

Public Employees Retirement Fund
ACTUARIAL VALUATION REPORT

JULY 1, 1996



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October 11, 1996

Legislative Commission on
Pensions and Retirement
55 State Office Building
St. Paul, Minnesota 55155

RE: Public Employees Retirement Fund

Commission Members:

Pursuant to the terms of our Actuarial Services Contract, we have performed an actuarial valuation of the Fund as of July 1, 1996.

The results of our calculations are set forth in the following report, as are the actuarial assumptions upon which our calculations have been made. We have relied on the basic employee data and asset figures as submitted by the Public Employees Retirement Fund.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with the requirements of Section 356.215, Minnesota Statutes, and the requirements of the Standards for Actuarial Work, adopted by the Commission on July 8, 1992.

Respectfully submitted,

Thomas K. Custis, F.S.A., M.A.A.A.
Consulting Actuary

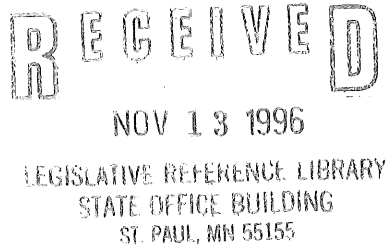
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TKC/WVH/bh

Public Employees Retirement Fund

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Public Employees Retirement Fund

Report Highlights

(dollars in thousands)

	07/01/95 Valuation	07/01/96 Valuation
A. CONTRIBUTIONS (Table 11)		
1. Statutory Contributions - Chapter 353 % of Payroll	8.91%	8.88%
2. Required Contributions - Chapter 356 % of Payroll	9.61%	9.75%
3. Sufficiency (Deficiency): (A.1. - A.2.)	-0.70%	-0.87%
B. FUNDING RATIOS		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	\$5,138,461	\$5,786,398
b. Current Benefit Obligations (Table 8)	\$5,994,492	\$6,608,646
c. Funding Ratio: (a/b)	85.72%	87.56%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$5,138,461	\$5,786,398
b. Actuarial Accrued Liability (Table 9)	\$6,622,069	\$7,270,073
c. Funding Ratio: (a/b)	77.60%	79.59%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$7,769,607	\$8,424,259
b. Current and Expected Future Benefit Obligations	\$8,147,393	\$8,902,933
c. Funding Ratio: (a/b)	95.36%	94.62%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	126,612	129,431
b. Projected Annual Earnings	\$2,930,993	\$3,073,106
c. Average Annual Earnings (Actual \$)	\$23,149	\$23,743
d. Average Age	43.3	43.4
e. Average Service	8.2	8.2
2. Others		
a. Service Retirements (Table 4)	31,487	32,906
b. Survivors (Table 5)	5,260	5,423
c. Disability Retirements (Table 6)	959	1,051
d. Deferred Retirements (Table 7)	7,156	8,605
e. Terminated Other Non-vested (Table 7)	9,683	11,448
f. Total	54,545	59,433

Public Employees Retirement Fund

Commentary

Purpose

The purpose of this valuation is to determine the financial status of the Plan. In order to achieve this purpose, an actuarial valuation is made at the beginning of each fiscal year as required by Section 356.215 of Minnesota Statutes.

Report Highlights

The financial status of the Plan can be measured by three different funding ratios:

- ° The Accrued Benefit Funding Ratio is a measure of current funding status and, when viewed over a period of years, presents a view of the funding progress. It is based upon benefits which have been earned by service to the valuation date. This year's ratio is 87.56%. The corresponding ratio for the prior year was 85.72%.
- ° The Accrued Liability Funding Ratio is also a measure of funding status and funding progress. It is based on the actuarial cost method that has historically been used by the State. For 1996 the ratio is 79.59%, which is an increase from the 1995 value of 77.60%.
- ° The Projected Benefit Funding Ratio is a measure of the adequacy or deficiency in the contribution level. This year's ratio of 94.62% shows that the current statutory contributions are inadequate.

Asset Information (Tables 1 and 2)

Minnesota Statutes require that the asset value used for actuarial purposes recognize only a third of the unrealized gains and losses. This requirement exists because market values (which include all unrealized gain and losses) are typically volatile and can produce erratic changes in the contribution requirements from year to year.

The calculation of the Actuarial Value of Assets is shown in Table 1 on lines F1 to F6. It combines the cost value of the Assets Available for Benefits and one-third of the difference between the market value and cost value of those assets.

The term "Actuarial Value of Assets" is used to indicate that the value was determined for use in this actuarial valuation. Since Minnesota Statutes refer to this value as "Current Assets", the latter phrase will be used in the remainder of this report.

This Plan participates in the Minnesota Post Retirement Investment Fund (i.e. MPRIF). After the MPRIF liability has been calculated for each participating Plan, the State Board of Investments, (i.e. SBI), will determine each Plan's portion of the excess earnings for the January benefit increase as well as the Plan's allocated market share of MPRIF.

Actuarial Balance Sheet (Table 8)

An actuarial balance sheet provides a method for evaluating current and future levels of funding.

The Current Benefit Obligation used to measure current funding levels is calculated in accordance with Statement No. 5 of the Governmental Accounting Standards Board (GASB). Those requirements are:

- ° For Active Members - salary and service are projected to retirement to determine benefits for each member and the ratio of credited service to total service establishes the portion of the projected benefit to be used in calculating the current funding level.
- ° For Non-active Members - the discounted value of benefits, including augmentation in cases where benefits have not commenced.

GASB Disclosure

The Current Benefit Obligation amounts in Table 8 are required to be disclosed by Statement No. 5 of the Governmental Accounting Standards Board (GASB). However, Statement No. 5 uses the terms "Actuarial Present Value of Credited Projected Benefits" and "Pension Benefit Obligation" rather than "Current Benefit Obligation".

The JULY 1, 1996 Pension Benefit Obligation reported in Table 8 is reformatted for GASB reporting purposes in the following table:

Retirees and beneficiaries currently receiving benefits and terminated employees not yet receiving benefits	\$3,458,961,000
Current Employees	
Accumulated employee contributions including allocated investment income	\$934,194,000
Employer-financed vested	1,964,332,000
Employer-financed nonvested	<u>251,159,000</u>
Total Pension Benefit Obligation	\$6,608,646,000
Net Assets Available for Benefits at Cost	\$5,702,248,000
Total Benefit Obligation less Assets	\$906,398,000
Funded Ratio	86.28%

Actuarial Cost Method (Table 9)

The approach used by the State of Minnesota to determine contribution sufficiency is the Entry Age Normal Actuarial Cost Method. The primary characteristic of this method is that it allocates costs as a level percentage of payroll.

A comparison of this actuarial method (Table 9) to the actuarial balance sheet (Table 8) illustrates the two techniques for allocating liabilities of active Members to past and future. As noted in the prior section, the balance sheet allocates benefits and the corresponding liabilities, on the basis of service. The method used in Table 9 allocates liabilities so that the cost each year will be a constant percentage of payroll. Both approaches, however, calculate the value of all future benefits the same way (see line F of Table 8 and line A6, column 1, of Table 9).

An Unfunded Actuarial Accrued Liability is computed under the Entry Age Normal Actuarial Cost Method by comparing the liabilities allocated to past service (Actuarial Accrued Liability) to the Current Assets. This amount, line B3, is funded over the remaining years to the amortization date by a series of payments that remain a constant percentage of payroll each year.

The payments will increase 6.00% each year because that is the assumed rate of increase in payroll. Although the payment schedule will be adequate to amortize the existing unfunded, the lower payments in the earlier years will not be sufficient to cover the interest on the unfunded liability. After a few years, the annual payment will cover the interest and also repay a portion of the unfunded.

Sources of Actuarial Gains and Losses (Table 10)

The assumptions used in making the calculations using the Entry Age Normal Actuarial Cost Method are based on long-term expectations. Each year the actual experience will deviate from the long-term expectation. For a detailed analysis of the major components, refer to Table 10.

Contribution Sufficiency (Table 11)

This report determines the adequacy of Statutory Contributions by comparing the Statutory Contributions to the Required Contributions.

The Required Contributions, set forth in Chapter 356, consist of:

- Normal costs based on the Entry Age Normal Actuarial Cost Method.
- A Supplemental Contribution for amortizing any Unfunded Actuarial Accrued Liability.
- An Allowance for Expenses.

Table 11 shows the Plan has a contribution deficiency since the Statutory Contribution Rate is 8.88% compared to the Required Contribution Rate of 9.75%.

Changes in Actuarial Assumptions

There were no changes that we treated as changes in actuarial assumptions since the last valuation which impacted funding costs. We did, however, modify our handling of post-retirement disabled annuitant mortality to more accurately reflect the fact that disabled annuitant liability is transferred to MPRIF when an annuitant reaches his/her normal retirement date under the plan. This caused a modest increase in liability measurement which makes up part of the "Other Item" losses reflected in Table 10.

Changes in Plan Provisions

There were no changes in plan provisions since the last valuation which impacted funding costs.

TABLE 1

Public Employees Retirement Fund

Accounting Balance Sheet*(dollars in thousands)*

JULY 1, 1996

	Market Value	Cost Value
A. ASSETS		
1. Cash, Equivalents, Short-term Securities	\$30,927	\$30,927
2. Investments		
a. Fixed Income	673,357	682,100
b. Equity	2,002,580	1,738,503
c. Real Estate	106,312	109,197
3. Equity in Minnesota Post-Retirement Investment Fund (MPRIF)	3,152,736	3,152,736
4. Other	1,440	1,440
B. TOTAL ASSETS	<u>\$5,967,352</u>	<u>\$5,714,903</u>
C. AMOUNTS CURRENTLY PAYABLE	\$12,655	\$12,655
D. ASSETS AVAILABLE FOR BENEFITS		
1. Member Reserves	\$992,911	\$992,911
2. Employer Reserves	1,809,050	1,556,601
3. MPRIF Reserves	3,152,736	3,152,736
4. Non-MPRIF Reserves	0	0
5. Total Assets Available for Benefits	<u>\$5,954,697</u>	<u>\$5,702,248</u>
E. TOTAL AMOUNTS CURRENTLY PAYABLE AND ASSETS AVAILABLE FOR BENEFITS	<u>\$5,967,352</u>	<u>\$5,714,903</u>
F. DETERMINATION OF ACTUARIAL VALUE OF ASSETS		
1. Cost Value of Assets Available for Benefits (D5)		\$5,702,248
2. Market Value (D5)	\$5,954,697	
3. Cost Value (D5)	<u>5,702,248</u>	
4. Market Over Cost: (F2-F3)	\$252,449	
5. 1/3 of Market Over Cost: (F4)/3		84,150
6. Actuarial Value of Assets (F1+F5) (Same as "Current Assets")		<u>\$5,786,398</u>

TABLE 2

Public Employees Retirement Fund

Change In Assets Available For Benefits
(dollars in thousands)

YEAR ENDING JUNE 30, 1996

	<u>Market Value</u>	<u>Cost Value</u>
A. ASSETS AVAILABLE AT BEGINNING OF PERIOD	\$5,266,690	\$5,074,357
B. OPERATING REVENUES		
1. Member Contributions	\$121,525	\$121,525
2. Employer Contributions	129,738	129,738
3. Investment Income	387,355	387,355
4. MPRIF Income	325,436	325,436
5. Net Realized Gain (Loss)	0	0
6. Other	1,202	1,202
7. Net Change in Unrealized Gain (Loss)	<u>60,116</u>	<u>0</u>
8. Total Revenue	<u>\$1,025,372</u>	<u>\$965,256</u>
C. OPERATING EXPENSES		
1. Service Retirements	\$291,331	\$291,331
2. Disability Benefits	7,225	7,225
3. Survivor Benefits	13,955	13,955
4. Refunds	14,683	14,683
5. Investment Fees	3,821	3,821
6. Administrative Expenses	5,515	5,515
7. Other	<u>835</u>	<u>835</u>
8. Total Disbursements	<u>\$337,365</u>	<u>\$337,365</u>
D. OTHER CHANGES IN RESERVES	0	0
E. ASSETS AVAILABLE AT END OF PERIOD	<u><u>\$5,954,697</u></u>	<u><u>\$5,702,248</u></u>

TABLE 3

PUBLIC EMPLOYEES RETIREMENT FUND

ACTIVE MEMBERS AS OF JUNE 30, 1996

Age	Years of Service								ALL
	<u>≤1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	
<25	1,631	1,965	46	1	0	0	0	0	3,643
25-29	2,085	5,953	1,358	30	0	0	0	0	9,426
30-34	1,726	5,729	4,321	1,273	54	1	0	0	13,104
35-39	1,931	6,982	5,490	3,039	1,932	66	0	1	19,441
40-44	1,663	6,992	6,511	3,437	3,301	1,443	38	0	23,385
45-49	2,392	6,521	6,179	3,654	3,195	2,316	714	23	24,994
50-54	545	2,679	3,477	2,799	2,736	1,816	1,193	295	15,540
55-59	325	1,615	2,127	1,744	2,110	1,602	1,029	522	11,074
60-64	168	889	1,189	967	1,130	978	726	235	6,282
65+	140	588	665	375	308	245	158	63	2,542
ALL	12,606	39,913	31,363	17,319	14,766	8,467	3,858	1,139	129,431

