Contra Costa County Employees' Retirement Association

ACTUARIAL EXPERIENCE STUDY

Analysis of Actuarial Experience During the Period January 1, 2007 through December 31, 2009

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July 6, 2010

Board of Retirement Contra Costa County Employees' Retirement Association 1355 Willow Way, Suite 221 Concord, CA 94520

Re: Review of Non-economic Actuarial Assumptions for the December 31, 2009 Actuarial Valuation

Dear Members of the Board:

We are pleased to submit this report of our review of the actuarial experience of the Contra Costa County Employees' Retirement Association. This study utilizes the census data of the last four actuarial valuations and includes the proposed actuarial assumptions to be used in future actuarial valuations starting with the December 31, 2009 actuarial valuation.

Please note that we have also reviewed the economic assumptions. The economic actuarial assumption recommendations for the December 31, 2009 valuation were provided in a separate report issued on March 2, 2010.

We are Members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein.

We look forward to reviewing this report with you and answering any questions you may have.

Sincerely,

Paul Cryla

Paul Angelo, FSA, EA, MAAA, FCA Senior Vice President and Actuary

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I. INTRODUCTION, SUMMARY, AND RECOMMENDATIONS

To project the cost and liabilities of the pension fund, assumptions are made about all future events that could affect the amount and timing of the benefits to be paid and the assets to be accumulated. Each year actual experience is compared against the projected experience, and to the extent there are differences, the future contribution requirement is adjusted.

If assumptions are modified, contribution requirements are adjusted to take into account a change in the projected experience in all future years. There is a great difference in both philosophy and cost impact between recognizing the actuarial deviations as they occur annually and changing the actuarial assumptions. Taking into account one year's gains or losses without making a change in the assumptions means that that year's experience was temporary and that, over the long run, experience will return to what was originally assumed. Changing assumptions reflects a basic change in thinking about the future, and it has a much greater effect on the current contribution requirements than recognizing gains or losses as they occur.

The use of realistic actuarial assumptions is important in maintaining adequate funding, while paying promised benefit amounts to participants already retired and to those near retirement. The actuarial assumptions used do not determine the "actual cost" of the plan. The actual cost is determined solely by the benefits and administrative expenses paid out, offset by investment income received. However, it is desirable to estimate as closely as possible what the actual cost will be so as to permit an orderly method for setting aside contributions today to provide benefits in the future, and to maintain equity among generations of participants and taxpayers.

This study was undertaken in order to review the demographic actuarial assumptions and to compare the actual experience with that expected under the current assumptions during the three year experience period from January 1, 2007 through December 31, 2009. The study was performed in accordance with Actuarial Standard of Practice (ASOP) No. 35, "Selection of Demographic and Other Non-economic Assumptions for Measuring Pension Obligations" and ASOP No. 27 "Selection of Economic Assumptions for Measuring Pension Obligations." These Standards of Practice put forth guidelines for the selection of the various actuarial assumptions utilized in a pension plan actuarial valuation. Based on the study's results and expected near-term experience, we are recommending various changes in the current actuarial assumptions.

We are recommending changes in the assumptions for retirement from active employment, pre-retirement mortality, healthy life mortality, disabled life mortality, turnover, disability (ordinary and duty), salary increases, and terminal pay. We are also recommending the Board consider a change to the actuarial cost method.

Our recommendations for the actuarial assumption categories are as follows:

Ref: Pg. 5 **Retirement Rates** - The probability of retirement at each age at which participants are eligible to retire.

Recommendation: Adjust the current retirement rates to those developed in Section III(B). Enhanced members are assumed to retire at slightly later ages overall. For Non-enhanced members the current rates were left unchanged.

Ref: Pg. 17 Mortality Rates - The probability of dying at each age. Mortality rates are used to project life expectancies.

Recommendation: The pre- and post-retirement mortality rates for non-disabled females were left unchanged. All other pre- and post-retirement mortality rates for General and Safety members have been decreased as developed in Sections III(C) and III(D).

Ref: Pg. 28 Termination Rates - The probability of leaving employment at each age and receiving either a refund of contributions or a deferred vested retirement benefit.
 Recommendation: Change the termination rates for both General and Safety members to those developed in Section III(E). Overall, the termination rates have been decreased.

- Ref: Pg. 37 Disability Incidence Rates The probability of becoming disabled at each age.
 Recommendation: Decrease the current disability rates for General Tier 1 and Tier 3 members and increase the current disability rates for Safety members to those developed in Section III(F).
- Ref: Pg. 43 Individual Salary Increases Increases in the salary of a member between the date of the valuation to the date of separation from active service.
 Recommendation: Change the promotional and merit increases to those developed in Section III(G). Overall, future salary increases are lower under the new assumptions for General members and generally unchanged for Safety members.
- Ref: Pg. 48 Terminal Pay Additional pay elements that are expected to be received during the member's final average earnings period.
 Recommendation: Increase the current terminal pay assumptions for General members to those developed in Section III(H). Maintain the current terminal pay assumptions for Safety members.
- Ref: Pg. 50 Service From Unused Sick Leave Conversion Additional service that is expected to be received when the member retires due to conversion of unused sick leave.
 Recommendation: Maintain the current assumption for all members as described in Section III(I).

Our recommendation for the actuarial cost method is as follows:

Ref: Pg. 51 Actuarial Cost Method – Procedure used to allocate the cost of the plan among different plan years.

Continue to use the Entry Age Normal Actuarial Cost Method, but consider calculating the annual Normal Cost on an individual basis instead of on an aggregate basis as described in Section III(J).

Section II provides some background on basic principles and the methodology used for the experience study and for the review of the demographic actuarial assumptions. A detailed discussion of each assumption and reasons for the proposed changes is found in Section III. Section IV shows the cost impact of the proposed assumption changes.

II. BACKGROUND AND METHODOLOGY

In this report, we analyzed the "demographic" or "non-economic" assumptions only. Our analysis of the "economic" assumptions for the December 31, 2009 valuation is provided in a separate report. Demographic assumptions include the probabilities of certain events occurring in the population of members, referred to as "decrements," e.g., termination from service, disability retirement, service retirement, and death after retirement. We also review the individual salary increases net of inflation (i.e., the promotional and merit assumptions) in this report.

Demographic Assumptions

In order to determine the probability of an event occurring, we examine the "decrements" and "exposures" of that event. For example, taking termination from service, we compare the number of employees who actually terminate in a certain age and/or service category (i.e., the number of "decrements") with those who could have terminated (i.e., the number of "exposures"). For example, if there were 500 active employees in the 20-24 age group at the beginning of the year and 50 of them terminate during the year, we would say the probability of termination in that age group is $50 \div 500$ or 10%.

The reliability of the resulting probability is highly dependent on both the number of decrements and the number of exposures. For example, if there are only a few people in a high age category at the beginning of the year (number of exposures), we would not lend as much credence to the probability of termination developed for that age category, especially if it is out of line with the pattern shown for the other age groups. Similarly, if we are considering the death decrement, there may be a large number of exposures in, say, the age 20-24 category, but very few decrements (actual deaths); therefore, we would not be able to rely heavily on the probability developed for that category.

One reason we use several years of experience for such a study is to have more exposures and decrements, and therefore more statistical reliability. Another reason for using several years of data is to smooth out fluctuations that may occur from one year to the next. However, we also calculate the rates on a year-to-year basis to check for any trend that may be developing in the later years.

III. ACTUARIAL ASSUMPTIONS

A. ECONOMIC ASSUMPTIONS

The economic assumptions are currently reviewed every three years at the same time as the non-economic assumptions. See the separate reported titled "Review of Economic Actuarial Assumptions for the December 31, 2009 Actuarial Valuation" that was issued on March 2, 2010.

