

**CITY OF GRAND RAPIDS POLICE AND FIRE RETIREMENT SYSTEM**  
**47TH ANNUAL ACTUARIAL VALUATION**  
**DECEMBER 31, 2013**

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April 25, 2014

The Board of Trustees  
City of Grand Rapids Police  
and Fire Retirement System  
Grand Rapids, Michigan

Dear Board Members:

The results of the ***December 31, 2013 Actuarial Valuation*** of the City of Grand Rapids Police and Fire Retirement System are presented in this report. The purpose of the annual valuation is to measure the system's funding progress and to determine the City's contribution rate for the ensuing fiscal year in accordance with established funding policies. The results of the valuation may not be applicable for other purposes.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as: plan experience differing from that anticipated by the economic and demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of the actuary's assignment, the actuary did not perform an analysis of the potential range of such future measurements.

***The actuarial methods and assumptions*** used in the actuarial valuation are summarized in Section C of this report. The assumptions are established by the Board after consulting with the actuary.

The valuation was based upon statistical data, furnished by your Executive Director concerning Retirement System benefits, financial transactions, and individual members, terminated members, retirants and beneficiaries. Data was checked for internal and year-to-year consistency, but was not otherwise audited.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge, this report is complete and accurate and was made in accordance with generally recognized actuarial methods in accordance with standards of practice prescribed by the Actuarial Standards Board and in compliance with the constitution of the State of Michigan. The actuarial assumptions used for the valuation produce results which we believe are reasonable.

James Anderson is a Member of the American Academy of Actuaries (MAAA), and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. The signing actuaries are independent of the plan sponsor.

Respectfully submitted,



David L. Hoffman



James D. Anderson, FSA, EA, MAAA

DLH/JDA:sc

C0270

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**SECTION A**

**VALUATION RESULTS**

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**CONTRIBUTIONS TO PROVIDE BENEFITS  
FOR THE FISCAL YEAR BEGINNING JULY 1, 2014  
BASED UPON A DECEMBER 31, 2013 VALUATION DATE**

Contributions for	% of Valuation Payroll	% of Gross-Up Payroll
Normal cost of benefits:		
Age & service pensions	18.40 %	16.72 %
Disability pensions	4.00 %	3.64 %
Death-in-service pensions	0.61 %	0.55 %
Refunds of member contributions	0.53 %	0.48 %
Totals	23.54 %	21.39 %
Member Contributions (weighted average)	11.29 %	10.27 %
Employer Normal Cost	12.25 %	11.12 %
Unfunded Actuarial Accrued Liabilities*	5.71 %	5.19 %
Section 1.263(2) Full Funding Credit*	0.00 %	0.00 %
<b>INITIAL COMPUTED EMPLOYER RATE</b>	<b>17.96 %</b>	<b>16.31 %</b>
Ordinance Section 1.263(3) Reduction+	N/A	N/A
<b>ADJUSTED COMPUTED EMPLOYER RATE@</b>	<b>17.96 %</b>	<b>16.31 %</b>

\* Amortized as a level percent-of-payroll over a period of 25 years.

@ In addition to this percent-of-payroll contribution, the City contributes for (i) certain Supplemental Benefits for a small, closed group of retirants and beneficiaries in accordance with the provisions of Ordinance Section 1.292, and (ii) 0.5% of payroll to provide a Medicare Supplement for members retiring after June 30, 1990.

+ See page A-3 for derivation of Ordinance Section 1.263(3) reduction.

**DETERMINING EMPLOYER DOLLAR CONTRIBUTIONS**

For any period of time, the percent-of-payroll contribution rate needs to be converted to dollars – and then contributed to the Retirement System in a timely manner.

The recommended procedure is: (1) *at the end of each payroll period, multiply the active member payroll for the period by the employer contribution percent*; and (2) *promptly contribute the dollar amount so determined*.

Valuation payroll is \$33,110,530.

“Gross-Up” payroll is \$36,429,915.

**ALLOCATION OF VALUATION ASSETS  
YEAR ENDED DECEMBER 31, 2013**

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*In financing the actuarial accrued liabilities*, Valuation Assets of \$354,769,666 were distributed as follows:

<b>Reserves for</b>	<b>Present Valuation Assets Applied to</b>			<b>Totals</b>
	<b>Member Actuarial Accrued Liabilities</b>	<b>Retired Life Actuarial Accrued Liabilities</b>	<b>Contingency Reserve</b>	
Member Contributions (MDF)	\$ 36,740,292			\$ 36,740,292
Employer Contributions (EAF)	36,499,678			36,499,678
Retired Benefit Payments (BRF)	1,190,101	\$ 208,857,372		210,047,473
Undistributed Income (IEF)	104,895,032			104,895,032
Valuation Asset Adjustment	(33,412,809)			(33,412,809)
<b>Totals</b>	<b>\$145,912,294</b>	<b>\$ 208,857,372</b>	<b>\$0</b>	<b>\$354,769,666</b>

*Assets were applied* against actuarial accrued liabilities in determining unfunded actuarial accrued liabilities as follows:

	<b>Retired Lives</b>	<b>Active Members</b>	<b>Total</b>
Computed Actuarial Accrued Liabilities and Reserves	\$208,857,372	\$ 177,003,020	\$385,860,392
Applied Assets	208,857,372	145,912,294	354,769,666
Unfunded Actuarial Accrued Liabilities/ (Full Funding Credit)	\$ 0	\$ 31,090,726	\$ 31,090,726

## DERIVATION OF ORDINANCE SECTION 1.263(3) REDUCTION FOR THE FISCAL YEAR BEGINNING JULY 1, 2014

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Section 1.263(3) reads as follows:

“Notwithstanding the offset to current service contributions under Section 1.263(2), the City shall make a contribution in the amount determined in this paragraph. **In the event the System has greater Valuation Assets than actuarial accrued liabilities, the City will pay its current service contribution during its next ensuing fiscal year reduced by 10% for each 1%, or portion thereof, that Valuation Assets exceed the actuarial accrued liabilities, as determined on the prior December 31 valuation date,** except as provided below. The unreduced current service contribution will be paid during the City’s next ensuing fiscal year if the Market Value of Assets on the March 31 prior to the next ensuing fiscal year for the City is less than 95% of the actuarial accrued liability determined on the prior December 31. No contribution will be made during the City’s next ensuing fiscal year if the Market Value at the March 31 prior to the City’s next ensuing fiscal year exceeds the actuarial present value of expected future benefit payments determined on the prior December 31. This subsection (3) shall be effective beginning with the contribution rate for July 1, 1994 (FY 1995).”

The 110% test specified in the second sentence is applied as follows:

	<b>December 31, 2013</b>
(1) Actuarial Accrued Liabilities	\$385,860,392
(2) Valuation Assets	354,769,666
(3) Funding Ratio: (2)/(1)	91.94%
(4) City Current Service Contribution (Employer Normal Cost from page A-1)	11.12%
(5) Percentage reduction: [(3)-100%] x 10 (if greater than 100%, use 100%)	None
(6) Ordinance Section 1.263(3) rate: (4) - [(4) x (5)]	N/A
(7) Contribution rate after 1.263(3) reduction: Lessor of (i) initial computed employer rate, or (ii) Section 1.263(3) rate, but not less than zero.	16.31%

## DERIVATION OF EXPERIENCE GAIN (LOSS)

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Actual experience will never (except by coincidence) coincide exactly with assumed experience. Gains and losses often cancel each other over a period of years, but sizeable year-to-year fluctuations are common. Detail on the derivation of the experience gain (loss) is shown below, along with a year-by-year comparative schedule.

	December 31, 2013	December 31, 2012
(1) UAAL* at start of year	\$54,473,912	\$44,093,176
(2) Normal cost from last valuation	4,164,738	6,118,304
(3) Actual employer contributions	7,531,566	8,194,227
(4) Interest accrual: [(1) + 1/2 (2) - (3)] x 0.075	3,959,287	3,229,141
(5) Expected UAAL before changes: [(1) + (2) - (3) + (4)]	55,066,371	45,246,394
(6) Effect of benefit changes	0	0
(7) Effect of revised actuarial assumptions or valuation methods	0	0
(8) Change in the SPDR (13th Check Reserve) Distribution Pension Reserve Account	0	0
(9) Expected UAAL after changes: (5) + (6) + (7) + (8)	55,066,371	45,246,394
(10) Actual UAAL at end of year	31,090,726	54,473,912
(11) Gain (loss): (9) - (10)	\$23,975,645	\$(9,227,518)
(12) Gain (loss) as percent of the beginning liabilities at start of period (\$375,797,800)	6.4%	(2.5)%

\* *Unfunded Actuarial Accrued Liabilities.*

Valuation Date	Experience Gain (Loss) as % of Beginning Accrued Liability
12/31/2004	3.0 %
12/31/2005	1.7 %
12/31/2006	6.9 %
12/31/2007	3.1 %
12/31/2008	(31.1)%
12/31/2009	(9.0)%
12/31/2010	(3.0)%
12/31/2011	(3.1)%
12/31/2012	(2.5)%
12/31/2013	6.4 %



**SUMMARY STATEMENT OF SYSTEM RESOURCES AND OBLIGATIONS**  
**YEAR ENDED DECEMBER 31, 2013**

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**PRESENT RESOURCES AND EXPECTED FUTURE RESOURCES**

A. Present valuation assets:		
1. Net assets from system financial statements	\$388,182,475	
2. Market (Funding) value adjustment	(33,412,809)	
3. Valuation assets		354,769,666
B. Actuarial present value of expected future Employer contributions:		
1. For normal costs	49,324,723	
2. For unfunded actuarial accrued liability	31,090,726	
3. Total		80,415,449
C. Actuarial present value of expected future member contributions		10,776,614
D. Total present and expected future resources		\$445,961,729

**ACTUARIAL PRESENT VALUE OF EXPECTED FUTURE BENEFIT PAYMENTS**

A. To retired lives:		
1. Annual allowances	\$208,857,372	
2. Reserve	none	
3. Total		208,857,372
B. To vested terminated members		8,048,988
C. To present active members:		
1. Allocated to service rendered prior to valuation date (actuarial accrued liability)	168,954,032	
2. Allocated to service likely to be rendered after valuation date		60,101,337
3. Total		229,055,369
D. Total present value of expected future benefit payments		\$445,961,729

## COMMENTS, RECOMMENDATION AND CONCLUSION

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**COMMENT A:** Overall experience exceeded expectations during the period ending December 31, 2013 (see page A-4). Larger than expected investment return along with lower than expected pay increases were the primary sources of the gain. With the asset losses from 2008 now 100% recognized, the funding value rate of return was over 13%.

There has also been a significant reversal of the relative position of the Market Value (MV) and the Funding Value (FV) of assets. The ratio of FV to MV was 106% at the end of 2011 and is now 92% at the end of 2013. If near term experience matches expectations, a decrease in the employer contribution will result (see Comment C below). Of course, recent experience makes us aware that this can change the other way.

