Fairfax County Police Officers Retirement System

Actuarial Valuation as of July 1, 2014

Produced by Cheiron

February 2015

CHEIRON Classic Values, Innovative Advice

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February 5, 2015

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

Re: Fairfax County Police Officers Retirement System
Actuarial Valuation as of July 1, 2014

Dear Members of the Board:

At your request, we have conducted our annual actuarial valuation of the Fairfax County Police Officers Retirement System as of July 1, 2014. 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 Police Officers Retirement System. This report is for the use of the Fairfax County Police Officers 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 2016 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 Police Officers 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.

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

Fiona E. Liston

Fiona E. Liston, FSA, EA
Principal Consulting Actuary

Christian Benjaminson

Christian E. Benjaminson, FSA, EA
Principal Consulting Actuary

FOREWORD

Cheiron has performed the actuarial valuation of the Fairfax County Police Officers Retirement System as of July 1, 2014. 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 2016; and

4) **Provide specific information** and documentation required by the Governmental Accounting Standards Board (GASB).

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 County contribution rate, determined using actuarial techniques, and compares that to the rate developed using the corridor method of funding.

Section V includes the required disclosures under GASB Statement Number 67.

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 Standard 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 is based on the normal cost rate plus expense rate determined as of the implementation date of the corridor method (July 1, 2001) 17.00% of payroll, plus an expense rate, currently 0.30% of payroll. This rate is adjusted for benefit and assumption changes and the normal cost is redetermined each year according to the entry age normal cost method.

The County's contribution rate will change when benefits are increased or modified or assumptions are changed. The new rate will reflect the change in normal cost rate and the change in actuarial liability amortized over 15 years. The changes in the UAL rate are summarized in Section IV. The normal cost rate and actuarial accrued liability will continue to 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 County contribution rate for FY 2016 as calculated under this method decreases from 31.82% to 31.37% of payroll, on the basis of this year's valuation results. The County's FY 2015 contribution was actually based on a 93% corridor floor and for FY 2016; we have provided numbers for a 94% and 95% floor. On that basis, the contribution in FY 2015 was 36.82% and for FY 2016 it will be either 36.66% or 37.98%.

This valuation reflects a change in both liabilities and assets due to assumption changes. The liability is higher by $42.4 million due to a change in the entry age normal cost method and the sick leave assumption. As a partial offset to this liability impact, the smoothed value of assets includes an additional recognition of $28.0 million of the remaining balance of past investment gains.

This valuation contains information reported in the June 30, 2014 Comprehensive Annual Financial Report (CAFR) of the System under the new GASB Statement No. 67. Disclosures are based on the use of updated procedures to roll forward the 2013 valuation results. The 2013 starting point is higher than the funding numbers from 2013 since the change in the assumptions and methods was included in the 2013 liabilities. The calculation of Net Pension Liability in Section V is shown as disclosed for the plan year June 30, 2014 and we also present a projection of the June 30, 2015 disclosure if all actuarial assumptions are met over the coming year.

Trends

The System outperformed the investment assumption during the fiscal year ending in 2014, causing an actuarial gain on the asset side of the System. The actual return on a market value basis was approximately 16.16%. On an actuarial value basis, the assets returned 10.29% (after recognition of additional $28 million included with this valuation) compared with an assumed rate of return of 7.5%. The gain recognized for funding purposes was $31.9 million.

The measurement of liabilities produced a gain this year in the amount of $11.6 million. This gain was due to experience compared to our assumptions about salary increases, retirement behavior, death, etc. Specific components of the gain include:

- The average salary increase was 4.2% for active participants who were in both the July 1, 2013 and July 1, 2014 valuations. This was less than the expected salary growth based on the actuarial assumption, which worked out to average 5.5%, which resulted in a gain of $3.3 million. The annual payroll was provided as of December 31, 2013 and adjusted to July 1, 2014, which included annualizing the 1.29% increase from July 1, 2014.

- The valuation assumed a 2.75% cost-of-living adjustment in 2014 for benefits in pay status (per the most recent experience study). The actual CPI-based COLA was 1.6% last year, creating a liability gain of $7.9 million.

- The 2014 valuation incorporates actual sick leave hours into both eligibility and projected benefits for active participants. The accrual of additional sick leave from 2013 to 2014 resulted in a loss of $1.0 million. The 2014 valuation is the first to include a projection of future sick leave accruals; as such we anticipate less deviation with this assumption in future valuations.

- 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, and this year they contributed $0.8 million to that number.

- There was a $2.2 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.

Finally, the County ordinance was changed this year to reduce the member contributions from 10% to 8.65%. This does not increase the unfunded liability, but shifts the future cost from the members to the County.

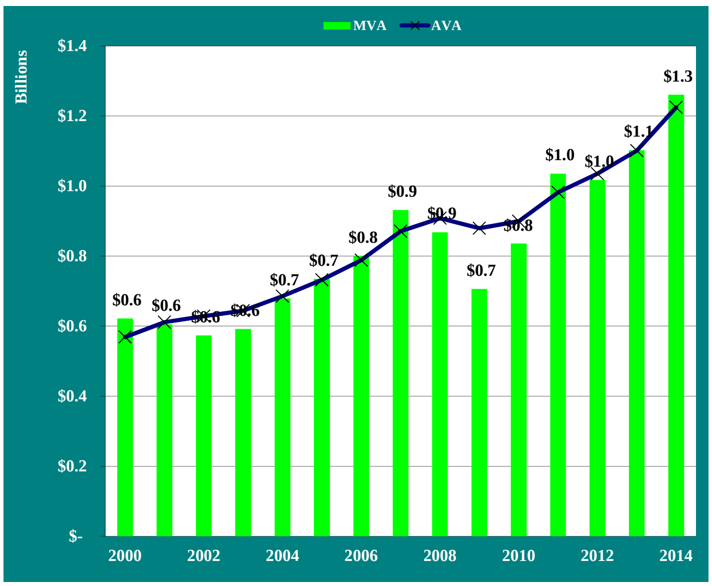
The combination of liability and investment experience and County plus member contributions over the last year led to the System's funding ratio (actuarial value of assets over actuarial accrued liability) increasing from 82.1% at July 1, 2013 to 85.0% at July 1, 2014. For purposes of measuring whether 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

SECTION I
BOARD SUMMARY

assumption changes. On this basis, the System's actuarial funded ratio increased from 84.2% at July 1, 2013 to 87.7% at July 1, 2014.

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.

Growth in Assets



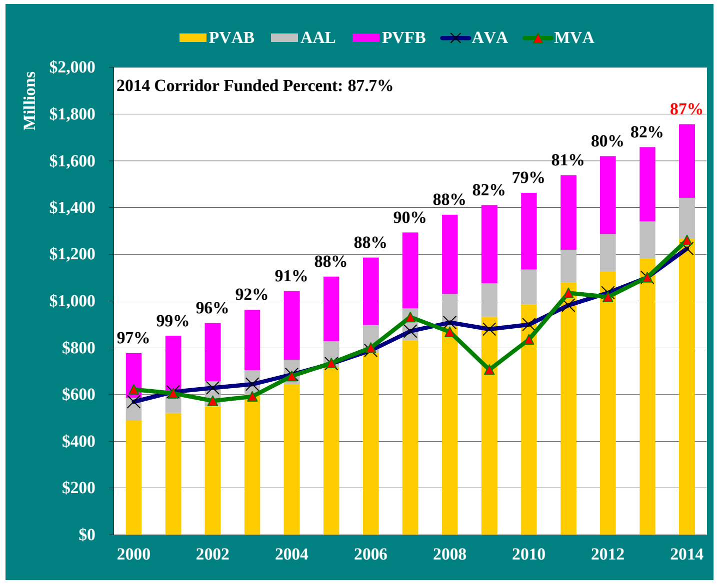
There was an increase in the market value of assets (MVA) over last year due to a return of 16.16%. The actuarial value of assets (AVA) increased due to the continued recognition of recent asset gains. For the 2014 valuation, the System recognized an additional $28.0 million of stored asset gains in order to reduce the total unfunded liability based on the actuarial value of assets. The System still has $35.9 million in unrecognized gains that will be phased in over the next few years.

