

Fairfax County Employees' Retirement System

**Actuarial Valuation
as of June 30, 2017**

Produced by Cheiron

October 2017

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October 24, 2017

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

**Re: *Fairfax County Employees' Retirement System
Actuarial Valuation as of June 30, 2017***

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, 2017. 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 2019 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 such other users.

We hereby certify that, to the best of our knowledge, this report and its contents, have been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Code of Professional Conduct and applicable Actuarial Standards

Board of Trustees
Fairfax County Employees' Retirement System
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of Practice set out by the Actuarial Standards Board. 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, EA
Principal Consulting Actuary



Coralie A. Taylor, FSA, EA
Associate Actuary

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

FOREWORD

Cheiron has performed the actuarial valuation of the Fairfax County Employees' Retirement System as of June 30, 2017. 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 employer for Fiscal Year 2019; 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 contains details on various asset measures, together with pertinent performance measurements.

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

Section IV develops the employer contribution rate, determined using actuarial techniques and compares that to the rate developed using the corridor method of funding.

Section V 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.

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, which are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

SECTION I - BOARD SUMMARY

General Comments

The employer's annual contribution to this System is determined by using a corridor funding method. Under this funding approach, the employer's contribution base rate consists of the normal cost rate plus expense rate plus certain amortization UAL bases. The UAL base rates are summarized in Section IV. The normal cost rate and actuarial accrued liability will be measured using the entry age funding method. If the corridor funded status falls outside the corridor, a credit (if above 120%) or charge (if below 90%) will be established based on a rolling 15-year amortization equal to the amount necessary to re-enter the corridor. The County is taking steps to increase the 90% corridor floor to 100%. Once this threshold is reached, the 15-year periods will become closed 15-year layers.

The employer contribution rate for Fiscal Year (FY) 2019, as calculated under this method, increased from 20.03% for FY 2017 to 21.15% of payroll when using the 90% corridor floor. The County's FY 2018 contribution was actually based on a 98% corridor floor, and for FY 2019, we have also provided contribution rates for a 99% floor. On that basis, the contribution in FY 2018 was 25.29%, and for FY 2019, it will be in the range of 26.47% to 27.14%.

This valuation contains information reported in the June 30, 2017 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 2017, causing an actuarial loss on the asset side of the System. The actual return on a market value basis was approximately 6.86%. On an actuarial value basis, the assets returned 4.85% compared with an assumed rate of return of 7.25%. The investment loss recognized for funding purposes was \$90.8 million.

The measurement of liabilities produced a loss this year in the amount of \$74.9 million. This was due to experience compared to our assumptions about salary increases, retirement behavior, COLA, and death, etc. Specific components of the loss include:

- The average salary increase was 6.7% for active participants who were in both the June 30, 2016 and June 30, 2017 valuations. This was more than expected based on the actuarial assumption, creating a liability loss of \$48.5 million.
- The valuation assumed a 2.50% cost-of-living adjustment in 2016 for benefits in pay status. The actual CPI-based COLA was 1.30% last year, creating a liability gain of \$33.4 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

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

SECTION I - BOARD SUMMARY

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. They account for a \$5.6 million loss this year.

- There was a \$54.2 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 2016 data in that status.

This valuation report also reflects a plan change to reduce the Social Security offset applied to certain disability benefits, which increased liabilities by \$0.6 million. The County will make an additional contribution in FY 2018 to pay for this change.

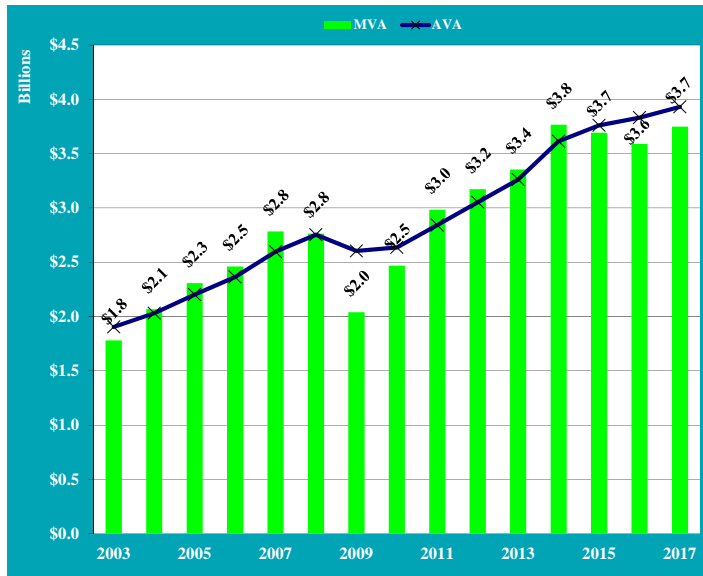
The combination of liability and investment experience and plan changes, together with County plus member contributions over the last year, led to the System's funding ratio (actuarial value of assets over actuarial accrued liability) decreasing from 74.9% at June 30, 2016 to 73.2% at June 30, 2017. For purposes of measuring whether the System remains within the funding corridor, an adjusted funding ratio is used. In this ratio, there is an additional asset recognized in the amount of the unfunded actuarial liability payments being made by the County to pay for benefit increases and assumption changes. On this basis, the System's actuarial funded ratio decreased from 78.6% at June 30, 2016 to 76.6% at June 30, 2017.

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, 2017**

SECTION I - BOARD SUMMARY

Growth in Assets

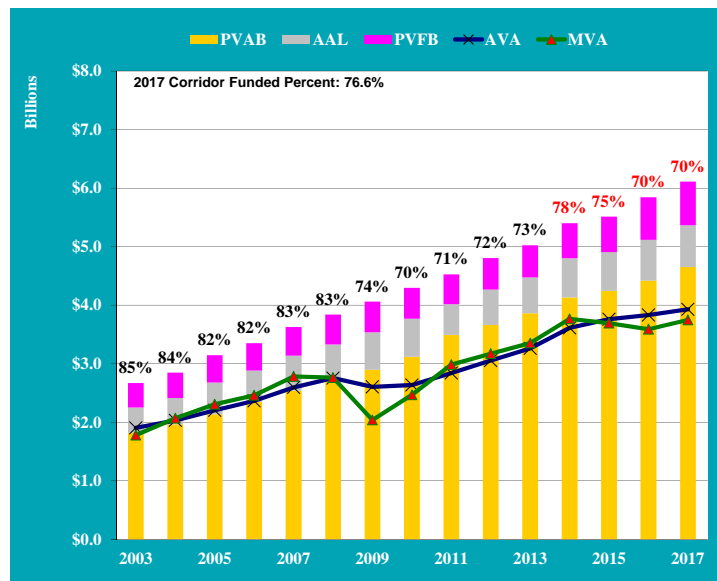


There was an increase in the market value of assets (MVA) (amount in billions shown above bars) over last year due to a return of 6.9%. The actuarial value of assets (AVA) increased due to the continued recognition of past asset gains. The System recognized only a third of the asset loss this year and there remains \$182 million in unrecognized losses that will be phased in over the next few years.

Over the period July 1, 2003 to June 30, 2017, the System's assets returned approximately 7.72% 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.

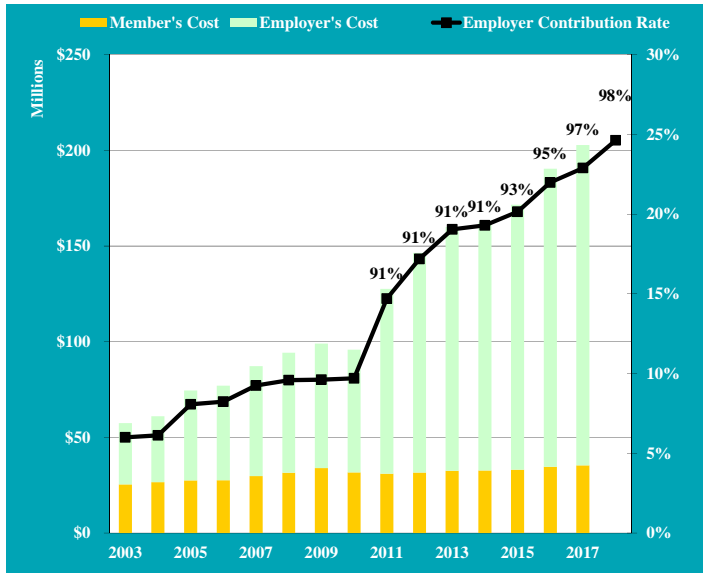


**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

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).

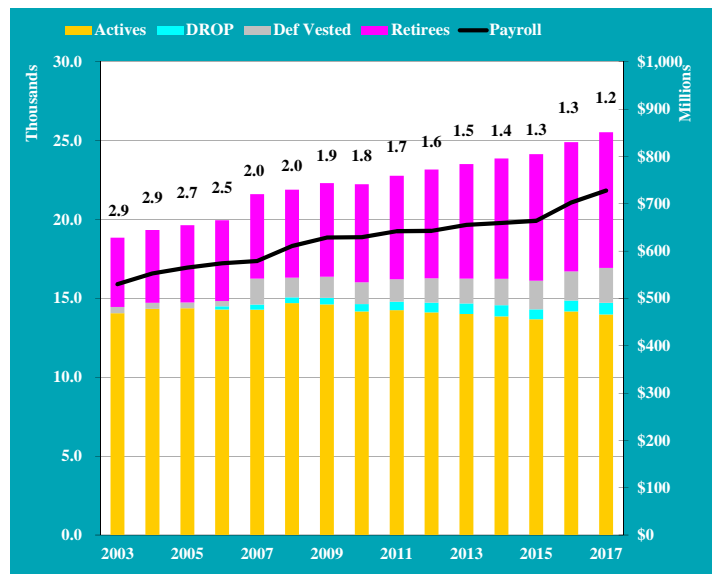


The member contribution rate is set by the County Ordinance. The County contribution rate is set by the actuarial process, as constrained by the corridor method. Note there is a lag in the rate shown. For example, the 2017 value is the rate prepared by the 2015 valuation and implemented for the period June 30, 2016 to June 30, 2017. 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 2.9 actives to each inactive in 2003 to 1.2 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.

