

Sacramento County Employees' Retirement System

Independent Review of Actuarial Valuation as of June 30, 2011

August 9, 2012

EFI ACTUARIES | EFI/LIABILITY MANAGEMENT SERVICES, INC.

The nation's leader in plan-specific, interactive asset allocation optimization counseling

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Executive Summary

Under a contract agreement with the Sacramento County Employees' Retirement System (SCERS), EFI Actuaries (EFI) has conducted an independent actuarial review of the Actuarial Valuation as of June 30, 2011 (the Report.) The purpose of this study is to review independently the actuarial report performed by SCERS's consulting actuary, the Segal Company (the Actuary), and to describe any shortcomings or errors present therein, and make any necessary recommendations.

We would like to thank the members of the Segal team, as well as the Staff at SCERS, for providing an extremely high level of cooperation during the audit process.

The main findings of our review are as follows:

1. As a result of our efforts, we are able to confirm that the liabilities and costs computed in the valuation as of June 30, 2011 are reasonably accurate and were computed in accordance with generally accepted actuarial principles.
2. We have evaluated the actuarial assumptions and methods used in the valuation and have found them to be reasonable and in accordance with generally accepted actuarial principles.

Aside from these findings our review produced a number of observations and conclusions:

- Overall, the economic assumptions proposed in Segal's review represent a reasonable set of assumptions. However, there are some areas where our recommended assumptions would differ, or where we wish to offer additional comments:
 - Segal stated that the inflation expectation for SCERS' investment consultant (Strategic Investment Solutions) is currently 2.4%, considerably lower than the assumption used in the valuation (3.5%). Although the current assumption can be considered to fall within a reasonable range, we recommend that the Board consider lowering the inflation assumption when the next experience study is completed or the next time the economic assumptions are revisited.
 - Segal has recommended using an assumption for the growth rate in future Cost of Living Adjustments (COLAs) of 3.4% for those with a 4% COLA cap and 2.0% for those with a 2% COLA cap. Using simulation analysis, we have shown that a slightly lower rate of expected growth in the COLAs could be considered.
- Overall, the non-economic actuarial assumptions proposed in Segal's Experience Study have been determined by EFI Actuaries to be generally reasonable and in compliance with acceptable standards of actuarial practice. However, we have several suggestions for consideration at the time of the next experience study:

- In addition to examining analyzing the mortality experience based on the number of members who lived and died, we recommend analyzing the experience by the *benefit amounts*. We have found at other systems that members with higher benefit amounts tend to live longer, on average. As a result, using mortality assumptions that are based only on the number of deaths (as was done in the Segal experience study) may potentially understate SCERS liabilities.
- We strongly agree with the comment by Segal that they will review future merit and promotional salary growth assumptions based on service, as an alternative to the current age-based rates. It has generally been our experience that the use of service-based rates produces more reliable predictions of wage growth throughout a career than age-based rates.
- We recommend that Segal review the current practice of calculating the normal cost for the Plan on an aggregate basis for each benefit tier, rather than calculating an individual normal cost for each member. We are aware that in certain circumstances the use of an aggregate normal cost calculation in conjunction with the Entry Age actuarial cost method can lead to recurring actuarial losses.
- Although we agree with the calculation of the overall level of employer cost computed in the valuation, we have some comments on the methodology used to assign costs between different valuation groups. In particular, we believe the Actuary and the Board should review policies related to the crediting of the prior Pension Obligation Bonds, as well as adjustments to the employer normal cost for members making full versus half-rate employee contributions.
- We believe there are several disclosures that could be included in the actuarial valuation report that would enhance the report's usefulness by the Board and make it easier for another actuary to confirm the results of the valuation. Some of these disclosures have been recommended as part of the Model Disclosure Element document that was issued by the California Actuarial Advisory Panel subsequent to the release of the valuation report.

Organization of the Report

This report is organized in several sections:

- The Executive Summary presents the conclusions of the report.
- We describe the scope of this independent review.
- In the Main Findings section, we summarize our reviews of the Data, Actuarial Assumptions and Methods, Liability and Cost Calculations and the Valuation Report.

