

Fairfax County Uniformed Retirement System

Actuarial Valuation as of July 1, 2015

Produced by Cheiron

January 2016

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January 21, 2016

Board of Trustees Fairfax County Uniformed Retirement System 10680 Main Street, Suite 280 Fairfax, Virginia 22030-3812

Re: Fairfax County Uniformed Retirement System Actuarial Valuation as of July 1, 2015

Dear Members of the Board:

At your request, we have conducted our annual actuarial valuation of the Fairfax County Uniformed Retirement System as of July 1, 2015. 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 Uniformed Retirement System. This report is for the use of the Fairfax County Uniformed 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 County contribution for Fiscal Year 2017 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.

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 Number 23.

This report was prepared exclusively for the Fairfax County Uniformed Retirement System for the purpose described herein. This report is not intended to benefit any third party, and Cheiron assumes no duty or liability to any such party.

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. Board of Trustees Fairfax County Uniformed Retirement System January 21, 2016

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 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

Shist

Fiona E. Liston, FSA, EA Principal Consulting Actuary

Coralie Million

Coralie A. Milligan, FSA, EA Associate Actuary



FOREWORD

Cheiron has performed the actuarial valuation of the Fairfax County Uniformed Retirement System as of July 1, 2015. 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 2017; 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 system 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 Number 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.



SECTION I BOARD SUMMARY

General Comments

Fairfax County's annual contribution to this System is determined by using a corridor funding method. Under this funding approach, the County's contribution rate base rate consists of the normal cost rate plus an 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 FY 2017 as calculated under this method decreases from 33.56% to 31.49% of payroll when using the 90% corridor floor. The County's FY 2016 contribution was actually based on a 95% corridor floor and for FY 2017, we have provided numbers for a 96% and 97% floor. On that basis, the contribution in FY 2016 was 38.83% and for FY 2017 it will be in the range of 37.75% to 38.80%.

This valuation contains information reported in the June 30, 2015 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 2015, causing an actuarial loss on the asset side of the System. The actual return on a market value basis was approximately 1.44%. On an actuarial value basis, the assets returned 6.65% compared with an assumed rate of return of 7.5%. The investment loss recognized for funding purposes was \$12.4 million.

The measurement of liabilities produced a gain this year in the amount of \$40.0 million. This gain was due to experience compared to our assumptions about salary increases, retirement behavior, death, etc. Specific components of the loss include:

- The average salary increase was 2.9% for active participants who were in both the July 1, 2014 and July 1, 2015 valuations. This was less than the expected salary growth based on the actuarial assumption, which worked out to average 5.8%. This resulted in a gain of \$16.6 million. The annual payroll was provided as of December 31, 2014 and adjusted to July 1, 2015, which included a 1.1% increase as of July 1, 2015.
- The valuation assumed a 2.75% cost-of-living adjustment in 2015 for benefits in pay status. The actual CPI-based COLA was 0.2% last year, creating a liability gain of \$21.9 million.



SECTION I BOARD SUMMARY

- The 2014 valuation incorporated a projection of future accrual of sick leave hours. The accrual of sick leave from 2014 to 2015 was higher than anticipated, producing a loss of \$4.2 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 the employer make contributions from the date of hire. However, when we look only at the liability side, they are a component of the annual liability loss. This year they account for a \$1.7 million loss.
- There was a \$7.0 million liability gain 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.

The combination of liability and investment experience and County plus member contributions over the last year caused an increase in the System's funding ratio (actuarial value of assets over actuarial accrued liability) from 81.7% at July 1, 2014 to 84.0% at July 1, 2015. 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 increased from 84.5% at July 1, 2014 to 86.3% at July 1, 2015.

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 which 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.



SECTION I BOARD SUMMARY

Growth in Assets

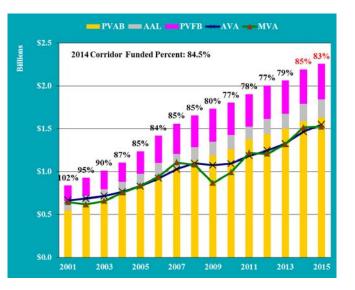


There was a slight increase in the market value of assets (MVA) over last year due to a return of 1.4%. The actuarial value of assets (AVA) increased due to the continued recognition of recent asset gains. The System has \$24.7 million in unrecognized losses that will be phased in over the next few years due to the smaller than expected increase in the MVA.

Over the period of July 1, 2001 to June 30, 2015, the System's assets returned approximately 6.2% per year measured at actuarial value, compared to a valuation assumption of 7.5% 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. If the System had assets equal to the PVFB, no contributions would, in theory, be needed for the current members. 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 #s). Starting in 2014, the comparison uses the market value of assets (red #s). These are the percentages shown in the graph labels.

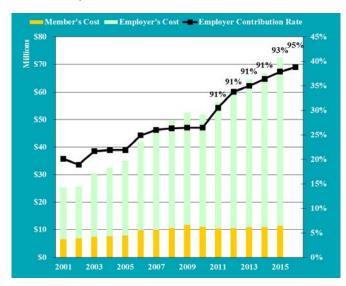




SECTION I BOARD SUMMARY

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 2015 value is the rate prepared by the 2013 valuation implemented and for the period July 1, 2014 to June 30, 2015. 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 funds 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 2001 to 1.3 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.

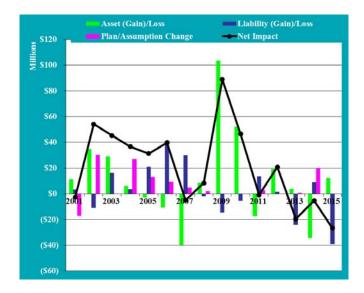
Starting in 2004, the chart also shows the number of DROP participants. Neither employer nor member contributions are made on their behalf, which leads to a slightly lower growth in effective covered payroll for this System.





SECTION I BOARD SUMMARY

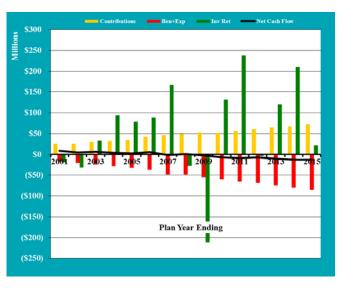
Gains and Losses



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 plan such as this one. The implications of a plan 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.





SECTION I BOARD SUMMARY

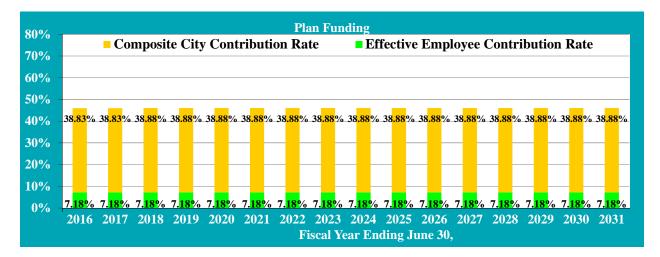
Future Outlook

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 7.5% on their *market value*.

