

City of Fairfax Retirement Plan for Public Safety Employees

35th Actuarial Valuation Report
June 30, 2017



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October 23, 2017

Administrative Committee
City of Fairfax Retirement Plan
for Public Safety Employees
Fairfax, Virginia

Ladies and Gentlemen:

Submitted in this report are the results of our **35th Annual Actuarial Valuation** of the City of Fairfax Retirement Plan for Public Safety Employees, based on data as of **June 30, 2017**. This report was prepared at the request of the Administrative Committee and is intended for use by the Retirement Plan and those designated or approved by the Committee. This report may be provided to parties other than the Plan only in its entirety and only with the permission of the Administrative Committee. GRS is not responsible for unauthorized use of this report. The calculations presented herein have been made on a basis consistent with our understanding of the provisions of the Plan and the funding objectives of the Administrative Committee.

The computed contribution rate shown on page 5 may be considered as a minimum contribution rate that complies with the Administrative Committee's funding policy. Users of this report should be aware that contributions made at that rate do not guarantee benefit security. Given the importance of benefit security to any retirement system, we suggest that contributions to the Plan in excess of those presented in this report be considered.

The actuarial calculations were prepared for purposes of calculating an employer contribution rate for the fiscal year beginning July 1, 2018 and to measure the Plan's funding progress. This report should not be relied on for any purpose other than the purpose described herein. Determinations of the financial results associated with the benefits described in this report for purposes other than those identified above may be significantly different.

The valuation was based upon information furnished by the City Finance Director and his staff concerning Retirement Plan benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked for internal and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by the City Finance Director and his staff.

The contribution allocation procedure, including the amortization period and method, is set by the Administrative Committee.

In addition, this report was prepared using certain assumptions approved by the Administrative Committee as described in the Appendix of this report. The actuarial assumptions are established by the Administrative Committee after consulting with the actuary under the Fairfax Code of Ordinances Section 66-452 (s).

The findings in this report are based on data and other information through June 30, 2017. 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 economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements.

This valuation assumed the continuing ability of the plan sponsor to make the contributions necessary to fund this plan. A determination regarding whether or not the plan sponsor is actually able to do so is outside our scope of expertise and was not performed.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge the information contained in this report is accurate and fairly presents the actuarial position of the City of Fairfax Retirement Plan for Public Safety Employees as of the valuation date. Heidi G. Barry and Shana M. Neeson are independent of the plan sponsor and are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

Respectfully submitted,



Heidi G. Barry, ASA, FCA, MAAA



Shana M. Neeson ASA, MAAA

HGB/SMN:sc



Comments and Recommendations

General Financial Objective: A sound general financial objective for any public employee retirement plan is to *establish and receive contributions which, expressed as percents of active member payroll, will remain approximately level from generation to generation of citizens.*

Fairfax Public Safety Plan Status: Over the past decade the objective of level-contribution-percent financing has been difficult to achieve. Investment returns in excess of the assumed rate in the mid to late 90s acted as a credit against the ongoing annual cost of the plan. This resulted in contribution rates declining to zero during this period, and remaining at zero for seven years. Contributions were once again required of the City beginning with the 2006/2007 fiscal year. The contribution rate was 11.08% last year and has risen to 13.15% of payroll this year.

Investment markets have experienced significant volatility in the past few years. A 5-year smoothing of investment gains and losses is used in determining the funding value of Retirement Plan assets. This smoothing method is a powerful tool for reducing the volatility in employer contribution rates, and is common among public sector retirement plans. Had the market value of assets been used in the valuation instead of the funding (smoothed) asset value, the City's contribution rate would have been 15.84% of covered payroll.

As a by-product of achieving level contribution financing, actuarial accrued liabilities usually become more and more funded over a period of years. The funded ratio was adversely affected by the market downturn in late 2008 and early 2009 (as were virtually all other public employee retirement systems in the country). On a funding value of assets basis, the Plan has a 91.8% funded ratio. On a market value of assets basis, the Retirement Plan has an 88.3% funded ratio.

Results from this Year: Overall experience during the year ending June 30, 2017 was less favorable than projected. The primary cause for the losses were a larger than expected increase in payroll and recognition of prior asset losses. This loss was partially offset by lower than expected cost-of-living adjustments. The recognized rate of return was 5.9% compared to an assumed rate of 6.75%. Investment gains and losses that occur each year are smoothed in over a 5-year period. Although there were carryover gains from prior years that were recognized, the current and prior unfavorable losses more than offset those gains.

Reserve Strength: Member contributions and liabilities for present retired lives continue to be 100% covered by present Fund assets. The remainder of Fund assets covers 74% of member accrued liabilities, less than was covered in the prior year (see page 9). The funded status is normally expected to gradually trend towards 100% over time.

Employer Contribution Rate: The computed rate for the fiscal year beginning July 1, 2018 is 13.15% of active member payroll in accordance with the current funding policy.

Funding Value of Retirement Plan Assets: The ratio of the funding value of Retirement Plan assets to the market value of Retirement Plan assets is currently 104%. Ratios in the range of 80% to 120% are generally considered reasonable.

Comments and Recommendations

Assumptions and Methods: There were no changes in assumptions or methods in the 2017 valuation.

Benefit Provisions: There were no changes in benefit provisions in the 2017 valuation.

GASB Standards: In June 2012, the Governmental Accounting Standards Board (GASB) issued new pension accounting Statements No. 67 and No. 68 for retirement systems and sponsoring governmental entities respectively. The information for GASB Statements No. 67 and No. 68 has been issued in a separate report.

Recommendations:

1. Assumptions were last changed for the June 30, 2012 valuation of this plan. The GFOA recommends a review of the assumptions at least every 5 years. The Plan will be reviewing the assumptions following the June 30, 2017 valuation. All assumptions will be reviewed including mortality and the economic assumptions.
2. We recommend that the Administrative Committee develop a formal funding policy for this plan. Example components of such a policy might be:
 - (1) Entry-Age Actuarial Cost Method.
 - (2) 5-year asset smoothing with a 20% corridor on asset values.
 - (3) 10-year closed amortization of unfunded liabilities, if any, existing on the adoption date of the policy. Layered 10-year amortization of gains and losses arising in the future, with ability to manage bases in order to reduce volatility.
 - (4) Minimum contribution equal to the normal cost.
 - (5) Regular experience studies to review actuarial assumptions.
 - (6) Regular review of the asset allocation and the risk level in the portfolio.

We would be pleased to discuss this with the Committee and provide additional background and options for consideration.

Other Observations

General Implications of Contribution Allocation Procedure of Funding Policy on Future Expected Plan Contributions and Funded Status

Given the Plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the Plan earning 6.75% on the funding value of assets), it is expected that:

- (1) The employer normal cost as a percentage of pay will decrease to the level of the current new entrants (i.e., members hired after July 1, 2014) normal cost as time passes and the majority of the active population is comprised of members hired after this date;
- (2) A small unfunded liability will remain for an extended period;
- (3) The unfunded liability is not expected to be fully amortized during the lifetimes of current members; and
- (4) The funded status of the plan will increase gradually towards a 100% funded ratio.

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the actuarial value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

- (1) The measurement is inappropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations, for example: transferring the liability to an unrelated third party in a market value type transaction.
- (2) The measurement is dependent upon the actuarial cost method which, in combination with the Plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. The current funded status is 91.8%. Even if the funded status measurement in this report was 100%, it would not be synonymous with no required future contributions. If the funded status were 100%, the Plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).
- (3) The measurement would produce a different result if the market value of assets were used instead of the actuarial value of assets.

