

**CONTRA COSTA COUNTY EMPLOYEES'  
RETIREMENT ASSOCIATION**

**Review of Economic Actuarial Assumptions  
for the December 31, 2015 Actuarial Valuation**



**COPYRIGHT © 2016  
ALL RIGHTS RESERVED  
APRIL 2016**



100 Montgomery Street Suite 500 San Francisco, CA 94104-4308  
T 415.263.8200 www.segalco.com

April 19, 2016

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, 2015 Actuarial Valuation**

Dear Members of the Board:

We are pleased to submit this report of our review of the economic actuarial assumptions for use in the Contra Costa County Employees' Retirement Association (CCCERA) December 31, 2015 actuarial valuation. This report includes our recommendations and the analysis supporting their development.

Please note that December 31, 2015 is also the year of the CCCERA's triennial non-economic actuarial 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 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,

A handwritten signature in black ink, appearing to read "Paul Angelo", written over a horizontal line.

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

A handwritten signature in black ink, appearing to read "John Monroe", written over a horizontal line.

John Monroe, ASA, EA, MAAA  
Vice President and Actuary

MAM/hy

5412045v4/05337.110

## TABLE OF CONTENTS

	Page
I. INTRODUCTION, SUMMARY, AND RECOMMENDATIONS .....	1
II. BACKGROUND AND METHODOLOGY.....	4
III. ECONOMIC ASSUMPTIONS .....	5
A. INFLATION .....	5
B. INVESTMENT RETURN .....	7
C. SALARY INCREASE .....	22

## 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. Taking into account one year's gains or losses without making a change in the assumptions in effect assumes that 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 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 inflation and “across the board” salary increase assumptions. The merit and promotional 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, 2015 Actuarial Valuation are as follows:

**Inflation** – Future increases in the Consumer Price Index (CPI) which drive investment returns and active member salary increases, as well as COLA increases to retired members.

**Recommendation:** *Reduce the rate from 3.25% to 3.00% per annum. We also recommend decreasing the assumed COLA for those tiers with a 4.00% maximum COLA from 3.25% to 3.00% per year.*

**Investment Return** - The estimated average future rate of return, net of investment expenses, on current and future assets of CCCERA as of the valuation date. This rate is used to discount liabilities.

**Recommendation:** *Maintain the investment return assumption at 7.25% per annum. This would be consistent with the Board’s past practice of having margin for adverse deviation under the risk-adjusted model used by Segal. We further recommend changing to an explicit treatment of administrative expenses in the selection of an investment return assumption for use both in funding and in financial reporting required by the Governmental Accounting Standards Board (GASB).*

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

- Inflationary salary increases,
- Real “across the board” salary increases, and
- Merit and promotional increases.

**Recommendation:** *Reduce the current inflationary salary increase assumption from 3.25% per annum to 3.00% per annum and reduce the current real “across the board” salary increase assumption from 0.75% to 0.50%. This means that the combined inflationary and real “across the board” salary increases will decrease from 4.00% to 3.50%. Please note that the merit and promotional increase assumption ranges from 0.75% to 9.50% for General and 0.75% to 10.00% for Safety. The merit and promotional increases will be reviewed as part of 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, 2015 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 members and drives increases in the allowances of retired members.

***Investment Return*** – Expected long term rate of return on CCCERA’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 members 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

#### 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-year and 30-year moving averages of historical inflation rates:

#### Historical Consumer Price Index – 1930 to 2015

	<u>25th Percentile</u>	<u>Median</u>	<u>75th Percentile</u>
15-year moving averages	2.5%	3.4%	4.6%
30-year moving averages	3.1%	4.1%	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 more recent 15-year averages are lower as they do not include the high inflation years of the mid-1970s and early 1980s.

For 2015, the public fund survey published by the National Association of State Retirement Administrators (NASRA) no longer contains the distribution of the inflation assumptions used by the responding retirement systems included in their survey. We contacted the NASRA staff and we were able to obtain the inflation assumptions used by 76 large public retirement funds in their 2014 valuations. The median value of those inflation assumptions is 3.00%. In California, CalPERS and Marin County use an inflation assumption of 2.75% while CalSTRS, LACERA, OCERS and nine other 1937 Act CERL systems use an inflation assumption of 3.00%.

