Village of Oak Park
Firefighters' Pension Fund

Actuarial Valuation
As of December 31, 2016

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Executive Summary of the Valuation

1. The Market Value and Actuarial Value of plan assets as of December 31, 2016 are $44,737,034. The rate of return for the 2015 Plan Year was 8.29%.

2. The Total Accrued Liabilities for funding purposes were $120,693,799. The funding ratio was 37.1%.

3. The recommended contribution for 2016 is $5,277,679.

4. Benefits payments to recipients totaled $6.3 million. The recommended contribution is insufficient to cover these payments. Assets in the Trust are less than the liability for current recipients.

Summary of the 2016 Valuation

SUMMARY OF RESULTS	December 31, 2016	December 31, 2015
Recommended Village Contribution	$5,277,679	$4,101,488
Member Contribution	563,882	546,944
Total Accrued Liability	120,693,799	$117,346,591
Market Value of Assets	44,737,034	$43,203,943
Unfunded Liability	75,956,765	$74,142,648
Funding Percentage	37.07%	36.82%
Payroll of Members	5,963,846	5,784,710
Active Participants	62	62

The undersigned are Members of the American Academy of Actuaries and meet the Qualification Standards of the Academy to render the actuarial opinion contained herein.

Mitchell I. Serota
F.S.A., E.A., M.A.A.A.
April 2017

Section I

GASB 25/27 Status of the Plan as of December 31, 2016

Overview

The Village of Oak Park sponsors the Firefighter's Pension Fund in order to pay mandated benefits to participants when they retire. Proper financial planning dictates that the cost of the Plan be budgeted over the working lifetime of current Plan participants. An actuarial valuation is the procedure used to determine an appropriate amount to be contributed to the Oak Park Firefighters' Pension Fund each year.

In order to determine a proper funding level for a given year, we examine the current status of the Plan's assets and liabilities. First, we determine the Actuarial Value of the Assets, which, in this case, is equal to the Market Value of Assets, including any receivable contributions.

Second, we calculate the liabilities for all plan participants. To do this, we rely on the Plan sponsor to provide accurate data, so that we can compute the projected benefit at retirement for each individual. Using the actuarial assumptions (enumerated in Exhibit III of the Appendix), we determine the Present Value of Future Benefits.

The actuarial method allocates the projected liability to past service (Accrued Liability) and future service (Present Value of Future Normal Costs). There are two methods currently in use for performing valuations for Illinois municipal plans: Projected Unit Credit and Entry Age Normal. We are switching this year to the Entry Age Normal method.

The Entry Age Normal method with level percentage, starts with the Present Value of Benefits and divides it by the present value of salary from the entry of the participant until his retirement. This is the Normal Cost rate for the participant. It then multiplies the Normal cost rate by the present value of the compensation earned to date by the participant. This product represents the Accrued Liability for an active participant. For a retired participant, or beneficiary, the Accrued Liability is equal to the Present Value of Benefits. The sum of the Accrued Liabilities for all participants, active and inactive, is the Accrued Liability for the Plan.

Assets

Assets are held and administered by Marquette Associates. Table I, below, summarizes the transactions during the Plan Year ending December 31, 2016. Table II shows the types of investments held.

Table I
Reconciliation of Plan Asset Values as of December 31, 2016

(1)	Market Value of Assets, January 1, 2016	$	43,203,942.59
(2)	Contribution from Village	$	3,779,495.39
(3)	Contribution from Members	$	563,721.39
(4)	Benefits paid	$	6,254,217.33
(5)	Administrative Expenses	$	51,062.21
(6)	Interest and Dividends	$	1,032,820.42
(7)	Appreciation (Realized and unrealized)	$	2,569,537.18
(8)	Investment expenses	$	(107,203.88)
(9)	Market Value of Assets, December 31, 2016		$44,737,033.55

Return on Assets 2016:	8.29%
Return on Assets 2015:	0.61%
Return on Assets 2014:	5.87%

Table II
Composition of Assets as of December 31, 2016

Cash and Cash Equivalents	$103,442
Money Market Mutual Funds	517,373
Other Fixed Income	14,370,015
Insurance Company Contracts	4,447,811
Equity-based Mutual Funds	20,729,905
Pooled Investment Accounts	4,468,677
Total Trust Portfolio	$44,637,223
Accrued Interest	117,100
Due from Municipality	1481
Prepaid	-4199
Expenses due and unpaid	-14,571
Plan Net Assets in Trust	$44,737,034

Accrued Liability and Funding Ratio

As described previously, the primary step in the actuarial valuation process is the determination of the Present Value of Future Benefits ("PVFB"). The past service liability represents the portion of the PVFB which has been allocated to the complete years of service at Village of Oak Park for each participant. The sum of the past service liabilities for all participants is called the **Accrued Liability.**

The **Funding Ratio** is the quotient of the Market Value of Assets and the Accrued Liability. Once the Funding Ratio has attained 100%, the Fund is considered solvent.

