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Agenda Item
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CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

Review of Economic Actuarial Assumptions for the December 31, 2012 Actuarial Valuation

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February 19, 2013

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

Re: Review of Economic Actuarial Assumptions
For the December 31, 2012 Actuarial Valuation

Dear Members of the Board:

We are pleased to submit this report of our review of the December 31, 2012 economic actuarial assumptions for the Contra Costa County Employees' Retirement Association. This report includes our recommendations and the analysis supporting their development.

Please note that December 31, 2012 is also the year of the Contra Costa County Employees' Retirement Association's triennial experience study. The non-economic actuarial assumption recommendations will be provided in a separate report once we complete our analysis.

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

John Monroe, ASA, EA, MAAA
Vice President and Associate 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 changed, 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. Adjusting contributions as gains or losses occur without making a change in the assumptions is appropriate if the deviation from projections is considered temporary and if, over the long run, experience is expected to 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 the gain or loss as they occur.

The use of realistic actuarial assumptions is important to maintain adequate funding, while fulfilling benefit commitments to participants already retired and to those near retirement. The actuarial assumptions 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 economic actuarial assumptions. The study was performed in accordance with Actuarial Standard of Practice (ASOP) No. 27, "Selection of Economic Assumptions for Measuring Pension Obligations." This Standard of Practice puts forth guidelines for the selection of the economic actuarial assumptions utilized in a pension plan actuarial valuation.

Please note that the investment return assumption recommended in this report has been developed without taking into consideration the impact of any "excess earnings" as described in the Board's Interest Crediting and Excess Earnings Policy.

We are recommending changes in the investment return, inflation and "across the board" salary increase assumptions. The promotional and merit salary increase assumptions will be reviewed in the triennial experience study of non-economic assumptions being performed this year. Our recommendations for the economic actuarial assumptions for the December 31, 2012 Actuarial Valuation are as follows:

Investment Return - The estimated average future net rate of return on current and future assets of the Association as of the valuation date. This rate is used to discount liabilities.
Recommendation: Reduce the current investment return assumption from 7.75% per annum to 7.25% per annum. The 7.25% recommendation would be consistent with the Board's past practice of having a margin for adverse deviation under the risk adjusted model used by Segal. However, as this would be a substantial change in this long-term assumption, we are also making an alternative recommendation for a 7.50% assumption that reflects no such margin under the risk adjusted model.[1]

Inflation – Future increases in the Consumer Price Index (CPI) which drives investment returns and active member salary increases, as well as cost-of-living adjustments (COLAs) for retirees.
Recommendation: Reduce the rate from 3.50% to 3.25% per annum. We also recommend decreasing the assumed COLA for those tiers with a 4.00% maximum COLA from 3.50% to 3.25% per year.

Individual Salary Increases - Increases in the salary of a member between the date of the valuation to the date of separation from active service. This assumption has three components:

- Inflationary salary increases,
- Real "across the board" salary increases, and
- Promotional and merit increases.

Recommendation: Reduce the current inflationary salary increase assumption from 3.50% to 3.25% and maintain the current real "across the board" salary increase assumption at 0.75%. This means that the combined inflationary and real "across the board" salary increases will decrease from 4.25% to 4.00%. Please note that the promotional and merit increase assumption ranges from 0.75% to 9.00% for General and 0.75% to 9.50% for Safety. The promotional and merit increases will be reviewed as part of our triennial experience study of non-economic assumptions.

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[1] In addition, the Board could also consider authorizing a review of the economic assumptions at a date earlier than the usual three-year period.

Terminal Pay – Additional pay elements that are expected to be received during the member's final average earnings period.

Recommendation: Our recommendation will be included in our triennial experience study of non-economic assumptions.

Section II provides some background on basic principles and the methodology used for the review of the economic actuarial assumptions. A detailed discussion of each of the economic assumptions and reasons behind the recommendations is found in Section III.

II. BACKGROUND AND METHODOLOGY

For this study, we analyzed "economic" assumptions only. Our analysis of the "non-economic" assumptions for the December 31, 2012 valuation will be provided in a separate report at a later date. The primary economic assumptions are inflation, investment return and salary increases.