**COMMENT B:** The employer contribution rate decreased from 19.07% to 16.31% primarily due to a large reduction in the unfunded actuarial liability as a result of the experience discussed in Comment A above. The funded ratio increased from 85.5% to 91.9%.

It is worth noting that on a market value basis, the System's funded ratio is slightly more than 100%.

**COMMENT C:** Below is the 5-year contribution rate projection based on all future experience matching exactly with our assumptions of future experience and a 25-year closed amortization period for the Police-Fire Retirement System.

<b>7.5% Market Return in 2014-2017</b>								
<b>Valuation Year</b>	<b>Funding Value (\$ millions)</b>	<b>Employer Rate</b>	<b>Employee Rate</b>	<b>Total Rate</b>	<b>Funded Ratio</b>	<b>MV Return</b>	<b>MV-FV (\$ millions)</b>	<b>MV (\$ millions)</b>
2013	\$355	16.31%	10.27%	26.58%	92%	16.8%	\$33	\$388
2014	383	14.46%	10.27%	24.73%	93%	7.5%	25	408
2015	410	13.31%	10.27%	23.58%	95%	7.5%	20	430
2016	444	11.45%	10.27%	21.72%	98%	7.5%	10	454
2017	476	10.27%	10.27%	20.54%	100%	7.5%	3	479

Note: Contribution rates are for the fiscal year beginning six months after the valuation date. Gains and losses in other risk areas may also have a material effect on contribution rates in future years. Payroll growth at rates that differ from assumptions is likely to affect this projection in a non-intuitive manner. The impact of future hire benefits are not modeled in this projection.

**COMMENT D:** The amortization policy is established by the City Commission. The current policy is to use a period that ranges from 15 years to 30 years. We have been informed that the City Commission adopted this policy five years ago. The City has elected that the original 30 year period be reduced by five years. Therefore this valuation uses a 25 year amortization period.

**RECOMMENDATION FOR RESERVE TRANSFER.** Inter-fund transfers are made either when (i) there is a residual December 31 balance in the Income-Expense Fund (IEF) after regular interest credits have been made or (ii) the year-end balance in the Benefit Reserve Fund (BRF) falls below the present value of benefits currently being paid. On December 31, 2013 there was a balance in the IEF (see page B-8). Therefore transfers will be made between the appropriate funds so that the ending balances in each reserve fund as of December 31, 2013 will be as follows:

	<b>MDF</b>	<b>EAF</b>	<b>BRF</b>	<b>IEF</b>
<b>Market</b>	\$36,740,292	\$142,584,811	\$208,857,372	\$0
<b>Cost</b>	\$36,740,292	\$ 39,191,659	\$208,857,372	\$0

**CONCLUSION.** The City’s contribution rate for the fiscal year beginning July 1, 2014 has been computed to be 16.31% of active member gross-up payroll based on the funding policy specified in the retirement ordinance.

**BENEFIT RESERVE FUND  
COMPARATIVE STATEMENT**

Valuation Date	Allowances Being Paid @		BRF Assets	Actuarial Accrued Liabilities	Assets/ Liabilities&
	No. *	\$/Month			
6/30/1990	384	\$ 353,352	\$ 41,231,628	\$ 41,712,360	98.8%
6/30/1991	400	398,031	45,524,717	47,293,644	96.3%
6/30/1992	402	413,907	45,385,380	51,274,296	88.5%
6/30/1993	407	467,559	56,180,491	58,557,960	95.9%
6/30/1994	435	541,725	66,051,111	68,845,704	95.9%
6/30/1995	459	627,560	77,220,497	80,150,076	96.3%
6/30/1996	461	677,015	83,301,082	87,177,204	95.6%
6/30/1997	487	794,296	102,380,668	103,260,072	99.1%
6/30/1998	493	851,973	107,928,659	110,669,460	97.5%
6/30/1999	499	898,586	111,412,944	115,585,584	96.4%
6/30/2000	507	944,958	117,164,662	120,407,496	97.3%
6/30/2001	513	990,722	120,396,308	127,594,608	94.4%
6/30/2002	520	1,039,831	129,873,949	133,501,368	97.3%
12/31/2003	531	1,112,249	136,051,587	140,824,416	96.6%
12/31/2004	542	1,176,973	153,594,184	148,382,784	103.5%
12/31/2005	541	1,183,651	147,281,966	143,974,800	102.3%
12/31/2006	604	1,359,707	167,979,383	167,852,376	100.1%
12/31/2007	614	1,408,709	172,944,949	172,445,604	100.3%
12/31/2008	606	1,424,517	173,901,558	173,015,040	100.5%
12/31/2009	614	1,498,088	180,866,587	184,218,288	98.2%
12/31/2010 #	612	1,509,644	184,087,532	187,767,588	98.0%
12/31/2011	616	1,572,805	193,606,183	195,045,000	99.3%
12/31/2012	623	1,620,628	201,092,608	200,723,004	100.2%
12/31/2013	627	1,678,815	210,047,473	208,857,372	100.6%

\* *Alternate payees under EDRO's counted as separate allowances beginning in 1997.*

@ *Includes disability benefits beginning with the 12/31/2006 valuation.*

# *Revised actuarial assumptions.*

& *Before reserve transfers.*

**CASUALTY RESERVE FUND  
COMPARATIVE STATEMENT**

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Valuation Date	Disabilities Being Paid		CRF Assets	Liabilities for Present Disabilities	Contingency Reserve
	No.	\$/Month			
6/30/1990	22	\$ 19,696	\$ 3,262,392	\$ 2,731,440	\$ 530,952
6/30/1991	29	33,597	3,705,051	4,826,340	(1,121,289)
6/30/1992	37	48,523	3,627,146	7,334,784	(3,707,638)
6/30/1993	38	54,086	7,112,030	8,247,408	(1,135,378)
6/30/1994	39	57,632	8,077,450	8,735,628	(658,178)
6/30/1995	43	66,805	8,620,106	10,137,444	(1,517,338)
6/30/1996	42	66,494	9,796,618	10,032,192	(235,574)
6/30/1997	44	73,553	9,828,796	11,151,720	(1,322,924)
6/30/1998	46	78,977	11,053,214	11,871,948	(818,734)
6/30/1999	48	86,784	11,814,236	13,093,908	(1,279,672)
6/30/2000	50	92,101	12,505,464	13,881,516	(1,376,052)
6/30/2001	53	100,380	13,260,228	16,246,464	(2,986,236)
6/30/2002	67	137,692	14,383,251	20,999,064	(6,615,813)
12/31/2003	73	156,598	22,473,127	23,799,576	(1,326,449)
12/31/2004	76	165,328	24,431,076	24,998,496	(567,420)
12/31/2005	76	169,242	24,829,682	24,615,576	214,106
12/31/2006	0	0	0	0	0
12/31/2007	0	0	0	0	0
12/31/2008	0	0	0	0	0
12/31/2009	0	0	0	0	0
12/31/2010	0	0	0	0	0
12/31/2011	0	0	0	0	0
12/31/2012	0	0	0	0	0
12/31/2013	0	0	0	0	0

*Disability benefits are included in the Benefit Reserve Fund Comparative Statement beginning with the 12/31/2006 valuation.*

**ACTUARIAL ACCRUED LIABILITIES & ASSETS  
HISTORICAL COMPARATIVE SCHEDULE  
(\$ AMOUNTS IN MILLIONS)**

Valuation Date	Valuation Assets	Actuarial Accrued		Unfunded Actuarial Accrued		
		Liability Dollar Amount	Liability Funded Ratio <sup>1</sup>	Dollar Amount	Ratio to Payroll <sup>2</sup>	Financing Period
9/30/1975	\$ 18.7	\$ 37.8	49.4%	\$ 19.1	197 %	17 yrs.
9/30/1980 #	40.5	62.8	64.6%	22.3	184 %	17
9/30/1985	75.6	84.6	89.3%	9.0	58 %	23
6/30/1990	139.8	120.6	115.9%	(19.2)	-	18
6/30/1995 #	202.0	180.6	111.9%	(21.4)	-	15
6/30/1996	229.7	194.3	118.2%	(35.4)	-	15
6/30/1997	255.4	208.6	122.4%	(46.8)	-	15
6/30/1998	283.6	219.2	129.4%	(64.4)	-	15
6/30/1999	302.3	226.9	133.3%	(75.5)	-	15
6/30/2000	310.5	238.4	130.2%	(72.1)	-	15
6/30/2001 # *	305.3	249.2	122.5%	(56.1)	-	15
6/30/2002 #	287.1	265.8	108.0%	(21.4)	-	15
12/31/2003 #@	301.8	276.1	109.3%	(25.8)	-	15
12/31/2004	315.0	285.0	110.5%	(30.0)	-	15
12/31/2005 *	325.0	284.3	114.3%	(40.8)	-	15
12/31/2006	350.2	292.9	119.5%	(57.2)	-	15
12/31/2007	365.1	301.0	121.3%	(64.1)	-	15
12/31/2008 #	346.5	310.2	111.7%	(36.2)	-	30
12/31/2009 #	334.2	348.3	96.0%	14.0	42 %	30
12/31/2010 *	328.6	360.6	91.1% +	32.0	92 %	30
12/31/2011	321.2	365.3	87.9%	44.1	128 %	30
12/31/2012	321.3	375.8	85.5%	54.5	160 %	30
12/31/2013	354.8	385.9	91.9%	31.1	94 %	25

- \* Revised actuarial assumptions.
- # Retirement System amended.
- @ One-half year ended December 31.
- + 87% on a market value basis.

1. **Valuation Assets as a Percent of AAL** is a traditional measure of a system's funding progress. Except in years when the system is amended or actuarial assumptions are revised, this percent can be expected to move gradually toward 100%.
2. **UAAL as a Percent of Valuation Payroll** is another relative index of condition. Unfunded actuarial accrued liabilities represent debt, while active member payroll represents the system's capacity to collect contributions to pay toward debt. The lower the percent, the greater the financial strength and vice-versa.

