

**THE POLICE AND FIRE RETIREMENT SYSTEM OF THE
CITY OF DETROIT**

**69TH ANNUAL ACTUARIAL VALUATION
JUNE 30, 2010**

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June 30, 2011

Board of Trustees
The Police and Fire Retirement System of the City of Detroit

The results of the **69th Annual Actuarial Valuation** of the annuity and pension liabilities of the Police and Fire Retirement System of the City of Detroit are presented in this report. The purpose of the valuation was to measure the System's funding progress and to determine an appropriate contribution level for the next fiscal year. The purpose of the valuations was to measure the system's funding progress, to determine contribution rates for the 2012 fiscal year in accordance with the established funding policy, and to determine actuarial information for Governmental Accounting Standards Board (GASB) Statements No. 25 and No. 27. The results of the valuation may not be applicable for other purposes.

The date of the valuation was **June 30, 2010**.

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 assumptions used in the valuation are summarized in the Appendix. Benefit provisions are summarized on pages 13-15. The statistical data concerning the active, inactive and retired persons covered by the System was furnished by the retirement system staff, together with needed financial information. Data was checked for year-to-year consistency, but was not otherwise audited by the actuary.

Your attention is directed particularly to the employer contribution rates on page 2 and the comments on page 12.

This report has been prepared by actuaries who have substantial experience valuing public sector retirement systems. To the best of our knowledge, this report is complete and accurate and was made in accordance with standards of practice promulgated by the Actuarial Standards Board of the American Academy of Actuaries. The actuarial assumptions used for the valuation produce results which, individually and in the aggregate, are reasonable.

Board of Trustees
June 30, 2011
Page 2

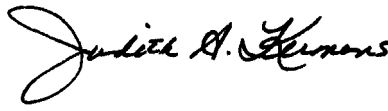
The signing actuaries are Members of the American Academy of Actuaries (where designated by “MAAA”), and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

The intended audience is the Board of Trustees for the Police and Fire Retirement System of the City of Detroit and their staff. If supplied to other parties, the report should be supplied in its entirety. The authors of this report are available to answer questions from the Board and Staff as needed.

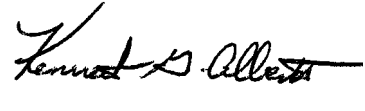
Respectfully submitted,



Norman L. Jones, FSA, MAAA



Judith A. Kermans, EA, MAAA



Kenneth G. Alberts

NLJ:mrh

VALUATION RESULTS

**EMPLOYER CONTRIBUTION RATES
COMPUTED PAYABLE LAST DAY OF FISCAL YEAR
EXPRESSED AS PERCENTS OF ACTIVE MEMBER PAYROLL
2011-2012 FISCAL YEAR**

Contributions for	Contributions Expressed as Percents of Payroll for the Fiscal Year Ending June 30,	
	2012	2011
Normal Cost		
Age & service allowances	23.34 %	25.20 %
Disability allowances	3.92 %	4.16 %
Death-in-service allowances	0.43 %	0.47 %
Total	27.69 %	29.83 %
Members current contributions #	3.53 %	3.63 %
(Future refunds)	(0.38)%	(0.37)%
Available for monthly benefits	3.15 %	3.26 %
Employer Normal Cost	24.54 %	26.57 %
Actuarial Accrued Liabilities		
Total (\$ millions)	\$3,987.5	\$4,221.3
Funding Value of Assets	3,853.3	3,945.2
Unfunded Actuarial Accrued Liabilities		
- dollar (millions)	134.2	276.1
- amortization percent +	3.27 %	7.40 %
Computed Employer Rate ##	27.81 %	33.97 %
Computed Employer Rate with Interest Adjustment *	28.90 %	35.22 %

Member statutory contributions of 5% to the Annuity Savings Fund are not payable during all periods of covered employment. The rate shown is the equivalent rate if paid during all covered employment.

Accrued employer contributions were assumed to be charged with interest at 8.0% from the date accrued to the actual date paid.

+ Based on the Board of Trustees funding policy to continue full normal cost contributions when valuation assets exceed accrued liabilities and the use of an open 30-year amortization period when accrued liabilities exceed assets.

* Computed Employer Rate if paid at end of year.

ACTUARIAL ACCRUED LIABILITIES AS OF JUNE 30, 2010

Present Value, June 30	Amount
Accrued Pension Liabilities	
Retirees and beneficiaries	\$2,795,594,240
Inactive members future deferred pensions	16,684,319
Active members	850,180,692
Total accrued pension liabilities	3,662,459,251
Pension fund balances	3,528,214,428
Unfunded accrued pension liabilities	\$ 134,244,823
Accrued Annuity Liabilities	
Retirees and beneficiaries	
Future annuities	\$ 4,978,953
Reserve for outstanding refunds & contingencies	22,330,105 *
Total	\$ 27,309,058
Members annuities & future refunds	297,755,895
Total accrued annuity liabilities	325,064,953
Annuity fund balances	325,064,953
Unfunded accrued annuity liabilities	\$ 0
System Totals	
Actuarial accrued liabilities	\$3,987,524,204
Accrued assets	3,853,279,381
Unfunded actuarial accrued liabilities	\$ 134,244,823

* See comment on page 12.

VALUATION RESULTS - COMPARATIVE STATEMENT
-- \$ IN MILLIONS --

June 30	Active Payroll		Actuarial Accrued Liabilities			Unfunded / Active Pays	Employer Contributions % of Pays
	Total	Average	Computed Total	Valuation Assets	Unfunded		
1984(a)	\$ 148.2	\$28,455	\$1,887.2	\$1,090.2	\$ 797.0	5.4	58.16%
1985(a)	171.4	30,302	2,076.4	1,208.3	868.1	5.1	54.66%
1986	185.3	29,220	2,171.5	1,378.5	793.0	4.3	50.21%
1987	202.3	30,906	2,238.2	1,557.0	681.2	3.4	44.69%
1988	206.1	33,120	2,386.0	1,705.4	680.6	3.3	45.71%
1989(a)	208.4	33,179	2,327.9	1,848.9	479.0	2.3	36.52%
1990*	221.5	36,874	2,453.6	2,037.4	416.2	1.9	35.98%
1991	213.1	39,182	2,517.2	2,085.5	431.7	2.0	36.19%
1992(a)*	205.7	39,095	2,345.9	2,163.8	182.1	0.9	27.83%
1993(a)	204.3	38,846	2,493.2	2,256.0	237.2	1.2	28.97%
1994	199.7	38,693	2,486.2	2,304.4	181.8	0.9	27.64%
1995(a)	209.7	39,692	2,574.2	2,443.0	131.2	0.6	25.90%
1996	212.7	39,965	2,633.4	2,628.6	4.8	0.0	21.81%
1997(b)	217.6	40,145	2,724.1	2,944.2	(220.1)	-	7.32%
1998*#	217.5	40,772	2,976.8	3,325.9	(349.1)	-	26.16%
1999#@	216.0	40,542	3,274.1	3,668.4	(394.3)	-	26.17%
2000*#	237.7	43,376	3,342.1	3,964.2	(622.1)	-	27.25%
2001#	253.3	45,353	3,463.2	3,900.0	(436.8)	-	27.22%
2002(a)#	248.7	46,203	3,632.0	3,635.1	(3.1)	-	23.39%
2003	248.7	47,305	3,721.6	3,205.5	516.1	2.1	43.89%
2004	258.7	51,126	3,857.5	3,074.5	783.0	3.0	54.36%
2005	250.5	52,197	3,780.4	3,757.9	22.5	0.1	25.98%
2006+&	228.1	52,908	3,809.0	3,980.3	(171.3)	-	25.09%
2007+	230.2	54,647	3,870.7	4,307.2	(436.5)	-	25.16%
2007+*	230.2	54,647	3,896.8	4,307.2	(410.4)	-	26.71%
2008+	232.8	57,090	3,992.4	4,316.3	(323.9)	-	26.75%
2008+(a)	232.8	57,090	4,071.1	4,316.3	(245.2)	-	26.27%
2009	231.8	57,418	4,221.3	3,945.2	276.1	1.2	35.22%
2010	228.8	57,322	4,180.1	3,412.8	767.3	3.4	49.75%
2010(a)	228.8	57,322	3,987.5	3,853.3	134.2	0.6	28.90%

(a) After changes in actuarial assumptions and/or methods.

(b) After changes in actuarial assumptions and a temporary full funding credit.

* After Plan Amendments.

Employer normal cost before full funding credit.

@ After \$55.4 million reserve for 1998-99 13th check and ASF distributions.