Over the period of July 1, 2000 to June 30, 2014, the System's assets returned approximately 6.34% per year measured at actuarial value, compared to a valuation assumption of 7.5% per year.

SECTION I
BOARD SUMMARY

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.



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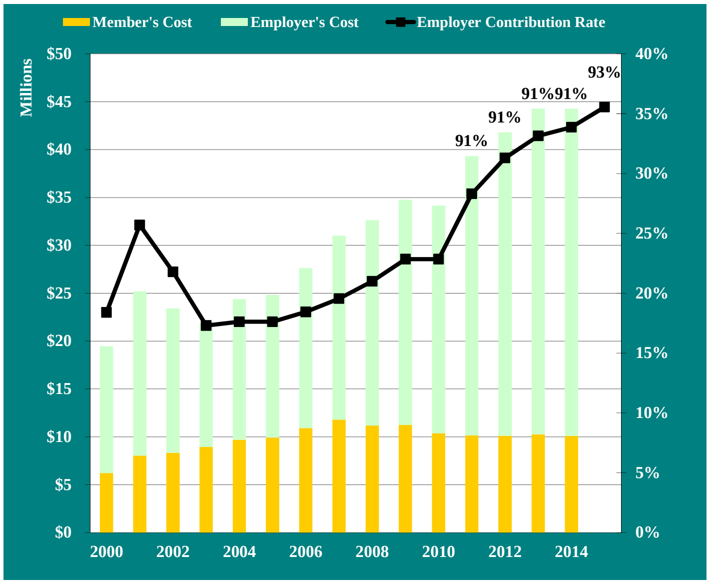
BOARD SUMMARY

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 2014 value is the rate prepared by the 2012 valuation and implemented for the period July 1, 2013 to June 30, 2014.

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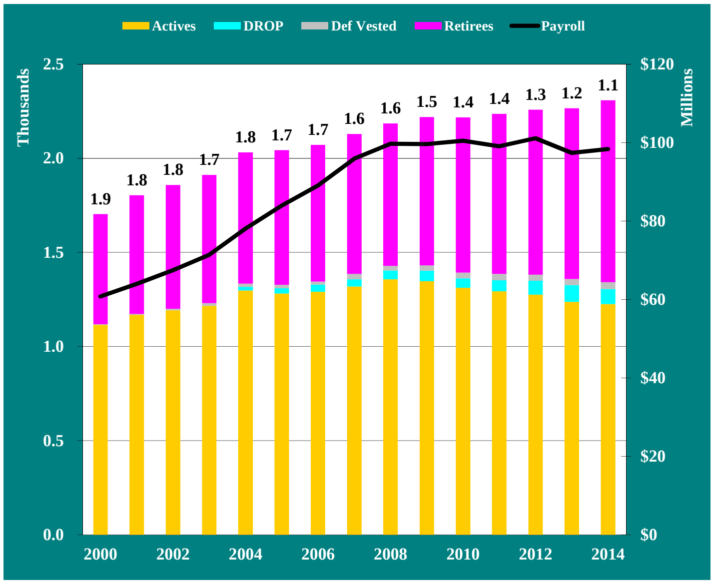
Participant Trends

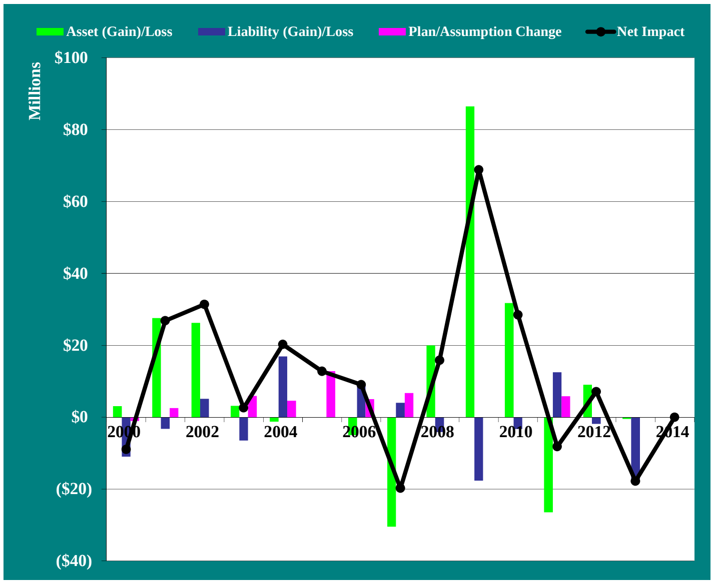
As with many funds in this country, there has been a steady growth in the number of retired members as the System has matured. The active-to-inactive ratio has decreased from 1.9 actives to each inactive in 2000 to 1.1 actives for each inactive today. While this would be an alarming trend in a pay-as-you-go system, the pool of invested assets has been established in anticipation of this development.

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



SECTION I
BOARD SUMMARY

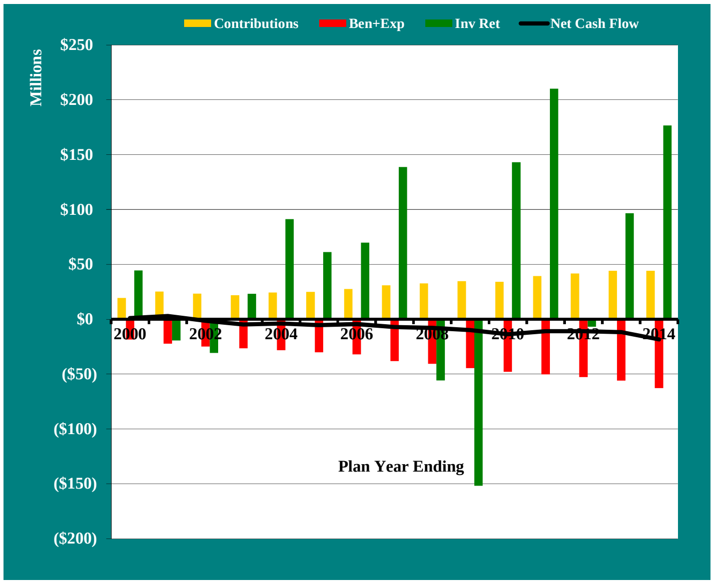
Gains and Losses



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, there is less principal that is available to be reinvested during periods of favorable returns.