**CITY AND MEMBER CONTRIBUTIONS  
HISTORICAL COMPARATIVE SCHEDULE**

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Valuation Date	Fiscal Year	Computed Contributions as %s of Active Member Payroll		
		Member	Employer	Total
9/30/1980 #	81/82	5.90%	27.60%	33.50%
9/30/1985	86/87	4.90%	17.79%	22.69%
6/30/1990	91/92	5.49%	9.03%	14.52%
6/30/1991	92/93	5.45%	9.95%	15.40%
6/30/1992 #	93/94	6.07%	16.22%	22.29%
6/30/1993 *	94/95	5.60%+	0.00%	5.60%
6/30/1994	95/96	5.60%+	0.00%	5.60%
6/30/1995 #	96/97	5.98%+	0.00%	5.98%
6/30/1996	97/98	5.90%+	0.00%	5.90%
6/30/1997	98/99	5.90%+	0.00%	5.90%
6/30/1998	99/00	5.90%+	0.00%	5.90%
6/30/1999	00/01	5.90%+	0.00%	5.90%
6/30/2000	01/02	5.90%+	0.00%	5.90%
6/30/2001 # *	02/03	6.09%+	0.00%	6.09%
6/30/2002 #	03/04	8.13%+	2.96%	11.09%
12/31/2003 #@	04/05	7.12%+	1.08%	8.20%
12/31/2004	05/06	5.10%+	0.00%	5.10%
12/31/2005 *	06/07	5.10%+	0.00%	5.10%
12/31/2006	07/08	4.12%+	0.00%	4.12%
12/31/2007	08/09	4.12%+	0.00%	4.12%
12/31/2008 #	09/10	3.73%+	0.00%	3.73%
12/31/2009 #	10/11	4.19%+	20.96%	25.15%
12/31/2010 *	11/12	4.18%+	21.18%	25.36%
12/31/2011	12/13	5.24%+	22.26%	27.50%
12/31/2012	13/14	10.27%+	19.07%	29.34%
12/31/2013	14/15	10.27%+	16.31%	26.58%

\* *Revised actuarial assumptions.*

# *Retirement System amended.*

+ *Adjusted for contributions on items of pay not included in valuation payroll and/or temporary reduction in contribution rate.*

@ *One-half year ended December 31.*

## ACTIVE MEMBERS AND RETIRED LIVES HISTORICAL COMPARATIVE SCHEDULE

Valuation Date	Active Members				Retired Lives			
	No.	Valuation Payroll			No. &	Active per Retired	Annual Benefits	
		\$ Millions	Average	% Incr.			\$ Millions	As a % of Pay
9/30/1980 #	569	12.1	\$21,243	4.1 %	331	1.7	\$ 1.6	13.3 %
9/30/1985	533	15.5	29,056	6.3 %	380	1.4	2.9	18.6 %
6/30/1990	492	17.2	34,908	4.5 %	406	1.2	4.5	26.1 %
6/30/1991	514	18.3	35,553	1.8 %	429	1.2	5.2	28.3 %
6/30/1992 #	523	19.7	37,627	5.8 %	439	1.2	5.5	28.2 %
6/30/1993 *	529	20.7	39,071	3.8 %	445	1.2	6.3	30.4 %
6/30/1994	554	22.2	40,139	2.7 %	474	1.2	7.2	32.3 %
6/30/1995 #	546	22.5	41,205	2.7 %	502	1.1	7.6	33.8 %
6/30/1996	600	25.0	41,609	1.0 %	503	1.1	8.9	35.6 %
6/30/1997	605	25.8	42,587	2.4 %	531	1.1	10.4	40.4 %
6/30/1998	614	26.6	43,394	1.9 %	539	1.1	11.2	42.1 %
6/30/1999	619	28.0	45,277	4.3 %	547	1.1	11.8	42.1 %
6/30/2000	620	29.9	48,187	6.4 %	557	1.1	12.4	41.5 %
6/30/2001 #*	629	31.8	50,513	4.8 %	566	1.1	13.1	41.2 %
6/30/2002 #	622	32.5	52,265	3.5 %	587	1.1	14.1	43.5 %
6/30/2003	619	33.5	54,190	3.7 %	598	1.0	14.9	44.4 %
12/31/2003 #@	608	33.1	54,443	0.5 %	604	1.0	15.2	46.0 %
12/31/2004	583	32.5	55,821	2.5 %	618	0.9	16.1	49.5 %
12/31/2005 *	576	33.4	57,999	3.9 %	617	0.9	16.2	48.5 %
12/31/2006	567	33.9	59,767	3.0 %	604	0.9	16.3	48.1 %
12/31/2007	545	32.9	60,289	0.9 %	614	0.9	16.9	51.4 %
12/31/2008	535	33.0	61,690	2.3 %	606	0.9	17.1	51.8 %
12/31/2009	506	33.5	66,187	7.3 %	614	0.8	18.0	53.7 %
12/31/2010	534	34.7	64,917	(1.9)%	612	0.9	18.1	52.2 %
12/31/2011	536	34.6	64,490	(0.7)%	616	0.9	18.9	54.6 %
12/31/2012	515	34.0	65,961	2.3 %	623	0.8	19.4	57.1 %
12/31/2013	501	33.1	66,089	0.2 %	627	0.8	20.1	60.7 %

20-Year Average

2.6 %

\* Revised actuarial assumptions.

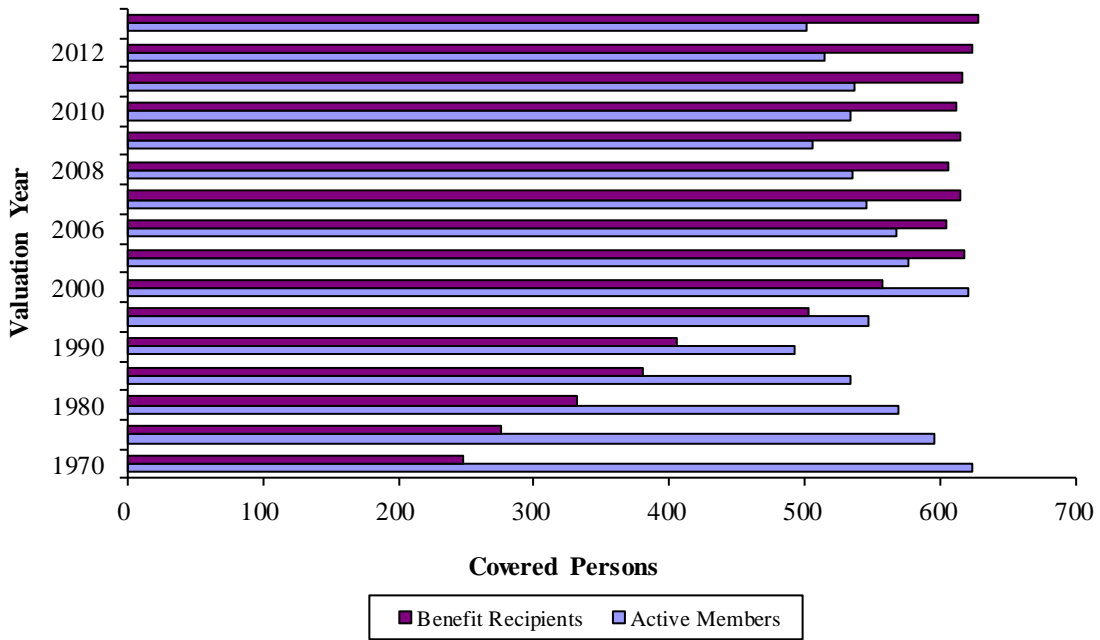
# Retirement System amended.

& Alternate payees under EDROs are counted as separate retired lives beginning in 1997.

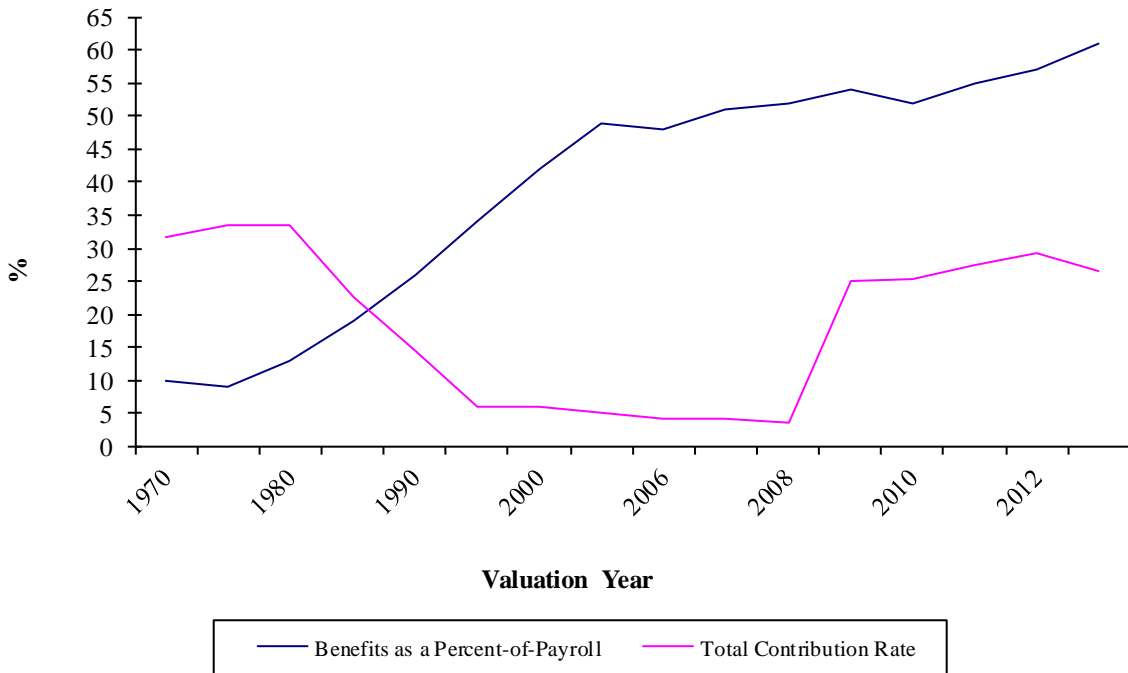
@ One-half year ended December 31.



