City of Ferguson, Missouri

Actuarial Review and Analysis of City Pension Plan as of July 1, 2012

September , 2012

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Summary of Results

Introduction

This Report presents the results of an actuarial review and analysis of the City of Ferguson Pension Plan (the Plan) as of July 1, 2012. The purposes of this review are:

- To compute the annual contribution required in order to fund the Plan in accordance with actuarial principles, and
- To determine the funding ratio of the Plan, and
- To present those items required for disclosure under Statement No. 25 of the Governmental Accounting Standards Board (GASB 25).

Summary

	7/1/2011	7/1/2012
Fully Projected Actuarial Liability	$25.5 M	$26.1 M
Actuarial Accrued Liability	20.7 M	21.3 M
Actuarial Value of Assets	20.8 M	21.2 M
Funding Ratio	100.6%	99.9%
Unfunded Actuarial Accrued Liability (UAAL)	(0.1) M	0.1 M
Amortization of UAAL	$ 0.0	$ 0.0
Normal Cost	$ 0.5 M	$ 0.5 M
Total Contribution as of end of fiscal year	$489,851	$524,100
Projected Payroll	$6.3 M	$6.4 M
Contribution as % of Payroll	7.83%	8.20%

Contribution Rates

The employer contribution increased slightly from $489,851 for fiscal year 2012 to $524,100 for fiscal year 2013. The reasons for this change can be broken down as follows:

Change in Contribution		Amount
Contribution for fiscal year 2012		**$ 489,851**
Change due to:		
Expected increase based on prior year	+ $ 34,322	
Demographic and Salary Experience	- $ 72,009	
New Entrants	+ $ 44,440	
Investment Experience	+ $ 27,496	
Total Change		+ $ 34,249
Contribution for fiscal year 2012*		**$ 524,100**

* The contribution is assumed to be paid 12 months after the valuation date.

The primary reasons for changes in the employer contribution since the prior valuation are summarized below:

- Expected Increase

  The expected increase of $34,000 in contributions is due to recognition of past investment losses in accordance with the Plan's asset smoothing method.

- Demographic Experience

  This refers to the movement of employees from the prior year. As part of an actuarial valuation, assumptions are made regarding employee termination, death, disability, and retirement rates. Future increases in member pay are also projected.

  When actual experience during the year differs from assumed levels, actuarial gains or losses occur that affect the employer contribution rate. The net impact of demographic experience was an actuarial gain. This was caused partly by a larger than expected number of terminations.

  This gain resulted in a decrease in the contribution of about $72,000

- New Entrants

  Each valuation is performed based on a closed group of Plan members; however, as employees terminate and retire, they are replaced by new members.

  The addition of these new members caused an increase in the contribution (primarily normal cost) of about $44,000.

- Investment Experience

  During the year ended June 30, 2012; the return on the market value of Plan assets was 1.3%, a loss versus the assumed 7.5% return.

  The impact of this loss was an increase in the contribution of about $27,000.

Conclusion and Certification

The nature of funding pension benefits is such that there will be gains and losses each year due to demographic, salary, and investment experience, causing contributions to fluctuate. These gains and losses are expected to balance out over the long term; however, actuarial assumptions should be reviewed every few years, through an actuarial experience study, to validate their reasonability and to mitigate the chances of a consistent pattern of gains or losses.

This assumption review was conducted in 2011, and the resulting changes in assumptions have been incorporated into this and the last valuation.

This statement has been prepared in accordance with generally accepted actuarial principles and practices. The undersigned are members of the American Academy of Actuaries, and are qualified to render the actuarial opinions presented herein.

Gregory M. Stump, FSA, MAAA

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Section 1:

Summary of Plan Provisions, Member Statistics, and Actuarial Assumptions

1.1: Brief Outline of Plan Provisions

Definitions

Credited Service

Service is defined as a period of continuous, uninterrupted employment as an employee of the City of Ferguson. Credited Service begins on the first day of the month coincident with or following the date of hire, and is counted in years and completed months.

