

FIREMEN'S RETIREMENT SYSTEM OF ST. LOUIS ANNUAL ACTUARIAL VALUATION OCTOBER 1, 2012

## **CONTENTS**

Section	Page	_
	1-3	Introduction
A		Valuation Results and Asset Information
	1-6 7-8	Summary of Actuarial Valuation Results Fund Balance Split
В		GASB Statement No. 25
	1 2 3	Schedule of Funding Progress Schedule of Employer Contributions Summary of Actuarial Methods and Assumptions
C		Data Reflecting Plan Membership
	1 2 3 4-10	Total Membership Active Non-DROP Member Data Active DROP Member Data Inactive Members in Payment Status
D		Valuation Procedures
	1 2-7 8-11	Actuarial Cost Method Actuarial Assumptions Brief Summary of Plan Provisions



December 21, 2012

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, 2012. 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 as of October 1, 2012, 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 System's asset values as of October 1, 2012, 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 cost 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 are unchanged from the previous valuation and are based on an experience review for the period October 1, 2005, through September 30, 2010.
- e) **Plan Provisions** The valuation is based on plan provisions in effect as of October 1, 2012.

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 Pension Board Firemen's Retirement System of St. Louis Page 2

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.

To the best of our knowledge, this actuarial statement is complete and accurate, fairly presents the actuarial position of the Firemen's Retirement System of St. Louis as of October 1, 2012, and has been prepared in accordance with generally accepted actuarial principles and practices, with the Actuarial Standards of Practice issued by the Actuarial Standards Board, and with applicable statutes.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions, contribution amounts or applicable law. Due to the limited scope of the actuary's assignment, the actuary did not perform an analysis of the potential range of such future measurements in this report.

The signing actuaries are independent of the plan sponsor.

This report should not be relied on for any purpose other than the purpose stated.

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

Respectfully yours,

Alex Rivera, FSA, EA, MAAA

alex Rivera

Senior Consultant

Lance Weiss, EA, MAAA

Laney win

Senior Consultant

#### INTRODUCTION

#### **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, 2012.

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 information and other data required by the System.

#### **Report Highlights**

The table below compares the key actuarial results from the October 1, 2012, valuation to the prior year's results. The key difference between this year's valuation results and the prior year's valuation results is the decrease in the City contribution from \$21.18 million for plan year ending September 30, 2012, to \$20.67 million for plan year ending September 30, 2013, due primarily to favorable asset and demographic experience.

The expected contribution for plan year ending September 30, 2013, before recognizing investment losses, demographic gains or changes in assumptions was estimated to be \$22.18 million. During the year, the market value of assets earned approximately 18.0 percent and actuarial value of assets earned 8.6 percent, which caused contributions to decrease by \$0.48 million. Favorable demographic experience, including salary increases lower than expected and fewer disabilities than expected, decreased expected contributions by \$1.03 million.

Summary of Results	2011	2012
Total Contribution	\$ 21,176,763	\$ 20,665,639
Present Value of Benefits	616,723,891	617,688,969
Actuarial Value of Assets	404,101,569	427,123,970
Market Value of Assets <sup>a</sup>	387,232,132	444,413,290

a Excluding Future Benefit Fund

## INTRODUCTION (CONTINUED)

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

Expected 2013 City contribution	\$ 22.18
(Decrease) due to investment loss	(0.48)
(Decrease) due to other demographic gains	 (1.03)
Actual 2013 City contribution	\$ 20.67

#### Funded Status as of October 1, 2012

The statutory cost method, Frozen Initial Liability, used to develop the City's contribution requirements, does not produce an explicit unfunded actuarial liability. For illustration purposes only, we are providing the funded status as of October 1, 2012, based on the Entry Age Normal cost method:

<b>Entry Age Normal Cost Method</b>	2011	2012	
Actuarial Liability	\$ 521,774,134	\$ 526,710,148	
Actuaral Value of Assets	404,101,569	427,123,970	
Unfunded Actuarial Liability	117,672,565	99,586,178	
Funded Ratio	77.4%	81.1%	

#### **Asset Information**

The market value of the assets of the fund, which are available for benefits, has increased from \$387.2 million at the end of FY 2011 to \$444.4 million at the end of FY 2012. The actuarial value of assets increased from \$404.1 million to \$427.1 million.

The detailed determinations of asset values utilized in this valuation and asset changes 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)

## **Membership Characteristics**

The following table shows the changes in the population of the fund. The active population has continued to decrease.

