



City of Lansing Police and Fire Retirement System

Actuarial Valuation For Funding and Contributions

as of December 31, 2014

September, 2015

Table of Contents

EXECUTIVE SUMMARY	3
PLAN ASSET INFORMATION.....	5
<i>Trust Fund Statement</i>	6
<i>Allocation of Net Plan Assets as of December 31, 2014</i>	6
<i>Development of Actuarial Value of Assets</i>	7
PARTICIPANT SUMMARY	8
<i>Reconciliation of Plan Participants from Prior Year</i>	9
<i>Distribution of Active Participants and Average Compensation</i>	10
VALUATION SUMMARY	11
<i>Development of Funding Ratio and City Contribution</i>	12
ACTUARIAL ASSUMPTIONS AND METHODS	13
SUMMARY OF PLAN BENEFITS	16
GLOSSARY OF TERMS.....	20
APPENDIX I: 20 YEAR PROJECTION OF FUNDING AND CONTRIBUTIONS.....	21
APPENDIX II: HISTORY OF EMPLOYER CONTRIBUTIONS AND FUNDING PROGRESS	22

September 10, 2015

City of Lansing Police and Fire Retirement System
124 W. Michigan Avenue
8th Floor
Lansing, MI 48933

Executive Summary

Members of the Board:

The following report sets forth the Actuarial Valuation of the City of Lansing Police and Fire Retirement System (the System) as of December 31, 2014. The report is based on participant data and asset summary as of December 31, 2014 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, 2014 was \$325,637,582. Plan assets exclude from this a reserve for healthcare benefits. The total yield of the fund for the plan year ending December 31, 2014 was 6.2% on the market value of assets and 9.6% on an actuarial basis, taking into account asset smoothing.

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 8.

FUNDING RECOMMENDATIONS:

The total recommended City contribution for fiscal year 2015 is \$10,884,312. Last year the total recommended contribution was \$11,050,091. Changes in the Employee Contributions and the change in Plan provisions for the new hires in Fire and Police - Non Supervisor groups, resulted in a slight decrease in the City Contribution.

FUNDING PROGRESS:

The Actuarial Accrued Liability as of December 31, 2014 is \$395,089,321 compared to the Actuarial Value of Assets of \$288,785,965, resulting in a plan funded ratio of 73.1%. Using the market value of assets, this ratio is 75.7%.

The purposes of this report are to establish the City contribution for the next fiscal year, and to evaluate the funding progress of the System.

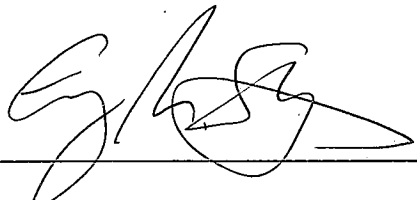
The accounting report for the System, under GASB 67 and 68, is provided under separate cover, and serves a different purpose. All the figures presented in this report are to be used for funding and contribution purposes.

This report is prepared in accordance with generally accepted actuarial principles and practices. In the opinion of the Retirement Board and its actuary, the actuarial assumptions used are reasonable related to Retirement System experience and expectations, and represent the best estimate of Retirement System experience.

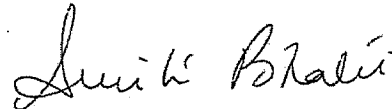
The undersigned below are members of the American Academy of Actuaries, and are qualified to render the actuarial opinions presented in this report.

Respectfully Submitted,

BOOMERSHINE CONSULTING GROUP, L.L.C.



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



Sunita K. Bhatia, ASA, EA, MAAA
Senior Consultant

Plan Asset Information

Trust Fund Statement

Market Value of Total Fund as of January 1, 2014		\$319,630,880
Receipts:		
Employer Contribution	11,298,948	
Employer Contribution - Healthcare Reserve	940,000	
Member Contributions	2,858,941	
Adjustments Investment Income		
Interest	1,203,476	
Dividends	1,146,480	
Market Appreciation	17,082,577	
Total Additions		\$34,530,422
Disbursements:		
Member Refund	18,093	
Distributions to Participants/ Beneficiaries	27,278,253	
Administrative Expenses and Other	119,035	
Investment Expenses	1,108,339	
Total Disbursements		\$28,523,720
Net Increase/(Decrease) in Assets		\$6,006,702
Market Value of Total Fund as of December 31, 2014		\$325,637,582

