City of Ferguson, Missouri

Actuarial Review and Analysis of City Pension Plan as of July 1, 2011

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October 14, 2011

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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, 2011. 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

	7/1/2010	7/1/2011
Fully Projected Actuarial Liability	$24.3 M	$25.5 M
Actuarial Accrued Liability	20.3 M	20.7 M
Actuarial Value of Assets	20.3 M	20.8 M
Funding Ratio	100%	100.6%
Unfunded Actuarial Accrued Liability (UAAL)	(0.0)	(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	$480,448	$489,851
Projected Payroll	$6.2 M	$6.3 M
Contribution as % of Payroll	7.73%	7.83%

Contribution Rates

The employer contribution increased slightly from $480,448 for fiscal year 2011 to $489,851 for fiscal year 2012. The reasons for this change can be broken down as follows:

Change in Contribution		Amount
Contribution for fiscal year 2011		**$ 480,448**
Change due to:		
Investment Experience, including recognition of prior losses	+ $ 14,505	
Demographic and Salary Experience	- $ 73,055	
New Entrants	+ $ 34,859	
Assumption Changes	+ $ 33,094	
Total Change		+ $ 9,403
Contribution for fiscal year 2012*		**$ 489,851**

* 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:

- Investment Experience

  During the year ended June 30, 2011; the return on the market value of Plan assets was 22%, a significant gain versus the assumed 7.5% return. However, recognition of past losses outweighed this gain, causing an increase in the City contribution.

  The expected increase in contributions due to recognition of past losses was about $75,000. The impact of the actual investment experience offset this to a large extent, but not fully. The net impact of the past investment loss recognition combined with the gain on actual investment experience was a net increase in the contribution of about $14,500.

  Investment losses experienced during fiscal year 2009 are now nearly fully recognized in the Plan's valuation assets.

- 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, due mainly to salary increases less than expected. The total payroll as of July 1, 2011 was about $6.0 million, somewhat lower than the $6.2 level we would have expected based on the prior valuation.

  This gain resulted in a decrease in the contribution of about $73,000.

- 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 $35,000.

- Actuarial Assumptions

  EFI recently conducted a review of the actuarial experience for the Plan, provided as a separate report, covering the most recent five years of experience. As a result of this study, several changes in assumptions were made, including:

  - Changes in assumed rates of retirement and termination
  - Changes in assumed merit pay increases
  - Adoption of a new mortality table, reflecting longer expected lifetimes of Plan members.

  The net impact of these changes was an increase in the contribution of about $33,000.

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 are incorporated into this 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.

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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, 2011 was updated by City staff. Participant data was reviewed for reasonableness and consistency but was neither verified nor audited.

Active Participants	July 1, 2010	July 1, 2011
Number Active	128	130
Average Age	42.8	42.5
Average Service	11.3	11.2
Average Pay	$46,707	$46,137

Inactive Participants	July 1, 2010	July 1, 2011
Number of Retired Participants	66	65
Average Age	69.8	70.4
Average Monthly Benefit	$1,119	$1,162
Number of Disabled Participants	9	10
Average Age	64.2	64.2
Average Monthly Benefit	$937	$955
Number of Terminated Vested Participants	17	19
Average Age	55.0	55.5
Average Monthly Benefit	$648	$675
Number of Beneficiaries*	11	13
Average Age	66.3	69.3
Average Monthly Benefit	$913	$853

* 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	4	1							5
25-29	11	4							15
30-34	10	11	1						22
35-39	7	9	3	1					20
40-44	1	2	7	5	2				17
45-49	1	1	3		6				11
50-54	2	3	1	3	3	2	1		15
55-59	1	1	7	1	1		1	5	17
60-64		1	2		1			1	5
65+		1	2						**3**
Total	**37**	**34**	**26**	**10**	**13**	**2**	**2**	**6**	**130**

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	37,143	32,760							36,266
25-29	36,633	35,469							36,322
30-34	37,665	42,441	48,568						40,549
35-39	40,277	40,122	49,081	48,568					41,943
40-44	43,272	38,002	47,596	55,778	52,998				49,255
45-49	31,824	39,624	48,589		53,002				48,657
50-54	58,053	52,430	35,818	48,318	55,252	58,929	84,215		54,800
55-59	82,410	36,795	39,071	54,579	68,557		81,765	69,663	55,642
60-64		32,282	42,838		62,462			62,483	48,580
65+		70,470	43,451						52,457
Total	**40,101**	**41,619**	**44,486**	**52,699**	**55,445**	**58,929**	**82,990**	**68,467**	**46,137**

