

1979 STATISTICAL SUPPLEMENT To the Annual Report

The Public Employees' Retirement Association of Colorado

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January, 1980
1300 Logan
Denver, Colorado 80203



PERA LEADERSHIP. Left to Right. Margaret Whilden, Retirement Board Chairperson, and Terry L. Lantry, Vice Chairperson.

Public Employees' Retirement Board

Margarett Whilden, Chairperson	St. Vrain Valley School District RE1J
Terry L. Lantry, Vice Chairperson	Colorado State University
Roberta J. Altenbern	Adams County School District 14
Bernal Brooks	City of Colorado Springs
Eileen Burroughs	Jefferson County School District R-1
Ada Houck	Mesa County Valley School District 51
John Kreiling	Retired
Thomas D. Lindquist	State Patrol
Edward W. Murrow	University of Colorado
Frank V. Taulli	Pueblo School District 60
Barclay Watson	Retired
Wilborn S. Whitehead	City of Arvada
Roy Romer	State Treasurer
Bob Scott	State Auditor

Administrative Staff

Joseph P. Natale	Executive Secretary
Kenneth E. Peterson	Assistant Executive Secretary
Carl S. Wilkerson	Assistant Executive Secretary
Robert J. Clark	Internal Auditor
Robert Gray	Administrative Aide
Dennis Blake	Director of Data Processing
Donald P. Clippinger	Director of Accounting
Ralph Doronzo	Director of Building Services
Allan L. Johnson	Director of Information Services
Jean Moretti	Director of Retirement Services
Kari Tae	Director of Investment Operations
Karen K. Turner	Director of Office Services
Paula Westerdahl	Director of Annuities

Consulting Firms

Gabriel, Roeder, Smith & Company, Actuaries
 Peat, Marwick, Mitchell & Co., Certified Public Accountants

Alliance Capital Management Corporation, Investment Counsel
 A. G. Becker & Co., Incorporated, Funds Evaluation Service

This Supplement to the 1979 Annual Report is divided into two major parts: a financial report and an actuarial report. The purpose of this supplement is to supply the interested member with detailed investment, financial, and actuarial information used by the Retirement Board in managing the Public Employees' Retirement Association.

In the financial report, the June 30, 1979, audited financial statements are presented with accompanying accountants' report. This section also deals with the growth and composition of the asset structure of the fund. Investments of the portfolio are listed as of June 30, 1979.

The actuarial report deals with the fundamental reality facing PERA—the growth of PERA, in terms of both people and dollar assets, and the growth of claims on the fund, accumulating over the years through a statutory promise to pay benefits at retirement.

The Public Employees' Retirement Association has four divisions—the State Division, School Division, Municipal Division, and Judges' Division. Much of the data in this booklet is consolidated for all four divisions although each fund is separated from the others and is only used to pay claims against that division. Actuarial facts for active members of the Association are listed as of December 31, 1978. Data on retired lives is listed as of June 30, 1979.

Most members contribute 7¾ percent of salary paid. While this money is invested, the member's principal amount can only be used for the benefit of the individual member or his survivor. The employers' contributions vary according to division. These contributions are determined on the basis of actuarial valuations to provide the amount of money needed, in addition to the employee's own contributions, to pay the allowances promised by the Association.

Explanatory materials including several graphs appear throughout to help explain the program. This is the sixth year that this Annual Statistical

Supplement has been published. We hope that this year's report will also be of interest to you and will be helpful in understanding and evaluating the program.

January, 1980

**Public Employees' Retirement
Board of Colorado**

**1300 Logan
Denver, Colorado 80203**

How the Plan Operates

The PERA retirement plan was established in 1931, and began by covering only state employees. The plan has been greatly expanded since that time and now includes employees of the State of Colorado, of all school districts in the state except Denver, and the employees of several municipalities, public health departments, and other local governmental agencies.

This plan is recognized as among the best in existence. Its purpose is to provide income to members and their families when they need it most—at retirement or in case of death or disability.

The Public Employees' Retirement Association is a joint-contributory retirement plan, operating on an actuarial reserve basis.

THE RETIREMENT ACT: The law governing the Public Employees' Retirement Association of Colorado is Article 51 of Title 24, Colorado

Revised Statutes, 1973, as amended. The last amendatory legislation was enacted in 1979.

Complete copies of the law are available at the Retirement Office.

ADMINISTRATION OF SYSTEM: The administration and responsibility for the proper operation of the Association are vested in the Public Employees' Retirement Board of Colorado which is made up of fifteen members, as follows:

Five representatives elected by members from the School Division.

Four representatives elected by members from the State Division.

Two representatives elected by members from the Municipal Division.

Two representatives elected by those retired under PERA.

The State Treasurer and State Auditor.

The members of the Association elect employee group representatives to the Board for four-year terms by mail ballot.

The legal advisor of the Retirement Board is the state attorney general. An executive secretary is appointed by the Retirement Board to be secretary and administrative officer of the Association. He, in turn, is responsible for the activities of the staff.

The Board also appoints an actuary who makes annual actuarial valuations to determine the adequacy of the funding of retirement benefit liabilities accrued under the retirement program. The PERA Board submits an annual actuarial valuation report to the Legislative Audit Committee and the Joint Budget Committee of the Colorado General Assembly.

A medical advisor is appointed by the board to review and evaluate medical evidence and make recommendations regarding applications for disability retirements. The Board also appoints an advisory Investment Committee and Legislative Committee.

Administrative expenses of the association are paid from the \$5 membership fees charged the employee upon employment and from a small portion of investment income.

INVESTMENTS: The funds of the retirement system are invested primarily in public utility and corporate bonds, common stock of top-rated companies, in real estate mortgages, and direct ownership of real estate properties.

The law charges the PERA Board with responsibility of investing the funds in a prudent and discretionary manner and limits investments in common and preferred stocks and convertible debentures to 30 percent of the portfolio.

CONTRIBUTIONS BY MEMBERS: Members of State, School, and Municipal Divisions make deposits of 7¼ percent of salary paid including pay for overtime and additional duties but excluding reimbursement of expenses. Certain wildlife officers and state patrolmen pay higher rates. Deposits are posted to individual accounts for each employee. The accumulated amount in each account will be used for the employee's benefit if he remains in service. If he leaves service, he may withdraw the amount of his contributions without interest, or he may, if he has five or more years of service, elect a deferred annuity providing a lifetime income at age 65 or in some cases earlier. If he dies before retirement and no other death benefits are payable, his beneficiary or estate will receive his contributions.

CONTRIBUTIONS BY EMPLOYER: While members are paying towards their retirement, the employer—State of Colorado, school district, municipality, other political subdivision—will be making contributions on behalf of their employees. Rates for PERA divisions differ.

The employer's contributions are determined on the basis of actuarial valuation and will provide the amount of money needed, in addition to the employee's own contributions, to provide the allowances promised by the association. The average retired member pays only 15 percent of the amount he receives as an annuity. The remainder comes from the employer money and investment income.

Most State Division employers pay 10.64 percent of payroll. (Both employee and employer rates are greater than regular state rates for certain wildlife officers and for members of the Colorado State Patrol.) School Division employers pay 12.10 percent of payroll. Municipal Division employers pay 9.86 percent.

The employee rate for the Judges' Division is 7 percent of salary paid; the employer rate is 12 percent of payroll.

WHERE TO WRITE FOR INFORMATION: Any member who wishes information which is not given in this booklet may write for further information to:

PUBLIC EMPLOYEES' RETIREMENT ASSOCIATION
Information Services Division
1300 Logan
Denver, Colorado 80203

Summary of PERA Benefits

The following is a brief description of the benefits of the Public Employees' Retirement Association in the State, School, and Municipal Divisions. The reader is reminded that this is only a brief explanation; complete details of the benefits and other aspects of the program may be found in the law and in the rules and regulations of the Retirement Board.

Final Average Salary (FAS) is a frequently used term describing PERA benefits. It means the average of the highest five consecutive years of earnings within the period of service being considered, usually, but not necessarily the last five years.

If You Resign

You are entitled to a refund of your own deposits to PERA. In addition to this benefit, if you have five or more years of service, you may leave your money on deposit and without further payment you will be eligible for a monthly benefit payable for the rest of your life beginning when you are 60 to 65. This monthly benefit will be based on the amount of your PERA-covered service.

If You Die

Your widow or widower will receive a monthly benefit until your youngest child is 18 years of age or until age 23 if the child is unmarried and in school. If you leave no eligible children or after benefits have been paid because of the children, your widow or widower will receive a monthly benefit beginning at his or her age of 60, earlier if you have more service. To be eligible for these survivor benefits you must have at least one year's

service under PERA unless the death is service incurred in which case there is no service credit requirement. If you leave no eligible survivors for monthly benefits, your beneficiary will receive a refund of the amount of money you have deposited with PERA.

If You Are Permanently Disabled

Members with five or more years of service credit since last date of employment can qualify for disability retirement if they are permanently disabled.

Most members will receive 50 percent of FAS. The benefit is payable for the rest of your life or until you recover from the disability.

If You Retire

You can retire as early as age 55 provided you have at least 20 years of PERA service credit at that age, or at age 60 with as few as five years of PERA service credit.

Regular retirement without reductions are at age 55 with at least 30 years service, age 60 with at least 20 years service, and age 65 with at least five years service.

The formula used to compute your retirement benefits is:

2½% of Final Average Salary per year—1st 20 years of service.

1% of Final Average Salary—21-40 years of service.

Maximum-70%

This formula is reduced in certain cases of early retirement.

PEAT, MARWICK, MITCHELL & CO.

CERTIFIED PUBLIC ACCOUNTANTS

1800 BROADWAY

DENVER, COLORADO 80202

The Retirement Board
Public Employees' Retirement
Association of Colorado:

We have examined the combining balance sheet of the Public Employees' Retirement Association of Colorado (consisting of State Employees', School Employees', Municipal Employees', and Judges' Divisions and the Common Operating Fund) as of June 30, 1979 and the related combining statements of revenue and administrative expense and changes in reserve accounts for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the aforementioned combining financial statements present fairly the individual financial positions of the Public Employees' Retirement Association of Colorado (consisting of State Employees', School Employees', Municipal Employees', and Judges' Divisions and the Common Operating Fund) at June 30, 1979 and their individual transactions for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

We have reported separately under date of September 28, 1979 on the financial statements of each of the divisions and the Common Operating Fund for the years ended June 30, 1979 and 1978. The columns on the accompanying financial statements captioned "Combined total - Memorandum only" are not necessary for a fair presentation of the financial statements, but are presented as additional analytical data.

Peat, Marwick, Mitchell & Co.