+ Based on the Board of Trustees funding policy to continue full normal cost contributions when valuation assets exceed accrued liabilities.

& 2006 assets were revised following the 6/30/2006 valuation.

SOLVENCY TESTS

The Police and Fire Retirement System of the City of Detroit funding objective is to meet long-term benefit promises through contributions that remain approximately level from year to year as a percent of member payroll. If the contributions to the System are level in concept and soundly executed, the System will pay all promised benefits when due -- the ultimate test of financial soundness. Testing for level contribution rates is *the long-term solvency test*.

A *short-term solvency test* is one means of checking a system's progress under its funding program. In a short-term solvency test, the plan's present assets (cash and investments) are compared with:

- 1) Active member contributions on deposit;
- 2) The liabilities for future benefits to present retired lives;
- 3) The liabilities for service already rendered by active members.

In a system that has been following the discipline of level percent-of-payroll financing, the liabilities for active member contributions on deposit (liability 1) and the liabilities for future benefits to present retired lives (liability 2) will be fully covered by present assets (except in rare circumstances). In addition, the liabilities for service already rendered by active members (liability 3) will often be partially covered by the remainder of present assets. The larger the funded portion of liability 3, the stronger the condition of the System.

Short-Term Solvency Test *5 Year Comparative Statement* (\$ millions)

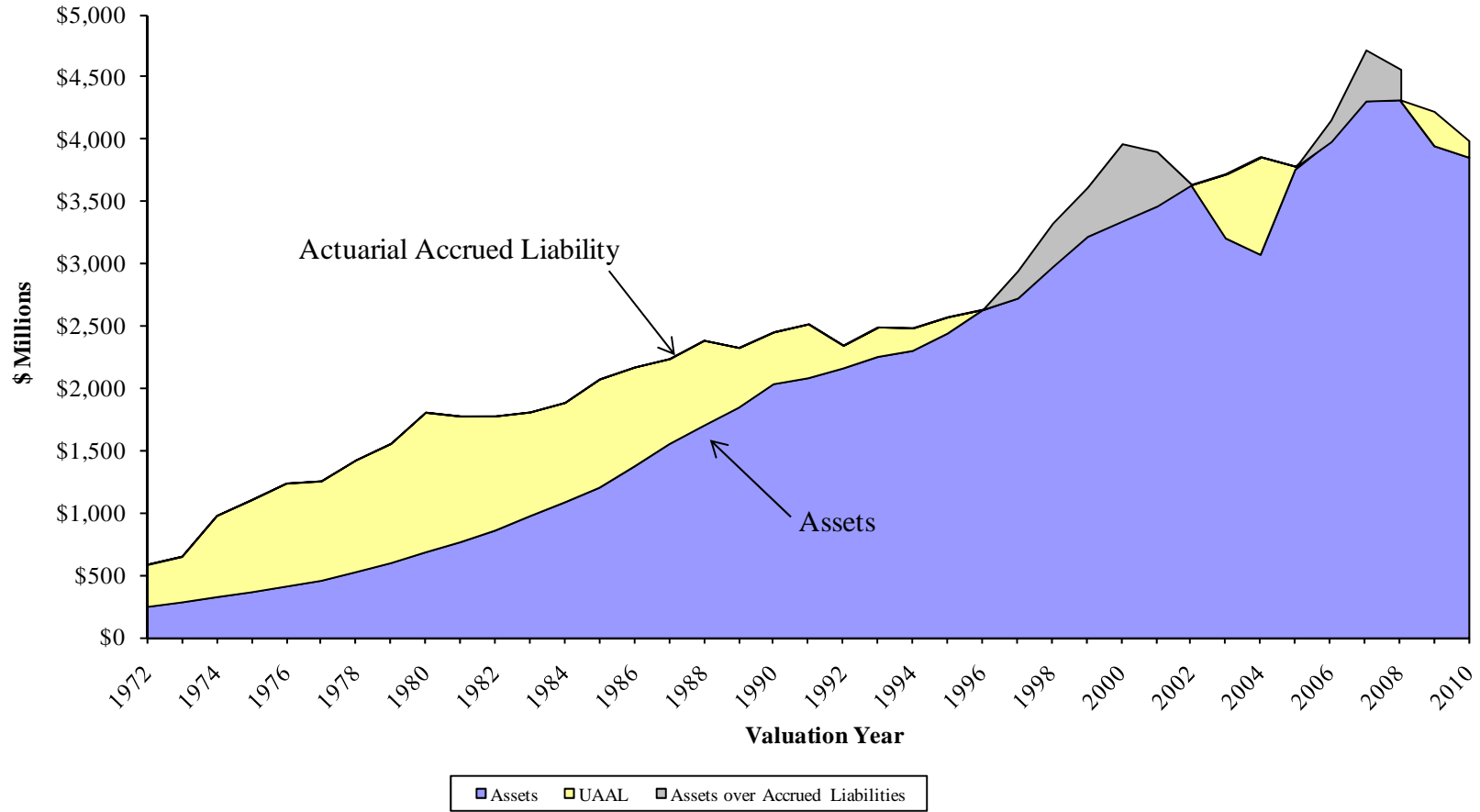
June 30	Actuarial Accrued Liabilities			Assets	Portion of Accrued Liabilities Covered by Assets			
	(1) Active Member Contr.	(2) Retirees and Benef.	(3) Present Members (Employer Financed Portion)		(1)	(2)	(3)	Total
	----- \$ Millions -----							
2006&	270	2,655	884	3,980	100%	100%	120%	105%
2007(a)	261	2,689	947	4,307	100%	100%	143%	111%
2008(a)	268	2,793	1,010	4,316	100%	100%	124%	106%
2009	301	2,837	1,083	3,945	100%	100%	75%	93%
2010#	298	2,823	866	3,853	100%	100%	85%	97%

(a) After changes in benefit provisions.

& 2006 assets were revised following the 6/30/2006 valuation.

After changes in actuarial assumptions and/or methods.

ASSETS AND ACCRUED LIABILITIES



**DERIVATION OF EXPERIENCE GAIN (LOSS)
YEAR ENDED JUNE 30, 2010**

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

(1) UAAL* at start of year	\$ 276,085,592
(2) Employer normal cost from last valuation	61,588,072
(3) Actual employer contributions	32,808,485
(4) Interest accrual: (1) x .075	20,706,419
(5) Expected UAAL before changes: (1) + (2) - (3) + (4)	325,571,598
(6) Change due to benefit provision modifications	0
(7) Change due to revised actuarial methods and/or assumptions	(192,614,483)
(8) Asset Method Change	(440,430,673)
(9) Expected UAAL after changes: (5) + (6) + (7) + (8)	(307,473,558)
(10) Actual UAAL at end of year	134,244,823
(11) Experience gain (loss): (9) - (10)	(441,718,381)
(12) Experience gain (loss) as a % of beginning of year accrued liability	(10.5)%
(13) Experience gain (loss)	(441,718,381)
(14) Gain (loss) due to investment experience	(579,652,364)
(15) Gain (loss) from other sources	137,933,983

