

CITY OF DETROIT GENERAL RETIREMENT SYSTEM
69TH ANNUAL ACTUARIAL VALUATION
JUNE 30, 2007

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April 23, 2008

The Board of Trustees
City of Detroit General Retirement System

Dear Board Members:

The results of the **69th Annual Actuarial Valuations** of the annuity and pension liabilities of the City of Detroit General Retirement System are presented in this report. The purpose of the valuations was to measure the system's funding progress and to determine contribution rates for the ensuing fiscal year in accordance with the established funding policy. Six divisions are evaluated separately.

The date of the valuations was **June 30, 2007**.

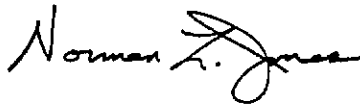
The valuations were based upon records maintained and furnished by the retirement system staff concerning active members, retirees and beneficiaries, and financial accounts as of the valuation date. The assumptions used in the valuations concerning future financial experience are summarized in the Appendix of this report.

Your attention is directed particularly to the comments on page A-5 and the contribution rates on page A-1.

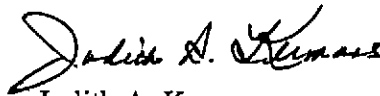
This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge, this report is complete and accurate and was made in accordance with standards of practice promulgated by the Actuarial Standards Board of the American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

The signing actuaries are Members of the American Academy of Actuaries (MAAA) as indicated, and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

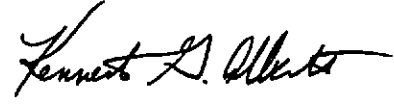
Respectfully submitted,



Norman L. Jones
FSA, EA, MAAA



Judith A. Kermans
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NLJ:mrh

SECTION A
RETIREMENT SYSTEM TOTALS

SUMMARY OF COMPUTED EMPLOYER CONTRIBUTION RATES 2008-2009 FISCAL YEAR

Contributions for	Contributions Expressed as a Percent of Payroll					
	General City	D.O.T.	Water*	Sewage*	Library	Total
Normal Cost:						
Age & Service Pensions	7.65 %	6.87 %	7.15 %	6.94 %	7.57 %	7.39 %
Disability Pensions	1.58 %	1.18 %	1.64 %	1.60 %	1.54 %	1.53 %
Death-in-Service Pensions	0.35 %	0.35 %	0.41 %	0.44 %	0.28 %	0.37 %
Employer Normal Cost	9.58 %	8.40 %	9.20 %	8.98 %	9.39 %	9.29 %
Unfunded Actuarial Accrued Liabilities#	(0.06)%	2.14 %	9.42 %	(8.99)%	(0.17)%	0.67 %
Computed Employer Contribution Rates	9.52 %	10.54 %	18.62 %	0.00 %	9.22 %	9.96 %
(Change from last year)	(0.05)%	0.61 %	(1.43)%	(0.80)%	(1.22)%	(0.25)%

Unfunded actuarial accrued liabilities (UAAL) were amortized over a 30 year period.

* Water/Sewage combined employer contribution rate would be 10.71% of payroll.

COMMENT

The valuation results shown above do not include a provision for the potential financial effect of retroactive transfers to the 1998 Defined Contribution Plan, which will occur after that plan has been implemented. These transfers may have a material impact on the computed employer contribution rates.

DEVELOPMENT OF LIABILITIES AS OF JUNE 30, 2007
RETIREMENT SYSTEM TOTALS

Present Value of Future Benefits	\$ 3,860,020,087
Present Value of Future Normal Costs	230,803,028
Actuarial Accrued Liability	3,629,217,059
Accrued Assets	3,586,550,485
Unfunded Actuarial Accrued Liability	\$ 42,666,574

ACTUARIAL ACCRUED LIABILITIES AS OF JUNE 30, 2007
RETIREMENT SYSTEM TOTALS

Present Value	June 30, 2007	June 30, 2006
Accrued Pension Liabilities (Employer Financed)		
Retirees and beneficiaries		
Future pensions	\$1,758,573,022	\$1,710,270,657
Mortality reserve	0	0
Total	1,758,573,022	1,710,270,657
Inactive members future deferred pensions	125,411,375	71,860,436
Active members	966,591,972	953,585,664
Total accrued pensions	2,850,576,369	2,735,716,757
Pension fund balances	2,810,626,017	2,678,230,567
Unfunded accrued pension liabilities	\$ 39,950,352	\$ 57,486,190
Accrued Annuity Liabilities (Member Financed)		
Retirees and beneficiaries		
Future annuities	\$ 45,713,669	\$ 45,083,467
Mortality reserve	0	0
Total	45,713,669	45,083,467
Member annuities & future refunds	732,927,021	653,487,929
Total accrued annuity liabilities	778,640,690	698,571,396
Annuity fund balances	775,924,468	695,457,110
Unfunded accrued annuity liabilities	\$ 2,716,222	\$ 3,114,286
Totals		
Actuarial Accrued Liabilities	\$3,629,217,059	\$3,434,288,153
Accrued Assets	3,586,550,485	3,373,687,677
Unfunded Actuarial Accrued Liabilities	\$ 42,666,574	\$ 60,600,476

VALUATION RESULTS - COMPARATIVE STATEMENT

----- \$ IN MILLIONS -----

RETIREMENT SYSTEM TOTALS

June 30	Active Payroll		% of Payroll Contributions For		Actuarial Accrued Liabilities		Unfunded/ Active Pay
	Total	Average	Normal Cost	UAAL	Computed Total	Accrued Assets	
1988(a)	\$326.2	\$24,403	9.33%	5.57%	\$1,816.9	\$1,585.9	\$231.0
1989	331.6	24,462	9.26%	4.76%	1,869.8	1,678.3	191.5
1990	352.6	26,700	9.22%	5.24%	1,983.0	1,768.9	214.1
1991	362.5	27,997	8.80%	5.09%	2,034.7	1,832.4	202.3
1992(a)#	344.3	28,369	8.48%	1.13%	1,998.8	1,930.3	68.5
1993(a)	331.0	28,763	8.02%	2.08%	2,114.2	1,983.8	130.4
1994	325.4	28,591	8.06%	2.73%	2,192.8	2,041.9	150.9
1995	327.6	28,451	8.11%	4.80%	2,275.2	2,043.4	231.8
1996	360.1	29,729	8.14%	3.44%	2,382.8	2,193.2	189.6
1997(a)	382.8	30,951	7.91%	3.93%	2,528.5	2,333.4	195.1
1998(a)#	387.0	31,565	9.30%	4.45%	2,814.9	2,582.1	232.8
1999#	383.4	31,989	9.29%	3.97%	2,900.4	2,756.6	143.8
2000	417.2	34,345	9.22%	4.15%	3,077.0	2,902.4	174.6
2001	439.6	34,497	9.22%	5.05%	3,179.6	2,912.1	267.5
2002(a)	440.7	34,867	8.74%	9.31%	3,250.5	2,761.2	489.3
2003	448.6	34,955	8.82%	13.90%	3,270.6	2,537.7	732.9
2004	444.6	37,706	8.99%	11.10%	3,383.9	2,470.2	913.7
2005*	390.6	39,775	9.26%	1.80%	3,347.4	3,222.4	125.0
2006	361.2	39,919	9.26%	0.95%	3,434.3	3,373.7	60.6
2007	361.7	40,319	9.29%	0.67%	3,629.2	3,586.6	42.6

After plan amendments.

(a) After changes in actuarial assumptions.

* After POC transfer.

COMMENTS

Computed Contribution Rate

The average total computed contribution rate decreased from 10.21% to 9.96% of payroll this year. Overall experience during the year was favorable, as shown on page A-7. The gain was primarily due to favorable investment experience.

Water and Sewage Divisions

Valuation results for these groups are distorted due to the periodic transfer of members and their accrued liabilities from Sewage to Water without a corresponding transfer of assets. We recommend that consideration again be given to combining the divisions for the purpose of setting contribution rates.

Pension Funding Policy

The computed employer contribution rates shown on page A-1 are based on the Board of Trustees policy of financing unfunded actuarial accrued liabilities over a period of 30 years (see Board resolution dated February 8, 2006).

Assets

Reported funding value of assets was reduced by \$3,066,889 (as of June 30, 2007) to account for the outstanding asset transfer for members of the Housing Division that transferred to MERS before the valuation date.

Conclusion and Recommendation

The Retirement System is 99% funded as of June 30, 2007. Based upon the funding policy established by the Board, the data furnished by the Retirement System and the actuarial assumptions shown in the Appendix, the weighted average recommended employer contribution rate for the 2007-2008 fiscal year is 9.96% of covered payroll with the rate for each division as shown on page A-1.

