMARY**

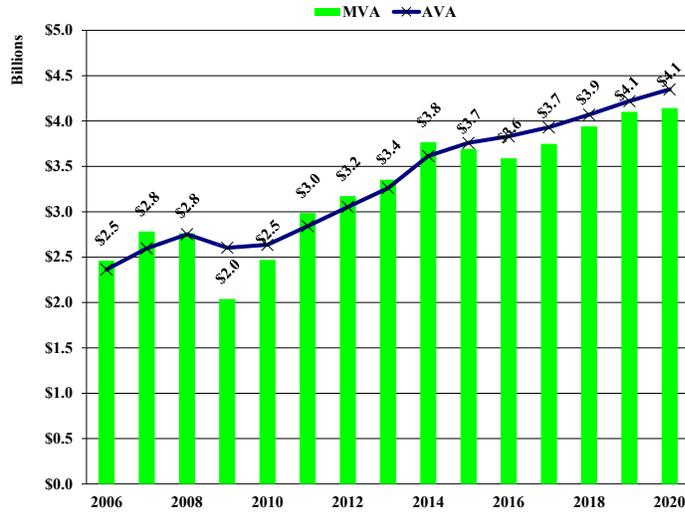
The combination of liability and investment experience, together with County plus member contributions over the last year, led to the System's funding ratio (actuarial value of assets over actuarial accrued liability) increasing from 72.9% at June 30, 2019 to 73.0% at June 30, 2020.

It is important to take a step back from the latest results and view them in the context of the System's recent history. On the next three pages, we present a series of charts that display key factors in the valuations over the last 15 years. After the historical review, we present a few projection graphs, showing the possible condition of the System over the next 15 years under various market return scenarios.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION I - BOARD SUMMARY**

Growth in Assets

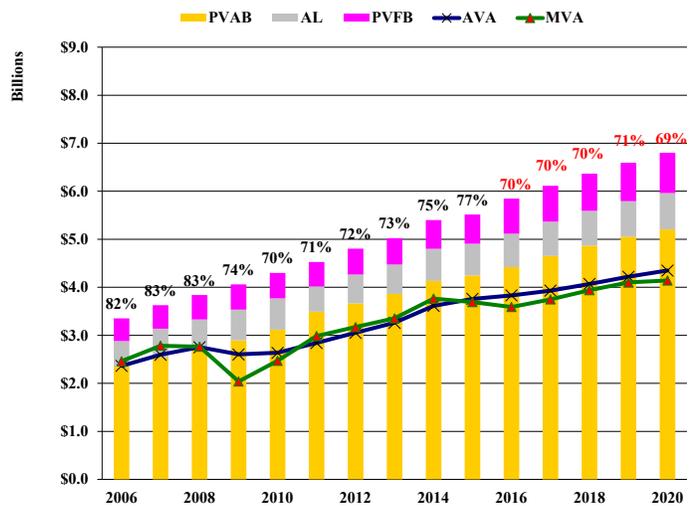


There was an increase in the market value of assets (MVA) (amount in billions shown above bars) over last year due to a return of 2.74%. The actuarial value of assets (AVA) increased due to the continued recognition of past asset gains. The System recognized only a third of the asset loss this year, and there remains \$207 million in unrecognized losses that will be phased in over the next few years.

Over the period July 1, 2006 to June 30, 2020, the System's assets returned approximately 6.05% per year measured at actuarial value, compared to the valuation assumption of 7.25% per year.

Assets and Liabilities

The three colored bars represent the three different measures of liability mentioned in this report. The amount represented by the top of the pink bars, the present value of future benefits (PVFB), is the amount needed to provide all benefits for the current participants and their beneficiaries. For funding purposes, the target amount is represented by the top of the gray bar. Through the 2013 valuation, we compare the actuarial value of assets to this measure of liability in developing the funded percent (black numbers). Starting in 2014, the comparison uses the market value of assets (red numbers). These are the percentages shown in the graph labels.

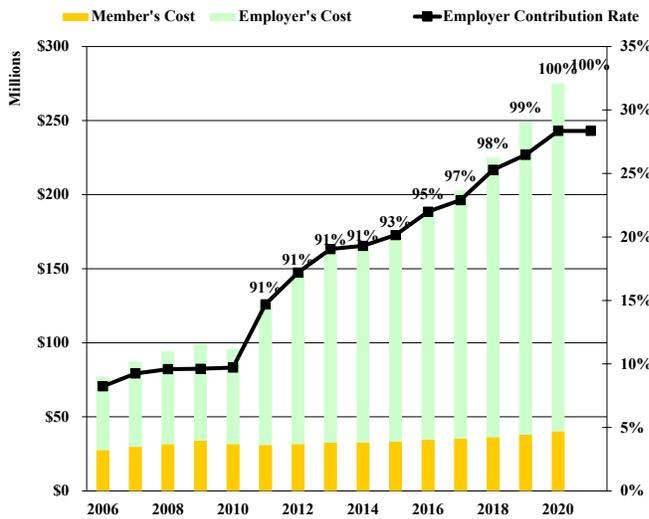


**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION I - BOARD SUMMARY**

Contribution Rates

The stacked bars in this graph show the contributions made by both the County and the members (left-hand scale). The black line shows the County contribution rate as a percent of payroll (right-hand scale).

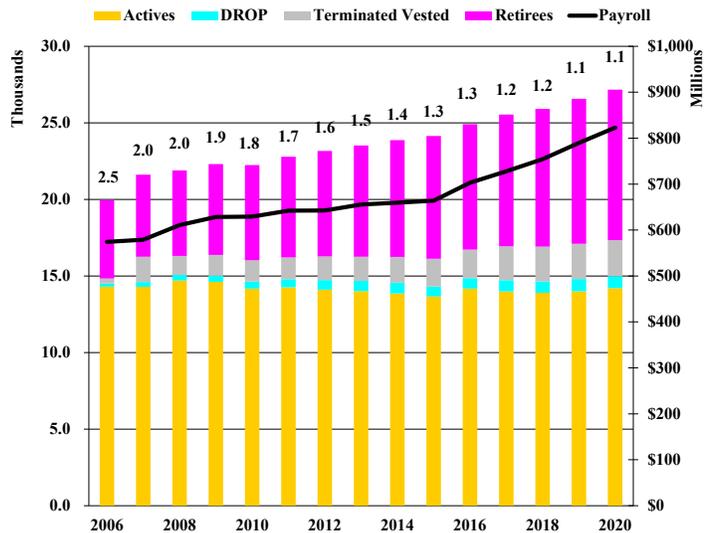


The member contribution rate is set by the County Ordinance. The County contribution rate is set by the actuarial process, as constrained by the corridor method. Note there is a lag in the rate shown. For example, the 2020 value is the rate prepared by the 2018 valuation and implemented for the period June 30, 2019 to June 30, 2020. Starting with FY 2011, the County contribution has been based on a corridor floor greater than 90%. The data labels show the change in this metric.

Participant Trends

As with many systems in this country, there has been a steady growth in the number of retired members as the System has matured. The active-to-inactive ratio has decreased from 2.5 actives to each inactive in 2006 to 1.1 actives for each inactive today. While this would be an alarming trend in a pay-as-you-go system, the pool of invested assets has been established in anticipation of this development.

The chart also shows the number of DROP participants. Neither County nor member contributions are made on their behalf, which leads to a slightly lower growth in effective covered payroll for this system.

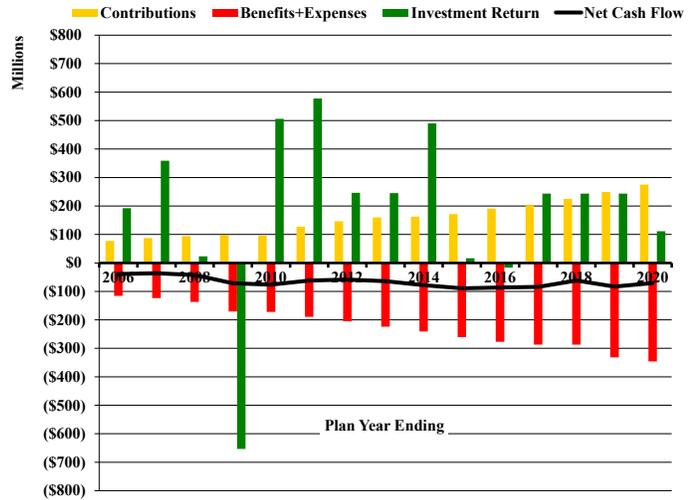


FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020

SECTION I - BOARD SUMMARY

Cash Flow

The graph shows the annual cash flows into and out of the System. The graph shows the magnitude of the investment returns on the market value (green bars) compared to the contributions (yellow bars). The net cash flow (line) is comparing the contributions to benefits and expenses (red bar). Negative cash flow is expected for a mature system such as this one. The implications of a system with negative cash flow are that the impact of market fluctuations can be more severe. This is because, as assets are being depleted to pay benefits in down markets, less principal is available to be reinvested during periods of favorable returns.



**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION I - BOARD SUMMARY**

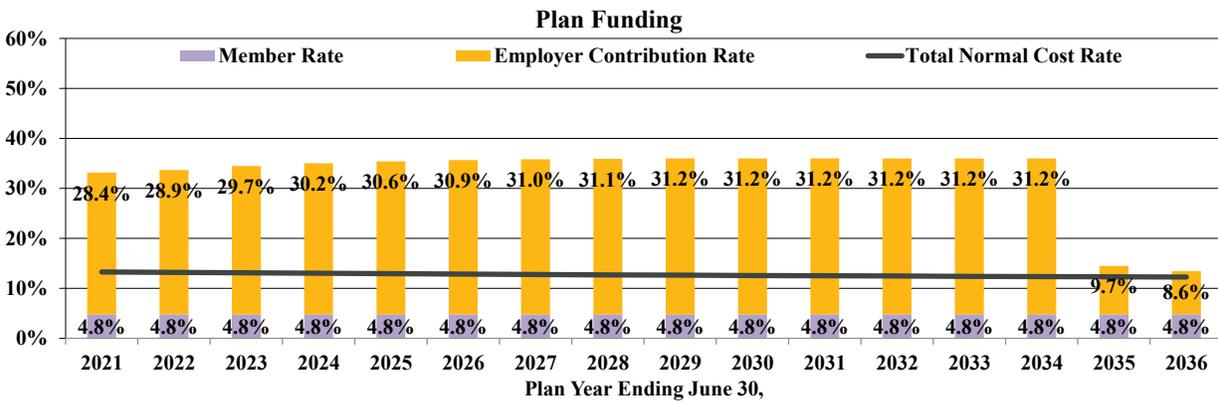
**Future Outlook**

Base-line Projections

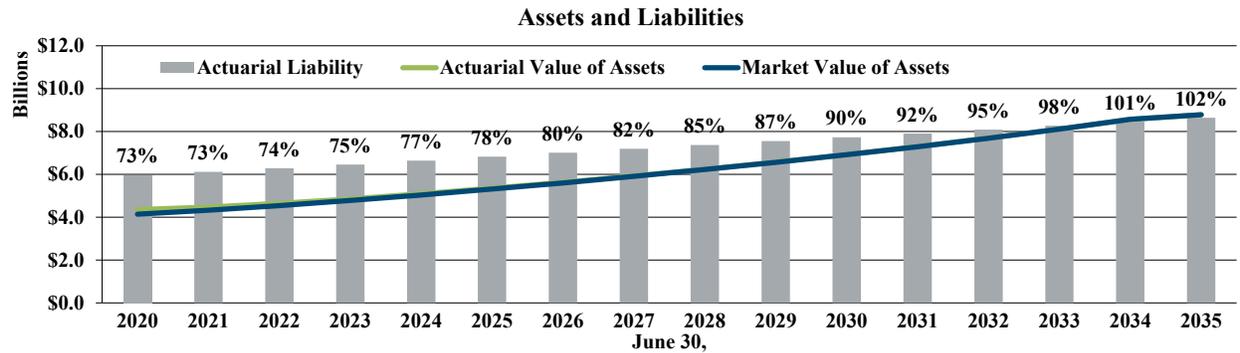
The two graphs below show the expected progress of the System over the next 15 years, assuming the System's assets earn 7.25% on their *market value*.

Contributions are calculated using a full actuarial calculation. The County does not intend to reduce the contribution rate until the System is 100% funded. Once the System is 100% funded, the contribution rate will drop as returns keep the funding above 100%.

The graph entitled "Plan Funding" illustrates future County and member contribution rates.



The "Assets and Liabilities" graph shows the projected funding status over the next 15 years. The funded ratio based on the actuarial value of assets gradually increases for the entire projection period ultimately reaching 100% funded as of 2034.



**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION I - BOARD SUMMARY**

The future funding status of this system will be influenced by the investment earnings. The prior projection assumed the System would earn 7.25% each and every year, which is extremely unlikely.

In the projections that follow, we show the risk to the System under volatile markets. The System has averaged a 7.79% return per year since 1994. In the following charts, we show results assuming returns over the next 15 years average 4.75%, 7.25%, and 9.75%. Different patterns of returns will produce different results from those shown here.