* *Unfunded actuarial accrued liability.*

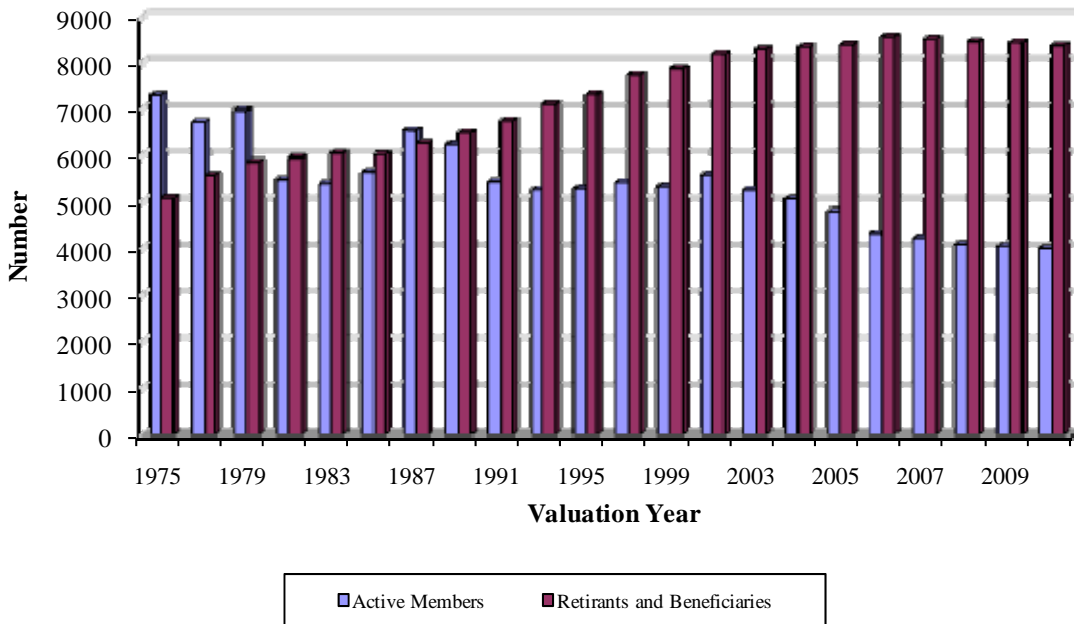
**COMPARATIVE STATEMENT OF ACTIVE MEMBERS
AND VALUATION PAYROLL**

June 30	No. Members		Total Members					
	1969 Plan	Pre- 1969	No.	% Change	Ratio of Active to Retired	Annual Payroll	Average Pay	
							\$	Change
1976	2,900	3,610	6,510	(11)%	1.2	\$128,594,291	\$19,753	18.5 %
1977	3,463	3,265	6,728	3 %	1.2	134,639,135	20,012	1.3 %
1978	4,432	2,911	7,343	9 %	1.3	164,975,236	22,467	12.3 %
1979	4,230	2,739	6,969	(5)%	1.2	175,174,674	25,136	11.9 %
1980	3,719	2,640	6,359	(9)%	1.1	178,004,349	27,993	11.4 %
1981	2,991	2,491	5,482	(14)%	0.9	155,849,804	28,429	1.6 %
1982	3,185	2,299	5,484	0 %	0.9	155,372,732	28,332	(0.3)%
1983	3,176	2,214	5,390	(2)%	0.9	153,347,716	28,450	0.4 %
1984	3,070	2,139	5,209	(3)%	0.9	148,223,416	28,455	0.0 %
1985	3,657	1,998	5,655	9 %	0.9	171,357,741	30,302	6.5 %
1986	4,463	1,879	6,342	12 %	1.0	185,312,563	29,220	(3.6)%
1987	4,918	1,627	6,545	3 %	1.0	202,277,028	30,906	5.8 %
1988	4,776	1,447	6,223	(5)%	1.0	206,107,980	33,120	7.2 %
1989	4,942	1,338	6,280	1 %	1.0	208,361,567	33,179	0.2 %
1990	4,834	1,174	6,008	(4)%	0.9	221,538,387	36,874	11.1 %
1991	4,372	1,066	5,438	(9)%	0.8	213,072,553	39,182	6.3 %
1992	4,411	850	5,261	(3)%	0.8	205,681,412	39,095	(0.2)%
1993	4,534	725	5,259	0 %	0.7	204,289,195	38,846	(0.6)%
1994	4,578	584	5,162	(2)%	0.7	199,734,550	38,693	(0.4)%
1995	4,779	505	5,284	2 %	0.7	209,733,734	39,692	2.6 %
1996	4,889	432	5,321	1 %	0.7	212,656,401	39,965	0.7 %
1997	5,049	371	5,420	2 %	0.7	217,585,229	40,145	0.5 %
1998	5,018	316	5,334	(2)%	0.7	217,479,443	40,772	1.6 %
1999	5,099	230	5,329	0 %	0.7	216,049,687	40,542	(0.6)%
2000	5,291	190	5,481	3 %	0.7	237,741,560	43,376	7.0 %
2001	5,453	132	5,585	2 %	0.7	253,297,027	45,353	4.6 %
2002	5,290	92	5,382	(4)%	0.7	248,663,133	46,203	1.9 %
2003	5,181	76	5,257	(2)%	0.6	248,681,461	47,305	2.4 %
2004	5,007	53	5,060	(4)%	0.6	258,699,581	51,126	8.1 %
2005	4,768	31	4,799	(5)%	0.6	250,491,872	52,197	2.1 %
2006	4,298	14	4,312	(10)%	0.5	228,140,160	52,908	1.4 %
2007	4,204	8	4,212	(2)%	0.5	230,173,964	54,647	3.3 %
2008	4,071	7	4,078	(3)%	0.5	232,812,606	57,090	4.5 %
2009	4,030	7	4,037	(1)%	0.5	231,795,528	57,418	0.6 %
2010	3,985	7	3,992	(1)%	0.5	228,829,999	57,322	(0.2)%

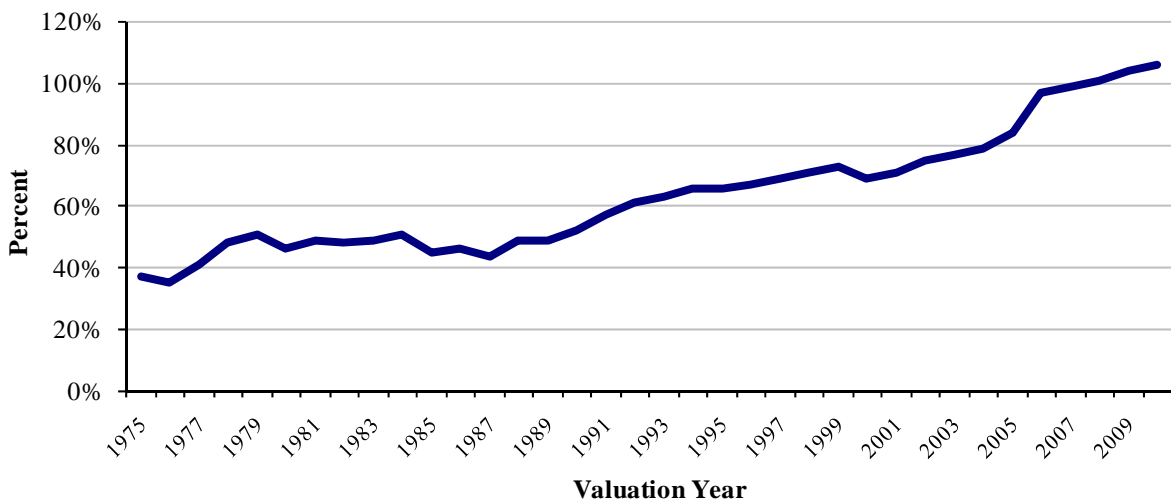
**COMPARATIVE STATEMENT OF ANNUAL RETIREMENT ALLOWANCES
BEING PAID RETIREES AND BENEFICIARIES**

June 30	No. Retired		% of Current Allowances			Current Allowances		Allowances as a % of Payroll
	Pre-69	Total	Annuities	Pensions	Escalators	Total	Average	
1976	5,325	5,325	3.5%	48.1%	48.4%	\$ 47,479,044	\$ 8,916	37%
1977	5,576	5,576	3.2%	52.0%	44.8%	51,040,761	9,154	38%
1978	5,760	5,760	2.8%	44.2%	53.0%	58,117,007	10,090	35%
1979	5,869	5,869	2.6%	51.3%	46.1%	61,355,273	10,454	35%
1980	5,676	5,911	2.1%	45.3%	52.6%	72,671,386	12,294	41%
1981	5,691	5,951	2.0%	46.7%	51.3%	74,565,233	12,530	48%
1982	5,709	6,006	2.0%	49.0%	49.0%	75,348,490	12,545	48%
1983	5,705	6,038	2.0%	50.8%	47.2%	75,774,552	12,550	49%
1984	5,641	5,986	1.9%	51.7%	46.4%	76,126,476	12,717	51%
1985	5,581	6,011	1.9%	54.0%	44.1%	70,776,660	12,773	45%
1986	5,585	6,117	1.6%	52.5%	45.9%	85,409,280	13,962	46%
1987	5,486	6,264	1.5%	53.5%	45.0%	88,608,492	14,146	44%
1988	5,442	6,416	1.3%	53.9%	44.8%	100,659,780	15,689	49%
1989	5,415	6,496	1.3%	55.7%	43.0%	103,122,696	15,875	49%
1990	5,412	6,660	1.1%	54.3%	44.6%	114,650,196	17,215	52%
1991	5,361	6,754	1.1%	54.3%	44.6%	121,715,028	18,021	57%
1992	5,342	6,899	1.0%	57.0%	42.0%	124,835,208	18,095	61%
1993	5,349	7,091	1.0%	59.5%	39.5%	129,027,970	18,196	63%
1994	5,249	7,169	0.9%	61.7%	37.4%	131,595,379	18,356	66%
1995	5,161	7,311	0.9%	61.3%	37.8%	138,959,417	19,007	66%
1996	5,049	7,469	0.8%	62.6%	36.6%	143,536,485	19,218	67%
1997	5,012	7,743	0.8%	63.3%	35.9%	150,843,744	19,481	69%
1998	4,719	7,750	0.7%	65.8%	33.5%	154,226,437	19,900	71%
1999	4,573	7,883	0.7%	68.4%	30.9%	158,523,816	20,110	73%
2000	4,498	8,079	0.6%	70.0%	29.4%	164,279,376	20,334	69%
2001	4,394	8,166	0.6%	67.4%	32.0%	180,239,652	22,072	71%
2002	4,229	8,179	0.5%	68.4%	31.1%	185,658,396	22,699	75%
2003	4,104	8,277	0.5%	69.8%	29.7%	191,634,636	23,153	77%
2004	3,961	8,328	0.4%	68.5%	31.1%	203,083,524	24,386	79%
2005	3,791	8,376	0.4%	69.5%	30.1%	211,114,020	25,205	84%
2006	3,666	8,550	0.4%	70.9%	28.7%	222,357,372	26,007	97%
2007	3,501	8,498	0.3%	70.6%	29.1%	227,671,788	26,791	99%
2008	3,318	8,442	0.3%	70.0%	29.7%	234,223,368	27,745	101%
2009	3,168	8,424	0.3%	70.1%	29.6%	240,094,968	28,501	104%
2010	3,035	8,356	0.3%	70.3%	29.4%	243,688,596	29,163	106%