ASSETS AND VALUATION RESULTS

Computed Employer Contribution Rates

Contributions Computed as of June 30	Contributions Expressed as %s of Active Member Payroll	
	2017	2016
Contributions for Fiscal Year End	2019	2018
Normal Cost:		
Age and service benefits	10.81 %	10.82 %
Deferred benefits	1.68 %	1.70 %
Disability benefits	0.97 %	0.97 %
Death-before-retirement benefits	0.28 %	0.28 %
Future refunds of member contributions	0.62 %	0.63 %
Total Normal Cost	14.36 %	14.40 %
Member Contributions	7.00 %	7.00 %
Employer Normal Cost	7.36 %	7.40 %
Unfunded Actuarial Accrued Liabilities		
Active Members	5.79 %	3.68 %
Total Computed Employer Contribution	13.15 %	11.08 %

Computed Employer Contribution Rates Comparative Statement

Valuation Date June 30	Active Members in Valuation		Last Year's Change in		Employer Unfunded AAL		Computed Employer Rate
	Number	Average Pay \$	Average Pay %	Inflation (CPI)	Amount	Financing Period	
2008	135	\$78,315	(0.3)%	5.0 %	\$(4,575,539)	10 yrs.	3.38 %
2009	128	80,688	3.0 %	(1.4)%	(2,092,169)	10	6.14 %
2010	133	79,005	(2.1)%	1.1 %	(758,720)	10	7.18 %
2011	132	78,169	(1.1)%	3.6 %	(325,044)	10	7.85 %
2012 [^]	132	77,039	(1.4)%	1.7 %	6,345,734	10	15.49 %
2013	137	81,720	6.1 %	1.8 %	8,995,625	10	16.64 %
2014 [#]	142	81,418	(0.4)%	2.1 %	5,496,252	10	12.24 %
2015	135	84,998	4.4 %	0.1 %	3,217,046	10	10.27 %
2016	137	83,875	(1.3)%	1.0 %	3,849,216	10	11.08 %
2017	137	86,041	2.6 %	1.6 %	6,121,480	10	13.15 %

Plan amendment.

[^] After assumption changes adopted following experience study.

Determination of Experience Gain (Loss) Year Ended June 30, 2017

(1) UAAL at start of year	\$ 3,849,216
(2) Employer normal cost for the year	850,327
(3) Actual employer contributions	1,173,293
(4) Net interest accrual on (1), (2) and (3)	249,041
(5) Expected UAAL before changes: (1) + (2) - (3) + (4)	3,775,291
(6) Change from benefit increases	0
(7) Change from revised actuarial assumptions or methods	0
(8) Expected UAAL after changes: (5) + (6) + (7)	3,775,291
(9) Actual UAAL at end of year	6,121,480
(10) Gain (Loss): (8) - (9)	(2,346,189)
(11) Actuarial Accrued Liabilities at start of year	70,664,928
(12) Gain (Loss) as a percent of Actuarial Accrued Liabilities at start of year: (10)/(11)	(3.32)%

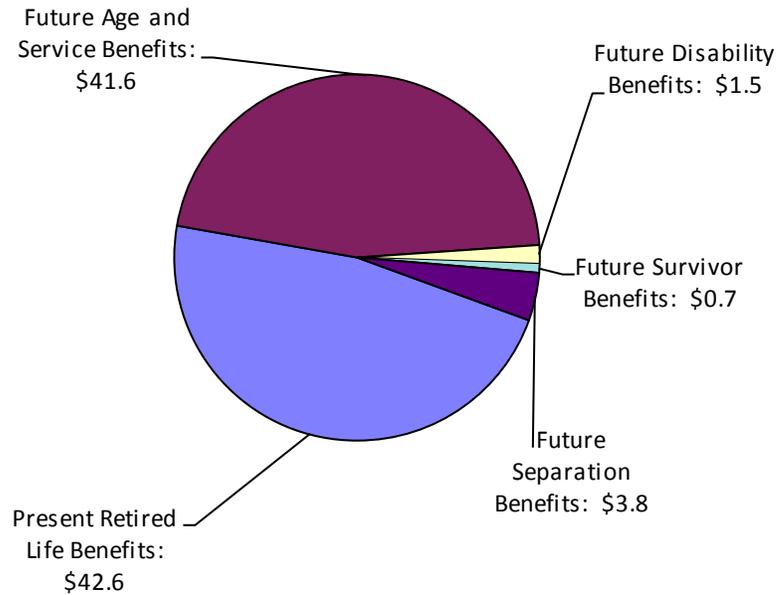
Actuarial Accrued Liabilities June 30, 2017

Present Value at Valuation Date of	(1) Total Present Value	(2) Portion Covered By Future Normal Cost Contributions	(3) Actuarial Accrued Liabilities (1) - (2)
Benefits to be paid to present retired lives	\$42,630,924	\$ 0	\$42,630,924
Age and service benefits likely to be paid to present active members	41,609,128	11,547,209	30,061,919
Disability benefits likely to be paid to present active members who become permanently disabled	1,489,430	1,068,434	420,996
Survivor benefits likely to be paid to beneficiaries of present active members who die before retiring	661,117	306,075	355,042
Separation benefits (refunds of contributions and deferred allowances) likely to be paid to present active and inactive members	3,844,800	2,518,826	1,325,974
Computed Actuarial Liabilities	\$90,235,399	\$15,440,544	\$74,794,855
Total Applicable Assets			\$68,673,375
Unfunded Actuarial Accrued Liability			\$ 6,121,480

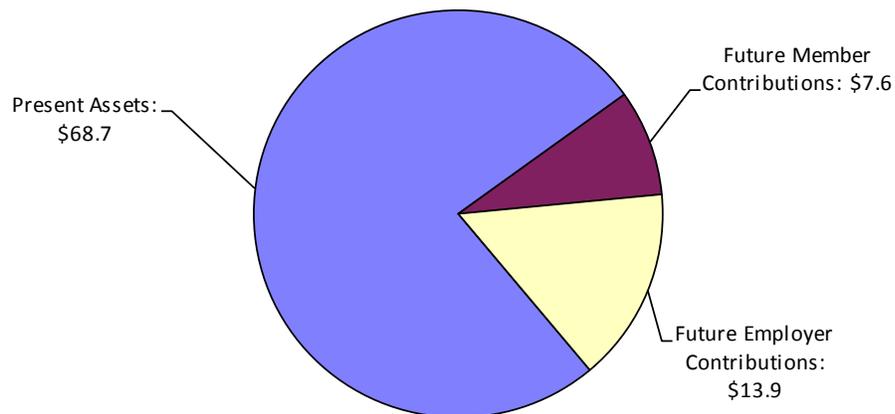
Financing of Benefit Promises

June 30, 2017

\$90.2 Million of Benefit Liabilities



\$90.2 Million of Present and Future Assets



Short Condition Test - Comparative Statement

The Fairfax funding objective is to meet long term benefit promises through contributions that remain approximately level from year to year as a percent of member payroll. If the contributions to the Plan are level in concept and soundly executed, the Plan will **pay all promised benefits when due -- the ultimate test of financial soundness**. Testing for level contribution rates is **the** long-term solvency test.

A short condition test is one means of checking a plan's progress under its funding program. In a short condition test, the plan's present assets (cash and investments) are compared with:

- 1) Active member contributions on deposit;
- 2) The liabilities for future benefits to present retired lives; and
- 3) The liabilities for service already rendered by active members.