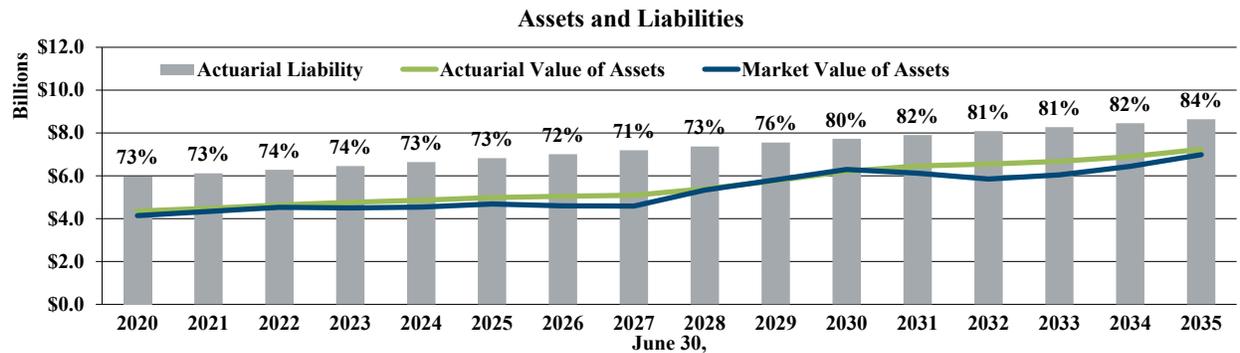
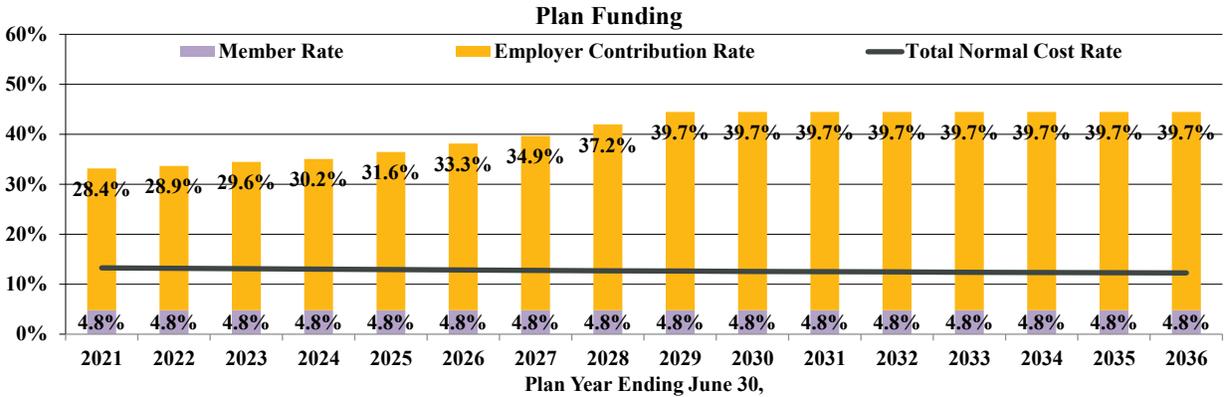
<b>Table I-1</b>			
<b>Fiscal Year Ending June 30,</b>	<b>Average 4.75%</b>	<b>Average 7.25%</b>	<b>Average 9.75%</b>
2021	7.42%	2.09%	(6.10)%
2022	6.80	6.92	4.29
2023	1.42	17.47	17.90
2024	2.73	29.76	32.31
	4.91	19.17	(9.23)
2025			
2026	(0.44)	5.36	10.22
2027	1.23	10.78	15.56
2028	17.34	4.05	(12.69)
2029	9.25	15.35	14.94
	9.00	(0.69)	14.58
2030			
2031	(2.36)	1.80	30.53
2032	(4.00)	(8.62)	24.67
2033	3.95	4.40	3.70
2034	7.02	(0.84)	7.12
2035	8.92	7.58	9.97
<b>Average</b>	<b>4.75%</b>	<b>7.25%</b>	<b>9.75%</b>

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION I - BOARD SUMMARY**

Alternative Projection – with average return of 4.75% in the period

Under this scenario, the County contribution rate increases from 28% to about 39% of payroll. The System's funding drops to as low as 71% on an actuarial value basis, even with the ramping up of contributions.

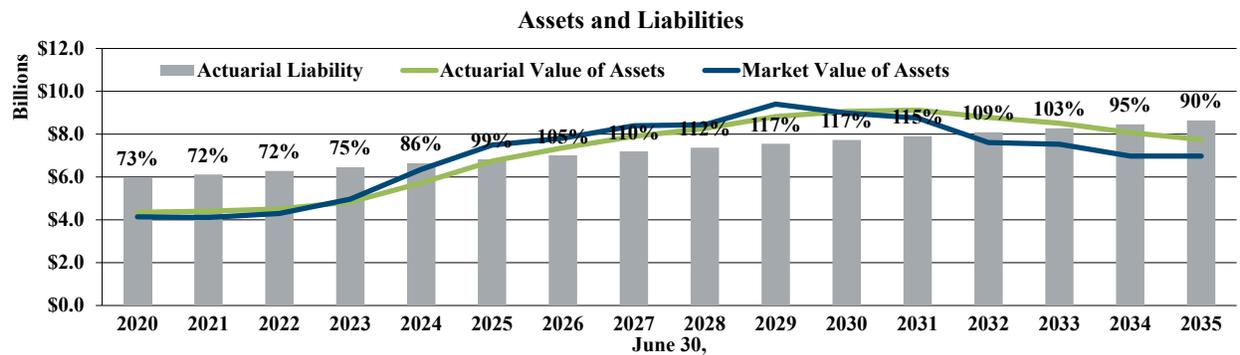
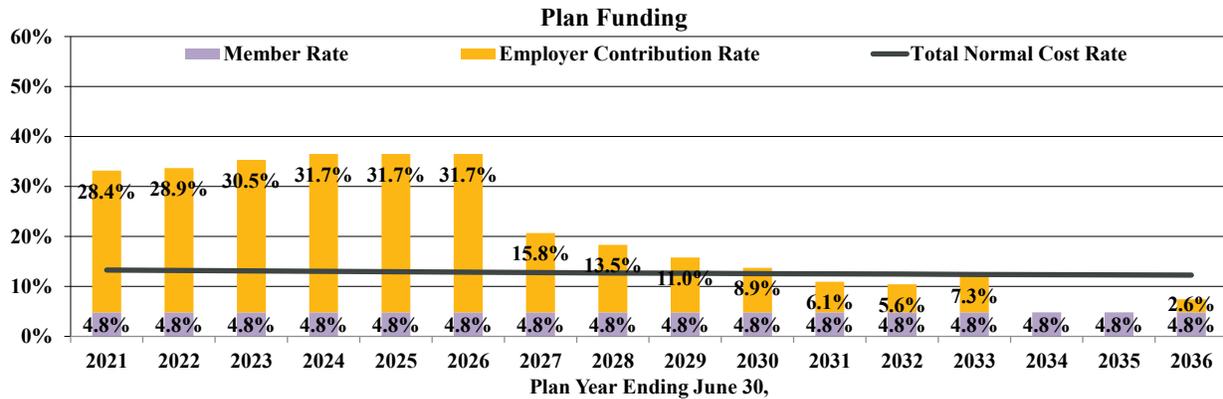


**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION I - BOARD SUMMARY**

Alternative Projection – with average return of 7.25% in the period

Under this scenario, in which the System is assumed to experience lower than expected returns for the first two years followed by higher than average returns in the next few years, the County contribution rate increases over the next few years as the asset losses are phased in and the funding ratio remains below 100%. After that time, the contribution drops dramatically as returns continue to push the funded percent well above 100% on an actuarial value basis.

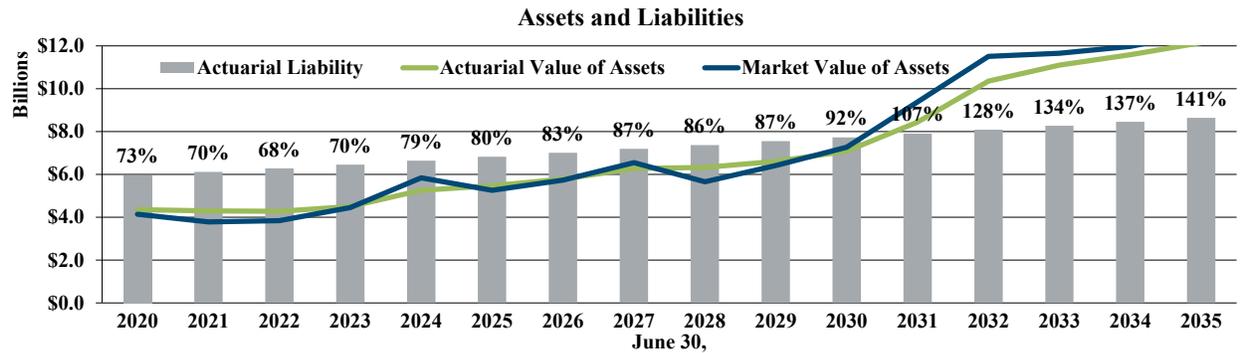
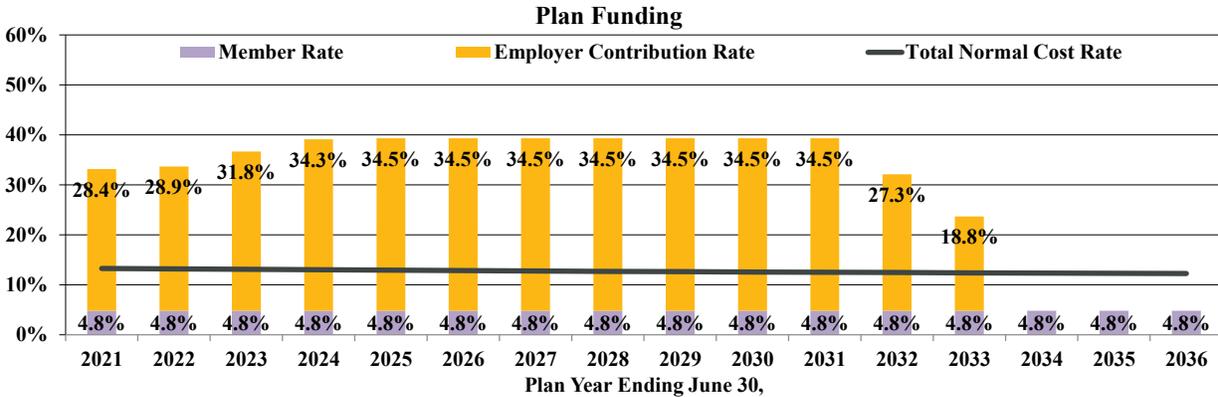


**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION I - BOARD SUMMARY**

Alternative Projection – with average return of 9.75% in the period

Under this scenario, in which the System is assumed to face lower returns in the first two years but significantly higher returns thereafter, the County contribution rate increases while phasing in the poor asset returns, holds at 34.5% and then drops off once the System reaches 100% funding on an actuarial value basis.



**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION I - BOARD SUMMARY**

<b>Table I-2 Summary of Principal Plan Results</b>			
<b>Valuation as of:</b>	<b>June 30, 2019</b>	<b>June 30, 2020</b>	<b>% Chg.</b>
<b><u>Participant Counts</u></b>			
Actives (excluding DROP)	14,000	14,204	1.5%
DROPs	806	785	(2.6)%
Terminated Vesteds	2,293	2,349	2.4%
In Pay Status	<u>9,468</u>	<u>9,824</u>	3.8%
Total	26,567	27,162	2.2%
Annual Salaries of Active Members	\$ 789,790,124	\$ 822,970,711	4.2%
Annual Retirement Allowances for Retired Members and Beneficiaries (Base amount only – not supplements)	\$ 251,887,905	\$ 263,223,924	4.5%
<b><u>Assets and Liabilities</u></b>			
Actuarial Accrued Liability (AAL)	\$ 5,791,680,570	\$ 5,961,066,083	2.9%
Assets for Valuation Purposes (AVA)	<u>4,220,420,263</u>	<u>4,349,257,826</u>	3.1%
Unfunded Actuarial Liability	\$ 1,571,260,307	\$ 1,611,808,257	2.6%
Actuarial Value Funding Ratio (AVA / AAL)	72.9%	73.0%	
Market Value Funding Ratio (MVA / AL)	70.8%	69.5%	
Present Value of Accrued Benefits	\$ 5,057,437,752	\$ 5,205,415,563	2.9%
Market Value of Assets	<u>4,101,637,346</u>	<u>4,142,063,209</u>	1.0%
Unfunded Accrued Liability (not less than \$0)	\$ 955,800,406	\$ 1,063,352,354	11.3%
Accrued Benefit Funding Ratio	81.1%	79.6%	
<b><u>Contributions as a Percentage of Payroll</u></b>			
	<b>Fiscal Year 2021</b>	<b>Fiscal Year 2022</b>	
Employer Normal Cost	8.32%	8.40%	
UAL Amortization	19.53%	20.23%	
Administrative Expense	<u>0.25%</u>	<u>0.25%</u>	
County Rate	28.10% <sup>1</sup>	28.88%	

<sup>1</sup>The County has a policy of not paying any less than the existing rate until such a time as the UAL has been exhausted. The FY 2021 rate will be held at the 28.35% rate in effect for FY 2020.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION II - IDENTIFICATION AND ASSESSMENT OF RISK**

Actuarial valuations are based on a set of assumptions about future economic and demographic experience. These assumptions represent a reasonable estimate of future experience, but actual future experience will undoubtedly be different and may be significantly different. This section of the report is intended to identify the primary risks to the System, provide some background information about those risks, and provide an assessment of those risks.

**Identification of Risks**

The fundamental risk to a pension plan is that the contributions needed to pay the benefits become unaffordable. While we believe it is unlikely that the System by itself would become unaffordable, the contributions needed to support the System may differ significantly from expectations. While there are a number of factors that could lead to contribution amounts deviating from expectations, we believe the primary sources are:

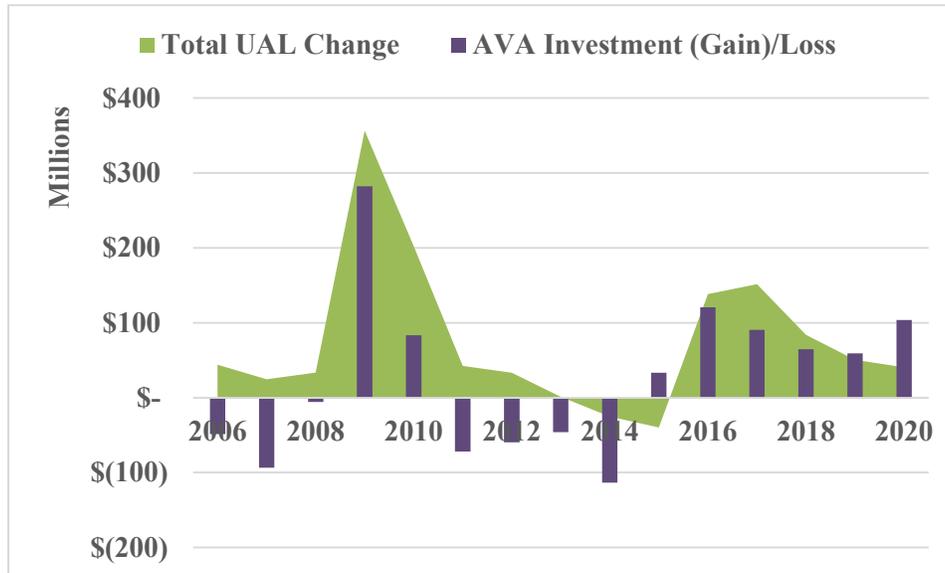
- Investment risk,
- Interest rate risk,
- Longevity and other demographic risks,
- Contribution risk, and
- Assumption change risk.

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

FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020

SECTION II - IDENTIFICATION AND ASSESSMENT OF RISK

*Investment Risk* is the potential for investment returns to be different than expected. Lower investment returns than anticipated will increase the Unfunded Actuarial Liability necessitating higher contributions in the future unless there are other gains that offset these investment losses. The potential volatility of future investment returns is determined by the System's asset allocation, and the affordability of the investment risk is determined by the amount of assets invested relative to the size of the plan sponsor or other contribution base.