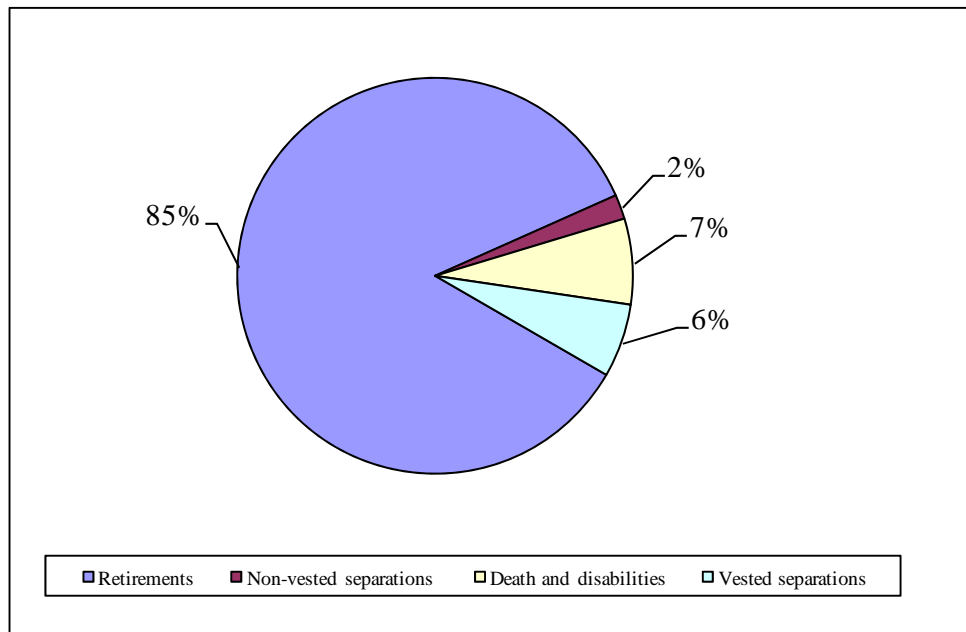
Active and Retired Members



Retirement Allowances as %s of Active Pays



EXPECTED TERMINATIONS FROM ACTIVE EMPLOYMENT FOR CURRENT ACTIVE MEMBERS



The chart above shows the expected future development of the present population in simplified terms. The retirement system presently covers 3,992 active members. Eventually, 89 members are expected to terminate covered employment prior to retirement and forfeit eligibility for an employer provided benefit. 3,627 members are expected to receive monthly retirement benefits either by retiring directly from active service, or by retiring from vested deferred status. 276 members are expected to become eligible for death-in-service or disability benefits.

COMMENTS

Experience during the Past Year

Investment experience for the year ended June 30, 2010 was close to expected with a market rate of return of 7.00%. However, the recognized rate of return on the funding value of assets was (7.2)% (after the change in the funding value of assets method) due to unrecognized investment losses from 2008 and 2009. Because of the unfavorable market returns over the last 3 years, the funding value of assets now exceeds the market value by \$835 million. Unless the market recovers within a relatively short period of time, another large increase in the employer rate can be expected next year. Please let us know if you would like GRS to model emerging contribution rate patterns under a variety of assumed market environments over the next several years.

Annuity Reserve Fund

The Annuity Reserve Fund (ARF) is currently \$22.1 million higher than the accrued liabilities for Retirees and Beneficiaries. The Board approved a transfer of \$12 million from the Annuity Reserve Fund to the Pension Accumulation Fund in 2001 and a transfer of \$5 million in 2005. We recommend that a study be undertaken to determine the appropriate ARF reserve balance.

Assumptions and Methods

The Board requested a review of certain assumptions and methods prior to the completion of this report. This review was presented to the Board in our report dated May 18, 2011. At the May 18, 2011 Board meeting, the Board adopted the following changes to the actuarial methods and assumptions:

- 8% investment return assumption
- 7 year asset smoothing method with corridors
- 30 year amortization period

GRS indicated that these changes were acceptable in accordance with the Actuarial Standards of Practice, but did not take a position in favor or against the changes. GRS further noted that although these changes resulted in lower contributions for the 2012 fiscal year, contributions will continue to increase during the next 7 years unless there are substantial actuarial gains. Our study dated April 7, 2010 showed that contributions could rise to a level between 60% and 70% of payroll once the losses from the 2009 market downturn were fully recognized (assuming no future gains or losses).

Changes in Benefit Provisions

Benefits for Lieutenants and Sergeants were amended through binding arbitration in April 2011. Those changes were not included in this valuation. They will be included in the June 30, 2011 valuation.

Conclusion

Based upon the funding policy established by the Board, the data furnished by the Retirement System and the actuarial assumptions shown in the Appendix, the recommended employer contribution rate for the 2011-2012 fiscal year is 28.90% of covered payroll.

DATA FURNISHED FOR VALUATION

SUMMARY OF BENEFIT PROVISIONS (JULY 1, 2010)

Age and Service Retirement

Eligibility - 25 years of service regardless of age. 20 years of service regardless of age for eligible DPOA and DFFA members.

Annual Amount - An annuity equal to the actuarial equivalent of the member's accumulated contribution account plus a defined benefit, which, when added to the annuity will provide the following:

Pre-1969 Members - 2.5% of AFC times the first 25 years of service, with a maximum allowance of 15/22 of a police officer's or firefighter's annual rate of compensation.

1969 Plan Members - 2.5% of AFC times the first 25 years of service plus 2.1% of AFC times each of the next 10 years of service.

Members may elect to receive their accumulated contribution account in a lump sum after 25 years of service (20 years of service for eligible DPOA and DFFA members). The defined benefit at retirement is then reduced by the actuarial equivalent of the amount of principal withdrawn. No reduction is made with regard to the interest portion of the withdrawal.

Pre-1969 plan members may elect 1969 plan benefits at the time of retirement.

Type of Average Final Compensation (AFC) - Average of the current compensation for the ranks held in each of last 5 years (last 3 years for DPCOA, Executive Members and their Fire equivalents). Pension benefits for non-union employees may not be diminished due to a reduction in compensation because of fiscal emergency. AFC includes prior longevity distributions during the averaging period in accordance with the following schedule: 1% of compensation after 5 years of service, 2% after 11 years, 3% after 16 years and 4% after 21 years. A member may elect that upon retirement or upon death before retirement either (i) a lump sum payment equal to 85% (100% for DPOA and DPCOA members) of the amount of his or her unused accumulated sick leave bank, or (ii) to have the three year average of 25% of the value of the accumulated unused sick leave bank added to his or her AFC. Any member electing the AFC adjustment option will also be paid a lump sum equal to the remaining value of the sick leave bank as provided in (i) above. Lump sum payments are not paid by the retirement system.

Deferred Retirement (vested benefit)

Eligibility - 10 years of service for DPOA and Fire equivalents, age 40 with 8 years of service for all others.

Annual Amount - Same as regular retirement but based on average final compensation and credited service at the time of termination.

Benefit Commencement - DPOA and Fire equivalent members hired after 6/30/85: Unreduced benefit begins at age 62. **All other members:** Unreduced benefit begins at the age when the member would have first been eligible for regular retirement had the member continued in City service. **All** members may elect a reduced benefit payable immediately.