September 28, 1979

Accountants' Report

Combining Balance Sheet

Year Ended June 30, 1979
with comparative combined totals for 1978

Assets	Municipal Employees' Division	School Employees' Division	Judges' Division	State Employees' Division	Common Operating Fund	Combined total (Memorandum only)	
						1979	1978
Cash	\$ —	656,428	213,081	477,799	39,783	1,387,091	3,603,329
Receivables:							
Member and employer contributions	1,070,864	9,789,819	115,641	8,515,721	—	19,492,045	16,862,781
Dividends and accrued interest on investments	1,310,076	14,934,251	207,637	12,000,381	35,870	28,488,215	24,083,317
Other	18,233	295,523	70,403	328,928	8,397	721,484	572,138
	<u>2,399,173</u>	<u>25,019,593</u>	<u>393,681</u>	<u>20,845,030</u>	<u>44,267</u>	<u>48,701,744</u>	<u>41,518,236</u>
Investments (note 2):							
Temporary investments, at cost	1,790,074	29,859,536	99,446	16,459,262	456,116	48,664,434	69,324,191
Corporate obligations, at amortized cost	45,845,145	533,419,211	6,486,530	415,267,600	—	1,001,018,486	908,266,749
Stocks, at cost	15,735,382	184,373,761	2,470,295	143,052,191	—	345,631,629	243,865,423
United States Government obligations, at amortized cost	8,442,666	113,007,851	1,082,047	82,206,834	1,645,382	206,384,780	195,072,587
First mortgages, at amortized cost	8,831,261	129,075,461	1,554,495	97,266,788	—	236,728,005	182,218,772
Real estate, at cost	601,119	8,798,933	100,187	7,514,556	—	17,014,795	225,092
Total investments before unamortized yield adjustment	81,245,647	998,534,753	11,793,000	761,767,231	2,101,498	1,855,442,129	1,598,972,814
Unamortized yield adjustment	1,926,413	18,784,858	301,902	15,806,794	—	36,819,967	22,486,650
	<u>83,172,060</u>	<u>1,017,319,611</u>	<u>12,094,902</u>	<u>777,574,025</u>	<u>2,101,498</u>	<u>1,892,262,096</u>	<u>1,621,459,464</u>
Property and equipment, at cost:							
Land	—	—	—	—	180,000	180,000	180,000
Building	—	—	—	—	3,471,984	3,471,984	3,438,849
Equipment and fixtures	—	—	—	—	453,407	453,407	416,664
	—	—	—	—	4,105,391	4,105,391	4,035,513
Less accumulated depreciation	—	—	—	—	349,557	349,557	254,027
Net property and equipment	—	—	—	—	3,755,834	3,755,834	3,781,486
Total real assets	85,571,233	1,042,995,632	12,701,664	798,896,854	5,941,382	1,946,106,765	1,670,362,515
Estimated obligation of employers for prior service (contra)	34,181,376	460,555,362	2,093,240	505,593,897	—	1,002,423,875	872,006,227
	<u>\$119,752,609</u>	<u>1,503,550,994</u>	<u>14,794,904</u>	<u>1,304,490,751</u>	<u>5,941,382</u>	<u>2,948,530,640</u>	<u>2,542,368,742</u>

See accompanying notes to combining financial statements.

Liabilities and Reserves

	Municipal Employees' Division	School Employees' Division	Judges' Division	State Employees' Division	Common Operating Fund	Combined total (Memorandum only)	
						1979	1978
Refunds and other liabilities payable	\$ 623,306	2,330,291	6,222	3,518,808	251,245	6,729,872	5,613,474
Reserve accounts:							
Contributions:							
Members' deposits	22,985,219	264,959,064	2,790,535	217,434,741	—	508,169,559	450,464,501
Employers':							
Accumulation	33,373,790	446,998,845	4,216,769	208,781,730	—	693,371,134	551,783,849
Actuarial requirements (contra)	34,181,376	460,555,362	2,093,240	505,593,897	—	1,002,423,875	872,006,227
	<u>90,540,385</u>	<u>1,172,513,271</u>	<u>9,100,544</u>	<u>931,810,368</u>	<u>—</u>	<u>2,203,964,568</u>	<u>1,874,254,577</u>
Annuity:							
Annuitants' retirement	25,685,083	309,689,743	4,551,635	342,953,682	—	682,880,143	613,282,755
Survivors' benefit	2,233,774	9,850,953	1,016,743	15,692,673	—	28,794,143	27,005,284
Deferred annuitants'	504,262	7,430,175	73,503	9,193,762	—	17,201,702	15,404,097
Deferred survivors' benefit	165,799	1,736,561	46,257	1,321,458	—	3,270,075	1,815,795
	<u>28,588,918</u>	<u>328,707,432</u>	<u>5,688,138</u>	<u>369,161,575</u>	<u>—</u>	<u>732,146,063</u>	<u>657,507,931</u>
Insurance dividend reserve (note 3)	—	—	—	—	5,690,137	5,690,137	4,992,760
Total reserve accounts	119,129,303	1,501,220,703	14,788,682	1,300,971,943	5,690,137	2,941,800,768	2,536,755,268
Commitments (note 4)							
	<u>\$119,752,609</u>	<u>1,503,550,994</u>	<u>14,794,904</u>	<u>1,304,490,751</u>	<u>5,941,382</u>	<u>2,948,530,640</u>	<u>2,542,368,742</u>

Combining Statement of Revenue and Administrative Expenses

Year ended June 30, 1979
with comparative combined totals for 1978

	Municipal Employees' Division	School Employees' Division	Judges' Division	State Employees' Division	Common Operating Fund	Combined total (Memorandum only)	
						1979	1978
Revenue:							
Interest income:							
Corporate obligations	\$3,564,239	41,995,649	529,011	33,305,929	—	79,394,828	62,770,389
United States Government obligations	661,318	8,681,343	83,852	6,429,231	154,540	16,010,284	13,677,031
First mortgages	600,228	7,865,327	112,420	6,124,184	—	14,702,159	12,468,399
Temporary investments	186,544	2,523,282	18,538	1,702,969	75,784	4,507,117	4,173,526
Dividend income	491,498	6,093,453	85,450	4,754,781	—	11,425,182	9,436,947
Real estate income	4,603	123,938	767	71,917	—	201,225	5,954
Gain (loss) on sale of investments, net	(19,700)	(874,344)	(8,886)	(952,796)	—	(1,855,726)	6,432,945
Amortization of premiums and discounts on investments, net							
	149,888	1,468,670	29,188	1,271,233	—	2,918,979	2,544,250
Membership fees	7,255	47,385	80	35,600	—	90,320	80,392
Other, net	5,397	210,258	—	93,296	88,526	397,477	380,010
	5,651,270	68,134,961	850,420	52,836,344	318,850	127,791,845	111,969,843
Less amortization of yield adjustment	195,832	1,462,093	21,237	1,318,827	—	2,997,989	1,199,428
	5,455,438	66,672,868	829,183	51,517,517	318,850	124,793,856	110,770,415
Administrative expenses:							
Personnel	—	—	—	—	1,432,722	1,432,722	1,143,495
Professional services	—	—	—	—	255,731	255,731	237,708
Building and equipment	—	—	—	—	273,890	273,890	187,191
Supplies	—	—	—	—	159,967	159,967	142,870
Depreciation	—	—	—	—	112,400	112,400	112,427
Other, net	—	—	—	—	163,572	163,572	104,626
Allocations to divisions	129,816	1,277,513	6,882	959,025	(2,373,236)	—	—
	129,816	1,277,513	6,882	959,025	25,046	2,398,282	1,928,317
Excess of revenue over expenses distributed to reserve accounts	\$5,325,622	65,395,355	822,301	50,558,492	293,804	122,395,574	108,842,098

See accompanying notes to combining financial statements.

Combining Statement of Changes in Reserve Accounts

Year ended June 30, 1979
with comparative combined totals for 1978

	Municipal Employees' Division	School Employees' Division	Judges' Division	State Employees' Division	Common Operating Fund	Combined total (Memorandum only)	
						1979	1978
Contributions:							
Members	\$ 5,371,865	48,542,401	473,692	42,227,255	—	96,615,213	88,385,974
Employers	6,834,315	75,232,001	811,716	57,662,332	—	140,540,364	128,554,061
	<u>12,206,180</u>	<u>123,774,402</u>	<u>1,285,408</u>	<u>99,889,587</u>	<u>—</u>	<u>237,155,577</u>	<u>216,940,035</u>
Excess of revenue over expenses	5,325,622	65,395,355	822,301	50,558,492	293,804	122,395,574	108,842,098
Cost of living adjustments appropriated by the Colorado State Legislature	158,286	2,035,919	17,364	3,206,800	—	5,418,369	4,440,150
Transfers for split annuities:							
From School Employees' Division to Municipal Employees' Division	10,844	(10,844)	—	—	—	—	—
From Municipal Employees' Division to State Employees' Division	(84,414)	—	84,414	—	—	—	—
From School Employees' Division to State Employees' Division	—	(433,153)	—	433,153	—	—	—
From School Employees' Division to Judges' Division	—	(130)	130	—	—	—	—
Refunds due to withdrawal of participating members	(1,913,634)	(11,276,719)	(11,404)	(11,168,411)	—	(24,370,168)	(22,638,988)
Refunds to employers	—	—	—	(12,869)	—	(12,869)	—
Benefits paid	(2,503,069)	(30,094,622)	(512,702)	(33,251,811)	—	(66,362,204)	(57,500,515)
Increase in estimated obligation of employers for prior service, adjusted to actuaries' certificate:							
Annual	3,450,376	14,331,362	89,240	29,622,897	—	47,493,875	55,895,734
Revised actuarial assumptions	1,316,635	17,509,649	137,493	63,959,996	—	82,923,773	—
Insurance dividends received, net	—	—	—	—	855,255	855,255	371,382
Paid-up life insurance purchased	—	—	—	—	(451,682)	(451,682)	(234,152)
Net increase for the year	17,966,826	181,231,219	1,827,830	203,322,248	697,377	405,045,500	306,115,744
Balance, beginning of year	101,162,477	1,319,989,484	12,960,852	1,097,649,695	4,992,760	2,536,755,268	2,230,639,524
Balance, end of year	\$119,129,303	1,501,220,703	14,788,682	1,300,971,943	5,690,137	2,941,800,768	2,536,755,268

See accompanying notes to combining financial statements.

Notes to Combining Financial Statements

June 30, 1979

(1) Summary of Significant Accounting Policies Valuation of Reserve Accounts

Basis of Combining Financial Statements

The accompanying combining financial statements include the accounts of the State, School, Municipal Employees', and Judges' Divisions, and the Common Operating Fund. Each of their accounts are separately maintained and all actuarial determinations are made on the basis of each division's separate actuarial information.

Employer Contributions

The effective statutory employer contribution rates ranged from 9.86 percent to 12.10 percent of active member payroll. The Association's actuary uses the "entry age normal" ("attained age normal" for Judges' Division) actuarial method to determine annuity liabilities and normal costs. As of December 31, 1978, after considering current cost contributions, the actuarially computed number of years necessary to accumulate assets to fund the actuarial liability for prior service ranged from 18 to 51 years (27 to 58 in 1977).

The aggregate unfunded actuarial liability of \$1,002,423,875, computed as of December 31, 1978, is presented in the balance sheet as "estimated obligation of employers for prior service" and as an employer reserve titled "actuarial requirements."

As a result of the Association's policy of requiring regular actuarial investigations to determine the relationship between estimated future economic factors and actual experience certain financial assumptions have been revised in the year ended June 30, 1979. These revisions have been reflected in the increase in the unfunded actuarial liability as of December 31, 1978.

Members' Deposits

Members' contribution rates are established by state statute and are deducted from the members' salaries and remitted by the various participating agencies.

Annuity and Deferred Annuity

Annuity and deferred annuity accounts are recorded at amounts sufficient to reflect the actuarially computed discounted accrued liability of each reserve.

