

## SUMMARY OF ASSUMPTIONS USED FOR DPFERS ACTUARIAL VALUATIONS

*assumptions adopted by Board of Trustees after consulting with actuary*

10

### ECONOMIC ASSUMPTIONS

**THE INVESTMENT RETURN RATE** used in the valuation was 7.8% per year, compounded annually (net after administrative expenses). The real rate of return is the portion of total investment return which is more than the inflation rate. Considering other financial assumptions, the 7.8% total investment return rate translates to an assumed real rate of return of 3%.

**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 4.8% recognizes inflation.

**TOTAL ACTIVE MEMBER PAYROLL** is assumed to increase 4.8% annually, which is the portion of the individual pay increase assumptions attributable to wage inflation.

### NON-ECONOMIC ASSUMPTIONS

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

**THE MORTALITY TABLE** used to measure retired life mortality was 90% of the 1983 Group Annuity Mortality Table. This table was first used for the June 30, 1998 valuation.

**THE PROBABILITIES OF AGE/SERVICE RETIREMENT** for members eligible to retire have been calculated. These probabilities were last revised for the June 30, 2003 valuation.

**THE PROBABILITIES OF SEPARATION** from service (including death-in-service) are shown for sample ages. These probabilities were revised for the June 30, 2003 valuation.

## FUNDING METHODS

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

**DIFFERENCES BETWEEN ASSUMED EXPERIENCE AND ACTUAL EXPERIENCE** (“actuarial gains and losses”) become part of actuarial accrued liabilities.

**UNFUNDED ACTUARIAL ACCRUED LIABILITIES, IF ANY,** are amortized over periods of future years to produce contribution amounts (principal and interest) which are level percent of payroll contributions.

**EMPLOYER CONTRIBUTION DOLLARS** were assumed to be *paid in a single sum on the last day* of the employer fiscal year. (Adopted for the 6/30/79 actuarial valuation.)

**VALUATION ASSETS** recognize investment return above or below the actuarial assumed rate over a three-year period. (Adopted for the 6/30/95 actuarial valuation.)

**THE EFFECT OF CHANGES IN ELIGIBILITY FOR NORMAL RETIREMENT DUE TO SERVICE PURCHASES** was approximated by increasing computed actuarial accrued liabilities by 5%. In addition, active member accrued liabilities were increased by 2% to approximate the effect of incomplete service data.

**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.).**

2004-2005 FISCAL YEAR  
**EMPLOYER CONTRIBUTION RATES**  
**COMPUTED PAYABLE LAST DAY OF FISCAL YEAR**

*expressed as percents of active member payroll*

CONTRIBUTIONS FOR	CONTRIBUTIONS EXPRESSED AS PERCENTS OF PAYROLL
<b>NORMAL COST</b>	
Age & service allowances .....	22.47%
Disability allowances .....	5.57%
Duty death allowances .....	0.49%
<b>TOTAL</b> .....	<b>28.53%</b>
Members current contributions:# .....	4.07%
(Future refunds) .....	<u>(0.36)%</u>
Available for monthly benefits .....	<u>3.71%</u>
<b>EMPLOYER NORMAL COST</b> .....	<b>24.82%</b>
<b>ACTUARIAL ACCRUED LIABILITIES</b>	
Total (\$ Millions) .....	\$3,721.60
Funding Value of Assets .....	<u>3,205.50</u>
UAAL - dollars .....	\$516.10
(20-year amortization) .....	14.43%
<b>COMPUTED EMPLOYER RATE</b>	
<b>AFTER FFC OFFSET</b> .....	<b>39.25%</b>