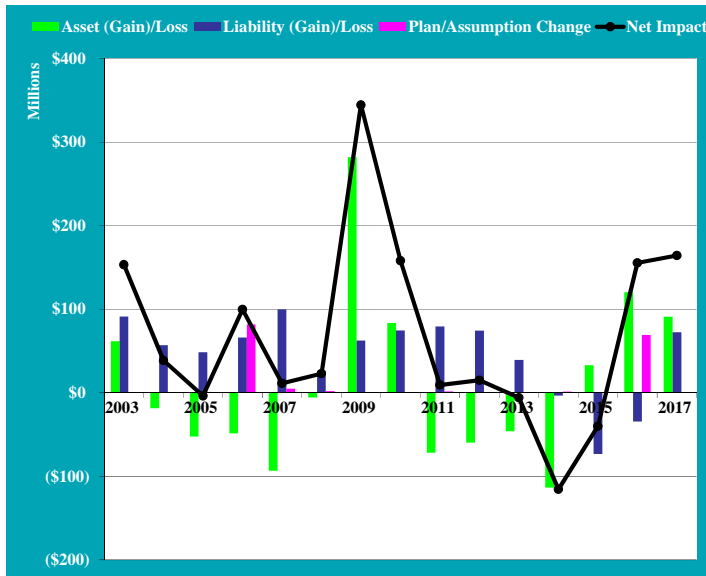
Starting in 2006, the chart also shows the number of DROP participants. Neither employer nor member contributions are made on their behalf, which leads to a slightly lower growth in effective covered payroll for this System.



**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

SECTION I - BOARD SUMMARY

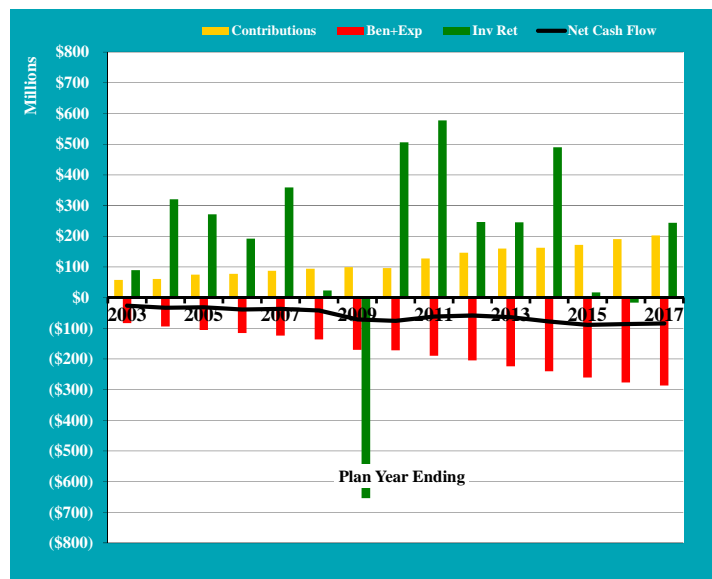
Gains and Losses



This graph shows the annual gains and losses experienced by the System, along with the change in unfunded actuarial liability (UAL) due to plan amendments and changes in assumptions. The black line shows the net impact of all such changes in a given year. Positive numbers represent increases in the UAL, while negative numbers show reductions.

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, 2017**

SECTION I - BOARD SUMMARY

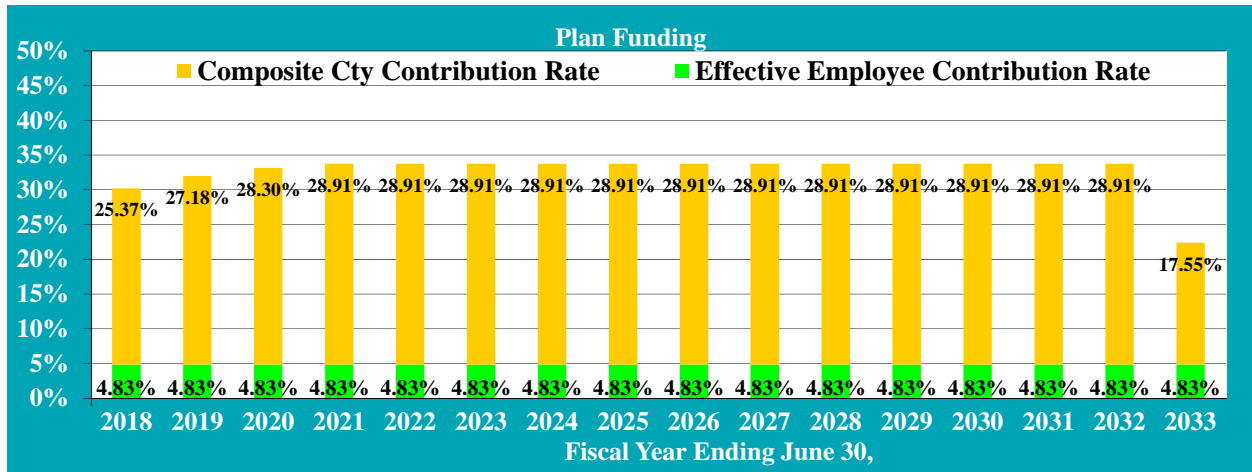
Future Outlook

Base-line Projections

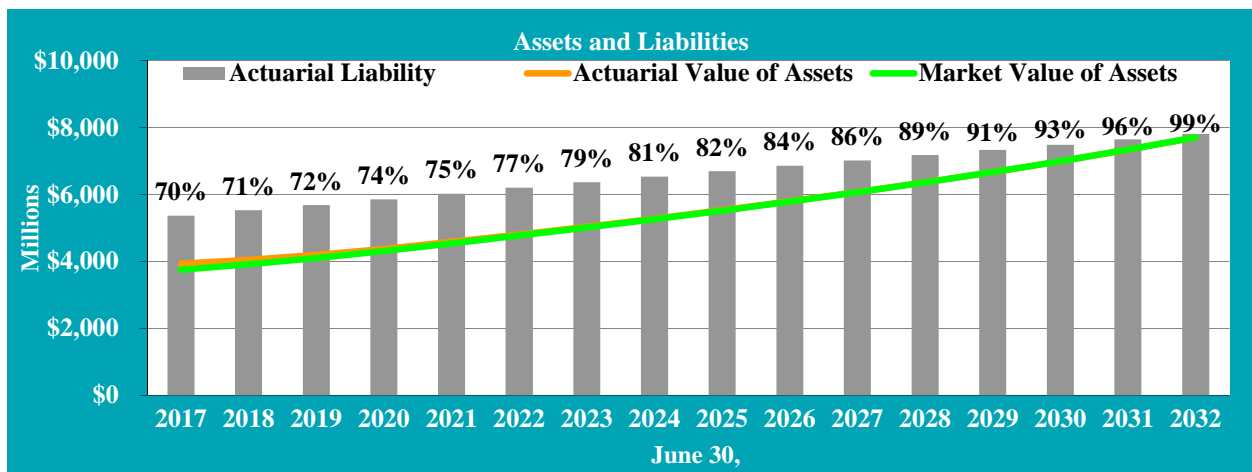
The two graphs below show the expected progress of the System over the next 15 years, assuming the System's assets earn 7.25% on their *market value*.

The floor of the County's corridor contribution calculation was increased to 98% for FY 2018. In FY 2019, the amortization target could range from 98 to 99% and continue increasing until the amortization target is 100%. In addition to the increasing corridor floor, the County does not intend to reduce the contribution rate until the System is 100% funded.

The graph entitled "Plan Funding" illustrates the FY 2019 floor at 99% with an increase to 100% for FY 2020.



The "Assets and Liabilities" graph shows the projected funding status over the next 15 years. The funded ratio gradually increases for the entire projection period ultimately reaching 99% funded as of 2032.



**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
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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 an 8.38% return per year since 1993. 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.