Investments

Temporary investments, consisting of corporate notes, are shown at purchased cost. Maturities are generally less than 30 days. Income is recognized as earned.

Stock investments, principally common stock, are recorded at purchased cost. Dividend income is recognized when dividends are payable. Gains or losses on stocks sold are recognized on the basis of the average cost of the aggregate stock being sold.

First mortgages are presented at amortized cost. Discounts recorded at the time of purchase are amortized on a straight-line basis for guaranteed purchase agreements covering a group of individual mortgages and by the use of the "scientific method" for other mortgages. Income is recognized on a monthly basis over the various lives of the respective mortgages.

Real estate is stated at purchased cost. Income is recognized as earned.

Other investments, principally corporate obligations, are reflected at amortized cost. Premiums and discounts recorded at the time of bond purchases are amortized to the call date and maturity date, respectively. Income is recorded as earned over the life of the investment.

Unamortized yield adjustment on bond exchanges reflects the deferral of losses when bonds are exchanged for similar bonds to achieve a higher yield. These losses are generally amortized to the respective earliest maturity date of the new bond acquired or the old bond exchanged. Losses of \$17,331,306 and \$7,558,272 on bond exchanges were deferred during the years ended June 30, 1979 and 1978, respectively.

Property and Equipment

Property and equipment are stated at cost. Depreciation is provided using the straight-line method in order to apportion the cost of the depreciable assets over the various useful lives of from 3 to 50 years.

Administrative Activities

The Common Operating Fund (Fund) accounts for all administrative activities which are common to the divisions. Operating assets and liabilities, which are held for the benefit of all divisions, are

recorded in the Fund. The expenses incurred by the Association are allocated to the various divisions on the basis of the relationship of the number of members in the division to the total membership in the Association.

The Retirement Board has established a policy that the Fund will receive net revenues from its own investments and allocations of revenue from the divisions in an amount equal to 6.5 percent (6% prior to January 1, 1979) of the average annual balance in the insurance dividend reserve.

(2) Investments

A summary of investments as of June 30, 1979 with comparative combined totals is as follows:

	1979					Combined (Memorandum only)		1978 Combined (Memorandum only)	
	Municipal Employees' Division	School Employees' Division	Judges' Division	State Employees' Division	Common Operating Fund	Total	Market value	Total	Market Value
	Temporary investments, at cost	\$ 1,790,074	29,859,536	99,446	16,459,262	456,116	48,664,434	48,664,434	69,324,191
Corporate obligations, at amortized cost:									
Par value	\$47,905,851	554,527,255	6,698,134	431,585,636	—	1,040,716,876		947,023,651	
Less discount, net	2,060,706	21,108,044	211,604	16,318,036	—	39,698,390		38,756,902	
	\$45,845,145	533,419,211	6,486,530	415,267,600	—	1,001,018,486	896,484,217	908,266,749	829,998,594
Stocks, at cost	\$15,735,382	184,373,761	2,470,295	143,052,191	—	345,631,629	368,746,051	243,865,423	243,596,859
United States Government obligations, at amortized cost:									
Par value	\$ 8,460,504	113,390,692	1,083,952	82,392,505	1,680,000	207,007,653		195,696,420	
Less discount, net	17,838	382,841	1,905	185,671	34,618	622,873		623,833	
	\$ 8,442,666	113,007,851	1,082,047	82,206,834	1,645,382	206,384,780	196,039,583	195,072,587	183,681,453
First mortgages, at amortized cost:									
Face value	\$ 8,956,507	130,920,275	1,586,747	98,870,514	—	240,334,043		186,787,190	
Less discount, net	125,246	1,844,814	32,252	1,603,726	—	3,606,038		4,568,418	
	\$ 8,831,261	129,075,461	1,554,495	97,266,788	—	236,728,005	214,757,008	182,218,772	160,901,664
Real estate	\$ 601,119	8,798,933	100,187	7,514,556	—	17,014,795	17,014,795	225,092	225,092

(3) Insurance Dividend Reserve

The insurance dividend reserve is a result of dividends paid by the insurance company as a return of the excess premiums paid by participating members. The reserve is used to purchase paid-up life insurance for eligible members when they retire and additional paid-up insurance for active insured members.

(4) Commitments

At June 30, 1979, the various divisions were committed to purchase investments at an aggregate cost of \$98,585,951.

PERA Investment Policy

Goal

The function of the Public Employees' Retirement Association is to provide present and future retirement or survivor benefits for its members. In keeping with that function, the preservation of capital is of paramount importance. Every effort will be made to manage the portfolio so that benefits can be paid from regular income and not from contributions or anticipated appreciation of investments. A substantial improvement in the funds' rate of return over a reasonable period of time should allow consideration of reduction of unfunded accrued liabilities, improved benefits, or reduced contributions, maintaining a level contribution fund.

Policy

The fund is long-term in nature and the selection of investments is regulated by (1) statutory limitations, (2) limits of acceptable risk and (3) the objective of a maximized total rate of return. Approval of all purchases and sales of investments is vested by law in the PERA Board. The assistant executive secretary-investments is authorized to execute investment transactions on behalf of the board as permitted under these policy and procedures statements.

Investment decisions shall be made within the framework of the goal established for the rate of return, limits of acceptable risk and fund objectives. At any point in time, certain types of investments have greater relative attractiveness than others. To maximize the realized rate of return, it is necessary to determine the relative values ascribed to differing types of investments within a given investment environment.

The association believes that individual holdings should stand alone on merit as well as complement the entire group of holdings.

Diversification shall be considered as part of the effort to minimize liquidity risks, maximize total rate of return and limit exposure to unanticipated business risks. Since the portfolio is long term in nature and is constructed to avoid the necessity of liquidating holdings to meet benefits

payments, liquidity is not a first consideration; however, every reasonable effort will be made to provide protection for the portfolio in future deteriorating markets.

No holding will be considered a "permanent" part of the portfolio. Any security can be sold at any time either to maximize gains or to minimize losses. The portfolio shall be continuously monitored in order to identify such instruments as over valued stocks or low yield bonds in order to take appropriate action.

Preference will be given to Colorado investments, all other things being equal.

Investment in foreign securities shall not be considered. This will not be construed to mean that securities of American companies doing business in foreign countries will not be considered. However, the foregoing shall not be meant to exclude securities of the International Bank for Reconstruction and Development (World Bank).

In making investment decisions the association shall avail itself of the highest caliber advice obtainable both internally and externally.

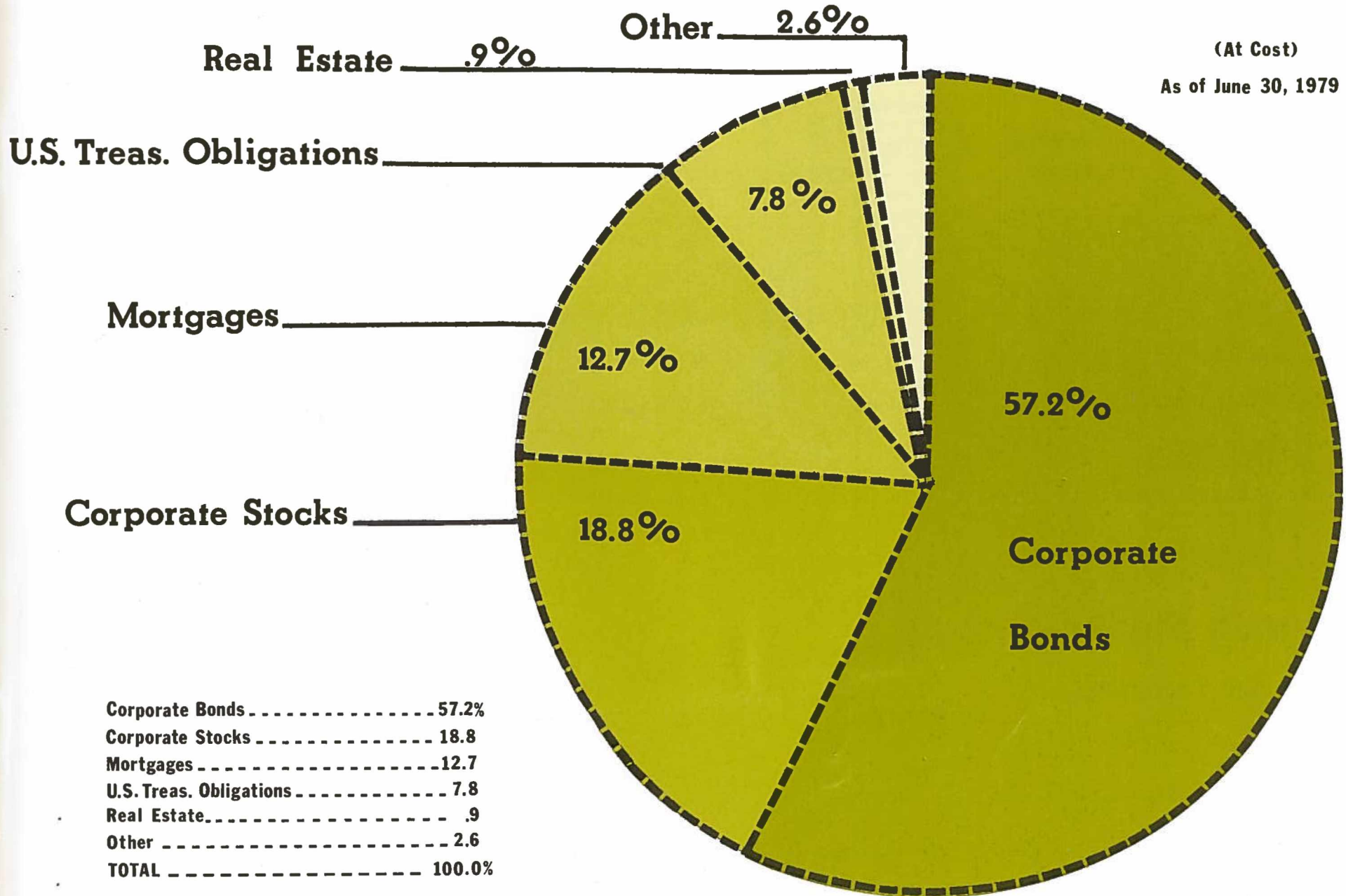
Generally Accepted Accounting Principles (GAAP) will be followed in accounting for the portfolio; however, GAAP should not restrict investment decisions. The deferral and amortization method of losses will be used for bond exchange transactions. Securities will be recorded at adjusted cost; market values will be reported to the board quarterly. The firm engaged for the annual audit shall be consulted when questions concerning accounting procedures arise.

An annual evaluation will be conducted by a performance evaluation service of the investment industry. In addition the annual external audit and the annual actuarial valuations shall be reviewed in conjunction with the evaluation of investment performance. All evaluations will be related to the association's stated goals. Because these goals are long-term, cumulative performance results will be considered as more important than performance in any one year.