The floor of the County's corridor contribution calculation was increased to 95% for FY 2016. In FY 2017, the amortization target could range from 95 or 97% 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.

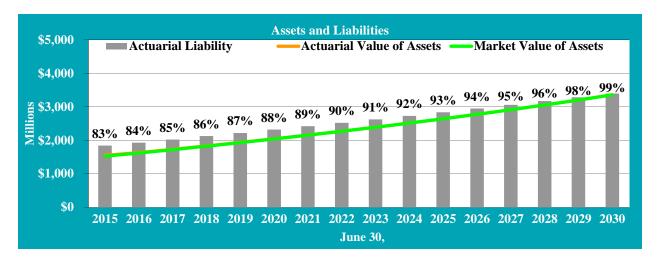
The graph entitled "Plan Funding" illustrates the FY 2017 floor at 96% with 1% annual increases thereafter.





SECTION I BOARD SUMMARY

The "Assets and Liabilities" graph shows the projected funding status over the next 15 years. The funded ratio slowly increases over the entire period until reaching 99% by 2030.





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 7.5% each and every year, which is extremely unlikely.

In the projections that follow, we show the risk to the System under volatile markets. Since 1980 the System has averaged 16.0% return per year. Therefore, for this analysis we have created the following three scenarios that produce the same average return.

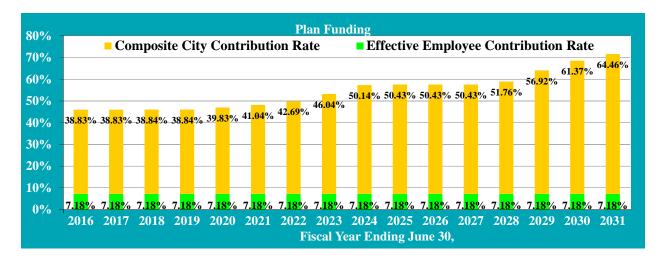
	Table	I-1	
Fiscal Year	Average	Average	Average
Ending June 30,	5.0%	7.5%	10.0%
2015	7.67%	2.34%	-5.85%
2016	7.05	7.17	4.54
2017	1.67	17.72	18.15
2018	2.98	30.01	32.56
2019	5.16	19.42	-8.98
2020	-0.19	5.61	12.47
2021	1.48	11.03	17.81
2022	17.59	4.30	-13.95
2023	9.50	15.60	15.19
2024	9.25	-0.44	14.83
2025	-2.11	2.05	28.45
2026	-3.75	-8.37	24.92
2027	4.20	4.65	3.95
2028	7.27	-0.59	7.37
2029	9.17	7.83	10.22
Average	5.00%	7.50%	10.00%

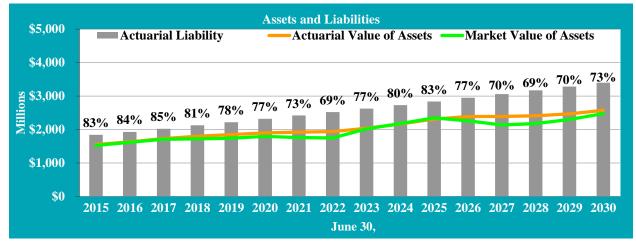


SECTION I BOARD SUMMARY

Alternative Projection -- with average return of 5.0% in the period

Under this scenario, the corridor contribution rate increases from 39% to about 64% of payroll. The System funding drops to as low as 69% even with the ramping up of contributions.



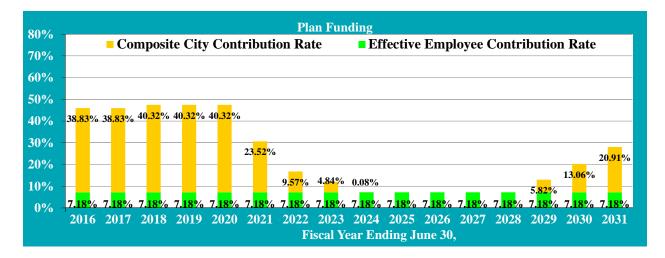


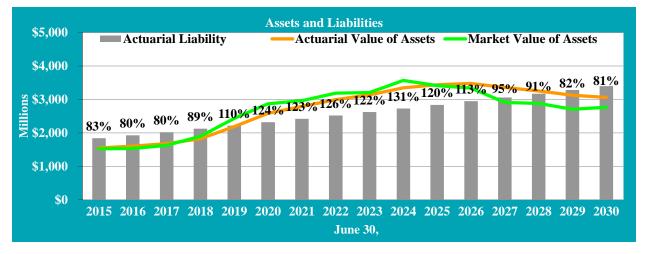


SECTION I BOARD SUMMARY

Alternative Projection – with average return of 7.5% in the period

Under this scenario, 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 over the 120% top of the corridor.



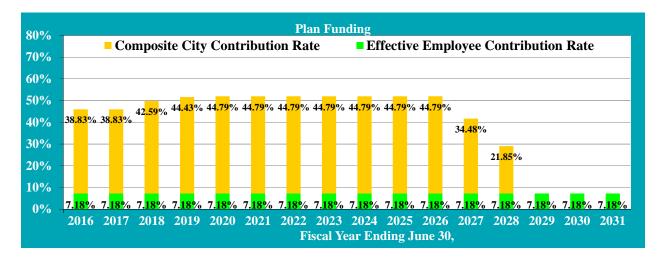


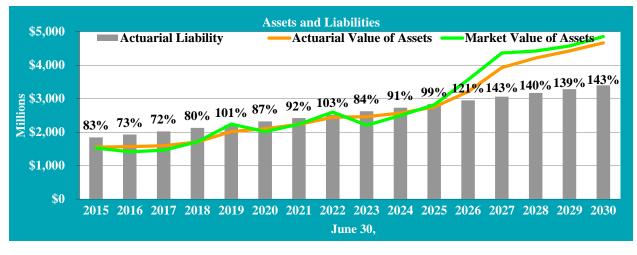


SECTION I BOARD SUMMARY

Alternative Projection -- with average return of 10.0% in the period

Similar to the prior scenario, the corridor contribution rate increases in the early years due to the assumed underperformance. The highest contribution rate of 44.79% is maintained until the System reaches full funding. This determination is made using the corridor assets. Note that the percentages used in the graph are based on market value of assets so the percentages in excess of 100% shown in 2019 and 2022 do not result in reduced contribution rates. By the end of the projection period the member contribution rate is the only amount being contributed.







