

**CITY OF ROYAL OAK RETIREMENT SYSTEM**  
61ST ACTUARIAL VALUATION REPORT  
AS OF JUNE 30, 2009

February 5, 2010

The Board of Trustees  
City of Royal Oak Retirement System  
Royal Oak, Michigan

Dear Board Members:

The results of the **61st Annual Actuarial Valuation** of the City of Royal Oak Retirement System are presented in this report. The purpose of the valuation was to measure the System's funding progress and to determine the employer contribution rate for the ensuing fiscal year.

The valuation was based upon information, furnished by the City, concerning Retirement System benefits, financial transactions, and individual active, terminated and retired members and beneficiaries. Data was checked for internal and year-to-year consistency, but was not otherwise audited by the actuary. This report may be provided to parties other than the Board of Trustees only in its entirety and only with the permission of the Board.

The date of the valuation was **June 30, 2009**.

To the best of our knowledge, this report is complete and accurate and was made in accordance with standards of practice prescribed by the Actuarial Standards Board. We believe that in the aggregate, the actuarial assumptions used for the valuation produce results which are reasonable. Both actuaries submitting this report are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,



Mark Buis, FSA, MAAA



Louise M. Gates, ASA, MAAA

MB/LMG:mrb

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## **SECTION A**

### **VALUATION RESULTS**

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## **FUNDING OBJECTIVE**

The funding objective of the Retirement System is to establish and receive contributions, expressed as percents of active member payroll, which will accumulate assets during members' periods of employment that will be sufficient to finance benefits throughout their retirement years.

## **CONTRIBUTION RATES**

The Retirement System is supported by member contributions, City contributions and investment income from Retirement System assets.

Contributions which satisfy the funding objective are determined by the annual actuarial valuation and are sufficient to:

- Cover the actuarial present value of benefits allocated to the current year by the actuarial cost method described in Section C (the normal cost); and
- Finance over a reasonable period of future years the actuarial present value of benefits not covered by valuation assets and anticipated future normal costs (the unfunded actuarial accrued liability).

*Computed contribution rates* for the fiscal year beginning July 1, 2010 are shown on page A-2.

**CONTRIBUTIONS TO PROVIDE BENEFITS  
FISCAL YEAR BEGINNING JULY 1, 2010**

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Total Contribution for	Computed Contributions Expressed as Percents of Active Member Payroll & Dollars		
	General & Water	Police Officers & Fire Fighters	Total **
<b>Normal Cost</b>			
Age and service benefits	12.61 %	14.27 %	13.47 %
Disability	1.73 %	3.07 %	2.42 %
Death	0.66 %	0.54 %	0.60 %
Deferred service pensions	0.70 %	0.64 %	0.67 %
Future refunds of member contributions	0.12 %	0.31 %	0.22 %
Totals	15.82 %	18.83 %	17.38 %
<b>Member Contributions</b>	2.26 %	5.00 %	3.67 %
<b>Employer Normal Cost</b>	13.56 %	13.83 %	13.71 %
<b>Unfunded Actuarial Accrued Liability*</b>	\$ 1,128,816	11.52 %	
<b>Computed Employer Rate</b>		<b>25.35%</b>	
<b>Projected Payroll</b>	\$9,757,082	\$10,678,829	
<b>Employer \$ Amount (Based on Projected Payroll)</b>	2,451,876	2,707,083	\$5,158,959

\* Amortized as a level dollar amount over 29 years for the General and Water Plan and level percent-of-payroll over 30 years for the Police Officers and Fire Fighters.

\*\* Normal cost based on a weighted average of rates from each group.

### **Determining Employer Dollar Contributions**

For any period of time, the percent-of-payroll contribution rate should be converted to dollars -- and then contributed to the Retirement System.

**Recommended Procedure:** (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.

Applying the employer normal cost percentage of the General and Water member projected payroll and adding the unfunded actuarial accrued liability produces annual employer contributions of \$2,451,876 for the General and Water group. Applying the employer contribution rate of 25.35% to the Police and Fire member projected payroll produces annual employer contributions of \$2,707,083 for the Police and Fire group.

**DERIVATION OF EXPERIENCE GAIN (LOSS)  
YEAR ENDED JUNE 30, 2009**

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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 sizable year to year fluctuations are common. Detail on the derivation of this year's experience gain (loss) is shown below.

	<b>All Groups Combined (Amounts in Thousands)</b>
(1) UAAL* at start of year	\$21,397
(2) Normal cost from last valuation	3,576
(3) Actual member and employer contributions	4,694
(4) Interest accrual	1,615
(5) Expected UAAL before changes	21,894
(6) Change in benefit provisions	0
(7) Change from assumption revision	0
(8) Expected UAAL after changes	21,894
(9) Actual UAAL	34,731
(10) Gain (loss): (8) - (9)	(12,837)
(11) % of beginning of year AAL	(7.7)%

\* *Unfunded actuarial accrued liability.*

<b>Valuation Date</b>	<b>Experience Gain (Loss) As % of Beginning of Year Accrued Liability</b>
6/30/2000	6.4%
6/30/2001	(3.8)%
6/30/2002	(11.1)%
6/30/2003	(12.0)%
6/30/2004	(10.2)%
6/30/2005	(5.9)%
6/30/2006	(2.5)%
6/30/2007	1.2%
6/30/2008	(1.5)%
6/30/2009	(7.7)%

**SUMMARY STATEMENT OF SYSTEM RESOURCES AND OBLIGATIONS  
AS OF JUNE 30, 2009**

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**Present Resources and Expected Future Resources**

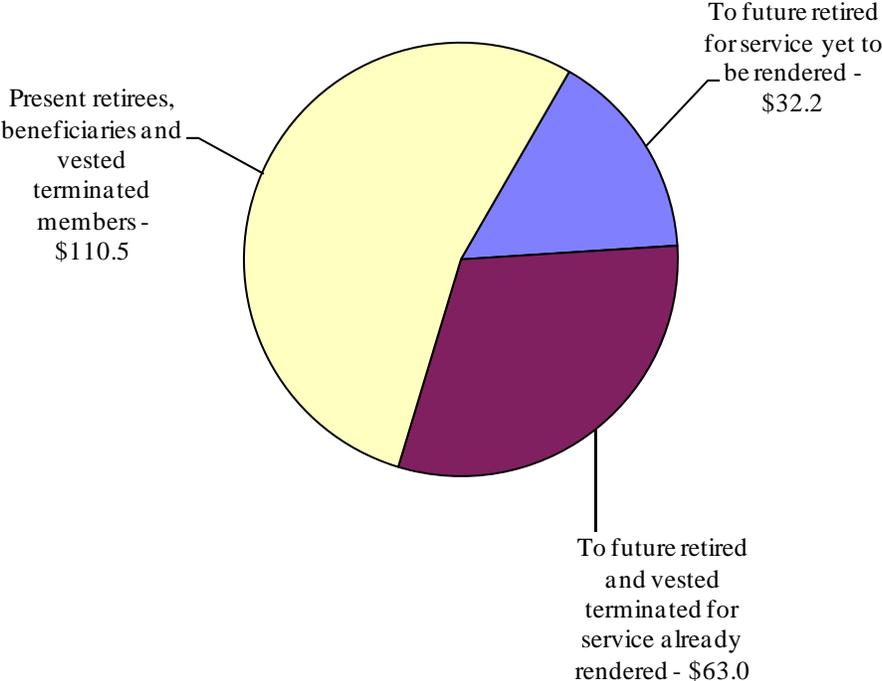
A. Present valuation assets	
1. Net assets from system financial statement	\$107,325,535
2. Market value adjustment	31,486,237
3. Actual valuation assets	<u>138,811,772</u>
B. Actuarial present value of expected future employer contributions	
1. For normal costs	25,271,883
2. For unfunded actuarial accrued liabilities	34,730,870
3. Totals	<u>60,002,752</u>
C. Actuarial present value of expected future member contributions	6,934,057
<b>D. Total Present and Expected Future Resources</b>	<b>\$205,748,582</b>

**Present Value of Expected Future Benefit Payments and Reserves**

A. To retirees and beneficiaries	\$107,668,438
B. To vested terminated members	2,789,863
C. To present active members	
1. Allocated to service rendered prior to valuation date	63,084,341
2. Allocated to service likely to be rendered after valuation date	32,205,940
3. Totals	<u>95,290,281</u>
<b>D. Total Actuarial Present Value of Expected Future Benefit Payments</b>	<b>\$205,748,582</b>

**ALLOCATION OF \$205.7 MILLION OF BENEFIT PROMISES  
AS OF JUNE 30, 2009**

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## COMMENTS

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**COMMENT A:** Contribution requirements for the General group increased due to unfavorable investment performance. Contribution requirements for Police and Fire increased due to unfavorable investment performance and a larger number of retirements than expected.

