ORANGE COUNTY EMPLOYEES RETIREMENT SYSTEM

Review of Economic Actuarial Assumptions for the December 31, 2014 Actuarial Valuation

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July 10, 2014

Board of Retirement
Orange County Employees Retirement System
2223 Wellington Avenue
Santa Ana, CA 92701

Re: Review of Economic Actuarial Assumptions for the December 31, 2014 Actuarial Valuation

Dear Members of the Board:

We are pleased to submit this report of our review of the December 31, 2014 economic actuarial assumptions for the Orange County Employees Retirement System. This report includes our recommendations and the analysis supporting their development.

Please note that December 31, 2014 is also the year of the Orange County Employees Retirement System's triennial experience study. The non-economic actuarial assumption recommendations are provided in a separate report.

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,

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Senior Vice President and Actuary

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TABLE OF CONTENTS

Page

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 the experience is treated as temporary and that, 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 for a single year.

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,[1] "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.

[1] ASOP No. 27 was revised in September 2013 effective for measurement dates on or after September 30, 2014. Because the recommendations developed herein are intended for use in the December 31, 2014, 2015 and 2016 valuations, this study was performed in accordance with ASOP 27 as constituted after the 2013 revisions to the ASOP.

We are not recommending changes in the investment return, inflation and "across the board" salary increase assumptions. However, we are recommending a change in treatment of administrative expenses for use in developing the investment return assumption and a possible change in the method or assumption used to anticipate growth in the employer's total payroll that would be used to develop the contribution rate to amortize the Unfunded Actuarial Accrued Liability (UAAL). Our recommendations for the economic actuarial assumptions for the December 31, 2014 Actuarial Valuation are as follows:

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: Maintain the assumed rate of price inflation at 3.25% per annum.

Investment Return – The estimated average future net rate of return on current and future assets of the System as of the valuation date. This rate is used to discount liabilities.
Recommendation: Increase the investment return assumption to 7.50% per annum, with an alternative recommendation to maintain the current investment return assumption at 7.25% per annum. Either of these recommendations would be consistent with the Board's past practice of having a margin for adverse deviation under the risk-adjusted model used by Segal. We also 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 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: Maintain the current inflationary salary increase assumption at 3.25% and the current real "across the board" salary increase assumption at 0.50%. This means that the combined inflationary and real "across the board" salary increases will remain unchanged at 3.75%. The recommended promotional and merit increase assumptions are provided in our separate non-economic actuarial assumptions report.

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, 2014 valuation is provided in a separate report. 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 System'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 UAAL are assumed to increase each year by the price inflation rate plus any "across the board" real 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 and 30 year moving averages of historical inflation rates:

Historical Consumer Price Index – 1930 to 2013

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

	25th Percentile	Median	75th Percentile
15-year moving averages	2.6%	3.4%	4.7%
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 2013 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 2012 valuations has decreased to 3.00% from the 3.25% used in the 2011 valuations. In California, CalPERS and LACERA have recently reduced their inflation assumptions to 2.75% and 3.00%, respectively.

OCERS' investment consultant, NEPC, anticipates an annual inflation rate of 3.25%, while the average inflation assumption provided by NEPC and by eight other investment advisory firms for their public clients in California is 2.54%. 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 2013 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 2.80%. We also compared the yields on the thirty-year inflation indexed U. S. Treasury bonds to comparable

traditional U. S. Treasury bonds. As of June 2014, the difference in yields is 2.28%, which provides a measure of market expectations of inflation.

Based on all of the above information, we recommend that the current 3.25% annual inflation assumption be maintained for the December 31, 2014 actuarial valuation.

Retiree Cost-of-Living Increases

In the last valuation, as of December 31, 2013, consistent with the 3.25% annual inflation assumption used by the Board for that valuation, the Board used a 3.00% cost-of-living adjustment for all retirees. Consistent with our recommended inflation assumptions, we also recommend maintaining the current assumptions to value the post-retirement cost-of-living adjustments (COLA).

Note that 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 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 System'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 netting NEPC's total return assumptions by their assumed 3.25% for inflation. The second column of returns (except for Diversified Credit, Hedge Funds, GTAA, Real Return and Private Equity) 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 NEPC 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.[2]

[2] 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 assumption is shorter than the time horizon encompassed by the actuarial valuation.