Economic Assumptions

Economic assumptions consist of:

Inflation - Increases in the price of goods and services. The inflation assumption reflects the basic return that investors expect from securities markets. It also reflects the expected basic salary increase for active employees and drives increases in the allowances of retired members.

Investment Return – Expected long term rate of return on the Association's investments after expenses. This assumption has a significant impact on contribution rates.

Salary Increases – In addition to inflationary increases, it is assumed that salaries will also grow by "across the board" real pay increases in excess of price inflation. It is also assumed that employees will receive raises above these average increases as they advance in their careers. These are commonly referred to as promotional and merit increases. Payments to amortize any Unfunded Actuarial Accrued Liability (UAAL) are assumed to increase each year by the price inflation rate plus any "across the board" pay increases that are assumed.

The setting of these assumptions is described in Section III.

III. ECONOMIC ASSUMPTIONS

The investment return assumption is comprised of two components: (i) Inflation; and (ii) Real Rate of Return.

A. INFLATION

Unless an investment grows at least as fast as prices increase, investors will experience a reduction in the inflation-adjusted value of their investment. There may be times when "riskless" investments return more or less than inflation, but over the long term, investment market forces will generally require an issuer of fixed income securities to maintain a minimum return which protects investors from inflation.

The inflation assumption is long term in nature, so it is set using primarily historical information. Following is an analysis of 15 and 30 year moving averages of historical inflation rates:

Historical Consumer Price Index – 1930 to 2012

(U.S. City Average - All Urban Consumers)

	25th Percentile	Median	75th Percentile
15 year moving averages	2.6%	3.4%	4.8%
30 year moving averages	3.2%	4.2%	4.9%

The average inflation rates have continued to decline gradually over the last several years due to the relatively low inflationary period over the past two decades. Also, the later of the 15-year averages during the period are lower as they do not include the high inflation years of the mid-1970s and early 1980s.

In the 2011 public fund survey published by the National Association of State Retirement Administrators, the median inflation assumption used by 126 large public retirement funds in their 2010 valuations has decreased to 3.25% from the 3.50% used in the 2009 valuations. In California, CalPERS and LACERA have recently reduced their inflation assumptions to 2.75% and 3.00%, respectively.

CCCERA's investment consultant, Milliman USA, anticipates an annual inflation rate of 2.50%. Note that, in general, the investment consultants' time horizon for this assumption is shorter than the time horizon we use for the actuarial valuation.

To find a forecast of inflation based on a longer time horizon, we referred to the 2012 report on the financial status of the Social Security program. The projected average increase in the Consumer Price

Index (CPI) over the next 75 years under the intermediate cost assumptions used in that report was 2.8%. We also compared the yields on the thirty-year inflation indexed U. S. Treasury bonds to comparable traditional U. S. Treasury bonds. As of December 2012, the difference in yields is 2.55%, which provides a measure of market expectations of inflation.

Based on all of the above information, we recommend that the current 3.50% annual inflation assumption be reduced to 3.25% for the December 31, 2012 actuarial valuation.

We are also recommending a change to the assumptions we use to value the post-retirement COLA benefit. We recommend decreasing the assumed COLA for tiers with a maximum 4% COLA from 3.50% to 3.25% per year. The current and proposed COLA assumptions are shown below:

Maximum COLA	Current Assumption	Proposed Assumption
2%	2.00%	2.00%
3%	3.00%	3.00%
4%	3.50%	3.25%

Note that in developing these COLA assumptions we also considered the results of a stochastic approach that would attempt to account for the possible impact of low inflation that could occur before COLA banks are able to be established for the member. The analytical results from that approach for the 2% and 4% maximum COLAs were not significantly lower than our proposed COLA assumptions and in our opinion do not justify using a lower COLA assumption.