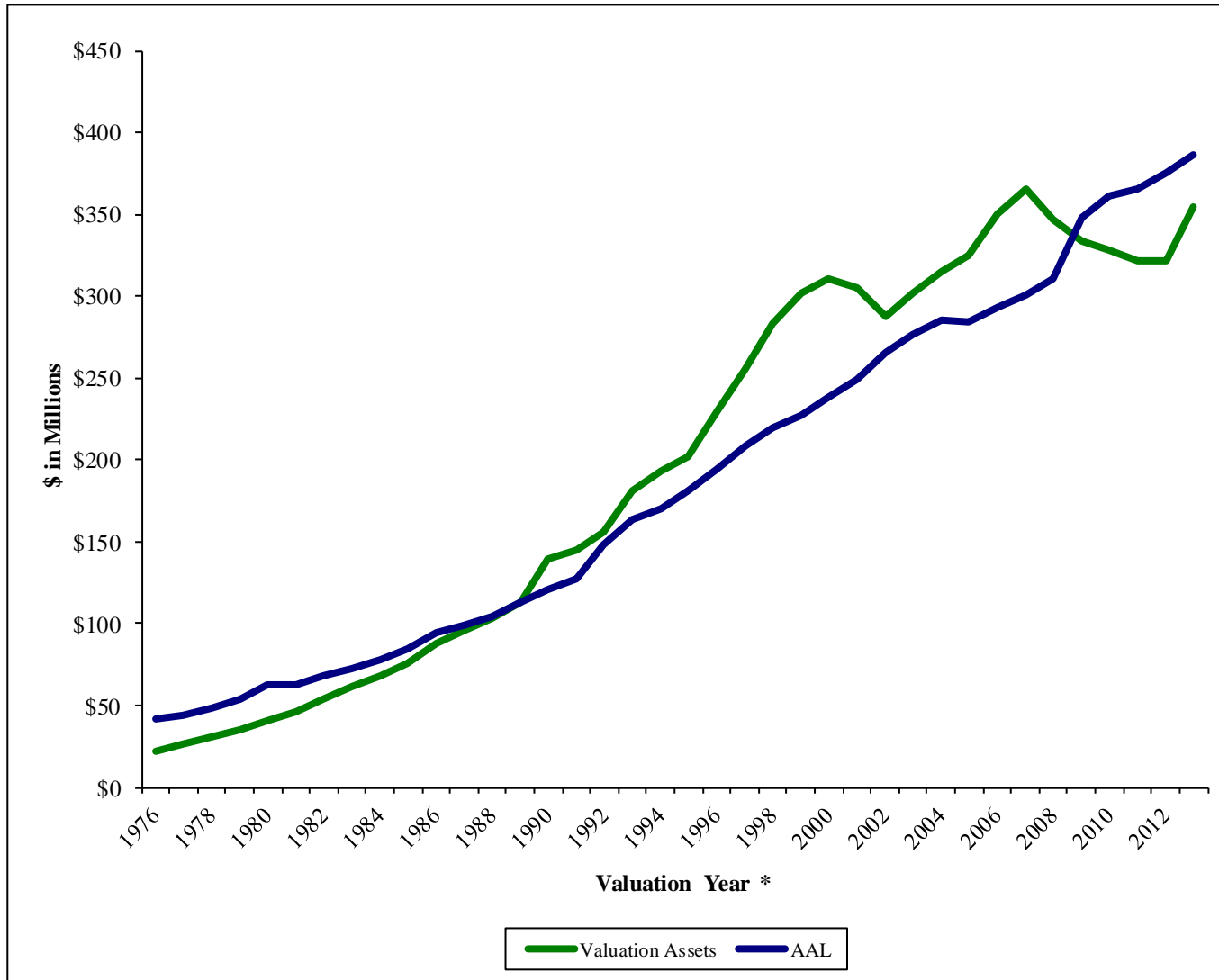
### Active Members and Benefit Recipients



### Benefits as a % of Pay and Total Contribution Rate



## ACTUARIAL ACCRUED LIABILITIES & ASSETS



\* Note: Valuation year is June 30 to June 30, 2003 and December 31 from December 31, 2003.

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**SECTION B**

**VALUATION DATA**

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## **SUMMARY OF BENEFIT PROVISIONS EVALUATED DECEMBER 31, 2013**

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***Voluntary Retirement.*** Police members may retire after attaining age 50 and completing 10 years of service. Firefighter members are eligible for retirement after attaining age 55 with 10 or more years of service. Firefighter members may also retire at the age their service reaches the service credit limit.

***Compulsory Retirement.*** None.

***Final Average Salary (FAS).*** The average of member's highest annual salary rates during the 3 consecutive calendar years of credited service when such compensation rates are the highest increased by the applicable FAS Adjustment Factor (11.8% Police members for the period January 1, 2013 to June 30, 2013, and 11.3% for Police members for the period July 1, 2013 to December 31, 2013, 8.4% Firefighter members for the period January 1, 2013 to June 30, 2013, and 8.2% for Firefighter members for the period July 1, 2013 to December 31, 2013). Highest salary rates that occur in calendar years after the calendar year in which the member reaches their service credit limit will not be included in the FAS.

***Benefit Multiplier Description.*** See page B-2.

**Benefit Multiplier.** The member's benefit multiplier, used to compute full age and service allowance, is defined in the following table:

### Benefit Multipliers and Allowance Caps for Member Groups

Covered Group	Date of Hire	Benefit Multiplier	Allowance Cap
Firefighters	Prior to July 1, 1992	2.5%	100%
	-or-		
	Prior to July 1, 1992	2.8%	94.5%
	July 1, 1992 to January 9, 2012	2.8%	90%
	January 10, 2012 or after	2.0%*	90%
Fire Chief	At any time	2.8%	94.5%
Police Command	Prior to July 1, 2001	2.8%	100%
	July 1, 2001 to December 19, 2011	2.8%	80%
	December 20, 2011 or after	2.0% <sup>@</sup>	80%
Police Chief or Deputy Police Chief	At any time	2.8%	100%
Police Officers and Sergeants	Before March 9, 1995	2.8%	100%
	March 9, 1995-June 30, 2001	2.8%	87.5%
	July 1, 2001 to December 19, 2011	2.8%	80%
	December 20, 2011 or after	2.0% <sup>#</sup>	80%

\* Firefighter members hired on or after January 10, 2012 will have a 2.0% multiplier for the first five years of employment. Members may then irrevocably elect that multiplier, or, by making higher member contributions, elect a higher multiplier for all future service (2.2%, 2.4%, 2.6%, or 2.8%).

<sup>@</sup> Police Command members hired on or after December 20, 2011 will have a 2.0% multiplier for the first five years of employment. Members may then irrevocably elect that multiplier, or, by making higher member contributions, elect a higher multiplier for all future service (2.2%, 2.4%, 2.6%, or 2.8%).

<sup>#</sup> Police Officers and Sergeants members hired on or after December 20, 2011 will have a 2.0% multiplier for the first five years of employment. Members may then irrevocably elect that multiplier, or, by making higher member contributions, elect a higher multiplier for all future service (2.2%, 2.4%, 2.6%, or 2.8%).

***Full Age and Service Allowance.*** Allowance, payable monthly for life to the retired member, equals the member's benefit multiplier times the member's FAS times years of credited service. In lieu of this single life-level amount form of payment, a retiring member may elect from a variety of optional forms of payment, each of which is the actuarial equivalent (same lump sum value at time of retirement) of the single life-level payment form.

***Deferred Allowance.*** A member with 10 or more years of service who leaves covered employment before retirement is eligible to receive an allowance computed in the same manner as an age and service allowance but based upon the member's employment record to the time of leaving. Such deferred allowance commences the first day of the calendar month next following the later of the date of the member's attainment of age 50 or the date when written application therefore is received by the Board. Benefits may be actuarially reduced in accordance with the Early Retirement provision if applicable.

***Early Allowance.*** A Firefighter member who leaves covered employment after both attaining age 50 and completing 10 years of service is eligible to receive an immediate early allowance (in lieu of a deferred allowance), computed in the same manner as a deferred allowance based upon the member's employment record to the time of early retirement, but actuarially reduced (per schedule in ordinance) to reflect the fact that the age when payments begin is younger than age 55.

***Duty Disability Allowance.*** A member who becomes totally and permanently disabled from duty-connected causes is eligible to receive, subject to offsets, a duty disability allowance computed in the same manner as a full age and service allowance based upon the member's employment record to the time of disability with a minimum allowance before offset of 72% of FAS. The maximum allowance after offsets is 90% of final salary less amounts received from (i) Worker's Compensation, (ii) gainful employment as a law enforcement officer or firefighter, and (iii) Social Security disability income.

***Non-Duty Disability Allowance.*** A member with 1 or more years of credited service who becomes totally and permanently disabled from other than duty-connected causes is eligible to receive a non-duty disability allowance computed in the same manner as a full age and service allowance, based upon the member's employment record to the time of disability. Minimum benefit for Police Officers is 48% of FAS if credited service is less than 20 years or 60% of FAS if credited service is 20 or more years. Minimum benefit for Police Command Officers is based on the earlier of (i) the date the member would have completed 20 (if credited service is less than 20 years) or 25 years of service (if credited service is 20 or more years) or (ii) the date the member would have reached 50 years of age. Minimum benefit for Firefighters is based on the earlier of (i) the date the member would have completed 20 (if credited service is less than 20 years) or 25 years of service (if credited service is 20 or more years) or (ii) the date the member would have reached 55 years of age.

***Death-in-Service Benefits.*** Upon the death of a member, surviving dependents are eligible to receive the following benefits, subject to offsets for Worker's Compensation and Social Security.

- (a) The widow receives an allowance equal to the Option B-100 allowance (joint and 100% survivor actuarial equivalent benefit) which would have been payable to her had the deceased member retired the day preceding the date of his death and elected Option B-100. The minimum allowance payable to the widow is 20% of the member's FAS. If the death was determined to be duty-related, the minimum allowance payable to the widow is 72% of the member's final average salary (60% for Command or Firefighters hired after June 30, 1992).
- (b) Dependent children under age 18 (up to age 23 if they are continuous full-time students) each are eligible to receive an allowance of 15% of the member's FAS. If there are 4 or more dependent children, each child receives an equal share of 50% of the member's FAS.
- (c) If there are neither a widow nor children, each dependent parent is eligible to receive an allowance equal to 15% of FAS.

**Compensation.** Compensation upon which members contribute includes base pay, longevity pay, educational increment and vacation pay, plus the following additional compensation items:

Firefighters: Overtime pay (assumed to be 4.2% for calendars years before 2010 and actual overtime in 2010 and later), holiday pay, clothing allowance, acting assignment pay, shop pay and shift pay.

Police Officers and Police Command Officers: Overtime pay, comp. payoff, holiday pay, clothing allowance, acting assignment, witness fees and shift pay.

The average of the additional compensation items is used to annually adjust the FAS Adjustment Factor. In addition, compensation will not include any amount that would cause the System to be in violation of IRC Sections 401(a) (17) or 415(d).

**Member Contributions.** Effective July 1, 2013, member contribution rates shall be payable in accordance with the following table.

<b>System Funding Represented As a Percentage of Valuation Assets to Actuarial Accrued Liabilities</b>	<b>Firefighters</b>	<b>Police Officers &amp; Sergeants</b>	<b>Police Command</b>
Below 100%	10.70%	9.86%	10.89%
100% - 104.999%	9.70%	8.86%	9.89%
105% - 109.999%	8.70%	7.86%	8.89%
110% - 114.999%	7.70%	6.86%	7.89%
115% - 119.999%	6.70%	5.86%	6.89%
120% - 124.999%	6.70%	5.20%	6.06%
125% - 129.999%	6.70%	4.54%	5.23%
130% - 134.999%	6.70%	3.88%	4.40%
135+%	6.70%	3.22%	3.57%

The member contribution rates used for the December 31, 2013 valuation were 10.70%, 9.86%, 10.89%, 10.20%, and 10.20% for Firefighters, Police Officers and Sergeants, Police Command Officers, Police Chief and Deputy Police Chiefs, and Fire Chief respectively.

If a member terminates employment before any allowance is payable, accumulated contributions (contributions plus regular interest) are refunded.



**Employer Contributions.** The City contributes the remainder amounts necessary to maintain the Retirement System in sound financial condition in accordance with its funding objectives.

**Automatic Post-Retirement Benefit Increases.** Post-retirement benefit increases are paid to eligible groups as described in the following table.