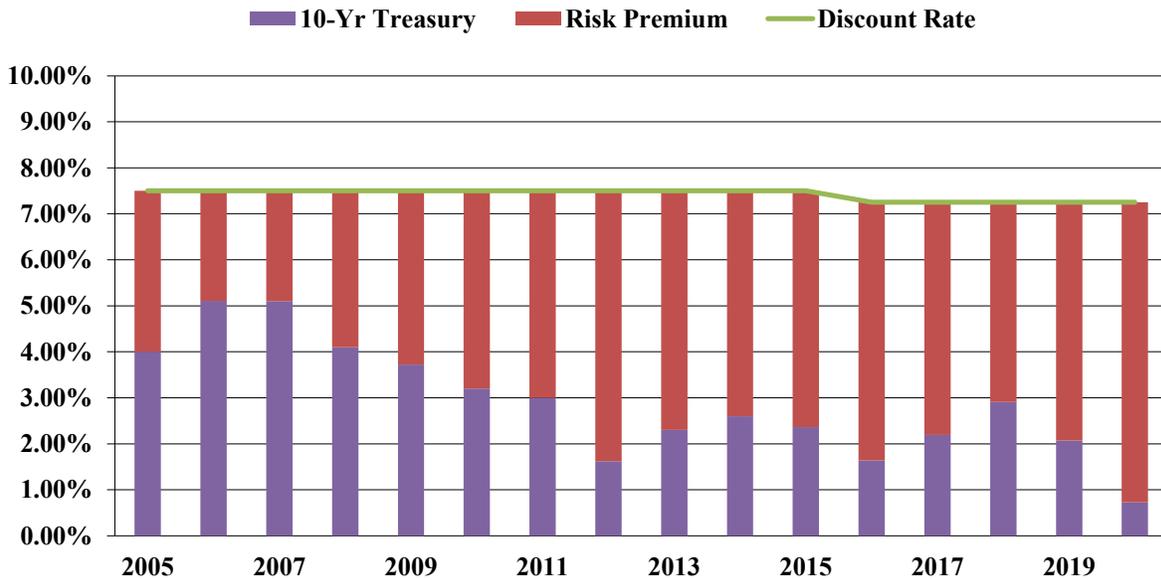


The graph above shows the impact of investment gains and losses on the smoothed Actuarial Value of Assets over the last 15 years compared to the System's total change in UAL.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION II - IDENTIFICATION AND ASSESSMENT OF RISK**

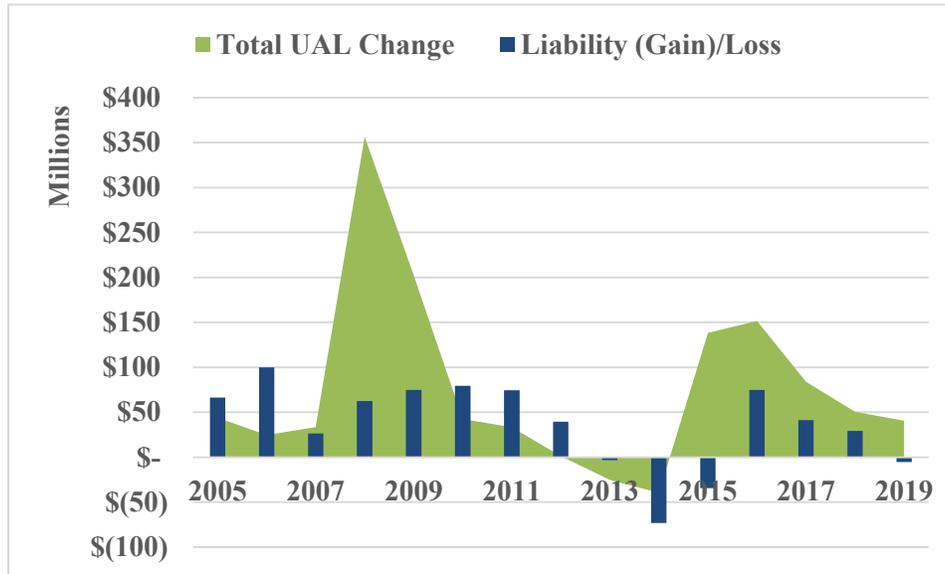
*Interest rate risk* is the potential for interest rates to be different than expected. For public plans, short-term fluctuations in interest rates have little or no effect as the plan's liability is usually measured based on the expected return on assets. Longer-term trends in interest rates, however, can have a powerful effect. The chart below shows the yield on a 10-year Treasury security compared to the System's assumed rate of return. The difference is a simple measure of the amount of investment risk taken. As interest rates have declined, plans faced a choice: maintain the same level of risk and reduce the expected rate of return, maintain the same expected rate of return and take on more investment risk, or some combination of the two strategies.



FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020

SECTION II - IDENTIFICATION AND ASSESSMENT OF RISK

*Longevity and other demographic risks* are the potential for mortality or other demographic experience to be different than expected. Generally, longevity and other demographic risks emerge slowly over time and are often dwarfed by other changes, particularly those due to investment returns. The following graph shows the demographic gains and losses over the last 15 years compared to the total change in the UAL for each year.



*Contribution risk* is the potential for actual future contributions to deviate from expected future contributions. There are different sources of contribution risk ranging from the sponsor choosing to not make contributions in accordance with the funding policy to material changes in the contribution base (e.g., covered employees, covered payroll, sponsor revenue) that affect the amount of contributions the System can collect. Historically, the System has made contributions in accordance with their funding policy.

*Assumption change risk* is the potential for the environment to change such that future valuation assumptions are different than the current assumptions. Assumption change risk is an extension of the other risks identified, but rather than capturing the risk as it is experienced, it captures the cost of recognizing a change in environment when the current assumption is no longer reasonable.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION II - IDENTIFICATION AND ASSESSMENT OF RISK**

**Plan Maturity Measures**

The future financial condition of a mature pension plan is more sensitive to each of the risks identified above than a less mature plan. Before assessing each of these risks, it is important to understand the maturity of this System compared to other plans and how the maturity has changed over time.

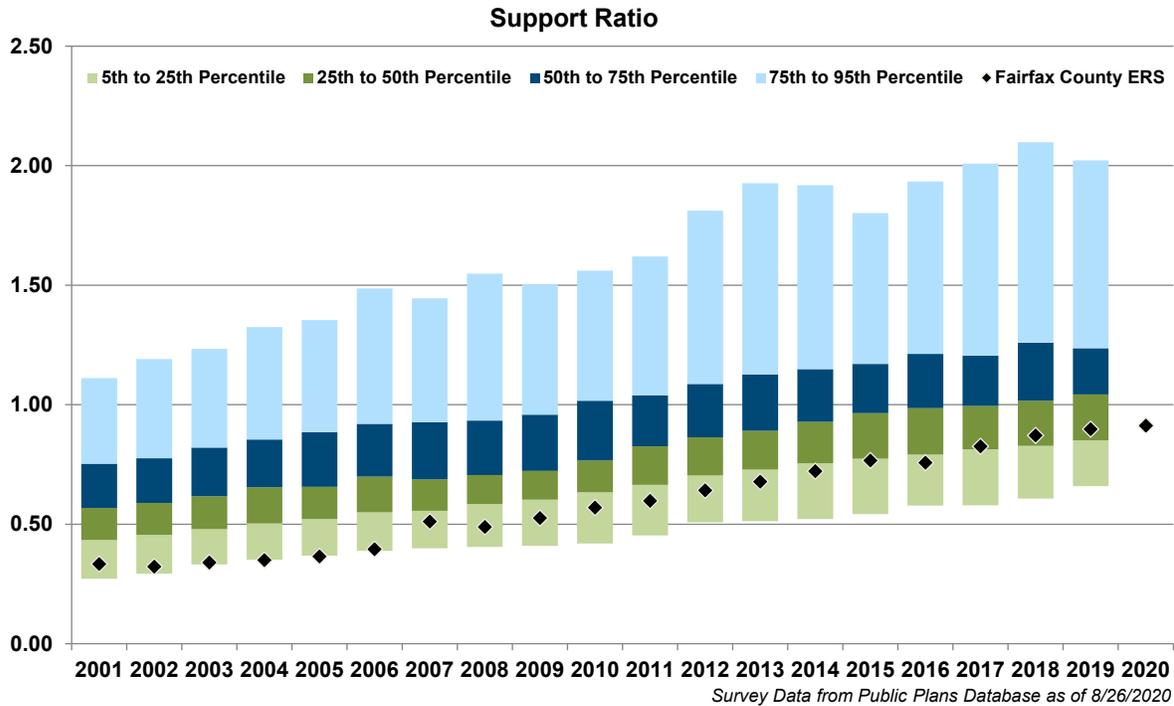
Plan maturity can be measured in a variety of ways, but they all get at one basic dynamic – the larger the plan is compared to the contribution or revenue base that supports it, the more sensitive the plan will be to risk. The measures below have been selected as the most important in understanding the primary risks identified for this System.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION II - IDENTIFICATION AND ASSESSMENT OF RISK**

**Inactives per Active (Support Ratio)**

One simple measure of plan maturity is the ratio of the number of inactive members (those receiving benefits or entitled to a deferred benefit) to the number of active members. The revenue base supporting the System is usually proportional to the number of active members, so a relatively high number of inactives compared to actives indicates a larger System relative to its revenue base as well.



The graph above shows the distribution from the 5th to 95th percentile of support ratios for the plans in the Public Plans Database. The black diamond shows how the Retirement System compares to the other plans.

Whereas the support ratios for the plans as a whole have increased over the period as they mature, ERS's support ratio has increased more than other plans over the period and is among the 25th to 50th percentile of the Public Plans Database.

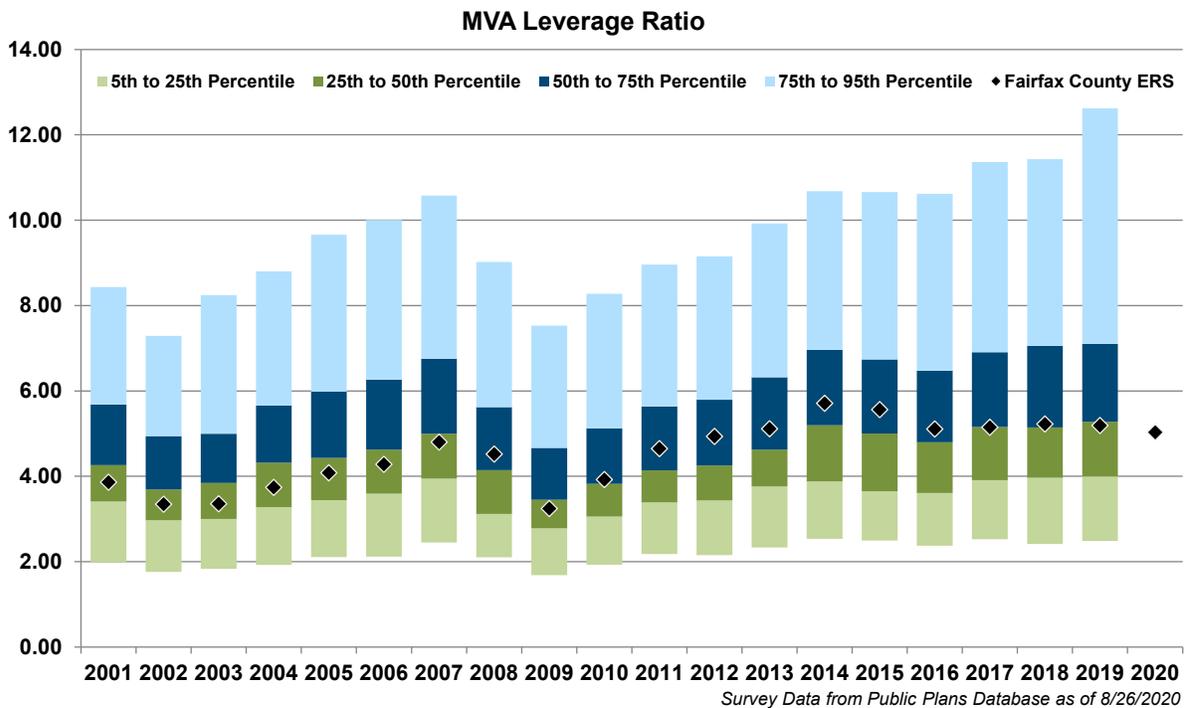
**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION II - IDENTIFICATION AND ASSESSMENT OF RISK**

**Leverage Ratios**

Leverage or volatility ratios measure the size of the plan compared to its revenue base more directly. An asset leverage ratio of 5.0, for example, means that if the System experiences a 10% loss on assets compared to the expected return, the loss would be equivalent to 50% of payroll.

The same investment loss for a system with an asset leverage ratio of 10.0 would be equivalent to 100% of payroll. As the System becomes better funded, the asset leverage ratio will increase, and if it was 100% funded, the leverage ratio would equal the Actuarial Liability (AL) leverage ratio.



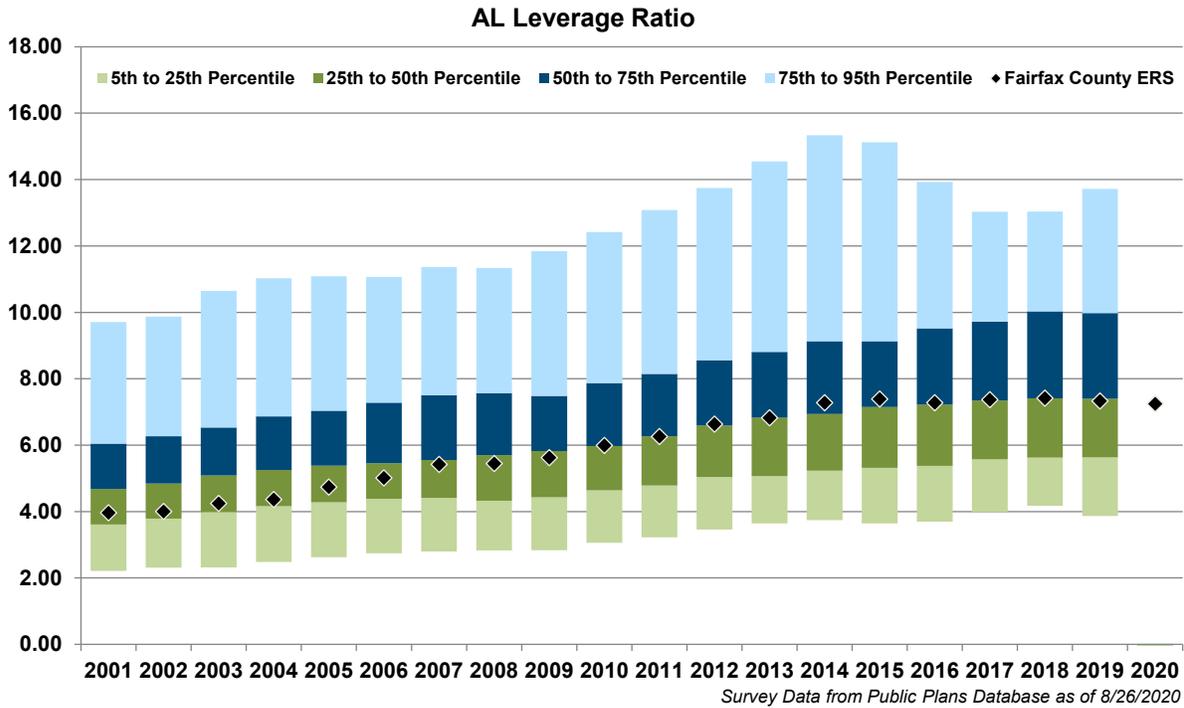
The chart above shows the distribution from the 5th to 95th percentile of asset leverage ratios for the plans in the Public Plans Database. The black diamond shows how the System compares.

