

**CITY OF ROYAL OAK RETIREMENT SYSTEM**

**54TH ANNUAL ACTUARIAL VALUATION**

**JUNE 30, 2002**

**GABRIEL, ROEDER, SMITH & COMPANY**



**GABRIEL, ROEDER, SMITH & COMPANY**  
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November 14, 2002

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

Dear Board Members:

The results of the **54th 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.

The date of the valuation was **June 30, 2002**.

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, actuarial assumptions used for the valuation produce results which are reasonable.

Respectfully submitted,

  
Norman L. Jones, FSA  
Mark Buis, ASA

NLJ:lr

## CONTENTS

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<b>Section</b>	<b>Page</b>
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### **VALUATION RESULTS**

A	1-2	COMPUTED CONTRIBUTIONS
	3	Valuation Assets and Unfunded Actuarial Accrued Liability
	4	Derivation of Experience Gain (Loss)
	5-6	Summary Statement of Resources and Obligations
	7-8	Comments, Recommendations and Conclusions
	9-12	Comparative Statements

### **VALUATION DATA**

B	1-4	Summary of Benefit Provisions
	5-7	Retired Life Data
	8	Inactive Member Data
	9-12	Active Member Data
	13-14	Asset Information

### **VALUATION PROCEDURES**

C	1-2	Financial Objective
	3-4	Financing Diagrams
	5	Methodology
	6-11	Actuarial Assumptions
	12	Miscellaneous and Technical Assumptions
	13-15	Glossary
	16	Pensions in an Inflationary Environment

### **GASB STATEMENT NO. 25**

D	1-2	Governmental Accounting Standards Board Statement No. 25
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## **SECTION A**

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### **Valuation Results**

## ***FUNDING OBJECTIVE***

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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***

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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, 2003 are shown on page A-2.

The City's established contribution rate of 0.00% is sufficient to finance the employer normal cost and to amortize the assets in excess of the actuarial accrued liability (\$28,099,618 as of June 30, 2002) as a level percent of payroll over a period of 11 years.

**CONTRIBUTIONS TO PROVIDE BENEFITS**  
**FISCAL YEAR BEGINNING JULY 1, 2003**

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	Computed Contributions Expressed as Percents of Active Member Payroll		
	General & Water	Police Officers & Fire Fighters	Weighted Average
Total Contribution for			
<b>Normal Cost</b>			
Age and service benefits	13.48 %	15.38 %	14.39 %
Disability	1.80 %	3.20 %	2.47 %
Death	0.76 %	0.75 %	0.76 %
Deferred service pensions	1.07 %	0.67 %	0.88 %
Future refunds of member contributions	0.18 %	0.20 %	0.19 %
<b>Totals</b>	<b>17.29 %</b>	<b>20.20 %</b>	<b>18.69 %</b>
<b>Member Contributions</b>	<b>2.44 %</b>	<b>3.48 %</b>	<b>2.94 %</b>
<b>Employer Normal Cost</b>	<b>14.85 %</b>	<b>16.72 %</b>	<b>15.75 %</b>
<b>Unfunded Actuarial Accrued Liability</b>	<b>0.00 %</b>	<b>0.00 %</b>	<b>0.00 %</b>
<b>Full Funding Credit*</b>			<b>(15.75)%</b>
<b>COMPUTED EMPLOYER RATE</b>			<b>0.00 %</b>

\* As of June 30, 2002, the assets available to finance retirement allowances exceeded the actuarial accrued liability. Amortization of the excess over an 11 year period results in the full funding credit shown.

### 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.

The total active member payroll reported to us for this valuation was \$19,368,385. Applying the weighted average employer contribution rate of 0.00% to this payroll produces annual employer contributions of \$0 for both the General and Water and the Police and Fire rate groups.

*Actual employer contributions* for the last fiscal year were reported to be \$0.

*In financing the actuarial accrued liabilities*, the present smoothed funding value of assets of \$157,353,017 was distributed as follows:

	Present Assets Applied to				
	Active & Inactive				Health Insurance Reserve
	Member	Retirants & Beneficiaries			
	Actuarial Accrued Liability	Liability			
					Totals
Employees' Contributions					
General Members	\$3,471,044	\$ 0	\$ 0	\$ 0	\$3,471,044
Police & Fire Members	5,394,279	0	0	0	5,394,279
Totals	8,865,323	0	0	0	8,865,323
Employer Contributions					
General Members	24,049,445	14,539,465			
Police & Fire Members	52,187,245	2,788,576			
Totals	76,236,690	17,328,041	950,081	94,514,812	
Retired Benefit Payments					
General Members		12,632,590			12,632,590
Police & Fire Members		41,340,292			41,340,292
Totals		53,972,882			53,972,882
Totals	\$85,102,013	\$71,300,923	\$950,081	\$157,353,017	

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

	Retired Lives	Active & Inactive Members	Totals
Computed Actuarial Accrued Liabilities	\$71,300,923	\$57,002,395	\$128,303,318
Applied Assets	71,300,923	85,102,013	156,402,936
Unfunded Actuarial Accrued Liabilities/ (Full Funding Credit)	\$ 0	\$(28,099,618)	\$(28,099,618)

**DERIVATION OF EXPERIENCE GAIN (LOSS)**  
**YEAR ENDED JUNE 30, 2002**

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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</b> <b>(\$1,000)</b>
(1)	UAAL* at start of year	\$(40,997)
(2)	Normal cost from last valuation	2,973
(3)	Actual member and employer contributions	468
(4)	Interest Accrual	(3,080)
(5)	Expected UAAL before changes	(41,572)
(6)	Change from benefit modification	0
(7)	Change from assumption revision	0
(8)	Expected UAAL after changes	(41,572)
(9)	Actual UAAL	(28,100)
(10)	Gain (loss): (8) - (9)	(13,472)
(11)	% of beginning of year AAL	(11.1)%

\* *Unfunded actuarial accrued liability.*

Investment income that was less than assumed was the primary source of unfavorable experience during the past year. The 2001-2002 recognized return based on the funding value of assets was 1.2% compared to an assumed rate of 7.75%.

