CITY OF LANSING

POLICE AND FIRE RETIREMENT SYSTEM

ACTUARIAL VALUATION

AS OF DECEMBER 31, 2012

Boomershine Consulting Group
Executive Center I
3300 North Ridge Road, Suite 300
Ellicott City, MD 21043

February, 2014

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City of Lansing Police and Fire Retirement System
124 W. Michigan Avenue
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Executive Summary

Members of the Board:

The following report sets forth the Actuarial Valuation of the *City of Lansing Police and Fire Retirement System* as of December 31, 2012. The report is based on participant data and asset summary as of December 31, 2012 as submitted by the Plan Administrator and City finance department. We relied on this information without auditing it.

INVESTMENT PERFORMANCE:

The total Market Value of Plan Assets for the plan year ending December 31, 2012 was $284,183,964. Plan assets exclude from this a reserve for healthcare benefits. The total yield of the fund for the plan year ending December 31, 2012 was 12.72% on the market value of assets and 2.39% on an actuarial basis.

The Plan uses a smoothing method to determine the City's contributions. 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 are shown on page 4.

FUNDING RECOMMENDATIONS:

The total recommended City contribution for the plan year ending December 31, 2013 is $11,248,857.
Last year the total recommended contribution was $10,133,598. The increase in the contribution was expected, as it is primarily due to the recognition of the final 20% of the 2008 investment loss.

FUNDING PROGRESS:

The Actuarial Accrued Liability as of December 31, 2012 is $373,083,911 compared to the Actuarial Value of Assets of $257,898,061, resulting in a plan funded ratio of 69.1%.

This report is 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 undersigned below are members of the American Academy of Actuaries, and are qualified to render the actuarial opinions presented in this Report.

Respectfully submitted,
BOOMERSHINE CONSULTING GROUP, L.L.C.

Sunita K. Bhatia, EA, ASA, ACA, MAAA

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

TRUST FUND STATEMENT

AND

DETERMINATION OF VALUATION ASSETS

TRUST FUND STATEMENT FOR THE PLAN YEAR ENDING DECEMBER 31, 2012

Market Value of Total Fund as of December 31, 2011			$263,462,783
Receipts:			
Employer Contributions	10,723,080		
Employer Contributions - Healthcare Reserve	578,000		
Member Contributions	2,637,952		
Adjustments Investment Income			
Interest	799,809		
Dividends	1,520,849		
Market Appreciation	30,828,374		
Total Additions		$47,088,064	
Disbursements:			
Member Refund	0		
Distributions to Participants/ Beneficiaries	25,349,536		
Administrative Expenses and Other	43,589		
Investment Expenses	973,758		
Total Disbursements		$26,366,883	
Adjustments			
Net Increase/(Decrease) in Assets			$20,721,181
Market Value of Total Fund as of December 31, 2012			$284,183,964

ALLOCATION OF NET PLAN ASSETS AS OF DECEMBER 31, 2012

	Market Value	%
Cash and Short Term Investments	13,487,398	4.8%
Equity	159,907,762	56.3%
Fixed Income	95,354,340	33.6%
Real Estate	15,657,023	5.5%
Accounts payable	(222,559)	-0.1%
TOTAL ASSETS	$284,183,964	100.0%