Scope of the Report

The objectives of our review were to determine if the Plan's actuary used appropriate valuation methods and assumptions, and to determine if they were applied properly. The scope of our review included an analysis of each of the following:

- We collected both raw data from SCERS and edited data from Segal. We performed an independent analysis on the raw data to confirm the member information used in the actuarial valuation.
- We reviewed and evaluated the actuarial methods and assumptions displayed in the valuation report.
- We collected and reviewed benefit calculations for individual plan participants.
- We independently determined liabilities for each group and compared them to those presented in the valuation report and in separate detailed results provided to us by Segal.
- We independently determined the normal cost, and compared it to the normal cost shown in the valuation report.
- We independently calculated the actuarial value of assets.
- We confirmed the employee contribution rates shown by age for each group.
- Using our independently determined liabilities and normal costs, we calculated the total required contribution (cost) for each group, and compared them to those presented in the valuation report. Aside from the assets, liabilities, and costs shown in the valuation report, we also reviewed the content of the report for completeness and compliance with actuarial standards of practice.

Main Findings

Review of Participant Data

As part of the valuation process, the Actuary collects member data from SCERS and then confirms that the data collected is reasonable and is reconciled with similar member data from the prior valuation. For our review, we performed a completely independent data analysis. We collected both raw information from SCERS, as well as the final data that was used by Segal in their actuarial valuation.

Data Reconciliation

After reviewing the information provided by SCERS and the final data file provided by Segal, we asked a number of follow up data questions to Segal. Based on the responses to the questions, we generated a final data file that is very similar to Segal's, with only minor differences, generally related to annualization of pay for new hires.

After completing our independent review of the data, we then reviewed the age-service charts, age-benefit charts, and data summary information shown in the valuation report. We were able to verify that the information shown in the valuation report accurately represents the data actually used for the actuarial valuation.

The table at the end of this section shows the results of the data comparison. Any differences in the data files are minor, and are expected to have a de minimis impact on the valuation results.

Table 1: Comparison of Participant Data as of June 30, 2011

Miscellaneous Member Data									
	Tier 1		Tier 2		Tier 3		Ratio		
	Segal	EFI	Segal	EFI	Segal	EFI	Tier 1	Tier 2	Tier 3
Active Participants									
Number	297	297	90	90	10,134	10,134	100.0%	100.0%	100.0%
Average Age	58.1	58.0	52.0	52.0	46.9	46.9	99.8%	100.0%	100.0%
Average Service	31.3	31.3	21.0	21.0	11.2	11.2	100.0%	100.0%	100.0%
Average Pay	\$ 78,793	\$ 78,793	\$ 65,764	\$ 65,764	\$ 66,329	\$ 66,391	100.0%	100.0%	100.1%
Service Retired									
Number	3,224	3,224	261	261	2,175	2,175	100.0%	100.0%	100.0%
Average Age	72.6	72.6	66.4	66.4	65.6	65.6	100.0%	100.0%	100.0%
Average Monthly Total Benefit	\$ 2,797	\$ 2,797	\$ 1,003	\$ 1,003	\$ 1,901	\$ 1,901	100.0%	100.0%	100.0%
Beneficiaries									
Number	734	734	35	35	192	192	100.0%	100.0%	100.0%
Average Age	75.8	75.8	68.1	68.1	62.4	62.4	100.0%	100.0%	100.0%
Average Monthly Total Benefit	\$ 1,379	\$ 1,379	\$ 450	\$ 450	\$ 806	\$ 806	100.0%	100.0%	100.0%
Disabled									
Number	238	238	34	34	191	191	100.0%	100.0%	100.0%
Average Age	72.7	72.7	62.6	62.5	60.7	60.7	100.0%	99.8%	100.0%
Average Monthly Total Benefit	\$ 1,847	\$ 1,847	\$ 936	\$ 936	\$ 1,519	\$ 1,519	100.0%	100.0%	100.0%
Total Being Paid									
Number	4,196	4,196	330	330	2,558	2,558	100.0%	100.0%	100.0%
Average Age	73.2	73.2	66.2	66.2	65.0	65.0	100.0%	100.0%	100.0%
Average Monthly Total Benefit	\$2,495	\$2,495	\$ 937	\$ 937	\$1,790	\$1,790	100.0%	100.0%	100.0%
Terminated Vested									
Number	110	110	251	251	1,930	1,930	100.0%	100.0%	100.0%
Average Age	60.2	60.2	53.8	53.8	46.4	46.4	100.0%	100.0%	100.0%

