

**FIREMEN'S RETIREMENT SYSTEM OF ST. LOUIS**  
ANNUAL ACTUARIAL VALUATION  
OCTOBER 1, 2009

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January 13, 2010

The Pension Board  
Firemen's Retirement System of St. Louis  
1601 South Broadway  
St. Louis, Missouri 63104

Dear Board Members:

We are pleased to present the report of the actuarial valuation of the Firemen's Retirement System of St. Louis as of October 1, 2009. An actuarial valuation of the system is performed annually as required by the Missouri State statutes. The valuation has been done to measure the funding status of the System and determine the contribution for the following year. It includes disclosure information required under GASB Statement No. 25. The assumptions and methods used were reviewed by the actuary and meet the parameters set for the disclosure presented in the financial section by Government Accounting Standards Board (GASB) Statement No. 25.

This valuation is based upon:

- a) **Data Relative to the Members of the System**—Data for active members and persons receiving benefits was provided by the System's staff. We have tested this data for reasonableness.
- b) **Asset Values**—The values of assets of the System were provided by the System's auditor. An actuarial value of assets was used to develop actuarial results for GASB Statement No. 25.
- c) **Actuarial Method**—The actuarial method utilized by the System as required by Missouri State statutes is the Frozen Entry Age Actuarial Cost Method. The objective of this method is to recognize the cost of the System on an aggregate basis as a level percentage of compensation. Any frozen unfunded actuarial accrued liability resulting from changes in plan provisions assumptions, or methods is separately amortized. All actuarial gains and losses under this method are reflected in future normal cost.
- d) **Actuarial Assumptions**—The actuarial assumptions used for this valuation remain unchanged from last year's. The assumptions are set forth in the following pages.

The funding objective is to provide employer and employee contributions sufficient to provide the benefits of the System when due. The employer contributes the normal contribution rate (normal cost under Frozen Entry Age Actuarial Cost Method) plus the accrued liability rate (amortization of the frozen unfunded actuarial liability).

The valuation results set forth in this report are based on the data and actuarial techniques described above, and upon the provisions of the Fund as of the valuation date. Based on these items, we certify these results to be true and correct.

The undersigned are members of the American Academy of Actuaries (M.A.A.A.), as indicated and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein.

Respectfully yours,



Michael R. Kivi, F.S.A., E.A., F.C.A., M.A.A.A.  
Senior Consultant



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Senior Consultant

MK: mf

# INTRODUCTION

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## Purposes of the Actuarial Valuation

At your request we have performed the actuarial valuation of the Firemen's Retirement System of St. Louis as of October 1, 2009.

The purposes of an actuarial valuation are as follows:

- To determine the funding status of the System as of the valuation date;
- To determine the current contribution level of the System required to fund the current benefit provisions; and
- To provide accounting and other data required by the System.

## Report Highlights

The table below compares the key actuarial results from the October 1, 2009, valuation to the prior year's results. The key difference between this year's valuation and the prior year's valuation is the increase in the City contribution from \$12.19 million for plan year ending September 30, 2009, to \$17.85 million for plan year ending September 30, 2010. The contribution for plan year ending September 30, 2010, was higher than the expected contribution amount of \$12.04 million. Investment losses had an increasing effect on the contribution amount. The investment losses were partially offset by favorable demographic experience including salary increases that were lower than expected. Employer contributions for the plan year ending September 30, 2009, of \$12.19 million were equal to the contribution amount anticipated by the actuarial valuations. During the year, the actuarial value of assets decreased from \$485.1 million to \$449.7 million as a result of the investment losses and the recognition of deferred investment gains.

<b>Summary of Results</b>	<b>2009</b>	<b>2008</b>
Total Contribution	\$ 17,854,546	\$ 12,193,989
Present Value of Benefits	630,900,678	620,605,184
Actuarial Value of Assets	449,655,366	485,138,953
Market Value of Assets <sup>a</sup>	376,671,131	416,603,847

<sup>a</sup> Excluding Future Benefit Fund

## INTRODUCTION (CONTINUED)

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A reconciliation of the increase in City contributions is shown below (in millions).

Expected 2010 City contribution	\$	12.04
Increase due to investment loss		6.16
Other demographic gains		<u>(0.35)</u>
Actual 2010 City contribution	\$	17.85

### **Asset Information**

The market value of the assets of the fund, which are available for benefits, has decreased from \$416.6 million at the end of FY 2008 to \$376.7 million at the end of FY 2009. The actuarial value of assets also decreased from \$485.1 million to \$449.7 million because of the recognition of investment losses generated over the last two years. This is a direct consequence of the asset smoothing process.

The detailed determinations of asset values utilized in this valuation and asset growth in the last year are set forth in Section A.

### **GASB Disclosure**

The Firemen's Retirement System of St. Louis produces its accounting statements under the terms of GASB Statement Number 25. Section B contains the Required Supplemental Information.

## INTRODUCTION (CONTINUED)

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### Membership Characteristics

The following table shows the changes in the population of the fund. There have not been significant changes from the prior year.

<b>Population</b>	<b>2009</b>	<b>2008</b>
Retired Members	375	388
Disabled Members	340	338
Widows and Children	295	299
<b>Total Inactive Members</b>	<b>1,010</b>	<b>1,025</b>
Actives - Non-DROP	665	677
Actives - DROP <sup>a</sup>	63	48
<b>Total Active and DROP Members</b>	<b>728</b>	<b>725</b>

More detailed breakouts of the membership can be found in Section C.

### Actuarial Assumptions and Methods

The assumptions and methods, with the exception of the valuing of sick leave benefits and shift differential, are based on the results of the experience review for the period September 1, 2002, through October 1, 2005. Subsequent to the October 1, 2006, valuation, the sick leave benefit and shift differential methodology was modified. The new methodology along with the rest of the assumption and methods are disclosed in Section D.

### Plan Provisions

The plan provisions used in this valuation are the same as those disclosed in the actuarial valuation report as of October 1, 2008. This set of plan provisions is described in Section D.

<sup>a</sup> As of October 1, 2009, there are 170 employees with DROP account balances, of which 63 are active members participating in the DROP.