The following Table shows the components of the Accrued Liability using the Projected Unit Credit method for 2016 and the Entry Age Normal (level percentage of salary) for 2017. The change in method increased the Accrued Liability by $995,881.

Table III
Accrued Liability as of December 31

	No.	2016	2015
Active Employees	62	30,999,970	$30,356,314
Inactive Employees			
Retirees	66	65,706,363	65,131,809
Surviving Spouses	35	13,110,108	11,947,611
Duty Disability	10	8,852,496	9,064,073
Non-duty Disability	2	1,359,963	
Terminated Vested	1	213,481	331,791
Children	0		53,865
QILDRO	1	451,418	461,128
Sum of Inactive Employee Liability	115	89,693,829	$86,990,277
Total Accrued Liability	177	120,693,799	$117,346,591
Market Value of Assets		$44,737,034	$43,203,943
Unfunded Accrued Liability		75,956,765	$74,142,648
Funding Ratio		37.07	36.82%

The Sum of Inactive Employee Liability still exceeds the Market Value of Assets .

Normal Cost and Tax Levy

The Normal Cost represents that portion of the total plan cost that has been allocated to the current Plan Year by the actuarial method. It is comparable to an insurance premium at the beginning of the Plan Year and consists of the cost of retirement, disability, death, and vesting benefits.

The Normal Cost is the present value of all benefits that are expected to accrue or to be earned under the terms of the Plan during the Plan Year. The Normal Costs for all participants are then summed to arrive at the Normal Cost for the Plan. In addition, the expected Administrative Expenses for running the Fund are included in the Normal Cost.

The Village is expected to contribute enough to fund the Normal Cost while amortizing the Unfunded Accrued Liability. The contributions from the Member participants serve to reduce the cost of the Plan.

Table IV

Normal Cost and Tax Levy as of January 1

	2017	2016
Normal Cost	$ 941,930	$1,636,297
Total Payroll	5,963,846	5,784,710
Normal Cost rate	15.79%	28.29%
Administrative Expenses	51,000	76,500
Total Normal Cost	992,930	1,712,797
Less expected Employee contributions	563,882	546,944
Village Normal Cost	429,048	1,165,853
Village Normal Cost rate	7.19%	20.15%
Amortization of Unfunded Accrued Liability[1]	4,514,914	2,803,845
Interest	333,717	131,790
Tax Levy Requirement at end of year	$ 5,277,679	$4,101,488

[1] The Unfunded Accrued Liability is amortized over 25 years, using 6.75% discount and 3.0% increase in payroll.

Table V

Development of Net Pension Obligation as of January 1

		2017	2016
Annual Required Contribution	$	4,101,488	3,574,416
Interest on Net Pension Obligation	$	(89,434)	(98,107)
Adjustment to annual required contribution	$	80,791	73,380
Annual Pension Cost	$	4,092,845	3,549,689
Village Contributions made	$	3,779,495	$3,473,103
Increase (decrease) in Net Pension Obligation	$	313,350	76,586
Net Pension Obligation, beginning of year		(1,324,947)	(1,401,533)
Net Pension Obligation, end of year		(1,011,597)	(1,324,947)

Three-Year Trend Information

	2017	2016	2015
Annual Pension Cost	4,092,845	3,549,689	3,199,555
Percentage of Annual Pension Cost contributed	92.34%	97.8%	102.6%
Net Pension Obligation	(1,011,597)	(1,324,947)	(1,401,533)

Section II

GASB 67/68 Status of the Plan as of December 31, 2016

The Entry Age Normal Method again starts with the Present Value of Benefits. This method then sums the present value of all salaries earned by the participant from entry age until retirement and divides this number into the Present Value of Benefits. Then the quotient is multiplied by the Present Value of Salaries earned to date. The result is the Accrued Liability for an active employee.

