# REPORT ON ACTUARIAL VALUATION OF THE LOS ANGELES CITY EMPLOYEES' RETIREMENT SYSTEM JUNE 30, 1980

TOWERS, PERRIN, FORSTER & CROSBY

ONE CENTURY PLAZA
LOS ANGELES, CALIFORNIA 90067

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February 10, 1981

Board of Administration City Employees' Retirement System Room 505, City Hall South 111 East First Street Los Angeles, California 90012

Members of the Board:

We are pleased to transmit herewith our Report setting forth the results of the valuation of your Retirement System as of June 30, 1980.

The valuation was based upon financial statements and employee data furnished by the Retirement Office.

We would like to take this opportunity to express our appreciation for the courtesy and cooperation accorded us by the Retirement Office during the course of our work.

Respectfully submitted,

TOWERS, PERRIN, FORSTER & CROSBY

Jon L. King, F.S.A

Principal

JLK/pp Enclosure

### REPORT ON

# ACTUARIAL INVESTIGATION AND VALUATION OF THE. LOS ANGELES CITY EMPLOYEES' RETIREMENT SYSTEM

JUNE 30, 1980

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# REPORT ON ACTUARIAL INVESTIGATION AND VALUATION OF THE LOS ANGELES CITY EMPLOYEES' RETIREMENT SYSTEM

### SECTION I

### INTRODUCTION

In accordance with our agreement with you and with the provision of the City Charter, we have completed an investigation into the mortality, service and compensation experience of members and beneficiaries under the System during the period July 1, 1977 through June 30, 1980. Upon the basis of the assumptions derived from this investigation and the rate of interest and salary increase that have been assumed, we have also completed an actuarial valuation of the assets and liabilities of the System as of June 30, 1980.

The Retirement Office furnished us with a magnetic tape containing detailed employee information on all active members of the System as of June 30, 1980 as well as information on all persons who have been members of the System but who had separated during the previous three years. We were also given a tape containing information on all members receiving retirement allowances as of June 30, 1980 and information on retired members who died during the previous year.

The following schedule shows a summary of the membership of the System as of June 30, 1980.

### SUMMARY OF MEMBERSHIP OF SYSTEM AS OF JUNE 30, 1980

### ACTIVE MEMBERS

			A	Average	
	Number	Annual Salary	Age	Monthly Salary	
Total 6-30-79	20,917	\$355,947,876	42	\$1,418	
Total 6-30-80	19,392	359,131,258	42	1,543	
Percent Increase	<b>-</b> 7 . 3%	0.9%		8.8%	

### **PENSIONERS**

	Number	Annual Allowance	Average Monthly Allowance
Total 6-30-79	6,502	\$ 42,369,216	543
Total 6-30-80	7,025	48,915,280	580
Percent Increase	8.0%	15.5%	6.8%

The Retirement Office also furnished us with an accounting balance sheet setting forth the assets and liabilities of the System as of June 30, 1980. No physical audit of these assets was made by us and our calculations are based upon the balance sheet as submitted.

### SECTION II

#### SUMMARY OF ACTUARIAL INVESTIGATION

In order to carry out an actuarial valuation of the assets and liabilities of the System, the actuary must first adopt assumptions with respect to the following items:

- 1. Interest earnings that will be realized on the funds over many years in the future.
- 2. The relative increases in the salary of a member from the date of the valuation to the date of separation from active service.
- 3. Increases in the cost-of-living index which would increase allowance payments to retired employees.
- 4. The mortality rates to be experienced among retired persons.
- 5. The probabilities of members separating from active service on account of withdrawal, death, disability, and service retirement.

We have examined the experience of the members of your Plans during the three-year period ending June 30, 1980. We set forth in the following paragraphs of this section a discussion of the above items. The Schedules in Section VI set forth the probabilities of separation from active service used in the current valuation.

### A. INTEREST EARNINGS, SALARY INCREASES, AND COST-OF-LIVING INCREASES

We would like to consider these three items together since their levels are all strongly influenced by the level of inflation. A variety of studies lead us to believe that interest earnings over long periods of time are equal to inflation plus a real return of about 3%. Other studies indicate that salary increases over long periods of time are equal to inflation plus merit or productivity increases. The financial effect of the merit increase can be approximated by an increase of about ½% to 1% per year. Conventional actuarial practice then leads us to believe that a "spread" of about 2% or 2½% between the interest and salary assumptions is proper. Despite recent experience, this spread has been shown to be plausible over long periods of history.

We concur with the Board's selection of  $7\frac{1}{2}\%$  as the interest earnings assumption. This interest assumption translates into a  $4\frac{1}{2}\%$  inflation assumption ( $7\frac{1}{2}\%$  less 3% real return). The above logic would then indicate the salary increase assumption should be 5% or  $5\frac{1}{2}\%$ . Therefore, with the Board's approval, we have assumed a  $5\frac{1}{2}\%$  annual salary increase assumption. Finally, since the inflation rate implied by these rates is well above the 3% cost-of-living "cap", we have assumed that future cost-of-living increases will be the full 3%.

### B. MORTALITY AFTER SERVICE RETIREMENT

During the last year there were 141 deaths among members on service retirement. Under the assumptions developed and used for the 1979 Report, one would have expected approximately 182 deaths. Normally one year's experience does not give sufficient statistical significance to justify a change in mortality assumption. However the recent mortality experience of the other public systems that we serve has uniformly indicated an improvement in mortality after service retirement. Since this same trend is indicated by the Los Angeles City data which is available, we have strengthened the System's mortality assumption to be the 1971 GAM Table with the male table set back two years and eight years for female members. A copy of the table (without setback) is included in Section VI.

### C. MORTALITY AFTER DISABILITY RETIREMENT

Eight deaths occurred among members during the last year and the mortality table currently in use "expected" 18 such deaths. However, the number of deaths contained in the study is statistically insignificant. In addition, we have recently contributed data to a "combined" postdisablement mortality study but the results are not yet available. For these two reasons we recommend that the question of a new mortality table for mortality after disability be deferred until the new table becomes available. The current rates for mortality after disability retirement are included in Section VI.