Valuation Date	Experience Gain (Loss)	
	As % of Beginning of Year	
	Accrued Liability	
6/30/1993	4.7 %	
6/30/1994	1.9 %	
6/30/1995	7.1 %	
6/30/1996	6.4 %	
6/30/1997	8.6 %	
6/30/1998	11.6 %	
6/30/1999	9.6 %	
6/30/2000	6.4 %	
6/30/2001	(3.8)%	
6/30/2002	(11.1)%	

**SUMMARY STATEMENT OF SYSTEM RESOURCES AND OBLIGATIONS**  
**JUNE 30, 2002**

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**Present Resources and Expected Future Resources**

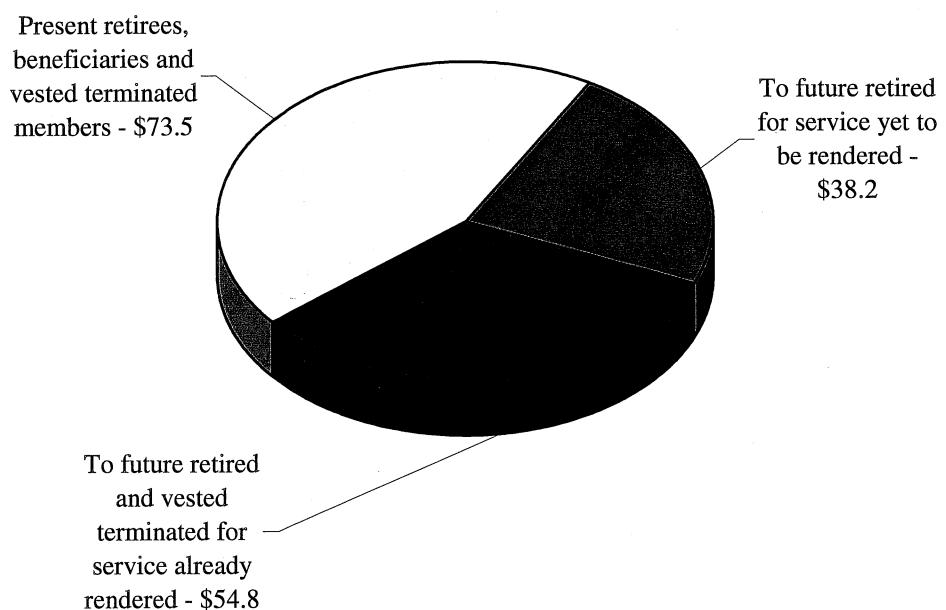
A. Present valuation assets	
1. Net assets from system financial statement	\$131,486,173
2. Market value adjustment	<u>24,916,763</u>
3. Actual valuation assets	156,402,936
B. Actuarial present value of expected future employer contributions	
1. For normal costs	32,095,748
2. For unfunded actuarial accrued liabilities	<u>(28,099,618)</u>
3. Totals	3,996,130
C. Actuarial present value of expected future member contributions	6,125,708
D. Health Insurance Reserve	950,081
<b>E. Total Present and Expected Future Resources</b>	<b>\$167,474,855</b>

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

A. To retirees and beneficiaries	\$ 71,300,923
B. To vested terminated members	2,173,126
C. To present active members	
1. Allocated to service rendered prior to valuation date	54,829,269
2. Allocated to service likely to be rendered after valuation date	<u>38,221,456</u>
3. Totals	93,050,725
D. Health Insurance Reserve	950,081
<b>E. Total Actuarial Present Value of Expected Future Benefit Payments</b>	<b>\$167,474,855</b>

**ALLOCATION OF \$166.5 MILLION OF BENEFIT PROMISES  
JUNE 30, 2002**

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## **COMMENTS, RECOMMENDATIONS AND CONCLUSIONS**

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**COMPUTED CONTRIBUTIONS:** The computed contribution rate this year is the same as it was last year, 0.00% of payroll. Assets exceed accrued liabilities by \$28.1 million as of June 30, 2002. There is no universally accepted procedure for computing the contribution in the presence of a credit of this size. Therefore a certain amount of subjective judgment was used in deriving the possible temporary credit on page A-2. The magnitude of the credit and in fact, the use of the credit at all, is a matter of policy. The figures on page A-2 represent one reasonable approach.

**OVERALL EXPERIENCE** was less favorable than assumed during the year ending June 30, 2002 - primarily as a result of recognized investment return that was less than assumed and the fact that more people retired than expected. A 5-year experience study was performed as of June 30, 2001 and is under review. Any changes adopted upon review of the assumptions will be reflected in the June 30, 2003 actuarial valuation.

**CURRENT MARKET ENVIRONMENT.** Market returns have been less than assumed in each of the last 3 years (see page B-14). The resulting losses have not yet been fully recognized. On a market value basis, the ratio of assets to liabilities has dropped to 102%. As a result of this extended period of market turbulence, it is likely that the Full Funding Credit will be depleted within the next few years. Once the credit is depleted, required City contributions will revert at least to the normal cost of benefits of 15.75% of covered payroll.

**HEALTH INSURANCE:** Following is the development of the balance of the Health Insurance (HI) Reserve as of June 30, 2002 assuming a maximum contribution is made to the reserve:

Balance as of June 30, 2001	\$3,742,974
Contribution to HI Reserve for the year ended June 30, 2002	155,883 *
HI premiums paid during the year ended June 30, 2002	(3,109,167)
Interest (7.0% assuming mid-year transactions)	160,391
Balance as of June 30, 2002	\$950,081

\* In accordance with section 401(h) of the Internal Revenue Code, the maximum contribution allocable to the Health Insurance Reserve in any given year is 25% of the smaller of (i) total member and employer contributions to the Retirement System, and (ii) the total normal cost contribution. For the year ended June 30, 2002, the maximum contribution to the Health Insurance Reserve was computed to be \$155,883.

**RESERVE TRANSFERS:** Actuarial present value of benefits payable to General retirees and beneficiaries on the rolls as of June 30, 2002 exceeded the Reserve for Retired Benefit Payments for General members by \$14,539,465. The actuarial present value of benefits payable to Police/Fire retirees and beneficiaries on the rolls as of June 30, 2002, exceeded the reserves allocated to the Police/Fire division by \$2,788,576. In accordance with the Retirement System Ordinance, we recommend the transfer of \$14,539,465 from the Reserve for Employer Contributions to the General Reserve for Retired Benefit Payments and \$2,788,576 from the Reserve for Employer Contributions to the Police/Fire Reserve for Retired Benefit Payments.

**CONCLUSION:** The City of Royal Oak Retirement System is in sound financial condition in accordance with actuarial principles of level percent of payroll funding.

**ACTUARIAL ACCRUED LIABILITIES & ASSETS**  
**COMPARATIVE STATEMENT**

Valuation Date	Actuarial Accrued Liability (AAL)	Valuation Assets (\$1,000s)	Unfunded Actuarial Accrued Liability (UAAL) (\$1,000s)	Ratio of Valuation Assets to AAL	Ratio of UAL to Valuation Payroll
	(\$1,000s)				
5-31-84*	\$49,397	\$35,642	\$13,755	72.2 %	139.2 %
5-31-85	52,062	38,438	13,624	73.8 %	132.5 %
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 %	-

\* 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.

