

**Fresno County  
Employees' Retirement Association**

**Independent Review of Actuarial Valuation as of June 30, 2010 and  
Experience Study (July 1, 2006 – June 30, 2009)**

January 11, 2011

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## Executive Summary

Under a contract agreement with the Fresno County Employees' Retirement Association (FCERA), EFI Actuaries (EFI) has conducted an independent actuarial review of the Actuarial Valuation as of June 30, 2010 (the Report) and the Experience Study covering the period from July 1, 2006 – June 30, 2009. The purpose of this study is to independently review the actuarial reports performed by FCERA'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 FCERA, for providing an extremely high level of cooperation during the audit process.

The main findings of our review are as follows:

- As a result of our efforts, we are able to confirm that the liabilities and costs computed in the valuation as of June 30, 2010 are reasonably accurate and were computed in accordance with generally accepted actuarial principles.
- We have evaluated the Experience Study and have found the methods and recommendations to be reasonable and in accordance with generally accepted actuarial principles.

However, aside from these findings our review produced a number of observations and conclusions:

- 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, there are several areas of concern with respect to the mortality rates:
  - The rates of actual post-retirement mortality described in the Study appear to have been incorrectly calculated based on an overstated number of recorded deaths. Therefore, the margin of conservatism that Segal claimed was reflected in their recommended mortality assumptions was overstated.
  - In addition to examining analyzing the mortality experience based on the number of members who lived and died, we also analyzed the experience by the *benefit amounts*. As we have found at other systems, the members with higher benefit amounts at FCERA 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) will tend to understate the liabilities.

- 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 has stated the their recommended expected rate of return of 7.75% (4.25%) reflects a confidence level significantly greater than 50% that the expected rate of return can be achieved, based on a sample of expected returns from various investment consultants. Using a full simulation of FCERA's target asset mix, we have shown that the recommended rate does not contain such a margin of conservatism, based on the expected returns, volatilities and correlations provided by FCERA's investment manager (Wurts & Associates).
  - Segal has recommended that the assumption for the growth rate in future COLAs should be the same as the 3% cap on the COLAs. Using simulation analysis, we have shown that the expected growth in the COLA should be less than the cap - around 2.7% - if the CPI rate ends being greater or less than the assumed rate in any given year, even if it averages 3.5% over the long-term.
  - Segal recommended an increase in the real "across the board" salary increase assumption from 0.25% to 0.50%. Although we recognize that either value could be considered a reasonable estimate of future experience, we question whether an increase in this assumption is appropriate at this time, given the current economic and employment conditions.
  - If we were to compute the costs under an alternative set of economic assumptions (7.5% discount rate, 2.7% COLA growth, 0.25% across the board salary increase), the impact on the cost would be only a slight change (0.4% reduction as a percentage of employer pay), but could ease some of the concerns expressed by Board members as to whether the 7.75% expected return is achievable in the long run.
- We independently collected data from FCERA, and performed a reconciliation of this data with the prior year's information. Although the data we used in our parallel valuation was similar to that used by Segal in their report, there are some minor differences which have specified later in this report. We do not believe that these discrepancies would have a significant impact on the valuation results.

## 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.
- We summarize our reviews of the Data, Actuarial Assumptions and Methods, and Liability and Cost Calculations.

## Scope of the Report

The two primary objectives of our review were to determine if the Plan's actuary used appropriate valuation methods and assumptions, and 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 FCERA and edited data from Segal. We performed an independent analysis on the raw data, to confirm the information used in the actuarial valuation and the demographic behavior used as the basis for the investigation of experience.
- We reviewed and evaluated the actuarial methods and assumptions displayed in the valuation report and investigation of experience.
- 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.
- We independently determined the normal cost for each group, and compared it to the normal cost shown in the valuation report.
- We collected asset information from FCERA and 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.

## Review of Participant Data

As part of the valuation process, the Actuary collects data from FCERA and then confirms that the data collected is reasonable and is reconciled from the prior valuation. As part of an investigation of experience, the Actuary collects data over a longer time period (from July 1, 2006 – June 30, 2009 in this case) and performs a similar reconciliation to determine the actual rates of decrement (retirement, disability, termination, etc.) that have occurred over the study period.

For our review, we performed a completely independent data analysis. We collected both raw information from FCERA, as well as the final data that was used by Segal in their actuarial valuation and investigation of experience. We conducted our own reconciliation of the data, including a computation of the number of decrements for each cause (such as retirements, disabilities, deaths, etc.) and exposures (counting the number of members eligible for each cause of decrement) over the study period.

