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**Volunteer Firefighters Retirement Fund of New Mexico
Annual Actuarial Valuation
as of June 30, 2012**





Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

October 25, 2012

The Retirement Board
Public Employees Retirement Association
Santa Fe, New Mexico

Members of the Board:

We have conducted the annual actuarial valuation of the Volunteer Firefighters Retirement Fund as of June 30, 2012; the results of the valuation are contained in the following report. The annual valuation is used to determine the sufficiency of the statutory contribution rates and, if necessary, the amount required to fund the annual normal cost and fully amortize the unfunded actuarial accrued liability with annual payments over a 30-year period. The results of this valuation apply to the fiscal year beginning July 1, 2012 and ending June 30, 2013 (FY 2013). Information contained in our report for plan years ending prior to June 30, 2010 is based upon valuations performed by the Fund's prior actuary.

In performing the valuation, we relied on data supplied by the Public Employees Retirement Association (PERA) and performed limited tests on the data for consistency and reasonableness. In determining the Fund's liabilities, future events, such as investment returns, deaths, retirements, etc., are anticipated based upon the set of actuarial assumptions as approved by the Board.

Future actuarial results may differ significantly from the current results presented in this report due to such factors as the following: fund experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and changes in plan provisions or applicable law. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

This is to certify that the undersigned are members of the American Academy of Actuaries and have experience in performing valuations for public retirement systems, that the valuation was prepared in accordance with principles of practice prescribed by the Actuarial Standards Board, and that the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the Fund.

Respectfully submitted,

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TABLE OF CONTENTS

<u>Section</u>	<u>Item</u>	<u>Page No.</u>
I	Board Summary	1
II	Membership Data	3
III	Fund Assets	4
IV	Fund Liabilities	7
V	Actuarial Valuation Results	10
VI	Accounting Information	11
 <u>Appendices</u>		
A	Additional Membership Data	14
B	Summary of Actuarial Assumptions and Methods	18
C	Summary of Fund Provisions	23

Section I: Board Summary



The table below summarizes the results of the June 30, 2012 actuarial valuation as compared with the prior year.

Table I-1: Comparative Summary of Principal Results

Valuation Date	June 30, 2012	June 30, 2011
Actuarial Accrued Liability (AAL)		
Active Members	\$ 10,086,158	\$ 10,912,740
Deferred Vested Members	6,088,650	5,459,211
Non-Vested Inactive Members*	2,997,508	2,358,636
Retired Members and Survivors	9,047,032	8,378,261
Total	<u>\$ 28,219,348</u>	<u>\$ 27,108,848</u>
Actuarial Value of Assets	\$ 47,382,330	\$ 47,004,974
Funded Ratio	167.91 %	173.39 %
Unfunded Actuarial Accrued Liability (UAAL) (AAL - Actuarial Value of Assets)	\$ (19,162,982)	\$ (19,896,126)
Calculation of Required Contribution (Fiscal Year Ending)	June 30, 2013	June 30, 2012
Normal Cost		
Retirement	\$ 563,343	\$ 635,898
Termination	211,670	243,340
Pre-Retirement Survivors	10,745	12,313
Disability	-	-
Total Normal Cost	<u>\$ 785,758</u>	<u>\$ 891,551</u>
Less Expected Member Contribution	<u>-</u>	<u>-</u>
Employer Normal Cost	\$ 785,758	\$ 891,551
UAAL Amortization Amount (30 Years)	<u>(1,601,317)</u>	<u>(1,662,581)</u>
Total Employer Contribution	\$ -	\$ -

* Members with at least 5 years of service and a last reported date within the last 5 years are valued similarly to deferred vested members in order to recognize potential liability these members hold.



Section I: Board Summary

Summary of Key Findings

The funding policy for the Fund determines the employer contribution required to fund the annual normal cost plus an amount to fully amortize the unfunded actuarial accrued liability (UAAL) over 30 years. The Fund has maintained a significant surplus of assets over liabilities and the annual contribution for the Fund in the fiscal year ending June 30, 2013 (FY 2013) remains \$0 in accordance with the funding objectives.

