

CITY OF SPRINGFIELD
POLICE PENSION FUND

ACTUARIAL VALUATION
AS OF FEBRUARY 28, 2011

December 7, 2011

Mr. Charles Alsbury
Staff Accountant
Office of Management and Budget
City of Springfield
Room 210 – Municipal Building
Springfield, Illinois 62701

Re: **Actuarial Valuation of the Springfield Police Pension Fund**

Dear Mr. Alsbury:

I am pleased to submit our actuarial report based on an actuarial valuation of the Springfield Police Pension Fund as of February 28, 2011.

The report consists of 10 Sections and 2 Appendices as follows:

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I would be pleased to discuss any aspects of this report with you and other interested persons.

Respectfully submitted,



Sandor Goldstein, F.S.A.
Consulting Actuary

A. PURPOSE AND SUMMARY

We have carried out an actuarial valuation of the Springfield Police Pension Fund as of February 28, 2011. The purpose of the valuation was to determine the financial position and the annual actuarial requirements of the pension fund. This report is intended to present the results of the valuation. The results of the valuation are summarized below:

1. Total Actuarial Liability	\$ 204,400,417
2. Actuarial Value of Assets	\$ 111,532,865
3. Unfunded Actuarial Liability	\$ 92,867,552
4. Funded Ratio	54.6%
5. Total Normal Cost For Year Beginning March 1, 2012	\$ 5,303,325
6. Total Normal Cost as a Percent of Payroll	29.32%
7. Annual Actuarial Requirements For Year Beginning March 1, 2012	\$ 7,844,957
8. Annual Required Contribution For GASB Statement No. 25 For Year Beginning March 1, 2012	\$ 10,664,571
9. Employer's Share of Annual Required Contribution For GASB Statement No. 25	\$ 8,872,155

B. DATA USED FOR THE VALUATION

Participation Data. The participant data required to carry out the valuation was supplied by the pension fund. The participant data for the pension fund as of February 28, 2011, on which the valuation is based, is summarized in Exhibit 1. It can be seen that there were 249 active members, 6 inactive members and 214 member receiving benefits. The total active payroll as of February 28, 2011 was \$17,539,051.

Exhibit 1

Summary of Participant Data

1. Number of Members		
(a) Active Members		
(i) Vested		184
(ii) Non-vested		65
(b) Inactive Members		6
(c) Members Receiving		
(i) Retirement Pensions		171
(ii) Survivor Pensions		36
(iii) Disability Pensions		<u>7</u>
(d) Total		<u>469</u>
2. Annual Salaries		
(a) Total Salary	\$	17,539,051
(b) Average Salary		70,438
3. Total Accumulated Contributions of Active Members	\$	15,540,698
4. Annual Benefit Payments Currently Being Made		
(a) Retirement Pensions	\$	8,251,059
(b) Survivor Pensions		793,116
(c) Disability Pensions		205,774

Assets. In November of 1994, the Governmental Accounting Standards Board (GASB) issued GASB Statement No. 25, which establishes standards of financial reporting for governmental pension plans. Under GASB Statement No. 25, the actuarial value of assets to be used for determining a plan's funded status and annual required contribution needs to be market related.

However, GASB has indicated that current market values should not be used if those values would result in unnecessary fluctuation in the funded status and the annual required contribution. Thus, in determining the actuarial value of assets, smoothing changes in the market value of assets over a period of three to five years is considered appropriate.

The asset values for the valuation were based on the asset information contained in the financial statements of the pension fund as of February 28, 2011. The actuarial value of assets was determined by smoothing unexpected gains or losses from investment return over a five-year period. The resulting actuarial value of assets is \$111,532,865. The development of this value is outlined in Exhibit 2.