SUMMARY OF BENEFIT PROVISIONS (CONTINUED)

Duty Disability Retirement

Eligibility - No age or service requirement.

Annual Amount – A basic benefit of 50% of final compensation and a supplemental benefit of 16-2/3% of final compensation is payable for 24 months. After 24 months, members disabled from any occupation continue to receive both benefits; otherwise, only the 50% benefit is then payable. Upon attaining 25 years of service, the disability benefit is 50% of final compensation. Members convert to regular retirement benefit at age 65. Worker's compensation payments are offset. Members who have already filed under the old duty disability plan will receive 66-2/3% of final compensation payable to eligibility date for regular retirement.

Non-Duty Disability Retirement

Eligibility - 5 years of service.

Annual Amount - Computed as a regular retirement benefit, but based on average final compensation and credited service at the time of disability. Minimum benefit is 20% of average final compensation.

Duty Death Before Retirement

Eligibility - No age or service requirement.

Annual Amount – Surviving spouse receives 5/11 of police officer's or firefighter's compensation and each child under age 18 receives 1/10 of such compensation with a maximum total of 7/33 of such compensation. If there is no surviving spouse, each child receives 1/4 of such compensation with a maximum total of 1/2 of such compensation. If there is no surviving spouse or children, each dependent parent receives 1/6 of such compensation. Worker's compensation payments are offset.

Non-Duty Death Before Retirement

Eligibility - No age or service requirement.

Annual Amount - Same as a regular retirement benefit to a surviving spouse, but reduced in accordance with a 100% joint and survivor option election. Minimum benefit is 20% of average final compensation. Each child under 18 receives 1/7 of police officer's or firefighter's compensation with a maximum total of 2/7 of such compensation. If there is no spouse or children, each dependent parent receives 1/7 of such compensation.

Post-Retirement Cost-of-Living Adjustments

- Pre-1969 Members** - Allowances increase in proportion to active member compensation for the corresponding rank.
- 1969 Plan Members** - Police retired after July 1, 2001, certain Police classes retired after July 1, 1998 and all Fire members: Pensions increase by 2.25% of the **current** pension amount each July 1. All other members: Pensions increase by 2.25% of the **original** pension amount each July 1.

SUMMARY OF BENEFIT PROVISIONS (CONCLUDED)

Member Contributions

5% of covered compensation payable until first eligible for regular retirement.

DROP plan

Members with 25 years of service may elect to participate in the DROP. When a DROP election is made, the member ceases to accrue any further age and service retirement benefits. Seventy five percent (75%) of the member's benefit (accrued to their DROP date) is contributed to a DROP account (a defined contribution account). At retirement the member is entitled to the balance in the DROP account and a monthly benefit equal to 100% of their benefit accrued to their DROP date, increased by any post-retirement increases that the member would have received, had the member been retired. Fire members must retire from the DROP plan at age 60.

ASSET INFORMATION FURNISHED FOR VALUATION

*Reserve Accounts**

Funds	Fund Balances	
	June 30, 2010	June 30, 2009
Annuity Savings	\$ 297,755,895	\$ 300,661,737
Annuity Reserve	27,309,058	23,340,833
Total Annuity Funds	325,064,953	324,002,570
Pension Accumulation	(78,934,009)	123,924,969
Pension Reserve	2,921,102,914	2,813,404,483
Accrued Liability Fund Reserve	680,858,878	674,899,835
Survivor Benefit	5,186,645	8,973,596
Total Pension Funds	3,528,214,428	3,621,202,883
Total Fund Balances	\$3,853,279,381	\$3,945,205,453

*Revenues and Expenditures**

	Pension Funds	Annuity Funds	Total Funds
Balance, July 1, 2009	\$3,621,202,883	\$ 324,002,570	\$3,945,205,453
Prior valuation audit adjustment	0	0	0
Balance July 1, 2009 after adjustment	3,621,202,883	324,002,570	3,945,205,453
Revenues			
Member contributions	238,748	10,526,221	10,764,969
Employer contributions #	32,808,485	0	32,808,485
Recognized investment income	129,117,485	18,565,879	147,683,364
Transfers	131,171	(131,171)	0
Total	\$ 162,295,889	\$ 28,960,929	\$ 191,256,818
Expenditures			
Benefit payments	251,026,026	645,903	251,671,929
Refund of member contributions	0	27,252,643	27,252,643
Administrative expenses	4,258,318	0	4,258,318
Total	\$ 255,284,344	\$ 27,898,546	\$ 283,182,890
Balance, June 30, 2010	\$3,528,214,428	\$325,064,953	\$3,853,279,381
Funding Value Rate of Return	3.7%	5.9%	3.9%

* Excludes the Market Stabilization Fund.

Employer contributions for FY 2010 of \$32,808,485 are accrued.

FUNDING VALUE OF ASSETS

	2009	2010	2011	2012	2013	2014	2015	2016
A. Funding Value Beginning of Year	\$4,316,263,291	\$ 3,945,205,453						
B. Market Value End of Year	3,052,160,615	3,017,949,235						
C. Market Value Beginning of Year	3,967,469,433	3,052,160,615						
D. Contributions During Year								
D1. City Contributions (End of Year)	36,151,057	32,808,485						
D2. Member Contributions	10,902,955	10,764,969						
E. Expenses								
E1. Benefits Paid During Year	252,139,514	278,924,572						
E2. Administrative Expenses	4,402,828	4,258,318						
F. Investment Income								
F1. Market Total: B - C - D + E	(705,820,488)	205,398,056						
F2. Assumed Rate	7.5%	7.5%						
F3. Amount for Immediate Recognition *	315,863,934	286,905,055						
F4. Amount for Phased-In Recognition: F1-F3	(1,021,684,422)	(81,506,999)						
G. Phased-In Recognition of Investment Income								
G1. Current Year: F4/7	(340,561,474)	(139,221,691)						
G2. 1st Prior Year	(211,921,889)		\$(139,221,691)					
G3. 2nd Prior Year	75,049,921			\$(139,221,691)				
G4. 3rd Prior Year					\$(139,221,691)			
G5. 4th Prior Year						\$(139,221,691)		
G6. 5th Prior Year							\$(139,221,691)	
G7. 6th Prior Year								\$(139,221,691)
G8. Total Recognized Investment Gain	(477,433,442)	(139,221,691)	(139,221,691)	(139,221,691)	(139,221,691)	(139,221,691)	(139,221,691)	(139,221,691)
H. Total Interest Distributed - Current Year: (F3 + G8)	(161,569,508)	147,683,364						
I. Funding Value End of Year:								
I1. Preliminary Funding Value End of Year: A + D - E + H	3,945,205,453	3,853,279,381						
I2. Upper Corridor Limit 130% x B		3,923,334,006						
I3. Lower Corridor Limit 70% x B		2,112,564,465						
I4. Funding Value End of Year	3,945,205,453	3,853,279,381						
J. Difference Between Market & Funding Value: (B - I)	(893,044,838)	(835,330,146)						
K. Recognized Rate of Return: H / [1/2 (A + I4 - H)]	(3.8)%	3.9%						
L. Market Rate of Return: F1 / [C - 1/2 (E - D)]	(18.3)%	7.0%						
M. Ratio of Funding Value to Market Value	129.3%	127.7%						

The Funding Value of Assets recognizes assumed investment income (line F2) fully each year. Differences between actual and assumed investment income (line F3) are phased-in over a closed 3-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. The Funding Value of Assets is unbiased with respect to Market Value. At any time it may be either greater or less than Market Value. If assumed rates are exactly realized for two consecutive years, the Funding Value will become equal to Market Value.

* *The amount for immediate recognition (F3) was calculated by GRS in 2010.*

RETIREES AND BENEFICIARIES JUNE 30, 2010
TABULATED BY ATTAINED AGE

Attained Age	Age & Service		Disability		Death-in-Service		Totals	
	No.	Monthly Allowances	No.	Monthly Allowances	No.	Monthly Allowances	No.	Monthly Allowances
Under 20*	9	\$ 16,472			73	\$ 33,310	82	\$ 49,782
20-24								
25-29	1	1,191	7	\$ 19,171	1	2,087	9	22,449
30-34	6	13,152	29	84,254	4	5,131	39	102,537
35-39	3	2,632	56	166,091	11	18,501	70	187,224
40-44	24	34,688	65	191,373	5	6,853	94	232,914
45-49	68	110,051	129	365,603	16	28,107	213	503,761
50-54	223	449,290	136	356,590	24	41,834	383	847,714
55-59	770	2,037,043	305	760,748	37	61,192	1,112	2,858,983
60-64	1,418	4,117,547	499	1,125,371	52	83,073	1,969	5,325,996
65-69	999	2,659,356	311	693,763	34	56,450	1,344	3,409,569
70-74	591	1,478,972	112	252,382	15	23,990	718	1,755,344
75-79	469	1,068,299	83	199,184	17	33,647	569	1,301,130
80-84	716	1,570,285	110	268,304	39	70,962	865	1,909,551
85-89	545	1,095,670	69	162,915	21	40,225	635	1,298,810
90-94	183	358,862	23	59,239	5	9,273	211	427,374
95 & Over	39	66,289	2	3,872	2	4,098	43	74,259
Totals	6,064	\$15,079,799	1,936	\$4,708,860	356	\$518,733	8,356	\$20,307,397

* May include records with defective birth dates.