### D. RATES OF SEPARATION FROM ACTIVE SERVICE

The results of the investigation with respect to rates of separation from active service are summarized on the following page. As the summary indicates we have increased the withdrawal and service retirement assumptions.

The terminology used in the headings of the summary should be interpreted with caution. The "old" expected separations are based on the rates adopted for the June 30, 1977, 1978, and 1979 valuations. The "new" expected separations are based on the rates adopted for the current valuation. By "expected separation" we mean the number of terminations that would occur if the assumed probabilities (either "old" or "new") were applied to your actual work force over the last three years. "Expected separations" is not a prediction of what is expected over the next three years. It would only be a fairly accurate prediction if the sex, age, and service characteristics of the active group over the next three years are similar to those that existed over the previous three years.

### SUMMARY OF ACTUARIAL INVESTIGATION WITH RESPECT TO RATES OF SEPARATION FROM ACTIVE SERVICE

	Actual Separations	"Old" Expected Separations	"New" Expected Separations
WITHDRAWAL			
Males Members	5,349	2,513	3,864
Females Members	2,688	1,736	2,182
DEATHS*			
Male Members	155	186	186
Female Members	26	28	28
DISABILITY RETIREMENT			•
Male Members	75	98	98
Females Members	9	13	13
SERVICE RETIREMENT			
Male Members	1,247	984	1,247
Female Members	278	226	278

<sup>\*</sup> Includes Ordinary Death, Death While Eligible for Service Retirement, and Death While Eligible for Disability.

#### SECTION III

#### MEMBER CONTRIBUTIONS

Sections 4.1031 and 4.1040(C) of the retirement ordinance specify the basis for normal, survivor and cost-of-living member contribution rates. However, Los Angeles City also enters into collective bargaining agreements with its employees as to the level of member contributions. The resulting rates need not be those that would be indicated by the ordinance formulas and the current assumptions. In order to accurately reflect the existing situation in the current valuation, we have been directed by the Board of Retirement to assume that members will contribute at the employee contribution rates specified in the June 30, 1977 valuation report. Should certain members, through a collective bargaining agreement, contribute at a lower rate, the City should contribute 67.12% of the amount of contribution "forgiven" the member.

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A complete list of member contribution rates as given in the June 30, 1977

Valuation Report is also given in Section VI. The following table illustrates these rates:

Member	Rates of Contribution	Including 15%	% Factor for COL
<u>Age</u>	Normal (	<u>Continuance</u>	<u>Total</u>
20	8.20%	. 44%	8.64%
25	8.58	. 63	9.21
30	9.06	. 75	9.81
35	9.61	. 83	10.44
40	10.19	.91	11.10
45	10.76	. 97	11.73
. 50	11.34	1.03	12.37
55	11.85	1.09	12.94
59	12 19	1.14	13.33

These rates are generally about 10% higher than the contribution rates assumed in the previous valuation.

### SECTION IV

### RESULTS OF VALUATION

### Introduction

The purpose of the actuarial valuation is to analyze the financial condition of the System and to recommend any necessary changes in City contributions.

The calculations are based on the actuarial assumptions as discussed in Section II. The "Beta" Formula was applied to all active members.

### Entry Age Normal Funding Method

This method defines the Normal Cost as the level percent of salary necessary to fund the projected future benefits over the period from the date of participation to the date of retirement. The Normal Cost can be thought of as the City's level percent cost for a new entrant to the System. The supplemental Present Value is equal to the excess of total liabilities over the present value of future member contributions and the present value of future Normal Costs. The excess of the Supplemental Present Value over the assets is called the Unfunded Supplemental Present Value and is funded over a fixed period of years. This method is being used by the City of Los Angeles for most benefits. The Unfunded Supplemental Present Value is generally being amortized over the period ending June 30, 2004 by contributions that will increase in accordance with the salary scale, i.e., 5½% per year. Certain small liabilities are being amortized over shorter periods by level dollar amounts.

### Term Cost Basis

Under this method, the amount contributed in any one year is the present value of expected claims arising during the year. This method is being used to fund the Family Death Benefit. Traditionally, the required contribution has been reviewed biannually just after a valuation. We are now due for such a review and we will make arrangements with the Retirement Office for the additional data required.

Our valuation of the Retirement System as of June 30, 1980 was based upon the following accounting balance sheet furnished by the Retirement Office. As indicated earlier in this Report, this statement of assets of the System was accepted by us without audit.

### ACCOUNTING BALANCE SHEET

JUNE 30, 1980

' UNAUDITED

\$802,292,433.28

### ASSETS

C.	A	S	Η

Total Assets

In City Treasury Health Insurance Trust Fund On Hand Total Cash	\$ 2,296,945.80 29,244.29 200.00 \$ 2,326,390.09
RECEIVABLES:	
Accrued Interest Dividends Receivable Due From Other Funds Due on Securities Other Receivables Total Receivables	\$ 12,384,515.04 256,628.55 -0- 1,611,626.84 -0- \$ 14,252,770.43
INVESTMENTS:	
Temporary Short-Term @ Cost Bonds @ Par Premium on Bonds Discount on Bonds Stocks @ Cost Total Investments	\$ 87,461,767.46 611,433,004.10 2,368,906.38 (42,844,804.75) 127,294,399.57 \$785,713,272.76

