Firefighters’ Retirement Plan of the City of St. Louis

Actuarial Valuation and Review as of October 1, 2013

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March 25, 2014

Board of Trustees
Firefighters' Retirement Plan of the City of St. Louis
1114 Market Street Room 700
St. Louis, Missouri 63101

Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of October 1, 2013. It summarizes the actuarial data used in the valuation, establishes the funding requirements for the Plan Year ending September 30, 2014.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist in administering the Plan. The census information on which our calculations were based was prepared by the Plan staff and Gabriel Roeder Smith & Company. That assistance is gratefully acknowledged. We have not subjected the census data to auditing procedures, but have examined the data for reasonableness and consistency with the prior year's data for the Firemen's Retirement System of the City of St. Louis.

The measurements shown in this actuarial valuation may not be applicable for other purposes. 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); and changes in plan provisions or applicable law.

The actuarial calculations were directed under our supervision. We are members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the information supplied in the actuarial valuation is complete and accurate.

We look forward to reviewing this report at your next meeting and to answering any questions.

Sincerely,

Segal Consulting, a Member of The Segal Group, Inc.

By:

Kim Nicholl, FSA, MAAA, EA, FCA
Senior Vice President and Consultant

Matthew A. Strom, FSA, MAAA, EA
Consulting Actuary

SECTION 1

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SECTION 2

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Purpose

Effective February 1, 2013, benefit accruals under the Firemen’s Retirement System of St. Louis (“FRS”) were frozen. The Firefighters' Retirement Plan of the City of St. Louis (“FRP”) was established as of that date to provide retirement, disability and death benefits for service rendered after the effective date. Credited service accrued under the FRS counts toward benefit accruals under the FRP, but benefits attributable to such service are offset by the benefits payable by the FRS. Under the FRP, the plan provisions for members who were active as of February 1, 2013 (“Grandfathered Participants”) are substantially the same as the plan provisions for the FRS, with some exceptions as detailed in Section 4.

This report has been prepared by Segal Consulting (Segal) to present a valuation of the FRP as of October 1, 2013. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits. The contribution requirements presented in this report are based on:

- The benefit provisions of the FRP, as administered by the Board;
- The benefit provisions of the FRS, frozen as of February 1, 2013;
- The characteristics of covered active participants and retired participants and beneficiaries as of October 1, 2013, provided by Firefighters’ Retirement Plan staff and the FRS actuary, Gabriel Roeder Smith & Company;
- The assets of the Plan as of September 30, 2013, provided by the Plan Administrator;
- Economic assumptions regarding future salary increases and investment earnings; and
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc.

The market value of assets used to determine the City’s annual contribution for the Plan year ending September 30, 2014 was based on an unaudited financial statement provided by the Plan administrator. The assets included cash received during the previous Plan year, but excluded the City’s required contribution for the previous Plan year and the assets expected to be transferred from the FRS. We expect that the actuarial valuation as of October 1, 2014 will be based on an audited financial statement and will recognize the City’s required contributions and the transferrable assets appropriately.

Summary of Key Valuation Results

	2013
Contributions for Plan Year beginning October 1:	
Recommended	$8,942,435
Funding elements for Plan Year beginning October 1:	
Normal cost less employee contributions	$4,852,832
Market value of assets	1,504,817
Actuarial value of assets	1,504,817
Actuarial accrued liability	59,755,249
Unfunded actuarial accrued liability	58,250,432
GASB 25/27 for Plan Year beginning October 1:	
Annual required contribution (ARC)	$8,902,020
Funded ratio	2.52%
Covered payroll	36,772,839
Demographic data for Plan Year beginning January 1:	
Number of retired participants and beneficiaries	1,012
Number of active participants*	
DROP	67
Non-DROP	553
Total	620
Total salary supplied by the Plan	$34,978,665
Average salary	56,417

**Includes 19 actives who are members of the FRP only*

A. PARTICIPANT DATA

The Actuarial Valuation and Review considers the number and demographic characteristics of covered participants, including active participants, retired participants, and beneficiaries.

Active Participants

Plan costs are affected by the age, years of credited service and payroll of active participants. In this year's valuation, there were 620 active participants with an average age of 45.1, average credited service of 16.1 years and average payroll of $56,417. The 635 active participants in the FRS as of October 1, 2012 had an average age of 44.9, average credited service of 16.0 years and average payroll of $56,714.