Allocation of Net Plan Assets as of December 31, 2014

Asset Class	Market Value	% of Total
Cash and Short Term Investments	\$ 30,665,518	9.4%
Equity	184,651,534	56.7%
Fixed Income	93,431,180	28.7%
Real Estate	18,042,030	5.6%
Accounts payable	(1,152,680)	-0.4%
TOTAL ASSETS	\$325,637,582	100.0%
Estimated Rate of Return on Market Value for 2014	6.2%	

Development of Actuarial Value of Assets

Market Value of Total Fund as of December 31, 2013				\$ 319,630,880
Plus: Contributions				15,097,889
Less: Benefit Payments, Refunds				27,296,346
Less: Admin Expenses				119,035
Plus: Expected Return during 2014 (@ 7.6%)				23,550,712
Expected Asset Value				\$330,864,100
Actual Market Value of Total Fund as of December 31, 2014				\$325,637,582
Asset Gain/(Loss) for 2014 Plan Year				(5,226,518)
Actuarial Value =				
Market Value of Total Fund as of December 31, 2014				\$325,637,582
Less: 80% of 2014 Gain/(Loss)	80%*	(5,226,518)		(4,181,214)
Less: 60% of 2013 Gain/(Loss)	60%*	25,936,548		15,561,929
Less: 40% of 2012 Gain/(Loss)	40%*	0 ¹		0
Less: 20% of 2011 Gain/(Loss)	20%*	0 ¹		0
Total Deferred Gain/(Loss)				11,380,715
Actuarial Value of Assets, Total Fund - December 31, 2014 (Market Value, less total deferred)				\$314,256,867
as % of Market Value of Assets				96.5%
Healthcare Reserve as of December 31, 2014				\$26,391,982
Adjusted Healthcare Reserve ²				25,470,902
Actuarial Value of Assets, Pension Plan - December 31, 2014				\$288,785,965
Estimated Rate of Return on the Actuarial Value is			9.6%	

¹ 2010 - 2012 Investment Experience fully recognized as of 12/31/2013

² Takes into account asset smoothing

Participant Summary

Reconciliation of Plan Participants from Prior Year

	Active Participants	Non-vested Terminations Due Refunds	Deferred Vested Terminations	Retired	Disabled	Beneficiary	Total
Participants as of December 31, 2013	352	15	23	495	64	140	1,089
Correction	0	0	0	0	0	0	0
Retired	(21)	0	(1)	22	0	0	0
Terminated Vested	(2)	0	2	0	0	0	0
Terminated Non-Vested (Member Contributions refunded)	(2)	0	0	0	0	0	(2)
Disabled	(1)	0	0	0	1	0	0
Deceased	0	0	0	(12)	0	(7)	(19)
New Beneficiary / EDRO	0	0	0	0	0	8	8
Rehired	0	0	0	0	0	0	0
Terminated Non-Vested (Member Contributions to be refunded)	0	0	0	0	0	0	0
Transfers In from ERS	0	0	0	0	0	0	0
New Hires	36	0	0	0	0	0	36
Data Adjustments	0	0	0	0	0	0	0
Participants as of December 31, 2014	362	15	24	505	65	141	1,112

* Includes distinction made between retiree EDROs and beneficiary EDROs

Inactive Participants	12/31/2013			12/31/2014		
	Fire	Police	Total	Fire	Police	Total
Number of Retired Participants	212	283	495	215	290	505
Average Age	65.3	65.4	65.4	65.4	65.3	65.3
Average Annual Benefit	\$47,634	\$43,121	\$45,054	\$49,777	\$43,742	\$46,311
Number of Disabled Participants	39	25	64	40	25	65
Average Age	54.0	52.5	53.4	54.7	53.5	54.2
Average Annual Benefit	\$41,463	\$37,342	\$39,853	\$41,084	\$39,701	\$40,552
Number of Beneficiaries/EDROs	57	83	140	68	73	141
Average Age	76.8	72.1	74.0	76.4	72.4	74.3
Average Annual Benefit	\$15,016	\$16,606	\$15,959	\$16,455	\$16,226	\$16,336
Number of Deferred Vested Participants	4	19	23	5	19	24
Average Age	42.7	47.4	47.3	42.7	47.9	46.8
Average Annual Benefit	\$34,032	\$26,246	\$27,600	\$34,519	\$27,173	\$28,703