### ACCOUNTING BALANCE SHEET

### JUNE 30, 1980

UNAUDITED

### LIABILITIES, RESERVES AND FUND BALANCE

CURRENT LIABILITIES	
Accrued Benefits Payable Accounts Payable Due Insurance Carriers Due on Securities	\$ 644,722.08 6,020,939.95 29,244.29
Total Current Liabilities	\$ 6,694,906.32
UNEARNED PREMIUM FROM SALE OF STOCK OPTIONS	\$ 3,089,329.70
RESERVES	. •
Actuarial:  Member Contributions Annuities  Prior Service Subsequent Service Cost of Living Family Death Benefit Insurance Total Actuarial Reserves	\$200,939,484.76 105,247,625.03 (741,751.05) 366,876,160.20 122,518,193.05 6,722,524.89 \$801,562,236.88
Others: Undistributed Earnings Gain/Loss on Equities Total Other Reserves	(224,110.02) (6,364,719.95) (6,588,829.97)
Total Reserves	\$794,973,406.91
FUND BALANCE	\$ (2,465,209.65)
Total Liabilities, Reserves and Fund Balance	\$802,292,433.28

An actuarial valuation of the Retirement System was made as of June 30, 1980 on the basis of the assumptions developed during the course of the June 30, 1980 investigation and upon a  $7\frac{1}{2}\%$  interest assumption, a  $5\frac{1}{4}\%$  salary increase assumption and a 3% future cost-of-living increase. The resulting values of assets and liabilities developed by the valuation are set forth in the following Actuarial Balance Sheet.

### ACTUARIAL BALANCE SHEET

### AS OF JUNE 30, 1980

### **ASSETS**

1.	Total Assets from Accounting Balance Sheet	\$	802,292,433

2. Present Value of Future Contributions of Members 278,636,032

- 3. Present Value of Future Contributions by the City on Account of:
  - a. Basic Pensions:

Normal Cost Amortization of Certain		s 98,706,609
Liabilities: -Prior Service Pensions -Increase due to 1965	s 7,589,743	
Amendments -Unfunded Supplemental	4,163,937	
Present Value	302,412,526	314,166,206

b. Cost-of-Living Pensions:

i. ii.	Normal Cost Amortization of Certain Liabilities:		52,464,158	
	-Increase due to 1967 Amendments -Unfunded Supplemental	16,948,553		
	Present Value	215,676,275	232,624,828	697,961,801

4. Total Assets <u>\$1,778,890,266</u>

### ACTUARIAL BALANCE SHEET

### AS OF JUNE 30, 1980

### LIABILITIES

5.	Current Liabilities		\$ 6,694,906
6.	Unearned Premium From Sale of Stock Options		3,089,330
7.	Present Value of Benefits Alre	ady Granted:	^
	<ul><li>a. Basic</li><li>b. Cost-of-Living</li></ul>	\$ 403,058,489 207,059,326	610,117,815
8.	Present Value of Benefits to b	e Granted:	
	<ul><li>a. Basic</li><li>b. Cost-of-Living</li></ul>	\$ 904,798,796 256,520,934	1,161,319,730
9.	Reserve for Gain or Loss on Eq	uities	(6,364,720)
10.	Undistributed Earnings Reserve		(224,110)
11.	Family Death Benefit Insurance	Reserve	6,722,525
12.	Fund Balance		(2,465,210)
13.	Total Liabilities		<u>s1,778,890,266</u>

### Comments on Actuarial Balance Sheet

The Actuarial Balance Sheet has been prepared in a condensed format and we have utilized some terminology that we hope will aid in its review and discussion.

"Cost-of-Living Pensions" are the postretirement increases provided by Section 510.1 of Article XXXIV of the City Charter, and related Ordinances.

"Basic Pensions" are all benefits other than "Cost-of-Living Pensions" and Family Death Benefits provided by Article XXXIV of the City Charter, and related Ordinances.

"Amortization of Certain Past Service Liabilities" refers to those liabilities of the System being amortized over fixed periods of time pursuant either to Charter, Ordinance or Board Authorization.

Items 5, 6, 9, 10, 11 and 12 were provided by the Retirement Office.

### The Traditional Funding Ratio

The schedule below compares the assets on hand with the present value of benefits earned to date. We have shown these figures for the current and previous valuations to acquaint you with the funding progress.

A funding ratio of over 100% would mean that monies had already been paid for benefits yet to be earned and this may not be appropriate in a public retirement system.

The present value of benefits earned to date is calculated on the basis of an ongoing system, i.e., reflecting all actuarial assumptions including future salary increases. Death and Disability benefits are prorated by years of service to normal retirement age. This is sometimes referred to as the "Plan Continuation Liability."

		<u>June 30, 1979</u> (Old Assumptions)	<u>June 30, 1980</u> (New Assumptions)
1.	Present Value of Benefits Earned to Valuation Date		,
•	(a) Basic Benefits	\$ 859,807,659	\$ 913,574,079
	(b) Cost-of-Living Benefits	325,422,426	351,691,595
	(c) Total	\$1,185,230,085	\$1,265,265,674
2.	Applicable Assets on Hand		
	(a) Basic Benefits	595,709,868	652,692,438
	(b) Cost-of-Living Benefits	115,112,731	142,147,274
	(c) Total	\$ 710,822,599	\$ 794,839,712
<b>3</b> .	Funding Ratio		
	(a) Basic Benefits	69%	71%
	(b) Cost-of-Living Benefits	35%	40%
	(c) Total	60%	63%

A large measure of the increase in the funding ratio is because of the change in assumptions.

### Vested Liability

We estimate that the liability for vested benefits as of June 30, 1980 amounts to \$1,239,000,000. At the request of the Retirement Board's Auditor, this calculation was done on the basis of projected salaries as described under "funding ratio." Applicable assets on hand amount to \$794,839,712. Thus, as of June 30, 1980, there was an excess of vested liability over applicable assets on hand amounting to \$444,160,288. It is to be noted that applicable assets on hand amount to 64% of the vested liability. The corresponding figure for June 30, 1979 was 61%.

Again, the change in assumptions was the primary factor in increasing the ratio of assets to vested liabilities.