	<b>Firefighters</b>	<b>Police Officer and Sergeants</b>	<b>Police Command</b>
Effective date	Retired on or after July 1, 2007	Retired on or after December 17, 2008	Retired on or after February 19, 2010
Amount of increase	1.5% of original benefit	1.0% of original benefit	1.0% of original benefit
First increase to occur	2 years after retirement	5 years after retirement	5 years after retirement

Benefit recipients who are eligible for the automatic post-retirement increase do not participate in the 13<sup>th</sup> check program.

**13th Check.** For members not eligible for automatic post-retirement increases, one-half of net investment income over 8% which is attributable to retired life assets is distributed annually (in January) to retired members and beneficiaries who have been on the retirement rolls for 5 years in the form of a 13th check. Net investment income is based on a market value rate of return averaged over the preceding 5 plan years. The distribution is in proportion to points. An individual's points are determined by multiplying (i) the number of full years of retirement, to a maximum of 15, by (ii) the number of years, and fractions thereof, of service at retirement. Subsequent to the calculations above, the benefit so calculated for Chief of Police, Deputy Chief, Police Command, Police Officers and Sergeants, Firefighter Service, and beneficiaries having had at least 10 years of service under either bargaining unit shall be increased by twenty percent.

## DERIVATION OF SECTION 1.233(28) VALUATION ASSETS\*

Valuation Date December 31:	2010	2011	2012	2013	2014	2015	2016	2017
A. Funding Value Beginning of Year	\$334,247,051	\$328,609,947	\$321,207,218	\$321,323,888				
B. Market Value End of Year	312,312,713	303,570,582	340,158,586	388,182,475				
C. Market Value Beginning of Year	279,071,974	312,312,713	303,570,582	340,158,586				
D. Non-Investment Net Cash Flow	(12,455,498)	(9,141,984)	(8,066,241)	(8,549,023)				
E. Investment Return:								
E1. Market Total: B-C-D	45,696,237	399,853	44,654,245	56,572,912				
E2. Assumed Rate	7.50%	7.50%	7.50%	7.50%				
E3. Amount for Immediate Recognition	24,601,448	24,302,922	23,788,057	23,778,703				
E4. Amount for Phased-In Recognition	21,094,789	(23,903,069)	20,866,188	32,794,209				
F. Phased-In Recognition of Investment Return:								
F1. Current Year: 0.2xE4	4,218,958	(4,780,614)	4,173,238	6,558,842				
F2. First Prior Year	8,045,675	4,218,958	(4,780,614)	4,173,238	\$ 6,558,842			
F3. Second Prior Year	(27,262,401)	8,045,675	4,218,958	(4,780,614)	4,173,238	\$ 6,558,842		
F4. Third Prior Year	(2,785,286)	(27,262,401)	8,045,675	4,218,958	(4,780,614)	4,173,238	\$ 6,558,842	
F5. Fourth Prior Year	0	(2,785,285)	(27,262,403)	8,045,674	4,218,957	(4,780,613)	4,173,236	\$ 6,558,841
F6. Total Recognized Investment Gain (Loss)	(17,783,054)	(22,563,667)	(15,605,146)	18,216,098	10,170,423	5,951,467	10,732,078	6,558,841
G. Funding Value End of Year: A+D+E3+F6	328,609,947	321,207,218	321,323,888	354,769,666				
H. Difference Between Market & Funding Values	(16,297,234)	(17,636,636)	18,834,698	33,412,809				
<b>I. Recognized Rate of Return</b>	<b>2.08%</b>	<b>0.54%</b>	<b>2.58%</b>	<b>13.25%</b>				
J. Market Value Rate of Return	16.75%	0.13%	14.91%	16.84%				
K. Ratio of Funding Value to Market Value	105.2%	105.8%	94.5%	91.4%				

\* The Funding Value of Assets recognizes assumed investment return (line E3) fully each year. Differences between actual and assumed investment return (line E4) are phased-in over a closed 5-year period. During periods when investment performance exceeds the assumed rate, Funding Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Funding Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for 4 consecutive years, funding value will become equal to market value.

**SUMMARY OF ASSET INFORMATION FROM AUDIT REPORT  
FURNISHED FOR VALUATION DECEMBER 31, 2013**

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**BALANCE SHEET**

**Reserves for**

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Member contributions (MDF)	\$ 36,740,292
Employer contributions (EAF)	36,499,678
Retired benefit payments (BRF)	210,047,473
Undistributed income (IEF)	104,895,032
<hr/>	
Total Reserves	\$388,182,475

**REVENUES AND EXPENDITURES**

	<b>December 31, 2013</b>
1. Balance - Beginning of Year	\$340,158,586
2. Revenues:	
a. Employees' contributions	\$ 3,893,917
b. Employer contributions	7,531,566
c. Investment income	58,083,811
d. Other	0
e. Total revenues	69,509,294
3. Expenditures:	
a. Benefit payments	19,948,222
b. Supplemental pension distribution	0
c. Refund of member contributions	26,284
d. Expenses	1,510,899
e. Total expenditures	21,485,405
4. Balance - End of Period:	\$388,182,475
(1) + (2e) - (3e)	

The derivation of Valuation Assets can be found on page B-7.

The Funding Value adjustment is the difference between Valuation Assets and assets reported on a Book Value basis. Investment Income above is on a Valuation Asset basis.

## RETIRANTS AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS HISTORICAL COMPARATIVE SCHEDULE

Year Ended	Added		Removed		End of Year		Average Allowance	Expected Removals	
	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances		No.	Annual Allowances
09/30/86	17	\$ 326,392	7	\$ 31,347	390	\$ 3,171,988	\$ 8,133	17	\$ 79,644
06/30/87	19	167,998	29	148,163	380	3,191,823	8,400	17	79,536
06/30/88	28	492,068	21	112,835	387	3,571,056	9,228	16	81,012
06/30/89	29	420,563	24	90,563	392	3,901,056	9,952	16	99,624
06/30/90	28	634,645	14	53,539	406	4,482,162	11,040	16	100,044
06/30/91	37	780,461	14	83,086	429	5,179,537	12,074	17	114,120
06/30/92	29	503,587	19	133,964	439	5,549,160	12,640	18	128,316
06/30/93	34	897,643	28	187,063	445	6,259,740	14,067	16	119,208
06/30/94	44	1,068,018	15	135,474	474	7,192,284	15,174	17	132,780
06/30/95	37	1,193,030	9	52,928	502	8,332,386	16,598	17	151,236
06/30/96	28	816,264	26	219,594	504	8,929,056	17,716	17	176,052
06/30/97	47	1,612,723	20	127,584	531	10,414,195	19,612	17	188,928
06/30/98	30	962,274	22	205,069	539	11,171,400	20,726	17	217,296
06/30/99	29	869,949	21	216,909	547	11,824,440	21,617	17	238,128
06/30/00	23	800,357	13	180,089	557	12,444,708	22,342	17	259,872
06/30/01	26	823,258	17	174,742	566	13,093,224	23,133	18	287,004
06/30/02	28	1,120,664	7	83,612	587	14,130,276	24,072	15	211,896
06/30/03	27	989,088	16	215,676	598	14,903,688	24,923	16	290,736
12/31/03 @	18	462,019	12	139,543	604	15,226,164	25,209	8	159,228
12/31/04	31	1,115,388	17	233,940	618	16,107,612	26,064	17	329,892
12/31/05	19	470,331	20	343,227	617	16,234,716	26,312	17	360,588
12/31/06	15	505,745	28	423,977	604	16,316,473	27,014	16	350,304
12/31/07	25	895,832	15	307,797	614	16,904,508	27,532	16	375,192
12/31/08	20	701,771	28	512,075	606	17,094,204	28,208	17	404,400
12/31/09	24	1,101,882	16	219,030	614	17,977,056	29,279	17	426,036
12/31/10	15	431,400	17	292,728	612	18,115,728	29,601	18	426,516
12/31/11	18	936,557	14	178,625	616	18,873,660	30,639	18	491,400
12/31/12	25	944,386	18	370,516	623	19,447,529	31,216	19	536,460
12/31/13	27	1,173,645	23	475,392	627	20,145,782	32,130	19	570,612
12/31/14								20	602,520

@ One-half year ended December 31.

**RETIRANTS AND BENEFICIARIES AS OF DECEMBER 31, 2013**  
**TABULATED BY TYPE OF ALLOWANCE BEING PAID**

Type of Pensions Being Paid	No.*	Annual Pension	Annual Liability
<b>AGE AND SERVICE PENSIONS</b>			
Regular pension - benefit terminating at death of retirant	162	\$ 5,660,915	\$ 49,441,692
Option B-100 - 100% joint & survivor (including pop-ups)	83	3,281,063	39,171,264
Option B-75 - 75% joint & survivor (including pop-ups)	92	3,619,350	39,239,592
Option B-50 - 50% joint & survivor (including pop-ups)	61	2,473,485	26,147,172
Survivor beneficiary of deceased retirant	95	1,605,633	13,346,508
<b>Total age and service pensions</b>	<b>493</b>	<b>\$16,640,446</b>	<b>\$167,346,228</b>
<b>DISABILITY PENSIONS</b>			
Regular pension - benefit terminating at death of retirant	37	\$ 1,248,362	\$ 14,734,860
Option B-100 - 100% joint & survivor (including pop-ups)	27	846,158	10,910,760
Option B-75 - 75% joint & survivor (including pop-ups)	11	393,288	5,199,564
Option B-50 - 50% joint & survivor (including pop-ups)	16	526,402	6,286,872
Survivor beneficiary of deceased retirant	6	104,269	1,090,176
<b>Total disability pensions</b>	<b>97</b>	<b>\$ 3,118,479</b>	<b>\$ 38,222,232</b>
<b>DEATH-IN-SERVICE PENSIONS</b>	<b>37</b>	<b>386,857</b>	<b>3,288,912</b>
<b>Total Pensions Being Paid</b>	<b>627</b>	<b>\$20,145,782</b>	<b>\$208,857,372</b>

\* Includes alternate payees under EDROs.

**ALLOWANCES BEING PAID –DECEMBER 31, 2013**  
**TABULATED BY ATTAINED AGES**

Attained Ages	Age & Service *		Disability		Death-in-Service		Totals	
	No.	Monthly Allowances	No.	Monthly Allowances	No.	Monthly Allowances	No.	Monthly Allowances
Under 40	2	\$ 5,464	5	\$ 11,488	7	\$ 5,008	14	\$21,960
40-44			1	2,477	2	3,009	3	\$5,485
45-49			12	37,411	1	1,266	13	\$38,677
50-54	31	109,890	17	53,900			48	\$163,790
55-59	48	183,674	19	63,663	2	3,166	69	\$250,502
60-64	33	134,113	12	35,973			45	\$170,086
65-69	96	324,523	13	27,308	4	3,582	113	\$355,412
70-74	98	274,475	11	19,240	6	3,951	115	\$297,666
75-79	55	145,935	5	7,150	4	3,633	64	\$156,718
80-84	65	130,140			4	4,678	69	\$134,817
85-89	47	61,529	2	1,263	4	2,780	53	\$65,572
90-94	17	15,906			3	1,166	20	\$17,072
95-99	1	1,056					1	\$1,056
100-104								\$0
<b>Total**</b>	<b>493</b>	<b>\$1,386,704</b>	<b>97</b>	<b>\$259,873</b>	<b>37</b>	<b>\$32,238</b>	<b>627</b>	<b>\$1,678,815</b>

\* Includes survivor beneficiaries.