Exhibit 2

Actuarial Value of Assets

A. Development of Investment Gain/(Loss) for the Year Ended February 28, 2011

1. Actuarial Value of Assets as of February 28, 2010	\$ 106,129,535
2. Contributions and Miscellaneous Income	9,577,120
3. Disbursements	9,178,702
4. Expected Investment Income	7,974,386
5. Actual Investment Income (Loss)	11,122,481
6. Investment Gain/(Loss) (5 - 4)	3,148,095

B. Development of Actuarial Value of Assets as of February 28, 2011

7. Expected Value of Assets (1 +2 - 3 +4)	\$ 114,502,339
8. Investment Gain/(Loss) for Fiscal Year 2007 Recognized in Current Year	1,660
9. Investment Gain/(Loss) for Fiscal Year 2008 Recognized in Current Year	(724,935)
10. Investment Gain/(Loss) for Fiscal Year 2009 Recognized in Current Year	(4,386,851)
11. Investment Gain/(Loss) for Fiscal Year 2010 Recognized in Current Year	1,511,033
12. Investment Gain/(Loss) for Fiscal Year 2011 Recognized in Current Year (20% of 6)	<u>629,619</u>
13. Actuarial Value of Assets (7 + 8 + 9 +10 + 11 + 12)	<u>\$ 111,532,865</u>

C. FUND PROVISIONS

Our valuation was based on the provisions of the fund in effect as of February 28, 2011 as provided in Article 3 of the Illinois Pension Code. Senate Bill 3538, which was signed into law on December 30, 2010 as Public Act 96-1495, created a "second tier" of benefits for police officers who first become participants under the fund on or after January 1, 2011. The benefit changes for new participants are as follows:

1. Defines the highest salary for annuity purposes as being the average monthly salary obtained by dividing the participant's total salary during the 96 consecutive months of service within the last 120 months of service in which the total compensation was the highest by the number of months in that period.
2. For 2011, limits the final average salary to the Social Security wage base of \$106,800. Limitations for future years shall automatically be increased by the lesser of 3% or one-half

of percentage change in the Consumer Price Index-U during the preceding 12-month calendar year.

3. Allows a participant to retire with unreduced benefits after attainment of age 55 with at least 10 years of service credit. However, a participant may elect to retire at age 50 with at least 10 years of service credit and receive a retirement annuity reduced by one-half of 1% for each month that his or her age is under 55.
4. Provides an initial survivor's annuity equal to 66 2/3% of the participant's earned retirement annuity at the date of death, subject to automatic annual increases of the lesser of 3% or one-half of the increase in the Consumer Price Index-U during the preceding calendar year, based on the originally granted survivor's annuity.
5. Provides for automatic annual increases in the retirement annuity then being paid equal to the lesser of 3% or one-half the annual change in the Consumer Price Index for all Urban Consumers, whichever is less, based on the originally granted retirement annuity.

A summary of the principal provisions of the fund is provided in Appendix 1.

D. ACTUARIAL ASSUMPTIONS AND COST METHOD

For the February 28, 2011 actuarial valuation, the mortality rates assumption was change from the UP-1984 Mortality Table to the UP-1994 Mortality Table for retirement and survivor pensioners and the RP-2000 Mortality Table for Disabled Retirees for disability pensioners. The other actuarial assumptions used for the February 28, 2011 actuarial valuation are the same as those used for the February 28, 2010 actuarial valuation. The actuarial assumptions used for the February 28, 2011 actuarial valuation are summarized below:

Mortality Rates. The UP-1994 Mortality Table was used for retirement and survivor pensioners. For disability pensioners, the RP-2000 Mortality Table for Disabled Retirees was used.

Termination Rates. Termination rates are used to estimate the probability that an employee will terminate employment at a given age. The following is a sample of the termination rates that were used:

<u>Age</u>	<u>Rate of Termination</u>
25	.0476
30	.0237
35	.0157
40	.0140
45 and over	.0105

Disability Rates. Disability rates are used to estimate the probability that an employee will become disabled at a given age. All disabilities were assumed to be in the line of duty. The following is a sample of the disability rates that were used:

<u>Age</u>	<u>Rate of Disability</u>
25	.0012
30	.0021
35	.0031
40	.0041
45	.0050
50	.0085
55	.0267
60	.0000

Retirement Rates. Retirement rates are used to estimate the probability that an employee will retire at each age at which a retirement benefit is available. Rates of retirement for each age from 50 to 65 were used. The following is a sample of the retirement rates that were used for the valuation:

<u>Age</u>	<u>Rate of Retirement</u>
50	.2111
55	.1689
60	.3815
65	1.0000

Salary Progression. 5.0% per year, compounded annually. This can be considered to consist of a 4.0% inflation assumption and 1.0% merit increase assumption.