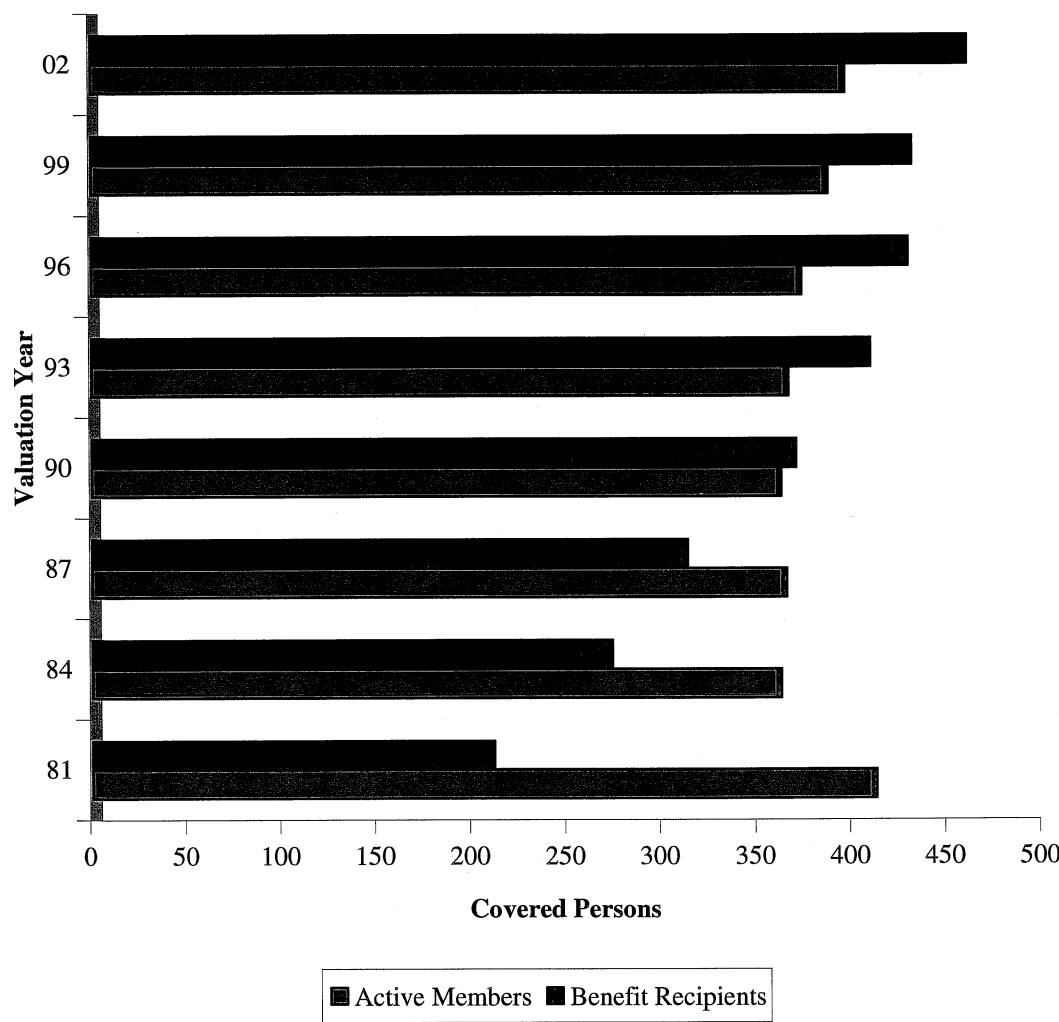
**COMPUTED EMPLOYER CONTRIBUTIONS**  
**COMPARATIVE STATEMENT**

Active Members							Retirees & Beneficiaries							Employer Contributions			
Valuation Date	No.	Valuation Payroll			% Incr.	No.	Active Per Retired			\$	% of Payroll	Annual Allowances			As Payroll Percents		
		Total	Average	%			Active	Per	Retired			General	Police	& Water	& Fire	Wt. Avg.	
5-31-81*	410	\$9,762,463	\$23,811			209	2.00			\$1,133,043	11.6 %	18.08 %	25.80 %				
5-31-82	376	9,523,807	25,329	(2.4)%		231	1.60			1,380,622	14.5 %	17.86 %	25.72 %				
5-31-83	348	8,847,234	25,423	(7.1)%		263	1.30			1,792,492	20.3 %	17.77 %	25.53 %				
5-31-84*	360	9,878,860	27,441	11.7 %		271	1.30			1,910,405	19.3 %	16.64 %	23.28 %				
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 %			

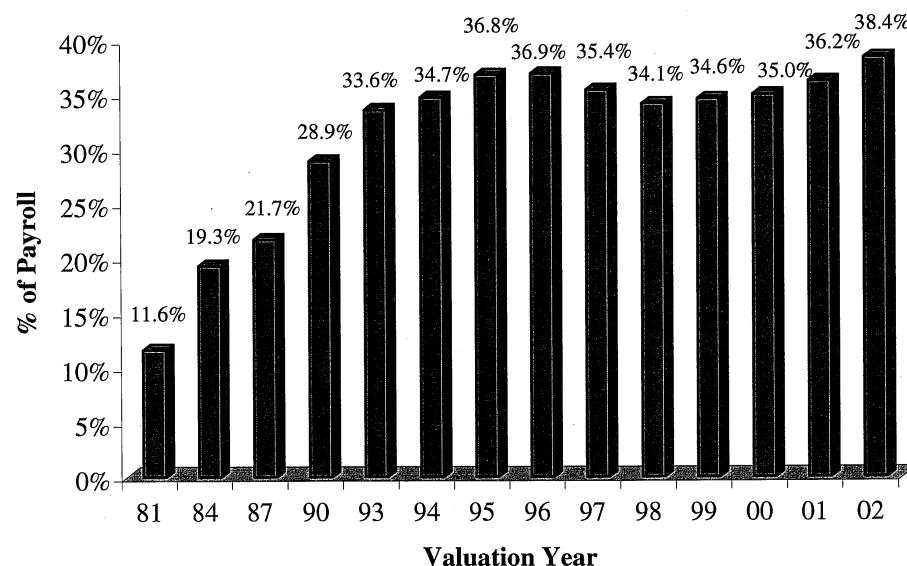
\* After changes in benefit provisions.  
# Actuarial assumptions revised.