The Fund's normal cost contribution decreased from \$891,551 to \$785,758. The surplus of the Fund's actuarial value of assets over the actuarial accrued liability results in a negative UAAL amount which has increased from \$(19,896,126) to \$(19,162,982). The funded ratio of the Fund decreased from 173.4% to 167.9% . We note the following key findings:

- The Fund experienced an actuarial loss on Fund assets of \$3,154,951 as a result of investment return on the actuarial value of assets being less than the assumed rate. This represents a 7.3% decrease to the funded ratio. Table III-3 provides the calculation of the investment loss for this year.
- The Fund experienced a net actuarial gain of \$1,026,893 on Fund liabilities due to non-investment related experience. This represents a 2.4% increase to the funded ratio.
- The Fund received \$779,063 more in contributions than expected which results in a 2.7% increase to the funded ratio.

Section II of the report provides summarized information on the membership data used in the valuation. Section III covers the Fund's assets and Section IV covers the Fund's liabilities. The results of the valuation are provided in Section V and the accounting information is in Section VI. The appendices provide additional information on: A) the Fund members, B) the actuarial assumptions and methods, and C) the summary of the benefit provisions of the Fund. It is important to note that all information contained in this report for periods prior to June 30, 2010 were produced by a prior actuarial consulting firm.



Section II: Membership Data

Data regarding the membership of the Fund for use in the valuation were furnished by PERA. The following table summarizes the membership data as of June 30, 2012 and is compared with that reported for the prior year.

Table II-1: Summary of Membership Data as of June 30, 2012

Group	June 30, 2012	June 30, 2011
Total Active Members	5,065	5,867
Deferred Vested Members	521	473
Non-Vested Inactive Members	385	310
Retirees		
Service	633	583
Disabled	0	0
Beneficiaries	<u>34</u>	<u>26</u>
Total Retirees	667	609
Total	6,638	7,259

Table II-2: Deferred Members, Retired Members and Beneficiaries as of June 30, 2012

Group	Number	Total Annual Benefits	Average Annual Benefits	Average Age
Deferred Vested	521	\$ 642,000	\$ 1,232	55.93
Retirees				
Service	633	868,800	1,373	66.99
Disability	0	0	N/A	N/A
Survivors	<u>34</u>	<u>27,953</u>	822	68.30
Retiree Totals	667	\$ 896,753	\$ 1,344	67.06
Total	1,188	\$1,538,753	\$ 1,295	62.18

Section III: Fund Assets



The following tables provide information on the Fund's market value of assets and cash flow.

Table III-1: Market Value Reconciliation

	June 30, 2012	June 30, 2011
Beginning of Year Market Value	\$ 47,641,091	\$ 38,938,999
Audit Adjustment	-	-
Revised Beginning of Year Market Value	\$ 47,641,091	\$ 38,938,999
Revenues:		
Member Contributions	-	-
Employer Contributions	750,000	750,000
Purchases of Service	-	-
Investment Income		
Adjustments of investments to market value	(1,656,561)	6,156,497
Interest, dividends, etc.	1,149,510	929,837
Realized gains (losses)	416,290	1,645,867
Security lending	(90,098)	(86,423)
Other Income	109,275	181,187
Total Revenues	\$ 678,416	\$ 9,576,965
Expenditures:		
Benefit Payments	856,453	781,845
Refunds of Member Contributions	-	-
Administrative and Investment Expenses	99,775	93,028
Total Expenditures	\$ 956,228	\$ 874,873
End of Year Market Value	\$ 47,363,279	\$ 47,641,091

The market value rate of return for the plan year is -0.36%. The Fund's cash flow is a negative 0.43% as a percentage of average market value.



Section III: Fund Assets

The actuarial value of assets represents a "smoothed" value developed with the purpose of dampening the impact of market volatility on the assets used in determining valuation results. The actuarial value of assets has been calculated by spreading the recognition of unexpected investment income over four years. The amount of unexpected investment income in each year is the difference between expected actuarial value investment income and actual market value investment income. Table III-2 provides the calculation of the amount of the current year excess investment income to be phased-in as well as the amount of deferred investment income from the prior years calculated in the development of the actuarial value of assets.

