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PERA

Public Employees
Retirement Association
of New Mexico

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**Volunteer Firefighters Retirement Fund of New Mexico
Annual Actuarial Valuation
as of June 30, 2015**





Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

October 29, 2015

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, 2015; 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, 2015 and ending June 30, 2016 (FY 2016). 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,

John J. Garrett, ASA, FCA, MAAA
Principal and Consulting Actuary

Jonathan T. Craven, ASA, EA, FCA, MAAA
Senior Actuary



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Section I: Board Summary



The table below summarizes the results of the June 30, 2015 actuarial valuation as compared with the prior year.

Table I-1: Comparative Summary of Principal Results

Valuation Date	June 30, 2015	June 30, 2014
Actuarial Accrued Liability (AAL)		
Active Members	\$ 17,635,798	\$ 16,297,916
Deferred Vested Members	6,639,910	6,843,452
Non-Vested Inactive Members*	2,388,648	3,001,453
Retired Members and Survivors	<u>17,252,036</u>	<u>15,374,005</u>
Total	\$ 43,916,392	\$ 41,516,826
Actuarial Value of Assets	\$ 61,575,304	\$ 57,997,323
Funded Ratio	140.2 %	139.7 %
Unfunded Actuarial Accrued Liability (UAAL) (AAL - Actuarial Value of Assets)	\$ (17,658,912)	\$ (16,480,497)
Calculation of Required Contribution (Fiscal Year Ending)	June 30, 2016	June 30, 2015
Normal Cost		
Retirement	\$ 1,053,050	\$ 991,568
Termination	425,915	385,891
Pre-Retirement Survivors	11,739	10,688
Disability	<u>-</u>	<u>-</u>
Total Normal Cost	\$ 1,490,704	\$ 1,388,147
Expected Administrative Expenses	45,000	45,000
UAAL Amortization Amount (30 Years)	<u>(1,475,632)</u>	<u>(1,377,160)</u>
Actuarially Determined Contribution	\$ 60,072	\$ 55,987

* 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.

The Fund's normal cost contribution increased from \$1,388,147 to \$1,490,704. Beginning with the 6/30/2014 valuation, the annual amount of expected administrative expenses is added to the normal cost in the calculation of the actuarial determined contribution. 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 \$(16,480,497) to \$(17,658,912). The funded ratio of the Fund increased from 139.7% to 140.2%. We note the following key findings:

- The Fund experienced an actuarial gain on Fund assets of \$32,381 as a result of investment return on the actuarial value of assets being greater than the assumed rate. This represents a 0.1% increase to the funded ratio. Table III-3 provides the calculation of the investment gain for this year.
- The Fund experienced a net actuarial gain of \$609,987 on Fund liabilities due to non-investment related experience. This represents a 1.9% increase to the funded ratio.
- The Fund received \$720,906 more in contributions than the actuarially determined amount which results in a 1.6% 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, 2015 and is compared with that reported for the prior year.

Table II-1: Summary of Membership Data as of June 30, 2015

Group	June 30, 2015	June 30, 2014
Total Active Members	8,136	7,499
Deferred Vested Members	437	451
Non-Vested Inactive Members	220	286
Retirees		
Service*	953	846
Disabled	0	0
Beneficiaries	<u>51</u>	<u>47</u>
Total Retirees	1,004	893
Total	9,797	9,129

Table II-2: Deferred Members, Retired Members and Beneficiaries as of June 30, 2015

Group	Number	Total Annual Benefits	Average Annual Benefits	Average Age
Deferred Vested	437	\$ 672,000	\$ 1,538	58.80
Retirees				
Service*	953	1,684,500	1,768	67.84
Disability	0	0	N/A	N/A
Survivors	<u>51</u>	<u>43,001</u>	843	72.37
Retiree Totals	1,004	\$1,727,501	\$ 1,721	68.07
Total	1,441	\$2,399,501	\$ 1,665	65.26

*Includes 1 co-payee

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, 2015	June 30, 2014
Beginning of Year Market Value	\$ 61,923,262	\$ 53,312,473
Audit Adjustment	-	404,492
Revised Beginning of Year Market Value	\$ 61,923,262	\$ 53,716,965
Revenues:		
Member Contributions	-	-
Employer Contributions	750,000	750,000
Purchases of Service	-	-
Investment Income		
Interest, dividends, etc.	2,109,145	1,256,831
Realized/Unrealized gains (losses)	(887,968)	7,834,319
Security lending	(5,346)	(37,176)
Other Income	(94,719)	301
Settlement Award	106,920	-
Total Revenues	\$ 1,978,032	\$ 9,804,275
Expenditures:		
Benefit Payments	1,633,388	1,418,943
Refunds of Member Contributions	-	-
Investment Expenses	122,074	134,719
Administrative Expenses	42,596	44,316
Total Expenditures	\$ 1,798,058	\$ 1,597,978
End of Year Market Value	\$ 62,103,236	\$ 61,923,262