B. RETIREMENT RATES

The age at which a member retires from service (i.e. who did not retire on a disability pension) will affect both the amount of the benefits that will be paid to that member as well as the period over which funding must take place.

The table on the following page shows the observed service retirement rates for General Enhanced Tier 1 members based on the actual experience over the three year period. The observed service retirement rates were determined by comparing those members who actually retired from service to those eligible to retire from service. This same methodology is followed throughout this report and was described in Section II. Also shown are the current rates assumed and the rates we propose:

Age	Current Rate of Retirement	Actual Rate of Retirement	Proposed Rate of Retirement	
Under 50	0.00%	66.67%	0.00%	
50	3.00	5.94	4.00	
51	3.00	5.00	4.00	
52	5.00	3.01	4.00	
53	8.00	0.78	5.00	
54	15.00	6.12	10.00	
55	20.00	11.51	15.00	
56	20.00	13.82	15.00	
57	25.00	10.40	17.00	
58	25.00	13.97	20.00	
59	25.00	16.16	20.00	
60	25.00	15.79	20.00	
61	30.00	29.85	30.00	
62	30.00	28.89	30.00	
63	30.00	26.92	30.00	
64	30.00	24.00	30.00	
65	35.00	23.81	35.00	
66	35.00	58.33	35.00	
67	35.00	50.00	35.00	
68	35.00	0.00	35.00	
69	35.00	50.00	35.00	
70 & Over	100.00	50.00	100.00	

General Enhanced Tier 1

As shown above, we are recommending an increase in the retirement rates for ages 50 and 51 and a decrease in the retirement rates from ages 52 to 60 for General Enhanced Tier 1 members.

Chart 1 that follows later in this section compares actual experience with the current and proposed rates of retirement for General Enhanced Tier 1 members.

The following table shows the observed retirement rates for General Enhanced Tier 3 members over the three year period. Also shown are the current rates assumed and the rates that we propose:

Age	Current Rate of Retirement	Actual Rate of Retirement	Proposed Rate of Retirement
Under 50	0.00%	100.00%	0.00%
50	3.00	5.02	4 00
51	3.00	2.42	3.00
52	3.00	2.42	3.00
53	3.00	3.00	3.00
54	5.00	3.88	5.00
55	10.00	5.88 8 71	10.00
55	10.00	0.71 8.26	10.00
50 57	10.00	0.50	10.00
57	10.00	9.60	10.00
58	10.00	8.82	10.00
59	10.00	6.67	10.00
60	15.00	14.08	15.00
61	20.00	12.66	17.00
62	25.00	25.13	25.00
63	25.00	20.17	25.00
64	30.00	24.53	27.00
65	35.00	40.91	35.00
66	35.00	42.86	35.00
67	35.00	38.71	35.00
68	35.00	58.33	35.00
69	35.00	15.79	35.00
70	100.00	39.39	40.00
71	100.00	36.36	40.00
72	100.00	17.65	40.00
73	100.00	16.67	40.00
74	100.00	37.50	40.00
75 & over	100.00	40.00	100.00

General Enhanced Tier 3

As shown above, we are recommending minor changes in the retirement rates for General Enhanced Tier 3 members. We are also increasing the age at which 100% retirement is assumed from age 70 to age 75.

Chart 2 compares actual experience with the current and proposed rates of retirement for General Enhanced Tier 3 members.

The following table shows the observed retirement rates for Safety Enhanced Tier A members over the three year period. Also shown are the current rates assumed and the rates we propose:

Age	Current Rate of Retirement	Actual Rate of	Proposed Rate of Retirement
Under 45			
Under 45	0.00%	0.00%	0.00%
45	2.00	1.14	2.00
46	2.00	1.28	2.00
47	2.00	2.35	2.00
48	2.00	2.35	2.00
49	10.00	11.90	10.00
50	25.00	21.54	25.00
51	20.00	13.41	17.00
52	20.00	23.94	20.00
53	20.00	14.00	20.00
54	25.00	19.15	20.00
55	30.00	29.27	30.00
56	30.00	15.63	25.00
57	40.00	17.14	25.00
58	40.00	28.57	30.00
59	40.00	26.09	30.00
60	100.00	26.67	40.00
61	100.00	40.00	40.00
62	100.00	22.22	40.00
63	100.00	50.00	40.00
64	100.00	0.00	40.00
65 & over	100.00	36.36	100.00

Safety Enhanced Tier A

We recommend reducing retirement rates for some ages as well as increasing the age at which 100% retirement is assumed from age 60 to age 65 for Safety Enhanced Tier A members.

Chart 3 compares actual experience with the current and proposed rates of retirement for Safety Enhanced Tier A members.

The following table shows the current rates assumed and the rates we propose for Safety Enhanced Tier C members:

Safety Enhanced Tier C					
Age	Current Rate of Retirement	Proposed Rate of Retirement			
Under 45	0.00%	0.00%			
45	1.00	1.00			
46	1.00	1.00			
47	1.00	1.00			
48	1.00	1.00			
49	5.00	5.00			
50	15.00	15.00			
51	12.00	10.00			
52	12.00	12.00			
53	12.00	12.00			
54	15.00	12.00			
55	20.00	20.00			
56	20.00	15.00			
57	25.00	15.00			
58	25.00	20.00			
59	30.00	20.00			
60	100.00	30.00			
61	100.00	30.00			
62	100.00	30.00			
63	100.00	30.00			
64	100.00	30.00			
65 & over	100.00	100.00			

We recommend reducing retirement rates for some ages as well as increasing the age at which 100% retirement is assumed from age 60 to age 65 for Safety Enhanced Tier C members. There were no actual retirements during this period for members in this tier. We have based our recommended rates on a combination of the current assumption used for Safety Tier C and the less than expected actual retirement experience that occurred for Safety Enhanced Tier A members.

Chart 4 compares the current rates with the proposed rates of retirement for Safety Enhanced Tier C members.

For those members not covered under the enhanced benefit formulas, we are recommending that the current retirement rates be left unchanged. There is only a small group of members covered by the non-enhanced formulas and there is insufficient data to support a modification of the rates.

	General Non-enhanced	Safety Non-enhanced
	Current and Proposed	Current and Proposed
Age	Rate of Retirement	Rate of Retirement
Under 50	0.00%	0.00%
50	3.00	1.00
51	3.00	1.00
52	3.00	1.00
53	3.00	1.00
54	3.00	1.00
55	10.00	2.00
56	10.00	2.00
57	10.00	3.00
58	10.00	4.00
59	10.00	20.00
60	25.00	17.00
61	15.00	17.00
62	40.00	18.00
63	25.00	20.00
64	30.00	100.00
65	40.00	100.00
66	35.00	100.00
67	35.00	100.00
68	35.00	100.00
69	35.00	100.00
70 & Over	100.00	100.00

The following table shows the current and proposed rates for non-enhanced members:

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In prior valuations, deferred vested General and Safety members were assumed to retire at age 58 and 55, respectively. The average age at retirement over the prior three years was 59 for General and 55 for Safety. We recommend leaving the General assumption at age 58 and the Safety assumption at age 55.

It was also assumed that 40% of inactive General and 60% of Safety deferred vested members would be covered under a reciprocal retirement system and receive 6.25% salary increases from termination until their date of retirement. Based on the actual experience that 37% of all current General deferred vested members and 67% of all current Safety deferred vested members went on to be covered by a reciprocal retirement system, we recommend keeping the current reciprocal assumption of 40% for General members and 60% for Safety members. Based on our recommended merit and promotional salary increase assumptions, we propose that the 6.25% salary increase assumption, which is used to anticipate salary increases from termination from CCCERA to the expected date of retirement, be reduced to 5.50%.