Table III-2: Development of Actuarial Value of Assets as of June 30, 2012

1. Actuarial Value Beginning of Year		\$	47,004,974
2. Market Value End of Year			47,363,279
3. Market Value Beginning of Year			47,641,091
4. Cash Flow			
a. Contributions		\$	750,000
b. Service Purchases			-
c. Benefit Payments and Refunds			(856,453)
d. Net		\$	(106,453)
5. Investment Income			
a. Market Total (2 - 3 - 4d)		\$	(171,359)
b. Assumed Rate			7.75 %
c. Amount for Immediate Recognition			3,638,760
d. Amount for Phased-In Recognition			(3,810,119)
6. Phased-In Recognition of Investment Income			
a. Current Year: 0.25 * 5d		\$	(952,530)
b. First Prior Year (2011)	\$ 4,947,497 x 25%		1,236,874
c. Second Prior Year (2010)	\$ 1,459,138 x 25%		364,785
d. Third Prior Year (2009)	(15,216,319) x 25%		(3,804,080)
e. Total Recognized Investment Gain		\$	(3,154,951)
7. Audit Adjustment		\$	-
8. Actuarial Value End of Year		\$	47,382,330
(1 + 4d + 5c + 6e + 7)			
9. Difference Between Market & Actuarial Values		\$	(19,051)
10. Rate of Return on Actuarial Value			1.03 %
11. Actuarial Value of Assets as a % of Market Value of Assets			100.0 %



Section III: Fund Assets

The actuarial valuation assumes the rate of investment return on the assets of the Fund is 7.75% annually. This assumption is based upon the reasonable long-term expected return on the assets. In each year, the Fund will experience actuarial gains and losses due to the actual investment return of the assets. Table III-3 provides the calculation of the gain or loss due to the investment experience on the actuarial value of assets for the year ended June 30, 2012.

Table III-3: Actuarial Investment Gain (Loss) for the Year Ended June 30, 2012

1. Beginning of Year Actuarial Value of Assets (AVA)	\$ 47,004,974
2. Employee and Employer Contributions	750,000
3. Benefit Payments	(856,453)
4. Interest [1 x 7.75% + (2 + 3) x 7.75% x 0.5]	3,638,760
5. Expected End of Year AVA (1 + 2 + 3 + 4)	50,537,281
6. Actual End of Year AVA	47,382,330
7. Actuarial Investment Gain (Loss) (6- 5)	\$ (3,154,951)



Section IV: Fund Liabilities

The total actuarial present value of benefits is the value as of the valuation date of all future benefits expected to be paid to current members of the Fund. An actuarial cost method allocates each individual's present value of benefits to past and future years of service. The actuarial accrued liability includes the portion of the active member present value of benefits allocated to past service as well as the entire present value of benefits for retirees, beneficiaries and inactive members. The portion of the actuarial present value allocated to the future service of active members is called the present value of future normal costs. Table IV-1 presents the calculation and allocation of the actuarial present value of benefits.

Table IV-1: Allocation of the Actuarial Present Value of Benefits as of June 30, 2012

	Actuarial Accrued Liability	Present Value of Future Normal Cost	Total Actuarial Present Value
Active Members			
Service Retirement	\$ 8,023,605	\$ 2,400,335	\$10,423,940
Termination Benefits	1,919,163	1,001,837	2,921,000
Disability Retirement	-	-	-
Survivor Benefits	143,390	49,238	192,628
Total for Active Members	\$10,086,158	\$ 3,451,410	\$13,537,568
Inactive Vested Members and Inactive-Holding Liability	\$ 9,086,158		\$ 9,086,158
Retirees and Beneficiaries			
Service Retirements	\$ 8,796,464		\$ 8,796,464
Disability Retirements	-		-
Beneficiaries	250,568		250,568
Total for Retirees and Beneficiaries	\$ 9,047,032		\$ 9,047,032
Total	\$28,219,348	\$ 3,451,410	\$31,670,758



Section IV: Fund Liabilities

Under the valuation funding method, an unfunded actuarial accrued liability (UAAL) exists to the extent that the actuarial accrued liability exceeds the actuarial value of assets as presented in Section III. The calculation of the UAAL and Funded Ratio as of the valuation date is shown in Table IV-2.