AVERAGE ANNUAL EARNINGS

Age	Years of Service								ALL
	<u>≤1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	
<25	8,875	11,978	16,296	11,067	0	0	0	0	10,643
25-29	11,379	18,280	23,247	24,047	0	0	0	0	17,488
30-34	11,748	19,018	26,678	27,674	26,030	40,927	0	0	21,458
35-39	10,289	17,064	25,997	31,546	30,132	30,271	0	36,397	22,522
40-44	10,576	15,944	23,629	30,379	34,123	33,241	32,925	0	23,485
45-49	8,514	15,197	22,623	28,028	33,530	38,554	38,538	34,205	23,461
50-54	11,159	16,437	21,601	25,546	28,591	34,599	40,982	39,619	25,635
55-59	9,955	14,651	21,299	23,551	25,220	27,845	34,655	39,429	24,141
60-64	8,234	13,161	18,949	22,271	24,009	25,546	29,521	38,659	22,251
65+	6,742	8,706	13,533	15,854	19,164	20,473	22,476	29,436	14,686
ALL	10,149	16,424	23,464	27,641	30,060	32,684	35,848	38,659	22,413

PRIOR FISCAL YEAR ENDINGS (IN MILLIONS) BY YEARS OF SERVICE

Age	<u>≤1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	ALL
All	128	656	736	479	444	277	138	44	2,901

TABLE 4

PUBLIC EMPLOYEES RETIREMENT FUND

SERVICE RETIREMENTS AS OF JUNE 30, 1996

Age	YEARS RETIRED							ALL
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	0	1	0	0	0	0	0	1
50-54	6	3	0	0	0	0	0	9
55-59	452	903	14	0	0	0	0	1,369
60-64	980	2,627	954	6	0	0	0	4,567
65-69	638	4,068	2,907	671	0	0	0	8,284
70-74	103	986	4,173	2,289	51	0	0	7,602
75-79	26	215	931	3,633	773	10	0	5,588
80-84	1	30	90	810	2,306	209	2	3,448
85+	2	6	23	76	327	1,195	409	2,038
ALL	2,208	8,839	9,092	7,485	3,457	1,414	411	32,906

AVERAGE ANNUAL BENEFIT

Age	YEARS RETIRED							ALL
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	0	3,810	0	0	0	0	0	3,810
50-54	11,371	7,094	0	0	0	0	0	9,945
55-59	8,734	8,746	10,659	0	0	0	0	8,762
60-64	6,770	9,506	8,646	19,582	0	0	0	8,752
65-69	5,820	6,826	7,563	16,232	0	0	0	7,769
70-74	3,977	5,966	6,454	12,615	15,180	0	0	8,271
75-79	4,669	4,454	5,353	8,510	10,006	8,528	0	8,017
80-84	1,313	2,537	4,203	6,318	8,178	11,980	8,637	7,817
85+	2,042	5,068	2,240	2,824	6,535	7,119	6,507	6,676
ALL	6,748	7,649	6,900	10,171	8,535	7,847	6,517	8,043

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS RETIRED

Age	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	ALL
All	14,900	67,610	62,735	76,130	29,506	11,096	2,679	264,663

TABLE 5

PUBLIC EMPLOYEES RETIREMENT FUND

SURVIVORS AS OF JUNE 30, 1996

<u>Age</u>	<u>YEARS SINCE DEATH</u>							<u>ALL</u>
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	13	91	46	21	6	0	1	178
50-54	11	54	34	13	10	4	1	127
55-59	14	90	72	33	19	3	1	232
60-64	15	111	146	96	25	9	9	411
65-69	4	86	257	281	61	28	27	744
70-74	2	42	228	451	140	53	54	970
75-79	2	17	89	334	343	111	77	973
80-84	5	20	59	120	290	198	148	840
85+	9	51	97	99	143	257	292	948
ALL	75	562	1,028	1,448	1,037	663	610	5,423

AVERAGE ANNUAL BENEFIT

<u>Age</u>	<u>YEARS SINCE DEATH</u>							<u>ALL</u>
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	8,046	5,180	6,130	8,755	7,966	0	3,670	6,142
50-54	9,833	7,484	7,713	10,400	5,932	9,418	5,026	7,967
55-59	7,446	7,055	8,253	9,816	8,756	6,745	6,409	7,976
60-64	5,690	5,869	7,571	12,261	9,516	8,498	4,368	8,207
65-69	3,976	5,139	7,583	11,751	8,349	7,899	4,214	8,808
70-74	16,054	4,915	6,348	9,840	8,004	7,415	3,631	8,076
75-79	4,592	3,697	5,520	8,539	7,776	7,063	3,218	7,312
80-84	5,020	4,097	4,878	5,834	6,954	6,693	3,647	5,925
85+	4,874	5,061	5,233	5,728	6,324	6,891	5,434	5,948
ALL	7,047	5,718	6,738	9,447	7,454	6,982	4,489	7,274

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH

<u>Age</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>ALL</u>
All	529	3,214	6,927	13,679	7,730	4,629	2,738	39,447

TABLE 6

PUBLIC EMPLOYEES RETIREMENT FUND

DISABILITY RETIREMENTS AS OF JUNE 30, 1996

Age	YEARS DISABLED							ALL
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	38	130	46	5	1	0	0	220
50-54	32	89	23	5	3	0	0	152
55-59	36	135	68	14	1	1	0	255
60-64	39	178	120	35	8	4	0	384
65-69	2	20	12	5	1	0	0	40
70-74	0	0	0	0	0	0	0	0
75-79	0	0	0	0	0	0	0	0
80-84	0	0	0	0	0	0	0	0
85+	0	0	0	0	0	0	0	0
ALL	147	552	269	64	14	5	0	1,051

AVERAGE ANNUAL BENEFIT

Age	YEARS DISABLED							ALL
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	4,640	4,252	3,305	2,647	5,546	0	0	4,090
50-54	6,334	6,500	6,610	8,012	4,416	0	0	6,491
55-59	7,033	7,209	6,124	9,441	3,395	8,895	0	7,009
60-64	6,463	7,691	8,783	9,321	8,759	7,578	0	8,077
65-69	2,665	6,986	9,974	15,304	15,915	0	0	8,929
70-74	0	0	0	0	0	0	0	0
75-79	0	0	0	0	0	0	0	0
80-84	0	0	0	0	0	0	0	0
85+	0	0	0	0	0	0	0	0
ALL	6,052	6,545	7,042	9,191	7,727	7,841	0	6,787

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS DISABLED

Age	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	ALL
All	890	3,613	1,894	588	108	39	0	7,133

TABLE 7

Public Employees Retirement Fund

Reconciliation Of Members

	Actives	Terminated	
		Deferred Retirement	Other Non-Vested
A. ON JUNE 30, 1995	126,612	7,156	9,683
B. ADDITIONS	14,639	2,429	4,512
C. DELETIONS			
1. Service Retirement	(1,926)	(322)	(78)
2. Disability	(190)	(22)	(9)
3. Death	(165)	(5)	(22)
4. Terminated - Deferred	(2,423)	0	0
5. Terminated - Refund	(3,557)	(1)	(1,420)
6. Terminated - Other Non-Vested	(3,442)	0	0
7. Returned as Active	0	(266)	(677)
8. Transferred to Other Fund	0	0	0
D. DATA ADJUSTMENTS	(117)	(364)	(541)
Vested	93,194		
Non-Vested	36,237		
E. TOTAL ON JUNE 30, 1996	129,431	8,605	11,448

	Recipients		
	Retirement Annuitants	Disabled	Survivors
A. ON JUNE 30, 1995	31,487	959	5,260
B. ADDITIONS	2,431	248	411
C. DELETIONS			
1. Service Retirement	0	(79)	0
2. Death	(1,004)	(68)	(248)
3. Annuity Expired	0	0	0
4. Returned as Active	0	0	0
D. DATA ADJUSTMENTS	(8)	(9)	0
E. TOTAL ON JUNE 30, 1996	32,906	1,051	5,423

TABLE 8

Public Employees Retirement Fund

Actuarial Balance Sheet*(dollars in thousands)*

JULY 1, 1996

A. CURRENT ASSETS (TABLE 1, F6)				\$5,786,398
B. EXPECTED FUTURE ASSETS				
1. Present Value of Expected Future Statutory Supplemental Contributions (See Table 11)				\$1,005,001
2. Present Value of Future Normal Costs				1,632,860
3. Total Expected Future Assets				<u>\$2,637,861</u>
C. TOTAL CURRENT AND EXPECTED FUTURE ASSETS				<u>\$8,424,259</u>
D. CURRENT BENEFIT OBLIGATIONS	Non-Vested	Vested	Total	
1. Benefit Recipients				
a. Retirement Annuities		\$2,897,364	\$2,897,364	
b. Disability Benefits		79,121	79,121	
c. Surviving Spouse and Child Benefits		381,979	381,979	
2. Deferred Retirements with Future Augmentation		95,730	95,730	
3. Former Members without Vested Rights		4,767	4,767	
4. Active Members				
a. Retirement Annuities	12,917	2,249,642	2,262,559	
b. Disability Benefits	177,389	0	177,389	
c. Survivor's Benefits	51,678	0	51,678	
d. Deferred Retirements	9,175	620,215	629,390	
e. Refund Liability Due to Death or Withdrawal	0	28,669	28,669	
5. Total Current Benefit Obligations	<u>\$251,159</u>	<u>\$6,357,487</u>	<u>\$6,608,646</u>	
E. EXPECTED FUTURE BENEFIT OBLIGATIONS				<u>\$2,294,287</u>
F. TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS				<u>\$8,902,933</u>
G. CURRENT UNFUNDED ACTUARIAL LIABILITY (D5-A)				\$822,248
H. CURRENT AND FUTURE UNFUNDED ACTUARIAL LIABILITY (F-C)				\$478,674

Public Employees Retirement Fund

**Determination Of Unfunded Actuarial Accrued Liability (UAAL)
And Supplemental Contribution Rate**
(dollars in thousands)

JULY 1, 1996

	Actuarial Present Value of Projected Benefits (1)	Actuarial Present Value of Future Normal Costs (2)	Actuarial Accrued Liability (3)=(1)-(2)
A. DETERMINATION OF ACTUARIAL ACCRUED LIABILITY (AAL)			
1. Active Members			
a. Retirement Annuities	\$3,938,641	\$901,917	\$3,036,724
b. Disability Benefits	325,042	127,485	197,557
c. Survivor's Benefit	88,072	32,814	55,258
d. Deferred Retirements	1,030,191	515,990	514,201
e. Refunds Due to Death or Withdrawal	62,026	54,654	7,372
f. Total	<u>\$5,443,972</u>	<u>\$1,632,860</u>	<u>\$3,811,112</u>
2. Deferred Retirements With Future Augmentation	95,730		95,730
3. Former Members Without Vested Rights	4,767		4,767
4. Annuitants in MPRIF	3,152,736		3,152,736
5. Recipients Not in MPRIF	<u>205,728</u>		<u>205,728</u>
6. Total	<u>\$8,902,933</u>	<u>\$1,632,860</u>	<u>\$7,270,073</u>
B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)			
1. AAL (A6)			\$7,270,073
2. Current Assets (Table 1, F6)			<u>5,786,398</u>
3. UAAL (B1-B2)			<u>\$1,483,675</u>
C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE			
1. Present Value of Future Payrolls Through the Amortization Date of July 1, 2020			\$54,690,973
2. Supplemental Contribution Rate (B3/C1)			2.71%

Public Employees Retirement Fund

Changes In Unfunded Actuarial Accrued Liability (UAAL)
(dollars in thousands)

YEAR ENDING JUNE 30, 1996

A. UAAL AT BEGINNING OF YEAR	\$1,483,608
B. CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
1. Normal Cost and Expenses	\$281,484
2. Contribution	(251,263)
3. Interest on A, B1 and B2	<u>127,391</u>
4. Total (B1+B2+B3)	<u>\$157,612</u>
C. EXPECTED UAAL AT END OF YEAR (A+B4)	\$1,641,220
D. INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
1. Salary Increases	(\$84,781)
2. Investment Return	(212,339)
3. MPRIF Mortality	10,697
4. Mortality of Other Benefit Recipients	3,621
5. Other Items	<u>125,257</u>
6. Total	<u>(\$157,545)</u>
E. UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTION (C+D6)	\$1,483,675
F. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO PLAN AMENDMENTS	0
G. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS	<u>0</u>
H. UAAL AT END OF YEAR (E+F+G)	<u><u>\$1,483,675</u></u>

Public Employees Retirement Fund

Determination Of Contribution Sufficiency*(dollars in thousands)*

JULY 1, 1996

	Percent of Payroll	Dollar Amount
A. STATUTORY CONTRIBUTIONS - CHAPTER 353		
1. Employee Contributions	4.29%	\$132,064
2. Employer Contributions	4.58%	140,909
3. Total	8.88%	\$272,973
B. REQUIRED CONTRIBUTIONS - CHAPTER 356		
1. Normal Cost		
a. Retirement Benefits	3.90%	\$119,949
b. Disability benefits	0.52%	16,107
c. Survivors	0.13%	4,010
d. Deferred Retirement Benefits	2.07%	63,701
e. Refunds Due to Death or Withdrawal	0.23%	7,028
f. Total	6.85%	\$210,795
2. Supplemental Contribution Amortization by July 1, 2020 of UAAL	2.71%	83,281
3. Allowance for Expenses	0.19%	5,839
4. Total	9.75%	\$299,915
C. CONTRIBUTION SUFFICIENCY (DEFICIENCY) [A3-B4]	-0.87%	(\$26,942)

Note: Projected Annual Payroll for Fiscal Year Beginning on JULY 1, 1996 is \$3,073,106.