INVESTMENT PORTFOLIO DISTRIBUTION

(At Cost)

As of June 30, 1979



Portfolio Distribution

Fixed Income Securities

	<u>Par Value</u>	<u>Cost</u>	<u>Market Value June 30, 1979</u>
SHORT TERM INVESTMENTS—Less than 30 days	\$ 48,475,000	\$ 48,208,318	\$ 48,208,318
Corporate Bonds			
Public Utilities—Telephone	164,677,000	154,405,733	136,360,416
Public Utilities—Electric & Gas	341,234,040	318,111,777	287,892,252
Public Utilities—Gas & Pipeline	9,200,000	8,962,203	8,061,000
Industrial	296,776,453	289,536,042	271,843,472
Transportation	70,950,709	70,561,231	64,537,088
Financial	218,125,982	214,613,747	202,708,765
Total Corporate Bonds	\$1,100,964,184	\$1,056,190,733	\$ 971,402,993
U.S. TREASURY OBLIGATIONS	\$ 145,000,000	\$ 144,417,225	\$ 138,879,482
OTHER DEBT OBLIGATIONS			
Mortgages, Contracts & Notes	\$ 240,384,742	\$ 233,648,474	\$ 214,652,026
TOTAL FIXED INCOME SECURITIES	<u>\$1,486,348,926</u>	<u>\$1,434,256,432</u>	<u>\$1,324,934,501</u>

Common Stocks

Science and Technology

	<u>Shares Held</u>	<u>Cost</u>	<u>Market Value June 30, 1979</u>
Business Equipment			
Burroughs Corporation	133,900	\$ 10,481,869	\$ 9,406,475
International Business Machines Corp.	160,000	9,656,090	11,740,000
Xerox Corporation	19,700	1,939,429	1,194,313
		\$ 22,077,388	\$ 22,340,788
Electronics			
Beckman Instruments, Inc.	248,400	5,775,805	6,396,300

Hewlett Packard Company	100,000	8,829,252	9,725,000
Texas Instruments, Inc.	91,300	7,206,294	8,228,413
		<u>\$ 21,811,351</u>	<u>\$ 24,349,713</u>
Other			
Harris Corporation	199,100	\$ 5,649,446	\$ 5,674,350
Motorola, Inc.	200,000	7,944,575	9,125,000
United Technologies	100,500	\$ 3,438,580	3,731,063
		<u>\$ 17,032,601</u>	<u>\$ 18,530,413</u>
Total Science & Technology		\$ 60,921,340	\$ 65,220,914

Consumer Products & Services

Automotive

General Motors Corporation	82,000	\$ 6,205,102	\$ 4,868,750
Genuine Parts Company	225,000	5,677,288	5,203,125
		<u>\$ 11,882,390</u>	<u>\$ 10,071,875</u>

Broadcasting

CBS Inc.	155,000	\$ 6,321,926	\$ 7,788,750
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Building and Building Products

Owens Corning Fiberglass Corporation	250,000	\$ 7,363,160	\$ 6,281,250
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Cosmetics

Avon Products Inc.	114,100	\$ 6,466,855	\$ 5,391,225
Revlon, Inc.	120,000	6,345,700	5,565,000
		<u>\$ 12,812,555</u>	<u>\$ 10,956,225</u>

Drugs and Hospital Supplies

Abbott Laboratories	199,500	\$ 6,605,200	\$ 6,807,938
American Home Products	214,000	6,143,155	5,804,750
Bristol Myers Company	116,000	4,116,944	3,741,000
Johnson & Johnson	64,600	5,242,952	4,635,050
Schering-Plough Corporation	101,800	6,070,958	3,130,350
Warner-Lambert Company	79,000	3,051,005	1,965,125
		<u>\$ 31,230,214</u>	<u>\$ 26,084,213</u>

Entertainment and Leisure Time

Disney (Walt) Productions	200,000	\$ 7,738,763	\$ 6,750,000
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	<u>Shares Held</u>	<u>Cost</u>	<u>Market Value June 30, 1979</u>
Food, Beverages and Tobacco			
General Mills Inc.	142,000	\$ 3,912,543	\$ 3,550,000
Heublein Inc.	219,600	7,750,028	5,737,050
Pepsico, Inc.	199,700	5,482,891	5,067,388
Philip Morris Inc.	309,000	7,166,596	10,660,500
Pillsbury Company	150,500	5,435,140	5,455,625
Reynolds R.J. Industries, Inc.	147,800	9,033,393	8,424,600
		<u>\$ 38,780,591</u>	<u>\$ 38,895,163</u>
Photography			
Eastman Kodak Company	114,300	\$ 9,032,827	\$ 6,529,388
Publishing & Advertising			
Donnelley, R. R. & Sons	150,000	\$ 4,282,613	\$ 4,162,500
Dow Jones & Company	147,600	4,631,712	5,147,550
Knight Ridder Newspapers, Inc.	120,000	3,030,100	2,565,000
		<u>\$ 11,944,425</u>	<u>\$ 11,875,050</u>
Restaurants & Lodging			
McDonalds Corporation	90,800	\$ 4,049,580	\$ 4,131,400
Retailing			
Federated Department Stores, Inc.	100,600	\$ 4,266,371	\$ 2,980,275
K Mart Corporation	54,900	2,011,341	1,454,850
Melville Corporation	140,000	3,488,887	4,007,500
Penney (J.C.) Company	82,300	4,767,216	2,458,713
		<u>\$ 14,533,815</u>	<u>\$ 10,901,338</u>
Other			
Echlin Manufacturing Company	124,200	\$ 2,125,608	\$ 2,142,450
Total Consumer Products & Services		\$157,815,854	\$142,407,102

Financial Services

Banking & Credit

BankAmerica Corporation	211,400	\$ 5,350,236	5,681,375
Citicorp	75,300	1,781,697	1,891,913
Continental Illinois Corporation	7,800	220,857	228,150
		<u>\$ 7,352,790</u>	<u>\$ 7,801,438</u>

	<u>Shares Held</u>	<u>Cost</u>	<u>Market Value June 30, 1979</u>
Insurance			
Aetna Life & Casualty Company	150,000	\$ 3,907,788	\$ 4,856,250
Farmers Group, Inc.	201,000	\$ 4,409,001	4,874,250
		<u>\$ 8,316,789</u>	<u>\$ 9,730,500</u>
Total Financial Services		\$ 15,669,579	\$ 17,531,938

Basic Industries

Aerospace

Boeing Company	288,500	\$ 5,373,200	\$ 11,684,250
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Chemicals

Air Products and Chemicals, Inc.	200,000	\$ 4,826,425	\$ 6,175,000
Diamond Shamrock	100,000	2,730,350	2,500,000
		<u>\$ 7,556,775</u>	<u>\$ 8,675,000</u>

Electrical Equipment

General Electric Company	145,500	\$ 7,664,116	\$ 7,275,000
General Signal Corporation	50,000	1,404,125	1,556,250
Reliance Electric Company	200,000	6,872,588	12,125,000
		<u>\$ 15,940,829</u>	<u>\$ 20,956,250</u>

Machinery

Caterpillar Tractor	151,500	\$ 7,032,806	\$ 8,351,438
Cooper Industries, Inc.	150,700	6,519,482	8,250,825
Dresser Industries, Inc.	150,000	5,877,770	6,806,250
Ingersoll Rand Company	50,000	2,397,450	2,493,750
		<u>\$ 21,827,508</u>	<u>\$ 25,902,263</u>

Oil & Gas

Continental Oil Company	38,500	\$ 1,108,615	\$ 1,458,188
Exxon Corporation	121,700	5,003,027	6,556,588
Kerr-McGee Corporation	33,500	1,899,899	1,838,313
Marathon Oil Company	180,000	4,691,167	6,840,000
Panhandle Eastern Pipeline Company	59,600	1,985,962	2,972,550
Phillips Petroleum Company	100,000	2,501,817	3,825,000
Standard Oil Company of Indiana	120,000	5,681,831	7,890,000
Standard Oil Company of Ohio	209,000	6,154,538	11,704,000
		<u>\$ 29,026,856</u>	<u>\$ 43,084,639</u>

Oil Services

Halliburton Company	136,500	\$ 6,710,477	\$ 9,145,500
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Paper and Forest Products

Boise Cascade Corporation	200,000	\$ 5,289,529	\$ 6,875,000
Georgia-Pacific Corporation	200,000	6,015,378	5,425,000
International Paper Company	46,400	3,112,723	2,070,600
Weyerhaeuser Company	151,100	5,105,715	4,495,225
		\$ 19,523,345	\$ 18,865,825

Other

Signal Companies, Inc.	199,900	\$ 5,260,914	5,272,363
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Total Basic Industries		\$111,219,904	\$143,586,090
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TOTAL COMMON STOCKS		\$345,626,677	\$368,746,044
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Summary

	<u>Cost</u>	<u>Market Value June 30, 1979</u>
SHORT TERM INVESTMENTS	\$ 48,208,318	\$ 48,208,318
FIXED INCOME SECURITIES	1,434,256,432	1,324,934,501
COMMON STOCKS	345,626,677	368,746,044
REAL ESTATE	17,014,796	17,014,796
TOTAL INVESTMENT PORTFOLIO	\$1,845,106,223	\$1,758,903,659

Becker Performance Evaluation

A. G. Becker & Company is the largest and a highly respected portfolio evaluation service in the United States and has evaluated PERA fund's performance since 1969.

A summary of the PERA fund's performance results, along with a brief description of issues to be considered in interpreting the results follow. Since the purpose of the summary is to provide an overview, the reader is cautioned against forming conclusions that may be premature. A number of important details of performance evaluation are not addressed here.

These six exhibits are reprinted from the PERA report; together, they provide a profile of the PERA fund's performance.

A. Deployment of Assets. In concise form, this exhibit shows the dollar value of each investment category of the PERA fund at the end of the last fiscal year, as well as the percent of the fund invested in that category. The policy decision to determine the fund's commitment to equities also is addressed here. A greater commitment to equity investments can offer the fund a potentially higher return. The reader should keep in mind, however, that such an investment would be subject to characteristic fluctuations in the equities market.

B. Total Fund Cumulative Annual Rate of Return. This exhibit shows how the PERA fund performed over multi-year periods compared with other funds of similar asset size. The boxes on the graph represent the range of performance results earned by all funds in the group. The PERA fund is highlighted by a diamond \diamond . The longest time period, 1970-1979, is displayed at the left. At the right, the reader can see performance results for last year only. The fund's return is tabulated under the graph, along with a segmentation of the group's results. Percent rank indicates what proportion of the group outperformed the fund; a low percent indicates a relatively higher return. With this exhibit, the reader can choose a time period of particular interest and examine the return the PERA fund earned for that period. In the past, a market cycle has generally covered a four-year

period. For any time period one chooses to examine, the median serves as an effective standard for determining what a "reasonable" return for that period would have been. (The median is that return which outranked 50 percent of the funds in the group and which was outranked by 50 percent of the funds.)

C. Total Fund Annual Rate of Return. The main purpose of this exhibit is to show which years have had the greatest impact on the multi-year performance of the PERA fund. Another purpose for displaying returns for individual years is to demonstrate how different securities markets affect fund performance. The variation of the median can be explained, in part, by rising and falling securities markets.

D. Total Fund: Income Rates of Return.

E. Equities Cumulative Annual Rate of Return and

F. Fixed Income Cumulative Annual Rate of Return. These exhibits show how the equity and debt portions of the PERA fund performed over multi-year periods. Since the fund's total return is comprised of equity and fixed income rates of return, both have been included so that one can see the impact of their return on the entire fund's performance.