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## **SECTION A**

### **VALUATION RESULTS AND ASSET INFORMATION**

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## SUMMARY OF ACTUARIAL VALUATION RESULTS

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### Determination of City Contributions

<b>Present Value of All Future Benefits</b>	
Retirees and Beneficiaries	\$ 292,710,197
Active Firemen	272,883,066
DROP Firemen	64,862,162
System Employees Benefit Fund	445,253
<b>Total</b>	<b>\$ 630,900,678</b>
<b>Assets</b>	
Actuarial Asset Value (3-year smoothing)	\$ 449,655,366
Present Value of Future Employee Contributions	24,491,215
<b>Total</b>	<b>\$ 474,146,581</b>
<b>Unfunded Accrued Liability</b>	<b>\$ 37,657,413</b>
<b>Present Value of Future Normal Costs</b>	<b>\$ 119,096,684</b>
<b>Present Value of Future Salary</b>	<b>\$ 304,255,412</b>
<b>Normal Contribution Percent</b>	<b>39.144%</b>
<b>Covered Salary</b>	<b>\$ 37,618,833</b>
<b>Annual City Contributions</b>	
Normal Contribution	\$ 14,725,516
Accrued Liability Amortization Payment	3,129,030
<b>Grand Total</b>	<b>\$ 17,854,546</b>
<b>Total Salary <sup>a</sup></b>	<b>\$ 42,052,210</b>
<b>Normal Contribution as a % of Total Salary</b>	<b>35.02%</b>
<b>Total Contribution as a % of Total Salary</b>	<b>42.46%</b>

<sup>a</sup> Includes salary of active members participating in the DROP Plan

# SUMMARY OF ACTUARIAL VALUATION RESULTS (CONTINUED)

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## Present Value of Future Benefits

<b>Retirees</b>		
1960 Plan	\$ 101,435,351	
Prospective Widows and Children of Retired Firemen	16,384,471	
<b>Ordinary Disability</b>		
1960 Plan	4,302,478	
Prospective Widows and Children of Retired Firemen	883,168	
<b>Accidental Disability</b>		
1960 Plan	130,290,403	
Prospective Widows and Children of Retired Firemen	14,190,235	
<b>Widows</b>		
1960 Plan	24,907,476	
1944 Plan	11,989	
Old Plan	9,487	
<b>Children</b>		
1960 Plan	295,139	
<b>Total Inactives</b>		<u>\$ 292,710,197</u>
<b>Active Firemen</b>		
Service Retirement	\$ 181,593,371	
Ordinary Disability Retirement	7,169,218	
Accidental Disability Retirement	74,282,887	
Withdrawal Benefit	1,904,769	
Ordinary Death	5,554,484	
Accidental Death	2,378,337	
<b>Total Actives</b>		<u>\$ 272,883,066</u>
<b>DROP Firemen</b>		
Account Balances <sup>a</sup>		
Actives	\$ 10,416,381	
Retirees	11,438,822	
Refund of Member Contributions	11,440,625	
Future Account Additions and Benefits	31,566,334	
<b>Total DROPS</b>		<u>\$ 64,862,162</u>
<b>System Employees Benefit Fund</b>		<u>\$ 445,253</u>
<b>Total Present Value Future Benefits</b>		<u>\$ 630,900,678</u>

<sup>a</sup> As of October 1, 2009, there are 170 employees with DROP account balances, of which 63 are active members participating in the DROP.

# SUMMARY OF ACTUARIAL VALUATION RESULTS (CONTINUED)

## Actuarial Value of Assets

**(1) Expected Return on Market Value of Assets for Prior Year**

- (a) Market Value of Assets as of 9/30/08<sup>a</sup> \$ 416,603,847  
 (b) Actual Income and Disbursements in Prior Year Weighted for Timing

Item	Amount	Weight for Timing	Weighted Amount
i) Member Contributions	\$ 2,917,843	50.0%	\$ 1,458,922
ii) City Contributions & Misc.	12,193,989	50.0%	6,096,995
iii) Benefit Payments	(34,230,413)	50.0%	(17,115,207)
iv) Refunds	(1,206,585)	50.0%	(603,293)
v) Administration	(966,132)	50.0%	(483,066)
vi) Total			\$ (10,645,649)

- (c) Market Value of Assets Adj. for Actual Income and Disbursements [(a) + (b)(vi)] \$ 405,958,198  
 (d) Assumed Rate of Return on Plan Assets for the Year 7.625%  
 (e) Expected Return Over Twelve Month Period 30,954,313  
 (f) Expected Market Value of Assets 10/1/09 \$ 426,266,862

**(2) Actual Return on Market Value of Assets for Prior Year**

- (a) Market Value of Assets as of 9/30/08<sup>a</sup> \$ 416,603,847  
 (b) Income (less investment income) for Prior Plan Year (21,291,298)  
 (c) Market Value of Assets as of 10/1/09<sup>a</sup> 376,671,131  
 (d) Actual Return [(c) - (b) - (a)] \$ (18,641,418)

**(3) Investment Gain/(Loss) for Prior Period**

\$ (49,595,731)

**(4) Actuarial Value of Assets as of 10/1/09**

- (a) Market Value of Assets as of 10/1/09 \$ 376,671,131  
 (b) Deferred Investment Gains and (Losses) for Last 3 Years

Plan Year	Gain/(Loss)	Weight for Timing	Deferred Amount
i) 2007	\$ 33,917,163	0.00%	\$ -
ii) 2008	(119,761,241)	33.33%	(39,920,414)
iii) 2009	(49,595,731)	66.67%	(33,063,821)
iv) Total	\$ (135,439,809)		\$ (72,984,235)

- (c) Actuarial Value of Assets [(a) - (b) (iv)] \$ 449,655,366

The calculated value is determined by adjusting the market value of assets to reflect the investment gains and losses (the difference between the actual investment return and the expected investment return) during each of the last 3 years at the rate of 33.33% per year.