**COMMENT B:** For the year ended June 30, 2009, the actual net investment return of (16.8)% was less than the long term assumption of 7.75% on a market value basis. Under the asset valuation method, investment gains and losses are spread over a 4-year period. After combining the phase-in of investment gains and losses for the current and prior three years, there was a net recognized asset loss for the year of \$11.2 million. The Funding Value of Assets now exceeds the Market Value by \$31 million (see page B-14). These losses will be recognized in the Funding Value over the next three years causing significant upward pressure on the contribution rate.

**COMMENT C:** As a result of the unfavorable system experience, the funded status of the plan decreased from 87.2% last year to 82.5% as of June 30, 2009. On a market value basis, the funded status is 61.8% as of June 30, 2009.

**COMMENT D:** Recently the Actuarial Standards Board issued an Actuarial Standard of Practice Statement Number 44 (ASOP 44). ASOP 44 requires a reasonable relationship between the valuation assets and the underlying market value of Retirement System assets among other things. The current ratio of valuation assets to the market value of assets is 129% which is still within a reasonable range around the market value. Continued volatility in investment returns coupled with unrecognized investment losses may result in a ratio that is outside of a reasonable range. We may provide some recommendations for changing the asset smoothing method in future valuations.

## COMMENTS, RECOMMENDATIONS AND CONCLUSION

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**RESERVE TRANSFERS:** The actuarial present value of benefits payable to General retirees and beneficiaries on the rolls as of June 30, 2009 exceeded the Reserve for Retired Benefit Payments for General members by \$2,691,581. The actuarial present value of benefits payable to Police/Fire retirees and beneficiaries on the rolls as of June 30, 2009, exceeded the reserves allocated to the Police/Fire division by \$4,233,659. In accordance with the Retirement System Ordinance, we recommend the transfer of \$2,691,581 from the Reserve for Employer Contributions to the General Reserve for Retired Benefit Payments and \$4,233,659 from the Reserve for Employer Contributions to the Police/Fire Reserve for Retired Benefit Payments. In accordance with the current administrative procedures, since the reserve for Undistributed Investment Income is less than 10% of the Market Value of the fund, no transfer should be made from the reserve for Undistributed Investment Income to the reserve for Employer Contributions.

**CONCLUSION:** We certify that the valuation is complete and accurate and was made in accordance with generally recognized actuarial methods. The actuarial assumptions summarized in Section C are in aggregate a reasonable representation of the past and anticipated future experience of the System. Due to the current economic climate and unrecognized investment losses, it is expected that contribution requirements will increase over the next few years.

**ACTUARIAL ACCRUED LIABILITIES & ASSETS  
COMPARATIVE STATEMENT**

Valuation Date	Actuarial Accrued Liability (AAL) (\$1,000s)	Valuation Assets (\$1,000s)	Unfunded Actuarial Accrued Liability (UAAL) (\$1,000s)	Ratio of Valuation Assets to AAL	Ratio of UAAL to Valuation Payroll
5-31-86	\$ 52,625	\$ 41,593	\$ 11,032	79.0 %	105.6 %
5-31-87*	57,698	45,963	11,735	79.7 %	102.1 %
5-31-88	61,331	51,036	10,295	83.2 %	86.0 %
5-31-89*	65,212	54,259	10,953	83.2 %	93.8 %
5-31-90*	68,924	58,438	10,486	84.8 %	84.2 %
5-31-91*	73,106	62,262	10,844	85.2 %	82.7 %
5-31-92*	77,429	69,859	7,570	90.2 %	58.9 %
6-30-93*	84,193	77,427	6,766	92.0 %	49.5 %
6-30-94*	88,519	88,519	0	100.0 %	-
6-30-95*	92,495	97,795	(5,300)	105.7 %	-
6-30-96	94,730	105,572	(10,842)	111.4 %	-
6-30-97	97,622	116,317	(18,695)	119.2 %	-
6-30-98	102,995	132,289	(29,294)	128.4 %	-
6-30-99	107,934	147,433	(39,499)	136.6 %	-
6-30-00	111,515	159,268	(47,753)	142.8 %	-
6-30-00*	113,215	159,268	(46,053)	140.7 %	-
6-30-01*	121,589	162,586	(40,997)	133.7 %	-
6-30-02	128,303	156,403	(28,100)	121.9 %	-
6-30-03*	136,529	146,740	(10,211)	107.5 %	-
6-30-04*	146,386	137,851	8,535	94.2 %	-
6-30-05*	152,016	134,773	17,243	88.7 %	82.7 %
6-30-06	158,239	137,264	20,975	86.7 %	102.7 %
6-30-07	162,782	143,619	19,163	88.2 %	94.3 %
6-30-08	166,957	145,561	21,396	87.2 %	104.6 %
6-30-09	173,543	138,812	34,731	80.0 %	172.5 %

\* After changes in benefit provisions and/or actuarial assumptions and actuarial cost methods.

**The Ratio of Present Assets to 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 ratio can be expected to increase (or decrease) gradually toward 100%.

**The Ratio of UAAL to 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 ratio, the greater the financial strength - and vice-versa.

## COMPUTED EMPLOYER CONTRIBUTIONS COMPARATIVE STATEMENT

Valuation Date	Active Members				Retirees & Beneficiaries				Employer Contributions		
	No.	Valuation Payroll			No.	Active Per Retiree	Annual Allowances		General & Water	Police & Fire	Wt. Avg.
		Total	Average	% Incr.			\$	% of Payroll			
5-31-85	358	\$ 10,280,426	\$28,716	4.1 %	288	1.20	\$ 2,125,341	20.7 %	16.49 %	22.68 %	
5-31-86	359	10,450,609	29,110	1.7 %	297	1.20	2,236,500	21.4 %	16.05 %	21.24 %	
5-31-87*	363	11,491,099	31,656	10.0 %	311	1.20	2,495,645	21.7 %	16.34 %	22.60 %	
5-31-88	364	11,974,522	32,897	4.2 %	330	1.10	2,842,657	23.7 %	15.75 %	22.26 %	
5-31-89*	357	11,681,433	32,721	(2.4)%	363	0.98	3,535,678	30.3 %	17.39 %	22.32 %	
5-31-90*	360	12,453,638	34,593	6.6 %	368	0.98	3,594,058	28.9 %	16.95 %	23.12 %	
5-31-91*	357	13,112,701	36,730	5.3 %	374	0.95	3,763,075	28.7 %	16.50 %	24.52 %	
5-31-92	352	12,844,067	36,489	(2.0)%	395	0.89	4,317,111	33.6 %	15.53 %	23.58 %	
6-30-93*	364	13,664,416	37,540	6.4 %	407	0.89	4,597,263	33.6 %	17.02 %	22.50 %	
6-30-94*#	360	14,109,602	39,193	3.3 %	415	0.87	4,894,145	34.7 %	11.85 %	15.16 %	0.13 %
6-30-95*	370	14,595,387	39,447	3.4 %	427	0.87	5,375,306	36.8 %	9.45 %	9.75 %	9.59 %
6-30-96	371	14,991,326	40,408	2.7 %	427	0.87	5,529,852	36.9 %	5.07 %	6.20 %	5.62 %
6-30-97	384	15,949,326	41,535	6.4 %	430	0.89	5,647,518	35.4 %	0.60 %	0.42 %	0.53 %
6-30-98	392	17,181,869	43,831	7.7 %	426	0.92	5,865,307	34.1 %	0.00 %	0.00 %	0.00 %
6-30-99	385	17,501,352	45,458	1.9 %	429	0.90	6,051,286	34.6 %	0.00 %	0.00 %	0.00 %
6-30-00*	396	18,129,821	45,782	3.6 %	437	0.91	6,346,060	35.0 %	0.00 %	0.00 %	0.00 %
6-30-01*	397	18,962,345	47,764	4.6 %	447	0.89	6,865,032	36.2 %	0.00 %	0.00 %	0.00 %
6-30-02	394	19,368,385	49,158	2.1 %	458	0.86	7,429,422	38.4 %	0.00 %	0.00 %	0.00 %
6-30-03*	391	20,138,113	51,504	4.0 %	456	0.86	7,710,821	38.3 %	3.79 %	10.20 %	6.90 %
6-30-04*	378	20,569,285	54,416	2.1 %	474	0.80	8,575,578	41.7 %	16.27 %	22.87 %	19.55 %
6-30-05*	365	20,839,464	57,094	1.3 %	479	0.76	9,305,818	44.7 %	16.76 %	23.52 %	20.12 %
6-30-06	351	20,431,658	58,210	(2.0)%	479	0.73	9,908,394	48.5 %	18.25 %	24.30 %	21.33 %
6-30-07	346	20,327,590	58,750	(0.5)%	482	0.72	10,342,238	50.9 %	17.57 %	23.49 %	20.60 %
6-30-08	336	20,459,734	60,892	0.7 %	477	0.70	10,386,269	50.8 %	\$2,058,401	21.79 %	\$4,395,643
6-30-09*	317	20,139,069	63,530	(1.6)%	480	0.66	10,872,875	54.0 %	\$2,451,876	25.35 %	\$5,158,959