This summary should be regarded only as an introduction to evaluating the PERA fund's performance results. Nevertheless, it is hoped that this brief overview will be of some assistance.

Definitions: Percent Rank refers to the percent of funds with assets in excess of 50 million dollars evaluated by A. G. Becker which out-performed PERA. The number of funds evaluated as of June 30, 1979, in this category was about 750.

The total number of funds evaluated as of June 30, 1979, by Becker was more than 3500.

MARKET VALUE OF INVESTMENTS (\$000'S)
AS OF JUNE 30, 1979

TOTAL FUND
\$1,760,240

EQUITIES
\$368,746
20.9 %

FIXED INCOME
\$1,390,156
79.0 %

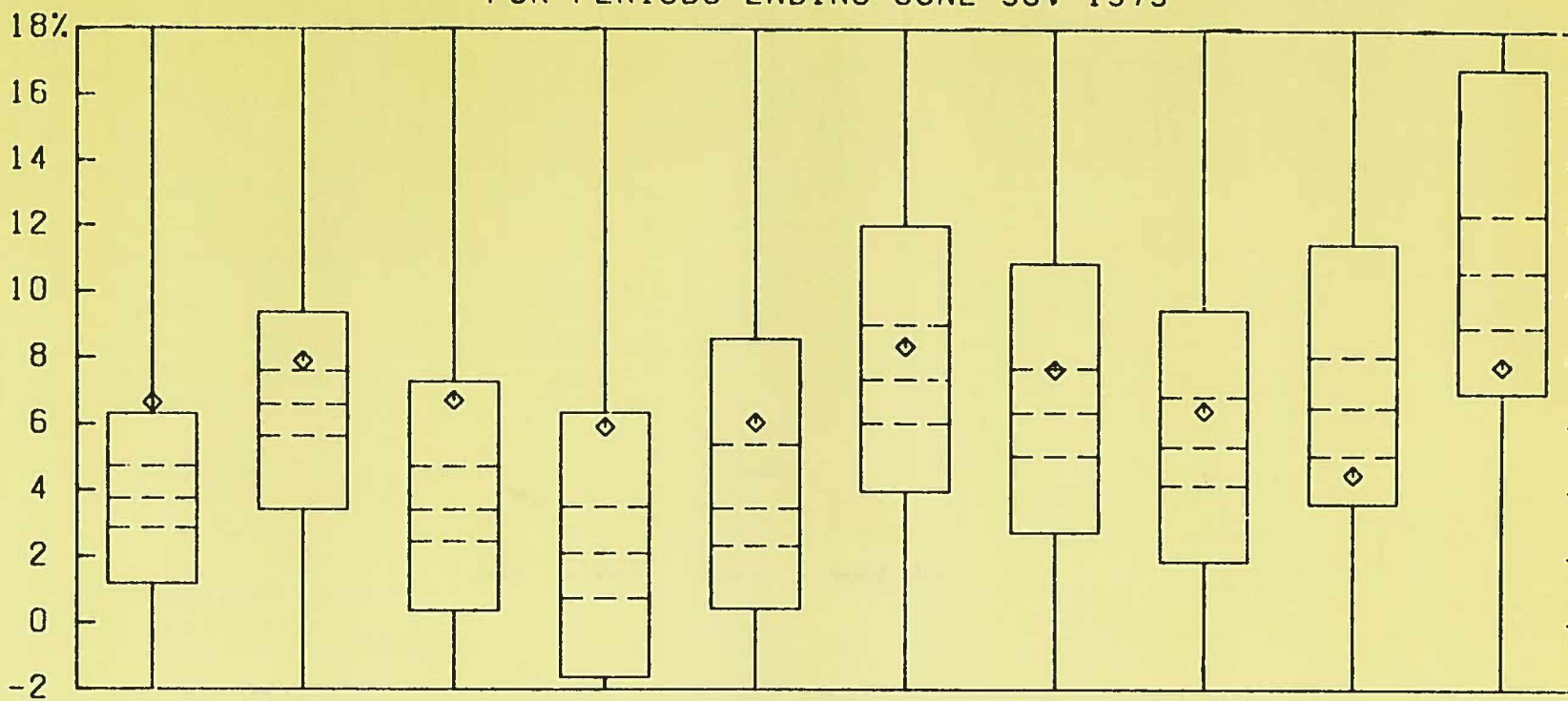
BONDS
\$1,110,282
63.1 %

CASH EQUIVALENTS
\$48,208
2.7 %

CONVERTIBLES

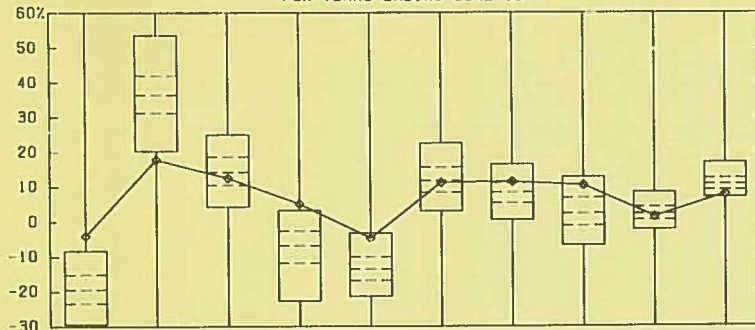
PRIVATE PLACEMENTS
\$231,666
13.2 %

TOTAL FUND: ANNUALIZED RATES OF RETURN
FOR PERIODS ENDING JUNE 30, 1979



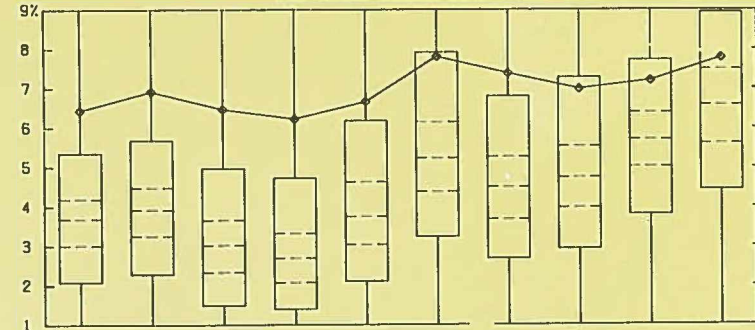
	<u>1970-79</u>	<u>1971-79</u>	<u>1972-79</u>	<u>1973-79</u>	<u>1974-79</u>	<u>1975-79</u>	<u>1976-79</u>	<u>1977-79</u>	<u>1978-79</u>	<u>1979</u>
5TH PERCENTILE	6.3	9.4	7.3	6.4	8.6	12.0	10.9	9.5	11.5	16.8
25TH PERCENTILE	4.7	7.6	4.7	3.5	5.4	9.0	7.7	6.9	8.1	12.4
MEDIAN	3.8	6.6	3.4	2.1	3.5	7.4	6.4	5.4	6.5	10.6
75TH PERCENTILE	2.9	5.6	2.5	0.8	2.3	6.1	5.1	4.2	5.1	9.0
95TH PERCENTILE	1.2	3.4	0.4	-1.6	0.4	4.0	2.8	1.9	3.6	7.0
YOUR FUND	6.6	7.9	6.7	5.9	6.1	8.4	7.7	6.4	4.5	7.8
PERCENT RANK	2	20	8	7	18	33	25	31	85	91

TOTAL FUND: RATES OF RETURN
FOR YEARS ENDING JUNE 30



	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
5TH PERCENTILE	-8.3	53.4	25.0	3.3	-3.3	22.5	16.5	12.8	8.4	16.8
25TH PERCENTILE	-15.1	42.0	18.7	-2.7	-10.0	15.6	11.1	6.8	4.2	12.4
MEDIAN	-19.4	36.4	14.2	-6.8	-13.5	11.7	8.4	2.3	2.2	10.6
75TH PERCENTILE	-23.4	31.2	10.5	-11.8	-16.8	8.4	5.4	-1.1	0.4	9.0
95TH PERCENTILE	-29.4	20.2	4.4	-22.7	-21.4	3.1	0.6	-6.7	-2.2	7.0
YOUR FUND	-4.0	17.8	12.5	5.1	-4.7	11.2	11.5	10.4	1.3	7.8
PERCENT RANK	2	97	61	2	7	55	23	12	63	91

TOTAL FUND: INCOME RATES OF RETURN
FOR YEARS ENDING JUNE 30



	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
5TH PERCENTILE	5.4	5.7	5.0	4.7	6.2	7.9	6.8	7.3	7.7	8.9
25TH PERCENTILE	4.2	4.6	3.7	3.3	4.6	6.1	5.3	5.5	6.4	7.5
MEDIAN	3.7	3.9	3.0	2.7	3.8	5.2	4.5	4.7	5.7	6.6
75TH PERCENTILE	3.0	3.3	2.3	2.1	3.0	4.4	3.7	4.0	5.0	5.6
95TH PERCENTILE	2.1	2.3	1.5	1.4	2.1	3.2	2.7	2.9	3.8	4.4
YOUR FUND	6.4	6.9	6.5	6.2	6.7	7.8	7.4	7.0	7.2	7.8
PERCENT RANK	1	1	1	1	3	6	3	7	9	19

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EXHIBIT C

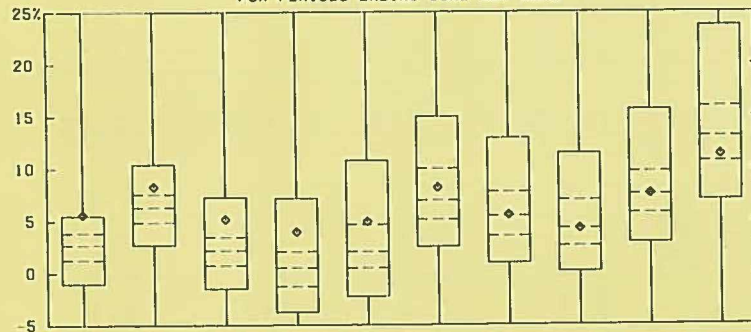
Becker

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EXHIBIT D

Becker

EQUITIES: ANNUALIZED RATES OF RETURN
FOR PERIODS ENDING JUNE 30, 1979



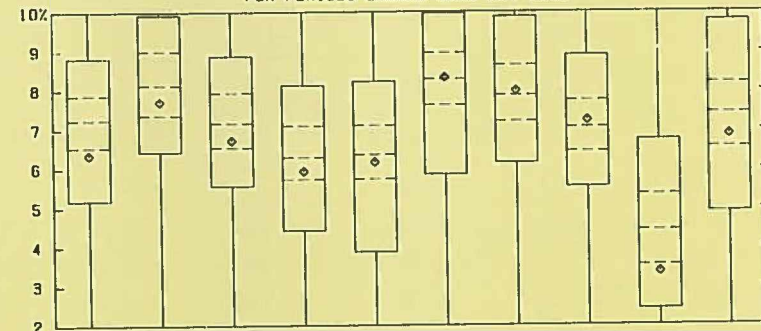
	1970-79	1971-79	1972-79	1973-79	1974-79	1975-79	1976-79	1977-79	1978-79	1979
5TH PERCENTILE	5.5	10.4	7.2	7.1	10.8	14.9	12.9	11.4	15.6	23.7
25TH PERCENTILE	3.8	7.6	3.5	2.1	4.6	10.0	7.7	7.0	9.7	15.9
MEDIAN	2.7	6.3	2.2	0.5	2.0	6.9	5.4	4.2	7.5	13.0
75TH PERCENTILE	1.3	4.9	0.7	-1.3	0.5	5.1	3.5	2.6	5.7	10.7
95TH PERCENTILE	-1.0	2.7	-1.5	-3.8	-2.3	2.5	1.0	0.1	2.9	7.0
YOUR FUND	5.6	8.3	5.2	3.9	4.9	8.2	5.5	4.2	7.6	11.3
PERCENT RANK	4	16	11	12	22	39	49	50	49	68