In prior valuations, it was assumed that 80% of all active male members and 55% of all active female members would be married or have an eligible domestic partner when they retired. We reviewed new retirees during the three year period and determined the actual percentage of these new retirees that had an eligible spouse or eligible domestic partner at the time of retirement. The results of that analysis are shown below:

Year Ending December 31	Male	Female
2007	68%	48%
2008	65%	51%
2009	69%	46%
Total	68%	48%

New Retirees – Actual Percent with Eligible Spouse or Domestic Partner

According to experience of members who retired during the last three years, about 68% of all male members and 48% of all female members were married or had a domestic partner at retirement. We recommend decreasing this assumption to 75% for male members and 50% for female members.

Note that there are two additional factors to consider when setting this assumption:

1) Starting January 1, 2000, spouses of members who marry for the first time or remarry after retirement are eligible for survivor continuance benefits; and

2) Starting January 1, 2005, surviving domestic partners became eligible for this benefit, and we believe that more experience needs to be collected on those that retire and have a domestic partner.

Since the value of the survivor's benefit is dependent on the survivor's age and sex, we must also have assumptions for the age and sex of the survivor. Based on the experience during the three year period and studies done for other retirement systems, we believe that it is reasonable to maintain the current assumptions, which are as follows.

Since the majority of survivors are expected to be of the opposite sex, even with the inclusion of domestic partners, we will continue to assume that the survivor's sex is the opposite of the member.

The current assumption for the age of the survivor and recommended assumption are shown below. These assumptions will continue to be monitored in future experience studies.

Survivor Ages – Current Assumptions			
	Survivor's Age as Con	npared to Member's Age	
Beneficiary Sex	Current Assumption	Recommended Assumption	
Male	3 years older	No change	
Female	3 years younger	No change	

















C. MORTALITY RATES - HEALTHY

The "healthy" mortality rates project what proportion of members will die before retirement as well as the life expectancy of a member who retires from service (i.e., who did not retire on a disability pension). The table currently being used for post-service retirement mortality rates is the RP-2000 Combined Healthy Mortality Table for males and females, with ages set back two years.

Pre-Retirement Mortality

The number of deaths among active and deferred vested members is not large enough to provide a statistically credible basis for a specific pre-retirement mortality analysis. Therefore, we continue to propose that pre-retirement mortality follow the same tables used for post-retirement mortality. All pre-retirement deaths are assumed to be ordinary (non-duty).

Post-Retirement Mortality (Service Retirements)

Among service retired members, the actual deaths compared to the expected deaths under the current assumption for the last three years is as follows:

	General - Healthy		Safety – Healthy			
Year	Expected Deaths	Actual Deaths	Proposed Expected Deaths	Expected Deaths	Actual Deaths	Proposed Expected Deaths
2007	107	109	103	13	11	11
2008	110	119	106	15	14	13
2009	116	127	111	16	20	14
Total	333	355	320	44	45	38
Actual / Expected	107%		111%	102%		118%

Chart 5 compares actual to expected deaths for General members under the current and proposed assumptions over the last three years. Experience shows that there were more deaths than predicted by the current table.

Chart 6 has the same comparison for Safety members. Experience shows that there were also slightly more deaths than predicted by the current table.

For General service retirees the ratio of actual to expected deaths was 107%. We recommend continuing to use the RP-2000 Combined Tables (separate tables for males and females) but increasing the age set back from two years to three years for males while leaving the two year age set back for females unchanged. This recommendation is consistent with the actual experience segregated by sex. This will bring the total actual to expected ratio to 111%. This is consistent with standard actuarial practice to include some margin in the rates to anticipate expected future improvement in life expectancy. Generally, preferable practice is to have a margin of around 10%; that is, the actual deaths among current retirees are around 10% greater than the expected deaths during the study period.

For Safety service retirees the ratio of actual to expected deaths was 102%. We also recommend continuing to use the RP-2000 Combined Table (separate tables for males and females) but increasing the age set back from two years to three years for males while leaving the two year age set back for females unchanged. This recommendation is consistent with that for General members and the fact that most Safety members are male. This will bring the actual to expected ratio to 118%. We will continue to monitor this assumption closely in future studies.

Chart 7 shows the life expectancies (i.e. expected future lifetime) under the current and the proposed tables for General members.

Chart 8 has the same information for Safety members.

Mortality Table for Member Contributions

We recommend that the mortality table used for determining contributions for General members be updated from the RP-2000 Combined Healthy Mortality Table set back two years weighted 30% male and 70% female to the RP-2000 Combined Healthy Mortality Table for males set back three years and the RP-2000 Combined Healthy Mortality Table for females set back two years weighted 30% male and 70% female. This is based on the proposed valuation mortality tables for General members and the actual sex distribution of General members.

For Safety members, we recommend the mortality table be changed from the RP-2000 Combined Healthy Mortality Table set back two years weighted 85% male and 15% female to the RP-2000 Combined Healthy Mortality Table for males set back three years and the RP-2000 Combined Healthy Mortality Table for females set back two years weighted 85% male and 15% female. This is based on the proposed valuation mortality tables for Safety members and the actual sex distribution of Safety members.

Chart 5 Post - Retirement Deaths Non - Disabled General Members













D. MORTALITY RATES - DISABLED

Since mortality rates for disabled members can vary from those of healthy members, a different mortality assumption is often used. The table currently being used for General members is the RP-2000 Combined Healthy Mortality Table with ages set forward six years. For Safety members, the RP-2000 Combined Healthy Mortality Table is used.

The number of actual deaths compared to the number expected for the last three years has been as follows:

	General – Disabled		Safe	ety – Disabl	ed	
			Proposed			Proposed
	Expected	Actual	Expected	Expected	Actual	Expected
	Deaths	Deaths	Deaths	Deaths	Deaths	Deaths
2007	16	14	13	5	3	4
2008	17	14	14	6	7	5
2009	17	17	14	6	5	5
Total	50	45	41	17	15	14
Actual / Expected	90%		110%	88%		107%

Based on this experience, we recommend decreasing the age set forward from six years to four years; this adjustment is applied to the RP-2000 Combined Healthy Mortality Table for General members (separate tables for males and females). For Safety members we recommend adjusting the RP-2000 Combined Healthy Mortality Table (separate tables for males and females) to use a two year age set back.

Chart 9 compares actual to expected deaths under both the current and proposed assumptions for disabled General members over the last three years. Experience shows that there were fewer deaths than predicted by the current table. Our recommendation adjusts for this difference and also incorporates a 10% margin for future mortality improvement.

Chart 10 has the same comparison for Safety members. Experience shows that there were fewer deaths than predicted by the current table. Our recommended assumption adjusts for this difference, plus a margin for some future mortality improvement.

Chart 11 shows the life expectancies under both the current and proposed tables for General members.

Chart 12 shows the same information for Safety members.