CCCERA’s investment consultant, Verus, anticipates an annual inflation rate of 2.10%. Note that, in general, investment consultants use a time horizon for this assumption that is shorter than the time horizon we use for the actuarial valuation. The average inflation rate used by a sample of eight investment advisory firms is 2.45%.



To find a forecast of inflation based on a longer time horizon, we referred to the 2015 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 2.70%. We also compared the yields on the thirty-year inflation indexed U. S. Treasury bonds to comparable traditional U. S. Treasury bonds. As of March 2016, the difference in yields is 1.69%, which provides a current measure of market expectations of inflation.

**Based on all of the above information, we recommend that the current 3.25% annual inflation assumption be reduced to 3.00% for the December 31, 2015 actuarial valuation.**

***Retiree Cost-of-Living Increases***

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 3.25% to 3.00% per year. The current and proposed COLA assumptions are shown below:

<b>Maximum COLA</b>	<b>Current Assumption</b>	<b>Proposed Assumption</b>
2%	2.00%	2.00%
3%	3.00%	3.00%
4%	3.25%	3.00%

In developing the COLA assumption, 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. Although the results of this type of analysis 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 assumption.
- 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 3.00% 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 assumption 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 association's portfolio will vary with the Board's asset allocation among asset classes.

Following is CCCERA's current target asset allocation and the assumed real rate of return assumptions by asset class. The first column of real rate of return assumptions are determined by reducing Verus' total or "nominal" return assumptions by their assumed 2.10% inflation rate in their December 2015 report. The second column of returns (except for Short-Term Govt/Credit, U.S. Treasury, Risk Diversifying Strategies, Private Credit and Private Equity) represents the average of a sample of real rate of return assumptions, where each firm's nominal returns have been reduced by that firm's assumed inflation rate. The sample includes the expected annual real rates of return provided to us by Verus and by seven other investment advisory firms retained by Segal's California public sector retirement clients. We believe these averages are a reasonable consensus forecast of long term future market returns in excess of inflation.<sup>1</sup>

---

<sup>1</sup> Note that, just as for the inflation assumption, in general the time horizon used by the investment consultants in determining the real rate of return assumptions is shorter than the time horizon we use for the actuarial valuation.

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

<u>Asset Class</u>	<u>Percentage of Portfolio</u>	<u>Verus’ Assumed Real Rate of Return<sup>(1)</sup></u>	<u>Average Real Rate of Return from a Sample of Consultants to Segal’s California Public Sector Clients<sup>(2)</sup></u>
Large Cap U.S. Equity	6%	4.60%	5.75%
Developed International Equity	10%	8.90%	6.99%
Emerging Markets Equity	14%	11.80%	8.95%
Short-Term Govt/Credit	24%	0.20%	0.20% <sup>(3)</sup>
U.S. Treasury	2%	0.30%	0.30% <sup>(3)</sup>
Real Estate	7%	3.80%	4.45%
Cash & Equivalents	1%	0.00%	-0.46%
Risk Diversifying Strategies	2%	4.30%	4.30% <sup>(3)</sup>
Private Credit	17%	6.30%	6.30% <sup>(3)</sup>
Private Equity	<u>17%</u>	<u>8.10%</u>	<u>8.10%</u> <sup>(3)</sup>
Total Portfolio	100%	5.67%	5.19%

<sup>(1)</sup> *Derived by reducing Verus’ total rate of return assumptions by their assumed 2.10% inflation rate.*

<sup>(2)</sup> *These are based on the projected arithmetic real returns provided by the investment advisory firms serving the county retirement associations of Contra Costa, Sonoma, Alameda, Mendocino, Ventura, the LA City Employees’ Retirement System, the East Bay Municipal Utility District Retirement Plan and the LA Fire & Police Pensions. These return assumptions are gross of any applicable investment expenses.*

<sup>(3)</sup> *For these asset classes, the Verus’ assumption is applied in lieu of the average because either this is an unique asset class from the firms survey or there exists a large disparity in returns for these asset classes among firms surveyed and because using Verus’ assumption should more closely reflect the underlying investments made specifically for CCCERA.*

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 (ASOP) No. 27, Section 3.8.3.d, which states:

“Investment Manager Performance - Anticipating superior (or inferior) investment manager performance may be unduly optimistic (pessimistic). The actuary should not assume that superior or inferior returns will be achieved, net of investment expenses, from an active investment management strategy compared to a passive investment management strategy unless the actuary believe, based on relevant supporting data, that such superior or inferior returns represent a reasonable expectation over the measurement period.”