Retired Participants and Beneficiaries

As of September 30, 2013, 695 retired participants and 317 beneficiaries were receiving total monthly benefits of $2,599,800, including benefits paid from the FRS and the FRP. Benefits paid from the FRP only were $1,180 per month.

CHART 1

Participant Population

Year Ended September 30	Active Participants	Retired Participants and Beneficiaries	Ratio of Non-Actives to Actives
2013	620	1,012	1.63

B. FINANCIAL INFORMATION

Retirement plan funding anticipates that, over the long term, both net contributions and net investment earnings (less investment fees and administrative expenses) will be needed to cover benefit payments.

Retirement plan assets change as a result of the net impact of these income and expense components.

As of October 1, 2013, the value of assets used as the actuarial value is $1,504,817.

The actuarial value is a representation of the Plan’s financial status. The actuarial asset value is significant because the Plan’s liabilities are compared to these assets to determine what portion, if any, remains unfunded. Amortization of the unfunded actuarial accrued liability is an important element in determining the contribution requirement.

It is desirable to have level and predictable plan costs from one year to the next. For this valuation year, the actuarial value of assets is equal to the market value of assets. However, in future years, the Board will have the option to adopt an asset "smoothing" method that recognizes gains and losses on the market value of assets over several years, resulting in more predictable Plan costs.

C. RECOMMENDED CONTRIBUTION

The amount of annual contribution required to fund the Plan is comprised of an employer normal cost payment and a payment on the unfunded actuarial accrued liability. This total amount is then divided by the projected payroll for active members to determine the funding rate of 24.32% of payroll.

The recommended contribution is based on the amortization of the unfunded accrued liability over the 30-year closed period that began February 1, 2013, as a level percentage of payroll, assuming 3% payroll growth.

The contribution requirements as of October 1, 2013, are based on all of the data described in the previous sections, the actuarial assumptions described in Section 4, and the Plan provisions adopted at the time of preparation of the Actuarial Valuation. They include all changes affecting future costs, actuarial gains and losses and changes in the actuarial assumptions.

CHART 2

Recommended Contribution

		Year Beginning October 1, 2013	
		Amount	**% of Payroll**
1.	Employer normal contribution as of beginning of year		
	a. Normal cost	$7,709,382	
	b. Less employee contributions	(2,856,550)	
	c. Total	$4,852,832	
2.	End of year employer normal contribution	$5,222,860	14.20%
3.	Actuarial accrued liability		
	a. Total accrued liability (FRS and FRP combined)	$530,986,534	
	b. Less frozen accrued liability from benefits attributable to service in FRS	(471,231,285)	
	c. FRP accrued liability	$59,755,249	
4.	Actuarial value of assets (equal to market value)	1,504,817	
5.	Unfunded actuarial accrued liability: (3c) - (4)	$58,250,432	
6.	End of year payment on unfunded actuarial accrued liability	$3,719,575	10.12%
7.	Total recommended contribution: (2) + (6)	$8,942,435	24.32%
8.	Projected payroll	$36,772,839	

EXHIBIT A
Table of Plan Coverage

Category	Year Ended September 30 2013*	 2012**	Change From Prior Year
Active participants in valuation:			
Number	620	635	-2.4%
Average age	45.1	44.9	N/A
Average years of service	16.1	16.0	N/A
Total salary supplied by the Plan	$34,978,665	$36,013,472	-2.9%
Average salary	56,417	56,714	-0.5%
Retired participants:			
Number in pay status	383	380	0.8%
Average age	70.0	70.5	N/A
Average monthly benefit	$3,022	$2,945	2.6%
Disabled participants:			
Number in pay status	312	324	-3.7%
Average age	63.7	63.5	N/A
Average monthly benefit	$3,603	$3,491	3.2%
Beneficiaries in pay status:			
Number in pay status	317	309	2.6%
Average age	72.0	72.9	N/A
Average monthly benefit	$1,004	$967	3.8%
Total participants	1,632	1,648	-1.0%

* *FRS and FRP combined*
** *FRS only*

EXHIBIT B

Participants in Active Service as of September 30, 2013
By Age, Years of Credited Service, and Average Payroll