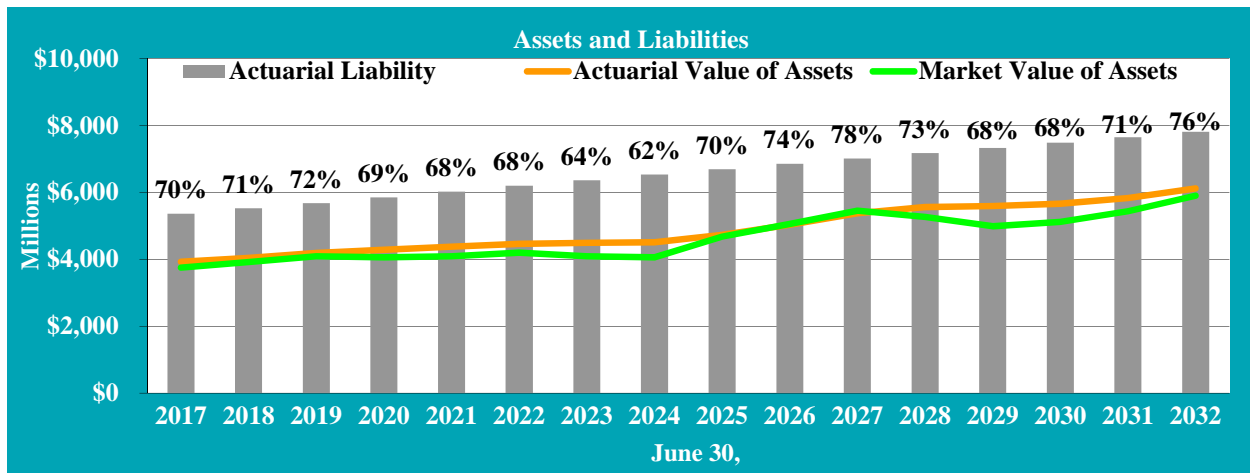
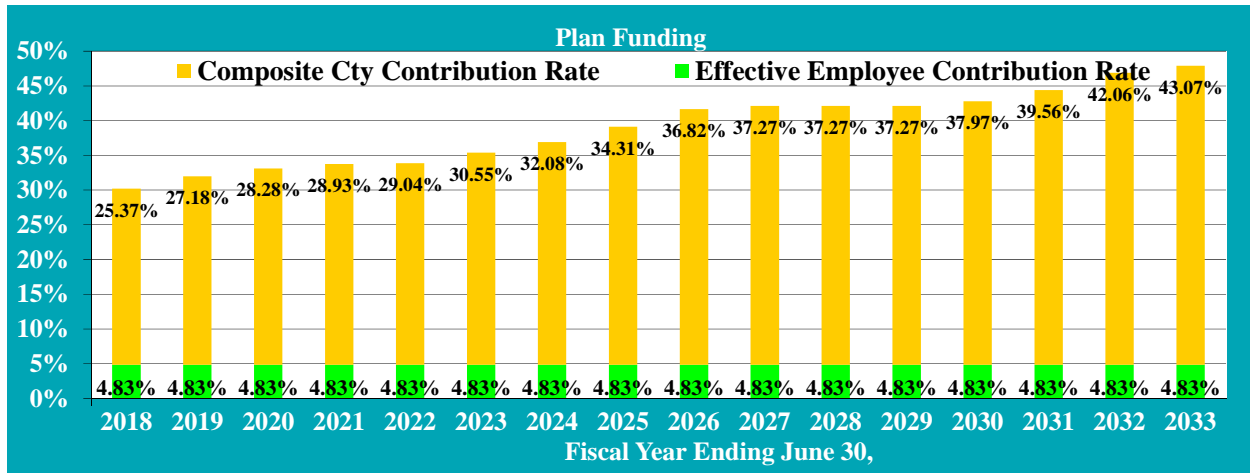
Table I-1			
Fiscal Year Ending June 30,	Average 4.75%	Average 7.25%	Average 9.75%
2018	7.42%	2.09%	(6.10)%
2019	6.80	6.92	4.29
2020	1.42	17.47	17.90
2021	2.73	29.76	32.31
2022	4.91	19.17	(9.23)
2023	(0.44)	5.36	12.22
2024	1.23	10.78	17.56
2025	17.34	4.05	(14.20)
2026	9.25	15.35	14.94
2027	9.00	(0.69)	14.58
2028	(2.36)	1.80	28.20
2029	(4.00)	(8.62)	24.67
2030	3.95	4.40	3.70
2031	7.02	(0.84)	7.12
2032	8.92	7.58	9.97
Average	4.75%	7.25%	9.75%

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

SECTION I - BOARD SUMMARY

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

Under this scenario, the corridor contribution rate increases from 25% to 43% of pay. The System's funding drops to as low as 61%, even with the ramping up of contributions.

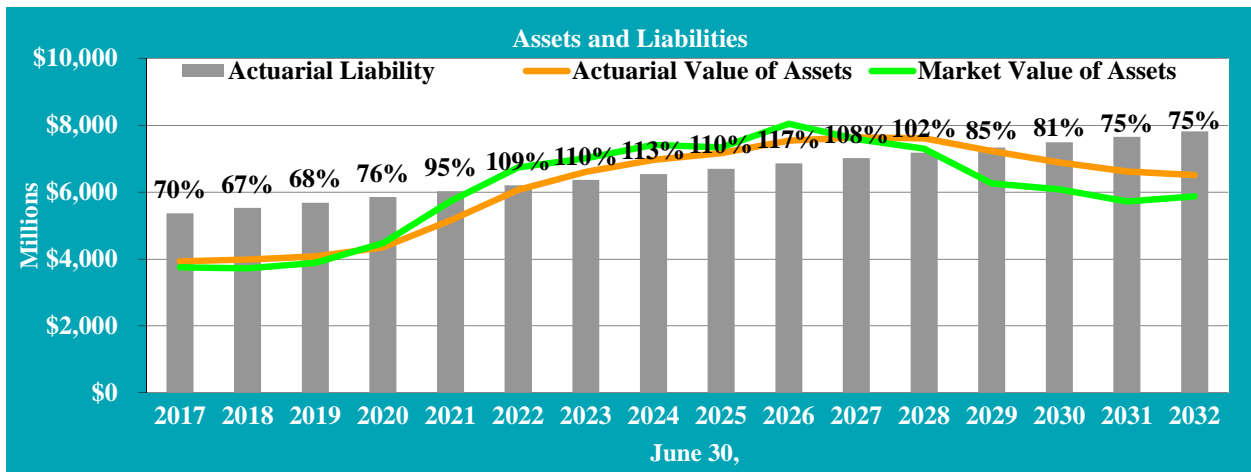
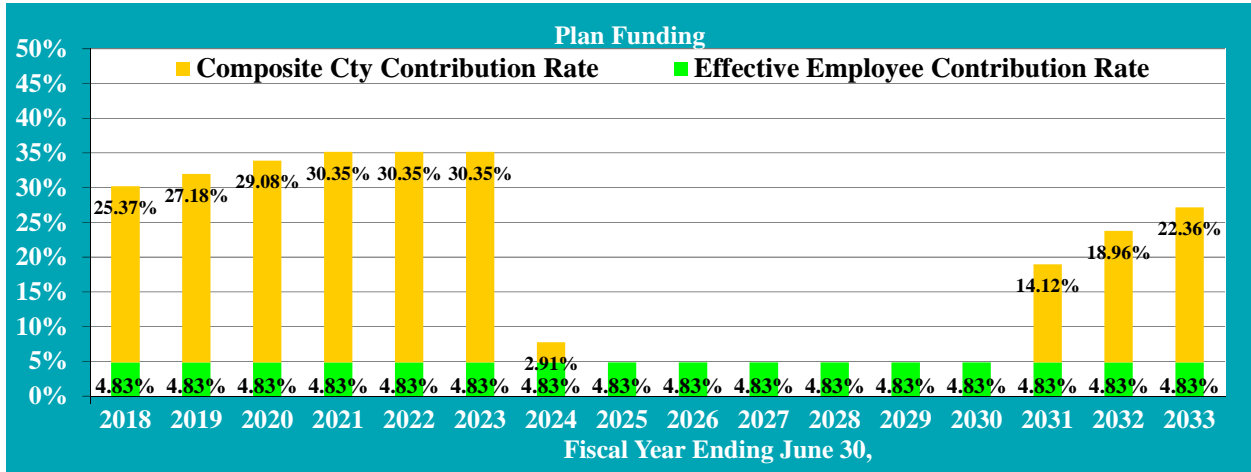


**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

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 enjoy higher than average returns in the first few years, the corridor contribution rate increases over the next few years as the corridor floor is increased to 100%. After that time, the contribution drops dramatically as returns continue to push the funded percent near the 120% top of the corridor.