Public Employees Retirement Fund

Summary of Actuarial Assumptions and Methods

Interest:	<p>Pre-Retirement: 8.5% per annum</p> <p>Post-Retirement: 8.5% per annum</p>
Benefit Increases After Retirement:	Payment of earnings on retired reserves in excess of 5% accounted for by 5% post-retirement assumptions.
Salary Increases:	Reported salary for prior fiscal year, with new hires annualized, increased to current fiscal year and annually for each future year according to the rate table below.
Mortality:	<p>Pre-Retirement:</p> <p>Male - 1983 Group Annuity Mortality Table for males setback five years.</p> <p>Female - 1983 Group Annuity Mortality Table for females setback five years.</p> <hr/> <p>Post-Retirement:</p> <p>Male - 1983 Group Annuity Mortality Table for males set forward one year.</p> <p>Female - 1983 Group Annuity Mortality Table for females set forward one year.</p> <p>Post-Disability:</p> <p>Male - 1965 RRB rates</p> <p>Female - 1965 RRB rates</p>
Retirement Age:	Age 64 or if over age 64, one year from valuation date. In addition, 50% of employees are assumed to retire under the Rule of 90 when first eligible.
Separation:	Graded rates based on experience as of June 30, 1990. Rates are shown in rate table.
Disability:	Rates as shown in rate table.

TABLE 12
(Continued)

Administrative and Investment Expenses:	Prior year expenses expressed as percentage of prior year payroll.
Return of Contributions:	All employees withdrawing after becoming eligible for a deferred benefit take the larger of their contributions accumulated with interest or the value of their deferred benefit.
Family Composition:	85% of male Members and 65% of female Members are assumed to be married. Female is four years younger than male. Assume Members have no children.
Social Security:	N/A
Special Consideration:	<p>Married Members assumed to elect subsidized joint and survivor form of annuity as follows:</p> <p>Males - 30% elect 50% J&S option 45% elect 100% J&S option</p> <p>Females - 15% elect 50% J&S option 15% elect 100% J&S option</p>
Actuarial Cost Method:	Entry Age Normal Actuarial Cost Method with normal costs expressed as a level percentage of earnings. Under this method, Actuarial Gains (Losses) reduce (increase) the Unfunded Actuarial Accrued Liability.
Asset Valuation Method:	Cost Value plus one-third Unrealized Gains or Losses.
Payment on the Unfunded Actuarial Accrued Liability:	A level percentage of payroll each year to the statutory amortization date assuming payroll increases of 6% per annum.

TABLE 12
(Continued)

Public Employees Retirement Fund

Summary of Actuarial Assumptions and Methods

Separation Expressed as Number of Occurrences Per 10,000:

<u>Age</u>	<u>Pre-Retirement Death</u>		<u>Withdrawal</u>		<u>Disability</u>		<u>Retirement</u>		<u>Salary Increases</u>
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	
20	3	1	2,542	2,913	9	9	0	0	7.7%
21	3	1	2,277	2,666	9	9	0	0	7.7
22	3	2	2,050	2,450	9	9	0	0	7.7
23	4	2	1,854	2,259	10	10	0	0	7.7
24	4	2	1,684	2,091	10	10	0	0	7.7
25	4	2	1,536	1,942	10	10	0	0	7.6
26	4	2	1,406	1,808	10	10	0	0	7.5
27	4	2	1,291	1,688	10	10	0	0	7.4
28	4	2	1,189	1,580	11	11	0	0	7.3
29	4	2	1,099	1,482	11	11	0	0	7.2
30	5	3	1,018	1,394	11	11	0	0	7.2
31	5	3	945	1,313	11	11	0	0	7.1
32	5	3	880	1,239	11	11	0	0	7.1
33	5	3	821	1,172	12	12	0	0	7.0
34	6	3	767	1,110	12	12	0	0	7.0
35	6	3	719	1,053	12	12	0	0	6.9
36	7	4	675	1,000	12	12	0	0	6.8
37	7	4	634	952	13	13	0	0	6.7
38	8	4	597	907	13	13	0	0	6.6
39	9	4	563	865	14	14	0	0	6.5
40	9	5	532	826	15	15	0	0	6.4
41	10	5	503	790	16	16	0	0	6.3
42	10	5	476	756	17	17	0	0	6.3
43	11	6	452	724	18	18	0	0	6.3
44	12	6	429	695	20	20	0	0	6.2
45	14	7	408	667	22	22	0	0	6.2
46	15	7	388	641	23	23	0	0	6.1
47	17	8	370	616	25	25	0	0	6.0
48	19	8	352	593	27	27	0	0	5.9
49	22	9	336	571	30	30	0	0	5.8

TABLE 12

(Continued)

Public Employees Retirement Fund***Summary of Actuarial Assumptions and Methods*****Separation Expressed as Number of Occurrences Per 10,000:**

Age	Pre-Retirement Death		Withdrawal		Disability		Retirement		Salary Increases
	Male	Female	Male	Female	Male	Female	Male	Female	
50	22	10	321	550	33	33	0	0	5.7%
51	25	11	316	531	36	36	0	0	5.7
52	28	12	310	513	40	40	0	0	5.7
53	31	14	270	495	45	45	0	0	5.7
54	35	15	230	487	51	51	0	0	5.7
55	39	16	195	478	58	58	0	0	5.7
56	43	18	150	410	66	66	0	0	5.7
57	48	19	100	362	76	76	0	0	5.7
58	52	21	50	210	88	88	0	0	5.7
59	57	23	20	50	102	102	0	0	5.0
60	61	25	0	0	118	118	0	0	5.0
61	66	28	0	0	136	136	0	0	5.0
62	71	31	0	0	157	157	0	0	5.0
63	77	34	0	0	181	181	0	0	5.0
64	83	38	0	0	208	208	10,000	10,000	5.0
65	91	42	0	0	0	0	0	0	5.0
66	101	47	0	0	0	0	0	0	5.0
67	111	52	0	0	0	0	0	0	5.0
68	124	58	0	0	0	0	0	0	5.0
69	139	64	0	0	0	0	0	0	5.0
70	156	71	0	0	0	0	0	0	5.0

TABLE 3A
BASIC

PUBLIC EMPLOYEES RETIREMENT FUND
ACTIVE MEMBERS AS OF JUNE 30, 1996

<u>Age</u>	<u>Years of Service</u>								<u>ALL</u>
	<u>≤1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	
<25	0	0	0	0	0	0	0	0	0
25-29	0	0	0	0	0	0	0	0	0
30-34	0	0	0	0	0	0	0	0	0
35-39	0	0	0	0	0	0	0	0	0
40-44	0	0	0	0	0	0	0	0	0
45-49	0	0	0	0	0	1	61	17	79
50-54	0	0	0	0	0	0	178	225	403
55-59	0	0	0	0	0	1	170	361	532
60-64	0	0	0	0	0	1	90	153	244
65+	0	0	0	0	0	0	34	52	86
ALL	0	0	0	0	0	3	533	808	1,344

AVERAGE ANNUAL EARNINGS

<u>Age</u>	<u>Years of Service</u>								<u>ALL</u>
	<u>≤1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	
<25	0	0	0	0	0	0	0	0	0
25-29	0	0	0	0	0	0	0	0	0
30-34	0	0	0	0	0	0	0	0	0
35-39	0	0	0	0	0	0	0	0	0
40-44	0	0	0	0	0	0	0	0	0
45-49	0	0	0	0	0	15,033	36,468	35,446	35,977
50-54	0	0	0	0	0	0	41,869	39,421	40,502
55-59	0	0	0	0	0	54,350	34,669	38,099	37,034
60-64	0	0	0	0	0	55,999	29,256	34,954	32,939
65+	0	0	0	0	0	0	19,853	26,817	24,064
ALL	0	0	0	0	0	41,794	35,420	37,090	36,438

PRIOR FISCAL YEAR ENDINGS (IN THOUSANDS) BY YEARS OF SERVICE

<u>Age</u>	<u>≤1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	<u>ALL</u>
All	0	0	0	0	0	125	18,879	29,969	48,973

TABLE 4A
BASIC

PUBLIC EMPLOYEES RETIREMENT FUND

SERVICE RETIREMENTS AS OF JUNE 30, 1996

<u>Age</u>	YEARS RETIRED							<u>ALL</u>
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	0	1	0	0	0	0	0	1
50-54	3	3	0	0	0	0	0	6
55-59	97	255	10	0	0	0	0	362
60-64	133	727	343	6	0	0	0	1,209
65-69	58	741	865	445	0	0	0	2,109
70-74	11	135	1,100	1,324	48	0	0	2,618
75-79	4	21	209	1,732	543	9	0	2,518
80-84	0	2	13	304	1,469	188	2	1,978
85+	0	1	5	18	181	872	339	1,416
ALL	306	1,886	2,545	3,829	2,241	1,069	341	12,217

AVERAGE ANNUAL BENEFIT

<u>Age</u>	YEARS RETIRED							<u>ALL</u>
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	0	3,810	0	0	0	0	0	3,810
50-54	18,230	7,094	0	0	0	0	0	12,662
55-59	23,796	21,191	10,485	0	0	0	0	21,593
60-64	16,747	20,922	18,840	19,582	0	0	0	19,865
65-69	13,821	16,148	16,123	22,068	0	0	0	17,323
70-74	13,437	16,828	13,647	18,180	15,141	0	0	16,130
75-79	13,723	16,067	13,077	13,232	12,529	8,605	0	13,075
80-84	0	10,578	17,609	11,988	10,426	12,503	8,637	10,909
85+	0	5,626	6,121	7,129	9,402	8,146	7,049	8,022
ALL	18,283	18,685	15,135	15,852	10,954	8,916	7,058	14,450

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS RETIRED

<u>Age</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>ALL</u>
All	5,594	35,239	38,518	60,697	24,547	9,531	2,406	176,535

TABLE 5A
BASIC

PUBLIC EMPLOYEES RETIREMENT FUND

SURVIVORS AS OF JUNE 30, 1996

<u>Age</u>	<u>YEARS SINCE DEATH</u>							<u>ALL</u>
	<u>≤1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	0	3	14	10	4	0	1	32
50-54	1	13	14	8	9	3	1	49
55-59	1	21	32	23	15	3	1	96
60-64	2	18	54	61	21	9	9	174
65-69	1	16	118	186	50	27	27	425
70-74	1	7	83	282	107	46	54	580
75-79	2	9	47	203	250	90	77	678
80-84	5	18	48	76	200	162	147	656
85+	9	50	92	87	125	213	282	858
ALL	22	155	502	936	781	553	599	3,548

AVERAGE ANNUAL BENEFIT

<u>Age</u>	<u>YEARS SINCE DEATH</u>							<u>ALL</u>
	<u>≤1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	0	9,762	11,520	13,925	11,265	0	3,670	11,830
50-54	15,108	14,833	12,624	13,377	6,458	12,213	5,026	12,071
55-59	11,694	15,972	14,113	12,640	10,418	6,745	6,409	13,254
60-64	7,417	13,029	13,802	16,712	10,695	8,498	4,368	13,532
65-69	2,760	12,446	11,869	15,348	9,396	7,909	4,214	12,363
70-74	31,557	9,371	10,317	12,747	9,516	8,040	3,631	10,573
75-79	4,592	5,783	7,268	11,194	9,358	7,902	3,218	8,811
80-84	5,020	4,445	5,580	7,982	8,302	7,328	3,659	6,654
85+	4,874	4,974	5,437	6,126	6,756	7,575	5,494	6,216
ALL	7,005	9,274	9,764	12,199	8,728	7,647	4,506	8,922