Chart 9 Post - Retirement Deaths Disabled General Members



Chart 10 Post - Retirement Deaths Disabled Safety Members







	le) — Current (Female)	\rightarrow Proposed (Female)
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E. TERMINATION RATES

Termination rates include all terminations for reasons other than death, disability, or retirement. Under the current assumptions there is an overall incidence of termination assumed, combined with an assumption that a member will choose between a refund of contributions and deferred vested benefit based on which option is more valuable. With this study, we continue to recommend that this same assumption structure be used. The termination experience over the last three years for General and Safety members, separated between those employees with under five years of service and those with five or more years of service, is as follows:

Rates of Termination (General)						
(Less than Five Years of Service)						
Years of Service	Current Rate	Observed Rate	Proposed Rate			
0	14.00%	16.01%	15.00%			
1	9.00	9.19	9.00			
2	8.00	9.62	9.00			
3	6.00	6.57	6.00			
4	5.00	5.24	5.00			

Rates of Termination (Safety)

(Less than Five Years of Service)					
Years of Service	Current Rate	Observed Rate	Proposed Rate		
0	11.00%	10.54%	11.00%		
1	7.00	7.57	7.00		
2	5.00	3.74	5.00		
3	4.00	4.71	4.00		
4	3.00	5.34	4.00		

(Five or More Years of Service)					
Age	Current Rate	Observed Rate	Proposed Rate		
20 - 24	5.00%	0.00%	5.00%		
25 - 29	5.00	2.62	5.00		
30 - 34	5.00	4.83	5.00		
35 - 39	4.66	4.76	5.00		
40 - 44	3.97	3.11	3.98		
45 - 49	2.98	2.73	2.71		
50 - 54	1.00	3.26	2.19		
55 - 59	0.13	1.89	1.13		
60 - 64	0.00	3.26	0.00		
65 – 69	0.00	6.34	0.00		

Rates of Termination (General) (Five or More Years of Service)

Rates of Termination (Safety) (Five or More Years of Service)

(Five of whore Tears of Service)					
Age	Current Rate	Observed Rate	Proposed Rate		
20 - 24	3.00%	0.00%	4.00%		
25 - 29	3.00	4.35	4.00		
30 - 34	2.68	3.86	3.70		
35 – 39	1.93	4.47	2.82		
40 - 44	1.43	2.84	2.15		
45 - 49	0.71	1.47	1.56		
50 - 54	0.00	2.86	1.06		
55 – 59	0.00	0.00	0.52		
60 - 64	0.00	5.88	0.00		

Chart 13 compares actual to expected terminations over the past three years for both the current and proposed assumptions for General members.

Chart 14 graphs the same information as Chart 13, but for Safety members.

Chart 15 shows the current, along with the proposed termination rates for General members with less than five years of service.

Chart 16 shows the same information as Chart 15, but for Safety members.

Chart 17 shows the current, along with the proposed termination rates for General members with five or more years of service.

Chart 18 shows the same information as Chart 17, but for Safety members.

Based upon the recent experience, the termination rates for both General and Safety members have been slightly increased. We will also continue to assume that all termination rates are zero at any age where members are assumed to retire. In other words, at those ages, members will either retire (and commence receiving a benefit) or continue working.












Chart 16 Termination Rates - Safety Members (Less than 5 Years of Service)



Chart 17 Termination Rates - General Members (Five or More Years of Service)



Chart 18 Termination Rates - Safety Members (Five or More Years of Service)



F. DISABILITY INCIDENCE RATES

When a member becomes disabled, he or she may be entitled to at least a 50% pension (service connected disability), or a pension that depends upon the member's years of service (non-service connected disability). The following summarizes the actual incidence of combined service and non-service connected disabilities over the past three years compared to the current and proposed assumptions for combined service-connected and non-service connected disability incidence:

Rates of Disability incluence (General Tier 1)						
Age	Current Rate*	Observed Rate*	Proposed Rate*			
20 - 24	0.05%	0.00%	0.03%			
25 - 29	0.10	0.00	0.05			
30 - 34	0.30	0.00	0.15			
35 - 39	0.40	0.00	0.20			
40 - 44	0.50	0.00	0.30			
45 - 49	0.60	0.46	0.50			
50 - 54	0.75	0.26	0.60			
55 – 59	0.90	0.52	0.75			
60 - 64	1.00	0.33	0.75			
65 - 69	1.25	0.00	0.75			

Pates	of Di	cohility	Incidence	(Conorol	Tior 1)
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*Total rates for service and non-service connected disabilities.

Rates of Disability Incidence (General Tier 3)						
Age	Current Rate*	Observed Rate*	Proposed Rate*			
20 - 24	0.01%	0.00%	0.01%			
25 - 29	0.03	0.00	0.03			
30 - 34	0.05	0.00	0.05			
35 - 39	0.07	0.00	0.07			
40 - 44	0.10	0.07	0.10			
45 - 49	0.20	0.16	0.15			
50 - 54	0.30	0.09	0.20			
55 – 59	0.40	0.18	0.25			
60 - 64	0.50	0.18	0.30			
65 - 69	0.75	0.44	0.50			

Rates of Disability Incidence (General Tier 3)

*Total rates for service and non-service connected disabilities.

Rates of Disability Incidence (Safety)						
Age	Current Rate*	Observed Rate*	Proposed Rate*			
20 - 24	0.10%	0.00%	0.10%			
25 - 29	0.30	0.00	0.30			
30 - 34	0.45	0.66	0.50			
35 - 39	0.75	0.63	0.75			
40 - 44	1.00	0.90	1.00			
45 - 49	1.50	0.73	1.25			
50 - 54	3.00	4.03	3.50			
55 - 59	3.50	5.73	5.00			
60 - 64	0.00	5.56	5.00			

*Total rates for service and non-service connected disabilities.

Chart 19 compares the actual number of non-service connected and service connected disabilities over the past three years to that expected under both the current and proposed assumptions. The proposed disability rates were adjusted to reflect the past three years experience. Overall, there are decreases proposed for General Tier 1 and Tier 3 and increases proposed for Safety.

Chart 20 shows actual disablement rates, compared to the assumed and proposed rates for General Tier 1 members. Since 56% of disabled General Tier 1 members received a service connected disability, we recommend decreasing the assumed proportion of members who will receive a service connected disability from 75% to 70%. The remaining 30% of General Tier 1 disabled members will be assumed to receive a non-service connected disability.

Chart 21 graphs the same information as Chart 20, but for General Tier 3 members. Since 30% of disabled General Tier 3 members received a service connected disability, we recommend increasing the assumed proportion of members who will receive a service connected disability from 20% to 25%. The remaining 75% of such disabled members will be assumed to receive a non-service connected disability.

Chart 22 graphs the same information as Charts 20 and 21, but for Safety members. Since 95% of disabled Safety members received a service connected disability, we recommend maintaining the current assumption that 100% of disabilities will receive a service connected disability retirement. This means that no non-service connected disabilities will be assumed for Safety members.





Expected Actual Proposed









Chart 22 Disablement Rates for Safety Members



G. PROMOTIONAL AND MERIT SALARY INCREASES

The Association's retirement benefits are determined in large part by a member's compensation just prior to retirement. For that reason it is important to anticipate salary increases that employees will receive over their careers. These salary increases are made up of three components:

- > Inflationary increases;
- > Real "across the board" increases; and
- > Promotional and merit increases.

The inflationary increases are assumed to follow the general annual price inflation assumption discussed in our separate economic assumption report where we recommended a decrease from 3.75% to 3.50%. We also discussed in that report our recommendation to increase the annual "across the board" real pay increase assumption from 0.50% to 0.75%. Therefore, the total assumed inflation and real "across the board" pay increase (i.e. wage inflation) of 4.25% is unchanged. This is the assumed annual rate of payroll growth at which payments to amortize the Unfunded Actuarial Accrued Liability (UAAL) are assumed to increase.

The annual promotional and merit increases are determined by measuring the actual increases received by members over the experience period, net of the inflationary and real "across the board" pay increases. Increases are measured separately for General and Safety members. This is accomplished by:

- > Measuring each member's actual salary increase over each year of the experience period;
- > Categorizing these increases according to member demographics;
- Removing the wage inflation component from these increases (equal to the increase in the members' average salary during the year);
- > Averaging these annual increases over the three year experience period; and
- Modifying current assumptions to reflect some portion of these measured increases reflective of their "credibility."

Note that, to be consistent with the experience, these merit and promotional assumptions should be used in combination with the 4.25% assumed inflation and real "across the board" increases.