Estimated Rate of Return on Market Value is 12.72%

DETERMINATION OF ACTUARIAL VALUE OF ASSETS AS OF JANUARY 1, 2013

Market Value of Total Fund as of December 31, 2011			$263,462,783
Plus: Contributions			13,939,032
Less: Benefit Payments			25,349,536
Less: Expenses			43,589
Plus: Expected Return at	7.80%		19,855,678
Expected Asset Value			$271,864,368
Market Value of Total Fund as of December 31, 2012			$284,183,964
Asset Gain/(Loss) for 2012 Plan Year			12,319,596
Market Value of Total Fund as of December 31, 2012			$284,183,964
Less: 80% of 2012 Gain/(Loss)	80% *	12,319,596	9,855,677
Less: 60% of 2011 Gain/(Loss)	60% *	(13,831,671)	(8,299,003)
Less: 40% of 2010 Gain/(Loss)	40% *	6,551,909	2,620,764
Less: 20% of 2009 Gain/(Loss)	20% *	13,329,038	2,665,808
		Total Gain/(Loss) Unrecognized	6,843,246
Actuarial Value of Assets, Total Fund - December 31, 2012			$277,340,718
as % of Market Value of Assets			97.6%
Healthcare Reserve Fund as of December 31, 2012			$19,442,658
Actuarial Value of Assets, Pension Plan - December 31, 2012			$257,898,060

Estimated Rate of Return on the Actuarial Value is 2.39%

PARTICIPANT SUMMARY

AGE, SERVICE AND COMPENSATION DISTRIBUTION

PARTICIPANT SUMMARY AND RECONCILIATION

	Active Participants	Non-vested Terminations Due Refunds	Deferred Vested Terminations	Retired	Disabled	Beneficiary	Total
Participants as of December 31, 2011	362	32	16	478	57	136	1,081
Retired	(10)	0	0	10	0	0	0
Terminated Vested	(3)	0	4	0	0	0	1
Terminated Non-Vested (Member Contributions refunded)	(2)	0	0	0	0	0	(2)
Disabled	(5)	0	0	0	5	0	0
Deceased	0	0	0	(13)	(1)	(3)	(17)
New Beneficiary / EDRO	0	0	0	0	0	8	8
Rehired	17	(17)	0	0	0	0	0
Terminated Non-Vested (Member Contributions to be refunded)	0	0	0	0	0	0	0
Transfers In from ERS	7	0	0	0	0	0	7
New Hires	4	0	0	0	0	0	4
Data Adjustments	0	0	0	9	0	(9)	0
Participants as of December 31, 2012	370	15	20	484	61	132	1,082

		12/31/2011			**12/31/2012**	
Inactive Participants	**Fire**	**Police**	**Total**	**Fire**	**Police**	**Total**
Number of Retired Participants	208	270	478	209	275	484
Average Age	65.0	65.1	65.0	65.1	65.3	65.2
Average Annual Benefit	$46,273	$41,400	$43,520	$46,894	$41,966	$44,094
Number of Disabled Participants	35	22	57	37	24	61
Average Age	55.0	53.5	54.4	54.9	51.7	53.6
Average Annual Benefit	$39,477	$34,623	$37,603	$40,772	$36,255	$38,995
Number of Beneficiaries/EDROs	58	78	136	58	74	132
Average Age	73.8	72.1	72.8	75.5	73.0	74.1
Average Annual Benefit	$14,801	$15,094	$14,969	$14,818	$15,774	$15,354
Number of Deferred Vested Participants	1	15	16	3	17	20
Average Age	40.4	47.7	47.3	41.6	48.2	47.2
Average Annual Benefit	$27,142	$25,377	$25,487	$33,479	$25,505	$26,701
Number of Terminated Participants Due Refunds	10	22	32	1	14	15

DISTRIBUTION OF ACTIVE PARTICIPANTS AND AVERAGE COMPENSATION BY AGE AND SERVICE AS OF DECEMBER 31, 2012

Nearest Age	-----Completed Years of Service from Date of Hire----- <1	1	2 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	>29	Total
<20										
20 - 24										
25 - 29	3	1	8	10						22
	36,157	56,737	48,915	68,404						56,389
30 - 34	3	1	9	19	17					49
	42,010	59,579	46,416	65,341	66,457					60,706
35 - 39		1	3	18	49	7				78
		59,025	34,852	66,790	66,634	68,987				65,561
40 - 44			2	5	32	55	12			106
			33,636	68,593	67,990	69,721	77,890			69,389
45 - 49				4	11	16	39			70
				69,331	61,855	70,693	74,689			71,453
50 - 54				1	2	9	24	1		37
				69,260	77,237	74,024	78,107	103,230		77,507
55 - 59						3	4			7
						65,909	76,651			72,047
60 - 64						1				1
						70,871				70,871
>64										
Total	6	3	22	57	111	91	79	1		370
	39,083	58,447	44,586	66,970	66,715	70,148	76,313	103,230		67,916