Population	2011	2012
Retired Members	376	380
Disabled Members	329	324
Widows and Children	311	309
<b>Total Inactive Members</b>	1,016	1,013
Actives - Non-DROP	605	557
Actives - DROP <sup>a</sup>	65	78
<b>Total Active and DROP Members</b>	670	635

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

## **Actuarial Assumptions and Methods**

The actuarial assumptions are unchanged from the previous valuation and are based on an experience review for the period October 1, 2005, through September 30, 2010. 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, 2011. This set of plan provisions is described in Section D.

<sup>&</sup>lt;sup>a</sup> As of October 1, 2012, there are 204 employees with DROP account balances, of which 78 are active members participating in the DROP.



## **SUMMARY OF ACTUARIAL VALUATION RESULTS**

## **Determination of City Contributions - Frozen Initial Liability**

	O	ctober 1, 2011	O	ctober 1, 2012
Present Value of All Future Benefits				
Retirees and Beneficiaries	\$	313,539,308	\$	321,820,158
Active Firemen		244,230,687		231,448,358
DROP Firemen		58,610,540		64,034,012
System Employees Benefit Fund		343,356		386,441
Total	\$	616,723,891	\$	617,688,969
Assets				
Actuarial Asset Value (3-year smoothing)		\$404,101,569	\$	427,123,970
Present Value of Future Employee Contributions		22,718,565		21,429,747
Total	\$	426,820,134	\$	448,553,717
Unfunded Accrued Liability	\$	26,653,809	\$	26,405,100
Present Value of Future Normal Costs	\$	163,249,948	\$	142,730,152
Present Value of Future Salary <sup>a</sup>	\$	321,185,884	\$	306,217,088
Normal Contribution Percent		50.827%		46.611%
Total Salary <sup>a</sup>	\$	37,157,256	\$	36,013,472
Annual City Contributions for Plan Year Ending 9/30/2013				
Normal Contribution <sup>a</sup>	\$	18,885,918	\$	16,786,239
Accrued Liability Amortization Payment		2,290,845	·	3,879,400
Grand Total	\$	21,176,763	\$	20,665,639
Normal Contribution as a % of Total Salary		50.827%		46.611%
Total Contribution as a % of Total Salary		56.992%		57.383%

<sup>&</sup>lt;sup>a</sup> Includes salary of all active members

### **Present Value of Future Benefits**

	October 1, 2011	October 1, 2012
Retirees		
1960 Plan	\$ 109,872,447	\$ 117,043,765
Prospective Widows and Children of Retired Firemen	15,563,164	15,877,685
Ordinary Disability		
1960 Plan	5,297,850	4,884,217
Prospective Widows and Children of Retired Firemen	655,548	726,398
Accidental Disability		
1960 Plan	145,431,633	146,147,869
Prospective Widows and Children of Retired Firemen	9,412,200	9,463,038
Widows		
1960 Plan	26,260,980	26,904,800
1944 Plan	10,523	9,994
Old Plan	8,517	8,159
Children		
1960 Plan	1,026,446	754,233
<b>Total Inactives</b>	\$ 313,539,308	\$ 321,820,158
Active Firemen		
Service Retirement	\$ 163,879,466	\$ 155,624,100
Ordinary Disability Retirement	9,224,770	8,755,803
Accidental Disability Retirement	63,828,118	60,352,948
Withdrawal Benefit	1,428,110	1,329,338
Ordinary Death	4,698,196	4,330,056
Accidental Death	1,172,027	1,056,113
Total Actives	\$ 244,230,687	\$ 231,448,358
DROP Firemen <sup>a</sup>		
Retiree Account Balances	\$ 10,259,955	\$ 11,316,971
Active Firemen <sup>b</sup>	48,350,585	52,717,041
Total DROPS	\$ 58,610,540	\$ 64,034,012
System Employees Benefit Fund	\$ 343,356	\$ 386,441
<b>Total Present Value Future Benefits</b>	\$ 616,723,891	\$ 617,688,969

<sup>&</sup>lt;sup>a</sup> As of October 1, 2012, there are 204 members with DROP account balances, of which 78 are active members participating in the DROP.

 $<sup>^</sup>b$  Includes active DROP balances, Refund of Member Contributions, and Future Account Additions and Benefits.