SECTION I
BOARD SUMMARY

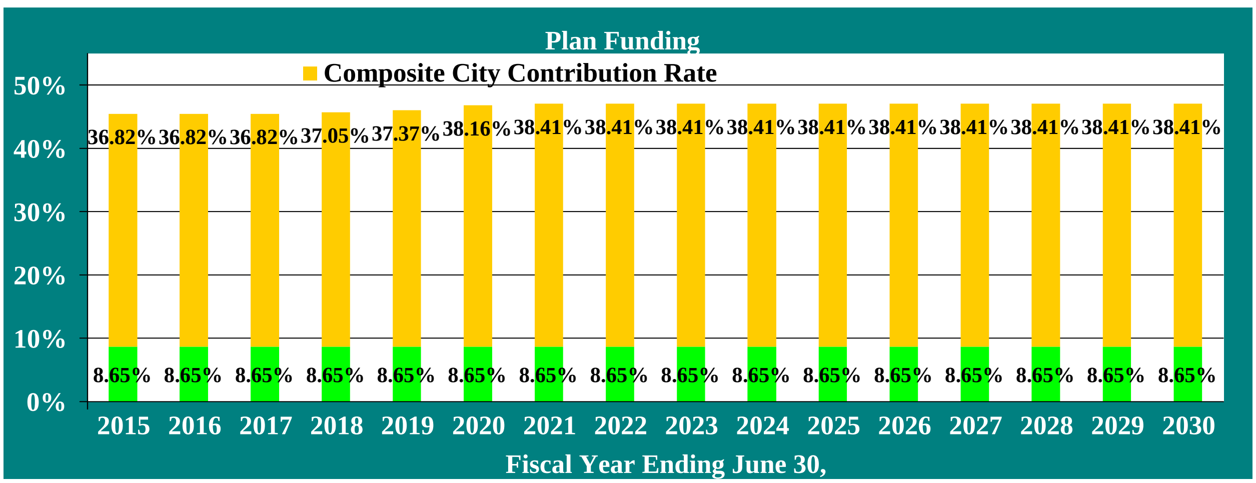
Future Outlook

<u>Base-line Projections</u>

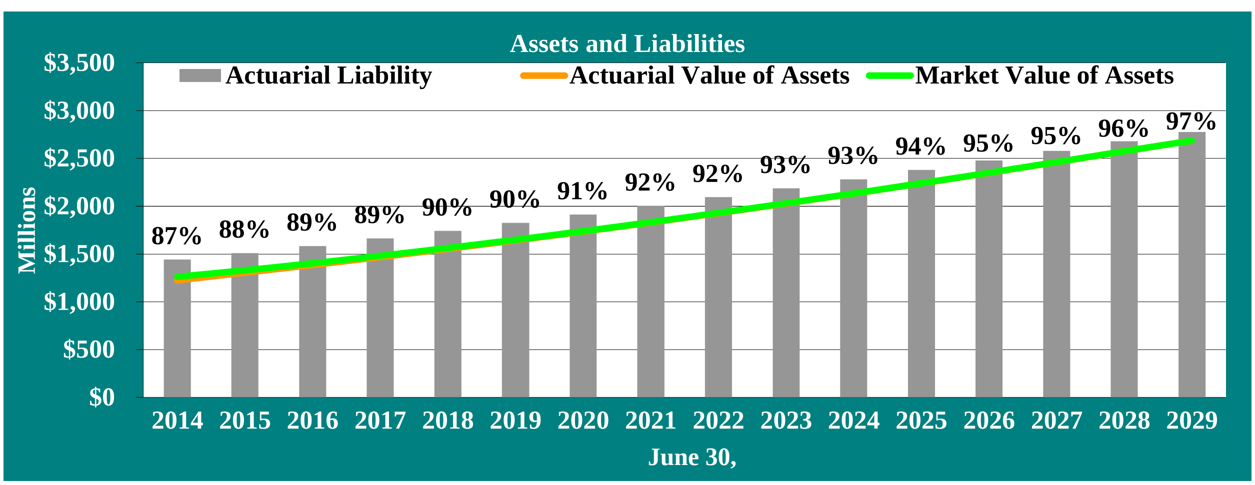
The two graphs below show the expected progress of the System over the next 15 years assuming the System's assets earn 7.5% on their *market value.*

While the County's written policy is to contribute to 90% of the corridor, for FY 2015, the County actually plans to contribute an amount to get to 93% funding based on the corridor method. In FY 2016, the amortization target will increase to 94% and continue increasing 1% each year 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" shows the contribution rate remaining at the 36.82% level for the first three years before slowly increasing to 38.41% and remaining at that level for the duration of the projection period.



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 97% funded as of 2029.



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 10.12% return per year. In the following charts, we show results assuming returns over the next 15 years average 5.0%, 7.5% and 10.0%. Different patterns of returns will produce different results from those shown here.

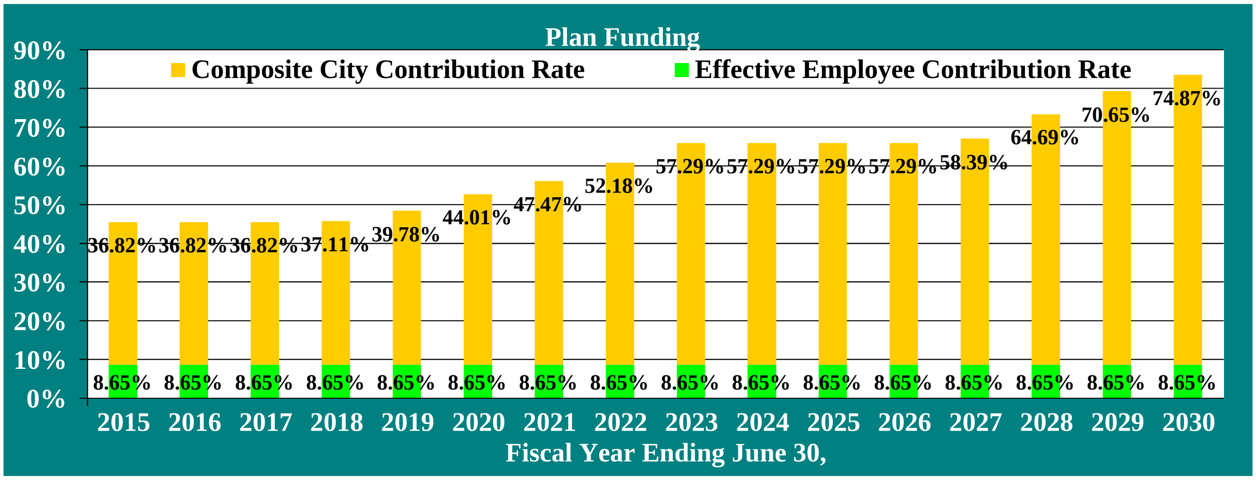
Table I-1

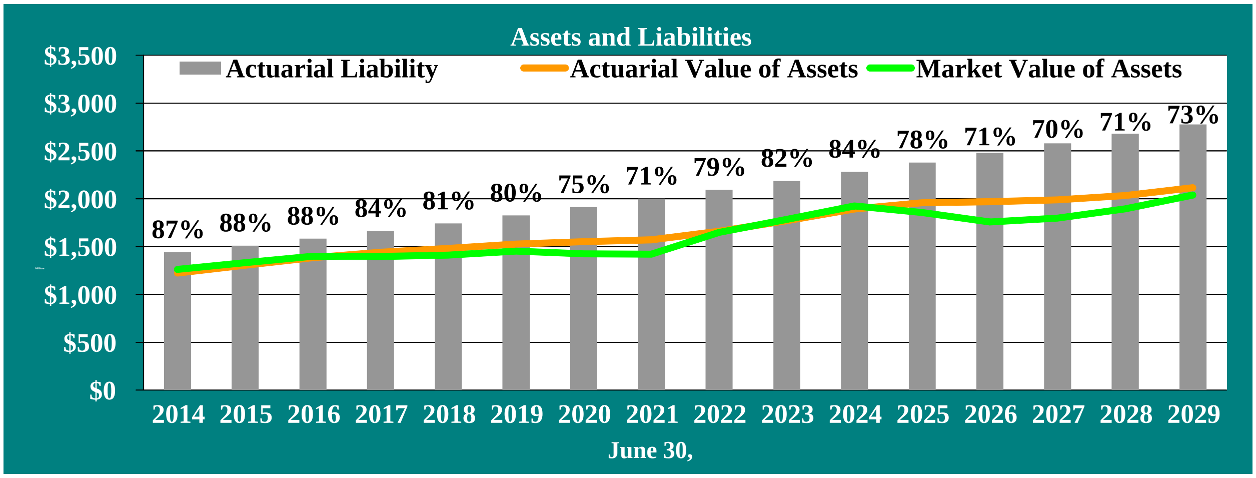
Fiscal Year Ending June 30,	Average 5.0%	Average 7.5%	Average 10.0%
2013	7.67%	2.34%	-5.85%
2014	7.05	7.17	4.54
2015	1.67	17.72	18.15
2016	2.98	30.01	32.56
2017	5.16	19.42	-8.98
2018	-0.19	5.61	12.47
2019	1.48	11.03	17.81
2020	17.59	4.30	-13.95
2021	9.50	15.60	15.19
2022	9.25	-0.44	14.83
2023	-2.11	2.05	28.45
2024	-3.75	-8.37	24.92
2025	4.20	4.65	3.95
2026	7.27	-0.59	7.37
2027	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 drastically increases from 37% to 75% of pay. The System funding drops to 70%, even with the ramping up of contributions.