## ACTIVE MEMBERS & BENEFIT RECIPIENTS

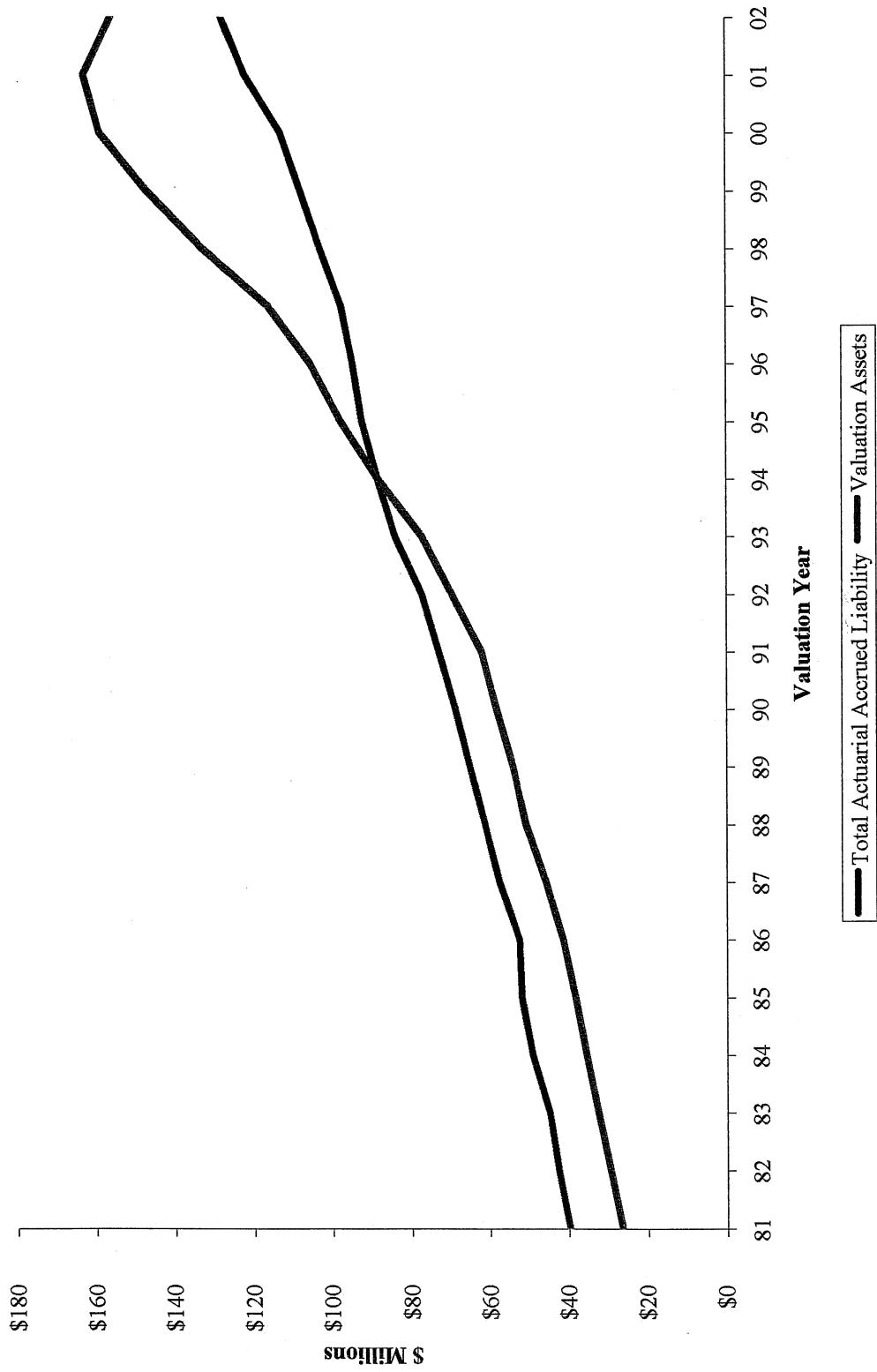
### Active Members & Benefit Recipients



### Benefits as a Percent of Payroll



## ASSETS & ACCRUED LIABILITIES



## **SECTION B**

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### **Summary of Benefit Provisions and Valuation Data**

**SUMMARY OF BENEFIT PROVISIONS EVALUATED**  
**JUNE 30, 2002**

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

*Eligibility – Permanent:*

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

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

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

Fire Fighters: Any age with 25 years of service or age 55 with 10 years of service.

*Temporary Eligibility - Until June 30, 2005:*

Executive Department Heads, Department Heads and Deputies, AFSCME, Technical and Professional, Supervisors: Age 50 with 25 years of service, age 55 with 20 years of service, or age 60 with 5 years of service.

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.

*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: Highest 2 consecutive years out of last 10 years.

*Annual Amount:*

General: 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.

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

Police Officers, Detectives: FAC multiplied by the sum of 2.8% of each of the first 20 years of service, 2.0% of each of the next 6 years of service, and 1% for each year of service thereafter to maximum of 75% of FAC.

Police Service Aides: Total service years multiplied by 2.0% of FAC with a maximum allowance of 80% of FAC minus the member's initial primary insurance amount under Social Security.

**SUMMARY OF BENEFIT PROVISIONS EVALUATED**  
**JUNE 30, 2002**  
**(CONTINUED)**

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**DEFERRED RETIREMENT (vested benefit):**

*Eligibility:*

General, 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: 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: 66-2/3% of base monthly salary at time of disability. Benefit is payable until voluntary retirement age for Professional & Technical 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, 2002**  
**(CONTINUED)**

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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, Police Officers, Police Command, Detectives, Police Service Aides, Fire Fighters:	No maximum

**NON-DUTY DISABILITY RETIREMENT:**

*Eligibility:*

Local 270-M: 10 years of service.

Others: 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.

Others: 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, 2002**  
**(CONTINUED)**

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**MEMBER CONTRIBUTIONS:**

	<b>Percent of Annual Compensation</b>	
	<b>To Social Security Wage Base</b>	<b>Over Social Security Wage Base</b>
AFSCME	1.50%	3.50%
Executive Department Heads, Department Heads and Deputies, Technical and Professional	2.00	4.00
Local 270M	3.00	5.00
Supervisors	3.00	3.00
Police Command, Fire Fighters	2.00	2.00
Police Service Aides	2.50	4.50
Police Officers, Detectives	5.00	5.00

**ANNUITY WITHDRAWAL:**

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

**COVERED COMPENSATION:**

General: Covered compensation includes base salary, longevity and sick leave incentive pay.

Police Command: Covered compensation includes base salary, longevity, payment in lieu of holidays, uniform allowance, 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, Detectives, Police Service Aides: Covered compensation includes base salary, longevity and payment in lieu of holidays.

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

**COMPARATIVE STATEMENT**

Valuation Date	Added to Rolls*		Removed from Rolls <sup>#</sup>		Net Increase		Rolls End of Year		
	No.	Annual	No.	Annual	No.	Annual	No.	Annual	
	No.	A	E	No.	Allowances	No.	Allowances	No.	Allowances
5/31/80	15	\$ 87,659	13	\$ 26,304	2	\$ 61,355	189	\$ 944,037	
5/31/81	24	544,336	4	355,330	20	189,006	209	1,133,043	
5/31/82	33	336,714	11	89,135	22	247,579	231	1,380,622	
5/31/83	42	453,290	10	41,420	32	411,870	263	1,792,492	
5/31/84	17	175,727	9	57,814	8	117,913	271	1,910,405	
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	448	7,429,422

A - Represents actual number.

E - Represents expected number based on actuarial assumptions.

\* Includes beneficiaries of deceased retirees.