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 (\$ IN MILLIONS)

June 30	Actuarial Accrued Liabilities			Valuation 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
2002(a)	\$ 706	\$1,371	\$1,174	\$2,761	100%	100%	58%	85%
2003	689	1,447	1,135	2,538	100%	100%	35%	78%
2004	658	1,546	1,180	2,470	100%	100%	23%	73%
2005*	632	1,680	1,035	3,222	100%	100%	88%	96%
2006	653	1,755	1,025	3,374	100%	100%	94%	98%
2007	733	1,804	1,092	3,587	100%	100%	96%	99%

* After POC transfer.

(a) After changes in actuarial assumptions.

DERIVATION OF EXPERIENCE GAIN (LOSS)
YEAR ENDED JUNE 30, 2007
(\$ IN MILLIONS)

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

(1) UAAL* at start of year	\$60.6
(2) Normal cost from last valuation	33.5
(3) Employer contributions	41.4
(4) Interest accrual: $[(1) + 1/2 [(2) - (3)]] \times .079$	4.5
(5) Expected UAAL before changes: (1) + (2) - (3) + (4)	57.1
(6) Increase due to deferred member data changes	44.8
(7) Increase due to changes in benefits, methods or assumptions	0.0
(8) Expected UAAL after changes: (5) + (6) + (7)	101.9
(9) Actual UAAL at end of year	42.7
(10) Experience gain (loss): (8) - (9)	\$ 59.2
(11) Gain (loss) as % of beginning of year (\$2,781 million) accrued pension liability	2.1 %
(12) Experience gain (loss)	\$ 59.2
(13) Gain (loss) due to investment experience and audit adjustment after last valuation	153.6
(14) Gain (loss) from other sources	(94.4)

* *Unfunded actuarial accrued liability.*

A large component of the actuarial experience gain (loss) in any given year is typically the Retirement System's investment gain (loss) on valuation assets. Detail on the investment gain (loss) is shown on Page A-9.

**ASSET INFORMATION
FURNISHED FOR VALUATION
RETIREMENT SYSTEM TOTALS**

***Reserve Accounts
(Funding Value)***

Funds	Fund Balances	
	June 30, 2007*	June 30, 2006
Annuity Savings	\$ 732,927,021	\$ 653,487,929
Annuity Reserve	42,997,447	41,969,181
Pension Accumulation	456,054,088	316,592,936
Pension Reserve	1,603,816,641	1,660,456,947
Accrued Liability Fund Reserve	750,755,288	701,180,684
Total Fund Balances	\$3,586,550,485	\$3,373,687,677

***Revenues and Expenditures
(Funding Value)***

	Pension Funds	Annuity Funds	Total Funds
Balance, July 1, 2006 *	\$2,678,230,566	\$ 695,457,111	\$3,373,687,677
Prior valuation audit adjustment	(17,541,879)	0	(17,541,879)
Balance July 1, 2006 after adjustment	2,660,688,687	695,457,111	3,356,145,798
Revenues			
Member contributions	24,718	19,415,761	19,440,479
Employer contributions #	41,442,687	0	41,442,687
Recognized investment income	308,542,977	145,425,941	453,968,918
Transfers	6,414,036	(6,414,036)	0
Total	\$ 356,424,418	\$ 158,427,666	\$ 514,852,084
Expenditures			
Benefit payments	197,963,467	4,903,187	202,866,654
Refund of member contributions	4,069,544	73,057,122	77,126,666
Administrative expenses	4,454,077	0	4,454,077
Total	\$ 206,487,088	\$ 77,960,309	\$ 284,447,397
Balance, June 30, 2007	\$2,810,626,017	\$775,924,468	\$3,586,550,485
Funding Value Rate of Return	11.8%	21.9%	13.8%

Includes contributions receivable.

* Reserve of \$1,820,717 is included in the above totals.

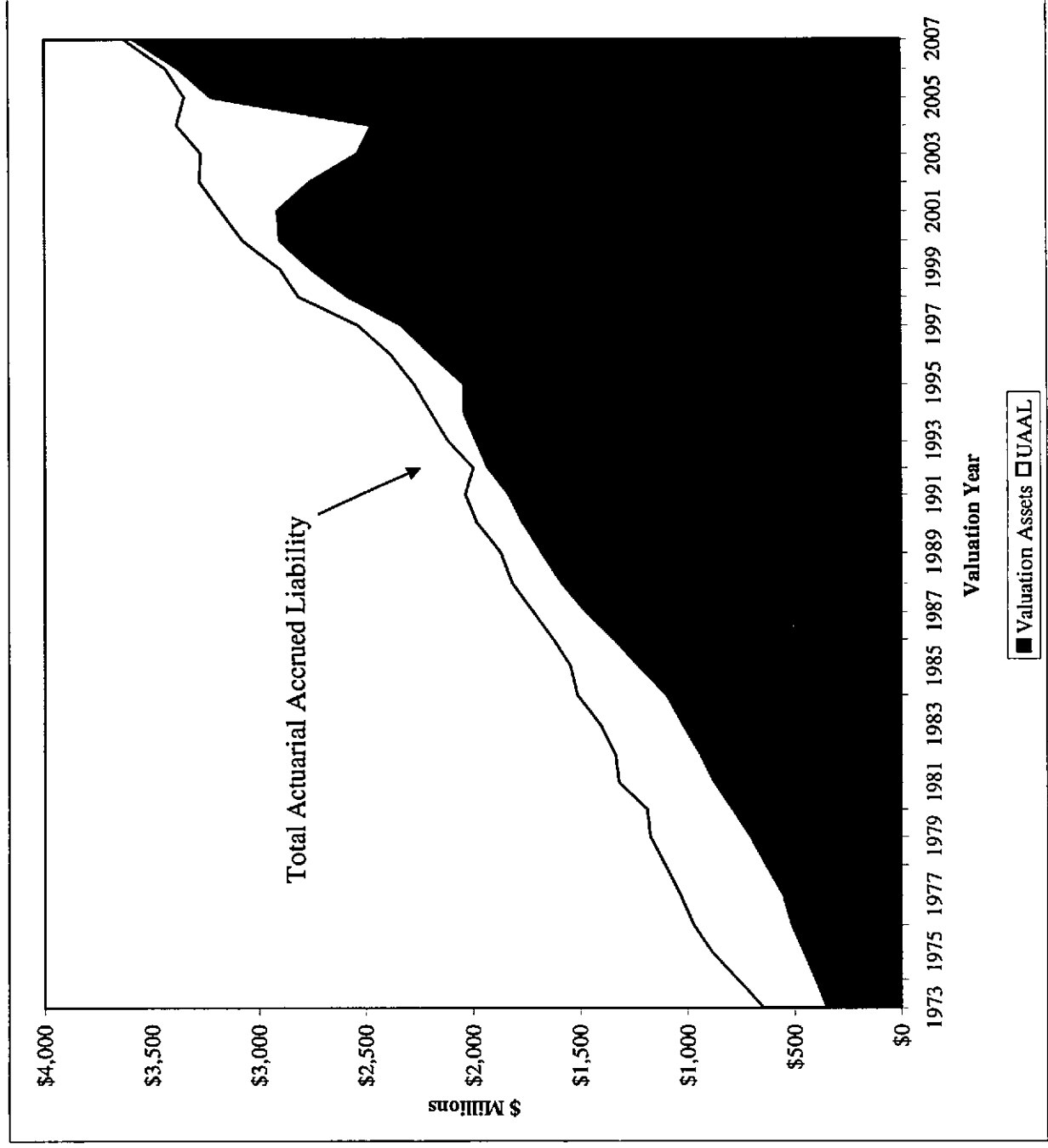
REPORTED FUNDING VALUE OF ASSETS

Year Ended June 30:	2005	2006	2007	2008	2009
A. Funding Value Beginning of Year	\$2,470,243,470	\$3,229,343,612	\$3,356,145,798		
B. Market Value End of Year	3,325,836,079	3,455,079,219	3,842,458,810		
C. Market Value Beginning of Year	2,521,497,015	3,325,836,079	3,455,079,219		
D. Non-Investment Net Cash Flow(Contribution-Benefits)	531,948,351	(240,991,858)	(218,952,938)		
E. Investment Income					
E1. Market Total: B - C - D	272,390,713	370,234,998	606,332,529		
E2. Amount for Immediate Recogn: Reg. Int. on Reserves	198,695,531	258,682,458	278,246,313		
E3. Amount for Phased-In Recognition: E1-E2	73,695,182	111,552,540	328,086,216		
F. Phased-In Recognition of Investment Income					
F1. Current Year: E3/3	24,565,061	37,184,180	109,362,072		
F2. First Prior Year	47,362,344	24,565,061	37,184,180	\$109,362,072	
F3. Second Prior Year	(43,471,145)	47,362,345	24,565,061	37,184,180	\$109,362,072
F4. Total Recognized Investment Gain	28,456,260	109,111,586	171,111,313	146,546,252	109,362,072
G. Total Recognized Investment Income: (E2+F4)	227,151,791	367,794,044	449,357,626		
H. Funding Value End of Year: A + D + G	3,229,343,612	3,356,145,798	3,586,550,486		
I. Difference between Market & Funding Value: B - H	96,492,467	98,933,421	255,908,324		
J. Recognized Rate of Return: G / [1/2(A+H-G)]	8.3%	11.8%	13.8%		
K. Market Value Rate of Return (net)	9.8%	11.6%	18.1%		

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 3 year period. During periods when investment performance exceeds the assumed rate, the Funding Value of Assets will tend to be less than Market Value. During periods when investment performance is less than the assumed rate, Funding Value of Assets will tend to be greater than market value. The Funding Value of Assets is unbiased with respect to Market Value. At any time it may be either greater or less than Market Value. If assumed rates are exactly realized for 2 consecutive years, it will become equal to Market Value.

