City of Ferguson
Pension Plan

Actuarial Funding Valuation

as of July 1, 2015 (for Fiscal Year 2017 Contribution)

January 2016

BOOMERSHINE CONSULTING GROUP, L.L.C.
ACTUARIAL & RETIREMENT PLAN SOLUTIONS

January 21, 2016

Mayor James Knowles III
& City Council
City of Ferguson
110 Church Street
Ferguson, MO 63135

Re: City of Ferguson Pension Plan Actuarial Valuation as of July 1, 2015

Mr. Mayor and Members of the Council:

The following report presents the results of the Actuarial Valuation of City of Ferguson Pension Plan (''the Plan'') as of July 1, 2015 and sets forth the recommended contribution for fiscal year 2017 (as of July, 2016), according to the City's funding policy. The report is based on participant data as of July 1, 2015 as submitted by the City. Investment data was provided by the City for the fiscal year ended June 30, 2015. We have relied on this information without auditing it.

INVESTMENT PERFORMANCE

The market value of Plan assets for the year ended June 30, 2015 is $24,912,059. The actuarial value of assets, reflecting smoothing of past gains and losses as of June 30, 2015 is $24,072,528. The investment return for the Plan year ending June 30, 2015 was 5.02% on a market value basis and 9.50% on an actuarial basis.

The Plan uses a smoothing method to determine Plan costs. Under this method, asset gains or losses are spread over a 5-year period. The gains and losses are determined every year by comparing actual investment returns with expected asset performance. Details of the development of the Actuarial Asset value is shown on page 8.

FUNDING RECOMMENDATION

The total required contribution for fiscal year 2017 is $452,813, which represents 6.9% of total expected payroll. The primary reason for the decrease is a demographic gain due to higher than expected turnover.

FUNDED STATUS

The Actuarial Accrued Liability of the Plan as of July 1, 2015 is $23,405,320 compared to the Actuarial Value of Assets of $24,072,528, resulting in a funded ratio of 102.9%. On a market value basis (disregarding asset smoothing), this ratio is 106.4%.

PLAN CHANGES AND ASSUMPTION CHANGES

There were no changes in benefits for this valuation. One change in assumptions was made: to include a provision for mortality improvement, both up to the valuation date, and five years beyond. More information is in the Actuarial Assumptions and Methods section.

This report has been prepared in accordance with generally accepted actuarial principles and practices. In the opinion of the City and its actuaries, the actuarial assumptions used are reasonably related to Plan experience and expectations, and represent the best estimate of anticipated Plan experience.

The first undersigned is a member of the American Academy of Actuaries, and is qualified to render the actuarial opinions presented in this report.

Respectfully Submitted,

BOOMERSHINE CONSULTING GROUP, L.L.C.

Gregory M. Stump, FSA, EA, MAAA, FCA

Darlene A. Morgan, CEBS

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1. Executive Summary

The information in the table below represents a high level summary of the valuation results, shown in comparison to the most recent study (one year prior), as well as the relative changes during the year.

Funding Progress	**7/1/2014**	**7/1/2015**	***Increase/(Decrease)***
Actuarial Accrued Liability ($ million)	$ 22.6	$23.4	*3.5%*
Plan Asset Value ($ million)			
Market Value	24.5	24.9	*1.7%*
Actuarial (smoothed) Value	22.7	24.1	*5.9%*
Ratio			
Market Value	108%	106%	
Actuarial (smoothed) Value	101%	103%	
Plan Contributions			
Normal Cost	$ 525,226	$ 500,687	*-4.7%*
Amortization of Unfunded Liability	(15,505)	(79,466)	*412.5%*
Interest for Contribution Timing	38,229	31,592	*-17.4%*
Net Employer Contribution	$ 547,950	$ 452,813	*-17.4%*
Percentage of Pay	7.8%	6.9%	
Plan Membership			
Active Members	134	126	*-6.0%*
Inactive Members	118	123	*4.2%*
Total Plan Membership	252	249	*-1.2%*