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 duration of a retirement plan's liabilities.
2. Using a sample average of expected real rates of return allows CCCERA's investment return assumption to reflect a broader range of capital market information and should help reduce year to year volatility in CCCERA's investment return assumption.
3. Therefore, we recommend that the 5.19% portfolio real rate of return be used to determine CCCERA's investment return assumption. This is 0.29% higher than the return that was used three years ago in the review to prepare the recommended investment return assumption for the December 31, 2012 valuation. The difference is due to changes in CCCERA's target asset allocation (+0.33%), changes in the real rate of return assumptions provided to us by the investment advisory firms (-0.09%) and the effect of the interaction between those two changes<sup>2</sup> (+0.05%).

### ***Association Expenses***

For funding purposes, the real rate of return assumption for the portfolio needs to be adjusted for investment expenses expected to be paid from investment income. As further discussed later in this report, current practice for CCCERA also adjusts for expected administrative expenses. The following table provides these expenses in relation to the actuarial value of assets for the five years ending December 31, 2014.

---

<sup>2</sup> This includes the joint effect of the changes in CCCERA's target asset allocation and the changes in the average real rate of return assumptions for each asset category as provided to us by the investment advisory firms.

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

FYE	Actuarial Value of Assets <sup>(1)</sup>	Administrative Expenses	Investment Expenses <sup>(2)</sup>	Administrative %	Investment %	Total %
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
2012	5,497,194	6,030	34,363	0.11	0.63	0.74
2013	5,922,449	6,776	38,158	0.11	0.64	0.75
2014	6,572,560	6,980	41,600	<u>0.11</u>	<u>0.63</u>	<u>0.74</u>
Average				0.11%	0.61%	0.72%

<sup>(1)</sup> As of end of plan year

<sup>(2)</sup> 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 0.72%. Based on this experience, we have increased the future expense component from 0.65% to 0.75%. This assumption will be re-examined in subsequent assumption reviews as new data becomes available.

Note related to investment expenses paid to active managers – As cited above, under Section 3.8.3.d of ASOP No. 27, the effect of an active investment management strategy should be considered “net of investment expenses...unless the actuary believes, based on relevant data, that such superior or inferior returns represent a reasonable expectation over the measurement period.”

We have not performed a detailed analysis to measure how much of the investment expenses paid to active managers might have been offset by additional returns (“alpha”) earned by that active management. We believe that such a review would not have a significant impact on the recommended investment return assumption developed using the above expense assumption. For now, we will continue to use the current approach of treating any “alpha” that may be identified as an increase in the risk adjustment and corresponding confidence level in developing the investment return assumption rather than as an offset to any related active management expenses.<sup>3</sup>

<sup>3</sup> As noted earlier, Actuarial Standard of Practice (ASOP) No. 27, Section 3.8.3.d states “Investment Manager Performance - Anticipating superior (or inferior) investment manager performance may be unduly optimistic (pessimistic). The actuary should not assume that superior or inferior returns will be achieved, **net of investment expenses**, from an active investment management strategy compared to a passive investment management strategy unless the actuary believe, based on relevant supporting data, that such superior or inferior returns represent a reasonable expectation over the measurement period.” (emphasis added). We believe this means that assuming only enough superior return to cover related investment expenses would not require the relevant supporting data referenced in ASOP No. 27.

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

In 2012, GASB 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<sup>4</sup>.

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 0.11% administrative expense from the above development and to develop a separate treatment of administrative expenses.