\*\* Totals may not add due to rounding.

**INACTIVE VESTED MEMBERS – DECEMBER 31, 2013**  
**ELIGIBLE FOR DEFERRED PENSIONS**  
**TABULATED BY ATTAINED AGES**

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<b>Attained Ages</b>	<b>No.</b>	<b>Estimated Monthly Benefits</b>
Under 30		
30-34		
35-39	4	\$ 8,838
40-44	13	33,374
45-49	11	33,565
50-54	1	2,127
55-59		
60 +		
<b>Totals</b>	<b>29</b>	<b>\$77,904</b>

**ACTIVE MEMBERS INCLUDED IN VALUATIONS  
HISTORICAL COMPARATIVE SCHEDULE**

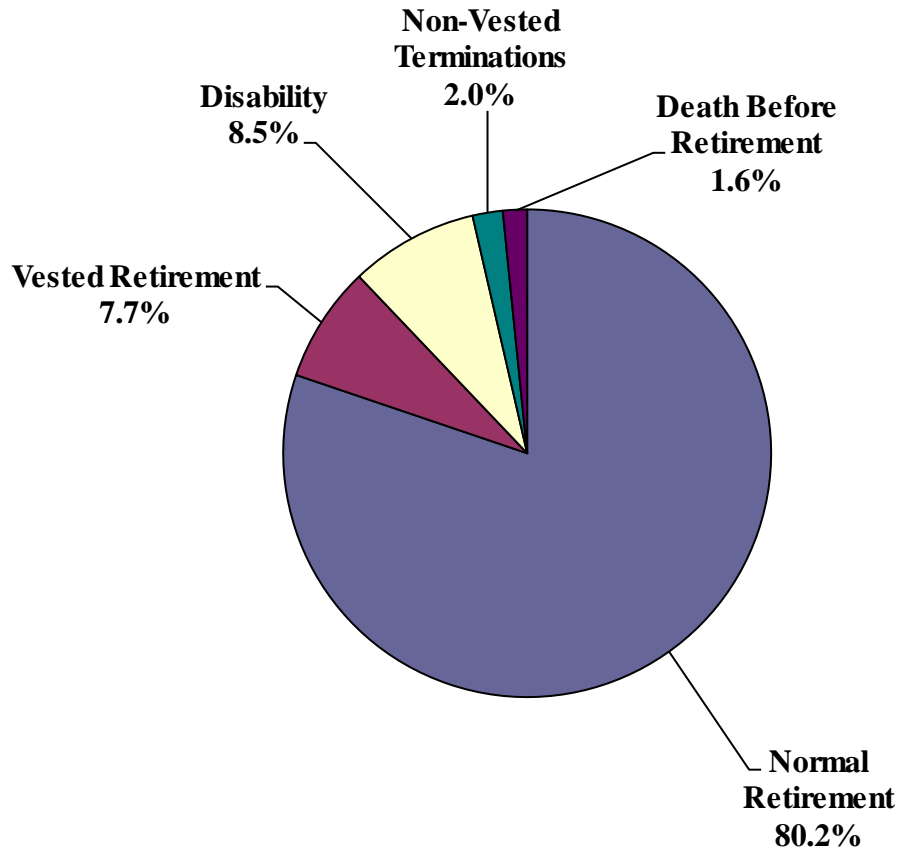
Year Ended	Active Members	Annual Payroll \$ Millions	Group Averages		Age Years	Service Years
			Annual Pay \$	% Change		
09/30/80	569	\$ 12.1	\$21,243	4.1 %	41.2	16.2
09/30/85	533	15.5	29,056	6.3 %	41.3	16.3
06/30/90	492	17.2	34,908	4.5 %	42.6	17.7
06/30/91	514	18.3	35,553	1.8 %	41.6	16.4
06/30/92	523	19.7	37,627	5.8 %	41.3	16.1
06/30/93	529	20.7	39,071	3.8 %	40.8	15.4
06/30/94	554	22.2	40,139	2.7 %	39.7	14.0
06/30/95	546	22.5	41,205	2.7 %	38.7	13.2
06/30/96	600	25.0	41,609	1.0 %	37.7	12.0
06/30/97	605	25.8	42,587	2.4 %	36.8	10.9
06/30/98	614	26.6	43,394	1.9 %	36.5	10.5
06/30/99	619	28.0	45,277	4.3 %	36.7	10.5
06/30/00	620	29.9	48,187	6.4 %	36.8	10.7
06/30/01	629	31.8	50,513	4.8 %	37.0	10.8
06/30/02	622	32.5	52,265	3.5 %	37.2	10.9
06/30/03	619	33.5	54,190	3.7 %	37.5	11.1
12/31/03 @	608	33.1	54,443	0.5 %	37.8	11.5
12/31/04	583	32.5	55,821	2.5 %	38.3	11.8
12/31/05	576	33.4	57,999	3.9 %	39.0	12.5
12/31/06	567	33.9	59,767	3.0 %	39.7	13.2
12/31/07	545	32.9	60,289	0.9 %	40.4	13.9
12/31/08	535	33.0	61,690	2.3 %	41.0	14.5
12/31/09	506	33.5	66,187	7.3 %	41.8	15.3
12/31/10	534	34.7	64,917	(1.9)%	41.9	15.4
12/31/11	536	34.6	64,490	(0.7)%	42.1	15.2
12/31/12	515	34.0	65,961	2.3 %	42.9	16.1
12/31/13	501	33.1	66,089	0.2 %	43.3	16.5
20-Year Average				2.5 %		

@ One-half year ended December 31.



**EXPECTED ULTIMATE DISPOSITION OF  
CURRENT ACTIVE MEMBERS AS  
AS OF DECEMBER 31, 2013**

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**ADDITIONS TO AND REMOVALS FROM ACTIVE MEMBERSHIP  
ACTUAL AND EXPECTED NUMBERS**

Year Ended	Added During Year #	Terminations During Year										End of Year
		Normal		Disability		Death-in-		Withdrawal				
		Retirement	Retirement	Service	Vested	Other	Total	A	E			
A	E	A	E	A	E	A	A	A	E			
06/30/95	34	35	25.6	4	1.8	1	1.1	0	2	2	6.2	546
06/30/96	78	17	22.1	5	1.7	0	0.9	0	2	2	6.3	600
06/30/97	56	39	22.4	3	1.6	0	0.9	0	9	9	7.4	605
06/30/98	43	21	16.4	2	1.6	0	0.9	2	9	11	7.8	614
06/30/99	34	13	13.5	3	1.7	1	0.9	0	12	12	8.0	619
06/30/00	30	13	13.5	2	1.7	0	0.9	2	12	14	7.8	620
06/30/01	36	12	11.8	4	1.8	1	0.5	2	8	10	7.7	629
06/30/02	19	17	11.0	4	2.5	0	0.5	0	5	5	6.5	622
06/30/03	21	13	9.0	4	3.1	0	0.4	2	5	7	7.2	619
12/31/03 @	0	5	4.5	1	1.6	2	0.2	1	2	3	3.6	608
12/31/04	9	17	8.9	3 *	3.2	0	0.4	2	12	14	6.9	583
12/31/05	11	5	6.3	2	3.3	0	0.4	6	5	11	6.3	576
12/31/06	6	6	6.3	2	3.9	0	0.4	3	4	7	6.6	567
12/31/07	5	6	7.3	9	4.1	1	0.4	2	9	11	6.2	545
12/31/08	11	4	7.4	5	4.1	0	0.4	7	5	12	5.7	535
12/31/09	5	16	8.5	2	4.2	0	0.5	2	14	16	5.4	506
12/31/10	35	1	9.3	3	4.2	0	0.5	2	1	3	4.7	534
12/31/11	18	12	13.1	1	4.1	0	0.5	3	0	3	7.8	536
12/31/12	0	12	14.3	1	4.1	1	0.5	4	3	7	7.6	515
12/31/13	10	13	15.8	4	4.1	0	0.5	6	1	7	6.8	501
<b>5-Year Totals</b>	<b>68</b>	<b>54</b>	<b>61.0</b>	<b>11</b>	<b>20.7</b>	<b>1</b>	<b>2.5</b>	<b>17</b>	<b>19</b>	<b>36</b>	<b>32.3</b>	
<b>10-Year Totals</b>	<b>110</b>	<b>92</b>	<b>97.2</b>	<b>32</b>	<b>39.3</b>	<b>2</b>	<b>4.5</b>	<b>37</b>	<b>54</b>	<b>91</b>	<b>64.0</b>	

*A = Actual*

*E = Expected*

*# Includes data corrections.*

*@ One-half year ended December 31.*

*\* Originally death-in-service, later changed to disability.*

**ACTIVE POLICE MEMBERS – DECEMBER 31, 2013**  
**BY ATTAINED AGE AND YEARS OF SERVICE**

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
20-24	4							4	\$ 164,256
25-29	7	2						9	485,681
30-34	4	11	5					20	1,250,057
35-39	2	10	30	17				59	3,864,812
40-44		1	12	58	11			82	5,617,670
45-49			10	37	25	2		74	5,092,134
50-54				8	11	12		31	2,178,638
55-59				1	1	5	3	10	766,573
60							1	1	74,410
<b>Totals</b>	<b>17</b>	<b>24</b>	<b>57</b>	<b>121</b>	<b>48</b>	<b>19</b>	<b>4</b>	<b>290</b>	<b>\$ 19,494,231</b>

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

	Average Age	Average Service	Average Pay	Number
Non-vested	31.7 years	4.7 years	\$58,665	41
Vested	44.3 years	18.3 years	68,630	249
Totals	42.5 years	16.4 years	67,221	290

**ACTIVE FIRE MEMBERS - DECEMBER 31, 2013**  
**BY ATTAINED AGE AND YEARS OF SERVICE**

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Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
20-24	4							4	\$ 210,026
25-29	11							11	584,408
30-34	14	2	4					20	1,163,012
35-39	6	3	11					20	1,228,604
40-44	2		13	19	1			35	2,191,399
45-49		1	5	21	19	5		51	3,373,114
50-54			1	8	13	23	1	46	3,232,927
55-59		1		4	8	10		23	1,571,959
62				1				1	60,850
<b>Totals*</b>	<b>37</b>	<b>7</b>	<b>34</b>	<b>53</b>	<b>41</b>	<b>38</b>	<b>1</b>	<b>211</b>	<b>\$ 13,616,299</b>

\* Totals may not add due to rounding.