Distribution of Active Participants and Average Compensation

Nearest Age	-----Completed Years of Service from Date of Hire-----								Total
	<1	1	2 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25+	
<20									
20 - 24	9 15,125	4 44,725							13 24,233
25 - 29	17 13,355	6 47,280	4 63,823	4 76,048					31 34,523
30 - 34	9 17,981	1 57,130	7 67,457	25 71,820	13 65,622				55 60,723
35 - 39	1 10,372		4 66,643	10 70,491	30 72,812	18 69,815			63 70,205
40 - 44			2 61,059	2 76,181	18 73,097	53 74,018	8 79,024		83 74,041
45 - 49			1 66,968	2 80,444	3 71,800	26 75,021	33 80,175	2 88,731	67 77,867
50 - 54				1 68,606	5 78,233	15 73,998	23 80,807	2 80,430	46 78,025
55 - 59						2 76,963	1 77,418		3 77,114
60 - 64							1 76,884		1 76,884
>64									
Total	36 14,871	11 47,247	18 65,731	44 72,420	69 71,881	114 73,633	66 80,164	4 84,580	362
						Males	Females	Total	
						20,736,997	3,592,922	24,407,740	
						67,547	66,536	67,425	
						Arithmetic Averages:			
						40.1	40.0	40.0	
						12.9	13.5	12.9	
						Salary-Weighted Averages:			
						41.8	41.0	41.6	
						14.5	14.5	14.5	
						307	54	362	
						84.8%	14.9%	100.0%	

Valuation Summary

Development of Funding Ratio and City Contribution

	12/31/2013	12/31/2014
1) Total Entry Age Normal Cost	\$ 6,577,961	\$ 6,548,752
2) <u>Estimated Employee Contributions</u>	<u>2,240,606</u>	<u>2,486,995</u>
3) Net City Normal Cost: (1) – (2)	\$4,337,355	\$4,061,757
4) Valuation Payroll	\$ 25,636,626	\$ 26,264,214
5) City Normal Cost Rate (% of pay): (3) ÷ (4)	16.9%	15.5%
Actuarial Accrued Liability		
Active Employees	\$ 104,601,312	\$104,149,553
Terminated Vested	4,228,451	4,701,287
<u>Retirees and Beneficiaries</u>	<u>275,049,517</u>	<u>286,238,481</u>
6) Total Actuarial Accrued Liability: (sum of above)	\$ 383,879,280	\$395,089,321
7) Actuarial Value of Assets	277,267,947	288,785,965
8) Net Unfunded Actuarial Accrued Liability: (6) – (7)	106,611,332	106,303,356
9) Plan Funding Ratio: (7) ÷ (6)	72.2%	73.1%
10) Amortization of Unfunded Actuarial Accrued Liability	\$ 6,390,889	\$ 6,495,287
11) Amortization Rate (% of Pay): (10) ÷ (4)	24.9%	24.7%
12) Total Contribution Rate: (5) + (11)	41.8%	40.2%
13) Projected Fiscal Payroll	\$ 26,405,725	\$ 27,078,405
14) Total City Contribution: (12) x (13)	\$ 11,050,091	\$10,884,312

Estimated Cash Flow for Next Five Years

Fiscal Year	City Contributions	Member Contributions	Benefit Payments
2017	10,900,000	2,600,000	28,400,000
2018	10,800,000	2,600,000	29,000,000
2019	10,800,000	2,700,000	29,600,000
2020	11,200,000	2,800,000	30,000,000
2021	11,500,000	2,900,000	30,500,000

Actuarial Assumptions and Methods

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 (27 years remaining as of December 31, 2014).

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: 7.60% compounded annually, net of investment expenses

Cost of Living (inflation): The cost of living as measured by the Consumer Price Index (CPI) is assumed to increase at the rate of 3.10% per year.

Salary Increases: Increases in salary are assumed to be equal to inflation, 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 than their female spouse.

Disability: Rates of disability vary based on the age of the member. 95% of disabilities are assumed to be duty related.

Sample rates are shown below:

<u>Age</u>	<u>Rate</u>
20	0.0800%
30	0.4000%
40	0.6250%
50	0.7500%
60	0.0000%

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

Sample Rates are shown below:

<u>Years of Service</u>	<u>Fire</u>	<u>Police</u>
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.

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

The demographic assumptions above are based on the most recent experience study, covering 2005 through 2011. The next study is scheduled for 2016.

Changes in assumptions and methods

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

Summary of Plan Benefits

All benefits are subject to the language in the City Ordinance and relevant collective bargaining agreements.