The issues associated with eliminating the consideration of administrative expenses when developing the investment return assumption used for funding, and the alternatives that are available to the Board in developing the investment return assumption for use in GASB financial reporting purposes are provided at the end of this Section. While we do recommend that the Board adopt an investment return for funding that is gross of administrative expenses (as discussed in the end of this Section), the preliminary discussion that follows has first been completed on a net of administrative expenses basis, to allow an "apples to apples" comparison with the current assumption.

---

<sup>4</sup> 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.

### ***Risk Adjustment***

The real rate of return assumption for the portfolio is adjusted to reflect the potential risk of shortfalls in the return assumptions. CCCERA's asset allocation 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.<sup>5</sup> The 5.19% 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 somewhat above the 50% level. This is consistent with our experience that retirement plan fiduciaries would generally prefer that returns exceed the assumed rate more often than not. Note that, based on the investment return assumptions recently adopted by systems that have been analyzed under this model, we observe a confidence level generally in the range of 50% to 60%.

Three years ago in the last full review of the economic assumptions, the Board adopted an investment return assumption of 7.25%. That return implied a risk adjustment of 0.25%, reflecting a confidence level of 53% 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.<sup>6</sup>

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.

---

<sup>5</sup> This type of risk adjustment is sometimes referred to as a "margin for adverse deviation."

<sup>6</sup> Based on an annual portfolio return standard deviation of 12.44% provided by Milliman USA in 2013. 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.

If we use the same 53% confidence level to set this year’s risk adjustment, based on the current long-term portfolio standard deviation of 10.80% provided by Verus, the corresponding risk adjustment would be 0.22%. Together with the other investment return components, this produces a net investment return assumption of 7.22%, which is slightly lower than the current assumption of 7.25%. This result supports maintaining the current assumption of 7.25% that would include a risk adjustment of 0.19% and confidence level of 53%.

The table below shows CCCERA’s investment return assumptions and, for the years when an analysis was performed, the risk adjustments and corresponding confidence levels as determined in those prior studies.

**Historical Investment Return Assumptions, Risk Adjustments and Confidence Levels Based on Assumptions Adopted by the Board**

Year Ending December 31	Investment Return	Risk Adjustment	Corresponding Confidence Level
2005	7.90%	0.84%	60%
2006 - 2008	7.80%	0.86%	60%
2009 - 2011	7.75%	0.41%	55%
2012 - 2014	7.25%	0.25%	53%
2015 (Recommended)	7.25%	0.19%	53%

As we have discussed in prior years, the risk adjustment model and associated confidence level is most useful as a means for comparing how CCCERA has positioned itself relative to risk over periods of time<sup>7</sup>. The use of a 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 Verus. 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.

---

<sup>7</sup> 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 lower level of inflation should reduce the overall risk of failing to meet the investment return assumption. Maintaining or even lowering the confidence level to some extent could be justified as consistent with the change in the inflation assumption.
- While a confidence level of 53% is within 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, we want to note that 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.
- As with any model, the results of the risk adjustment model should be evaluated for reasonableness and consistency. This is discussed in the later section on “Comparison with Other Public Retirement Systems”.

Taking into account the factors above, our preliminary recommendation is to maintain the net investment return assumption at 7.25%. As noted above, this return implies a 0.19% risk adjustment, reflecting a confidence level of 53% that the actual average return over 15 years would not fall below the assumed return.

***Preliminary Recommended Investment Return Assumption***

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

<b>Calculation of Net Investment Return Assumption</b>		
<u>Assumption Component</u>	<u>December 31, 2015 Preliminary Recommended Value</u>	<u>December 31, 2012 Adopted Value</u>
Inflation	3.00%	3.25%
Plus Portfolio Real Rate of Return	5.19%	4.90%
Minus Expense Adjustment	(0.75%)	(0.65%)
Minus Risk Adjustment	<u>(0.19%)</u>	<u>(0.25%)</u>
Total	7.25%	7.25%
Confidence Level	53%	53%

**Based on this analysis, our preliminary recommendation is to maintain the investment return assumption at 7.25% per annum. Our final recommendation follows later in this section after discussion regarding a recommended change in how expected administrative expenses are handled.**

***Comparing 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 7.25% is still one of the most common investment return assumptions among those California public sector retirement systems. In particular, the 7.25% assumption is used by seven county employees retirement systems (including CCCERA’s current assumption). To our knowledge, there is only one California county employees retirement system who has recently adopted a 7.00% investment return assumption.