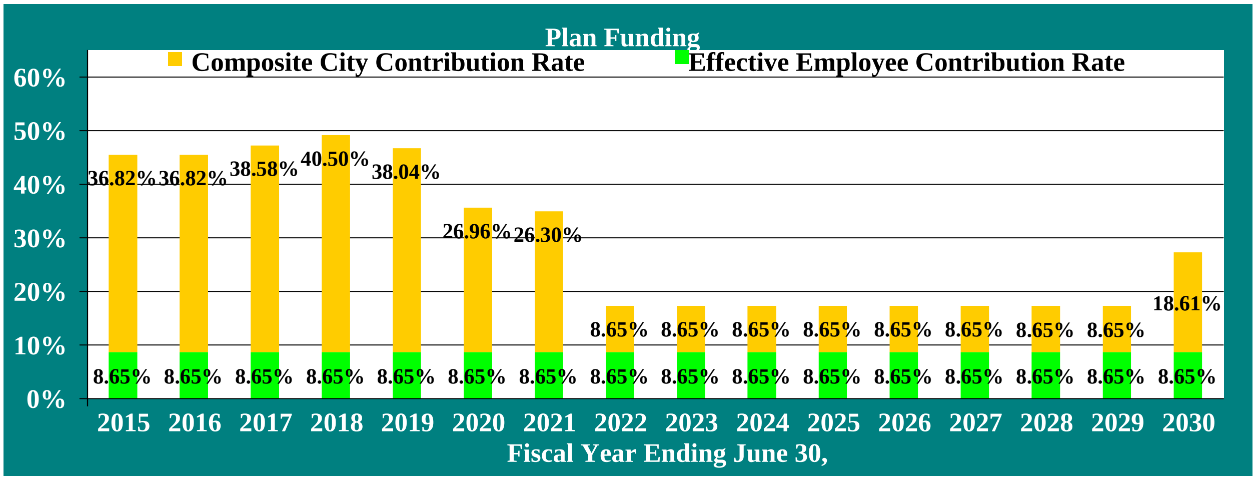


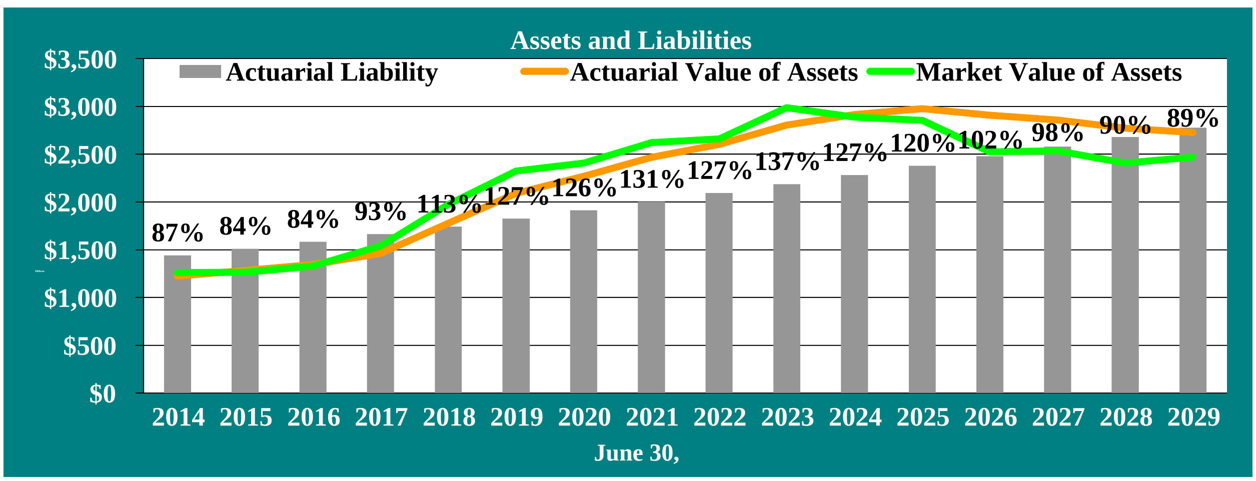


SECTION I
BOARD SUMMARY

<u>Alternative Projection -- with average return of 7.5% in the period</u>

Under this scenario, in which the System is assumed to enjoy higher than average returns in the third through fifth years, the corridor contribution rate increases to 40.50% until the System reaches full funding in 2018. After that time, the contribution drops dramatically as returns continue to push the funded percent over the 120% top of the corridor. County contributions in this System can never drop below the member's contribution rate.

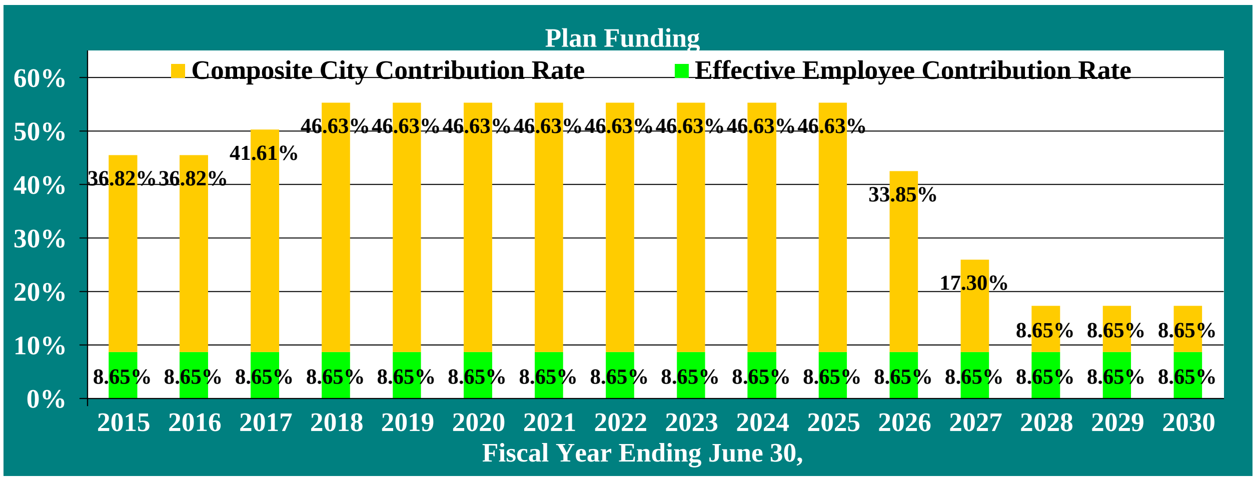


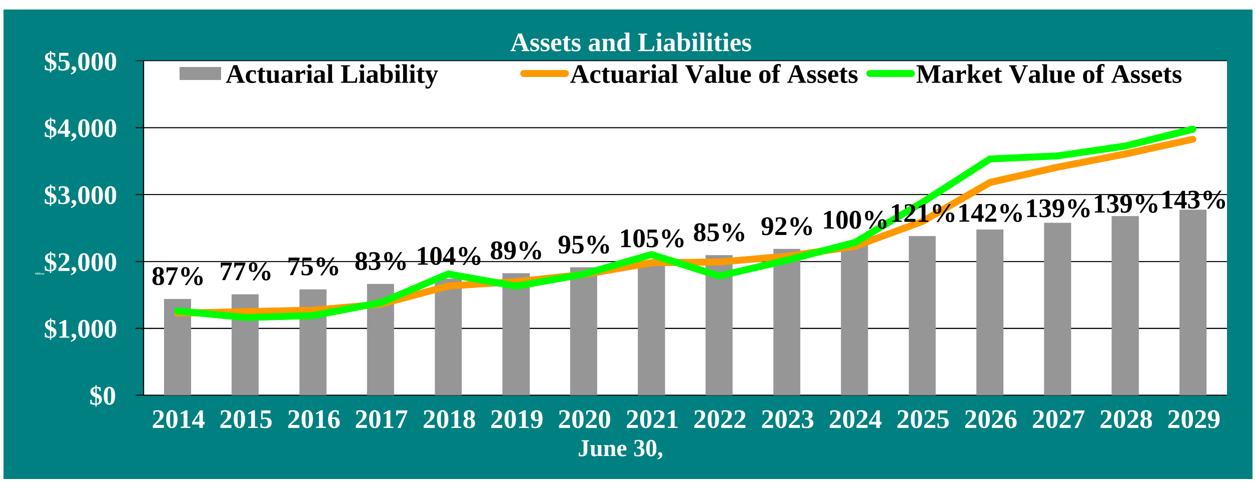


SECTION I
BOARD SUMMARY

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

Under this scenario, in which returns for the first two years are less than 7.5% but subsequent returns are much higher, the corridor contribution rate increases to 46.63% where it remains until the System reaches 100% funded. 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 2018 and 2021 do not result in reduced contribution rates. By the end of the projection period, the County rate is down to the System's minimum of 8.65%, equal to the member contribution rate.