The System's asset leverage ratio has been in the 25th to 50th percentile compared to other plans before 2011 but moved into the 50th to 75th percentile in 2011 and came back to the 25<sup>th</sup> to 50<sup>th</sup> percentile in 2019. The asset leverage ratio will increase as the System approaches 100% funded.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION II - IDENTIFICATION AND ASSESSMENT OF RISK**

The actuarial liability leverage ratio of 5.0 means that if the System experiences a 10% loss on liabilities compared to the expected return, the liability loss would be equivalent to 50% of payroll.



The chart above shows the distribution from the 5th to 95th percentile of Actuarial Liability leverage ratios for the plans in the Public Plans Database. The black diamond shows how the System compares.

The System's Actuarial Liability leverage ratio has historically been in the 25th to 50th percentile compared to other plans. But as the System matures and more of the liability is due to inactive members, this ratio continues to increase. The ratio has been under 8.0 over the period with the ratio currently around 7.2 in 2020.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION III - ASSETS**

Pension system 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 benefit levels, County contributions, and the ultimate security of participants' benefits.

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

- **Disclosure** of the System's 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 10 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 values are market values that have been smoothed; they are used for evaluating the System's ongoing liability to meet its obligations.

Current methods employed by this system set the actuarial value equal to the expected value plus 33⅓% of the difference between the expected value of assets and the actual market value, where the expected value is equal to the prior year's actuarial value, rolled forward with actual contributions, benefit payments, and administrative expenses plus interest imputed at the prior year investment return assumption of 7.25%.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION III - ASSETS**

<b>Table III-1</b>		
<b>Statement of Assets at Market Value</b>		
	<b>June 30, 2019</b>	<b>June 30, 2020</b>
<b><u>Assets</u></b>		
Equity in County's Pooled Cash,		
Contributions Receivable and Other Assets	\$ 19,867,882	\$ 20,121,748
Accrued Interest and Dividends Receivable	10,979,923	6,307,737
Receivable from Sale of Investments	79,161,312	170,303,014
Capital Assets	49,056	44,736
US Government Obligations	291,174,296	171,532,652
Asset-Backed Securities	134,624,752	124,131,724
Other Bonds and Notes	244,940,950	313,598,470
Common and Preferred Stock	830,416,016	791,420,601
Pooled and Mutual Funds	2,296,046,669	2,446,241,939
Short-Term Investments	314,310,897	259,692,003
Cash Collateral Received Under		
Securities Lending Agreements	90,947,924	109,323,253
<b>Total Assets</b>	<b>\$ 4,312,519,677</b>	<b>\$ 4,412,717,877</b>
<b><u>Liabilities</u></b>		
Payable for Collateral Received Under		
Securities Lending Agreements	\$ 90,947,924	\$ 109,323,253
Payable for Purchase of Investments	110,851,008	154,074,634
Accounts Payable and Accrued Expenses	9,083,399	7,256,781
<b>Total Liabilities</b>	<b>\$ 210,882,331</b>	<b>\$ 270,654,668</b>
<b>Net Assets Available for Benefits</b>	<b>\$ 4,101,637,346</b>	<b>\$ 4,142,063,209</b>

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION III - ASSETS**

<b>Table III-2</b>	
<b>Changes in Market Values</b>	
<b>Value of Assets – June 30, 2019</b>	\$ 4,101,637,346
<b><u>Additions</u></b>	
Contributions:	
Employer Contributions	\$ 234,743,643
Employee Contributions	<u>40,327,359</u>
Total Contributions	\$ 275,071,002
Investment Income:	
Net Appreciation (Depreciation) in Fair Value of Investments	\$ 101,340,085
Interest	30,425,274
Dividends	<u>16,522,700</u>
Total Investment Income	\$ 148,288,059
Investment Activity Expenses:	
Management Fees	\$ (35,666,960)
Custodian Fees	(136,776)
Consulting Expense	(113,578)
Allocated Administrative Expenses	<u>(2,030,651)</u>
Total Investment Activity Expenses	\$ (37,947,965)
From Securities Lending Activities:	
Securities Lending Income	\$ 2,286,654
Securities Lending Expenses	
Borrowers Rebates	0
Management Fees	<u>(1,184,587)</u>
Net Income from Securities Lending Activities	\$ 1,102,067
Net Investment Income	<u>\$ 111,442,161</u>
Total Additions	\$ 386,513,163
<b><u>Deductions</u></b>	
Annuity Benefits	\$ (323,782,787)
Disability Benefits	(7,938,497)
Survivor Benefits	(7,888,832)
Refunds and Other Expenses	(4,005,739)
Administrative Expenses	<u>(2,471,445)</u>
Total Deductions	<u>\$ (346,087,300)</u>
<b><u>Total</u></b>	
Net Increase (Decrease)	<u>\$ 40,425,863</u>
<b>Value of Assets – June 30, 2020</b>	<b>\$ 4,142,063,209</b>

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
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 adding 33 $\frac{1}{3}$ % of the difference between market value and expected value to the expected value. The following table illustrates the calculation of actuarial value of assets for the June 30, 2020 valuation.

<b>Table III-3 Development of Actuarial Value of Assets as of June 30, 2020</b>	
1. Actuarial Value of Assets at June 30, 2019	<b>\$ 4,220,420,263</b>
2. Amount in (1) with Interest to June 30, 2020	4,526,400,732
3. Employer and Member Contributions for the Plan Year Ended June 30, 2020	275,071,002
4. Interest on Contributions Assuming Received Uniformly Throughout the Year to June 30, 2020	9,796,862
5. Disbursements from Trust Except Investment Expenses, July 1, 2019 Through June 30, 2020	(346,087,300)
6. Interest on Disbursements Assuming Payments Made Uniformly Throughout the Year to June 30, 2020	(12,326,162)
7. Expected Value of Assets at June 30, 2020 = (2) + (3) + (4) + (5) + (6)	4,452,855,134
8. Market Value of Assets at June 30, 2020	<u>4,142,063,209</u>
9. Excess of (8) Over (7)	\$ (310,791,925)
10. Actuarial Value of Assets at June 30, 2020 = (7) + 33-1/3% of (9)	<b>\$ 4,349,257,826</b>

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION III - ASSETS**

**Investment Performance**

The market value of assets (MVA) returned 2.74% during 2020, which is slightly less than the assumed 7.25% return. A return of 4.78% 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 33⅓% 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-4  
Annual Rates of Return**

<b>Year Ending June 30,</b>	<b>Market Value</b>	<b>Actuarial Value</b>	<b>Total Return Standard &amp; Poor's 500 Index</b>	<b>Barclays Global Aggregate Index<sup>1</sup></b>
1996	15.9%	25.0% <sup>2</sup>	26.0%	4.7% <sup>3</sup>
1997	20.1%	10.2%	34.7%	8.2%
1998	17.2%	7.7%	30.2%	10.5%
1999	8.5%	16.0%	22.8%	3.1%
2000	5.8%	12.2%	7.2%	4.6%
2001	(0.5)%	7.6%	(14.8)%	11.2%
2002	(4.2)%	3.7%	(18.0)%	8.6%
2003	5.2%	4.1%	0.3%	10.4%
2004	18.2%	8.5%	19.1%	0.3%
2005	13.2%	10.1%	6.3%	6.8%
2006	8.4%	9.7%	8.6%	(0.8)%
2007	14.7%	11.5%	20.6%	6.1%
2008	0.8%	7.7%	(13.1)%	7.1%
2009	(24.0)%	#####	(26.2)%	5.5%
2010	25.3%	4.3%	14.4%	9.5%
2011	23.7%	10.3%	30.8%	3.9%
2012	8.3%	9.6%	5.4%	7.5%
2013	7.8%	9.0%	20.6%	(0.1)%
2014	14.8%	10.9%	24.6%	4.4%
2015	0.4%	6.6%	7.4%	1.8%
2016	(0.5)%	4.3%	4.0%	6.0%
2017	6.8%	4.8%	17.9%	(0.3)%
2018	7.3%	5.6%	14.4%	(0.4)%
2019	6.0%	5.8%	10.4%	7.9%
2020	2.7%	4.8%	7.5%	8.7%

<sup>1</sup> Formerly the Lehman Global Aggregate Bond Index.

<sup>2</sup> The actuarial return in 1996 reflects the adjustment to a revised actuarial valuation method.

<sup>3</sup> Figures shown prior to 1997 are Shearson Lehman Government/Corporate Bond Index.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION III - ASSETS**

Expected benefit payments are projected for the closed group valued at June 30, 2020. Projecting any further than 10 years using a closed group would not yield reliable predictions due to the omission of new hires.

Expected employer contributions are projected based on the current County contribution rate of 28.35% for FY 2021, 28.88% for FY 2022, and then continuing to calculate a rate with 15-year amortization layers thereafter. This projection assumes no further liability gains or losses, continued reflection of untapped investment gains or losses, a 2.75% annual increase in the total covered payroll, and models the anticipated impact of new hires coming in with altered plan provisions.

<b>Table III-5</b>		
<b>Projection of System's Benefit Payments and County Contributions</b>		
<b>Year Beginning</b>	<b>Expected</b>	<b>Expected</b>
<b><u>July 1,</u></b>	<b><u>Benefit Payments</u></b>	<b><u>County Contributions</u></b>
2020	\$ 387,305,000	\$ 233,312,000
2021	382,280,000	244,210,000
2022	383,644,000	257,852,000
2023	394,844,000	269,778,000
2024	409,933,000	280,679,000
2025	426,602,000	290,776,000
2026	443,510,000	300,204,000
2027	460,532,000	309,513,000
2028	477,298,000	318,606,000
2029	492,916,000	327,368,000

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
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,
- Statement of **changes** in these liabilities during the year, and
- A **projection** of future liabilities.

**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 Benefits:** Used for analyzing the financial outlook of the System, this represents the amount of money needed today to fund all future benefits of the System, assuming participants continue to accrue benefits and all assumptions are met.
- **Actuarial Liability:** Used for funding calculations and GASB disclosures, this liability is calculated taking the present value of benefits above and subtracting the present value of future member contributions and 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 Liabilities:** Used for communicating the current level of liabilities, this liability represents the total amount of money needed today to fully fund the current accrued obligations of the System, assuming no future accruals of benefits and that all assumptions are met, including the 7.25% investment return. These liabilities are also used to assess whether the System can meet its current benefit commitments.

None of the liability figures disclosed in this report is meant to be a measure of the System's settlement liability.

The following table discloses each of these liabilities for the current and prior valuations. With respect to each disclosure, a subtraction of the appropriate value of the System's assets yields, for each respective type, a **net surplus** or an **unfunded liability**.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION IV - LIABILITIES**

<b>Table IV-1</b>		
<b>Liabilities/Net (Surplus)/Unfunded</b>		
	<b>June 30, 2019</b>	<b>June 30, 2020</b>
<b>Present Value of Future Benefits</b>		
Active Participant Benefits (excluding DROP)	\$ 2,967,853,000	\$ 3,081,890,218
DROP Participant Benefits	532,585,648	504,591,461
Retiree Benefits	2,965,540,798	3,083,511,434
Terminated Vested and Inactive Members	<u>126,657,898</u>	<u>131,266,722</u>
<b>Present Value of Benefits (PVB)</b>	<b>\$ 6,592,637,344</b>	<b>\$ 6,801,259,835</b>
Market Value of Assets (MVA)	\$ 4,101,637,346	\$ 4,142,063,209
Future Employee Contributions	289,162,599	304,540,978
Future County Contributions	<u>2,201,837,399</u>	<u>2,354,655,648</u>
<b>Total Resources</b>	<b>\$ 6,592,637,344</b>	<b>\$ 6,801,259,835</b>
<b>Actuarial Liability</b>		
Present Value of Benefits (PVB)	\$ 6,592,637,344	\$ 6,801,259,835
Present Value of Future Normal Costs (PVFNC)		
County Portion	511,794,175	535,652,774
Employee Portion	<u>289,162,599</u>	<u>304,540,978</u>
<b>Actuarial Liability</b>	<b>\$ 5,791,680,570</b>	<b>\$ 5,961,066,083</b>
<b>(AL = PVB - PVFNC)</b>		
Actuarial Value of Assets (AVA)	\$ 4,220,420,263	\$ 4,349,257,826
<b>Net (Surplus)/Unfunded (AL – AVA)</b>	<b>\$ 1,571,260,307</b>	<b>\$ 1,611,808,257</b>
<b>Present Value of Accrued Benefits</b>		
Present Value of Benefits (PVB)	\$ 6,592,637,344	\$ 6,801,259,835
Present Value of Future Benefit Accruals (PVFBA)	<u>1,535,199,592</u>	<u>1,595,844,272</u>
<b>Present Value of Accrued Benefits</b>	<b>\$ 5,057,437,752</b>	<b>\$ 5,205,415,563</b>
<b>(PVAB = PVB – PVFBA)</b>		
Market Value of Assets (MVA)	<u>\$ 4,101,637,346</u>	<u>\$ 4,142,063,209</u>
<b>Net Unfunded, not less than \$0 (PVAB – MVA)</b>	<b>\$ 955,800,406</b>	<b>\$ 1,063,352,354</b>

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION IV - LIABILITIES**

**Changes in Liabilities**

Each of the liabilities disclosed in the prior table are 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 due to changes in System assets resulting from the following:

- Employer contributions less than the full actuarial contribution
- Investment earnings different than expected
- A change in the method used to measure System 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.