The following table compares the CCCERA recommended net investment return assumptions against those of the nationwide public retirement systems that participated in the NASRA 2015 Public Fund Survey for 125 large public retirement funds in their 2014 valuations:

<b>Assumption</b>	<b>CCCERA</b>	<b>NASRA 2015 Public Fund Survey</b>		
		Low	Median	High
Net Investment Return	7.25%	6.50%	7.75%	8.50%

The detailed survey results show that more than one-half of the systems that have an investment return assumption in the range of 6.75% to 7.75%. 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 less frequently and so may lag behind emerging practices in this area.

The recommended assumption of 7.25% provides for some margin for adverse deviation within the risk adjustment model and is consistent with the Association’s current practice relative to other public systems.

## *Developing an Investment Return Assumption for use in Accounting and Financial Reporting under GASB Statement 67 and 68*

The Governmental Accounting Standards Board (GASB) has adopted Statements 67 and 68 that replace Statements 25 and 27 for financial reporting purposes. We now discuss the issues and policy alternatives available to CCCERA in developing its investment return assumptions in a manner that will allow the Plan to maintain consistency in its liability measurements for funding and financial reporting purposes.

### **Background**

GASB Statement 67 governs the Plan's financial reporting and is effective for plan year 2014, while GASB Statement 68 governs the employers' financial reporting and is effective for fiscal year 2014/2015. The new Statements specify requirements for measuring both the pension liability and the annual pension expense incurred by the employers. The new GASB requirements are only for financial reporting and do not affect how the Plan determines funding requirements for its employer. Nonetheless, it is important to understand how the new financial reporting results will compare with the funding requirement results. The comparison between funding and GASB financial reporting results will differ dramatically depending on whether one is considering measures of the accumulated pension liability or measures of the current year annual pension contribution/expense:

- When measuring pension liability GASB will use the same actuarial cost method (Entry Age method) and the same type of discount rate (expected return on assets) as CCCERA uses for funding. This means that the GASB "Total Pension Liability" measure for financial reporting will be determined on generally the same basis as CCCERA's "Actuarial Accrued Liability" measure for funding. This is a generally favorable feature of the new GASB rules that should largely preclude the need to explain why CCCERA has two different measures of pension liability. We note that the same is generally true for the "Normal Cost" component of the annual plan cost for both funding and financial reporting.
- When measuring annual pension expense, GASB will require more rapid recognition of investment gains or losses and much shorter amortization of changes in the pension liability (whether due to actuarial gains or losses, actuarial assumption changes or plan amendments). Because of GASB's more rapid recognition of those changes, retirement systems that have generally used the same "annual required contribution" amount for both funding (contributions) and financial reporting (pension expense) will now have to prepare and disclose two different annual cost results, one for contributions and one for financial reporting under the new GASB Statements.

This situation will facilitate the explanation of why the funding and financial reporting results are different: the liabilities and Normal Costs are generally the same, and the differences in annual costs are due to differences in how changes in liability are recognized. However, there is one other feature that will make the liability and Normal Cost measures different unless action is taken by CCCERA.

### **Treatment of Expected Administrative Expenses when Measuring Liabilities**

As noted above, according to GASB, the discount rate used for financial reporting purposes should be based on the long-term expected rate of return on a retirement system's investments, just as it is for funding. However, GASB requires that this assumption should be net of investment expenses but not net of administrative expenses (i.e., without reduction for administrative expenses). Currently, CCCERA's investment return assumption used for the annual funding valuation is developed net of both investment and administrative expenses.

While CCCERA could continue to develop its funding investment return assumption net of both investment and administrative expenses, that would mean that CCCERA would then have two slightly different investment return assumptions, one for funding and one for financial reporting. To avoid this apparent discrepancy and to maintain the consistency of liability and Normal Cost measures described above, we believe that it would be preferable to use the same investment return assumption for both funding and financial reporting purposes. This means that the assumption for funding purposes would be developed on a basis that is net of only investment expenses, with an explicit assumption for administrative expenses.