Investment Return Rate. 7.5% per year, compounded annually.

Marital Status. 80% of participants were assumed to be married.

Spouse's Age. The age of the spouse was assumed to be 4 years younger than the age of the employee.

Actuarial Value of Assets. The actuarial value of assets was determined by smoothing unexpected gains or losses from investment return over a five-year period.

Actuarial Cost Method. Based on the requirements of Public Act 96-1495, the actuarial cost method was changed for the February 28, 2011 actuarial valuation from the entry age normal cost method to the projected unit credit cost method.

E. ACTUARIAL LIABILITY

The actuarial liability as determined under the valuation for the various classes of members is summarized in Exhibit 3. The total actuarial liability is then compared with the actuarial value of assets in order to arrive at the unfunded actuarial liability. (The actuarial terms used in this report are defined in Appendix 2.)

As of February 28, 2011 the total actuarial liability is \$204,400,417, the actuarial value of assets is \$111,532,865, and the unfunded actuarial liability is \$92,867,552. The ratio of the actuarial value of assets to the actuarial liability, or funded ratio, is 54.6%.

Exhibit 3

Actuarial Liability as of February 28, 2011

1. Actuarial Liability For Members Receiving Benefits	
(a) Retirement Pensions	\$ 122,557,050
(b) Survivor Pensions	6,730,814
(c) Disability Pensions	<u>3,011,209</u>
(d) Total	\$ 132,299,073
2. Actuarial Liability For Inactive Members	57,544
3. Actuarial Liability For Active Members	<u>72,043,800</u>
4. Total Actuarial Liability	\$ <u>204,400,417</u>
5. Actuarial Value of Assets	<u>111,532,865</u>
6. Unfunded Actuarial Liability	\$ <u>92,867,552</u>
7. Funded Ratio	54.6%

F. RECONCILIATION OF CHANGE IN UNFUNDED LIABILITY

The net actuarial experience during the period March 1, 2010 to February 28, 2011 resulted in an increase in the fund's unfunded liability of \$12,956,527. This increase in unfunded liability is a result of several kinds of gains and losses, which have an impact on the unfunded liability. The financial effect of the most significant gains and losses is illustrated in Exhibit 4.

The net rate of investment return earned by the fund during the year, based on the actuarial value of assets, was approximately 4.7%, in comparison to the assumed rate of 7.5%. This resulted in an increase in the unfunded liability of \$2,969,474. Salaries increased at an average rate of approximately 4.9% in comparison to the assumed rate of 5.0%. Salary increases lower than assumed resulted in a decrease in the unfunded liability of \$61,891.

The contribution required to keep the unfunded liability from increasing was \$8,983,384, whereas the actual employer contribution was \$7,897,449, resulting in an increase in the unfunded liability of \$1,085,935.

The change in the mortality rates assumption resulted in an increase in the unfunded liability of \$9,637,086. The change in the actuarial cost method used for the February 28, 2011 valuation had the impact of decreasing the unfunded liability by \$2,726,085.

The various other aspects of the fund's experience resulted in an increase in the unfunded liability of \$2,052,008. The aggregate financial experience of the fund resulted in an increase in the unfunded liability of \$12,956,527.