SECTION I BOARD SUMMARY

Table I-2					
Summary of Principal Plan Results					
Valuation as of:		7/1/2014		7/1/2015	% Chg
Participant Counts					
Actives (excluding DROP)		1,817		1,889	4.0%
DROPs		125		116	-7.2%
Terminated Vesteds		50		55	10.0%
In Pay Status		1,194		1,243	4.1%
Total		3,186		3,303	3.7%
Annual Salaries of Active Members	\$	153,456,176	\$	159,216,906	3.8%
Annual Retirement Allowances for					
Retired Members and Beneficiaries	\$	68,396,659	\$	72,213,918	5.6%
(Base amount only – not supplements)					
Assets and Liabilities					
Actuarial Accrued Liability (AL)	\$	1,793,852,293	\$	1,844,719,543	2.8%
Assets for Valuation Purposes (AVA)		1,466,110,756		1,550,327,414	5.7%
Unfunded Actuarial Liability	\$	327,741,537	\$	294,392,129	-10.2%
Actuarial Value Funding Ratio (AVA/AL)		81.7%		84.0%	
Market Value Funding Ratio (MVA/AL)		84.6%		82.7%	
Present Value of Accrued Benefits	\$	1,588,582,859	\$	1,634,345,665	2.9%
Market Value of Assets		1,516,720,045		1,525,617,480	0.6%
Unfunded Accrued Liability	\$	71,862,814	\$	108,728,185	51.3%
(not less than \$0) Accrued Benefit Funding Ratio		95.5%		93.3%	
-	_		_		
<u>Contributions as a Percentage of Payroll</u> Corridor Method:	Fi	scal Year 2016	Fi	scal Year 2017	
Normal Cost Contribution		20.31%		20.19%	
Increase Due to Amortized Changes		7.20%		7.20%	
Administrative Expense		0.25%		0.25%	
Base Rate		27.76%		27.64%	
Amortize to 95%		38.83%*		36.71%	
Amortize to 96%				37.75%	
Amortize to 97%				38.80%**	
				20.0070	

* The actual contribution rate being paid by the County in FY 2016 is 38.83%, which is based on the Amortize to 95% amount shown above.

** 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 2017 will be held at the 38.83% rate in effect for FY 2016.



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

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

- **Disclosure** of system assets at July 1, 2014 and July 1, 2015;
- Statement of the **changes** in market values during the year;
- Development of the **actuarial value of assets**;
- An assessment of investment performance; and
- A projection of the System's expected **cash flows** for the next ten years.

Disclosure

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

The actuarial values are market values which 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 $7\frac{1}{2}\%$.



SECTION II ASSETS

Table II-1 Statement of Assets at Market Value				
	7/1/2014	7/1/2015		
Assets				
Equity in County's Pooled Cash,				
Contributions Receivable and Other Assets	\$ 5,061,921	\$ 6,459,121		
Accrued Interest and Dividends Receivable	2,555,653	2,442,831		
Receivable from Sale of Investments	51,191,852	66,112,015		
US Government Obligations	34,686,456	35,625,703		
Asset-Backed Securities	91,778,372	101,143,099		
Other Bonds and Notes	147,080,486	85,713,162		
Common and Preferred Stock	238,208,622	235,397,891		
Pooled and Mutual Funds	868,662,380	948,337,844		
Short-Term Investments	143,415,635	127,338,284		
Cash Collateral Received Under				
Securities Lending Agreements	8,587,339	37,647,651		
Total Assets	\$ 1,591,228,716	\$ 1,646,217,601		
Liabilities				
Payable for Collateral Received Under				
Securities Lending Agreements	\$ 8,587,339	\$ 37,647,651		
Payable for Purchase of Investments	63,109,492	80,090,315		
Accounts Payable and Accrued Expenses	2,811,840	2,862,155		
Total Liabilities	\$ 74,508,671	\$ 120,600,121		
Net Assets Available for Benefits	\$ 1,516,720,045	\$ 1,525,617,480		



SECTION II ASSETS

Changes in Market Values Value of Assets – July 1, 2014 \$ 1,516,720,045 Additions Contributions: Employer Contributions \$ 60,928,766 Employee Contributions \$ 11,473,273 Total Contributions \$ 72,402,039 Investment Income: \$ 3,330,400 Net Appreciation (Depreciation) in Fair Value of Investments \$ 3,330,400 Interest 13,055,028 Dividends _10,208,440 Total Investment Income \$ 26,593,868 Investment Activity Expenses: Management Fees Management Fees \$ (4,414,359) Consulting Expense (202,486) Total Investment Activity Expenses \$ (4,925,462) From Securities Lending Activities: \$ 21,800,261 Securities Lending Expenses 0 Management Fees	Table II-2				
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DeductionsAnnuity Benefits\$ (75,228,455)Disability Benefits(8,101,613)Survivor Benefits(1,110,871)Refunds and Other Expenses(408,486)Administrative Expenses(455,440)Total Deductions\$ (85,304,865)Total\$ 8,897,435	Net Investment Income			\$	21,800,261
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Total Deductions \$ (85,304,865) Total \$ Net Increase (Decrease) \$ 8,897,435	1				
TotalNet Increase (Decrease)\$ 8,897,435	1		<u>(433,440)</u>	\$	(85 304 865)
Net Increase (Decrease) \$ 8,897,435				Ψ	(00,001,000)
				\$	8 897 135
Value of Assets – July 1, 2015 \$ 1,525,617,480					



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 $33\frac{1}{3}\%$ of the difference between market value and expected value to the expected value. The following table illustrates the calculation of the actuarial value of assets for the July 1, 2015 valuation.

	Table II-3 Development of Actuarial Value of Assets as of July 1, 2015				
1.	Actuarial Value of Assets at July 1, 2014	\$	1,466,110,756		
2.	Amount in (1) with Interest to July 1, 2015		1,576,069,063		
3.	Employer and Member Contributions for the Plan Year Ended June 30, 2015		72,402,039		
4.	Interest on Contributions Assuming Received Uniformly Throughout the Year to July 1, 2015		2,715,076		
5.	Disbursements from Trust Except Investment Expenses, July 1, 2014 Through June 30, 2015		(85,304,865)		
6.	Interest on Disbursements Assuming Payments Made Uniformly Throughout the Year to July 1, 2015		(3,198,932)		
7.	Expected Value of Asset at July 1, 2015 = $(2) + (3) + (4) + (5) + (6)$	\$	1,562,682,381		
8.	Market Value of Assets at July 1, 2015		1,525,617,480		
9.	Excess of (8) Over (7)	\$	(37,064,901)		
10.	Actuarial Value of Assets at July 1, 2015 = $(7) + 33 - 1/3\%$ of (9)	\$	1,550,327,414		
Al	All interest adjustments are made using the $7\frac{1}{2}$ % per annum actuarial assumed interest rate.				