To review, using the same investment return assumption for both purposes would be easier for CCCERA's stakeholders to understand and should result in being able to report CCCERA's Actuarial Accrued Liability (AAL) for funding purposes as the Total Pension Liability (TPL) for financial reporting purposes.

### **Development of Investment Return Assumption For Funding on a Gross of Administrative Expenses Basis so the Same Assumption Can Also Be Used for Financial Reporting ("Option A")**

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 administrative expense component of about 0.11% from development of the 7.25% investment return preliminary recommendation. Under this approach, because these economic assumptions are generally changed in ¼% increments, there would be no change in the recommended investment return assumption as developed earlier in this report. Instead,

there would be an increase in the risk adjustment of 0.11% (from 0.19% to 0.30%), with a corresponding increase in the confidence level from 53% to 54%.

Under this approach, there would also be an explicit loading for administrative expenses. There are various ways to set the explicit administrative expense load assumption, but ultimately the method should result in an assumption that is approximately equivalent to about \$7 million annually, or 1.0% of payroll.

This approach and our final recommendation for the investment return assumption is presented in the following table.

### Calculation of Net Investment Return Assumption

Assumption Component	December 31, 2015 Recommended Values if Used only for Funding (Net of Admin. Expenses)	December 31, 2015 Recommended Values for both Funding and Financial Reporting (Gross of Admin. Expenses)
Inflation	3.00%	3.00%
Plus Portfolio Real Rate of Return	5.19%	5.19%
Minus Expense Adjustment	(0.75%)	(0.64%)
Minus Risk Adjustment	<u>(0.19%)</u>	<u>(0.30%)</u>
Total	7.25%	7.25%
Confidence Level	53%	54%
Increase in combined Employer and Employee Contributions Due to Explicit Load for Administrative Expenses (Cost as % of Payroll)	Not Applicable	1.0% of payroll

There is an additional complication associated with eliminating the administrative expenses in developing the investment return assumption used for funding that relates to the allocation of administrative expenses between the employers and members:

1. Even though GASB requires the exclusion of the administrative expenses 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. That approach is illustrated in the table above.

2. Under CCCERA's current approach of subtracting the administrative expense in the development of the investment return assumption, such annual administrative expense is funded implicitly 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 member's contribution requirements, these administrative expenses have been funded implicitly by both the employer and the members.
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 members, including possibly establishing a new method to allocate the anticipated annual administrative expense between them. Under current practice, part of the implicit funding of administrative expenses is in the Normal Cost and so is shared between the employer and the members. However, the rest of the implicit expense funding is in the (Unfunded) Actuarial Accrued Liability, which is funded solely by the employers.
4. It is not straightforward to quantify precisely the current implicit sharing of administrative expenses between employers and members. This means that an exact reproduction of that allocation on an explicit basis will be difficult to develop. This in turn means that CCCERA would need to develop a new basis for sharing the cost of administrative expenses, one that if desired, approximately reproduces the current allocation. Alternatively, CCCERA could decide to treat administrative expenses as a loading applied only to the employer contribution rates, which is the practice followed by private plans, both single employer and multi-employer.
5. As the Board is aware, legislative changes under AB 340 imposed major modifications to both the level of benefits and the cost-sharing of the funding of those benefits for county employees' retirement systems. Included in such modifications is the requirement (for future hires) to fund the Normal Cost on a 50:50 basis between the employer and the member. As noted in (3) above, under current practice, part of the implicit funding of administrative expenses is in the Normal Cost and so would be shared between the employer and the members. This would not necessarily continue when the administrative expense loading is developed separate from the Normal Cost.