Although the results for the 3% COLA assumption might justify the use of a lower COLA assumption we are not recommending that at this time. The reasons for this conclusion include the following:

- The results of the stochastic modeling are significantly dependent on assuming that lower levels of inflation will persist in the early years of the projections. If this is not assumed, then the stochastic modeling will produce results similar to our proposed COLA assumptions.
- Using a lower long-term COLA assumption based on a stochastic analysis would mean that an actuarial loss would occur even when the inflation assumption of 3.25% is met in a year. We question the reasonableness of this result.

We do not see the stochastic possibility of COLAs averaging less than those predicted by the assumed rate of inflation as a reliable source of cost savings that should be anticipated in our COLA assumptions. Therefore, we continue to recommend setting the COLA assumptions based on the long-term annual inflation assumption, as we have in prior years.

B. INVESTMENT RETURN

The investment return assumption is comprised of two primary components, inflation and real rate of investment return, with adjustments for expenses and risk.

Real Rate of Investment Return

This component represents the portfolio's incremental investment market returns over inflation. Theory has it that, as an investor takes a greater investment risk, the return on the investment is expected to also be greater, at least in the long run. This additional return is expected to vary by asset class and empirical data supports that expectation. For that reason, the real rate of return assumptions are developed by asset class. Therefore, the real rate of return assumption for a retirement system's portfolio will vary with the Board's asset allocation among asset classes.

The following is the Association's current target asset allocation and the assumed real rate of return assumptions by asset class. The column of returns (except for Private Equity and Alternative Investments) represents the average of a sample of real rate of return assumptions. The sample includes the expected annual real rate of returns provided to us by Milliman USA and by eight other investment advisory firms retained by Segal's public sector clients. We believe these assumptions reasonably reflect a consensus forecast of long term future real market returns. The Milliman assumption is used for CCCERA's Private Equity and Alternative Investments.

CCCERA Target Asset Allocation and Assumed Arithmetic Real Rate of Return Assumptions by Asset Class and for the Portfolio

Asset Class	Percentage of Portfolio	Average from a Sample of Consultants to Segal's Public Sector Clients' Real Rate of Return[1]
Domestic Large Cap Equity[2]	13.60%	6.09%
Domestic Small Cap Equity[2]	5.80%	6.79%
Developed International Equity[2]	17.60%	6.66%
Emerging Market Equity[2]	5.60%	8.02%
Domestic Core Bonds	16.10%	0.83%
International Bonds	3.30%	0.69%
High Yield Bonds	5.00%	3.32%
Inflation-Indexed Bonds	1.66%	0.73%
Long Duration Fixed Income	5.00%	1.45%
Real Estate	12.50%	4.83%
Commodities	1.67%	4.71%
Private Equity	10.00%	8.95%[3]
Alternative Investment (Timber)	1.67%	4.20%[3]
Cash & Equivalents	0.50%	0.25%
Total	100.00%	4.90%[4]

(1) These are based on the projected arithmetic returns provided by the investment advisory firms serving the county retirement systems of Contra Costa, Orange, Ventura, Mendocino, Alameda, Fresno, the LA City Employees' Retirement System, LA Department of Water and Power and the LA Fire & Police Pensions. These return assumptions are gross of any applicable investment expenses.

(2) The total allocation of 42.6% to global equity is allocated 13.6% to domestic large cap equity, 5.8% to domestic small cap equity, 17.6% to developed international equity and 5.6% to emerging market equity.

(3) For these asset classes, the Milliman assumption is applied in lieu of the average because there is a larger disparity in returns for these asset classes among the firms surveyed and using the Milliman assumption should more closely reflect the underlying investments made specifically for CCCERA.

(4) The real rate of return assumptions utilized by Milliman produce a 4.53% weighted average real rate of return for the portfolio.

Please note that the above are representative of "indexed" returns and do not include any additional returns ("alpha") from active management. This is consistent with the Actuarial Standard of Practice No. 27, Section 3.6.3.e, which states:

> "Investment Manager Performance – Anticipating superior (or inferior) investment manager performance may be unduly optimistic (pessimistic). Few investment managers consistently achieve significant above-market returns net of expenses over long periods."