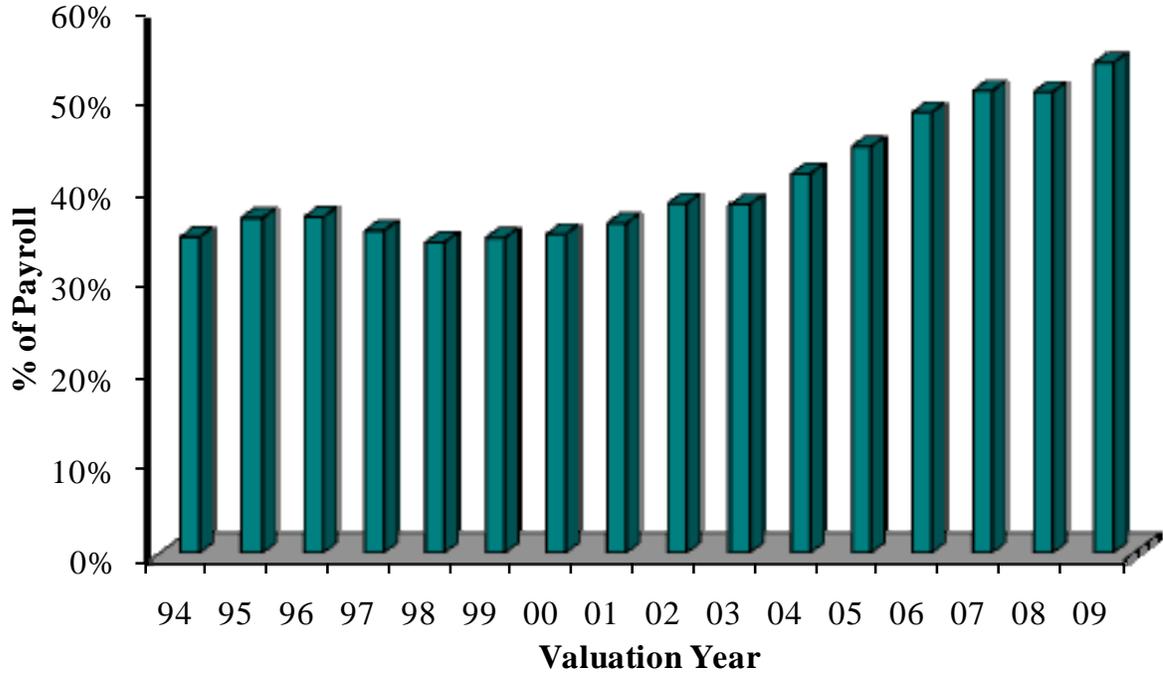
\* After changes in benefit provisions.

# Actuarial assumptions revised.

# ACTIVE MEMBERS & BENEFIT RECIPIENTS

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## Benefits as a Percent of Payroll



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## **SECTION B**

### **SUMMARY OF BENEFIT PROVISIONS AND VALUATION DATA**

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# SUMMARY OF BENEFIT PROVISIONS EVALUATED

## JUNE 30, 2009

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### REGULAR RETIREMENT (no reduction factor for age):

#### *Eligibility:*

AFSCME, Executive Department Heads, Department Heads and Deputies, Professional and Technical, Teamsters hired prior to dates shown below: Age 50 with 25 years of service, age 55 with 20 years of service, or age 60 with 5 years of service.

Police Service Aides: Age 55 with 25 years of service or age 60 with 5 years of service.

Supervisors, Local 270M: Any age with 30 years of service, age 50 with 25 years of service, age 55 with 20 years of service, or age 60 with 5 years of service.

Police Command, Police Officers, Detectives, Fire Fighters: Any age with 25 years of service or age 55 with 10 years of service.

<u>Group</u>	<u>Date of Closure to New Hires</u>
Local 270M	7/1/2006
Department Heads and Deputies	7/15/2008
Professional & Technical	7/1/2007
AFSCME	7/1/2006
Foremen and Supervisors	7/1/2006
Judges	5/1/2008

#### *Type of Final Average Compensation (FAC):*

AFSCME, Executive Department Heads, Professional & Technical, Supervisors, Police Command, Detectives, Fire Fighters: Highest 2 years out of last 10 years.

Department Heads & Deputies, Local 270M, Police Officers, Police Service Aides, Teamsters: Highest 2 consecutive years out of last 10 years.

#### *Annual Amount:*

AFSCME, Executive Department Heads, Department Heads and Deputies, Professional and Technical, Local 270M, Supervisors: Total service years multiplied by 2.5% for the first 20 years of service and 2.2% thereafter of FAC with a maximum allowance of 75% of FAC.

Teamsters: For employees hired before 4/29/2004, 2.8% for the first 20 years of service and 1.5% thereafter. For employees hired after 4/29/2004, 2.5% for the first 20 years of service and 2.2% thereafter of FAC. All employees have a maximum allowance of 75% of FAC.

Police Officers, Detectives, Police Command, Fire Fighters: Total service years multiplied by 2.8% of FAC with a maximum allowance of 75% of FAC.

Police Service Aides: Total service years multiplied by 2.5% for the first 20 years of service and 2.2% thereafter of FAC with a maximum allowance of 80% of FAC.

# SUMMARY OF BENEFIT PROVISIONS EVALUATED

## JUNE 30, 2009

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### DEFERRED RETIREMENT (vested benefit):

#### *Eligibility:*

AFSCME, Executive Department Heads, Department Heads and Deputies, Professional and Technical, Local 270M, Supervisors, Police Service Aides: 5 years of service.  
Police Officers, Police Command, Detectives, Fire Fighters: 10 years of service.

#### *Annual Amount:*

Same as regular retirement but based upon service and final average compensation at time of termination.

AFSCME, Executive Department Heads, Department Heads and Deputies, Professional & Technical, Police Service Aides, Teamsters: Payable at age 55 with 25 years of service or age 60 with 5 years of service.

Supervisors, Local 270M: Payable at age 50 with 30 years of service or age 60 with 5 years of service.

Police Officers, Police Command, Detectives, Fire Fighters: Payable at age 55 with 10 years of service.

### DUTY DISABILITY RETIREMENT:

*Eligibility* - No age or service requirements.

#### *Annual Amount:*

AFSCME: 66-2/3% of base monthly salary at time of disability, with recomputation to 70% after 5 years of disability and 75% after 10 years. Benefit is payable until attaining minimum retirement requirements.

Executive Department Heads, Department Heads & Deputies: 66% of base monthly salary at time of disability. Benefit is payable until voluntary retirement age.

Professional & Technical, Supervisors, Local 270M, Teamsters: 66-2/3% of base monthly salary at time of disability. Benefit is payable until voluntary retirement age for Professional & Technical and Teamsters and until age 60 for Supervisors and Local 270M.

Police Officers, Police Command, Detectives, Police Service Aides: 66-2/3% of base monthly salary, where salary is adjusted for negotiated pay increases for physical disabilities and remains the salary at the time of disability for psychological disabilities. Workers' compensation is offset. Benefit is payable until age 55 for Police Officers, Police Command, and Detectives and until age 60 for Police Service Aides.

Fire Fighters: 66-2/3% of base monthly salary at time of disability. Worker's compensation is offset. Benefit is payable until voluntary retirement age.

# SUMMARY OF BENEFIT PROVISIONS EVALUATED

## JUNE 30, 2009

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### ***Duty Disability Maximum Monthly Benefit:***

Executive Department Heads, Department Heads & Deputies:	\$5,000
Professional & Technical:	\$3,500
AFSCME, Local 270M, Supervisors, Teamsters, Police Officers, Police Command, Detectives, Police Service Aides, Fire Fighters:	No maximum

### **NON-DUTY DISABILITY RETIREMENT:**

#### ***Eligibility:***

Local 270-M: 10 years of service.

AFSCME, Executive Department Heads, Department Heads and Deputies, Professional and Technical, Supervisors, Police Officers, Police Command, Detectives, Police Service Aides, Fire Fighters: 5 years of service.

#### ***Annual Amount:***

AFSCME: 66-2/3% of base monthly salary at time of disability. Benefit is payable until attaining minimum retirement requirements.

Fire Fighters: 50% of base monthly salary at time of disability. Benefits are payable the same as duty disability.

Executive Department Heads, Department Heads and Deputies, Professional and Technical, Local 270M, Supervisors, Police Officers, Police Command, Police Service Aides, Detectives: Benefits are the same as duty disability.