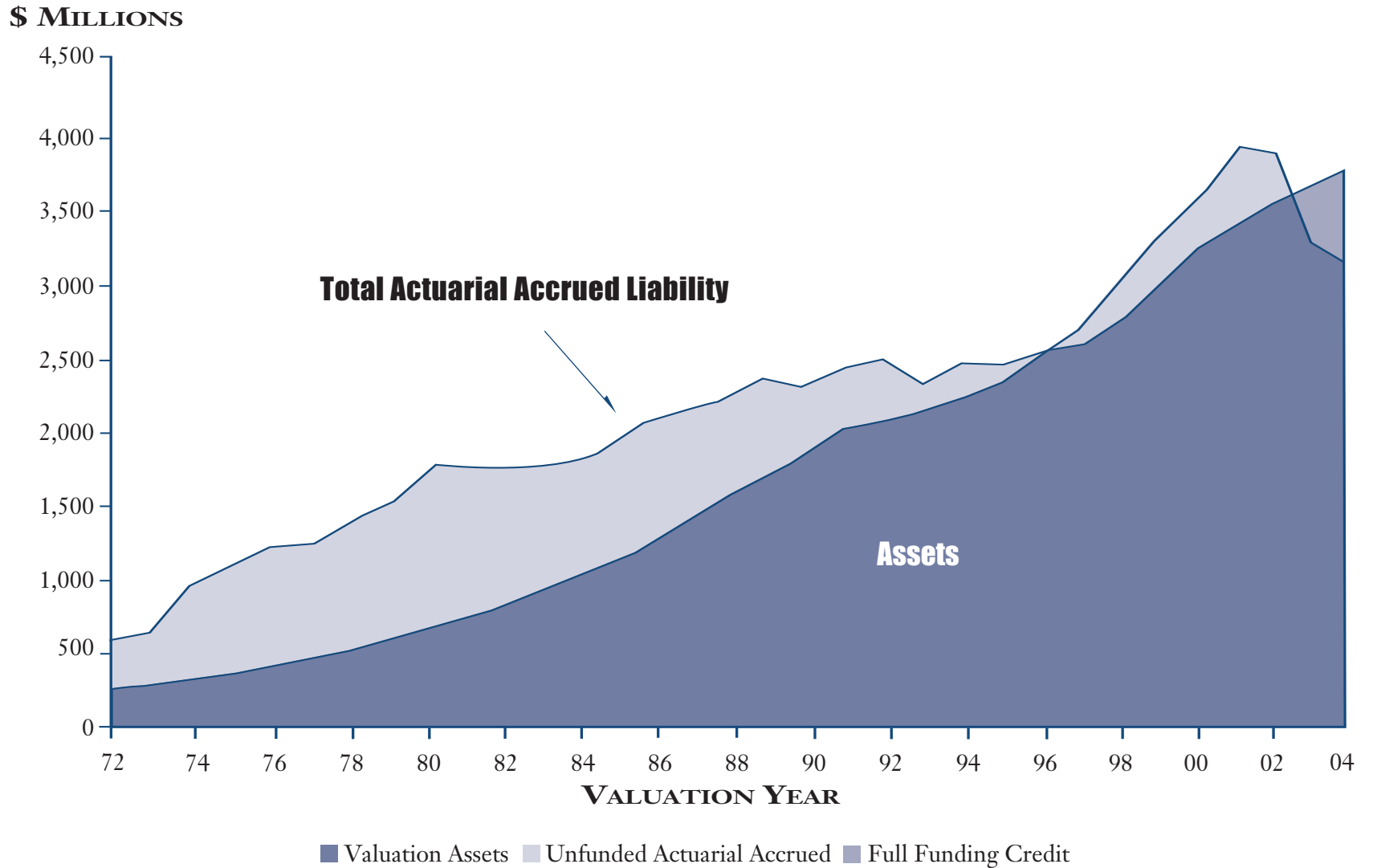
# Member statutory contributions of 5% to Annuity Savings Fund are not payable during all periods of covered employment. The rate shown is the equivalent rate if paid during all covered employment.

JUNE 30, 2004  
**ACTUARIAL ACCRUED LIABILITIES**

<b>PRESENT VALUE, JUNE 30</b>	<b>AMOUNT</b>
<b>ACCRUED PENSION LIABILITIES</b>	
Retirees and beneficiaries .....	\$ 2,500,929,070
Inactive members future deferred pensions .....	5,423,341
Active members .....	1,032,409,854
Total accrued pension liabilities .....	<u>3,538,762,265</u>
Pension fund balances .....	<u>2,755,785,572</u>
Unfunded accrued pension liabilities .....	\$ 782,976,693
(Full funding credit)	
<b>ACCRUED ANNUITY LIABILITIES</b>	
Retirees and beneficiaries	
Future annuities .....	\$ 8,242,435
Contingency reserve .....	<u>7,167,904</u>
Total .....	\$ 15,410,339
Members annuities and future refunds .....	<u>303,320,678</u>
Total accrued annuity liabilities .....	318,731,017
Annuity fund balances .....	<u>318,731,017</u>
Unfunded accrued annuity liabilities .....	\$ 0
<b>SYSTEM TOTALS</b>	
Actuarial Accrued Liabilities .....	<b>\$3,857,493,282</b>
Accrued Assets .....	<u><b>3,074,516,589</b></u>
Unfunded Actuarial Accrued Liabilities .....	<b>\$ 782,976,693</b>