Normal Retirement Date

The Normal Retirement Date is the first day of the month coincident with or following the completion of eight years of Credited Service, provided the participant is at least 60 years old. Unreduced benefits are also available at age 55 if the sum of the member's age and service is at least 82½.

Average Monthly Compensation

The highest average of the monthly compensation received during 60 consecutive months which are part of the last 96 months of service.

Funding

There are no employee contributions. The City contributes the amount necessary to fund any remaining cost over the future lifetime of current participants.

Participation

All regular, full time uniformed and non-uniformed employees are covered under the Plan.

Retirement Benefit

Eligibility

A Plan participant may retire at his or her Normal Retirement Date or upon completion of eight years of Credited Service and after age 55. Retirement before the Normal Retirement Date is reduced by one-quarter of one percent for each month that the retirement date precedes the Normal Retirement Date. The participant may also retire without a reduced benefit after his or her 55th birthday, provided the sum of his or her age plus Credited Service is equal to at least 82½.

Benefit Amount

The benefit is equal to one and three-fourths of a percent of Average Monthly Compensation for each year of Credited Service.

Form of Benefit

The benefit begins at retirement and continues for the Participant's life. Alternate optional forms which provide either a continuance benefit or a guaranteed certain period are also available. A reduction in benefit is applied for alternate forms.

Termination Benefit

An employee who has completed at least eight years of service is entitled to receive a monthly benefit calculated in accordance with the Retirement Benefit formula beginning at his or her Normal Retirement Date.

Disability Retirement

Eligibility

Total and permanent disability as deemed by the Board.

Benefit Amount

The monthly benefit, payable for the lifetime of the participant, is determined in accordance with Retirement Benefit provisions, and is payable immediately. In no event may the monthly amount be lower than $450.

Death Benefits

Retirement Eligible

If a participant dies while in active service and eligible for retirement, his beneficiary shall receive a benefit determined as an actuarial equivalent of the benefit as if the participant had actually retired on the date before their death. The benefit will be paid for 120 months.

Not Retirement Eligible

If a participant dies while in active service and vested but not eligible for retirement, his beneficiary shall receive 120 monthly payments equal to the amount of benefit accrued to the date of death, with no reduction for early retirement.

Supplemental Benefit

Upon retirement before Medicare Eligibility, the participant will receive a monthly supplement equal to $5 for each year of service (up to 30 years). The benefit is payable until the retiree is eligible for Medicare.

Changes in Benefit Provisions since Prior Valuation

There have been no changes in benefits since the prior valuation.

1.2: Participant Data

Data on active and inactive Participants as of July 1, 2012 was updated by City staff. Participant data was reviewed for reasonableness and consistency but was neither verified nor audited.

Active Participants	July 1, 2011	July 1, 2012
Number Active	130	131
Average Age	42.5	43.0
Average Service	11.2	11.3
Average Pay	$46,137	$47,236

Inactive Participants	July 1, 2011	July 1, 2012
Number of Retired Participants	65	67
Average Age	70.4	71.0
Average Monthly Benefit	$1,162	$1,134
Number of Disabled Participants	10	10
Average Age	64.2	65.2
Average Monthly Benefit	$955	$955
Number of Terminated Vested Participants~	19	21
Average Age	55.5	52.9
Average Monthly Benefit	$675	$722
Number of Beneficiaries*	13	15
Average Age	69.3	70.3
Average Monthly Benefit	$853	$826

~ includes one alternate payee (Domestic Relations Order)

* Three beneficiaries with temporary benefits are included in these figures.