In a plan that has been following the discipline of level percent of payroll financing, the liabilities for active member contributions on deposit (liability 1) and the liabilities for future benefits to present retired lives (liability 2) will be fully covered by present assets (except in rare circumstances). In addition, the liabilities for service already rendered by active members (liability 3) will be partially covered by the remainder of present assets. The larger the funded portion of liability 3, the stronger the condition of the Plan.

The following schedule will show the history of the short condition test of the Plan:

June 30	Actuarial Accrued Liabilities (\$ Thousands) for				Portion of Liabilities Covered by Assets		
	(1)	(2)	(3)	Valuation Assets	(1)	(2)	(3)
	Member Contributions on Deposit	Retirants and Beneficiaries	Active and Inactive Members				
2002	\$ 6,588	\$ 19,924	\$ 11,531	\$ 50,902	100 %	100 %	212 %
2003	6,353	21,138	11,364	50,568	100 %	100 %	203 %
2004@	5,838	22,521	15,137	51,252	100 %	100 %	151 %
2005	6,752	22,255	16,145	52,393	100 %	100 %	145 %
2006	7,506	22,182	19,454	53,939	100 %	100 %	125 %
2007^	8,228	23,377	22,284	57,910	100 %	100 %	118 %
2008	8,752	24,563	23,161	61,166	100 %	100 %	120 %
2009	8,797	27,218	22,438	60,637	100 %	100 %	110 %
2010	9,876	26,627	22,829	60,188	100 %	100 %	104 %
2011	10,370	27,362	22,360	60,418	100 %	100 %	102 %
2012^	9,195	33,631	22,057	58,538	100 %	100 %	71 %
2013	9,334	33,272	24,581	58,191	100 %	100 %	63 %
2014@	9,569	33,456	25,304	62,833	100 %	100 %	78 %
2015#	9,228	34,943	25,209	66,163	100 %	100 %	87 %
2016	9,226	37,641	23,798	66,816	100 %	100 %	84 %
2017	8,471	42,631	23,693	68,673	100 %	100 %	74 %

^ After assumption changes adopted following experience study.

@ After benefit change.

New benefit tier added.

Statement of Plan Assets as of June 30, 2016 and 2017

	2017	2016
Cash	\$ 0	\$ 0
Money market fund	381,795	1,150,692
Government and agency	0	0
Real Estate	0	0
Corporate debt	0	0
Common stock	4,180,751	11,358,202
Foreign stock	0	0
Accrued income	5,733	4,653
Mortgages	0	0
Mutual funds	54,360,409	48,897,491
Subtotal	\$58,928,688	\$61,411,038
Other	7,098,964	0
 Net assets held in trust for pension benefits	 \$66,027,652	 \$61,411,038

(A schedule of funding progress for the plan is presented on page 14.)

Assets by category were provided by the plan administrator in total for both the Public Safety Retirement Plan and the General Employees Retirement Plan. The numbers above were computed by taking the total amount provided and multiplying by the percent that the market value of the Public Safety Plan bears to the total market value of both plans.

Statement of Changes in Plan Assets for the Fiscal Years Ended June 30, 2016 and 2017

	Reconciliation as of June 30,	
	2017	2016
Additions		
Contributions		
Employer	\$ 1,173,293	\$ 1,359,471
Plan members	800,484	777,157
Other receipts	9,858	32,681
Total contributions	1,983,635	2,169,309
Investment return		
Net appreciation	3,445,747	(2,490,283)
Interest and dividends	1,065,831	1,305,329
Gain(loss) on sale of securities	2,556,304	632,738
Subtotal	7,067,882	(552,216)
Less investment expense	413,068	381,373
Net investment return	6,654,814	(933,589)
Total additions	8,638,449	1,235,720
Deductions		
Benefits	4,009,894	3,729,813
Refunds of contributions	11,941	148,711
Other	0	0
Total deductions	4,021,835	3,878,524
Net increase	4,616,614	(2,642,804)
Net assets held in trust for pension benefits		
Beginning of year	\$61,411,038	\$64,053,842
Beginning of year adjustment	0	0
End of year	\$66,027,652	\$61,411,038

Development of Funding Value of Retirement Plan Assets (Market Related Value)

Year Ended June 30:	2014	2015	2016	2017	2018	2019	2020	2021
A. Funding Value Beginning of Year	\$58,190,725	\$62,833,256	\$66,163,010	\$66,815,712				
B. Market Value End of Year	65,585,004	64,053,842	61,411,038	66,027,652				
C. Market Value Beginning of Year	58,666,338	65,585,004	64,053,842	61,411,038				
D. Non-Investment Net Cash Flow*	(648,784)	(883,322)	(1,709,215)	(2,038,200)				
E. Investment Return								
E1. Market Total: B-C-D	7,567,450	(647,840)	(933,589)	6,654,814				
E2. Amount for Immediate Recognition (6.75%)	3,905,977	4,211,433	4,408,317	4,441,271				
E3. Amount for Phased-In Recognition: E1-E2	3,661,473	(4,859,273)	(5,341,906)	2,213,543				
F. Phased-In Recognition of Investment Return								
F1. Current Year: 0.20 x E3	732,294	(971,854)	(1,068,381)	442,708				
F2. First Prior Year	319,824	732,294	(971,854)	(1,068,381)	\$ 442,708			
F3. Second Prior Year	(1,058,279)	319,824	732,294	(971,854)	(1,068,381)	\$ 442,708		
F4. Third Prior Year	979,655	(1,058,279)	319,824	732,294	(971,854)	(1,068,381)	\$ 442,708	
F5. Fourth Prior Year	411,844	979,658	(1,058,283)	319,825	732,297	(971,857)	(1,068,382)	\$ 442,711
F6. Total Recognized Investment Gain	1,385,338	1,643	(2,046,400)	(545,408)	(865,230)	(1,597,530)	(625,674)	442,711
G. Funding Value End of Year: A+D+E2+F6	62,833,256	66,163,010	66,815,712	68,673,375				
H. Difference between Market & Funding Value	2,751,748	(2,109,168)	(5,404,674)	(2,645,723)	(1,780,493)	(182,963)	442,711	0
I. Market Rate of Return	13.0 %	(1.0)%	(1.5)%	11.0 %				
J. Recognized Rate of Return	9.1 %	6.8 %	3.6 %	5.9 %				
K. Ratio of Funding Value to Market Value	95.8 %	103.3 %	108.8 %	104.0 %				

* Fiscal year 2014 includes auditor adjustment.

The Funding Value of Assets recognizes assumed investment return (line E2) fully each year. Differences between actual and assumed investment return (line E3) are phased-in over a closed 5-year period. During periods when investment performance exceeds the assumed rate, Funding Value of Assets will tend to be less than Market Value. During periods when investment performance is less than the assumed rate, Funding Value of Assets will tend to be greater than Market Value. The Funding Value of Assets is unbiased with respect to Market Value. At any time it may be either greater or less than Market Value. If assumed rates are exactly realized for 4 consecutive years, it will become equal to Market Value.

Changes in Assets (Cash & Investments) Year Ended June 30, 2017

Financial activity during fiscal year 2016-2017 was reported to the actuary as follows.