	Males	Females	Total
Total Compensation	$ 21,054,508	$ 4,074,365	$25,128,872
Average Compensation	$ 68,359	$ 65,716	$ 67,916
Arithmetic Averages:			
Nearest Age	41.2	40.2	41
Completed Years of Service	14.0	13.3	14
Salary-Weighted Averages:			
Nearest Age	41.8	40.6	42
Completed Years of Service	14.6	13.9	15
Number of Participants	308	62	370
Percent male / female	83%	17%	100%

VALUATION SUMMARY

DEVELOPMENT OF RECOMMENDED CONTRIBUTION

	12/31/2011	12/31/2012
Total Entry Age Normal Cost	$ 5,824,059	$ 6,438,815
Estimated Employee Contributions	2,237,504	2,325,203
Net City Normal Cost	$ 3,586,555	$ 4,113,612
Valuation Payroll	$ 25,128,835	$ 26,121,411
City Normal Cost Rate (% of pay)	14.3%	15.7%
Actuarial Accrued Liability		
Active Employees	$ 116,327,833	$ 103,595,214
Terminated Vested	2,995,898	3,661,363
Retirees and Beneficiaries	253,223,779	265,827,334
Total Actuarial Accrued Liability	$ 372,547,510	$ 373,083,911
Actuarial Value of Assets	264,686,793	257,898,061
Net Unfunded Actuarial Accrued Liability	107,860,717	115,185,850
Amortization of Unfunded Actuarial Accrued Liability	$ 6,238,422	$ 6,775,892
Amortization Rate (% of Pay)	24.8%	25.9%
Total Contribution Rate	39.1%	41.7%
Projected Fiscal Payroll	$ 25,918,180	$ 26,983,418
Total City Contribution	**$ 10,133,598**	**$ 11,248,857**

Estimated Cash Flow for Next Five Years:

Fiscal Year	City Contributions	Member Contributions	Benefit Payments
2015	11,300,000	2,400,000	26,900,000
2016	11,600,000	2,500,000	27,700,000
2017	11,900,000	2,600,000	28,500,000
2018	12,100,000	2,600,000	29,400,000
2019	12,500,000	2,700,000	30,300,000

GOVERNMENTAL ACCOUNTING STANDARDS BOARD INFORMATION

SCHEDULE OF EMPLOYER CONTRIBUTIONS

Fiscal Year Ending	Annual Required Contribution (ARC)	Actual Contribution	Percentage of ARC Contributed
6/30/2003	2,636,688	2,636,688	100.0%
6/30/2004	3,286,596	3,273,450	99.6%
6/30/2005	3,333,869	3,333,869	100.0%
6/30/2006	4,658,703	4,658,703	100.0%
6/30/2007	5,385,960	5,385,960	100.0%
6/30/2008	6,520,974	6,520,974	100.0%
6/30/2009	6,094,397	6,483,000	106.4% (1)
6/30/2010	7,179,360	6,790,757	94.6% (1)
6/30/2011	8,240,688	8,240,688	100.0%
6/30/2012	9,242,173	9,057,080	98.0% (2)
6/30/2013	10,133,599	10,133,599	100.0%
6/30/2014	11,248,857	To Be Determined	To Be Determined

(1) The City contributed in excess of its FY 2009 ARC. The City's FY 2010 contribution was reduced by the dollar amount of the FY 2009 overpayment.

(2) The FY 2012 City contribution was reduced by $185,093 in recognition of additional contributions by International Association of Firefighters (IAFF) employees, which were negotiated and contributed after the estabishment of the June 30, 2012 ARC from the December 31, 2010 valuation.