Summary of Active Participants

Number of Participants — **Years of Service**

Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35+	Total
20-24	5	1							6
25-29	12	3							15
30-34	11	10	3						24
35-39	3	5	3	1					12
40-44	2	5	6	4	1				18
45-49	2	1	2	1	4				10
50-54	3	1	4	3	4	3	1		19
55-59	2	1	4	2	1	1	1	6	18
60-64		1	3		1			1	6
65+		1	2						3
Total	**40**	**29**	**27**	**11**	**11**	**4**	**2**	**7**	**131**

Summary of Active Participant Pay

Average Pay — **Years of Service**

Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35+	Total
20-24	38,251	33,907							**37,527**
25-29	37,579	40,717							**38,207**
30-34	38,535	41,933	47,967						**41,130**
35-39	38,098	41,112	51,031	50,268					**43,601**
40-44	33,155	47,276	49,539	56,096	70,014				**49,685**
45-49	32,369	40,813	49,559	41,828	54,449				**46,430**
50-54	30,083	77,226	43,691	48,481	55,262	58,127	58,147		**49,540**
55-59	88,321	38,083	39,649	49,461	61,010	70,956	84,627	75,304	**63,370**
60-64		33,250	44,520		44,757			64,670	**46,039**
65+		72,584	44,972						**54,176**
Total	**39,458**	**44,113**	**46,304**	**50,986**	**55,875**	**61,334**	**71,387**	**73,785**	**47,236**

Changes in Plan Membership

	Active	Terminated Vested	Retired	Disabled	Surviving Beneficiaries	Total
Members on July 1, 2011	130	19	65	10	13	**237**
New Hires	13	-	-	-	-	**13**
Disabilities	-	-	-	-	-	**0**
Retirements	(1)	(2)	3	-	-	**0**
Terminations with Vested Benefits*	(3)	4	-	-	-	**1**
Terminations without Vested Benefits	(7)	-	-	-	-	**(7)**
Died with a Beneficiary	-	-	(1)	-	2	**1**
Died without a Beneficiary	-	-	-	-	-	**0**
Benefits Expired or Became Ineligible	(1)	-	-	-	-	**(1)**
Data Corrections	-	-	-	-	-	**0**
Members on July 1, 2012	**131**	**21**	**67**	**10**	**15**	**244**

* Number of new terminated vested members includes one alternate payee

1.3: Actuarial Methods and Assumptions

Actuarial Method

Annual contributions to the Plan are computed under the Entry Age Normal Actuarial cost method. Under this cost method, the annual employer contribution is computed as follows:

Normal Cost

- The benefit obligation for all future benefits payable under the Plan to current participants is computed. This is called the Fully Projected Liability (or Present Value of Future Benefits).
- Entry age is established based on the dates provided in the data from the City.
- A portion of the Fully Projected Liability is assigned for each participant to estimate prior Entry Age Normal costs, based on assumed past earnings The sum of these portions is called the Actuarial Accrued Liability.
- The excess of the total Fully Projected Liability over the Actuarial Accrued Liability is divided by the present value of future pay to determine the Normal Cost as a percentage of pay. The percentage for each individual is multiplied by their respective pay. The sum of these is the Employer Normal Cost.

Amortization Cost

- The value of assets used in the valuation (Actuarial Value of Assets) is subtracted from the Actuarial Accrued Liability, producing the Unfunded Actuarial Accrued Liability.
- The Unfunded Actuarial Accrued Liability is amortized as a level percentage of pay (assuming 4% per year growth in total payroll) over an open period of 10 years.
- Amortizations of future gains and losses can be tracked individually and amortized over different periods.

The sum of the Employer Normal Cost and the Amortization Cost is the total employer contribution. The contribution is assumed to be paid 12 months after the valuation date.

Actuarial Value of Plan Assets

The actuarial value of Plan assets (AVA) is based on a five year smoothed market value. The AVA for a given year is defined as the expected actuarial value, plus 20% of the difference between the actual market value and the expected actuarial value. The AVA cannot be less than 80% or more than 120% of the market value of assets.

Changes in Methods since Prior Valuation

There have been no changes in methods since the prior valuation.