General	Police/Fire	TOTAL	Item
\$51,360,342	\$58,063,457	\$109,423,799	A1. Beginning Cost
54,097,439	61,411,038	115,508,477	A2. Beginning Market
508,749	800,484	1,309,233	B1. Member Contributions
745,267	1,173,293	1,918,560	B2. Employer Contributions
(35,803)	(11,941)	(47,744)	B3. Refund of Member Contributions
(3,158,871)	(4,009,894)	(7,168,765)	B4. Retirement Benefits
9,100	9,858	18,958	B5. Other Receipts
(1,931,558)	(2,038,200)	(3,969,758)	B6. Net New Money: B1+B2+B3+B4+B5
983,845	1,065,831	2,049,676	C1. Ordinary Investment Return
(381,294)	(413,068)	(794,362)	C2. Investment Expense
2,359,665	2,556,304	4,915,969	C3. Realized Gains & Losses
3,180,690	3,445,747	6,626,437	C4. Unrealized Gains & Losses
2,962,216	3,209,067	6,171,283	C5. Net Investment Return (Cost): C1+C2+C3
6,142,906	6,654,814	12,797,720	C6. Net Investment Return (Market): C1+C2+C3+C4
52,391,000	59,234,324	111,625,324	D1. Ending Cost: A1+B6+C5
58,308,787	66,027,652	124,336,439	D2. Ending Market A2+B6+C6

Schedule of Funding Progress (Dollar Amounts in Millions)

Actuarial Valuation Date	Applicable Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Employer Unfunded AAL (UAAL) (b)-(a)	Funded Ratio (a)/(b)	Covered Payroll (c)	Employer UAAL as a Percent of Covered Payroll [(b)-(a)]/(c)
6/30/2008	\$61.17	\$56.59	\$ (4.58)	108.1 %	\$ 10.57	-
6/30/2009	60.64	58.54	(2.10)	103.6 %	10.33	-
6/30/2010	60.19	59.43	(0.76)	101.3 %	10.51	-
6/30/2011	60.42	60.09	(0.33)	100.5 %	10.32	-
6/30/2012	58.54	64.88	6.34	90.2 %	10.17	62.3 %
6/30/2013	58.19	67.19	9.00	86.6 %	11.20	80.4 %
6/30/2014	62.83	68.33	5.50	92.0 %	11.56	47.6 %
6/30/2015	66.16	69.38	3.22	95.4 %	11.47	28.1 %
6/30/2016	66.82	70.66	3.84	94.6 %	11.49	33.4 %
6/30/2017	68.67	74.79	6.12	91.8 %	11.79	51.9 %

Schedule of Employer Contributions and Normal Costs

Schedule of Employer Contributions

Fiscal Year Ended June 30	Actuarially Determined Employer Contribution		
	As Percent of Payroll	As Dollar Amount	Percent Contributed
2008	5.17%	\$ 471,789	100%
2009	3.55%	356,692	100%
2010	3.38%	365,744	100%
2011	6.14%	421,734	100%
2012	7.18%	722,639	100%
2013	7.85%	818,112	100%
2014	15.49%	1,772,644	100%
2015	16.64%	1,854,639	100%
2016	12.24%	1,359,471	100%
2017	10.27%	1,173,293	100%
2018	11.08%		
2019	13.15%		

Schedule of Employer Normal Costs

Valuation Year Ended June 30	Employer Normal Cost
2008	7.98%
2009	8.00%
2010	7.84%
2011	8.11%
2012	7.99%
2013	7.90%
2014	7.61%
2015	7.47%
2016	7.40%
2017	7.36%

BENEFIT PROVISIONS AND VALUATION DATA

Public Safety Employees

Benefit Provisions Evaluated/Considered

June 30, 2017

**Employees Hired
Before 4/1/83**

**Employees Hired Between
4/1/83 and 6/30/14**

**Employees Hired
7/1/14 and Later**

Normal Age and Service Retirement

The benefits are described in the terms of amounts payable to and after Social Security Full Retirement Age (SSFRA).

Eligibility

Age 50 with 5 years of service, or 20 years of service regardless of age.

Amount

To SSFRA:

Straight life benefit of 0.5% of 3-year highest average earnings times the first 20 years of service plus 2.0% of 3-year highest average earnings times all credited service up to the maximum years of service.

At SSFRA:

Straight life benefit of 0.5% of 3-year highest average earnings times the first 20 years of service plus 0.5% of 3-year highest average pay times all credited service up to the maximum years of service.

Total service includes credit for sick leave unused at retirement.

For retirements before January 1, 2004, the maximum number of years is 30. For retirements after January 1, 2004, the maximum is 30 plus years of creditable service attributable to eligible unused sick leave.

Eligibility

Age 55 with 5 years of service, or 25 years of service regardless of age.

Amount

To Age 55:

Straight life benefit of 2.5% of 3-year highest average earnings times total service.

From age 55 to SSFRA:

Straight life benefit of 1.5% of 3-year highest average earnings times total service.

At SSFRA:

Straight life benefit of 1.3% of 3-year highest average earnings times total credited service.

Total service includes credit for sick leave unused at retirement.

Eligibility

Age 57 with 7 years of service, or 25 years of service regardless of age.

Amount

To Age 55:

Straight life benefit of 2.5% of 5-year highest average earnings times total service.

From age 55 to SSFRA:

Straight life benefit of 1.5% of 5-year highest average earnings times total service.

At SSFRA:

Straight life benefit of 1.3% of 5-year highest average earnings times total credited service.

Total service includes credit for sick leave unused at retirement.

Deferred (Vested) Retirement

Eligibility

5 years of service.

Amount

Accrued normal retirement benefit payable at age 50.

Eligibility

5 years of service.

Amount

Accrued normal retirement benefit payable at normal retirement age.

Eligibility

7 years of service.

Amount

Accrued normal retirement benefit payable at normal retirement age.

Public Safety Employees

Benefit Provisions Evaluated/Considered

June 30, 2017

Employees Hired Before 4/1/83

Employees Hired Between 4/1/83 and 6/30/14

Employees Hired 7/1/14 and Later

Disability Retirement

Eligibility

5 years of service.

Amount

Computed in the same manner as normal retirement except that 'total service' is the smallest of:

- (i) twice the years of credited service.
- (ii) the years of credited service the participant would have had at age 60.
- (iii) 30 years.

Benefit payable prior to Social Security age, when combined with worker's compensation, Social Security, VRS benefits, and any earned income may not exceed 75% of 3-year highest average earnings.

Eligibility

5 years of service.

Amount

The spouse or parent receives the same monthly benefit that would have been payable if the member had retired at death, elected the joint and 100% survivor option and died immediately thereafter.

Minimum benefit is 15% of 3-year highest average earnings. Benefits for dependent children and parents may also be payable. Special rules apply if the spouse was less than 40 years old when the member died.

Eligibility

5 years of service.

Amount

Computed in the same manner as normal retirement except that 'total service' is:

- (i) actual accrued service if the disability is from non-duty related causes.
- (ii) the number of years of service the participant would have had at the normal retirement date if the disability is from duty related causes.

Benefit payable prior to Social Security age, when combined with worker's compensation, Social Security, VRS benefits, and any earned income, may not exceed 75% of 3-year highest average earnings.

Benefits for Death before Retirement

Eligibility

5 years of service.

Amount

The spouse or parent receives the same monthly benefit that would have been payable if the member had retired at death, elected the joint and 100% survivor option and died immediately thereafter.

Minimum benefit is 15% of 3-year highest average earnings. Benefits for dependent children and parents may also be payable. Special rules apply if the spouse was less than 40 years old when the member died.

Eligibility

7 years of service.

Amount

Computed in the same manner as normal retirement except that 'total service' is:

- (i) actual accrued service if the disability is from non-duty related causes.
- (ii) the number of years of service the participant would have had at normal retirement date if the disability is from duty related causes.

Benefit payable prior to Social Security age, when combined with worker's compensation, Social Security, VRS benefits, and any earned income, may not exceed 75% of 5-year highest average earnings.

Eligibility

7 years of service.

Amount

The spouse or parent receives the same monthly benefit that would have been payable if the member had retired at death, elected the joint and 100% survivor option and died immediately thereafter.