<sup>a</sup> Excluding Future Benefit Fund

**SUMMARY OF ACTUARIAL VALUATION RESULTS  
(CONTINUED)**

**Amortization Schedule of Unfunded Accrued Liability**

<u>Date Established</u>	<u>Original Period</u>	<u>Outstanding Period 10/1/09</u>	<u>Payment End of Year</u>	<u>Outstanding Balance 10/1/09</u>
9/1/1981	30	1 Years, 11 Months	\$ -	\$ 82,379
9/1/1982	30	2 Years, 11 Months	-	(2,790,365)
9/1/1983	30	3 Years, 11 Months	-	116,961
9/1/1984	30	4 Years, 11 Months	-	1,851,504
9/1/1985	30	5 Years, 11 Months	-	1,414,383
9/1/1986	30	6 Years, 11 Months	-	371,994
9/1/1987	30	7 Years, 11 Months	-	2,342,900
9/1/1988	30	8 Years, 11 Months	-	(4,012,977)
9/1/1989	30	9 Years, 11 Months	-	516,575
9/1/1990	30	10 Years, 11 Months	-	681,395
9/1/1990	30	10 Years, 11 Months	-	2,525,712
9/1/1991	30	11 Years, 11 Months	-	(1,394,244)
9/1/1993	30	13 Years, 11 Months	-	2,697,816
9/1/1996	30	16 Years, 11 Months	-	354,178
9/1/1999	30	19 Years, 11 Months	835,438	8,421,018
9/1/2000	30	20 Years, 11 Months	335,172	3,450,521
9/1/2001	30	21 Years, 11 Months	(134,627)	(1,412,852)
9/1/2002	30	22 Years, 11 Months	2,104,448	22,475,956
10/1/2006	30	27 Years, 0 Months	(743,321)	(8,407,933)
10/1/2007	30	28 Years, 0 Months	731,920	8,372,491
<b>Total</b>			<b>\$ 3,129,030</b>	<b>\$ 37,657,413</b>

On May 13, 1998, the City of St. Louis conducted a bond issue in the amount of \$27,943,654. This amount was equal to the present value on that date of the scheduled unfunded accrued liability amortization payments through August 31, 2010, and was applied to prepay those scheduled payments. Therefore, there will be no amortization payments for the bases established before the bond issue until August 31, 2011. The outstanding balance for these bases is the present value on the valuation date of the payments due on and after August 31, 2011. Amortization payments for bases established after the bond issue are made beginning in the plan year in which the base was established.

**SUMMARY OF ACTUARIAL VALUATION RESULTS  
(CONTINUED)**

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The valuation balance sheet shown below demonstrates the sources of income required to fund the current present value of future benefits as of the valuation date.

**Valuation Balance Sheet**

**Sources of Funds**

<b>Actuarial Asset Value</b>		<b>\$ 449,655,366</b>
<b>Present Value of Future Contributions</b>		
Members at 8% of Future Compensation	\$ 24,340,434	
Members at 1% of Future Compensation	150,781	
<b>Total</b>	<u>                    </u>	<b><u>\$ 24,491,215</u></b>
<b>City's Future Contributions</b>		
Normal Cost	\$119,096,684	
Accrued Liability	37,657,413	
<b>Total</b>	<u>                    </u>	<b><u>\$ 156,754,097</u></b>
<b>Grand Total</b>		<b><u>\$ 630,900,678</u></b>

**SUMMARY OF ACTUARIAL VALUATION RESULTS  
(CONTINUED)**

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**Change in Market Value of Assets**

<b>Receipts</b>		
Paid by City		
Allocated to General Reserve Fund		\$ 12,193,989
Members' Contribution		
To Members' Savings Fund		\$ 2,917,843
Income Received on Investments		
Allocated to Member's Savings Fund	\$ (3,055,262)	
Allocated to Benefit Reserve Fund	(13,050,270)	
Allocated to General Reserve Fund	(3,502,018)	
Allocated to Future Benefit Fund	(235,035)	
Allocated to Expense Fund	977,713	\$ (18,864,872)
<b>Total Receipts</b>		<b>\$ (3,753,040)</b>
<b>Disbursements</b>		
Payment to Retired Members and Dependents:		
From Benefit Reserve Fund		
To Retirees, Beneficiaries, and Dependents		\$ (34,230,413)
From Future Benefit Fund		
To Retirees, Beneficiaries, and Dependents		\$ -
From Members Savings Fund		
Withdrawals, Deaths, and Retirements		\$ (1,206,585)
Operating Expenses		\$ (977,713)
<b>Total Disbursements</b>		<b>\$ (36,414,711)</b>
<b>Net Operating Income</b>		<b>\$ (40,167,751)</b>
<b>Fund Balance October 1, 2008</b>		<b>\$ 421,475,703</b>
<b>Fund Balance October 1, 2009</b>		<b>\$ 381,307,952</b>

## **DESCRIPTION OF FUNDS**

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For administrative purposes, the assets of the System are accounted for as four separate funds, as described below. The first three funds were established by Ordinance 49623. The other fund, the Future Benefit Fund, was established by Ordinance 61414. Only the assets of the first three funds are considered when determining the actuarial funding requirements.

Member's Savings Fund: All contributions by members are credited to this Fund. Interest at a rate determined by the Board is credited annually on the minimum balance in each member's account during the preceding year. Withdrawal refunds of member's accumulated contribution are charged to this Fund. Upon retirement or death of an active member after October 2, 1983, the member's own contributions are refunded to him while the balance of his accumulated contribution fund is transferred to the Benefit Reserve Fund.

Benefit Reserve Fund: Upon retirement or death, this fund is credited with the remaining balance of the member's accumulated contribution fund after his own contributions have been refunded to him from the Member's Savings Fund. It is also credited with an additional amount from the General Reserve Fund which, when added to the Benefit Reserve Fund, will be adequate to provide the present value of all benefits payable to all members and beneficiaries currently receiving benefits. All annuities granted are payable from this Fund.

General Reserve Fund: Contributions made by the City are credited to this Fund, and the reserves for benefits not provided by member's contributions are accumulated in this fund.

Future Benefit Fund: The entire fund is excluded from the assets used to determine the contribution requirement for the upcoming year. Through the SHARE program, one-half of the return on the fund is used to provide ad-hoc increases for members not eligible for other benefit increases.