Note: Above balances in 2006 exclude a reserve of \$17,541,879 for bonuses.

ASSETS AND ACCRUED LIABILITIES



PERSONS IN VALUATIONS - COMPARATIVE STATEMENTS
RETIREMENT SYSTEM TOTALS

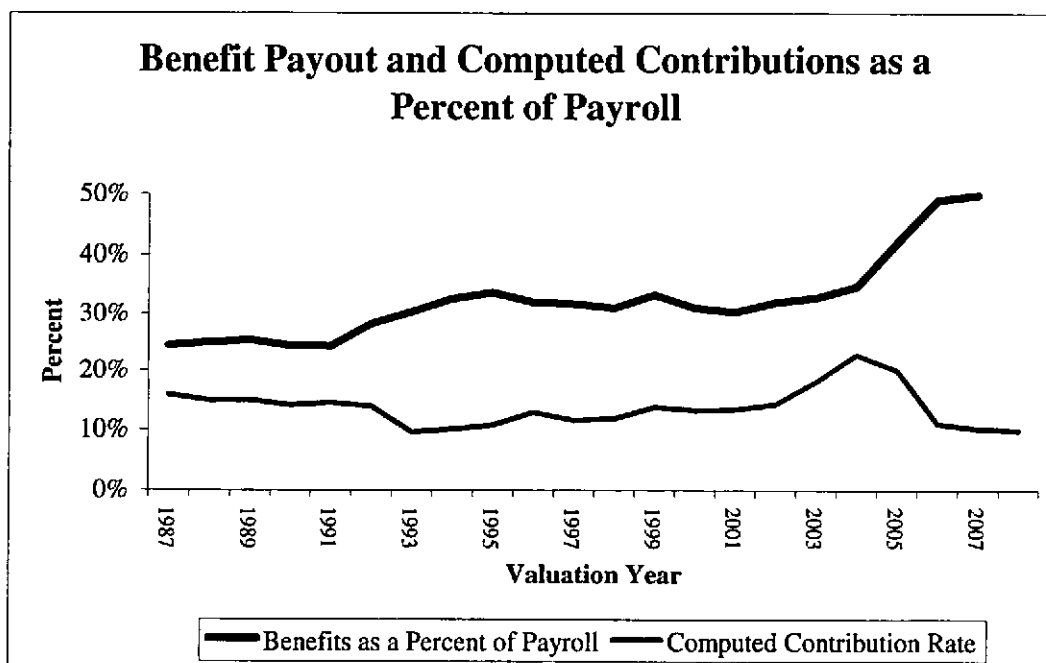
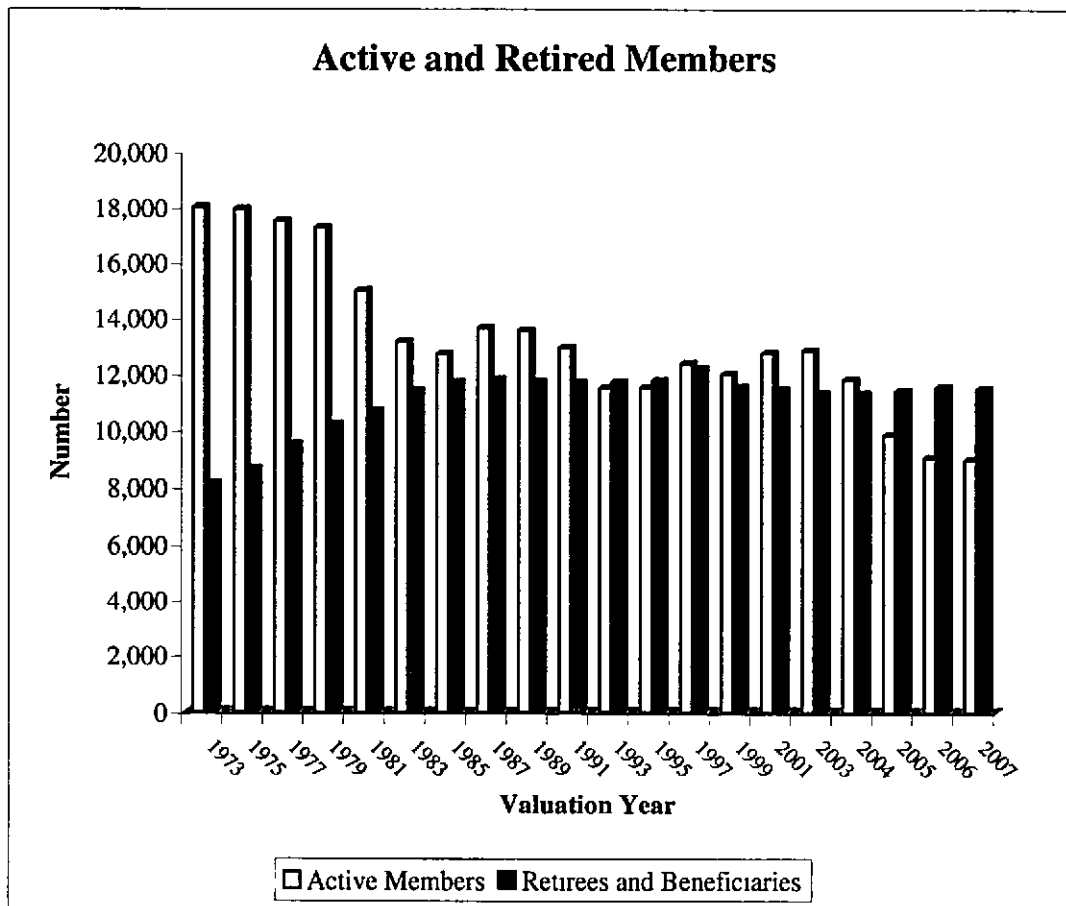
Active Members

June 30	Active Members		Annual Payroll	Group Averages			
	No.	Change		Average Pay		Age Years	Service Years
				\$	Change		
1978	17,475	(0.2)%	\$297,680,389	\$17,035	8.5 %	41.3	12.3
1979	17,258	(1.2)%	310,683,375	18,002	5.7 %	41.5	12.3
1980	15,881	(8.0)%	293,624,360	18,489	2.7 %	41.7	12.6
1981	14,993	(5.6)%	301,243,225	20,092	8.7 %	42.0	13.0
1982	13,730	(8.4)%	283,677,869	20,661	2.8 %	42.0	13.1
1983	13,156	(4.2)%	272,369,708	20,703	0.2 %	41.6	12.6
1984	13,172	0.1 %	288,048,279	21,868	5.6 %	41.5	12.0
1985	12,719	(3.4)%	281,378,439	22,123	1.2 %	41.5	11.9
1986	13,423	5.5 %	299,859,070	22,339	1.0 %	41.1	11.3
1987	13,640	1.6 %	321,402,755	23,563	5.5 %	40.9	11.0
1988	13,368	(2.0)%	326,216,082	24,403	3.6 %	41.0	11.1
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
2000	12,147	1.3 %	417,187,666	34,345	7.4 %	43.5	12.0
2001	12,744	4.9 %	439,636,072	34,497	0.4 %	43.3	11.7
2002	12,639	(0.8)%	440,680,045	34,867	1.1 %	43.7	11.8
2003	12,833	1.5 %	448,579,064	34,955	0.3 %	43.5	11.7
2004	11,791	(8.1)%	444,596,299	37,706	7.9 %	44.5	12.5
2005	9,820	(16.7)%	390,593,600	39,775	5.5 %	45.9	13.8
2006	9,047	(7.9)%	361,151,456	39,919	0.4 %	46.6	14.6
2007	8,971	(0.8)%	361,701,481	40,319	1.0 %	47.0	14.6