Table IV-2: Calculation of the Unfunded Actuarial Accrued Liability and Funded Ratio

	June 30, 2012	June 30, 2011
1. Actuarial Accrued Liability	28,219,348	27,108,848
2. Actuarial Value of Assets	47,382,330	47,004,974
3. Unfunded Actuarial Accrued Liability (1 - 2)	(19,162,982)	(19,896,126)
Funded Ratio (2 / 1)	167.9%	173.4%

The funded ratio is the ratio of the actuarial value of assets (Table III-2) to the actuarial accrued liability (Table IV-1) as of the valuation date. As of June 30, 2012, the funded ratio of the Fund is 167.9% as compared to a ratio of 173.4% as of June 30, 2011. The ratio is a commonly used measure of the funding progress and can be useful in reviewing the historical trend of a Fund's funding progress. Such a review should also consider the impact to this measure over the historical period due to changes to Fund benefits, changes to the actuarial assumptions and methods, and the significant impact that investment experience can have on the ratio over short-term periods. We caution that no single "point in time" measure can provide a universal basis for comparing one Fund's funded status to another.



Section IV: Fund Liabilities

The calculation of the Fund's actuarial assets and liabilities require the use of several assumptions concerning the future experience of the Fund and its members. In each annual valuation, the latest year of actual experience is compared to that expected by the prior valuation. The differences are actuarial gains and losses which decrease or increase the UAAL. Table IV-3 provides the reconciliation of the UAAL.

Table IV-3: Reconciliation of the UAAL

	UAAL	Funded Ratio
1. Beginning of Year	\$ (19,896,126)	173.4 %
2. Normal Cost	891,551	
3. Expected Contributions	-	
4. Interest [1 x 7.75% + (2 + 3) x 7.75% x 0.5]	(1,507,402)	
5. Expected End of Year (1 + 2 + 3 + 4)	<u>\$ (20,511,977)</u>	170.1 %
6. Actuarial Experience (Gain) / Loss		
Additional Contributions (with interest)	\$ (779,063)	2.7 %
Investment Experience	3,154,951	(7.3)%
Liability Experience	<u>(1,026,893)</u>	2.4 %
Total Actuarial Experience (Gain) / Loss	\$ 1,348,995	
7. End of Year Prior to Assumption/Method Changes (5 + 6)	\$ (19,162,982)	167.9 %
8. Assumption/Method Changes	-	0.0 %
9. Actual End of Year (7 + 8)	\$ (19,162,982)	167.9 %



Section V: Actuarial Valuation Results

Section IV of this report presented the Fund's actuarial accrued liability as the portion of the present value of benefits allocated to past years of service. The portion of the active members' present value of benefits allocated to future years of service is funded through annual normal cost contributions from the employer. The normal cost amount was developed as of the valuation date and presented in Table V-1.

The required contribution to satisfy the funding policy is the dollar amount necessary to fund the annual normal cost of the Fund and fully amortize the UAAL over 30 years. The amortization amount calculated is expected to remain constant over the remaining amortization period. As this Fund is in a significant surplus funded position, the annual amortized amount of the surplus more than offsets the Fund's annual normal cost amount. The calculation of the contribution requirement is provided in Table V-1.