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EXHIBIT E

Becker

BONDS: ANNUALIZED RATES OF RETURN
FOR PERIODS ENDING JUNE 30, 1979



	1970-79	1971-79	1972-79	1973-79	1974-79	1975-79	1976-79	1977-79	1978-79	1979
5TH PERCENTILE	8.8	9.9	8.9	8.1	8.2	10.0	9.9	8.9	6.7	9.8
25TH PERCENTILE	7.9	9.0	7.9	7.1	7.1	9.0	8.6	7.7	5.3	8.2
MEDIAN	7.2	8.1	7.2	6.3	6.4	8.3	7.9	7.1	4.4	7.4
75TH PERCENTILE	6.5	7.4	6.5	5.7	5.7	7.6	7.2	6.4	3.5	6.5
95TH PERCENTILE	5.2	6.4	5.6	4.4	3.9	5.9	6.2	5.5	2.4	4.9
YOUR FUND	6.4	7.7	6.7	5.9	6.2	8.3	8.0	7.2	3.4	6.9
PERCENT RANK	80	64	68	68	54	48	45	43	79	68

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EXHIBIT F

Becker

Retirement Statistics

Retirement annuities have been approved by the Retirement Board payable to retired members during the fiscal year as follows:

	State	School	Municipal	Judges
20 or more years service at age 55 (Patrol, Wildlife)	3			
30 or more years service at age 55	38	16	4	
20 or more years service at age 60	181	186	13	4
5 or more years service at age 65 (Fractional)	150	144	25	4
General disability after 5 years of service	161	91	15	
Termination of service: Retained member (Sec. 9)	2	12		
Survivor Benefits: Automatic	6	2		
Deferred (Age 60 or 65)	14	17	1	
20 or more years service at age 55 (reduced)	28	50		
5 or more years service at age 60 (reduced)	133	154	12	
TOTAL RETIRED DURING FISCAL YEAR	716	672	70	8
Total number receiving retirement annuities 6/30/1979	7321	7120	628	61
Total number receiving retirement annuities during fiscal year	8037	7792	698	69
Co-beneficiaries continued upon the death of annuitant	58	35	11	
Returned to rolls from suspension		4		
Less: Retired members deceased during fiscal year	286	160	26	2
Annuities temporarily suspended this year	7			
TOTAL NUMBER RECEIVING RETIREMENT ANNUITIES 6/30/1979	7802	7671	683	67
Average monthly rate 6/30/1979	\$ 327	\$ 307	\$ 278	\$ 532
Total paid in annuities 7/1/1978 to 6/30/1979 (12 months)	\$28,694,628	\$27,150,087	\$2,135,125	\$397,759
Average monthly rate for annuitants retired during year	\$ 467	\$ 398	\$ 372	\$ 942
Survivor Benefits added to rolls during fiscal year	46	39	7	2
Total Survivor Benefits 6/30/1979	453	310	79	14
Total paid in Survivor Benefits 7/1/1978 to 6/30/1979 (12 months)	\$ 1,381,169	\$ 964,243	\$ 214,026	\$101,090
Retirement annuities deferred (Future at 60 or 65)	456	754	32	3
Total future liability (annually)	\$ 1,455,082	\$ 1,750,702	\$ 87,315	\$ 14,835
Survivor Benefits (Future)	34	26	2	
Total future liability (annually)	\$ 78,016	\$ 55,899	\$ 2,924	

Annuitant Rolls Increase

The number of persons receiving retirement annuities has grown steadily in relation to active membership, as shown in the table below. Since PERA has not yet reached maturity as a retirement plan, this trend is natural. The trend will continue, and the annuitants on rolls will increase rapidly, until members enrolled near the beginning of the plan reach retirement age and attrition begins among the annuitants, a relatively young group at present.

The level-cost financing principle assures that deduction rates will not have to be raised to meet the benefit load. The current percentages of pay will be sufficient to meet the increasing annuity payroll, if the benefit provisions contained in state law are not changed.

The steep growth in the dollar amount of the annuitant payroll is shown in the right-hand column of the table.

Figures shown are for the State, School, and Municipal Divisions.

Year	Number of retired members on 6/30	Number of active members on 6/30	Retired members as % of active members on 6/30	Total annuities paid-yr. ending 6/30
1940	93	3,715	2.5%	\$ 72,588
1945	171	5,585	3.1	137,442
1950	280	11,853	2.4	237,866
1955	747	21,185	3.5	745,679
1960	1,775	33,068	5.4	2,055,139
1965	3,631	49,701	7.3	5,486,225
1970	6,308	65,586	9.6	12,366,658
1975	11,650	84,781	13.7	32,242,456
1976	12,788	87,605	14.6	37,837,649
1977	13,917	89,604	15.5	43,631,214
1978	15,069	91,892	16.4	50,518,619
1979	16,156	94,447	17.1	57,979,840

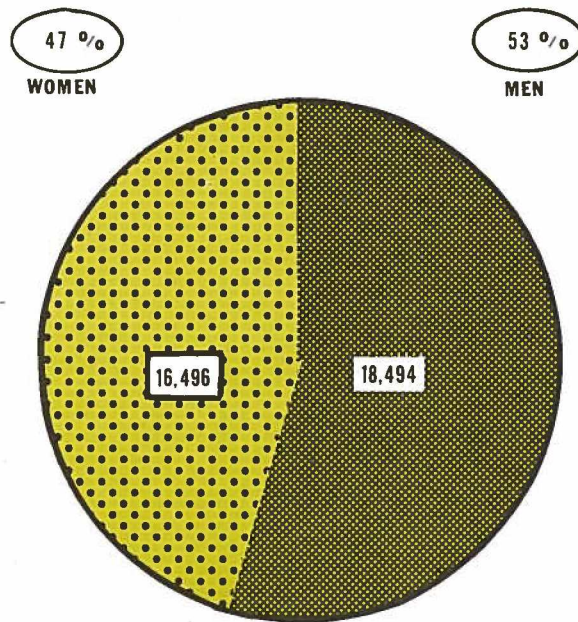
Membership Statistics

	CONSOLIDATED TOTALS	STATE DIVISION	SCHOOL DIVISION	MUNICIPAL DIVISION	JUDGES' DIVISION
TOTAL MEMBERSHIP MAY 31, 1979	111,628	44,566	60,479	6,262	321
Active Members	94,557	36,311	52,505	5,501	240
Annuitants and Survivor Benefit Members	17,071	8,255	7,974	761	81
New Members Accepted					
June 1, 1978, to May 31, 1979	17,192	6,564	9,323	1,289	16
Active Members Deceased	63	31	30	2	0
Active Members Accounts Withdrawn	12,686	5,311	6,389	982	4

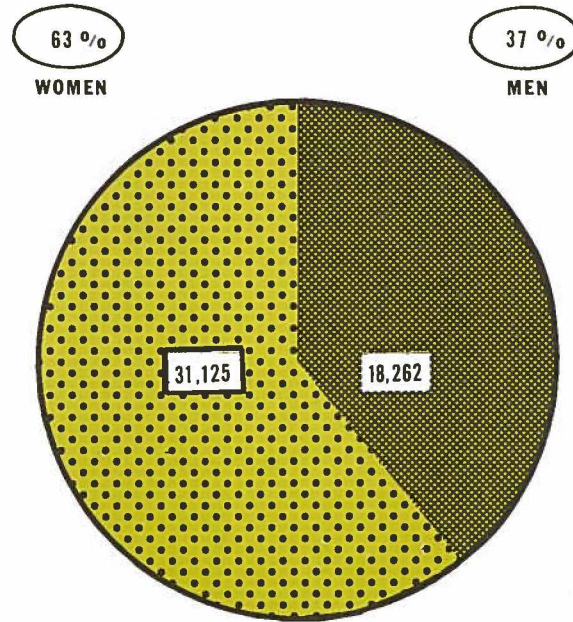
NUMBERS OF ACTIVE MEMBERS BY DIVISION 12-31-78

(Further Distribution According to Sex)

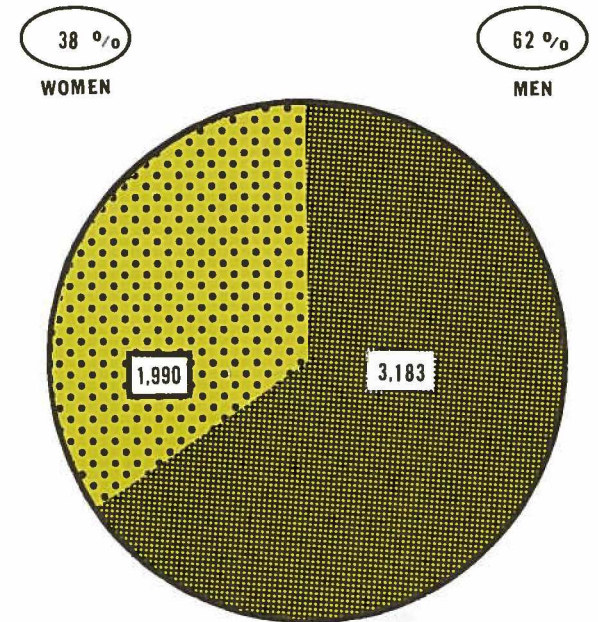
State Division



School Division



Municipal Division



Judges Division

94% Men - 218
6% Women - 15

State Division

Active Members in Valuation By Attained Age Groups & Years of Credited Service—12-31-78

Active members included in the STATE DIVISION valuation totaled 34,990, involving monthly salaries totaling \$45,233,009 (\$542,796,108 annually).

Attained Age Groups	Number With Indicated Years of Credited Service							Totals	Monthly Salaries
	0-4	5-9	10-14	15-19	20-24	25-29	30 & Up		
Under 20	162							162	\$ 87,566
20-24	2,054	102						2,156	1,665,848
25-29	4,285	928	24					5,237	5,249,457
30-34	3,435	1,895	402	19				5,751	7,093,619
35-39	1,915	1,527	903	257	4			4,606	6,384,891
40-44	1,366	1,049	790	448	133	3		3,789	5,463,777
45-49	1,110	1,004	807	487	330	51	4	3,793	5,586,633
50-54	792	928	851	523	340	189	85	3,708	5,440,520
55-59	557	810	840	518	362	208	104	3,399	4,884,371
60	66	118	143	92	70	32	17	538	759,972
61	69	126	123	108	50	39	24	539	761,519
62	46	95	107	71	52	21	17	409	576,746
63	34	66	102	76	24	22	22	346	480,835
64	20	60	82	60	32	15	20	289	413,012
65	15	44	48	49	17	6	9	188	265,803
66	1	10	19	9	4	2		45	63,746
67	4	6	2		1			13	22,186
68	2	7	1		1			11	14,479
69			1		1			2	1,908
70 & Over	1	7	1					9	16,121
Totals	15,934	8,782	5,246	2,717	1,421	588	302	34,990	\$45,233,009

The median attained age for State Division members was 39.5 years, and the median service was 5.9 years. This assumes even distribution throughout the median interval.