#### **Actuarial Value of Assets**

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

(a) Market Value of Assets as of 9/30/11 a

\$ 387,232,132

(b) Actual Income and Disbursements in Prior Year Weighted for Timing

		Weight for	Weighted
Item	Amount	Timing	 Amount
i) Member Contributions	\$ 2,569,508	50.0%	\$ 1,284,754
ii) City Contributions & Misc.	21,680,123	50.0%	10,840,062
iii) Benefit Payments	(33,379,933)	50.0%	(16,689,967)
iv) Refunds	(2,265,135)	50.0%	(1,132,568)
v) Total	\$ (11,395,437)		\$ (5,697,719)

- (c) Market Value of Assets Adj. for Actual Income and Disbursements [(a) + (b)(v)]
- 381,534,413

(d) Assumed Rate of Return on Plan Assets for the Year

7.625% 29,091,999

(e) Expected Return Over Twelve Month Period(f) Expected Market Value of Assets 10/1/12

\$ 404,928,694

- (2) Actual Return on Market Value of Assets for Prior Year
  - (a) Market Value of Assets as of 9/30/11 a

\$ 387,232,132

(b) Income (less investment income and expenses) for Prior Plan Year

(11,395,437)

(c) Market Value of Assets as of 10/1/12 a

444,413,290

(d) Actual Return, Net of Expenses [(c) - (b) - (a)](3) Investment Gain/(Loss) for Prior Period [2(d) - 1(e)]

\$ 68,576,595 \$ 39,484,596

- (4) Actuarial Value of Assets as of 10/1/12
  - (a) Market Value of Assets as of 10/1/12 a

\$ 444,413,290

(b) Deferred Investment Gains and (Losses) for Last 3 Years

			Weight for	Deferred
	Plan Year	 Gain/(Loss)	Timing	 Amount
i)	2010	\$ 3,594,154	0.00%	\$ -
ii)	2011	(27,101,232)	33.33%	(9,033,744)
iii)	2012	39,484,596	66.67%	26,323,064
iv)	Total	\$ 15.977.518		\$ 17,289,320

(c) Actuarial Value of Assets [(a) - (b) (iv)]

\$ 427,123,970

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>&</sup>lt;sup>a</sup> Excluding Future Benefit Fund

## **Amortization Schedule of Unfunded Accrued Liability**

Date Established	Original Period	Outstanding Period 10/1/12	Payment End of Year	Outstanding Balance 10/1/12
9/1/1983	30	0 Years, 11 Months	45,468	42,506
9/1/1984	30	1 Years, 11 Months	607,539	1,046,747
9/1/1985	30	2 Years, 11 Months	382,788	968,459
9/1/1986	30	3 Years, 11 Months	86,581	283,978
9/1/1987	30	4 Years, 11 Months	482,532	1,918,885
9/1/1988	30	5 Years, 11 Months	(746,635)	(3,452,521)
9/1/1989	30	6 Years, 11 Months	88,194	460,869
9/1/1990	30	7 Years, 11 Months	108,061	625,089
9/1/1990	30	7 Years, 11 Months	400,548	2,317,004
9/1/1991	30	8 Years, 11 Months	(207,408)	(1,307,483)
9/1/1993	30	10 Years, 11 Months	361,205	2,613,242
9/1/1996	30	13 Years, 11 Months	42,154	354,009
9/1/1999	30	16 Years, 11 Months	835,438	7,795,662
9/1/2000	30	17 Years, 11 Months	335,172	3,217,406
9/1/2001	30	18 Years, 11 Months	(134,627)	(1,325,852)
9/1/2002	30	19 Years, 11 Months	2,104,448	21,212,354
10/1/2006	30	24 Years, 0 Months	(743,322)	(8,077,308)
10/1/2007	30	25 Years, 0 Months	731,920	8,070,001
10/1/2010	30	28 Years, 0 Months	(435,013)	(4,976,147)
10/1/2011	30	29 Years, 0 Months	(465,643)	(5,381,800)
Total			\$ 3,879,400	\$ 26,405,100

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**

Actuarial Asset Value		\$ 427,123,970
<b>Present Value of Future Employee Contributions</b>		\$ 21,429,747
Present Value of City's Future Contributions		
Normal Cost	\$142,730,152	
Accrued Liability	26,405,100	
Total		\$ 169,135,252
Grand Total		\$ 617,688,969