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### Other Measures of Funding Progress

In evaluating the funding progress of a retirement system, there are several measures which can be used. In this year's Valuation Report we would like to introduce two funding measures not previously presented in our Valuation Reports. The first new funding measure is the "present value of accumulated benefits" as defined by the Financial Accounting Standards Board (FASB) Opinion No. 35. The second new funding measure is the "Quick Liability." We will also take this opportunity to review the funding measures which have previously been used.

The first measure of funding progress is to compare the change in the unfunded liability from one year to another. Last year the unfunded liability was \$566,374,062. This year the unfunded liability decreased to \$546,791,034. This decrease was largely due to the change in assumptions.

We believe that the comparison of unfunded liabilities is by itself an unsound measure of funding progress. The main reason is that the unfunded liability itself is heavily dependent on the particular funding method used and, in particular, the definition of normal cost. Thus, we recommend considering other measures of funding progress which are independent of the funding method.

The next measure of funding progress has already been presented in this Valuation Report as the "traditional funding ratio." This approach features the calculation of the "present value of benefits earned to the valuation date." This liability is an accrued liability (i.e., excluding future service) but on an "ongoing basis" (i.e., including future salary increases). In addition this liability is independent of the funding method. We have already shown that assets as a percentage of this liability increased from 60% last year to 63% this year. This increase was again largely due to the change in assumptions.

Another measure of funding progress has recently been introduced by the Financial Accounting Standards Board (FASB) in its Opinion No. 35. The FASB has decided that if the Plan's financial statement is to be compiled in accordance with generally accepted accounting principles (GAAP) the statement must contain the "present value of accumulated benefits" determined in accordance with FASB No. 35.

FASB No. 35 requires a straightforward determination of the present value of accrued benefits similar to our traditional approach. However, they require one change to the definition used in the "traditional" approach, namely, no projection of future salary increases is made. Thus, while the "traditional" accrued liability is calculated on the basis of an ongoing system, the FASB accrued liability is more appropriate if no future salary increases were made. Using the FASB approach we have determined the following:

		<u>June 30, 1979</u>	<u>June 30, 1980</u>
(1)	Present Value of Accrued Benefits	N/A	\$1,106,046,794
(2)	Assets	N/A	794,839,712
(3)	Percent Funded (2) ÷ (1)	N/A	71.86%

The above results are based on the actuarial assumptions as described in Section II including an interest rate of 7½%. Since the book value of the assets is used by the System and since market value is specified to be used in the above comparison by the FASB, it would probably be appropriate to use a higher interest rate more in line with today's market condition in determining a FASB "present value of accumulated benefits" if you were using market values for your value of assets.

A final simple measure of a plan's condition is to compare the liability for members who are no longer actively employed plus member deposits of those still actively engaged in providing services versus accumulated assets. We have termed this liability as the "Quick Liability" and the comparison to assets is as follows:

		<u>June 30, 1980</u>
(1)	Liability for Retired and Vested Terminations	\$ 610,117,815
(2)	Accumulated Active Member Deposits with Interest	197,634,464
(3)	Total (1) + (2)	807,752,279
(4)	Assets	794,839,712

In a well funded System the assets should at least exceed the liability for members no longer providing services plus the active members' "own" money.

To summarize there are two basic considerations in contemplating the funding status of a system. The first is how much assets have been accumulated to pay benefits and how they compare to the current liability for benefits already earned. The various funding measures presented above are intended to evaluate this aspect of funding. However, the second consideration is normally more important: what is the financial commitment of the plan sponsor to continue to fund both benefits earned to date and benefits to be earned in the future, and does the plan sponsor have the financial resources to meet future budgetary obligations? Both the contribution levels and duration we recommend are discussed in the next section.

### SECTION V

### RECOMMENDATIONS

Based on the actuarial valuation of the Retirement System as of June 30, 1980, we respectfully submit the following recommendations in accordance with the provisions of Article XXXIV of the City Charter and related ordinances.

Based on the entry age normal cost funding method and upon the assumption that all members will contribute on the basis of the full rates recommended in Section II, we recommend that the City contributions for the fiscal year 1981-82 be made up as follows:

		Contributions -1982	
	Percentage of Salary		Fixed Dollar Amount
a. For Basic Pensions:	•		
i. Normal Cost	3.50%		main minin minin
ii. Prior Service-Minimum Pensions (Charter-Period ending June 30, 1997)			\$ 804,513
iii. Increase due to 1965 Amendments (Charter-Period Ending June 30, 1990)			606,627
iv. Unfunded Supplemental Present Value	4.52%		
v. Total Basic Pensions:	8.02%		\$1,411,140

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		Recommended City Contribution For 1981-1982		
		Percentage of Salary	Fixed Dollar plus <u>Amount</u>	
Ь.	For Cost-of-Living Pensions:			
	i. Normal Cost	1.86%		
	ii. Increase due to 1967 Amendment (Charter-Period ending June 30, 1997)	•	\$1,796,547	
	iii. Unfunded Supplemental Present Value (Period ending June 30, 2004)	3.23%		
	iv. Total Cost-of-Living Pensions	5.09%	\$1,796,547	
С.	Total Basic and Cost-of-Living Pensions	13.11%	\$3,207,687	
d.	For Family Death Benefits:			

The following table compares present City Percentage of Salary Contribution rates with those proposed.

Benefit Insurance Plan.

\$5.14\* per month for each participating member in the Family Death

	<u>lity Percentag</u>	e of Salary	Contributions
	Present	Proposed	<u>Ratio</u>
Basic Benefits	9.16%	8.02%	88%
Cost-of-Living Benefits	5.45	5.09	93
Total	14.61	13.11	90

The primary reason for the decrease in the recommended rates is the increase in the member contribution rates. However, the new assumptions probably accounted for roughly one-third of the decrease.

\* Subject to a pending review of the adequacy of this contribution rate.

The new ordinance that became effective in October of 1975 permits the City to "subsidize" a portion of employee contributions. Since the portion that will be subsidized by the City will not be refunded to the member upon his termination of employment prior to retirement, the City does not have to pay into the System the total amount of employee contributions that it subsidizes.