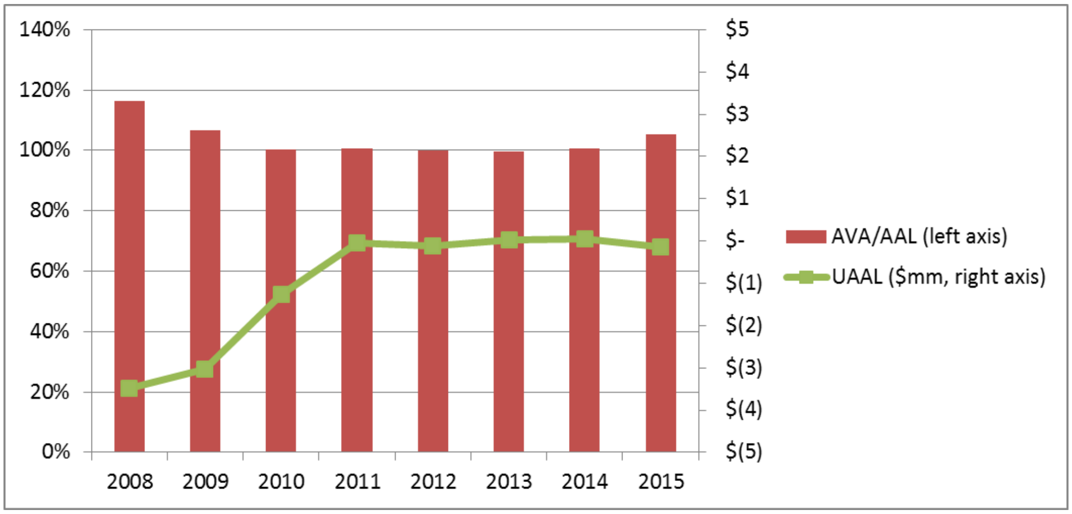
From the above, we can see that the Plan's asset value increased by about $1.4 million (Actuarial Value), and the Actuarial Liability increased by about $0.8 million. This served to improve funding and decrease the City's contribution. The table below shows the primary factors influencing this change.

	Employer Contribution
Prior Valuation	$547,950
Change due to:	
Expected Increase/(Decrease)	(46,400)
Investment Experience	9,286
Demographic/Salary Experience	(174,959)
New Entrants	41,236
Plan Changes	-
Assumption Changes	75,700
Total Change	($95,137)
Current Valuation	$452,813

FUNDING and CONTRIBUTIONS: PAST and FUTURE TRENDS

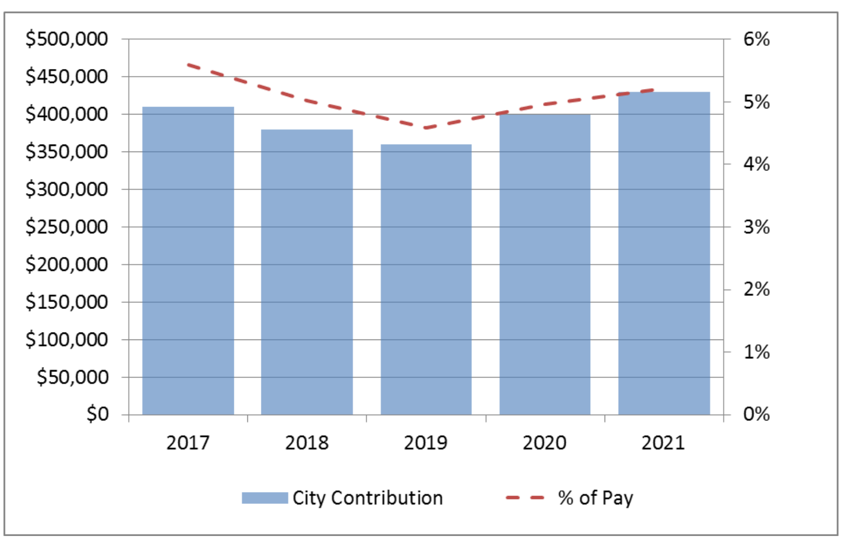
The funding of the Plan, as measured by the Actuarial Value of Assets divided by the Actuarial Accrued Liability (AVA/AAL), over the past 8 years has remained close to or above 100%. Over this time period, the Unfunded Actuarial Accrued Liability (UAAL) has remained close to or below $0. Each of these is shown in the graph below.

History of Plan Funding



The graph below shows that the City contribution is expected to decrease over the next few years, as recent investment gains are recognized. During this time, the Plan's funding ratio is expected to remain close to 100% as well. This scenario is based on no gains or losses from any source, which is impossible. Therefore, the actual contributions will differ from what is shown below. The unrecognized gains will still provide downward pressure on contributions nonetheless.