The following table shows the General members' actual average promotional and merit increases by years of service over the three year experience period from January 1, 2007 through December 31, 2009. The actual increases were reduced by the actual average inflation plus "across the board" increase (i.e. wage inflation) for each year over the three year experience period (3.0% on average).

GeneralJanuary 1, 2007 Through December 31, 2009 AverageYears of ServiceCurrent AssumptionsGeneral Promotional and Merit IncreasesProposed Assumptions					
1	6.50	5.47	6.00		
2	5.00	4.17	4.75		
3	4.00	1.94	3.25		
4	3.00	1.48	2.25		
5	2.00	0.43	1.50		
6	1.75	0.64	1.25		
7	1.50	-0.02	1.00		
8	1.25	0.12	0.75		
9	1.00	0.66	0.75		
10	0.75	0.13	0.75		
11	0.75	0.69	0.75		
12	0.75	0.67	0.75		
13	0.75	0.69	0.75		
14	0.75	1.14	0.75		
15	0.75	0.53	0.75		
16	0.75	0.58	0.75		
17	0.75	0.24	0.75		
18	0.75	0.68	0.75		
19	0.75	0.67	0.75		
20 & over	0.75	0.85	0.75		

The following table provides the same information for Safety members. The actual average promotional and merit increases were determined by reducing the actual average total salary increases by the actual average inflation plus real "across the board" increase (i.e. wage inflation) for each year over the three year period (3.8% on average).

Safety				
Years of Service	Current Assumptions	January 1, 2007 Through December 31, 2009 Average Safety Promotional and Merit Increases	Proposed Assumptions	
Less than 1	8.00%	15.86%	9.50%	
1	6.50	5.63	6.25	
2	5.50	4.70	5.25	
3	4.50	3.26	4.00	
4	2.25	1.69	2.00	
5	0.75	0.10	0.75	
6	0.75	0.44	0.75	
7	0.75	-0.61	0.75	
8	0.75	0.48	0.75	
9	0.75	-0.17	0.75	
10	0.75	0.62	0.75	
11	0.75	0.81	0.75	
12	0.75	0.41	0.75	
13	0.75	0.90	0.75	
14	0.75	3.30	0.75	
15	0.75	0.38	0.75	
16	0.75	1.23	0.75	
17	0.75	1.29	0.75	
18	0.75	0.52	0.75	
19	0.75	0.77	0.75	
20 and over	0.75	0.63	0.75	

The proposed promotional and merit salary increase assumptions include an increase for those with less than one year of service and decreases for some with more than one but less than five years of service.

Charts 23 and 24 provide a graphical comparison of the actual promotional and merit increases, compared to the proposed assumptions. Chart 23 shows this information for General members and Chart 24 is for Safety members.







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H. TERMINAL PAY

In 1998, the Board of Retirement, in the course of actions related to the Paulson Settlement, determined that several additional pay elements should be included as Earnable Compensation. These additional pay elements fall into two categories:

- Ongoing Pay Elements Those that are expected to be received relatively uniformly over a member's employment years; and
- Terminal Pay Elements Those that are expected to be received only during the member's final average earnings pay period.

The first category is recognized in the actuarial calculations by virtue of being included in the current pay of active members. The second category requires a separate actuarial assumption to anticipate its impact on a member's retirement benefit.

In this study, we have collected data for the last three years to estimate terminal pay for active members as a percentage of current pay. The results are summarized in the following table:

	General Tier 1	General Tier 2	General Tier 3	Safety Tier A	Safety Tier C
Year	Actual Average Terminal Pay				
2007	11.60%	3.54%	7.63%	12.16%	N/A
2008	12.67%	3.20%	7.50%	9.39%	N/A
2009	13.42%	<u>3.82%</u>	<u>8.31%</u>	<u>11.98%</u>	<u>N/A</u>
Average	12.55%	3.53%	7.84%	11.27%	N/A
Current Assumptions	11.50%	3.25%	7.00%	11.00%	3.75%
Proposed Assumption	12.00%	3.50%	7.50%	11.25%	3.75%

There is no actual experience during the period for members in Safety Tier C since this tier was created on January 1, 2007 and there have been no retirements since its inception.

Based on the data in the above table, we are recommending increases in the terminal pay assumptions for the December 31, 2009 valuation for all tiers except for Safety Tier C.

For determining the cost of the basic benefit (i.e., non-COLA component), the cost of this pay element is currently recognized in the valuation as an employer only cost and does not affect member contribution rates.

Pending the outcome of the depooling action adopted by the Board, we may have to perform a separate study on terminal pay experience by employer. In this case, there would be separate terminal pay assumptions for each employer/cost group that would be used in the valuation.

I. SERVICE FROM UNUSED SICK LEAVE CONVERSION

At retirement, members can convert their unused sick leave to increase the service credit used in the calculation of their retirement benefit. The actuarial valuation anticipates this additional benefit using an assumption to estimate the proportional increase in service that will occur due to unused sick leave conversions.

The information on the actual amount of sick leave converted to service credit for retirees was not available for most of the three year period studied due to system conversions at the Retirement Association. Generally, data was only available for members that retired in the final six months of the experience period. An analysis of this data showed it to be consistent with the current assumption. We recommend no change be made to this assumption at this time.

The table below shows the current and proposed assumptions for sick leave converted to service credit as a percentage of total service credit (before including the sick leave converted to service credit) at retirement separately for General and Safety members as well as non-disabled and disabled members.

	Current/Proposed Assumption
General Retirees (Non-Disabled)	1.25%
Safety Retirees (Non-Disabled)	2.25%
General Retirees (Disabled)	0.25%
Safety Retirees (Disabled)	1.25%

Pursuant to Section 31641.01, the cost of this benefit will be charged only to employers and will not affect member contribution rates.

J. ACTUARIAL COST METHOD

The total contribution requirement for each rate group has two components - an annual Normal Cost, and a payment with respect to the Unfunded Actuarial Accrued Liability (UAAL). These cost components are based on an actuarial cost method. The actuarial cost method is the procedure used to allocate the value of projected benefits for active members over the members' years of service. The value attributed to each year is the Normal Cost for that year. The Normal Costs for service to date determine the portion of the value of benefits attributable to past service (Actuarial Accrued Liability), with the remainder (Present Value of Future Normal Costs) attributable to future service. Actuarial valuations for the Association have been based on the actuarial cost method known as the Entry Age Normal actuarial cost method. This method produces Normal Costs that are determined as a level percentage of covered payroll over each member's career.

As described above, the Association's Actuarial Accrued Liability is calculated on an individual basis and is based on each individual's past Normal Costs, allocated as a level percent of compensation. However, the Normal Cost for each rate group is calculated on an aggregate basis by taking the Present Value of Future Normal Costs divided by Present Value of Future Salaries to obtain a normal cost rate for each rate group of employees. This normal cost rate is then multiplied by the total of current salaries for that rate group.

The aggregate Normal Cost described above is generally close to the individual Normal Cost that is calculated to determine the Actuarial Accrued Liability. However, to be more consistent with the liability calculation (and with generally accepted actuarial practice), we recommend the Board consider that the Entry Age Normal Cost for each rate group be calculated as the sum of the individual Normal Costs for members in the rate group. Note that this change would not result in a change in the Actuarial Accrued Liability, so no additional payment towards the UAAL would be required. The only change to the contribution requirement would be to the Normal Cost component.

Compared to other cost methods, the Entry Age Normal method produces costs that are more stable as a percentage of compensation. That is why, in the public fund survey published in 2009 by the National Association of State Retirement Administrators, the Entry Age Normal cost method was used by approximately 75% of the large public retirement funds in their 2008 valuations. Therefore, we recommend the Association continue to use the Entry Age Normal actuarial cost method, but consider calculating the annual Normal Cost by summing the Normal Costs determined on an individual basis rather than the aggregate calculation described earlier.