## Change in Market Value of Assets<sup>a</sup>

Receipts			
Paid by City Allocated to General Reserve Fund		\$	21,680,123
Members' Contribution To Members' Savings Fund		\$	2,569,508
		•	_,,
Income Received on Investments			
Allocated to Member's Savings Fund	\$13,499,655		
Allocated to Benefit Reserve Fund	54,578,767		
Allocated to General Reserve Fund	498,173		
Allocated to Future Benefit Fund	893,947		
Allocated to Expense Fund	1,594,151	\$	71,064,693
Total Receipts		\$	95,314,324
Disbursement	ts		
Payment to Retired Members and Dependents:			
From Benefit Reserve Fund			
To Retirees, Beneficiaries, and Dependents		\$	(33,379,933)
From Future Benefit Fund			
To Retirees, Beneficiaries, and Dependents		\$	(16,360)
From Members Savings Fund			
Withdrawals, Deaths, and Retirements		\$	(2,265,135)
Operating Expenses		\$	(1,594,151)
Total Disbursements		\$	(37,255,579)
Net Operating Income		\$	58,058,745
Fund Balance October 1, 2011 <sup>a</sup>		\$	392,102,253
Fund Balance October 1, 2012 <sup>a</sup>		\$	450,160,998

<sup>&</sup>lt;sup>a</sup> Includes Future Benefit Fund Assets

#### **DESCRIPTION OF FUNDS**

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 of refunds of member's accumulated contribution is charged to this Fund. Upon retirement or death of an active member after October 2, 1983, the member's own contributions are refunded to the member while the balance of the member's 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 the member's own contributions have been refunded 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.

<u>General Reserve Fund</u>: 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.

<u>Future Benefit Fund</u>: 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.

## **Change in Fund Balances**

	<u>Total</u>	Members Savings Fund	Benefit Reserve Fund	General Reserve Fund	Future Benefit Fund
Market Value, September 30, 2011	\$ 392,102,253	\$ 73,271,180	\$313,539,308	\$ 421,644	\$ 4,870,121
Additions					
Member Contributions	2,569,508	2,569,508	-	-	-
City Appropriations	21,680,123	-	-	21,680,123	-
Interest and Dividends Received	69,470,542	13,499,655	54,578,767	498,173	893,947
Transfer Due to Surplus/Deficit	-	(13,232,160)	(12,917,984)	26,150,144	
Total Additions	93,720,173	2,837,003	41,660,783	48,328,440	893,947
Deductions					
Benefit Payments	(33,396,293)	-	(33,379,933)	-	(16,360)
Refunds w/o Interest and					
Withdrawals w/ Interest	 (2,265,135)	(2,265,135)	-	-	
Total Deductions	 (35,661,428)	(2,265,135)	(33,379,933)		(16,360)
Market Value, September 30, 2012	\$ 450,160,998	\$ 73,843,048	\$321,820,158	\$ 48,750,084	\$ 5,747,708

## **SECTION B**

GASB STATEMENT NO. 25

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

Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability <sup>a</sup> (AAL)	I	Unfunded AAL (UAAL)	Funded Ratio	Covered Payroll	UAAL as a % of Covered Payroll
	(a)	(b)		(b) - (a)	(a) / (b)	(c)	((b) - (a)) / (c))
10/1/2012	\$ 427,123,970	\$ 453,529,070	\$	26,405,100	94.2%	\$ 36,013,472	73.3%
10/1/2011	404,101,569	430,755,378		26,653,809	93.8%	37,157,256	71.7%
10/1/2010	407,027,843	439,351,827		32,323,984	92.6%	40,788,947	79.2%
10/1/2009	449,655,366	487,312,779		37,657,413	92.3%	42,052,210	89.5%
10/1/2008	485,138,953	523,035,764		37,896,811	92.8%	41,648,953	91.0%
10/1/2007	495,116,340	533,235,588		38,119,248	92.9%	37,690,439	101.1%
10/1/2006	410,775,345	440,486,134		29,710,789	93.3%	35,726,289	83.2%
10/1/2005	391,181,701	429,764,156		38,582,455	91.0%	35,433,943	108.9%
10/1/2004	369,893,135	408,660,044		38,766,909	90.5%	33,847,826	114.5%
9/1/2003	391,020,699	429,972,716		38,952,017	90.9%	34,648,486	112.4%