Safety Member Data						
	Tier 1		Tier 2		Ratio	
	Segal	EFI	Segal	EFI	Tier 1	Tier 2
Active Participants						
Number	480	480	1,433	1,433	100.0%	100.0%
Average Age	48.0	48.0	39.8	39.8	100.0%	100.0%
Average Service	21.2	21.2	11.0	11.0	100.0%	100.0%
Average Pay	\$ 111,589	\$ 111,589	\$ 87,724	\$ 87,724	100.0%	100.0%
Service Retired						
Number	1,023	1,023	193	193	100.0%	100.0%
Average Age	64.1	64.1	64.0	64.0	100.0%	100.0%
Average Monthly Total Benefit	\$ 5,758	\$ 5,758	\$ 4,253	\$ 4,253	100.0%	100.0%
Beneficiaries						
Number	255	255	23	23	100.0%	100.0%
Average Age	66.0	66.0	53.2	53.2	100.0%	100.0%
Average Monthly Total Benefit	\$ 2,534	\$ 2,534	\$ 2,397	\$ 2,397	100.0%	100.0%
Disabled						
Number	209	209	34	34	100.0%	100.0%
Average Age	62.3	62.3	52.4	52.3	100.0%	99.8%
Average Monthly Total Benefit	\$ 3,811	\$ 3,811	\$ 2,916	\$ 2,916	100.0%	100.0%
Total Being Paid						
Number	1,487	1,487	250	250	100.0%	100.0%
Average Age	64.2	64.2	61.4	61.4	100.0%	100.0%
Average Monthly Total Benefit	\$4,931	\$4,931	\$3,900	\$3,900	100.0%	100.0%
Terminated Vested						
Number	136	136	283	283	100.0%	100.0%
Average Age	48.3	48.3	39.0	39.0	100.0%	100.0%

Review of Actuarial Assumptions and Methods

To conduct an actuarial valuation, it is necessary to select and use a set of actuarial methods and assumptions. Demographic assumptions involve probabilities by age and service concerning when people will retire, terminate employment, become disabled, and die. Economic assumptions concern the investment returns on plan assets, inflation, and salary growth. Actuarial methods affect how asset values are determined and how liabilities and costs are allocated to various parts of a member's career and between various employment groups.

Demographic Assumptions

A full review of the demographic assumptions determined by the most recent actuarial experience study was beyond the scope of this audit. However, we have reviewed the current assumptions for reasonableness based on our experience with other '37 Act systems. We have concluded that the demographic assumptions appear to be reasonable and consistent with other plans. In particular, we are pleased to see the following, all of which are consistent with current best practices:

- Service-based termination rates for those with less than five years of service, and an elimination of termination rates once a member is eligible for service retirement, and
- Mortality assumptions that include a margin for future improvement of at least 10%

However, we have several suggestions for Segal to consider at the time of the next experience study related to a number of assumptions:

Termination Rates

Regarding the termination rates, we encourage Segal in their next experience study to review whether the likelihood of termination prior to retirement is correlated more closely with service than age at all levels, not just prior to five years of service. We have found this to be the case with many of our clients, including '37 Act counties. In particular, the observed frequency of a withdrawal with high levels of service is extremely low, even for members not yet eligible for service retirement.

We also recommend that Segal perform an analysis to determine whether the likelihood of contribution withdrawal - versus leaving contributions on deposit and receiving a deferred benefit - varies significantly by service. In our experience, members with high levels of service (even if not yet eligible to retire) are much less likely to withdraw their contributions than members with fewer years of service. If there is a large differential between the rates of withdrawal by terminating members at various levels of service, then the use of a single withdrawal percentage can result in an underestimation of liabilities, since the plan experiences a larger gain when high-service members receive a refund.

Mortality Rates

Although we are pleased to see mortality assumptions that include a measure of conservatism, we would also encourage Segal to consider implementing generational mortality assumptions at the time of

the next experience study (i.e. mortality tables which are explicitly assumed to improve each year, based on a projection scale), rather than using static tables that rely on a specific margin, such as 10%. The Retirement Plans Experience Committee of the Society of Actuaries – the group responsible for producing the RP2000 mortality tables and future updates – has specifically recommended the use of generational mortality tables.

An alternative approach is to use one of the commonly used projection scales – such as Projection Scale AA or the new interim Scale BB – to adjust explicitly a set of mortality tables to a future date, usually the average duration of the projected benefit payments. This will approximate the impact of generational mortality on liabilities and costs, while avoiding some of the administrative and computational difficulties associated with the implementation of generational improvements.