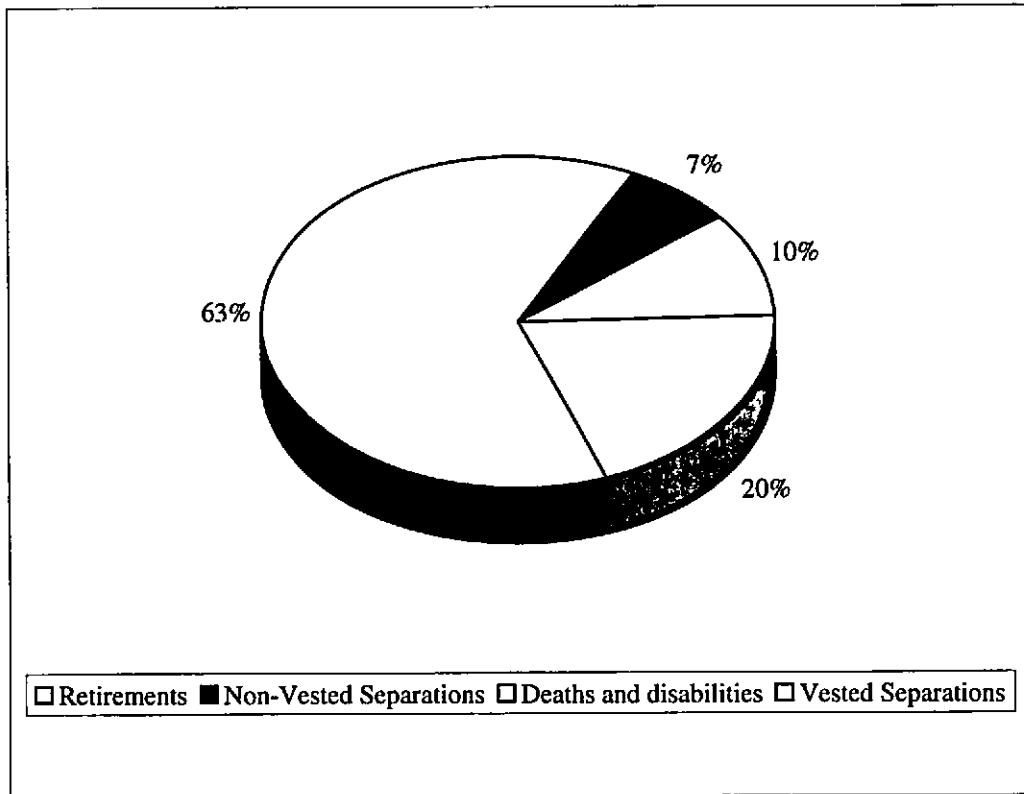
PERSONS IN VALUATIONS - COMPARATIVE STATEMENTS
RETIREMENT SYSTEM TOTALS

Retirees and Beneficiaries

June 30	No.	% of Current Allowances				Annual Allowances		
		Annuities	Initial Pensions	Escalators & Other Increases	Allow.	Total	Average	% of Payroll
1978	9,934	7.4%	79.6%	13.0%	100.0%	\$ 39,090,328	\$ 3,935	13.1%
1979	10,207	6.8%	82.4%	10.8%	100.0%	42,147,291	4,129	13.6%
1980	10,373	6.3%	81.0%	12.7%	100.0%	45,054,237	4,343	15.3%
1981	10,693	5.6%	81.7%	12.7%	100.0%	49,416,852	4,621	16.4%
1982	10,924	4.8%	77.7%	17.5%	100.0%	56,741,667	5,194	20.0%
1983	11,418	4.1%	79.6%	16.3%	100.0%	64,048,464	5,609	23.5%
1984	11,643	3.8%	80.4%	15.8%	100.0%	68,564,556	5,889	23.8%
1985	11,710	3.4%	80.6%	16.0%	100.0%	71,433,168	6,100	25.4%
1986	11,776	3.2%	80.7%	16.1%	100.0%	74,834,820	6,355	25.0%
1987	11,800	2.9%	80.2%	16.9%	100.0%	78,342,384	6,639	24.4%
1988	11,728	3.0%	80.0%	17.0%	100.0%	81,346,500	6,936	24.9%
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%
2000	11,480	2.2%	77.7%	20.1%	100.0%	129,354,696	11,268	31.0%
2001	11,450	2.3%	77.7%	20.0%	100.0%	133,170,804	11,631	30.3%
2002	11,363	2.2%	78.2%	19.6%	100.0%	140,805,120	12,392	32.0%
2003	11,322	2.4%	78.3%	19.3%	100.0%	147,024,720	12,986	32.8%
2004	11,311	2.6%	78.5%	18.9%	100.0%	154,133,460	13,627	34.7%
2005	11,396	2.7%	79.6%	17.7%	100.0%	165,095,736	14,487	42.3%
2006	11,541	2.7%	79.6%	17.7%	100.0%	175,193,088	15,180	48.5%
2007	11,478	2.7%	79.6%	17.7%	100.0%	180,332,688	15,711	49.9%



EXPECTED TERMINATIONS FROM ACTIVE EMPLOYMENT FOR CURRENT ACTIVE MEMBERS



The chart shows the expected future development of the present population in simplified terms. The retirement system presently covers 8,971 active members. Eventually, 652 people are expected to terminate covered employment prior to retirement and forfeit eligibility for an employer provided benefit. 7,437 people are expected to receive monthly retirement benefits either by retiring directly from active service, or by retiring from vested deferred status. 882 people are expected to become eligible for death-in-service or disability benefits.

RETIREEES AND BENEFICIARIES JUNE 30, 2007
TABULATED BY ATTAINED AGES
RETIREMENT SYSTEM TOTALS

Attained Ages	Age & Service#		Disability		Death-in-Service		Totals	
	No.	Monthly Allowances	No.	Monthly Allowances	No.	Monthly Allowances	No.	Monthly Allowances
Under 20*	51	\$ 88,246			9	\$ 6,507	60	\$ 94,753
20-24	1	445					1	445
25-29	1	718	1				2	718
30-34	7	7,514	10	\$ 5,232			17	12,746
35-39	10	6,661	29	17,193	5	6,203	44	30,057
40-44	26	23,181	77	42,582	9	6,064	112	71,827
45-49	207	401,237	193	116,469	22	19,458	422	537,164
50-54	698	1,534,124	213	143,092	28	32,294	939	1,709,510
55-59	1,251	2,715,888	224	245,370	47	74,679	1,522	3,035,937
60-64	1,394	2,249,821	139	129,349	42	47,860	1,575	2,427,030
65-69	1,210	1,556,637	100	77,962	44	44,064	1,354	1,678,663
70-74	1,207	1,474,563	73	52,128	83	71,601	1,363	1,598,292
75-79	1,505	1,585,198	97	67,200	82	60,863	1,684	1,713,261
80-84	1,279	1,275,925	85	60,287	83	61,748	1,447	1,397,960
85-89	643	537,332	26	16,914	42	25,848	711	580,094
90-94	187	119,473	8	3,827	9	4,625	204	127,925
95-99	20	10,471			1	871	21	11,342
Totals	9,697	\$13,587,434	1,275	\$977,605	506	\$462,685	11,478	\$15,027,724

* May include records with defective birth dates.

Includes survivor beneficiaries of deceased retirees.