<sup>&</sup>lt;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**

GASB Statement #25 Annual Required Contribution a Statutory Annual Required Contribution Per Actuarial Percentage Percentage of Per Actuarial Percentage Percentage of Fiscal Year Valuation Contributed Covered Payroll Valuation Contributed Covered Payroll 2012 \$ 22,598,021 95.9% 62.7% \$ 21,176,763 102.4% 58.8% 2011 19,158,853 120.4% 51.6% 23,071,773 100.0% 62.1% 2010 13,609,128 131.2% 33.4% 17,854,546 100.0% 43.8% 2009 8,661,890 140.8% 20.6% 12,193,989 100.0% 29.0% 2008 30.2% 7,484,524 12,585,106 59.5% 18.0% 100.0% 17,206,230 287.1% 14,285,300 345.8% 37.9% 2007 45.7% 2006 17,871,455 23.0% 50.0% 18,179,873 22.6% 50.9% 2005 17,768,649 14,766,270 27.8% 41.7% 23.1% 50.1% 2004 9,721,831 28.7% 13,765,477 14.9% 40.7% 21.1% 2003 4,289,688 48.4% 12.4% 8,913,102 23.3% 25.7%

<sup>&</sup>lt;sup>a</sup> The GASB Statement No. 25 Annual Required Contribution is developed by using one quarter of the current year's Statutory Annual Required Contribution and three quarters of the prior year's Statutory Annual Required Contribution because the City's fiscal year ends on June 30 each year

## SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

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, 2012

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% Wage inflation <sup>a</sup> 3.350% Includes inflation at 3.000%

Cost-of-living adjustments

 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

<sup>&</sup>lt;sup>a</sup> Salary increases include seniority/promotional increases in addition to wage inflation.



## DATA REFLECTING PLAN MEMBERSHIP

## Summary of Membership as of October 1, 2012

## **Retirees and Dependents**

	<u>Number</u>	Mor	thly Pension
Retirees 1960 Plan	380	\$	1,118,629
Ordinary Disability 1960 Plan	22		37,065
Accidental Disability 1960 Plan	302		1,094,141
Widows			
1960 Plan	284		287,506
1944 Plan	1		200
Old Plan	1		200
Children			
1960 Plan	<u>23</u>		10,817
Total	1,013	\$	2,548,558

#### **Active and DROP**

	Number	Member's Compensation	S Annual  Contribution
Actives - Non-DROP	557	\$ 30,995,674	
Actives - DROP	<u>78</u>	5,017,797	
Total	635	\$ 36,013,471	\$ 2,569,508

#### Active Non-DROP Members as of October 1, 2012 By Attained Age and Years of Service

				n Date	atio	vice to Valua	e r	Years of S					A ttaine d
Totals	5 & Up	3	30-34	25-29		20-24		15-19	10-14		5-9	0-4	Age
2												2	20-24
84,590	\$											84,590	\$
21												21	25-29
896,006	\$											896,006	\$
53										8	28	25	30-34
2,389,006	\$									1	\$ 1,312,791	\$ 1,076,215	\$
79								4	35	7	27	13	35-39
3,990,942	\$							233,186	\$ 1,886,912	9 \$	\$ 1,291,399	\$ 579,445	\$
116						7		24	55	6	26	4	40-44
6,318,535	\$					462,070	\$	1,415,879	\$ 2,990,549	6 \$	\$ 1,265,896	\$ 184,141	\$
143				6		58		22	36	8	18	3	45-49
8,446,489	\$			437,320	\$	3,682,922	\$	1,313,352	\$ 1,963,325	4 \$	\$ 896,314	\$ 153,256	\$
98			1	27		37		18	9	6	6		50-54
6,027,414	\$		71,979	\$ 1,870,540	\$	2,273,572	\$	1,033,838	\$ 488,684	1 \$	\$ 288,801	\$	
39	1		11	10		1		10	3	3	3		55-59
2,460,616	\$ 89,453	\$	750,879	\$ 626,398	\$	70,885	\$	595,006	\$ 176,671	4 \$	\$ 151,324	\$	
5	1		3						1				60-64
327,427	\$ 71,979	\$	201,346	\$					54,102	\$			
1								1					65-69
54,649	\$							54,649					
557	2		15	43		103		79	139	8	108	68	Count
30,995,674	\$ 161,432	\$	1,024,204	\$ 2,934,258	\$	6,489,449	\$	4,645,910	\$ 7,560,243	5 \$	\$ 5,206,525	\$ 2,973,653	\$ Payroll

## Active DROP Members as of October 1, 2012 By Attained Age and Years of Service

	Attained Age		20-24	25-29	30 & Up	Totals
	40-44		3			3
		\$	167,049			\$ 167,049
	45-49		31	2		33
		\$	1,831,656	\$ 154,890	\$ -	\$ 1,986,546
	50-54		19	7	3	29
		\$	1,147,589	\$ 469,926	\$ 241,451	\$ 1,858,966
	55-59			1	11	12
		\$	-	\$ 57,023	\$ 863,478	\$ 920,501
	60-64			1		1
		\$_	_	\$ 84,736	\$ -	\$ 84,736
Totals:	Count		53	11	14	78
	Payroll	\$	3,146,294	766,575	1,104,928	\$ 5,017,797