The following are some observations about the returns provided above:

1. The investment consultants to our California public sector clients have each provided us with their expected real rates of return for each asset class, over various future periods of time. However, in general, the returns available from investment consultants are projected over time periods shorter than the durations of a retirement plan's liabilities.

2. Using an average of expected real rate of returns allows the Association's investment return assumption to include a broader range of capital market information and should help produce a more stable investment return assumption.

3. Therefore, we recommend that the 4.90% portfolio real rate of return be used to determine the Association's investment return assumption. This is 0.36% lower than the return that was calculated three years ago. This difference is due to changes in the real rate of return assumptions provided to us by the investment advisory firms (-0.54%) offset slightly by the effect of a change in the Association's target asset allocation (+0.18%).

Association Expenses

The real rate of return assumption for the portfolio needs to be adjusted for administrative and investment expenses expected to be paid from investment income. The following table provides these expenses in relation to the actuarial value of assets for the five years ending December 31, 2011.

Administrative and Investment Expenses as a Percentage of Actuarial Value of Assets
(All dollars in 000's)

FYE	Actuarial Value of Assets[1]	Administrative Expenses	Investment Expenses[2]	Administrative %	Investment %	Total %
2007	$5,029,276	$5,942	$26,322	0.12%	0.52%	0.64%
2008	5,295,961	5,601	26,942	0.11	0.51	0.62
2009	5,304,262	7,359	26,717	0.14	0.50	0.64
2010	5,355,971	5,283	30,475	0.10	0.57	0.67
2011	5,441,120	6,290	30,694	0.12	0.56	0.68
Average				0.12%	0.53%	0.65%

(1) *As of end of plan year*

(2) *Excludes securities lending expenses. Because we do not assume any additional net return for this program, we effectively assume that any securities lending expenses will be offset by related income.*

The average expense percentage over this five year period is 0.65%. Based on this experience, we have increased the future expense component from 0.60% to 0.65%.

Adjustment to Exclude Administrative Expenses in Developing Investment Return Assumption for use in GASB Financial Reporting

GASB has recently adopted Statements 67 and 68 that replace Statements 25 and 27 for financial reporting purposes. GASB Statements 67 and 68 are effective for plan year 2014 for the Retirement Association and fiscal year 2014/2015 for the employer[2].

According to GASB, the investment return assumption for use in financial reporting purposes should be based on the long-term expected rate of return on a retirement system's investments and should be net of investment expenses but not of administrative expenses (i.e., without reduction for administrative expenses). As can be observed from the above development of the expense assumption, if the Board wishes to develop a single investment return assumption for both funding and financial reporting purposes, then it would be necessary to exclude the roughly 0.12% administrative expense from the above development and to develop a separate treatment of administrative expenses.

2 The new Statements (67 and 68) will require more rapid recognition for investment gains or losses and much shorter amortization for actuarial gains or losses. Because of the more rapid recognition of those changes, retirement systems that have generally utilized the previous Statements (25 and 27) as a guideline to establish the employer's contribution amounts for both funding and financial reporting purposes would now have to prepare two sets of cost results, one for contributions and one for financial reporting under the new Statements.

However, there are some complications associated with eliminating the administrative expense in developing the investment return assumption used for funding:

1. Even though GASB requires the exclusion of the administrative expense from the investment return assumption, such expense would continue to accrue for a retirement system. For private sector retirement plans, where the investment return is developed using an approach similar to that required by GASB (i.e., without deducting administrative expenses), contribution requirements are increased explicitly by the anticipated annual administrative expense.

2. Under the current approach of subtracting the administrative expense in the development of the investment return assumption, such annual administrative expense is accounted for implicitly by many public sector retirement systems by effectively deducting it from future expected investment returns.

   Since an investment return assumption net of investment and administrative expenses has been used historically to establish both the employer's and the employee's contribution requirements, such expense has been paid for implicitly by both the employer and the employees.

3. A switch from the method described in (2) to the method described in (1) may require a new discussion on how to allocate administrative expenses between employers and employees, including possibly establishing a new method to allocate the anticipated annual administrative expense between them.