Minimum benefit is 15% of 5-year highest average earnings. Benefits for dependent children and parents may also be payable. Special rules apply if the spouse was less than 40 years old when the member died.

Public Safety Employees Benefit Provisions Evaluated/Considered June 30, 2017

Employees Hired Before 4/1/83

Employees Hired Between 4/1/83 and 6/30/14

Employees Hired 7/1/14 and Later

Benefit Increases after Retirement

Monthly benefits are adjusted annually, to reflect changes in the Inflation Index (CPI) since retirement, with maximum increase of 5% in any year.

Monthly benefits are adjusted annually, to reflect changes in the Inflation Index (CPI) since retirement, with maximum increase of 5% in any year.

Monthly benefits are adjusted annually, to reflect changes in the Inflation Index (CPI) since retirement, with maximum increase of 3% in any year.

Member Contributions

5.5% of member's pay. No contributions after 30 years of credited service. Interest credited, based on actual investment return but not less than 4% annually until June 30, 2014. Starting July 1, 2014, interest credited at a rate of 3.0% annually.

7.0% of member's pay. Interest credited, based on actual investment return but not less than 4% annually until June 30, 2014. Starting July 1, 2014, interest credited at a rate of 3.0% annually.

7.0% of member's pay. Interest credited at the rate of 3.0% annually.

Optional Forms of Benefit Payment

Option 1: Reduced benefits are paid to the member for life. Upon death of the member a designated portion of the member's benefit is payable to the contingent annuitant for life. Upon death of the contingent annuitant, the member's benefit will revert to the unreduced straight life amount if the retiree is alive at that time.

Same.

Same.

Option 2: Members retiring prior to eligibility for VRS or OASDI benefits may elect to receive a higher amount prior to commencement of those benefits and a lower amount later.

Same.

Same.

Option factors are based upon the 1984 actuarial equivalent tables of the Virginia Retirement System.

Same.

Same.

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Retired Lives Hired Before 4/1/83 by Type of Benefit July 1, 2017*

Type of Benefit	Number	Monthly Amounts		
		Original		Current
		To Soc. Sec. Age #	After Soc. Sec. Age #	
Age and Service				
Single Life Benefit	55	\$182,652	\$49,876	\$164,623
Joint and Survivor	7	10,806	10,806	15,565
Survivor Beneficiaries	1	571	571	965
Total Age and Service	63	194,029	61,253	181,153
Disability				
Single Life Benefit	4	4,172	2,295	6,000
Joint and Survivor	3	2,173	2,173	5,149
Survivor Beneficiaries	0	0	0	0
Total Disability	7	6,345	4,468	11,149
Death-in-Service	0	0	0	0
Grand Total	70	\$200,374	\$65,721	\$192,302

Benefits for beneficiaries of deceased members change when the member would have attained the age indicated.

Special rules apply to dependent children.

* Includes July 1, 2017 COLA, if applicable.

Retired Lives Hired Between 4/1/83 and 7/1/14 by Type of Benefit July 1, 2017*

Type of Benefit	Number	Monthly Amounts			
		Original			Current
		To Age 55 #	At Age 55 #	After Soc. Sec. Age #	
Age and Service					
Single Life Benefit	31	\$139,859	\$120,832	\$67,344	\$145,156
Joint and Survivor	5	4,348	10,227	8,865	10,977
Survivor Beneficiaries	0	0	0	0	0
Total Age and Service	36	144,207	131,059	76,209	156,133
Disability					
Single Life Benefit	0	0	0	0	0
Joint and Survivor	0	0	0	0	0
Survivor Beneficiaries	0	0	0	0	0
Total Disability	0	0	0	0	0
Death-in-Service	2	3,257	2,317	1,379	3,960
Grand Total	38	\$147,464	\$133,376	\$77,588	\$160,093

Benefits for beneficiaries of deceased members change when the member would have attained the age indicated.

Special rules apply to dependent children.

* Includes July 1, 2017 COLA, if applicable.

**Retirants and Beneficiaries
Hired Before 4/1/83 by Age
July 1, 2017***

Age	No.	Monthly Amounts		
		Original		Current
		To Soc. Sec. Age #	After Soc. Sec. Age #	
56	3	\$ 12,712	\$ 3,294	\$ 15,294
57	2	12,705	3,256	13,673
58	2	12,622	3,207	13,841
59	1	2,028	810	2,787
60	5	17,743	4,958	23,372
61	7	27,116	8,211	34,239
62	2	9,072	5,514	10,668
63	2	2,072	2,072	3,212
64	3	8,297	3,235	12,398
65	2	9,176	2,387	12,227
66	3	8,257	1,628	2,452
67	1	774	774	1,062
68	3	11,355	3,169	4,376
69	3	4,901	2,337	4,032
70	3	8,118	2,850	3,888
71	4	12,701	4,105	5,982
72	4	6,927	2,801	6,021
73	2	6,130	1,633	2,438
74	2	3,722	1,627	3,873
75	6	11,513	3,949	7,479
76	3	3,887	1,667	3,710
79	1	1,576	129	272
80	1	1,927	213	520
81	1	1,360	202	641
82	2	1,368	1,368	2,543
83	1	920	83	329
85	1	1,395	242	973
Totals	70	\$200,374	\$65,721	\$192,302

Benefits for beneficiaries of deceased members change when the member would have attained the age indicated. Special rules apply to dependent children.

* Includes July 1, 2017 COLA, if applicable.

**Retirants and Beneficiaries
Hired Between 4/1/83 and 7/1/14 by Age
July 1, 2017****

Age	No.	Monthly Amounts			
		Original			Current
		To Age 55 *	At Age 55 #	After Soc. Sec. Age #	
17	1	\$ 605	\$ 726	\$ 0	\$ 851
50	3	18,349	13,149	7,192	18,626
51	2	11,585	9,130	3,689	11,707
52	6	38,043	25,803	16,571	39,001
53	2	12,136	9,558	3,801	12,463
55	3	16,578	11,570	6,774	12,704
56	4	19,874	15,225	8,246	15,674
57	3	6,601	8,689	2,335	8,876
58	2	0	8,465	7,336	8,707
59	1	4,960	2,976	2,579	3,212
60	3	9,888	10,274	5,290	11,083
61	2	8,845	5,307	4,600	5,977
63	1	0	2,773	2,404	2,842
64	3	0	6,610	5,730	6,982
70	2	0	3,121	1,041	1,388
Totals	38	\$147,464	\$133,376	\$77,588	\$160,093

Benefits for beneficiaries of deceased members change when the member would have attained the age indicated. Special rules apply to dependent children.

* The "To Age 55" amounts are zero for retirees who retired after age 55.

** Includes July 1, 2017 COLA, if applicable.

**Vested Former Members Hired Before 7/1/14
Eligible for a Deferred Benefit
by Age - July 1, 2017**

Age	No.	Monthly Amounts	
		Original	
		To Soc. Sec. Age	After Soc. Sec. Age
35	1	\$ 370	\$ 321
46	1	2,360	2,045
52	1	1,033	344
53	2	1,893	1,059
56	1	708	613
60	1	1,098	951
Totals	7	\$ 7,462	\$ 5,333

A vested former member is a member who terminated the City's employment with 5 or more years of service and did not withdraw his or her accumulated contributions. Such members are eligible for benefits at the normal retirement age.