For a retired participant, or beneficiary, the Accrued Liability is equal to the Present Value of Benefits. The sum of the Accrued Liabilities for all participants, active and inactive, is the Accrued Liability for the Plan.

Table VI

GASB 68: Components of Net Pension Liability

	(a) Total Pension Liability	(b) Plan Fiduciary Net Position	(c)= (a)-(b) Net Pension Liability
Balance as of January 1, 2016	$ 118,230,456	$ 43,203,943	$ 75,026,513
Changes for the period			
Service Cost	1,121,758		$ 1,121,758
Interest	7,980,556		$ 7,980,556
Difference between expected and actual experience	$ (460,786)		$ (460,786)
Changes in assumptions	3,699,385		$ 3,699,385
Employer contributions		$3,779,495	$ (3,779,495)
Employee contributions		$563,721	$ (563,721)
Net investment income		$3,495,154	$ (3,495,154)
Benefit payment and refunds	$ (6,254,217)	-$6,254,217	$ -
Administrative expense		-$51,062	$ 51,062
Net Changes	$ 6,086,695	$ 1,533,091	$ 4,553,604
Balance as of December 31, 2016	$ 124,317,151	$ 44,737,034	$ 79,580,117

Table VII

GASB 67/68: Schedule of Changes in Net Pension Liability

	2016	2015
TOTAL PENSION LIABILITY		
Service Cost	$ 1,121,758	$ 1,400,000
Interest	7,980,556	$ 6,637,129
Plan participant contributions		$ 547,100
Changes of benefit terms		
Difference between expected and actual experience	$ (460,786)	$ 3,629,940
Changes of assumptions	3,699,385	$ 17,181,861
Benefit payments, including refunds	$ (6,254,217)	$ (5,981,707)
Net change in Total Pension Liability	$ 6,086,695	$ 23,414,323
TOTAL PENSION LIABILITY beginning	$ 118,230,456	$ 94,816,133
TOTAL PENSION LIABILITY ENDING	$ 124,317,151	$ 118,230,456
PLAN FIDUCIARY NET POSITION		
Contributions -employer	$ 3,779,495	$ 3,473,103
Contributions -members	$ 563,721	$ 547,100
Net investment income	$ 3,495,154	$ 268,782
Benefit payments, including refunds of member contributions	$ (6,254,217)	$ (5,981,707)
Administrative Expense	$ (51,062)	$ (76,329)
Net change in plan fiduciary net position	$ 1,533,091	$ (1,769,051)
Plan fiduciary Net Position beginning	$ 43,203,943	$ 44,972,994
Plan fiduciary Net Position ENDING	$ 44,737,034	$ 43,203,943
EMPLOYER'S NET PENSION LIABILITY	$ 79,580,117	$ 75,026,513

Sensitivity to Discount Rate Assumption

	1% decrease	Current Rate	1% increase
Rate	5.5%	6.5%	7.5%
Total Pension Liability	$141,165,260	$124,317,151	$110,554,333
Net Pension Liability	$96,428,226	$79,580,117	$65,817,299

Market Value of Liabilities

The Market Value of Liabilities is a concept relating to the notion of the Accrued Liability if calculated on a "risk-free" basis on a Unit Credit method. The Unit Credit method looks at past service alone and has the implicit assumption that no further accruals will inure to the plan participants. The notion of "risk-free" may mean the return on investment of U. S. Treasury Bonds or high quality corporate bonds. The Citi Pension Discount Curve and Liability Index provides a uniform and commonly accepted measurement. As of December 31, 2016, the discount rate was 4.14%.

The Market Value of Liabilities at that rate is $172,125,927.
The Market Value of Assets is $44,737,034.
The funded ratio on the Market Value basis is 25.99%