INACTIVE VESTED MEMBERS JUNE 30, 2007
BY ATTAINED AGES
RETIREMENT SYSTEM TOTALS

Attained Ages	No.	Estimated Annual Pensions
Under 25	0	\$ 0
25-29	0	0
30-34	15	121,979
35-39	69	618,984
40-44	194	1,686,996
45-49	350	3,229,239
50-54	360	3,266,656
55-59	362	3,330,871
60-64	184	1,799,981
65-69	83	791,715
70-74	37	388,817
75-79	12	142,230
80 and Over	6	78,934
Totals	1,672	\$15,456,402

ACTIVE MEMBERS AS OF JUNE 30, 2007
BY ATTAINED AGE AND YEARS OF SERVICE
RETIREMENT SYSTEM TOTALS

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	13							13	\$ 215,697
20-24	101	12						113	2,444,459
25-29	162	179	6					347	10,413,733
30-34	180	249	124	4				557	19,351,915
35-39	172	415	278	79	14			958	36,685,131
40-44	167	356	396	274	180	4		1,377	54,572,765
45-49	153	326	326	343	408	179	17	1,752	71,237,338
50-54	110	278	287	258	415	396	87	1,831	76,149,641
55-59	74	161	181	185	255	302	142	1,300	56,615,526
60-64	29	87	93	69	80	92	72	522	24,412,857
65-69	10	31	31	14	11	20	26	143	6,958,327
70-74	3	9	7	4	3		11	43	2,048,544
75-79		3	2	1	3		3	15	595,548
Totals	1,177	2,106	1,731	1,231	1,369	999	358	8,971	\$361,701,481

Group Averages:

Age: 47.0 years
Service: 14.6 years
Annual Pay: \$40,319

RETIREES AND BENEFICIARIES JUNE 30, 2007
TABULATED BY YEAR OF RETIREMENT

Year of Retirement	No.	Monthly Allowances	
		Total	Average
1950 & before	1	\$ 192	\$ 192
1951-1955	8	3,419	427
1956-1960	6	2,137	356
1961-1965	32	13,319	416
1966-1970	118	47,093	399
1971-1975	367	194,416	530
1976-1980	1,089	790,134	726
1981-1985	1,708	1,698,638	995
1986-1990	1,435	1,535,384	1,070
1991-1995	2,057	2,481,659	1,206
1996-2000	1,852	2,821,553	1,524
2001	352	582,092	1,654
2002	447	816,235	1,826
2003	398	787,936	1,980
2004	467	945,104	2,024
2005	543	1,198,749	2,208
2006	456	870,422	1,909
2007	142	239,242	1,685
Totals	11,478	\$15,027,724	\$1,309

SUMMARY OF BENEFIT PROVISIONS EVALUATED

Age and Service Pension

Eligibility - Any age (minimum age 55 for members hired after 1995) with 30 years of service (25 for EMS members), or age 60 with 10 years of service, or age 65 with 8 years of service.

Annual Amount - Sum of a) a basic pension of \$12 for each of the first 10 years of service, plus b) a pension equal to the first 10 years of service multiplied by 1.6% of AFC, plus 1.8% of AFC for each year of service greater than 10 years up to 20 years, plus 2.0% of AFC for each year of service greater than 20 years up to 25 years, plus 2.2% of AFC for each year of service greater than 25 years.

Type of Average Final Compensation (AFC) - Highest 3 consecutive years out of the last 10. Pension benefits will not be diminished if compensation is reduced because of a fiscal emergency. Effective July 1, 1999, in computing the AFC, a member shall have the option of adding the value of 25% of unused accrued sick leave to the earnings used in computing the AFC. Longevity is added to AFC in accordance with the following schedule: \$150 after 5 years, \$300 after 10 years, \$450 after 15 years, \$600 after 20 years, and \$750 after 25 years.

Early Retirement

Eligibility - Any age with 25 or more years of service (minimum age 55 for members hired after 1995).

Annual Amount - Same as regular retirement but actuarially reduced.

Deferred Retirement (Vested Benefit)

Eligibility - Hired prior to 7-1-80: Age 40 with 8 years of service. Hired on or after 7-1-80: Any age with 10 years of service.

Benefit Commencement - **SAAA and APTE hired prior to October 1, 1988 and all Non-Union and lawyers:** Benefit begins at the age the member would have become eligible for regular retirement if service had continued. **Others:** Benefits based on service rendered by June 30, 1986 begin at the age the member would have become eligible for regular retirement. Benefits based on service rendered after July 1, 1986 begin at age 62.

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

Duty Disability Retirement

Eligibility - Service related disability before age 60. No service requirement.

Annual Amount - An annuity which is the actuarial equivalent of the accumulated contributions at date of disability plus a pension of two-thirds of average final compensation at time of disability. The maximum annual pension is \$9,000. At the earliest of when the member would have accrued 30 years service credit (25 for EMS) or age 60, the annuity is recomputed assuming contributions would have continued at a salary level equal to final compensation. The pension is recomputed with additional service credit granted from the date of disability to age 60 (or 30 years service credit) with no maximum.

SUMMARY OF BENEFIT PROVISIONS EVALUATED (CONCLUDED)

Non-Duty Disability Retirement

Eligibility - Disability from any cause before age 60 with 10 or more years of service.

Annual Amount - Computed in the same manner as a regular retirement benefit. Maximum annual pension to age 60 is \$6,000. Benefit is recomputed at age 60 with no maximum.

Duty Death Before Retirement

Eligibility - Death from service related causes. No age or service requirements.

Annual Amount - One-third of final compensation to the surviving spouse for life or until remarriage, plus an equal share of 1/4 of final compensation to each unmarried child under age 18. If there is no eligible spouse, eligible children each receive 1/4 of final compensation; if there are more than 2 such children, each child shares an equal part of 1/2 of final compensation. Maximum total amount for spouse and children is \$9,000 annually. If there is no eligible spouse or children, dependent parents each receive 1/6 of deceased's final compensation, to a total maximum of \$600 annually.

Non-Duty Death Before Retirement

Eligibility - Death-in-service at any age with 15 years of service; or after age 60 with 10 years of service; or after age 65 with 8 years of service.

Annual Amount - To Surviving Spouse: Computed as a regular retirement benefit but reduced in accordance with a 100% joint and survivor election for members with 20 or more years of service. For members with 15 years of service but less than 20, benefit is reduced in accordance with a 50% joint and survivor election. To Dependent Children if no Surviving Spouse: \$9,000 payable to age 19 of the youngest child or for life if child is physically or mentally impaired for members with 20 or more years of service (\$6,000 if less than 20 years of service).

Post-Retirement Cost-of-Living Adjustments

Benefit is increased annually by 2.25% of the **original** pension amount at retirement.

Member Contributions

Members have the option of choosing one of four contribution amounts: (1) 0%; (2) 3.0% of compensation up to the Social Security wage base, plus 5.0% of compensation in excess of the Social Security wage base; (3) 5.0% of total compensation; or (4) 7.0% of total compensation. Member contributions can be paid as a lump sum or annuitized at retirement to provide an annuity in addition to the pension (which is not affected by the level of member contributions).

SECTION B

DIVISIONS SEPARATELY EXPERIENCE RATED

SUMMARY OF MEMBER DATA

JUNE 30, 2007

Active Members

	General	D.O.T.	Water	Sewage	Library	Totals
Number	4,914	1,509	1,289	834	425	8,971
% Change in active members	(0.4)%	3.4 %	(3.0)%	(5.9)%	(2.7)%	(0.8)%
Annual payroll (\$ millions)	\$ 205.2	\$ 51.4	\$ 51.7	\$ 38.1	\$ 15.3	\$ 361.7
Average pay	\$41,753	\$34,055	\$40,117	\$45,713	\$36,008	\$40,319
% Change in average pay	1.3 %	(1.7)%	2.6 %	1.3 %	3.1 %	1.0 %

Retired Members and Survivor Beneficiaries

	General	D.O.T.	Water	Sewage	Library	Totals
Number	7,567	1,591	1,721	299	300	11,478
Annual benefits (\$ millions) #	\$ 118.1	\$ 23.4	\$ 32.1	\$ 5.7	\$ 5.9	\$ 185.1
Average benefits	\$15,606	\$14,692	\$18,635	\$19,029	\$19,728	\$16,130
% Change in average benefit	3.4 %	4.7 %	2.3 %	6.2 %	1.4 %	3.5 %

Includes Annuities

Inactive Vested Members

	General	D.O.T.	Water	Sewage	Library	Totals
Number	1,055	230	257	90	40	1,672
Annual benefits (\$ millions)	\$ 9.5	\$ 2.1	\$ 2.7	\$ 0.9	\$ 0.3	\$ 15.5
Average benefits	\$9,011	\$9,032	\$10,593	\$9,574	\$7,215	\$9,244
% Change in average benefit	37.2 %	35.5 %	42.2 %	49.4 %	9.3 %	38.5 %

ALLOCATION OF ASSETS USED FOR VALUATION RESERVE ACCOUNTS

	June 30, 2007	June 30, 2006
Annuity Savings Fund		
General	\$ 363,673,743	\$ 333,135,475
D.O.T.	126,549,747	109,947,597
Water	210,086,650	183,849,853
Sewage	5,227,556	2,767,730
Housing	2,326,940	2,541,797
Library	25,062,385	21,245,477
Totals	732,927,021	653,487,929
Annuity Reserve Fund		
General	23,789,382	22,726,509
D.O.T.	4,475,864	4,412,870
Water	9,564,408	8,817,065
Sewage	485,455	1,236,904
Housing	2,254,395	2,273,305
Library	2,427,943	2,502,528
Totals	42,997,447	41,969,181
Pension Accumulation Fund		
General	219,188,569	149,443,613
D.O.T.	56,346,001	42,758,282
Water	(58,868,013)	(84,054,812)
Sewage	205,429,521	180,315,847
Housing	12,853,609	11,715,567
Library	21,104,401	16,414,439
Totals	456,054,088	316,592,936
Pension Reserve Fund		
General	971,443,235	1,004,098,425
D.O.T.	190,437,132	201,073,651
Water	313,300,655	313,596,785
Sewage	37,956,263	47,260,357
Housing	40,093,303	41,898,160
Library	50,586,053	52,529,569
Totals	1,603,816,641	1,660,456,947
Accrued Liability Fund		
General	464,524,268	433,744,645
D.O.T.	99,406,025	93,312,324
Water	154,280,760	144,073,348
Sewage	9,461,344	8,391,280
Housing	N/A	N/A
Library	23,082,891	21,659,087
Totals	750,755,288	701,180,684
Retirement System Totals	\$3,586,550,485	\$3,373,687,677