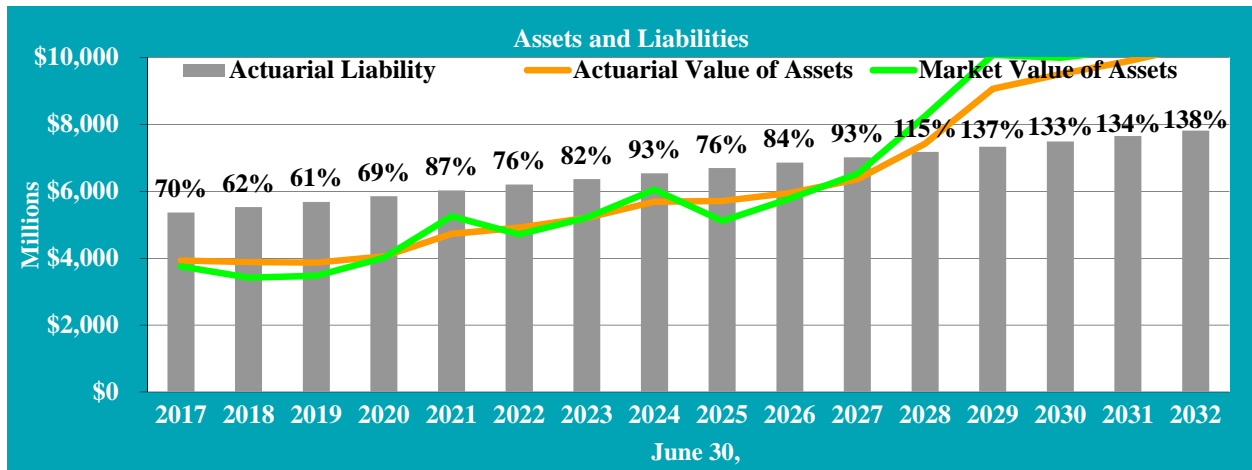
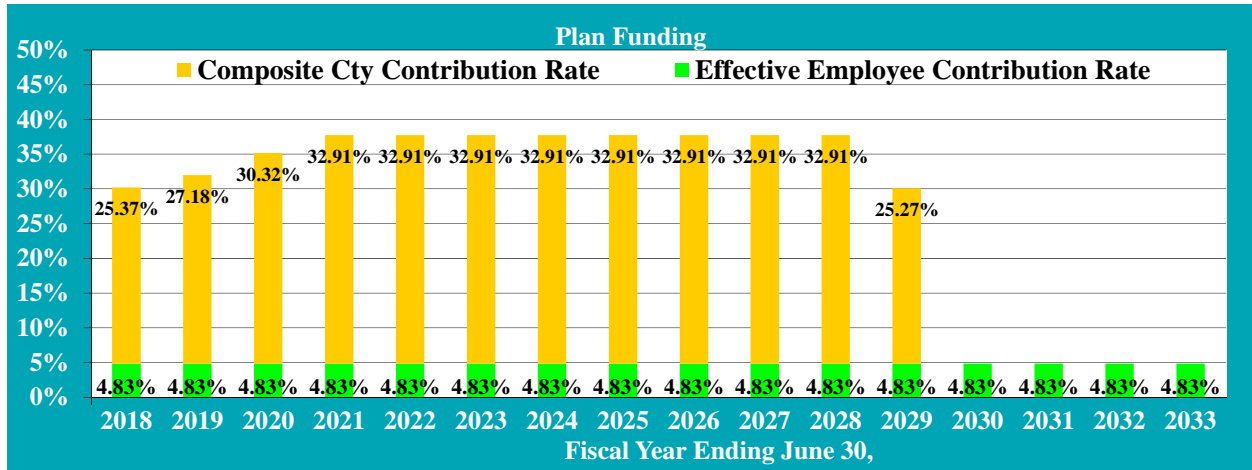


**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

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 corridor contribution rate increases during the phase-up period, holds at 32.91% and then drops off once the System reaches 100% funding.



**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

SECTION I - BOARD SUMMARY

Table I-2 Summary of Principal Plan Results			
Valuation as of:	June 30, 2016	June 30, 2017	% Chg.
<u>Participant Counts</u>			
Actives (excluding DROP)	14,171	13,986	(1.3)%
DROPs	691	745	7.8%
Terminated Vesteds	1,858	2,207	18.8%
In Pay Status	<u>8,189</u>	<u>8,603</u>	5.1%
Total	24,909	25,541	2.5%
Annual Salaries of Active Members	\$ 702,787,358	\$ 728,022,176	3.6%
Annual Retirement Allowances for Retired Members and Beneficiaries (Base amount only – not supplements)	\$ 203,914,539	\$ 220,086,897	7.9%
<u>Assets and Liabilities</u>			
Actuarial Accrued Liability (AL)	\$ 5,116,417,171	\$ 5,367,731,521	4.9%
Assets for Valuation Purposes (AVA)	<u>3,831,179,295</u>	<u>3,930,924,191</u>	2.6%
Unfunded Actuarial Liability	\$ 1,285,237,876	\$ 1,436,807,330	11.8%
Actuarial Value Funding Ratio (AVA/AL)	74.9%	73.2%	
Market Value Funding Ratio (MVA/AL)	70.2%	69.9%	
Present Value of Accrued Benefits	\$ 4,419,589,670	\$ 4,653,102,374	5.3%
Market Value of Assets	<u>3,590,082,229</u>	<u>3,749,384,616</u>	4.4%
Unfunded Accrued Liability (not less than \$0)	\$ 829,507,441	\$ 903,717,758	8.9%
Accrued Benefit Funding Ratio	81.2%	80.6%	
<u>Contributions as a Percentage of Payroll</u>			
	Fiscal Year 2018	Fiscal Year 2019	
<u>Corridor Method:</u>			
Normal Cost Contribution	8.74%	8.54%	
Increase Due to Amortized Changes	3.55%	3.42%	
Administrative Expense	<u>0.25%</u>	<u>0.25%</u>	
Base Rate	12.54%	12.21%	
Amortize to 98%	25.29% ¹	26.47%	
Amortize to 99%	25.95%	27.14%	

¹ The contribution rate currently being paid by the County in FY 2018 is 25.37%, which is based on the amortize to 98% amount shown above, with an additional amount to pay for the disability change.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

SECTION II - 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, employer 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, 2016 and June 30, 2017,
- 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 33 $\frac{1}{3}$ % 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, 2017**

SECTION II - ASSETS

Table II-1		
Statement of Assets at Market Value		
	June 30, 2016	June 30, 2017
<u>Assets</u>		
Equity in County's Pooled Cash,		
Contributions Receivable and Other Assets	\$ 12,384,373	\$ 14,759,227
Accrued Interest and Dividends Receivable	9,797,444	12,333,378
Receivable from Sale of Investments	120,841,193	204,271,731
US Government Obligations	106,026,000	128,353,539
Asset-Backed Securities	160,353,573	136,013,943
Other Bonds and Notes	373,891,983	371,663,379
Common and Preferred Stock	1,143,663,759	886,989,134
Pooled and Mutual Funds	1,603,601,463	1,924,097,215
Short-Term Investments	236,842,762	263,674,511
Cash Collateral Received Under Securities Lending Agreements	301,316,481	222,297,561
Total Assets	\$ 4,068,719,031	\$ 4,164,453,618
<u>Liabilities</u>		
Payable for Collateral Received Under Securities Lending Agreements	\$ 301,316,481	\$ 222,297,561
Payable for Purchase of Investments	169,419,443	183,752,985
Accounts Payable and Accrued Expenses	7,900,878	9,018,456
Total Liabilities	\$ 478,636,802	\$ 415,069,002
Net Assets Available for Benefits	\$ 3,590,082,229	\$ 3,749,384,616

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

SECTION II - ASSETS

Table II-2 Changes in Market Values		
Value of Assets – June 30, 2016		\$ 3,590,082,229.00
<u>Additions</u>		
Contributions:		
Employer Contributions	\$ 167,311,608	
Employee Contributions	<u>35,476,023</u>	
Total Contributions		\$ 202,787,631.00
Investment Income:		
Net Appreciation (Depreciation) in Fair Value of Investments	\$ 223,451,035	
Interest	28,319,741	
Dividends	<u>24,044,119</u>	
Total Investment Income		\$ 275,814,895
Investment Activity Expenses:		
Management Fees	\$ (31,973,036)	
Custodian Fees	(136,911)	
Consulting Expense	(94,356)	
Allocated Administrative Expenses	<u>(981,403)</u>	
Total Investment Activity Expenses		\$ (33,185,706)
From Securities Lending Activities:		
Securities Lending Income	\$ 2,399,133	
Securities Lending Expenses		
Borrowers Rebates	0	
Management Fees	<u>(1,532,145)</u>	
Net Income from Securities Lending Activities		\$ 866,988
Net Investment Income		\$ <u>243,496,177</u>
Total Additions		\$ 446,283,808
<u>Deductions</u>		
Annuity Benefits	\$ (267,245,571)	
Disability Benefits	(7,824,755)	
Survivor Benefits	(6,188,361)	
Refunds and Other Expenses	(3,671,886)	
Administrative Expenses	<u>(2,050,848)</u>	
Total Deductions		\$ <u>(286,981,421)</u>
<u>Total</u>		
Net Increase (Decrease)		\$ 159,302,387
Value of Assets – June 30, 2017		\$ 3,749,384,616

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

SECTION II - 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 33⅓% 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, 2017 valuation.

Table II-3 Development of Actuarial Value of Assets as of June 30, 2017	
1. Actuarial Value of Assets at June 30, 2016	\$ 3,831,179,295
2. Amount in (1) with Interest to June 30, 2017	4,108,939,794
3. Employer and Member Contributions for the Plan Year Ended June 30, 2017	202,787,631
4. Interest on Contributions Assuming Received Uniformly Throughout the Year to June 30, 2017	7,351,052
5. Disbursements from Trust Except Investment Expenses, July 1, 2016 Through June 30, 2017	(286,981,421)
6. Interest on Disbursements Assuming Payments Made Uniformly Throughout the Year to June 30, 2017	(10,403,077)
7. Expected Value of Assets at June 30, 2017 = (2) + (3) + (4) + (5) + (6)	4,021,693,979
8. Market Value of Assets at June 30, 2017	<u>3,749,384,616</u>
9. Excess of (8) Over (7)	\$ (272,309,363)
10. Actuarial Value of Assets at June 30, 2017 = (7) + 33-1/3% of (9)	\$ 3,930,924,191

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

SECTION II - ASSETS

Investment Performance

The market value of assets (MVA) returned 6.86% during 2017, which is less than the assumed 7.25% return. A return of 4.85% 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 II-4
Annual Rates of Return**

Year Ending June 30,	Market Value	Actuarial Value	Total Return Standard & Poor's 500 Index	Barclays Global Aggregate Index¹
1993	15.7%	11.7%	13.6%	13.2%
1994	5.8%	8.9%	1.3%	(1.5)%
1995	13.1%	10.7%	26.1%	12.8%
1996	15.9%	25.0% ²	26.0%	4.7% ³
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)%	(2.9)%	(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)%

¹ Formerly the Lehman Global Aggregate Bond Index.