INACTIVE VESTED MEMBERS JUNE 30, 2010

Not explicitly valued since the June 30, 2007 actuarial valuation due to incomplete reporting subsequent to June 30, 2007.

PRE 1969 RETIREES AND BENEFICIARIES JUNE 30, 2010
TABULATED BY ATTAINED AGE

Attained Age	Age & Service#		Disability#		Death-in-Service		Totals	
	No.	Monthly Allowances	No.	Monthly Allowances	No.	Monthly Allowances	No.	Monthly Allowances
Under 20*	5	\$ 8,477					5	\$ 8,477
20-24								
25-29								
30-34	1	1,657	1	\$ 2,534			2	4,191
35-39								
40-44	1	1,054					1	1,054
45-49	0	0					0	0
50-54	7	6,529			1	\$ 1,763	8	8,292
55-59	7	11,693			3	5,450	10	17,143
60-64	104	193,546	35	75,831	12	22,928	151	292,305
65-69	332	672,537	156	345,508	18	33,190	506	1,051,235
70-74	351	754,503	87	192,197	14	22,752	452	969,452
75-79	313	637,809	66	145,439	14	26,457	393	809,705
80-84	536	1,100,058	101	243,118	37	65,590	674	1,408,766
85-89	498	977,148	66	156,351	20	39,538	584	1,173,037
90-94	180	354,701	23	59,239	5	9,273	208	423,213
95 & Over	37	64,194	2	3,872	2	4,098	41	72,164
Totals	2,372	\$4,783,906	537	\$1,224,089	126	\$231,039	3,035	\$6,239,034

* May include records with defective birth dates.

Includes survivor beneficiaries of service and disability retirees.

ACTIVE MEMBERS JUNE 30, 2010
BY ATTAINED AGE AND YEARS OF SERVICE

Police Members

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
Under 20									\$ 0
20-24	53							53	1,959,489
25-29	112	61	6					179	7,985,276
30-34	67	132	218	3				420	21,650,515
35-39	28	78	438	89				633	34,634,247
40-44	18	53	254	206	48			579	32,986,298
45-49	6	21	97	91	218	6	1	440	26,435,283
50-54	3	10	38	25	206	36	10	328	20,437,171
55-59	1	1	5	6	95	64	43	215	13,555,959
60				3	7	4	6	20	1,247,858
61		1	2		2	6	10	21	1,288,540
62				1	2	1	11	15	918,311
63				1	1		6	8	478,395
64						1	3	4	257,222
65							1	1	53,237
66							1	1	53,237
67							4	4	242,464
68							2	2	121,682
69							1	1	67,995
71							2	2	121,232
75							1	1	53,237
Totals	288	357	1,058	425	579	118	102	2,927	\$164,547,648

Fire Members

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
Under 20									\$ 97,839
20-24	1	2						3	1,233,875
25-29	10	13	3					26	6,658,548
30-34	18	52	60					130	9,456,608
35-39	6	53	90	25	1			175	14,353,684
40-44	6	22	63	86	68			245	13,785,403
45-49	1	11	23	56	105	25		221	10,411,045
50-54		2	8	14	62	43	25	154	7,832,019
55-59				1	21	19	64	105	453,330
60							6	6	
Totals	42	155	247	182	257	87	95	1,065	\$64,282,351

**TOTAL ACTIVE MEMBERS JUNE 30, 2010
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
Under 20									
20-24	54	2						56	\$ 2,057,328
25-29	122	74	9					205	9,219,151
30-34	85	184	278	3				550	28,309,063
35-39	34	131	528	114	1			808	44,090,855
40-44	24	75	317	292	116			824	47,339,982
45-49	7	32	120	147	323	31	1	661	40,220,686
50-54	3	12	46	39	268	79	35	482	30,848,216
55-59	1	1	5	7	116	83	107	320	21,387,978
60				3	7	4	12	26	1,701,188
61		1	2		2	6	10	21	1,288,540
62				1	2	1	11	15	918,311
63				1	1		6	8	478,395
64						1	3	4	257,222
65							1	1	53,237
66							1	1	53,237
67							4	4	242,464
68							2	2	121,682
70									
74									
Totals	330	512	1,305	607	836	205	197	3,992	\$228,829,999

	Group Averages		
	Police	Fire	Total
Age:	41.8 years	43.7 years	42.3 years
Service:	15.1 years	17.7 years	15.8 years
Annual Pay:	\$56,217	\$60,359	\$57,322

**ACTUARIAL DISCLOSURES REQUIRED BY
STATEMENT NO. 25 OF THE
GOVERNMENTAL ACCOUNTING STANDARDS
BOARD**

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 STATEMENT NO. 25 REQUIRED SUPPLEMENTARY INFORMATION

Actuarial Valuation Date	Actuarial Value of Assets (a)	Schedule of Funding Progress			Covered Payroll (c)	UAAL as a % of Covered Payroll ((b - a) / c)
		Actuarial Accrued Liability (AAL) -- Entry Age (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)		
1999	\$3,668,362,979	\$3,274,050,127	\$(394,312,852)	112.0%	\$216,049,687	-
2000*	3,964,231,470	3,342,123,550	(622,107,920)	118.6%	237,741,560	-
2001	3,900,020,703	3,463,248,393	(436,772,310)	112.6%	253,297,027	-
2002#	3,635,106,581	3,631,971,448	(3,135,133)	100.1%	248,663,133	-
2003	3,205,516,657	3,721,593,210	516,076,553	86.1%	248,681,461	207.5 %
2004	3,074,516,589	3,857,493,282	782,976,693	79.7%	258,699,581	302.7 %
2005@&	3,757,884,417	3,780,447,414	22,562,997	99.4%	250,491,872	9.0 %
2006&	3,980,254,576	3,808,952,741	(171,301,835)	104.5%	228,140,160	-
2007*&	4,307,194,763	3,896,814,229	(410,380,534)	110.5%	230,173,964	-
2008#	4,316,263,291	4,071,053,752	(245,209,539)	106.0%	232,812,606	-
2009	3,945,205,453	4,221,291,045	276,085,592	93.5%	231,795,528	119.1 %
2010	3,412,848,708	4,180,138,687	767,289,979	81.6%	228,829,999	335.3 %
2010#	3,853,279,381	3,987,524,204	134,244,823	96.6%	228,829,999	58.7 %

* Plan amended.

After changes in actuarial assumptions and/or methods.

@ After POC transfer.

& 2005 and 2006 assets were revised following the June 30, 2006 valuation. 2007 assets were revised after the June 30, 2007 valuation.

SCHEDULE OF EMPLOYER CONTRIBUTIONS

Fiscal Year Ended June 30	Reported Employer Contributions	
	From Pension Obligation Certificates (POCs)	Employer Contributions other than from POCs
1999		\$ 15,709,799
2000		19,972,058
2001		14,443,382
2002		8,449,645
2003		66,843,029
2004		69,475,202
2005	\$ 630,829,189	51,602,596
2006&		57,766,542
2007		57,423,366
2008		33,934,636
2009@		36,151,057
2010		32,808,485

& 2006 assets were revised following the 6/30/2006 valuation.

@ Contribution receivable.