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

Asset Class	Percentage of Portfolio	NEPC's Assumed Real Rate of Return[(1)]	Average Real Rate of Return from a Sample of Consultants to Segal's Public Sector Client[(2)]
Large Cap Equity[(3)]	14.90%	5.88%	5.92%
Small/Mid Cap Equity[(3)]	2.73%	6.70%	6.49%
Developed International Equity[(3)]	10.88%	6.86%	6.90%
Emerging International Equity[(3)]	6.49%	9.14%	8.34%
Core Bonds	10.00%	0.92%	0.73%
Global Bonds	2.00%	0.10%	0.30%
Emerging Market Debt	3.00%	5.02%	4.00%
Real Estate	10.00%	4.57%	4.96%
Diversified Credit (US Credit)	8.00%	4.97%	4.97%[(4)]
Diversified Credit (Non-US Credit)	2.00%	6.76%	6.76%[(4)]
Hedge Funds	7.00%	4.13%	4.13%[(4)]
GTAA	7.00%	4.22%	4.22%[(4)]
Real Return	10.00%	5.86%	5.86%[(4)]
Private Equity	6.00%	9.60%	9.60%[(4)]
Total Portfolio	100.00%	5.38%	5.33%

(1) *Derived by reducing NEPC's nominal rate of return assumptions by their assumed 3.25% inflation rate.*

(2) *These are based on the projected arithmetic real returns provided by the investment advisory firms serving the county retirement systems of Orange, Sacramento, Contra Costa, Sonoma, Mendocino, Imperial, 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.*

(3) *We have taken the 5.00% Global Equity allocation and divided it between these asset classes: (a) 38.10% to Large Cap Equity (1.90% of entire portfolio), (b) 14.60% to Small Cap Equity (0.73% of entire portfolio), (c) 37.50% to Developed International Equity (1.88% of entire portfolio) and (d) 9.80% to Emerging International Equity (0.49% of entire portfolio).*

(4) *For these asset classes, NEPC's 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 NEPC's assumption should more closely reflect the underlying investments made specifically for OCERS.*

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 prior Actuarial Standard of Practice (ASOP) 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."

In the revised ASOP No. 27, Section 3.8.3.d contains the following similar but expanded guidance:

"Investment Manager Performance—Anticipating superior (or inferior) investment manager performance may be unduly optimistic (or 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 believes, 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 durations of a retirement plan's liabilities.

2. Using a sample average of expected real rate of returns allows the System's investment return assumption to reflect a broader range of capital market information and should help reduce year to year volatility in the investment return assumption.

3. Therefore, we recommend that the 5.33% portfolio real rate of return be used to determine the System's investment return assumption. This is 0.39% higher than the return we used in 2012 to prepare the recommended investment return assumption for the December 31, 2012 valuation. This difference is split almost evenly between the changes in the real rate of return assumptions provided to us by the investment advisory firms and the effect of changes in the System's target asset allocation.

System 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 OCERS 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, 2013.

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

Plan Year	Valuation Value of Assets[1]	Administrative Expenses	Investment Expenses[2]	Administrative %	Investment %	Total %
2009	$7,748,380	$10,893	$34,819	0.14%	0.45%	0.59%
2010	8,154,687	12,448	68,027[3]	0.15	0.83	0.98
2011	8,672,592	15,479	39,023	0.18	0.45	0.63
2012	9,064,355	14,295	40,992	0.16	0.45	0.61
2013	9,469,208	14,904	38,759	0.16	0.41	0.57
Average				0.16%	0.52%	0.68%

[1] *As of beginning of plan year.*

[2] *Net of 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.*

[3] *We understand that the 2010 investment expenses included some one-time expenses such as foreign tax expense that is expected to be offset by a future tax reclaim.*

The average expense percentage over this five year period is 0.68%. The average expense percentage excluding 2010 is 0.60%. Based on this experience, we have maintained the future expense component of 0.60%. 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 the 2014 revision to ASOP No. 27, the effect of an active investment management strategy should be considered "net of investment expenses". In the case of OCERS' portfolio, we understand from our discussions with OCERS' investment staff that for a portion of the portfolio, investment expense is incentive based and is only awarded to the outside managers if certain performance goals are met; while for other portions of the portfolio, the relationship between investment expense and performance is not as direct.