A final recommendation on mortality rates would be to encourage Segal to review the impact of benefit size on mortality rates, in addition to reviewing the experience based on gender and retirement status. Based on our recent review of mortality among a number of '37 Act systems, we have found a significant impact on the analysis of mortality rates, as members with higher benefits tend to live longer. If not taken into account, this can lead to underestimations of liability, even if the number and timing of deaths is accurately predicted for the group as a whole.

Merit and Promotional Salary Increase Rates

In their Actuarial Experience Study, Segal made the following comment with respect to merit and promotional salary increase rates:

“... we want to point out that some California Public retirement systems that have recently reviewed this assumption have elected to use service instead of age as the predictor on future salary increases. While we will include this analysis in future studies, we would not recommend considering any change to use service instead of age in predicting salary increases until more stable data is available for this analysis.”

We strongly support Segal's intention to include a service-based analysis of merit and promotion salary increases in future studies, as our experience has shown that service-based rates generally provide more accurate and reliable predictions of wage growth behavior during a member's career. We note that Segal has made similar statements in experience studies for other '37 Act systems: *“Note that based on our recent experience with both ACERA and with similar public retirement systems, merit and promotional increases are generally correlated more closely with service than with age.”* (<http://www.acera.org/downloads/publications/5579%20re%20ACERA%20Experience%20Study%20from%202007%20to%202010%20%282%29.pdf>)

We also note that a stable multi-year data set is not always necessary to develop a reliable analysis of merit and promotion increases by service. For the study of this component of individual pay increases, we generally choose to use a *transverse* study. A reliable way to assess average increases in pay due to merit is to analyze average pay versus service for the current active members of a plan at a given point in time.

With a homogeneous group of any size at all, the pattern of promotions and longevity increases during the career of an average employee is clearly visible in this analysis. This is a transverse study of longevity and promotion pay increases: The data is taken as of a particular point in time. *Longitudinal* studies, such as those used by Segal and which use changes in pay collected over several years, are often unreliable due to the effects of inflation, collective bargaining, and management decisions during the term of the study. We would be happy to provide Segal and the Board with examples of transverse studies of promotion and longevity increases we have performed for other clients.

Economic Assumptions

Expected Return on Plan Assets

The rate of expected return on assets suggested in the investigation of experience and used in the valuation was 7.75%. Overall, this rate is reasonable considering the asset allocation and the asset class expectations provided by the investment advisor.

However, we have several comments on the adjustments to the return assumption for administrative and investment expenses made by Segal in their Review of Economic Assumptions:

- Traditionally, the expected rate of return on pension assets is expressed net of investment expenses. As a result, actuaries will typically adjust expected asset class returns for anticipated investment expenses when setting the overall assumption rate. Segal has done this in their Review of Economic Assumptions: they computed an average level of investment expenses of 0.34% over the past five years, and reduced the expected overall investment return by this amount.

This level of expenses is based on recent investment policies, which include a significant amount of active management. However, the average real returns collected by Segal from various investment consultants are stated to be based on indexed (or passively managed) returns – which would generally reflect investment expenses lower than 0.34%. As a result, Segal is using an investment return assumption based on passive investing, but reflecting active management expenses.

A frequent assumption used in setting return assumptions is that the additional returns earned due to the use of active management will offset the higher level of expenses. Segal is not following this practice for SCERS; they are using a more conservative assumption that does not assume any additional return for active management. This is a reasonable approach; we have made similar recommendations for plans where the active management of assets has shown a historical pattern of underperformance compared to the benchmark, net of fees. However, we recommend that Segal explicitly spell out the impact of active versus passive management on the expected returns and expenses of the Plan.

- Based on their Review, we have concluded that the expected rate of return is intended to be net of administrative expenses, since the calculation of the investment return assumption also includes an offset for these expenses (averaging 0.11% per year for FYE 2006-2010). The recently adopted new GASB pension accounting statements will require that the investment return assumption for disclosure purposes should be *net of investment but not administrative expenses*.

We suggest that at the time of the next economic assumption review, Segal consider removing the adjustment for administrative expenses from the return assumption, and instead include an explicit administrative expense element to the employer cost calculation, so as to allow for the use of the same assumption for funding and disclosure purposes. We also suggest that Segal disclose in the valuation report whether the return assumption is intended to be net or gross of administrative and investment expenses.

