

ACTUARIAL & STATISTICAL SECTION

SUMMARY OF ASSUMPTIONS USED FOR DGRS ACTUARIAL VALUATIONS

assumptions adopted by board of trustees after consulting with actuary

ECONOMIC ASSUMPTIONS

THE INVESTMENT RETURN RATE used in making the valuation was 7.9% per year, compounded annually (net after administrative expenses). The real rate of return is the portion of total investment return which is more than the inflation rate. Considering other economic assumptions, the 7.9% total investment return rate translates to an assumed real rate of return of 3.9%.

PAY INCREASE ASSUMPTIONS for individual active members have been calculated. Part of the assumption for each age is for a merit and/or seniority increase, and the other 4.0% recognizes inflation.

TOTAL ACTIVE MEMBER PAYROLL is assumed to increase 4.0% annually, which is the portion of the individual pay increase assumptions attributable to inflation.

NON-ECONOMIC ASSUMPTIONS

THE NUMBER OF ACTIVE MEMBERS is assumed to continue at the present number.

THE MORTALITY TABLE used to measure retired life mortality was 80% of the 1983 Group Annuity Mortality Table. This table was first used for the June 30, 1998 valuation.

THE PROBABILITIES OF RETIREMENT for members eligible to retire have been calculated. These probabilities were revised for the June 30, 1998 valuation.

THE PROBABILITIES OF SEPARATION from service (including *death-in-service* and *disability*) are shown for sample ages. These probabilities were revised for the June 30, 1998 valuation.

FUNDING METHODS

THE ENTRY AGE ACTUARIAL COST METHOD was used in determining age & service pension liabilities and normal cost, vesting liabilities and normal cost, and casualty pension liabilities and normal cost.

DIFFERENCES BETWEEN ASSUMED EXPERIENCE AND ACTUAL EXPERIENCE ("actuarial gains and losses") become part of actuarial accrued liabilities and are amortized over a 15 year period.

UNFUNDED ACTUARIAL ACCRUED LIABILITIES (net of actuarial gains and losses after 6/30/92) are amortized over a 23 year period, to produce contribution amounts (principal & interest) which are level percent of payroll contributions.

EMPLOYER CONTRIBUTION dollars were assumed to be paid in equal monthly installments throughout the employer fiscal year.

PRESENT ASSETS were reported to be valued using a three year smoothing of the difference between expected and actual investment income.

THE DATA ABOUT PERSONS NOW COVERED AND ABOUT PRESENT ASSETS were furnished by the System's administrative staff. Although examined for general reasonableness, the data was not audited by the Actuary.

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

1999-2000 Fiscal Year
**GENERAL CITY COMPUTED
 EMPLOYER CONTRIBUTION RATES**

expressed as percents of active member payroll

CONTRIBUTIONS EXPRESSED AS A PERCENT OF PAYROLL

CONTRIBUTIONS FOR	General City	D.O.T.	Water	Sewage	Housing	Library
Normal Cost:						
Age & Service Pensions	7.29%	6.81%	7.12%	7.10%	7.55%	7.60%
Disability Pensions	1.84	1.02	1.95	1.82	1.62	1.98
Death-in-Service Pensions	0.33	0.32	0.38	0.39	0.36	0.26
Employer Normal Cost	9.46	8.15	9.45	9.31	9.53	9.84
Unfunded Actuarial Accrued Liabilities#	6.34	6.08	7.71	(9.31)	1.85	(0.11)
Computed Employer Contributions	15.80	14.23	17.16	0.00	11.38	9.73
(Change from last year)	(+2.11)	(+1.32)	(+0.05)	(0.00)	(+0.58)	(+1.63)
TOTAL CONTRIBUTION RATE	15.80%	14.23%	17.16%	0.00%	11.38%	9.73%

Unfunded actuarial accrued liabilities (UAAL) net of actuarial gains and losses incurred after June 30, 1992 and liabilities arising from retiree benefit increases in 1998 were amortized over a period of 23 years. Actuarial gains and losses incurred after June 30, 1992 and liabilities arising from retiree benefit increases were amortized over a period of 15 years.