<b>Table IV-2</b>			
	<b>Present Value of Benefits</b>	<b>Actuarial Liability</b>	<b>Present Value of Accrued Benefits</b>
Liabilities June 30, 2019	\$ 6,592,637,344	\$ 5,791,680,570	\$ 5,057,437,752
Liabilities June 30, 2020	<u>6,801,259,835</u>	<u>5,961,066,083</u>	<u>5,205,415,563</u>
Liability Increase (Decrease)	\$ 208,622,491	\$ 169,385,513	\$ 147,977,811
Change Due to:			
Plan Amendment	\$ 0	\$ 0	\$ 0
Actuarial (Gain)/Loss	<i>Not Calculated</i>	(5,460,818)	<i>Not Calculated</i>
Method and Assumption Changes	0	0	0
Benefits Accumulated and Other Sources	208,622,491	174,846,331	147,977,811

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION V - CONTRIBUTIONS**

In the process of evaluating the financial condition of any pension system, 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 technique that will result in a pattern of contributions that is both stable and predictable.

For this system, the funding method employed is the **Entry Age Actuarial Cost Method**. Under this method, there are three components to the total contribution: the **normal cost rate**, the **unfunded actuarial liability rate** (UAL rate), and the **administrative expense rate**. The normal cost rate is determined in the following steps. First, an individual normal cost rate is determined by taking the value, as of entry age into the System, of each member's projected future benefits. This value is then divided by the value, also at entry age, of the member's expected future salary. Second, the normal cost rate is multiplied by current salary and added together to obtain the total System normal cost. This is divided by total salary to convert it to the total system normal cost rate. Finally, the total normal cost rate is reduced by the average member contribution rate to produce the County's normal cost rate.

### **Development of County Contribution Rate**

The employer's total contribution rate is equal to the normal cost rate plus rate changes due to amendments passed or assumption changes adopted since July 1, 2001 plus a 15-year amortization of the UAL that existed on June 30, 2018 other than that which existed from prior amendment and assumption change bases. In the future, additional amortization bases will be created each year. Finally, the rate includes an expense rate. Please see Table V-2 for details.

This section contains a comparison of the County contribution rates for FY 2020 and 2021 in Table V-1. Tables V-2 and V-3 show the calculations of the FY 2021 and 2022 rates using a closed 15-year layered amortization approach.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION V - CONTRIBUTIONS**

The table below presents and compares the budgeted rate for the System for this valuation and the prior one.

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 15-year periods.

<b>Table V-1</b>		
<b>Actuarially Determined Rate (for County Contribution)</b>		
<b>Valuation Date</b>	<b>June 30, 2019</b>	<b>June 30, 2020</b>
<b>Fiscal Year</b>	<b>2021</b>	<b>2022</b>
Normal Cost Rate	8.32%	8.40%
UAL Rate	19.53%	20.23%
Expense Rate	<u>0.25%</u>	<u>0.25%</u>
Total County Rate	28.10% <sup>1</sup>	28.88%

<sup>1</sup> The County has a policy of not paying any less than the existing rate until such a time as the UAL has been exhausted. FY 2021 will be held at the 28.35% rate in effect for FY 2020.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION V - CONTRIBUTIONS**

Table V-2 Development of UAL Amortization Layer		
	June 30, 2019 (for FY 2021)	June 30, 2020 (for FY 2022)
<b>1. Present Value of Future Benefits</b>		
a. Active Employees	\$ 2,967,853,000	\$ 3,081,890,218
b. DROP	532,585,648	504,591,461
c. Retired Members	2,965,540,798	3,083,511,434
d. Vested Terminated and Inactive Members	<u>126,657,898</u>	<u>131,266,722</u>
e. Total Present Value	\$ 6,592,637,344	\$ 6,801,259,835
<b>2. Present Value of Future Normal Costs</b>		
a. County Portion	\$ 511,794,175	\$ 535,652,774
b. Employee Portion	<u>289,162,599</u>	<u>304,540,978</u>
c. Total Present Value	\$ 800,956,774	\$ 840,193,752
<b>3. Actuarial Liability (1) – (2)</b>	\$ 5,791,680,570	\$ 5,961,066,083
<b>4. Actuarial Value of Assets</b>	\$ 4,220,420,263	\$ 4,349,257,826
<b>5. Unfunded Actuarial Liability (UAL)</b>	\$ 1,571,260,307	\$ 1,611,808,257
<b>6. Outstanding Prior Bases (see Table V-4)</b>	<u>1,474,736,205</u>	<u>1,523,392,839</u>
<b>7. New Base at July 1, 2019//2020</b>	96,524,102	88,415,418
<b>8. Expected County Contribution FY 2020//2021 (County Rate x Expected Payroll)</b>	223,905,500	233,312,197
<b>9. Employer Normal Cost Payments</b>	(65,711,045)	(69,129,540)
<b>10. Expense Payments (using 0.25% assumption)</b>	<u>(1,974,475)</u>	<u>(2,057,427)</u>
<b>11. Net Contribution to apply to UAL</b>	156,219,980	162,125,230
<b>12. Amortization of prior bases (from Table V-4)</b>	<u>154,388,004</u>	<u>158,475,367</u>
<b>13. Excess UAL Payment (11 - 12)</b>	\$ 1,831,976	\$ 3,649,863
<b>14. Remaining New Base One Year Later (7 - 13, with interest)</b>	\$ 101,624,876	\$ 91,045,680
<b>15. 14-year Amortization Factor</b>	10.3847	10.3847
<b>16. New UAL Amortization Layer (14 / 15)</b>	\$ 9,786,019	\$ 8,767,290
<b>17. Next Year Amortization of Bases (from Table V-4)</b>	<u>148,689,063</u>	<u>162,334,980</u>
<b>18. Total UAL Payments (16 + 17)</b>	\$ 158,475,082	\$ 171,102,270
<b>19. Estimated Payroll</b>	\$ 811,509,352	\$ 845,602,406
<b>20. UAL as a % of Payroll</b>	19.53%	20.23%

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION V - CONTRIBUTIONS**

<b>Table V-3 Schedule of Amortization Bases</b>						
<b>Type of Base</b>	<b>Date Established</b>	<b>June 30, 2020</b>	<b>FY 2021</b>	<b>June 30, 2021</b>	<b>Amortization Years</b>	<b>FY 2022</b>
		<b>Outstanding Amount</b>	<b>Amortization Payment</b>	<b>Outstanding Amount<sup>1</sup></b>		<b>Amortization Payment</b>
<b>1.</b> DROP Implementation	7/1/2006	\$ 780,720	\$ 808,534	\$ -	1	\$ -
<b>2.</b> DPSC Conversion	7/1/2006	(312,289)	(323,414)	-	1	-
<b>3.</b> Reduce Disability Offset to 40%	7/1/2007	458,588	242,549	240,648	2	249,219
<b>4.</b> Reduce Disability Offset to 30%	7/1/2008	449,040	161,700	314,136	3	166,147
<b>5.</b> Assumption Changes	7/1/2010	843,895	161,700	737,618	6	166,147
<b>6.</b> Reduce Disability Offset to 25%	7/1/2013	540,149	80,851	495,579	8	83,074
<b>7.</b> Assumption Changes	7/1/2014	68,487,979	9,297,726	63,824,486	9	9,553,413
<b>8.</b> Reduce Disability Offset to 15%	7/1/2014	1,191,095	161,700	1,109,990	9	166,147
<b>9.</b> Assumption Changes	7/1/2016	61,554,878	7,114,855	58,649,351	11	7,310,514
<b>10.</b> Unfunded Base	7/1/2018	1,287,773,908	130,983,147	1,245,489,305	13	134,585,184
<b>11.</b> New UAL Layer 2019	7/1/2019	<u>101,624,876</u>	<u>9,786,019</u>	<u>98,858,124</u>	14	<u>10,055,135</u>
<b>Total</b>		<b>\$ 1,523,392,839</b>	<b>\$ 158,475,367</b>	<b>\$ 1,469,719,237</b>		<b>\$ 162,334,980</b>

<sup>1</sup> Outstanding amount includes a full year of interest on prior year balance and half year on the amortization payment

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION VI - ACCOUNTING STATEMENT INFORMATION**

ASC Topic 960 of the Financial Accounting Standards Board (FASB) describes certain disclosures regarding a plan's funded status.

The FASB ASC Topic 960 disclosures provide a quasi "snap shot" view of how the System's assets compare to its liabilities if contributions stopped and accrued benefit claims had to be satisfied. However, due to potential legal requirements and the possibility that alternative interest rates would have to be used to determine the liabilities, these values may not be a good indication of the amount of money it would take to buy the benefits for all members if the System were to terminate.

FASB ASC Topic 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. The relevant amounts as of June 30, 2019 and June 30, 2020 are exhibited in Table VI-1, which also includes a reconciliation of liabilities determined as of the prior valuation, June 30, 2019 to the liabilities as of June 30, 2020.

Table VI-2 is a history of gains and losses in Actuarial Liability, and Table VI-3 is the Schedule of Funded Liabilities by Type, which shows the portion of Accrued Liability covered by Assets. See our report dated October 2, 2020 for the required disclosures under GASB Statement No. 67.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION VI - ACCOUNTING STATEMENT INFORMATION**

<b>Table VI-1 Accounting Statement Information</b>		
	<b>June 30, 2019</b>	<b>June 30, 2020</b>
<b>A. FASB ASC Topic 960 Basis</b>		
1. Present Value of Benefits Accrued and Vested to Date		
a. Members Currently Receiving Payments	\$ 2,965,540,798	\$ 3,083,511,434
b. Vested Terminated and Inactive Members	126,657,898	131,266,722
c. DROP	532,585,648	504,591,461
d. Active Members	<u>854,361,715</u>	<u>878,591,464</u>
e. Total PVVB	\$ 4,479,146,059	\$ 4,597,961,081
2. Present Value of Non-Vested Accrued Benefits for Active Members	<u>578,291,693</u>	<u>607,454,482</u>
3. Total Present Value of Accrued Benefits	\$ 5,057,437,752	\$ 5,205,415,563
4. Assets at Market Value	<u>4,101,637,346</u>	<u>4,142,063,209</u>
5. Unfunded Present Value of Accrued Benefits, But Not Less Than Zero	\$ 955,800,406	\$ 1,063,352,354
6. Ratio of Assets to Value of Benefits (4) / (3)	81.1%	79.6%
<b>B. Statement of Changes in Present Value of Accrued Benefits</b>		
Actuarial Present Value of Accrued Benefits as of June 30, 2019		\$ 5,057,437,752
Increase (Decrease) During Years Attributable to:		
Passage of Time		\$ 354,208,162
Benefit Paid – FY 2020		(343,615,855)
Assumption Change		0
Plan Amendment		0
Benefits Accrued, Other Gains/Losses		<u>137,385,504</u>
Net Increase (Decrease)		\$ 147,977,811
Actuarial Present Value of Accrued Benefits as of June 30, 2020		\$ 5,205,415,563

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**SECTION VI - ACCOUNTING STATEMENT INFORMATION**

**Table VI-2  
Analysis of Financial Experience  
Gains and Losses in Accrued Liability During Years Ended June 30  
Resulting from Differences Between Assumed Experience and Actual Experience**

Type of Activity	<i>Gain (or Loss) for Year ending June 30,</i>					
	2015	2016	2017	2018	2019	2020
Investment Income	\$ (33,127,096)	\$ (120,548,533)	\$ (90,769,788)	\$ (64,779,936)	\$ (59,391,459)	\$ (103,597,308)
Combined Liability Experience	<u>73,129,057</u>	<u>34,314,735</u>	<u>(74,947,986)</u>	<u>(41,362,698)</u>	<u>(29,354,840)</u>	<u>5,460,818</u>
Gain (or Loss) During Year from Financial Experience	\$ 40,001,961	\$ (86,233,798)	\$ (165,717,774)	\$ (106,142,634)	\$ (88,746,299)	\$ (98,136,490)
Non-Recurring Items	<u>0</u>	<u>(69,346,439)</u>	<u>(582,418)</u>	<u>(603,265)</u>	<u>0</u>	<u>0</u>
<b>Composite Gain (or Loss) During Year</b>	<b>\$ 40,001,961</b>	<b>\$ (155,580,237)</b>	<b>\$ (166,300,192)</b>	<b>\$ (106,745,899)</b>	<b>\$ (88,746,299)</b>	<b>\$ (98,136,490)</b>

**Table VI-3  
Schedule of Funded Liabilities by Type  
Aggregate Accrued Liabilities For**

Valuation Date June 30,	(1)	(2)	(3)	Reported Assets*	Portion of Accrued Liabilities by Reported Assets		
	Active Member Contributions	Retirees Vested Terms, Beneficiaries & DROP	Active Members (Employer Financed Portion)		(1)	(2)	(3)
2015	\$ 372,037,954	\$ 2,884,906,681	\$ 1,649,587,057	\$ 3,759,611,811	100%	100%	30%
2016	396,434,811	2,987,100,852	1,732,881,508	3,831,179,295	100%	100%	26%
2017	380,179,076	3,216,480,052	1,771,072,393	3,930,924,191	100%	100%	19%
2018	397,692,499	3,444,004,357	1,749,526,935	4,070,486,587	100%	100%	13%
2019	404,341,900	3,624,784,344	1,762,554,326	4,220,420,263	100%	100%	11%
2020	419,154,588	3,719,369,617	1,822,541,878	4,349,257,826	100%	100%	12%

\* Reported assets are the actuarial value of assets in this demonstration.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**APPENDIX A - MEMBERSHIP INFORMATION**

The data for this valuation was provided electronically by the Fairfax County Retirement System staff. Cheiron did not perform a formal audit on the data. However, we did perform checks of the data for reasonableness and consistency in accordance with Actuarial Standards of Practice No. 23 – Data Quality. The data was collected as of December 31, 2019.

Data reported in this Appendix is as of the December 31, 2019 data collection date. Covered payroll and benefits in pay status reported elsewhere in this report have been adjusted to approximate the June 30, 2020 values.

For inactive participants given with a Joint and Survivor form of benefit and no continuation percentage provided, a survivor percentage of 100% is assumed.