### **DUTY DEATH BEFORE RETIREMENT:**

***Eligibility*** - No age or service requirements.

***Annual Amount*** - Computed as regular retirement but with additional service credit from date of death until date age 60 would have been attained. Spouse is paid 75% of regular retirement benefit; 1 or 2 unmarried children under age 19 are paid 10% of regular retirement benefit per child; 3 or more unmarried children under age 19 are paid an equal share of 25% of regular retirement benefit. Worker's Compensation payments are offset.

### **NON-DUTY DEATH BEFORE RETIREMENT:**

***Eligibility*** - 3 years of service.

***Annual Amount*** - Same as duty death before retirement.

### **AUTOMATIC DEATH BENEFIT AFTER RETIREMENT:**

75% of a retiree's straight life pension will be continued to an eligible surviving spouse upon retiree's death with no corresponding reduction in straight life pension.

### **LUMP SUM DEATH BENEFIT AFTER RETIREMENT:**

\$4,000 for all divisions.

**SUMMARY OF BENEFIT PROVISIONS EVALUATED**  
**JUNE 30, 2009**

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**MEMBER CONTRIBUTIONS:**

	Percent of Annual Compensation	
	To Social Security Wage Base	Over Social Security Wage Base
Judges	1.20%	1.20%
AFSCME, Police Service Aides	1.50	3.50
Executive Department Heads, Department Heads and Deputies, Teamster, Professional and Technical	2.00	4.00
Local 270M	3.00	5.00
Supervisors	3.00	3.00
Police Officers, Detectives, Police Command, Fire Fighters:		
Effective July 1, 2009	4.00	4.00
Effective July 1, 2010	5.00	5.00

**ANNUITY WITHDRAWAL:**

Members may withdraw their accumulated member contributions upon retirement with a corresponding reduction in pension amount.

**COVERED COMPENSATION:**

AFSCME, Executive Department Heads, Department Heads and Deputies, Professional and Technical, Local 270M, Supervisors: Covered compensation includes base salary, longevity and up to 96 hours of sick leave incentive pay.

Teamsters: Covered compensation includes base salary and up to 96 hours of sick leave incentive pay.

Police Command: Covered compensation includes base salary, longevity, payment in lieu of holidays, uniform allowance, up to 96 hours of sick leave incentive pay and required administrative time.

Fire Fighters: Covered compensation includes base salary, longevity, payment in lieu of holidays, uniform allowance, cleaning allowance, food allowance, sick leave incentive pay and paramedic premium.

Police Officers, Police Service Aides: Covered compensation includes base salary, longevity, payment in lieu of holidays, up to 120 hours of sick and personal business days, and up to 200 hours from the vacation bank.

Detectives: Covered compensation includes base salary, longevity and payment in lieu of holidays, 24 personal business hours, up to 96 hours sick leave incentive pay and up to 200 hours from the vacation bank.

**RETIREES AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS  
COMPARATIVE STATEMENT**

Valuation Date	Added to Rolls*		Removed from Rolls #			Net Increase		Rolls End of Year	
	No.	Annual Allowances	No.		Annual Allowances	No.	Annual Allowances	No.	Annual Allowances
			A	E					
5/31/85	29	\$ 283,601	12	8.8	\$ 68,665	17	\$214,936	288	\$2,125,341
5/31/86	17	147,292	8	9.3	36,133	9	111,159	297	2,236,500
5/31/87	22	288,998	8	9.9	29,853	14	259,145	311	2,495,645
5/31/88	26	403,952	7	10.1	56,940	19	347,012	330	2,842,657
5/31/89	41	748,391	8	10.7	55,370	33	693,021	363	3,535,678
5/31/90	15	184,697	10	11.8	126,317	5	58,380	368	3,594,058
5/31/91	18	292,334	12	12.8	123,317	6	169,017	374	3,763,075
5/31/92	37	668,965	16	13.6	114,929	21	554,036	395	4,317,111
6/30/93	27	408,146	15	13.9	127,994	12	280,152	407	4,597,263
6/30/94	26	456,550	18	14.3	159,668	8	296,882	415	4,894,145
6/30/95	21	513,916	9	13.5	32,755	12	481,161	427	5,375,306
6/30/96	12	272,020	12	13.5	117,474	0	154,546	427	5,529,852
6/30/97	19	349,731	16	9.8	232,065	3	117,666	430	5,647,518
6/30/98	12	300,261	16	6.8	82,472	(4)	217,789	426	5,865,307
6/30/99	24	369,781	21	15.2	183,802	3	185,979	429	6,051,286
6/30/00	25	532,563	17	15.6	237,789	8	294,774	437	6,346,060
6/30/01	18	585,533	8	16.2	66,561	10	518,972	447	6,865,032
6/30/02	27	648,282	16	17.3	83,892	11	564,390	458	7,429,422
6/30/03	24	512,343	26	18.1	230,945	(2)	281,399	456	7,710,821
6/30/04	31	1,003,875	13	18.4	139,118	18	864,757	474	8,575,578
6/30/05	27	953,722	22	19.5	223,481	5	730,240	479	9,305,818
6/30/06	21	824,024	21	16.4	221,448	0	602,576	479	9,908,394
6/30/07	24	631,164	21	17.4	197,320	3	433,844	482	10,342,238
6/30/08	16	402,955	21	18.0	358,924	(5)	44,031	477	10,386,269
6/30/09	23	698,353	20	18.8	211,747	3	486,606	480	10,872,875

\* Includes beneficiaries of deceased retirees.

# Includes deceased retirees with beneficiaries.

A - Represents actual number.

E - Represents expected number based on actuarial assumptions.

**RETIREES AND BENEFICIARIES JUNE 30, 2009**  
**TABULATED BY TYPE OF ALLOWANCE BEING PAID**

Type of Allowances Being Paid	Annual Retirement Allowances					
	General & Water		Police Officers & Fire Fighters		Totals	
	No.	Amount	No.	Amount	No.	Amount
<b>Age and Service Allowances</b>						
Regular allowance						
Terminating at death of retirant	66	\$ 1,064,348	20	\$ 671,036	86	\$ 1,735,384
75% of benefit continuing to spouse	126	2,734,387	140	4,993,830	266	7,728,217
100% Joint & Survivor benefit	2	10,628	2	7,493	4	18,121
50% Joint & Survivor benefit	2	10,684			2	10,684
Survivor beneficiary of deceased retirant	47	375,044	44	608,374	91	983,418
Domestic Relations Order Recipient	6	74,517	2	29,050	8	103,567
<b>Total Age and Service Allowances</b>	<b>249</b>	<b>\$4,269,608</b>	<b>208</b>	<b>\$6,309,783</b>	<b>457</b>	<b>\$10,579,391</b>
<b>Casualty Allowances</b>						
Duty Disability Allowances						
Terminating at death of retirant	1	\$ 1,916			1	\$ 1,916
Joint & Survivor benefit	1	4,444	1	\$ 22,780	2	27,224
Survivor beneficiary of deceased retirant						
<b>Totals</b>	<b>2</b>	<b>\$ 6,360</b>	<b>1</b>	<b>\$ 22,780</b>	<b>3</b>	<b>\$ 29,140</b>
Non-Duty Disability Allowances						
Terminating at death of retirant						
Joint & Survivor benefit						
Survivor beneficiary of deceased retirant	3	30,037			3	30,037
<b>Totals</b>	<b>3</b>	<b>30,037</b>			<b>3</b>	<b>30,037</b>
Duty Death Allowances						
Survivor beneficiary			1	\$ 4,860	1	\$ 4,860
Child(ren) beneficiary						
<b>Totals</b>			<b>1</b>	<b>\$ 4,860</b>	<b>1</b>	<b>\$ 4,860</b>
Non-Duty Death Allowances						
Spouse beneficiary	7	\$ 67,270	8	\$ 157,801	15	\$ 225,071
Child(ren) beneficiary			1	4,376	1	4,376
<b>Totals</b>	<b>7</b>	<b>\$ 67,270</b>	<b>9</b>	<b>\$ 162,177</b>	<b>16</b>	<b>\$ 229,447</b>
<b>Total Casualty Allowances</b>	<b>12</b>	<b>\$ 103,667</b>	<b>11</b>	<b>\$ 189,817</b>	<b>23</b>	<b>\$ 293,484</b>
<b>Total Allowances Being Paid</b>	<b>261</b>	<b>\$4,373,275</b>	<b>219</b>	<b>\$6,499,600</b>	<b>480</b>	<b>\$10,872,875</b>

**RETIREES AND BENEFICIARIES JUNE 30, 2009**  
**TABULATED BY ATTAINED AGES**

Attained Ages	Age and Service		Casualty		Totals	
	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances
Under 40			3	\$ 10,700	3	\$ 10,700
40-44	3	\$ 155,706	1	23,714	4	179,420
45-49	12	591,870	1	37,878	13	629,748
50-54	14	662,960			14	662,960
55-59	39	1,521,519	4	95,366	43	1,616,885
60-64	69	2,343,543	1	4,860	70	2,348,403
65-69	73	1,834,515	1	1,916	74	1,836,431
70-74	64	1,386,776	5	68,279	69	1,455,055
75-79	63	936,769	2	9,950	65	946,719
80-84	59	721,950	3	36,736	62	758,686
85-89	42	326,209	1	1,797	43	328,006
90 & Over	19	97,574	1	2,288	20	99,862
<b>Totals</b>	<b>457</b>	<b>\$10,579,391</b>	<b>23</b>	<b>\$293,484</b>	<b>480</b>	<b>\$10,872,875</b>

**INACTIVE MEMBERS JUNE 30, 2009**  
**TABULATED BY ATTAINED AGES**

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Also included in the valuation were 30 General members and 6 Police/Fire members who are eligible for deferred allowances with an estimated value of \$498,565 upon retirement. Some of these 36 inactive members are presently covered under either a long-term disability insurance policy or worker's compensation.