**SUMMARY OF ACTUARIAL VALUATION RESULTS  
(CONTINUED)**

		<b>Fund Balances</b>				
		<u>Total</u>	<u>Members Savings Fund</u>	<u>Benefit Reserve Fund</u>	<u>General Reserve Fund</u>	<u>Future Benefit Fund</u>
<b>Balance, September 30, 2008</b>	\$	421,475,703	62,476,638	287,631,676	66,495,533	4,871,856
<b><u>Additions</u></b>						
Member Contributions		2,917,843	2,917,843	-	-	-
City Appropriations		10,974,590	-	-	10,974,590	-
Airport Appropriations		1,219,399	-	-	1,219,399	-
Interest and Dividends Received		(19,842,585)	(3,055,262)	(13,050,270)	(3,502,018)	(235,035)
<b>Transfer Due to Surplus/Deficit</b>		-	6,061,879	52,359,204	(58,421,083)	-
<b>Total Additions</b>		(4,730,753)	5,924,460	39,308,934	(49,729,112)	(235,035)
<b>Deductions</b>						
Benefit Payments		(34,230,413)	-	(34,230,413)	-	-
Refunds w/o Interest and Withdrawals w/ Interest		(1,206,585)	(1,206,585)	-	-	-
<b>Total Deductions</b>		(35,436,998)	(1,206,585)	(34,230,413)	-	-
<b>Balance, September 30, 2009</b>	<b>\$</b>	<b>381,307,952</b>	<b>67,194,513</b>	<b>292,710,197</b>	<b>16,766,421</b>	<b>4,636,821</b>

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## **SECTION B**

### **GASB STATEMENT NO. 25**

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**This information is presented in draft form for review by the City's auditor. Please let us know if there are any changes so that we may maintain consistency with the City's financial statements.**

**SUPPLEMENTARY INFORMATION  
SCHEDULE OF FUNDING PROGRESS**

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Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability <sup>a</sup> (AAL)	Unfunded AAL (UAAL)	Funded Ratio	Covered Payroll	UAAL as a % of Covered Payroll
	(a)	(b)	(b) - (a)	(a) / (b)	(c)	((b) - (a)) / (c)
10/01/2009	\$ 449,655,366	\$ 487,312,779	\$ 37,657,413	92.3%	\$ 42,052,210	89.5%
10/01/2008	485,138,953	523,035,764	37,896,811	92.8%	41,648,953	91.0%
10/01/2007	495,116,340	533,235,588	38,119,248	92.9%	37,690,439	101.1%
10/01/2006	410,775,345	440,486,134	29,710,789	93.3%	35,726,289	83.2%
10/01/2005	391,181,701	429,764,156	38,582,455	91.0%	35,433,943	108.9%
10/01/2004	369,893,135	408,660,044	38,766,909	90.5%	33,847,826	114.5%
09/01/2003	391,020,699	429,972,716	38,952,017	90.9%	34,648,486	112.4%
09/01/2002	427,199,947	466,310,235	39,110,288	91.6%	34,520,010	113.3%
09/01/2001	456,143,883	470,607,738	14,463,855	96.9%	32,626,002	44.3%
09/01/2000	441,611,320	457,572,578	15,961,258	96.5%	31,559,439	50.6%

<sup>a</sup> The actuarial accrued liability equals the outstanding balance of the initial unfunded actuarial liability under the entry age frozen initial liability cost method plus the actuarial value of assets.

## SCHEDULE OF EMPLOYER CONTRIBUTIONS

### Annual Required Contribution

Valuation Date	GASB Statement #25 Annual Required Contribution			Statutory Annual Required Contribution		
	Per Actuarial Valuation	Percentage Contributed	Percentage of Covered Payroll	Per Actuarial Valuation	Percentage Contributed	Percentage of Covered Payroll
2009	\$ 8,661,890	140.8%	20.6%	\$ 12,193,989	100.0%	29.0%
2008	12,585,106	59.5%	30.2%	7,484,524	100.0%	18.0%
2007	17,206,230	287.1%	45.7%	14,285,300	345.8%	37.9%
2006	17,871,455	23.0%	50.0%	18,179,873	22.6%	50.9%
2005	14,766,270	27.8%	41.7%	17,768,649	23.1%	50.1%
2004	9,721,831	21.1%	28.7%	13,765,477	14.9%	40.7%
2003	4,289,688	48.4%	12.4%	8,913,102	23.3%	25.7%
2002	3,514,488	95.7%	10.2%	3,365,007	100.0%	9.7%
2001	3,300,380	107.4%	10.1%	3,544,385	100.0%	10.9%
2000	2,905,731	111.9%	9.2%	3,251,579	100.0%	10.3%

## SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

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The information presented in the required schedules was determined as part of the actuarial valuation at the dates indicated. Additional information as of the latest actuarial valuation follow:

Valuation date:	October 1, 2009
Actuarial cost method:	Entry Age - Frozen Initial Liability
Amortization method:	30-year closed period from establishment
Remaining amortization period:	Various
Asset valuation method:	3-year smoothed market

Actuarial assumptions:

Investment rate of return	7.625%
Projected salary increases	4.000%
Includes inflation at	3.500%
Cost-of-living adjustments	
	Under Age 60
Service	COLA
20-24 Years	1.500%
25-29 Years	2.250%
30 or more Years	3.000%

Over Age 60

3% with a maximum of 25% in increases after age 60

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## **SECTION C**

### **DATA REFLECTING PLAN MEMBERSHIP**

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## DATA REFLECTING PLAN MEMBERSHIP

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### Summary of Membership as of October 1, 2009

#### Retirees and Dependents

	<u>Number</u>	<u>Monthly Pension</u>
<b>Retirees</b>		
1960 Plan	375	\$ 1,025,218
<b>Ordinary Disability</b>		
1960 Plan	20	34,009
<b>Accidental Disability</b>		
1960 Plan	320	1,078,982
<b>Widows</b>		
1960 Plan	281	256,367
1944 Plan	1	200
Old Plan	1	200
<b>Children</b>		
1960 Plan	<u>12</u>	<u>4,883</u>
<b>Total</b>	<b>1,010</b>	<b>\$ 2,399,859</b>