Present Active Members by Age and Years of Service as of June 30, 2017

Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
20-24	3							3	\$ 174,808
25-29	21	5						26	1,598,129
30-34	17	15	2					34	2,380,721
35-39	3	3	11	1				18	1,469,117
40-44		4	6	6	2			18	1,864,655
45-49	1		3	7	4			15	1,662,861
50-54		1	1	1	6	3	1	13	1,486,455
55-59	1	1			1	3		6	693,789
60							1	1	95,734
61							1	1	117,552
62							1	1	95,734
63				1				1	148,028
Totals	46	29	23	16	13	6	4	137	\$ 11,787,583

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Group Averages:

Age: 38.3 years
Service: 11.0 years
Annual Pay: \$86,041

Active Members in Actuarial Valuations Comparative Statement

June 30	Hired Before 4/1/83				Hired After 4/1/83 & Before 7/1/14				Hired After 7/1/14				Police/Fire Plan Totals				
	Group Averages				Group Averages				Group Averages				Group Averages				
	No.	Age	Service	Pay	No.	Age	Service	Pay	No.	Age	Service	Pay	No.	Age	Service	Pay	% Inc.
1998	35	44.7	20.0	\$63,141	72	35.1	8.5	\$48,319					107	38.2	12.3	\$53,168	7.1 %
1999	32	45.5	20.4	64,088	81	35.2	8.4	49,672					113	38.1	11.8	53,755	1.1 %
2000	29	46.0	21.1	68,420	79	36.2	9.4	53,294					108	38.8	12.6	57,356	6.7 %
2001	27	47.1	22.1	72,135	88	36.3	9.0	54,079					115	38.8	12.1	58,319	1.7 %
2002	21	47.2	23.0	74,476	89	36.5	9.3	56,499					110	38.5	11.9	59,931	2.8 %
2003	18	47.9	23.8	78,824	98	37.0	9.2	59,077					116	38.7	11.4	62,141	3.7 %
2004	13	47.3	24.4	84,194	106	37.3	9.3	62,060					119	38.4	11.0	64,478	3.8 %
2005*	13	48.3	25.5	86,594	106	38.2	10.2	65,766					119	39.3	11.9	68,041	5.5 %
2006	12	49.2	26.3	99,471	106	39.1	11.2	75,040					118	40.1	12.7	77,525	13.9 %
2007	11	50.0	27.1	101,231	112	39.0	11.2	76,342					123	39.9	12.7	78,568	1.3 %
2008	9	50.4	27.6	101,674	126	38.2	10.8	76,646					135	39.0	11.9	78,315	(0.3)%
2009	7	50.8	28.2	102,538	121	38.7	11.3	79,424					128	39.4	12.2	80,688	3.0 %
2010	7	51.8	29.2	102,538	126	38.5	11.5	77,697					133	39.2	12.4	79,005	(2.1)%
2011	5	53.3	29.9	99,402	127	38.9	12.0	77,332					132	39.4	12.7	78,169	(1.1)%
2012	2	56.2	30.7	94,876	130	38.7	11.7	76,764					132	38.9	12.0	77,039	(1.4)%
2013	1	57.0	32.3	110,403	136	39.0	11.7	81,509					137	39.1	11.9	81,720	6.1 %
2014	1	58.0	33.3	110,403	141	39.5	11.9	81,212					142	39.6	12.0	81,418	(0.4)%
2015^	1	59.0	34.3	112,064	125	40.2	12.9	87,042	9	25.2	0.5	\$53,597	135	39.3	12.2	84,998	4.4 %
2016	1	60.0	35.3	112,064	117	40.6	13.3	87,242	19	27.9	0.9	61,658	137	39.0	11.8	83,875	(1.3)%
2017	1	61.0	36.3	117,552	106	40.8	13.5	92,533	30	28.7	1.3	62,051	137	38.3	11.0	86,041	2.6 %

* Method of reporting pay was changed for 2003.

^ After addition of new tier.

FINANCIAL PRINCIPLES

Financial Principles and Operational Techniques

Promises Made, and Eventually Paid: As each year is completed, the plan in effect hands an “IOU” to each member then acquiring a year of service credit --- the “IOU” says: “The City of Fairfax Public Safety Retirement Plan owes you one year’s worth of retirement benefits, payments in cash commencing when you qualify for retirement.”

The related *key financial questions* are:

Which generation of taxpayers contributes the money to cover the IOU?

The present taxpayers, who receive the benefit of the member’s present year of service?

Or the future taxpayers, who happen to be in Fairfax at the time the IOU becomes a cash demand?

The law governing plan financing intends that this year’s taxpayers contribute the money to cover the IOUs being handed out this year. By following this principle, ***the employer contribution rate will remain approximately level from generation to generation*** --- our children and our grandchildren will contribute the same percents of active payroll we contribute now.

(There are systems which have a design for deferring contributions to future taxpayers, lured by a lower contribution rate now and putting aside the consequence that the contribution rate must then relentlessly grow much greater over decades of time -- consume now, and let your children face higher taxes after you retire.)

An inevitable by-product of the level-cost design is the accumulation of reserve assets, for decades, and the income produced when the assets are invested. ***Investment return*** becomes in effect the third contributor for benefits to employees, and is interlocked with the contribution amounts required from employees and employers.

Translated to actuarial terminology, this level-cost objective means that the contribution rates must total at least the following:

Normal Cost (the cost of members' service being rendered this year)

. . . plus . . .

Interest on Unfunded Actuarial Accrued Liabilities (unfunded actuarial accrued liabilities are the difference between (i) actuarial accrued liabilities and (ii) the accrued assets of the plan).

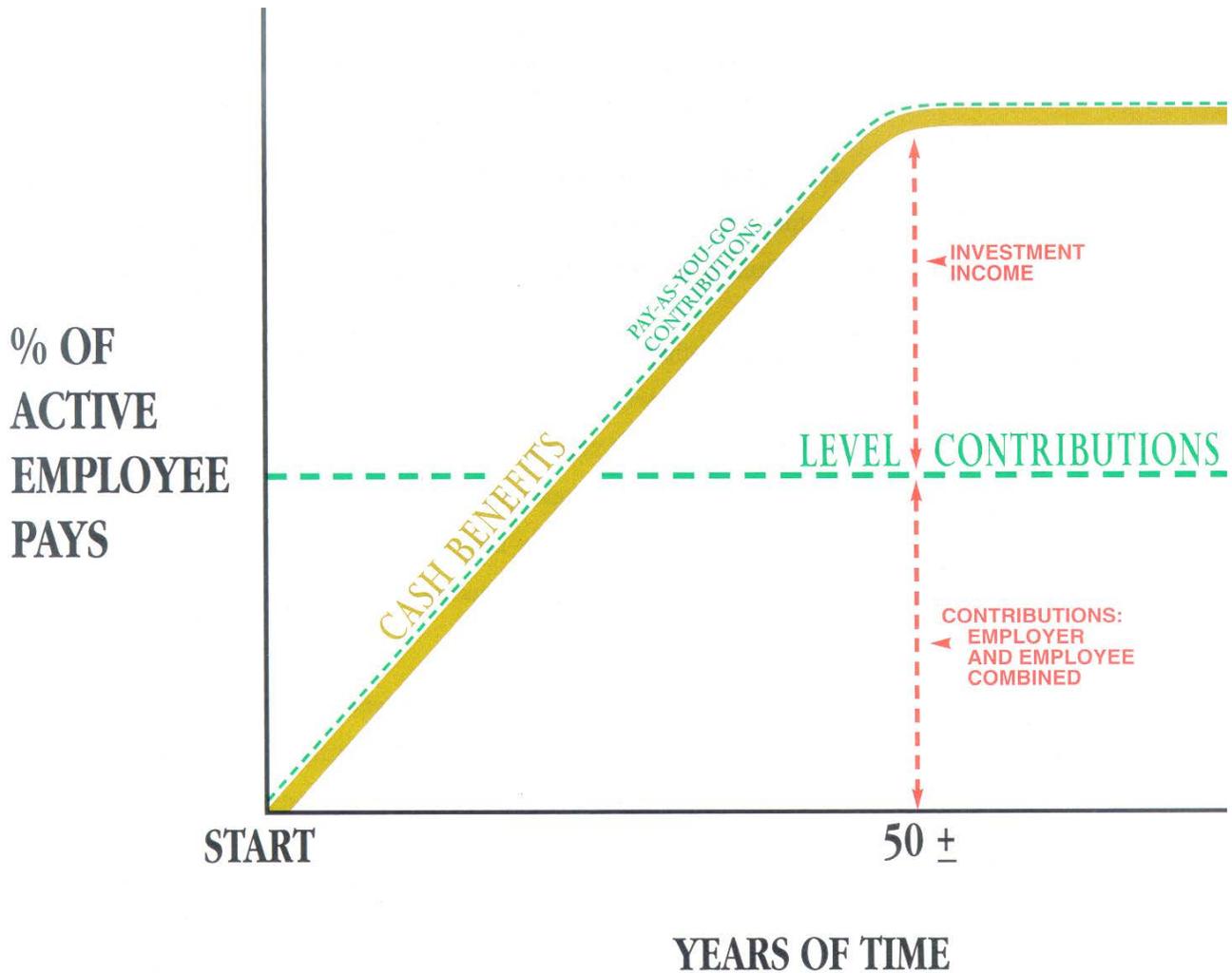
Computing Contributions to Support Plan Benefits: From a given schedule of benefits and from the employee data and asset data furnished, the actuary determines the contribution rates to support the benefits, by means of *an actuarial valuation and a funding method*.