Historical information and footnotes were provided by the City's Finance office.

GOVERNMENTAL ACCOUNTING STANDARDS BOARD INFORMATION
SCHEDULE OF FUNDING PROGRESS

Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability	Percentage Funded	Unfunded Actuarial Accrued Liability	Annual Covered Payroll	Unfunded AAL as a % of Covered Payroll
12/31/2002	280,686,000	259,282,000	108.3%	(21,404,000)	26,152,000	-82%
12/31/2003	277,947,000	267,786,000	103.8%	(10,161,000)	26,484,000	-38%
12/31/2004	275,807,000	279,873,000	98.6%	4,066,000	27,754,000	15%
12/31/2005	275,216,000	290,299,000	94.8%	15,083,000	27,855,000	54%
12/31/2006	278,839,000	308,193,000	90.5%	29,354,000	29,582,000	99%
12/31/2007	293,571,000	315,635,000	93.0%	22,064,000	29,600,000	75%
12/31/2008	287,394,000	326,673,000	88.0%	39,279,000	30,161,000	130%
12/31/2009	280,342,000	337,315,000	83.1%	56,973,000	30,443,000	187%
12/31/2010	276,377,041	359,293,016	76.9%	82,915,975	28,536,056	291%
12/31/2011	264,492,738	372,547,509	71.0%	108,054,771	25,128,835	430%
12/31/2012	257,898,061	373,083,911	69.1%	115,185,850	26,121,411	441%

GASB 27 Pension Cost and Net Pension Obligation (NPO)

Fiscal Year Ending	Annual Required Contribution (ARC)	Interest on NPO	ARC Adjustment	Annual Pension Cost	Contribution By Employer	Change in NPO	NPO End of Year
2009							(388,603)
2010	7,179,360	(31,088)	22,067	7,170,339	(6,790,757)	379,582	(9,021)
2011	8,240,688	(722)	512	8,240,478	(8,240,688)	(210)	(9,231)
2012	9,242,173	(720)	504	9,241,957	(9,057,080)	184,877	175,646
2013	10,133,599	13,700	(10,333)	10,136,967	-----------To Be Determined------------		

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

ASSUMPTIONS AND METHODS

ASSUMPTIONS AND METHODS

No changes in assumptions or methods have been made since the prior valuation, except for a change in the actuarial firm.

Funding Method:	Entry Age Normal Actuarial Cost Method. The contribution equals the sum of the normal cost and the amount necessary to amortize the unfunded actuarial liability as a level percent of payroll over a closed period of thirty years, decreasing by 1 year to an ultimate period of 15 years (29 years remaining as of December 31, 2012).
Asset Smoothing Method:	Investment gains and losses are determined annually and each is spread over a 5-year period. This is done on a total fund basis. The value of the healthcare reserve is then excluded from the valuation assets.
Investment Return:	7.80% compounded annually
Cost of Living (inflation):	The cost of living as measured by the Consumer Price Index (CPI) is assumed to increase at the rate of 3.30% per year.
Salary Increases:	Increases in salary are assumed to be 3.30% annually, plus 7.00% for those with less than 5 years of service or 0.75% for all others.
Mortality:	RP2000 with Blue Collar adjustments for males and females. For Disabled members, the disabled version of these tables are assumed with a 5 year age setback for males. Each of these tables is projected to 2008 using Scale BB. Future improvements in mortality for non disabled members are anticipated by projecting these tables an additional 15 years using 50% of Scale BB.
Percent Married:	90% of participants are assumed to be married. Male spouses are assumed to be three years older their female spouses.
Disability:	Rates of disability vary based on the age of the member. 95% of disabilities are assumed to be duty related.

Samples rates are shown below.