Exhibit 4

Reconciliation of Change in Unfunded Liability
Over the Period March 1, 2010 to February 28, 2011

1. Unfunded Liability as of March 1, 2010	\$ 79,911,025
2. Increase in Unfunded Liability Due to Employer Contribution Less Than Normal Cost Plus Interest on the Unfunded Liability	1,085,935
3. Increase in Unfunded Liability Due to Investment Return Lower Than Assumed	2,969,474
4. (Decrease) in Unfunded Liability Due to Salary Increases Lower Than Assumed	(61,891)
5. Increase in Unfunded Liability Due to Changes in Assumptions	9,637,086
6. (Decrease) in Unfunded Liability Due to Change in Actuarial Cost Method	(2,726,085)
7. Increase in Unfunded Liability Due to Other Sources	<u>2,052,008</u>
8. Net Increase in Unfunded Liability for the Year (2 + 3 + 4 + 5 + 6 + 7)	<u>\$ 12,956,527</u>
9. Unfunded Liability as of February 28, 2011 (1 + 8)	<u>\$ 92,867,552</u>

G. NORMAL COST

The normal cost for the year beginning March 1, 2011 is developed in Exhibit 5. For the year beginning March 1, 2011, the total normal cost is estimated to be \$5,109,841, which can be expressed as 29.13% of payroll.

Exhibit 5

Normal Cost For Year Beginning March 1, 2011

	<u>Dollar Amount</u>	<u>Percent of Payroll</u>
1. Basic Retirement Pension	\$ 3,132,472	17.86%
2. Annual Increases in Pension	551,790	3.14
3. Survivor's Pension	594,535	3.39
4. Disability Pension	677,338	3.86
5. Refunds	24,120	.14
6. Administrative Expenses	<u>129,586</u>	<u>.74</u>
7. Total Normal Cost	<u>\$ 5,109,841</u>	<u>29.13%</u>

Note. The above figures are based on a total active payroll of \$17,539,051 as of February 28, 2011.

H. ANNUAL ACTUARIAL REQUIREMENTS FOR YEAR BEGINNING MARCH 1, 2012

According to Section 5/3-125 of the Illinois Pension Code, the city council shall annually levy a tax which, when added to employee contributions, will produce an amount sufficient to meet the annual actuarial requirements of the pension fund.

Senate Bill 3538, which was signed into law as Public Act 96-1495 and became effective on January 1, 2011, made significant changes in the determination of the annual actuarial requirements of the pension fund. Under Public Act 96-1495, the annual requirements of the pension fund are to be determined as a level percent of payroll sufficient to bring the total assets of the pension fund up to 90% of the total actuarial liabilities determined under the projected unit credit actuarial cost method by the year 2040.

It is our understanding that the results of the current valuation will be used to determine the amount of tax to be levied by the City for contribution to the pension fund in the year beginning March 1, 2012. Based on the February 28, 2011 actuarial valuation and the funding provisions of Public Act 96-1495, we have therefore performed funding projections through 2040 in order to determine the required employer contribution for fiscal year 2013 which begins March 1, 2012. We have also estimated the required employer contributions for fiscal years 2014 through 2018. These required employer contributions are as follows:

<u>Fiscal Year</u>	<u>Projected Payroll</u>	<u>Required Employer Contribution as a Percent of Payroll</u>	<u>Required Employer Contribution as a Dollar Amount</u>
2013	\$ 18,086,943	43.37%	\$ 7,844,957
2014	18,711,568	43.37	8,115,880
2015	19,324,676	43.37	8,381,807
2016	19,953,782	43.37	8,654,673
2017	20,567,129	43.37	8,920,703
2018	21,125,527	43.37	9,162,901

Method of Calculation

The employer contribution requirements shown above have been determined using the actuarial assumptions, membership data and benefit provisions that were used for the regular actuarial valuation. However, in order to determine the contribution requirements, certain calculations needed to be made that are not normally required in a regular actuarial valuation. Benefit payout requirements, normal costs, and payroll were estimated over the 29-year period from 2012 through 2040 by projecting the membership of the system over the 29-year period, taking into account the impact of new entrants to the fund over the 29-year period.

In order to make the required projections, assumptions needed to be made regarding the age and salary distribution of new entrants as well as the size of the active membership of the fund. The assumptions regarding the profile of new entrants to the fund was based on the recent experience of the fund with regard to new entrants. The size of the active membership of the fund was assumed to remain constant over the 29-year projection period.

