

MINNESOTA
PUBLIC EMPLOYEES RETIREMENT ASSOCIATION
(PERA)

ACTUARIAL ANALYSIS AND RECOMMENDATIONS

1944



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ACTUARIAL ANALYSIS OF PUBLIC EMPLOYEES RETIREMENT ASSOCIATION

FINANCIAL HISTORY

1944

The principal sources of income from the Fund have been members' deposits, fees, and interest on investments. The total received from members up to June 30, 1943, including members' deposits, fees and penalties, and advance annuity payments amounted to \$3,112,979. Interest received, including interest on bonds and back payments of members, totaled \$552,641. Total receipts, exclusive of bonds called and matured, total \$3,842,803.

Disbursements, excluding bond purchases, have been made principally for refunds to withdrawing members, annuity payments, and expenses of operation. Refunds to members have totaled \$731,164, annuity payments \$665,397, and operating expenses \$71,498.

Assets of the Retirement Fund at June 30, 1943 amounted to \$2,246,195 consisting principally of cash \$83,822; and bonds, \$2,123,932.

Liabilities shown by the financial statement of the Association at June 30, 1943 amounted to \$2,162,088, consisting chiefly of members' deposits and advance annuity payments totaling \$2,157,562. The difference between assets and liabilities of \$84,107 is shown in the financial statement as a surplus. No liability is set up for future payment of annuities to retired members except \$38,016 representing the accumulated deductions of retired members not yet disbursed in annuity payments.

Income from investments has increased in amount each year of operation, but the rate of yield has decreased in each year. The yield was in excess of 3 $\frac{1}{2}$ % up to 1938, decreasing to 3% in 1941, 2.9% in 1942, and 2.8% in 1943. This follows the general trend of experience of financial institutions.

Expenses of operation have been modest and compare favorably with the expenses of comparable retirement funds. The expense has averaged \$1.207 per member per year, or about 10¢ per month.

Annuity payments are charged against the accumulated deductions of retired members until the member's account is used up, and thereafter against income. Since no annuities were granted before 1935, income from investments, fees, and other miscellaneous sources exceeded expenses of operation and annuity payments from income up to 1940. The excess of income increased each year to 1937, reaching a high for that year of \$42,593.76. At June 30, 1940, the accumulated excess amounted to \$156,518.66. Since 1940, income has been less than expenses and annuity payments in each year, reducing the accumulated excess at June 30, 1943 to \$84,106.62. The deficiency for the year ended June 30, 1943 was \$36,272.96.

ADEQUACY OF PLAN

The basic plan of operation of the Retirement Fund is, in a simple statement, contributions by members at a prescribed rate, and benefits of specified amounts to members who retire under certain conditions of eligibility. In order for the plan to be adequate, the funds derived from contributions and earnings thereon must be sufficient to provide the promised benefits. Theoretically, and from the standpoint of equity, each member's contribution with interest earned thereon before retirement, plus the member's share of any additional contributions or forfeitures available for the entire group, should be a sufficient amount to make all payments of the members' annuities when they fall due. Actually, in practice, it is necessary that the aggregate of the funds be sufficient to make all annuity payments.

In order to measure the adequacy of the Retirement Fund on the basis of its experience, we have made a valuation of the liability and future payments of annuities to existing retired members. This valuation was made on the basis of the Combined Annuitants Mortality Table and interest at 3%. This basis we believe fairly represents the measure of what may be expected over a considerable period in the future. Results of this valuation show a liability for the 153 men with annuities of \$150,975 annually, of \$1,140,428; and for the 33 women with annuities of \$29,384 annually, of \$267,131; or a total liability of \$1,407,560. This is the amount which the Fund should have on hand on the basis of computation used in order to make all future annuity payments to these annuitants as they fall due. The Fund, in its financial statement, shows a liability of \$38,016 for this purpose.

As a measure of the adequacy of the contributions, these annuitants contributed a total of \$328,501 to the Fund, or enough to pay their annuities totaling \$130,359 annually for 1.82 years. Annuitants who have died contributed a total of \$84,487, or enough to pay their annuities totaling \$45,261 annually for 1.87 years. Actually, they received payments totaling \$130,500, or \$46,053 more than the total of their contributions. These deceased annuitants can not represent the average as many who were granted annuities at the same time are still drawing annuities and will continue to do so for years to come.