ACTUARIAL ACCRUED LIABILITIES AS OF JUNE 30, 2007
BY DIVISION
(\$ IN THOUSANDS)

Present Value, June 30 of	General	D.O.T.	Water	Sewage	Library	Totals
Accrued Pension Liabilities						
Retirees and beneficiaries	\$1,101,456	\$216,117	\$328,528	\$ 58,708	\$ 53,764	\$1,758,573
Inactive members future deferred pensions	76,808	16,739	22,281	7,191	2,392	125,411
Active members	525,704	133,044	145,161	124,813	37,870	966,592
Total accrued pension liabilities	1,703,968	365,900	495,970	190,712	94,026	2,850,576
Pension fund balances	1,708,103	346,189	408,713	252,847	94,773	2,810,625
Unfunded accrued pension liabilities	(4,135)	19,711	87,257	(62,135)	(747)	39,951
Accrued Annuity Liabilities						
Retirees and beneficiaries	28,012	4,329	9,085	1,583	2,705	45,714
Members annuities & future refunds	366,001	126,550	210,087	5,228	25,062	732,928
Total accrued annuity liabilities	394,013	130,879	219,172	6,811	27,767	778,642
Annuity fund balances	392,044	131,026	219,651	5,713	27,490	775,924
Unfunded accrued annuity liabilities	1,969	(147)	(479)	1,098	277	2,718
Totals						
Actuarial Accrued Liabilities	2,097,981	496,779	715,142	197,523	121,793	3,629,218
Accrued Assets	2,100,147	477,215	628,364	258,560	122,263	3,586,549
Funded Ratio	100.1%	96.1%	87.9%	130.9%	100.4%	98.8%
Unfunded Actuarial Accrued Liabilities	\$(2,166)	\$ 19,564	\$86,778	\$(61,037)	\$(470)	\$ 42,669

Note: Totals may be off slightly due to rounding.

**ACTIVE AND RETIRED MEMBERS
INCLUDED IN VALUATION
HISTORIC COMPARISONS**

*Active Members
by Valuation Division*

June 30	General	D.O.T.	Water	Sewage	Housing	Library	Totals
1993	6,274	1,694	1,586	1,132	298	524	11,508
1994	6,289	1,596	1,592	1,108	308	489	11,382
1995	6,377	1,585	1,604	1,091	369	489	11,515
1996	6,620	1,724	1,681	1,134	461	466	12,086
1997	6,717	1,845	1,727	1,185	436	459	12,369
1998	6,659	1,764	1,785	1,184	430	439	12,261
1999	6,527	1,669	1,768	1,173	414	436	11,987
2000	6,941	1,606	1,770	1,064	334	432	12,147
2001	7,325	1,677	1,836	1,094	325	487	12,744
2002	7,320	1,705	1,797	1,106	262	449	12,639
2003	7,575	1,734	1,744	1,090	227	463	12,833
2004	7,068	1,652	1,592	1,035	0	444	11,791
2005	5,414	1,529	1,472	973	0	432	9,820
2006	4,935	1,460	1,329	886	0	437	9,047
2007	4,914	1,509	1,289	834	0	425	8,971

*Retired Members & Beneficiaries
by Valuation Division*

June 30	General	D.O.T.	Water	Sewage	Housing	Library	Totals
1993	7,866	1,837	1,189	256	309	262	11,719
1994	7,827	1,789	1,203	268	304	258	11,649
1995	7,883	1,788	1,256	254	310	265	11,756
1996	7,910	1,823	1,312	257	323	264	11,889
1997	8,086	1,858	1,377	254	347	277	12,199
1998	7,665	1,738	1,334	247	337	272	11,593
1999	7,599	1,719	1,360	243	338	278	11,537
2000	7,522	1,706	1,387	242	330	293	11,480
2001	7,483	1,684	1,418	235	327	303	11,450
2002	7,392	1,667	1,446	227	327	304	11,363
2003	7,329	1,659	1,481	227	319	307	11,322
2004	7,593	1,614	1,569	226	*	309	11,311
2005	7,592	1,623	1,643	235	*	303	11,396
2006	7,638	1,617	1,714	267	*	305	11,541
2007	7,567	1,591	1,721	299	*	300	11,478

* Included with General City beginning 6/30/2004.

EMPLOYER COMPUTED CONTRIBUTIONS - HISTORICAL COMPARISON

Valuation Date June 30	As Percents of Valuation Payroll					
	General	D.O.T.	Water	Sewage	Housing	Library
1978	18.85%	31.62%	18.23%	12.18%	17.57%	19.26%
1979	18.81%	30.35%	18.27%	11.44%	17.09%	19.19%
1980	18.58%	25.56%	18.02%	10.85%	16.81%	18.24%
1981*	20.67%	30.27%	19.41%	12.52%	17.81%	20.24%
1982(a)	19.39%	27.36%	18.12%	10.97%	16.94%	19.07%
1983	19.19%	28.30%	17.57%	9.86%	16.10%	17.33%
1984(a)	20.27%	27.45%	18.36%	9.48%	17.22%	18.15%
1985	17.81%	24.64%	16.35%	6.52%	14.45%	13.75%
1986*	16.39%	23.17%	15.28%	5.04%	12.29%	11.46%
1987	15.62%	21.67%	14.74%	3.26%	11.24%	10.10%
1988(a)*	15.96%	19.82%	15.03%	2.98%	11.54%	10.47%
1989	15.18%	18.54%	14.49%	1.58%	11.33%	8.80%
1990	15.72%	18.62%	15.10%	2.02%	11.08%	9.04%
1991	15.31%	17.73%	14.45%	1.80%	10.51%	8.42%
1992(a)*	11.21%	10.08%	10.49%	0.76%	6.94%	6.15%
1993(a)	11.57%	10.80%	12.31%	0.59%	8.14%	5.51%
1994	12.31%	11.35%	13.42%	0.25%	8.55%	7.65%
1995	14.71%	12.65%	15.68%	0.98%	10.74%	10.28%
1996	13.23%	12.52%	15.83%	0.00%	9.74%	7.64%
1997(a)	13.47%	12.94%	15.32%	0.00%	9.34%	7.09%
1998(a)*	15.80%	14.23%	17.16%	0.00%	11.38%	9.73%
1999*	15.31%	13.70%	16.95%	0.00%	10.48%	8.04%
2000	15.19%	14.37%	17.12%	0.00%	9.01%	6.97%
2001	15.92%	15.36%	19.12%	0.00%	9.25%	9.20%
2002(a)	19.32%	19.51%	26.33%	0.33%	10.90%	15.82%
2003	23.45%	23.59%	29.82%	10.09%	13.11%	21.72%
2004	19.75%	19.96%	31.71%	6.80%	-	20.40%
2005#	10.35%	10.88%	20.84%	2.04%	-	11.33%
2006	9.57%	9.93%	20.05%	0.80%	-	10.44%
2007	9.52%	10.54%	18.62%	0.00%	-	9.22%
Totals						

(a) After changes in actuarial assumptions.

* After plan amendments.

After issuance of POCs.

SECTION C

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

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

GASB STATEMENT NO. 25 REQUIRED SUPPLEMENTARY INFORMATION

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)
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	2,900,404,223	143,789,765	95.0%	383,449,421	37.5%
2000	2,902,433,063	3,077,001,129	174,568,066	94.3%	417,187,666	41.8%
2001	2,912,146,389	3,179,601,214	267,454,825	91.6%	439,636,072	60.8%
2002#	2,761,203,680	3,250,514,916	489,311,236	84.9%	440,680,045	111.0%
2003	2,537,668,376	3,270,627,177	732,958,801	77.6%	448,579,064	163.4%
2004	2,470,243,470	3,383,926,672	913,683,202	73.0%	444,596,299	205.5%
2005@	3,222,393,861	3,347,387,652	124,993,791	96.3%	390,593,600	32.0%
2006	3,373,687,677	3,434,288,153	60,600,476	98.2%	361,151,456	16.8%
2007	3,586,550,485	3,629,217,059	42,666,574	98.8%	361,701,481	11.8%

@ After POC transfer.