**EMPLOYER COMPUTED CONTRIBUTIONS -
 HISTORIC COMPARISON**

AS PERCENTS OF VALUATION PAYROLL

VALUATION DATE JUNE 30	General	D.O.T.	Water	Sewage	Housing	Library	Totals
1989	15.18	18.54	14.49	1.58	11.33	8.80	14.02
1990	15.72	18.62	15.10	2.02	11.08	9.04	14.46
1991	15.31	17.73	14.45	1.80	10.51	8.42	13.89
1992(a)*	11.21	10.08	10.49	0.76	6.94	6.15	9.61
1993(a)	11.57	10.80	12.31	0.59	8.14	5.51	10.10
1994	12.31	11.35	13.42	0.25	8.55	7.65	10.79
1995	14.71	12.65	15.68	0.98	10.74	10.28	12.91
1996	13.23	12.52	15.83	0.00	9.74	7.64	11.58
1997(a)	13.47	12.94	15.32	0.00	9.34	7.09	11.84
1998(a)*	15.80	14.23	17.16	0.00	11.38	9.73	13.75
1999*	15.31%	13.70%	16.95%	0.00%	10.48%	8.04%	13.26%

(a) After changes in actuarial assumptions.
 * After changes in benefits.

RETIREMENT SYSTEM TOTALS

persons in valuations-comparative statements

ACTIVE MEMBERS

GROUP AVERAGES

June 30	ACTIVE MEMBERS No.	Change	Annual Payroll	ANNUAL PAY \$	Change	Age Years	Serv. Years
1989	13,554	+1.4	331,555,458	24,462	+0.2	41.1	11.0
1990	13,207	-2.6	352,622,639	26,700	+9.1	41.5	11.4
1991	12,949	-2.0	362,532,918	27,997	+4.9	41.8	11.7
1992	12,137	-6.3	344,320,379	28,369	+1.3	42.2	12.1
1993	11,508	-5.2	331,009,921	28,763	+1.4	43.0	12.9
1994	11,382	-1.1	325,427,813	28,591	-0.6	43.1	12.8
1995	11,515	+1.2	327,615,936	28,451	-0.5	42.2	12.6
1996	12,086	+5.0	360,068,578	29,792	+4.7	42.8	11.9
1997	12,369	+2.3	382,835,917	30,951	+3.9	42.8	11.7
1998	12,261	-0.9	387,022,423	31,565	+2.0	43.3	11.8
1999	11,987	-2.2%	383,449,421	\$ 31,989	+ 1.3%	43.7	12.1

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RETIREMENT SYSTEM TOTALS CON'T