# Includes deceased retirees with beneficiaries.

**RETIREES AND BENEFICIARIES JUNE 30, 2002**  
**TABULATED BY TYPE OF ALLOWANCE BEING PAID**

Type of Allowances Being Paid	Annual Retirement Allowances					
	General & Water		Police Officers & Firefighters		Totals	
	No.	Amount	No.	Amount	No.	Amount
<b>Age and Service Allowances</b>						
Regular allowance						
Terminating at death of retirant	72	\$ 755,305	15	\$ 297,460	87	\$ 1,052,765
75% of benefit continuing to spouse	120	1,841,734	127	3,455,007	247	5,296,741
100% Joint & Survivor benefit	3	12,418	2	7,493	5	19,911
50% Joint & Survivor benefit	5	19,878	1	6,635	6	26,513
Survivor beneficiary of deceased retirant	41	249,755	40	483,862	81	733,618
Domestic Relations Order Recipient	3	12,875	1	15,665	4	28,540
Total Age and Service Allowances	244	\$2,891,965	186	\$4,266,122	430	\$7,158,087
<b>Casualty Allowances</b>						
Duty Disability Allowances						
Terminating at death of retirant						
Joint & Survivor benefit	1	4,445	1	\$ 22,779	2	27,225
Survivor beneficiary of deceased retirant				1	3,228	1
Totals	1	\$ 4,445	2	\$ 26,008	3	\$ 30,453
Non-Duty Disability Allowances						
Terminating at death of retirant						
Joint & Survivor benefit						
Survivor beneficiary of deceased retirant						
Totals						
Duty Death Allowances						
Survivor beneficiary of deceased retirant						
Non-Duty Death Allowances						
Spouse beneficiary	13	93,731	8	\$ 131,328	21	225,059
Child(ren) beneficiary			4	15,823	4	15,823
Totals	13	\$ 93,731	12	\$ 147,151	25	\$ 240,882
Total Casualty Allowances	14	\$98,176	14	\$173,159	28	\$271,335
<b>Total Allowances Being Paid</b>	<b>258</b>	<b>\$2,990,141</b>	<b>200</b>	<b>\$4,439,281</b>	<b>458</b>	<b>\$7,429,422</b>

**RETIREES AND BENEFICIARIES JUNE 30, 2002**  
**TABULATED BY ATTAINED AGES**

Attained Ages	Age and Service		Casualty		Totals	
	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances
Under 40			5	\$ 53,702	5	\$ 53,702
40-44						
45-49	3	\$ 110,784	1	20,220	4	131,004
50-54	25	796,653	2	32,364	27	829,017
55-59	39	1,212,339			39	1,212,339
60-64	66	1,534,597	4	58,793	70	1,593,390
65-69	61	1,102,669	5	31,394	66	1,134,063
70-74	73	1,059,655	5	48,272	78	1,107,927
75-79	79	816,758	1	16,310	80	833,068
80-84	53	359,494	3	4,764	56	364,258
85-89	21	123,684	2	5,516	23	129,200
90 & Over	10	41,454			10	41,454
<b>Totals</b>	<b>430</b>	<b>\$7,158,087</b>	<b>28</b>	<b>\$271,335</b>	<b>458</b>	<b>\$7,429,422</b>

***INACTIVE MEMBERS JUNE 30, 2002***  
***TABULATED BY ATTAINED AGES***

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Also included in the valuation were 33 General members and 3 Police/Fire members who are eligible for estimated deferred allowances of \$412,873 upon attainment of voluntary retirement age. Some of these 36 inactive members are presently covered under either a long-term disability insurance policy or worker's compensation.

<b>Attained Ages</b>	<b>Estimated Deferred</b>	
	<b>No.</b>	<b>Annual Allowances</b>
34	1	\$5,460
36	1	4,100
38	2	23,766
41	1	16,850
42	2	20,926
43	1	13,798
44	1	10,938
45	1	5,637
46	3	28,658
47	3	31,803
48	1	3,258
49	2	39,540
50	4	20,648
51	3	53,285
52	1	33,729
53	2	37,766
55	1	3,764
56	1	4,000
57	1	22,386
58	2	23,327
59	2	9,234
<b>Totals</b>	<b>36</b>	<b>\$412,873</b>

## **ACTIVE MEMBERS -- COMPARATIVE SCHEDULE**

<b>Valuation Date</b>	<b>Active Members</b>	<b>Valuation Payroll</b>	<b>Average</b>			
			<b>Age</b>	<b>Service</b>	<b>Pay</b>	<b>% Pay Increase</b>
5-31-82	376	\$9,523,807	45.0	14.3	\$25,329	6.4 %
5-31-83	348	8,847,234	44.2	13.8	25,423	0.4 %
5-31-84	360	9,878,860	44.3	13.6	27,441	7.9 %
5-31-85	358	10,280,426	44.1	13.3	28,716	4.6 %
5-31-86	359	10,450,609	43.8	13.2	29,110	1.4 %
5-31-87	363	11,491,099	43.7	12.9	31,656	8.7 %
5-31-88	364	11,974,522	43.3	12.6	32,897	3.9 %
5-31-89	357	11,681,433	42.0	11.2	32,721	(0.5)%
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 %

## **ACTIVE MEMBERS - JUNE 30, 2002**

<b>Group</b>	<b>Active Members</b>	<b>Valuation Payroll</b>
Local 270	67	\$2,678,582
Department Heads and Deputies	25	1,863,895
Technical and Professional	47	2,167,766
AFSCME	68	2,534,506
Foremen and Supervisors	6	347,207
Police Service Aides	12	416,501
Police	71	3,266,737
Fire	68	4,139,061
Police Command	15	1,029,899
Police/Fire Department Heads	4	332,748
Police Detectives	9	494,963
Judges	2	96,520
<b>Total</b>	<b>394</b>	<b>\$19,368,385</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		
5-31-86	25	24	11	10.8	0	2.9	0	1.2	13	10.1	359	
5-31-87	27	23	13	10.0	1	3.0	1	1.3	8	11.3	363	
5-31-88	27	26	14	10.1	0	2.8	3	1.3	9	12.3	364	
5-31-89	36	43	33	13.4	1	2.7	0	1.2	9	12.9	357	
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	
Last 5 Years			60	48.7	2	6.7	2	4.2	60	72.0		

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**

Age Group	Years of Accrued Service							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Up	No.	Salary
20-24	1							1	\$ 31,644
25-29	6	3						9	341,038
30-34	11	6						17	606,907
35-39	8	9	8	3				28	1,212,516
40-44	15	12	8	7		1		43	1,831,597
45-49	17	5	9	8	7	1		47	2,204,144
50-54	8	6	9	6	4	5	1	39	1,873,338
55-59	5	7	4	6	4	1	3	30	1,420,370
60	1	2	1	1	1			6	255,797
61	1							1	36,742
63	1							1	25,713
64		1						1	50,296
65		1		1				2	147,108
66			1					1	31,004
71						1		1	36,763
<b>Totals</b>	<b>74</b>	<b>52</b>	<b>40</b>	<b>32</b>	<b>16</b>	<b>9</b>	<b>4</b>	<b>227</b>	<b>\$10,104,977</b>