### Service Retirees - 1960 Plan

Age 9/30/2012	<u>Number</u>	Monthly <u>Allowance</u>	Age 9/30/2012	<u>Number</u>	Monthly Allowance
44	2	\$ 3,859.10	69	6	\$ 25,056.94
45	2	3,971.95	70	13	40,601.75
46	3	6,640.20	71	14	47,979.64
47	2	4,541.89	72	12	45,385.18
48	4	9,475.88	73	24	77,326.44
49	1	1,908.99	74	16	48,861.78
50	7	14,657.63	75	12	33,878.10
51	5	9,978.55	76	12	32,691.19
52	1	2,369.11	77	9	27,661.06
53	6	13,841.51	78	10	23,685.54
54	10	32,698.34	79	11	28,241.39
55	3	9,967.73	80	12	32,910.09
56	4	9,137.61	81	16	36,659.10
57	3	5,535.84	82	6	13,111.05
58	8	29,182.83	83	8	16,802.51
59	8	30,020.68	84	6	13,255.62
60	7	25,991.55	85	8	20,804.36
61	10	35,826.23	86	8	15,876.04
62	13	39,908.68	87	6	19,012.23
63	8	32,958.21	88	3	6,874.70
64	10	26,785.76	89	4	10,420.44
65	11	41,271.83	91	6	13,518.35
66	12	47,447.97	92	5	10,525.88
67	10	31,083.00	93	1	2,124.00
68	1	3,966.62	95	1	 2,337.71
			Total	380	\$ 1,118,628.78
			Average Monthly Allowance		\$ 2,943.76
			Average Age		70.5

### Ordinary Disability Retirees - 1960 Plan

Age <u>9/30/2012</u>	<u>Number</u>	Monthly Allowance
43	1	\$ 1,815.43
44	2	2,497.12
45	1	1,958.93
47	2	2,621.54
48	1	3,692.06
51	1	1,580.20
57	1	884.21
58	1	1,193.88
59	1	1,128.89
60	1	1,337.02
61	1	1,104.53
64	2	4,109.65
69	1	2,848.56
70	2	2,769.49
71	1	3,681.68
76	1	437.50
79	1	2,089.50
83	1	 1,315.22
Total	22	\$ 37,065.41
Average Monthly Allowance		\$ 1,684.79
Average Age		59.5

## Accidental Disability Retirees - 1960 Plan

Age <u>9/30/2012</u>	<u>Number</u>	Monthly <u>Allowance</u>	Allowance 9/30/2012 Number		Monthly <u>Allowance</u>
30	1	\$ 3,731.24	65	7	\$ 27,249.99
35	1	4,007.94	66	6	24,484.19
36	1	4,007.94	67	3	14,057.67
37	1	3,731.24	68	3	12,181.91
38	1	3,731.24	69	11	43,081.13
40	1	3,586.69	70	4	18,069.60
41	2	8,485.17	71	3	10,849.31
42	3	11,539.05	72	12	43,020.54
43	3	11,286.24	73	5	11,662.69
44	1	3,800.05	74	11	40,121.46
45	5	18,781.38	75	9	25,431.77
46	4	15,447.23	76	6	17,713.85
47	5	19,527.10	77	13	39,949.84
48	11	42,833.97	78	5	10,467.10
49	9	35,560.79	79	4	9,133.44
50	11	41,392.45	80	4	14,707.41
51	11	44,241.53	81	5	13,886.72
52	8	33,059.24	82	7	19,924.13
53	2	9,446.87	83	1	820.63
54	12	50,968.01	84	5	12,764.87
55	9	36,882.16	85	2	4,576.34
56	3	10,164.14	86	7	15,144.57
57	4	14,740.38	87	1	954.69
58	11	45,732.82	88	2	3,977.90
59	4	14,846.60	89	2	6,511.01
60	5	18,741.63	90	1	2,326.90
61	5	21,701.49	92	1	2,424.78
62	10	41,646.35	93	1	4,189.08
63	9	34,228.94	98	1	 2,326.90
64	7	34,280.50			
			otal verage Monthly	302	\$ 1,094,140.80
		A	llowance		\$ 3,622.98
		A	verage Age		62.3