**RETIREMENT SYSTEM TOTALS**  
**ASSETS AND ACCRUED LIABILITIES**

14



COMPARATIVE STATEMENT

ACTUARIAL ACCRUED LIABILITIES  
\$ IN MILLIONS

JUNE 30	ACTIVE PAYROLL		COMPUTED TOTAL	VALUATION ASSETS	UNFUNDED	UNFUNDED/ ACTIVE PAYS	EMPLOYER CONTRIBUTIONS % OF PAYS
	TOTAL	AVERAGE					
1994	\$199.7	\$38,693	\$2,486.2	\$2,304.4	\$181.8	0.9	27.64
1995(a)	209.7	39,692	2,574.2	2,443.0	131.2	0.6	25.90
1996	212.7	39,965	2,633.4	2,628.6	4.8	0.0	21.81
1997(b)	217.6	40,145	2,724.1	2,944.2	(220.1)	0.0	7.32
1998*	217.5	40,772	2,976.8	3,325.9	(349.1)	0.0	26.16#
1999@	216.0	40,542	3,724.1	3,668.4	(394.3)	0.0	26.17#
2000*	237.7	43,376	3,342.1	3,964.2	(622.1)	0.0	27.25#
2001	253.3	45,353	3,463.2	3,900.0	(436.8)	0.0	27.22#
2002(a)	248.7	46,203	3,632.0	3,635.1	(3.1)	0.0	23.39#
2003	248.7	47,305	3,721.6	3,205.5	(516.1)	2.1	43.89
<b>2004</b>	<b>\$258.7</b>	<b>\$51,126</b>	<b>\$3,857.5</b>	<b>\$3,074.5</b>	<b>\$783.0</b>	<b>3.0</b>	<b>54.36%</b>

(a) After changes in actuarial assumptions.

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

\* Plan amended.

# Employer normal cost before full funding credit.

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

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.

## SOLVENCY TESTS

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

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

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

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

16

### SHORT-TERM SOLVENCY TEST 5-YEAR COMPARATIVE STATEMENT (\$ MILLIONS)

JUNE 30	ACTUARIAL ACCRUED LIABILITIES			ASSETS	PORTION OF ACCRUED LIABILITIES COVERED BY ASSETS			
	(1) ACTIVE MEMBER CONTR.	(2) RETIREES AND BENEF.	(3) PRESENT MEMBERS (EMPLOYER FINANCED PORTION)		(1)	(2)	(3)	TOTAL
2000*	\$283	\$2,192	\$867	\$3,964	100	100	172	119
2001	365	2,255	843	3,900	100	100	152	113
2002(a)	391	2,299	942	3,635	100	100	100	100
2003	341	2,400	980	3,206	100	100	47	86
<b>2004</b>	<b>\$303</b>	<b>\$2,516</b>	<b>\$1,038</b>	<b>\$3,075</b>	<b>100%</b>	<b>100%</b>	<b>25%</b>	<b>80%</b>

\* After changes in benefit provisions.

(a) After changes in actuarial assumptions.

**GASB STATEMENT 25 REQUIRED  
SUPPLEMENTARY INFORMATION**

**Schedule of Funding Progress**

<b>ACTUARIAL VALUATION DATE</b>	<b>ACTUARIAL VALUE OF ASSETS (a)</b>	<b>ACTUARIAL ACCRUED LIABILITY (AAL) - ENTRY AGE (b)</b>	<b>UNFUNDED AAL (UAAL) (b-a)</b>	<b>FUNDED RATIO (a/b)</b>	<b>COVERED PAYROLL (c)</b>	<b>UAAL AS A % OF COVERED PAYROLL ((b-a)/c)</b>
1993#	\$2,255,955,423	\$2,493,225,379	\$237,269,956	90.5%	\$204,289,195	116.1%
1994	2,304,360,431	2,486,218,878	181,858,447	92.7%	199,734,550	91.1%
1995#	2,443,016,319	2,574,189,310	131,172,991	94.9%	209,733,734	62.5%
1996	2,628,627,790	2,633,394,644	4,766,854	99.8%	212,656,401	2.2%
1997#	2,944,208,105	2,820,330,323	(123,877,782)	104.4%	217,585,229	-
1998#*	3,325,929,721	2,976,770,662	(349,159,059)	111.7%	217,479,443	-
1999	3,668,362,979	3,274,050,127	(394,312,852)	112.0%	216,049,687	-
2000*	3,964,231,470	3,342,123,550	(662,107,920)	118.6%	237,741,560	-
2001	3,900,020,703	3,463,248,393	(436,772,310)	112.6%	253,297,027	-
2002#	3,635,106,581	\$3,631,971,488	\$(3,135,133)	100.1%	248,663,133	-
2003	\$3,205,516,657	\$3,721,593,210	\$516,076,553	86.1%	\$248,681,461	207.5%
2004	\$3,074,516,589	\$3,857,493,282	\$782,976,693	79.7%	\$258,699,581	302.7%

\* Plan amended.