The market value rate of return for the plan year is 1.78%. The Fund's cash flow is a negative 1.47% 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 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, 2015

1. Actuarial Value Beginning of Year		\$	57,997,323
2. Market Value End of Year			62,103,236
3. Market Value Beginning of Year (with audit adjustment)			61,923,262
4. Cash Flow			
a. Contributions		\$	750,000
b. Service Purchases			-
c. Benefit Payments and Refunds			(1,633,388)
d. Administrative Expenses			(42,596)
e. Other			12,201
f. Net		\$	(913,783)
5. Investment Income			
a. Market Total (2 - 3 - 4f)		\$	1,093,757
b. Assumed Rate			7.75 %
c. Amount for Immediate Recognition			4,459,383
d. Amount for Phased-In Recognition			(3,365,626)
6. Phased-In Recognition of Investment Income			
a. Current Year: 0.25 * 5d		\$	(841,407)
b. First Prior Year (2014)	\$ 4,903,308	x 25%	1,225,827
c. Second Prior Year (2013)	\$ 2,401,964	x 25%	600,491
d. Third Prior Year (2012)	\$ (3,810,119)	x 25%	(952,530)
e. Total Recognized Investment Gain		\$	32,381
7. Audit Adjustment		\$	-
8. Actuarial Value End of Year		\$	61,575,304
(1 + 4f + 5c + 6e + 7)			
9. Difference Between Market & Actuarial Values (2 - 8)		\$	527,932
10. Rate of Return on Actuarial Value			7.81 %
11. Actuarial Value of Assets as a % of Market Value of Assets			99.1 %



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, 2015.

Table III-3: Actuarial Investment Gain (Loss) for the Year Ended June 30, 2015

1. Beginning of Year Actuarial Value of Assets (AVA)	\$ 57,997,323
2. Employee and Employer Contributions	750,000
3. Benefit Payments	(1,633,388)
4. Administrative Expenses	(42,596)
5. Other	12,201
6. Interest [1 x 7.75% + (2 + 3 + 4 + 5) x 7.75% x 0.5]	4,459,383
7. Expected End of Year AVA	61,542,923
8. Actual End of Year AVA	61,575,304
9. Actuarial Investment Gain (Loss) (6 - 5)	\$ 32,381



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, 2015

	Actuarial Accrued Liability	Present Value of Future Normal Cost	Total Actuarial Present Value
Active Members			
Service Retirement	\$13,971,394	\$ 4,548,214	\$18,519,608
Termination Benefits	3,538,414	2,069,333	5,607,747
Disability Retirement	-	-	-
Survivor Benefits	125,990	55,728	181,718
Total for Active Members	\$17,635,798	\$ 6,673,275	\$24,309,073
Inactive Vested Members and Inactive-Holding Liability	\$ 9,028,558		\$ 9,028,558
Retirees and Beneficiaries			
Service Retirements	\$16,903,483		\$16,903,483
Disability Retirements	-		-
Beneficiaries	348,553		348,553
Total for Retirees and Beneficiaries	\$17,252,036		\$17,252,036
Total	\$43,916,392	\$ 6,673,275	\$50,589,667



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, 2015	June 30, 2014
1. Actuarial Accrued Liability	43,916,392	41,516,826
2. Actuarial Value of Assets	61,575,304	57,997,323
3. Unfunded Actuarial Accrued Liability (1 - 2)	(17,658,912)	(16,480,497)
Funded Ratio (2 / 1)	140.2%	139.7%

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, 2015, the funded ratio of the Fund is 140.2% as compared to a ratio of 139.7% as of June 30, 2014. 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	\$ (16,480,497)	139.7 %
2. Normal Cost , including expenses	1,433,147	
3. Expected Contributions	(55,987)	
4. Other Income/Expense	30,395	
5. Interest [1 x 7.75% + (2 + 3 + 4) x 7.75% x 0.5]	(1,222,696)	
6. Expected End of Year	\$ (16,295,638)	136.6 %
7. Actuarial Experience (Gain) / Loss		
Additional Contributions (with interest)	\$ (720,906)	1.6 %
Investment Experience	(32,381)	0.1 %
Liability Experience	(609,987)	1.9 %
Total Actuarial Experience (Gain) / Loss	\$ (1,363,274)	
8. End of Year Prior to Assumption/Method/Plan Changes (6 + 7)	\$ (17,658,912)	140.2 %
9. Assumption/Method Changes	-	
10. Plan Changes	-	
11. Actual End of Year (8 + 9 + 10)	\$ (17,658,912)	140.2 %



Section V: Actuarial Funding Calculation

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 and expected administrative expenses 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 offsets most of the Fund's annual normal cost amount. The calculation of the contribution requirement is provided in Table V-1.