Based upon the actuarial valuation carried out as of June 30, 1980, we recommend that the City contribute to the System 67.12% of the employee contribution it subsidizes, i.e., for each \$10,000 the City subsidizes, the City should contribute \$6,712 to the System. We note the amount the City subsidizes is the difference between the members actual contributions and the amount of contributions if they contributed at the levels shown in Section VI.

We believe that if the recommendations contained herein are adopted, the System will be maintained on a sound basis in accordance with the actuarial assumptions and funding methods underlying the calculations.

### SECTION VI

### STATISTICAL INFORMATION

0	Mortal	ity	after	Service	Retirement
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- o Mortality after Disability Retirement
- o Probability of Occurrence (of Decrements from Active Service)

  Male

Female

- o Member Contribution Rates
- o Distribution of Active Members by Age and Service
- o Distribution of Pensioners by Age and Year of Retirement
- o Summary of Major Plan Provisions

### EXPECTATION OF LIFE

### $\frac{1971 \text{ Group Annuity}}{(x-0)(x-6)}$

<u>Age</u>	Male	<u>Female</u>
15	60.13 years	65.97 years
20	55.26	61.10
25	50.40	56.23
30	45.57	51.37
35	40.76	46.53
40	36.01	41.72
45	31.36	36.96
46 47 48 49 50	30.45 29.55 28.66 27.78 26.91	36.01 35.07 34.13 33.20 32.28
51 52 53 54 55	26.05 25.20 24.36 23.53 22.71	31.36 30.45 29.55 28.66 27.78
56 57 58 59 60	21.90 21.10 20.31 19.53 18.76	26.91 26.05 25.20 24.36 23.53
61 62 63 64 65	18.00 17.26 16.53 15.81 15.11	22.71 21.90 21.10 20.31 19.53
66 67 68 69 70	14.43 13.77 13.13 12.50 11.91	18:76 18:00 17:26 16:53 15:81

<sup>\*</sup> This table was used with a two-year age setback.

### EXPECTATION OF LIFE

### $\frac{1971 \text{ Group Annuity}}{(x-0)(x-6)}$

Age	<u>Male</u>	<u>Female</u>
71	11.33 years	15.11 years
72	10.79	14.43
73	10.26	13.77
74	9.74	13.13
75	9.24	12.50
76	8.76	11.91
77	8.28	11.33
78	7.83	10.79
79	7.41	10.26
80	7.00	9.74
81	6.63	9.24
82	6.27	8.76
83	5.94	8.28
84	5.63	7.83
85	5.34	7.41
86	5.06	7.00
87	4.80	6.63
88	4.55	6.27
89	4.31	5.94
90	4.08	5.63
91	3.87	5.34
92	3.66	5.06
93	3.46	4.80
94	3.26	4.55
95	3.07	4.31
96	2.89	4.08
97	2.71	3.87
98	2.54	3.66
99	2.37	3.46
100	2.20	3.26
101	2.04	3.07
102	1.88	2.89
103	1.72	2.71
104	1.55	2.54
105	1.38	2.37
106	1.21	2.20
107	1.04	2.04
108	.88	1.88
109	.71	1.72
110	.50	1.55

<sup>\*</sup> This table was used with a two-year age setback.

# EXPECTATION OF LIFE 1973 DISABILITY

Age		<u>Age</u>		<u>Age</u>	
20	33.87	50	18.50	80	6.35
21	33.37	51	18.06	81	6.02
22	32.86	52	17.61	82	5.70
23	32.34	53	17.18	83	5.39
24	31.82	54	16.75	84	5.11
25	31.29	55	16.32	85	4.84
26	30.76	56	15.90	86	4.59
27	30.22	57	15.48	87	4.35
28	29.67	58	15.07	88	4.12
29	29.13	59	14.66	89	3.90
30	28.58	60	14.25	90	3.70
31	28.03	61	13.84	91	3.50
32	27.48	62	13.44	92	3.31
33	26.94	63	13.03	93	3.12
34	26.40	64	12.62	94	2.95
35	25.87	65	12.22	95	2.77
36	25.34	66	11.81	96	2.61
37	24.82	67	11.40	97	2.44
38	24.30	68	10.99	98	2.28
39	23.78	69	10.58	99	2.13
40	23.27	70	10.17	100	1.98
41	22.77	71	9.77	101	1.83
42	22.28	72	9.36	102	1.68
43	21.78	73	8.95	103	1.53
44	21.30	74	8.55	104	1.38
45 46 47 48 49	20.82 20.34 19.88 19.41 18.96	75 76 77 78 79	8.15 7.77 7.40 7.04 6.69	105 106 107 108 109	1.22 1.05 .92 .75

### LCS ANDRES CITY EMPLOYEES MALE GENERAL MEMBERS PROBABILITY OF OCCURRENCE CINCLUDING SLIGINILITY)

NEARCST	CRCIMARY WITHHRAW	VESTID WITHORAN	CREINARY EEATH	GREIN FRY GISABLIY	SETVICE RETIRE	SERVICE DISAULTY	SERVICE DEATH	ONE SVC RET	DIS REI
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29	1.167.		4.18.16	0.3001	t •	•	9.4	() •	i .
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3.1	9.1280	u • ·	0.638	0.003	3.	13 . 3	3.	II •	
32	0.115:	" <b>.</b> r	9 انز	6.0004	ð •:	. • 1	9 . (	ti •	C al
33	9.1081	13.0		0.0005	1.0	11 . 1	11 - 1	<b>3</b> •	9.
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42	510	: • r		6.0117	0.7	( • 1	9.7	ÿ •:'	') •:
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4.4	1. 42	•	0.0724	0.918	3 • .	1.1	0.0	υ. ύ.	(.
45	G • 481	• • :	26	0.1420	Ú • 4	 	9 . 7	0.9	C •:
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<u>c.</u>	1. 31		1.0(11	0.0531	0.603		B • · J		
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÷ 6	a • 57.	`• <u>;</u>	.0.143	0.0142	0.2819	r••1 	i' •	0.0020	
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58	0.18	1. • 1	1.0053	0.4(50	0.0964	•13	ù •1Ì	0 - 11 ii 36	V ••
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6.2	e . 1	'' •	.3 132	0.0 61	0.1353	6.5	; • J	0.0.54	Ç •
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(· 4	i. 3.	• 1	1.31	0 - 1 -67	0.197	2.03	0.0	U 66	<u>0</u> • .
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6.7	* •	• 6	.0135	ŋ • '`	2.203	. • 6	C • 1	9. 9.	li • i
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1.		43 🛖 "	. 1	· ·	1.00	. • 9	r • u	THOUSE AT	V. RS. PERRIN, FORSTER