#### Active and DROP

	<u>Number</u>	<u>Member's Annual Compensation</u>	<u>Member's Annual Contribution</u>
<b>Actives - Non-DROP</b>	665	\$ 37,618,833	
<b>Actives - DROP</b>	<u>63</u>	<u>4,433,377</u>	
<b>Total</b>	<b>728</b>	<b>\$ 42,052,210</b>	<b>\$ 2,917,843</b>

**DATA REFLECTING PLAN MEMBERSHIP  
(CONTINUED)**

**Active Non-DROP Members as of October 1, 2009  
By Attained Age and Years of Service**

Attained Age	<u>Years of Service to Valuation Date</u>								Totals
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Up	
<b>20-24</b>	14								<b>14</b>
	\$ 554,007								\$ 554,007
<b>25-29</b>	44								<b>44</b>
	\$ 1,831,025								\$ 1,831,025
<b>30-34</b>	52	14	4						<b>70</b>
	\$ 2,258,596	\$ 738,759	\$ 226,765						\$ 3,224,120
<b>35-39</b>	29	25	50	2					<b>106</b>
	\$ 1,307,101	\$ 1,326,448	\$ 2,912,400	\$ 114,349					\$ 5,660,298
<b>40-44</b>	21	25	46	63	9				<b>164</b>
	\$ 976,345	\$ 1,338,101	\$ 2,659,267	\$ 3,935,353	\$ 616,028				\$ 9,525,094
<b>45-49</b>	12	8	30	78	47	2			<b>177</b>
	\$ 585,816	\$ 434,552	\$ 1,761,449	\$ 4,794,095	\$ 3,114,598	\$ 146,539			\$ 10,837,049
<b>50-54</b>	5	2	11	8	12	16	9		<b>63</b>
	\$ 215,233	\$ 106,512	\$ 638,529	\$ 491,220	\$ 866,489	\$ 1,073,491	\$ 714,654		\$ 4,106,128
<b>55-59</b>		1	2		1	1	16	1	<b>22</b>
		\$ 48,746	\$ 112,012		\$ 86,854	\$ 60,019	\$ 1,160,178	\$ 59,675	\$ 1,527,484
<b>60-64</b>			1				3	1	<b>5</b>
			56,733				207,909	\$ 88,986	\$ 353,628
<b>Totals: Count</b>	<b>177</b>	<b>75</b>	<b>144</b>	<b>151</b>	<b>69</b>	<b>19</b>	<b>28</b>	<b>2</b>	<b>665</b>
<b>Payroll</b>	<b>\$ 7,728,123</b>	<b>\$ 3,993,118</b>	<b>\$ 8,367,155</b>	<b>\$ 9,335,017</b>	<b>\$ 4,683,969</b>	<b>\$ 1,280,049</b>	<b>\$ 2,082,741</b>	<b>\$ 148,661</b>	<b>\$ 37,618,833</b>

**DATA REFLECTING PLAN MEMBERSHIP  
(CONTINUED)**

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**Active DROP Members as of October 1, 2009  
By Attained Age and Years of Service**

<b>Attained</b>						
<b>Age</b>		<b>20-24</b>	<b>25-29</b>	<b>30 &amp; Up</b>	<b>Totals</b>	
<b>40-44</b>		3			<b>3</b>	
	\$	190,071			\$	<b>190,071</b>
<b>45-49</b>		15	2	1	<b>18</b>	
	\$	954,069	\$ 120,037	\$ 88,372	\$	<b>1,162,478</b>
<b>50-54</b>		11	3	15	<b>29</b>	
	\$	723,347	\$ 178,777	\$ 1,142,828	\$	<b>2,044,952</b>
<b>55-59</b>				9	<b>9</b>	
				\$ 733,938	\$	<b>733,938</b>
<b>60-64</b>				4	<b>4</b>	
				\$ 301,938	\$	<b>301,938</b>
<b>Totals:</b>						
<b>Count</b>		<b>29</b>	<b>5</b>	<b>29</b>		<b>63</b>
<b>Payroll</b>	\$	<b>1,867,487</b>	<b>298,814</b>	<b>2,267,076</b>	\$	<b>4,433,377</b>

**DATA REFLECTING PLAN MEMBERSHIP  
(CONTINUED)**

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**Service Retirees - 1960 Plan**

<u>Age</u> <u>9/30/2009</u>	<u>Number</u>	<u>Monthly</u> <u>Allowance</u>	<u>Age</u> <u>9/30/2009</u>	<u>Number</u>	<u>Monthly</u> <u>Allowance</u>
43	1	\$ 2,726.79	70	24	\$ 77,890.99
44	1	2,560.52	71	18	54,009.24
46	1	1,852.99	72	15	43,932.52
47	2	4,461.06	73	12	32,520.60
49	2	4,686.48	74	10	30,065.21
50	1	1,986.32	75	12	29,549.38
51	5	10,227.05	76	12	31,320.38
52	2	4,211.80	77	13	34,192.35
53	4	8,869.53	78	17	38,993.88
54	4	8,722.86	79	7	14,906.06
55	7	21,600.94	80	10	20,457.51
56	6	20,044.79	81	6	13,255.62
57	2	3,678.68	82	13	31,821.79
58	6	12,788.88	83	10	19,558.13
59	9	19,064.57	84	9	26,108.39
60	5	15,062.75	85	4	8,350.61
61	9	19,947.56	86	8	19,339.94
62	11	40,398.59	88	8	18,298.01
63	10	32,545.17	89	9	18,965.48
64	10	29,627.91	90	1	2,002.08
65	3	9,675.97	91	2	4,284.88
66	7	25,743.55	92	2	5,362.14
67	14	40,797.17	93	1	2,541.78
68	14	47,225.33	94	1	3,519.24
69	14	53,815.74	98	1	1,648.72
<b>Total</b>				<b>375</b>	<b>\$ 1,025,217.93</b>
<b>Average Monthly Allowance</b>					<b>\$ 2,733.91</b>
<b>Average Age</b>					<b>71.3</b>

**DATA REFLECTING PLAN MEMBERSHIP  
(CONTINUED)**

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**Ordinary Disability Retirees - 1960 Plan**