² The actuarial return in 1996 reflects the adjustment to a revised actuarial valuation method.

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

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

SECTION II - ASSETS

Expected benefit payments are projected for the closed group valued at June 30, 2017. 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 25.37% for FY 2018, and then using the amortize to 99% rate for FY 2019 and amortize to 100% for FY 2020. This projection assumes no further 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.

Table II-5		
Projection of System's Benefit Payments and County Contributions		
Year Beginning	Expected	Expected
<u>July 1,</u>	<u>Benefit Payments</u>	<u>County Contributions</u>
2017	\$ 319,993,000	\$ 184,699,000
2018	333,166,000	197,970,000
2019	339,851,000	208,564,000
2020	343,622,000	219,512,000
2021	363,068,000	225,548,000
2022	381,554,000	231,751,000
2023	397,716,000	238,124,000
2024	413,488,000	244,672,000
2025	429,633,000	251,401,000
2026	445,647,000	258,314,000

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

SECTION III - LIABILITIES

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

- **Disclosure** of system liabilities at June 30, 2016 and June 30, 2017,
- 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 and expenses of the System, assuming participants continue to accrue benefits and all assumptions are met.
- **Actuarial Accrued 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 pay off 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, 2017**

SECTION III - LIABILITIES

Table III-1		
Liabilities/Net (Surplus)/Unfunded		
	June 30, 2016	June 30, 2017
Present Value of Future Benefits		
Active Participant Benefits (excluding DROP)	\$ 2,858,861,955	\$ 2,897,443,152
DROP Participant Benefits	470,992,431	495,716,476
Retiree Benefits	2,416,039,673	2,608,361,852
Terminated Vested and Inactive Members	100,068,748	112,401,724
Present Value of Benefits (PVB)	\$ 5,845,962,807	\$ 6,113,923,204
Market Value of Assets (MVA)	\$ 3,590,082,229	\$ 3,749,384,616
Future Employee Contributions	250,941,517	262,281,194
Future County Contributions	2,004,939,061	2,102,257,394
Total Resources	\$ 5,845,962,807	\$ 6,113,923,204
Actuarial Accrued Liability		
Present Value of Benefits (PVB)	\$ 5,845,962,807	\$ 6,113,923,204
Present Value of Future Normal Costs (PVFNC)		
County Portion	478,604,119	483,910,489
Employee Portion	250,941,517	262,281,194
Actuarial Accrued Liability (AAL = PVB - PVFNC)	\$ 5,116,417,171	\$ 5,367,731,521
Actuarial Value of Assets (AVA)	\$ 3,831,179,295	\$ 3,930,924,191
Net (Surplus)/Unfunded (AAL – AVA)	\$ 1,285,237,876	\$ 1,436,807,330
Present Value of Accrued Benefits		
Present Value of Benefits (PVB)	\$ 5,845,962,807	\$ 6,113,923,204
Present Value of Future Benefit Accruals (PVFBA)	1,426,373,137	1,460,820,830
Present Value of Accrued Benefits (PVAB = PVB – PVFBA)	\$ 4,419,589,670	\$ 4,653,102,374
Market Value of Assets (MVA)	\$ 3,590,082,229	\$ 3,749,384,616
Net Unfunded, not less than \$0 (PVAB – MVA)	\$ 829,507,441	\$ 903,717,758

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

SECTION III - 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 also, 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.

Table III-2			
	Present Value of Benefits	Actuarial Accrued Liability	Present Value of Accrued Benefits
Liabilities June 30, 2016	\$ 5,845,962,807	\$ 5,116,417,171	\$ 4,419,589,670
Liabilities June 30, 2017	<u>6,113,923,204</u>	<u>5,367,731,521</u>	<u>4,653,102,374</u>
Liability Increase (Decrease)	\$ 267,960,397	\$ 251,314,350	\$ 233,512,704
Change Due to:			
Plan Amendment	\$ 662,878	\$ 582,418	\$ 646,501
Actuarial (Gain)/Loss	<i>Not Calculated</i>	74,947,986	<i>Not Calculated</i>
Method and Assumption Changes	0	0	0
Benefits Accumulated and Other Sources	267,297,519	175,783,946	232,866,203

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

SECTION IV - 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.

Budgeted Rate (Based on Corridor Method)

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 the expense rate, as long as the System's actuarial funded status remains within a corridor of 90% to 120%. The normal cost rate and actuarial accrued liability will continue to be measured using the entry age funding method. If the funded status falls outside the corridor, a credit (if above 120%) or charge (if below 90%) will be established based on a 15-year amortization equal to the amount necessary to re-enter the corridor.

Table IV-1	
Changes Since 2001	Impact on UAL Rate
2005 Assumption Changes	+ 1.23%
2006 DROP Implementation	+ 0.10%
2006 DPSC Conversion	- 0.04%
2007 Reduce Disability Offset to 40%	+ 0.03%
2008 Reduce Disability Offset to 30%	+ 0.02%
2010 Assumption Changes	+ 0.02%
2013 Reduce Disability Offset to 25%	+ 0.01%
2014 Assumption Changes	+ 1.15%
2014 Reduce Disability Offset to 15%	+ 0.02%
2016 Assumption Changes	<u>+ 0.88%</u>
Total Increase	+ 3.42%

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

SECTION IV - CONTRIBUTIONS

The table below presents and compares the budgeted rate for the System for this valuation and the prior one. In both cases, the amortization follows the corridor amortization to Total County Rate using 90%.

Table IV-2		
Actuarially Determined Rate (for Corridor Contribution)		
Valuation Date	June 30, 2016	June 30, 2017
Fiscal Year	2018	2019
Normal Cost Rate	8.74%	8.54%
UAL Rate	3.55%	3.42%
Amortization of Amount Outside Corridor (90%)	7.49%	8.94%
Expense Rate	<u>0.25%</u>	<u>0.25%</u>
Total County Rate	20.03%	21.15%
Total Rate with Alternative Amortization Targets of		
98%	25.29% ¹	26.47%
99%	25.95%	27.14% ²

¹ The actual contribution rate being paid by the County in FY 2018 is 25.37%, which is based on the amortize to 98% amount shown above with an additional amount to pay for the disability change.

² The actual contribution rate will include an additional amount of 0.08% to pay for the disability change.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

SECTION IV - CONTRIBUTIONS

Table IV-3 Development of Corridor Contribution Rate		
	June 30, 2016 (for FY 2018)	June 30, 2017 (for FY 2019)
1. Present Value of Future Benefits		
a. Active Employees	\$ 2,858,861,955	\$ 2,897,443,152
b. DROP	470,992,431	495,716,476
c. Retired Members	2,416,039,673	2,608,361,852
d. Vested Terminated and Inactive Members	<u>100,068,748</u>	<u>112,401,724</u>
e. Total Present Value	\$ 5,845,962,807	\$ 6,113,923,204
2. Present Value of Future Normal Costs		
a. County Portion	\$ 478,604,119	\$ 483,910,489
b. Employee Portion	<u>250,941,517</u>	<u>262,281,194</u>
c. Total Present Value	\$ 729,545,636	\$ 746,191,683
3. Actuarial Accrued Liability (1) – (2)	\$ 5,116,417,171	\$ 5,367,731,521
4. Actuarial Value of Assets for Corridor Purposes		
a. Actuarial Assets	\$ 3,831,179,295	\$ 3,930,924,191
b. Outstanding Balance of Plan and Assumption Changes	<u>189,824,854</u>	<u>178,546,464</u>
c. Adjusted Assets (a) + (b)	\$ 4,021,004,149	\$ 4,109,470,655
5. Funding Ratio for Corridor Test	78.6%	76.6%
6. Liability to be Amortized if outside Corridor		
a. [98% or 99%]x(3) - (4)(c)	\$ 993,084,678	\$ 1,204,583,551
b. (4)(c) - 120%x(3)	0	0
7. Active Member Payroll	\$ 702,787,358	\$ 728,022,176
8. Unfunded Liability Amortization Factor	11.0842	11.0842
9. Amortization as a % of Payroll (6)/(7)/(8)	12.75%	14.93%
10. County Contribution Results (Corridor)		
a. Normal Cost Rate	8.74%	8.54%
b. Administrative Expense Rate	0.25%	0.25%
c. Plan Change Amortizations	3.55%	3.42%
d. Amortization Outside Corridor (9)	<u>12.75%</u>	<u>14.93%</u>
e. Total County Contribution Rate June 30	25.29%	27.14%

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

SECTION V - 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, 2016 and June 30, 2017 are exhibited in Table V-1, which also includes a reconciliation of liabilities determined as of the prior valuation, June 30, 2016 to the liabilities as of June 30, 2017.