## LOS ANGELES CITY EMPLOYEES FEMALE GENERAL NEMBERS PECHABILITY OF OCCURRENCE (INCLUDING ELIGIBILITY)

	SGE LEAREST	CPDINARY WITHOPAW	VISTED ULTHERAN	CREINARY	CRDINARY	SERVICE RETIRE	SCRVICE DISAULTY	SERVICE DEATH	OVE SVC RET	DWE DIS RET
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	;	0.2115	19 🛖 1	"•1: 2	d • 11	1] .	<b>4.</b> • T	2.1	ď .	0 •
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	. 1	2 . 1 at	_	1.003	0 • ;-	C • "	٦. ٢	3.5	a.	C -t
1	āU.	.173	•	• : 4	6 . i	Ü • 11	P .	€ • 1	<b>0</b> • .	C at
1	⊋ 5	1.1671		• 2 9	0.3	û •a .	B • 5	4.1	J • '	Ĺ •;
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- 1	31	.1 36:	• 1	•0· 7	0.0001	9.1	• *	12 • 1	U • •	ÿ •:
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	·	). 35		11 28	0.1032	0.0179	• • •	r.1	0	t •
- 1	34	33		60 10	0.0036	0.0230	r.r	i • '	0.	r.
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	27	5. 21	. 1	.: 33	0.2540	0.1513	i. • 5	r .	5 m 1	<b>⊌</b> •
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1	52	2.1	· 🛂	.v 58	1.	3.15	512	f • "	ն •	₹ 🐷
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ı	6.4	a • · · 7 ·	• i	.73	٠ را	9.2150	> 4.3	€ •1"	ti •	. t.
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	+ 6	•	•	. 1.5	J •	0.2911	3 ± 6	9.	6 • .	<b>l</b> * • ¹
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	69		•	157	7.1	0.35	. • 2	5. ·	C •	C •1.
	r		•		6.0	1.0000	• • 9	`: • !	rainer at	C = C ERS PEIGRIN FORSTER & CRUXIBY
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### APPLICABLE TO MEMBERS COVERED UNDER "BETA" FORMULA

### 115% NORMAL CONTRIBUTION RATES

<u>Age</u>	"Normal" Contribution Rate	<u>Age</u>	"Normal" Contribution Rata
16 17 18 19	8.00% 8.04% 8.08% 8.14%	40 41 42 43 44	10.19% 10.29% 10.41% 10.52% 10.64%
20 21 22 23 24	8.20% 8.27% 8.34% 8.42% 8.50%	45 46 47 48 49	10.76% 10.89% 11.01% 11.12% 11.24%
25 26 27 28 29	8.58% 8.66% 8.75% 8.36% 8.96%	50 51 52 53 54	11.34% 11.44% 11.55% 11.55%
30 31 32 33 34	9.06% 9.17% 9.23% 9.40% 9.50%	55 56 57 58 59	11.85% 11.94% 12.03% 12.11% 12.19%
35 36 37 38 39	9.61% 9.73% 9.84% 9.96% 10.07%		

71 GAM 5-3/4% 3-1/2% S/S

### APPLICABLE TO MEMBERS COVERED UNDER "BETA" FORMULA

### 115% SURVIVOR CONTRIBUTION RATES

<u>Age</u>	"Survivor" Contribution Rates	<u>Aqe</u>	"Survivor" Contribution Rates
16 17 18 19	. 22% . 28 . 33 . 39	45 46 47 48 49	.97% .98 .99 1.00 1.01
20 21 22 23 24	. 44 . 48 . 53 . 56 . 60	50 51 52 53	1.03 1.05 1.06 1.07 1.08
25 26 27 29 29	.63 .66 .68 .70 .72	55 56 57 58	1.09 1.10 1.12 1.13 1.14
30 31 32 33 34	.75 .77 .79 .31 .32	59 and Over	, 1.1÷
35 36 37 38 39	.83 .85 .36 .37 .90		
40 41 42 43 44	.91 .92 .93 .94 .95		

71 GAM 5-3/4% 3-1/2% S/S

### APPLICABLE TO MEMBERS COVERED UNDER "SETA" FORMULA

### 115% NORMAL PLUS SURVIVOR CONTRIBUTION RATES

### Applicable Only to Employees Whose Normal and Survivor Contribution Rates are Assigned by the Same Age

<u>Age</u>	Total		Total
	<u>Contribution Rate</u>	<u>Аде</u>	Contribution Rate
16 17 18 19	8.22% 8.32 8.41 8.53	40 41 42 43 44	11.10% 11.21 11.34 11.45 11.59
20	8.64	45	11.73
21	8.75	46	11.87
22	8.87	47	12.00
23	8.98	48	12.12
24	9.10	49	12.25
25	9.21	50	12.37
26	9.32	51	12.49
27	9.43	52	12.61
23	9.56	53	12.72
29	9.68	54	12.33
30	9.81	55	12.94
31	9.94	56	13.04
32	10.07	57	13.15
33	10.21	58	13.24
34	10.32	59	13.53
35 36 37 38 39	10.44 10.58 10.70 10.83 10.97		