Our independent data analysis resulted in several findings:

1. As part of our analysis of the data over the period of study for the investigation of experience, we found one area – relating to the number of post-retirement deaths counted during the experience study period – which appeared to be incorrectly calculated in Segal's analysis. We elaborate on this issue in the discussion of the demographic assumptions below.
2. After reviewing the information provided by FCERA and the final data file provided by Segal, we asked a number of follow up data questions to the FCERA Staff. Based on the responses to the questions, we generated a final data file that differs from Segal's for a number of reasons:
  - a) 27 members (22 beneficiaries, 4 retirees and 1 disabled) included in liabilities by Segal are not included by EFI since they were either not reported by FCERA or FCERA indicated that these members are not receiving benefits. Some of these members appear to be counted twice in the Segal data due to changes in the unique identifier used to update information.
  - b) 13 members (4 beneficiaries, 7 alternate payees (DROs), 1 retiree and 1 disabled) included by EFI in liabilities are not included by Segal.
  - c) 175 members are valued by both EFI and Segal, but with different statuses. 31 of these members are Safety members categorized as DROs or beneficiaries by EFI and retired or disabled by Segal. This can cause a slight change in liabilities since the mortality assumption is different for Safety members and survivors. In addition, four of these members are active and are receiving survivor benefits or benefits under a domestic relations order. These four members are only included as retired by Segal and the active record is not valued.
  - d) 1,258 non-vested members with funds on account are not included in the information provided by Segal and are reported in the client data. EFI included these members in the member counts. Segal

may be computing liabilities for these members and not reporting them since they are non-vested terminations.

Total benefit amounts differed by \$12,002. When excluding members valued by one actuary and not the other, total benefit amounts differed by \$6,865. These differences are not significant.

We would be happy to provide Segal and the FCERA Staff with a listing of the individuals and the reasoning behind our changes.

3. We investigated the handling of member pay in several ways.
  - a) We reviewed a number of individual benefit calculations, comparing the final average pay amounts used in the benefit calculations with the pay amounts provided in the actuarial valuation data, to verify that the valuation data included all special pay amounts that should be included in pensionable earnings, such as those due to the Ventura ruling. Our limited review of these benefit calculations showed that all pensionable earnings had been reported in the valuation data, avoiding an understatement of liabilities.
  - b) We independently studied rates of member pay increase due to merit and longevity. The rates we derived were consistent with the assumptions recommended by Segal.
  - c) We tested the conversion factors adopted by Segal to account for the impact on pension benefits of payments made at retirement for unused annual leave. These were found to be reasonable.
4. Segal appears to annualize the reported rate of pay for individuals for a single pay period (understood to be the first pay period of the fiscal year) to project annual pay for the coming year. We recommend that consideration be given to using an average of several pay periods or some other method, since the use of a static single pay period could result in systematic over- or under-estimation of pay based on special characteristics of that period. For instance, the pay period reported for Safety members is generally higher than the following pay period, since it includes an extra pensionable holiday pay.

After completing our independent review of the data, we then reviewed the age-service, 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 following is a detailed table showing the results of the data comparison. The reasons for the noticeable discrepancies have been identified above, and are not believed to have a significant impact on the valuation results.

**Table 1: Comparison of Participant Data as of June 30, 2010**

	General		Safety		Ratio	
	Segal	EFI	Segal	EFI	General	Safety
<b>Active Participants</b>						
Number	6,134	6,111	812	809	99.6%	99.6%
Average Age	44.7	44.8	41.7	41.6	100.2%	99.8%
Average Service	11.0	11.0	13.1	13.1	100.0%	100.0%
Average Pay	\$ 55,875	\$ 55,915	\$ 81,429	\$81,550	100.1%	100.1%
<b>Service Retired</b>						
Number	4,202	4,174	499	508	99.3%	101.8%
Average Age	68.7	68.6	64.6	64.6	99.9%	100.0%
Average Monthly Total Benefit	\$ 2,475	\$ 2,482	\$ 4,061	\$ 4,002	100.3%	98.5%
<b>Beneficiaries</b>						
Number	515	542	87	86	105.2%	98.9%
Average Age	73.0	73.3	67.4	67.0	100.4%	99.4%
Average Monthly Total Benefit	\$ 1,397	\$1,440	\$ 2,097	\$ 2,157	103.1%	102.9%
<b>Disabled</b>						
Number	197	189	136	132	95.9%	97.1%
Average Age	66.1	65.8	56.9	56.4	99.5%	99.1%
Average Monthly Total Benefit	\$ 1,651	\$ 1,621	\$2,905	\$ 2,978	98.2%	102.5%
<b>Total In Pay</b>						
Number	4,914	4,905	722	726	99.8%	100.6%
Average Age	69.0	69.0	63.5	63.4	100.0%	99.8%
Average Monthly Total Benefit	\$ 2,329	\$ 2,333	\$ 3,607	\$ 3,598	100.2%	99.8%
<b>Terminated Vested</b>						
Number	1,330	1,325	122	121	99.6%	99.2%
Average Age	48.8	48.8	43.2	43.0	100.0%	99.5%



## 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. The demographic assumptions involve factors such as when people will retire, in addition to economic factors such as how the plan assets will grow. Actuarial methods affect how asset values are determined and how liabilities are allocated to various parts of a member's career.