persons in valuations-comparative statements

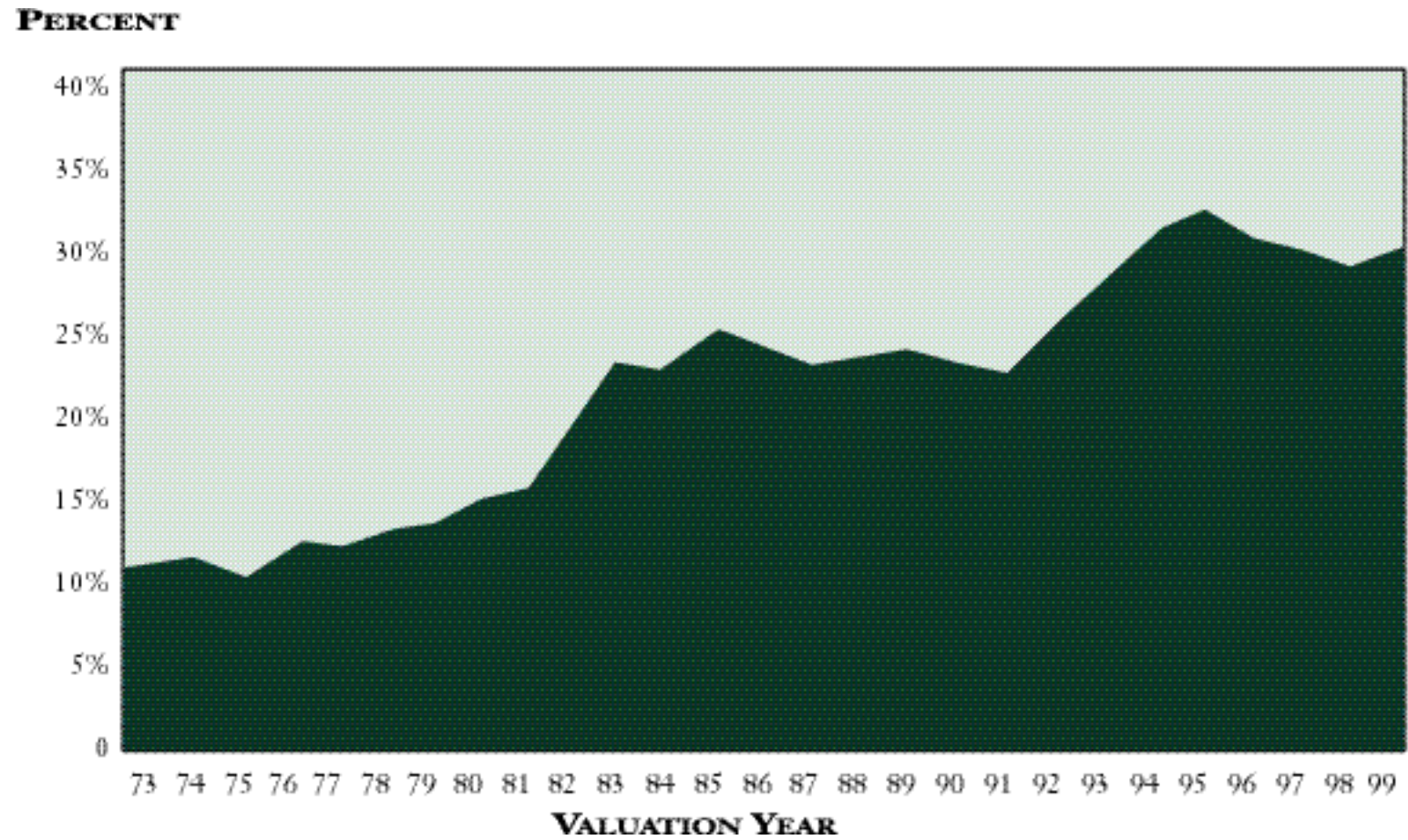
RETIRANTS & BENEFICIARIES

% OF CURRENT ALLOWANCES

June 30	No.	% OF CURRENT ALLOWANCES				ANNUAL ALLOWANCES		
		Annuities	Initial Pensions	Escalators & Other Increases	Allow.	Total	Average	%Payroll
1989	11,734	3.0	79.8	17.2	100.0	83,790,744	7,141	25.3
1990	11,684	2.9	79.1	18.0	100.0	85,720,620	7,337	24.3
1991	11,691	2.9	78.7	18.4	100.0	87,625,800	7,495	24.2
1992	11,674	2.6	76.5	20.9	100.0	97,218,012	8,328	28.2
1993	11,719	2.8	77.7	19.5	100.0	100,203,596	8,551	30.3
1994	11,649	2.8	76.9	20.3	100.0	106,193,220	9,116	32.6
1995	11,756	2.7	76.7	20.6	100.0	110,262,876	9,379	33.7
1996	11,889	2.6	75.5	21.9	100.0	115,232,400	9,692	32.0
1997	12,199	2.4	74.4	23.2	100.0	121,255,488	9,940	31.7
1998	11,593	2.3	73.7	24.0	100.0	119,852,820	10,338	31.0
1999	11,537	2.4%	76.6%	21.0%	100.0%	\$127,535,748	\$11,054	33.3%

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BENEFITS AS A PERCENT OF PAYROLL