<u>Attained Ages</u>	<u>No.</u>	<u>Estimated Deferred Annual Allowances</u>
36	1	\$ 18,744
38	1	11,544
40	1	6,170
42	1	5,460
43	1	4,099
46	4	76,488
47	1	27,613
49	2	30,324
50	2	19,268
52	1	16,467
53	2	13,967
54	4	43,900
55	2	16,560
56	3	33,355
57	2	34,705
58	6	92,410
59	1	13,762
60	1	33,729
<b>Totals</b>	<b>36</b>	<b>\$498,565</b>

## ACTIVE MEMBERS -- COMPARATIVE SCHEDULE

Valuation Date	Active Members	Valuation Payroll	Average			
			Age	Service	Pay	% Pay Increase
5-31-90	360	\$12,453,638	42.0	11.4	\$34,593	5.7 %
5-31-91	357	13,112,701	42.2	11.8	36,730	6.2 %
5-31-92	352	12,844,067	41.9	11.6	36,489	(0.7)%
6-30-93	364	13,664,416	41.7	11.5	37,540	2.9 %
6-30-94	360	14,109,602	41.6	11.3	39,193	4.4 %
6-30-95	370	14,595,387	41.3	10.8	39,447	0.6 %
6-30-96	371	14,991,326	41.5	10.9	40,408	2.4 %
6-30-97	384	15,949,325	41.8	10.8	41,535	2.8 %
6-30-98	392	17,181,869	41.8	10.8	43,831	5.5 %
6-30-99	385	17,501,352	42.4	11.5	45,458	3.7 %
6-30-00	396	18,129,821	42.2	11.0	45,782	0.7 %
6-30-01	397	18,962,345	42.7	11.1	47,764	4.3 %
6-30-02	394	19,368,385	43.1	10.9	49,158	2.9 %
6-30-03	391	20,138,113	43.2	11.1	51,504	4.8 %
6-30-04	378	20,569,285	43.5	10.9	54,416	5.7 %
6-30-05	365	20,839,464	43.7	11.0	57,094	4.9 %
6-30-06	351	20,431,658	43.9	11.4	58,210	2.0 %
6-30-07	346	20,327,590	44.1	11.8	58,750	0.9 %
6-30-08	336	20,459,734	44.9	12.6	60,892	3.6 %
6-30-09	317	20,139,069	45.6	13.5	63,530	4.3 %

### ACTIVE MEMBERS - JUNE 30, 2009

Group	Active Members	Valuation Payroll
Local 270M	50	\$ 2,472,836
Department Heads and Deputies	21	1,765,968
Professional & Technical	41	2,286,071
AFSCME	47	2,240,940
Foremen and Supervisors	6	436,523
Judges	2	96,770
Police Service Aides	10	522,252
Police	58	4,166,998
Fire	58	4,032,543
Police Command	12	1,079,848
Police Detectives	8	646,741
Police/Fire Department Heads	4	391,579
<b>Total</b>	<b>317</b>	<b>\$20,139,069</b>

## ACTIVE MEMBERS ADDED TO AND REMOVED FROM ROLLS

Year Ended	Number Added During Year		Terminations During Year								Active Members End of Year
			Normal Retirement		Disabled		Death Service		Other Terminations		
	A	E	A	E	A	E	A	E	A	E	
5-31-90	24	21	6	12.9	0	2.8	1	1.2	14	12.3	360
5-31-91	16	19	8	11.0	1	2.6	1	1.1	9	13.6	357
5-31-92	24	29	21	11.7	0	2.7	1	1.0	7	13.2	352
6-30-93	30	18	12	12.9	0	2.4	2	1.0	4	11.6	364
6-30-94	25	29	16	10.5	2	2.3	1	1.1	10	11.3	360
6-30-95	37	27	14	10.5	2	2.3	2	1.0	9	11.9	370
6-30-96	27	26	8	10.2	0	1.4	0	0.9	18	11.8	371
6-30-97	30	17	8	9.3	0	1.3	0	0.8	9	14.0	384
6-30-98	23	15	9	11.2	0	1.4	0	0.8	6	14.5	392
6-30-99	21	28	11	10.5	0	1.4	0	0.7	17	14.5	385
6-30-00	38	27	12	10.1	0	1.3	0	0.9	15	13.5	396
6-30-01	27	26	13	9.5	1	1.3	0	0.9	12	14.9	397
6-30-02	25	28	15	7.4	1	1.3	2	0.9	10	14.6	394
6-30-03	16	19	12	9.8	2	1.3	0	0.8	5	14.1	391
6-30-04	19	32	21	10.8	0	1.3	1	0.9	10	12.5	378
6-30-05	14	27	20	9.5	0	1.3	0	0.9	7	12.1	365
6-30-06	7	21	18	5.9	2	1.4	0	0.7	1	7.7	351
6-30-07	13	18	13	4.8	0	1.5	0	0.7	5	6.5	346
6-30-08	2	12	7	6.9	1	1.5	0	0.6	4	6.0	336
6-30-09	0	9	13	7.9	1	1.6	0	0.7	5	5.1	317
<b>Last 5 Years</b>	<b>36</b>	<b>87</b>	<b>71</b>	<b>35.0</b>	<b>4</b>	<b>7.3</b>	<b>0</b>	<b>3.6</b>	<b>22</b>	<b>37.4</b>	

A - Represents actual number.

E - Represents expected number based on actuarial assumptions.

**GENERAL AND WATER MEMBERS  
(INCLUDES POLICE SERVICE AIDES)  
BY ATTAINED AGE AND YEARS OF SERVICE**

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Age Group	Years of Accrued Service							No.	Totals Salary
	0-4	5-9	10-14	15-19	20-24	25-29	30 & Up		
25-29	2	1						3	\$ 162,548
30-34	3	5	1					9	456,371
35-39	2	6	7	1				16	783,260
40-44		11	5	6	2			24	1,298,049
45-49	1	6	13	6	8			34	1,889,947
50-54		8	14	6	9	3		40	2,355,868
55-59	1	12	6	5	8		3	35	1,943,913
60		2	1					3	131,967
61	1							1	42,794
62	2				1		1	4	353,964
63			3					3	143,650
65									
66		1						1	37,163
67		1	1					2	119,492
68			1					1	52,078
71				1				1	50,296
<b>Totals</b>	<b>12</b>	<b>53</b>	<b>52</b>	<b>25</b>	<b>28</b>	<b>3</b>	<b>4</b>	<b>177</b>	<b>\$9,821,360</b>

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

**Group Averages**

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Age: 49.0 years  
Service: 13.4 years  
Annual Pay: \$55,488

**POLICE AND FIRE MEMBERS  
BY ATTAINED AGE AND YEARS OF SERVICE**

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Age Group	Years of Accrued Service							No.	Totals Salary
	0-4	5-9	10-14	15-19	20-24	25-29	30 & Up		
20-24									
25-29	6	1						7	\$ 432,320
30-34	10	8						18	1,158,868
35-39		16	12	4				32	2,399,447
40-44	2	5	11	18	1			37	2,800,288
45-49		1	4	9	11			25	1,888,942
50-54				5	9	2		16	1,234,521
55-59					3		1	4	319,868
61					1			1	83,455
<b>Totals</b>	<b>18</b>	<b>31</b>	<b>27</b>	<b>36</b>	<b>25</b>	<b>2</b>	<b>1</b>	<b>140</b>	<b>\$10,317,709</b>