Table V-2 is a history of gains and losses in Accrued Liability, and Table V-3 is the Solvency Test, which shows the portion of Accrued Liability covered by Assets. See our report dated September 20, 2017 for the required disclosures under GASB Statement No. 67.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

SECTION V - ACCOUNTING STATEMENT INFORMATION

Table V-1		
Accounting Statement Information		
	June 30, 2016	June 30, 2017
A. FASB ASC Topic 960 Basis		
1. Present Value of Benefits Accrued and Vested to Date		
a. Members Currently Receiving Payments	\$ 2,416,039,673	\$ 2,608,361,852
b. Vested Terminated and Inactive Members	100,068,748	112,401,724
c. DROP	470,992,431	495,716,476
d. Active Members	<u>867,096,663</u>	<u>848,517,525</u>
e. Total PVVB	\$ 3,854,197,515	\$ 4,064,997,577
2. Present Value of Non-Vested Accrued Benefits for Active Members	<u>565,392,155</u>	<u>588,104,797</u>
3. Total Present Value of Accrued Benefits	\$ 4,419,589,670	\$ 4,653,102,374
4. Assets at Market Value	<u>3,590,082,229</u>	<u>3,749,384,616</u>
5. Unfunded Present Value of Accrued Benefits, But Not Less Than Zero	\$ 829,507,441	\$ 903,717,758
6. Ratio of Assets to Value of Benefits (4) / (3)	81.2%	80.6%
B. Statement of Changes in Present Value of Accrued Benefits		
Actuarial Present Value of Accrued Benefits as of June 30, 2016		\$ 4,419,589,670
Increase (Decrease) During Years Attributable to:		
Passage of Time		\$ 310,138,389
Benefit Paid – FY 2017		(284,930,573)
Assumption Change		0
Plan Amendment		646,501
Benefits Accrued, Other Gains/Losses		<u>207,658,387</u>
Net Increase (Decrease)		\$ 233,512,704
Actuarial Present Value of Accrued Benefits as of June 30, 2017		\$ 4,653,102,374

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

SECTION V - ACCOUNTING STATEMENT INFORMATION

**Table V-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>					
	2012	2013	2014	2015	2016	2017
Investment Income	\$ 59,620,255	\$ 46,004,262	\$ 113,443,149	\$ (33,127,096)	\$ (120,548,533)	\$ (90,769,788)
Combined Liability Experience	<u>(74,547,089)</u>	<u>(39,401,877)</u>	<u>3,445,687</u>	<u>73,129,057</u>	<u>34,314,735</u>	<u>(74,947,986)</u>
Gain (or Loss) During Year from Financial Experience	\$ (14,926,834)	\$ 6,602,385	\$ 116,888,836	\$ 40,001,961	\$ (86,233,798)	\$ (165,717,774)
Non-Recurring Items	<u>0</u>	<u>(727,193)</u>	<u>(1,462,698)</u>	<u>0</u>	<u>(69,346,439)</u>	<u>(582,418)</u>
Composite Gain (or Loss) During Year	\$ (14,926,834)	\$ 5,875,192	\$ 115,426,138	\$ 40,001,961	\$ (155,580,237)	\$ (166,300,192)

**Table V-3
Solvency Test
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)
2012	\$ 332,723,684	\$ 2,411,862,623	\$ 1,519,589,131	\$ 3,053,412,085	100%	100%	20%
2013	355,254,873	2,587,007,980	1,531,567,801	3,261,923,577	100%	100%	21%
2014	363,335,228	2,769,188,984	1,668,195,558	3,614,067,515	100%	100%	29%
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%

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

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

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, 2016.

Data reported in this Appendix is as of the December 31, 2016 data collection date. Covered payroll and benefits in pay status reported elsewhere in this report have been adjusted to approximate the June 30, 2017 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 June 30, 2017

		Active Members *		
		Count	Average Age	Average Salary
School	Plan A	1,945	52.87	\$ 33,028
	Plan B	2,176	53.49	38,370
	Plan C	1,188	45.29	21,629
	Plan D	<u>527</u>	<u>46.52</u>	<u>25,751</u>
	Total	5,836	50.98	\$ 32,042
County	Plan A	2,116	49.17	\$ 64,498
	Plan B	3,734	48.75	66,048
	Plan C	670	38.17	48,975
	Plan D	<u>1,630</u>	<u>39.65</u>	<u>59,425</u>
	Total	8,150	46.17	\$ 62,918
Total Systems	Plan A	4,061	50.94	\$ 49,426
	Plan B	5,910	50.50	55,857
	Plan C	1,858	42.72	31,490
	Plan D	<u>2,157</u>	<u>41.33</u>	<u>51,197</u>
	Total	13,986	48.18	\$ 50,034

*Excludes DROP participants.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

APPENDIX A - MEMBERSHIP INFORMATION

	Inactive Members		Total
	School	County	
Service Retirement			
Count	3,057	4,634	7,691
Annual Basic Benefit	\$ 53,353,482	\$ 149,092,731	\$ 202,446,213
Annual Supplements	8,817,050	25,705,784	34,522,834
Service – Connected Disability			
Count	72	74	146
Annual Basic Benefit ¹	\$ 1,561,320	\$ 2,183,938	\$ 3,745,258
Ordinary Disability			
Count	214	144	358
Annual Basic Benefit	\$ 2,007,511	\$ 2,239,837	\$ 4,247,349
Beneficiaries			
Count	30	378	408
Annual Basic Benefit	\$ 377,698	\$ 6,202,782	\$ 6,580,479
DROP			
Count	199	546	745
Annual Basic Benefit	\$ 4,493,612	\$ 20,982,782	\$ 25,476,394
Annual Supplements	2,104,174	9,583,049	11,687,223
Vested Former Members			
Count	1,029	1,178	2,207
Annual Basic Benefit ²	\$ 4,932,093	\$ 9,827,696	\$ 14,759,789

¹Benefits are net of offsets for Workers' Compensation and Social Security.

²Benefits are payable at age 65.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

APPENDIX A - MEMBERSHIP INFORMATION

Membership Statistics						
The number of retired members, beneficiaries, and disabled members can be analyzed as follows:						
	<u>June 30, 2016</u>		<u>June 30, 2017</u>		<u>% Change</u>	
		Average Monthly Benefit		Average Monthly Benefit		Average Monthly Benefit
Inactive Members	Count		Count		Count	
Service Retirement						
Basic Benefit	7,300	\$ 2,167	7,691	\$ 2,221	5.4%	2.5%
Supplement	1,811	1,427	1,866	1,471	3.0%	3.1%
Service-Connected Disability	149	2,272	146	2,282	-2.0%	0.5%
Ordinary Disability	359	1,003	358	1,007	-0.3%	0.4%
Beneficiaries	<u>381</u>	<u>1,360</u>	<u>408</u>	<u>1,361</u>	<u>7.1%</u>	<u>0.1%</u>
Total/Average (Basic Benefit)	8,189	2,080	8,603	2,131	5.1%	2.5%

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

APPENDIX A - MEMBERSHIP INFORMATION

Data Reconciliation from June 30, 2016 to June 30, 2017										
	Active	DROP	Terminated Vested	Retired	Service- Connected Disability	Ordinary Disability	Widow	Beneficiary	Child	Total
Participant count as of July 1, 2016	14,171	691	1,858	7,300	149	359	0	381	0	24,909
New Hires / Re-hires	1,404		(23)							1,381
Terminated Vested	(259)		261							2
DROP	(340)	340								0
Retired	(227)	(286)	(55)	569		(1)				0
Deceased with beneficiary	(10)			(19)				29		0
Deceased without beneficiary	(19)	(1)	(3)	(171)	(5)	(16)				(215)
Benefits Expired										0
Ordinary Disability	(11)		(2)			13				0
Service-Connected Disability	(2)				2					0
Terminated Not Vested	(721)									(721)
Corrections	-	<u>1</u>	<u>171</u>	<u>12</u>	-	<u>3</u>		<u>(2)</u>		<u>185</u>
Change	(185)	54	349	391	(3)	(1)	0	27	0	632
Participant count as of June 30, 2017	13,986	745	2,207	7,691	146	358	0	408	0	25,541

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

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	1	0	0	0	0	0	0	0	1
25 to 29	0	20	20	3	0	0	0	0	0	43
30 to 34	1	38	89	37	3	0	0	0	0	168
35 to 39	0	17	91	104	27	0	0	0	0	239
40 to 44	0	17	58	76	65	17	0	0	0	233
45 to 49	1	14	71	64	80	84	59	13	13	386
50 to 54	0	25	56	52	78	88	110	25	25	434
55 to 59	0	12	68	57	78	46	41	20	20	322
60 to 64	0	19	26	54	34	24	24	16	16	197
65 & up	0	16	21	17	12	8	11	8	8	93
Total	2	179	500	464	377	267	245	82	82	2,116

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	\$ 42,652	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 42,652
25 to 29	0	733,586	933,399	140,369	0	0	0	0	0	1,807,354
30 to 34	24,598	1,744,130	4,613,754	1,828,994	143,611	0	0	0	0	8,355,087
35 to 39	0	873,553	5,076,696	6,256,913	1,627,302	0	0	0	0	13,834,464
40 to 44	0	742,391	3,258,889	4,586,120	4,346,910	1,108,381	0	0	0	14,042,691
45 to 49	20,643	700,971	3,623,735	3,912,031	5,584,858	7,070,623	4,697,861	952,318	952,318	26,563,040
50 to 54	0	976,968	3,204,902	3,089,313	5,655,620	7,003,412	9,624,910	2,165,056	2,165,056	31,720,181
55 to 59	0	273,870	3,587,708	3,221,291	5,237,773	3,781,723	3,418,436	1,936,821	1,936,821	21,457,622
60 to 64	0	666,234	1,319,607	3,252,194	2,121,348	1,722,050	2,166,409	1,978,369	1,978,369	13,226,211
65 & up	0	445,951	902,089	838,297	771,030	545,107	871,368	1,054,420	1,054,420	5,428,262
Total	\$ 45,241	\$ 7,200,306	\$ 26,520,779	\$ 27,125,522	\$ 25,488,452	\$ 21,231,296	\$ 20,778,984	\$ 8,086,984	\$ 8,086,984	\$ 136,477,564