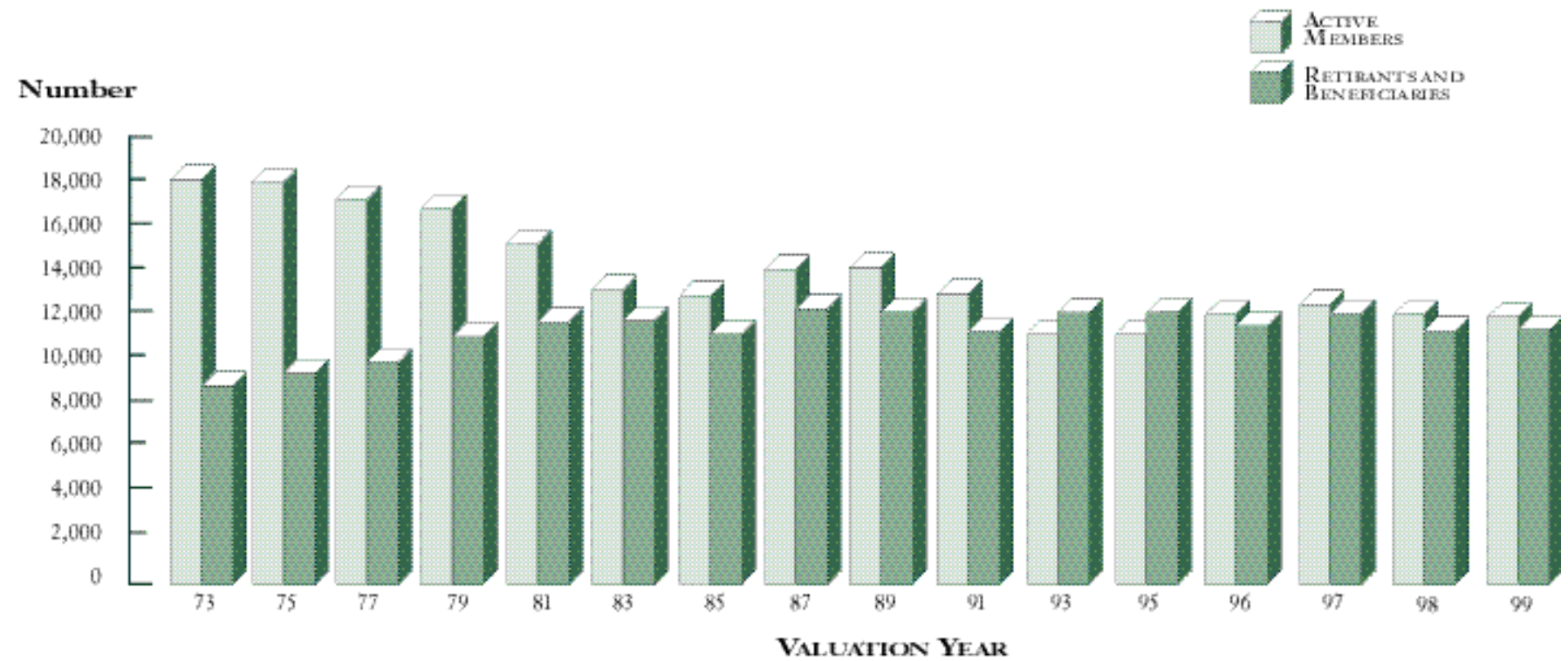


**RETIRANTS AND BENEFICIARIES
JUNE 30, 1999**

tabulated by year of retirement

Year of Retirement	No.	MONTHLY ALLOWANCES	
		Total	Average
1951-1955	57	23,344	410
1956-1960	37	13,468	364
1961-1965	144	61,458	427
1966-1970	424	204,832	483
1971-1975	1,131	666,114	589
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1976-1980	2,166	1,551,514	716
1981-1985	2,472	2,310,433	935
1986-1990	1,770	1,728,632	977
1991-1995	2,074	2,386,941	1,151
1996-1999	1,262	1,681,243	1,332
TOTALS	11,537	\$10,627,979	\$921

**RETIREMENT SYSTEM TOTALS
ACTIVE AND RETIRED MEMBERS**



SOLVENCY TESTS

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

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

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

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

**SHORT-TERM SOLVENCY TEST
5 YEAR COMPARATIVE STATEMENT**

JUNE 30	ACTUARIAL ACCRUED LIABILITIES			VALUATION ASSETS	PORTION OF ACCRUED LIABILITIES COVERED BY ASSETS			
	(1) ACTIVE MEMBER CONTR.	(2) RETIRANTS AND BENEF.	(3) PRESENT MEMBERS (EMPLOYER FINANCED PORTION)		(1)	(2)	(3)	TOTAL
1995	434	1,046	794	2,043	100	100	71	90
1996	471	1,101	810	2,193	100	100	77	92
1997(a)	524	1,187	817	2,333	100	100	76	92
1998(a)#	626	1,211	978	2,582	100	100	76	92
1999#	\$706	\$1,214	\$981	\$2,757	100%	100%	85%	95%

(a) After changes in actuarial assumptions.
Full plan amendments.