An actuarial valuation has a number of ingredients such as: the rate of investment return which plan assets will earn; the rates of withdrawal of active members who leave covered employment before qualifying for any monthly benefit; the rates of mortality; the rates of disability; the rates of pay increases; and the assumed age or ages at actual retirement.

In making an actuarial valuation, assumptions must be made as to what the above rates will be, for the next year and for decades in the future. Only the subsequent actual experience of the plan can indicate the degree of accuracy of the assumptions.

Reconciling Differences Between Assumed Experience and Actual Experience: Except by coincidence, actual experience will not coincide exactly with assumed experience, regardless of the choice of the assumptions, the skill of the actuary, and the precision of the calculations. Some future events can be predicted with considerable precision. Others, such as economic activities tend to be volatile and *seem to defy reliable prediction*.

The plan copes with these continually changing differences by having periodic actuarial valuations. Each actuarial valuation is a complete recalculation of assumed future experience, taking into account all past differences between assumed and actual experience. The result is *continuing adjustments in financial position*.



CASH BENEFITS LINE. This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).

LEVEL CONTRIBUTION LINE. Determining the level contribution line requires detailed assumptions concerning a variety of experiences in future decades, including:

Economic Risk Areas

- Rates of investment return
- Rates of pay increase
- Changes in active member group size

Non-Economic Risk Areas

- Ages at actual retirement
- Rates of mortality
- Rates of withdrawal of active members (turnover)
- Rates of disability

The Actuarial Valuation Process

The financing diagram on the previous page shows the relationship between the two fundamentally different philosophies of paying for retirement benefits: the method where contributions match cash benefit payments (or barely exceed cash benefit payments, as in the Federal Social Security program) which is an **increasing contribution method**; and the **level contribution method** which equalizes contributions between the generations.

The actuarial valuation is the mathematical process by which the level contribution rate is determined, and the flow of activity constituting the valuation may be summarized as follows:

- Covered Person Data**, furnished by plan administrator
 - Retired lives now receiving benefits
 - Former employees with vested benefits not yet payable
 - Active employees
- + **Asset Data** (cash and investments), furnished by plan administrator
- + **Assumptions concerning future financial experiences in various risk areas**, which assumptions are established by the Administrative Committee after consulting with the actuary
- + **The funding method** for employer contributions (the long-term, planned pattern for employer contributions)
- + **Mathematically combining the assumptions, the funding method, and the data**
- = Determination of:
 - Plan Financial Position**
 - and/or **New Employer Contribution Rate**

APPENDIX

Actuarial Cost Methods

Age and Service and Casualty Benefits. Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using an individual **entry-age actuarial cost method** having the following characteristics:

- (i) the annual normal costs for each individual active member, payable from the date of employment to the date of retirement, are sufficient to accumulate the value of the member's benefit at the time of retirement; and
- (ii) each annual normal cost is a constant percentage of the member's year-by-year projected covered pay.

Financing of Unfunded Actuarial Accrued Liability. Unfunded Actuarial Accrued Liability (the portion of total liabilities not covered by present assets or expected future normal cost contributions) were amortized by level (principal and interest combined) percent-of-payroll over an open 10-year period. The Unfunded Actuarial Accrued Liability (UAAL) payment reflects payments expected to be made between the valuation date and the fiscal year for which the contributions in this report have been calculated.

Funding Value of Assets. The valuation assets used for funding purposes is derived as follows: prior year valuation assets are increased by contribution and expected investment income and reduced by refunds, benefit payments and expenses. To this amount is added 20% of the difference between expected and actual investment income for each of the previous five years.

Summary of Assumptions used for the Fairfax Actuarial Valuations Assumptions Adopted by the Administrative Committee after Consulting with Actuary

The actuarial assumptions used in performing the valuation are shown in this Section of the report. The assumptions were established for the June 30, 2012 actuarial valuation, based upon a study of experience during the period July 1, 2006 to June 30, 2011.

Economic Assumptions

The investment return rate used in making the valuation was 6.75% per year, compounded annually (net after administrative expenses). This rate of return is not the assumed real rate of return. The real rate of return over wages is the portion of investment return which is more than the wage inflation rate. Considering wage inflation recognition of 3.50%, the 6.75% investment return rate translates to ***an assumed real rate of return of 3.25% over wages. The assumed real return over prices would be higher.***

Pay increase assumptions for individual active members are shown on page 34. Part of the assumption for each age is for a merit and/or seniority increase, and the other 3.50% recognizes wage inflation.

Total active member payroll is assumed to increase 3.50% a year, which is the portion of the individual pay increase assumptions recognizing wage inflation.

Price inflation is assumed to be 3% per year. For all members hired prior to 7/1/2014, the 5% COLA cap was valued by assuming that the actual COLA paid would average 2.8% annually. For all members hired after 7/1/2014, the 3% COLA cap was valued by assuming that the actual COLA paid would average 2.5% annually. This assumption will be reviewed further in the experience study.

The number of active members is assumed to continue at the present number.

Non-Economic Assumptions

The mortality table used to measure non-disabled retired life mortality is the RP-2000 Combined Healthy Mortality Table for males and females projected to 2020 using projection scale AA. The provision for future mortality improvement is the projection to 2020. The mortality tables used to measure disabled retired life mortality were the same as described above, set-forward 10-years. Related values for sample ages are shown in on page 35.

The probabilities of retirement for members eligible to retire are shown in on page 36.

The probabilities of withdrawal from service, **death-in-service** and **disability** are shown for sample ages on page 34.

The entry age actuarial cost method of valuation was used in determining liabilities and normal cost.

Differences in the past between assumed experience and actual experience (“actuarial gains and losses”) become part of actuarial accrued liabilities.

Unfunded actuarial accrued liabilities are amortized to produce contribution amounts (principal and interest) which are level percent of payroll contributions.