Inflation

The assumed rate of inflation is currently 3.50%, which we believe is within a reasonable range, but it is significantly higher than expectations in the investment markets. Segal's review of economic assumptions states that the expectation for SCERS's investment consultant – SIS – is only 2.4%, though this assumption is identified as having a short time horizon. Segal also provided evidence regarding longer-term expectations of inflation from multiple sources: the Social Security Trustees report and the difference between Treasury bonds and TIPS, both of which indicate a long-term assumption of approximately 2.8%.

All of these indicators signal a lower expectation for inflation than is currently being assumed by SCERS. Most of our clients are moving towards lower inflation assumptions, and we recommend that the Board consider lowering the inflation assumption at the earlier of the time of the next experience study or the next time the economic assumptions are revisited.

Cost of Living Adjustments

Segal recommended that the Board retain the current retiree cost-of-living assumption of 3.4% per year for those with a 4% cap and 2.0% for those with a 2% cap. They noted that the 3.4% assumption for Tier 1 employees was based on a low current inflationary environment and small COLA banks for these members.

We have done extensive analyses for a number of our '37 Act clients who have similar COLA provisions – COLA equal to CPI growth, capped at 2.0% or 4.0%, with CPI increases above the cap “banked” for future years. These studies confirm that the rate of growth in the post-retirement benefits should average *less* than the cap over the long term, as is reflected in the 3.4% COLA growth with a 3.5% inflation assumption proposed by Segal. This occurs because there is often not a significant bank already in existence (such as in the early years of retirement); therefore, when there are years in which inflation is below the cap the shortfall is often not made up in future years.

As part of our analyses, we have produced statistical simulations of inflation and then modeled how the COLA maxima and the banking process interact with the changes in CPI. This approach is suggested in the Actuarial Standard of Practice governing the measurement of pension obligations (ASOP #4), where the impact of using a deterministic procedure (i.e. assuming inflation will be 3.5% every year) could result in a poor measurement of the impact of certain benefit provisions.

Based on our analyses done at other '37 Act systems, we recommend an assumed COLA growth rate of 3.2% per year, given a 4.0% cap and 3.5% inflation assumption. For those with a 2.0% COLA, the impact of the cap is less significant, but we would still recommend a COLA assumption of 1.9%, which is lower than the 2% cap. These changes would have only a minor impact on the actuarial cost for SCERS.

Actuarial Methods

Actuarial methods relate to the application of actuarial assumptions in the determination of Plan liabilities and contributions. These methods include the selection of the actuarial cost method, amortization policy, actuarial asset smoothing, and the calculation and use of reserves. The questions guiding our review of the actuarial methods were the following:

- Are the methods acceptable and appropriate for the intended purpose?
- Do the methods comply with relevant accounting and actuarial standards?

Actuarial Cost Method

The actuarial cost method used by Segal to value the SCERS pension plan is the Entry Age Normal Actuarial Cost method. This method is required by the '37 Act (CERL 31453.5). It is an acceptable and appropriate cost method, and is accurately described within the valuation reports.

However, there is a potential issue with how the Entry Age Funding method is being applied. Rather than using the total of the individually-determined normal costs for each active participant, Segal is currently using an aggregate calculation of the normal cost for each tier. We have encountered situations in which the projected use of this approach can result in recurring actuarial losses and increasing contribution rates. Under proposed revisions to the Actuarial Standard of Practice related to the calculation of pension obligations (ASOP #4), this would require disclosure under the proposed ASOP #4 revision: *"a statement regarding the expectation of declining future funding status or increased contribution requirements, if applicable."*

We recommend that Segal review this issue and determine whether the use of this method is likely to result in recurring losses. We note that changing to an individual-based determination of the normal cost would increase the current employer contribution rate by approximately 1% of payroll.

Amortization Policy

SCERS is currently amortizing the unfunded liabilities of the Plan over a closed 30 year period (with 24 years remaining from current valuation date) as a level percentage of payroll. There is an exception for

the UAAL established as a result of an early retirement incentive for LEMA members, which is being amortized over a 10 year declining period (with nine years remaining).

We have confirmed that the Segal report applies the amortization method as described. This amortization policy meets the minimum standards of the '37 Act and the Government Accounting Standards Board's (GASB) disclosure standards – both of which currently allow for level percentage of pay amortization with a maximum period of 30 years.

It should be noted that GASB has revised their pension disclosure standards for future years; shorter amortization periods will be required for changes to the unfunded liability in future financial statements. However, GASB standards have no impact on the funding requirements of the Plan; they only directly impact the Plan's financial disclosures.