Age	Rate
20	0.0800%
30	0.4000%
40	0.6250%
50	0.7500%
60	0.0000%

ASSUMPTIONS AND METHODS
(continued)

Termination: Rates of termination vary based on the service of the member.

Samples rates are shown below.

Years of Service	Fire	Police
0	4.0%	5.0%
1	3.2%	4.3%
5	1.3%	2.2%
10	0.4%	1.0%
15	0.1%	0.4%
20	0.0%	0.0%

Retirement: Rates of retirement vary based on the service of the member as shown below.

Years of Service	Fire	Police
10-24	5.0%	5.0%
25	80.0%	80.0%
26-29	60.0%	25.0%
30+	100.0%	100.0%

The assumptions above are based on the most recent experience study, covering 2005 through 2011.

HIGHLIGHTS OF PLAN PROVISIONS

PLAN PROVISIONS

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

Employee Group Covered:	Police Officers and Fire Fighters
Normal Retirement:	Age 55 or 25 years of service
Mandatory Retirement:	Age 60 for Police and age 70 for Firefighters
Normal Form of Benefit:	Monthly life annuity with 50% of the benefit payable to the spouse upon the member's death.

Member Contribution Rates:

Group	Contribution Rate (% of Pay)
Fire	9.08%
Police, Supervisor	9.52%
Police, Non Supervisor	8.50%

Compensation:	Member's Salary, wages, and longevity bonus. In addition, Compensation may include up to 80 hours of compensatory time for members not eligible for overtime pay.
Final Average Compensation:	The average of the highest annual compensation paid over 24 consecutive months immediately preceding a member's termination of employment.
Normal Retirement Benefit Formula:	3.2% of Final Average Compensation times years of credited service, not to exceed 25 years. Maximum benefit is 80% of Final Average Compensation.

Termination Prior to Retirement

Eligibility	Vesting is after 10 years of credited service
Benefit Amount	Benefit is payable beginning at age 55 and computed in the same manner as the Normal Retirement Benefit, but based on credited service and Final Average Compensation at date of termination.

Duty Disability

Eligibility	Members are eligible for Duty Disability Retirement benefits immediately upon employment.
Benefit Amount (Before Retirement Eligibility)	The Duty Disability Retirement Benefit payable to members is equal to 2/3 of Final Average Compensation.

PLAN PROVISIONS
(continued)

Benefit Amount (After Retirement Eligibility)	Benefit is paid at the effective date of disability retirement as a Life Annuity and is equal to the accrued Retirement Benefit. In computing the benefit amount, credited service is increased to include the period of disability, and Final Average Compensation is calculated using current rates of compensation for those with similar rank. The Disability Benefit will be offset by any workers' compensation payable on account of the disability.

Non Duty Disability

Eligibility	Members are eligible for Non Duty Disability Retirement benefits after completing 10 years of service.
Benefit Amount	Benefit is paid at the effective date of disability retirement as a Life Annuity and is equal to the accrued Retirement benefit, with a maximum benefit equal to 2/3 of the annual rate of compensation of either a full-paid patrolman or a full-paid firefighter as of the date of retirement, whichever is higher.

Death incurred in the Line of Duty

Eligibility	The Death in Line of Duty Benefit is payable to the survivors of a member who died as a result of an injury or disease arising out of and in the course of duty.
Benefit Amount	A Life Annuity benefit equal to 86% of the Normal Retirement Benefit is payable to the widow or widower, with a minimum benefit equal to 1/3 of the deceased member's Final Compensation. In addition, unmarried children under the age of 21 will receive a benefit equal to 1/4 of the deceased member's Final Compensation, divided equally among children.

Non Duty Pre-Retirement Death

Eligibility	The non duty pre retirement death benefit is payable upon the death of a member after earning 10 years of credited service.
Benefit Amount	50% of the accrued retirement benefit, computed in the same manner as the Retirement Benefit payable as a Life Annuity.

Optional Benefit Forms

Prior to retirement, a member may elect a reduced benefit of either 93% or 86% of the original amount, thereby increasing the spouse benefit to either 75% or 86%, respectively.