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH

<u>Age</u>	<u>≤1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>ALL</u>
All	154	1,437	4,901	11,418	6,816	4,228	2,699	31,655

TABLE 6A
BASIC

PUBLIC EMPLOYEES RETIREMENT FUND

DISABILITY RETIREMENTS AS OF JUNE 30, 1996

<u>Age</u>	YEARS DISABLED							<u>ALL</u>
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	1	0	0	0	1	0	0	2
50-54	1	8	2	1	1	0	0	13
55-59	2	17	10	4	0	1	0	34
60-64	4	25	30	16	5	4	0	84
65-69	0	3	5	3	1	0	0	12
70-74	0	0	0	0	0	0	0	0
75-79	0	0	0	0	0	0	0	0
80-84	0	0	0	0	0	0	0	0
85+	0	0	0	0	0	0	0	0
ALL	8	53	47	24	8	5	0	145

AVERAGE ANNUAL BENEFIT

<u>Age</u>	YEARS DISABLED							<u>ALL</u>
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	25,868	0	0	0	5,546	0	0	15,707
50-54	20,539	16,786	19,348	18,796	7,350	0	0	16,898
55-59	10,809	18,728	18,744	17,816	0	8,895	0	17,870
60-64	19,716	21,798	20,507	16,090	12,395	7,578	0	18,914
65-69	0	15,138	21,006	22,774	15,915	0	0	19,557
70-74	0	0	0	0	0	0	0	0
75-79	0	0	0	0	0	0	0	0
80-84	0	0	0	0	0	0	0	0
85+	0	0	0	0	0	0	0	0
ALL	18,361	19,680	20,136	17,326	11,348	7,841	0	18,497

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS DISABLED

<u>Age</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>ALL</u>
All	146	1,043	946	415	90	39	0	2,682

TABLE 11A
Basic

Public Employees Retirement Fund

Determination Of Contribution Sufficiency
(dollars in thousands)

JULY 1, 1996

	<u>Percent of Payroll</u>	<u>Dollar Amount</u>
A. STATUTORY CONTRIBUTIONS - CHAPTER 353		
1. Employee Contributions	8.23%	\$4,252
2. Employer Contributions	10.73%	5,544
3. Total	<u>18.96%</u>	<u>\$9,796</u>
 B. REQUIRED CONTRIBUTIONS - CHAPTER 356		
1. Normal Cost		
a. Retirement Benefits	4.53%	\$2,339
b. Disability benefits	0.79%	407
c. Survivors	0.52%	267
d. Deferred Retirement Benefits	3.43%	1,771
e. Refunds Due to Death or Withdrawal	0.01%	4
f. Total	<u>9.28%</u>	<u>\$4,788</u>

Note: Projected Annual Payroll for Fiscal Year Beginning on JULY 1, 1996 is \$51,668.

Public Employees Retirement Fund

Summary of Plan Provisions

GENERAL

Eligibility: A public employee who is not covered under the Social Security Act. General exceptions are employees covered by other public funds and certain part-time employees.

Contributions:

Member: 8.23% of salary.

Employer: 10.73% of salary.

Allowable Service: Service during which Member contributions were deducted. May also include certain leaves of absence and military service.

Salary: Includes amounts deducted for deferred compensation or supplemental retirement plans, net income from fees and sick leave payments funded by the employer. Excludes unused annual leave and sick leave payments, severance payments, Workers' Compensation benefits and employer-paid flexible spending accounts, cafeteria plans, healthcare expense accounts, day-care expenses, fringe benefits and the cost of insurance coverage.

Average Salary: Average of the five highest successive years of salary. Average salary is based on all Allowable Service if less than five years.

RETIREMENT

Normal Retirement Benefit:

Eligibility: Age 65 and three years of Allowable Service. Proportionate Retirement Annuity is available at age 65 and one year of Allowable Service.

Early Retirement Benefit:

- Eligibility:*** Age 55 and three years of Allowable Service.
Any age with 30 years of Allowable Service.
Rule of 90: Age plus Allowable Service totals 90.
- Amount:*** The greater of
2% of average salary for each of the first 10 years of Allowable Service and 2.5% of average salary for each subsequent year with reduction of 0.25% for each month the Member is under age 65 at time of retirement or age 62 if 30 years of Allowable Service. No reduction if age plus years of Allowable Service totals 90;
OR
2.5% of average salary for each year of Allowable Service assuming augmentation to age 65 at 3% per year and actuarial reduction for each month the Member is under age 65.
- Form of Payment:*** Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are:

50% or 100% joint and survivor with bounce back feature without additional reduction (option canceled if Member is pre-deceased by beneficiary).
- Benefit Increases:*** Benefits may be increased each January 1 depending on the investment performance of the Minnesota Post Retirement Investment Fund (MPRIF). (Note: The MPRIF methodology for this increase will change effective 1/1/94.) A benefit recipient who has been receiving a benefit for at least 12 full months as of June 30 will receive a full increase. Members receiving benefits for at least one full month but less than 12 full months will receive a partial increase.

Benefit Increases: (continued) Members retired under laws in effect before July 1, 1973 receive an additional lump-sum payment each year. In 1989, this lump-sum payment is the greater of \$25 times each full year of Allowable Service or the difference between \$400 times each full year of Allowable Service and the sum of the benefits paid from any Minnesota public pension plan plus cash payments from the Social Security Administration for the preceding fiscal year July 1, 1988 through June 30, 1989. In each following year, the lump-sum payment will increase by the same percentage increase that is applied to regular annuities paid from MPRIF.

DISABILITY

Disability Benefit:

Eligibility: Total and permanent disability before normal retirement age with three years of Allowable Service.

Amount: Normal Retirement Benefit based on Allowable Service and average salary at disability without reduction for commencement before normal retirement age. Supplemental benefit of \$25 per month payable to the later of the normal retirement age or the 5-year anniversary at commencement of disability. The disability benefit is reduced to that amount which, when added to Workers' Compensation, does not exceed the salary the disabled Member received as of the date of the disability or the salary currently payable for the same employment position substantially similar to the one the person held as of the date of the disability, whichever is greater.

Payments stop if disability ceases. If death occurs prior to age 65 or within five years of disability, the surviving spouse can receive a refund or a survivor benefit. Dependent children are entitled to dependent child benefits subject to the 70% family maximum. Payments change to a retirement annuity at normal retirement age. Benefits may be reduced on resumption of partial employment.

Form of Payment: Same as for retirement.

Benefit Increases: Adjusted by PERA to provide same increase as MPRIF.

Retirement After Disability

Eligibility: Normal retirement age.

Amount: Any optional annuity continues. Otherwise, the larger of the disability benefit paid before normal retirement age or the normal retirement benefit available at normal retirement age, or an actuarially equivalent optional annuity.

Benefit Increases: Same as for retirement.

DEATH

Surviving Spouse Benefit

Eligibility: Active Member with 18 months of Allowable Service or Member receiving a disability benefit.

Amount: 50% of salary averaged over last six months. Family benefit is maximum of 70% and minimum of 50% of average salary. Benefit paid until spouse's death but no payments while spouse is remarried prior to July 1, 1991.

Surviving spouse optional annuity may be elected in lieu of this benefit.

Surviving Dependent Child Benefit

Eligibility: Active Member with 18 months of Allowable Service or Member receiving a disability benefit.

Amount: 10% of salary averaged over last six months for each child. Family benefit minimum (including spouse's benefit) of 50% of salary and maximum of 70% of average salary. Benefits paid until child marries, dies, or attains age 18 (age 22 if full-time student.)

Surviving Spouse Optional Annuity

Eligibility: Member or former Member who dies before retirement benefits commence and other survivor annuity is waived by spouse.

Amount: Survivor's payment of the 100% joint and survivor benefit the Member could have elected if terminated or an actuarial equivalent term certain annuity. If commencement is prior to age 65 (age 62 if 30 years of service), the benefit is reduced same as early retirement with half the applicable reduction factor used from age 55 to the actual commencement age. If no surviving spouse, then an actuarial equivalent dependent child benefit is paid to age 20 or for five years if longer.

Benefit Increases: Adjusted by PERA to provide same increase as MPRIF.

Refund of Contributions

Eligibility: Member dies before receiving any retirement benefits and survivor benefits are not payable.

Amount: The excess of the Member's contributions with 6% interest over any disability or survivor benefits paid.

TERMINATION

Refund of Contributions

<i>Eligibility:</i>	Termination of public service.
<i>Amount:</i>	Member's contributions with 5% interest compounded annually if termination occurred before May 16, 1989 and 6% interest if termination occurred on or after May 16, 1989. A deferred annuity may be elected in lieu of a refund if three or more years of Allowable Service.

Deferred Benefit

<i>Eligibility:</i>	Three years of Allowable Service.
<i>Amount:</i>	Benefit computed under law in effect at termination and increased by the following percentage compounded annually: 0% before 7/1/71; 5% from 7/1/71 to 1/1/81; and 3% thereafter until January 1 of the year following attainment of age 55 and 5% thereafter until the annuity begins. Amount is payable as a normal or early retirement.

SUMMARY OF SIGNIFICANT CHANGES

None

**TABLE 3B
COORDINATED**

PUBLIC EMPLOYEES RETIREMENT FUND
ACTIVE MEMBERS AS OF JUNE 30, 1996

<u>Age</u>	<u>Years of Service</u>								<u>ALL</u>
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	
<25	1,631	1,965	46	1	0	0	0	0	3,643
25-29	2,085	5,953	1,358	30	0	0	0	0	9,426
30-34	1,726	5,729	4,321	1,273	54	1	0	0	13,104
35-39	1,931	6,982	5,490	3,039	1,932	66	0	1	19,441
40-44	1,663	6,992	6,511	3,437	3,301	1,443	38	0	23,385
45-49	2,392	6,521	6,179	3,654	3,195	2,315	653	6	24,915
50-54	545	2,679	3,477	2,799	2,736	1,816	1,015	70	15,137
55-59	325	1,615	2,127	1,744	2,110	1,601	859	161	10,542
60-64	168	889	1,189	967	1,130	977	636	82	6,038
65+	140	588	665	375	308	245	124	11	2,456
ALL	12,606	39,913	31,363	17,319	14,766	8,464	3,325	331	128,087

AVERAGE ANNUAL EARNINGS

<u>Age</u>	<u>Years of Service</u>								<u>ALL</u>
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	
<25	8,875	11,978	16,296	11,067	0	0	0	0	10,643
25-29	11,379	18,280	23,247	24,047	0	0	0	0	17,488
30-34	11,748	19,018	26,678	27,674	26,030	40,927	0	0	21,458
35-39	10,289	17,064	25,997	31,546	30,132	30,271	0	36,397	22,522
40-44	10,576	15,944	23,629	30,379	34,123	33,241	32,925	0	23,485
45-49	8,514	15,197	22,623	28,028	33,530	38,564	38,731	30,686	23,422
50-54	11,159	16,437	21,601	25,546	28,591	34,599	40,826	40,258	25,239
55-59	9,955	14,651	21,299	23,551	25,220	27,828	34,653	42,412	23,490
60-64	8,234	13,161	18,949	22,271	24,009	25,515	29,559	45,570	21,819
65+	6,742	8,706	13,533	15,854	19,164	20,473	23,195	41,818	14,358
ALL	10,149	16,424	23,464	27,641	30,060	32,681	35,917	42,488	22,266

PRIOR FISCAL YEAR ENDINGS (IN MILLIONS) BY YEARS OF SERVICE

<u>Age</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	<u>ALL</u>
All	128	656	736	479	444	277	119	14	2,852

**TABLE 4B
COORDINATED**

PUBLIC EMPLOYEES RETIREMENT FUND

SERVICE RETIREMENTS AS OF JUNE 30, 1996

<u>Age</u>	YEARS RETIRED							<u>ALL</u>
	<u>≤1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	0	0	0	0	0	0	0	0
50-54	3	0	0	0	0	0	0	3
55-59	355	648	4	0	0	0	0	1,007
60-64	847	1,900	611	0	0	0	0	3,358
65-69	580	3,327	2,042	226	0	0	0	6,175
70-74	92	851	3,073	965	3	0	0	4,984
75-79	22	194	722	1,901	230	1	0	3,070
80-84	1	28	77	506	837	21	0	1,470
85+	2	5	18	58	146	323	70	622
ALL	1,902	6,953	6,547	3,656	1,216	345	70	20,689

AVERAGE ANNUAL BENEFIT

<u>Age</u>	YEARS RETIRED							<u>ALL</u>
	<u>≤1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	0	0	0	0	0	0	0	0
50-54	4,513	0	0	0	0	0	0	4,513
55-59	4,619	3,850	11,094	0	0	0	0	4,150
60-64	5,204	5,138	2,924	0	0	0	0	4,752
65-69	5,020	4,750	3,937	4,742	0	0	0	4,506
70-74	2,847	4,244	3,880	4,981	15,817	0	0	4,143
75-79	3,023	3,197	3,118	4,209	4,051	7,843	0	3,869
80-84	1,313	1,963	1,940	2,912	4,235	7,302	0	3,658
85+	2,042	4,957	1,163	1,488	2,982	4,348	3,885	3,614
ALL	4,893	4,656	3,699	4,223	4,078	4,538	3,885	4,260