**Summary of Membership Data as of December 31, 2019**

		Active Members *		
		Count	Average Age	Average Salary
School	Plan A	1,489	54.27	\$ 36,876
	Plan B	1,610	54.71	42,883
	Plan C	1,300	48.25	28,554
	Plan D	947	49.07	30,862
	Plan E	<u>437</u>	<u>43.84</u>	<u>30,586</u>
	Total	5,783	51.40	\$ 35,217
County	Plan A	1,587	50.51	\$ 69,782
	Plan B	2,978	50.60	74,984
	Plan C	936	39.76	55,899
	Plan D	2,515	41.29	66,776
	Plan E	<u>405</u>	<u>37.79</u>	<u>59,551</u>
	Total	8,421	45.98	\$ 68,689
Total Systems	Plan A	3,076	52.33	\$ 53,853
	Plan B	4,588	52.04	63,719
	Plan C	2,236	44.70	40,001
	Plan D	3,462	43.42	56,952
	Plan E	<u>842</u>	<u>40.93</u>	<u>44,518</u>
	Total	14,204	48.19	\$ 55,061

\* Excludes DROP participants.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**APPENDIX A - MEMBERSHIP INFORMATION**

	<b>Inactive Members</b>		<b>Total</b>
	<b>School</b>	<b>County</b>	
<b>Service Retirement</b>			
Count	3,474	5,367	8,841
Annual Basic Benefit	\$ 62,388,885	\$ 182,823,607	\$ 245,212,492
Annual Supplements	9,712,620	28,765,534	38,478,155
<b>Service – Connected Disability</b>			
Count	73	67	140
Annual Basic Benefit <sup>1</sup>	\$ 1,582,809	\$ 2,023,305	\$ 3,606,114
<b>Ordinary Disability</b>			
Count	204	147	351
Annual Basic Benefit	\$ 2,139,114	\$ 2,364,255	\$ 4,503,368
<b>Beneficiaries</b>			
Count	41	451	492
Annual Basic Benefit	\$ 598,930	\$ 7,738,243	\$ 8,337,174
<b>DROP</b>			
Count	298	487	785
Annual Basic Benefit	\$ 6,793,807	\$ 18,820,614	\$ 25,614,421
Annual Supplements	3,009,157	8,707,368	11,716,525
<b>Vested Former Members</b>			
Count	1,082	1,267	2,349
Annual Basic Benefit <sup>2</sup>	\$ 6,047,502	\$ 11,237,954	\$ 17,285,456

<sup>1</sup> Benefits are net of offsets for Workers' Compensation and Social Security.

<sup>2</sup> Benefits are payable at age 65.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**APPENDIX A - MEMBERSHIP INFORMATION**

<b>Membership Statistics</b>						
<b>The number of retired members, beneficiaries, and disabled members can be analyzed as follows:</b>						
	<u>December 31, 2018</u>		<u>December 31, 2019</u>		<u>% Change</u>	
		Average Monthly Benefit		Average Monthly Benefit		Average Monthly Benefit
<b>Inactive Members</b>	<b>Count</b>		<b>Count</b>		<b>Count</b>	
<b>Service Retirement</b>						
Basic Benefit	8,520	\$ 2,290	8,841	\$ 2,340	3.8%	2.2%
Supplement	1,919	1,539	1,950	1,565	1.6%	1.7%
Service-Connected Disability	145	2,742	140	2,473	-3.4%	-9.8%
Ordinary Disability	348	1,047	351	1,083	0.9%	3.4%
Beneficiaries	<u>455</u>	<u>1,400</u>	<u>492</u>	<u>1,430</u>	<u>8.1%</u>	<u>2.2%</u>
<b>Total/Average (Basic Benefit)</b>	<b>9,468</b>	<b>2,208</b>	<b>9,824</b>	<b>2,252</b>	<b>3.8%</b>	<b>2.0%</b>

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**APPENDIX A - MEMBERSHIP INFORMATION**

Data Reconciliation from June 30, 2019 to June 30, 2020								
	Active	DROP	Terminated Vested	Retired	Service- Connected Disability	Ordinary Disability	Beneficiary	Total
<b>Participant count as of July 1, 2019</b>	<b>14,000</b>	<b>806</b>	<b>2,293</b>	<b>8,520</b>	<b>145</b>	<b>348</b>	<b>455</b>	<b>26,567</b>
New Hires / Re-hires	1,633		(30)	(1)				<b>1,602</b>
Terminated Vested	(215)		215					<b>0</b>
DROP	(275)	275						<b>0</b>
Retired	(181)	(293)	(74)	548				<b>0</b>
Deceased with beneficiary	(2)			(41)			43	<b>0</b>
Deceased without beneficiary	(11)	(3)	(5)	(175)	(11)	(16)	(5)	<b>(226)</b>
Benefits Expired				(12)	(1)		(1)	<b>(14)</b>
Ordinary Disability	(7)		(13)			20		<b>0</b>
Service-Connected Disability	(1)		(6)		7			<b>0</b>
Vested Return of Contributions			(43)					<b>(43)</b>
Terminated Not Vested	(736)							<b>(736)</b>
Corrections	(1)		12	2		(1)		<b>12</b>
Change	204	(21)	56	321	(5)	3	37	<b>595</b>
<b>Participant count as of June 30, 2020</b>	<b>14,204</b>	<b>785</b>	<b>2,349</b>	<b>8,841</b>	<b>140</b>	<b>351</b>	<b>492</b>	<b>27,162</b>

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**APPENDIX A - MEMBERSHIP INFORMATION**

**Distribution of Active Participants - - County Plan A**

*COUNTS BY AGE/SERVICE*

Age	Service									Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up		
Under 25	0	0	0	0	0	0	0	0	0	0
25 to 29	0	1	4	0	0	0	0	0	0	5
30 to 34	0	5	55	20	2	0	0	0	0	82
35 to 39	0	8	45	90	22	0	0	0	0	165
40 to 44	0	2	38	83	71	21	0	0	0	215
45 to 49	1	3	41	59	60	69	24	6	6	263
50 to 54	0	6	30	57	56	77	66	33	33	325
55 to 59	0	6	44	53	55	61	25	36	36	280
60 to 64	1	7	33	40	29	19	12	16	16	157
65 & up	0	13	18	21	10	9	11	13	13	95
<b>Total</b>	<b>2</b>	<b>51</b>	<b>308</b>	<b>423</b>	<b>305</b>	<b>256</b>	<b>138</b>	<b>104</b>	<b>104</b>	<b>1,587</b>

*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 & Up		
Under 25	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
25 to 29	0	25,254	180,558	0	0	0	0	0	0	205,812
30 to 34	0	195,425	2,945,853	1,167,296	142,050	0	0	0	0	4,450,624
35 to 39	0	359,839	2,681,943	5,656,234	1,339,127	0	0	0	0	10,037,143
40 to 44	0	29,064	2,393,703	5,782,989	4,986,815	1,497,947	0	0	0	14,690,518
45 to 49	30,503	115,970	2,676,736	3,993,608	4,383,505	5,688,033	2,309,294	500,174	500,174	19,697,823
50 to 54	0	171,043	1,565,460	3,636,545	4,077,364	6,312,729	6,203,446	2,643,928	2,643,928	24,610,515
55 to 59	0	129,064	2,289,220	3,814,176	3,834,087	4,997,009	2,170,512	3,325,426	3,325,426	20,559,494
60 to 64	10,648	149,130	1,749,421	2,459,688	2,231,556	1,403,018	1,153,283	1,477,209	1,477,209	10,633,953
65 & up	0	234,259	789,378	1,259,102	612,288	686,634	932,126	1,344,019	1,344,019	5,857,806
<b>Total</b>	<b>\$ 41,151</b>	<b>\$ 1,409,048</b>	<b>\$ 17,272,272</b>	<b>\$ 27,769,638</b>	<b>\$ 21,606,792</b>	<b>\$ 20,585,370</b>	<b>\$ 12,768,661</b>	<b>\$ 9,290,756</b>	<b>\$ 9,290,756</b>	<b>\$110,743,688</b>

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**APPENDIX A - MEMBERSHIP INFORMATION**

**Distribution of Active Participants - - County Plan B**

*COUNTS BY AGE/SERVICE*

Age	Service									Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up		
Under 25	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	8	0	0	0	0	0	0	8
30 to 34	0	2	125	44	0	0	0	0	0	171
35 to 39	1	4	128	167	51	0	0	0	0	351
40 to 44	0	9	87	146	96	22	0	0	0	360
45 to 49	0	4	99	149	117	85	11	6	6	471
50 to 54	0	7	110	160	127	83	36	12	12	535
55 to 59	0	9	90	178	157	76	17	17	17	544
60 to 64	0	8	99	148	87	18	7	12	12	379
65 & up	0	5	38	47	43	20	3	3	3	159
<b>Total</b>	<b>1</b>	<b>48</b>	<b>784</b>	<b>1,039</b>	<b>678</b>	<b>304</b>	<b>74</b>	<b>50</b>	<b>50</b>	<b>2,978</b>

*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 & Up		
Under 25	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
25 to 29	0	0	498,472	0	0	0	0	0	0	498,472
30 to 34	0	58,633	8,022,856	2,696,392	0	0	0	0	0	10,777,881
35 to 39	7,208	112,264	8,882,992	11,001,048	3,470,214	0	0	0	0	23,473,726
40 to 44	0	386,062	6,463,375	10,519,138	7,184,168	1,709,787	0	0	0	26,262,530
45 to 49	0	114,136	6,593,764	11,834,789	9,486,088	7,360,279	1,000,873	552,371	552,371	36,942,300
50 to 54	0	303,921	6,868,394	12,684,446	10,245,312	7,389,767	3,632,280	1,079,490	1,079,490	42,203,610
55 to 59	0	311,816	5,467,197	13,557,155	12,823,217	7,114,960	1,688,591	1,612,454	1,612,454	42,575,390
60 to 64	0	279,749	6,666,023	11,233,863	6,698,915	1,598,975	692,883	1,237,616	1,237,616	28,408,024
65 & up	0	257,577	2,560,019	3,663,173	3,546,567	1,633,106	245,174	255,284	255,284	12,160,900
<b>Total</b>	<b>\$ 7,208</b>	<b>\$ 1,824,158</b>	<b>\$ 52,023,092</b>	<b>\$ 77,190,004</b>	<b>\$ 53,454,481</b>	<b>\$ 26,806,874</b>	<b>\$ 7,259,801</b>	<b>\$ 4,737,215</b>	<b>\$ 4,737,215</b>	<b>\$223,302,833</b>

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**APPENDIX A - MEMBERSHIP INFORMATION**

**Distribution of Active Participants - - County Plan C**

*COUNTS BY AGE/SERVICE*

Age	Service									Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up		
Under 25	16	9	0	0	0	0	0	0	0	25
25 to 29	36	125	12	0	0	0	0	0	0	173
30 to 34	40	126	44	0	0	0	0	0	0	210
35 to 39	20	116	26	0	0	0	0	0	0	162
40 to 44	15	61	10	1	0	0	0	0	0	87
45 to 49	14	57	15	0	0	0	0	0	0	86
50 to 54	10	36	15	0	0	0	0	0	0	61
55 to 59	10	43	17	0	1	0	0	0	0	71
60 to 64	5	26	8	0	0	0	0	0	0	39
65 & up	4	15	3	0	0	0	0	0	0	22
<b>Total</b>	<b>170</b>	<b>614</b>	<b>150</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>936</b>

*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 & Up		
Under 25	\$ 598,087	\$ 424,464	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 1,022,551
25 to 29	1,631,756	6,075,642	705,062	0	0	0	0	0	0	8,412,460
30 to 34	2,043,094	7,101,829	2,820,188	0	0	0	0	0	0	11,965,111
35 to 39	1,007,966	6,637,665	1,774,456	0	0	0	0	0	0	9,420,087
40 to 44	722,308	3,257,754	602,055	38,738	0	0	0	0	0	4,620,855
45 to 49	809,097	3,581,386	975,205	0	0	0	0	0	0	5,365,688
50 to 54	579,291	1,862,692	1,186,970	0	0	0	0	0	0	3,628,953
55 to 59	511,755	2,638,450	1,330,250	0	95,847	0	0	0	0	4,576,302
60 to 64	296,323	1,383,546	550,546	0	0	0	0	0	0	2,230,415
65 & up	75,129	750,190	254,026	0	0	0	0	0	0	1,079,345
<b>Total</b>	<b>\$ 8,274,806</b>	<b>\$ 33,713,618</b>	<b>\$ 10,198,758</b>	<b>\$ 38,738</b>	<b>\$ 95,847</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 52,321,767</b>

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**APPENDIX A - MEMBERSHIP INFORMATION**

**Distribution of Active Participants - - County Plan D**

*COUNTS BY AGE/SERVICE*

Age	Service								Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	
Under 25	10	25	0	0	0	0	0	0	35
25 to 29	56	282	46	0	0	0	0	0	384
30 to 34	62	330	109	0	0	0	0	0	501
35 to 39	45	250	106	1	0	0	0	0	402
40 to 44	50	205	69	1	0	0	0	0	325
45 to 49	30	172	52	0	0	0	0	0	254
50 to 54	20	164	53	1	0	0	0	0	238
55 to 59	17	127	55	0	0	0	0	0	199
60 to 64	15	85	35	1	1	0	0	0	137
65 & up	2	21	17	0	0	0	0	0	40
<b>Total</b>	<b>307</b>	<b>1,661</b>	<b>542</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,515</b>

*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 & Up	
Under 25	\$ 470,977	\$ 1,213,136	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 1,684,113
25 to 29	2,763,112	15,452,494	2,683,171	0	0	0	0	0	20,898,777
30 to 34	3,868,739	19,916,346	7,110,015	0	0	0	0	0	30,895,100
35 to 39	3,003,276	17,265,577	7,189,311	70,848	0	0	0	0	27,529,012
40 to 44	3,307,451	15,174,823	5,493,583	83,752	0	0	0	0	24,059,609
45 to 49	1,763,868	12,238,455	3,930,115	0	0	0	0	0	17,932,438
50 to 54	1,304,707	11,353,089	4,076,902	86,137	0	0	0	0	16,820,835
55 to 59	1,073,305	8,811,864	4,727,190	0	0	0	0	0	14,612,359
60 to 64	979,869	5,811,962	2,993,119	153,480	203,836	0	0	0	10,142,266
65 & up	141,802	1,462,517	1,762,939	0	0	0	0	0	3,367,258
<b>Total</b>	<b>\$ 18,677,106</b>	<b>\$108,700,263</b>	<b>\$ 39,966,345</b>	<b>\$ 394,217</b>	<b>\$ 203,836</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$167,941,767</b>

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**APPENDIX A - MEMBERSHIP INFORMATION**

**Distribution of Active Participants - - County Plan E**

*COUNTS BY AGE/SERVICE*

Age	Service									Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up		
Under 25	41	0	0	0	0	0	0	0	0	41
25 to 29	80	0	0	0	0	0	0	0	0	80
30 to 34	70	0	0	0	0	0	0	0	0	70
35 to 39	65	0	0	0	0	0	0	0	0	65
40 to 44	47	0	0	0	0	0	0	0	0	47
45 to 49	35	0	0	0	0	0	0	0	0	35
50 to 54	26	0	0	0	0	0	0	0	0	26
55 to 59	22	0	0	0	0	0	0	0	0	22
60 to 64	14	0	0	0	0	0	0	0	0	14
65 & up	5	0	0	0	0	0	0	0	0	5
<b>Total</b>	<b>405</b>	<b>0</b>	<b>405</b>							