We further understand that OCERS' investment staff is planning on conducting an analysis to measure the relationship between the investment expense paid to active managers and the amount of additional returns ("alpha") earned by that active management. As that information is not currently available, we would recommend the continuation of the prior approach (which assumes no alpha) in this study. This means that any alpha that may be identified would serve to increase the confidence level of achieving the recommended investment return assumptions. For example, an alpha of 0.25% would increase the

confidence level by about 3% (see discussions that follow for definitions of risk adjustment and confidence level).

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 System and fiscal year 2014/2015 for the employer.[3]

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 0.16% 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 may be available to the Board in developing the investment return assumption for use in GASB financial reporting purposes are discussed 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.

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 System'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

[3] 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.

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.[4] The 5.33% 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.

Two years ago, the Board adopted an investment return assumption of 7.25%. That return implied a risk adjustment of 0.34%, 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.[5] The confidence levels from that review as well as from the two other reviews prior to that are summarized in the table below:

Based on Investment Return Assumption Adopted for Valuation as of December	Adopted Investment Return Assumption	Confidence Level
2012	7.25%	55%
2011	7.75%	<50%
2007	7.75%	61%
2004	7.75%	56%

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.

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

5 Based on an annual portfolio return standard deviation of 10.30% provided by NEPC in 2012. 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 55% confidence level to set this year's risk adjustment, based on the current long-term portfolio standard deviation of 12.30%, provided by NEPC, the corresponding risk adjustment would be 0.40%. Together with the other investment return components, this produces a net investment return assumption of 7.58%, which is higher than the current assumption of 7.25%. Because these economic assumptions are generally changed in ¼% increments, this result would support an assumption of 7.50%. That would include a risk adjustment of 0.48% with a corresponding confidence level of 56%

We also evaluated the effect on the confidence level of maintaining the current investment return assumptions. A net investment return assumption of 7.25%, together with the other investment return components, would produce a risk adjustment of 0.73%, which corresponds to a confidence level of 59%.

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 System has positioned itself relative to risk over periods of time.[6] The use of either a 56% or a 59% 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 NEPC. 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.

- 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".

- While a confidence level of either 59% or 56% is higher than the confidence level of 55% from the last review, both are still within the range of about 50% to 60% that correspond the risk adjustments used by most of Segal's other California public retirement system clients. (However, we note that in recent reviews of economic assumptions, those confidence levels have generally been decreasing.)

[6] 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."

Taking into account the factors above, our preliminary recommendation is to increase the net investment return assumption to 7.50% with an alternative recommendation to maintain the net investment return assumption at 7.25%. As noted above, these returns imply risk adjustments of 0.48% and 0.73%, reflecting confidence levels of 56% or 59% 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.

Calculation of Net Investment Return Assumption

Assumption Component	December 31, 2014 Preliminary Recommended Value	December 31, 2014 Alternative Preliminary Recommended Value	December 31, 2012 Adopted Value
Inflation	3.25%	3.25%	3.25%
Plus Portfolio Real Rate of Return	5.33%	5.33%	4.94%
Minus Expense Adjustment	(0.60%)	(0.60%)	(0.60%)
Minus Risk Adjustment	(0.48%)	(0.73%)	(0.34%)
Total	7.50%	7.25%	7.25%
Confidence Level	56%	59%	55%

Based on this analysis, our preliminary recommendation is that the investment return assumption be increased to 7.50% with an alternative recommendation to maintain the assumption at 7.25% per annum. Our final recommendation follows later in this section after discussion regarding a change in how expected administrative expenses are handled.

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.

Besides OCERS, two other County employees retirement systems (Fresno and Contra Costa) have recently adopted a 7.25% earnings assumption. However, 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, adopted a 7.50% earnings assumption . Note that CalPERS uses a lower inflation assumption of 2.75% while LACERA uses an inflation assumption of 3.00%.

The following table compares the OCERS recommended net investment return assumptions against those of the nationwide public retirement systems that participated in the National Association of State Retirement Administrators (NASRA) 2013 Public Fund Survey:

Assumption	**OCERS**	**NASRA 2013 Public Fund Survey**		
		Low	Median	High
Net Investment Return	7.25%	6.50%	7.90%	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%, almost half 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.

We note that while the alternative recommended assumption of 7.25% provides for a larger margin for adverse deviation within the risk adjustment model as compared to two years ago, it is still consistent with the System's current practice relative to other public systems as well as to the System's practice from 2007.