These figures of contributions made by annuitants do not include any portion of the interest earned throughout their active service either on their contributions or on the contributions of members who withdraw from service. Even if the total amount of earnings over the entire history of the Fund had been apportioned solely to these annuities, this amount of \$552,641 would have paid the excess of annuity payments over contributions to the annuitants who died, and the annuities of living annuitants for less than three years.

From another view, the only source of funds to provide benefits is the contributions made by members who remain in service to retirement, plus interest earned thereon, plus interest earnings of contributors who withdraw or die, plus forfeitures on the extra one-half per cent contributions made by those who withdraw or die, plus any amounts received from other sources. We have made computations, based on the experience of the System in the period 1931-1943 as to withdrawals and deaths, the Combined Annuitants Mortality Table, and 3% interest earnings, of the accumulation of funds for members who continue in service to retirement, assuming a continuous salary of \$2,000 per year throughout service and a contribution of 4% of salary each year, and compared the resulting amounts with the amounts necessary to provide annuities promised at retirement. Results of these computations are as follows:

Annual Salary \$2,000

Annual Deposit \$80.00

Annuity at Retirement, \$1,000

<u>Years of Contribution</u>	<u>Accumulated Amount</u>
20	\$ 2,369.25
25	3,215.76
30	4,198.12
35	5,340.04
40	6,674.67

Amount Required for \$1,000 Annuity

<u>Retirement</u> <u>Age</u>	<u>Men</u>	<u>Women</u>
60	\$ 11,870.10	\$ 13,404.80
65	9,992.20	11,489.40
70	8,211.00	9,626.50

It is obvious from a comparison of accumulated amounts with the amounts required to produce the expected annuity, that the accumulated contributions are inadequate, even at the longest period of contribution and the oldest age at retirement. The accumulation for a reasonable period of 35 years when applied at a reasonably normal age at retirement of 65 will produce more than one-half the expected annuity for a man, and less than one-half for a woman.

These figures apply only when the member has contributed at the full rate throughout the entire period of service. They can not be applied to present active members as no contributions are required for service prior to 1931, and contributions were at a rate of 3½% until 1943. The additional amounts contributed under the provisions of the act by retiring members who are required to contribute such amounts representing interest accruals would increase the total amount available for purchase of the annuity, but are obviously insufficient to make up the deficiency.

The liabilities set up by the Retirement Fund not only do not include the liability for future payments to members already retired, but do not provide for the accumulated deficiencies in contributions of present active members; or to state it in another way, the contingent liability for future payments of annuities to present active members. It is obvious from the preceding discussion, that such a liability exists. We have not attempted to make an accurate determination of this liability, but estimate it roughly at \$4,350,000. This estimate was based on the deficiencies which we may reasonably expect from the accumulation from members' deposits and the experience of the Association as to withdrawals from service, death, and retirement.

The conclusion is inescapable that the Fund as presently constituted is inadequate to provide the benefits promised because the basis of contributions to provide funds for the Association is obviously inadequate.

FUTURE PROSPECTS

In order to arrive at an estimate of the amounts which the Fund will be called upon to disburse in annuity payments in future years, we have made a projection of the present membership, both active and retired, based on the experience of the Association as to withdrawals and retirement on annuity, and the Combined Annuitants Mortality Table. This projection has been made in five-year periods over a period of twenty-five years. It can not be expected that this projection will measure accurately the exact amount of annuity payments in each of the years shown as there are many factors which will influence the amount of these payments which can not be accurately predicted. We believe, however, that these calculations represent, to a fair degree, the expected trend of annuity payments, and within reasonable limits the actual amounts which can be anticipated. Results of this projection are as follows:

ANNUAL ANNUITY PAYMENTS

<u>Year</u>	<u>Men</u>		<u>Women</u>		<u>Total</u>	
	<u>No.</u>	<u>Amt.</u>	<u>No.</u>	<u>Amt.</u>	<u>No.</u>	<u>Amt.</u>
1943	158	\$150,975	38	\$ 29,834	196	\$180,809
1948	399	400,815	96	75,884	495	476,699
1953	505	507,744	158	124,346	663	632,090
1958	576	579,079	227	178,821	803	757,900
1963	595	598,378	290	229,069	885	827,447
1968	548	552,806	326	258,068	874	810,874