Projection of City Contributions



2. Plan Asset Information

Asset Statements

	Year Ending June 30, 2014	Year Ending June 30, 2015
Market Value of Assets as of the Beginning of the Year	$ 21,412,846	$ 24,501,867
Employer Contributions	524,100	535,336
Interest and Dividends	609,455	602.806
Realized Gains/(Losses)	2,054,860	2,040,801
Market Appreciation/(Depreciation)	1,124,345	(1,455,012)
Benefit Payments	(1,161,198)	(1,262,471)
Expenses	(71,848)	(83,145)
Market Value as of End of Plan Year prior to Accruals	$ 24,492,560	$ 24,880,182
Net Accrued	9,306	31,878
Market Value as of End of Plan Year	$ 24,501,867	$ 24,912,059

Asset Mix ($000)	**June 30, 2014**		**June 30, 2015**	
Equity Securities and Funds	15,456	63%	16,330	66%
Fixed Income Securities and Funds	7,978	33%	7,533	30%
Other Assets	430	2%	429	2%
Cash and Equivalents	599	2%	588	2%
Total Invested Assets	24,493	100%	24,880	100%
Net Accrued	9		32	
Net Assets	24,502		24,912	

Actuarial Value of Assets

The Actuarial Value of Assets is determined by recognizing one-fifth of each year's investment gain or loss. The gain or loss was determined as the amount by which the actual market value differs from the expected market value of assets.

The actuarial value is limited to not more than 120% and not less than 80% of the market value of assets.

				July 1, 2015
1.	Market Value of Assets as of Beginning of Year			$ 24,501,867
2.	Contributions			535,336
3.	Benefit Payments and Expenses			(1,345,616)
4.	Expected Return at 7.50%			1,823,134
5.	Expected Market Value as of End of Plan Year			$ 25,514,721
	[Line 1 + Line 2 + Line 3 + Line 4]			
6.	Actual Market Value as of End of Plan Year			24,912,059
7.	Asset Gain/(Loss) for Plan Year[Line 6 - Line 5]			(602,662)
8.	Market Value of Assets at End of Plan Year			24,912,059
9.	Less: 80% of 2015 Gain/(Loss)	80% of (602,662)	(482,130)	
	Less: 60% of 2014 Gain/(Loss)	60% of 2,202,769	1,321,661	
	Total			839,531
10.	Actuarial Value of Assets as of End of Plan Year			$ 24,072,528
	[Line 8 - Line 9; not less than 80% or more			
	than 120% of the Market Value of Assets]			
10.	Actuarial Value as % of Market Value of Assets			96.6%
11.	Estimated Rate of Return on Actuarial Value of Assets			9.50%

3. Participant Summary

	July 1, 2014	July 1, 2015
Active Participants		
Number of Participants	134	126
Average Age	43.3	43.9
Average Years of Service from hire	11.9	11.6
Total Compensation	$ 6,772,763	$ 6,365,009
Average Compensation	50,543	50,516
Retired Participants		
Number of Participants	72	75
Average Age	71.3	71.4
Total Annual Benefit	$ 909,527	$ 1,042,174
Average Annual Benefit	12,632	13,896
Disabled Retired Participants		
Number of Participants	10	9
Average Age	67.1	67.3
Total Annual Benefit	$ 119,535	$ 103,688
Average Annual Benefit	11,953	11,521
Beneficiaries		
Number of Participants	13	12
Average Age	77.3	78.2
Total Annual Benefit	$ 141,696	$ 134,427
Average Annual Benefit	10,900	11,202
Terminated Deferred Vested Participants		
Number of Participants	23	27
Average Age	52.7	50.2
Total Annual Benefit	$ 207,045	$ 264,474
Average Annual Benefit	9,002	9,795

PARTICIPANT RECONCILIATION

	Active	Retired	Disabled Retirees	Beneficiary	Deferred Terminated Vested	Total
as of July 1, 2014	134	72	10	13	23	252
New Participants	15	-	-	-	-	15
Rehires	-	-	-	-	-	-
Terminated Vested	(6)	-	-	-	6	-
Non-vested	(12)	-	-	-	-	(12)
Retired	(5)	6	-	-	(1)	-
Disabled Retiree	-	-	-	-	-	-
Deceased – with Beneficiary	-	-	-	-	-	-
Deceased - No Beneficiary	-	(3)	(1)	(1)	-	(5)
Certain Period Complete	-	-	-	-	-	-
Data Adjustments*	-	-	-	-	(1)	(1)
as of June 30, 2015	126	75	9	12	27	249

*Combined two records consisting of two employment periods for one retiree.
One terminated vested record deleted; Includes retiree record for one member previously thought to be ineligible.