The Board should also understand that the use of level percentage of pay amortization with a period of longer than 16-17 years will result in "negative amortization", wherein the expected contribution towards the unfunded liability will be less than the interest on the unfunded amount, thereby resulting in an expectation that the unfunded liability will increase year-over-year as a dollar amount.

Asset Smoothing

The actuarial (or smoothed) value of assets is determined using a five year smoothing method for gains or losses prior to July 1, 2008, and a seven year period for gains and losses established after July 1, 2008. The Board has adopted a corridor around the market value of assets of 30%. We have confirmed that the Segal report applies the actuarial smoothing method as described.

In our opinion, this method satisfies the Actuarial Standard of Practice which governs asset valuation methods (ASOP #44), which requires that the actuarial asset value should fall within a "reasonable range around the corresponding market value" and that differences between the actuarial and the market value should be "recognized within a reasonable period of time."

Cost Sharing

SCERS is a cost-sharing plan, wherein the assets of the Plan are available to fund the benefits of all members. This is different from an approach in which specific asset pools are tracked and held separately for each employer. As a result, methods and assumptions must be used to assign portions of the unfunded accrued liability to the different employment groups (i.e. County vs. District, General vs. Safety). In addition, cost sharing plans such as SCERS will sometimes assign normal costs to individual employers based on an average normal cost for a pool of member (generally all members with the same benefit formula, or tier), rather than the normal costs determined for that specific employer.

We consider the allocation of costs between employment groups to be an element of the actuarial methods. While no formal actuarial guidance necessarily exists with respect to these issues, actuarial insights can help guide the evaluation of the fairness and reasonability of these allocations.

A full description of the methods used to assign the normal costs and unfunded liabilities between cost groups is not included in the current valuation report. Although the inclusion of these descriptions would make it simpler to perform future actuarial audits, we recognize that this level of detail may not be appropriate for the basic valuation report. Segal was able to provide us with additional documentation that allowed us to verify the cost calculations for the various employers and tiers.

We recommend that Segal review several areas of the methodology used to assign costs between various groups, and if necessary, discuss with the Board whether these methods remain appropriate.

- Currently, Segal uses a methodology to assign credit to the County for the Pension Obligation Bonds (POBs) issued by the County by adding an additional amortization base to the Special Districts' unfunded liability amortization payments. However, this additional amortization base is being amortized using an assumption that the remaining base will increase annually with the expected rate of return.

In effect, this implies that the Special Districts are being assigned an additional charge for not participating in the POB that does not vary based on the return of the assets contributed to the Plan as part of the POB. This shields the Special Districts from the portion of the investment risk (both upside and downside) applicable to these assets.

Although this is not necessarily an unreasonable policy – it is certainly common for unfunded liability amortization bases to be credited with the assumed earnings rate – we think that Segal and the Board should understand the implications of this policy. However, the size of the remaining POB unamortized base (approximately \$33 million) is very small relative to the size of the overall unfunded liability (over \$900 million), so the impact of this policy is not significant.

On a related issue, we noted that the unfunded liabilities associated with several withdrawn employers had previously been established based on interest crediting which reflected the actual investment returns experienced by the Plan, either on a smoothed or market basis. However, we were told by Segal that in recent years the calculation of the unfunded liability assigned to these employers has been based on crediting investment returns at the assumed rate.

As with the above situation, this may protect these employers from the impact of adverse investment returns. Again, the portion of the unfunded liability associated this issue is small enough that it has no significant impact on the cost calculation for the other employers.

- The Segal valuation currently uses a methodology for assigning a normal cost rate to each employer based on the following: an aggregate *total* normal cost is determined for each tier, and then separate *employer* normal costs are determined for the County and Special Districts, based on the share of their employees that are paying “full” or “half” rates.

The employer's normal cost contribution is *not* determined based on the actual total normal costs and offsetting employee contributions for their members; rather the normal costs and expected employee contributions are determined for each tier in aggregate, and then adjusted based on whether any of their members are paying half rates. This type of risk pooling is a reasonable policy, as it protects smaller employers from large changes in their normal cost rate based on large and unpredictable changes in their demographic profiles.