71 GAM 5-3/4% 3-1/2% S/S

### AGE/SERVICE DISTRIBUTION TOTAL MEMBERS

AGE		0-1	1-2	2-3	3-4	4-5	** SER\ 5-9 ****	/ICE ## 10-14 ######	15-19 ****	20-24	25-29 #######	30-34	35 <b>-</b> *****	TOTAL
15-19	*NO. #	109	1	()	0	0	0	0	0	0	0	0	0	110
	*IOI.AMI*	1124684	9709	0	0	0	0	0	0	0	0	0	0	1134393
	AVE.AMI*	10318	9709	0	0	0	0	0	0	0	0	0	0	10313
20-24	*NO.	577 6620206 11473	77 903368 11732	149 1734143 11639	42 517406 12319	19 239254 12592	50 655316 13106	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	914 10669693 . 11674
25-29	#NO. #	665	151	352	152	125	895	64	0	0	0	0	0	2404
	#TOT.AMT#	8823171	2199263	5283433	2257998	1881236	13287666	983059	0	0	0	0	0	34715826
	AVE.AMT#	13268	14565	15010	14855	15050	14847	15360	0	0	0	0	0	14441
30-34	*NO.	446 65 19208 14617	133 2071329 15574	325 5452078 16776	149 281 1672 18870	134 2617924 19537	1334 24656144 18483	537 9604111 17885	20 353802 17690	0 0 0	0 0 0	0 0 0	0 0 0	3078 54086268 17572
35-39	*NO. *	238	71	161	80	73	830	833	210	11	0	0	0	2507
	*TOT.AMT*	3573124	1312754	2848082	1603781	1464545	16115615	17290923	4196679	200380	0	0	0	48605883
	AVE.AMT*	15013	18489	17690	20047	20062	19416	20757	19984	18216	0	0	0	19388
110-111	#NO. #	158	44	. 99	49	67	536	658	375	185	8	. 0	0	2179
	#TOT.AMT#	2505688	734331	1693784	874251	1331134	10341872	13133972	8082012	3782150	186872	0	0	42666066
	AVE.AMT#	15859	16689	17109	17842	19868	19295	19960	21552	20444	23359	0	0	19581
45-49	*NO. #	102	29	83	47	37	376	4198	371	450	112	3	0	2108
	*IOT.AMT*	1558432	524492	1400643	958549	805904	6961497	9305018	8022065	10018814	2447245	61135	0	42063794
	AVE.AMF*	15279	18086	16875	20395	21781	18515	18685	21623	22264	21850	20378	0	19954
50-54	*NO.	89 1506944 16932	37 674052 18218	65 1074671 16533	1 <sub>1</sub> 9 927178 18922	46 956523 20794	348 6508750 18703	392 7527179 19202	336 6895841 20523	471 10127178 21501	318 7244944 22783	123 3065287 24921	3 90743 30248	3277 46599290 20465
55-59	*NO.	58 943421 16266	13 248716 19132	70 1188737 16982	28 537771 19206	32 669206 20913	339 6506262 19193	367 6962893 18972	298 6021758 20207	385 7957716 20669	299 6849488 22908	287 7401318 25789	17 416111 24477	2193 45703397 20841
60-64	#NO. #	16	11	30	15	26	206	232	194	189	133	136	17	1205
	#10T.AMI#	352752	200842	513591	305069	501473	3990413	431 1202	3973193	3639701	2801921	3416408	455333	24461898
	AVE.AMT#	22047	18258	17120	20338	19287	19371	18583	20480	19258	21067	25121	267811	20300
65-	"NO. #	5	2	7	6	4	81	78	75	62	39	1 <sub>1</sub> 9	9	417
	"TOT.AMT"	185348	33929	154070	102269	66940	1638163	1473247	1536390	1209865	754210	1078813	191506	8424750
	AVE.AMT"	37070	16965	22010	17045	16735	20224	18888	20485	19514	19339	22017	21278	20203
TOTAL	#NO. #	2463	569	1341	617	563	4995	3659	1879	1753	909	598	46	19392
	#TOT.AMT#	33712978	8912785	21343232	10895944	10534139	90661698	70591604	39081740	36935804	20284680	15022961	11536933	59131258
	AVE.AMT#	13688	15664	15916	17660	18711	18150	19293	20799	21070	22315	25122	25080	18520