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

**Group Averages**

Age: 45.8 years  
 Service: 10.2 years  
 Annual Pay: \$44,515

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

---

Age Group	Years of Accrued Service						Totals		
	0-4	5-9	10-14	15-19	20-24	25-29	30 Up	No.	Salary
20-24									
25-29	14	1						15	\$ 576,026
30-34	16	20	5					41	2,005,949
35-39	4	10	18	1				33	1,773,055
40-44	1	4	16	11				32	1,853,370
45-49	1	1	5	11	5	1		24	1,523,433
50-54				1	11	7		19	1,338,095
55-59				1		1		2	136,817
60						1		1	56,663
<b>Totals</b>	<b>36</b>	<b>36</b>	<b>44</b>	<b>25</b>	<b>16</b>	<b>10</b>		<b>167</b>	<b>\$9,263,408</b>

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

**Group Averages**

---

Age: 39.5 years  
 Service: 11.9 years  
 Annual Pay: \$55,470

**SUMMARY OF CURRENT ASSET INFORMATION  
FURNISHED FOR VALUATION  
(MARKET VALUE)**

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**Balance Sheet**

Reported Assets		Reserves for	
Cash & equivalents	\$ 8,783,828	Member contributions	\$ 8,865,323
Other short-term	0	Employer contributions	19,604,639
Receivables & accruals	733,521	Retired benefit payments	53,972,882
Equities	70,263,357	Health Insurance	3,742,974
Fixed Income	49,840,898	Undistributed investment income	45,300,354
Real Estate Investments	6,492,530		
Accounts Payable	(4,627,961)		
<b>Total Current Assets</b>	<b>\$131,486,173</b>	<b>Total Reserves</b>	<b>\$131,486,173</b>

**Revenues and Expenditures**

	2001-02	2000-01
Balance - Beginning of year	\$150,776,160	\$164,548,151
<i>Revenues</i>		
Member contributions	623,530	662,900
Employer contributions	0	0
Investment income (net)	(8,346,847)	(3,700,860)
Total	<u>(7,723,316)</u>	<u>(3,037,960)</u>
<i>Expenditures</i>		
Benefit payments	7,802,442	7,417,862
Health insurance premiums for retired members	3,109,167	2,714,692
Refund of member contributions	21,618	37,754
Administrative & investment expenses	633,444	563,723
Total	<u>11,566,671</u>	<u>10,734,031</u>
Balance - End of year	\$131,486,173	\$150,776,160

**DEVELOPMENT OF FUNDING VALUE OF RETIREMENT SYSTEM ASSETS**

	<b>Year Ended June 30:</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
A. Funding Value Beginning of Year						
B. Market Value End of Year	\$165,230,196	\$166,329,096				
C. Market Value Beginning of Year	150,776,160	131,486,173				
D. Non-Investment Net Cash Flow	164,548,151	150,776,160				
	(10,036,868)	(10,890,434)				
E. Investment Income						
E1. Market Total: B-C-D	(3,735,123)	(8,399,553)				
E2. Amount for Immediate Recognition: (7.75%)	12,416,412	12,468,501				
E3. Amt. for Phased In Recognition: E1-E2	(16,151,535)	(20,868,054)				
F. Phased-In Recognition of Investment Income						
F1. Current Year: 0.25 x E3	(4,037,884)	(5,217,013)				
F2. First Prior Year	(2,140,038)	(4,037,884)	\$ (5,217,013)			
F3. Second Prior Year	840,788	(2,140,038)	(4,037,884)	\$ (5,217,013)		
F4. Third Prior Year	4,056,491	840,789	(2,140,038)	(4,037,884)	\$ (5,217,013)	
F5. Total Recognized Investment Gain	<u>(1,280,643)</u>	<u>(10,554,146)</u>	<u>(11,394,935)</u>	<u>(9,254,894)</u>	<u>(5,217,015)</u>	
G. Funding Value End of Year: A+D+E2+F5	166,329,096	157,353,017	(14,471,909)	(5,217,015)	0	
H. Difference Between Market & Funding Value	(15,552,936)	(25,866,844)				
I. Recognized Rate of Return	<b>7.0%</b>	<b>1.2%</b>				
J. Market Value Rate of Return	(2.3)%	(5.8)%				
K. Ratio of Market Value to Funding Value	90.6%	83.6%				

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.

## **SECTION C**

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### **Summary of Valuation Methods and Assumptions**

## ***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:

$$B = C + I - E$$

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

Contributions received on behalf of the group.

... plus ...

Investment 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.*

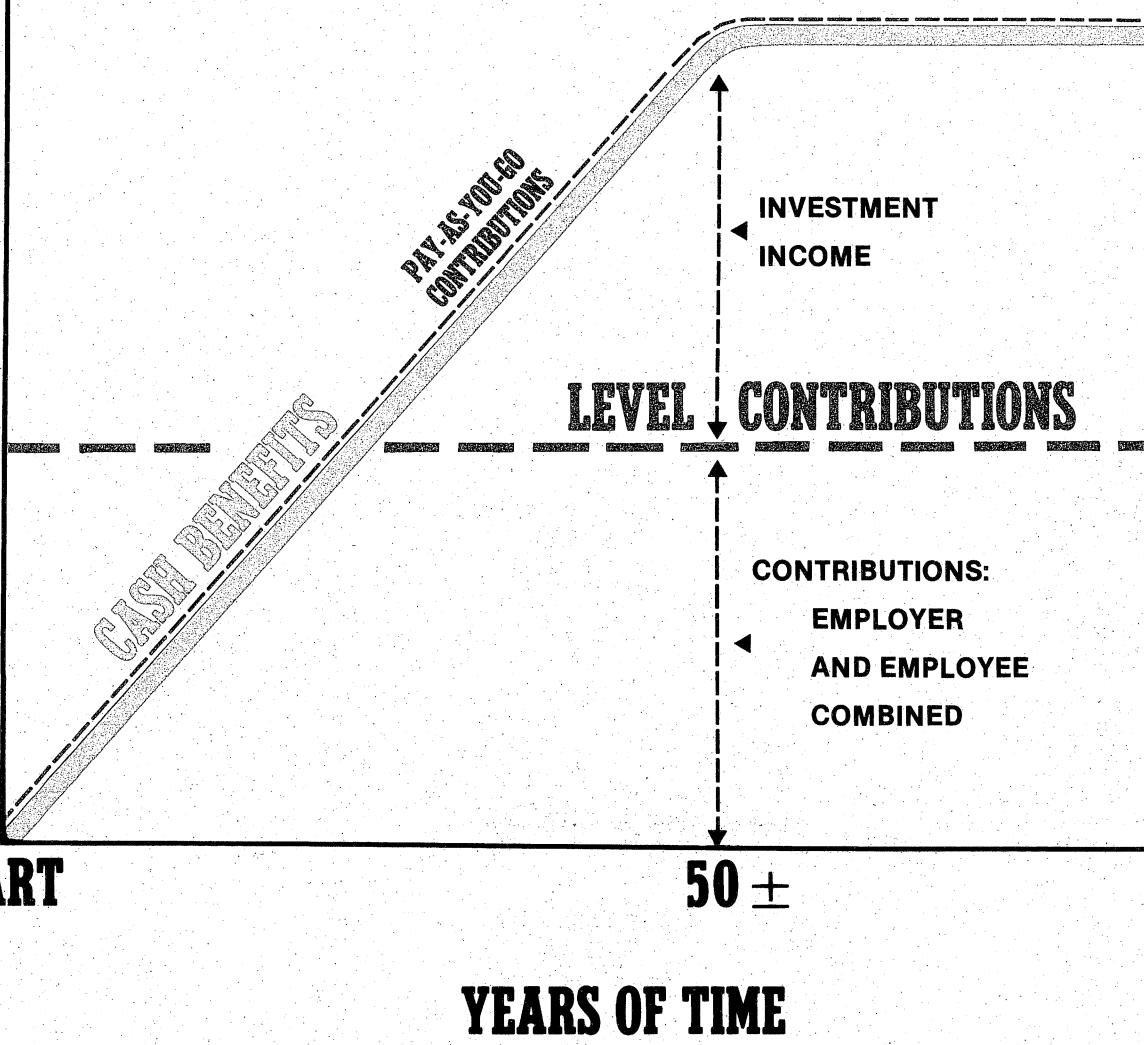
**Computed Contribution Rate Needed to Finance Benefits.** From a given schedule of benefits and from the data furnished, the actuary calculates the contribution rate by means of an actuarial valuation - the technique of assigning monetary values to the risks assumed in operating a retirement program.

