

**City of Springfield
Policemen and Firemen's Retirement Fund**

Actuarial Valuation as of June 30, 2002

Prepared November 2002



Wetherman USA

Consultants and Actuaries

**City of Springfield
Policemen and Firemen's Retirement Fund**

June 30, 2002 Actuarial Valuation

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**City of Springfield
Policemen and Firemen's Retirement Fund**

June 30, 2002 Actuarial Valuation

Introduction and Purpose

In this report, we present the results of the June 30, 2002 actuarial valuation for the City of Springfield Policemen and Firemen's Retirement Fund.

PURPOSES OF THE VALUATION

The actuarial valuation of the Plan is intended to accomplish several purposes:

- In general, the determination of current levels of employer contributions which, together with employee contributions and prior funding, will accumulate monies sufficient to meet benefit payments when due under the terms of the Plan;
- provide information required under applicable governmental accounting standards;
- review plan experience for the year ended on the valuation date to ascertain whether the assumptions and methods employed for valuation purposes are reflective of actual events and remain appropriate for prospective application; and
- assessment of the relative funded position of the plan on an ongoing basis, i.e., through a comparison of plan assets and projected plan liabilities.

**City of Springfield
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Actuarial Certification

The information and results shown in this report are, to the best of our knowledge, complete and accurate and are based upon:

1. Employee census data submitted by the City of Springfield. This data was not audited by us, but appears sufficient and reliable for purposes of the report.
2. Financial data submitted by the City of Springfield. This data was not audited by us, but appears sufficient and reliable for purposes of the report.
3. Actuarial assumptions which, in the aggregate, are reasonably related to the experience of the Fund and to reasonable expectations, and which represent our best estimate of anticipated experience under the plan.
4. Actuarial methods and assumptions stated in the report and our interpretation of the plan provisions as summarized in the report.

The enclosed report is intended to be used only for the purposes stated in the Introduction section of the report. It should not be used for any other purpose without the specific, written consent of Milliman USA, Inc.

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

Respectfully submitted,



Michael J. Zwienner, F.S.A.
Consulting Actuary



Michael A. Sudduth, A.S.A.
Associate Actuary

**City of Springfield
Policemen and Firemen's Retirement Fund**

June 30, 2002 Actuarial Valuation

Discussion of Valuation Results

1. Contribution Recommendation

The results of this valuation are used to determine recommended contribution rates to the Fund for the July 1, 2003-June 30, 2004 fiscal year. A comparison of recommended contribution rates (presented as a percentage of pay) for the current and immediately proceeding valuations are summarized below:

	<u>Actuarial Valuation as of</u>	
	<u>June 30, 2002</u>	<u>June 30, 2001</u>
Applies to Fiscal Year	07/01/03-06/30/04	07/01/02-06/30/03
Member Contribution Rate	10.64%	10.64%
City Contribution Rate	23.83%	21.65%
Total	34.47%	32.29%

The increase in the recommended contribution rate (34.47% vs. 32.29%) is due to actuarial losses from both investment returns and pay increases (see item 5).

2. Plan Assets

The market value of plan assets decreased from \$121,200,165 at June 30, 2001 to \$112,154,936 at June 30, 2002. A balance sheet and statement of income and disbursements are presented on pages 5 and 6.

The actuarial value of assets increased from \$129,479,927 at June 30, 2001 to \$129,854,216 at June 30, 2002. The development of the June 30, 2002 actuarial value of assets is presented on page 7.

3. Actuarial Assumptions, Methods and Plan Provisions

The plan was amended to increase the minimum monthly widow's benefit from \$524 to \$1,000, for both active employees and retirees.

All other actuarial assumptions, methods and plan provisions remained the same as the prior year. Descriptions of these can be found on pages 11-16.

4. Plan Population

The number of active participants increased from 509 in the previous valuation to 538 in the current valuation. The number of retirees/beneficiaries increased from 377 to 391. The number of deferred vested participants remained at 2.

5. Plan Experience

In the aggregate, the plan experienced a significant actuarial loss for the year ending June 30, 2002. The primary reasons for the loss were investment return less than expected (2.7% vs. 8.5%) and salary increases greater than expected (6.91% vs. 4.55%).