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

	<u>Average Age</u>	<u>Average Service</u>	<u>Average Pay</u>	<u>Number</u>
Non-vested	32.3 years	4.1 years	\$55,638	44
Vested	47.7 years	19.8 years	66,876	167
Totals	44.5 years	16.5 years	64,532	<u>211</u>

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## **SECTION C**

### **SUMMARY OF VALUATION METHODS AND ASSUMPTIONS**

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## VALUATION METHODS

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Normal cost and the allocation of benefit values between service rendered before and after the valuation date was determined using the individual entry-age actuarial cost method having the following characteristics:

- (i) The annual normal costs for each individual active member, payable from the date of employment to the date of retirement, are sufficient to accumulate the value of the portion of the member's benefit at the time of retirement;
- (ii) each annual normal cost is a constant percentage of the member's year-by-year projected covered pay.

***Financing of Unfunded Actuarial Accrued Liabilities.*** Unfunded actuarial accrued liabilities were amortized by level (principal & interest combined) percent-of-payroll contributions over a period of 30 years.

***Valuation Asset Method.*** Valuation Assets were determined using a method which phases-in each year's differences between actual and assumed investment return over a closed five-year period.

## **ACTUARIAL ASSUMPTIONS USED FOR THE VALUATION ADOPTED BY THE BOARD OF TRUSTEES**

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The actuary calculates contribution requirements and actuarial present values of the System by applying assumptions to the benefit provisions and census data information furnished, using the valuation methods described on the previous page.

The principal areas of financial risk which require assumptions about future experiences are:

- (i) Long-term rates of investment return to be generated by the assets of the System,
- (ii) patterns of pay increases to members,
- (iii) rates of mortality among members, retirants and beneficiaries,
- (iv) rates of withdrawal of active members,
- (v) rates of disability among members, and
- (vi) the age patterns of actual retirement.

In a valuation, the actuary calculates the monetary effect of each assumption for as long as a present covered person survives - - - a period of time which can be as long as a century.

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Actual experience will not coincide exactly with assumed experience, regardless of the wisdom of the assumptions, or the skill of the actuary and the precision of the many calculations made. Each valuation provides a complete recalculation of assumed future experience and takes into account all past differences between assumed and actual experience. The result is a continual series of adjustments (usually small) to the computed contribution rate.

From time to time it becomes appropriate to modify one or more of the assumptions, to reflect experience trends (but not random year-to-year fluctuations).

*The rates of salary increase* used for individual members are in accordance with the following table. This assumption is used to project a member's current salary to the salaries upon which benefit amounts will be based.

Service at Beginning of Year	Salary Increase Assumptions For an Individual Member		
	Merit & Seniority	Base (Economic)	Increase Next Year
1	17.0%	3.5%	20.5%
2	7.0	3.5%	10.5
3	6.0	3.5%	9.5
4	5.0	3.5%	8.5
5	4.0	3.5%	7.5
6 and over	1.0	3.5%	4.5

These rates were first used for the December 31, 2010 valuation.

If the number of active members remains constant, then the total active member payroll will increase 3.5% annually, the base portion of the individual salary increase assumptions. This increasing payroll was recognized in amortizing unfunded actuarial accrued liabilities.

*The rate of investment return* was 7.50% a year compounded yearly (net after expenses and before adjustment for the 13<sup>th</sup> check program). This assumption is used to make money payable at one point in time equal in value to a different amount of money payable at another point in time. This assumption was first used for the December 31, 2010 valuation.

The assumed real return for funding purposes is the rate of return in excess of average salary increases.



*The mortality table* was the 1983 Group Annuity Mortality Table set back three years for males and two years for females. Related values are shown below.

Sample Ages	Value at Retirement of \$1 Monthly for Life		Future Life Expectancy (Years)	
	Men	Women	Men	Women
50	\$142.39	\$149.52	31.90	36.81
55	135.01	143.78	27.42	32.10
60	125.92	136.25	23.13	27.48
65	114.57	126.63	19.02	23.02
70	101.23	114.62	15.23	18.76
75	87.08	100.30	11.92	14.81
80	72.40	85.10	9.08	11.40

This assumption is used to measure the probabilities of members dying before retirement and the probabilities of each benefit payment being made after retirement. This assumption was first used for the December 31, 2005 valuation.

Based on observation from the most recent experience study, it appears that the current table provides a margin of 11% for future mortality improvements for males. There were insufficient numbers of female retired members to lend credibility to any comments regarding a margin for future mortality improvements.

*The rates of retirement* used to measure the probability of eligible members retiring during the next year were as follows:

Retirement		Retirement	
Ages	Percent	Ages	Percent
50	25%	60	50%
51	25%	61	60%
52	25%	62	70%
53	25%	63	80%
54	25%	64	90%
55	25%	65	100%
56	25%	66	100%
57	25%	67	100%
58	25%	68	100%
59	25%	69	100%
		70	100%

A Police member is eligible for retirement after both attaining age 50 and completing 10 or more years of service. Fire members are eligible after attaining age 55 with 10 or more years of service or at the age their service reaches the service credit limit.

**Rates of separation from active membership** were as follows:

(Rates do not apply to members eligible to retire and do not include separation on account of death or disability.) This assumption measures the probabilities of members remaining in employment. These rates were first used for the December 31, 2010 valuation.

Sample Ages	% of Active Members Separating Within Next Year	
	Police	Fire
25	4.60%	2.76%
30	3.80	2.28
35	2.60	1.56
40	1.80	1.08
45	1.40	0.84
50	1.20	0.72
55	1.20	0.72
60	1.20	0.72

**The rates of disability** were as follows:

Sample Ages	% of Active Members Becoming Disabled Within Next Year	
	Police	Fire
20	0.08%	0.16%
25	0.08	0.16
30	0.08	0.16
35	0.18	0.36
40	0.39	0.78
45	0.70	1.40
50	1.12	2.24
55	1.67	3.34

		Duty Related	Non-Duty Related
Cause of Disability:	Male	90%	10%
	Female	90%	10%

**SUMMARY OF ASSUMPTIONS USED**  
**DECEMBER 31, 2013**  
**MISCELLANEOUS AND TECHNICAL ASSUMPTIONS**

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**Marriage Assumption.** 90% of males and 90% of females are assumed to be married for purposes of death-in-service benefits.

**Pay Increase Timing.** Beginning of (Fiscal) year. Reported pays represent amounts paid to members during the year ended on the valuation date.

**Decrement Timing.** Decrements of all types are assumed to occur mid-year.

**Eligibility Testing.** Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.

**Benefit Service.** Exact fractional service is used to determine the amount of benefit payable.

**Decrement Relativity.** Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.

**Liability Adjustments.** Retirement present values were increased by 11.8% and 8.4% for police and fire, respectively, to account for the FAS Adjustment Factor.

**13<sup>th</sup> Check.** The investment return assumption is reduced by 0.25% for members eligible to participate in the 13<sup>th</sup> Check program.

**Normal Form of Benefit.** The assumed normal form of benefit is the straight life form.

**Incidence of Contributions.** Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made. New entrant normal cost contributions are applied to the funding of new entrant benefits.

**New Benefit Multiplier.** Benefits for new hires will be modeled using the 2.0% benefit multiplier for all future years of service until such time that they elect another benefit multiplier.

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## **SECTION D**

### **BASIC FINANCIAL OBJECTIVE AND OPERATION OF THE RETIREMENT SYSTEM**

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## BASIC FINANCIAL OBJECTIVE AND OPERATION OF THE RETIREMENT SYSTEM

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***Benefit Promises Made Which Must Be Paid For.*** A retirement system is an orderly means of handing out, keeping track of, and financing contingent pension promises to a group of employees. As members of the Retirement System acquire a unit of service credit they are, in effect, handed an “IOU” which reads: “The Retirement System promises to pay you one unit of retirement benefits; payments in cash commencing when you retire.”

The principal related financial question is: When shall the money required to cover the “IOU” be contributed? This year, when the benefit of the member’s service is received? Or, some future year when the “IOU” becomes a cash demand?

The constitution of the State of Michigan is directed to the question:

“Financial benefits arising on account of service rendered in each fiscal year shall be funded during that year and such funding shall not be used for financing unfunded accrued liabilities.”

This Retirement System meets this constitutional requirement by having the following ***Financial Objective: To establish and receive contributions, expressed as percents of active member payroll, which will remain approximately level*** from year-to-year and will not have to be increased for future generations of taxpayers.

Translated into actuarial terminology, a level percent-of-payroll contribution objective means that the contribution rate must be at least:

***Normal Cost*** (the current value of benefits likely to be paid on account of service being rendered in the current year)

. . . plus . . .

***Interest on the Unfunded Actuarial Accrued Liability*** (the difference between the actuarial accrued liability and current system assets).

If contributions to the Retirement System are less than the preceding amount, the difference, *plus investment earnings not realized thereon*, will have to be contributed at some later time, or, benefits will have to be reduced, to satisfy the fundamental fiscal equation under which all retirement programs must operate; that is:

$$\mathbf{B = C + I - E}$$

**Benefit** payments to any group of members and their beneficiaries cannot exceed the sum of:

**Contributions** received on behalf of the group from members and the City

. . . plus . . .

**Investment** earnings on plan assets

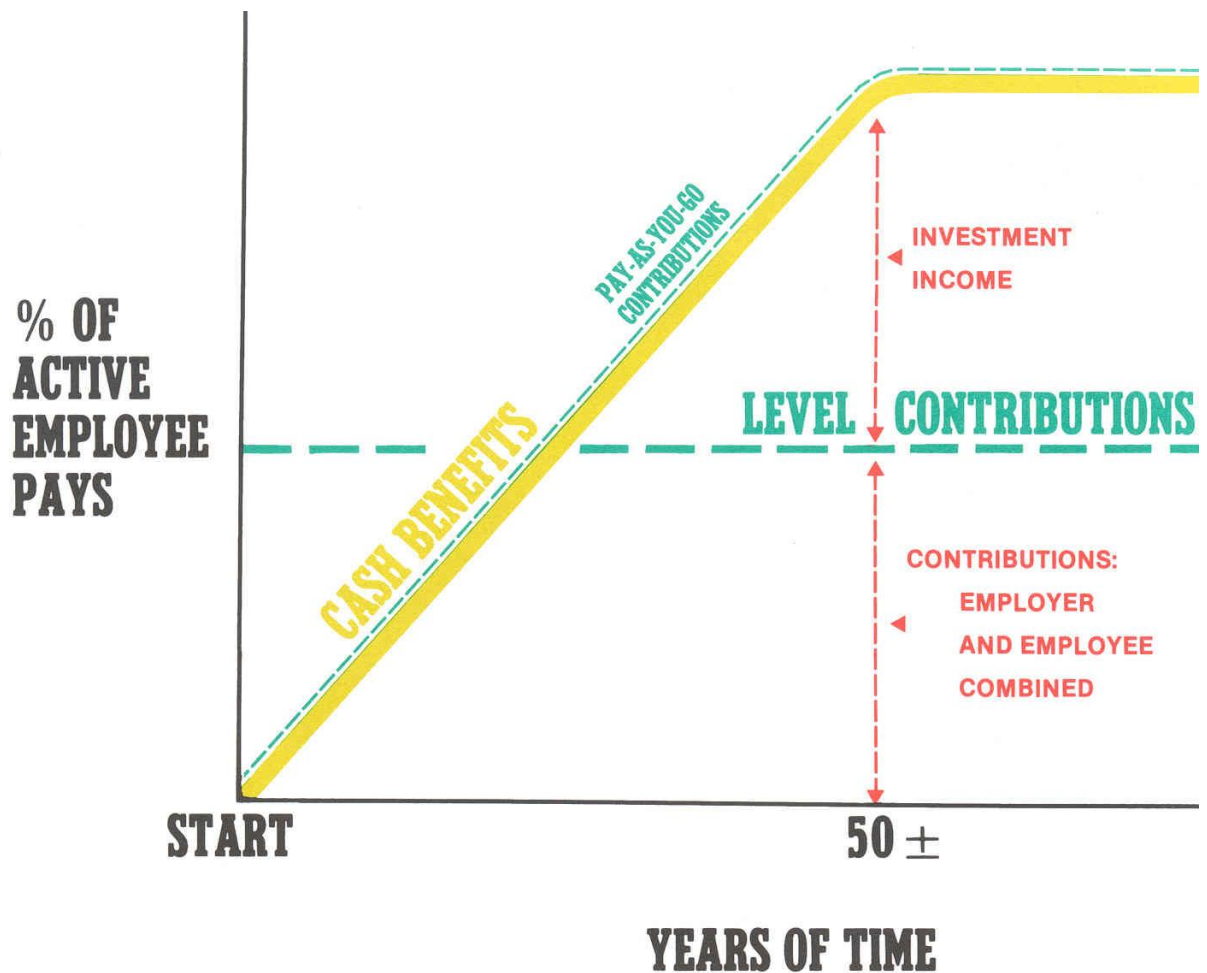
. . . minus . . .