<u>Age</u> <u>9/30/2009</u>	<u>Number</u>	<u>Monthly</u> <u>Allowance</u>
40	1	\$ 1,392.55
41	2	2,447.55
42	1	2,341.34
44	1	993.72
48	2	6,023.53
54	1	858.27
55	1	1,164.59
56	1	1,095.77
58	1	1,072.13
61	2	3,771.55
66	1	2,743.53
67	2	2,714.13
68	1	3,623.70
73	1	437.50
76	1	2,089.50
80	1	1,239.72
<b>Total</b>	<b>20</b>	<b>\$ 34,009.08</b>
<b>Average Monthly Allowance</b>		<b>\$ 1,700.45</b>
<b>Average Age</b>		<b>57.3</b>

**DATA REFLECTING PLAN MEMBERSHIP  
(CONTINUED)**

**Accidental Disability Retirees - 1960 Plan**

<u>Age</u> <u>9/30/2009</u>	<u>Number</u>	<u>Monthly</u> <u>Allowance</u>	<u>Age</u> <u>9/30/2009</u>	<u>Number</u>	<u>Monthly</u> <u>Allowance</u>
32	1	\$ 3,777.86	64	3	\$ 13,434.82
33	1	3,777.86	65	5	19,619.76
34	1	3,586.69	66	12	45,548.69
38	1	3,586.75	67	4	17,628.25
39	2	7,394.45	68	3	10,457.81
40	2	7,156.15	69	18	65,794.24
41	1	3,581.91	70	5	11,662.69
42	3	10,840.23	71	12	40,655.58
43	4	14,699.78	72	10	27,140.67
44	5	18,406.16	73	9	27,429.55
45	10	36,917.40	74	13	39,016.12
46	8	30,159.25	75	5	10,335.52
47	10	35,705.20	76	5	12,078.26
48	9	33,707.89	77	6	19,950.38
49	8	31,161.51	78	5	13,389.87
50	3	12,480.90	79	8	23,226.77
51	11	43,630.94	80	2	3,226.36
52	9	34,764.98	81	5	12,304.55
53	3	9,580.68	82	3	5,357.57
54	5	17,118.68	83	10	17,090.55
55	11	43,107.59	84	5	6,960.15
56	4	13,994.35	85	2	3,804.36
57	5	17,665.78	86	2	6,137.25
58	6	23,504.43	87	2	5,263.87
59	10	38,757.24	89	1	2,285.59
60	10	35,173.76	90	1	3,948.61
61	6	28,840.79	94	1	820.63
62	7	25,816.69	95	1	2,193.33
63	6	23,324.42			
<b>Total</b>				<b>320</b>	<b>\$ 1,078,982.12</b>
<b>Average Monthly Allowance</b>					<b>\$ 3,371.82</b>
<b>Average Age</b>					<b>63.0</b>

**DATA REFLECTING PLAN MEMBERSHIP  
(CONTINUED)**

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**Widows - 1960 Plan**

<u>Age</u> <u>9/30/2009</u>	<u>Number</u>	<u>Monthly</u> <u>Allowance</u>	<u>Age</u> <u>9/30/2009</u>	<u>Number</u>	<u>Monthly</u> <u>Allowance</u>
43	1	\$ 1,868.76	74	4	\$ 4,199.30
44	1	1,959.66	75	9	7,478.76
45	1	906.78	76	7	6,543.32
46	1	1,944.64	77	11	10,997.72
50	1	978.88	78	13	10,708.60
52	1	2,196.80	79	13	10,125.70
53	2	3,511.00	80	8	7,919.44
56	3	4,301.36	81	10	7,899.64
57	4	6,443.30	82	16	11,911.84
58	4	6,113.23	83	6	5,068.48
59	3	4,745.17	84	7	5,369.47
60	4	6,051.71	85	10	6,836.75
62	1	564.54	86	14	9,364.00
63	4	4,067.60	87	8	4,581.24
64	5	4,718.33	88	2	1,153.56
65	5	5,706.00	89	5	2,600.59
66	6	7,021.65	90	4	1,988.60
67	5	7,258.06	91	3	1,558.11
68	10	11,976.53	92	5	2,969.58
69	12	13,609.78	93	5	1,871.04
70	12	11,789.54	94	1	266.12
71	7	7,057.62	95	4	1,354.42
72	8	6,956.86	96	2	782.02
73	11	10,214.25	97	2	856.16
<b>Total</b>				<b>281</b>	<b>\$ 256,366.51</b>
<b>Average Monthly</b>					
<b>Allowance</b>					<b>\$ 912.34</b>
<b>Average Age</b>					<b>76.1</b>

**DATA REFLECTING PLAN MEMBERSHIP  
(CONTINUED)**

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**Widows - 1944 Plan**

<u>Age</u> <u>9/30/2009</u>	<u>Number</u>	<u>Monthly</u> <u>Allowance</u>
86	<u>1</u>	<u>\$ 200.00</u>
<b>Total</b>	<b>1</b>	<b>\$ 200.00</b>
<b>Average Monthly Allowance</b>		<b>\$ 200.00</b>
<b>Average Age</b>		<b>86.0</b>

**DATA REFLECTING PLAN MEMBERSHIP  
(CONTINUED)**

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**Widows - Old Plan**

<u>Age</u> <u>9/30/2009</u>	<u>Number</u>	<u>Monthly</u> <u>Allowance</u>
91	<u>1</u>	\$ <u>200.00</u>
<b>Total</b>	<b>1</b>	<b>\$ 200.00</b>
<b>Average Monthly Allowance</b>		<b>\$ 200.00</b>
<b>Average Age</b>		<b>91.0</b>

**DATA REFLECTING PLAN MEMBERSHIP  
(CONTINUED)**

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**Children - 1960 Plan**

<u>Age</u> <u>9/30/2009</u>	<u>Number</u>	<u>Monthly</u> <u>Allowance</u>
11	1	\$ 388.93
13	1	352.83
15	1	181.36
16	1	391.93
17	1	454.11
18	1	466.66
19	1	296.91
20	2	906.02
28	1	931.01
39	1	286.01
60	<u>1</u>	<u>227.45</u>
<b>Total</b>	<b>12</b>	<b>\$ 4,883.22</b>
<b>Average Monthly Allowance</b>		<b>\$ 406.94</b>
<b>Average Age</b>		<b>23.0</b>

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## **SECTION D**

### VALUATION PROCEDURES

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## ACTUARIAL COST METHOD

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***The Actuarial Cost Method.*** The method used in this valuation is the Frozen Entry Age Actuarial Cost Method. This method determines a normal cost on an aggregate basis expressed as a level percentage of pay. The normal cost rate equals the ratio of (a) the present value of future benefits less the actuarial value of assets less the frozen unfunded actuarial liability, to (b) the present value of future salaries. Under this method, the actuarial gains (losses), as they occur, reduce (increase) future normal costs.