Actual Rate of Return

6. Funded Status

There are a number of ways to measure the funded status of a retirement plan. While there is no single, definitive test, two commonly used measures were prepared in conjunction with this valuation.

FAS35 Basis. Under this basis, the present value of benefits earned (accrued) to date are calculated using the regular valuation assumptions. The actuarial value of plan assets is then divided by this liability measure to provide a ratio. The ratio is the portion of the FAS35 liability "covered" by current assets. This ratio as of the current valuation date is 78.01%. The ratio as of the previous valuation date was 82.87%.

Ongoing Basis. The GASB rules provide a couple of bases for assessing the funded status of the plan on an ongoing basis (see p. 10 for detailed calculations). One basis is to divide the actuarial value of assets by the Accrued Liability. Page 10 shows this ratio to be 72.49% for the current year. An upward trend in this ratio over the years is considered a favorable indicator of the plan's funding progress. Unfortunately this ratio has decreased from almost 80% a couple of years ago to 72.49% as of the current valuation date. This trend is hardly surprising considering the extended downturn in the investment markets.

Another measure displayed on page 10 is the Unfunded Accrued Liability as a percentage of covered payroll. A downward trend in this ratio over time is considered favorable. The increase in the ratio this year is sizable. This unfavorable trend will continue to be monitored.

**City of Springfield
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June 30, 2002 Actuarial Valuation

Statement of Assets as of June 30, 2002

<u>Assets</u>	<u>Market Value</u>
1. Cash and Equivalents	\$596,672
2. Investments	111,252,008
3. Accrued Interest	<u>326,973</u>
4. Total Assets	112,175,653
 <u>Liabilities</u>	
1. Accounts Payable	20,717
 Net Assets	 <u>112,154,936</u>

**City of Springfield
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June 30, 2002 Actuarial Valuation

Statement of Income and Disbursements

1. Market Value of Assets as of July 1, 2001	\$121,200,165
2. Income:	
a. Employer Contributions	4,493,908
b. Employee Contributions	2,411,510
c. Interest and Dividends	<u>2,984,603</u>
d. Total Income	9,890,021
3. Expenses	
a. Employee Benefit Distributions	9,303,428
b. Refund of Employee Contributions	734,685
c. Administrative Expenses	26,453
d. Investment Expenses	789,496
e. Realized/Unrealized Loss	<u>8,081,188</u>
f. Total Expenses	18,935,250
4. Net Increase (Decrease) = (2d) - (3f)	(9,045,229)
5. Market Value of Assets as of June 30, 2002 = (1) + (4)	\$112,154,936
6. Net Rate of Return	<i>RAW Returns</i> -4.9%

**City of Springfield
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June 30, 2002 Actuarial Valuation

Development of Actuarial Value of Assets

	Valuation Date <u>June 30, 2000</u>	Valuation Date <u>June 30, 2001</u>	Valuation Date <u>June 30, 2002</u>
1. Actuarial Value Beginning of Year	\$116,424,865	\$124,461,663	\$129,479,927
2. Market Value End of Year	122,678,495	121,200,165	112,154,936
3. Market Value Beginning of Year	118,311,569	122,678,495	121,200,165
4. Non-Investment Cash Flows	(2,591,964)	(3,117,811)	(3,132,695)
5. Investment Income			
a Market Total: (2) - (3) - (4)	6,958,890	1,639,481	(5,912,534)
b Assumed Rate of Return	8.50%	8.50%	8.50%
c Amount for Immediate Recognition	9,785,955	10,446,734	10,872,654
d Amount for Phased-In Recognition	(2,827,065)	(8,807,253)	(16,785,188)
6. Phased-In Recognition of Investment Income			
a Current Year: .25 x (5d)	(706,766)	(2,201,813)	(4,196,297)
b First Prior Year	(260,794)	(706,766)	(2,201,813)
c Second Prior Year	858,714	(260,794)	(706,766)
d Third Prior Year	<u>951,653</u>	<u>858,714</u>	<u>(260,794)</u>
e Total Recognized Investment Gain	842,807	(2,310,659)	(7,365,670)
7. Funding Value End of Year: (1) + (4) + (5c) + (6e)	124,461,663	129,479,927	129,854,216
8. Excess of Market Value over Funding Value	(1,783,168)	(8,279,762)	(17,699,280)
9. Recognized Rate of Return	9.2%	6.6%	2.7%

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June 30, 2002 Actuarial Valuation

Actuarial Balance Sheet

The key elements of the actuarial funding process are illustrated in the Actuarial Balance Sheet. The format of the balance sheet captures the essential purpose of an actuarial cost method - the determination of assets sufficient to provide for pension benefits.