SECTION II ASSETS

Investment Performance

The market value of assets (MVA) returned 1.44% during 2015, which is less than the assumed 7.50% return. A return of 6.65% 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 $33\frac{1}{3}\%$ 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		
	A	Annual Rates of F	Return	
			Total Return	
			Standard	Barclays Global
Year Ending	Market	Actuarial	& Poor's 500	Aggregate
June 30,	Value	Value	Index	Index ¹
1991	7.8%	8.6%	7.4%	10.2%
1992	14.1%	9.8%	13.5%	14.2%
1993	12.2%	10.0%	13.6%	13.2%
1994	1.4%	6.3%	1.3%	-1.5%
1995	14.6%	9.3%	26.1%	12.8%
1996	15.0%	$14.2\%^2$	26.0%	$4.7\%^{3}$
1997	17.2%	12.9%	34.6%	8.2%
1998	16.2%	10.8%	30.2%	10.5%
1999	9.6%	13.4%	22.7%	3.1%
2000	5.2%	10.4%	7.3%	4.6%
2001	-2.8%	5.7%	-14.8%	11.2%
2002	-4.9%	2.3%	-18.0%	8.6%
2003	5.4%	3.3%	0.3%	10.4%
2004	14.3%	6.7%	19.1%	0.3%
2005	10.4%	7.9%	6.3%	6.8%
2006	10.5%	8.8%	8.6%	-0.8%
2007	17.8%	11.8%	20.6%	6.1%
2008	-2.5%	6.7%	-13.1%	7.1%
2009	-19.6%	-1.9%	-26.2%	5.5%
2010	15.2%	2.6%	14.4%	9.5%
2011	24.1%	9.1%	30.8%	3.9%
2012	-0.3%	5.9%	5.4%	7.5%
2013	10.0%	7.2%	20.6%	-0.1%
2014	16.0%	10.0%	24.6%	4.4%
2015	1.4%	6.7%	7.4%	1.8%

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.



SECTION II ASSETS

Expected benefit payments are projected for the closed group valued at July 1, 2015. Projecting any farther than ten years using a closed-group would not yield reliable predictions due to the omission of new hires.

Expected contributions are projected based on the current County contribution rate of 38.83% for FY 2016 and 2017, and then using the Amortize to 98% rate for FY 2018, amortize to 99% for FY 2019 and increasing to 100% for FY 2020. This projection assumes no further gains or losses, a 3% 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 July 1,	Expected Benefit Payments	Expected County Contributions		
2015	\$ 89,927,000	\$ 61,824,000		
2013 2016	\$ 89,927,000 94,470,000	63,679,000		
2017	101,513,000	65,680,000		
2018	111,747,000	67,650,000		
2019	116,230,000	69,679,000		
2020	122,892,000	71,770,000		
2021	130,252,000	73,923,000		
2022	137,204,000	76,141,000		
2023	144,249,000	78,425,000		
2024	151,093,000	80,778,000		



SECTION III LIABILITIES

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

- **Disclosure** of system liabilities at July 1, 2014 and July 1, 2015;
- 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 7.5% investment return. These liabilities are also required for accounting purposes (FASB ASC Topic 960) and used to assess whether the plan 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 system assets yields, for each respective type, a **net surplus** or an **unfunded liability**.



SECTION III LIABILITIES

Table III-1		
Liabilities/Net (Surplus))/Unfunded	
	July 1, 2014	July 1, 2015
Present Value of Future Benefits	U /	
Active Participant Benefits (excluding DROP)	\$ 1,099,994,677	\$ 1,133,935,723
DROP Participant Benefits	170,125,420	153,687,205
Retiree Benefits	917,538,195	964,866,777
Terminated Vested and Inactive Members	6,921,019	7,588,333
Present Value of Benefits (PVB)	\$ 2,194,579,311	\$ 2,260,078,038
Market Value of Assets (MVA)	\$ 1,516,720,045	\$ 1,525,617,480
Future Employee Contributions	105,127,952	109,620,985
Future County Contributions	572,731,314	624,839,573
Total Resources	\$ 2,194,579,311	\$ 2,260,078,038
Actuarial Accrued Liability		
Present Value of Benefits (PVB)	\$ 2,194,579,311	\$ 2,260,078,038
Present Value of Future Normal Costs (PVFNC)		
County Portion	295,599,066	305,737,510
Employee Portion	105,127,952	109,620,985
Actuarial Accrued Liability	\$ 1,793,852,293	\$ 1,844,719,543
(AAL = PVB - PVFNC)		
Actuarial Value of Assets (AVA)	1,466,110,756	1,550,327,414
Net (Surplus)/Unfunded (AAL – AVA)	\$ 327,741,537	\$ 294,392,129
Present Value of Accrued Benefits		
Present Value of Benefits (PVB)	\$ 2,194,579,311	\$ 2,260,078,038
Present Value of Future Benefit Accruals (PVFBA)	605,996,452	625,732,373
Present Value of Accrued Benefits	\$ 1,588,582,859	\$ 1,634,345,665
$(\mathbf{PVAB} = \mathbf{PVB} - \mathbf{PVFBA})$		
Market Value of Assets (MVA)	1,516,720,045	1,525,617,480
Net Unfunded, not less than \$0 (PVAB – MVA)	\$ 71,862,814	\$ 108,728,185



SECTION III LIABILITIES

Changes in Liabilities

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

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

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

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

In each valuation, we report on those elements of change which 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 7/1/2014	\$ 2,194,579,311	\$ 1,793,852,293	\$ 1,588,582,859
Liabilities 7/1/2015	2,260,078,038	1,844,719,543	1,634,345,665
Liability Increase (Decrease)	\$ 65,498,727	\$ 50,867,250	\$ 45,762,806
Change Due to:			
Plan Amendment and Ad Hoc COLAs	\$ 0	\$ 0	\$ 0
Actuarial (Gain)/Loss	Not Calculated	(38,954,945)	Not Calculated
Method and Assumption Change	0	0	0
Benefits Accumulated and Other Sources	65,498,727	89,822,195	45,762,806



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 of the member's expected future salary, also at entry age. Second, the individual normal cost rate for each member is weighted by the present value of future pay at current age to obtain an average total normal cost rate for the system. 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 County'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. Once the funded status is within the corridor, the contribution rate will return to the normal cost rate, plus expense rate, plus amortization of post-2001 changes.

Table IV-1	
Changes Since 2001	Impact on UAL Rate
2002 ad-hoc COLA	+ 0.25%
2002 Pre-Social Security Supplement	+ 2.45
2004 DROP	+0.53
2004 Retiree Increase	+ 1.70
2005 Assumption Changes	+0.91
2006 DPSC Transfer	+0.62
2007 Reduce Disability Offset to 40%	+0.30
2008 Reduce Disability Offset to 30%	+0.12
2010 Assumption Changes	+0.17
2013 Reduce Disability Offset to 25%	+0.05
2014 Reduce Disability Offset to 15%	+0.10
Total Increase	+ 7.20%



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 method amortization to 90%.