GASB STATEMENT NO. 25 REQUIRED SUPPLEMENTARY INFORMATION

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 actuarial valuation follows:

Valuation date	June 30, 2010
Actuarial cost method	Entry Age
Amortization method	Level percent
Remaining amortization period	30 years
Asset valuation method	7 year smoothed market

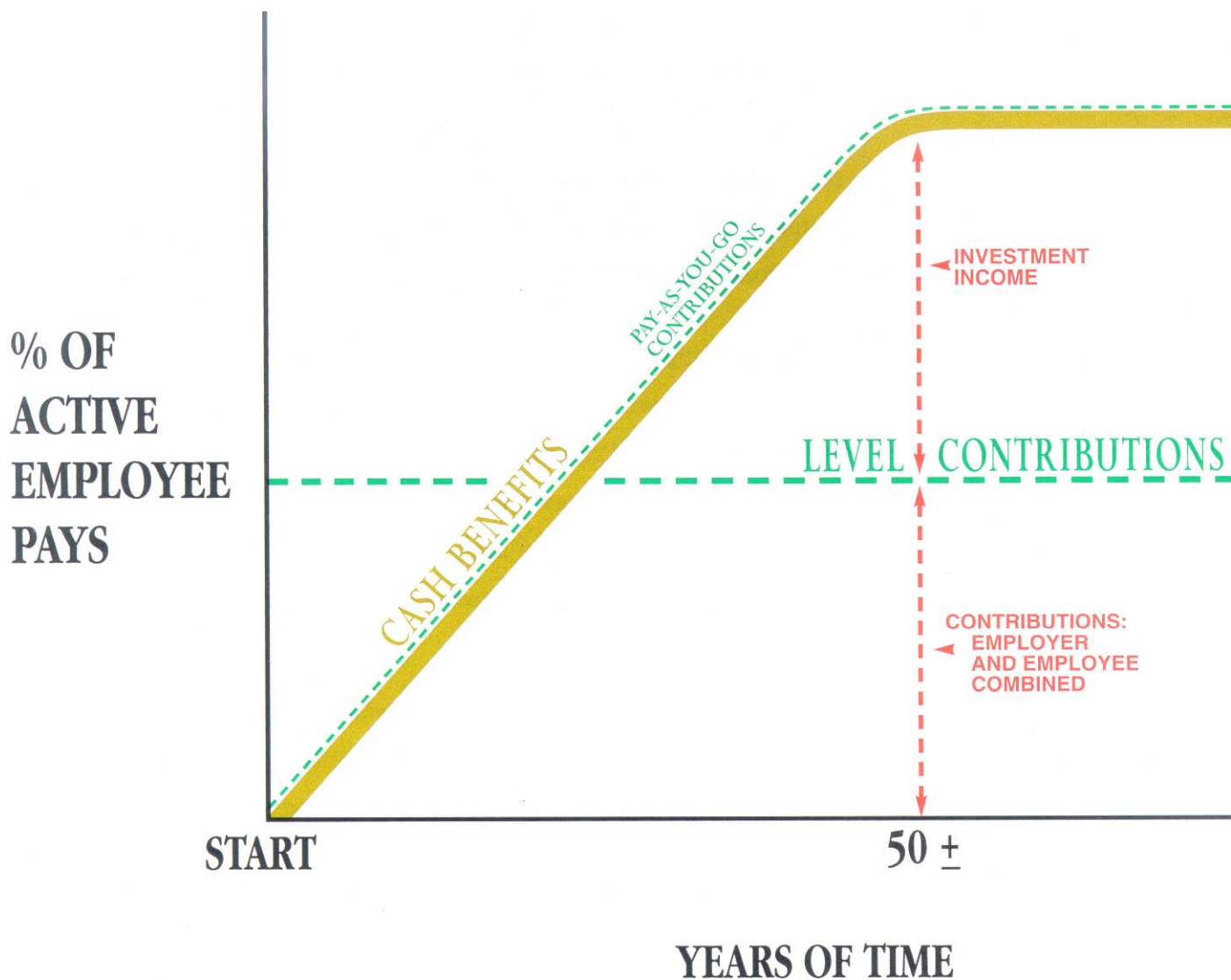
Actuarial assumptions:

Investment rate of return	8.0%
Projected salary increases*	5.0% - 9.2%
*Includes inflation at	4.0%
Cost-of-living adjustments	Pre-1969 Plan Members: Allowances increase in proportion to active member compensation for corresponding rank.
	1969 Plan Members: Pensions increase by 2.25% of current pension amount each July 1.

Membership of the plan consisted of the following at June 30, 2010, the date of the latest actuarial valuation:

Retirees and beneficiaries receiving benefits	8,356
Terminated plan members entitled to but not yet receiving benefits	NA
Active plan members	3,992
Total	12,348

FINANCIAL PRINCIPLES



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

THE ACTUARIAL VALUATION PROCESS

The financing diagram on the opposite page shows the relationship between two different philosophies of paying for retirement benefits: the method where contributions match cash benefit payments (as in the Federal Social Security program) is an *increasing contribution method*; and the *level contribution method* which seeks to balance contributions between generations.

The actuarial valuation is the mathematical process by which the level contribution rate is determined, and the flow of activity constituting the valuation may be summarized as follows:

A. *Member Census Data:*

- Retired lives now receiving benefits
- Former members with vested benefits
- Active members

B. *Benefit provisions* that establish eligibility and amounts of payments to members

C. *Asset Data* (cash & investments)

D. *Assumptions concerning future experience in various risk areas*, which are established by the Board of Trustees and the City Council after consulting with the actuary

E. *The funding method* for employer contributions (the long-term, planned pattern for employer contributions)

F. *Mathematically combining the assumptions, the funding method, and the data*

G. *Determination* of:

- Plan Financial position and
- New Employer Contribution Rate

BASIC FINANCIAL OBJECTIVE AND OPERATION OF THE RETIREMENT SYSTEM

Benefit Promises Made Which Must Be Paid For. A retirement program is an orderly means of handing out, keeping track of, and financing contingent pension promises to a group of employees. As each member of the retirement program acquires 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 value of benefits likely to be paid which is assigned to 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 program 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 over time on behalf of the group

. . . plus . . .

Ivestment earnings on contributions received and not required for immediate payment of benefits

. . . minus . . .

Expenses incurred in operating the program.

There are retirement programs designed to defer the bulk of contributions far into the future. Contributions in early years are low, but 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 for varying periods of time. Investment income becomes the major contributor to the retirement program, and the amount is directly related to the amount of past contributions and investment performance.

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

APPENDIX

**SUMMARY OF ASSUMPTIONS USED FOR DPFERS ACTUARIAL VALUATION
ASSUMPTIONS ADOPTED BY BOARD OF TRUSTEES
AFTER CONSULTING WITH ACTUARY**

ECONOMIC ASSUMPTIONS

The investment return rate used in the valuation was 8.0% per year, compounded annually (net after administrative expenses). The real rate of return is the portion of total investment return which is more than the inflation rate. Considering other financial assumptions, the 8.0% total investment return rate translates to an assumed real rate of return of 4.0% over wage inflation. This assumption was first used for the June 30, 2010 valuation.

Pay increase assumptions for individual active members are shown on page 30. Part of the assumption for each age is for a merit and/or seniority increase, and the other 4.0% recognizes wage inflation.

Total active member payroll is assumed to increase 4.0% annually, which is the portion of the individual pay increase assumptions attributable to wage inflation.

NON-ECONOMIC ASSUMPTIONS

The number of active members is assumed to continue at the present number.

The mortality table used to measure retired life mortality was 95% of the RP-2000 Combined Table for males and 100% of the RP-2000 Combined Table set back 2 years for females. Related values are shown on page 30. This table was first used for the June 30, 2008 valuation. For disabled members, a 10 year set forward of the healthy rates was used to measure post-retirement mortality.

The probabilities of age/service retirement for members eligible to retire are shown on page 31. Probabilities for service eligibility were first used for the June 30, 2008 valuation.

The probabilities of separation from service (including *death-in-service*) are shown for sample ages on page 32. These probabilities were first used for the June 30, 2008 valuation.

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS
JUNE 30, 2010

Marriage Assumption:	100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses.
Pay Increase Timing:	End of (Fiscal) year. This is equivalent to assuming that reported pays represent amounts paid to members during the year beginning the day after the valuation date.
Decrement Timing:	Decrements are assumed to occur mid-year.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and exact fractional service nearest the date the decrement is assumed to occur.
Decrement Relativity:	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
Decrement Operation:	Disability and mortality decrements do not operate during the first 5 years of service. Disability also does not operate during retirement eligibility.
Incidence of Contributions:	Member contributions are assumed to be received continuously throughout the year. Employer contributions are assumed to be received on the last day of the fiscal year.
Longevity in AFC:	Longevity payments included in the computation of Average Final Compensation were assumed to increase age and service costs by 4% and disability and death-in-service costs by 2%.
Unused Sick Leave Payout:	The normal cost was increased by 1.0% of payroll to account for the inclusion of a percentage of unused sick leave banks in the determination of AFC.
Post-Retirement COLA:	Active members are assumed to receive a 1.9% COLA rather than 2.25% because the annuity portion is not subject to the COLA.
FAC Period:	1 year FAC period was used.
Disability Change Age:	The duty disability benefit is assumed to change at normal retirement age.
Administrative Expense Load:	1.2% of pay is added to the normal cost to account for administrative expenses.
Deferred Liability:	Deferred data was incomplete for June 30, 2010. Liabilities were set equal to 1.5% of active liabilities.