The year by year results of our funding projections are shown in Exhibit 6 below:

Exhibit 6

Springfield Police Pension Fund

**Funding Projections to End of 2040
Based on Reduced Benefits for Employees Hired after January 1, 2011
and Changes in the Funding Provisions Provided Under Public Act 96-1495**

Fiscal Year	Annual Payroll	Total Payout	Employers' Contribution	Employers' Contribution as Percent of Payroll	Actuarial Liability	Assets	Unfunded Liability	Funded Ratio
2011					\$204,400,417	\$111,532,865	\$92,867,552	54.6%
2012	\$17,539,051	\$10,486,918	\$8,550,052	48.75%	213,763,398	116,720,632	97,042,766	54.6%
2013	18,086,943	10,924,617	7,844,957	43.37%	223,559,567	121,890,982	101,668,585	54.5%
2014	18,711,568	11,480,738	8,115,880	43.37%	233,668,391	131,605,786	102,062,605	56.3%
2015	19,324,676	11,995,415	8,381,807	43.37%	244,170,624	140,339,985	103,830,639	57.5%
2016	19,953,782	12,616,876	8,654,673	43.37%	254,930,576	148,800,455	106,130,121	58.4%
2017	20,567,129	13,332,800	8,920,703	43.37%	265,795,605	157,486,359	108,309,246	59.3%
2018	21,125,527	14,076,907	9,162,901	43.37%	276,732,420	166,347,387	110,385,033	60.1%
2019	21,685,623	14,866,584	9,405,834	43.37%	287,705,216	175,349,011	112,356,205	60.9%
2020	22,282,584	15,662,575	9,664,758	43.37%	298,705,322	184,523,564	114,181,758	61.8%
2021	22,873,409	16,581,517	9,921,020	43.37%	309,552,627	193,748,031	115,804,596	62.6%
2022	23,442,189	17,618,477	10,167,720	43.37%	320,029,912	202,892,390	117,137,522	63.4%
2023	23,954,123	18,625,165	10,389,764	43.37%	330,158,288	211,946,556	118,211,732	64.2%
2024	24,514,739	19,673,443	10,632,924	43.37%	339,835,002	220,890,206	118,944,796	65.0%
2025	25,070,063	20,727,594	10,873,788	43.37%	349,010,565	229,700,033	119,310,532	65.8%
2026	25,647,082	21,793,874	11,124,061	43.37%	357,644,446	238,364,073	119,280,373	66.6%

Exhibit 6

Springfield Police Pension Fund

**Funding Projections to End of 2040
Based on Reduced Benefits for Employees Hired after January 1, 2011
and Changes in the Funding Provisions Provided Under Public Act 96-1495**

Fiscal Year	Annual Payroll	Total Payout	Employers' Contribution	Employers' Contribution		Assets	Unfunded Liability	Funded Ratio
				as Percent of Payroll	Actuarial Liability			
2027	26,274,026	22,954,196	11,395,990	43.37%	365,549,086	246,806,160	118,742,926	67.5%
2028	26,892,222	23,991,274	11,664,123	43.37%	372,856,127	255,127,936	117,728,191	68.4%
2029	27,600,629	25,049,005	11,971,385	43.37%	379,473,402	263,350,021	116,123,381	69.4%
2030	28,341,796	26,063,272	12,292,856	43.37%	385,422,964	271,523,934	113,899,030	70.4%
2031	29,142,624	27,022,704	12,640,204	43.37%	390,756,126	279,731,161	111,024,965	71.6%
2032	30,038,598	28,061,886	13,028,820	43.37%	395,292,382	287,943,678	107,348,704	72.8%
2033	30,946,645	28,982,245	13,422,672	43.37%	399,125,938	296,281,670	102,844,268	74.2%
2034	31,936,892	29,836,980	13,852,178	43.37%	402,311,169	304,863,655	97,447,514	75.8%
2035	33,016,147	30,635,889	14,320,290	43.37%	404,852,041	313,815,642	91,036,399	77.5%
2036	34,137,108	31,372,846	14,806,491	43.37%	406,787,660	323,242,462	83,545,198	79.5%
2037	35,344,822	32,012,319	15,330,320	43.37%	408,226,430	333,324,220	74,902,210	81.7%
2038	36,660,995	32,497,061	15,901,191	43.37%	409,349,037	344,331,532	65,017,505	84.1%
2039	38,070,311	32,923,515	16,512,463	43.37%	410,236,066	356,444,769	53,791,297	86.9%
2040	39,578,082	33,250,936	17,166,437	43.37%	411,000,769	369,900,708	41,100,061	90.0%