However, this approach can result in anomalous results, such as can be seen in a comparison of the Special District versus County employer normal cost rates for the Tier 1 Safety members. The total normal cost rate assigned to the Tier 1 Safety members for all employers is approximately 37.8% of payroll. However, the net employer cost assigned to the County for Tier 1 Safety members is 24.58%, versus 23.63% for the Special Districts. This is because around 16% of the County Safety Tier 1 members were paying "Half" rates at the time of the last valuation; whereas all Special District Tier 1 members are paying "Full" rates. This gets reflected as a larger offset to the total normal cost rate for employee contributions for the Special Districts.

A closer examination of the Special District Tier 1 population reveals the anomaly: of the four Tier 1 Safety Special District members, one has over 30 years of service and therefore does not make any contributions, and another has 29 years of service and will not be expected to make contributions in FY 12-13 (the year in which the contribution rates from the valuation will apply). As a result, the average expected employee contribution rate for the Special District Tier 1 members is actually *less* than the rate for the County Tier 1 members.

Again, this does not necessarily mean that the methodology used to assign normal costs is unreasonable; it is merely a byproduct of the risk pooling approach. In addition, the assignment of a lower normal cost to the Special District Safety Tier 2 members has a negligible impact on the County's normal cost allocation, because of the very small number of Special District Safety Tier 2 members. However, as with the issue above, we believe the Board should be aware of and comfortable with the approaches being used to allocate costs between various groups.

Liability and Cost Calculations

The table below contains the comparison of the aggregate liabilities and costs shown in the Segal Actuarial Valuation Report and our independent calculations. All cost and liability results are within the desired 5% tolerance level.

Total Liabilities and Cost

(\$ in Millions)	June 30, 2011	EFI Independent	
	<u>Valuation</u>	<u>Review</u>	<u>Ratio</u>
Present Value of Projected Benefits	8,888.1	8,933.9	100.5%
Actuarial Accrued Liabilities	7,310.2	7,295.7	99.8%
Valuation Value of Assets	6,348.2	6,348.2	100.0%
Unfunded Accrued Liability (UAL)	962.1	947.5	98.5%
(Shown as % of Payroll)			
UAL Amortization	7.11%	6.97%	98.0%
<u>Normal Cost</u>	<u>15.41%</u>	<u>16.03%</u>	<u>104.0%</u>
Total	22.52%	23.00%	102.1%

Employee Contribution Rates

We have verified the calculations of the individual employee contribution rates based on the applicable provisions of the CERL and generally have found these rates to be correct.

Our Basic (non-COLA) rates were within 0.05% of Segal's rates for all groups and Tiers, including the rates computed for the new tiers (Miscellaneous Tier 4 and Safety Tier 3).

We also reviewed the methodology used to determine the contribution rates for members not in Tier 1 hired on or after January 1, 1975, who contribute based on a single rate for each tier. SCERS has adopted several sections of the CERL – 31621.11 and 31639.26 – that allow for the use of single member contribution rates for Miscellaneous and Safety members, respectively. Both of these CERL sections contain a version of the following language:

Instead of the normal rates of contribution required by Section xxx ..., the board may, upon actuarial advice, establish a single rate of contributions applicable to all persons becoming members after this section is made operative in that county by the board. However, this rate shall be such as to provide the average annuity described in Section

Our (non-legal) interpretation of this section is that the contributions collected according to this method should be anticipated to be actuarially equivalent to the contributions that would be collected if individual age-based rates were used.

Segal applies these sections by calculating a contribution rate using the standard entry-age based methodology, and then using the rate determined for the average entry-age for each group: currently age 36 for Miscellaneous members and age 29 for Safety members. Segal reviewed the demographics of the current population to confirm these average entry-ages as part of their recent experience study, and we have confirmed that these estimates appear accurate based on the data we received.

In addition to confirming the average entry age, we also reviewed whether this approach (i.e. using the average entry age based on the current population) does, in fact, result in an expected collection of contributions equivalent to that which would result from the use of full entry-age based rates. To do this, we computed a full set of entry-age based rates using the same methodology used to determine the single-age rates. We then applied these rates to the current populations, calculated the anticipated contributions for the next year *and* the present value of future contributions in all years for the active membership, and compared these values to the same measures based on the current single contribution rates.

For all tiers, the total level of expected employee contributions using the single contribution rate – based both on the expected dollars to be received for the current year and the total present value of future contributions in all years – was within approximately 2% of the level computed using individual entry-age based rates. We therefore conclude that the current methodology of using a single rate based on the average entry-age of the population produces a reasonable result. We urge Segal to continue monitoring the methods used to determine single contribution rates to confirm that they provide a reasonable equivalent to entry-aged based approaches.