You will note that this projection forecasts a substantial increase in the amount of annuity payments over the next 20 years for men, and a slight decrease within the next 5 years. For women, the increase is continuous. This difference is due to the fact that by far the larger concentration of women is at the younger ages who will not be eligible for annuities for a considerable time; whereas, the men are concentrated largely between ages 40 and 60, who will consequently be eligible for annuities earlier than the women. This projection does not take into account any new entrants into the System, but covers only present active and retired members. The influx of new members in the future will, of course, produce additional annuity payments beginning about 25 years hence. We believe it reasonable to expect, therefore, that the level of annuity payments will rise rather steadily for the next 20 to 25 years, and about that period will reach a level in excess of \$800,000 annually, and remain constant at or about that level indefinitely thereafter, on the assumption that the number of members, and their age distribution will remain approximately the same as at present. It is obvious that the funds now held by the Association, together with revenues which can be anticipated on the present basis of contributions, will not be sufficient to meet the requirement for annuity payments as this requirement increases.

CONCLUSIONS

The first conclusion to be drawn from this investigation is that the Retirement Fund is actuarially insolvent. This conclusion is inescapable in view of the fact that the assets of the Association, as of June 30, 1943, were about \$1,300,000 less than the amount necessary to cover members' deposits which are subject to withdrawal, and the liability for future payments of annuities to those already retired, and in addition make no provision for the estimated \$4,350,000 contingent liability for deficiencies of contributions of present active members.

The provisions for contributions by members of the Association are inadequate as has been clearly demonstrated. No provision is made in the law for contribution by the governmental sub-divisions, by which members are employed, and if this position is to be continued, it is obvious that either members' contributions must be substantially increased, or the level of benefits substantially lowered.

The practice generally of public employee retirement systems is to provide for a joint contributory basis, calling for contributions from the employee and the employer. Normally, the employee contributes a percentage of salary, and the employer contributes amounts which in effect match the contributions of the employee, or make up the balance of the retirement allowance not provided for by the members' contribution. Where credit is allowed for service rendered prior to the organization of the Retirement System, liability for benefits granted for such service is, in most cases, made a liability of the employer.

The members themselves are not able to finance the cost of benefits from prior service, and the only logical conclusion is that the employer should finance such benefits if they are to be granted.

The only provision in the law which would make up the deficiencies in contributions is the provision for reduction of annuities where the amount of annuity payments exceeds the amount of contributions. This is a very undesirable provision as it offers no security to the retired member, and no guarantee that his annuity will be continued to him at the same level after he has retired from service. Under the present method of financing, however, there is only one alternative, which would be a provision that any deficiencies in the amount available for annuity payments should be made up by additional contribution by active members. Such a provision is obviously unfair as the active members would be required to contribute additional amounts from which they could never expect to receive any benefit.

The provisions for service credit appear reasonable and fair and generally in agreement with the practice among retirement systems. The provision for allowing a former employee, upon return to service, to repay amounts refunded on previous termination of annuity rights, is a provision used by many retirement systems but in some cases is not permitted. The chief difficulty with such a provision is that the returning employee often finds it very difficult, if not impossible, to repay the amount withdrawn.

The provision for refund of contributions on termination of service, is a common provision and one which has often been abused. Basically, the deposits made by members are for the purpose of providing a portion of the allowance provided at retirement. Some funds have taken the view that since such deposits are made for this purpose, they shall be used for no other purpose and therefore do not permit withdrawal of funds upon separation from service. The amounts deposited and the retirement rights acquired are continued for the benefit of the former employee, and a partial or proportionate benefit is granted when he reached retirement age.

The provision for payment of accumulations to heirs or legal representatives at the death of the member is in accord with general practice.

The provision for annuities on retirement is not entirely satisfactory from the standpoint of equity. A member with 20 years of service, who has reached 65, would get exactly the same annuity where the average salary is the same as another employee with 45 years of service and retiring at age 65, although he had contributed to the Fund for 25 years longer. Furthermore, there is no recognition of the difference in value of annuities granted at different ages which would make an annuity of the same amount have a considerably higher value; for instance, at age 60 than where retirement took place at age 70. From the standpoint of a reasonably adequate retirement allowance, however, the amounts provided are reasonably satisfactory.