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS RETIRED

<u>Age</u>	<u>≤1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>ALL</u>
All	9,306	32,373	24,217	15,439	4,958	1,565	271	88,135

**TABLE 5B
COORDINATED**

PUBLIC EMPLOYEES RETIREMENT FUND

SURVIVORS AS OF JUNE 30, 1996

<u>Age</u>	<u>YEARS SINCE DEATH</u>							<u>ALL</u>
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	13	88	32	11	2	0	0	146
50-54	10	41	20	5	1	1	0	78
55-59	13	69	40	10	4	0	0	136
60-64	13	93	92	35	4	0	0	237
65-69	3	70	139	95	11	1	0	319
70-74	1	35	145	169	33	7	0	390
75-79	0	8	42	131	93	21	0	295
80-84	0	2	11	44	90	36	1	184
85+	0	1	5	12	18	44	10	90
ALL	53	407	526	512	256	110	11	1,875

AVERAGE ANNUAL BENEFIT

<u>Age</u>	<u>YEARS SINCE DEATH</u>							<u>ALL</u>
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	8,046	5,024	3,772	4,055	1,370	0	0	4,896
50-54	9,306	5,154	4,276	5,639	1,201	1,036	0	5,389
55-59	7,120	4,342	3,565	3,324	2,524	0	0	4,251
60-64	5,425	4,484	3,915	4,506	3,328	0	0	4,299
65-69	4,382	3,470	3,946	4,709	3,593	7,631	0	4,072
70-74	551	4,024	4,077	4,990	3,103	3,310	0	4,363
75-79	0	1,351	3,565	4,427	3,524	3,471	0	3,868
80-84	0	974	1,815	2,125	3,961	3,840	1,900	3,326
85+	0	9,415	1,490	2,847	3,327	3,583	3,755	3,401
ALL	7,065	4,364	3,851	4,418	3,568	3,642	3,586	4,156

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH

<u>Age</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>ALL</u>
All	374	1,776	2,025	2,262	913	400	39	7,792

**TABLE 6B
COORDINATED**

PUBLIC EMPLOYEES RETIREMENT FUND

DISABILITY RETIREMENTS AS OF JUNE 30, 1996

<u>Age</u>	<u>YEARS DISABLED</u>							<u>ALL</u>
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	37	130	46	5	0	0	0	218
50-54	31	81	21	4	2	0	0	139
55-59	34	118	58	10	1	0	0	221
60-64	35	153	90	19	3	0	0	300
65-69	2	17	7	2	0	0	0	28
70-74	0	0	0	0	0	0	0	0
75-79	0	0	0	0	0	0	0	0
80-84	0	0	0	0	0	0	0	0
85+	0	0	0	0	0	0	0	0
ALL	139	499	222	40	6	0	0	906

AVERAGE ANNUAL BENEFIT

<u>Age</u>	<u>YEARS DISABLED</u>							<u>ALL</u>
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	4,067	4,252	3,305	2,647	0	0	0	3,984
50-54	5,876	5,485	5,397	5,317	2,949	0	0	5,518
55-59	6,811	5,550	3,949	6,092	3,395	0	0	5,339
60-64	4,949	5,386	4,876	3,621	2,701	0	0	5,043
65-69	2,665	5,548	2,094	4,101	0	0	0	4,375
70-74	0	0	0	0	0	0	0	0
75-79	0	0	0	0	0	0	0	0
80-84	0	0	0	0	0	0	0	0
85+	0	0	0	0	0	0	0	0
ALL	5,344	5,151	4,270	4,311	2,899	0	0	4,913

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS DISABLED

<u>Age</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>ALL</u>
All	742	2,570	947	172	17	0	0	4,451

Public Employees Retirement Fund

Determination Of Contribution Sufficiency
(dollars in thousands)

JULY 1, 1996

	<u>Percent of Payroll</u>	<u>Dollar Amount</u>
A. STATUTORY CONTRIBUTIONS - CHAPTER 353		
1. Employee Contributions	4.23%	\$127,811
2. Employer Contributions	4.48%	135,365
3. Total	<u>8.71%</u>	<u>\$263,176</u>
 B. REQUIRED CONTRIBUTIONS - CHAPTER 356		
1. Normal Cost		
a. Retirement Benefits	3.89%	\$117,610
b. Disability benefits	0.52%	15,700
c. Survivors	0.12%	3,743
d. Deferred Retirement Benefits	2.05%	61,930
e. Refunds Due to Death or Withdrawal	0.23%	7,025
f. Total	<u>6.81%</u>	<u>\$206,008</u>

Note: Projected Annual Payroll for Fiscal Year Beginning on JULY 1, 1996 is \$3,021,543.

Public Employees Retirement Fund

Summary of Plan Provisions

GENERAL

<i>Eligibility</i>	A public employee who is covered under the Social Security Act. General exceptions are employees covered by other public funds and certain part-time employees. City managers and persons holding elective office may choose to become Members.
<i>Contributions</i>	
<i>Member:</i>	4.23% of salary.
<i>Employer:</i>	4.48% of salary.
<i>Allowable Service:</i>	Service during which Member contributions were deducted. May also include certain leaves of absence and military service.
<i>Salary:</i>	Includes amounts deducted for deferred compensation or supplemental retirement plans, net income from fees and sick leave payments funded by the employer. Excludes unused annual leave and sick leave payments, severance payments, Workers' Compensation benefits and employer-paid flexible spending accounts, cafeteria plans, healthcare expense accounts, day-care expenses, fringe benefits and the cost of insurance coverage.
<i>Average Salary:</i>	Average of the five highest successive years of salary. Average salary is based on all Allowable Service if less than five years.

RETIREMENT

Normal Retirement Benefit

<i>Eligibility:</i>	First hired before July 1, 1989: Age 65 and three years of Allowable Service. Proportionate Retirement Annuity is available at age 65 and one year of Allowable Service.
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<i>Eligibility:</i> (Continued)	First hired after June 30, 1989: The greater of age 65 or the age eligible for full Social Security retirement benefits and three years of Allowable Service. Proportionate Retirement Annuity is available at normal retirement age and one year of Allowable Service.
<i>Amount:</i>	1.5% of Average salary for each year of Allowable Service.

Early Retirement Benefit

<i>Eligibility:</i>	First hired before July 1, 1989: Age 55 and three years of Allowable Service. Any age with 30 years of Allowable Service. Rule of 90: Age plus Allowable Service totals 90. First hired after June 30, 1989: Age 55 with three years of Allowable Service.
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<i>Amount:</i>	First hired before July 1, 1989: The greater of 1% of average salary for each of the first 10 years of Allowable Service and 1.5% of average salary for each subsequent year with reduction of 0.25% for each month the Member is under age 65 at time of retirement or age 62 if 30 years of Allowable Service. No reduction if age plus years of Allowable Service totals 90; <p style="text-align: center;">OR</p> 1.5% of average salary for each year of Allowable Service assuming augmentation to age 65 at 3% per year and actuarial reduction for each month the Member is under age 65.
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	First hired after June 30, 1989: 1.5% of average salary for each year of allowable Service assuming augmentation to the age eligible for full Social Security retirement benefits at 3% per year and actuarial reduction for each month the Member is under the Social Security retirement age.
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Form of Payment: Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are:

50% or 100% joint and survivor with bounce back feature without additional reduction (option canceled if Member is pre-deceased by beneficiary).

Benefit Increases: Benefits may be increased each January 1 depending on the investment performance of the Minnesota Post Retirement Investment Fund (MPRIF). A benefit recipient who has been receiving a benefit for at least 12 full months as of June 30 will receive a full increase. Benefit recipients receiving benefits for at least one full month but less than 12 full months will receive a partial increase.

Members retired under laws in effect before July 1, 1973 receive an additional lump-sum payment each year. In 1989, this lump-sum payment is \$25 times each full year of Allowable Service. In each following year, the lump-sum payment will increase by the same percentage increase that is applied to regular annuities paid from MPRIF.

DISABILITY

Disability Benefit

Eligibility: Total and permanent disability before normal retirement age with three years of Allowable Service.

Amount: Normal Retirement Benefit based on Allowable Service and average salary at disability without reduction for commencement before normal retirement age. The disability benefit is reduced to that amount which, when added to Workers' Compensation, does not exceed the salary the disabled Member received as of the date of the disability or the salary currently payable for the same employment position substantially similar to the one the person held as of the date of the disability, whichever is greater.

Amount: Payments stop if disability ceases or death occurs. Payments
(Continued) change to a retirement annuity at normal retirement age. Benefits may be reduced on resumption of partial employment.

Form of Payment: Same as for retirement.

Benefit Increases: Adjusted by PERA to provide same increase as MPRIF.

Retirement After Disability

Eligibility: Normal retirement age.

Amount: Any optional annuity continues. Otherwise, the larger of the disability benefit paid before normal retirement age or the normal retirement benefit available at normal retirement age, or an actuarially equivalent optional annuity.

Benefit Increases: Same as for retirement.

DEATH

Surviving Spouse Optional Annuity

Eligibility: Member or former Member who dies before retirement or disability benefits commence.

Amount: Survivor's payment of the 100% joint and survivor benefit the Member could have elected if terminated or an actuarial equivalent term certain annuity. If commencement is prior to age 65 (age 62 if 30 years of service), the benefit is reduced same as early retirement with half the applicable reduction factor used from age 55 to the actual commencement age. If no surviving spouse, then an actuarial equivalent dependent child benefit is paid to age 20 or for five years if longer.

Benefit Increases: Adjusted by PERA to provide same increase as MPRIF.

Refund of Contributions

<i>Eligibility:</i>	Member dies before receiving any retirement benefits and survivor benefits are not payable.
<i>Amount:</i>	The excess of the Member's contributions with 6% interest over any disability or survivor benefits paid.

TERMINATION

Refund of Contributions

<i>Eligibility:</i>	Termination of public service.
<i>Amount:</i>	Member's contributions with 5% interest compounded annually if termination occurred before May 16, 1989 and 6% interest if termination occurred on or after May 16, 1989. A deferred annuity may be elected in lieu of a refund if three or more years of Allowable Service.

Deferred Benefit

<i>Eligibility:</i>	Three years of Allowable Service.
<i>Amount:</i>	Benefit computed under law in effect at termination and increased by the following percentage compounded annually: 0% before 7/1/71; 5% from 7/1/71 to 1/1/81; and 3% thereafter until January 1 of the year following attainment of age 55 and 5% thereafter until the annuity begins. Amount is payable as a normal or early retirement.

SUMMARY OF SIGNIFICANT CHANGES

None

Public Employees Police and Fire Fund
ACTUARIAL VALUATION REPORT

July 1, 1996

 **FILE COPY**



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October 11, 1996

Legislative Commission on
Pensions and Retirement
55 State Office Building
St. Paul, Minnesota 55155

RE: Public Employees Police and Fire Fund

Commission Members:

Pursuant to the terms of our Actuarial Services Contract, we have performed an actuarial valuation of the Fund as of July 1, 1996.

The results of our calculations are set forth in the following report, as are the actuarial assumptions upon which our calculations have been made. We have relied on the basic employee data and asset figures as submitted by the Public Employees Retirement Association.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with the requirements of Section 356.215, Minnesota Statutes, and the requirements of the Standards for Actuarial Work, adopted by the Commission on July 8, 1992.

Respectfully submitted,

Thomas K. Custis, F.S.A., M.A.A.A.
Consulting Actuary

William V. Hogan, F.S.A., M.A.A.A.
Consulting Actuary

TKC/WVH/bh

Public Employees Police and Fire Fund

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Public Employees Police and Fire Fund

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Public Employees Police and Fire Fund

Report Highlights
(dollars in thousands)

	07/01/95 Valuation	07/01/96 Valuation
A. CONTRIBUTIONS (Table 11)		
1. Statutory Contributions - Chapter 353 % of Payroll	19.00%	19.00%
2. Required Contributions - Chapter 356 % of Payroll	16.49%	15.11%
3. Sufficiency (Deficiency): (A.1. - A.2.)	2.51%	3.89%
B. FUNDING RATIOS		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	\$1,385,901	\$1,633,010
b. Current Benefit Obligations (Table 8)	\$1,113,225	\$1,243,429
c. Funding Ratio: (a/b)	124.49%	131.33%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$1,385,901	\$1,633,010
b. Actuarial Accrued Liability (Table 9)	\$1,196,795	\$1,334,202
c. Funding Ratio: (a/b)	115.80%	122.40%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$2,154,949	\$2,453,950
b. Current and Expected Future Benefit Obligations	\$2,002,817	\$2,209,297
c. Funding Ratio: (a/b)	107.60%	111.07%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	7,380	7,680
b. Projected Annual Earnings	\$313,885	\$336,779
c. Average Annual Earnings (Actual \$)	\$42,532	\$43,851
d. Average Age	38.4	38.3
e. Average Service	10.5	10.5
2. Others		
a. Service Retirements (Table 4)	1,435	1,524
b. Survivors (Table 5)	426	447
c. Disability Retirements (Table 6)	146	184
d. Deferred Retirements (Table 7)	250	267
e. Terminated Other Non-vested (Table 7)	141	162
f. Total	2,398	2,584

Public Employees Police and Fire Fund

Commentary

Purpose

The purpose of this valuation is to determine the financial status of the Plan. In order to achieve this purpose, an actuarial valuation is made at the beginning of each fiscal year as required by Section 356.215 of Minnesota Statutes.