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 OCERS in developing its investment return assumptions in a manner that will allow the System to maintain consistency in its liability measurements for funding and financial reporting purposes.

Background

GASB Statement 67 governs the System'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 System determines funding requirements for its employers. 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 OCERS uses for funding. This means that the GASB "Total Pension Liability" measure for financial reporting will be determined on the same basis as OCERS' "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 OCERS has two different measures of pension liability. We note that the same is 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 OCERS.

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, OCERS'

investment return assumption used for the annual funding valuation is developed net of both investment and administrative expenses.

While OCERS could continue to develop its funding investment return assumption net of both investment and administrative expenses, that would mean that the System 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 OCERS' stakeholders to understand and should result in being able to report OCERS' 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 0.16% from development of the preliminary 7.50% and 7.25% investment return recommendations. 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 0.16%, with a corresponding increase in the confidence level either from 56% to 58% or from 59% to 61%. Note that under the alternative recommendation of 7.25% this would allow the System to set the investment return assumption in 2014 by using the same confidence level that was used to set the investment return assumption in 2007 (see table on page 12).

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 $15 million annually or 0.9% of payroll.

This approach and our final recommendations for the investment return assumption are presented in the following two tables.

Calculation of Net Investment Return Assumption: 7.50% Recommendation

Assumption Component	December 31, 2014 Recommended Values if Used only for Funding (Net of Administrative Expenses)	December 31, 2014 Recommended Values for both Funding and Financial Reporting (Gross of Administrative Expenses)
Inflation	3.25%	3.25%
Plus Portfolio Real Rate of Return	5.33%	5.33%
Minus Expense Adjustment	(0.60%)	(0.44%)
Minus Risk Adjustment	(0.48%)	(0.64%)
Total	7.50%	7.50%
Confidence Level	56%	58%
Increase in combined Employer and Employee Contributions Due to Explicit Load for Administrative Expenses (Cost as % of Payroll)	Not Applicable	0.9% of payroll

Calculation of Net Investment Return Assumption: 7.25% Recommendation

Assumption Component	December 31, 2014 Recommended Values if Used only for Funding (Net of Administrative Expenses)	December 31, 2014 Recommended Values for both Funding and Financial Reporting (Gross of Administrative Expenses)
Inflation	3.25%	3.25%
Plus Portfolio Real Rate of Return	5.33%	5.33%
Minus Expense Adjustment	(0.60%)	(0.44%)
Minus Risk Adjustment	(0.73%)	(0.89%)
Total	7.25%	7.25%
Confidence Level	59%	61%
Increase in combined Employer and Employee Contributions Due to Explicit Load for Administrative Expenses (Cost as % of Payroll)	Not Applicable	0.9% 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 employees:

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.

2. Under OCERS' 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 employee's contribution requirements, these administrative expenses have been funded 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. 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 employees. 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 employees. This means that an exact reproduction of that allocation on an explicit basis will be difficult to develop. This in turn means that OCERS would need to develop a new basis for sharing the cost of administrative expenses, one that if desired, approximately reproduces the current allocation. Alternatively, OCERS 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 employee. 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 employees. 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 a separate, explicit administrative expense load assumption be developed. 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 0.16% of assets or $15 million annually, which is about 0.9% of payroll.

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 employees. 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 employees. A straightforward way to do that in a manner generally consistent with current practice would be to allocate expenses based on the components of the total contribution rate (before expenses) for employers and employees. These components would be employee Normal Cost contributions, employer Normal Cost contributions and employer UAAL contributions. **Of the total administrative expenses of about $15 million or 0.9% of payroll, this would result in about $11 million or 0.7% of payroll being allocated to the employers and $4 million or 0.2% of payroll being allocated to the employees in the aggregate. These illustrative allocation amounts are based on the 39.05% and 12.77% contribution rates paid by the employers and the employees, respectively, in the December 31, 2013 valuation.**

Development of Investment Return Assumption 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 either 7.50% or 7.25% on a net of administrative expense basis for funding purposes, we believe there still is a way to use that same 7.50% or 7.25% for financial reporting purposes under GASB. Under this approach, what appears to be the same 7.50% or 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 7.50% or 7.25% assumption from 56% or 59% as used for funding purposes to 58% or 61% only as used for financial reporting purposes.