		Years of Credited Service							
Age	**Total**	**1-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**
Under 30	19	14	5	- -	- -	- -	- -	- -	- -
	$43,171	$42,568	$44,859	- -	- -	- -	- -	- -	- -
30 - 34	65	21	43	1	- -	- -	- -	- -	- -
	44,483	39,319	46,800	- -	- -	- -	- -	- -	- -
35 - 39	78	8	37	30	3	- -	- -	- -	- -
	50,327	41,060	48,884	$54,135	- -	- -	- -	- -	- -
40 - 44	111	1	24	49	30	7	- -	- -	- -
	54,988	- -	49,199	54,501	$58,321	$64,082	- -	- -	- -
45 - 49	163	- -	19	28	32	76	8	- -	- -
	59,085	- -	50,319	54,235	57,761	62,058	$73,934	- -	- -
50 - 54	132	- -	6	8	19	58	39	1	1
	62,146	- -	50,610	54,300	57,259	61,261	68,070	- -	- -
55 - 59	47	- -	2	3	9	5	14	6	8
	65,440	- -	- -	- -	58,358	61,398	65,137	$79,198	$74,065
60 - 64	4	- -	- -	1	- -	- -	- -	- -	3
	- -	- -	- -	- -	- -	- -	- -	- -	- -
65 & over	1	- -	- -	- -	1	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total	620	44	136	120	94	146	61	7	12
	$56,417	$41,005	$48,441	$54,308	$57,769	$61,816	$68,166	$79,989	$74,673

EXHIBIT C
Definitions of Pension Terms

The following list defines certain technical terms for the convenience of the reader:

Assumptions or Actuarial Assumptions: The estimates on which the cost of the Plan is calculated including:

(a) Investment return — the rate of investment yield that the Plan will earn over the long-term future;

(b) Mortality rates — the death rates of employees and pensioners; life expectancy is based on these rates;

(c) Retirement rates — the rate or probability of retirement at a given age;

(d) Turnover rates — the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement.

Normal Cost: The amount of contributions required to fund the benefit allocated to the current year of service.

Actuarial Accrued Liability For Actives: The value of all projected benefit payments for current members less the portion that will be paid by future normal costs.

Actuarial Accrued Liability For Pensioners: The single-sum value of lifetime benefits to existing pensioners. This sum takes account of life expectancies appropriate to the ages of the pensioners and the interest that the sum is expected to earn before it is entirely paid out in benefits.

Unfunded Actuarial Accrued Liability: The extent to which the actuarial accrued liability of the Plan exceeds the assets of the Plan. There is a wide range of approaches to paying off the unfunded actuarial accrued liability, from meeting the interest accrual only to amortizing it over a specific period of time.

Amortization of the Unfunded Actuarial Accrued Liability:	Payments made over a period of years equal in value to the Plan's unfunded actuarial accrued liability.
Investment Return:	The rate of earnings of the Plan from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.

EXHIBIT I

Summary of Actuarial Valuation Results

The valuation was made with respect to the following data supplied to us:	
1. Retired participants as of the valuation date (including 317 beneficiaries in pay status)	1,012
2. Participants active during the year ended September 30, 2013	620
3. Total participants as of September 30, 2013	1,632

The actuarial factors as of the valuation date are as follows:	
1. Normal cost	$7,709,382
2. Actuarial accrued liability	59,755,249
3. Actuarial value of assets	1,504,817
4. Unfunded actuarial accrued liability	$58,250,432

EXHIBIT I (continued)

Summary of Actuarial Valuation Results

The determination of the recommended contribution is as follows:

1.	Employer normal contribution as of beginning of year	
	a. Normal cost	$7,709,382
	b. Less employee contributions	(2,856,550)
	c. Total	$4,852,832
2.	End of year employer normal contribution	$5,222,860
3.	Actuarial accrued liability	
	a. Total accrued liability (FRS and FRP combined)	$530,986,534
	b. Less frozen accrued liability from benefits attributable to service in FRS	(471,231,285)
	c. FRP accrued liability	$59,755,249
4.	Actuarial value of assets (equal to market value)	1,504,817
5.	Unfunded actuarial accrued liability: (3c) - (4)	$58,250,432
6.	End of year payment on unfunded actuarial accrued liability	$3,719,575
7.	Total recommended contribution: (2) + (6)	$8,942,435
8.	Projected payroll	$36,772,839
9.	Total recommended contribution as a percentage of projected payroll: (7) ÷ (8)	24.32%

EXHIBIT II

Supplementary Information Required by the GASB – Schedule of Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded/ (Overfunded) AAL (UAAL) (b) - (a)	Funded Ratio (a) / (b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll* [(b) - (a)] / (c)
10/01/2013	$1,504,817	$59,755,249	$58,250,432	2.52%	$34,978,665	166.5%

** Not less than zero*

EXHIBIT III

Supplementary Information Required by the GASB – Additional Information

Valuation date	October 1, 2013
Actuarial cost method	Entry Age Normal Cost Method
Amortization method	Level percent of payroll
Remaining amortization period	30 years (closed) from February 1, 2013
Asset valuation method	Market value
Actuarial assumptions:	
Investment rate of return	7.625%
Payroll growth	3.00%
Projected salary increases	Vary by service
Plan membership:	
Retired participants and beneficiaries receiving benefits	1,012
Active participants	620
Total	1,632

EXHIBIT IV
Actuarial Assumptions and Actuarial Cost Method

Mortality Rates:

Pre-Retirement: 85% of the healthy post-retirement rates. Mortality rates for duty-related deaths cease at age 50.