I. ANNUAL REQUIRED CONTRIBUTION FOR GASB STATEMENT NO. 25

GASB Statement No. 25 requires the disclosure of the annual required contribution (ARC), calculated in accordance with certain parameters. Based on the results of the February 28, 2011 actuarial valuation, we have therefore calculated the annual required contribution for the fiscal year beginning March 1, 2012. In accordance with the parameters prescribed in GASB Statement No. 25, in calculating the annual required contribution, we have used smoothed market value for the actuarial value of assets, and have amortized the unfunded liability over 29 years from March 1, 2011 as a level percent of payroll. As can be seen from Exhibit 7 below, the annual required contribution for the fiscal year beginning March 1, 2012 has been determined to be \$10,664,571. Employee contributions for the year are estimated to be \$1,792,416. Therefore, the employer's share of the annual required contribution is determined to be \$8,872,155.

Exhibit 7

Annual Required Contribution for Year Beginning March 1, 2012

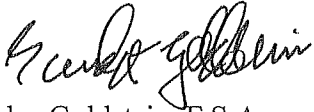
	<u>Dollar Amount</u>	<u>Percent of Payroll</u>
1. Total Normal Cost	\$ 5,303,325	29.32%
2. Annual Amount Required to Amortize Unfunded Liability Over 29 Years Subsequent to March 1, 2011 as a Level Percent of Payroll	<u>5,361,246</u>	<u>29.64</u>
3. Annual Required Contribution for Year Beginning March 1, 2012 (1 + 2)	\$10,664,571	58.96%
4. Employee Contributions for Year	<u>1,792,416</u>	<u>9.91</u>
5. Employer's Share of Annual Required Contribution (3 - 4)	<u>\$ 8,872,155</u>	<u>49.05%</u>

Note. The above figures have been based on a projected payroll of \$18,086,943.

J. CERTIFICATION

This actuarial report has been prepared in accordance with generally accepted actuarial principles and practices and to the best of our knowledge, fairly represents the financial condition of the Springfield Police Pension Fund as of February 28, 2011.

Respectfully submitted,



Sandor Goldstein, F.S.A.
Consulting Actuary



Ryan Gundersen
Actuarial Analyst

Appendix 1

Summary of Principal Provisions

Pension Benefits

A police officer age 50 or over who has at least 20 years of creditable service and is no longer in service as a police officer is entitled to a pension of 1/2 of the salary attached to the rank held on the last day of service. The pension is increased by 2.5% of such salary for each additional year over 20 years of service through 30 years of service.

Separation Benefits

A police officer who is separated from service having at least 8 years but less than 20 years of creditable service is entitled upon attainment of age 60 to a pension of 2.5% of the salary attached to the rank held on the last day of service by the officer for each year of creditable service.

Annual Increases In Pension

The monthly pension of a police officer who retires after January 1, 1977, shall, upon either the first of the month following the first anniversary of the date of retirement, if 55 years of age or over at retirement date, or upon the first day of the month following attainment of age 55 if it occurs after the first anniversary of retirement, be increased by 1/12 of 3% of the originally granted monthly pension for each full month that has elapsed since the pension began, and by 3% of the current amount of pension in each January thereafter.

The monthly pension of a police officer who is receiving a disability pension shall be increased in January of the year following the year the officer attains age 60 by 3% of the originally granted monthly pension for each year that pension payments have been made. In each January thereafter, the officer shall receive an additional increase of 3% of the original monthly pension.