**% OF  
ACTIVE  
EMPLOYEE  
PAYS**

**START**

**50 ±**

**YEARS OF TIME**



**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:

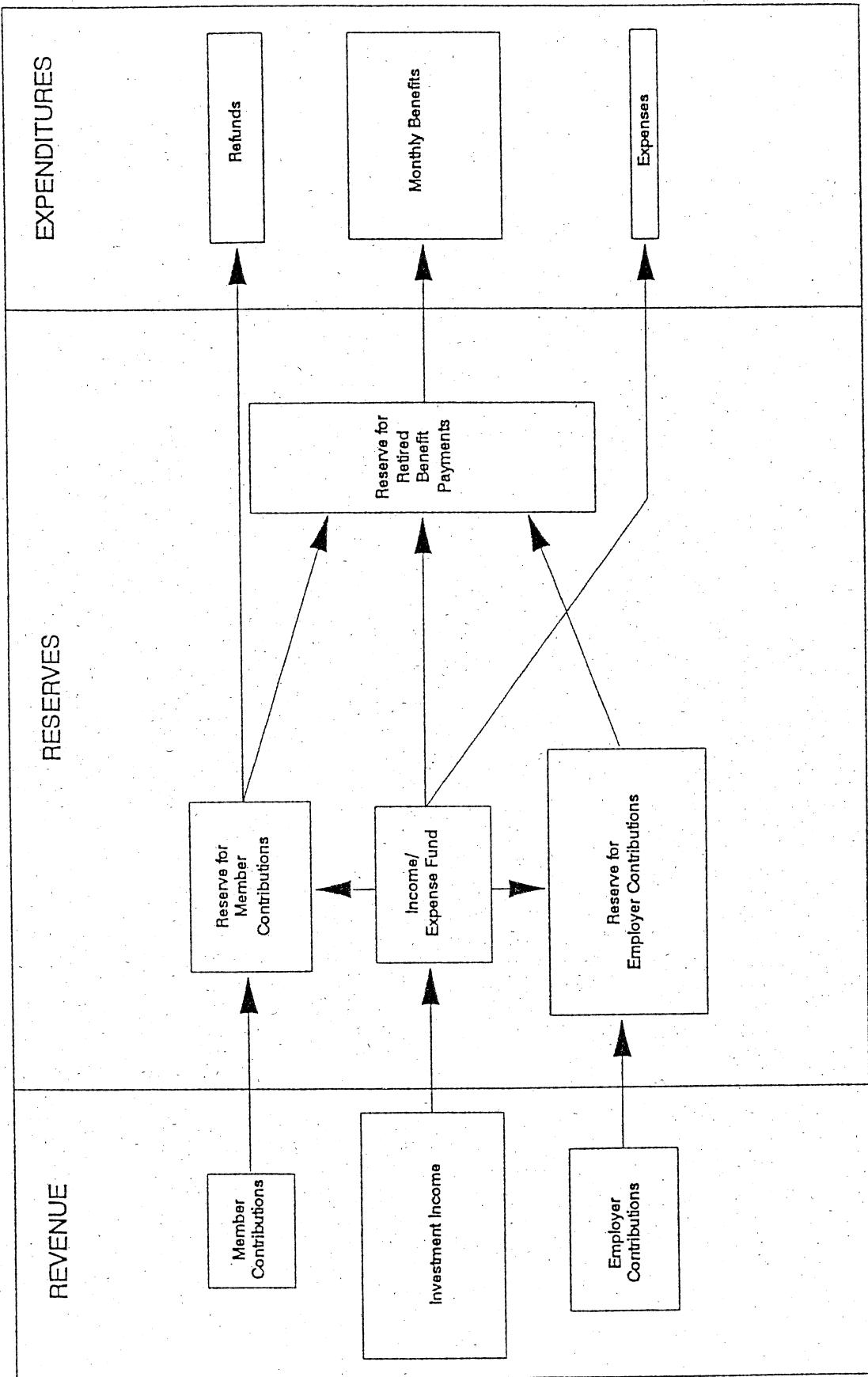
**Economic Risk Areas**

- 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



## **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.*** Assets in excess of actuarial accrued liabilities were amortized by level (principal & interest combined) percent-of-payroll contributions over a period of 11 years.

## ***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-1.

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	5.0%	3.8%	3.0%
25	5.0%	3.1%	3.0%
30	5.0%	2.7%	2.6%
35	5.0%	2.4%	1.1%
40	5.0%	2.1%	0.2%
45	5.0%	1.7%	0.2%
50	5.0%	1.1%	0.2%
55	5.0%	0.7%	0.1%
60	5.0%	0.2%	-
65	5.0%	-	-
Ref		5	34

*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 2.75%. Experience over the last 5 years has been more favorable than assumed, as illustrated below.