**If, as we recommend, the Board wishes to continue to develop a single investment return assumption for both funding and financial reporting purposes, it is our recommendation that the Board adopt a change in the funding of administrative expenses from the method described in (2) above with an implicit allocation of administrative expenses to the method described in (1) above with an explicit allocation of administrative expenses.**

**In addition, we recommend that the total explicit administrative expense load assumption be set at 1.0% of payroll, which is approximately equivalent to about 0.11% of assets or \$7 million annually. This assumption would be reviewed with each triennial experience study, along with the other economic assumptions.**

The more significant issues mentioned in (3), (4) and (5) above concern whether or not the costs associated with the administrative expenses should continue to be allocated to both the employers and the members. Unless the Board wishes to charge administrative expenses only to the employers, we propose a method whereby the costs associated with the explicit assumption for administrative expenses continue to be allocated to both employers and members. We recommend a straightforward way to do that in a manner generally consistent with current practice, which is to allocate expenses based on the components of the total contribution rate (before expenses) for employers and members. These components would be member Normal Cost contributions, employer Normal Cost contributions and employer UAAL contributions. **Under this recommended approach, of the total administrative expenses of about \$7 million or 1.0% of payroll, about \$1.6 million or 0.23% of payroll would be allocated to the members and \$5.4 million or 0.77% of payroll would be allocated to the employers in the aggregate. This illustrative allocation is based on the 40.06% and 11.84% contribution rates paid by the employers and the members, respectively, in the December 31, 2014 valuation.**

**Development of Investment Return Assumption for Funding on a Net of Administrative Expenses Basis but use that Same Assumption for Financial Disclosure Development (“Option B”)**

If the Board decides to leave the recommended investment return assumption of 7.25% on a net of administrative expense basis for funding purposes, we believe there still is a way to use that same 7.25% for financial reporting purposes under GASB. Under this approach, what appears to be the same 7.25% assumption would actually be used as two slightly different assumptions: an assumption net of administrative expenses for funding, and an assumption gross of administrative expenses for financial reporting. This would indirectly result in an increase in the margin for adverse deviation or “confidence level” associated with the use of the recommended 7.25% assumption from 53% as used for funding purposes to 54% only as used for financial reporting purposes.

The Board had previously adopted this Option B on an interim basis for use in performing the December 31, 2013 and 2014 actuarial valuation and the December 31, 2014 GASB 67 report.

The following table summarizes the components of the investment return assumption under this approach, using the recommended assumption for both funding (net of administration expenses) and financial reporting (gross of administration expenses):

**Calculation of Net Investment Return Assumption**

Assumption Component	December 31, 2015 Recommended Values if Used only for Funding (Net of Admin. Expenses)	December 31, 2015 Alternative Values for Financial Reporting (Gross of Admin. Expenses)
Inflation	3.00%	3.00%
Plus Portfolio Real Rate of Return	5.19%	5.19%
Minus Expense Adjustment	(0.75%)	(0.64%)
Minus Risk Adjustment	<u>(0.19%)</u>	<u>(0.30%)</u>
Total	7.25%	7.25%
Confidence Level	53%	54%

Note that under both Option A and Option B the confidence level for financial reporting increases from 53% to 54% (because the risk adjustment increases from 0.19% to 0.30%). The difference is that under Option A the same confidence level increase would apply for funding purposes, along with the addition of an explicit loading on the contribution rates for administrative expenses.



## 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 a member 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 will require an employer to maintain its members' standards of living.

**As discussed earlier in this report, we are recommending that the assumed rate of inflation be reduced from 3.25% per annum to 3.00% per annum. This inflation component is used as part of the salary increase assumption.**

2. Real “Across the Board” Pay Increases – These increases are sometimes 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 0.6% - 0.9% 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 July 2015. In that report, real “across the board” pay increases are forecast to be 1.2% 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, recent salary experience with public systems in California as well as anecdotal discussions with plans and plan sponsors indicate lower future real wage growth expectations for public sector employees. 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, 2014 was actually negative, at -0.5%.

**Considering these factors, we recommend reducing the real “across the board” salary increase assumption from 0.75% to 0.50%. This means that the combined inflation and “across the board” salary increase assumption will decrease from 4.00% to 3.50%.**

3. Individual Merit and Promotional Increases – As the name implies, these increases come from a member’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 a member’s service. The assumed increases range from 0.75% to 9.50% for General members and 0.75% to 10.00% for Safety members. This assumption is derived from member-specific information as part of the triennial experience study.

**Recommended merit and promotional 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 is assumed to increase only by inflation and real “across the board” pay increases. The merit and promotional 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 4.00% to 3.50% annually, consistent with the combined inflation plus real “across the board” salary increase assumptions.**