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

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	1	0	0	0	0	0	0	0	1
25 to 29	0	41	60	2	0	0	0	0	0	103
30 to 34	0	70	217	63	2	0	0	0	0	352
35 to 39	0	43	198	136	40	0	0	0	0	417
40 to 44	0	47	168	143	75	14	0	0	0	447
45 to 49	0	50	165	166	125	49	40	6	6	601
50 to 54	0	51	173	147	147	73	50	21	21	662
55 to 59	0	45	171	165	123	50	22	14	14	590
60 to 64	0	36	133	131	94	19	7	6	6	426
65 & up	0	5	41	36	37	6	3	7	7	135
Total	0	389	1,326	989	643	211	122	54	54	3,734

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	\$ 49,945	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 49,945
25 to 29	0	2,093,365	2,872,954	98,233	0	0	0	0	0	5,064,552
30 to 34	0	3,648,034	11,860,416	3,319,092	100,643	0	0	0	0	18,928,185
35 to 39	0	2,495,180	12,007,624	7,980,627	2,443,915	0	0	0	0	24,927,346
40 to 44	0	2,892,982	10,727,200	9,668,178	5,255,039	1,044,586	0	0	0	29,587,985
45 to 49	0	2,619,124	10,826,764	11,357,716	9,759,707	4,248,180	3,171,657	477,776	477,776	42,460,924
50 to 54	0	2,563,167	10,983,653	9,933,784	11,082,974	6,221,519	4,092,298	1,840,306	1,840,306	46,717,701
55 to 59	0	2,360,031	10,446,617	11,117,529	9,350,234	4,435,758	1,936,409	1,407,949	1,407,949	41,054,527
60 to 64	0	1,655,450	9,350,055	8,478,488	6,916,033	1,413,741	577,125	523,570	523,570	28,914,462
65 & up	0	175,555	2,493,233	2,303,832	2,598,598	499,503	172,988	675,590	675,590	8,919,299
Total	\$ 0	\$ 20,552,833	\$ 81,568,516	\$ 64,257,479	\$ 47,507,143	\$ 17,863,287	\$ 9,950,477	\$ 4,925,191	\$ 4,925,191	\$ 246,624,926

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

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	33	12	0	0	0	0	0	0	0	45
25 to 29	56	112	0	0	0	0	0	0	0	168
30 to 34	46	83	0	0	0	0	0	0	0	129
35 to 39	32	50	0	0	0	0	0	0	0	82
40 to 44	20	36	0	0	0	0	0	0	0	56
45 to 49	23	33	0	0	0	0	0	0	0	56
50 to 54	22	36	0	1	0	0	0	0	0	59
55 to 59	11	21	0	0	0	0	0	0	0	32
60 to 64	18	12	0	0	0	0	0	0	0	30
65 & up	8	5	0	0	0	0	0	0	0	13
Total	269	400	0	1	0	0	0	0	0	670

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	\$ 1,125,270	\$ 495,545	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 1,620,815
25 to 29	2,493,896	5,196,476	0	0	0	0	0	0	0	7,690,372
30 to 34	2,137,330	4,287,712	0	0	0	0	0	0	0	6,425,042
35 to 39	1,435,982	2,629,766	0	0	0	0	0	0	0	4,065,748
40 to 44	917,075	1,786,993	0	0	0	0	0	0	0	2,704,068
45 to 49	1,201,455	2,120,693	0	0	0	0	0	0	0	3,322,148
50 to 54	1,212,755	2,009,622	0	83,272	0	0	0	0	0	3,305,649
55 to 59	443,468	1,289,096	0	0	0	0	0	0	0	1,732,564
60 to 64	616,062	790,923	0	0	0	0	0	0	0	1,406,985
65 & up	265,469	274,666	0	0	0	0	0	0	0	540,135
Total	\$ 11,848,762	\$ 20,881,492	\$ 0	\$ 83,272	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 32,813,526

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

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	42	30	0	0	0	0	0	0	0	72
25 to 29	111	218	0	0	0	0	0	0	0	329
30 to 34	77	211	0	0	0	0	0	0	0	288
35 to 39	68	176	0	1	0	0	0	0	0	245
40 to 44	52	113	1	0	0	0	0	0	0	166
45 to 49	56	127	1	0	0	0	0	0	0	184
50 to 54	45	101	1	0	0	0	0	0	0	147
55 to 59	38	89	0	1	0	0	0	0	0	128
60 to 64	11	48	0	0	0	0	0	0	0	59
65 & up	2	10	0	0	0	0	0	0	0	12
Total	502	1,123	3	2	0	0	0	0	0	1,630

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	\$ 1,796,282	\$ 1,308,288	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 3,104,570
25 to 29	5,326,510	10,795,370	0	0	0	0	0	0	0	16,121,880
30 to 34	4,735,154	12,223,501	0	0	0	0	0	0	0	16,958,655
35 to 39	4,297,971	10,912,728	0	60,631	0	0	0	0	0	15,271,330
40 to 44	3,475,694	7,425,046	76,172	0	0	0	0	0	0	10,976,912
45 to 49	3,198,794	7,822,749	46,927	0	0	0	0	0	0	11,068,470
50 to 54	2,975,906	6,492,856	31,084	0	0	0	0	0	0	9,499,846
55 to 59	2,459,352	6,284,559	0	181,029	0	0	0	0	0	8,924,940
60 to 64	630,300	3,251,191	0	0	0	0	0	0	0	3,881,491
65 & up	104,670	949,294	0	0	0	0	0	0	0	1,053,964
Total	\$ 29,000,633	\$ 67,465,582	\$ 154,183	\$ 241,660	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 96,862,058

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

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	2	0	0	0	0	0	0	0	2
25 to 29	0	5	4	2	0	0	0	0	0	11
30 to 34	1	23	18	7	0	0	0	0	0	49
35 to 39	2	55	49	20	5	0	0	0	0	131
40 to 44	3	82	63	52	15	2	0	0	0	217
45 to 49	4	107	109	52	31	7	4	2	2	316
50 to 54	1	108	128	67	39	12	12	7	7	374
55 to 59	1	99	135	85	46	11	6	9	9	392
60 to 64	1	66	111	58	24	10	5	1	1	276
65 & up	0	52	73	31	12	4	1	4	4	177
Total	13	599	690	374	172	46	28	23	23	1,945

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	\$ 54,197	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 54,197
25 to 29	0	138,807	147,365	109,898	0	0	0	0	0	396,070
30 to 34	28,763	673,557	677,010	284,854	0	0	0	0	0	1,664,184
35 to 39	40,349	1,529,120	1,671,333	950,552	275,420	0	0	0	0	4,466,774
40 to 44	106,173	2,147,277	2,026,500	2,126,669	806,679	116,315	0	0	0	7,329,613
45 to 49	70,628	2,708,954	3,529,944	2,122,192	1,558,857	398,493	284,153	123,318	123,318	10,796,539
50 to 54	13,508	1,969,793	4,124,031	2,731,173	1,864,321	592,039	775,706	465,039	465,039	12,535,610
55 to 59	13,233	2,098,851	4,108,854	3,269,044	2,262,994	622,390	436,917	640,005	640,005	13,452,288
60 to 64	65,455	1,349,698	3,029,097	2,130,417	949,780	556,302	281,428	65,180	65,180	8,427,357
65 & up	0	1,126,242	1,974,330	1,065,566	467,285	203,361	58,564	222,270	222,270	5,117,618
Total	\$ 338,109	\$ 13,796,496	\$ 21,288,464	\$ 14,790,365	\$ 8,185,336	\$ 2,488,900	\$ 1,836,768	\$ 1,515,812	\$ 1,515,812	\$ 64,240,250

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

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	2	0	0	0	0	0	0	0	2
25 to 29	0	10	9	1	0	0	0	0	0	20
30 to 34	2	16	20	13	0	0	0	0	0	51
35 to 39	2	25	38	30	8	0	0	0	0	103
40 to 44	0	48	54	48	29	9	3	0	0	191
45 to 49	1	82	83	72	61	16	25	3	3	343
50 to 54	0	102	138	74	78	50	22	4	4	468
55 to 59	0	86	120	127	84	42	6	7	7	472
60 to 64	1	65	115	94	53	21	6	3	3	358
65 & up	1	32	59	48	18	3	5	2	2	168
Total	7	468	636	507	331	141	67	19	19	2,176