	Year Ending June 30					5 Year Average
	2002	2001	2000	1999	1998	
(1) Nominal rate*	1.2 %	7.0 %	12.5 %	16.3 %	18.8 %	11.0 %
(2) Increase in CPI	1.1 %	3.2 %	3.7 %	2.0 %	1.7 %	3.1 %
(3) Average salary increase	2.9 %	4.3 %	0.7 %	3.7 %	5.5 %	3.9 %
(4) Real return						
- investment purposes						7.9 %
- funding purposes						7.0 %

\* The nominal rate of return was computed using the approximate formula:  $i = I \text{ divided by } 1/2 (A+B-I)$ , 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 1984 Group Annuity Mortality Table set back 0 years for men, and 6 years for women. 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	Single Life Retirement Values				
	Present Value of \$1 Monthly for Life		Future Life Expectancy (years)		
	Ages	Men	Women	Men	Women
50	\$131.79	\$140.17	27.53	32.93	
55	123.22	133.32	23.28	28.40	
60	112.80	125.06	19.27	24.11	
65	100.50	115.05	15.55	20.05	
70	87.07	103.10	12.25	16.27	
75	73.71	89.78	9.49	12.87	
80	60.28	76.43	7.17	10.02	
Ref.	68	x 1.00	70	x 1.00	

*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	Police Officers & Detectives
45-49			40%
50	15%		40%
51	10%		35%
52	10%		20%
53	10%		15%
54	10%		15%
55	10%	15%	15%
56	10%	10%	15%
57	10%	10%	15%
58	10%	10%	15%
59	10%	10%	25%
60	10%	10%	100%
61	10%	10%	
62	30%	30%	
63	15%	15%	
64	15%	15%	
65	100%	100%	
Ref.	623	134	46

Years of Service	Percent of Eligible Active Members Retiring
	Police Command & Fire Fighters
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.

999

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

Group	Eligibility Requirements for Retirement
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	20.00%	10.00%	10.00%
	1	15.00%	7.00%	7.00%
	2	10.00%	5.00%	5.00%
	3	8.00%	4.00%	4.00%
	4	7.00%	3.50%	3.50%
25	5 & Over	6.00%	3.50%	2.00%
30		5.50%	2.90%	1.80%
35		4.40%	1.50%	1.30%
40		1.85%	0.60%	1.00%
45		1.25%	0.50%	0.70%
50		1.25%	0.50%	0.50%
55		1.25%	0.50%	0.40%
60		1.25%	0.50%	0.40%
65		1.25%	0.50%	0.40%
Ref.		12 59	30 54	30 166

*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-3). 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 2.3% to account for the items not reported for valuation purposes. There is currently no load for Police/Fire members. Once additional data is compiled, the 2.3% will be 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*

Year Ending June 30	Final Average Compensation		Ratio
	With Extras	Without Extras	
2001	\$ 409,951	\$ 396,912	1.033
2002	650,589	630,933	1.031
2003			
<b>Totals</b>	<b>\$1,060,540</b>	<b>\$1,027,845</b>	<b>1.032</b>

*Final Average Compensation With and Without Extra Compensation Items*

*New Police/Fire Retirees*

Year Ending June 30	Final Average Compensation		Ratio
	With Extras	Without Extras	
2001	\$440,010	\$430,922	1.021
2002	215,032	210,335	1.022
2003			
<b>Totals</b>	<b>\$655,042</b>	<b>\$641,257</b>	<b>1.021</b>

## ***MISCELLANEOUS AND TECHNICAL ASSUMPTIONS***

***JUNE 30, 2002***

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Marriage Assumption:	90% of males and 90% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses.
Pay Increase Timing:	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.
Decrement Timing:	Decrements of all types are assumed to occur mid-year.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and exact fractional service.
Decrement Operation:	Disability and mortality decrements do operate during the first 5 years of service. They do not operate during retirement eligibility.
Loads	Age and Service Retirement Present Values for General Members were loaded by 2.3% to account for the additional amount included in the FAC due to unused sick time and unused vacation time.
Option Factors	Option factors are based upon 7.0% interest and the 1971 GA Mortality Table with a 90% Unisex Blend.
Incidence of Contributions:	Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.

## ***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 5.0% Inflation**

<b>Age</b>	<b>COLA Rate</b>	
	<b>2.5%</b>	<b>0%</b>
55	\$1,000	\$1,000
56	976	952
57	953	907
58	930	864
59	908	823
60	886	784
65	786	614
70	697	481
75	618	377
80	547	295
85	\$ 485	\$ 231

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.

## **SECTION D**

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**Required by Statement No. 25 of  
the Governmental Accounting Standards  
Board**

## **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, 2002
Actuarial Cost Method	Entry-Age
Amortization Method	Level percent
Remaining amortization period	11 years
Asset valuation method	4 year smoothed market
Actuarial assumption:	
Investment rate of return	7.75%
Projected salary increases	5.0% - 8.8%
Includes inflation at	5%
Cost-of-living adjustments	None

Membership of the plan consisted of the following at June 30, 2002, the date of the latest actuarial valuation.

Retirees and Beneficiaries receiving benefits	458
Terminated plan members entitled to but not yet receiving benefits	36
Active plan members	<hr/> 394
Total	888

**GASB STATEMENT NO. 25 REQUIRED SUPPLEMENTARY INFORMATION**

*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
6-30-93	\$77,426,606	\$84,192,619	\$6,766,013	92.0 %	\$13,664,416	49.5 %
6-30-94	88,518,562	88,518,562	0	100.0 %	14,109,602	-
6-30-95	97,794,571	92,495,060	(5,299,511)	105.7 %	14,595,387	-
6-30-96	105,571,789	94,729,657	(10,842,132)	111.4 %	14,991,326	-
6-30-97	116,317,283	97,622,379	(18,694,904)	119.2 %	15,949,326	-
6-30-98	132,289,359	102,995,320	(29,294,039)	128.4 %	17,181,869	-
6-30-99	147,432,723	107,934,001	(39,498,722)	136.6 %	17,501,352	-
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	-

*Schedule of Employer Contributions*

Fiscal Year Beginning	Contribution Rates as Percents of Valuation Payroll	Computed Dollar Contribution Based On Projected Payroll	Actual Annual Contributions	Percent Contribution
7-1-94	16.67 %	2,826,398 *	2,278,026	100%
7-1-95	13.48 %	1,901,974	1,901,974	100%
7-1-96	9.59 %	1,399,698	1,399,698	100%
7-1-97	5.62 %	542,513	542,513	100%
7-1-98	0.53 %	84,531	84,531	100%
7-1-99	0.00 %	0	0	100%
7-1-00	0.00 %	0	0	100%
7-1-01	0.00 %	0	0	100%
7-1-02	0.00 %	0		
7-1-03	0.00 %	0		

\* Subsequent to the 6/30/93 annual valuation, the Board adopted new assumptions which decreased the computed contribution for the fiscal year beginning 7/1/94 to \$2,278,026.