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Table VIII

Village of Oak Park
Firefighters' Pension fund
Projection of Benefit Payments

Year	Payments for Current Actives	Payments for Current Inactives	Total Payments
2017	291,745	6,257,095	6,548,840
2018	526,880	6,370,843	6,897,723
2019	742,281	6,478,213	7,220,494
2020	978,413	6,577,664	7,556,077
2021	1,187,171	6,667,861	7,855,032
2022	1,365,189	6,747,752	8,112,941
2023	1,542,084	6,816,560	8,358,644
2024	1,726,326	6,873,708	8,600,034
2025	1,939,178	6,918,701	8,857,879
2026	2,138,942	6,951,043	9,089,985
2027	2,361,913	6,970,184	9,332,097
2028	2,607,017	6,975,533	9,582,550
2029	2,836,831	6,966,517	9,803,348
2030	3,098,442	6,942,550	10,040,992
2031	3,368,298	6,903,031	10,271,329
2032	3,631,009	6,847,369	10,478,378
2033	3,866,213	6,775,058	10,641,271
2034	4,091,024	6,685,654	10,776,678
2035	4,293,238	6,578,801	10,872,039
2036	4,482,405	6,454,285	10,936,690
2037	4,676,625	6,312,000	10,988,625
2038	4,870,548	6,152,078	11,022,626
2039	5,067,643	5,974,928	11,042,571
2040	5,248,827	5,781,325	11,030,152
2041	5,438,760	5,572,345	11,011,105
2042	5,616,043	5,349,219	10,965,262

Year	Payments for Current Actives	Payments for Current Inactives	Total Payments
2043	5,802,807	5,113,274	10,916,081
2044	5,998,111	4,865,964	10,864,075
2045	6,200,541	4,608,870	10,809,411
2046	6,389,305	4,343,621	10,732,926
2047	6,557,811	4,072,080	10,629,891
2048	6,710,184	3,796,344	10,506,528
2049	6,861,965	3,518,489	10,380,454
2050	6,955,224	3,240,825	10,196,049
2051	7,015,511	2,965,782	9,981,293
2052	7,052,420	2,695,609	9,748,029
2053	7,072,904	2,432,628	9,505,532
2054	7,049,796	2,179,210	9,229,006
2055	7,004,770	1,937,279	8,942,049
2056	6,940,055	1,708,523	8,648,578
2057	6,855,349	1,494,445	8,349,794
2058	6,752,746	1,296,275	8,049,021
2059	6,633,834	1,115,070	7,748,904
2060	6,499,660	951,421	7,451,081
2061	6,351,436	805,502	7,156,938
2062	6,190,320	677,124	6,867,444
2063	6,017,546	565,699	6,583,245
2064	5,834,150	470,253	6,304,403
2065	5,640,987	389,474	6,030,461
2066	5,438,786	321,838	5,760,624
2067	5,228,283	265,809	5,494,092
2068	5,010,282	219,741	5,230,023
2069	4,785,675	182,002	4,967,677
2070	4,555,273	151,106	4,706,379
2071	4,319,760	125,781	4,445,541
2072	4,080,023	104,827	4,184,850
2073	3,836,952	87,231	3,924,183
2074	3,591,293	72,260	3,663,553
2075	3,343,956	59,405	3,403,361
2076	3,096,022	48,330	3,144,352

Table IX

GASB 67/68 Deferred Outflows & Inflows of Resources

	Initial Amount	Date of First Charge or Credit	Remaining Period (years)	Deferred Outflows (beg. of year)	Deferred Inflows (beg. of year)	Recognition Charge or (Credit)
1. Liability (Gain)/Loss						
(a) 2015 Liability Gain or Loss	$3,629,940	1/1/2015	2.8085	$2,676,825		$953,115
(b) 2016 Liability Gain or Loss	(460,786)	1/1/2016	3.8611		$460,786	(119,341)
Total Liability (Gain)/Loss				2,676,825	460,786	833,774
2. Asset (Gain)/Loss						
(a) Asset Loss	2,802,060	1/1/2015	4.0000	$2,241,648		560,412
(b) Asset Gain	(650,625)	1/1/2016	5.0000		$650,625	$(130,125)
Total Asset (Gain)/Loss				2,241,648	650,625	430,287
3. Assumption Change						
(a) mortality, salary, disc	$17,181,861	1/1/2015	2.8085	12,670,410		4,511,451
(b) discount	3,699,385	1/1/2016	3.8611	3,699,385		958,117
Total Assumption Change				$16,369,795	0	5,469,568
4. Plan Change						
Total				$21,288,268	$1,111,411	$6,733,629

Table IX (continued)

GASB 67/68 Deferred Outflows & Inflows of Resources

Amounts reported as deferred outflows and deferred inflows of resources related to pension will be recognized in pension expense as follows:

Year ended December 31	
2017	$6,733,629
2018	$5,687,166
2019	$1,152,558
2020	$(130,125)
Sum	$13,443,228

Table X

GASB 67/68 Components of Pension Expense

Pension Expense	2016	2015
Service Cost	$ 1,121,758	$ 1,400,000
Interest on Total Pension Liability	7,980,556	6,637,129
Amortization of experience differential from expected	833,774	953,115
Amortization of assumption changed	5,469,568	4,511,451
Employee contributions	(563,721)	(547,100)
Projected earnings on investment	(2,844,528)	(3,070,841)
Amortization of earnings differential from projected	430,287	560,412
Administrative Expense	51,062	76,329
Total Pension Expense	$ 12,478,755	$ 10,520,495

Section III

Comments and Recommendations

Funding and Current Status

The concept of how well the Plan is funded relates to whether the plan has more assets than liabilities. Although asset values and liabilities are fixed at any given point in time, both are presented for different purposes and different assumptions are made for those calculations. The degree of overfunding or underfunding therefore depends on the purpose of the calculation.

In this report, we have calculated three different Actuarial Liabilities, using two different discount rates and three different actuarial methods. The calculations for these Liabilities are summarized as follows:

	Interest Rate	Amount	Under/ (Over) Funding	Cost Method
Market Value of Assets		**$44,737,034**		
Tax Levy	6.75%	$120,693,799	$75,956,765	Entry Age Normal (level percentage of salary)
GASB 67	6.50%	$124,317,152	$79,580,118	Entry Age Normal (level percentage of salary)
Market Value of Liabilities	4.14%	$172,125,927	$127,388,893	Unit Credit

Assumptions

We changed one assumptions from the prior valuation: the discount rate. The discount rate for disclosure will be lowered gradually to approach the prevailing interest rate for corporate bonds.

Discount rate

We reduced the previous discount rate from 6.75% to 6.50%. The return on investment was 8.29% this past year and 0.61% the prior year. The investment manager has not opined on the long-term growth of assets.

Tax Levy

The change in method from Projected Unit Credit to Entry Age Normal brought an increase in the tax levy. We advise the Village to increase the tax levy until there is better equilibrium between the contributions and the outflow of cash for benefit payments. We also advise a faster amortization of the Unfunded Liabilities to prevent the obligations of the current residents from being passed on to future residents of the Village.

We welcome the opportunity to assist Village of Oak Park with its pension consulting needs. We are always available to answer any questions that may arise from this report or to discuss any issue in greater depth.

Respectfully submitted,

Mitchell I. Serota & Associates, Inc.

APPENDIX

Exhibit I illustrates the distribution of active participants among the various accrued service and age groups.

Exhibit II summarizes plan provisions.

Exhibit III summarizes the actuarial assumptions.

Exhibit I

Village of Oak Park Firefighters' Pension Fund

Age-Service Distribution

Attained	Under 1 Average		1 to 4 Average		5 to 9 Average		10 to 14 Average		15 to 19 Average		20 to 24 Average		25 to 29 Average		30 to 34 Average		35 and up Average		Total Average	
Age	No	Comp.	No	Comp.	No	Comp.	No	Comp.	No	Comp.	No	Comp.	No	Comp.	No	Comp.	No	Comp.	No	Comp.
Under 25	0	0	3	68517	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	68517
25 to 29	2	62543	6	73602	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	70837
30 to 34	0	0	2	75587	3	94202	0	0	0	0	0	0	0	0	0	0	0	0	5	86756
35 to 39	0	0	0	0	2	95279	8	98662	1	131761	0	0	0	0	0	0	0	0	11	101056
40 to 44	0	0	0	0	1	93444	3	96651	4	100430	0	0	0	0	0	0	0	0	8	98140
45 to 49	0	0	0	0	0	0	3	96668	5	105055	1	109598	0	0	0	0	0	0	9	102764
50 to 54	0	0	0	0	0	0	1	96214	1	96891	3	106012	2	116716	1	123833	0	0	8	108551
55 to 59	0	0	0	0	0	0	2	96432	1	96291	4	107646	0	0	2	103395	0	0	9	102948
60 to 64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
65 to 69	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	141269	1	141269
Total	2	62543	11	72576	6	94434	17	97549	12	104328	8	107278	2	116716	3	110207	1	141269	62	96191

Exhibit II

Village of Oak Park Firefighters' Pension Fund

Summary of Principal Plan Provisions

Effective Date:

The date of the Plan's establishment was not known at the time of the preparation of this report.