**Table V-1: Calculation of Required Employer Contribution
for Fiscal Year Ending June 30, 2012**

1. Present Value of Future Benefits	\$ 31,670,758
2. Present Value of Future Normal Costs	3,451,410
3. Actuarial Accrued Liability (1 - 2)	\$ 28,219,348
4. Actuarial Value of Assets	47,382,330
5. Unfunded Actuarial Accrued Liability (UAAL) (3 - 4)	\$ (19,162,982)
6. UAAL Amortization Payment (30 years)	(1,601,317)
7. Total Normal Cost	785,758
8. Less: Expected Employee Contribution	-
9. Employer Normal Cost	785,758
Calculated Required Contribution (6 + 9)	\$ -



Section VI: Accounting Information

The tables provided in this section present disclosure information necessary to comply with GASB requirements and are relevant for the annual financial reporting of the Fund.

Table VI-1: GASB Statement No. 25 Schedule of Funding Progress

Actuarial Valuation Date	Actuarial Value of Plan Assets (a)	Actuarial Accrued Liability (AAL)* (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)
6/30/2012	\$ 47,382,330	\$ 28,219,348	\$ -	167.9 %
6/30/2011	47,004,974	27,108,848	-	173.4 %
6/30/2010	47,346,417	20,465,920	-	231.3 %
6/30/2009	48,192,255	19,869,273	-	242.5 %
6/30/2008	48,437,876	16,945,857	-	285.8 %
6/30/2007	44,960,981	16,536,060	-	271.9 %
6/30/2006	40,679,359	23,742,890	-	171.3 %
6/30/2005	35,651,070	25,151,577	-	141.7 %
6/30/2004	33,000,250	17,778,145	-	185.6 %
6/30/2003	31,221,546	17,058,252	-	183.0 %

* Entry age, level dollar beginning with the 6/30/2011 valuation; unit credit for prior valuations.

Table VI-2: Schedule of Employer Contributions

Fiscal Year Ended June 30	Actuarial Valuation Date	Annual Required Contribution (ARC)
2013	6/30/2012	\$0
2012	6/30/2011	0
2011	6/30/2010	0
2010	6/30/2009	0
2009	6/30/2008	0
2008	6/30/2007	0
2007	6/30/2006	0 - 446,000
2006	6/30/2005	406,000 - 1,370,000
2005	6/30/2004	0 - 565,000
2004	6/30/2003	0 - 680,000
2003	6/30/2002	0 - 653,000



Table VI-3: Solvency Test

Valuation Date	Aggregate Accrued Liabilities For				Actuarial Value of Assets	Portion of Accrued Liabilities Covered by Actuarial Value of Assets		
	(1) Active Member Contributions	(2) Retirees, Survivors and Inactive Members	(3) Active Members (Employer Financed Portion)			(1)	(2)	(3)
6/30/2012	\$ -	\$ 18,133,190	\$ 10,086,158	\$ 47,382,330	N/A	100.00%	100.00%	
6/30/2011	-	16,196,108	10,912,740	47,004,974	N/A	100.00	100.00	
6/30/2010	-	13,093,663	7,372,257	47,346,417	N/A	100.00	100.00	
6/30/2009	-	6,343,000	12,686,000	40,844,000	N/A	100.00	100.00	
6/30/2008	-	5,807,000	11,139,000	48,437,876	N/A	100.00	100.00	

Table VI-4: Schedule of Retirants Added to and Removed from Rolls

Valuation Date	Added to Rolls		Removed from Rolls		Rolls End of Year		% Increase in Annual Allowances	Average Annual Allowances
	Number Added	Annual Allowances	Number Removed	Annual Allowances	Number	Annual Allowances		
6/30/2012	72	\$ 92,400	14	\$ 17,592	667	\$ 896,753	9.10%	\$ 1,344
6/30/2011	72	100,800	7	8,400	609	821,945	12.67%	1,350
6/30/2010	76	116,001	2	3,600	544	729,545	18.21%	1,341
6/30/2009	43	62,400	8	9,600	470	617,144	9.36%	1,313
6/30/2008	50	**	3	**	435	564,344	14.72%	1,297



Table VI-5: Summary of Actuarial Methods and Assumptions

Valuation Date	June 30, 2012
Actuarial cost method	Entry Age, Level Dollar
Amortization method	Level Dollar, Open
Remaining amortization period	30 years
Asset valuation method	4-year Smoothed Market
Actuarial assumptions:	
Investment rate of return (includes 3.50% inflation)	7.75%