SECTION I
BOARD SUMMARY

Table I-2
Summary of Principal Plan Results

Valuation as of:	7/1/2013	7/1/2014	% Chg
Participant Counts			
Actives (excluding DROP)	1,237	1,226	-0.9%
DROPs	89	80	-10.1%
Terminated Vesteds	33	36	9.1%
In Pay Status	907	966	6.5%
Total	2,266	2,308	1.9%
Annual Salaries of Active Members	$ 97,361,728	$ 98,346,859	1.0%
Annual Retirement Allowances for Retired Members and Beneficiaries	$ 54,193,186	$ 58,963,469	8.8%
Assets and Liabilities			
Actuarial Accrued Liability	$ 1,341,129,495	$ 1,441,544,593	7.5%
Assets for Valuation Purposes	1,101,474,728	1,224,882,430	11.2%
Unfunded Actuarial Liability	$ 239,654,767	$ 216,662,163	-9.6%
Funding Ratio	82.1%	85.0%	
Present Value of Accrued Benefits	$ 1,181,327,846	$ 1,266,382,609	7.2%
Market Value of Assets	1,102,522,083	1,260,757,215	14.4%
Unfunded Accrued Liability (not less than $0)	$ 78,805,763	$ 5,625,394	-92.9%
Accrued Benefit Funding Ratio	93.3%	99.6%	
Contributions as a Percentage of Payroll	**Fiscal Year 2015**	**Fiscal Year 2016**	
Corridor Method:			
Normal Cost Contribution	20.09%	22.49%	
Increase Due to Amortized Changes	4.24%	5.56%	
Administrative Expense	0.30%	0.30%	
Base Rate	24.63%	28.35%	
Amortize to 93% [1]	35.55%	35.34%	
Amortize to 94%	36.79%	36.66%	
Amortize to 95%	38.03%	37.98%	

[1] The actual contribution rate being paid by the County in FY 15 is 36.82%, which is based on the amortize to 93% amount shown above plus the adjustment for the change in member contribution rate.

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, 2013 and July 1, 2014;
- 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 33⅓% of the difference between the expected value of assets and the actual market value, where the expected value is equal to the prior year's actuarial value, rolled forward with actual contributions, benefit payments, and administrative expenses plus interest imputed at 7.5%.

SECTION II
ASSETS

Table II-1
Statement of Assets at Market Value

	7/1/2013	7/1/2014
Assets		
Equity in County's Pooled Cash,		
Contributions Receivable and Other Assets	$ 3,385,754	$ 3,628,356
Accrued Interest and Dividends Receivable	1,846,671	1,788,434
Receivable from Sale of Investments	5,947,383	2,428,554
US Government Obligations	46,047,990	50,920,477
Asset-Backed Securities	68,538,931	52,608,615
Other Bonds and Notes	60,081,461	79,433,159
Common and Preferred Stock	141,210,663	165,752,756
Pooled and Mutual Funds	753,804,866	883,308,066
Short-Term Investments	29,674,338	25,601,157
Cash Collateral Received Under		
Securities Lending Agreements	8,621,799	3,198,250
Total Assets	$ 1,119,159,856	$ 1,268,667,824
Liabilities		
Payable for Collateral Received Under		
Securities Lending Agreements	$ 8,621,799	$ 3,198,250
Payable for Purchase of Investments	6,415,220	2,853,630
Accounts Payable and Accrued Expenses	1,600,754	1,858,729
Total Liabilities	$ 16,637,773	$ 7,910,609
Net Assets Available for Benefits	**$ 1,102,522,083**	**$ 1,260,757,215**

SECTION II
ASSETS

Table II-2
Changes in Market Values

Value of Assets – July 1, 2013		**$ 1,102,522,083**
Additions		
Contributions:		
County Contributions	$ 34,178,960	
Employee Contributions	10,091,331	
Total Contributions		$ 44,270,291
Investment Income:		
Net Appreciation (Depreciation) in Fair Value of Investments	$ 161,045,013	
Interest	12,294,087	
Dividends	5,698,382	
Total Investment Income	$ 179,037,482	
Investment Activity Expenses:		
Management Fees	$ (2,122,891)	
Custodian Fees	(69,244)	
Consulting Expense	(1,154)	
Allocated Administrative Expenses	(197,665)	
Total Investment Activity Expenses	$ (2,390,954)	
From Securities Lending Activities:		
Securities Lending Income	$ 55,038	
Securities Lending Expenses		
Borrowers Rebates	0	
Management Fees	(17,956)	
Net Income from Securities Lending Activities	$ 37,082	
Net Investment Income		$ 176,683,610
Total Additions		$ 220,953,901
Deductions		
Annuity Benefits	$ (56,871,422)	
Disability Benefits	(1,309,868)	
Survivor Benefits	(3,534,131)	
Refunds and Other Expenses	(572,284)	
Administrative Expenses	(431,064)	
Total Deductions		$ (62,718,769)
Total		
Net Increase (Decrease)		$ 158,235,132
Value of Assets – July 1, 2014		**$ 1,260,757,215**

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 actuarial value of assets in this July 1, 2014 valuation also recognizes an additional amount of past deferred gains in order to offset the increase in liability caused by changes in assumptions and methods. The following table illustrates the calculation of the actuarial value of assets for the July 1, 2014 valuation.

Table II-3
Development of Actuarial Value of Assets
as of July 1, 2014

1.	Actuarial Value of Assets at July 1, 2013	**$ 1,101,474,728**
2.	Amount in (1) with Interest to July 1, 2014	1,184,085,333
3.	County and Member Contributions for the Plan Year Ended June 30, 2014	44,270,291
4.	Interest on Contributions Assuming Received Uniformly Throughout the Year to July 1, 2014	1,660,136
5.	Disbursements from Trust Except Investment Expenses, July 1, 2013 Through June 30, 2014	(62,718,769)
6.	Interest on Disbursements Assuming Payments Made Uniformly Throughout the Year to July 1, 2014	(2,351,954)
7.	Expected Value of Asset at July 1, 2014 = (2) + (3) + (4) + (5) + (6)	$ 1,164,945,037
8.	Market Value of Assets at July 1, 2014	1,260,757,215
9.	Excess of (8) Over (7)	$ 95,812,178
10.	Additional Recognition of Past Deferred Gains	28,000,000
11.	Actuarial Value of Assets at July 1, 2014 = (7) + 33-1/3% of (9) + (10)	**$ 1,224,882,430**

All interest adjustments are made using the 7½% per annum actuarial assumed interest rate.

SECTION II
ASSETS

Investment Performance

The market value of assets (MVA) returned 16.16% during 2014, which is more than the assumed 7.50% return. A return of 10.29% 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 Index [1]
1990	11.8%	11.2%	16.4%	7.1%
1991	9.5%	9.9%	7.4%	10.2%
1992	12.2%	10.0%	13.5%	14.2%
1993	15.0%	11.4%	13.6%	13.2%
1994	3.4%	7.6%	1.3%	-1.5%
1995	14.6%	10.5%	26.1%	12.8%
1996	16.1%	19.2% [2]	26.0%	4.7% [3]
1997	21.4%	15.1%	34.6%	8.2%
1998	17.3%	8.1%	30.2%	10.5%
1999	8.1%	15.9%	22.7%	3.1%
2000	7.7%	12.7%	7.3%	4.6%
2001	-3.1%	7.0%	-14.8%	11.2%
2002	-5.1%	3.0%	-18.0%	8.6%
2003	4.1%	3.3%	0.3%	10.4%
2004	15.5%	7.0%	19.1%	0.3%
2005	9.1%	7.7%	6.3%	6.8%
2006	9.5%	8.3%	8.6%	-0.8%
2007	17.4%	11.4%	20.6%	6.1%
2008	-6.0%	5.2%	-13.1%	7.1%
2009	-17.6%	-2.1%	-26.2%	5.5%
2010	20.5%	3.9%	14.4%	9.5%
2011	25.3%	10.5%	30.8%	3.9%
2012	-0.7%	6.6%	5.4%	7.5%
2013	9.6%	7.6%	20.6%	-0.1%
2014	16.2%	10.3%	24.6%	4.4%

[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, 2014. 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 36.82% for FY 2015, and then using amortize to 93% rate for FY 2016, amortize to 94% for FY 2016 and so on increasing to 100%. This projection assumes no further gains or losses and 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[1]	Expected County Contributions
2014	$ 70,645,000	$ 36,211,000
2015	72,136,000	37,298,000
2016	72,756,000	38,417,000
2017	80,489,000	39,818,000
2018	82,976,000	41,363,000
2019	86,473,000	43,502,000
2020	90,370,000	45,101,000
2021	97,101,000	46,454,000
2022	102,890,000	47,847,000
2023	109,245,000	49,283,000

[1] Assumes assets in the inactive and suspense account are paid out in first year.