**GASB STATEMENT 25 REQUIRED
SUPPLEMENTARY INFORMATION**

Schedule of Funding Progress

Actuarial Valuation Date June 30	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a % of Covered Payroll ((b-a)/c)
1992*#	\$1,930,339,963	\$1,998,966,965	\$ 68,527,002	96.6%	\$344,320,379	19.9%
1993#	1,983,829,832	2,114,227,938	130,398,106	93.8	331,009,921	39.4
1994	2,041,914,572	2,192,846,039	150,931,467	93.1	325,427,813	46.4
1995	2,043,397,183	2,275,210,040	231,812,857	89.8	327,615,936	70.8
1996	2,193,234,516	2,382,866,954	189,632,438	92.0	360,068,578	52.7
1997#	2,333,412,893	2,528,504,057	195,091,164	92.3	382,835,917	51.0
1998#*	2,582,099,884	2,814,878,226	232,778,342	91.7	387,022,423	60.1
1999	2,756,614,458	2,875,731,718	119,117,260	95.9	382,509,403	31.1
1999*	\$2,756,614,458	\$2,900,404,223	\$143,789,765	95.0%	\$383,449,421	37.5%

* After all plan amendments.
After changes in actuarial assumptions.

RETIREMENT SYSTEM TOTALS

valuation results - comparative statement \$ in millions

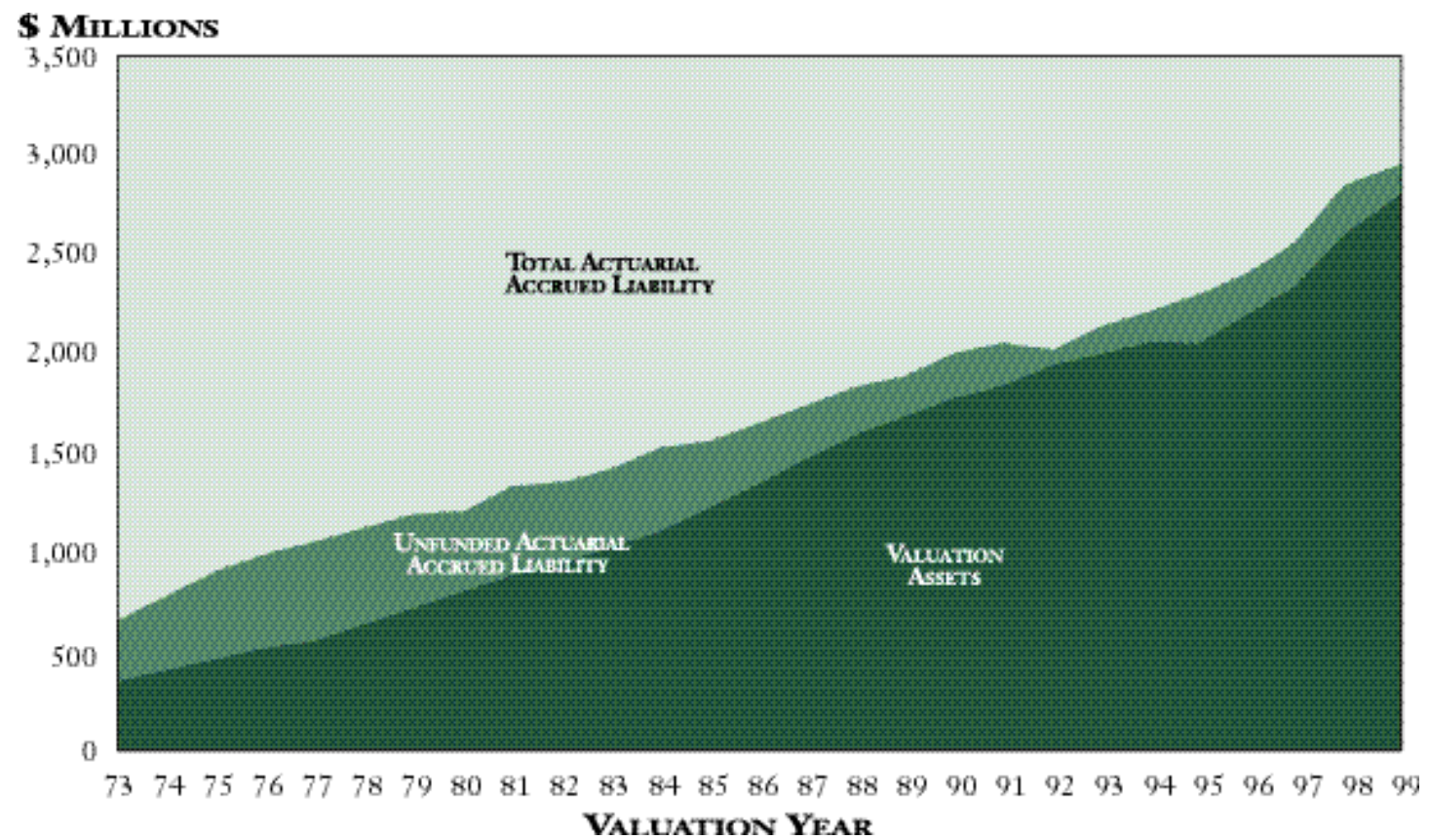
JUNE 30	% OF ACTIVE PAYROLL CONTRIBUTIONS FOR				ACTUARIAL ACCRUED LIABILITIES			UNFUNDED/ UNFUNDED ACTIVE PAY		
	ACTIVE PAYROLL TOTAL	AVERAGE	NORMAL COST	UAAL	ON TIME TOTALS	CONTR. DUE	COMPUTED ACCRUED TOTAL ASSETS			
1989	\$331.6	\$24,462	9.26%	4.76%	14.02%	0.10%	\$1,869.8	\$1,678.3	\$191.5	0.58
1990	352.6	26,700	9.22	5.24	14.46	0.15	1,983.0	1,768.9	214.1	0.61
1991	362.5	27,997	8.80	5.09	13.89	0.12	2,034.7	1,832.4	202.3	0.56
1992(a)#	344.3	28,369	8.48	1.13	9.61	0.13	1,998.8	1,930.3	68.5	0.20
1993(a)	331.0	28,763	8.02	2.08	10.10	0.00	2,114.2	1,983.8	130.4	0.39
1994	325.4	28,591	8.06	2.73	10.79	0.00	2,192.8	2,041.9	150.9	0.46
1995	327.6	28,451	8.11	4.80	12.91	0.00	2,275.2	2,043.4	231.8	0.71
1996	360.1	29,729	8.14	3.44	11.58	0.00	2,382.8	2,193.2	189.6	0.53
1997(a)	382.8	30,951	7.91	3.93	11.84	0.00	2,528.5	2,333.4	195.1	0.51
1998(a)#	387.0	31,565	9.30	4.45	13.75	0.00	2,814.9	2,582.1	232.8	0.60
1999#	\$383.4	\$31,989	9.29%	3.97%	13.26%	0.00%	\$2,900.4	\$2,756.6	\$143.8	0.38