*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 & Up		
Under 25	\$ 1,834,977	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 1,834,977
25 to 29	4,146,232	0	0	0	0	0	0	0	0	4,146,232
30 to 34	3,917,536	0	0	0	0	0	0	0	0	3,917,536
35 to 39	4,505,118	0	0	0	0	0	0	0	0	4,505,118
40 to 44	3,076,641	0	0	0	0	0	0	0	0	3,076,641
45 to 49	2,407,283	0	0	0	0	0	0	0	0	2,407,283
50 to 54	1,370,874	0	0	0	0	0	0	0	0	1,370,874
55 to 59	1,346,938	0	0	0	0	0	0	0	0	1,346,938
60 to 64	1,315,653	0	0	0	0	0	0	0	0	1,315,653
65 & up	196,765	0	0	0	0	0	0	0	0	196,765
<b>Total</b>	<b>\$ 24,118,017</b>	<b>\$ 0</b>	<b>\$ 24,118,017</b>							

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**APPENDIX A - MEMBERSHIP INFORMATION**

**Distribution of Active Participants - - School Plan A**

*COUNTS BY AGE/SERVICE*

Age	Service									Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up		
Under 25	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0	0	0
30 to 34	0	2	16	4	1	0	0	0	0	23
35 to 39	2	16	28	19	2	0	0	0	0	67
40 to 44	2	29	53	22	23	3	0	0	0	132
45 to 49	2	45	84	63	38	14	0	0	0	246
50 to 54	2	45	111	63	30	27	5	2	2	285
55 to 59	4	46	121	96	46	20	4	5	5	342
60 to 64	0	42	96	80	29	8	4	2	2	261
65 & up	0	15	64	35	11	4	2	2	2	133
<b>Total</b>	<b>12</b>	<b>240</b>	<b>573</b>	<b>382</b>	<b>180</b>	<b>76</b>	<b>15</b>	<b>11</b>	<b>11</b>	<b>1,489</b>

*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 & Up		
Under 25	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
25 to 29	0	0	0	0	0	0	0	0	0	0
30 to 34	0	46,484	714,450	235,171	38,801	0	0	0	0	1,034,906
35 to 39	47,812	498,981	1,050,636	945,800	105,412	0	0	0	0	2,648,641
40 to 44	46,786	737,279	1,921,988	1,081,354	1,302,896	191,156	0	0	0	5,281,459
45 to 49	16,252	1,115,223	2,799,147	2,896,854	2,062,213	880,679	0	0	0	9,770,368
50 to 54	26,901	920,788	3,383,854	2,550,960	1,496,874	1,552,255	321,499	139,884	139,884	10,393,015
55 to 59	55,573	690,489	3,773,180	4,193,701	2,360,607	1,088,586	215,201	359,852	359,852	12,737,189
60 to 64	0	700,034	2,787,016	3,258,330	1,291,345	458,367	290,441	188,220	188,220	8,973,753
65 & up	0	205,623	1,626,860	1,290,089	503,518	183,607	118,908	139,974	139,974	4,068,579
<b>Total</b>	<b>\$ 193,324</b>	<b>\$ 4,914,901</b>	<b>\$ 18,057,131</b>	<b>\$ 16,452,259</b>	<b>\$ 9,161,666</b>	<b>\$ 4,354,650</b>	<b>\$ 946,049</b>	<b>\$ 827,930</b>	<b>\$ 827,930</b>	<b>\$ 54,907,910</b>

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**APPENDIX A - MEMBERSHIP INFORMATION**

**Distribution of Active Participants - - School Plan B**

*COUNTS BY AGE/SERVICE*

Age	Service									Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up		
Under 25	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	4	0	0	0	0	0	0	4
30 to 34	1	1	18	8	0	0	0	0	0	28
35 to 39	0	4	16	30	12	1	0	0	0	63
40 to 44	1	9	43	34	29	8	1	0	0	125
45 to 49	1	18	65	51	54	27	13	0	0	229
50 to 54	1	28	103	82	65	31	15	7	0	332
55 to 59	0	39	121	88	84	32	11	3	0	378
60 to 64	0	21	99	79	58	25	8	1	0	291
65 & up	0	19	58	47	21	5	5	5	0	160
<b>Total</b>	<b>4</b>	<b>139</b>	<b>527</b>	<b>419</b>	<b>323</b>	<b>129</b>	<b>53</b>	<b>16</b>	<b>0</b>	<b>1,610</b>

*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 & Up		
Under 25	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
25 to 29	0	0	242,449	0	0	0	0	0	0	242,449
30 to 34	13,099	6,615	798,346	494,903	0	0	0	0	0	1,312,963
35 to 39	0	91,714	765,564	1,630,971	686,353	92,348	0	0	0	3,266,950
40 to 44	5,348	160,159	1,752,809	1,936,769	1,782,722	521,669	49,190	0	0	6,208,666
45 to 49	25,654	390,349	2,435,264	2,546,036	3,059,547	1,824,415	1,113,204	0	0	11,394,469
50 to 54	12,468	443,181	3,028,542	3,797,993	3,585,395	2,046,041	1,127,465	626,857	0	14,667,942
55 to 59	0	498,266	3,227,055	3,749,467	4,811,019	2,124,193	801,310	217,329	0	15,428,639
60 to 64	0	237,943	2,781,778	3,282,224	2,831,179	1,260,354	452,936	112,562	0	10,958,976
65 & up	0	214,707	1,733,468	1,680,659	920,920	259,747	332,673	418,345	0	5,560,519
<b>Total</b>	<b>\$ 56,569</b>	<b>\$ 2,042,934</b>	<b>\$ 16,765,275</b>	<b>\$ 19,119,022</b>	<b>\$ 17,677,135</b>	<b>\$ 8,128,767</b>	<b>\$ 3,876,778</b>	<b>\$ 1,375,093</b>	<b>\$ 0</b>	<b>\$ 69,041,573</b>

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**APPENDIX A - MEMBERSHIP INFORMATION**

**Distribution of Active Participants - - School Plan C**

*COUNTS BY AGE/SERVICE*

Age	Service									Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up		
Under 25	3	14	0	0	0	0	0	0	0	17
25 to 29	14	40	2	0	0	0	0	0	0	56
30 to 34	34	56	8	0	0	0	0	0	0	98
35 to 39	28	105	8	1	0	0	0	0	0	142
40 to 44	45	130	7	0	0	0	0	0	0	182
45 to 49	57	142	14	0	0	0	1	0	0	214
50 to 54	30	153	21	0	0	0	0	0	0	204
55 to 59	34	131	18	0	0	0	0	0	0	183
60 to 64	22	103	8	0	0	0	0	0	0	133
65 & up	14	54	3	0	0	0	0	0	0	71
<b>Total</b>	<b>281</b>	<b>928</b>	<b>89</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1,300</b>

*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 & Up		
Under 25	\$ 96,152	\$ 379,629	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 475,781
25 to 29	336,577	1,163,997	106,338	0	0	0	0	0	0	1,606,912
30 to 34	834,569	1,625,258	355,079	0	0	0	0	0	0	2,814,906
35 to 39	580,585	3,326,879	296,500	75,171	0	0	0	0	0	4,279,135
40 to 44	933,834	4,083,447	280,340	0	0	0	0	0	0	5,297,621
45 to 49	1,133,844	3,786,493	606,735	0	0	0	97,580	0	0	5,624,652
50 to 54	572,421	4,155,104	923,454	0	0	0	0	0	0	5,650,979
55 to 59	771,360	3,855,115	829,062	0	0	0	0	0	0	5,455,537
60 to 64	435,445	3,096,311	384,963	0	0	0	0	0	0	3,916,719
65 & up	412,101	1,481,333	104,152	0	0	0	0	0	0	1,997,586
<b>Total</b>	<b>\$ 6,106,888</b>	<b>\$ 26,953,566</b>	<b>\$ 3,886,623</b>	<b>\$ 75,171</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 97,580</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 37,119,828</b>

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**APPENDIX A - MEMBERSHIP INFORMATION**

**Distribution of Active Participants - - School Plan D**

*COUNTS BY AGE/SERVICE*

Age	Service								Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	
Under 25	7	11	1	0	0	0	0	0	19
25 to 29	16	23	3	0	0	0	0	0	42
30 to 34	17	35	9	0	0	0	0	0	61
35 to 39	39	52	4	0	0	0	0	0	95
40 to 44	32	59	9	0	0	0	0	0	100
45 to 49	53	86	9	0	0	0	0	0	148
50 to 54	48	95	23	0	0	0	0	0	166
55 to 59	35	105	26	0	1	0	0	0	167
60 to 64	24	53	13	0	0	0	0	0	90
65 & up	12	43	4	0	0	0	0	0	59
<b>Total</b>	<b>283</b>	<b>562</b>	<b>101</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>947</b>

*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 & Up	
Under 25	\$ 170,238	\$ 397,848	\$ 49,662	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 617,748
25 to 29	375,170	895,537	157,860	0	0	0	0	0	1,428,567
30 to 34	505,226	1,284,196	484,248	0	0	0	0	0	2,273,670
35 to 39	997,125	1,810,004	225,802	0	0	0	0	0	3,032,931
40 to 44	699,043	1,981,599	415,848	0	0	0	0	0	3,096,490
45 to 49	1,278,234	2,610,191	445,483	0	0	0	0	0	4,333,908
50 to 54	1,034,246	2,677,812	991,854	0	0	0	0	0	4,703,912
55 to 59	744,734	3,240,030	1,260,549	0	35,120	0	0	0	5,280,433
60 to 64	508,785	1,675,495	512,138	0	0	0	0	0	2,696,418
65 & up	253,367	1,351,087	158,090	0	0	0	0	0	1,762,544
<b>Total</b>	<b>\$ 6,566,168</b>	<b>\$ 17,923,799</b>	<b>\$ 4,701,534</b>	<b>\$ 0</b>	<b>\$ 35,120</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 29,226,621</b>

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**APPENDIX A - MEMBERSHIP INFORMATION**

**Distribution of Active Participants - - School Plan E**

*COUNTS BY AGE/SERVICE*

Age	Service									Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up		
Under 25	24	0	0	0	0	0	0	0	0	24
25 to 29	42	0	0	0	0	0	0	0	0	42
30 to 34	42	0	0	0	0	0	0	0	0	42
35 to 39	47	0	0	0	0	0	0	0	0	47
40 to 44	75	0	0	0	0	0	0	0	0	75
45 to 49	63	0	0	0	0	0	0	0	0	63
50 to 54	66	0	0	0	0	0	0	0	0	66
55 to 59	47	0	0	0	0	0	0	0	0	47
60 to 64	20	0	0	0	0	0	0	0	0	20
65 & up	11	0	0	0	0	0	0	0	0	11
<b>Total</b>	<b>437</b>	<b>0</b>	<b>437</b>							

*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 & Up		
Under 25	\$ 738,015	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 738,015
25 to 29	1,171,240	0	0	0	0	0	0	0	0	1,171,240
30 to 34	1,371,859	0	0	0	0	0	0	0	0	1,371,859
35 to 39	1,465,879	0	0	0	0	0	0	0	0	1,465,879
40 to 44	2,365,846	0	0	0	0	0	0	0	0	2,365,846
45 to 49	1,901,265	0	0	0	0	0	0	0	0	1,901,265
50 to 54	2,038,492	0	0	0	0	0	0	0	0	2,038,492
55 to 59	1,447,758	0	0	0	0	0	0	0	0	1,447,758
60 to 64	558,693	0	0	0	0	0	0	0	0	558,693
65 & up	306,923	0	0	0	0	0	0	0	0	306,923
<b>Total</b>	<b>\$ 13,365,970</b>	<b>\$ 0</b>	<b>\$ 13,365,970</b>							

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**APPENDIX A - MEMBERSHIP INFORMATION**

**Distribution of Active Participants - - Total**

*COUNTS BY AGE/SERVICE*

Age	Service								Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	
Under 25	101	59	1	0	0	0	0	0	161
25 to 29	244	471	79	0	0	0	0	0	794
30 to 34	266	557	384	76	3	0	0	0	1,286
35 to 39	247	555	361	308	87	1	0	0	1,559
40 to 44	267	504	316	287	219	54	1	0	1,648
45 to 49	256	527	379	322	269	195	49	12	2,009
50 to 54	203	534	466	363	278	218	122	54	2,238
55 to 59	169	506	492	415	344	189	57	61	2,233
60 to 64	101	345	391	348	204	70	31	31	1,521
65 & up	48	185	205	150	85	38	21	23	755
<b>Total</b>	<b>1,902</b>	<b>4,243</b>	<b>3,074</b>	<b>2,269</b>	<b>1,489</b>	<b>765</b>	<b>281</b>	<b>181</b>	<b>14,204</b>

*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 & Up	
Under 25	\$ 3,908,446	\$ 2,415,077	\$ 49,662	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 6,373,185
25 to 29	10,424,087	23,612,924	4,573,910	0	0	0	0	0	38,610,921
30 to 34	12,554,122	30,234,786	23,251,035	4,593,762	180,851	0	0	0	70,814,556
35 to 39	11,614,969	30,102,923	22,867,204	19,380,072	5,601,106	92,348	0	0	89,658,622
40 to 44	11,157,257	25,810,187	19,323,701	19,442,740	15,256,601	3,920,559	49,190	0	94,960,235
45 to 49	9,366,000	23,952,203	20,462,449	21,271,287	18,991,353	15,753,406	4,520,951	1,052,545	115,370,194
50 to 54	6,939,400	21,887,630	22,025,430	22,756,081	19,404,945	17,300,792	11,284,690	4,490,159	126,089,127
55 to 59	5,951,423	20,175,094	22,903,703	25,314,499	23,959,897	15,324,748	4,875,614	5,515,061	124,020,039
60 to 64	4,105,416	13,334,170	18,425,004	20,387,585	13,256,831	4,720,714	2,589,543	3,015,607	79,834,870
65 & up	1,386,087	5,957,293	8,988,932	7,893,023	5,583,293	2,763,094	1,628,881	2,157,622	36,358,225
<b>Total</b>	<b>\$ 77,407,207</b>	<b>\$ 197,482,287</b>	<b>\$ 162,871,030</b>	<b>\$ 141,039,049</b>	<b>\$ 102,234,877</b>	<b>\$ 59,875,661</b>	<b>\$ 24,948,869</b>	<b>\$ 16,230,994</b>	<b>\$ 782,089,974</b>

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2020**

**APPENDIX B - ACTUARIAL ASSUMPTIONS AND METHODS**

**A. Long-Term Assumptions Used to Determine System Costs and Liabilities**

**1. Demographic Assumptions**

**a. Healthy Mortality**

Annual Deaths Per 10,000 Members Mortality Projected to 2020		
Age	Male	Female
20	4	2
25	5	2
30	5	2
35	6	3
40	7	4
45	11	7
50	45	27
55	63	36
60	85	53
65	122	82
70	187	131
75	303	214
80	511	362
85	890	642
90	1,586	1,162
95	2,520	1,934
100	3,577	2,869

110% and 100% of the RP-2014 Healthy Annuitant Mortality Table for males and females, respectively, backed down to 2006 then projected using the RPEC-2015 model, with an ultimate rate of 0.65% for ages 20-85 grading down to an ultimate rate of 0% for ages 115-120 and convergence to the ultimate rate in the year 2015. The valuation uses fully generational projection of mortality improvements. Sample rates shown are those projected through the valuation date.