The following tables summarize 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), but with differing treatment of administrative expenses:

Calculation of Net Investment Return Assumption: 7.50% Recommendation

Assumption Component	December 31, 2014 Recommended Values if Used only for Funding (Net of Administrative Expenses)	December 31, 2014 Alternative Values for Financial Reporting (Gross of Administrative Expenses)
Inflation	3.25%	3.25%
Plus Portfolio Real Rate of Return	5.33%	5.33%
Minus Expense Adjustment	(0.60%)	(0.44%)
Minus Risk Adjustment	(0.48%)	(0.64%)
Total	7.50%	7.50%
Confidence Level	56%	58%

Calculation of Net Investment Return Assumption: 7.25% Recommendation

Assumption Component	December 31, 2014 Recommended Values if Used only for Funding (Net of Administrative Expenses)	December 31, 2014 Alternative Values for Financial Reporting (Gross of Administrative Expenses)
Inflation	3.25%	3.25%
Plus Portfolio Real Rate of Return	5.33%	5.33%
Minus Expense Adjustment	(0.60%)	(0.44%)
Minus Risk Adjustment	(0.73%)	(0.89%)
Total	7.25%	7.25%
Confidence Level	59%	61%

Note that under both Option A and Option B the confidence level for financial reporting increases either from 56% to 58% or from 59% to 61% (because the risk adjustment increases from 0.48% to 0.64% or from 0.73% to 0.89%). 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 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 maintained at 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 0.4% - 0.7% 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 May 2013. 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 OCERS' active members the actual average inflation plus "across the board" increase (i.e., wage inflation) over the five-year period ending December 31, 2013 was 1.56% which was significantly lower than the five-year average observed during the prior review of this assumption as of December 31, 2011 of 4.27%.

Valuation Date	Actual Average Increase[1]	Actual Change in CPI[2]
December 31, 2007	5.48%	3.30%
December 31, 2008	7.31%	3.53%
December 31, 2009	4.83%	-0.80%
December 31, 2010	1.78%	1.20%
December 31, 2011	1.97%	2.67%
Five-Year Average as of December 31, 2011	4.27%	1.98%
December 31, 2012	0.03%	2.04%
December 31, 2013	-0.83%	1.08%
Five-Year Average as of December 31, 2013	1.56%	1.24%

(1) *Reflects the increase in average salary for members at the beginning of the year versus those at the end of the year. It does not reflect the average salary increases received by members who worked the full year.*

(2) *Based on the change in the Annual CPI for the Los Angeles-Riverside-Orange County area compared to the prior year.*

Considering these factors, we recommend maintaining the real "across the board" salary increase assumption at 0.50%. This means that the combined inflation and "across the board" salary increase assumption will remain at 3.75%.

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 OCERS, there are service-specific merit and promotional increases. These assumptions have been reviewed as part of our triennial experience study as of December 31, 2014.

Recommended promotional and merit assumptions are provided 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.

Under the Board's current practice, the UAAL contribution rate is developed by assuming that the total payroll for all active members will increase annually over the amortization periods at the same assumed rates of inflation plus real "across the board" salary increase assumptions as are used to project the members' future benefits.

If the Board continues its current practice, we would recommend that the active member payroll increase assumption used to develop the UAAL contribution rate be maintained at 3.75% annually, consistent with the combined inflation plus real "across the board" salary increase assumptions.

Modification to Method/Assumption used to Determine UAAL Contribution Rate

As part of OCERS' 2014 review of actuarial funding policy, we discussed with the Board the possibility of increases in the UAAL from contribution losses that occur when actual total payroll grows by less than the annual assumed increases (3.75%) used to determine the UAAL contribution rate.

As we also discussed with the Board, this risk can be mitigated using the following approaches:

1. A short-term approach would be to change the method used to determine the actual UAAL contribution amount to be the greater of (a) the estimated UAAL payment amount calculated in the actuarial valuation or (b) the UAAL contribution rate times the actual total payroll for the fiscal year.

   The Board considered this approach in March 2014. That discussion included a report from OCERS staff on some of the administrative and implementation issues raised by the participating employers.

2. A more structural, longer-term approach would be to project annual growth in total payroll for developing the UAAL contribution rate using an assumption which is less than the 3.75% combined inflation and "across the board" assumptions used in projecting individual salary increases.

   This approach would require the selection of a particular lower total payroll growth assumption as well as the length of time that lower total payroll growth assumption would be applied in developing the UAAL contribution rate.

A detailed discussion of the above approaches will be provided in a separate document.