The unfunded actuarial accrued liability (UAAL) was determined using the funding value of assets and actuarial accrued liability calculated as of the valuation date. The UAAL amortization payment (one component of the contribution requirement), is the level percent of pay required to fully amortize the UAAL over a 10-year period beginning on the date contributions determined by this report are scheduled to begin. This UAAL payment reflects any payments expected to be made between the valuation date and the date contributions determined by this report are scheduled to begin, which tends to smooth out changes in contribution rates from year to year.

A market related value of assets was used for valuation purposes (see page 12).

The data about persons now covered and about present assets was furnished by the Plan’s administrative staff. Although examined for general reasonableness, the data was not audited by the Actuary.

The actuarial valuation computations were made by or under the supervision of a Member of the American Academy of Actuaries (MAAA).

Pay Increase Assumptions for an Individual Member

Pay Increase Assumptions for an Individual Employee			
Sample Ages	Merit & Seniority	Base (Economy)	Increase Next Year
20	5.0%	3.5%	8.5%
25	4.0	3.5	7.5
30	2.5	3.5	6.0
35	2.0	3.5	5.5
40	1.5	3.5	5.0
45	1.0	3.5	4.5
50	0.5	3.5	4.0
55	0.5	3.5	4.0
60	0.5	3.5	4.0
65	0.5	3.5	4.0
Ref	399		

Rates of Separation from Active Employment Before Retirement

Sample Ages	% of Active Members Separating within Next Year					
	Death		Disability*		Other	
	Men	Women	Men	Women	Men	Women
25	0.0231%	0.0117%	0.0850%	0.0340%	18.50%	20.35%
30	0.0302	0.0162	0.1400	0.0540	9.80	10.78
35	0.0524	0.0286	0.2050	0.0890	4.60	5.06
40	0.0689	0.0392	0.2700	0.1220	2.40	2.64
45	0.0871	0.0611	0.3900	0.2920	2.00	2.20
50	0.1115	0.0892	0.5100	0.4590	1.40	1.54
55	0.1852	0.1736	0.2550	0.2290	1.00	1.10
60	0.3665	0.3430	0.0000	0.0000	1.00	1.10
Ref	#454x0.75sb(#455x0.75sb(458	459	ab989x1	ab989x1.1

* 50% of disabilities are assumed to be duty related for post-4/1/83 members. There is no distinction between duty and non-duty disability for pre-4/1/83 members.

Death After Retirement

Non-Disabled

Sample Age Now	Men			Women		
	Future Life Expectancy (years)	Expected Total Life (years)	Portion of Age 55 Lives Still Alive	Future Life Expectancy (years)	Expected Total Life (years)	Portion of Age 55 Lives Still Alive
55	28.0	83.0	100%	29.9	84.9	100%
60	23.5	83.5	98	25.3	85.3	98
65	19.2	84.2	95	21.0	86.0	95
70	15.2	85.2	89	17.1	87.1	90
75	11.6	86.6	79	13.5	88.5	81
80	8.4	88.4	65	10.2	90.2	69
85	5.9	90.9	45	7.4	92.4	53
Ref	#454x1sb0			#455x1sb0		

Disabled

Sample Age Now	Men			Women		
	Future Life Expectancy (years)	Expected Total Life (years)	Portion of Age 55 Lives Still Alive	Future Life Expectancy (years)	Expected Total Life (years)	Portion of Age 55 Lives Still Alive
55	19.2	74.2	100%	21.0	76.0	100%
60	15.2	75.2	93	17.1	77.1	94
65	11.6	76.6	84	13.5	78.5	85
70	8.4	78.4	68	10.2	80.2	73
75	5.9	80.9	47	7.4	82.4	56
80	4.1	84.1	23	5.3	85.3	34
85	2.9	87.9	7	4.1	89.1	14
Ref	#454x1sb-10			#455x1sb-10		

Probabilities of Retirement for Members Eligible to Retire

Percent of Eligible Members Retiring within Next Year

Attained Age	Member Hired		
	Before April 1, 1983	After April 1, 1983 and Before July 1, 2014*	After July 1, 2014*
40	30%		
41	30		
42	30		
43	20		
44	20		
45	17	16%	16%
46	15	16	16
47	10	16	16
48	10	16	16
49	10	16	16
50	10	12	12
51	10	12	12
52	30	12	12
53	30	12	12
54	30	12	12
55	30	12	12
56	30	12	12
57	30	8	12
58	30	12	12
59	30	25	25
60	100	100	100
Ref	1460	2220	

* An additional 10% is added for the first year eligible for the 25 and out provision.

Miscellaneous and Technical Assumptions

June 30, 2017

Marriage Assumption:	100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses.
Pay Increase Timing:	Reported pays were pay rates at July 1 including the COLA for the year. Other increases are assumed to occur uniformly throughout the year. This situation is approximated by assuming that pay increases occur six months after the beginning of the fiscal year.
Decrement Timing:	Decrements are assumed to occur mid-year (i.e., January 1).
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
Decrement Relativity:	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
Decrement Operation:	Disability and turnover do not operate during retirement eligibility.
Service Credit Accruals:	It is assumed that members accrue one year of service credit per year.
Loads:	The normal cost and actuarial accrued liability, for age and service benefits were increased by 2.1% to account for inclusion of unused sick leave in the service used to calculate retirement benefits. Optional benefit factors are described in Sections 66-126 and 66-366 of the City of Fairfax Code of Ordinances. The factors used are not actuarially equivalent. Liabilities were increased 1.4% to reflect this.
Incidence of Contributions:	Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.
Benefit Service:	Exact Fractional service is used to determine the amount of benefit payable.
Normal Form of Benefit:	The assumed normal form of benefit is the straight life form.

Definitions of Technical Terms

Accrued Service: Service credited under the system which was rendered before the date of the actuarial valuation.

Actuarial Accrued Liability: The difference between the actuarial present value of system benefits and the actuarial present value of future normal costs. Also referred to as “past service liability.”

Actuary: A person who is trained in the applications of probability and compound interest to problems in business and finance that involve payment of money in the future, contingent upon the occurrence of future events. Most actuaries in the United States are Members of the American Academy of Actuaries. The Society of Actuaries is an international research, education and membership organization for actuaries in the life and health insurance, employee benefits, and pension fields. It administers a series of examinations leading initially to Associateship and the designation ASA and ultimately to Fellowship with the designation FSA.

Actuarial Assumptions: Estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment return and pay increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (pay increases and investment return) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

Actuarial Cost Method: A mathematical budgeting procedure for allocating the dollar amount of the “actuarial present value of future benefits” between future normal costs and actuarial accrued liability. Sometimes referred to as the “actuarial funding method.”

Actuarial Equivalent: One series of payments is said to be actuarially equivalent to another series of payments if the two series have the same actuarial present value.

Actuarial Gain (Loss): The difference between actual unfunded actuarial accrued liabilities and anticipated unfunded actuarial accrued liabilities -- during the period between two valuation dates. It is a measurement of the difference between actual and expected experience.

Actuarial Present Value: The single sum now which is equal to a payment or series of payments in the past or future. It is determined by adjusting payments by rates of interest and by probabilities of payment.

Amortization: Paying off a debt with periodic payments.

Normal Cost: The portion of the actuarial present value of future benefits that is assigned to the current year by the actuarial cost method. Sometimes referred to as “current cost.”

Unfunded Actuarial Accrued Liabilities: The difference between actuarial accrued liabilities and valuation assets. Sometimes referred to as “unfunded past service liability” or, strangely, “unfunded supplemental present value” or simply as “unfunded liability.”