#### Widows - 1960 Plan

Age <u>9/30/2012</u>	<u>Number</u>	Monthly <u>Allowance</u>	Age <u>9/30/2012</u>	<u>Number</u>	Monthly <u>Allowance</u>
46	1	\$ 1,868.76	75	6	\$ 5,647.94
47	1	1,959.66	76	12	12,006.53
48	1	906.78	77	6	5,996.38
49	2	4,087.68	78	8	6,455.10
51	1	2,161.08	79	7	6,763.96
53	1	978.88	80	13	12,928.82
54	1	2,416.28	81	15	13,414.65
55	1	2,196.80	82	12	9,804.38
56	3	5,217.14	83	9	9,795.78
58	3	5,085.63	84	9	7,149.18
59	3	4,301.36	85	16	11,961.12
60	4	6,443.30	86	5	4,770.72
61	5	7,193.71	87	5	4,469.52
62	2	2,523.22	88	9	5,722.09
63	5	7,533.43	89	11	7,714.90
64	1	2,221.95	90	5	2,496.46
65	2	2,479.18	91	3	1,879.08
66	5	6,063.06	92	4	2,016.27
67	6	6,642.72	93	4	1,958.52
68	7	9,876.80	94	3	1,667.74
69	7	7,845.21	95	2	1,092.46
70	6	8,975.32	96	3	1,261.96
71	11	12,376.61	97	2	813.66
72	17	20,501.09	98	1	294.52
73	10	8,953.46	99	1	 333.14
74	7	8,282.46			
			Total Average Monthly	284	\$ 287,506.45
			Allowance Average Age		\$ 1,012.35 77.0

### Widows - 1944 Plan

Age <u>9/30/2012</u>	<u>Number</u>	Monthly <u>Allowance</u>			
89	1	\$ 200.00			
Total	1	\$ 200.00			
Average Monthly Allowance		\$ 200.00			
Average Age		89.0			

### Widows - Old Plan

Age <u>9/30/2012</u>	<u>Number</u>	Monthly <u>Allowance</u>				
94	1	\$ 200.00				
Total	1	\$ 200.00				
Average Monthly Allowance		\$ 200.00				
Average Age		94.0				

#### Children - 1960 Plan

Age <u>9/30/2012</u>	<u>Number</u>	Monthly <u>Allowance</u>	
1	1	\$ 397	.87
11	1	544	.96
14	1	388	.93
15	1	432	.22
16	1	352	.83
18	3	1,042	.19
19	1	391	.93
20	4	2,115	.51
21	1	466	.66
22	5	2,712	.56
23	1	439	.36
31	1	931	.01
42	1	286	.01
56	1	314	.61
Total	23	\$ 10,816.	65
Average Monthly Allowance		\$ 470.	29
Average Age		21	1.4



VALUATION PROCEDURES

#### ACTUARIAL COST METHOD

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 attributable to changes in assumptions, plan provisions, or methods are 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**

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

The mortality table used to measure ordinary post retirement mortality was the RP2000 mortality table, sex distinct, with rates projected to 2015. This assumption is used to measure the probabilities of members dying after retirement and the probabilities of each benefit payment being made after retirement. Illustrative rates are shown below. Based on the most recent experience review, this table provides a margin for near-term mortality improvements.

Post Retirement Mortality Rate Per 1,000 Employees

Rate 1 et 1,000 Employees			
Age	Male	Female	
45	1.2390	0.8820	
50	1.6280	1.2960	
55	2.7180	2.4090	
60	5.2970	4.6890	
65	10.3090	9.0030	
70	17.7020	15.5290	
75	30.6220	24.9160	
80	55.3600	41.2910	
85	99.6800	70.7610	

The mortality rate for pre-retirement mortality is assumed to be 85 percent of the post retirement rates. Illustrative rates are shown below.

Ordinary Pre Retirement Mortality
Rate Per 1.000 Employees

Kate 1 et 1,000 Employees				
	Age	Male	Female	
	25	0.2746	0.1428	
	35	0.6095	0.3417	
	45	1.0532	0.7497	
	55	2.3103	2.0477	
	65	8.7627	7.6526	
	75	26.0287	21.1786	
	85	84.7280	60.1469	

*The accidental mortality* rate for pre-retirement mortality is assumed to be 85 percent of the post retirement rates up to age 50. Illustrative rates are shown below.