Report Highlights

The financial status of the Plan can be measured by three different funding ratios:

- ° The Accrued Benefit Funding Ratio is a measure of current funding status and, when viewed over a period of years, presents a view of the funding progress. It is based upon benefits which have been earned by service to the valuation date. This year's ratio is 131.33%. The corresponding ratio for the prior year was 124.49%.
- ° The Accrued Liability Funding Ratio is also a measure of funding status and funding progress. It is based on the actuarial cost method that has historically been used by the State. For 1996 the ratio is 122.40%, which is an increase from the 1995 value of 115.80%.
- ° The Projected Benefit Funding Ratio is a measure of the adequacy or deficiency in the contribution level. This year's ratio of 111.07% verifies that the current statutory contributions are sufficient.

Asset Information (Tables 1 and 2)

Minnesota Statutes require that the asset value used for actuarial purposes recognize only a third of the unrealized gains and losses. This requirement exists because market values (which include all unrealized gain and losses) are typically volatile and can produce erratic changes in the contribution requirements from year to year.

The calculation of the Actuarial Value of Assets is shown in Table 1 on lines F1 to F6. It combines the cost value of the Assets Available for Benefits and one-third of the difference between the market value and cost value of those assets.

The term "Actuarial Value of Assets" is used to indicate that the value was determined for use in this actuarial valuation. Since Minnesota Statutes refer to this value as "Current Assets", the latter phrase will be used in the remainder of this report.

This Plan participates in the Minnesota Post Retirement Investment Fund (i.e. MPRIF). After the MPRIF liability has been calculated for each participating Plan, the State Board of Investments, (i.e. SBI), will determine each Plan's portion of the excess earnings for the January benefit increase as well as the Plan's allocated market share of MPRIF.

Actuarial Balance Sheet (Table 8)

An actuarial balance sheet provides a method for evaluating current and future levels of funding.

The Current Benefit Obligation used to measure current funding levels is calculated in accordance with Statement No. 5 of the Governmental Accounting Standards Board (GASB). Those requirements are:

- ° For Active Members - salary and service are projected to retirement to determine benefits for each member and the ratio of credited service to total service establishes the portion of the projected benefit to be used in calculating the current funding level.
- ° For Non-active Members - the discounted value of benefits, including augmentation in cases where benefits have not commenced.

GASB Disclosure

The Current Benefit Obligation amounts in Table 8 are required to be disclosed by Statement No. 5 of the Governmental Accounting Standards Board (GASB). However, Statement No. 5 uses the terms "Actuarial Present Value of Credited Projected Benefits" and "Pension Benefit Obligation" rather than "Current Benefit Obligation".

The JULY 1, 1996 Pension Benefit Obligation reported in Table 8 is reformatted for GASB reporting purposes in the following table:

Retirees and beneficiaries currently receiving benefits and terminated employees not yet receiving benefits	\$473,265,000
Current Employees	
Accumulated employee contributions including allocated investment income	\$205,302,000
Employer-financed vested	406,375,000
Employer-financed nonvested	<u>158,487,000</u>
Total Pension Benefit Obligation	\$1,243,429,000
Net Assets Available for Benefits at Cost	\$1,592,671,000
Total Benefit Obligation less Assets	(\$349,242,000)
Funded Ratio	128.09%

Actuarial Cost Method (Table 9)

The approach used by the State of Minnesota to determine contribution sufficiency is the Entry Age Normal Actuarial Cost Method. The primary characteristic of this method is that it allocates costs as a level percentage of payroll.

A comparison of this actuarial method (Table 9) to the actuarial balance sheet (Table 8) illustrates the two techniques for allocating liabilities of active Members to past and future. As noted in the prior section, the balance sheet allocates benefits and the corresponding liabilities, on the basis of service. The method used in Table 9 allocates liabilities so that the cost each year will be a constant percentage of payroll. Both approaches, however, calculate the value of all future benefits the same way (see line F of Table 8 and line A6, column 1, of Table 9).

An Unfunded Actuarial Accrued Liability is computed under the Entry Age Normal Actuarial Cost Method by comparing the liabilities allocated to past service (Actuarial Accrued Liability) to the Current Assets. This amount, line B3, is funded over the remaining years to the amortization date by a series of payments that remain a constant percentage of payroll each year.

Sources of Actuarial Gains and Losses (Table 10)

The assumptions used in making the calculations using the Entry Age Normal Actuarial Cost Method are based on long-term expectations. Each year the actual experience will deviate from the long-term expectation. For a detailed analysis of the major components, refer to Table 10.

Contribution Sufficiency (Table 11)

This report determines the adequacy of Statutory Contributions by comparing the Statutory Contributions to the Required Contributions.

The Required Contributions, set forth in Chapter 356, consist of:

- ° Normal costs based on the Entry Age Normal Actuarial Cost Method.
- ° A Supplemental Contribution for amortizing any Unfunded Actuarial Accrued Liability.
- ° An Allowance for Expenses.

Table 11 shows the Plan has a contribution sufficiency since the Statutory Contribution Rate is 19.00% compared to the Required Contribution Rate of 15.11%.

Changes in Actuarial Assumptions

There were no changes that we treated as changes in actuarial assumptions since the last valuation which impacted funding costs. We did, however, modify our handling of post-retirement disabled annuitant mortality to more accurately reflect the fact that disabled annuitant liability is transferred to MPRIF when an annuitant reaches his/her normal retirement date under the plan. This caused a modest increase in liability measurement which makes up part of the "Other Item" losses reflected in Table 10.

Changes in Plan Provisions

There were no changes in plan provisions since the last valuation which impacted funding costs.

TABLE 1

Public Employees Police and Fire Fund

Accounting Balance Sheet*(dollars in thousands)*

JULY 1, 1996

	<u>Market Value</u>	<u>Cost Value</u>
A. ASSETS		
1. Cash, Equivalents, Short-term Securities	\$15,102	\$15,102
2. Investments		
a. Fixed Income	316,777	318,643
b. Equity	942,117	817,292
c. Real Estate	50,014	51,957
3. Equity in Minnesota Post-Retirement Investment Fund (MPRIF)	391,369	391,369
4. Other	145	145
B. TOTAL ASSETS	<u>\$1,715,524</u>	<u>\$1,594,508</u>
C. AMOUNTS CURRENTLY PAYABLE	\$1,837	\$1,837
D. ASSETS AVAILABLE FOR BENEFITS		
1. Member Reserves	\$212,498	\$212,498
2. Employer Reserves	1,109,820	988,804
3. MPRIF Reserves	391,369	391,369
4. Non-MPRIF Reserves	0	0
5. Total Assets Available for Benefits	<u>\$1,713,687</u>	<u>\$1,592,671</u>
E. TOTAL AMOUNTS CURRENTLY PAYABLE AND ASSETS AVAILABLE FOR BENEFITS	<u>\$1,715,524</u>	<u>\$1,594,508</u>
<hr/>		
F. DETERMINATION OF ACTUARIAL VALUE OF ASSETS		
1. Cost Value of Assets Available for Benefits (D5)		\$1,592,671
2. Market Value (D5)	\$1,713,687	
3. Cost Value (D5)	1,592,671	
4. Market Over Cost: (F2-F3)	<u>\$121,016</u>	
5. 1/3 of Market Over Cost: (F4)/3		40,339
6. Actuarial Value of Assets (F1+F5) (Same as "Current Assets")		<u>\$1,633,010</u>

TABLE 2

Public Employees Police and Fire Fund

Change In Assets Available For Benefits
(dollars in thousands)

YEAR ENDING JUNE 30, 1996

	<u>Market Value</u>	<u>Cost Value</u>
A. ASSETS AVAILABLE AT BEGINNING OF PERIOD	\$1,445,344	\$1,356,179
B. OPERATING REVENUES		
1. Member Contributions	\$24,065	\$24,065
2. Employer Contributions	36,066	36,066
3. Investment Income	178,775	178,775
4. MPRIF Income	37,716	37,716
5. Net Realized Gain (Loss)	0	0
6. Other	159	159
7. Net Change in Unrealized Gain (Loss)	<u>31,851</u>	<u>0</u>
8. Total Revenue	<u>\$308,632</u>	<u>\$276,781</u>
C. OPERATING EXPENSES		
1. Service Retirements	\$31,384	\$31,384
2. Disability Benefits	3,201	3,201
3. Survivor Benefits	2,547	2,547
4. Refunds	846	846
5. Investment Fees	1,800	1,800
6. Administrative Expenses	400	400
7. Other	<u>111</u>	<u>111</u>
8. Total Disbursements	<u>\$40,289</u>	<u>\$40,289</u>
D. OTHER CHANGES IN RESERVES	0	0
E. ASSETS AVAILABLE AT END OF PERIOD	<u>\$1,713,687</u>	<u>\$1,592,671</u>

TABLE 3

PUBLIC EMPLOYEES POLICE AND FIRE FUND

ACTIVE MEMBERS AS OF JUNE 30, 1996

Age	Years of Service								ALL
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	
<25	112	84	0	0	0	0	0	0	196
25-29	213	714	220	0	0	0	0	0	1,147
30-34	85	531	731	199	1	0	0	0	1,547
35-39	37	253	464	539	209	0	0	0	1,502
40-44	13	85	213	304	534	171	0	1	1,321
45-49	19	57	80	129	288	434	89	0	1,096
50-54	2	19	37	51	93	162	218	18	600
55-59	3	15	15	14	18	37	64	32	198
60-64	0	2	10	11	6	14	13	10	66
65+	0	2	1	1	2	1	0	0	7
ALL	484	1,762	1,771	1,248	1,151	819	384	61	7,680

AVERAGE ANNUAL EARNINGS

Age	Years of Service								ALL
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	
<25	17,776	27,426	0	0	0	0	0	0	21,912
25-29	20,589	34,521	40,403	0	0	0	0	0	33,062
30-34	20,487	35,855	43,595	43,906	27,685	0	0	0	39,698
35-39	21,566	35,695	43,542	46,643	45,874	0	0	0	43,116
40-44	25,826	37,489	41,493	46,196	46,663	45,637	0	53,475	44,799
45-49	18,663	37,169	40,201	43,955	47,427	47,547	50,305	0	45,740
50-54	23,406	39,343	35,919	40,388	41,900	46,721	49,355	55,326	45,673
55-59	19,791	33,498	40,499	29,163	37,792	44,433	48,243	50,977	43,539
60-64	0	22,752	30,273	35,190	28,111	31,180	45,263	49,712	36,758
65+	0	36,608	11,016	8,934	31,541	26,888	0	0	26,162
ALL	20,067	35,015	42,498	45,237	46,048	46,539	49,251	52,094	41,189

PRIOR FISCAL YEAR ENDINGS (IN THOUSANDS) BY YEARS OF SERVICE

Age	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	ALL
All	9,712	61,696	75,264	56,456	53,001	38,115	18,912	3,178	316,332

TABLE 4

PUBLIC EMPLOYEES POLICE AND FIRE FUND

SERVICE RETIREMENTS AS OF JUNE 30, 1996

<u>Age</u>	<u>YEARS RETIRED</u>							<u>ALL</u>
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	0	0	0	0	0	0	0	0
50-54	26	37	0	0	0	0	0	63
55-59	74	211	18	0	0	0	0	303
60-64	23	131	177	0	0	0	0	331
65-69	6	59	124	122	0	0	0	311
70-74	0	6	63	105	64	0	0	238
75-79	0	1	8	57	61	22	0	149
80-84	0	0	2	3	52	31	2	90
85+	0	0	0	4	4	21	10	39
ALL	129	445	392	291	181	74	12	1,524