Table IV-2 Actuarially Determined Rate (for Corridor Contribution)							
Valuation Date Fiscal Year	July 1, 2014 2016	July 1, 2015 2017					
Normal Cost Rate	20.31%	20.19%					
UAL Rate	7.20%	7.20%					
Amortization of Amount Outside Corridor (to 90%)	5.80%	3.85%					
Expense Rate	0.25%	0.25%					
Total County Rate	33.56%	31.49%					
Total Rate with Alternative Amortization Targets of							
95%	38.83% *	36.71%					
96%		37.75%					
97%		38.80%**					

* The actual contribution rate being paid by the County in FY 2016 is 38.83%, which is based on the Amortize to 95% amount shown above.

** 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 2017 will be held at the 38.83% rate in effect for FY 2016.



SECTION IV CONTRIBUTIONS

	Table IV-3				
	Development of Corridor Cor	ntrib	ution Rate		
			July 1, 2014 (for FY 2016)		July 1, 2015 (for FY 2017)
1.	Present Value of Future Benefits				
	a. Active Employees	\$	1,099,994,677	\$, , ,
	b. DROP		170,125,420		153,687,205
	c. Retired Members		917,538,195		964,866,777
	d. Vested Terminated and Inactive Members	¢	6,921,019	¢	7,588,333
	e. Total Present Value	2	2,194,579,311	2	2,260,078,038
2.	Present Value of Future Normal Costs				
	a. County Portion	\$	295,599,066	\$, ,
	b. Employee Portion	<u>_</u>	105,127,952	\$	109,620,985
	c. Total Present Value	\$	400,727,018	\$	415,358,495
3.	Actuarial Accrued Liability (1) – (2)	\$	1,793,852,293	\$	1,844,719,543
4.	Actuarial Value of Assets for Corridor Purposes				
	a. Actuarial Assets	\$	1,466,110,756	\$	1,550,327,414
	b. Outstanding Balance of Plan and Assumption				
	Changes	<u>_</u>	49,595,880	<u>_</u>	41,972,891
	c. Adjusted Assets (a) + (b)	\$	1,515,706,636	\$	1,592,300,305
5.	Funding Ratio for Corridor Test		84.5%		86.3%
6.	Liability to be Amortized if outside Corridor				
	a. $90\%x(3) - (4)(c)$	\$	98,760,428	\$	67,947,284
	b. (4)(c) - 120%x(3)		0		0
7.	Active Member Payroll	\$	153,456,176	\$	159,216,906
8.	Unfunded Liability Amortization Factor		11.0918		11.0918
9.	Amortization as a % of Payroll (6)/(7)/(8)		5.80%		3.85%
10	County Contribution Results (Corridor)				
	a. Normal Cost Rate		20.31%		20.19%
	b. Administrative Expense Rate		0.25%		0.25%
	c. Plan Change Amortizations		7.20%		7.20%
	d. Amortization Outside Corridor (9)		5.80%		3.85%
	e. Total County Contribution Rate June 30 ¹		33.56%		31.49%

¹Alternative rate calculations developed by amortizing to 97% for FY 2017 is a County Rate of 38.80%



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 July 1, 2014 and July 1, 2015 are exhibited in Table V-1, which also includes a reconciliation of liabilities determined as of the prior valuation, July 1, 2014, to the liabilities as of July 1, 2015.

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 1, 2015 for the required disclosures under GASB Statement Number 67.



SECTION V ACCOUNTING STATEMENT INFORMATION

Table V-1				
Accounting Statement Infor	ma			
		July 1, 2014		July 1, 2015
A. FASB ASC Topic 960 Basis				
1. Present Value of Benefits Accrued and Vested to Date				
a. Members Currently Receiving Payments	\$	917,538,195	\$, ,
b. Vested Terminated and Inactive Members		6,921,019		7,588,333
c. DROP		170,125,420		153,687,205
d. Active Members		304,112,569		303,318,155
e. Total PVVB	\$	1,398,697,203	\$	1,429,460,470
2. Present Value of Non-Vested Accrued				
Benefits for Active Members		189,885,656		204,885,195
3. Total Present Value of Accrued Benefits	\$	1,588,582,859	\$	1,634,345,665
4. Assets at Market Value		1,516,720,045	_	1,525,617,480
5. Unfunded Present Value of Accrued Benefits,				
But Not Less Than Zero	\$	71,862,814	\$	108,728,185
6. Ratio of Assets to Value of Benefits (4) / (3)		95.5%		93.3%
B.Statement of Changes in Present Value of Accrued Bene	fits			
Actuarial Present Value of Accrued Benefits as of July 1, 2014	4		\$	1,588,582,859
Increase (Decrease) During Years Attributable to:				
Passage of Time			\$	115,961,861
Benefit Paid – FY 2015				(84,849,425)
Assumption Changes				0
Benefit Change				0
Benefits Accrued, Other Gains/Losses			_	14,650,370
Net Increase (Decrease)			\$	45,762,806
Actuarial Present Value of Accrued Benefits as of July 1, 2015	5		\$	1,634,345,665



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	Gain (or Loss) for Year ending June 30,Type of Activity201020112012201320142015								
Investment Income Combined Liability Experience Gain (or Loss) During Year from Financial Experience	\$ (52,003,538) 5,509,116 \$ (46,494,422)		(1,456,752)	\$ (3,805,385) <u>24,088,845</u> \$ 20,283,460	\$ 34,542,175 (9,026,264) \$ 25,515,911	\$ (12,354,967) <u>38,954,945</u> \$ 26,599,978			
Non-Recurring Items Composite Gain (or Loss) During Year	<u>0</u> \$ (46,494,422)	(2,808,343) \$ 852,883	<u>0</u> \$ (20,787,669)	(813,016) \$ 19,470,444	(20,177,168) \$ 5,338,743	<u>0</u> \$ 26,599,978			

	Table V-3 Solvency Test Aggregate Accrued Liabilities For									
Valuation Date	(1)(2)(3)Portion of AccruedValuationActiveRetireesActive MembersLiabilities									
July 1,	Contributions	Beneficiaries & DROP	Financed Portion)	Assets*	(1)	(2)	(3)			
2010	\$ 113,757,792	\$ 813,049,990	\$ 500,808,928	\$ 1,095,079,616	100%	100%	34%			
2011	120,040,592	896,003,321	510,174,331	1,185,593,678	100%	100%	33%			
2012	120,373,016	981,922,550	511,358,566	1,247,526,438	100%	100%	28%			
2013	130,979,546	1,042,085,650	503,200,502	1,326,424,772	100%	100%	30%			
2014	137,482,080	1,094,584,634	561,785,579	1,466,110,756	100%	100%	42%			
2015	145,293,199	1,126,142,315	573,284,029	1,550,327,414	100%	100%	49%			

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



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 reasonable and consistency in accordance with Actuarial Standards of Practice Number 23 Data Quality. The active data was collected as of January 1, 2015 and the inactive data was collected as of July 1, 2015.