DISTRIBUTION OF ACTIVE PARTICIPANTS BY AGE AND SERVICE AS OF JULY 1, 2015

	Years of Service							
Age	<5	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	Total
<20	-	-	-	-	-	-	-	-
20 - 24	3	-	-	-	-	-	-	3
25 - 29	8	1	-	-	-	-	-	9
30 - 34	9	7	3	-	-	-	-	19
35 - 39	8	5	6	-	-	-	-	19
40 - 44	9	5	5	4	1	-	-	24
45 - 49	2	1	1	4	4	1	-	13
50 - 54	2	1	-	1	3	3	1	11
55 - 59	3	1	3	1	1	2	2	13
60 - 64	2	1	3	1	2	2	4	15
>64	-	-	-	-	-	-	-	-
Total	46	22	21	11	11	8	7	126

4. Valuation Summary

Development of Unfunded Actuarial Accrued Liability

		7/1/2014	7/1/2015
1.	Number of Participants		
	Active	134	126
	Retired and Beneficiaries	85	87
	Disabled Retired	10	9
	Terminated Deferred Vested	23	27
	Total	252	249
2.	Active compensation		
	Actual as of current date	$ 6,772,763	$ 6,365,009
	Projected for the following plan year	6,992,878	6,571,872
3.	Actuarial Accrued Liability (AAL)		
	Active	$ 11,997,823	$ 11,222,062
	Retired and Beneficiaries	8,327,270	9,959,211
	Disabled Retired	1,132,813	879,251
	Terminated Deferred Vested	1,151,563	1,344,796
	Total	$ 22,609,469	$ 23,405,320
4.	Actuarial Value of Assets (AVA)	22,739,652	24,072,528
5.	Unfunded Actuarial Accrued Liability (UAAL)	(130,183)	(667,208)
	Funding Ratio (AVA/AAL)	101%	103%

Development of Actuarial Gain/Loss

1.	Expected Actuarial Accrued Liability		
	(a)	Actuarial Accrued Liability as of July 1, 2014	$ 22,609,469
	(b)	Normal Cost as of July 1, 2014	525,226
	(c)	Interest on (a) and (b) to June 30, 2015	1,735,102
	(d)	Actual benefit payments for the prior plan year	(1,262,471)
	(e)	Interest on (d) to June 30, 2015	(46,487)
	(f)	Expected Actuarial Accrued Liability as of July 1, 2015	$ 23,560,839
		[(a) + (b) +(c) + (d) + (e)]	
2.	Actual Actuarial Accrued Liability as of July 1, 2015 (prior to assumption changes)		22,826,662
3.	Gain/(Loss) on Actuarial Accrued Liability [Line 1(f) - Line 2]		734,177
4.	Expected Actuarial Value of Assets		
	(a)	Actuarial Value of Assets as of July 1, 2014	$ 22,739,652
	(b)	Expected Return on (a) to June 30, 2015	1,705,474
	(c)	City contributions made for year ending June 30, 2015	535,336
	(d)	Interest on (c) to June 30, 2015	35,042
	(e)	Actual benefit payments and expenses for the prior plan year	(1,345,616)
	(f)	Expected Return on (e) to June 30, 2015	(49,548)
	(g)	Expected Actuarial Value of Assets as of July 1, 2015	$ 23,620,340
		[(a) + (b) + (c) + (d) + (e) + (f)]	
5.	Actual Actuarial Value of Assets as of July 1, 2015		$ 24,072,528
6.	Gain/(Loss) on Actuarial Value of Assets [Line 5 - Line 4(g)]		452,188
7.	Total Actuarial Gain/(Loss) [Line 3 + Line 6]		$ 1,186,365

Development of City Contribution

		July 1, 2014	July 1, 2015
1.	Present Value of Future Benefits		
	Active	$ 16,972,634	$ 15,970,028
	Retired and Beneficiaries	8,327,270	9,959,211
	Disabled	1,132,813	879,251
	Terminated Vested	1,151,563	1,344,796
	Total	$ 27,584,280	$ 28,153,286
2.	Actuarial Accrued Liability	22,609,469	23,405,320
3.	Actuarial Value of Assets	$ 22,739,652	$ 24,072,528
4.	Unfunded Actuarial Accrued Liability [Line 2 - Line 3]	(130,183)	(6667,208)
5.	Amortization of Unfunded Actuarial Accrued Liability, beginning of Plan Year	(15,505)	(79,466)
6.	Normal Cost, beginning of Plan Year	525,226	500,687
7.	Total Contribution, beginning of Plan Year [Line 5 + Line 6]	$ 509,721	$ 421,221
8.	Total Contribution, end of Plan Year [Line 8 plus 7.50% interest]	**$ 547,950**	**$ 452,813**
9.	Projected Payroll	6,992,878	6,571,872
10.	Total Contribution as a % of Payroll [Line 8 / Line 9]	7.84%	6.89%

