

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

Actuarial Valuation as of June 30, 1999

Prepared August 2000



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Actuaries & Consultants

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August 3, 2000

Fred. A. Fantauzzi, CPA
Director of Finance
City of Springfield
P.O. Box 8368
Springfield, Missouri 65801-8368

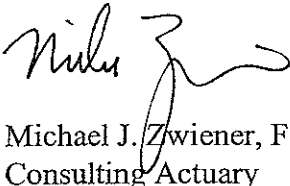
RE: Policemen and Firemen's Retirement Fund

Dear Fred:

Please find enclosed 20 copies of the June 30, 1999 actuarial valuation of the Policemen and Firemen's Retirement Fund.

The valuation report documents the recommended contribution levels to the Plan for the July 1, 2000 – June 30, 2001 fiscal year.

Sincerely,



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

MJZ/gah

Enclosures

cc: Pepper Jackson (with encl)

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

June 30, 1999 Actuarial Valuation

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

June 30, 1999 Actuarial Valuation

Introduction and Purpose

In this report, we present the results of the June 30, 1999 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
Policemen and Firemen's Retirement Fund**

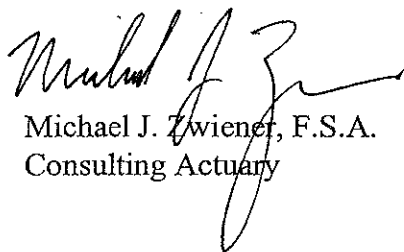
June 30, 1999 Actuarial Valuation

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.

Respectfully submitted,



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

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

June 30, 1999 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, 2000 - June 30, 2001 fiscal year. A comparison of recommended contribution rates (presented as a percentage of pay) for the current and immediately preceding valuations are summarized below:

	<u>Actuarial Valuation as of</u>	
	<u>June 30, 1999</u>	<u>June 30, 1998</u>
Applies to Fiscal Year	7/1/2000-6/30/2001	7/1/1999-6/30/2000
Member Contribution Rate	10.04%	8.50%
City Contribution Rate	20.52%	19.65%
Total	31.16%	28.15%

The primary reasons for the increase in recommended contribution rates are:

- The improvement in the benefit multiplier from 2.5% to 2.8%. The cost for the improvement is being funded by the increase in the Member contribution rate.
- Changes in the actuarial assumptions effective with this valuation made to better reflect the emerging experience. The specific changes are detailed elsewhere in this report.

2. Plan Assets

The market value of plan assets increased from \$112,850,603 at June 30, 1998 to \$118,311,569 at June 30, 1999. A balance sheet and statement of income and disbursements are presented on page 5 and 6.

The actuarial value of assets increased from \$107,955,272 at June 30, 1998 to \$116,424,865 at June 30, 1999. The development of the June 30, 1999 actuarial value of assets is presented on page 1.

3. Actuarial Assumptions, Methods and Plan Provisions

The actuarial cost method and method used to calculate the actuarial value of assets remains unchanged from the prior year. A description of these methods can be found on page 11.

Several assumptions were changed effective with this valuation. The changes, in the aggregate, served to increase the recommended contribution rate for the current year by 0.88% of payroll. A description of the assumptions are presented beginning on page 12.

The provisions of the plan are the same as the prior year except that:

- 1) the benefit multiplier was increased from 2.5% to 2.8%, and
- 2) the required Member contribution rate was raised from 8.50% percent of pay to 10.64%of pay.

4. Plan Population

The number of active participants increased from 482 in the previous valuation to 491 in the current valuation. The number of retirees/beneficiaries increased from 335 to 349.

5. Plan Experience

In the aggregate, experience closely matched assumptions for the year ending June 30, 1999. Gains arising from favorable investment experience offset losses in arising from demographic assumptions. Several of the demographic assumptions were modified effective with this valuation based on the results of a recent assumption study of the Fund.