School Division

Active Members in Valuation By Attained Age Groups & Years of Credited Service—12-31-78

Active members included in the SCHOOL DIVISION valuation totaled 49,387, involving monthly salaries totaling \$51,609,701 (\$619,316,412 annually).

Attained Age Groups	Number With Indicated Years of Credited Service							Totals	Monthly Salaries
	0-4	5-9	10-14	15-19	20-24	25-29	30 & Up		
Under 20	124							124	\$ 64,412
20-24	2,277	42						2,319	1,630,335
25-29	6,529	1,312	3					7,844	7,144,815
30-34	4,847	3,560	540	2				8,949	9,435,504
35-39	3,456	2,220	1,637	278				7,591	8,308,344
40-44	2,534	1,718	1,185	963	140			6,540	7,291,887
45-49	1,670	1,530	996	836	520	40	1	5,593	6,329,366
50-54	1,039	1,104	937	653	490	282	7	4,512	5,145,170
55-59	705	735	734	589	405	251	53	3,472	3,792,261
60	108	112	114	110	85	28	6	563	595,895
61	88	127	90	103	67	23	4	502	502,173
62	82	79	65	78	44	15	9	372	377,698
63	50	86	70	65	43	24	5	343	356,870
64	36	88	58	58	38	22	8	308	311,354
65	25	48	51	43	29	15	8	219	228,779
66	13	9	12	6	6	4	1	51	38,551
67	4	7	4		1			16	11,336
68	7	4	5	4	1			21	13,131
69	2	2	5	2	4			15	9,575
70 & Over	8	13	6	3	2	1		33	22,245
Totals	23,604	12,796	6,512	3,793	1,875	705	102	49,387	\$51,609,701

The median attained age for School Division members was 38.6 years, and the median service was 5.4 years. This assumes even distribution throughout the median interval.

Municipal Division

Active Members in Valuation By Attained Age Groups & Years of Credited Service—12-31-78

Active members included in the MUNICIPAL DIVISION valuation totaled 5,173, involving monthly salaries totaling \$5,727,034 (\$68,724,408 annually).

Attained Age Groups	Number With Indicated Years of Credited Service							Totals	Monthly Salaries
	0-4	5-9	10-14	15-19	20-24	25-29	30 & Up		
Under 20	40							40	\$ 22,437
20-24	436	25						461	361,123
25-29	750	259	3					1,012	1,007,000
30-34	540	382	59	2				983	1,144,657
35-39	305	200	99	28	2			634	745,777
40-44	191	153	84	47	17			492	583,543
45-49	137	175	78	29	31	13	2	465	557,306
50-54	95	133	79	40	22	15	9	393	472,927
55-59	80	119	81	52	28	21	11	392	487,442
60	8	23	14	12	8	1	3	69	84,506
61	8	19	8	5	5	1	4	50	56,415
62	7	12	10	8	4	3		44	49,124
63	5	13	11	8	3	1	1	42	51,130
64	3	9	6	1	2			21	26,397
65	5	8	9	5	2	2	1	32	33,991
66	5	3	2	2	1			13	12,552
67	1	4	2	2		2		11	13,828
68	2	1	1		1	1		6	3,794
69	2		1					3	3,252
70 & Over	4	2	2	2				10	9,833
Totals	2,624	1,540	549	243	126	60	31	5,173	\$5,727,034

The median attained age for Municipal Division members was 35.7 years, and the median service was 4.9 years. This assumes even distribution throughout the median interval.

Judges' Division

Active Members in Valuation By Attained Age Groups & Years of Credited Service—12-31-78

Active members included in the JUDGES' DIVISION valuation totaled 233, involving monthly salaries totaling \$532,077 (\$6,384,924 annually).

Attained Age Groups	Number With Indicated Years of Credited Service							Totals	Monthly Salaries
	0-4	5-9	10-14	15-19	20-24	25-29	30 & Up		
25-29	3							3	\$ 2,625
30-34	7	2						9	14,844
35-39	23	5						28	63,675
40-44	10	13	3	1				27	61,792
45-49	12	9	7					28	68,084
50-54	9	11	15	3	1			39	89,284
55-59	6	11	12	5				34	79,848
60	1	3	3	3				10	24,362
61		1	1	3		1		6	13,073
62	2		1					3	7,421
63	2	2	2		1			7	16,125
64		4	4					8	19,833
65		2	4	2	1			9	17,688
66			1	2	1			4	10,375
67		1	1	1				3	7,750
68		3	3					6	12,021
69			1	1				2	5,250
70 & Over		3	3		1			7	18,027
Totals	75	70	61	21	5	1		233	\$532,077

The median attained age for Judges Division members was 52.8 years, and the median service was 8.0 years. This assumes even distribution throughout the median interval.

Per Capita Reserves

Fiscal Years 1976-1979

		Present Retired Reserve	Members' Deposits	Future Retired Reserve
STATE DIVISION	June 30, 1976	\$35,930	\$ 4,300	\$ 2,932
	June 30, 1977	38,614	4,875	3,735
	June 30, 1978	41,986	5,382	4,480
	June 30, 1979	43,957	5,916	5,681
SCHOOL DIVISION	June 30, 1976	\$34,508	\$ 3,717	\$ 6,856
	June 30, 1977	36,442	4,190	6,000
	June 30, 1978	39,231	4,627	7,131
	June 30, 1979	40,372	5,081	8,571
MUNICIPAL DIVISION	June 30, 1976	\$32,236	\$ 3,136	\$ 3,446
	June 30, 1977	33,941	3,591	4,328
	June 30, 1978	36,396	3,798	4,873
	June 30, 1979	37,606	4,145	6,019
JUDGES' DIVISION	June 30, 1976	\$51,573	\$ 8,612	\$13,320
	June 30, 1977	57,561	9,625	15,155
	June 30, 1978	61,032	10,640	16,310
	June 30, 1979	67,935	11,298	17,072

The table above shows some important facts about the three main reserves in the PERA financial structure—reserves for presently retired, members' deposits, and the reserves for future retirees.

Using the State Division as an example on 6-30-79, if you divide the reserve established for those already receiving retirement annuities by the total number of those recipients, you end up with \$43,957 per retiree. If you divide the total individual deposits by the total active membership, the result is \$5,916 per active member. The reserve for future retired is used with active members' own deposits to finance the retirement of each retiring member. This reserve divided by the number of active members nets \$5,681 per member.

PERA annuities are fully funded. This means that once a member retires, there is enough money set aside to pay his annuity for the rest of his life without additional member or employer deductions. The Present Retired Reserve is the largest of the three on a per capita basis. Its growth in each division from year to year indicates the higher retirement amounts being

paid.

The member's personal deposits are only used for the member's own benefit or his survivor's benefit.

The Future Retired Reserve is a pooled fund containing employer deductions and interest within each division. It helps fund benefits earned by active members during their careers. When an individual is granted a benefit at retirement, which is determined according to the provisions of State Law, a portion of the Future Retired Reserve is combined with the member's deposits and placed in the Present Retired Reserve to pay his benefit.

While PERA retirees' benefits are fully funded, benefits that have been earned but are not yet payable to actively-employed members are not presently fully funded. This means that assets in Members' Deposits and the Future Retired Reserve total less than the liabilities for service active members have already rendered. This shortfall is called the unfunded accrued liability. State Law requires, and PERA is following, a schedule to amortize the unfunded liability over a period not exceeding 60 years.

Actuarial Principles

Promises Made, and Eventually Paid. As each year is completed, PERA in effect hands an "IOU" to each member then acquiring a year of service credit—the "IOU" says: "The Public Employees' Retirement Association of Colorado owes you one year's worth of retirement benefits, payments in cash commencing when you qualify for retirement."

The related key financial questions are:

Which generation of taxpayers contributes the money to cover the IOU?

The present taxpayers, who receive the benefit of the member's present year of service?

Or the future taxpayers, who happen to be in Colorado at the time the IOU becomes a cash demand?

The law governing PERA financing intends that this year's taxpayers contribute the money to cover the IOUs being handed out this year. By following this principle, **the employer contribution rate will remain approximately level from generation to generation**—our children and our grandchildren will contribute the same percents of active payroll we contribute now.

(There are systems which have a design for deferring contributions to future taxpayers, lured by a lower contribution rate now and putting aside the consequence that the contribution rate must then relentlessly grow much greater over decades of time—consume now, and let your children face your financial pollution after you retire.) See chart on next page.

An inevitable by-product of the level-cost design is the accumulation of reserve assets, for decades, and the income produced when the assets are invested. Invested assets are a by-product and not the objective. Investment income becomes in effect the third contributor for benefits to employees, and is directly related to the contribution amounts required from employees and employers.

Translated to actuarial terminology, this level-cost objective means that

the contribution rates must total at least the following:

Current cost (the cost of members' service being rendered this year).
... plus ...

Interest on unfunded accrued liabilities (unfunded accrued liabilities are the difference between: liabilities for members' service already rendered; and the accrued assets of PERA).

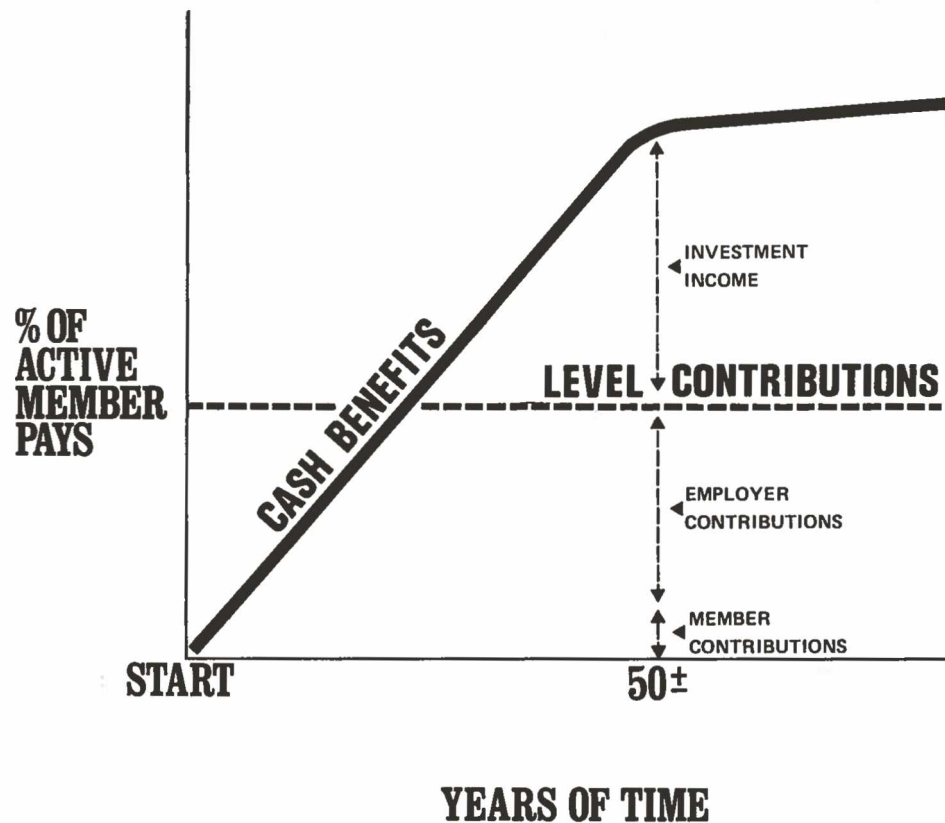
Computing Contributions to Support Fund Benefits. From a given schedule of benefits and from the employee data and asset data furnished him, the actuary determines the contribution rates to support the benefits, by means of **an actuarial valuation and a funding method.**

An actuarial valuation has a number of ingredients such as: the rate of investment income which plan assets will earn; the rates of withdrawal of active members who leave covered employment before qualifying for any monthly benefit; the rates of mortality; the rates of disability; the rates of salary increases; and the assumed age or ages at actual retirement.