SECTION III
LIABILITIES

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

- **Disclosure** of system liabilities at July 1, 2013 and July 1, 2014;
- 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 fully pay off all future benefits and expenses of the System, assuming participants continue to accrue benefits.

- **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. 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.

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, 2013	July 1, 2014
Present Value of Future Benefits		
Active Participant Benefits (excluding DROP)	$ 799,422,340	$ 843,307,544
DROP Participant Benefits	115,685,867	104,519,133
Retiree Benefits	739,957,632	803,601,980
Terminated Vested and Inactive Members	3,662,481	4,992,690
Present Value of Benefits (PVB)	**$ 1,658,728,320**	**$ 1,756,421,347**
Market Value of Assets (MVA)	$ 1,102,522,083	$ 1,260,757,215
Future Employee Contributions	103,016,976	86,203,921
Future County Contributions	453,189,261	409,460,211
Total Resources	**$ 1,658,728,320**	**$ 1,756,421,347**
Actuarial Accrued Liability		
Present Value of Benefits (PVB)	$ 1,658,728,320	$ 1,756,421,347
Present Value of Future Normal Costs (PVFNC)		
County Portion	214,581,849	228,672,833
Employee Portion	103,016,976	86,203,921
Actuarial Accrued Liability (AAL = PVB – PVFNC)	**$ 1,341,129,495**	**$ 1,441,544,593**
Actuarial Value of Assets (AVA)	1,101,474,728	1,224,882,430
Net (Surplus)/Unfunded (AAL – AVA)	**$ 239,654,767**	**$ 216,662,163**
Present Value of Accrued Benefits		
Present Value of Benefits (PVB)	$ 1,658,728,320	$ 1,756,421,347
Present Value of Future Benefit Accruals (PVFBA)	477,400,474	490,038,738
Present Value of Accrued Benefits (PVAB = PVB – PVFBA)	**$ 1,181,327,846**	**$ 1,266,382,609**
Market Value of Assets (MVA)	1,102,522,083	1,260,757,215
Net Unfunded, not less than $0 (PVAB – MVA)	**$ 78,805,763**	**$ 5,625,394**

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:

- County 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 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 7/1/2013	$ 1,658,728,320	$ 1,341,129,495	$ 1,181,327,846
Liabilities 7/1/2014	1,756,421,347	1,441,544,593	1,266,382,609
Liability Increase (Decrease)	$ 97,693,027	$ 100,415,098	$ 85,054,763
Change Due to:			
Plan Amendment and Ad Hoc COLAs	$ 0	$ 0	$ 0
Actuarial (Gain)/Loss	*Not Calculated*	(11,575,441)	*Not Calculated*
Method and Assumption Changes	36,002,028	42,429,959	27,612,124
Benefits Accumulated and Other Sources	61,690,999	69,560,580	57,442,639

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 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 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.

Table IV-1

Changes Since 2001	Impact on UAL Rate
2002 ad-hoc COLA	+ 0.32%
2004 ad-hoc COLA	+ 0.48
2005 Implementation of DROP	+ 0.16
2005 Assumption Changes	+ 0.83
2005 ad-hoc COLA	+ 0.46
2006 ad-hoc COLA	+ 0.45
2007 ad-hoc COLA	+ 0.45
2007 Remove 30-year service cap on benefits	+ 0.07
2008 ad-hoc COLA	+ 0.50
2010 Assumption Changes	+ 0.52
2014 Assumption Changes	+ 1.32
Total Increase	+ 5.56%

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, 2013** **2015**	**July 1, 2014** **2016**
Normal Cost Rate	20.09%	22.49%
UAL Rate	4.24%	5.56%
Amortization of Amount Outside Corridor (to 90%)	7.19%	3.02%
Expense Rate	0.30%	0.30%
Total County Rate	31.82%	31.37%
Total Rate with Alternative Amortization Targets of:		
93% [1]	35.55%	35.34%
94%	36.79%	36.66%
95%	38.03%	37.98%

[1] The actual contribution rate being paid by the County in FY 15 is 36.82%, which is based on the amortize to 93% amount shown above plus the adjustment for the change in member contribution rate.

SECTION IV
CONTRIBUTIONS

Table IV-3
Development of Corridor Contribution Rate

	July 1, 2013 (for FY 2015)	July 1, 2014 (for FY 2016)
1. Present Value of Future Benefits		
a. Active Employees	$ 799,422,340	$ 843,307,544
b. DROP	115,685,867	104,519,133
c. Retired Members	739,957,632	803,601,980
d. Vested Terminated and Inactive Members	3,662,481	4,992,690
e. Total Present Value	$1,658,728,320	$1,756,421,347
2. Present Value of Future Normal Costs		
a. County Portion	$ 214,581,849	$ 228,672,833
b. Employee Portion	103,016,976	86,203,921
c. Total Present Value	$ 317,598,825	$ 314,876,754
3. Actuarial Accrued Liability (1) – (2)	$1,341,129,495	$1,441,544,593
4. Actuarial Value of Assets for Corridor Purposes		
a. Actuarial Assets	$1,101,474,728	$1,224,882,430
b. Outstanding Balance of Plan and Assumption Changes	27,851,140	39,523,965
c. Adjusted Assets (a) + (b)	$1,129,325,868	$1,264,406,395
5. Funding Ratio for Corridor Test	84.2%	87.7%
6. Liability to be Amortized if outside Corridor		
a. 90% x (3) - (4)(c)	$ 77,690,677	$ 32,983,739
b. (4)(c) - 120% x (3)	0	0
7. Active Member Payroll	$ 97,361,728	$ 98,346,859
8. Unfunded Liability Amortization Factor	11.0918	11.0918
9. Amortization as a % of Payroll (6)/(7)/(8)	7.19%	3.02%
10. County Contribution Results (Corridor)		
a. Normal Cost Rate	20.09%	22.49%
b. Administrative Expense Rate	0.30%	0.30%
c. Plan Change Amortizations	4.24%	5.56%
d. Amortization Outside Corridor (9)	7.19%	3.02%
e. Total County Contribution Rate June 30[1]	31.82%	31.37%

[1]Alternative rate calculations developed by amortizing to 94% for FY 2016 is a County Rate of 36.66%.

SECTION V
ACCOUNTING STATEMENT INFORMATION

ASC Topic 960 of the Financial Accounting Standards Board (FASB) requires the System to disclose certain information regarding its funded status. Statement Number 67 of the Governmental Accounting Standards Board (GASB) establishes standards for disclosure of pension information by public employee retirement systems (PERS) and governmental employers in notes to financial statements and supplementary information.

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, 2013 and July 1, 2014 are exhibited in Table V-1, which also includes a reconciliation of liabilities determined as of the prior valuation, July 1, 2013, to the liabilities as of July 1, 2014.

This valuation contains information reported in the June 30, 2014 Comprehensive Annual Financial Report (CAFR) of the System under the new GASB Statement No. 67. Disclosures are based on the use of update procedures to roll forward the 2013 valuation results. The 2013 starting point is higher than the funding numbers from 2013 since the change in the assumed investment return was included in the 2013 liabilities. The calculation of Net Pension Liability in Table V-2 shows the amounts disclosed for the plan year June 30, 2014 as well as a projection of the anticipated June 30, 2015 disclosure if all actuarial assumptions are met over the coming year.

Tables V-3 through V-5 are exhibits to be used with the System’s CAFR report. Table V-3 is the Notes to Required Supplementary Information, Table V-4 is a history of gains and losses in Accrued Liability, and Table V-5 is the Solvency Test which shows the portion of Accrued Liability covered by Assets.