Appendix A: Additional Membership Data

Table A-1: Schedule of Active Participant Data as of June 30, 2012

Nearest Age	Completed Years of Service							Total
	Under 5	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30+	
Under 30	954	71	5	0	0	0	0	1,030
30 to 34	361	98	30	0	0	0	0	489
35 to 39	289	58	41	12	1	0	0	401
40 to 44	702	83	39	18	5	1	0	848
45 to 49	300	105	42	31	14	10	1	503
50 to 54	266	99	66	46	28	17	11	533
55 to 59	232	85	49	28	24	14	3	435
60	41	13	1	3	4	1	0	63
61	44	13	4	8	5	3	1	78
62	49	12	5	7	4	2	0	79
63	34	10	6	3	1	0	0	54
64	47	20	2	4	1	0	1	75
65	44	22	2	1	1	1	0	71
66	35	11	2	1	0	0	0	49
67	28	16	2	0	1	0	0	47
68	38	2	2	1	0	0	0	43
69	25	7	4	0	0	1	0	37
70	24	14	0	1	1	1	0	41
71	18	11	0	0	0	0	0	29
72	14	10	1	1	0	1	0	27
73	8	3	0	1	0	0	0	12
74	15	6	1	1	0	0	0	23
75	7	2	0	0	0	0	0	9
76	12	5	0	2	0	0	0	19
77	14	2	0	0	1	0	0	17
78	6	1	1	0	0	0	0	8
79	7	2	0	1	0	0	0	10
80 & Over	27	5	2	0	1	0	0	35
Total	3,641	786	307	170	92	52	17	5,065

Average Age: 44.26

Average Service: 4.10



Appendix A: Additional Membership Data

Table A-2: Number of Annual Retirement Allowances of Benefit Recipients as of June 30, 2012

Type of Pension	Number	Total Annual Benefits	Average Annual Pension
Normal Retirement Pensions			
Two Life 66 2/3% Survivor Pension			
Retired Member Recipient	633	868,800	1,373
Survivor Recipient	34	27,953	822
Total Normal Retirement Pensions	667	\$ 896,753	\$ 1,344
Total Pensions Being Paid	667	\$ 896,753	\$ 1,344

Table A-3: Distribution of Participants Receiving Benefits as of June 30, 2012

Attained Age	Retired Member		Survivor		Totals	
	Number	Annual Pensions	Number	Annual Pensions	Number	Annual Pensions
Under 40	0	\$ -	0	\$ -	0	\$ -
40 to 44	0	-	1	800	1	800
45 to 49	0	-	1	800	1	800
50 to 54	0	-	0	-	0	-
55 to 59	86	126,000	1	800	87	126,800
60 to 64	170	244,800	4	3,184	174	247,984
65 to 69	170	228,000	11	8,785	181	236,785
70 to 74	112	142,800	9	7,192	121	149,992
75 to 79	70	93,600	5	4,792	75	98,392
80 to 84	21	27,600	1	800	22	28,400
85 to 89	4	6,000	1	800	5	6,800
90 to 94	0	-	0	-	0	-
95 to 99	0	-	0	-	0	-
100 & Over	0	-	0	-	0	-
Total	633	\$ 868,800	34	\$ 27,953	667	\$ 896,753



Appendix A: Additional Membership Data

Table A-4: Distribution of Retirees & Beneficiaries by Years of Service at Retirement

	Years of Credited Service at Retirement							Total
	Under 5	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30+	
Average Monthly Benefit*	\$110	\$100	\$99	\$98	\$106	\$188	\$120	\$111
Average Final Average Salary	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Number of Retirees/Beneficiaries*	10	31	226	124	40	66	10	507

* Does not include 160 retirees/beneficiaries with missing years of service at retirement.