**Table V-1: Calculation of Actuarially Determined Contribution
for Fiscal Year Ending June 30, 2016**

1. Present Value of Future Benefits	\$ 50,589,667
2. Present Value of Future Normal Costs	6,673,275
3. Actuarial Accrued Liability (1 - 2)	\$ 43,916,392
4. Actuarial Value of Assets	61,575,304
5. Unfunded Actuarial Accrued Liability (UAAL) (3 - 4)	\$ (17,658,912)
6. UAAL Amortization Payment (30 years)	(1,475,632)
7. Total Normal Cost	1,490,704
8. Expected Administrative Expenses	45,000
9. Total Normal Cost and Administrative Expenses	1,535,704
Actuarially Determined Contribution (6 + 9)	\$ 60,072



Section VI: Accounting Information

The tables provided in this section present information relevant for the annual financial reporting of the Fund. GASB Statement No. 67 required disclosure information will be provided in a separate supplemental report. GASB Statement No. 25 information is provided below.

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)
6/30/2015	\$ 61,575,304	\$ 43,916,392	\$ -	140.2 %
6/30/2014	57,997,323	41,516,826	-	139.7 %
6/30/2013	52,179,180	37,766,300	-	138.2 %
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 %

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

Table VI-2: Solvency Test

Valuation Date	Aggregate Accrued Liabilities For				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)	Actuarial Value of Assets	(1)	(2)	(3)
6/30/2015	\$ -	\$ 26,280,594	\$ 17,635,798	\$ 61,575,304	N/A	100.00%	100.00%
6/30/2014	-	25,218,190	16,297,916	57,997,323	N/A	100.00	100.00
6/30/2013	-	23,246,567	14,519,733	52,179,180	N/A	100.00	100.00
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

Section VI: Accounting Information



Table VI-3: 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		
6/30/2015	127	\$ 226,500	16	\$ 28,300	1,004	\$ 1,727,501	12.96%	\$ 1,721
6/30/2014	139	262,048	8	11,300	893	1,529,301	19.61%	1,713
6/30/2013	109	399,400	14	17,600	762	1,278,553	42.58%	1,678
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

Table VI-4: Summary of Actuarial Methods and Assumptions

Valuation Date	June 30, 2015
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:	
Administrative Expenses	\$45,000 annually
Investment rate of return (includes 3.00% inflation)	7.75%

Appendix A: Additional Membership Data



Table A-1: Schedule of Active Participant Data as of June 30, 2015

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	1,800	155	6	0	0	0	0	1,961
30 to 34	626	139	39	0	0	0	0	804
35 to 39	539	139	45	17	3	0	0	743
40 to 44	1,234	114	59	20	13	0	0	1,440
45 to 49	389	143	64	23	19	10	2	650
50 to 54	344	150	70	49	31	18	9	671
55 to 59	332	131	49	29	37	13	4	595
60	62	18	11	2	3	2	0	98
61	49	28	8	3	3	2	0	93
62	63	25	10	4	0	2	1	105
63	52	21	1	2	2	0	0	78
64	54	19	6	4	2	0	3	88
65	52	28	6	3	5	1	1	96
66	59	13	6	2	3	0	0	83
67	51	31	8	4	1	0	0	95
68	52	32	3	2	0	0	0	89
69	37	22	2	0	1	0	0	62
70	34	19	2	0	1	0	0	56
71	35	16	1	1	0	0	0	53
72	31	11	3	2	0	1	0	48
73	19	13	4	1	0	1	0	38
74	17	14	1	0	0	0	0	32
75	14	13	1	0	0	1	0	29
76	11	4	0	0	0	0	0	15
77	19	6	0	2	0	0	0	27
78	9	2	0	1	0	0	0	12
79	12	5	1	0	0	0	0	18
80 & Over	42	13	1	0	1	0	0	57
Total	6,038	1,324	407	171	125	51	20	8,136

Average Age: 42.88

Average Service: 3.63



Appendix A: Additional Membership Data

Table A-2: Number of Annual Retirement Allowances of Benefit Recipients as of June 30, 2015