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

**Group Averages**

Age: 41.3 years  
Service: 13.7 years  
Annual Pay: \$73,698

**SUMMARY OF REPORTED ASSET INFORMATION  
AS OF JUNE 30, 2009  
(MARKET VALUE)**

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**Balance Sheet**

Reported Assets			Reserves for
Cash & equivalents	\$ 524,115	Member contributions	\$ 9,698,724
Other short-term	2,566,047	Employer contributions	22,506,732
Receivables & accruals	390,783	Retired benefit payments	100,743,198
Equities	56,341,116	Undistributed investment income	(25,623,119)
Fixed income	47,568,001		
Real estate investments	0		
Accounts payable	(64,527)		
<b>Total Current Assets</b>	<b>\$107,325,535</b>	<b>Total Reserves</b>	<b>\$107,325,535</b>

**Revenues and Expenditures**

	2008-09	2007-08
Balance - Beginning of year	\$136,188,754	\$147,593,169
Revenues		
Member contributions	619,137	586,350
Employer contributions	4,074,977	4,161,255
Investment income	(21,544,384)	(4,379,239)
Total	(16,850,270)	368,366
Expenditures		
Benefit payments	10,836,716	10,548,540
Health insurance premiums for retired members	0	0
Refund of member contributions	456,773	237,542
Administrative & investment expenses	719,460	986,699
Total	12,012,949	11,772,781
Balance - End of year	\$107,325,535	\$136,188,754

## DEVELOPMENT OF FUNDING VALUE OF RETIREMENT SYSTEM ASSETS

Year Ended June 30:	2008	2009	2010	2011	2012
A. Funding Value Beginning of Year	\$143,619,213	\$145,560,741			
B. Market Value End of Year	136,188,754	107,325,535			
C. Market Value Beginning of Year	147,593,169	136,188,754			
D. Non-Investment Net Cash Flow	(6,038,477)	(6,599,375)			
E. Investment Income					
E1. Market Total: B-C-D	(5,365,938)	(22,263,844)			
E2. Amount for Immediate Recognition: (7.75%)	10,896,498	11,025,232			
E3. Amt. for Phased In Recognition: E1-E2	(16,262,436)	(33,289,076)			
F. Phased-In Recognition of Investment Income					
F1. Current Year: 0.25 x E3	(4,065,609)	(8,322,269)			
F2. First Prior Year	1,611,789	(4,065,609)	\$(8,322,269)		
F3. Second Prior Year	(398,736)	1,611,789	(4,065,609)	\$(8,322,269)	
F4. Third Prior Year	(63,937)	(398,737)	1,611,788	(4,065,609)	\$(8,322,269)
F5. Total Recognized Investment Gain/(Loss)	(2,916,493)	(11,174,826)	(10,776,090)	(12,387,878)	(8,322,269)
G. Funding Value End of Year: A+D+E2+F5	145,560,741	138,811,772			
H. Difference Between Market & Funding Value	(9,371,987)	(31,486,237)	(20,710,147)	(8,322,269)	0
<b>I. Recognized Rate of Return</b>	<b>5.7%</b>	<b>(0.1)%</b>			
J. Market Value Rate of Return	(3.7)%	(16.8)%			
K. Ratio of Funding Value to Market Value	106.9%	129.3 %			

The Funding Value of Assets recognizes assumed investment income (line E2) fully each year. Differences between actual and assumed investment income (line E3) are phased in over a closed 4-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 actual and assumed rates of investment income are exactly equal for 4 consecutive years, the Funding Value will become equal to Market Value.

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## **SECTION C**

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

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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 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 current value of benefits likely to be paid on account of member’s 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 on behalf of the group.

. . . plus . . .

**Ivestment** earnings on contributions received.

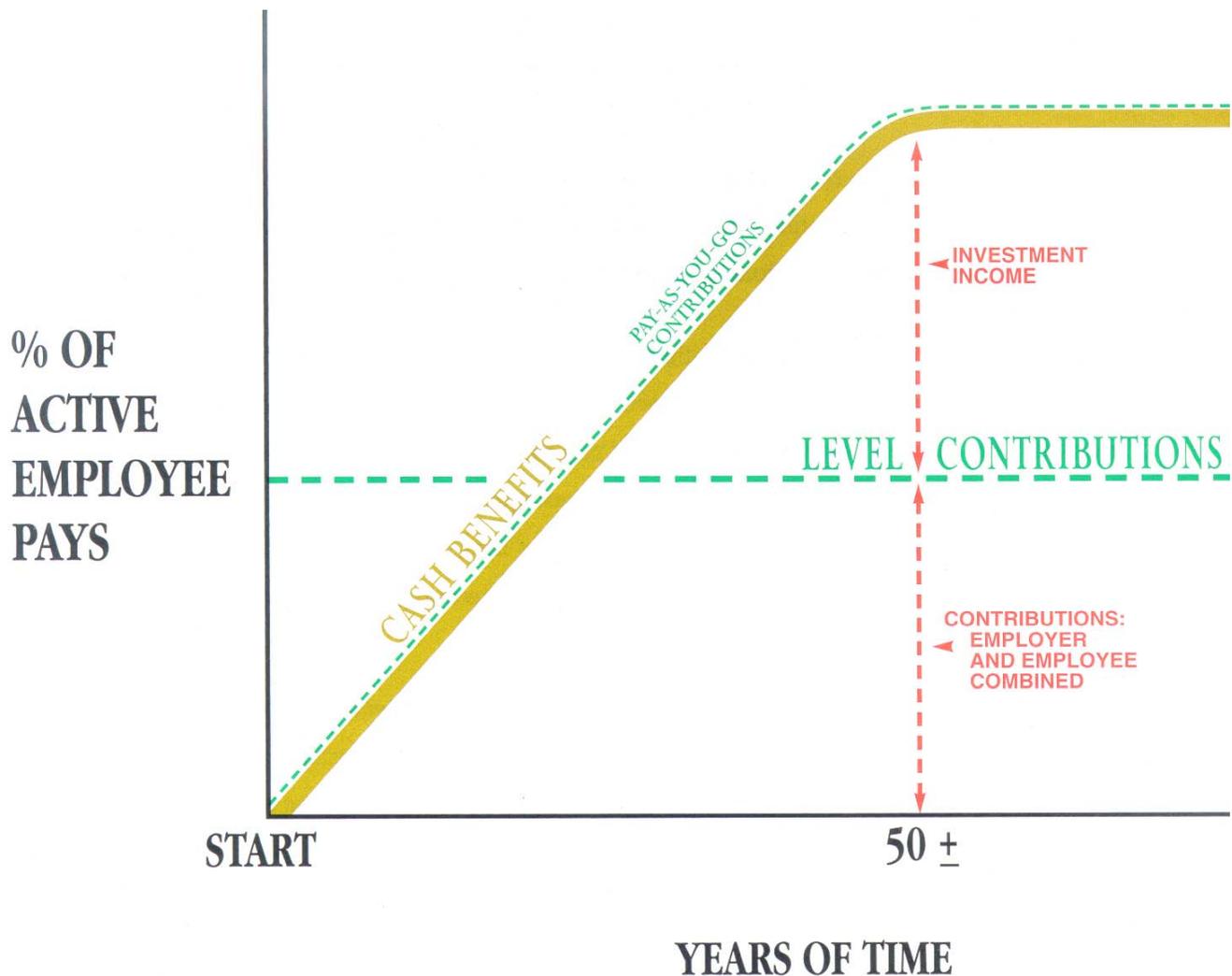
. . . minus . . .

**Expenses** incurred in operating the program.

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

There are retirement programs designed to defer the bulk of contributions far into the future. Lured by artificially low present contributions, such programs ignore the inevitable consequence of 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.*

***Computed Contribution Rate Needed to Finance Benefits:*** From a given schedule of benefits and from the data furnished, 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