Table A-5: Distribution of Recent Retiree Ages at Retirement

	2007-08 Retirees	2008-09 Retirees	2009-10 Retirees	2010-11 Retirees	2011-12 Retirees	All Current Retirees & Beneficiaries
Number	41	39	75	64	65	667
Average Monthly Benefit at Retirement	\$137	\$126	\$127	\$119	\$111	\$113
Average Attained Age at Retirement	59.16	60.14	64.72	62.54	63.77	59.70



Appendix A: Additional Membership Data

Table A-6: Status Reconciliation

	Active Members	Vested Terminated Members	Non-Vested Inactive Members *	Pension Recipients			Total
				Service Retired	Disability Retired	All Beneficiaries	
June 30, 2011	5,867	473	310	583	0	26	7,259
Increase (Decrease) From:							
Service Retirement	(42)	(16)	(1)	59			0
Disability Retirement							0
Deaths	(4)	(1)		(13)			(18)
Survivors						9	9
Other Pension Terminations	(87)		87				0
Vested Terminations	(66)	66					0
Non-Vested Terminations	(846)						(846)
New Entrants/Rehires	243	(3)	(9)				231
Data Corrections/Changes		2	(2)	4		(1)	3
June 30, 2012	5,065	521	385	633	0	34	6,638

* Members with at least 5 years of service and a last reported date within the last 5 years are valued similarly to deferred vested members in order to recognize potential liability these members hold.



Appendix B: Summary of Actuarial Assumptions and Methods

Actuarial Cost Methods Used for the Valuation

An actuarial cost method is a procedure for allocating the actuarial present value of benefits and expenses to time periods. The method used for this valuation is known as the entry age normal level dollar cost method and has the following characteristics:

- i) The total present value of projected benefits of each individual is allocated on a level basis over service from entry age to retirement age. The portion of this present value allocated to the valuation year is the normal cost.
- ii) The actuarial liability is the accumulation of past normal costs on the valuation date.

Unfunded actuarial accrued liability, which is the difference between the actuarial accrued liability and the accrued assets, is amortized over a 30-year period. As of June 30, 2012, funding value of assets exceeded accrued liabilities. The excess was amortized over 30 years and applied as a credit to the computed normal cost.

The actuarial value of assets used for funding purposes are derived as follows: prior year actuarial value of assets are increased by contributions and expected investment income and reduced by refunds, benefit payments and expenses. To this amount 25% of the difference between expected and actual investment income for each of the previous four years is added.



Appendix B: Summary of Actuarial Assumptions and Methods

Actuarial Assumptions Used for the Valuation

The rate of investment return was 7.75% per year, compounded annually, net of expenses.

The rates of separation from active membership were as follows:

Sample Ages	Years of Service	Percent of Active Members Separating Within Next Year
ALL	0	24.00%
	1	18.00
	2	15.00
	3	14.50
	4	14.00
25	5 & Over	10.50
30		10.00
35		9.75
40		9.50
45		9.25
50		9.00
55		8.75
60		8.50



Appendix B: Summary of Actuarial Assumptions and Methods

The rates of retirement from active membership were as follows:

Ages	Percent of Active Members Retiring Within Next Year
55	40.0%
56	30.0
57	25.0
58	25.0
59	25.0
60	30.0
61	30.0
62	30.0
63	30.0
64	40.0
65	100.0

Mortality Assumption. The 2000 Group Annuity Mortality Table (1971 GAM projected), set back 3 years for men and 7 years for women for healthy lives. Special disabled mortality rates are developed and assumed for disabled lives. No provision was made for future mortality improvement. Rates are shown for sample ages in the following schedule.