4. As the Board may be aware, legislative changes under AB 340 impose major modifications to both the level of benefits and the funding of those benefits for county employees' retirement systems. Included in such modifications is the requirement to fund the Normal Cost on a 50:50 basis between the employer and the employee.

Based on all these considerations, it is our recommendation that a decision to adopt a single investment return assumption for both funding and financial reporting purposes be deferred until more analysis can be performed on the allocation of administrative expense. For that reason, this report continues to treat administrative expenses as an offset to future expected investment returns.

Risk Adjustment

The real rate of return assumption for the portfolio generally is adjusted to reflect the potential risk of shortfalls in the return assumptions. The Association's asset allocation also determines this portfolio risk, since risk levels are driven by the variability of returns for the various asset classes and the correlation of returns among those asset classes. This portfolio risk is incorporated into the real rate of return assumption through a risk adjustment.

The purpose of the risk adjustment (as measured by the corresponding confidence level) is to increase the likelihood of achieving the actuarial investment return assumption in the long term[3]. The 4.90% expected real rate of return developed earlier in this report was based on expected mean or average arithmetic returns. This means there is a 50% chance of the actual return in each year being at least as great as the average (assuming a symmetrical distribution of future returns). The risk adjustment is intended to increase that probability. This is consistent with our experience that retirement plan fiduciaries would generally prefer that returns exceed the assumed rate more often than not.

Three years ago, the Board adopted an investment return assumption of 7.75%. That return implied a risk adjustment of 0.41%, reflecting a confidence level of 55% that the actual average return over 15 years would not fall below the assumed return, assuming that the distribution of returns over that period follows the normal statistical distribution.[4]

In our model, the confidence level associated with a particular risk adjustment represents the likelihood that the actual average return would equal or exceed the assumed value over a 15-year period. For example, if we set our real rate of return assumption using a risk adjustment that produces a confidence level of 60%, then there would be a 60% chance (6 out of 10) that the average return over 15 years will be equal to or greater than the assumed value. The 15-year time horizon represents an approximation of the "duration" of the fund's liabilities, where the duration of a liability represents the sensitivity of that liability to interest rate variations.

If we use the same 55% confidence level to set this year's risk adjustment, based on the current long-term portfolio standard deviation of 12.44%, provided by Milliman USA, the corresponding risk adjustment

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[3] This type of risk adjustment is sometimes referred to as a "margin for adverse deviation".

[4] Based on an annual portfolio return standard deviation of 12.39% provided by Milliman USA in 2010. Strictly speaking, future compounded long-term investment returns will tend to follow a log-normal distribution. However, we believe the Normal distribution assumption is reasonable for purposes of setting this type of risk adjustment.

would be 0.41%. Together with the other investment return components, this produces a net investment return assumption of 7.09%, which is substantially lower than the current assumption of 7.75%.

Because this would be such a substantial change in this long-term assumption, we evaluated the effect on the confidence level of alternative investment return assumptions. In particular, a net investment return assumption of 7.50%, together with the other investment return components, would produce no risk adjustment, which corresponds to a confidence level of 50%. A net investment return assumption of 7.25%, together with the other investment return components, would produce a risk adjustment of 0.25% which corresponds to a confidence level of 53%. As the use of an investment earnings with no risk adjustment (i.e., with a confidence level of only 50%) would not be consistent with the Board's past practice, we are recommending for consideration a 7.25% assumption. However, because this would still represent a substantial change in this long-term assumption, and because we believe that the use and the level of a risk adjustment are matters for the Board to decide, we are also making an alternative recommendation of 7.50% which provides for no risk adjustment and an associated confidence level of 50%.

As we have discussed in prior years, the risk adjustment model and associated confidence level is most useful as a means for comparing how the Association has positioned itself relative to risk over periods of time[5]. The use of either a 50% or 53% confidence level should be considered in context with other factors, including:

- As noted above, the confidence level is more of a relative measure than an absolute measure, and so can be reevaluated and reset for future comparisons.