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

June 30, 1999 Actuarial Valuation

Statement of Assets as of June 30, 1999

<u>Assets</u>	<u>Market Value</u>
1. Cash and Equivalents	\$6,389,255
2. Contributions Receivable	\$164,428
3. Fixed Income	64,948,396
4. Equities	46,596,432
5. Real Estate	0
6. Accruals Net of Payables	<u>213,058</u>
Net Assets	<u>118,311,569</u>

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

June 30, 1999 Actuarial Valuation

Statement of Income and Disbursements

1. Market Value of Assets as of July 1, 1998	\$112,850,603
2. Income:	
a. Employer Contributions	3,945,188
b. Employee Contributions	1,633,856
c. Interest and Dividends	4,820,355
d. Realized Gain/(loss)	5,905,238
e. Unrealized Gain/(loss)	<u>(1,924,574)</u>
f. Total Income	14,380,063
3. Expenses	
a. Employee Benefit Distributions	7,178,215
b. Refund of Employee Contributions	963,959
c. Administrative Expenses	32,050
d. Investment Expenses	<u>744,873</u>
e. Total Expenses	8,919,097
4. Net Increase (Decrease) = (2f) - (3e)	5,460,966
5. Market Value of Assets as of June 30, 1999 = (1) + (4)	\$118,311,569
6. Net Rate of Return	7.2%

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

June 30, 1999 Actuarial Valuation

Development of Actuarial Value of Assets

	<u>Valuation Date</u> <u>June 30, 1997</u>	<u>Valuation Date</u> <u>June 30, 1998</u>	<u>Valuation Date</u> <u>June 30, 1999</u>
1. Actuarial Value Beginning of Year	\$92,005,064	\$98,471,537	\$107,955,272
2. Market Value End of Year	103,485,767	112,850,603	118,311,569
3. Market Value Beginning of Year	94,109,870	103,485,767	112,850,603
4. Non-Investment Cash Flows	(2,159,374)	(2,340,623)	(2,563,130)
5. Investment Income			
a Market Total: (2) - (3) - (4)	11,535,271	11,705,459	8,024,096
b Assumed Rate of Return	8.50%	8.50%	8.50%
c Amount for Immediate Recognition	7,728,657	8,270,604	9,067,265
d Amount for Phased-In Recognition	3,806,614	3,434,855	(1,043,169)
6. Phased-In Recognition of Investment Income			
a Current Year: .25 x (5d)	951,653	858,714	(260,794)
b First Prior Year	415,885	951,653	858,714
c Second Prior Year	1,327,501	415,885	951,653
d Third Prior Year	<u>(1,797,850)</u>	<u>1,327,501</u>	<u>415,885</u>
e Total Recognized Investment Gain	897,189	3,553,753	1,965,458
7. Funding Value End of Year:			
(1) + (4) + (5c) + (6e)	98,471,536	107,955,271	116,424,865
8. Excess of Market Value over Funding Value	5,014,231	4,895,332	1,886,704
9. Recognized Rate of Return	9.5%	12.2%	10.3%

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

June 30, 1999 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, 1999

Liabilities

1. Actuarial Present Value of Future Benefits	
a. Active Participants	\$86,335,838
b. Terminated Vested Participants	475,319
c. Retired Participants	<u>95,661,964</u>
d. Total	182,473,121

Assets

1. Current Valuation Assets	
a. Actuarial Value of Assets	116,424,865
2. Prospective Valuation Assets	
a. Unfunded Actuarial Liability	33,827,866
b. Present Value of Future Normal Cost Contributions	<u>32,220,390</u>
3. Total	182,473,121

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

June 30, 1999 Actuarial Valuation

Development of Recommended Contribution

	<u>June 30, 1999</u>
1. Present Value of Future Benefits	
a. Active Participants	\$86,335,838
b. Terminated Vested Participants	475,319
c. Retired Participants	<u>95,661,964</u>
d. Total	182,473,121
2. Present Value of Future Normal Costs	32,220,390
3. Actuarial Value of Assets	116,424,865
4. Entry Age Unfunded Accrued Liability: (1d) - (2) - (3)	33,827,866
5. Entry Age Normal Cost	3,989,570
6. Present Value of Future Earnings	168,628,071
7. Payroll	18,448,343
8. Amortization Payment (34 Years in 1999)	2,017,276
9. Recommended Contribution: (5) + (8)	6,006,846
10. Recommended Contribution as a Percentage of Payroll	
Normal Cost	20.69%
Amortization Payment	<u>10.46%</u>
Total	31.16%
10. Member Portion	10.64%
11 City Portion	20.52%

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

June 30, 1999 Actuarial Valuation

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%

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

**City of Springfield
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June 30, 1999 Actuarial Valuation

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 35 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.

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

June 30, 1999 Actuarial Valuation

Actuarial Assumptions

Following are the primary actuarial assumptions used in performing the study. Any changes from those used in the June 30, 1998 actuarial valuation are specifically noted.