Changes in Plan Membership

	Active	Terminated Vested	Retired	Disabled	Surviving Beneficiaries	Total
Members on July 1, 2010	128	17	66	9	11	**231**
New Hires	12	-	-	-	-	**12**
Disabilities	(1)	-	-	1	-	**0**
Retirements	(2)	(1)	3	-	-	**0**
Terminations with Vested Benefits	(2)	2	-	-	-	**0**
Terminations without Vested Benefits	(5)	-	-	-	-	**(5)**
Died with a Beneficiary	-	-	(3)	-	3	**0**
Died without a Beneficiary	-	-	(1)	-	(1)	**(2)**
Benefits Expired	-	-	-	-	-	**0**
Data Corrections	-	1	-	-	-	**1**
Members on July 1, 2011	**130**	**19**	**65**	**10**	**13**	**237**

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

Valuation Date	All assets and liabilities are computed as of July 1, 2011.
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%

Previously, salary levels were assumed to increase by 4.0% per year, due to wage inflation. No merit/longevity increases were assumed.

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. Previously, rates of mortality were given by the 1983 Group Annuity Mortality Tables for males and females.

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

Previously, 25% of participants were assumed to retire when first eligible. Rates for other ages were based on the following:

Age	Rate
55-61	0.05
62	0.75
63-64	0.20
65+	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

Previously, rates of termination were based on the Participant's age. Representative rates are as follows:

Age	Rate
20	0.0658
30	0.0483
40	0.0384
50	0.0153
60	0.0150

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

Changes in Assumptions since Prior Valuation

Actuarial assumptions were updated based on a review of experience conducted in 2011, covering the past five years of experience. Changes in assumptions are noted above.

Section 2:

Asset Information

2.1: Statement of Net Plan Assets

	June 30, 2010	June 30, 2011
Assets		
Interest Receivable	83,555	80,577
Investments		
Common Stock	9,488,034	13,111,169
Fixed Income Securities	7,170,894	6,514,138
Cash and Equivalents	724,927	625,080
Total Assets	17,467,410	20,330,964
Liabilities		
Accounts Payable	0	0
Accrued Expenses	0	0
Total Liabilities	0	0
Net Assets Available For Benefits	**17,467,410**	**20,330,964**

2.2: Statement of Changes in Net Plan Assets for Year Ending June 30, 2011

	Market Value	Expected Actuarial Value	Actuarial Value
Beginning of Plan Year	17,467,410	20,296,557	20,296,557
Contributions			
Employer Contributions	325,875	325,875	325,875
Employee Contributions	0	0	0
Total Contributions	325,875	325,875	325,875
Investment Income			
Interest and Dividends	500,170	N/A	N/A
Appreciation/(Depreciation) in Market Value	2,735,684	N/A	N/A
Other Investment Income	(2,978)	N/A	N/A
Realized Gains/(Losses)	513,722	N/A	N/A
Total Investment Income	3,746,598	1,501,347	1,384,568
Disbursements			
Benefit Payments	(1,156,693)	N/A	N/A
Other Payments	0	N/A	N/A
Expenses	(52,226)	N/A	N/A
Total Disbursements	(1,208,919)	(1,208,919)	(1,208,919)
End of Plan Year	20,330,964	20,914,860	20,798,081
Approximate Rate of Return	22.01%	7.50%	6.97%

2.3: Development of Actuarial Value of Assets

	June 30, 2010	June 30, 2011
Market Value (MVA) Beginning of Year	17,074,471	17,467,410
Actuarial Value (AVA) Beginning of Year	20,489,365	20,296,557
Contributions	107,526	325,875
Disbursements	(1,096,689)	(1,208,919)
Assumed Return on AVA	1,503,641	1,501,348
Actual Return on MVA	1,382,102	3,746,598
MVA End of Year	17,467,410	20,330,964
Return on MVA	**8.34%**	**22.01%**
Expected AVA End of Year	21,003,844	20,914,860
Gain/(Loss) = MVA End of Year – Expected AVA End of Year	(3,536,434)	(583,896)
20% of Gain/(Loss)	(707,287)	(116,779)
Actual Return on AVA	796,354	1,384,569
AVA End of Year (w/Corridor) = Expected AVA + 20% of Gain/(Loss)	20,296,557	20,798,081
Return on AVA	3.98%	6.97%
AVA/MVA	116.2%	102.3%