In making an actuarial valuation assumptions must be made as to what the above rates will be for the next year and for decades in the future. Only the subsequent actual experience of the plan can indicate the degree of accuracy of the assumptions.

Reconciling Differences Between Assumed Experience and Actual Experience. Once actual experience has occurred and been observed, it will not coincide exactly with assumed experience, regardless of the wisdom of the assumptions or the skill of the actuary and the millions of calculations he made. The future can be predicted with considerable precision, except inflation, but not 100 percent precision.

PERA copes with these continually changing differences by having annual actuarial valuations. Each actuarial valuation is a complete recalculation of assumed future experience, taking into account all past differences between assumed and actual experience. The result is **continuing adjustments in financial position.**



Cash Benefits Line. This relentlessly increasing line is the fundamental reality of retirement plan financing. As the ratio of retired to active, working members rises, the benefits paid rise as a percent of payroll.

The line increases over time even if new benefits aren't added. It increases regardless of the financing method being followed.

Level Contribution Line. Determining the level contribution line requires detailed assumptions concerning experiences in future decades, including:

- Rate of withdrawal of active members (turnover);
- Rates of mortality;
- Rates of disability;
- Ages at actual retirement;
- Rates of pay increase;
- Investment income;
- Change in active member group size.

Assumptions Used By Actuary

(For State, School, and Municipal Divisions Only)

1. The interest rate used in making the valuation was 6.5 percent per annum, compounded annually.
2. The mortality table, for post-retirement mortality, used in evaluating annuities to be paid, was the 1971 Group Annuity Mortality Table, set back no years for men and set back five years for women as shown below.

Single Life Retirement Values

Based on 1971 Group Annuity Mortality & 6.5% Interest

Sample Attained Ages	Present Value of \$1.00 Monthly for Life		Present Value of \$1.00 Mo. the First Year Increasing \$.03 Yearly		Future Life Expectancy (Years)	
	Men	Women	Men	Women	Men	Women
40	\$162.96	\$169.44	\$216.36	\$228.48	35.54	40.29
45	155.65	162.96	201.84	216.36	31.36	35.54
50	146.02	155.65	185.40	201.84	26.91	31.36
55	134.84	146.02	167.28	185.40	22.71	26.91
60	121.80	134.84	147.24	167.28	18.76	22.71
65	107.03	121.80	125.88	147.24	15.11	18.76
70	91.54	107.03	104.88	125.88	11.91	15.11
75	76.66	91.54	85.44	104.88	9.24	11.91
80	62.14	76.66	67.68	85.44	7.00	9.24
85	49.08	62.14	53.52	67.68	5.20	7.00

3. The salary scale, showing present salary assumed to result in a salary of \$1,000 at age 60.

Sample Ages	Present Salary Resulting in Salary of \$1,000 at Age 60	Sample Ages	Present Salary Resulting in Salary of \$1,000 at Age 60
20	(\$ 57)	40	(\$ 298)
25	(94)	45	(415)
30	(145)	50	(570)
35	(211)	55	(767)
		60	(1,000)

(School Division in parentheses)

4. The probabilities of age and service retirement for members eligible to retire. Eligibility for superannuation retirement for members contributing 7.75% was assumed to be age 55 and 20 years of service, or age 60 and five or more years of service.

Percent of Eligible Active Members

Retiring Within Next Year

Retirement Ages			Retirement Ages		
	Men	Women		Men	Women
55	10%	15%	63	12%	18%
56	10	15	64	20	30
57	10	15	65	60	60
58	10	15	66	40	40
59	10	15	67	50	50
60	10	15	68	60	60
61	10	15	69	80	80
62	10	16	70	100	100

5. The probabilities of separating from service due to death or withdrawal. Vesting was assumed to occur after attainment of age 35 and completion of 10 or more years of accrued service.

Percent of Active Participants Separating Within Next Year

Sample	State		School		Municipal	
	Men	Women	Men	Women	Men	Women
20	22.95%	29.75%	20.06%	23.91%	22.95%	29.75%
25	18.12	27.08	15.15	21.05	18.12	27.08
30	14.65	22.61	9.98	14.91	14.65	22.61
35	11.39	17.05	6.66	9.65	11.39	17.05
40	8.43	12.30	5.68	7.62	8.43	12.30
45	6.27	9.32	5.19	6.48	6.27	9.32
50	5.29	7.78	5.21	5.88	5.29	7.78
55	5.47	6.95	5.78	5.33	5.47	6.95
60	6.59	6.84	7.02	4.81	6.59	6.84

6. The entry age normal cost method of valuation was used in determining superannuation annuity liabilities and normal cost.

7. In financing unfunded accrued liabilities, active member payroll was assumed to increase five percent a year.

Actuarial Assumptions for Judges' Division

1. The interest rate used in making the valuation was 6.5 percent per annum, compounded annually.

2. The mortality table, for post-retirement mortality, used in evaluating annuities to be paid, was the 1971 Group Annuity Mortality Table, set back no years for men and set back five years for women.

Single Life Retirement Values

Based on 1971 Group Annuity Mortality & 6.5% Interest

Sample Attained Ages	Present Value of \$1.00 Monthly for Life		Present Value of \$1.00 Mo. the First Year Increasing \$.015 Yearly		Future Life Expectancy (Years)	
	Men	Women	Men	Women	Men	Women
40	\$162.96	\$169.44	\$189.84	\$199.20	35.54	40.29
45	155.65	162.96	178.44	189.84	31.36	35.54
50	146.02	155.65	165.36	178.44	26.91	31.36
55	134.84	146.02	150.60	165.36	22.71	26.91
60	121.80	134.84	133.92	150.60	18.76	22.71
65	107.03	121.80	115.80	133.92	15.11	18.76
70	91.54	107.03	97.44	115.80	11.91	15.11
75	76.66	91.54	80.40	97.44	9.24	11.91
80	62.14	76.66	64.20	80.40	7.00	9.24
85	49.08	62.14	51.24	64.20	5.20	7.00

3. The salary scale, showing present salary assumed to result in a salary of \$1,000 at age 65.

Sample Ages	Present Salary Resulting in Salary of \$1,000 at Age 65	Sample Ages	Present Salary Resulting in Salary of \$1,000 at Age 65
20	\$ 44	45	\$ 326
25	73	50	441
30	113	55	588
35	166	60	772
40	236	65	1,000

4. The probabilities of age and service retirement for members eligible to retire. Eligibility for superannuation retirement was assumed to be age 65 with 5 or more years of service.

Retirement Ages	Percent of Eligible Active Members Retiring Within Next Year	Retirement Ages	Percent of Eligible Active Members Retiring Within Next Year
65	40%	68	30%
66	20	69	50
67	25	70	100

5. The probabilities of separating from service due to death or withdrawal. Vesting was assumed to occur after completion of 10 years of accrued service.

Sample Ages	Percent of Active Members Separating Within the Next Year		Sample Ages	Percent of Active Members Separating Within the Next Year	
	Men	Women		Men	Women
20	7.99%	7.98%	45	4.27%	4.14%
25	7.79	7.77	50	3.09	2.85
30	7.30	7.28	55	1.79	1.47
35	6.39	6.36	60	1.40	.94
40	5.31	5.26	65	2.13	1.31

6. The attained age normal cost method of valuation was used in determining superannuation annuity liabilities and normal cost.

7. In financing unfunded accrued liabilities, active member payroll was assumed to increase five percent a year.

Computed Employer Contribution Rate

Expressed as Percents of Active Member Payroll

	State	School	Municipal	Judges
Contributions for Current Cost:				
Superannuation annuities	9.46%	11.14%	8.97%	15.12%
Disability annuities	1.50	0.90	1.40	0.40
Survivor annuities	0.50	0.50	0.60	1.70
Total	11.46	12.54	10.97	17.22
Member current contributions	7.76	7.75	7.75	7.00
(Future refunds)	(3.35)	(3.17)	(3.29)	(0.85)
Available for annuities	4.41	4.58	4.46	6.15
Employer Current Cost	7.05	7.96	6.51	11.07
Unfunded Accrued Liabilities	3.60	4.14	3.35	0.93
(Amortization period)	(34 years)	(22 years)	(18 years)	(51 years)
TOTAL COMPUTED EMPLOYER CONTRIBUTION RATE	10.65%	12.10%	9.86%	12.00%
STATUTORY RATE	10.65%	12.10%	9.86%	12.00%

Dec. 31, 1978

Glossary

Actuarial Reserve. A fund for the purpose of paying benefits which will not be paid in the very near future but which have already been earned. An actuarial reserve retirement system sets aside money for benefits earned before the benefits will actually have to be paid.

Actuarial Valuation. An examination by an actuary of a group of people, with regard to certain characteristics of the people in that group. Some of the characteristics are age, service, salaries, rate of turnover by death or termination. The actuary can then determine whether contributions are sufficient to fund liabilities earned. An annual valuation of PERA members and annuitants is conducted by PERA's actuary.

Amortize. To pay off through regular contributions or adjustments over a specified period.

Annuity. A series of regular payments to the annuitant for life.

Audit. An examination by someone or some firm outside an organization of accounting records developed by the staff of the organization. Recommendations and suggestions for better record-keeping and management are often part of an audit.

Corporate Obligation. An investment in a corporation with specified payments of principal and interest over a definite period of time.

Current Cost. The cost of members' service being rendered this year, expressed as a percentage of payroll. Current cost is a part of the total contribution rate.

Diversification. The practice of investing in several different business industries and companies within the industries in order to minimize total portfolio risks.

Level-Cost Financing. A method of financing a retirement system in which contributions, as a percentage of payroll, remain level from generation to generation, if benefit provisions are not changed.

Portfolio. The total of investments held, (by PERA, for example).

Risk. The possibility that the expected rate of return may not be attained for the total portfolio or for specific securities.

Temporary Investment. An investment in highly liquid money market instruments usually maturing within one year.

Total Rate of Return. Cash income plus capital appreciation, less capital depreciation, realized and unrealized, adjusted for capital contributions and withdrawals expressed as a percentage on an annual basis.

Unfunded Accrued Liability. The difference between liabilities for members' service already rendered, and the assets of the system, measured as of any particular date.

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