Healthy Post-Retirement: RP-2000 Combined Healthy Mortality Table projected to 2015 using Scale AA

Disabled Post-Retirement: 120% of the healthy post-retirement rates

The mortality tables for pre-retirement and post-retirement mortality projected to 2015 using scale AA reasonably reflect the projected mortality experience of the Plan as of the measurement date. Based on the most recent experience review of FRS performed by GRS, this table provides a margin for near-term mortality improvements.

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Termination Rates before Retirement:

Years of Service	Rate (%)
0	7.50
1	4.00
2 – 7	2.25
8 – 13	1.25
14 – 19	0.50
20 or more	0.00

Disability Rates before Retirement:

Age	Rate (%) Ordinary	Rate (%) Accidental
25	0.03	0.02
30	0.03	0.02
35	0.06	0.04
40	0.09	0.06
45	0.12	0.08
50	0.12	0.08
55	0.21	0.14
60	0.21	0.14

Retirement Rates:

Years of Service	Retirement Probability*
20 – 29	5%
30 – 34	15%
35 or more	100%

**100% retirement is assumed at age 65*

Unknown Data for Participants: Same as those exhibited by participants with similar known characteristics. If not specified, participants are assumed to be male.

Percent Married: 100%

Age of Spouse: Females are 3 years younger than their spouses.

Net Investment Return: 7.625%

Salary Increases:

Years of Service	Increase (%)
0 – 4	5.50
5 – 9	5.00
10 – 14	3.75
15 or more	3.35

Payroll Growth: 3.0% per year

Increase in Consumer Price Index: 3.0% per year

Actuarial Value of Assets: Market value

Actuarial Cost Method: Entry Age Normal Actuarial Cost Method. The actuarial present value of projected benefits for each individual participant is allocated on a level basis over future earnings between the valuation date and retirement. The portion of actuarial present value of benefits not provided for at the valuation date by future normal contributions is the actuarial accrued liability. Under this method, actuarial gains/(losses), as they occur, reduce/(increase) the unfunded actuarial accrued liability.

Sick Leave Benefits: Unused sick leave accrued prior to September 26, 2010 can be used to increase the credited service used to calculate the participant's final retirement benefit. It is assumed that the sick leave balance yields a fifteen percent increase in the retirement benefit and a lump sum equal to 60.3% of the accumulated sick leave balance (assumed to be twice the annual pension benefit the participant is eligible to receive prior to sick leave adjustments, prorated by the amount of service earned as of September 26, 2010 to the service projected to be earned at retirement).

DROP Entry:	Grandfathered Participants are assumed to enter the DROP program upon attaining 28 years of service. Grandfathered Participants with more than 28 years of service on the valuation date are assumed to enter the DROP the following year. Participants who enter the DROP with less than 30 years of service are assumed to return to active status after completing five years in the DROP.

EXHIBIT V

Summary of Plan Provisions

This exhibit summarizes the major provisions of the Plan included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions.

Plan Year:	October 1 through September 30
Service Retirement:	
<u>For benefits attributable to service in the FRS</u>	
Age Requirement	None
Service Requirement	20 years of Credited Service
Amount	2% of the final two-year average monthly compensation as of February 1, 2013 for the first 25 years of service plus 5% of final average compensation for the next 5 years of service, to a maximum of 75% of final average compensation. In addition to the monthly pension, the participant will receive a refund of contributions without interest made before February 1, 2013 (the "effective date").
<u>For benefits attributable to service in the FRP</u>	
Age Requirement	55
Service Requirement	20 years of Credited Service
Amount	2% of the final five-year (two-year for Grandfathered participants) average monthly compensation for the first 25 years of service plus 2.5% of final average compensation for the next 10 years of service, to a maximum of 75% of final average compensation.