- The confidence level is based on the standard deviation of the portfolio that is determined and provided to us by Milliman. The standard deviation is a statistical measure of the future volatility of the portfolio and so is itself based on assumptions about future portfolio volatility and can be considered somewhat of a "soft" number.

- A lower level of inflation should reduce the overall risk of failing to meet the investment return assumption. Lowering the confidence level to some extent could be justified as consistent with the change in the inflation assumption.

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5 In particular, it would not be appropriate to use this type of risk adjustment as a measure of determining an investment return rate that is "risk-free."

- A confidence level of 50% (which is associated with a 7.50% investment return assumption) is at the low end of the range of about 50% to 60% that corresponds to the risk adjustments used by most of Segal's other California public retirement system clients. Most public retirement systems that have recently reviewed their investment return assumptions have considered adopting more conservative investment return assumptions for their valuations, in part to maintain some likelihood that future actual market return will meet or exceed the investment return assumption. While this may provide argument for a confidence level of 53% (which is associated with the recommended 7.25% investment return assumption), we again note that a 0.50% reduction in the investment return assumption is a very significant reduction in a long-term assumption.

- As with any model, the results of the risk adjustment model should be evaluated for reasonableness and consistency. One measure of reasonableness is discussed in the following section that presents a comparison with assumptions adopted by similarly situated public sector retirement sections.

- As discussed above, the 7.25% recommendation is consistent with prior Board practice in that it continues to provide for some margin for adverse deviation through the use of a risk adjustment. However, even though the 7.50% assumption provides no such margin, we believe it is a reasonable assumption for the Board to consider, and so is presented here as an alternative recommendation. We note that the purpose of our risk-adjusted model is to identify the relative risk adjustments and confidence levels associated with different assumptions, not to require that the Board necessarily maintain prior levels of these parameters.

Taking into account the factors above, our recommendation is to reduce the net investment return assumption from 7.75% to 7.25%. As noted above, this return implies a 0.25% risk adjustment, reflecting a confidence level of 53% that the actual average return over 15 years would not fall below the assumed return. Because this represents a substantial change in this long-term assumption, we are also making an alternative recommendation of 7.50% with no risk adjustment and an associated confidence level of 50%.

Recommended Investment Return Assumption

The following table summarizes the components of the investment return assumption developed in the previous discussion. For comparison purposes, we have also included similar values from the last study.

Calculation of Net Investment Return Assumption

Assumption Component	December 31, 2012 Recommended Value	December 31, 2012 Alternative Recommendation	December 31, 2009 Adopted Value
Inflation	3.25%	3.25%	3.50%
Plus Portfolio Real Rate of Return	4.90%	4.90%	5.26%
Minus Expense Adjustment	(0.65%)	(0.65%)	(0.60%)
Minus Risk Adjustment	(0.25%)	(0.00%)	(0.41%)
Total	7.25%	7.50%	7.75%
Confidence Level	53%	50%	55%

Based on this analysis, we recommend that the investment return assumption be reduced from 7.75% per annum to 7.25% per annum. This would be consistent with the Board's past practice of maintaining the confidence level associated with this assumption at a level of greater than 50%. However, as this would be a substantial change in this long-term assumption, we are also making an alternative recommendation for a 7.50% assumption that, while reasonable, reflects no margin for adverse deviation under the risk adjusted model.

Comparison with Other Public Retirement Systems

One final test of the recommended investment return assumption is to compare it against those used by other public retirement systems, both in California and nationwide.

We note that a 7.50% investment return assumption is emerging as the common assumption among those California public sector retirement systems that have studied this assumption recently. In particular two of the largest California systems, CalPERS and LACERA, recently adopted a 7.50% earnings assumption[6] . Note that CalPERS uses a lower inflation assumption of 2.75% while LACERA uses an inflation assumption of 3.00%.

6 The approach adopted by LACERA was to phase in the reduction from their current 7.75% assumption to their 7.50% over a three-year period.

