ORANGE COUNTY EMPLOYEES RETIREMENT SYSTEM

Review of Economic Actuarial Assumptions for the December 31, 2007 Actuarial Valuation

SEGAL

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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, 2007 Actuarial Valuation

Dear Members of the Board:

We are pleased to submit this report of our review of the December 31, 2007 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, 2007 is also the year of the Orange County Employees Retirement System's triennial experience analysis. The non-economic actuarial assumption recommendations are provided in a separate report.

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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Vice President and Associate Actuary

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I. INTRODUCTION, SUMMARY, AND RECOMMENDATIONS

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

If assumptions are changed, contribution requirements are adjusted to take into account a change in the projected experience in all future years. There is a great difference in both philosophy and cost impact between recognizing the actuarial deviations as they occur annually and changing the actuarial assumptions. Adjusting contributions as gains or losses occur without making a change in the assumptions is appropriate if the deviation from projections is considered temporary and if, over the long run, experience is expected to return to what was originally assumed. Changing assumptions reflects a basic change in thinking about the future, and it has a much greater effect on the current contribution requirements than the gain or loss 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, *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.

We are recommending a change in the economic assumptions currently used by the Board. Our recommendations for the economic actuarial assumptions for the December 31, 2007 Actuarial Valuation are as follows:

Investment Return - The estimated average net rate of return on assets over the projected lifetime of the System as of the valuation date. This rate is used to discount liabilities.

Recommendation: Maintain the rate at 7.75% per annum.

Inflation – Future increases in the cost-of-living index which drives investment returns and active member salary increases, as well as COLA increases to retired employees.

Recommendation: Maintain the rate at 3.50% per annum.

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.
- Merit and promotion increases.

Recommendation: Maintain the current inflationary salary increase of 3.50%, but introduce a real "across the board" salary increase of 0.25%. The recommended merit and promotion increase assumptions are provided in our December 31, 2007 triennial experience study 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

In this report, we analyzed the "economic" assumptions only. The primary economic assumptions reviewed 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. Payments to the Unfunded Actuarial Accrued Liability (UAAL) are assumed to increase each year by the inflation rate plus any "across the board" pay increases that are assumed.

Investment Return – Expected return on the System's investments. This assumption has a significant impact on contribution rates.

Salary Increases – In addition to inflationary increases, it is assumed that employees will receive raises from promotions and step increases. These are sometimes referred to as merit and promotion increases. Salaries will also grow by any real "across the board" pay increases that are assumed.

The setting of these assumptions is described in Section III.

III. ECONOMIC ASSUMPTIONS

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

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 require an issuer of 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 2007

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

	25th Percentile	Median	75th Percentile
15 year moving averages	2.7%	3.6%	4.9%
30 year moving averages	3.3%	4.3%	5.0%

The average inflation rates have continued to decline gradually over the last several years due to the relatively low inflationary period in the 1990s and early 2000s; however, the inflation rates for the past few years have started to show some increase. Also, the 15 year averages are declining as the high inflation years of the mid 1970s and early 1980s are diluted by the recent low inflation years in the 15 year moving average calculations.

OCERS' investment consultant, Callan Associates, Inc. (CAI), anticipated an annual inflation rate of 2.75%. Note that in general, the investment consultants' time horizon for this assumption is shorter than the time horizon we use for the actuarial valuation.

In a public fund survey published in 2007 by the National Association of State Retirement Administrators, the median inflation assumption used by 116 large public retirement funds in the 2006 valuations has remained unchanged from the 3.50% used in the 2005 valuations.

Based on this analysis, we recommend that the current 3.50% annual inflation assumption be continued for the December 31, 2007 valuation.

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, as 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.

Following is the System's target asset allocation as of December 31, 2007 and the average assumed real rate of return assumptions by asset class. The column of real rate of return assumptions represents the average of a sample that includes the expected annual real arithmetic rates of return provided to us by CAI and by eight other investment advisory firms retained by Segal's public sector clients. We believe this sample average reflects a consensus forecast of long term future market expectation that can be reasonably used to anticipate future long term real market returns.