SECTION V
ACCOUNTING STATEMENT INFORMATION

Table V-1
Accounting Statement Information

	July 1, 2013	July 1, 2014
A. FASB ASC Topic 960 Basis		
1. Present Value of Benefits Accrued and Vested to Date		
a. Members Currently Receiving Payments	$ 739,957,632	$ 803,601,980
b. Vested Terminated and Inactive Members	3,662,481	4,992,690
c. DROP	115,685,867	104,519,133
d. Active Members	317,536,305	348,797,554
e. Total PVVB	$1,176,842,285	$1,261,911,357
2. Present Value of Non-Vested Accrued Benefits for Active Members	4,485,561	4,471,252
3. Total Present Value of Accrued Benefits	$1,181,327,846	$1,266,382,609
4. Assets at Market Value	1,102,522,083	1,260,757,215
5. Unfunded Present Value of Accrued Benefits, But Not Less Than Zero	$ 78,805,763	$ 5,625,394
6. Ratio of Assets to Value of Benefits (4) / (3)	93.3%	99.6%
B. Statement of Changes in Present Value of Accrued Benefits		
Actuarial Present Value of Accrued Benefits as of July 1, 2013		$1,181,327,846
Increase (Decrease) During Year Attributable to:		
Passage of Time		$ 86,263,799
Benefit Paid – FY 2014		(62,287,705)
Assumption Changes		27,612,124
Plan Amendment		0
Benefits Accrued, Other Gains/Losses		33,466,545
Net Increase (Decrease)		$ 85,054,763
Actuarial Present Value of Accrued Benefits as of July 1, 2014		$1,266,382,609

SECTION V
ACCOUNTING STATEMENT INFORMATION

Table V-2
GASB No. 67 Disclosures

	June 30, 2014	Estimated* June 30, 2015
Total Pension Liability		
Service Cost	$ 30,858,609	$ 30,405,150
Interest	102,492,490	107,497,814
Changes in benefit terms	0	0
Differences between expected and actual experience	0	(11,515,790)
Changes in assumptions	0	0
Benefit payments, including refunds or member contributions	(62,287,705)	(70,645,000)
Net change in Total Pension Liability	**$ 71,063,394**	**$ 55,742,175**
Total Pension Liability – beginning	**$ 1,381,996,989**	**$ 1,453,060,383**
Total Pension Liability – ending (a)	**$ 1,453,060,383**	**$ 1,508,802,558**
Plan Fiduciary Net Position		
Contributions – Employer	$ 34,178,960	$ 36,211,000
Contributions – Member	10,091,331	8,200,000
Net investment income	176,683,610	93,580,000
Benefit payments, including refunds of member contributions	(62,287,705)	(70,645,000)
Administrative Expenses	(431,064)	(300,000)
Net change in Plan Fiduciary Net Position	**$ 158,235,132**	**$ 67,046,000**
Plan Fiduciary Net Position – beginning	**$ 1,102,522,083**	**$ 1,260,757,215**
Plan Fiduciary Net Position – ending (b)	**$ 1,260,757,215**	**$ 1,327,803,215**
Plan Net Pension Liability (Asset) – ending [(a) – (b)]	**$ 192,303,168**	**$ 180,999,343**

*These numbers will change to reflect the actual Plan Fiduciary Net Position and benefit payments. Estimates are provided here for planning purposes only

SECTION V
ACCOUNTING STATEMENT INFORMATION

Table V-3
Note to Required Supplementary Information

The information presented in the required supplementary schedules was determined as part of the actuarial valuation at the date indicated. Additional information as of the latest actuarial valuation follows.

Valuation date	July 1, 2014
Actuarial cost method	Entry age
Amortization method	Level percent open
Remaining amortization period	15 years
Asset valuation method	3-year smoothed market
Actuarial assumptions:	
Investment rate of return*	7.5%
Projected salary increases*	4.8% - 11.0%
Cost-of-living adjustments	2.75%
*Includes inflation at	3.0%

The actuarial assumptions used have been recommended by the actuary and adopted by the System's Board of Trustees based on the most recent review of the System's experience, completed in 2011.

The rate of employer contributions to the System is composed of the normal cost, amortization of the unfunded actuarial accrued liability and an allowance for administrative expenses. The normal cost is a level percent of payroll cost which, along with the member contributions, will pay for projected benefits at retirement for the average plan participant. The actuarial accrued 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 the funds accumulated as of the same date is the unfunded actuarial accrued liability. The allowance for administrative expenses is based upon the System's actual administrative expenses.

SECTION V
ACCOUNTING STATEMENT INFORMATION

Table V-4
Analysis of Financial Experience
Gains and Losses in Accrued Liability During Years Ended June 30
Resulting from Differences Between Assumed Experience and Actual Experience

	Gain (or Loss) for Year ending June 30,					
Type of Activity	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Investment Income	$ (86,460,572)	$ (31,755,165)	$ 26,496,140	$ (8,996,470)	$ 523,678	$ 31,937,393
Combined Liability Experience	17,649,316	3,313,576	(12,495,024)	1,919,058	17,282,544	11,575,441
Gain (or Loss) During Year from Financial Experience	$ (68,811,256)	$ (28,441,589)	$ 14,001,116	$ (7,077,412)	$ 17,806,222	$ 43,512,834
Non-Recurring Items	0	0	(5,795,987)	0	0	(14,429,959)
Composite Gain (or Loss) During Year	**$ (68,811,256)**	**$ (28,441,589)**	**$ 8,205,129**	**$ (7,077,412)**	**$ 17,806,222**	**$ 29,082,875**

Table V-5
Solvency Test

	Aggregate Accrued Liabilities For				**Portion of Accrued Liabilities by Reported Assets**		
Valuation Date July 1,	**(1) Active Member Contributions**	**(2) Retirees Vested Terms, Beneficiaries & DROP**	**(3) Active Members (Employer Financed Portion)**	**Reported Assets**	**(1)**	**(2)**	**(3)**
2009	$ 96,351,833	$ 658,492,487	$ 321,194,627	$ 879,543,429	100%	100%	39%
2010	100,709,756	695,041,990	339,263,552	899,543,387	100%	100%	31%
2011	104,188,027	732,172,476	383,248,604	982,153,681	100%	100%	38%
2012	107,411,328	798,639,061	380,790,276	1,035,444,171	100%	100%	34%
2013	107,211,514	859,305,980	374,612,001	1,101,474,728	100%	100%	36%
2014	106,872,811	913,113,803	421,557,979	1,224,882,430	100%	100%	49%

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, 2014 and the inactive data was collected as of July 1, 2014.

Active pay information is adjusted to project the pay expected to be earned from July 1, 2014 through June 30, 2015. The annual payroll was provided as of December 31, 2013 and adjusted to July 1, 2014, which included annualizing the 1.29% increase from July 1, 2014.

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, 2014

Active Members*	Count	Annual Salary Rates	Average Annual Salary
Employed Prior to July 1, 1981	2	$ 355,987	$ 177,994
Employed on or After July 1, 1981	1,162	94,360,691	81,205
Employed on or After January 1, 2013	62	3,630,180	58,551
Total	1,226	$ 98,346,859	$ 80,218
Average Age	38.9		
Average Service	12.5		

* Excludes DROP participants.