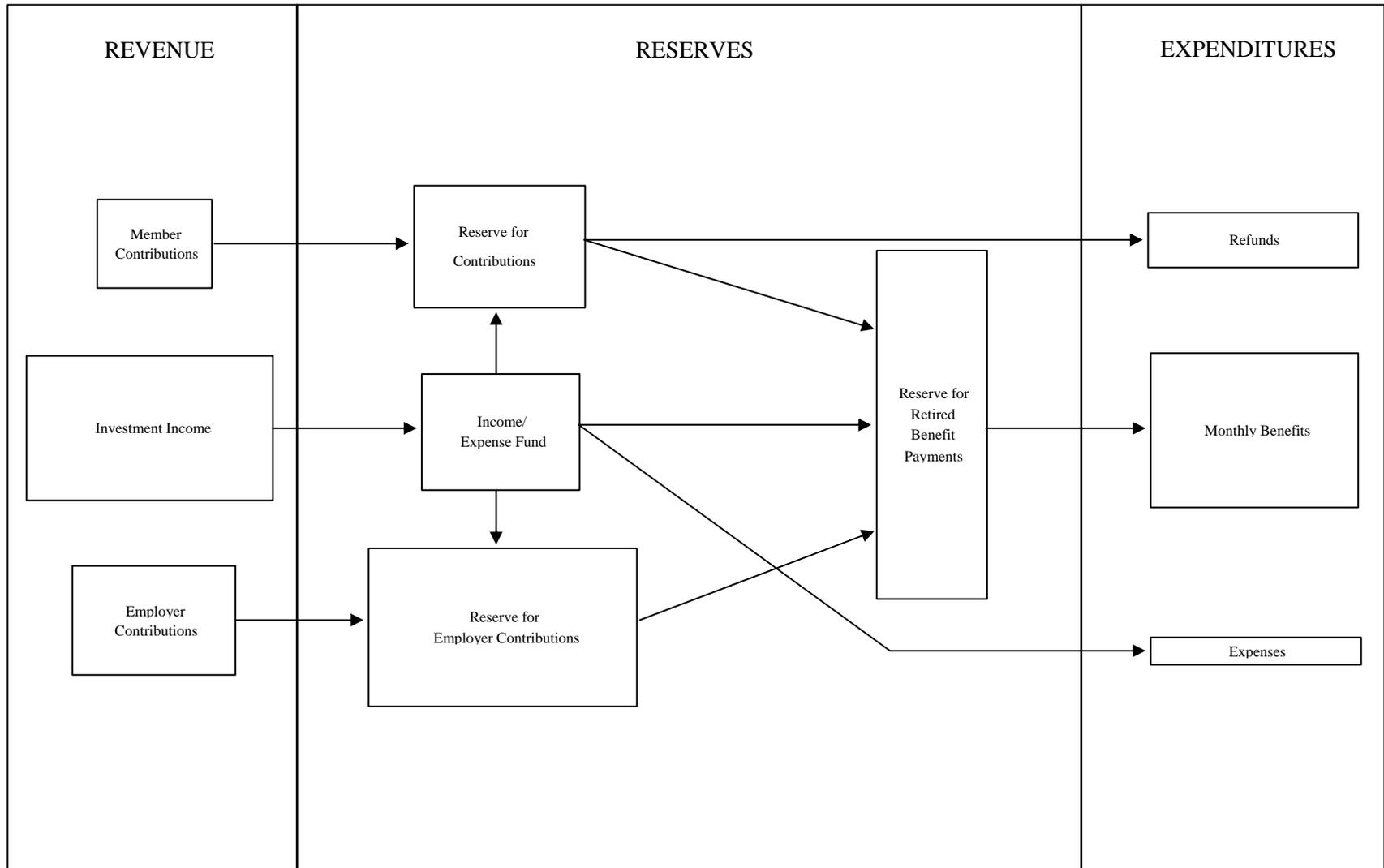
- Rates of investment return
- Rates of pay increase
- Changes in active member group size

Non-Economic Risk Areas

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

# FLOW OF MONEY THROUGH THE RETIREMENT SYSTEM

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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 an individual **entry-age normal cost** valuation method having the following characteristics:

- 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 member's benefit at the time of retirement;
- 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 for the police and firefighter plans and a 29 year level dollar amount for the general and water plans.

## ACTUARIAL ASSUMPTIONS USED IN THE VALUATION

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The actuary calculates the contribution requirements and benefit values of the plan by applying actuarial assumptions to the benefit provisions and census data furnished, using the valuation method described on page C-5.

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

- long-term rates of investment income
- patterns of salary increases
- rates of mortality before and after retirement
- rates of withdrawal from active membership
- rates of disability among members and their subsequent rates of recovery
- probabilities of retirement at various ages after benefit eligibility

In a valuation the monetary effect of each assumption, for each distinct experience group, is projected for the next year and for each year over the next half-century or longer.

Actual experience will not coincide exactly with assumed experience, regardless of the skill of the actuary, the completeness of the data and the precision of the many calculations that are made. Each valuation provides a complete recalculation of system obligations based upon assumptions regarding future experience and takes into account all past differences between assumed and actual experience. The result is a continual series of small adjustments of the computed contribution rate.

From time-to-time it is appropriate to modify one or more of the assumptions to reflect basic 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.

Sample Ages	Annual Rate of Salary Increase for Sample Age		
	Base (Economic)	Merit & Longevity	
		General & Water	Police-Fire
20	3.5%	3.8%	3.0%
25	3.5%	3.1%	3.0%
30	3.5%	2.7%	3.0%
35	3.5%	2.4%	2.1%
40	3.5%	2.1%	0.8%
45	3.5%	1.7%	0.2%
50	3.5%	1.1%	0.1%
55	3.5%	0.7%	0.0%
60	3.5%	0.2%	0.0%
65	3.5%	-	-
Ref		5	225

*The rate of investment return* was 7.75% per year, compounded annually, net after administrative and investment expenses. 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.

The assumed real return for funding purposes is the net rate of return in excess of average salary increases. Considering other assumptions used in the valuation, the 7.75% translates to a real return of approximately 4.25%.

	Year Ending June 30					5 Year Average
	2009	2008	2007	2006	2005	
(1) Nominal rate*	(0.1)%	5.7 %	9.0 %	6.1 %	2.6 %	4.6 %
(2) Increase in CPI	(1.4)%	5.0 %	2.7 %	4.3 %	2.5 %	2.6 %
(3) Average salary increase	4.3 %	3.6 %	0.9 %	2.0 %	4.9 %	3.2 %
(4) Real return						
- investment purposes						2.0 %
- funding purposes						1.4 %

\* *The nominal rate of return was computed using the approximate formula:  $i = I$  divided by  $1/2 (A+B-I)$ , where  $I$  is recognized investment income,  $A$  is the beginning of year funding value and  $B$  is the end of year funding value.*

*The mortality table* was the 1994 Group Annuity Mortality Table multiplied by 110%. This assumption is used to measure the probabilities of members dying before retirement and the probabilities of each benefit payment being made after retirement.

Sample Attained Ages	Single Life Retirement Values			
	Present Value of \$1 Monthly for Life		Future Life Expectancy (years)	
	Men	Women	Men	Women
50	\$136.42	\$142.76	29.80	34.03
55	128.19	136.18	25.29	29.33
60	118.00	127.62	21.01	24.78
65	106.21	117.34	17.08	20.51
70	93.44	105.55	13.60	16.60
75	79.50	91.49	10.51	12.96
80	64.91	76.08	7.85	9.75
Ref.	261	x 1.10	262	x 1.10

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

Retirement Ages	Percent of Eligible Active Members Retiring	
	General	Police Service Aides
45-49		
50	15%	
51	10%	
52	10%	
53	10%	
54	10%	
55	10%	15%
56	10%	10%
57	10%	10%
58	10%	10%
59	10%	10%
60	10%	10%
61	10%	10%
62	30%	10%
63	15%	10%
64	15%	10%
65	50%	10%
66	40%	10%
67	40%	30%
68	40%	15%
69	40%	15%
70	100%	100%
Ref.	625	623

<b>Years of Service</b>	<b>Percent of Eligible Active Members Retiring Police Officers, Detectives, Command &amp; Fire Fighters</b>
25	35%
26	35%
27	35%
28	20%
29	20%
30	20%
31	20%
32	20%
33	20%
34	20%
35	20%
36	20%
37	20%
38	20%
39	20%
40	100%
Ref.	576

A member was assumed to be eligible for retirement after satisfying the following requirements:

<b>Group</b>	<b>Eligibility Requirements for Retirement</b>
Local 270M	30 years of service regardless of age; or 50 years of age with 25 years of service; or 55 years of age with 20 years of service; or 60 years of age with 5 years of service.
Other General & Water	50 years of age with 25 years of service; or 55 years of age with 20 years of service; or 60 years of age with 5 years of service.
Police Command, Police Officers, Detectives & Fire Fighters	25 years of service regardless of age; or 55 years of age with 10 or more years of service.
Police Service Aides	55 years of age with 25 years of service; or 60 years of age with 5 or more years of service.

*Rates of separation from active membership* were as shown below (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 terminating employment before eligibility for an immediate benefit.

Sample Ages	Years of Service	% of Active Members Separating Within Next Year	
		General	Police & Fire
ALL	0	12.00%	10.00%
	1	9.00%	7.00%
	2	7.00%	5.00%
	3	5.00%	4.00%
	4	4.50%	3.50%
25	5 & Over	5.00%	3.50%
30		4.50%	2.90%
35		3.55%	1.50%
40		1.45%	0.60%
45		0.75%	0.50%
50		0.75%	0.50%
55		0.75%	0.50%
60		0.75%	0.50%
65		0.75%	0.50%
Ref.		29 55	30 54

*Rates of disability* were as follows. This assumption measures the probability of members retiring with a disability benefit.