Employee Group Covered: Police Officers and Fire Fighters

Normal Retirement: Age 55 or 25 years of service; For FOP-NS, full retirement is at age 50 with 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.

	<u>Group</u>	<u>Contribution Rate</u> (% of Pay)	
Member Contribution Rates:	Fire (IAFF)	9.08%	(10.00% as of 05/19/2014)
	Police, Supervisor (FOP-S)	9.52%	
	Police, Non Supervisor (FOP-NS)	8.50%	(9.00% as of 07/01/2015)
Hires after 5/19/2014	Fire (IAFF)	7.00%	
Hires after 08/01/2014	Police, Non Supervisor (FOP-NS)	7.00%	

Included Compensation: For a police officer member, Included Compensation is defined as annual base salary, overtime pay (including holiday pay), longevity, gun allowance, clothing allowances, sick leave reimbursement (buy-back), shift premium and retroactive pay (prorated by effective date). For a Police Supervisory Division Unit member, the definition also includes compensatory time buy-back (up to a maximum of 160 hours), provided that the compensatory time was earned in the same 24 months on which final average compensation is based. For a firefighter member, Included Compensation is defined as annual base salary, overtime pay, acting pay, ambulance wage differential pay, longevity, holiday pay, field training instructor pay and retroactive pay (prorated by effective date).

Final Average Compensation: Final Average Compensation means the monthly average of the member's final compensation that is included in Included Compensation, paid during the period of the member's 24 highest consecutive months of credited service as a police officer, or firefighter. If the member has less than 24 months of credited service, the member's final average compensation shall be the monthly average of the Included Compensation paid for his or her total period of credited service.

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. Pension benefit is capped at 110% of Base Wage for IAFF and FOP-NS

Benefit Multiplier is changed to 2.5% and Pension Benefit is capped at 100% of Base Wage for hires on or after May 19, 2014 for IAFF and August 1, 2014 for FOP-NS

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.

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:

<u>Spouse Benefit %</u>	<u>Annual Benefit Increase</u>
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.

Changes in Plan provisions since the prior valuation

This Valuation takes into effect the change in Employee Contribution rate for the Fire and Police - Non Supervisor groups and the new Plan provisions for new hires in the Fire and Police - Non Supervisor groups.

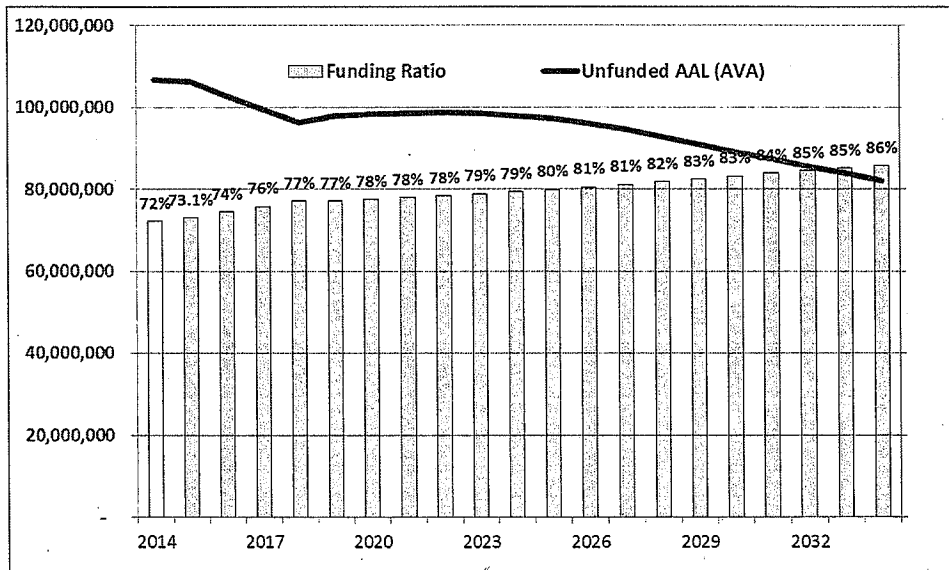
Glossary of Terms

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 .
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 Service Cost.
Unfunded Actuarial Accrued Liability:	The difference between the Actuarial Value of Assets and the Actuarial Accrued Liability, used for funding purposes .