Inactive Members and DROP Participants	Count	Total Annual Benefit	Average Monthly Benefit
Service Retirement	813	$ 54,154,651	$ 5,551
Service-Connected Disability	29	1,177,821	3,385
Ordinary Disability	6	134,897	1,874
Beneficiaries	118	3,496,100	2,469
Total/Average in Payment Status	966	$ 58,963,469	$ 5,087
DROP	80	$ 5,817,954	$ 6,060
Vested Former Members	36	$ 623,843	$ 1,444

APPENDIX A
MEMBERSHIP INFORMATION

Data Reconciliation from July 1, 2013 to July 1, 2014

	Active	DROP	Terminated Vested	Retired	Service-Connected Disability	Ordinary Disability	Widow	Beneficiary	Child	Total
Participant count as of July 1, 2013	**1,237**	**89**	**33**	**764**	**30**	**6**	**82**	**19**	6	**2,266**
New Hires / Re-hires	64		(2)							**62**
Terminated Vested	(6)		6							**0**
DROP	(34)	34								**0**
Retired	(17)	(42)		59						**0**
Deceased with beneficiary		(1)	(1)	(9)	(1)		9	3		**0**
Deceased without beneficiary				(1)			(1)			**(2)**
Benefits Expired										**0**
Ordinary Disability										**0**
Service-Connected Disability										**0**
Terminated Not Vested	(18)									**(18)**
Corrections										**0**
Change	(11)	(9)	3	49	(1)	0	8	3	0	**42**
Participant count as of July 1, 2014	**1,226**	**80**	**36**	**813**	**29**	**6**	**90**	**22**	**6**	**2,308**

APPENDIX A
MEMBERSHIP INFORMATION

Distribution of Active Participants - Total

COUNTS BY AGE/SERVICE

	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	19	18	1	0	0	0	0	0	38
25 to 29	23	48	75	1	0	0	0	0	147
30 to 34	10	21	115	78	0	0	0	0	224
35 to 39	4	10	39	142	60	0	0	0	255
40 to 44	1	5	19	96	95	62	2	0	280
45 to 49	0	2	11	34	38	77	33	0	195
50 to 54	0	3	6	8	13	13	17	7	67
55 to 59	0	0	2	0	5	4	2	4	17
60 to 64	0	0	0	1	1	0	0	0	2
65 & up	0	0	0	1	0	0	0	0	1
Total	57	107	268	361	212	156	54	11	1,226

TOTAL SALARY BY AGE/SERVICE

	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	$ 1,040,433	$ 1,014,976	$ 60,840	$ 0	$ 0	$ 0	$ 0	$ 0	$ 2,116,249
25 to 29	1,396,199	2,830,676	5,044,277	69,973	0	0	0	0	9,341,125
30 to 34	607,510	1,296,474	8,218,168	6,189,379	0	0	0	0	16,311,531
35 to 39	244,602	648,559	2,941,268	11,520,040	5,116,862	0	0	0	20,471,331
40 to 44	59,261	332,222	1,359,937	7,800,356	8,285,751	6,012,981	286,645	0	24,137,153
45 to 49	0	129,602	815,610	2,728,981	3,331,429	7,467,213	3,344,020	0	17,816,855
50 to 54	0	203,676	448,881	632,654	1,108,850	1,193,935	1,845,601	746,570	6,180,167
55 to 59	0	0	146,256	0	437,658	372,764	190,258	591,802	1,738,738
60 to 64	0	0	0	78,854	77,561	0	0	0	156,415
65 & up	0	0	0	77,295	0	0	0	0	77,295
Total	$ 3,348,005	$ 6,456,185	$ 19,035,237	$ 29,097,532	$ 18,358,111	$ 15,046,893	$ 5,666,524	$ 1,338,372	$ 98,346,859

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 RP-2000 Mortality Projected to 2015*		
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

* 20% of deaths are assumed to be service-connected.

b. Disabled Mortality

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

APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS

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

Annual Terminations Per 1,000 Members	
Years of Service	Terminations
0	70
1	40
2	45
3	50
4	40
5	30
6	20
7	15
8	14
9	13
10	12
11	11
12	10
13	10
14	10
15	8
16	6
17	4
18	2
19	2
20 or more	2

It is assumed that members who terminated 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 Disabilities Per 1,000 Members*	
Age	**Male and Female**
20	2
25	2
30	2
35	2
40	2
45	4
50	6
55	6
60	6

* 70% of disabilities are assumed to be service-connected.
Of these, 100% are assumed to receive Workers' Compensation benefits.

e. Retirement

Probability of Retirement*		
Years of Service	**Hired Pre - 7/1/81**	**Hired Post - 7/1/81**
20	40%	N/A
21	40	N/A
22	40	N/A
23	40	N/A
24	40	N/A
25	40	40%
26	40	40
27	40	40
28	40	40
29	40	40
30	40	40
31+	100	100

* 50% are assumed to DROP.

APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS

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

Years of Service*	Merit/Seniority Increase
0	8.0%
5	4.3
10	1.0
15	3.0
20	1.8
25	1.8
30	1.8

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

g. Family Composition

For purposes of valuing the pre-retirement death benefit, an assumption concerning how many employees are married is needed. The assumption used in this valuation is that 80% of active employees are married at death and that the female spouse is five years-younger than the male spouse. In addition, each married employee is assumed to have two children, 22 and 24 years-younger than the employee.

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:	0.30%

* Benefit increases are limited to 4% per year.

3. Changes since Last Valuation

A sick leave accrual assumption has been added to project sick leave as part of future benefit and service accruals.

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.

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.

In 2014, there was an additional recognition of $28.0 million of the remaining balance of past investment gains

3. Changes since Last Valuation

Moved from the entrant variation of the Entry-Age Normal funding method to the individual method.

There was an additional recognition of $28.0 million of the past investment gains.

APPENDIX C
SUMMARY OF PLAN PROVISIONS

1. Membership

The plan covers Police Officers who are not covered by the Fairfax County Employees' Retirement System, the Uniformed Retirement System or the VRS. In addition, former Park Police Officers who elected, effective January 22, 1983, to transfer to this System from the Uniformed Retirement System are eligible for membership.

2. Member Contributions

8.65% of compensation. Starting on January 1, 1984, the contributions are made through an "employer pick-up" arrangement which results in deferral of taxes on the contributions.

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

3. Credited Service

All service as a member, including the period a member is on service-connected disability retirement plus certain purchased prior service for re-employed officers, is credited. In addition, credit is allowed at the rate of 1 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 including pick-up contributions, roll call and holiday pay. Average final compensation is the average over the high 36 consecutive months (or shorter period of total service) including the period covered by unused sick leave.

5. Normal Retirement

Eligibility

For members employed before July 1, 1981, age 55 or completion of 20 years of service. For members employed after July 1, 1981, age 55 or completion of 25 years of service.

Benefit

2.8% of average final compensation for each year of service with a maximum benefit of 84%. The benefit is then increased by 3%.

APPENDIX C
SUMMARY OF PLAN PROVISIONS

6. Early Retirement

Eligibility

20 years of service (does not apply if hired before July 1, 1981).

Benefit

Normal retirement benefit calculated using average final compensation and service at early retirement, actuarially reduced. The resulting benefit is then increased by 3%.

7. 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).

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-connect benefit.

APPENDIX C
SUMMARY OF PLAN PROVISIONS

8. Service-Connected Disability

Eligibility

No age or service requirement.

Benefit

For total disability, 66-2/3% of compensation as of the date of disability less 100% of Virginia Workers' Compensation benefit, payable to 25 years of service at which time the benefit converts to 60% of the current compensation for the position from which the member retired.

9. Ordinary Disability

Eligibility

No age or service requirement.

Benefit

If not eligible for normal or early retirement benefit, greater of (i) 10% of average final compensation or (ii) amount determined under normal retirement benefit formula, based on average final compensation and credited service as of disability date. The resulting benefit is then increased by 3%.

10. Service-Connected Death

Eligibility

No age or service requirement.

Benefit

Spouse may elect a benefit of 66-2/3% of member's current salary in lieu of ordinary death benefit. The resulting benefit is then increased by 3%.

11. Ordinary Death

Eligibility

No age or service requirement (covers death while active or after normal, early or service-connected disability benefits).

Benefit

Surviving spouse receives $1,000 per month payable for the life of the spouse but ceasing upon remarriage. Surviving children under 18, or under age 23 if full time students, receive $400 per month. The maximum combination of benefits is $2,000 per month. This benefit will be increased by cost-of-living adjustments in the future. The monthly benefits for the year beginning July 1, 2014 are $2,217.12, $886.84, and $4,434.22, respectively.

12. 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 55 or actuarially reduced and payable at early retirement age.

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

13. Withdrawal

Eligibility

Not eligible for other benefits.

Benefit

Member contribution account balance.

14. Form of Payment

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

A member who is entitled to a normal or early retirement benefit may elect an actuarially equivalent Joint and Survivor pop-up benefit.

APPENDIX C
SUMMARY OF PLAN PROVISIONS

15. 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 deferred vested benefits prior to benefit commencement. Service connected disability benefits, commencing prior to July 1, 1981, are increased by the salary index used in the actuarial valuation instead of by the cost-of-living index.

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

16. Changes since Last Valuation

Effective July 1, 2014 the member contribution rate was changed from 10% to 8.65% of compensation.