* After plan amendments.

After changes in actuarial assumptions.

Schedule of Employer Contributions

Valuation Year Ended June 30	Fiscal Year Ended June 30	Contribution Rates as Percents of Valuation Payroll
1994	1996	10.79%
1995	1997	12.91%
1996	1998	11.58%
1997	1999	12.30%
1998	2000	13.75%
1999	2001	13.26%
2000	2002	13.37%
2001	2003	14.27%
2002	2004	19.06%
2003	2005	22.72%
2004	2006	20.09%
2005	2007	11.06%
2006	2008	10.21%
2007	2009	9.96%

GASB STATEMENT NO. 25 REQUIRED SUPPLEMENTARY INFORMATION

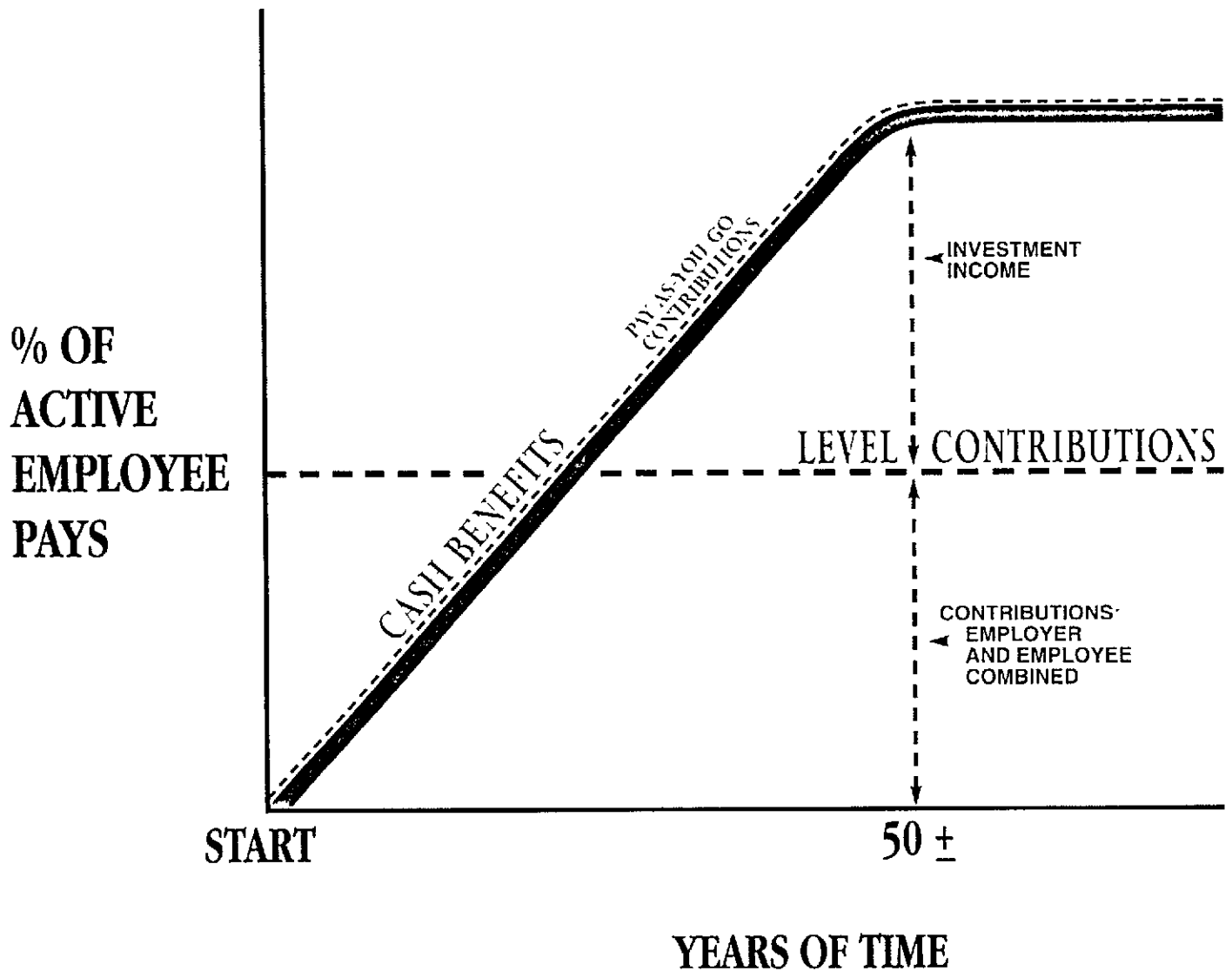
The information presented in the required supplementary schedules was determined as part of the actuarial valuations at the dates indicated. Additional information as of the latest actuarial valuation follows:

Valuation date	June 30, 2007
Actuarial cost method	Entry Age
Amortization method	Level percent
Remaining amortization period for unfunded accrued liabilities	30 years (see page A-4)
Asset valuation method	3-year smoothed market
Actuarial assumptions:	
Investment rate of return	7.9%
Projected salary increases*	4.0% - 9.5%
*Includes inflation at	4.0%
Cost-of-living adjustments	2.25% of original pension amount at retirement.

Membership of the plan consisted of the following at June 30, 2007, the date of the latest actuarial valuation:

Retirees and beneficiaries receiving benefits	11,478
Terminated plan members entitled to but not yet receiving benefits	1,672
Active plan members	8,971
Total	22,121

SECTION D
FINANCIAL PRINCIPLES



CASH BENEFITS LINE. This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).

LEVEL CONTRIBUTION LINE. Determining the level contribution line requires detailed assumptions concerning a variety of experiences in future decades, including:

Economic Risk Areas

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

Non-Economic Risk Areas

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

THE ACTUARIAL VALUATION PROCESS

The financing diagram on page D-1 shows the relationship between two different philosophies of paying for retirement benefits: the method where contributions match cash benefit payments (as in the Federal Social Security program) and is an *increasing contribution method*; and the *level contribution method* which seeks to balance contribution rates between generations.

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

A. *Member Census Data:*

Retired lives now receiving benefits

Former employees with vested benefits not yet payable

Active employees

B. *Benefit provisions* governing future payments from the plan

C. *Asset data* (cash & investments)

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

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

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

G. *Determination of:*

Plan financial position, and

New Employer Contribution Rate

BASIC FINANCIAL OBJECTIVE AND OPERATION OF THE RETIREMENT SYSTEM

Benefit Promises Made Which Must Be Paid For. A retirement program is an orderly means of handing out, keeping track of, and financing contingent pension promises to a group of employees. As each member of the retirement program acquires a unit of service credit they are, in effect, handed an "IOU" which reads: **"The Retirement System promises to pay you one unit of retirement benefits, payments in cash commencing when you retire."**

The principal related financial question is: When shall the money required to cover the "IOU" be contributed? This year, when the benefit of the member's service is received? Or, some future year when the "IOU" becomes a cash demand?

The Constitution of the State of Michigan is directed to the question:

"Financial benefits arising on account of service rendered in each fiscal year shall be funded during that year and such funding shall not be used for financing unfunded accrued liabilities."

This retirement system meets this constitutional requirement by having the following *Financial Objective: To establish and receive contributions, expressed as percents of active member payroll, which will remain approximately level* from year-to-year and will not have to be increased for future generations of taxpayers.

Translated into actuarial terminology, a level percent-of-payroll contribution objective means that the contribution rate must be at least:

Normal Cost (the value of benefits likely to be paid which is assigned to service being rendered in the current year)

... plus ...

Interest on the Unfunded Actuarial Accrued Liability (the difference between the actuarial accrued liability and current system assets).

If contributions to the retirement program are less than the preceding amount, the difference, plus investment earnings not realized thereon, will have to be contributed at some later time, or, benefits will have to be reduced, to satisfy the fundamental fiscal equation under which all retirement programs must operate; that is:

$$B = C + I - E$$

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

Contributions received over time on behalf of the group

... plus ...

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

... minus ...

Expenses incurred in operating the program.

There are retirement programs designed to defer the bulk of contributions far into the future. Contributions in early years are low, but the inevitable consequence is a relentlessly increasing contribution rate – to a level greatly in excess of the level percent-of-payroll rate. *This method of financing is prohibited in Michigan by the state constitution.*

A by-product of the level percent-of-payroll contribution objective is the accumulation of invested assets for varying periods of time. Investment income becomes the major contributor to the retirement program, and the amount is directly related to the amount of past contributions and investment performance.

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

SECTION E
APPENDIX

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 and investment expenses). The real rate of return is the portion of total investment return which is more than the inflation rate. The 7.9% total investment return rate translates to a spread of 3.9% over wage inflation and 4.4% to 4.9% over price inflation.