Active pay information is adjusted to project the pay expected to be earned from July 1, 2015 through June 30, 2016. The annual payroll was provided as of December 31, 2014 and adjusted to July 1, 2015; which included a 1.1% increase as of July 1, 2015.

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



APPENDIX A MEMBERSHIP INFORMATION

Summary of Membership Data as of July 1, 2015

Active Members *							
Plan	Count	Average Age	Average Service	Average A	Annual Salary		
А	0	0.0	0.0	\$	0		
В	55	48.4	21.7		103,360		
С	0	0.0	0.0		0		
D	1,647	40.6	13.0		86,612		
Е	187	28.9	0.8		<u>58,198</u>		
Total	1,889	39.7	12.0	\$	84,286		

* Excludes DROP participants.



APPENDIX A MEMBERSHIP INFORMATION

Inact			
	Count	Total Annual Benefit	Average Monthly Benefit
Service Retirement ¹			
Basic Benefit	1,021	\$ 63,001,255	\$ 5,142
Pre-62 Supplement	29	482,744	1,387
Pre-Social Security Supplement	578	4,306,509	621
Service-Connected Disability ²	171	7,851,348	3,826
Ordinary Disability	17	329,262	1,614
Beneficiaries	34	1,032,053	2,530
DROP	116	8,100,959	5,820
Vested Former Members ³	55	812,211	1,231

¹ Supplements shown include only amounts currently payable. For members who are in Plan B and have not yet attained age 55, this means their pre-62 supplement will double in future years.
² Benefits are net of offsets for Workers' Compensation and Social Security.

³ Benefits are payable at age 55.



APPENDIX A MEMBERSHIP INFORMATION

	Data Reconciliation from July 1, 2014 to July 1, 2015 Service-							
	Active	DROP	Terminated Vested	Retired	Connected Disability		Beneficiary	Total
Participant count as of July 1, 2014	1,817	125	50	967	176	17	34	3,186
New Hires / Re-hires	152							152
Terminated Vested	(4)		4					0
DROP	(41)	41						0
Retired	(11)	(49)		60				0
Deceased with beneficiary				(1)			1	0
Deceased without beneficiary				(5)	(5)			(10)
Benefits Expired							(1)	(1)
Ordinary Disability			(2)					(2)
Service-Connected Disability								0
Terminated Not Vested	(24)							(24)
Corrections		(1)	3					2
Change	72	(9)	5	54	(5)	0	0	117
Participant count as of July 1, 2015	1,889	116	55	1,021	171	17	34	3,303



APPENDIX A MEMBERSHIP INFORMATION

Distribution of Active Participants - - Plan B

				Servio	e				
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	Total
Under 25	0	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0	0
30 to 34	0	0	0	0	0	0	0	0	0
35 to 39	0	0	0	0	0	0	0	0	0
40 to 44	0	0	0	0	8	9	1	0	18
45 to 49	0	0	0	0	7	7	4	1	19
50 to 54	0	0	0	0	6	6	2	1	15
55 to 59	0	0	0	0	0	0	0	1	1
60 to 64	0	0	0	0	1	0	0	0	1
65 & up	0	0	0	0	1	0	0	0	1
Total	0	0	0	0	23	22	7	3	55

COUNTS BY AGE/SERVICE

					Servio	ce					
Age	Under 1	1 to 4	5 to 9	1	0 to 14	15 to 19	20 to 24		25 to 29	30 & Up	Total
Under 25	\$ 0	\$ 0	\$	0 \$	0 9	6 0	\$	0 5	\$ 0	\$ 0	\$ 0
25 to 29	0	0		0	0	0		0	0	0	0
30 to 34	0	0		0	0	0		0	0	0	0
35 to 39	0	0		0	0	0		0	0	0	0
40 to 44	0	0		0	0	783,378	995,84	9	114,726	0	1,893,953
45 to 49	0	0		0	0	675,715	789,35	57	474,314	104,936	2,044,321
50 to 54	0	0		0	0	579,458	569,09	2	189,725	93,139	1,431,414
55 to 59	0	0		0	0	0		0	0	143,833	143,833
60 to 64	0	0		0	0	83,296		0	0	0	83,296
65 & up	0	0		0	0	88,004		0	0	0	88,004
Total	\$ 0	\$ 0	\$	0 \$	0 9	5 2,209,851	\$ 2,354,29	8 9	\$ 778,764	\$ 341,908	\$ 5,684,821



APPENDIX A MEMBERSHIP INFORMATION

Distribution of Active Participants - - Plan D

		Service								
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	Total	
Under 25	0	25	0	0	0	0	0	0	25	
25 to 29	0	84	66	2	0	0	0	0	152	
30 to 34	0	57	192	51	0	0	0	0	300	
35 to 39	0	27	94	134	42	0	0	0	297	
40 to 44	0	11	59	113	121	37	2	0	343	
45 to 49	0	6	23	63	80	80	43	1	296	
50 to 54	0	3	12	29	30	48	40	15	177	
55 to 59	0	3	5	6	11	3	4	11	43	
60 to 64	0	0	4	3	2	1	1	2	13	
65 & up	0	0	0	0	0	0	0	1	1	
Total	0	216	455	401	286	169	90	30	1,647	

COUNTS BY AGE/SERVICE

				Ser	vice				
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	Total
Under 25	\$ 0	\$ 1,484,020	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 1,484,020
25 to 29	0	5,290,150	4,433,295	145,469	0	0	0	0	9,868,914
30 to 34	0	3,670,385	13,619,810	4,159,547	0	0	0	0	21,449,742
35 to 39	0	1,717,275	6,616,782	11,827,643	4,351,980	0	0	0	24,513,680
40 to 44	0	704,258	4,303,015	9,885,656	12,317,377	4,430,511	246,485	0	31,887,302
45 to 49	0	401,831	1,667,735	5,293,448	8,002,877	9,125,006	5,153,527	148,836	29,793,260
50 to 54	0	208,334	906,232	2,424,475	2,927,458	5,465,484	4,448,971	1,837,780	18,218,734
55 to 59	0	173,480	361,326	467,806	1,023,675	351,976	388,169	1,465,931	4,232,363
60 to 64	0	0	266,807	213,132	172,924	101,411	112,424	211,303	1,078,001
65 & up	0	0	0	0	0	0	0	123,136	123,136
Total	\$ 0	\$ 13,649,733	\$ 32,175,002	\$ 34,417,176	\$ 28,796,291	\$ 19,474,388	\$ 10,349,576	\$ 3,786,986	\$142,649,152