Actuarial Assumptions

Actuarial assumptions were updated based on a review of experience conducted in 2011, covering the prior five years of experience.

Valuation Date

All assets and liabilities are computed as of July 1, 2012.

Rate of Return

The annual rate of return on all Plan assets is assumed to be 7.50%, net of all investment and administrative expenses.

Increases in Pay

Salaries are assumed to increase by 3.25% per year, plus the following longevity/merit increases:

Service	Rate
0-4	3.5%
5-9	2.5%
10-14	2.0%
15-19	1.0%
20+	0.0%

Active, Retired, and Disabled Mortality

Rates of mortality for active and retired Participants are given by the Retired Pensioners (RP) 2000 Mortality Tables for males and females published by the Society of Actuaries. No explicit assumption has been made for future generational improvements because there has not yet been enough experience to make such a determination.

For deaths while employed, it is assumed that all members will have an eligible beneficiary.

Service Retirement

Rates of retirement are based on the Participants age as follows:

Age	Rate
55-59	0.10
60-64	0.20
65-69	0.50
70+	1.00

Disability

Rates of disability for Participants are given by the Period 2, Benefit 4 rates in the 1952 disability study. Representative rates are as follows:

Age	Rate
20	0.0105
30	0.0012
40	0.0020
50	0.0046
60+	0.000

Termination

Rates of termination for all Participants from causes other than death, disability, and service retirement are based on the Participant's service, and are applied when not eligible for retirement. Rates are as follows:

Service	Rate
0-4	0.11
5-8	0.07
9+	0.01

Terminated vested members are assumed to begin collecting benefits at age 60.

Changes in Assumptions since Prior Valuation

There have been no changes in assumptions since the prior valuation.

Section 2:

Asset Information

2.1: Statement of Net Plan Assets

	June 30, 2011	June 30, 2012
Assets		
Interest Receivable	80,577	62,018
Investments		
Equity Securities and Funds	13,111,169	12,447,457
Fixed Income Securities and Funds	6,514,138	6,949,091
Cash and Equivalents	625,080	407,218
Total Assets	20,330,964	19,865,784
Liabilities		
Accounts Payable	0	0
Accrued Expenses	0	(36,640)
Total Liabilities	0	(36,640)
Net Assets Available For Benefits	**20,330,964**	**19,829,144**

2.2: Statement of Changes in Net Plan Assets for Year Ending June 30, 2012

	Market Value	Expected Actuarial Value	Actuarial Value
Beginning of Plan Year	20,330,964	20,798,081	20,798,081
Contributions			
Employer Contributions	480,448	480,448	480,448
Employee Contributions	0	0	0
Total Contributions	480,448	480,448	480,448
Investment Income			
Interest and Dividends	497,690	N/A	N/A
Appreciation/(Depreciation) in Market Value	(1,167,356)	N/A	N/A
Other Investment Income and Receipts	0	N/A	N/A
Realized Gains/(Losses)	952,590	N/A	N/A
Total Investment Income	282,924	1,614,056	1,254,406
Disbursements			
Benefit Payments	(1,195,838)	N/A	N/A
Other Payments	0	N/A	N/A
Expenses	(69,354)	N/A	N/A
Total Disbursements	(1,265,192)	(1,265,192)	(1,265,192)
End of Plan Year	19,829,144	21,627,393	21,267,743
Approximate Rate of Return	1.06%	7.50%	5.80%