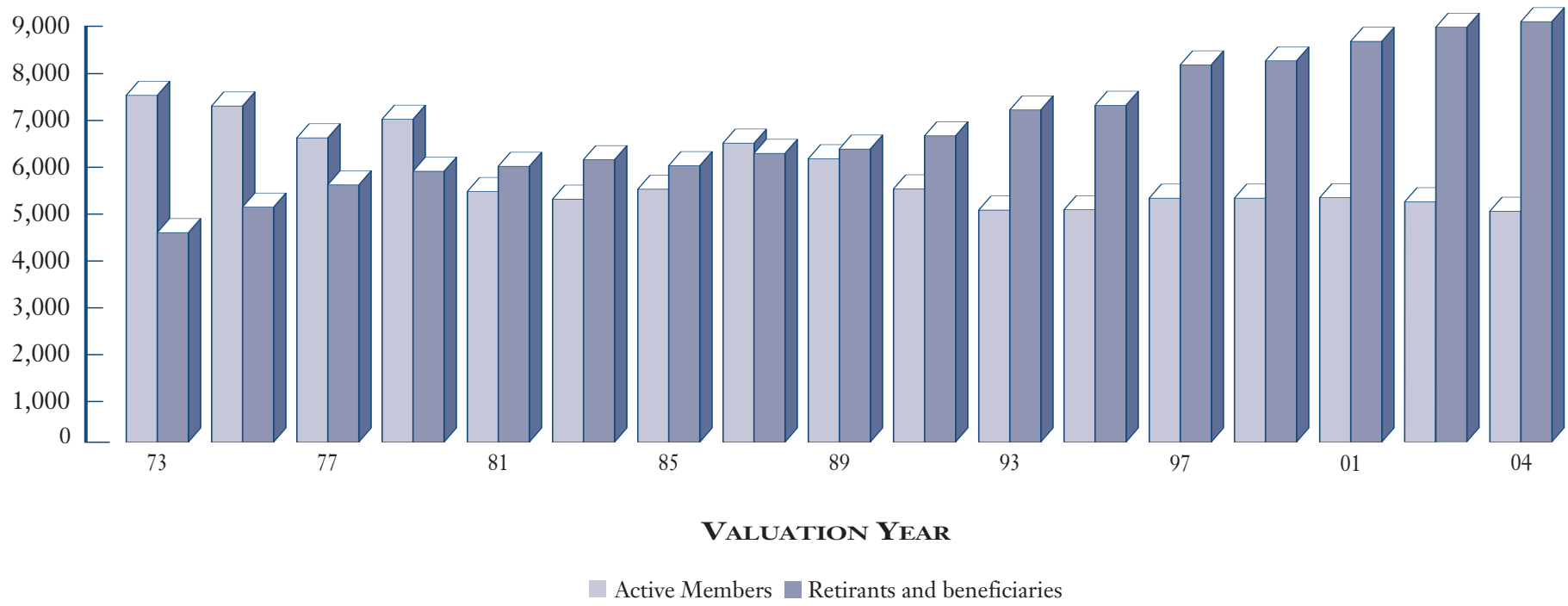
# After changes in actuarial assumptions.