IV. COST IMPACT OF ASSUMPTION AND METHOD CHANGES

The table on the following page shows the changes in key valuation results due to the recommended assumption changes as if they were applied in the December 31, 2008 actuarial valuation. If all of the proposed assumption changes were implemented, the Plan's average employer rate would have increased by 0.40% of compensation. The average member rate would have increased by 0.02% of compensation. The Plan's Unfunded Actuarial Accrued Liability would have increased by \$57 million, causing the funded ratio to decrease from 88.4% to 87.6%.

Of the various assumption changes, the most significant cost impacts are from the mortality assumption changes, which increase costs and liabilities, and from the retirement and termination assumptions, which decrease costs and liabilities.

Separate from the assumption changes, the modification to the actuarial cost method would increase the average employer rate by an additional 0.54% of compensation, and the average member rate by an additional 0.15% of compensation.

The allocation of the cost impact across tiers does not reflect the Board's recent decisions and deliberations regarding depooling by employer.

Charts 25 through 29 show the member contribution rates from the December 31, 2008 actuarial valuation along with the member rates based on the proposed assumptions and methods.

	Current A	ssumptions	Proposed	Assumptions
Employer Contribution Rates (County and District combined) ⁽¹⁾ :		Estimated		Estimated
	Total Rate	Annual Amount	Total Rate	Annual Amount
General Tier 1 Non-enhanced	30.64%	\$213,578	30.82%	\$214,306
General Tier 1 Enhanced	26.30%	21,451,202	26.31%	21,445,818
General Tier 3 Enhanced	20.95%	96,829,564	22.02%	101,594,744
Safety Tier A Non-enhanced	37.41%	847,293	43.19%	978,202
Safety Tier A Enhanced	40.46%	61,867,120	41.43%	63,358,034
Safety Tier C Enhanced	36.72%	1,975,131	37.66%	2,012,605
All Employers combined	25.99%	\$183,183,888	26.93%	\$189,603,709
Average Member Contribution Rates ⁽¹⁾ :		Estimated		Estimated
	Total Rate	Annual Amount	Total Rate	Annual Amount
General Tier 1 Non-enhanced	11.31%	\$78,837	11.64%	\$80,939
General Tier 1 Enhanced	9.43%	7,691,741	9.52%	7,758,996
General Tier 3 Enhanced	9.39%	43,395,500	9.53%	43,965,275
Safety Tier A Non-enhanced	12.92%	292,623	13.53%	306,439
Safety Tier A Enhanced	14.90%	22,781,240	15.18%	23,212,119
Safety Tier C Enhanced	11.85%	637,399	12.01%	641,832
All Categories Combined	10.62%	\$74,877,340	10.79%	\$75,651,600
Funded Status:				
Actuarial accrued liability	\$5,972,471,074		\$6,028,891,907	
Valuation value of assets	\$5,282,505,159		\$5,282,505,159	
Funded percentage	88.4%		87.6%	
Unfunded Actuarial Accrued Liability (UAAL)	\$689,965,915		\$746,386,748	

Summary of Key Valuation Results as of December 31, 2008

⁽¹⁾ Based on projected payroll of \$704,947,668 under the current assumptions and \$704,054,453 under the proposed assumptions. These rates do not include any employer subvention of member contributions or any member subvention of employer contributions. The allocation of the cost impact across tiers does not reflect the Board's recent decisions and deliberations regarding depooling by employer.



Chart 25 General Non-enhanced Tier 1 Member Contribution Rates





Chart 27 General Enhanced Tier 3 Member Contribution Rates





Chart 28 Safety Non-enhanced Member Contribution Rates









APPENDIX A

CURRENT ACTUARIAL ASSUMPTIONS AND METHODS

Mortality Rates:

Healthy:	For General Members: RP-2000 Combined Healthy Mortality Table set back two years.
	For Safety Members: RP-2000 Combined Healthy Mortality Table set back two years.
Disabled:	For General Members: RP-2000 Combined Healthy Mortality Table set forward six years.
	For Safety Members: RP-2000 Combined Healthy Mortality Table.
Beneficiaries:	Beneficiaries are assumed to have the same mortality as a General Member of the opposite sex who has taken a service (non-disability) retirement.
Member Contribution Rates:	For General Members: RP-2000 Combined Healthy Mortality Table set back two years weighted 30% male and 70% female.
	For Safety Members: RP-2000 Combined Healthy Mortality Table set back two years weighted 85% male and 15% female.

Termination Rates Before Retirement:

Rate (%) Mortality					
	Ge	neral	Sa	afety	
Age	Male	Female	Male	Female	
25	0.04	0.02	0.04	0.02	
30	0.04	0.02	0.04	0.02	
35	0.06	0.04	0.06	0.04	
40	0.10	0.06	0.10	0.06	
45	0.13	0.09	0.13	0.09	
50	0.19	0.14	0.19	0.14	
55	0.29	0.22	0.29	0.22	
60	0.53	0.39	0.53	0.39	
65	1.00	0.76	1.00	0.76	

All pre-retirement deaths are assumed to be non-service connected.

Termination Rates Before Retirement (continued):

Rate (%)							
Disability							
GeneralGeneralAgeTier 1 ⁽¹⁾ Tier 3 ⁽²⁾ Safet							
20	0.03	0.00	0.06				
25	0.08	0.02	0.22				
30	0.22	0.04	0.39				
35	0.36	0.06	0.63				
40	0.46	0.09	0.90				
45	0.56	0.16	1.30				
50	0.69	0.26	2.40				
55	0.84	0.36	3.30				
60	0.96	0.46	0.00				

⁽¹⁾ 75% of General Tier 1 disabilities are assumed to be duty disabilities. The other 25% are assumed to be ordinary disabilities.

⁽²⁾ 20% of General Tier 3 disabilities are assumed to be duty disabilities. The other 80% are assumed to be ordinary disabilities.

⁽³⁾ 100% of Safety disabilities are assumed to be duty disabilities.

Termination Rates Before Retirement (continued):

Withdrawal (Less than Five Years of Service)			
Years of Service	General	Safety	
0	14.00	11.00	
1	9.00	7.00	
2	8.00	5.00	
3	6.00	4.00	
4	5.00	3.00	

Rate (%)

Withdrawal (Five or More Years of Service)*

Age	General	Safety
20	5.00	3.00
25	5.00	3.00
30	5.00	3.00
35	4.92	2.20
40	4.23	1.61
45	3.54	1.05
50	1.68	0.00
55	0.37	0.00
60	0.00	0.00

^{*} The member is assumed to receive the greater of the member's contribution balance or a deferred retirement benefit. No withdrawal is assumed after a member is first assumed to retire.