**Expenses** incurred in operating the program.

There are retirement programs designed to defer the bulk of contributions far into the future. Lured by artificially low present contributions, the inevitable consequence is a relentlessly increasing contribution rate -- to a level greatly in excess of the level percent of payroll rate. *This method of financing is prohibited in Michigan by the state constitution.*

A by-product of the level percent-of-payroll contribution objective is the accumulation of invested assets. Invested assets are a by-product of level percent-of-payroll contributions, not the objective. Investment income becomes a major contributor to the Retirement System, and the amount is directly related to the amount of contributions and investment performance.

*Computed Contribution Rate Needed To Finance Benefits.* From a given schedule of benefits and from the data furnished him, the actuary calculates the contribution rate *by means of an actuarial valuation* - the technique of assigning monetary values to the risks assumed in operating a retirement program.



**CASH BENEFITS LINE.** This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).

**LEVEL CONTRIBUTION LINE.** Determining the level contribution line requires detailed assumptions concerning a variety of experiences in future decades, including:

**Economic Risk Areas**

- Rates of investment return
- Rates of pay increase
- Changes in active member group size

**Non-Economic Risk Areas**

- Ages at actual retirement
- Rates of mortality
- Rates of withdrawal of active members (turnover)
- Rates of disability

## GLOSSARY

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***Actuarial Accrued Liability.*** The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as “accrued liability” or “past service liability.”

***Accrued Service.*** The service credited under the plan which was rendered before the date of the actuarial valuation.

***Actuarial Assumptions.*** Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turn-over and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

***Actuarial Cost Method.*** A mathematical budgeting procedure for allocating the dollar amount of the “actuarial present value of future plan benefits” between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the “actuarial funding method”.

***Actuarial Equivalent.*** A single amount or series of amounts of equal value to another single amount or series of amounts, computed on the basis of the rate(s) of interest and mortality tables used by the plan.

***Actuarial Present Value.*** The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

***Amortization.*** Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.



## GLOSSARY

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***Experience Gain (Loss).*** A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

***Normal Cost.*** The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as “current service cost.” Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

***Plan Termination Liability.*** The actuarial present value of future plan benefits based on the assumption that there will be no further accruals for the future service and salary. The termination liability will generally be less than the liabilities computed on a “going-concern” basis and is not normally determined in a routine actuarial valuation.

***Reserve Account.*** An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.

***Unfunded Actuarial Accrued Liability.*** The difference between the actuarial accrued liability and Valuation Assets. Sometimes referred to as “unfunded accrued liability.”

***Valuation Assets.*** The value of current plan assets recognized for valuation purposes. Generally based on a phase-in of differences between actual and assumed market rates of return.

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## **SECTION E**

### **ACTUARIAL AND SUPPLEMENTAL INFORMATION REQUIRED BY STATEMENTS NO. 25 AND NO. 27 OF THE GOVERNMENTAL ACCOUNTING STANDARDS BOARD**

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**This information is presented in draft form for review by the System's auditor. Please let us know if there are any items that the auditor changes so that we may maintain consistency with the System's financial statements.**

**GASB STATEMENTS NO. 25 AND NO. 27  
REQUIRED ACTUARIAL INFORMATION  
SCHEDULE OF FUNDING PROGRESS**

<b>Actuarial Valuation Date</b>	<b>Actuarial Value of Assets (a)</b>	<b>Entry Age Actuarial Liability (b)</b>	<b>Unfunded Accrued Liability (UAL) (b)-(a)</b>	<b>Funded Ratio (a)/(b)</b>	<b>Annual Covered Payroll (c)</b>	<b>UAL as a Percentage of Covered Payroll [(b)-(a)]/(c)</b>
6/30/1994	\$193,060,013	\$169,840,090	\$(23,219,923)	114%	\$22,236,842	0%
6/30/1995 #	201,964,374	180,559,832	(21,404,542)	112%	22,497,795	0%
6/30/1996	229,739,010	194,326,855	(35,412,155)	118%	24,965,697	0%
6/30/1997	255,391,009	208,649,541	(46,741,468)	122%	25,764,970	0%
6/30/1998	283,573,424	219,216,206	(64,357,218)	129%	26,644,030	0%
6/30/1999	302,315,206	226,814,077	(75,501,129)	133%	28,026,397	0%
6/30/2000	310,502,184	238,351,701	(72,150,483)	130%	29,875,819	0%
6/30/2001 #*	305,328,814	249,233,407	(56,095,407)	123%	31,772,454	0%
6/30/2002 #	287,125,896	265,750,488	(21,375,408)	108%	32,508,791	0%
12/31/2003 #@	301,845,219	276,065,502	(25,779,717)	109%	33,101,130	0%
12/31/2004	315,021,806	285,041,937	(29,979,869)	111%	32,543,780	0%
12/31/2005 *	325,044,112	284,262,073	(40,782,039)	114%	33,407,682	0%
12/31/2006	350,154,501	292,906,422	(57,248,079)	120%	33,887,922	0%
12/31/2007	365,116,538	300,989,725	(64,126,813)	121%	32,857,305	0%
12/31/2008 #	346,472,441	310,236,119	(36,236,322)	112%	33,004,358	0%
12/31/2009 #	334,247,051	348,250,068	14,003,017	96%	33,490,487	42%
12/31/2010 *	328,609,947	360,573,351	31,963,404	91%	34,665,767	92%
12/31/2011	321,207,218	365,300,394	44,093,176	88%	34,566,692	128%
12/31/2012	321,323,888	375,797,800	54,473,912	86%	33,970,131	160%
12/31/2013	354,769,666	385,860,392	31,090,726	92%	33,110,530	94%

\* Revised actuarial assumptions.

# Retirement System amended.

@ One-half year ended December 31.

**GASB STATEMENTS NO. 25 AND NO. 27  
REQUIRED ACTUARIAL INFORMATION  
SCHEDULE OF EMPLOYER CONTRIBUTIONS**

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Year Ended	Annual Required Contribution *
6/30/1992	\$1,981,125
6/30/1993	544,188
6/30/1994	0
6/30/1995	0
6/30/1996	0
6/30/1997	0
6/30/1998	0
6/30/1999	0
6/30/2000	0
6/30/2001	0
6/30/2002	0
12/31/2003 @	525,966
12/31/2004	727,754
12/31/2005	192,259
12/31/2006	0
12/31/2007	0
12/31/2008	0
12/31/2009	0
12/31/2010	3,709,786
12/31/2011	7,851,051
12/31/2012	8,194,227
12/31/2013	7,531,566

@ One-half year ended December 31.

\* Since it was reported to the actuary that the City's practice is to contribute the percent-of-payroll employer contribution rate shown in the actuarial valuation report, the annual required contributions shown in the Schedule of Employer Contributions are the actual contributions made by the City in the fiscal year.

**GASB STATEMENTS NO. 25 AND NO. 27**  
**REQUIRED SUPPLEMENTARY INFORMATION**

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The information presented in the required supplementary schedules was determined as part of the actuarial valuations at the dates indicated. Additional information as of the latest valuation date follows:

Valuation date:	December 31, 2013
Actuarial cost method:	Individual entry age
Amortization method:	Level percent closed
Remaining amortization period:	25 years per City Commission
Asset valuation method:	5-year smoothed market
Actuarial assumptions:	
Investment rate of return	7.36% (7.50% for groups receiving annual postretirement increases, 7.25% for groups participating in the 13th check program).
Projected salary increases including inflation at	20.5% - 3.5% 3.50%
Cost-of-living adjustments:	Ad hoc "13th check" tied to plan investments for benefit recipients who do not have an automatic benefit increase. 1.5% simple escalator for firefighters retired on or after July 1, 2007 with commencement delayed 2 years after retirement. 1.0% simple escalator for police command officer retired on or after February 19, 2010 with commencement delayed 5 years after retirement. 1.0% simple escalator for police officers and sergeants retired on or after December 17, 2008 with commencement delayed 5 years after retirement.

Membership of the plan consisted of the following at December 31, 2013, the date of the latest actuarial valuation:

Retirees and beneficiaries receiving benefits	627*
Terminated plan members entitled to but not yet receiving benefits	29
Active plan members	<u>501</u>
Total	1,157

\* Includes alternate payees under Michigan Eligible Domestic Relations Order.

April 25, 2014

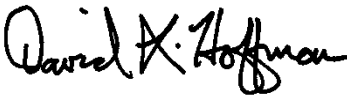
Ms. Peggy Korzen, Executive Director  
City of Grand Rapids Police and Fire  
Retirement System  
233 East Fulton, Suite 216  
Grand Rapids, Michigan 49503

Dear Peggy:

Enclosed are 25 copies of the December 31, 2013 Actuarial Valuation for the City of Grand Rapids Police and Fire Retirement System.

As always, your questions and comments are welcome.

Sincerely,



David L. Hoffman

DLH:sc  
Enclosures

cc: BDD USA, LLP (+1 report copy)  
Attention: Ms. Pam Slaugh

BDD USA, LLP

Attention: Ms. Pam Slauch  
200 Ohawa Avenue NW, Suite 300  
Grand Rapids, MI 49503