***Amortization of Frozen Unfunded Accrued Liabilities.*** Unfunded actuarial accrued liabilities for changes in assumptions, plan provisions, or methods were amortized on a level basis over 30 years from the creation of the unfunded base. A schedule of the frozen unfunded accrued liability amortization is shown in section A of this report.

The total contribution is equal to the normal cost plus the amortization of the frozen unfunded accrued liabilities.

***Actuarial Value of Assets.*** The calculated value is determined by adjusting the market value of assets, excluding the future benefit fund, to reflect the investment gains and losses (the difference between the actual investment return and the expected investment return) during each of the last three years at a rate of 33 percent per year.

## ACTUARIAL ASSUMPTIONS

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*The assumed rate of investment return* used was 7.625 percent, net of expenses, annually.

*The mortality table* used to measure ordinary pre-retirement mortality and post retirement mortality was the 1994 Group Annuity Mortality Table. This assumption is used to measure the probabilities of members dying before retirement and the probabilities of each benefit payment being made after retirement. Illustrative rates are shown below.

<b>Ordinary Mortality</b>		
<b>Rate Per 1,000 Employees</b>		
<b>Age</b>	<b>Male</b>	<b>Female</b>
25	0.6610	0.2910
35	0.8510	0.4780
45	1.5780	0.9730
55	4.4250	2.2940
65	14.5350	8.6360
75	37.2110	22.6860
85	97.2400	67.7380

*The accidental mortality* rate for pre-retirement mortality is assumed to be .0015 per year for ages up to and including age 49.

*The disability retirement mortality table* was the 1994 Group Annuity Mortality Table with a six-year set forward. Illustrative rates are shown below.

<b>Post - Disability Mortality</b>		
<b>Rate Per 1,000 Employees</b>		
<b>Age</b>	<b>Male</b>	<b>Female</b>
45	2.8720	1.5680
55	8.9860	5.0930
65	25.9510	14.9530
75	68.6150	43.9520
85	167.2600	128.7510

**ACTUARIAL ASSUMPTIONS  
(CONTINUED)**

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*Rates of separation from active membership* are represented by the following table (rates do not apply to members eligible to retire and do not include separation on account of death or disability). This assumption measures the probabilities of members terminating employment.

Years of Service	Employee Withdrawal Rate Per 1,000 Employees Rate of Withdrawal
0	80.0
1	50.0
2	20.0
3	20.0
4	20.0
5	20.0
6	20.0
7	20.0
8	20.0
9	15.0
10	15.0
11	15.0
12	15.0
13	10.0
14	10.0
15	10.0
16	5.0
17	5.0
18	5.0
19	5.0
20 or more	0.0

*The rates of salary increase* used for individual members are 4.0 percent annual increases. This assumption is used to project a member's current salary to the salaries upon which benefit amounts will be based.

**ACTUARIAL ASSUMPTIONS  
(CONTINUED)**

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*The rates of disability* for active members are broken out between ordinary and accidental disability. Ordinary disability accounts for 15 percent of total disabilities and accidental disability accounts for 85 percent of total disabilities.

<b>Employee Disablement Rate Per 1,000 Employees</b>		
<b>Age</b>	<b>Ordinary</b>	<b>Accidental</b>
25	0.7500	4.2500
30	0.7500	4.2500
35	1.5000	8.5000
40	3.0000	17.0000
45	3.0000	17.0000
50	5.2500	29.7500
55	5.2500	29.7500
60	5.2500	29.7500

*Probabilities of retirement* for members eligible to retire during the next year were as follows:

<b>Rates of Retirement</b>	
<b>Years of Service</b>	<b>Rate of Retirement</b>
20	20.00 %
21	12.50
22	5.00
23	5.00
24	5.00
25	5.00
26	5.00
27	5.00
28	5.00
29	5.00
30 or more	100.00

## ACTUARIAL ASSUMPTIONS (CONTINUED)

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***Sick Leave Benefits.*** It is assumed that the sick leave balance at retirement is equal to two times the annual pension benefit the member is eligible to receive before any adjustments for sick leave. It is assumed that this sick leave balance yields a fifteen percent increase in the retirement benefit and a lump-sum equal to 60.3 percent of the accumulated sick leave balance. Furthermore, it is assumed that if a member has not participated in the DROP, the member will participate in the DROP when pension payments commence and the benefit increase and lump sum will be payable four years later at actual retirement. If the member has participated in the DROP and subsequently returned to active service, the benefit increase and lump sum are assumed to be payable immediately upon retirement.

***Shift Differential.*** The bi-weekly pay rate used for valuation purposes is increased 2.5 percent to account for approximately 100 eight hour shifts at the higher hourly pay rate.

## **SUMMARY OF PLAN PROVISIONS**

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The Retirement System was revised effective January 1, 1960, under Ordinance 49623.

Prior to January 1, 1960, there were two groups of members, one group referred to as “Old Plan” and the other group as “New Plan”. There is no longer a need for this separation in the active members because the revised system makes no distinction between the “Old Plan” members and the “New Plan” members. The retirees are divided into Old Plan, 1944 Plan (New Plan) and 1960 Plan (Ordinance 49623).

### **Service Retirement**

Retirements after June 3, 1978: Voluntary retirement after 20 or more years of service. Compulsory retirement at age 60 with 30 years of service. The monthly retirement allowance consists of 40 percent of the final two-year average monthly compensation at 20 years of service, plus 2.0 percent of such final average compensation for each of the next five years of service (50 percent of final average compensation after 25 years of service), plus 4.0 percent of such final average compensation for each additional year of service over 25 years, but with a maximum of 30 years (70 percent of final average compensation after 30 years of service).