Age	Mortality Rates			
	Pre- and Post retirement		Post-disablement	
	Male	Female	Male	Female
20	0.0378 %	0.0342%	5.1360%	2.6300%
25	0.0450	0.0390	5.2360	2.6300
30	0.0566	0.0468	4.4270	2.6300
35	0.0758	0.0598	2.9780	2.4200
40	0.1072	0.0809	2.0450	2.1800
45	0.1655	0.1156	1.9280	2.0800
50	0.3107	0.1871	2.1270	2.1900
55	0.5363	0.3499	2.4660	2.4900
60	0.8309	0.5899	3.0070	2.8800
65	1.3130	0.9013	3.8570	3.2300
70	2.2037	1.4413	5.1870	3.6200
75	3.7677	2.4514	7.2610	4.0200
80	5.8349	4.1064	10.4530	4.6500
85	9.4487	6.4629	15.2880	6.8600



Appendix B: Summary of Actuarial Assumptions and Methods

Miscellaneous and Technical Assumptions

Marriage Assumption:	All members are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses. At retirement, 90% of members are assumed to be married for purposes of valuing death after retirement benefits.
Pay Increase Timing:	N/A.
Decrement Timing:	Decrements of all types are assumed to occur mid-year.
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 mortality decrements operate during the first 5 years of service. Only mortality operates during retirement eligibility.
Incidence of Contributions:	Contributions are assumed to be received in the middle of the year.
Normal Form of Benefit:	A 66-2/3% automatic joint and survivor payment is the assumed normal form of benefit for married members. Straight life is the assumed normal form of benefit for single members.
Benefit Service:	Service nearest the whole year is used to determine the amount of benefit payable.
Average Entry Age:	Age 40.16 was assumed in cases where insufficient data was provided. Active members were assumed to accrue 0.75 years of service credit in each future year.
Non-Vested Inactive Members:	Members with at least 5 years of service and a last reported date within the last 5 years are valued similarly to deferred vested members in order to recognize potential liability these members hold.



Appendix B: Summary of Actuarial Assumptions and Methods

Definitions of Technical Terms

Actuarial Accrued Liability. The difference between the actuarial present value of future benefit payments and the actuarial present value of future normal costs.

Actuarial Cost Method. A mathematical budgeting procedure for allocating the dollar amount of the “actuarial present value of future benefit payments” between future normal cost and actuarial accrued liability.

Actuarial Present Value. The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest and by probabilities of payment.

Amortization. Paying off an interest-discounted amount with periodic payments of interest and principal – as opposed to paying off with a lump sum payment.

Experience Gain (Loss). The difference between actual actuarial costs and anticipated actuarial costs – during the period between two valuation dates.

Normal Cost. The actuarial cost allocated to the current year by the actuarial cost method.

Unfunded Actuarial Accrued Liability. The difference between the actuarial accrued liability and the actuarial value of assets. Sometimes referred to as “unfunded accrued liability.”



Appendix C: Summary of Fund Provisions

Membership

Includes any active volunteer non-salaried firefighter whose first year of service credit was earned on or after age 16.

Service Credit

A year of service credit may be granted upon required certification for each year the member

- (1) attended 50% of all scheduled fire drills,
- (2) attended 50% of all scheduled business meetings, and
- (3) participated in at least 50% of all emergency response calls which the fire department held him responsible to attend.

Retirement Eligibility

A member may retire (1) with a full retirement annuity at age 55 with 25 or more years of service credit or (2) with a reduced retirement annuity at age 55 with 10 or more years of service credit.

Retirement Annuity

The full retirement annuity is \$200 per month. The reduced retirement annuity is \$100 per month.

Surviving Spouse Annuity

The surviving spouse of a deceased annuitant receives an annuity equal to $\frac{2}{3}$ of the retirement annuity being paid at the time of the member's death. The annuity ceases upon the surviving spouse's marriage or death.

Surviving Dependent Child

If there is no surviving spouse, then a surviving dependent child will receive an annuity equal to $\frac{2}{3}$ of the retirement annuity being paid at the time of the member's death. The annuity will cease upon the earlier of the dependent child's 18th birthday or death.

Vested Retirement Annuity

Any member with at least 10 years of service credit who ceases to be a volunteer non-salaried firefighter is eligible for a deferred retirement annuity commencing at age 55. The monthly amount is \$200 if the member has at least 25 years of service credit and \$100 if the member has between 10 and 25 years of service credit.

Public Payments

\$750,000 annually from the State's fire protection fund.