OCERS Target Asset Allocation as of December 31, 2007 and Assumed Real Rate of Return Assumptions by Asset Class and for the Portfolio

Asset Class	Percentage of Portfolio	Average Assumed Real Rate of Return from a Sample of Consultants to Segal's Public Sector Clients [1]
Broad Domestic Equity	18%	6.81%
Developed International Equity	18%	7.20%
Emerging Market Equity	5%	10.43%
Core Bonds (including TIPS)	29%	2.70%
Global Bonds	10%	2.42%
Real Estate	10%	4.80%
Non-Traditional[2]	5%	15.03%
GTAA (Bridgewater) [2]	5%	6.97%
Total Portfolio	100%	5.65%

[1] Including counties of Orange, Alameda, Sacramento, San Bernardino, Contra Costa, San Diego and Fresno, LA City Employees and City of Fresno Retirement Systems.

[2] Rate of return taken only from OCERS' investment advisor.

Please note that the comparable real rate of return calculated by using the assumed return from CAI alone is 6.29%.

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

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

The following are some observations and our conclusions from the above analysis:

1. The investment consultants to our California public 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 future time period returns available from investment consultants are shorter than the durations of a retirement plan's liabilities.

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

3. Therefore, we recommend that the 5.65% portfolio real rate of return be used to determine the System's investment return assumption.

System Expenses

The real rate of return assumption for the portfolio needs to be adjusted for administrative and investment expenses to be paid from investment income.

The following table provides the available history of these expenses in relation to the actuarial value of assets.

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

FYE	Actuarial Value of Assets*	Administrative Expenses	Investment Expenses**	Administrative %	Investment %	Total %
2003	$4,695,675	$8,848	$16,769	0.19%	0.36%	0.55%
2004	4,790,099	9,463	17,393	0.20	0.36	0.56
2005	5,245,821	9,953	18,012	0.19	0.34	0.53
2006	5,786,617	9,600	18,438	0.17	0.32	0.49
2007	6,466,085	10,459	30,032	0.16	0.46	0.62
					Average	0.55%

* As of beginning of plan year.

** Net of securities lending expenses

Based on this experience, we believe the continued use of a future expense assumption of 0.60% is reasonable.

Risk Adjustment

The real rate of return assumption for the portfolio 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 also are expected to vary by asset class. This portfolio risk is incorporated into the real rate of return assumption through a risk adjustment.

On February 21, 2006, the Board adopted an investment return assumption of 7.75% for the December 31, 2004 valuation. Based on this 7.75% investment return assumption and the 3.50% inflation, 5.24% real return and 0.60% expense components determined at that time, there was an implied risk adjustment of approximately 0.39%. Using the annual portfolio standard deviation of 10.67% provided by CAI at that time, a 0.39% risk adjustment was equivalent to about a 56% confidence level 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[1].

If we use the 3.50% inflation, 5.65% real return, 0.60% expense determined in this report, the risk adjustment is 0.80% under the current 7.75% investment return assumption. Based on the annual standard deviation of 10.95% provided by CAI, this 0.80% risk adjustment is equivalent to about a 61% confidence level that the actual average return over 15 years would not fall below the 7.75% assumed return.

The investment return assumptions adopted by Segal's California Public Sector clients generally reflect confidence levels of about 60%. We also note that a 7.75% assumption is within the most common range for this assumption among other California public sector retirement systems. That range, with few exceptions, is from 7.75% to 8.00%.

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1 The theory that long term investment returns follow a Normal distribution is debatable; however, we believe the Normal distribution assumption is not unreasonable for purposes of setting the risk adjustment.

Recommended Investment Return Assumption

The following table provides the calculated investment return assumption that results from the previous discussion.

Calculation of Investment Return Assumption

Assumption Component	Recommended Value
Inflation	3.50%
Plus Portfolio Real Rate of Return	5.65%
Minus Expense Adjustment	(0.60%)
Minus Risk Adjustment	(0.80%)
Total	7.75%

Based on this analysis, we recommend that the investment return assumption be maintained at 7.75%.

Salary Increase Assumption

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 higher UAAL amortization payments (or greater rate credit demands if the UAAL is negative). 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 will require an employer to maintain its employees' standards of living.

   As discussed earlier in this report, we are recommending an inflation rate of 3.50%.

2. Real "Across the Board" Pay Increases – These increases are typically termed productivity increases since they are considered to be derived from an organization's ability to produce goods and services in a more efficient manner. As that occurs, 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 0.7% - 1.0% annually during the last 10 - 20 years. However, this has generally been a period of low inflation and favorable investment markets, so there remains some question as to whether this will sustain in the long term.

   We recommend the introduction of a 0.25% real "across the board" assumption in this valuation.

3. Merit and Promotion 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. OCERS has adopted age-specific merit and promotion assumptions. The recommended merit and promotion increase assumptions are provided in our December 31, 2007 triennial experience study report.

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