**COMPARATIVE STATEMENTS OF  
ANNUAL RETIREMENT ALLOWANCES**

*being paid to retirants and beneficiaries*

JUNE 30	NO. RETIRED		% OF CURRENT ALLOWANCES			CURRENT ALLOWANCES	
	PRE-1969	TOTAL	ANNUITIES	PENSIONS	ESCALATORS	TOTAL	AVERAGE
1994	5,249	7,169	0.9	61.7	37.4	131,595,379	18,356
1995	5,161	7,311	0.9	61.3	37.8	138,959,417	19,007
1996	5,049	7,469	0.8	62.6	36.6	143,536,485	19,218
1997	5,012	7,743	0.8	63.3	35.9	150,843,744	19,481
1998	4,719	7,750	0.7	65.8	33.5	154,226,437	19,900
1999	4,573	7,883	0.7	68.4	30.9	158,523,816	20,110
2000	4,498	8,079	0.6	70.0	29.4	164,279,376	20,334
2001	4,394	8,166	0.6	67.4	32.0	180,239,652	22,072
2002	4,229	8,179	0.5	68.4	31.1	185,658,396	22,699
2003	4,104	8,277	0.5%	69.8%	29.7%	\$191,634,636	\$23,153
<b>2004</b>	<b>3,961</b>	<b>8,328</b>	<b>0.4%</b>	<b>68.5%</b>	<b>31.1%</b>	<b>\$203,083,524</b>	<b>\$24,386</b>

**RETIREMENT SYSTEM TOTALS**  
**ACTIVE AND RETIRED MEMBERS**



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

JUNE 30	NO. MEMBERS		TOTAL MEMBERS					AVERAGE PAY	
	1969 PLAN	PRE-1969	NO.	% CHANGE	RATIO OF ACTIVE TO RETIRED	ANNUAL PAYROLL	\$	CHANGE	
1994	4,578	584	5,162	-2%	0.7	\$199,734,550	\$38,693	- 0.4	
1995	4,779	505	5,284	+2	0.7	209,733,734	39,692	+ 2.6	
1996	4,889	432	5,321	+1	0.7	212,656,401	39,965	+ 0.7	
1997	5,049	371	5,420	+2	0.7	217,585,229	40,145	+ 0.5	
1998	5,018	316	5,334	- 2	0.7	217,479,443	40,772	+ 1.6	
1999	5,099	230	5,329	0	0.7	216,049,687	40,542	- 0.6	
2000	5,291	190	5,481	+3	0.7	237,741,560	43,376	+ 7.0	
2001	5,453	132	5,585	+2	0.7	253,297,027	45,353	+ 4.6	
2002	5,290	92	5,382	-4	0.7	248,663,133	46,203	+ 1.9	
2003	5,181	76	5,257	-2	0.6	248,681,461	47,305	+ 2.4	
<b>2004</b>	<b>\$5,007</b>	<b>53</b>	<b>5,060</b>	<b>-4%</b>	<b>0.6</b>	<b>258,699,581</b>	<b>51,126</b>	<b>+ 7.5%</b>	

**ACTIVE MEMBERS AS OF JUNE 30, 2004**

*by attained age & years of service*

ATTAINED AGE	POLICE MEMBERS 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	1							1	\$29,259
20-24	148	5						153	5,575,226
25-29	331	232	1					564	24,478,382
30-34	205	531	61	3				800	37,804,887
35-39	87	283	161	95				626	31,272,822
40-44	43	94	69	288	5			499	26,421,824
45-49	14	31	30	227	90	21	2	415	22,963,095
50-54	4	3	11	117	141	71	80	427	24,466,726
55-59	3	1	5	8	46	36	133	232	13,773,939
60				1	2	2	8	13	804,808
61					2		11	13	736,415
62					6	1	9	16	996,081
63					1	1	3	5	289,207
64							3	3	200,763
65							8	8	447,813
66							1	1	47,763
68							1	1	90,800
69							3	3	179,674
<b>TOTALS</b>	<b>836</b>	<b>1180</b>	<b>338</b>	<b>739</b>	<b>293</b>	<b>132</b>	<b>262</b>	<b>3,780</b>	<b>\$190,579,484</b>

ATTAINED AGE	FIRE MEMBERS 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									
20-24	25	1						26	\$971,690
25-29	109	20						129	5,354,618
30-34	80	87	26	1				194	8,787,718
35-39	33	54	91	73				251	12,599,696
40-44	21	25	49	100	18	1		214	11,226,115
45-49	3	5	18	65	42	26		159	9,215,872
50-54			4	16	23	77	57	177	11,102,311
55-59				5	8	24	89	126	8,597,807
60			1			1	2	4	264,270
<b>TOTALS</b>	<b>271</b>	<b>192</b>	<b>189</b>	<b>260</b>	<b>91</b>	<b>129</b>	<b>148</b>	<b>1,280</b>	<b>\$68,120,097</b>