AVERAGE ANNUAL BENEFIT

<u>Age</u>	<u>YEARS RETIRED</u>							<u>ALL</u>
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	0	0	0	0	0	0	0	0
50-54	18,840	18,095	0	0	0	0	0	18,403
55-59	26,013	23,632	17,480	0	0	0	0	23,848
60-64	22,445	20,646	21,814	0	0	0	0	21,396
65-69	12,011	16,084	20,985	22,830	0	0	0	20,606
70-74	0	17,479	15,970	21,506	19,663	0	0	19,444
75-79	0	15,543	19,663	13,948	17,876	15,560	0	16,112
80-84	0	0	16,524	7,553	16,235	13,106	5,848	14,643
85+	0	0	0	6,794	10,722	10,002	9,016	9,494
ALL	23,280	21,191	20,343	20,235	17,878	12,955	8,488	20,074

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS RETIRED

<u>Age</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>ALL</u>
All	3,003	9,429	7,974	5,888	3,235	958	101	30,592

TABLE 5

PUBLIC EMPLOYEES POLICE AND FIRE FUND

SURVIVORS AS OF JUNE 30, 1996

<u>Age</u>	<u>YEARS SINCE DEATH</u>							<u>ALL</u>
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	2	23	20	11	2	0	0	58
50-54	4	6	6	4	5	1	0	26
55-59	0	6	14	7	2	1	1	31
60-64	0	7	12	10	14	3	1	47
65-69	0	0	22	24	9	7	3	65
70-74	0	1	5	28	21	12	4	71
75-79	0	0	3	10	23	14	6	56
80-84	0	2	3	11	12	15	8	51
85+	0	2	4	4	8	12	12	42
ALL	6	47	89	109	96	65	35	447

AVERAGE ANNUAL BENEFIT

<u>Age</u>	<u>YEARS SINCE DEATH</u>							<u>ALL</u>
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	25,892	19,997	13,816	16,522	11,497	0	0	17,117
50-54	19,439	20,720	14,994	16,416	13,969	10,596	0	16,852
55-59	0	9,259	15,792	15,436	12,558	4,906	2,910	13,472
60-64	0	18,861	19,379	17,014	11,951	9,739	2,752	15,617
65-69	0	0	13,866	13,350	10,993	7,038	3,203	12,050
70-74	0	4,220	10,353	13,170	12,017	8,815	2,993	11,195
75-79	0	0	10,360	9,640	10,778	9,266	4,017	9,450
80-84	0	4,552	5,420	6,864	11,291	7,875	3,979	7,575
85+	0	4,524	5,448	8,211	5,704	5,074	5,037	5,492
ALL	21,590	16,898	13,999	13,023	11,100	7,823	4,104	11,872

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH

<u>Age</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>ALL</u>
All	129	794	1,245	1,419	1,065	508	143	5,306

PUBLIC EMPLOYEES POLICE AND FIRE FUND

DISABILITY RETIREMENTS AS OF JUNE 30, 1996

<u>Age</u>	<u>YEARS DISABLED</u>							<u>ALL</u>
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	14	40	28	3	0	0	0	85
50-54	11	23	17	3	6	2	0	62
55-59	4	22	2	2	0	0	0	30
60-64	2	4	0	0	0	0	0	6
65-69	0	1	0	0	0	0	0	1
70-74	0	0	0	0	0	0	0	0
75-79	0	0	0	0	0	0	0	0
80-84	0	0	0	0	0	0	0	0
85+	0	0	0	0	0	0	0	0
ALL	31	90	47	8	6	2	0	184

AVERAGE ANNUAL BENEFIT

<u>Age</u>	<u>YEARS DISABLED</u>							<u>ALL</u>
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	17,426	17,230	16,951	10,623	0	0	0	16,937
50-54	21,550	20,661	18,013	21,679	16,800	10,749	0	19,449
55-59	25,335	24,267	17,239	11,421	0	0	0	23,085
60-64	24,308	16,350	0	0	0	0	0	19,003
65-69	0	15,636	0	0	0	0	0	15,636
70-74	0	0	0	0	0	0	0	0
75-79	0	0	0	0	0	0	0	0
80-84	0	0	0	0	0	0	0	0
85+	0	0	0	0	0	0	0	0
ALL	20,354	19,770	17,347	14,969	16,800	10,749	0	18,846

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS DISABLED

<u>Age</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>ALL</u>
All	630	1,779	815	119	100	21	0	3,467

Public Employees Police and Fire Fund

TABLE 7

Reconciliation Of Members

	Actives	Terminated	
		Deferred Retirement	Other Non-Vested
A. ON JUNE 30, 1995	7,380	250	141
B. ADDITIONS	596	57	76
C. DELETIONS			
1. Service Retirement	(104)	(19)	(8)
2. Disability	(35)	(4)	0
3. Death	(7)	0	0
4. Terminated - Deferred	(57)	0	0
5. Terminated - Refund	(41)	(1)	(31)
6. Terminated - Other Non-Vested	(47)	0	0
7. Returned as Active	0	(8)	(14)
8. Transferred to Other Fund	0	0	0
D. DATA ADJUSTMENTS	(5)	(8)	(2)
Vested	6,193		
Non-Vested	1,487		
E. TOTAL ON JUNE 30, 1996	7,680	267	162

	Recipients		
	Retirement Annuitants	Disabled	Survivors
A. ON JUNE 30, 1995	1,435	146	426
B. ADDITIONS	136	42	36
C. DELETIONS			
1. Service Retirement	0	(2)	0
2. Death	(46)	(3)	(14)
3. Annuity Expired	0	0	0
4. Returned as Active	0	0	0
D. DATA ADJUSTMENTS	(1)	1	(1)
E. TOTAL ON JUNE 30, 1996	1,524	184	447

TABLE 8**Public Employees Police and Fire Fund****Actuarial Balance Sheet***(dollars in thousands)*

JULY 1, 1996

A. CURRENT ASSETS (TABLE 1, F6)			\$1,633,010
B. EXPECTED FUTURE ASSETS			
1. Present Value of Expected Future Statutory Supplemental Contributions (See Table 11)			(\$54,155)
2. Present Value of Future Normal Costs			875,095
3. Total Expected Future Assets			<u>\$820,940</u>
C. TOTAL CURRENT AND EXPECTED FUTURE ASSETS			<u>\$2,453,950</u>
D. CURRENT BENEFIT OBLIGATIONS	Non-Vested	Vested	Total
1. Benefit Recipients			
a. Retirement Annuities		\$361,084	\$361,084
b. Disability Benefits		35,093	35,093
c. Surviving Spouse and Child Benefits		62,502	62,502
2. Deferred Retirements with Future Augmentation		14,368	14,368
3. Former Members without Vested Rights		218	218
4. Active Members			
a. Retirement Annuities	4,670	553,391	558,061
b. Disability Benefits	83,916	0	83,916
c. Survivor's Benefits	68,443	0	68,443
d. Deferred Retirements	1,458	56,263	57,721
e. Refund Liability Due to Death or Withdrawal	0	2,023	2,023
5. Total Current Benefit Obligations	<u>\$158,487</u>	<u>\$1,084,942</u>	<u>\$1,243,429</u>
E. EXPECTED FUTURE BENEFIT OBLIGATIONS			<u>\$965,868</u>
F. TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS			<u>\$2,209,297</u>
G. CURRENT UNFUNDED ACTUARIAL LIABILITY (D5-A)			(\$389,581)
H. CURRENT AND FUTURE UNFUNDED ACTUARIAL LIABILITY (F-C)			(\$244,653)

TABLE 9

Public Employees Police and Fire Fund

**Determination Of Unfunded Actuarial Accrued Liability (UAAL)
And Supplemental Contribution Rate**
(dollars in thousands)

JULY 1, 1996

	Actuarial Present Value of Projected Benefits (1)	Actuarial Present Value of Future Normal Costs (2)	Actuarial Accrued Liability (3)=(1)-(2)
A. DETERMINATION OF ACTUARIAL ACCRUED LIABILITY (AAL)			
1. Active Members			
a. Retirement Annuities	\$1,308,788	\$595,137	\$713,651
b. Disability Benefits	174,713	104,954	69,759
c. Survivor's Benefit	138,318	84,126	54,192
d. Deferred Retirements	109,775	87,848	21,927
e. Refunds Due to Death or Withdrawal	4,438	3,030	1,408
f. Total	<u>\$1,736,032</u>	<u>\$875,095</u>	<u>\$860,937</u>
2. Deferred Retirements With Future Augmentation	14,368		14,368
3. Former Members Without Vested Rights	218		218
4. Annuitants in MPRIF	391,369		391,369
5. Recipients Not in MPRIF	<u>67,310</u>		<u>67,310</u>
6. Total	<u>\$2,209,297</u>	<u>\$875,095</u>	<u>\$1,334,202</u>
B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)			
1. AAL (A6)			\$1,334,202
2. Current Assets (Table 1, F6)			<u>1,633,010</u>
3. UAAL (B1-B2)			<u>(\$298,808)</u>
C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE			
1. Present Value of Future Payrolls Through the Amortization Date of July 1, 2020			\$6,297,118
2. Supplemental Contribution Rate (B3/C1)			-4.75%

Public Employees Police and Fire Fund

Changes In Unfunded Actuarial Accrued Liability (UAAL)
(dollars in thousands)

YEAR ENDING JUNE 30, 1996

A. UAAL AT BEGINNING OF YEAR	(\$189,106)
B. CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
1. Normal Cost and Expenses	\$51,760
2. Contribution	(60,130)
3. Interest on A, B1 and B2	<u>(16,430)</u>
4. Total (B1+B2+B3)	<u>(\$24,800)</u>
C. EXPECTED UAAL AT END OF YEAR (A+B4)	(\$213,906)
D. INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
1. Salary Increases	(\$20,556)
2. Investment Return	(98,151)
3. MPRIF Mortality	1,032
4. Mortality of Other Benefit Recipients	2,695
5. Other Items	<u>30,078</u>
6. Total	<u>(\$84,902)</u>
E. UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTION (C+D6)	(\$298,808)
F. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO PLAN AMENDMENTS	0
G. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS	<u>0</u>
H. UAAL AT END OF YEAR (E+F+G)	<u><u>(\$298,808)</u></u>

Public Employees Police and Fire Fund

Determination Of Contribution Sufficiency
(dollars in thousands)

JULY 1, 1996

	Percent of Payroll	Dollar Amount
A. STATUTORY CONTRIBUTIONS - CHAPTER 353		
1. Employee Contributions	7.60%	\$25,595
2. Employer Contributions	11.40%	38,393
3. Total	19.00%	\$63,988
 B. REQUIRED CONTRIBUTIONS - CHAPTER 356		
1. Normal Cost		
a. Retirement Benefits	13.45%	\$45,309
b. Disability benefits	2.36%	7,958
c. Survivors	1.96%	6,597
d. Deferred Retirement Benefits	1.89%	6,377
e. Refunds Due to Death or Withdrawal	0.07%	221
f. Total	19.73%	\$66,462
2. Supplemental Contribution Amortization by July 1, 2020 of UAAL	-4.75%	(15,997)
3. Allowance for Expenses	0.13%	438
4. Total	15.11%	\$50,903
C. CONTRIBUTION SUFFICIENCY (DEFICIENCY) [A3-B4]	3.89%	\$13,085

Note: Projected Annual Payroll for Fiscal Year Beginning on JULY 1, 1996 is \$336,779.

Public Employees Police and Fire Fund

Summary of Actuarial Assumptions and Methods

Interest:	Pre-Retirement: 8.5% per annum Post-Retirement: 8.5% per annum
Benefit Increases After Retirement:	Payment of earnings on retired reserves in excess of 5% accounted for by 5% post-retirement assumption.
Salary Increases:	Reported salary for prior fiscal year, with new hires annualized, increased 6.5% to current fiscal year and 6.5% annually for each future year.
Mortality:	Pre-Retirement: Male - 1971 Group Annuity Mortality Table male rates projected to 1984 by Scale D Female - 1971 Group Annuity Mortality Table female rates projected to 1984 by Scale D Post-Retirement: Male - Same as above Female - Same as above Post-Disability: Male - 1965 RRB rates Female - 1965 RRB rates
Retirement Age:	Age 60, or if over age 60, one year from the valuation date.
Separation:	Graded rates based on plan experience as of June 30, 1989. Rates are shown in rate table.
Disability:	Rates as shown in rate table.
Expenses:	Prior year expenses expressed as percentage of prior year payroll.
Return of Contributions:	All employees withdrawing after becoming eligible for a deferred benefit were assumed to take the larger of their contributions accumulated with interest or the value of their deferred benefit.

TABLE 12

(Continued)

<i>Family Composition:</i>	85% of male Members and 65% of female Members are assumed to be married. Female is four years younger than male. Assume Members have no children.
<i>Social Security:</i>	N/A
<i>Special Consideration:</i>	Married Members assumed to elect subsidized joint and survivor form of annuity as follows: Males - 40% elect 50% J&S option 45% elect 100% J&S option Females - 15% elect 50% J&S option 15% elect 100% J&S option
<i>Actuarial Cost Method:</i>	Entry Age Normal Actuarial Cost Method with normal costs expressed as a level percentage of earnings. Under this method, Actuarial Gains (Losses) reduce (increase) the Unfunded Actuarial Accrued Liability.
<i>Asset Valuation Method:</i>	Cost Value plus one-third Unrealized Gains or Losses.
<i>Payment on the Unfunded Actuarial Accrued Liability:</i>	A level percentage of payroll each year to the statutory amortization date assuming payroll increases of 6.5% per annum.