The Actuarial Present Value of Current and Prospective Plan Benefits is the liability that must be balanced by Current and Prospective assets. The Present Value of Future Normal Cost Contributions represents the prospective assets from contributions that will be made for costs allocated to the future.

June 30, 2002

Liabilities

1. Actuarial Present Value of Future Benefits	
a. Active Participants	\$101,786,862
b. Terminated Vested Participants	171,817
c. Retired Participants	<u>116,605,658</u>
d. Total	218,564,337

Assets

1. Current Valuation Assets	
a. Actuarial Value of Assets	129,854,216
2. Prospective Valuation Assets	
a. Unfunded Actuarial Liability	49,271,339
b. Present Value of Future Normal Cost Contributions	<u>39,438,782</u>
3. Total	218,564,337

**City of Springfield
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June 30, 2002 Actuarial Valuation

Development of Recommended Contribution

	<u>June 30, 2002</u>
1. Present Value of Future Benefits	
a. Active Participants	\$101,786,862
b. Terminated Vested Participants	171,817
c. Retired Participants	<u>116,605,658</u>
d. Total	218,564,337
2. Present Value of Future Normal Costs	39,438,782
3. Actuarial Value of Assets	129,854,216
4. Entry Age Unfunded Accrued Liability: (1d) - (2) -(3)	49,271,339
5. Entry Age Normal Cost	4,903,011
6. Present Value of Future Earnings	204,244,032
7. Payroll	22,142,466
8. Amortization Payment (31 Years in 2002)	3,073,642
9. Recommended Contribution: (5) + (8)	7,976,653
10. Recommended Contribution as a Percentage of Payroll	
Normal Cost	21.19%
Amortization Payment	<u>13.28%</u>
Total	34.47%
11. Member Portion	10.64%
12. City Portion	23.83%

**City of Springfield
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GASB 25 and 27 Disclosure Information

Schedule of Funding Progress

<u>Date of Valuation</u>	<u>Actuarial Asset Value</u>	<u>Entry Age Normal Accrued Liability</u>	<u>Unfunded Accrued Liability (UAL)</u>	<u>Funded Ratio</u>	<u>Covered Payroll</u>	<u>UAL as a Percentage of Covered Payroll</u>
June 30, 1994	81,735,481	96,269,283	14,533,802	84.90%	13,017,803	111.65%
June 30, 1995	87,113,039	111,261,338	24,148,299	78.30%	14,816,363	162.98%
June 30, 1996	92,005,064	120,470,362	28,465,298	76.37%	15,205,892	187.20%
June 30, 1997	98,471,537	129,131,343	30,659,806	76.26%	16,616,974	184.51%
June 30, 1998	107,955,272	136,533,065	28,577,793	79.07%	17,893,509	159.71%
June 30, 1999	116,424,865	150,252,731	33,827,866	77.49%	18,448,343	183.37%
June 30, 2000	124,461,663	155,782,143	31,320,480	79.89%	19,046,000	164.45%
June 30, 2001	129,479,927	168,344,798	38,864,871	76.91%	20,222,061	192.19%
June 30, 2002	129,854,216	179,125,555	49,271,339	72.49%	22,142,466	222.52%

Schedule of Employer Contributions and Development of Net Pension Obligation

<u>Fiscal Year Ending</u>	<u>Annual Required Contribution (ARC)</u>	<u>Annual Pension Cost</u>	<u>Actual Employer Contributions</u>	<u>Change in NPO</u>	<u>NPO Balance</u>
June 30, 1994	2,098,927	2,098,927	2,098,927	0	0
June 30, 1995	1,998,834	1,998,834	1,998,834	0	0
June 30, 1996	2,578,429	2,578,429	2,578,429	0	0
June 30, 1997	3,111,237	3,111,237	3,111,237	0	0
June 30, 1998	3,686,008	3,686,008	3,686,008	0	0
June 30, 1999	3,945,188	3,945,188	3,945,188	0	0
June 30, 2000	4,049,600	4,049,600	4,049,600	0	0
June 30, 2001	4,497,049	4,497,049	4,497,049	0	0
June 30, 2002	4,493,908	4,493,908	4,493,908	0	0

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Actuarial Methods

Following are brief descriptions of the actuarial cost and asset valuation methods used in the valuation.