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	\$ 62,388	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 62,388
25 to 29	0	315,874	361,566	46,793	0	0	0	0	0	724,233
30 to 34	12,168	471,735	944,975	617,503	0	0	0	0	0	2,046,381
35 to 39	14,462	838,024	1,671,676	1,320,379	408,805	0	0	0	0	4,253,346
40 to 44	0	1,274,619	1,981,330	2,148,982	1,665,842	596,812	210,907	0	0	7,878,492
45 to 49	6,845	1,873,885	2,854,769	2,963,949	3,219,220	971,049	1,828,610	257,895	257,895	13,976,222
50 to 54	0	1,886,398	4,552,241	3,104,062	4,166,104	3,108,122	1,655,588	259,724	259,724	18,732,239
55 to 59	0	1,761,655	3,545,479	5,356,085	4,064,056	2,429,673	404,697	463,869	463,869	18,025,514
60 to 64	31,978	1,240,238	3,171,267	3,615,386	2,700,508	1,120,020	477,660	269,420	269,420	12,626,477
65 & up	16,584	621,197	1,603,231	1,628,856	764,118	125,965	282,824	124,323	124,323	5,167,098
Total	\$ 82,037	\$ 10,346,013	\$ 20,686,534	\$ 20,801,995	\$ 16,988,653	\$ 8,351,641	\$ 4,860,286	\$ 1,375,231	\$ 1,375,231	\$ 83,492,390

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

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	27	11	0	0	0	0	0	0	38
25 to 29	71	32	0	0	0	0	0	0	103
30 to 34	87	40	0	0	0	0	0	0	127
35 to 39	88	51	0	0	0	0	0	0	139
40 to 44	98	68	0	0	0	0	0	0	166
45 to 49	101	75	0	0	0	0	0	0	176
50 to 54	95	76	0	0	0	0	0	0	171
55 to 59	85	51	0	0	0	0	0	0	136
60 to 64	62	32	0	0	0	0	0	0	94
65 & up	25	13	0	0	0	0	0	0	38
Total	739	449	0	0	0	0	0	0	1,188

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	\$ 379,832	\$ 252,308	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 632,140
25 to 29	1,274,061	926,567	0	0	0	0	0	0	2,200,628
30 to 34	1,564,228	1,064,409	0	0	0	0	0	0	2,628,637
35 to 39	1,687,739	1,654,432	0	0	0	0	0	0	3,342,171
40 to 44	1,553,548	1,811,922	0	0	0	0	0	0	3,365,470
45 to 49	1,538,837	2,040,390	0	0	0	0	0	0	3,579,227
50 to 54	1,556,439	2,185,043	0	0	0	0	0	0	3,741,482
55 to 59	1,386,454	1,609,664	0	0	0	0	0	0	2,996,118
60 to 64	1,365,540	957,160	0	0	0	0	0	0	2,322,700
65 & up	515,982	370,931	0	0	0	0	0	0	886,913
Total	\$ 12,822,660	\$ 12,872,826	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 25,695,486

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

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	9	7	0	0	0	0	0	0	0	16
25 to 29	9	20	0	0	0	0	0	0	0	29
30 to 34	21	18	0	0	0	0	0	0	0	39
35 to 39	23	37	0	0	0	0	0	0	0	60
40 to 44	26	32	0	0	0	0	0	0	0	58
45 to 49	48	70	0	0	0	0	0	0	0	118
50 to 54	31	54	0	0	0	0	0	0	0	85
55 to 59	23	49	0	0	0	0	0	0	0	72
60 to 64	8	25	0	0	0	0	0	0	0	33
65 & up	7	10	0	0	0	0	0	0	0	17
Total	205	322	0	0	0	0	0	0	0	527

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	\$ 149,665	\$ 200,258	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 349,923
25 to 29	160,261	668,299	0	0	0	0	0	0	0	828,560
30 to 34	422,925	595,964	0	0	0	0	0	0	0	1,018,889
35 to 39	404,896	1,101,564	0	0	0	0	0	0	0	1,506,460
40 to 44	462,628	1,125,294	0	0	0	0	0	0	0	1,587,922
45 to 49	814,340	2,097,972	0	0	0	0	0	0	0	2,912,312
50 to 54	562,339	1,495,327	0	0	0	0	0	0	0	2,057,666
55 to 59	463,115	1,493,665	0	0	0	0	0	0	0	1,956,780
60 to 64	177,788	758,303	0	0	0	0	0	0	0	936,091
65 & up	146,978	269,153	0	0	0	0	0	0	0	416,131
Total	\$ 3,764,935	\$ 9,805,799	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 13,570,734

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

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	111	66	0	0	0	0	0	0	0	177
25 to 29	247	458	93	8	0	0	0	0	0	806
30 to 34	235	499	344	120	5	0	0	0	0	1,203
35 to 39	215	454	376	291	80	0	0	0	0	1,416
40 to 44	199	443	344	319	184	42	3	0	0	1,534
45 to 49	234	558	429	354	297	156	128	24	0	2,180
50 to 54	194	553	496	341	342	223	194	57	0	2,400
55 to 59	158	452	494	435	331	149	75	50	0	2,144
60 to 64	101	303	385	337	205	74	42	26	0	1,473
65 & up	43	143	194	132	79	21	20	21	0	653
Total	1,737	3,929	3,155	2,337	1,523	665	462	178	0	13,986

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	\$ 3,451,049	\$ 2,465,581	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 5,916,630
25 to 29	9,254,728	20,868,344	4,315,284	395,293	0	0	0	0	0	34,833,649
30 to 34	8,925,166	24,709,042	18,096,155	6,050,443	244,254	0	0	0	0	58,025,060
35 to 39	7,881,399	22,034,367	20,427,329	16,569,102	4,755,442	0	0	0	0	71,667,639
40 to 44	6,515,118	19,206,524	18,070,091	18,529,949	12,074,470	2,866,094	210,907	0	0	77,473,153
45 to 49	6,851,542	21,984,738	20,882,139	20,355,888	20,122,642	12,688,345	9,982,281	1,811,307	0	114,678,882
50 to 54	6,320,947	19,579,174	22,895,911	18,941,604	22,769,019	16,925,092	16,148,502	4,730,125	0	128,310,374
55 to 59	4,765,622	17,171,391	21,688,658	23,144,978	20,915,057	11,269,544	6,196,459	4,448,644	0	109,600,353
60 to 64	2,887,123	10,669,197	16,870,026	17,476,485	12,687,669	4,812,113	3,502,622	2,836,539	0	71,741,774
65 & up	1,049,683	4,232,989	6,972,883	5,836,551	4,601,031	1,373,936	1,385,744	2,076,603	0	27,529,420
Total	\$ 57,902,377	\$ 162,921,347	\$ 150,218,476	\$ 127,300,293	\$ 98,169,584	\$ 49,935,124	\$ 37,426,515	\$ 15,903,218	\$ 0	\$ 699,776,934

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

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 2017		
Age	Male	Female
20	4	2
25	5	2
30	5	2
35	6	3
40	7	4
45	11	7
50	46	27
55	64	37
60	86	55
65	125	84
70	191	134
75	309	219
80	521	370
85	908	655
90	1,602	1,175
95	2,524	1,937
100	3,581	2,873

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.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

APPENDIX B - ACTUARIAL ASSUMPTIONS AND METHODS

b. Disabled Mortality

Annual Deaths Per 10,000 Members Mortality Projected to 2017		
Age	Male	Female
45	174	106
50	209	135
55	237	170
60	269	205
65	326	251
70	418	337
75	569	493
80	811	745

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)

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

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

APPENDIX B - ACTUARIAL ASSUMPTIONS AND METHODS

Annual Termination Rates Per 1,000 Members – Schools	
Service	Termination
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

Annual Disabilities Per 10,000 Members*		
Age	Male	Female
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.

FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017

APPENDIX B - ACTUARIAL ASSUMPTIONS AND METHODS

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

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

APPENDIX B - ACTUARIAL ASSUMPTIONS AND METHODS

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.

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

g. Merit/Seniority Salary Increase (in Addition to Across-the-Board Increase)

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

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

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

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.

Under the Corridor Funding Method, the employer's total contribution rate is equal to the normal cost rate plus the UAL amortization rates for changes due to assumption changes or amendments passed since July 1, 2001 plus the expense rate as long as the System's actuarial funded status remains within a corridor of 90% to 120%. If the funded status falls outside the corridor, a credit (if above 120%) or charge (if below 90%) will be established based on a 15-year amortization equal to the amount necessary to re-enter the corridor.

The 90% corridor floor is being increased to 100% by 2020. As of the 2016 valuation, the floor had reached 98%. Amortization is currently performed using an open 15-year period (with the exception of prior changes identified in Section IV). Once the corridor floor reaches 100%, the 15-year period will be closed. Continued use of an open amortization period would result in the System's UAL never being fully exhausted.

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.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

APPENDIX B - ACTUARIAL ASSUMPTIONS AND METHODS

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.

4. Changes Since Last Valuation and Rationale for Changes

None

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

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 may elect to join Plan C or Plan D.

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 and D: 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 (\$127,200 in 2017).

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.

FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017

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%.

All Plans: 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 reached his/her SSRA (age 65, 66, or 67).

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.

10. Service-Connected Disability

Eligibility

No age or service requirement

FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017

APPENDIX C - SUMMARY OF PLAN PROVISIONS

Benefit

66-2/3% of average final compensation less 5% of any primary Social Security benefit to which the member is entitled and less 100% of Virginia Workers' Compensation benefit.

11. Ordinary Disability

Eligibility

Five years of credited service

Benefit

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%

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

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

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

APPENDIX C - SUMMARY OF PLAN PROVISIONS

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 ²/₃%, 75%, or 100% continuation to the spouse.

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.

**FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2017**

APPENDIX C - SUMMARY OF PLAN PROVISIONS

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

The service-connected disability benefit offset was reduced from 10% to 5% of any primary Social Security benefit.



Classic Values, Innovative Advice