PLAN PROVISIONS
(continued)

Ad Hoc Cost-of-Living Adjustments

One-time cost of living increases were granted in 1973, 1984 and 1987.

Post Retirement Benefit Adjustments

Effective January 1, 1995 and each January 1 thereafter, the annual benefit amount will be increased by $525 for each retiree who meets each of the following conditions:

1) 25 or more years of credited service at the time of retirement
2) Age 60 as of the January 1 increase date
3) Has been retired at least 6 months as of the January 1 increase date

The $525 amount is reduced for retirees who elected the 75% or 86% optional forms of benefit ($488.25 and $451.50, respectively).

Spouses of deceased members are also eligible for benefit increases each January 1 if:

1) The deceased member had at least 25 years of credited service at the time of retirement
2) The deceased member would have attained at least age 60 as of the January 1 increase date
3) The deceased member had been deceased at least 6 months as of the January 1 increase date.

The spouse's annual benefit increase amount is adjusted based on the form of payment elected by the deceased member, according to the following schedule:

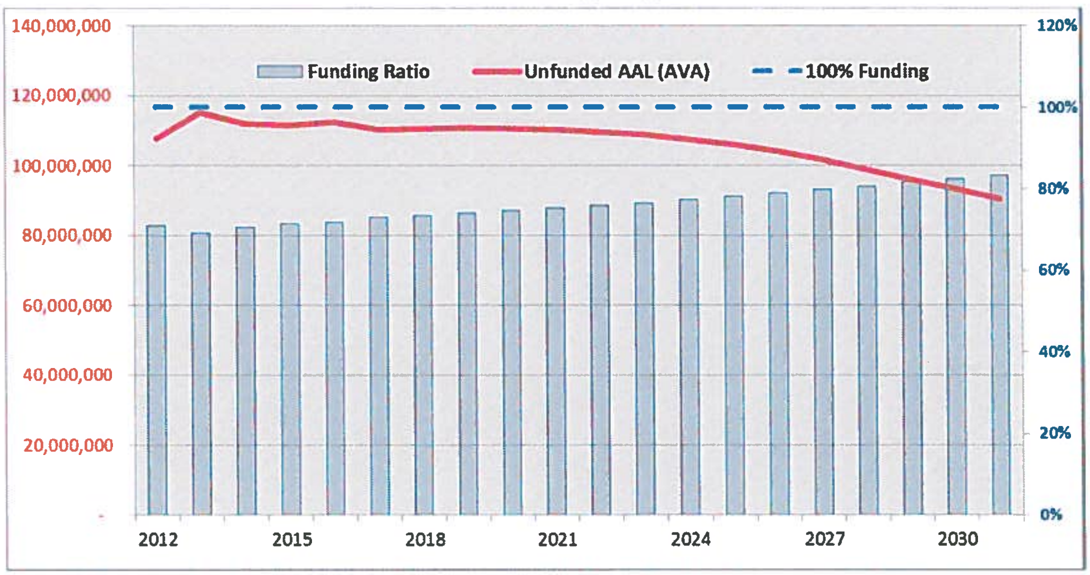
Spouse Benefit %	Annual Benefit Increase
50%	$262.50
75%	$393.75
86%	$451.50

The benefit increases accumulate from year to year, but cumulative benefit increases shall not exceed cumulative increases in the Consumer Price Index.

APPENDIX: FUTURE FUNDING AND CONTRIBUTIONS

The graphs below show a projection of expected funding progress and City contributions to the Fund. The actual funding progress and contributions over this time period will differ from what is shown here, due to the actual experience of the Plan. However, we can see that the Plan is on a path to decreasing the unfunded liability (top graph, red line) and improving the funding ratio to above 80%. During this time, City 'contributions are expected to increase gradually until eventually leveling.

Projection of Funding Progress



Projection of City Contributions