Pay increase assumptions for individual active members are shown on page E-3. Part of the assumption for each age is for a merit and/or seniority increase, and the other 4.0% recognizes wage inflation. Wage inflation has historically exceeded price inflation by 0.5% to 1.0% a year, on average. Wage inflation of 4% suggests an underlying rate of price inflation of 3.0% to 3.5%. The merit and/or seniority increase assumption was first used in the June 30, 2003 valuation.

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 90% (150% for disabled members) of the 1983 Group Annuity Mortality Table. Related values are shown on page E-3. This table was first used for the June 30, 2003 valuation.

The probabilities of retirement for members eligible to retire are shown on pages E-4 and E-5. These probabilities were revised for the June 30, 2003 valuation.

The probabilities of separation from service (including *death-in-service* and *disability*) are shown for sample ages on page E-6. These probabilities were revised for the June 30, 2003 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.

Unfunded actuarial accrued liabilities are amortized over a 30-year period (see page A-4), 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.).

SAMPLE SALARY ADJUSTMENT RATES

Sample Ages	Salary Increase Assumptions For an Individual Member		
	Merit & Seniority	Base (Economic)	Increase Next Year
20	5.5%	4.0%	9.5%
25	4.9%	4.0%	8.9%
30	3.1%	4.0%	7.1%
35	1.6%	4.0%	5.6%
40	0.9%	4.0%	4.9%
45	0.6%	4.0%	4.6%
50	0.4%	4.0%	4.4%
55	0.2%	4.0%	4.2%
60	0.1%	4.0%	4.1%
Ref	217		

SINGLE LIFE RETIREMENT VALUES

Sample Attained Ages	Present Value of \$1 Monthly for Life Increasing 2.25% Annually		Future Life Expectancy (years)	
	Men	Women	Men	Women
50	\$162.66	\$174.84	30.19	35.86
55	151.74	166.09	25.79	31.15
60	138.50	155.08	21.55	26.56
65	122.90	141.60	17.54	22.13
70	106.13	125.48	13.96	17.93
75	88.99	107.60	10.84	14.10
80	72.39	89.64	8.23	10.84
Ref:	30 x 0.90	31 x 0.90		

**PROBABILITIES OF AGE/SERVICE RETIREMENT
FOR MEMBERS ELIGIBLE TO RETIRE**

Retirement Ages	Percent of Eligible Active Members Retiring Within Next Year With Unreduced Benefits					
	EMS		D.O.T.		Others	
	Male	Female	Male	Female	Male	Female
45	25%	25%				
46	25%	25%				
47	25%	25%				
48	22%	22%				
49	20%	20%				
50	18%	18%	50%	50%	25%	30%
51	15%	15%	50%	50%	25%	30%
52	15%	15%	50%	50%	25%	30%
53	15%	15%	50%	50%	25%	30%
54	15%	15%	50%	50%	25%	30%
55	15%	15%	50%	50%	25%	30%
56	15%	15%	50%	50%	25%	30%
57	15%	15%	50%	50%	25%	30%
58	15%	15%	50%	50%	25%	30%
59	15%	15%	50%	50%	25%	30%
60	40%	40%	50%	50%	25%	30%
61	30%	30%	50%	50%	25%	30%
62	30%	30%	50%	50%	25%	35%
63	30%	30%	40%	40%	25%	20%
64	30%	30%	40%	40%	25%	20%
65	30%	30%	30%	30%	40%	20%
66	30%	30%	30%	30%	35%	20%
67	30%	30%	30%	30%	25%	20%
68	30%	30%	30%	30%	25%	20%
69	30%	30%	30%	30%	25%	20%
70	100%	100%	100%	100%	25%	20%
71					25%	20%
72					25%	20%
73					25%	20%
74					25%	20%
75					25%	20%
76					25%	20%
77					25%	20%
78					25%	20%
79					25%	20%
80					100%	100%
Ref	537	537	535	535	536	516

**PROBABILITIES OF EARLY RETIREMENT
FOR MEMBERS ELIGIBLE FOR EARLY RETIREMENT**

Retirement Ages	Percent of Eligible Active Members Retiring Within Next Year With Reduced Benefits
50	5%
51	5%
52	5%
53	5%
54	5%
55	5%
56	5%
57	5%
58	5%
59	5%
Ref	446

SAMPLE RATES OF SEPARATION FROM ACTIVE EMPLOYMENT BEFORE RETIREMENT

Sample Ages	Years of Service	% of Active Members Separating Within Next Year			
		Withdrawal			
		EMS	D.O.T	Others	
				Men	Women
ALL	0	0.00%	16.00%	15.00%	16.00%
	1	0.00%	12.00%	11.00%	12.00%
	2	0.00%	12.00%	9.00%	12.00%
	3	0.00%	10.00%	8.00%	10.00%
	4	0.00%	6.00%	7.00%	6.00%
25	5 & Over	6.50%	8.00%	8.00%	8.00%
30		4.00%	7.60%	7.60%	7.60%
35		2.30%	5.56%	5.56%	5.56%
40		0.90%	4.26%	4.26%	4.26%
45		0.50%	3.69%	3.69%	3.69%
50		0.50%	3.50%	3.50%	3.50%
55		0.00%	3.50%	3.50%	3.50%
60		0.00%	3.50%	3.50%	3.50%
Ref		1	209	205	209
		351	212	212	212

Sample Ages	% of Active Members Becoming Disabled Within Next Year			
	D.O.T.		Others	
	Ordinary	Duty	Ordinary	Duty
25	0.02%	0.03%	0.01%	0.28%
30	0.05%	0.09%	0.04%	0.33%
35	0.12%	0.23%	0.09%	0.38%
40	0.24%	0.45%	0.18%	0.44%
45	0.45%	0.85%	0.34%	0.50%
50	0.59%	1.10%	0.44%	0.58%
55	0.68%	1.27%	0.51%	0.67%
60	0.77%	1.44%	0.58%	0.77%
Ref	23 x 0.40	23 x 0.75	23 x 0.30	423 x 1.00

Sample Ages	% of Active Members Dying Within Next Year			
	Non-Duty Death		Duty Death	
	Men	Women	Men	Women
25	0.03%	0.02%	0.01%	0.01%
30	0.05%	0.03%	0.02%	0.01%
35	0.06%	0.04%	0.02%	0.01%
40	0.09%	0.05%	0.03%	0.02%
45	0.16%	0.08%	0.05%	0.03%
50	0.29%	0.12%	0.10%	0.04%
55	0.46%	0.19%	0.15%	0.06%
60	0.69%	0.32%	0.23%	0.11%
Ref	30 x 0.75	31 x 0.75	30 x 0.25	31 x 0.25

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

Benefit Service	Exact Fractional service is used to determine the amount of benefit payable.
Decrement Operation	Disability and mortality decrements do not operate during the first 5 years of service. Disability and withdrawal also do not operate during retirement eligibility.
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 on the date the decrement is assumed to occur.
Forfeitures	For vested separations from service, it is assumed that 0% of members separating will withdraw their contributions and forfeit an employer financed benefit.
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.
Liability Adjustments	Retired life liabilities were increased by 3.0% to adjust for incomplete and missing data.
Marriage Assumption	100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses for active member valuation purposes.
Normal Form of Benefit	Straight life is the normal form of benefit.
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.
Service Credit Accruals	It is assumed that members accrue one year of service credit per year.

MEANING OF “UNFUNDED ACTUARIAL ACCRUED LIABILITIES”

Actuarial accrued liabilities are the portion of the present value of plan promises to pay benefits in the future not covered by future normal cost contributions.

--- a liability has been established (“accrued”) because the service has been rendered, but the resulting monthly cash benefit may not be payable until years in the future.

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

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

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

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

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

GLOSSARY

Actuarial Accrued Liability. The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as “accrued liability” or “past service liability.”

Accrued Service. The service credited under the plan which was rendered before the date of the actuarial valuation.

Actuarial Assumptions. Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

Actuarial Cost Method. A mathematical budgeting procedure for allocating the dollar amount of the “actuarial present value of future plan benefits” between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the “actuarial funding method.”

Actuarial Equivalent. A single amount or series of amounts of equal value to another single amount or series of amounts, computed on the basis of the rate(s) of interest and mortality tables used by the plan.

Actuarial Present Value. The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Amortization. Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

Experience Gain (Loss). A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

Normal Cost. The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as “current service cost.” Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

Reserve Account. An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.

Unfunded Actuarial Accrued Liability. The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as “unfunded accrued liability.”

Valuation Assets. The value of current plan assets recognized for valuation purposes. Generally based on market value plus a portion of unrealized appreciation or depreciation.