Effective October 3, 1982, any retired firemen may act as a special advisor to the retirement system and thereby be entitled to a minimum pension of \$350.00 per month.

Effective October 1, 1989, any unused accrued sick leave will be added to the years of service used to determine the monthly pension allowance. If the total years of service are limited to 30 years as described above, the unused accrued sick leave will be added to 30.

Effective November 28, 1995, the monthly retirement allowance consists of 40 percent of the final two-year average monthly compensation at 20 years of service, plus 2.0 percent of such final average compensation for each of the next five years of service (50 percent of final average compensation after 25 years of service), plus 5.0 percent of such final average compensation for each additional year of service over 25 years, but with a maximum of 30 years (75 percent of final average compensation after 30 years of service).

## SUMMARY OF PLAN PROVISIONS (CONTINUED)

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Effective July 1, 2002, a Member has three options for use of unused sick leave and service retirement:

- Receive 100 percent of the value (sick leave multiplied by rate of pay) as a lump sum deposit into the DROP account,
- Receive 100 percent of the sick leave as service added to the credited service used in the calculation of the retirement benefit, or
- Receive 50 percent of the value as a lump sum deposit into the DROP account, and receive 25 percent as service added to the credited service used in the calculation of the retirement benefit, and receive 25 percent of the value as additional pay solely for purposes of determining the final average earnings used in the calculation of the retirement benefit.

### **Ordinary Disability Retirement**

Provides a service retirement allowance if 20 or more years of service. Provides for a monthly retirement allowance after five years of service (but less than 20 years) which is the largest of (a) 90 percent of the monthly service retirement allowance based on the actual service or (b) one-fourth of the final two-year average monthly compensation. In addition, a monthly benefit of 10 percent of the final two-year average monthly compensation, for each unmarried dependent child under age eighteen, but not in excess of three children, is provided.

### **Accidental Disability Retirement**

Provides for retirement if the member is totally and permanently incapacitated for duty as the result of an accident or exposure occurring while in the actual performance of duty. The monthly retirement allowance is 75 percent of the highest monthly salary in effect for the highest step in the range of salary, for his rank held at retirement.

## SUMMARY OF PLAN PROVISIONS (CONTINUED)

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If the accident immediately, totally and permanently incapacitates the member from performing any type of work and confines him to his home, the Board may provide an increased retirement allowance not to exceed 100 percent of the member's actual rate of compensation as of the date his disability allowance began.

### **DROP Benefit**

A member eligible for service retirement may defer receipt of the service retirement benefit for up to five years while continuing active employment. Contributions by the member while in the DROP are one percent of annual compensation. The amount the member would have received as a service retirement benefit is deposited into the DROP account. A member terminating the DROP plan may retire or continue active service. Service while in the DROP will not count as creditable service. Upon termination of employment, the member may choose to receive the DROP account with the interest earned by the account.

### **Ordinary Death Benefit**

Provides for the following benefits after death which occurs:

- (1) While in service, a monthly retirement allowance to the widow during widowhood of the greater of (1) 50 percent<sup>a</sup> of the final two year average monthly compensation or (2) \$200. In addition, 10 percent of each unmarried dependent child under age eighteen in her care, but not in excess of three children.
  
- (2) After service retirement, accidental disability retirement or ordinary disability retirement, a monthly allowance to the widow during widowhood of the greater of (1) 50 percent<sup>a</sup> of the final two year average monthly compensation, or (2) \$200. In addition, 10 percent of such compensation for each unmarried dependent child under eighteen in her care but not in excess of three children.

<sup>a</sup> Assumes the widow has applied for and been appointed to the status of special consultant; if not the amount is 25 percent.

## SUMMARY OF PLAN PROVISIONS (CONTINUED)

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### **Accidental Death Benefit**

Provides, if death is the result of an accident or exposure while in the actual performance of duty, a monthly allowance to the widow during her widowhood of the greater of (1) 50 percent of the final two-year average monthly compensation or (2) \$200. In addition, 10 percent for each unmarried dependent child under 18 in her care but not in excess of three children.

### **\$2,000 Lump Sum Death Benefit**

Provides a \$2,000 lump sum amount upon the death of an active or retired member.

### **Cost-of-Living Adjustments**

(Ordinance 56444) Retirement allowances to members who retired after March 16, 1973, and prior to December 28, 1983, shall be increased 3.0 percent whenever the Consumer Price Index released by the U.S. Department of Labor shows an increase of at least 3.0 percent for three consecutive months in the preceding twelve-month period. Prior to August 31, 1980, each increase was applied to the base retirement benefit at time of retirement. Commencing August 31, 1980, the cost-of-living adjustment is made to the current retirement benefit.

Ordinance 59018 changed the cost-of-living provision for anyone retiring after December 28, 1983. For those members who retired subsequent to December 28, 1983, the cost-of-living increases for service or ordinary disability retirement are based upon the number of years of service at retirement, and are subject to a maximum of the actual increase in the Consumer Price Index over the most recent 12 months.

## **SUMMARY OF PLAN PROVISIONS (CONTINUED)**

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For a member with less than 25 years of service at retirement, the cost-of-living is 1.5 percent per year up to age 60 and 5.0 percent per year after age 60 with a 25 percent maximum applied past age 60. For a member with at least 25 years of service but less than 30 years at retirement, the cost-of-living increase is 2.25 percent per year up to age 60 and 5.0 percent per year after age 60 with a 25 percent maximum applied past age 60. For a member with 30 or more years of service at retirement, the cost-of-living increase is 3.0 percent per year up to age 60 and 5.0 percent per year after age 60 with a 25 percent maximum applied past age 60. For a member who retires at age 60 or later, the cost-of-living increase is 5.0 percent per year with a 25 percent maximum applied.

For a member who retires with an accidental disability retirement, the cost-of-living increase is 3.0 percent per year up to age 60 and 5.0 percent per year after age 60 with a 25 percent maximum applied past age 60.

### **Return of Contributions**

Upon service retirement, ordinary disability, accidental disability, or death of an active member, contributions without interest are refunded. Upon withdrawal from service of a member prior to eligibility for a service retirement allowance, the entire amount of the member's contributions with interest accumulated is returned to the member in lieu of any other benefits.