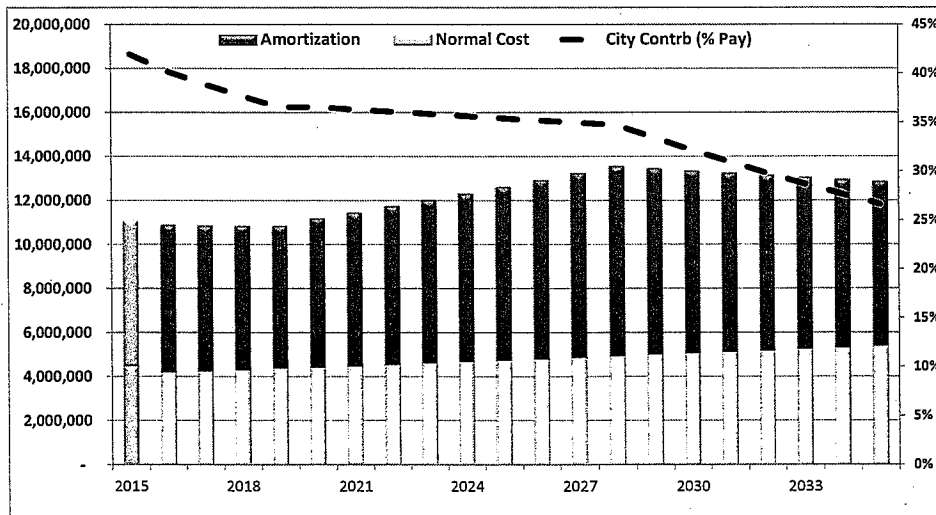
Appendix I: 20 Year Projection of Funding and Contributions

The graphs below show a projection of expected funding progress and City pension 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 by about 13% over 20 years. During this time, the City contribution rate is expected to decrease from its current level to less than 30% of pay. All recent benefit changes have been taken into account for these projections.

Projection of Funding Progress



Projection of City Contributions



Appendix II: History of Employer Contributions and Funding Progress

Historical Employer Contributions

Fiscal Year Ending	Actuarially Determined Employer Contribution	Actual Employer Contribution	
6/30/2007	5,385,960	5,385,960	
6/30/2008	6,520,974	6,520,974	
6/30/2009	6,094,397	6,483,000	(1)
6/30/2010	7,179,360	6,790,757	(1)
6/30/2011	8,240,688	8,240,688	
6/30/2012	9,242,173	9,057,080	(2)
6/30/2013	10,133,599	10,133,599	(3)
6/30/2014	11,248,857	11,248,857	
6/30/2015	11,050,091	11,050,091	(4)
6/30/2016	10,884,312	To Be determined	

(1) The City contributed in excess of its FY 2009 ADEC. 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 establishment of the June 30, 2012 ADEC from the December 31, 2010 valuation.

(3) Fiscal year 2013 ADEC reflects changes made to actuarial assumptions based on an Experience Study. Changes included a decrease in the assumed rate of return from 8.0% to 7.8%. A closed amortization period was also adopted as of 12/31/2011, beginning at 30 years and decreasing each year until 15 years is reached.

(4) Fiscal year 2015 ADEC reflects changes made to assumed return and inflation from 7.8% and 3.3% to 7.6% and 3.1%, respectively. ADEC also reflects change in asset smoothing to immediately recognize all investment gains and losses prior to 12/31/2012.

Historical Funding Progress

Valuation Date	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability (AAL)	Percentage Funded	Unfunded Actuarial Accrued Liability
12/31/2005	275,216,000	290,299,000	94.8%	15,083,000
12/31/2006	278,839,000	308,193,000	90.5%	29,354,000
12/31/2007	293,571,000	315,635,000	93.0%	22,064,000
12/31/2008	287,394,000	326,673,000	88.0%	39,279,000
12/31/2009	280,342,000	337,315,000	83.1%	56,973,000
12/31/2010	276,377,041	359,293,016	76.9%	82,915,975
12/31/2011	264,492,738	372,547,509	71.0%	108,054,771 (5)
12/31/2012	257,898,061	373,083,911	69.1%	115,185,850
12/31/2013	277,267,947	383,879,280	72.2%	106,611,333 (6)
12/31/2014	288,785,965	395,089,321	73.1%	106,303,356

(5) Reflects changes made to actuarial assumptions, based on Experience Study, including a reduction in the assumed return 8.0% to 7.8%.

(6) Reflects changes made to assumed return and inflation from 7.8% and 3.3% to 7.6% and 3.1%, respectively. AVA also reflects change in asset smoothing to immediately recognize all investment gains and losses prior to 12/31/2012.