The following table compares the CCCERA recommended net investment return assumptions against those of the nationwide public retirement systems that participated in the National Association of State Retirement Administrators (NASRA) 2011 Public Fund Survey:

Assumption	CCCERA	NASRA 2011 Public Fund Survey		
		Low	Median	High
Net Investment Return	7.50%	7.00%	8.00%	8.50%

The detailed survey results show that of the systems that have an investment return assumption in the range of 7.50% to 7.90%, over a third of those systems have used an assumption of 7.50%. The survey also notes that several plans have reduced their investment return assumption during the last year, and others are considering doing so. State systems outside of California tend to change their economic assumptions slowly and so may lag behind emerging practices in this area.

In summary, while we believe that both the risk adjustment model and other considerations indicate a lower earnings assumptions, the model result of 7.09% (leaving the confidence level unchanged) appears to be an unreasonably large change for a long term assumption. We further observe that even the recommended assumption of 7.25% is a substantial change, one that would be in advance of comparable plans in California. While the alternative recommendation of 7.50% provides no margin for adverse deviation within the risk adjustment model, it is consistent with the System's current practice relative to other public systems.

C. SALARY INCREASE

Salary increases impact plan costs in two ways: (i) by increasing members' benefits (since benefits are a function of the members' highest average pay) and future normal cost collections; and (ii) by increasing total active member payroll which in turn generates lower UAAL contribution rates. These two impacts are discussed separately below.

As an employee progresses through his or her career, increases in pay are expected to come from three sources:

1. Inflation – Unless pay grows at least as fast as consumer prices grow, employees will experience a reduction in their standard of living. There may be times when pay increases lag or exceed inflation,

but over the long term, labor market forces may require an employer to maintain its employees' standards of living.

As discussed earlier in this report, we are recommending that the assumed rate of inflation be reduced from 3.50% to 3.25%. This inflation component is used as part of the salary increase assumption.

2. Real "Across the Board" Pay Increases – These increases are typically termed productivity increases since they are considered to be derived from the ability of an organization or an economy to produce goods and services in a more efficient manner. As that occurs, at least some portion of the value of these improvements can provide a source for pay increases. These increases are typically assumed to extend to all employees "across the board." The State and Local Government Workers Employment Cost Index produced by the Department of Labor provides evidence that real "across the board" pay increases have averaged about 0.50% - 0.75% annually during the last ten to twenty years.

   We also referred to the annual report on the financial status of the Social Security program published in April 2012. In that report, real "across the board" pay increases are forecast to be 1.1% per year under the intermediate assumptions.

   The real pay increase assumption is generally considered a more "macroeconomic" assumption, that is not necessarily based on individual plan experience. However, we note that for CCCERA's active members the actual average inflation plus "across the board" increase (i.e., wage inflation) over the three-year period ending December 31, 2011 was 1.0%.

   Considering these factors, we recommend maintaining the real "across the board" salary increase assumption at 0.75%. This means that the combined inflation and "across the board" salary increase assumption will decrease from 4.25% to 4.00%.

3. Promotional and Merit Increases – As the name implies, these increases come from an employee's career advances. This form of pay increase differs from the previous two, since it is specific to the individual. For CCCERA, this assumption is structured as a function of an employee's service. The assumed increases range from 0.75% to 9.00% for General members and 0.75% to 9.50% for Safety members. This assumption is derived from employee-specific information as part of the triennial experience study.

Recommended promotional and merit assumptions will be studied as part of our triennial experience analysis.

All three of these forces will be incorporated into a salary increase assumption which is applied in the actuarial valuation to project future benefits and future normal cost contribution collections.

Active Member Payroll

Projected active member payrolls are used to develop the UAAL contribution rate. Future values are determined as a product of the number of employees in the workforce and the average pay for all employees. The average pay for all employees increases only by inflation and real "across the board" pay increases. The promotional and merit increases are not an influence, because this average pay is not specific to an individual.

We recommend that the active member payroll increase assumption be decreased from 4.25% to 4.00% annually, consistent with the combined inflation plus real "across the board" salary increase assumptions.

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