Plan Year:

The **Plan Year** is the calendar year.

Normal Retirement Date

TIER 1	TIER 2
Age 50 and 20 years Credited Service	Age 55 with 10 Years Credited Service
Employees with at least ten years but less than 20 years of credited Service may retire at or after the age of 60 and receive a reduced benefit.	Employees with at least ten years may retire at or after age 50 and receive a reduced benefit.

Normal Retirement Benefit:

TIER 1	TIER 2
Equal to 50% of annual salary attached to rank held at the date of requirement. The annual benefit shall be increased by 2.5% of such salary for each additional year of Service over 20 years up to 30 years to a maximum of 75.0% of such salary.	Equal to 2.5% times years of Creditable Service times the average monthly salary Employees with at least ten years may retire at or after age 50 and receive a reduced benefit (i.e., .5% for each month under 55).

Average Monthly Plan Earnings

TIER 1	TIER 2
Final monthly Salary at retirement	Total salary during 96 consecutive months of Service within the last 120 months of Service in which the total salary was the highest by the number of months of Service in that period, divided by 96. Firefighters' salary for pension purposes is capped at $111,571 (2015).

Disability Benefit:

For disability occurring in the line of duty, the maximum of (a) 65% of salary attached to the rank held by Member on the last day of Service and (b) monthly retirement benefit that the Member is entitled to receive if the Member retired immediately.

Monthly benefits of $20 are paid to children until they reach 18.

For disability occurring not in the line of duty, 50% of salary attached to the rank held by Member on the last day of Service.

Cost of Living Adjustment:

TIER 1	TIER 2
The monthly benefit of a covered employee who retired with 20 years or more years of Service after January 1, 1977 shall be increased annually, following the first anniversary date of retirement and be paid upon reaching the age of at least 55 years, by 3.0% compounded annually thereafter.	The monthly benefit of a covered employee who retired with 20 years or more years of Service shall be increased annually by the lesser of ½ of the annual change in the Consumer Price Index or 3.0% (simple interest).

Vesting:

Employment terminations with less than 10 years of Service are entitled to a refund of Member contributions. Terminations with 10 years more of Service is salary attached to the rank held by the Member on the last day of Service and payable at age 60 in accordance with a vesting schedule.

Death Benefit:

Pre-retirement: The maximum of (a) 54% of salary attached to the rank held by Member on the last day of Service and (b) the monthly pension earned at date of death payable immediately. If death occurred in the line of duty, the surviving spouse receives 100% of final salary.

Post-retirement: The normal form of payment is a life annuity. The normal form for married participants is a joint-and-100% survivor annuity with no actuarial reduction.

Exhibit III

Village of Oak Park Firefighters' Pension Fund

Actuarial Methods and Assumptions

Actuarial Cost Method:	Entry Age Normal
Asset Valuation Method:	Market Value.
Discount Rate:	6.75% for tax levy 6.50% for disclosure. 4.14% for market value.
Mortality for Retired Lives:	RP-2014 Blue Collar headcount-weighted Mortality Table brought back to 2006, projected to 2016 using the MP2016; separate tables for males and females. Death while on duty: 5%.
Salary Scale:	2.5% per annum after the contract. Merit raises for first five years, per union contract:

Year	Merit increase
1	10.4193%
2	09.4361%
3	08.6225%
4	07.9380%
5	07.3543%

Wages in total are projected in increase at 3.0% per annum.

Turnover, Disability, Retirement: According to the sample rates below, provided by Illinois Department of Insurance Study, 2012:

Age	Turnover	Disability	Retirement
20	9.00%	0.10%	
25	5.00%	0.10%	
30	2.50%	0.20%	
35	2.00%	0.35%	
40	1.00%	0.50%	
45	1.00%	0.65%	
50	1.00%	1.00%	14%
55	1.00%	1.50%	20%
60		3.00%	25%
65		4.25%	50%
70			100%

Disability while on duty: 15%

Marriage: 80% of Firefighters are married.
Female spouses are three years younger than male spouses.

Cost of living: 3% per annum compounded for Tier I;
1.5% per annum simple for Tier II.

Expenses: $51,000