Early Retirement:

Age Requirement	None
Service Requirement	20 years of Credited Service
Amount	For participants who entered the Plan after the effective date and Grandfathered participants with less than 20 years of service as of the effective date, the portion of the benefit earned after the effective date will be actuarially reduced for retirement after attaining 20 years of service but prior to age 55. Grandfathered participants with 20 or more years of service as of the effective date may receive their entire benefit unreduced at any age. In addition to the monthly pension, the participant will receive a refund of contributions without interest made before the effective date.

Ordinary Disability:

Age Requirement	None
Service Requirement	5 years of Credited Service
Amount	The benefit for a disability not incurred in the line of duty that prevents work in any occupation is the greatest of 1) 90% of the pension benefit accrued to date, 2) 25% of final 2-year average monthly compensation, and 3) the regular service retirement (for participants with 20 or more years of service as of their disability date). In addition to the monthly pension, the participant will receive a refund of contributions without interest made before the effective date.

Accidental Disability:

Age Requirement	None
Service Requirement	None
Amount	The benefit for a disability incurred in the line of duty that prevents work in any occupation is 75% of final 2-year average monthly compensation. The benefit for a disability incurred in the line of duty that prevents work as a firefighter, but not other gainful employment, is 25% of final average compensation plus 2.75% of final average compensation for each year of service in excess of 10 years, up to 25 years of

	service. For a participant with at least 25 years of service, the benefit is 75% of final average compensation. In addition, tuition at a state university for up to five years for passing grades in a degree program is reimbursed. In addition to the monthly pension, the participant will receive a refund of contributions without interest made before the effective date.

Refund of Contributions Due to Termination:

Age Requirement	None
Service Requirement	None
Amount	100% of contributions with interest made on behalf of the participant upon termination prior to attaining eligibility for a service pension.

Deferred Pension (if Refund of Contributions is not elected):

Age Requirement	None
Service Requirement	10 years of Credited Service
Amount	Service pension accrued. Only available to participants who entered the Plan after the effective date.
Normal Retirement Age	62

Pre- and Post-Retirement Death Benefit:

Age Requirement	None
Service Requirement	None
Amount	The greater of a) 50% of the final two-year average monthly compensation and b) $200. In addition, 10% of final average compensation for up to three unmarried dependent children under age eighteen. In addition to the monthly pension, the participant will receive a refund of contributions without interest made before the effective date.

Lump-sum Death Benefit:

Age Requirement	None
Service Requirement	None
Amount	$2,000 payable upon the death of an active or retired member

Participation:	An employee becomes a Participant on the first day of employment.
Credited Service:	Uninterrupted years and completed months from first date of participation in the Plan to the date of retirement or termination of employment.

DROP Benefit:	A Grandfathered Participant with 20 or more years of credited service may elect to enter the DROP program and defer retirement for up to five years while continuing active employment. The benefit payments the participant would have received during that period are deposited into the DROP account and earn interest at a rate equal to the percentage rate of return of the Trust Fund’s investment portfolio for that year. After five years or termination from the DROP plan, the participant may retire or return to regular active service. Upon termination of employment, the participant can choose to receive the DROP account with interest earned. If the participant dies prior to termination of employment, the DROP account is paid as a lump sum to the participant’s beneficiary or estate. Active service while in the DROP program is not included in the credited service used to calculate the participant’s final benefit amount.
Member Contributions:	9% of pay. For Grandfathered participants with 20 or more years of service as of the effective date, contributions of 8% of pay are required. Contributions are 1% of pay for those participating in the DROP program of the FRS.
Cost-of-Living Adjustments:	For Grandfathered Participants: For retirements before attaining 25 years of service, the COLA is 1.5% per year up to age 60 and 5% per year after 60, with a 25% maximum applied past age 60. For retirements after attaining 25 years of service but before attaining 30 years of service, the COLA is 2.25% per year up to age 60 and 5% per year after 60, with a 25% maximum applied past age 60. For retirements after attaining 30 years of service and disabilities incurred in the line of duty in response to

an emergency call that prevent work in any occupation, the COLA is 3% per year up to age 60 and 5% per year after 60, with a 25% maximum applied past age 60. For retirements after age 60, the COLA is 5% per year up to a maximum of 25%. For disabilities other than those incurred in the line of duty in response to an emergency call that prevent work in any occupation, the COLA is 3% per year up to a maximum of 25%.

For participants who entered the Plan after the effective date: 3% per year up to a maximum of 25%.

All COLAs are subject to an upper limit of the Consumer Price Index (CPI) for the calendar year prior to the year the COLA is awarded.

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