Type of Pension	Number	Total Annual Benefits	Average Annual Pension
Normal Retirement Pensions			
Two Life 66 2/3% Survivor Pension			
Retired Member Recipient	952	1,683,750	1,769
Survivor Recipient	51	43,001	843
Co-Payee Recipient	1	750	750
Total Normal Retirement Pensions	1,004	\$1,727,501	\$ 1,721
Total Pensions Being Paid	1,004	\$1,727,501	\$ 1,721

Table A-3: Distribution of Participants Receiving Benefits as of June 30, 2015

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	132	252,000	0	-	132	252,000
60 to 64	217	409,500	4	3,600	221	413,100
65 to 69	235	421,500	11	8,800	246	430,300
70 to 74	187	301,500	13	11,000	200	312,500
75 to 79	113	183,000	14	12,000	127	195,000
80 to 84	56	93,000	3	2,600	59	95,600
85 to 89	11	19,500	1	800	12	20,300
90 to 94	2	4,500	3	2,600	5	7,100
95 to 99	0	-	0	-	0	-
100 & Over	0	-	0	-	0	-
Total	953	\$1,684,500	51	\$ 43,001	1,004	\$1,727,501



Appendix A: Additional Membership Data

**Table A-4: Distribution of Retirees by Years of Service at Retirement
(not including Disabled Members, Beneficiaries, and Co-Payees)**

	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*	\$188	\$125	\$125	\$125	\$128	\$242	\$250	\$148
Average Final Average Salary	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Number of Retirees*	6	2	505	201	56	147	29	946

* Does not include 6 retirees with missing years of service at retirement.

**Table A-5: Distribution of Recent Retiree Ages at Retirement
(not including Disabled Members, Beneficiaries, and Co-Payees)**

	2010-11 Retirees	2011-12 Retirees	2012-13 Retirees	2013-14 Retirees	2014-15 Retirees	All Current Retirees & Beneficiaries
Number	62	66	101	117	130	952
Average Monthly Benefit at Retirement	\$149	\$142	\$156	\$157	\$152	\$147
Average Attained Age at Retirement	62.55	63.51	62.38	63.68	63.39	60.86



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, 2014	7,499	451	286	846	0	47	9,129
Increase (Decrease) From:							
Service Retirement	(93)	(21)		114			0
Disability Retirement							
Deaths	(1)	(1)		(14)		(1)	(17)
Survivors						6	6
Co-Payee							
Other Pension Terminations						(1)	(1)
Vested Terminations	(14)	14					0
Non-Vested Terminations	(139)		11				(128)
New Entrants/Rehires	886	(9)	(4)				873
Data Corrections/Changes	(2)	3	(73)	7			(65)
June 30, 2015	8,136	437	220	953	0	51	9,797

* 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 actuarial value of assets, is amortized over a 30-year period. As of June 30, 2015, actuarial value of assets exceeded accrued liabilities. The excess was amortized over 30 years and applied as a credit to the computed normal cost and expected administrative expenses.

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 (effective June 30, 2011 except as noted)

The rate of investment return (effective June 30, 2014): 7.75% per year, compounded annually, net of investment expenses.

The expected administrative expenses (effective June 30, 2014): \$45,000 which is included in the calculation of the actuarial determined contribution amount.

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 (effective June 30, 2014): RP-2000 Mortality Tables (Combined table for healthy post-retirement, Employee table for active members, and Disabled table for disabled retirees before retirement age) with projection to 2018 using Scale AA. This assumption includes between 5% and 8% margin sufficient to allow for modest future improvement in the rates of mortality.

Sample Mortality Rates								
Pre-Retirement			Post-Retirement			Disabled		
Age	Male	Female	Age	Male	Female	Age	Male	Female
25	0.0003	0.0002	45	0.0012	0.0008	45	0.0178	0.0056
30	0.0004	0.0002	50	0.0015	0.0012	50	0.0209	0.0085
35	0.0007	0.0004	55	0.0026	0.0024	55	0.0251	0.0143
40	0.0009	0.0005	60	0.0050	0.0046	60	0.0314	0.0200
45	0.0012	0.0008	65	0.0099	0.0089	65	Uses healthy post-retirement rates upon surviving to normal retirement age.	
50	0.0015	0.0012	70	0.0169	0.0153	70		
55	0.0021	0.0022	75	0.0294	0.0243	75		
60	0.0036	0.0036	80	0.0537	0.0404	80		
65	0.0059	0.0053	85	0.0976	0.0695	85		



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 at the beginning of the 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 39.34 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 \$250 per month. The reduced retirement annuity is \$125 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 \$250 if the member has at least 25 years of service credit and \$125 if the member has between 10 and 25 years of service credit.

Public Payments

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