Interest Rate 8.50% per annum, net of investment expenses.

Annual Pay Increases 4.25% per year, with an additional 1% during each of the first six years of service.

Previously, 5.0% annual increases were assumed plus a margin based on age. Sample rates were as follows:

<u>Age</u>	
20	8.75%
25	7.58%
30	6.77%
35	5.97%
40	5.54%
45	5.32%
50	5.20%
55	5.00%

Mortality 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.

Previously, the Unisex Pensioner 1984 Mortality Table was used with males set forward one year and females back four years.

Turnover

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%

Previously, the police turnover rates were used for both police and fire.

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>	
	<u>Previous Assumption</u>	<u>Current Assumption</u>
20	0.11%	0.16%
25	0.13%	0.19%
30	0.15%	0.22%
35	0.19%	0.28%
40	0.26%	0.39%
45	0.36%	0.54%
50	0.69%	1.03%
55	1.35%	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>	
	<u>Previous Assumption</u>	<u>Current Assumption</u>
45	15%	15%
46	15%	15%
47	15%	15%
48	15%	15%
49	15%	15%
50	15%	20%
51	15%	20%
52	20%	20%
53	20%	25%
54	20%	35%
55	60%	60%
56	60%	60%
57	60%	60%
58	60%	60%
59	60%	60%
60	100%	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.

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

June 30, 1999 Actuarial Valuation

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. For persons retiring prior to July 1, 2000, "2.8%" is replaced with "2.5%".

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 original benefit. 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:

- 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 75%/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.

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

June 30, 1999 Actuarial Valuation

Summary of Participant Data

	<u>Police</u> <u>June 30, 1999</u>	<u>Fire</u> <u>June 30, 1999</u>
1. Active Participants		
a. Count	290	201
b. Plan Compensation	10,573,046	7,875,297
c. Average Compensation	36,459	39,181
d. Average Age	34.6	38.4
e. Average Service	8.0	10.2
2. Retired Participants (including Beneficiaries)		
a. Count	152	197
b. Total Monthly Benefits	\$273,083	\$357,974
c. Average Monthly Benefits	\$1,797	\$1,817
3. Terminated Vested Participants		
a. Count	1	1
b. Total Monthly Benefits	\$1,689	\$1,327
c. Average Monthly Benefits	\$1,689	\$1,327

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

June 30, 1999 Actuarial Valuation

Distribution of Active Police Participants by Age and by Years of Service
(as of June 30, 1999)

Attained Age	YEARS OF CREDITED SERVICE													Total	
	Under 1	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.		
Under 25	16	10	0	0	0	0	0	0	0	0	0	0	0	0	26
25 to 29	18	58	5	0	0	0	0	0	0	0	0	0	0	0	81
30 to 34	3	20	20	2	0	0	0	0	0	0	0	0	0	0	45
35 to 39	1	7	20	22	9	0	0	0	0	0	0	0	0	0	59
40 to 44	0	3	5	7	13	3	0	0	0	0	0	0	0	0	31
45 to 49	0	1	6	2	5	17	0	0	0	0	0	0	0	0	31
50 to 54	1	0	2	0	2	5	4	1	0	0	0	0	0	0	15
55 to 59	0	0	1	0	0	1	0	0	0	0	0	0	0	0	2
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	39	99	59	33	29	26	4	1	0	0	0	0	0	0	290

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

June 30, 1999 Actuarial Valuation

Distribution of Active Fire Participants by Age and by Years of Service
(as of June 30, 1999)

Attained Age	YEARS OF CREDITED SERVICE											Total		
	Under 1	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.			
Under 25	1	7	0	0	0	0	0	0	0	0	0	0	0	8
25 to 29	3	23	4	0	0	0	0	0	0	0	0	0	0	30
30 to 34	1	17	11	1	0	0	0	0	0	0	0	0	0	30
35 to 39	0	7	26	11	1	0	0	0	0	0	0	0	0	45
40 to 44	0	2	6	10	11	2	0	0	0	0	0	0	0	31
45 to 49	0	1	4	9	10	9	3	0	0	0	0	0	0	36
50 to 54	0	0	0	4	4	5	5	0	0	0	0	0	0	18
55 to 59	0	0	0	1	0	0	2	0	0	0	0	0	0	3
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	57	51	36	26	16	10	0	0	0	0	0	0	201