Actuarial Cost Method

The Entry Age Normal Cost Method on an individual basis is used. Normal costs are computed as a level percentage of pay. The Unfunded Entry Age Accrued Liability is amortized over 31 years as a level percent of covered payroll. For this purpose, covered payroll is assumed to increase 4.5% per year.

Each year, the amortization payment on the Unfunded Entry Age Accrued Liability is recalculated, with the amortization period decreasing by one each year.

Asset Valuation Method

An asset valuation method is used to help smooth short term fluctuations in market value.

25% of the difference between the investment return expected under the investment return assumption and the actual investment return is recognized in the current valuation assets and the valuation assets in each of the next three valuations.

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Actuarial Assumptions

Following are the primary actuarial assumptions used in performing the study.

<u>Interest Rate</u>	8.50% per annum, net of investment expenses.
<u>Annual Pay Increases</u>	4.25% per year with an additional 1% during each of the first six years of service.
<u>Mortality</u>	Unisex Pensioner 1984 Mortality Table with no adjustment for males and set back five years for females. Disabled life mortality uses healthy mortality set forward ten years.
<u>Turnover</u>	Separation from service for reason other than disability, death, or age/service retirement. Rates at selected ages:

<u>Age</u>	<u>Percentage Terminating in the Next Year</u>	
	<u>Police</u>	<u>Fire</u>
25	5.27%	3.51%
30	4.83%	3.22%
35	4.47%	2.98%
40	3.84%	2.56%
45	3.21%	2.14%
50	1.52%	1.01%
55	0.33%	0.22%

Forfeiture of City Provided Benefit A vested member who terminates employment may elect to receive a return of his/her own contributions and forfeit any City-provided benefit. The portion of members making such election at selected ages:

<u>Age</u>	<u>Percentage Electing ROC</u>
35 and under	100%
36 - 54	50%
55 and over	0%

Rate of Disability

Probability of becoming disabled during the next year. Rates at selected ages:

<u>Age</u>	<u>Percentage Becoming Disabled in the Next Year</u>
20	0.16%
25	0.19%
30	0.22%
35	0.28%
40	0.39%
45	0.54%
50	1.03%
55	2.02%

100% of all disabilities are assumed to be duty related.

Workers Compensation offset to the plan disability benefit is assumed to be zero.

Rates of Retirement

Probability of an eligible member retiring under the age/service provisions during the next year. Rates are as follows:

<u>Age</u>	<u>Percentage Retiring In the Next Year</u>
45	15%
46	15%
47	15%
48	15%
49	15%
50	20%
51	20%
52	20%
53	25%
54	35%
55	60%
56	60%
57	60%
58	60%
59	60%
60	100%

Dependent Information

For retired members, actual marital status and spouse birth date is used. For active members, 90% are assumed married, with males assumed three years older than their spouses.

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Summary of Plan Provisions

A summary of the current primary provisions of the Fund are described below. A complete description of the provisions can be found in Chapter 29 of the local statutes.

Average Salary

Average of the highest three years' salary within the last 10 years of service.

Normal Retirement Age

Eligibility for unreduced benefits upon meeting any of the following:

- Age 50 and 20 years of service,
- 25 years of service, or
- Age 60.

Age/Service Benefit

A monthly benefit equal to $1/12$ of Average Salary times 2.8% times Years of Service. The maximum benefit is 70% of Average Salary.

Normal Form of Payment

The benefit is payable for the member's lifetime. If the member should predecease his/her spouse, the spouse is entitled to a lifetime survivors benefit. The amount of the benefit is a percentage of the Average Salary. The percentage is equal to 25% plus $1-1/8\%$ for each year of service over five years, not to exceed 50% in total.

Cost of Living Adjustment

Every July 1st, the monthly pension is increased by 3% for the following groups of retirees provided pension payment has been paid at least 12 months prior to July 1:

- Age/service retirees age 56 or greater,
- Disability retirees of any age.