We also reviewed the methodology used by Segal to determine the employee COLA contribution rates – i.e. adding a tier-based load to the Basic rates – and found it to be reasonable and accurately applied. Our calculation of the load for one group – Safety Tier 1 – was somewhat higher than the results presented by Segal: a load of approximately 49% for Segal versus approximately 41% in our calculations. However, the resulting overall member contribution rates (Basic plus COLA) are still within approximately 5%, and therefore do not represent a significant discrepancy.

The Segal methodology is commonly used by '37 Act systems, and appears to meet the requirement that *"Any increases in contribution shall be shared equally between the county or district and the contributing members"* (CERL 31873). However, we have shared with Segal's consultants an alternative methodology for determining employee COLA contribution rates, which involves calculating a distinct COLA rate for each individual entry-age, rather than applying a certain percentage load to the Basic rates. This methodology has the advantage of avoiding annual changes to the COLA contribution rates; the COLA rates will only change if there is a modification to the benefit provisions or actuarial assumptions.

Employer Contribution Rates by Detailed Group

(Shown as % of Payroll)	June 30, 2011	EFI Independent	
	<u>Valuation</u>	<u>Review</u>	<u>Ratio</u>
County			
General Tier 1	19.09%	19.83%	103.9%
General Tier 2	16.55%	17.02%	102.8%
General Tier 3	19.36%	19.81%	102.3%
Safety Tier 1	37.19%	38.34%	103.1%
Safety Tier 2	32.38%	33.94%	104.8%
Special Districts			
General Tier 1	25.59%	26.32%	102.9%
General Tier 3	25.90%	26.35%	101.7%
Safety Tier 1	57.40%	58.61%	102.1%
New Tiers (County, Full Rates)			
General Tier 4	14.19%	14.33%	101.01%
Safety Tier 3	29.50%	31.38%	106.36%

The table above contains the comparison of the costs by Tier shown in the Segal report and our independent calculations.

There is one discrepancy greater than 5% between our results and Segal's with respect to the cost for one tier – the new Safety Tier 3. However, the difference is only marginally greater than 5%, and the costs for these tiers are based on estimated, not actual, demographic information, since no members of these tiers existed as of June 30th, 2011. Therefore the cost calculations for this tier do not have a significant impact on the overall valuation results, and we are comfortable that the results Segal has produced are accurate and reasonable.

Valuation Report

In addition to verifying the liabilities and costs presented in the valuation report, we also reviewed the Report itself for completeness, accuracy and compliance with actuarial standards. We also determined whether the Report included all of the recommended basic disclosure elements described in a recent document issued by the California Actuarial Advisory Panel (CAAP) – the “Model Disclosure Elements for Actuarial Valuation Reports on Public Retirement Systems in California.” We note that this document was released in December, 2011 – after the June 30, 2011 Actuarial Valuation report was released.

In general, we found the report to be complete, accurate and compliant with actuarial standards of practice. We have a number of minor suggestions to be considered for future valuation reports. Some of these suggestions are based on recommendations from the CAAP Disclosure Elements document; it should be noted that this document is not a standard, but rather “an inventory of disclosure elements that actuaries should strive towards including in their reports...”

- We recommend that future reports include a description of the assumed timing of the normal cost, UAAL amortization payment, and employee and employer contributions.
- We recommend that future reports include additional information regarding how the contributions are determined for individual employment groups. This would include a description of how the assets are allocated between different groups for purposes of determining UAAL payments. It would also include a more thorough description of how the Pension Obligation Bond and other credits or special reserves are determined (such as the member COLA offset and the reserves for withdrawn employers), including a description of the origin and basis for the credits, and how they are to be allocated among different employment groups.
- We recommend the presentation of the present value of benefits and accrued liability in total and separately for different membership (i.e. active, retired, and terminated vested) and employment (i.e. miscellaneous vs. safety, by tier, by employer) groups.
- We recommend the presentation of the asset and liability volatility ratios, as described in the CAAP document. We note that we have heard Segal’s consultants make presentations to other ’37 Act clients wherein they mentioned the likely inclusion of these ratios in future valuation reports, and we would hope and expect that these additions would also apply to future SCERS reports.

Certification

We certify that this review was performed in accordance with generally accepted actuarial principles and practices. The undersigned are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Respectfully Submitted,



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