The provision for an annual examination and audit by the public examiner is desirable as an independent check on the accounting transactions of the Fund. Such an examination, however, does not contemplate or attempt a check on the financial position of the Fund, taking into account all existing liabilities, both actual and contingent, or the adequacy of rates of contribution to provide promised benefits. Such information can be obtained only by an actuarial examination. There should be a requirement for an annual valuation of liabilities, on a basis approved by the Board, which should be made a part of the annual financial report. If such a provision had been included originally, the actuary making the valuations would have pointed out the deficiencies and inadequacies of the System, and corrective measures could have been taken before the situation reached its present stage.

We conclude, therefore, that in general the provisions under which the Retirement System operates are not unreasonable with regard to membership, service credit, refunds, and annuities, although some change may be indicated to improve these provisions in certain respects. It is obvious that the provisions for financing the system are inadequate, that the operation of the system has resulted in a substantial deficit, and if the system attempts to continue on the present basis of operation the results will be an increased deficit, reduction of annuities by retired members with no hope of restoration to their original amount, and an eventual abandonment of operation of the System.

It appears imperative that steps be taken immediately to correct the inadequacies of the System as it now exists. We do not believe it feasible to increase the contribution of employees to a level which would be adequate to provide the benefits now promised, nor do we favor reducing the benefits to the extent which would be necessary to make the present contributions adequate, as the resulting retirement allowance would be inadequate for the purpose for which the System was organized--that of furnishing reasonably adequate retirement benefits to members who are no longer able to continue efficiently in their positions. It appears advisable to make provisions for regular contributions by the governmental sub-divisions, or the state, or both, which will provide sufficient amounts to finance the portion of benefits not provided by the contributions of members; and that there should be included a provision which makes the responsibility for maintaining the adequacy of the System an obligation of the governmental sub-divisions, or the state, or both. This conclusion is obvious when we consider that any deficiencies which arise may be made up from only three sources; (1) from retired members by reduction of their annuities, (2) from active members by additional contributions, or (3) by the employer. The first of these is obviously undesirable as it reduces the income of the retired member, which he has been lead to expect will continue at the level on which it was granted, and which is none too adequate at best, at a time when he is unable to supplement his income by his own effort. The second alternative is also unsound as it provides for contributions from which the member can never expect to receive any benefit. It seems clear, therefore, that the responsibility, if any, should be an obligation of the employer. We believe that the contribution by the employer should be calculated, and paid over into the Fund currently with active service on the basis which will provide the entire amount necessary at retirement to pay the annuity based on current service, and that additional contributions should be made which will liquidate the employer's contingent liability for prior service over a period not to exceed 50 years. As an alternative, employers' contributions may be made in the year of retirement, sufficient to provide all the annuities granted in the current year. From the standpoint of the taxpayer, however, the previous method is ultimately less costly.

Provisions for benefits granted should be revised to provide a benefit based on the employee's contribution of the amount which the accumulation of members' deposits will purchase at retirement. Interest should be credited to members' deposits currently as earned by the invested funds of the Association, and the full accumulation should be applied to the purchase of an annuity. The benefit provided by the employer should either match the amount provided by members' deposits, plus an additional amount for prior service, or should be based on length of service alone, expressed as a percentage of average salary earned. As a suggestion, such a benefit might be computed as one-seventieth of average salary for each year of prior service, plus one one-hundred-fortieth of average salary for each year of contributory service with a maximum limit on the period of service credited for this purpose, and the maximum amount of annuity to be granted. There should be no maximum imposed on the amount purchased by members' deposits.

It is evident that substantially increased contributions from some source will be necessary in order for the Retirement Fund to meet its future obligations. We believe that the major portion of such increased contributions should come from the employer, either the governmental sub-divisions or the state, or both. There can be no question of the benefit to the employer in having a sound retirement system for its employees. The ability to retire employees from service who are no longer able to perform their duties efficiently, and the satisfaction and encouragement of the employee who is assured an adequate retirement allowance, make for better and more efficient employees, greater continuity of service, and tends to attract persons of greater ability to such service. Public employees are not now covered by the Federal Social Security Act, which attempts to provide a measure of security in old age to anyone covered by its terms. The establishing of retirement systems for public employees has become such a general practice that it is regarded as an obligation for the public employer to make adequate provision for employee retirement. The principles underlying this System are essentially for the good of public employers and employees within the state. Failure to provide adequate financing has jeopardized the continued operation of the System, and it is therefore a matter of vital concern that steps be taken immediately to correct this condition.

True and exact copy of the original from Minnesota State Legislative File.

Year 1944

E. D. Brown, Jr.
Consulting Actuary

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