TABLE 12
(Continued)

Public Employees Police and Fire Fund

Summary of Actuarial Assumptions and Methods

Separations Expressed as the Number of Occurrences per 10,000:

<u>Age</u>	<u>Death</u>		<u>Withdrawal</u>		<u>Disability</u>		<u>Retirement</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
20	5	2	859	859	11	11	0	0
21	5	2	750	750	11	11	0	0
22	5	2	660	660	12	12	0	0
23	5	3	583	583	12	12	0	0
24	5	3	519	519	13	13	0	0
25	6	3	463	463	13	13	0	0
26	6	3	416	416	14	14	0	0
27	6	3	374	374	14	14	0	0
28	7	3	339	339	14	14	0	0
29	7	4	307	307	15	15	0	0
30	7	4	280	280	16	16	0	0
31	8	4	256	256	16	16	0	0
32	8	4	234	234	17	17	0	0
33	9	5	215	215	17	17	0	0
34	10	5	198	198	18	18	0	0
35	10	5	183	183	19	19	0	0
36	11	6	169	169	20	20	0	0
37	12	6	157	157	22	22	0	0
38	13	7	146	146	23	23	0	0
39	14	7	135	135	24	24	0	0
40	15	8	126	126	26	26	0	0
41	16	9	118	118	28	28	0	0
42	18	9	110	110	29	29	0	0
43	21	10	103	103	31	31	0	0
44	24	11	97	97	34	34	0	0
45	27	12	91	91	36	36	0	0
46	30	13	86	86	41	41	0	0
47	34	14	81	81	46	46	0	0
48	39	15	69	69	52	52	0	0
49	44	17	59	59	60	60	0	0

TABLE 12
(Continued)

Public Employees Police and Fire Fund

Summary of Actuarial Assumptions and Methods

Separations Expressed as the Number of Occurrences per 10,000:

<u>Age</u>	<u>Death</u>		<u>Withdrawal</u>		<u>Disability</u>		<u>Retirement</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
50	49	18	50	50	69	69	0	0
51	54	20	39	39	80	80	0	0
52	60	21	29	29	91	91	0	0
53	65	23	22	22	104	104	0	0
54	72	25	15	15	119	119	0	0
55	78	27	11	11	135	135	0	0
56	85	30	7	7	152	152	0	0
57	92	33	5	5	171	171	0	0
58	100	37	3	3	192	192	0	0
59	110	41	1	1	215	215	0	0
60	121	46	0	0	0	0	10,000	10,000
61	133	52	0	0	0	0	0	0
62	146	58	0	0	0	0	0	0
63	160	65	0	0	0	0	0	0
64	176	73	0	0	0	0	0	0
65	195	81	0	0	0	0	0	0
66	219	90	0	0	0	0	0	0
67	243	99	0	0	0	0	0	0
68	270	109	0	0	0	0	0	0
69	300	123	0	0	0	0	0	0
70	334	140	0	0	0	0	0	0

Public Employees Police and Fire Fund

Summary of Plan Provisions**GENERAL**

<i>Eligibility:</i>	All full-time and certain part-time, police officers and fire fighters, who are not contributing to any other local retirement fund.
<i>Contributions:</i>	
<i>Member:</i>	7.6% of salary. Beginning July 1, 1994, automatically adjusted downward after four continuous years of sufficiencies at or above .5% of salary.
<i>Employer:</i>	11.4% of salary. Beginning July 1, 1994, automatically adjusted downward after four continuous years of sufficiencies at or above .5% of salary.
<i>Allowable Service:</i>	Police and fire service during which Member contributions were deducted. May also include certain leaves of absence and military service.
<i>Salary:</i>	Includes amounts deducted for deferred compensation or supplemental retirement plans, net income from fees and sick leave payments funded by the employer. Excludes lump-sum annual leave and sick leave payments and Workers' Compensation benefits.
<i>Average Salary:</i>	Average of the five highest successive years of salary. Average salary is based on all Allowable Service if less than five years.

RETIREMENT***Normal Retirement Benefit:***

<i>Eligibility:</i>	Age 55 and three years of Allowable Service. Proportionate Retirement Annuity is available at age 65 and one year of Allowable Service.
<i>Amount:</i>	2.65% of average salary for each year of Allowable Service.

Early Retirement Benefit:

<i>Eligibility:</i>	Age 50 and three years of Allowable Service.
<i>Amount:</i>	Normal Retirement Benefit based on Allowable Service and average salary at retirement date assuming augmentation to age 55 at 3% per year and a 0.2%* reduction for each month the Member is under age 55.
<i>Form of Payment:</i>	<p>Life annuity with return on death of any balance of contributions over aggregate monthly payments.</p> <p>Actuarially equivalent options are:</p> <p>50% or 100% joint and survivor with bounce back feature without additional reduction.</p>
<i>Benefit Increases:</i>	<p>Benefits may be increased each January 1 depending on the investment performance of the Minnesota Post Retirement Investment Fund (MPRIF). (Note: The MPRIF methodology for this increase will change effective 1/1/94.)</p> <p>A benefit recipient who has been receiving a benefit for at least 12 full months as of June 30 will receive a full increase. Benefit recipients receiving benefits for at least one full month but less than 12 full months will receive a partial increase.</p> <p>Members retired under law in effect before July 1, 1973 receive an additional lump-sum payment each year. In 1989, this lump-sum payment is the greater of \$25 times each full year of Allowable Service or the difference between \$400 times each full year of Allowable Service and the sum of the benefits paid from any Minnesota public pension plan plus cash payments from the Social Security Administration for the preceding fiscal year July 1, 1988 through June 30, 1989. In each following year, the lump-sum payment will increase by the same percentage increase that is applied to regular annuities paid from MPRIF.</p>

**Effective July 1, 1996. Prior to that date, an actuarial reduction is used.*

DISABILITY

Duty Disability Benefit:

<i>Eligibility:</i>	Physically or mentally unable to perform duties as a police officer or fire fighter as a direct result of an act of duty.
<i>Amount:</i>	53% of average salary plus 2.65% of average salary for each year in excess of 20 years of Allowable Service. The disability benefit is reduced to that amount which when added to Workers' Compensation and actual earnings, does not exceed salary or 125% of pay for an employee at same position. Payments change to retirement annuity at age 55.

Non-Duty Disability Benefits:

<i>Eligibility:</i>	Physically or mentally unable to perform duties as a police officer or fire fighter with one year of Allowable Service.
<i>Amount:</i>	Normal Retirement benefit based on Allowable Service (minimum of 15 years) and average salary at disability without reduction for commencement before age 55. Payments change to retirement annuity at age 55.
<i>Form of Payment:</i>	Same as for retirement.
<i>Benefit Increases:</i>	Adjusted by PERA to provide same increase as MPRIF.

Retirement Benefits:

<i>Eligibility:</i>	Age 55
<i>Amount:</i>	Any optional annuity continues. Otherwise, the larger of the disability benefit paid before age 55 or the normal retirement benefit available at age 55, or an actuarially equivalent optional annuity.
<i>Benefit Increases:</i>	Same as for retirement.

DEATH***Surviving Spouse Benefit:***

<i>Eligibility:</i>	Active or Disabled Member with surviving spouse, married for at least one year unless death in the line of duty.
<i>Amount:</i>	50% of salary averaged over last six months. Benefit paid until spouse's death but no payments while spouse is remarried prior to July 1, 1991.

Surviving Dependent Child Benefit:

<i>Eligibility:</i>	Active or Disabled Member with dependent child.
<i>Amount:</i>	10% of salary averaged over last six months for each child. Family benefit minimum (including spouse's benefit) of 50% of salary and maximum of 70% of salary. Benefits paid until child marries, dies, or attains age 18 (age 23 if full-time student.)

Surviving Spouse Optional Annuity:

<i>Eligibility:</i>	Active or Disabled Member dies before age 55, benefits commence when Member would have been age 55 or as early as age 50 if qualified for early retirement except that benefits commence immediately if Member had 30 years of service.
<i>Amount:</i>	Survivor's payment of the 100% joint and survivor benefit the Member could have elected if terminated. Alternatively, spouse may elect refund of deceased's contributions with interest if there are no dependent children.
<i>Benefit Increases:</i>	Adjusted by PERA to provide same increase as MPRIF.

TERMINATION

Refund of Contributions:

<i>Eligibility:</i>	Termination of public service.
<i>Amount:</i>	Member's contributions with 5% interest compounded annually if termination occurred before May 16, 1989 and 6% interest if termination occurred on or after May 16, 1989. A deferred annuity may be elected in lieu of a refund if three or more years of Allowable Service.

Deferred Annuity:

<i>Eligibility:</i>	Three years of Allowable Service.
<i>Amount:</i>	Benefit computed under law in effect at termination and increased by the following percentage compounded annually: 0% before 7/1/71; 5% from 7/1/71 to 1/1/81; and 3% thereafter until January of the year following attainment of age 55 and 5% thereafter until the annuity begins. Amount is payable as a normal or early retirement.

SUMMARY OF SIGNIFICANT CHANGES

None



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MEMORANDUM

DATE: November 11, 1996

FROM: Tom Custis *TC*

RE: "Other Losses" in 1996 P.E.R.A. Valuation

Readers of the July 1, 1996 actuarial valuation of the Minnesota Public Employees Retirement Fund will undoubtedly notice, and question, the large "Other Loss" item shown on Table 10 of the valuation report.

Most of this loss can be explained by two changes made in our valuation procedures this year, and this memo is intended to offer some explanation for these changes. Before addressing each specific change I think it is useful to discuss in general the valuation processes we employ, and how these changes come to be made. It is always our goal to produce the most accurate and precise work products. If one understands the valuation process, one realizes that hundreds of separate computations are made for each participant in a pension plan. For plans with thousands of participants this literally means millions of calculations go into producing the valuation results. This means that it is simply impossible to precisely check every computation every year. Our checking procedures are intended to assure that all significant errors are caught and corrected, and also focus on the overall reasonableness of results from year to year. Each year we try to focus on different detail or aspects of the process to assure that we are not carrying forward any systematic errors, or that we are not completing our valuation in a manner that is inconsistent with administrative practices. We make refinements in our procedures whenever we believe that the results will more accurately reflect the proper valuation of plan liabilities. This year we made two such changes for this plan as discussed below.

Disabled Annuitant Mortality

In past valuations we have made calculations based on the assumption that once a participant goes out on disability pension they continue to be treated as a disability



FILED

MEMORANDUM
November 11, 1996
Page Two

annuitant until death (or recovery). However, this year we discovered that at the later of age 65 or five years in- payment disability annuitants are transferred to the post-fund, where they are commingled with all other annuitants. Accordingly, this year we have adjusted our post 65 mortality decrements for disabled annuitants to be consistent with our post 65 decrements for all other annuitants. Since this increases the life expectancy of disabled annuitants, this increases the accrued liability measurement both for those who are currently disabled, as well as for the active participants who are assumed to become disabled in the future. We estimate that this valuation change accounts for about \$20 million of the "Other Loss" shown on Table 10. It also contributes a very small increase in normal costs for disability benefits.

Variable Normal Retirement Ages

Under the P.E.R.A. coordinated plan, some participants have an age 65 Normal Retirement Age. For post 1989 hires the Normal Retirement Age is defined as the Social Security Retirement Age, which can vary from age 65 to age 67 depending on one's year of birth.

In reviewing the detail of the computer programming this year, we uncovered a problem with how these multiple normal retirement ages were being handled. The programming had set the NRA at 65, then would adjust it if a person met the requirements for a higher age. Accordingly, the detail of our benefit traces would check out accurately. However, we discovered that due to the sequencing of certain programming instructions, the parameter was not being reset at age 65 once it had been increased to a higher age. This meant that for some participants, for some decrements, the ultimate benefit to be paid was being based on the wrong normal retirement age. We estimate that the effect of making the appropriate adjustment in this part of the computer programming is an increase in accrued liability of \$90-95 million. This change also impacted the normal cost calculations causing a very modest increase in the retirement decrement normal cost (about 8 or 9 basis points), and a somewhat larger increase in the withdrawal decrement normal cost (about 11 or 12 basis points).

* * * * *

As one can see, these two changes in valuation procedures account for most of the "Other Loss" as shown on Table 10, and explain why the measurement of plan deficiency did not improve this year despite significant asset gains. It is important to remember that changes such as these do not actually change the funding status of the plan. They are only made to try to improve the measurement process in order to present the most meaningful information possible.

TC/lt