Plan amended.
(a) After changes in actuarial assumptions.

In an inflationary economy the value of dollars is decreasing. This environment results in employee pays increasing in dollar amounts, retirement benefits increasing in dollar amounts, and then, unfunded accrued liabilities increasing in dollar amounts, all at a time when the actual substance of these items may be decreasing. Looking at just the dollar amounts of unfunded accrued liabilities can be misleading. Unfunded accrued liabilities dollars divided by active employee payroll provides an index which helps understanding. **THE SMALLER THE RATIO OF UNFUNDED LIABILITIES TO ACTIVE MEMBER PAYROLL, THE STRONGER THE SYSTEM.** Observation of this relative index over a period of years will give an indication of whether the system is becoming financially stronger or weaker.

**RETIREMENT SYSTEM TOTALS
ASSETS AND ACCRUED LIABILITIES**

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**RETIREMENT SYSTEM TOTALS
ACTIVE MEMBERS AS OF JUNE 30, 1999**
by attained age & years of service

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ATTAINED AGE	YEARS OF SERVICE TO VALUATION DATE							TOTALS	
	0-4	5-9	10-14	15-19	20-24	25-29	30+	No.	VALUATION PAYROLL
UNDER 20	13							13	\$194,848
20-24	246	5						251	5,110,146
25-29	620	62	4					686	17,263,105
30-34	745	268	199	9				1,221	35,133,866
35-39	713	378	576	117	15			1,799	54,099,973
40-44	635	317	635	393	321	10		2,311	73,738,613
45-49	395	244	468	344	526	217	11	2,205	74,272,411
50-54	270	190	338	271	363	349	125	1,906	66,889,109
55-59	127	98	151	130	223	163	152	1,044	37,226,236
60-64	59	39	86	39	84	51	63	421	14,871,771
65-69	14	12	12	6	7	6	24	81	2,872,560
70-74	0	5	8	2	0	2	12	29	1,116,511
75-79	3	1	2	3	1	1	9	20	660,272
TOTALS	3,840	1,619	2,479	1,314	1,540	799	396	11,987	\$383,449,421