2.3: Development of Actuarial Value of Assets

	June 30, 2011	June 30, 2012
Market Value (MVA) Beginning of Year	17,467,410	20,330,964
Actuarial Value (AVA) Beginning of Year	20,296,557	20,798,081
Contributions	325,875	480,448
Disbursements, net of expenses	(1,208,919)	(1,195,838)
Assumed Return on AVA, net of expenses	1,501,348	1,544,702
Actual Return on MVA, net of expenses	3,746,598	213,570
MVA End of Year	20,330,964	19,829,144
Return on MVA, net of expenses	22.01%	1.06%
Expected AVA End of Year	20,914,860	21,627,393
Gain/(Loss) = MVA End of Year – Expected AVA End of Year	(583,896)	(1,798,249)
20% of Gain/(Loss)	(116,779)	(359,650)
Actual Return on AVA, net of expenses	1,384,569	1,185,052
AVA End of Year (w/Corridor) = Expected AVA + 20% of Gain/(Loss)	20,798,081	21,267,743
Return on AVA	6.97%	5.80%
AVA/MVA	102.3%	107.3%

Section 3:

Actuarial Computations

3.1: Computation of Employer Contribution Rate

		7/1/2011 (Prior Valuation)	7/1/2012 Expected Assets	7/1/2012 Actual Assets
	Present Value of Future Benefits			
	Active Members	14,337,081	14,999,013	14,999,013
	Beneficiaries of Deceased Members	884,067	969,300	969,300
	Disabled Members	1,205,974	1,182,207	1,182,207
	Retired Members	7,993,291	7,831,057	7,831,057
	Terminated Vested Members	1,038,886	1,093,843	1,093,843
(1)	Total Present Value of Future Benefits	25,459,300	26,075,420	26,075,420
(2)	Actuarial Accrued Liability (AAL)	20,677,719	21,296,785	21,296,785
(3)	Actuarial Value of Plan Assets (AVA)	20,798,081	21,520,213	21,267,743
(4)	Unfunded Actuarial Accrued Liability (UAAL) (2) – (3)	(120,362)	(223,428)	29,042
(5)	Amortization of UAAL, Beginning of Year	(13,766)	(25,553)	3,322
(6)	Normal Cost, Beginning of Year	469,441	484,214	484,214
(7)	**Total Contribution, End of Year (5) + (6) + 7.5% interest***	**$ 489,851**	**$ 493,060**	**$ 524,100**
(8)	Projected Payroll	6,252,741	6,388,994	6,388,994
(9)	**Contribution as a % of Pay (7) ÷ (8)**	**7.83%**	**7.72%**	**8.20%**

* Contributions assumed to be paid 12 months after valuation date.

3.2: Change in Present Value of Accumulated Benefits

Present Value of Accumulated Benefits as of 7/1/2011		18,234,366
Change from:		
New Accruals	469,441	
Interest	1,357,942	
Changes in Assumptions	0	
Plan Amendments	0	
(Gain)/Loss	40,565	
Benefits Paid	(1,195,838)	
Total Change in Present Value		672,110
Present Value of Accumulated Benefits as of 7/1/2012		18,906,476

Section 4:

Disclosure Information Required Under GASB 25

Schedule of Employer Contributions

Year Ended June 30	Annual Required Contribution	Percentage Contributed
2001	0	100%
2002	0	100%
2003	0	100%
2004	0	100%
2005	0	100%
2006	0	100%
2007	0	100%
2008	7,075	100%
2009	35,496	100%
2010	107,526	100%
2011	317,969	100%
2012	480,448	100%

Schedule of Funding Status

Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability	Funded Ratio	Covered Payroll	Unfunded Liability as a Percent of Payroll
7/1/2006	$20,277,743	$16,810,351	($3,467,392)	121%	$5,668,903	(61%)
7/1/2007	$21,097,686	$17,605,559	($3,492,127)	120%	$5,688,280	(61%)
7/1/2008	$21,600,485	$18,575,389	($3,025,096)	116%	$6,011,092	(50%)
7/1/2009	$20,489,365	$19,215,789	($1,273,576)	107%	$5,936,682	(21%)
7/1/2010	$20,296,557	$20,254,008	($42,548)	100%	$5,978,521	(1%)
7/1/2011	$20,798,081	$20,677,719	($120,362)	101%	$5,997,833	(2%)
7/1/2012	$21,267,743	$21,296,785	$29,042	100%	$6,187,888	1%