APPENDIX A MEMBERSHIP INFORMATION

Distribution of Active Participants - - Plan E

		Service								
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	Total	
Under 25	50	10	0	0	0	0	0	0	60	
25 to 29	58	11	0	0	0	0	0	0	69	
30 to 34	24	11	0	0	0	0	0	0	35	
35 to 39	4	4	0	0	0	0	0	0	8	
40 to 44	7	0	0	0	0	0	0	0	7	
45 to 49	1	1	0	0	0	0	0	0	2	
50 to 54	2	1	0	0	0	0	0	0	3	
55 to 59	2	1	0	0	0	0	0	0	3	
60 to 64	0	0	0	0	0	0	0	0	0	
65 & up	0	0	0	0	0	0	0	0	0	
Total	148	39	0	0	0	0	0	0	187	

COUNTS BY AGE/SERVICE

				Ser	vice				
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	Total
Under 25	\$ 2,888,532	\$ 540,502	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 3,429,034
25 to 29	3,384,816	629,652	0	0	0	0	0	0	4,014,468
30 to 34	1,357,780	609,062	0	0	0	0	0	0	1,966,842
35 to 39	277,869	226,386	0	0	0	0	0	0	504,255
40 to 44	396,971	0	0	0	0	0	0	0	396,971
45 to 49	54,404	80,106	0	0	0	0	0	0	134,510
50 to 54	88,447	46,600	0	0	0	0	0	0	135,047
55 to 59	106,218	195,589	0	0	0	0	0	0	301,807
60 to 64	0	0	0	0	0	0	0	0	0
65 & up	0	0	0	0	0	0	0	0	0
Total	\$ 8,555,037	\$ 2,327,897	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 10,882,934



APPENDIX A MEMBERSHIP INFORMATION

Distribution of Active Participants - - Total

				Servi	ice				
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	Total
Under 25	50	35	0	0	0	0	0	0	85
25 to 29	58	95	66	2	0	0	0	0	221
30 to 34	24	68	192	51	0	0	0	0	335
35 to 39	4	31	94	134	42	0	0	0	305
40 to 44	7	11	59	113	129	46	3	0	368
45 to 49	1	7	23	63	87	87	47	2	317
50 to 54	2	4	12	29	36	54	42	16	195
55 to 59	2	4	5	6	11	3	4	12	47
60 to 64	0	0	4	3	3	1	1	2	14
65 & up	0	0	0	0	1	0	0	1	2
Total	148	255	455	401	309	191	97	33	1,889

COUNTS BY AGE/SERVICE

							Ser	vice						
Age	U	nder 1	1 to 4	5	to 9	1	0 to 14		15 to 19	20 to 24	25 to 29	30 & Up	- -	Fotal
Under 25	\$ 2	,888,532	\$ 2,024,522	\$	0	\$	0	\$	0	\$ 0	\$ 0	\$ 0	\$ 4	,913,054
25 to 29	3	,384,816	5,919,802	4,	,433,295		145,469		0	0	0	0	13	,883,382
30 to 34	1	,357,780	4,279,447	13,	,619,810		4,159,547		0	0	0	0	23	,416,584
35 to 39		277,869	1,943,661	6,	,616,782	1	1,827,643		4,351,980	0	0	0	25	,017,935
40 to 44		396,971	704,258	4,	,303,015		9,885,655		13,100,755	5,426,360	361,211	0	34	,178,225
45 to 49		54,404	481,937	1,	,667,735		5,293,448		8,678,592	9,914,363	5,627,841	253,772	31	,972,091
50 to 54		88,447	254,934		906,232		2,424,475		3,506,916	6,034,576	4,638,696	1,930,919	19	,785,195
55 to 59		106,218	369,069		361,326		467,806		1,023,675	351,976	388,169	1,609,764	4	,678,003
60 to 64		0	0		266,807		213,132		256,220	101,411	112,424	211,303	1	,161,297
65 & up		0	0		0		0		88,004	0	0	123,136		211,140
Total	\$8	,555,037	\$ 15,977,630	\$ 32,	,175,002	\$3	4,417,175	\$	31,006,142	\$ 21,828,686	\$ 11,128,340	\$ 4,128,894	\$159	,216,906



APPENDIX B ACTUARIAL ASSUMPTIONS AND METHODS

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

1. Demographic Assumptions

a. Healthy Mortality

	Deaths Per 10,000 Mortality Project	
Age	Male	Female
20	3	2
25	3	2
30	4	2
35	7	4
40	10	6
45	12	9
50	16	13
55	27	24
60	53	47
65	103	90
70	177	155
75	306	249
80	554	413
85	997	708
90	1,727	1,259
95	2,596	1,888
100	3,394	2,339
105	3,979	2,931

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

Mortality table was set in conjunction with the 2010 experience study to include a static projection to 2015. The System is embarking on a new experience study in 2015 which will determine whether the margin for future mortality improvements remains and to propose revised tables.



APPENDIX B ACTUARIAL ASSUMPTIONS AND METHODS

b. Disabled Morality

Annual Deaths Per 10,000 Disabled Members RP-2000 Mortality Project to 2015 with Ages Set Forward Five Years									
Age									
40	12	9							
45	16	13							
50	27	24							
55	53	47							
60	103	90							
65	177	155							
70	306	249							
75	75 554 413								
80	997	708							

Mortality table was set in conjunction with the 2010 experience study to include a static projection to 2015 with ages set forward five years. The System is embarking on a new experience study in 2015 which will determine whether the margin for future mortality improvements remains and to propose revised tables.

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

Annual Ter	Annual Terminations Per 1,000 Members								
Service	Sheriffs	Non-Sheriffs							
0	135	120							
5	43	18							
10	10	8							
15	5	5							
20	5	5							
25	5	5							

It is assumed that members who terminate before normal or early retirement age elect to receive a refund of contributions instead of vested benefits.



APPENDIX B ACTUARIAL ASSUMPTIONS AND METHODS

d. Disability

Annual Disabilitie	s Per 1,000 Members*
Age	Male and Female
20	1
25	2
30	2
35	3
40	4
45	7
50	11
55	16
60	16

* Disabilities are assumed to be all service-connected. Of these, 30% are assumed to receive Social Security benefits and 38% are assumed to receive Workers' Compensation benefits.

e. Retirement

Annual Retirement Per 1,000 Eligible*			
		Greater than	
	Less than 24 years	23 years of	
Age	of Service	Service	
Less than 55	0	350	
55-64	350	350	
65 and Older	1,000	1,000	

* 75% are assumed to DROP.

f. Merit/Seniority Salary Increase (in addition to across-the-board increase)

Year of Service	Merit/Seniority Increase
0	8.0%
5	5.0%
10	1.5%
15	3.0%
20	1.8%
25	1.8%
30	1.8%

*There is a spike of 3.5% at 19 years of service.