Accidental Mortality - Pre Retirement Rate Per 1.000 Employees

Rate 1 cl 1,000 Employees				
Age Male Female				
25	0.2746	0.1428		
30	0.3502	0.1930		
35	0.6095	0.3417		
40	0.8135	0.4786		
45	1.0532	0.7497		
49	1.3116	1.0030		
50+	0.0000	0.0000		

*The disability retirement mortality table* was 20 percent higher than post retirement mortality. Illustrative rates are shown below.

Post - Disability Mortality Rate Per 1.000 Employees

Rate 1c1 1,000 Employees				
Age Male Female				
	45	1.4868	1.0584	
	55	3.2616	2.8908	
	65	12.3708	10.8036	
	75	36.7464	29.8992	
	85	119.6160	84.9132	

**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.

<b>Employee</b>	Withdrawal Ra	ate Per
1.0	00 Employees	

1,000 Employees		
Years of Service	Rate of Withdrawal	
0	75.0	
1	40.0	
2	22.5	
3	22.5	
4	22.5	
5	22.5	
6	22.5	
7	22.5	
8	12.5	
9	12.5	
10	12.5	
11	12.5	
12	12.5	
13	12.5	
14	5.0	
15	5.0	
16	5.0	
17	5.0	
18	5.0	
19	5.0	
20 or more	0.0	

*The annual rates of salary increase* used for individual members are shown below includes a wage inflation assumption of 3.35 percent. This assumption is used to project a member's current salary to the salaries upon which benefit amounts will be based.

## Salary Increase Assumptions For an Individual Mambar

	For an Individual Member	
Sample	Increase	
Service	Next Year	
0	5.50%	
1	5.50%	
2	5.50%	
3	5.50%	
4	5.50%	
5	5.00%	
6	5.00%	
7	5.00%	
8	5.00%	
9	5.00%	
10	3.75%	
11	3.75%	
12	3.75%	
13	3.75%	
14	3.75%	
15 or more	3.35%	

*The rates of disability* for active members are broken out between ordinary and accidental disability. Ordinary disability accounts for 20 percent of total disabilities and accidental disability accounts for 80 percent of total disabilities.

Employee Disablement Rate Per 1.000 Employees

Rate Fer 1,000 Employees			
	Age	Ordinary	Accidental
	25	1.0000	4.0000
	30	1.0000	4.0000
	35	2.0000	8.0000
	40	3.0000	12.0000
	45	4.0000	16.0000
	50	4.0000	16.0000
	55	7.0000	28.0000
	60	7.0000	28.0000

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

D - 4	- C D	- 4.	
Rates	OT K	etire	ment

Years of Service	Rate of Retirement
20	5.00 %
21	5.00
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	15.00
31	15.00
32	15.00
33	15.00
34	15.00
	100.00
35 or more	100.00

100% retirement assumed at age 70

*Marital status* varies by gender. Male spouse is assumed to be three years older than the female spouse. One hundred percent of members are assumed to be married.

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.

In 2010, the City of St. Louis passed ordinances 68745 and 68746 which effectively ended the practice of firefighters accruing sick leave for retirement benefit purposes. Sick leave accrued prior to September 26, 2010, can still be used for retirement benefit purposes. As a result of this change, the sick leave balance at retirement is prorated by the amount of service earned as of September 26, 2010, to the amount of service projected to be earned at the assumed retirement date. Furthermore, the increase in the retirement benefit due to sick leave is also prorated by the amount of service earned as of September 26, 2010, to the amount of service projected to be earned at the assumed retirement date.

*Shift Differential.* No assumption is made for shift differential because it was removed for active members for City fiscal year ending June 30, 2011, and is not expected to be reinstated.

#### DROP Benefits.

It is assumed that members will enter the DROP with 28 years of service. If the member has more than 28 years of service at the valuation date, it is assumed that the member will enter the DROP the following year. It is assumed that members who enter the DROP with less than 30 years of service will return to active status after completing five years in the DROP. DROP balances are assumed to earn 7.625 percent. If a member with a DROP balance dies prior to termination of employment, it is assumed that a lump sum payment equal to the amount in the member's DROP account shall be paid to the beneficiary or the member's estate.

#### **SUMMARY OF PLAN PROVISIONS**

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).

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.

## SUMMARY OF PLAN PROVISIONS (CONTINUED)

In 2010, the City of St. Louis passed ordinances 67845 and 67846 which effectively ended the practice of firefighters accruing sick leave for retirement benefit purposes. Sick leave accrued prior to September 26, 2010, can still be used for retirement benefit purposes.

#### **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.

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.

## SUMMARY OF PLAN PROVISIONS (CONTINUED)

### **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.

#### **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.

<sup>&</sup>lt;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)

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.