Sample Ages	% of Active Members Becoming Disabled Within Next Year		
	General & Water		Police & Fire
	Male	Female	
20	0.07%	0.03%	0.10%
25	0.09%	0.05%	0.15%
30	0.10%	0.07%	0.25%
35	0.14%	0.13%	0.30%
40	0.21%	0.19%	0.70%
45	0.32%	0.28%	0.80%
50	0.52%	0.45%	0.95%
55	0.92%	0.76%	1.10%
60	1.53%	1.10%	1.20%
Ref.	33	34	45

**Loading Factor:** In the valuation process a person's salary is assumed to increase by a certain percentage each year (see page C-7). However, compensation for benefit purposes includes things such as sick leave incentive pay which are not reported for the valuation. In order to more accurately calculate contribution requirements, the General active normal retirement liabilities were increased by 3.0% to account for the items not reported for valuation purposes, and Police/Fire active normal retirement liabilities were increased by 4.0%. As additional experience emerges, the ratios will be periodically adjusted to better estimate the effect of inclusion of additional items in final average compensation.

**Final Average Compensation With and Without Extra Compensation Items  
New General Retirees**

<b>Year Ending June 30</b>	<b>Final Average Compensation</b>		<b>Ratio</b>
	<b>With Extras</b>	<b>Without Extras</b>	
2004	\$ 796,585	\$ 772,138	1.032
2005	832,434	806,775	1.032
2006	780,739	756,118	1.033
2007	368,581	359,998	1.024
2008	265,708	257,527	1.032
2009	411,886	397,403	1.036
<b>Totals</b>	<b>\$3,455,932</b>	<b>\$3,349,960</b>	<b>1.032</b>

**Final Average Compensation With and Without Extra Compensation Items  
New Police/Fire Retirees**

<b>Year Ending June 30</b>	<b>Final Average Compensation</b>		<b>Ratio</b>
	<b>With Extras</b>	<b>Without Extras</b>	
2004	\$ 645,123	\$ 621,923	1.037
2005	668,633	610,426	1.095
2006	588,052	556,844	1.056
2007	529,024	477,168	1.109
2008	235,078	207,897	1.131
2009	620,166	557,307	1.113
<b>Totals</b>	<b>\$3,286,077</b>	<b>\$3,031,566</b>	<b>1.084</b>

## MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

### JUNE 30, 2009

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<b>Marriage Assumption:</b>	90% of males and 90% 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.
<b>Pay Increase Timing:</b>	Beginning of (Fiscal) year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
<b>Pay Annualization:</b>	Reported pay for members with less than twelve contributing months was annualized by the ratio of 12 to the number of contribution months in the year.
<b>Decrement Timing:</b>	Decrements of all types are assumed to occur mid-year.
<b>Eligibility Testing:</b>	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.
<b>Decrement Relativity:</b>	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
<b>Decrement Operation:</b>	All decrements the first 5 years of service. Only mortality operates during retirement eligibility.
<b>Service Credit Accruals:</b>	It is assumed that members accrue one year of service credit per year.
<b>Loads:</b>	Age and Service Retirement Present Values for General and Police/Fire members were loaded by 3.0% and 4.0% respectively to account for the additional amount included in the FAC due to unused sick time and unused vacation time.
<b>Incidence of Contributions:</b>	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.
<b>Normal Form of Benefit:</b>	A 75% automatic joint and survivor payment is the assumed normal form of benefit for married people.
<b>Benefit Service:</b>	Exact fractional service is used to determine the amount of benefit payable.

## 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, 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.

## GLOSSARY

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**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 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 book value plus a portion of unrealized appreciation or depreciation.

## MEANING OF “UNFUNDED ACTUARIAL ACCRUED LIABILITIES”

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*“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 service has been rendered, but the resulting monthly cash benefit may not be payable until years in the future. Actuarial accrued liabilities are the results of complex mathematical calculations, which are made annually by the plan’s actuary.

If “actuarial accrued liabilities” at any time exceed the plan’s accrued assets, the difference is *“unfunded actuarial accrued liabilities.”* This is the common condition. If the plan’s assets equaled the plan’s “actuarial accrued liabilities,” the plan would be termed “fully-funded.” This is an unusual condition.

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Each time a plan adds a new benefit which applies to service already rendered, an “actuarial accrued liability” is created, which is also an “unfunded actuarial accrued liability” because assets do not immediately increase to cover the value of the new benefit promises. Payment for such unfunded actuarial accrued liabilities is spread over a period of years, commonly in the 20-40 year range.

Unfunded actuarial accrued liabilities can occur in another way: if actual experience is less favorable than assumed experience, the difference is added to unfunded actuarial accrued liabilities. For example, in plans where benefits are directly related to pay near time of retirement, unfunded actuarial accrued liabilities increase when unexpected rates of pay increase create additional actuarial accrued liabilities which are not offset by higher than assumed investment income. Most unexpected pay increases are the direct result of inflation, which is a very destructive force affecting financial stability.

The existence of unfunded actuarial accrued liabilities is not a cause for concern, but the changes from year to year in amount of unfunded actuarial accrued liabilities are important.

Nor are unfunded actuarial accrued liabilities a bill payable immediately. However, it is important that policy-makers prevent the amount from becoming unreasonably high and *it is vital for a plan to have a sound method for making payments toward them* so that they are controlled.

## PENSIONS IN AN INFLATIONARY ENVIRONMENT

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### Value of \$1,000/month Retirement Benefit to an Individual Who Retires at Age 55 in an Environment of 3.5% Inflation

Age	COLA Rate	
	2.5%	0%
55	\$1,000	\$1,000
56	990	966
57	981	934
58	971	902
59	962	871
60	953	842
65	907	709
70	864	597
75	824	503
80	784	423
85	747	356

The life expectancy of a 55-year-old male retiree is to age 78. The life expectancy for a 55-year-old female retiree is to age 83. Half of the people will outlive their life expectancy. The effects of even moderate amounts of inflation can be significant for those who live to an advanced age.

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**SECTION D**

**INFORMATION REQUIRED BY OF THE  
GOVERNMENTAL ACCOUNTING STANDARDS  
BOARD**

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## 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 actuarial valuation follows:

Valuation date:	June 30, 2009
Actuarial cost method:	Entry-Age
Amortization method:	Level percent for Police and Fire Level dollar for General and Water
Remaining amortization period:	30 years open for Police and Fire 29 years closed for General and Water
Asset valuation method:	4-year smoothed market
Actuarial assumption:	
Investment rate of return	7.75%
Projected salary increases	3.5% - 7.3%
Includes inflation at	3.5%
Cost-of-living adjustments	None

Membership of the plan consisted of the following at June 30, 2009, the date of the latest actuarial valuation.

Retirees and beneficiaries receiving benefits	480
Terminated plan members entitled to but not yet receiving benefits	36
Active plan members	<u>317</u>
Total	833

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

## REQUIRED SUPPLEMENTARY INFORMATION

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### Schedule of Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability (AAL) Entry-Age	Unfunded AAL (UAAL)	Funded Ratio	Covered Payroll	UAAL as a % of Covered Payroll
6-30-00	\$159,267,910	\$ 113,215,274	\$(46,052,636)	140.7 %	\$18,129,821	-
6-30-01	162,586,122	121,588,930	(40,997,192)	133.7 %	18,962,345	-
6-30-02	156,402,936	128,303,318	(28,099,618)	121.9 %	19,368,385	-
6-30-03	146,739,571	136,529,458	(10,210,113)	107.5 %	20,138,113	-
6-30-04	131,980,258	146,386,162	14,405,904	90.2 %	20,569,285	70.0%
6-30-05	134,773,019	152,016,446	17,243,427	88.7 %	20,839,464	82.7%
6-30-06	137,263,998	158,239,077	20,975,079	86.7 %	20,431,658	102.7%
6-30-07	143,619,213	162,781,663	19,162,450	88.2 %	20,327,590	94.3%
6-30-08	145,560,741	166,957,321	21,396,580	87.2 %	20,459,734	104.6%
6-30-09	138,811,772	173,542,642	34,730,870	80.0 %	20,139,069	172.5%

### Schedule of Employer Contributions

Fiscal Year Beginning	Computed Dollar Contribution Based on Projected Payroll	Actual Annual Contributions
7-1-01	\$ 0	\$ 0
7-1-02	0	0
7-1-03	0	0
7-1-04	1,427,055	1,340,215
7-1-05	4,426,805	3,768,869
7-1-06	4,301,317	4,055,421
7-1-07	4,510,584	4,161,255
7-1-08	4,330,235	4,074,977
7-1-09	4,395,643	
7-1-10	5,158,959	

February 5, 2010

Ms. Julie Rudd  
Finance Director  
City of Royal Oak  
211 S. Williams Street  
Royal Oak, Michigan 48067

**Re: City of Royal Oak Retirement System**

Dear Ms. Rudd:

Enclosed are seventeen copies of the report of the annual actuarial valuation as of June 30, 2009.

Sincerely,



Mark Buis

MB:mr  
Enclosures