APPENDIX B ACTUARIAL ASSUMPTIONS AND METHODS

g. Family Composition

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

h. Sick Leave Credit

Unused sick leave balances as reported for each active member is used as of the valuation date. Future sick leave accruals are assumed to accrue at 50% of each participant's annual average, but capped at 124 hours per year.

2. Economic Assumptions

a.	Rate of Investment Return:	7.50%
b.	Rate of General Wage Increase:	3.00%
c.	Rate of Increase in Cost of Living:	2.75%*
d.	Rate of Increase in Total Payroll	
	(for Amortization):	3.00%
e.	Administrative Expenses as a	
	Percentage of Payroll:	0.25%

* Benefit increases are limited to 4% per year.

These assumptions are based upon the actuary's review of inflation experience since 1948 and the relative relationships between these assumptions. Future compensation includes an inflation component, as well as components for merit, productivity increases and longevity. Prior compensation increases are based on changes in national average wages over an extended history.

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 2011. The results of this study were presented in a report dated May 2011 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 County'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. Once the funded status is within the corridor, the contribution rate will return to the normal cost rate, plus expense rate, plus amortization of post-2001 changes.

The 90% corridor floor is being increased to 100% by 2020. As of the 2014 valuation, the floor had reached 95%. 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.

3. Changes since Last Valuation

None.



APPENDIX C SUMMARY OF PLAN PROVISIONS

1. Membership

The plan covers uniformed employees including non-clerical employees of the Fire and Rescue Department, Park Police Department, Sheriff's Department, Helicopter Pilots, Department of Public Safety Communications, and Game Wardens, who are not covered by the Fairfax County Police Officers Retirement System, the Employees' Retirement System or the VRS. In order to join, an eligible employee must take a physical examination, agree to make required contributions, and may not be within five years of his normal retirement date.

Plan A members as of July 1, 1981 were given the opportunity to join Plan B at that time. Between July 1, 1981 and March 31, 1998, all members were enrolled in Plan B. As of April 1, 1998, Plan A members were given the opportunity to join Plan C, and Plan B members were given the opportunity to join Plan D. On and following April 1, 1998, all members are enrolled in Plan D. On and following January 1, 2013, all members are enrolled in Plan E.

2. Member Contributions

- *Plan A:* 4% of compensation up to Social Security wage base and 5-3/4% of compensation in excess of wage base.
- *Plan B:* 7.08% of compensation up to Social Security wage base and 8.83% of compensation in excess of wage base.
- Plan C: 4% of compensation.
- *Plan D:* 7.08% of compensation.
- Plan E: 7.08% 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. Also, 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

Compensation includes salary paid due to regularly scheduled hours worked, holiday hours worked, administrative emergency leave worked and shift differential paid. It does not include premium pay such as all overtime. Pay at the rate of final salary is credited for any unused sick leave period. Average final compensation is the average over the high 36 consecutive months (or shorter period of total service).



APPENDIX C SUMMARY OF PLAN PROVISIONS

Participants whose average final compensation was affected by the 1992-1993 step freeze shall have their average final compensation adjusted.

5. Social Security Wage Base

The amount of wages subject to Social Security (FICA) taxes (\$118,500 in 2015).

6. Social Security Breakpoint

The Social Security breakpoint is the average of past and future Social Security wage bases over an employee's career.

7. Normal Retirement

Eligibility

- (i) age 55 with six years of service, or
- (ii) completion of 25 years of service

Benefit

Plan A Benefit: 2.0% of average final compensation multiplied by credited service, plus, starting at age 55, 100% of the Pre-62 Supplement defined below.

Plan B Benefit: 2.0% of average final compensation multiplied by credited service, plus 50% of the Pre-62 Supplement defined below until age 55 and 100% of the supplement after age 55.

Pre-62 Supplement: Estimated Primary Social Security Benefit multiplied by a ratio, not to exceed one, of the years of credited service as of the date of the calculation, to 25. If the member was hired prior to July 1, 1976, this ratio is equal to one. The supplement is reduced by the Social Security benefits the member is eligible to receive.

Pre-Social Security Supplement (Plans A&B): 0.2% of average final compensation multiplied by credited service.

Plans C, D & E Benefit: 2.5% of average final compensation multiplied by credited service.

Pre-Social Security Supplement (Plans C, D & E): 0.3% of average final compensation multiplied by credited service.

All benefits increased by 3%.



APPENDIX C SUMMARY OF PLAN PROVISIONS

8. Early Retirement

<u>Eligibility</u>

20 years of service.

<u>Benefit</u>

Plans A&B: Normal retirement benefit, excluding the Pre-Social Security supplement, calculated using average final compensation and service at early retirement, actuarially reduced.

Plan A: The Pre-62 Supplement is not provided until age 55; the full supplement is provided at this time.

Plan B: Prior to age 55, one-half of the Pre-62 Supplement is provided. At age 55, the full supplement is paid.

Plans C, D & E: Normal retirement benefit calculated using average final compensation and service at early retirement, actuarially reduced.

All benefits increased by 3%.

9. DROP (Deferred Retirement Option Program)

<u>Eligibility</u>

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.

<u>Benefit</u>

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.



APPENDIX C SUMMARY OF PLAN PROVISIONS

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

<u>Eligibility</u>

No age or service requirement.

Benefit

40% of final compensation less 15% of Social Security disability benefit to which the member is entitled and less 100% of Virginia Workers' Compensation benefit.

If severely disabled, the benefit is 90% of final compensation with the same offsets for Social Security and Workers' Compensation.

11. Ordinary Disability

Eligibility

Five years of credited service.

<u>Benefit</u>

2% of average final compensation times years of credited service; maximum is 60% of average final compensation, increased by 3%.



APPENDIX C SUMMARY OF PLAN PROVISIONS

12. Service - Connected Death

<u>Eligibility</u>

No age or service requirement.

<u>Benefit</u>

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

13. Ordinary Death

Eligibility

Less than five years of service.

Benefit

Return of employee contributions with interest, payable in a lump sum.

<u>Eligibility</u>

Five or more years of service.

<u>Benefit</u>

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, excluding the Pre-Social Security Retirement Age supplement, 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 age 60.

14. Vesting

<u>Eligibility</u>

Five years of service.

<u>Benefit</u>

Normal retirement benefit based on average final compensation and service at date of termination. Benefit is payable in full at age 55 or actuarially reduced and payable at early retirement age. No supplements are payable.



APPENDIX C SUMMARY OF PLAN PROVISIONS

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.

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 for the Washington metropolitan area. 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-62 or Pre-Social Security Supplements or to deferred vested benefits prior to benefit commencement. For Plan A benefits, cost-of-living adjustments do not apply to service retirement benefits until the member has attained age 55.

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

None.