Early Retirement Age

Eligibility for early retirement is satisfied upon attainment of age 55 and completion of five years of service.

Early Retirement Benefit

Determined using regular formula and reducing the result 1/200 for each month by which the benefit start date precedes age 60.

Member Contributions

Members are required to contribute 10.64% of pay. Prior to July 1, 2000, Members were required to contribute 8.5% of pay.

Duty Disability

A monthly benefit equal to 2/3 of salary in effect at the time of retirement. All members are eligible.

Non-Duty Disability

1.75% of Average Salary times Years of Service. Minimum/maximum benefits is 25%/50% of Average Salary. A member must have three Years of Service to be eligible.

Duty Death in Service

All members are eligible. A monthly benefit to the spouse equal to 50% of salary in effect at time of death. Additional benefits to unmarried children under age 18, but total cannot exceed 75% of pre-death salary.

Non-Duty Death in Service

A member is eligible after completing five Years of Service. The benefit is 25% of Average Salary plus 1 1/8% of Average Salary for each Year of Service in excess of five, not to exceed 50%. Additional benefits to unmarried children under 18 but total benefit cannot exceed 60% of Average Salary.

Return of Contributions

Member contributions are returned to age/service retirees and disability retirees upon commencement of monthly benefits, without interest.

Vested members who terminate before eligible for retirement may elect to receive a return of their own contributions without interest. Election of this benefit results in a forfeiture of any City provided benefit.

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Summary of Participant Data

	<u>Police</u> <u>June 30, 2002</u>	<u>Fire</u> <u>June 30, 2002</u>
1. Active Participants		
a. Count	332	206
b. Plan Compensation	13,359,680	8,783,222
c. Average Compensation	40,240	42,637
d. Average Age	34.3	38.8
e. Average Service	7.7	10.2
2. Retired Participants (including Beneficiaries)		
a. Count	175	216
b. Total Monthly Benefits	\$362,223	\$440,120
c. Average Monthly Benefits	\$2,070	\$2,038
d. Average Age at Onset of Disability Retirements	41.9	47.4
3. Terminated Vested Participants		
a. Count	1	1
b. Total Monthly Benefits	\$1,770	\$1,327
c. Average Monthly Benefits	\$1,770	\$1,327

**City of Springfield
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Distribution of Active Police Participants by Age and by Years of Service
(as of June 30, 2002)

Attained Age	Under 1	YEARS OF CREDITED SERVICE											Total		
		1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 and up					
No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	
Under 25	9	10	0	0	0	0	0	0	0	0	0	0	0	0	19
25 to 29	11	58	0	0	0	0	0	0	0	0	0	0	0	0	94
30 to 34	5	34	4	0	0	0	0	0	0	0	0	0	0	0	78
35 to 39	3	2	21	3	0	0	0	0	0	0	0	0	0	0	51
40 to 44	2	3	18	11	10	0	0	0	0	0	0	0	0	0	51
45 to 49	0	1	8	4	7	4	0	0	0	0	0	0	0	0	25
50 to 54	0	0	2	1	2	3	1	0	0	0	0	0	0	0	10
55 to 59	0	0	1	0	0	0	1	1	0	0	0	0	0	0	4
60 to 64	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
70 and up	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	30	108	92	54	19	19	7	2	1	0	0	0	0	0	332

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Distribution of Active Fire Participants by Age and by Years of Service
(as of June 30, 2002)

Attained Age	Under 1	YEARS OF CREDITED SERVICE										Total		
		1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 and up				
No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	
Under 25	0	2	0	0	0	0	0	0	0	0	0	0	0	2
25 to 29	2	19	8	0	0	0	0	0	0	0	0	0	0	29
30 to 34	2	24	20	1	0	0	0	0	0	0	0	0	0	47
35 to 39	1	6	16	11	1	0	0	0	0	0	0	0	0	35
40 to 44	0	0	12	13	8	1	0	0	0	0	0	0	0	34
45 to 49	0	1	1	8	11	12	0	0	0	0	0	0	0	33
50 to 54	0	0	2	2	6	9	2	1	0	0	0	0	0	22
55 to 59	0	0	0	0	3	0	1	0	0	0	0	0	0	4
60 to 64	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
70 and up	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	5	52	59	35	29	22	3	1	0	0	0	0	0	206