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							
	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	7	682	238	67	222	46	1,264

* Does not include 10 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)

	2013-14 Retirees	2014-15 Retirees	2015-16 Retirees	2016-17 Retirees	2017-18 Retirees	All Current Retirees
Number	112	117	124	115	148	1,274
Average Monthly Benefit at Retirement	$156	$156	$159	$162	$151	$136
Average Attained Age at Retirement	62.89	62.96	62.34	62.44	62.20	61.10

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, 2017	**7,491**	**382**	**48**	**1,140**	**0**	**71**	**9,132**
Increase (Decrease) From:							
Service Retirement	(106)	(45)	(1)	152			
Disability Retirement							
Deaths	(28)	(8)		(19)		(2)	(57)
Survivors						10	10
Co-Payee							
Other Pension Terminations							
Vested Terminations	(9)	9					
Non-Vested Terminations	(53)		12				(41)
New Entrants/Rehires	643	(14)	(7)				622
Data Corrections/Changes	1	1	2	2			6
Released After 5 Years			(5)				(5)
June 30, 2018	**7,939**	**325**	**49**	**1,275**	**0**	**79**	**9,667**

* 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, 2018, 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.

Appendix B: Summary of Actuarial Assumptions and Methods

Actuarial Assumptions Used for the Valuation
(effective June 30, 2018 except as noted)

The rate of investment return: 7.25% per annum 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	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: RPH-2014 Blue Collar mortality table with female ages set forward one year. Future improvement in mortality rates is assumed using 60% of the MP-2017 projection scale generationally.

Sample Mortality Rates (Base Rates)								
Pre-Commencement			Post-Commencement			Post-Commencement		
Age	Male	Female	Age	Male	Female	Age	Male	Female
25	0.000733	0.000244	35	0.001793	0.001169	80	0.053460	0.042932
30	0.000717	0.000317	40	0.002156	0.001611	85	0.088524	0.072752
35	0.000797	0.000417	45	0.003275	0.002671	90	0.146859	0.125111
40	0.000958	0.000598	50	0.005604	0.004235	95	0.223428	0.197901
45	0.001455	0.001013	55	0.007342	0.005165	100	0.313988	0.291040
50	0.002490	0.001685	60	0.009893	0.006890	105	Disabled retirees use the same assumption as healthy lives.	
55	0.004071	0.002510	65	0.014089	0.010092	110		
60	0.006743	0.003606	70	0.021101	0.016038	115		
65	0.011612	0.005456	75	0.032952	0.026199	120		

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:	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 38.30 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.