Retirement Rates (Enhanced):

For those members covered under the enhanced ben	nefit formulas the following rates apply:
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	Rate (%)				
Age	General Tier 1	General Tier 3	Safety Tier A	Safety Tier C	
45	0.00	0.00	2.00	1.00	
46	0.00	0.00	2.00	1.00	
47	0.00	0.00	2.00	1.00	
48	0.00	0.00	2.00	1.00	
49	0.00	0.00	10.00	5.00	
50	3.00	3.00	25.00	15.00	
51	3.00	3.00	20.00	12.00	
52	5.00	3.00	20.00	12.00	
53	8.00	3.00	20.00	12.00	
54	15.00	5.00	25.00	15.00	
55	20.00	10.00	30.00	20.00	
56	20.00	10.00	30.00	20.00	
57	25.00	10.00	40.00	25.00	
58	25.00	10.00	40.00	25.00	
59	25.00	10.00	40.00	30.00	
60	25.00	15.00	100.00	100.00	
61	30.00	20.00	100.00	100.00	
62	30.00	25.00	100.00	100.00	
63	30.00	25.00	100.00	100.00	
64	30.00	30.00	100.00	100.00	
65	35.00	35.00	100.00	100.00	
66	35.00	35.00	100.00	100.00	
67	35.00	35.00	100.00	100.00	
68	35.00	35.00	100.00	100.00	
69	35.00	35.00	100.00	100.00	
70	100.00	100.00	100.00	100.00	

Rate (%)

Retirement Rates (Non-enhanced):

Rate (%)				
Age	General Tier 1	Safety		
50	3.00	1.00		
51	3.00	1.00		
52	3.00	1.00		
53	3.00	1.00		
54	3.00	1.00		
55	10.00	2.00		
56	10.00	2.00		
57	10.00	3.00		
58	10.00	4.00		
59	10.00	20.00		
60	25.00	17.00		
61	15.00	17.00		
62	40.00	18.00		
63	25.00	20.00		
64	30.00	100.00		
65	40.00	100.00		
66	35.00	100.00		
67	35.00	100.00		
68	35.00	100.00		
69	35.00	100.00		
70	100.00	100.00		

For those members not covered under the enhanced benefit formulas the following rates apply:

Retirement Age and Benefit for Deferred Vested Members:	For deferred vested benefits, we make the followin retirement assumption:				
	Safety Age: Age 55				
	We assume that 40% and 60% of future General and Safety deferred vested members, respectively, will continue to work for a reciprocal employer. For reciprocals, we assume 6.25% compensation increases per annum.				
Future Benefit Accruals:	1.0 year of service per year for the full-time employees. Continuation of current partial service accrual for part-time employees.				
Unknown Data for Members:	Same as those exhibited by members with similar known characteristics. If not specified, members are assumed to be male.				
Percent Married:	80% of male members and 55% of female members are assumed to be married at pre-retirement death or retirement. There is no explicit assumption for children's benefits.				
Age of Spouse:	Females are 3 years younger than their spouses.				
Offsets by Other Plans of the Employer for Disability Benefits:	The Plan requires members who retire because of disability from General Tier 3 to offset the Plan's disability benefits with other Plans of the employer. We have not assumed any offsets in this valuation.				
Terminal Pay Assumptions:	The following assumptions for terminal pay as a percentage of final average pay are used:				
	General Tier 1: 11.50% General Tier 2: 3.25% General Tier 3: 7.00% Safety Tier A: 11.00% Safety Tier C: 3.75%				
	For determining the cost of the basic benefit (i.e., non-COLA component), the cost of this pay element is currently recognized				

component), the cost of this pay element is currently recognized in the valuation as an employer only cost and does not affect member contribution rates. Service From Unused Sick Leave Conversion:

The following assumptions for service converted from unused sick leave as a percentage of service at retirement are used:

Service Retirements:

	General:	1.25%		
	Safety:	2.25%		
	Disability Retirements:			
	General: 0.25% Safety: 1.25%			
	Pursuant to Section charged only to contribution rates.	on 31641.01, the cost of this benefit will be employers and will not affect member		
Net Investment Return:	7.80%, net of admi	instration and investment expenses		
Employee Contribution Crediting Rate:	7.80%, compounde	ed semi-annually		
Consumer Price Index:	Increase of 3.75% subject to a 3.00% disability benefits 4.00% maximum of Safety Tier C bene per year.	per year; retiree COLA increases due to CPI b maximum change per year except for Tier 3 and Tier 2 benefits which are subject to a change per year (valued as a 3.75% increase). efits are subject to a 2.00% maximum change		

Salary Increases:

Inflation: 3.75% per year, plus "across the board" salary increases of 0.50% per year, plus the following merit and promotional increases.

Years of Service	General	Safety
Less than 1	7.50%	8.00%
1	6.50%	6.50%
2	5.00%	5.50%
3	4.00%	4.50%
4	3.00%	2.25%
5	2.00%	0.75%
6	1.75%	0.75%
7	1.50%	0.75%
8	1.25%	0.75%
9	1.00%	0.75%
10	0.75%	0.75%
11	0.75%	0.75%
12	0.75%	0.75%
13	0.75%	0.75%
14	0.75%	0.75%
15	0.75%	0.75%
16	0.75%	0.75%
17	0.75%	0.75%
18	0.75%	0.75%
19	0.75%	0.75%
20 & over	0.75%	0.75%

Actuarial Value of Assets:	Market value of assets less unrecognized returns in each of the last nine semi-annual accounting periods. Unrecognized return is equal to the difference between the actual market return and the expected return on the market value, and is recognized semi- annually over a five-year period.
Valuation Value of Assets:	Actuarial Value of Assets reduced by the value of the non-valuation reserves and designations.
Actuarial Cost Method:	Entry Age Normal Actuarial Cost Method. Entry Age is calculated as age on the valuation date minus years of service. Actuarial Accrued Liability is calculated on an individual basis and is based on costs allocated as a level percent of compensation. The Normal Cost is calculated on an aggregate basis by taking the Present Value of Future Normal Costs divided by Present Value of Future Salaries to obtain a normal cost rate for each rate group of employees. This normal cost rate is then multiplied by the total of current salaries for that rate group. The Present Value of Future Normal Costs is determined as if the current benefit accrual rate had always been in effect.

APPENDIX B

PROPOSED ACTUARIAL ASSUMPTIONS AND METHODS

Mortality Rates:

Healthy:	For General Members: RP-2000 Combined Healthy Mortality Table set back three years for males and set back two years for females.
	For Safety Members: RP-2000 Combined Healthy Mortality Table set back three years for males and set back two years for females.
Disabled:	For General Members: RP-2000 Combined Healthy Mortality Table set forward four years.
	For Safety Members: RP-2000 Combined Healthy Mortality Table set back two years.
Beneficiaries:	Beneficiaries are assumed to have the same mortality as a General Member of the opposite sex who has taken a service (non-disability) retirement.
Member Contribution Rates:	For General Members: RP-2000 Combined Healthy Mortality Table set back three years for males and set back two years for females weighted 30% male and 70% female.
	For Safety Members: RP-2000 Combined Healthy Mortality Table set back three years for males and set back two years for females weighted 85% male and weighted 15% female.

Termination Rates Before Retirement:

Rate (%)				
	Mortality			
General		Safety		
Male	Female	Male	Female	
0.04	0.02	0.04	0.02	
0.04	0.02	0.04	0.02	
0.06	0.04	0.06	0.04	
0.09	0.06	0.09	0.06	
0.12	0.09	0.12	0.09	
0.17	0.14	0.17	0.14	
0.27	0.22	0.27	0.22	
0.47	0.39	0.47	0.39	
0.88	0.76	0.88	0.76	
	Gen Male 0.04 0.04 0.06 0.09 0.12 0.17 0.27 0.47 0.88	Mate (%) Mortality General Male Female 0.04 0.02 0.04 0.02 0.04 0.02 0.05 0.04 0.06 0.04 0.12 0.09 0.17 0.14 0.27 0.22 0.47 0.39 0.88 0.76	Rate (%) Mortality General Sa Male Female Male 0.04 0.02 0.04 0.04 0.02 0.04 0.06 0.04 0.06 0.09 0.06 0.09 0.12 0.09 0.12 0.17 0.14 0.17 0.27 0.22 0.27 0.47 0.39 0.47 0.88 0.76 0.88	

All pre-retirement deaths are assumed to be non-service connected.
Termination Rates Before Retirement (continued):

Rate (%)			
Disability			
Age	General Tier $1^{(1)}$	General Tier 3 ⁽²⁾	Safety ⁽³⁾
20	0.02	0.00	0.02
25	0.04	0.02	0.22
30	0.11	0.04	0.42
35	0.18	0.06	0.65
40	0.26	0.09	0.90
45	0.42	0.13	1.15
50	0.56	0.18	2.60
55	0.69	0.23	4.40
60	0.75	0.28	5.00
65	0.75	0.42	5.00
70	0.75	0.58	5.00

⁽¹⁾ 70% of General Tier 1 disabilities are assumed to be duty disabilities. The other 30% are assumed to be ordinary disabilities.