Section 3:

Actuarial Computations

3.1: Computation of Employer Contribution Rate

		7/1/2010	7/1/2011 Old Assumptions	7/1/2011 New Assumptions
	Present Value of Future Benefits			
	Active Members	13,616,520	13,592,751	14,337,081
	Beneficiaries of Deceased Members	881,977	903,000	884,067
	Disabled Members	1,053,703	1,188,901	1,205,974
	Retired Members	7,870,686	7,893,442	7,993,291
	Terminated Vested Members	846,458	1,014,452	1,038,886
(1)	Total Present Value of Future Benefits	24,269,343	24,592,545	25,459,300
(2)	Actuarial Accrued Liability (AAL)	20,254,008	20,584,961	20,677,719
(3)	Actuarial Value of Plan Assets (AVA)	20,296,557	20,798,081	20,798,081
(4)	Unfunded Actuarial Accrued Liability (UAAL) (2) – (3)	(42,548)	(213,120)	(120,362)
(5)	Amortization of UAAL, Beginning of Year	(4,916)	(24,624)	(13,766)
(6)	Normal Cost, Beginning of Year	451,844	449,513	469,441
(7)	**Total Contribution, End of Year (5) + (6) + 7.5% interest***	**$ 480,448**	**456,757**	**489,851**
(8)	Projected Payroll	6,217,662	6,237,746	6,252,741
(9)	**Contribution as a % of Pay (7) ÷ (8)**	**7.73%**	**7.32%**	**7.83%**

* 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 7/1/2010		17,754,355
Change from:		
New Accruals	451,844	
Interest	1,322,089	
Changes in Assumptions	110,151	
Plan Amendments	0	
(Gain)/Loss	(247,380)	
Benefits Paid	(1,156,693)	
Total Change in Present Value		480,011
Present Value of Accumulated Benefits as of 7/1/2011		18,234,366

Section 4:

Disclosure Information Required Under GASB 25

Schedule of Employer Contributions

Year Ended (6/30)	Annual Required Contribution	Percentage Contributed
2000	0	100%
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%

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%)

Appendix:

Supplemental Benefit

Background

The supplement is a monthly benefit equal to $5 for each year of service (up to 30 years, maximum $150 per month), currently payable from retirement until the member becomes eligible for Medicare.

Cost Analysis

The following table shows the impact of providing this supplemental benefit as a lifetime benefit.

		Temporary Supplement (Current Provision)	Lifetime Supplement (Active Only)	Lifetime Supplement (All Members)
	Present Value of Future Benefits			
	Active Members	14,337,081	14,697,008	14,697,008
	Beneficiaries of Deceased Members	884,067	884,067	884,067
	Disabled Members	1,205,974	1,205,974	1,291,893*
	Retired Members	7,993,291	7,993,291	8,615,250*
	Terminated Vested Members	1,038,886	1,038,886	1,041,367
(1)	Total Present Value of Future Benefits	25,459,300	25,819,227	26,529,585
(2)	Actuarial Accrued Liability (AAL)	20,677,719	20,950,978	21,661,337
(3)	Actuarial Value of Plan Assets (AVA)	20,798,081	20,798,081	20,798,081
(4)	Unfunded Actuarial Accrued Liability (UAAL) (2) – (3)	(120,362)	152,897	863,256
(5)	Amortization of UAAL, Beginning of Year	(13,766)	17,487	98,730
(6)	Normal Cost, Beginning of Year	469,441	480,065	480,065
(7)	**Total Contribution, End of Year (5) + (6) + 7.5% interest**	**489,851**	**534,868**	**622,204**
(8)	Projected Payroll	6,252,741	6,252,741	6,252,741
9)	**Fiscal Year 2012 Contribution Rate (% of Pay)**	**7.83%**	**8.55%**	**9.95%**

* For retirees younger than age 65, their current supplement is assumed to be continued. For retirees over age 65, a $100 per month supplement is assumed to be reinstated. Actual amounts would have to be determined for these retirees. No additional supplement is assumed for surviving spouses.