Disability Pension

If a police officer, as a result of an act of duty, is found to be disabled for service in the police department, the officer shall be granted a disability pension of the greater of 65% of the salary attached to the rank held by the officer at the date of suspension of duty or the retirement pension to which the police officer would be entitled. If the disability is the result of any cause other than an act of duty, the disability pension is 50% of salary.

Pension To Survivors

(a) Upon the death of a police officer in receipt of a pension, the surviving spouse of the police officer is entitled to the pension that the police officer was receiving as of the time of death.

(b) Upon the death of a police officer while in service, having at least 20 years of creditable service, the surviving spouse shall be entitled to the pension earned by the police officer as of the date of death.

(c) Upon the death of a police officer while in service, having at least 10 but less than 20 years of service, the surviving spouse shall be entitled to a pension of 1/2 of the salary attached to the rank held by the officer for one year immediately prior to the date of death. If death occurs as a result of the performance of duty, the 10-year requirement shall not apply.

Contributions By Police Officers

Police officers are required to contribute 9.91% of their salary to the pension fund as a condition of participation in the pension fund.

Persons Who First Become Participants On or After January 1, 2011

The following changes to the above provisions apply to persons who first become participants on or after January 1, 2011:

1. The highest salary for annuity purposes is equal to the average monthly salary obtained by dividing the participant's total salary during the 96 consecutive months of service within the last 120 months of service in which the total compensation was the highest by the number of months in that period.
2. For 2011, the final average salary is limited to the Social Security wage base of \$106,800. Limitations for future years shall automatically be increased by the lesser of 3% or one-half of percentage change in the Consumer Price Index-U during the preceding month calendar year.
3. A participant is eligible to retire with unreduced benefits after attainment of age 55 with at least 10 years of service credit. However, a participant may elect to retire at age 50 with at least 10 years of service credit and receive a retirement annuity reduced by one-half of 1% for each month that his or her age is under 55.
4. The initial survivor's annuity is equal to 66 2/3% of the participant's earned retirement annuity at the date of death, subject to automatic annual increases of the lesser of 3% or one-half of the increase in the Consumer Price Index-U during the preceding calendar year, based on the originally granted survivor's annuity.
5. Automatic annual increases in the retirement annuity then being paid are equal to the lesser of 3% or one-half the annual change in the Consumer Price Index for all Urban Consumers, whichever is less, based on the originally granted retirement annuity.

Appendix 2

Glossary of Terms used in Report

1. Actuarial Present Value. The value of an amount or series of amounts payable at various times, determined as of a given date by the application of a particular set of actuarial assumptions.
2. Actuarial Cost Method or Funding Method. A procedure for determining the actuarial present value of pension plan benefits and for determining an actuarially equivalent allocation of such value to time periods. Usually in the form of a normal cost and an actuarial accrued liability.
3. Normal Cost. That portion of the actuarial present value of pension plan benefits which is allocated to a valuation year by the actuarial cost method.
4. Actuarial Accrued Liability or Accrued Liability. That portion, as determined by a particular actuarial cost method, of the actuarial present value of pension benefits which is not provided for by future normal costs.
5. Actuarial Value of Assets. The value assigned by the actuary to the assets of the pension plan for purposes of an actuarial valuation.
6. Unfunded Actuarial Liability. The excess of the actuarial liability over the actuarial value of assets.
7. Projected Unit Credit Actuarial Cost Method. A cost method under which the projected benefits of each individual included in an actuarial valuation are allocated by a consistent formula to valuation years. The actuarial present value of benefit allocated to a valuation year is called the normal cost. The actuarial present value of benefits allocated to all periods prior to a valuation year is called the actuarial liability.
8. Actuarial Assumptions. Assumptions as to future events affecting pension costs.
9. Actuarial Valuation. The determination, as of a valuation date, of the normal cost, actuarial liability, actuarial value of assets, and related actuarial present values for the pension plan.
10. Accrued Benefit or Accumulated Plan Benefits. The amount of an individual's benefit as of a specific date determined in accordance with the terms of a pension plan and based on compensation and service to that date.
11. Vested Benefits. Benefits that are not contingent on an employee's future service.