⁽²⁾ 25% of General Tier 3 disabilities are assumed to be duty disabilities. The other 75% are assumed to be ordinary disabilities.

⁽³⁾ 100% of Safety disabilities are assumed to be duty disabilities.

Termination Rates Before Retirement (continued):

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Withdrawal (Less than Five Years of Service)		
Years of Service	General	Safety
0	15.00	11.00
1	9.00	7.00
2	9.00	5.00
3	6.00	4.00
4	5.00	4.00

Rate (%)

Withdrawal (Five or more Years of Service)*

Age	General	Safety
20	5.00	4.00
25	5.00	4.00
30	5.00	4.00
35	5.00	3.14
40	4.73	2.39
45	3.05	1.80
50	2.42	1.24
55	1.68	0.81
60	0.00	0.00

^{*} The member is assumed to receive the greater of the member's contribution balance or a deferred retirement benefit. No withdrawal is assumed after a member is first assumed to retire.

Retirement Rates (Enhanced):

For those members covered under the enhanced benefit formulas the following rates apply:

Rate (%)				
Age	General Tier 1	General Tier 3	Safety Tier A	Safety Tier C
45	0.00	0.00	2.00	1.00
46	0.00	0.00	2.00	1.00
47	0.00	0.00	2.00	1.00
48	0.00	0.00	2.00	1.00
49	0.00	0.00	10.00	5.00
50	4.00	4.00	25.00	15.00
51	4.00	3.00	17.00	10.00
52	4.00	3.00	20.00	12.00
53	5.00	3.00	20.00	12.00
54	10.00	5.00	20.00	12.00
55	15.00	10.00	30.00	20.00
56	15.00	10.00	25.00	15.00
57	17.00	10.00	25.00	15.00
58	20.00	10.00	30.00	20.00
59	20.00	10.00	30.00	20.00
60	20.00	15.00	40.00	30.00
61	30.00	17.00	40.00	30.00
62	30.00	25.00	40.00	30.00
63	30.00	25.00	40.00	30.00
64	30.00	27.00	40.00	30.00
65	35.00	35.00	100.00	100.00
66	35.00	35.00	100.00	100.00
67	35.00	35.00	100.00	100.00
68	35.00	35.00	100.00	100.00
69	35.00	35.00	100.00	100.00
70	100.00	40.00	100.00	100.00
71	100.00	40.00	100.00	100.00
72	100.00	40.00	100.00	100.00
73	100.00	40.00	100.00	100.00
74	100.00	40.00	100.00	100.00
75	100.00	100.00	100.00	100.00

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Retirement Rates (Non-Enhanced):

Rate (%)			
Age	General Ti	er 1 Safety	
50	3.00	1.00	
51	3.00	1.00	
52	3.00	1.00	
53	3.00	1.00	
54	3.00	1.00	
55	10.00	2.00	
56	10.00	2.00	
57	10.00	3.00	
58	10.00	4.00	
59	10.00	20.00	
60	25.00	17.00	
61	15.00	17.00	
62	40.00	18.00	
63	25.00	20.00	
64	30.00	100.00	
65	40.00	100.00	
66	35.00	100.00	
67	35.00	100.00	
68	35.00	100.00	
69	35.00	100.00	
70	100.00	100.00	

For those members not covered under the enhanced benefit formulas the following rates apply:

Retirement Age and Benefit for Deferred Vested Members:	For deferred vested benefits, we make the following retiremen assumption: General Age: Age 58	
	Safety Age: Age 55 We assume that 40% and 60% of future General and Safety deferred vested members, respectively, will continue to work for a reciprocal employer. For reciprocals, we assume 5.50% compensation increases per annum.	
Future Benefit Accruals:	1.0 year of service per year for the full-time employees. Continuation of current partial service accrual for part-time employees.	
Unknown Data for Members:	Same as those exhibited by members with similar known characteristics. If not specified, members are assumed to be male.	
Percent Married:	75% of male members and 50% of female members are assumed to be married at pre-retirement death or retirement. There is no explicit assumption for children's benefits.	
Age of Spouse:	Female are 3 years younger than their spouses.	
Offsets by Other Plans of the Employer for Disability Benefits:	The Plan requires members who retire because of disability from General Tier 3 to offset the Plan's disability benefits with other Plans of the employer. We have not assumed any offsets in this valuation.	
Terminal Pay Assumptions:	The following assumptions for terminal pay as a percentage of final average pay are used:	
	General Tier 1: 12.00% General Tier 2: 3.50% General Tier 3: 7.50% Safety Tier A: 11.25% Safety Tier C: 3.75%	
	For determining the cost of the basic benefit (i.e. non-COLA component), the cost of this pay element is currently recognized in the valuation as an employer only cost and does not affect	

member contribution rates.

Service From Unused Sick Leave Conversion:	The following assumptions for service converted from unused sick leave as a percentage of service at retirement are used:	
	Service Retirements:	
	General Age:1.25%Safety:2.25%	
	Disability Retirements:	
	General: 0.25% Safety: 1.25%	
	Pursuant to Section 31641.01, the cost of this benefit will be charged only to employers and will not affect member contribution rates.	
Net Investment Return:	7.75%, net of administration and investment expenses	
Employee Contribution Crediting Rate:	7.75%, compounded semi-annually	
Consumer Price Index:	Increase of 3.50% per year; retiree COLA increases due to CPI subject to a 3.00% maximum change per year except for Tier 3 disability benefits and Tier 2 benefits which are subject to a 4.00% maximum change per year (valued as a 3.50% increase). Safety Tier C benefits are subject to a 2.00% maximum change per year.	

Salary Increases:

Annual Rate of Compensation Increase

Inflation: 3.50% per year, plus "across the board" salary increases of 0.75% per year, plus the following merit and promotional increases:

Years of		
Service	General	Safety
Less than 1	9.00%	9.50%
1	6.00%	6.25%
2	4.75%	5.25%
3	3.25%	4.00%
4	2.25%	2.00%
5	1.50%	0.75%
6	1.25%	0.75%
7	1.00%	0.75%
8	0.75%	0.75%
9	0.75%	0.75%
10	0.75%	0.75%
11	0.75%	0.75%
12	0.75%	0.75%
13	0.75%	0.75%
14	0.75%	0.75%
15	0.75%	0.75%
16	0.75%	0.75%
17	0.75%	0.75%
18	0.75%	0.75%
19	0.75%	0.75%
20 & over	0.75%	0.75%

Actuarial Value of Assets:	Market value of assets less unrecognized returns in each of the last nine semi-annual accounting periods. Unrecognized return is equal to the difference between the actual market return and the expected return on the market value, and is recognized semi- annually over a five-year period.
Valuation Value of Assets:	Actuarial Value of Assets reduced by the value of the non-valuation reserves and designations.
Actuarial Cost Method:	Entry Age Normal Actuarial Cost Method. Entry Age is calculated as age on the valuation date minus years of service. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are based on costs allocated as a level percent of compensation, with Normal Cost determined as if the current benefit accrual rate has always been in effect.

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