Appendix A: Additional Membership Data

Table A-2: Number of Annual Retirement Allowances of Benefit Recipients as of June 30, 2017

Type of Pension	Number	Total Annual Benefits	Average Annual Pension
Two Life 66 2/3% Survivor Pension	1,139	2,063,250	1,811
Single Life Pension	72	67,150	933
Total Normal Retirement Pensions	**1,211**	**$2,130,400**	**$ 1,759**
Total Pensions Being Paid	**1,211**	**$2,130,400**	**$ 1,759**

Table A-3: Distribution of Participants Receiving Benefits as of June 30, 2017

Attained Age	Retired Member*		Survivor		Totals	
	Number	Annual Pensions	Number	Annual Pensions	Number	Annual Pensions
Under 40						
40 to 44						
45 to 49			1	$ 800	1	$ 800
50 to 54			1	800	1	800
55 to 59	158	$ 319,500	2	2,000	160	321,500
60 to 64	243	466,500	6	6,800	249	473,300
65 to 69	261	484,500	9	7,800	270	492,300
70 to 74	245	415,500	17	14,800	262	430,300
75 to 79	133	213,000	19	18,800	152	231,800
80 to 84	74	120,000	12	11,000	86	131,000
85 to 89	23	39,000	2	1,800	25	40,800
90 to 94	3	6,000	2	1,800	5	7,800
95 to 99						
100 & Over						
Total	**1,140**	**$2,064,000**	**71**	**$ 66,400**	**1,211**	**$2,130,400**

* Includes 1 co-payee

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							
	Under 5	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30+	Total
Average Monthly Benefit*	$125	$125	$125	$125	$125	$250	$250	$151
Number of Retirees*	2	6	605	217	64	194	43	1,131

* Does not include 9 retirees whose service at retirement was not provided in the census data.

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

	2012-13 Retirees	2013-14 Retirees	2014-15 Retirees	2015-16 Retirees	2016-17 Retirees	All Current Retirees
Number	101	114	118	129	107	1,139
Average Monthly Benefit at Retirement	$127	$156	$156	$158	$164	$134
Average Attained Age at Retirement	62.41	63.19	62.99	62.44	62.81	61.05

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, 2016	**7,823**	**451**	**31**	**1,054**	**0**	**59**	**9,418**
Increase (Decrease) From:							
Service Retirement	(79)	(28)	0	107			0
Disability Retirement							
Deaths	(46)	(60)		(24)		(1)	(131)
Survivors						13	13
Co-Payee							
Other Pension Terminations							
Vested Terminations	(20)	20	0				
Non-Vested Terminations	(854)		17				(837)
New Entrants/Rehires	667	(3)	(1)				663
Data Corrections/Changes		2	3	3		0	8
Released After 5 Years			(2)				(2)
June 30, 2017	**7,491**	**382**	**48**	**1,140**	**0**	**71**	**9,132**

* 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.

**Includes 1 co-payee

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, 2017, 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 is derived as follows: prior year actuarial value of assets is 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.

Actuarial Assumptions Used for the Valuation
(effective June 30, 2017 except as noted)

The rate of investment return: 7.25% per annum net of investment expenses for the first 9 years, 7.75% thereafter.

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	18.0%
	1	10.0
	2	8.5
	3	8.0
	4	7.5
25	5 & Over	6.9
30		5.9
35		5.2
40		5.0
45		5.0
50		5.0
55		5.0
60		5.0

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	35.0%
56	25.0
57	20.0
58	23.0
59	23.0
60	25.0
61	30.0
62	30.0
63	30.0
64	30.0
65	30.0
66	30.0
67	45.0
68	45.0
69	45.0
70	100.0

Appendix B: Summary of Actuarial Assumptions and Methods

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		

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:	Neither disability nor withdrawal decrements operate 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 38.60 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 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 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.