**TOTAL ACTIVE MEMBERS  
AS OF JUNE 30, 2004**

*by attained age & years of service*

ATTAINED AGE	YEARS OF SERVICE TO VALUATION DATE							TOTALS	
	0-4	5-9	10-14	15-19	20-24	25-29	30+	No.	VALUATION PAYROLL
UNDER 20	1							1	\$29,259
20-24	173	6						179	6,546,916
25-29	440	252	1					693	29,833,000
30-34	285	618	87	4				994	46,592,605
35-39	120	337	252	168				877	43,872,518
40-44	64	119	118	388	23	1		713	37,647,939
45-49	17	36	48	292	132	47	2	574	32,178,967
50-54	4	3	15	133	164	148	137	604	35,569,037
55-59	3	1	5	13	54	60	222	358	22,371,746
60			1	1	2	3	10	17	1,069,078
61					2		11	13	736,415
62					6	1	9	16	996,081
63					1	1	3	5	289,207
64							3	3	200,763
65							8	8	447,813
66							1	1	47,763
68							1	1	90,800
69							3	3	179,674
<b>TOTALS</b>	<b>1,107</b>	<b>1,372</b>	<b>527</b>	<b>999</b>	<b>384</b>	<b>261</b>	<b>410</b>	<b>5,060</b>	<b>\$258,699,581</b>

**GROUP AVERAGES:**

	POLICE	FIRE	TOTAL
Age:	39.0 years	41.2 years	39.5 years
Service:	12.5 years	15.3 years	13.3 years
Annual Pay:	\$50,418	\$53,219	\$51,126

## ACTUARIAL COMMENTS

REVISED  
ASSUMPTIONS AND  
FUNDING METHODS

Each year as of June 30, the actuarial liabilities of DPFRS 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 system assets.

Assumptions should be carefully chosen and continually monitored. 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 Policemen and Firemen 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 1997-2002 experience study. A summary of the experience study results follows:

**RATES OF WITHDRAWALS** from service were varied but higher than current rates. The recommended revised withdrawal assumptions recognize a portion of the observed rates. Full credibility is generally not given to a 5-year experience period because it is not known that recent trends will persist indefinitely.

**PAY INCREASE RATES (MERIT AND SENIORITY PORTION)** were found to be higher than assumed rates, especially for members with fewer than 5-years of service. As with other decrement changes, the recommended rates partially reflect observed experience.

**RETIREMENT EXPERIENCE** indicated many more retirements than expected for Police members. Retirement experience for Fire members indicated fewer retirements than expected. Each group's results indicated that service is being purchased to allow for earlier retirements. Recommended rates reflect these trends. This change puts upward pressure on contribution rates.

**POST-RETIREMENT MORTALITY RATES** observed in the study were only slightly greater than the present assumed rates. Consequently, it is recommended that mortality rates remain unchanged since they already include a margin for future longevity improvement.

**PRE-RETIREMENT MORTALITY** experience was inconclusive. Recommended rates are the same as current rates and are approximately 90% of post-retirement mortality rates.

**NON-DUTY DISABILITY** rates were found to be lower than expected for both the Police and Fire group. Recommended rates partially reflect the observed lower rates of non-duty disability over the past 5 years.

**DUTY DISABILITY** rates were found to be much lower than previously assumed for Police and higher for the Fire group. Recommended rates partially reflect the observed patterns of duty disability over the past 5 years.

**VALUATION METHOD.** The method used to measure the cost of disability and death-in-service benefits was changed from a 5-year terminal funding method to the entry age normal cost method. The previous method is a carry-over from the original city charter. This change puts all portions of the rate setting process on a consistent basis.

**EXPERIENCE DURING THE PAST YEAR**

Investment experience for the year ended June 30, 2004 was very favorable with a market rate of return of 14.79%. However, under the asset valuation method, market gains and losses are spread over a 3-year period and prior years' investment results were much less favorable. Because of the favorable market return, the market value of assets now exceeds the funding value by \$48 million. If market returns average 7.8% or more in future years, the excess will ultimately be recognized and provide some contribution rate relief.

**ANNUITY RESERVE FUND**

The contingency reserve in the Annuity Reserve Fund is \$7.2 million and the ratio of the ARF balance to computed liabilities is over 180% (see page 3). The size of the contingency is likely to increase further unless a balance is restored. The Board approved a transfer of \$12 million from the Annuity Reserve Fund to the Pension Accumulation Fund in May 2001. An additional transfer of \$5 million at this time would reduce the funded ratio 120% which would still provide an ample margin for unforeseen contingencies.

**CONTRIBUTION RECEIVABLE**

Financial information submitted for the year indicated employer contributions of \$69,475,202 were unpaid as of June 30, 2004.

**OVERALL FINANCIAL CONDITION**

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