GROUP AVERAGES*:
Age: 43.7 years
Service: 12.1 years
Annual Pay: \$31,989

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

ACTUARIAL COMMENTS

REVISED ASSUMPTIONS AND FUNDING METHODS

Each year as of June 30, the actuarial liabilities of DGRS are valued. In order to perform the valuation, assumptions must be made regarding the future experience of the system with regard to the following risk areas:

1. Rates of **withdrawal** of active members.
2. Rates of **disability** among active members.
3. Patterns of **salary increases** to active members.
4. Rates of **retirement** among active members.
5. Rates of **mortality** among active members, retirants and beneficiaries.
6. Long-term rates of **investment return** to be generated by the assets of the System.

Assumptions should be carefully chosen and continually mon-

itored. An unrealistic set of assumptions can lead to:

- Understated costs resulting in either an inability to pay benefits when due, or sharp increases in required contributions at some point in the future;
- Overstated costs resulting in either benefit levels that are kept below the level that could be supported by the computed rate, or an unnecessarily large burden on the current generation of members, employers and taxpayers.

A single set of assumptions will not be suitable indefinitely. Things change, and our understanding of things (whether or not they are changing) also changes.

In recognition of this, the City Charter provides that assumptions used to value the liabilities of the General Retirement System should be studied in depth every five years. The

package of assumptions is then adjusted to reflect basic experience trends – but not random year to year fluctuations. Actuarial assumptions were revised following the 1992-1997 experience study and are used for this actuarial valuation. A summary of the 1992-1997 experience study findings follows:

RATES OF WITHDRAWALS from service without entitlement to an immediate benefit (other than a separation benefit) declined for all groups. The revised withdrawal assumptions recognize a portion of the 1992-1997 observed rates.

PAY INCREASE RATES (MERIT AND LONGEVITY PORTION) were found to be slightly higher than assumed rates. Therefore, current pay increase assumptions will be continued for the ensuing 5 year period.

RETIREMENT EXPERIENCE indicated significantly more retirements than expected for

General members. Revised rates partially reflect the 1992-97 observed rates.

POST-RETIREMENT MORTALITY RATES observed in the study were lower than the present assumed rates. Consequently, mortality rates were revised to reflect longevity improvement.

PRE-RETIREMENT MORTALITY experience was inconclusive. Rates were revised to be consistent with post-retirement mortality rates.

VALUATION METHOD. The method used to measure the cost of disability and death-in-service benefits was changed from a 3 year terminal funding method to the entry age normal cost method. The previous method was a carry-over from the original city charter. This change puts all portions of the rate setting process on a consistent basis.

ACTUARIAL COMMENTS CON'T

FUNDING POLICY

The Board policy for financing unfunded actuarial accrued liabilities (UAAL) is as follows:

1. The remaining portion of June 30, 1992 and June 30, 1998 unfunded actuarial accrued liabilities are financed over a closed amortization period with 22 years remaining as of June 30, 1999.
2. Actuarial experience gains and losses incurred after June 30, 1992 are over a 15 year open (perpetual) amortization period.
3. Changes in unfunded actuarial accrued liabilities due to increased benefits for active members are financed over a 15 year closed amortization period beginning with the effective date of the increase.
4. Changes in unfunded actuarial accrued liabilities due to increased benefits

for active members are financed over a 25 year closed amortization period beginning with the effective date of the increase.

EXPERIENCE DURING THE PAST YEAR

During the year ended June 30, 1999, overall Retirement System experience was more favorable than assumed, primarily due to favorable investment returns. Investment gains were partially offset by supplemental payments to retirees and beneficiaries.

BENEFIT CHANGES

The following benefit changes have been reflected in this valuation:

- EMS members had a change in regular retirement eligibility from 30 years of service to 25 years of service. EMS members

who retired with a duty disability benefit are eligible for conversion at the point where they would have attained 25 years of service.

- For retirees who retired on or before June 30, 1992, the benefit multiplier increased from 1.56% to 1.63% for service over 10 years.

CONTRIBUTION RECEIVABLE

Financial information submitted for the year indicated employer contributions of \$5.5 million were unpaid as of June 30, 1999.

OVERALL FINANCIAL CONDITION

The Retirement System is in excellent actuarial condition in accordance with the principles of level percent-of-payroll financing.