5% of pre-retirement deaths are assumed to be service-connected.

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**APPENDIX B - ACTUARIAL ASSUMPTIONS AND METHODS**

**b. Disabled Mortality**

<b>Annual Deaths Per 10,000 Members Mortality Projected to 2020</b>		
<b>Age</b>	<b>Male</b>	<b>Female</b>
45	171	104
50	205	133
55	232	166
60	264	201
65	319	246
70	410	331
75	558	483
80	796	730

100% and 115% of the RP-2014 Disabled Annuitant Mortality Table for males and females, respectively, backed down to 2006 then projected using the RPEC-2015 model, with an ultimate rate of 0.65% for ages 20-85 grading down to an ultimate rate of 0% for ages 115-120 and convergence to the ultimate rate in the year 2015. The valuation uses fully generational projection of mortality improvements. Sample rates shown are projected through the valuation date.

**c. Termination of Employment (Prior to Normal Retirement Eligibility)**

<b>Annual Termination Rates Per 1,000 Members – County</b>	
<b>Service</b>	<b>Termination</b>
0	176
5	72
10	39
15	19
20	10
25	4
30	0

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<b>Annual Termination Rates Per 1,000 Members – Schools</b>	
<b>Service</b>	<b>Termination</b>
0	250
5	45
10	28
15	18
20	12
25	10
30	0

It is assumed that members who terminate before the earlier of age 45 or with age plus service equal to 60 elect to receive a refund of contributions instead of vested benefits. Termination rates drop to zero three years prior to approaching Rule of 80 (or Rule of 85 for Plans C and D) retirement.

**d. Disability**

<b>Annual Disabilities Per 10,000 Members*</b>		
<b>Age</b>	<b>Male</b>	<b>Female</b>
25	2	1
30	2	1
35	2	1
40	3	2
45	7	6
50	14	11
55	21	17
60	27	21

\* 30% of disabilities are assumed to be service-connected. Of these, 5% are assumed to receive Social Security benefits and 31% are assumed to receive Workers' Compensation benefits.

No disability is assumed to occur once members reach eligibility for retirement.

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e. Retirement/DROP

Annual Retirements/DROPs Per 1,000 Eligible Members (Male and Female)	
Age	Normal
50	190
51	200
52	200
53	230
54	240
55	275
56	250
57	300
58	250
59	250
60	250
61	275
62	300
63	250
64	350
65	400
66	250
67	250
68	200
69	250
70	250
71	250
72	250
73	250
74	250
75	1,000

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**f. Deferred Retirement Option Program (DROP)**

Retirees are assumed to enter DROP instead of immediate retirement in accordance with the rates below. DROP participants are assumed to remain in DROP for three years and receive interest at 5% per annum on their DROP deferrals.

<b>Annual DROP entrances per 100 Eligible Members (Male and Female)</b>	
<b>Age</b>	<b>DROP</b>
50	70
55	68
60	63
65	30
70	30
75	30

**g. Merit/Seniority Salary Increase (in addition to General Wage Increases)**

<b>County</b>	
<b>Service</b>	<b>Merit/Seniority Increases</b>
0	4.00%
5	1.55
10	1.30
15	1.05
20	0.80
25	0.55
30	0.50

<b>Schools</b>	
<b>Service</b>	<b>Merit/Seniority Increases</b>
0	5.20%
5	2.10
10	1.50
15	1.10
20	0.80
25	0.60
30	0.60

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**APPENDIX B - ACTUARIAL ASSUMPTIONS AND METHODS**

**h. Family Composition**

For purposes of valuing the pre-retirement death benefit, an assumption is made that 80% of employees are married at death while active and that the female spouse is three years younger than the male spouse.

**i. Sick Leave Credit**

Unused sick leave balances as reported for each active member are used as of the valuation date. Future sick leave accruals are assumed to accrue at 100% of each participant's annual average but are capped at 124 hours per year for members hired on or after January 1, 2013.

**2. Economic Assumptions**

a. Rate of Investment Return:	7.25%
b. Rate of General Wage Increase:	2.75%*
c. Rate of Increase in Cost of Living:	2.50%**
d. Rate of Increase in Total Payroll (for Amortization):	2.75%
e. Administrative Expenses as a Percentage of Payroll:	0.25%

\* General Wage Increase assumption applies for projecting contributions and developing Social Security benefits.

\*\* Benefit increases are limited to 4% per year.

**3. Rationale for Assumptions**

The actuarial assumptions were adopted by the Board of Trustees upon the recommendation of the actuary, based on an experience study performed in 2016. The results of this study were presented in a report dated June 2016 and are incorporated into this report by reference.

**4. Changes Since Last Valuation**

None

## APPENDIX B - ACTUARIAL ASSUMPTIONS AND METHODS

### B. Actuarial Methods

#### 1. Funding Method

The Entry Age Normal Cost method is used to determine costs. Under this method, the employer contribution has three components: the normal cost, the payment toward the unfunded actuarial liability, and the expense rate.

The normal cost is a level percent of pay cost, which, along with the member contributions, will pay for projected benefits at retirement for each plan participant.

The actuarial liability is that portion of the present value of projected benefits that will not be paid by future employer normal costs or member contributions. The difference between this liability and funds accumulated as of the same date is referred to as the unfunded actuarial liability.

The expense rate is added to cover the System's administrative expenses.

The employer's total contribution rate is equal to the normal cost rate plus rate changes due to amendments passed or assumption changes adopted since July 1, 2001 plus a 15-year level percent of pay amortization of the UAL that existed on June 30, 2018 other than prior unamortized amendment and assumption change bases. In the future, additional amortization bases will be created each year. Finally the rate includes an expense rate.

#### 2. Actuarial Value of Assets

For purposes of determining the County contribution to the System, we use an actuarial value of assets. The asset adjustment method dampens the volatility in asset values that could occur because of fluctuations in market conditions. Use of an asset smoothing method is consistent with the long-term nature of the actuarial valuation process.

In determining the actuarial value of assets, we calculate an expected actuarial value based on cash flow for the year and imputed returns at the actuarial assumption. This expected value is compared to the market value, and one-third of the difference is added to the preliminary actuarial value to arrive at the final actuarial value.

#### 3. Valuation Timing

All participant data is collected as of the December 31 prior to the valuation date. Initial valuation runs are performed as of December 31, and the resulting liabilities are then adjusted for six months to the June 30 valuation date. The adjustment takes into account the actual July 1 cost-of-living increase and any other changes that are known to have occurred in that six-month period.

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**4. Changes Since Last Valuation and Rationale for Changes**

None

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**APPENDIX C - SUMMARY OF PLAN PROVISIONS**

**1. Membership**

The plan covers full-time and certain part-time County and School Board employees who are not covered by the Fairfax County Police Officers Retirement System, the Uniformed Retirement System, or the VRS. In order to join, the eligible employee must agree to make the required contributions.

Members hired prior to January 1, 2013 could elect to join Plan A or Plan B. Members hired on or after January 1, 2013 and prior to July 1, 2019 may elect to join Plan C or Plan D. Members hired on or after July 1, 2019 will join Plan E.

**2. Member Contributions**

Plans A and C: 4% of compensation up to Social Security wage base and 5-1/3% of compensation in excess of wage base

Plans B, D, and E: 5-1/3% of compensation

Interest is credited at the rate of 5% per year.

Member contributions are made through an “employer pick-up” arrangement, which results in deferral of the taxes on these contributions.

**3. Credited Service**

All service as a member plus certain purchased prior service is credited. For members who have at least five years of service, credit is allowed at the rate of one month for 172 hours of accrued unused sick leave. For those hired on or after January 1, 2013, the amount of unused sick leave that may be used is capped at 2,080 hours.

**4. Average Final Compensation**

Base pay and roll call pay are credited, including the “pay” at the rate of final salary during the unused sick leave period. Average Final Compensation is the average over the high 36 consecutive months (or shorter period of total service).

**5. Social Security Wage Base**

The amount of wages subject to Social Security (FICA) taxes (\$132,900 in 2020).

**6. Social Security Breakpoint**

The Social Security breakpoint is the 35-year average of Social Security wage bases ending with the year the employee attains Social Security Retirement Age.

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APPENDIX C - SUMMARY OF PLAN PROVISIONS

**7. Normal Retirement**

Eligibility

For those hired before January 1, 2013:

- (i) Age 65 with five years of service, or
- (ii) Age 50 with age plus service greater than or equal to 80

For those hired on or after January 1, 2013:

- (i) Age 65 with five years of service, or
- (ii) Age 55 with age plus service greater than or equal to 85

Benefit

*Plan A and C Benefits:* The sum of 1.8% of average final compensation up to the Social Security breakpoint plus 2% of average final compensation in excess of the breakpoint, all multiplied by credited service, and increased by 3%.

*Plan B and D Benefits:* 2% of average final compensation multiplied by credited service, increased by 3%.

*Plan E Benefits:* 2% of average final compensation multiplied by credited service.

*Plans A, B, C, and D:* Pre-Social Security Retirement Age (SSRA) supplement of 1% of average final compensation up to the Social Security breakpoint times credited service and increased by 3%. This benefit is payable from normal retirement age until the participant reaches his/her SSRA (age 65, 66, or 67).

*Plan E:* Early Age Option of 0.5% of average final compensation up to the Social Security breakpoint times credited service. This benefit is payable from retirement age until the participant reaches his/her SSRA (age 65, 66, or 67). After SSRA, the base benefit would be reduced to account for the accelerated pre-SSRA benefit.

**8. Early Retirement**

Eligibility

- (i) Age 50 with 25 years of service, or
- (ii) 10 years of service with age plus service greater than or equal to 75

Benefit

Normal retirement benefit calculated using average final compensation and service at early retirement, actuarially reduced.

No pre-SSRA supplement benefit is payable.

APPENDIX C - SUMMARY OF PLAN PROVISIONS

9. DROP (Deferred Retirement Option Program)

Eligibility

All members are eligible for DROP participation upon attaining eligibility for normal service retirement. Members can only participate in DROP once, and their election is irrevocable.

Benefit

The benefit scheduled to begin at normal retirement will be credited to a separate DROP account within the Retirement System, accumulating with interest while the member continues to work for a period of 36 months. Upon completion of the three-year period, DROP participation ends, and participants must terminate employment. At that time, the participant will receive payment of the accumulated DROP benefits and begin receiving his or her monthly retirement benefit (in the same amount as determined at commencement of DROP participation, plus annual cost-of-living increases).

For those hired on or after January 1, 2013, the amount credited to the DROP account will exclude the Pre-Social Security Supplement described in item 7.

The DROP account will be credited with interest at an annual rate of 5%, compounded monthly.

Death or Disability during DROP

*Non Service-Connected:* The effective date of the death or disability will be treated as the end of the DROP participation.

*Service-Connected Disability:* The member may elect either (1) to receive the service-connected disability benefits to which he or she would otherwise be entitled (forfeiture of DROP balance) or (2) the normal retirement benefit plus the DROP account balance.

*Service-Connected Death:* The beneficiary will receive payment of the accumulated DROP benefits and the regular service-connected benefit.

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APPENDIX C - SUMMARY OF PLAN PROVISIONS

**10. Service-Connected Disability**

Eligibility

No age or service requirement

Benefit

66-2/3% of average final compensation less 100% of Virginia Workers' Compensation benefit

**11. Ordinary Disability**

Eligibility

Five years of credited service

Benefit

*Plan A, B, C, and D:* 2% of average final compensation times years of credited service, increased by 3%; maximum is 60% of average final compensation; minimum is \$300 per year, increased by 3%.

*Plan E:* 2% of average final compensation times years of credited service; maximum is 60% of average final compensation; minimum is \$300 per year.

**12. Service - Connected Death**

Eligibility

No age or service requirement

Benefit

Lump sum payment of \$10,000 plus ordinary death benefit

**13. Ordinary Death**

Eligibility

Less than 15 years of service

Benefit

Return of employee contributions with interest, payable in lump sum

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APPENDIX C - SUMMARY OF PLAN PROVISIONS

Eligibility

15 or more years of service

Benefit

*Spouse Allowance:* In lieu of the refund of contributions, the spouse of the deceased member may elect an allowance of 50% of the normal retirement benefit, based on average final compensation and service as of the date of the member's death. The allowance is payable for the life of the spouse but ceases upon the spouse's remarriage, if such remarriage occurs prior to the spouse's attainment of age 60.

**14. Vesting**

Eligibility

Five years of service

Benefit

Normal retirement benefit based on average final compensation and service at date of termination. Benefit is payable in full at age 65 or actuarially reduced and payable at early retirement age.

A member may withdraw his contributions with interest at termination, in which case no vested benefit is payable.

**15. Withdrawal**

Eligibility

Not eligible for other benefits

Benefit

Contributions with interest

**16. Form of Payment**

The normal form of payment is a life annuity with a guarantee that at least the amount of member contributions with interest will be paid to the retiree or beneficiaries.

A member may elect an actuarially equivalent "pop-up" Joint and Survivor benefit with choice of 50%, 66  $\frac{2}{3}$ %, 75%, or 100% continuation to the spouse.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM  
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**APPENDIX C - SUMMARY OF PLAN PROVISIONS**

**17. Cost-of-Living Adjustment**

Each July 1, benefits are increased by the lesser of 4% or the increase in the cost-of-living index. The increase is prorated for those who have not been retired for a full year.

Cost-of-living adjustments do not apply to the pre-SSRA supplement or to deferred vested benefits prior to benefit commencement.

In addition to automatic adjustments, benefits may be further increased on an ad hoc basis, if actuarial experience has been favorable.

**18. Changes Since Last Valuation**

Members hired on or after July 1, 2019 will join Plan E.