AVERAGE AGE # 42.0 # AVERAGE SERVICE # 10.3 #

#### DISTRIBUTION OF PENSIONERS BY YEAR OF RETIREMENT AND BY ATTAINED AGE AS OF 6/80

#### TOTAL OF ALL MEMBERS

	** YEAR OF RETIREMENT **																							
ATTAINED AGE ******	PRE '60 ###	'60 ###	'61 ###	'62 ###	'63 ###	'64 ###	<b>'</b> 65 ###	'66 ###	'67 ###	¹68 ###	'69 ###	'70 ###	'71 ***	'72 ###	'73 ###	'74 ***	¹75 ###	'76 ###	'77 ###	'78 ###	'79 ***	TOTAL ****	AVG AMT ****	
0- 29	4	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	6	12	3654	
30- 34	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	2	1	6	1	13	4260	
35- 39	0	0	0	0	0	0	0	0	1	0	0	0	1	2	0	6	7	11	5	9	1	36	4299	
40- 44	0	0	0	0	0	0	0	0	1	0	1	3	Lį.	3	5	2	6	10	8	15	10	68	5057	
45- 49	0	0	0	0	0	0	1	0	3	0	1	1.	7	3	lţ	4	10	12	9	7	6	68	4630	
50- 54	1	0	0	1	0	0	0	2	2	0	2	£\$	11	13	12	13	15	21	27	30	15	169	5557	
55- 59	Lį	0	2	1	3	2	1	6	5	6	3	6	17	10	15	25	39	64	114	190	158	671	8630	
60- 64	8	1	3	1	7	3	1	5	14	12	13	14	38	56	68	89	135	178	184	231	190	1251	8894	
65- 69	8	2	6	7	6	1	21	22	45	42	47	45	65	78	129	111	167	194	164	155	110	1425	7733	
70- 74	27	10	20	20	<i>l</i> į <i>t</i> į	25	43	67	74	64	77	67	89	102	144	95	132	83	47	38	26	1294	6617	
75- 79	96	36	28	112	67	42	78	56	76	75	45	57	73	56	65	26	16	I.	0	1	0	939	5724	
80- 84	179	39	43	50	51	28	92	50	46	118	25	15	2	2	3	0.	0	0	0	1	0	674	5032	
85- 89	151	27	34	25	37	28	9	1	2	2	1	0	1	0	1	0	0	0	0	0	0	319	4668	
90- 94	65	2	1	0	2	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	73	3498	
95- 99	12	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	. 0	0	. 0	0	13	4060	
100-104	0	0	0	0	0	0	0	0	O	0	0	0	0	0	0	0	.0	0	0	0	0	Ö	0	
105-999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOT NUM	555	117	138	147	217	129	248	210	269	250	215	212	308	327	447	371	528	572	559	683	523	7025		
AVG AMT	3628	4388	4532	4779	4670	4420	5668	5129	5320	5492	5193	5298	5810	5871	7636	7255	8437	9252	8867	9187	9863			

<sup>#</sup> AVG AMT # 6963

<sup>#</sup> TOT.PEN. 48915280 #

# LOS ANGELES CITY EMPLOYEES' RETIREMENT SYSTEM SUMMARY OF MAJOR PLAN PROVISIONS

### 1. Membership Requirements

First of month following employment.

### 2. Final Monthly Compensation

Highest 12-month average salary.

### Service Retirement

### A. Eligibility

10 years of service and age 55, or 30 years of service any age, or age 70.

### B. Allowance

"Beta" Formula - 2.16% of Final Monthly Compensation for each year of service (reduced if retirement prior to age 60).

Prior Formula - 2% of Final Monthly Compensation for each year of service (reduced if retirement prior to age 58-3/4).

### C. Form of Payment

Monthly allowance payable for life with 50% continuance to eligible spouse. Larger continuance available as option with reduced allowance.

### 4. Disability Retirement

### A. Eligibility

Five or more years of continuous service and physically or mentally incapacitated so that unable to perform duties of position.

### B. Allowance

1/70 of Final Monthly Compensation for each year of continuous service. If service is less than 23-1/3 years, then service is projected to retirement, with a maximum total service (actual plus projected) of 23-1/3 years.

### C. Form of Payment

Monthly allowance payable for life, with 50% continuance to eligible surviving spouse if employee had that coverage at time of retirement.

### 5. Deferred Service Retirement

### A. Eligibility

Terminate City service with 5 or more years of retirement credit, apply in writing within 3 years after termination, and agree to leave accumulated contributions on deposit.

Application required for retirement at any time after attaining age 55 provided at least 10 years have elapsed when employee first became a member, or at age 70 without any elapsed time requirement.

- 5. Deferred Service Retirement (continued)
  - B. Allowance

Same as Service Retirement.

C. Form of Payment

Same as Service Retirement.

- 6. Death prior to Retirement
  - A. Not Eligible to Retire

The sum of

- i. accumulated contributions,
- ii. a monthly pension to the surviving spouse, minor children, or dependent parents of the deceased member, payable for a period equal to 2 months times the number of completed years of service credit to a maximum period of 12 months at the rate of 1/2 of the average monthly salary for the year prior to death, and
- iii. if deceased member was a qualified member of the Family

  Death Benefit Insurance Plan, such benefits as are payable

  under that Plan.

- B. <u>Eligibility for Disability Retirement or Duty Related Death</u>
  The sum of the following:
  - i. 60% of the allowance the member would have received had he been granted a disability retirement allowance the day before he died, payable for the lifetime of the member's surviving spouse, and
  - ii. if the deceased member was a qualified member of the Family Death Benefit Insurance Plan, such benefits as are payable under the Plan.

### C. Eligible for Retirement

Surviving spouse receives a lifetime survivorship allowance based upon an actuarially computed percentage of the retirement allowance the member would have been entitled to had he been granted an Option 1 service retirement the day before he died. Benefits under the Family Death Benefit Insurance Plan, if any, are not payable. The surviving spouse may elect A or B above in lieu of C.

### 7. Death After Retirement

- A. 50% continuance to surviving eligible spouse, if covered under the plan.
- B. Upon the death of both the member and surviving spouse, designated beneficiary receives any unused contributions which may remain (provided the normal cash refund annuity was selected) and any accrued but unpaid retirement allowance due at time of death.
- C. \$500 death benefit paid to designated beneficiary of deceased member for assumption of obligation to pay expense of burial.

### 8. Postretirement Cost-of-Living Benefits

As of each July 1 benefits being paid increased (proportionately if paid less than 12 months) by increase in Consumer Price Index (to a maximum of 3%). Increases in CPI above 3% are "banked" to apply in years when CPI increase is less than 3%.

### 9. Employee Contributions

For purposes of this valuation each member is assumed to contribute to the System at the rates as specified previously in the Section. These rates were recommended in our 1977 valuation and adopted through union negotiations; these rates are being phased in and were assumed to be totally effective after June 30, 1981. To the extent that members contribute less than the full rates the City should make compensating contributions as discussed in Section V. Contribution rates for members not covered by the "BETA" formula are 8% less than the rates for members covered by the BETA formula.

### 10. Family Death Benefit Insurance Plan

### A. Eligibility

Employee may <u>elect</u> coverage after 18 months of City retirement service credit.

### B. Benefits

Benefits similar to those provided by Survivors Insurance under Social Security payable if member dies in active service after 18 months of Plan membership.

### C. Cost

Member and City share cost of Plan (currently \$5.14 per month contribution for each).