FUNDING METHODS

The entry age actuarial cost method was used in determining age and service liabilities and normal cost, vesting liabilities and normal cost, and casualty liabilities and normal cost.

Differences between assumed experience and actual experience (“actuarial gains and losses”) become part of actuarial accrued liabilities.

Unfunded actuarial accrued liabilities, if any, are amortized over periods of future years to produce contribution amounts (principal & interest) which are level percent of payroll contributions.

Employer contribution dollars were assumed to be *paid in a single sum on the last day* of the employer fiscal year. (Adopted for the 6-30-79 actuarial valuation.)

Valuation assets recognize investment return above or below the actuarial assumed rate over a seven year period. (Adopted for the 6-30-10 actuarial valuation.)

The effect of changes in eligibility for normal retirement due to service purchases was approximated by increasing computed actuarial accrued liabilities by 3%. In addition, active member accrued liabilities were increased by 1% to approximate the effect of incomplete service data.

The data about persons now covered and about present assets was furnished by the System’s administrative staff. Although examined for general reasonableness, the data was not audited by the actuary.

The actuarial valuation computations were made by or under the supervision of a Member of the American Academy of Actuaries (M.A.A.A.).

SAMPLE SALARY ADJUSTMENT RATES

Service	Salary Increase Assumptions for an Individual Member		
	Merit & Seniority	Base (Economic)	Increase Next Year
5	5.20%	4.00%	9.20%
10	1.70%	4.00%	5.70%
15	1.00%	4.00%	5.00%
20	1.00%	4.00%	5.00%
25	1.00%	4.00%	5.00%
30	1.00%	4.00%	5.00%
35	1.00%	4.00%	5.00%
Ref			306 + 4.00%

SINGLE LIFE RETIREMENT VALUES BASED ON RP-2000 COMBINED & 8.0% INTEREST 95% OF MALE RATES SET-BACK 0 YEARS 100% OF FEMALE RATES SET-BACK 2 YEARS

Sample Attained Ages	Present Value of \$1.00 Monthly Increasing "X"% Annually After Retirement						Future Life Expectancy (years)	
	4.0% Compound		2.25% Simple		2.25% Compound		Men	Women
	Men	Women	Men	Women	Men	Women		
45	\$ 224.52	\$ 236.82	\$ 173.21	\$ 178.99	\$ 180.46	\$ 187.39	35.97	40.28
50	208.32	222.62	164.68	172.13	170.60	179.24	31.24	35.49
55	189.54	206.05	153.76	163.26	158.37	169.04	26.61	30.77
60	168.51	187.03	140.39	152.02	143.78	156.51	22.16	26.17
65	145.94	166.04	124.89	138.53	127.22	141.84	18.00	21.78
70	122.74	144.03	107.85	123.36	109.33	125.65	14.23	17.75
75	99.47	121.39	89.64	106.67	90.50	108.15	10.88	14.08
80	77.33	98.98	71.33	89.14	71.77	90.01	8.02	10.85
Ref:	506 x 0.95	507 x 1.00	506 x 0.95	507 x 1.00	506 x 0.95	507 x 1.00		

PROBABILITIES OF SERVICE RETIREMENT

Service	Percent of Eligible Active Members Retiring Within Next Year			
	Police		Fire	
19	25%		15%	
20	18%		12%	
21	18%		12%	
22	18%		12%	
23	18%		12%	
24	18%	35%	12%	15%
25	18%	25%	12%	15%
26	18%	20%	12%	12%
27	18%	20%	12%	12%
28	18%	20%	12%	12%
29	18%	18%	15%	12%
30	18%	18%	15%	12%
31	18%	18%	15%	12%
32	20%	20%	15%	12%
33	25%	25%	20%	20%
34	30%	30%	25%	20%
35	30%	30%	30%	30%
36	30%	30%	30%	35%
37	30%	30%	30%	35%
38	30%	30%	30%	35%
39	30%	30%	30%	35%
40	100%	100%	100%	100%
Ref	1548	823	1549	1639

Age	Percent of Eligible Active Members Retiring Within Next Year	
	Police	Fire
60	25%	100%
61	25%	100%
62	25%	100%
63	22%	100%
64	20%	100%
65	18%	100%
66	15%	100%
67	15%	100%
68	15%	100%
69	15%	100%
70	100%	100%
Ref	1638	1

PROBABILITIES OF SEPARATION

Sample Ages	Years of Service	% of Active Members Separating Within Next Year			
		Withdrawal		Death	
		Police	Fire	Male	Female
ALL	0	8.50%	5.00%		
	1	7.50%	4.00%		
	2	6.00%	3.00%		
	3	5.00%	2.00%		
	4	4.50%	2.00%		
25	5 & Over	4.50%	1.96%	0.03%	0.01%
30		3.30%	1.61%	0.03%	0.02%
35		2.30%	1.11%	0.06%	0.03%
40		1.70%	0.76%	0.08%	0.04%
45		1.50%	0.60%	0.11%	0.07%
50		1.10%	0.51%	0.16%	0.11%
55		0.80%	0.51%	0.27%	0.17%
60		0.80%	0.51%	0.51%	0.29%
Ref		566 207	230 113 x .85	506 x .75	507 x .75

Sample Ages	% of Active Members Becoming Disabled Within Next Year			
	Police		Fire	
	Ordinary	Duty	Ordinary	Duty
25	0.06%	0.13%	0.07%	0.34%
30	0.07%	0.19%	0.08%	0.52%
35	0.08%	0.34%	0.09%	0.90%
40	0.10%	0.49%	0.12%	1.30%
45	0.16%	0.73%	0.18%	1.92%
50	0.47%	1.16%	0.53%	3.06%
55	0.73%	1.96%	0.82%	5.18%
60	0.82%	2.82%	0.93%	7.47%
Ref	105 x 0.75	90 x 0.85	105 x 0.85	90 x 2.25

MEANING OF “UNFUNDED ACTUARIAL ACCRUED LIABILITIES”

Actuarial accrued liabilities are the portion of the present value of plan promises to pay benefits in the future not covered by future normal cost contributions --- a liability has been established (“accrued”) because the service has been rendered, but the resulting monthly cash benefit may not be payable until years in the future.

If actuarial accrued liabilities at any time exceed the plan’s accrued assets (cash & investments), the difference is *unfunded actuarial accrued liabilities*. If the plan’s assets equal the plan’s actuarial accrued liabilities, the plan would be termed “fully funded.”

Each time a plan adds a new benefit which applies to service already rendered, an actuarial accrued liability is created. If assets are insufficient to cover the value of the new benefit promises, an additional unfunded actuarial accrued liability is also created. Payment for such unfunded accrued liabilities is generally spread over a period of years, commonly in the 15-30 year range.

Unfunded actuarial accrued liabilities can occur in another way: if actual financial experience is less favorable than assumed financial experience, the difference is added to unfunded actuarial accrued liabilities. For example, during periods of high inflation, unfunded actuarial accrued liabilities generally increase because unexpected rates of pay increase will create additional liabilities which may not be matched by investment performance.

The existence of unfunded actuarial accrued liabilities is not bad, but the changes from year to year in the amount of unfunded actuarial accrued liabilities are important -- “bad” or “good” or somewhere in between.

Unfunded actuarial accrued liabilities do not represent a bill payable immediately, but it is important that policy-makers prevent the amount from becoming unreasonably high and *it is vital that there is a sound method in place for making payments toward them*, so that they are controlled.

GLOSSARY

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, turnover 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.

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.

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.

June 30, 2011

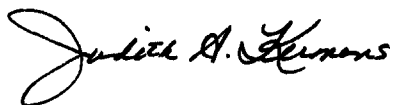
Mr. Walter Stampor
Executive Secretary
The Police and Fire Retirement System of the
City of Detroit
2 Woodward Avenue – Suite 908
Detroit, Michigan 48226

Re: June 30, 2010 Actuarial Valuation

Dear Walter:

Enclosed are 20 copies of the report of the June 30, 2010 annual actuarial valuation.

Sincerely,



Judith A. Kermans

JAK:mrh
Enclosures

cc: Cynthia Thomas, City of Detroit Retirement Systems
Norman Jones, GRS
Kenneth Alberts, GRS