Present Value of Accrued Benefits

			7/1/2014	7/1/2015
1.	Present Value of Vested Benefits			
		Active	$7,928,916	$7,326,916
		Retired and Beneficiaries	8,327,270	9,959,211
		Disabled Retired	1,132,813	879,251
		Deferred Vested	1,151,563	1,344,796
		Total	$ 18,540,562	$ 19,510,174
2.	Present Value of Nonvested Benefits		626,842	588,950
3.	Total Present Value of Accrued Benefits		19,167,404	20,099,124
4.	Market Value of Assets		24,501,867	24,912,059
5.	Unfunded Value of Accrued Benefits		(5,334,463)	(4,812,935)
6.	Funded Ratio [(4) / (3)]		127.83%	123.95%

CHANGE IN PRESENT VALUE OF ACCRUED BENEFITS			
Present Value of Accrued Benefits as of July 1, 2014			$ 19,167,404
Change from:			
	New Accruals	$ 525,226	
	Interest	1,430,460	
	Changes in Assumptions	467,375	
	Plan Amendments	0	
	(Gain)/Loss	(228,870)	
	Benefits Paid	(1,262,471)	
Total Change in Present Value			$ 931,720
Present Value of Accrued Benefits as of July 1, 2015			$ 20,099,124

The figures above were determined using the same assumptions as were used to compute the Actuarial Accrued Liability; however, the actuarial cost method used was the Unit Credit method. Only benefits accrued prior to the valuation date are taken into account under this cost method.

5. Actuarial Assumptions and Methods

Actuarial Cost Method:

The Entry Age Normal Actuarial Cost Method was used for this study. The contribution equals the Normal Cost plus the amount needed to amortize the Unfunded Actuarial Accrued Liability over a rolling ten year period, as a level percentage of payroll. The Normal Cost is the level annual payment that would be required to fund the Plan if paid from the date each employee became eligible to participate to the date of exit. The Actuarial Accrued Liability is the accumulated value of the Normal Cost for each employee from date of participation to the present. The Unfunded Actuarial Accrued Liability is the Actuarial Accrued Liability minus the Plan Value of Assets. Actuarial gains and losses reduce or increase the Unfunded Actuarial Accrued Liability.

All actuarial liabilities were computed as of July 1, 2015. An experience study was conducted in 2011 to establish the demographic assumptions outlined below.

Actuarial Assumptions:

Assumed Investment Return: 7.50% per year, net of expenses.

Salary Increases: 3.25% per year, plus a service-based merit increase, as follows:

Years of Service	Addt'l Increase
0 - 4	3.5%
5 - 9	2.5%
10 - 14	2.0%
15 - 19	1.0%
20+	0.0%

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, with Blue Collar adjustments and projected to 2020 using Scale BB. For disabled members, the RP 2000 Disabled tables (male, female) were used.
For the prior valuation, the RP 2000 tables were used without projected improvements. The assumption was changed to account for improvements in life expectancy among plan participants, both up to the valuation date and five years beyond.

Disability Rates: 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	Assumed Rate
20	1.05%
30	0.12%
40	0.20%
50	0.46%
60+	0.00%

Termination Rates: Rates vary by service as follows:

Years Service	Assumed Rate
0 – 4	11%
5 - 8	7%
9+	1%

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

Retirement Rates: Rates of retirement are based on the Participant's age as follows:

Age	Assumed Rate
55 - 59	10%
60 - 64	20%
65 - 69	50%
70+	100%

Assumed Form of Payment: Single Life Annuity

Changes in assumptions and methods since the prior valuation:
There has been one change in actuarial assumptions since the prior valuation, as described above under Mortality.

6. Highlights 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 Benefits:

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 Benefits:

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 Benefits:

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.

There have been no changes in Plan provisions since the prior valuation.

Glossary of Terms

Actuarial Accrued Liability (AAL):	The portion of benefits deemed to be accrued by participants based on past service. The AAL serves as the asset **funding** target, when annual contributions are determined.
Actuarial Value of Assets (AVA):	The smoothed value of assets, used to compute the Unfunded AAL. The purpose of the AVA is to control volatility in annual **cash contributions**.
Amortization of Unfunded Liability:	The portion of the **annual cash contribution** that represents a portion of the Unfunded AAL. The amortization can be positive or negative.
Actuarially Determined Employer Contribution (ADEC):	The contribution determined by the actuary for **funding purposes**.
Funded Ratio	The ratio of Plan assets to Actuarial liability.
Market Value of Assets (MVA):	The total value of Plan assets available to pay benefits.
Normal Cost:	That portion of the annual contribution that represents one year's accrual of benefits. In funding calculations, this is known as the Normal Cost.
Unfunded Actuarial Accrued Liability:	The difference between the Actuarial Value of Assets and the Actuarial Accrued Liability, used for **funding purposes**.