### Demographic Assumptions

The questions guiding our review of the demographic assumptions were the following:

- Do the rates of termination from active service due to retirement, withdrawal, disability, and death, follow reasonable patterns?
- Do the rates reflect the experience of the Plan?

To answer these questions, we performed a full parallel investigation of experience. First, as described above, we collected data from FCERA and performed an independent analysis. We then compared the assumptions proposed by Segal in their Experience Study report. In general, we agreed with the conclusions of Segal's study. However, there were two exceptions where our conclusions differed:

#### 1. Mortality rates

As described in our review of the data, Segal incorrectly computed the number of retired members who died during the period of study – classifying at least a dozen members as dying when in fact their status changed as part of a reclassification from retiree to alternate payee. This resulted in their study showing computed rates of post-retirement mortality that were higher than actually occurred. This prompted Segal to claim a higher margin of conservatism in their rates than actually existed.

#### 2. Mortality conservatism

In their review of the mortality experience, Segal recommended the use of more conservative mortality tables than had been used previously. Typically, actuaries prefer to see an actual-to-expected ratio (A/E ratio) greater than 100% when comparing the number of actual deaths to those expected, based on two primary factors:

- Rates of mortality are expected to improve over time (i.e. people will live longer in the future)
- Members who receive higher benefits generally have lower rates of mortality, which can lead to underestimations of liability, even if the number and timing of deaths is accurately predicted for the group as a whole.

Segal only addressed the first factor in their experience study. Based on our recent review of mortality amongst a number of '37 Act systems, we have found that the second factor has just

as large of an impact on the analysis of A/E ratios. Also, the analysis of mortality by benefit amount does not rely on assumptions about future changes in mortality rates – which are highly uncertain and about which there are significant disagreements among experts - but rather reveals important characteristics about mortality *that already clearly exist in the data*.

We recomputed the ratio of actual to expected deaths based on the new mortality assumptions proposed by Segal using our own data file (which did not include the additional deaths) and found that the A/E ratio for the general retirees decreased from 111% (for a conservatism margin of 11%) to a ratio of 103% on a member-weighted basis, or 97% on a benefit-weighted basis. The first number (103%) shows that the actual margin in the proposed rates is very small, leaving little conservatism in the liabilities for any future improvements in mortality experience. The second number (97%) shows that the rates are not actually conservative at all, if the recent experience is properly measured against the proposed assumptions from a benefit amount perspective.

An additional consideration that the Board (and the County) may wish to keep in mind when setting post-retirement mortality assumptions concerns upcoming changes being proposed to the pension accounting standards proposed for public plans by the Government Accounting Standards Board (GASB). As part of their recent Exposure Draft, GASB has stated that they may require that public employers expense *immediately* the full impact on any changes to post-retirement mortality assumptions to the accrued liabilities for their retirees.

This could result in a very significant expense charge in any year in which mortality tables have changed. Plans and sponsors may wish to consider whether it makes sense to try to incorporate sufficient conservatism in their rates now, when changes to the liability can still be amortized over many years of expense charges (currently 15 years for FCERA), rather than waiting until the standards have changed and the full impact must be recognized in a single year.

We recognize, however, that introducing additional conservatism in the current fiscal environment is difficult. Moreover, the issues identified here with respect to GASB only apply to the sponsor's financial statements; GASB's actions will have no impact on required funding policies.

## Economic Assumptions

The questions guiding our review of the economic assumptions were the following:

- o Rate of expected return on plan assets – Does the rate reasonably represent the expected return based on the plans asset mix? Is it overly aggressive or conservative?
- o Rates of salary increase and inflation – Are the salary increase rates reasonable with respect to the populations? Is the rate of inflation within a reasonable range? Is the rate of real return (expected return less inflation) reasonable?
- o Rates of Cost of Living Adjustment (COLA) growth – Are the COLA growth rates reasonable with respect to the provisions of the Plan and the inflation assumption?

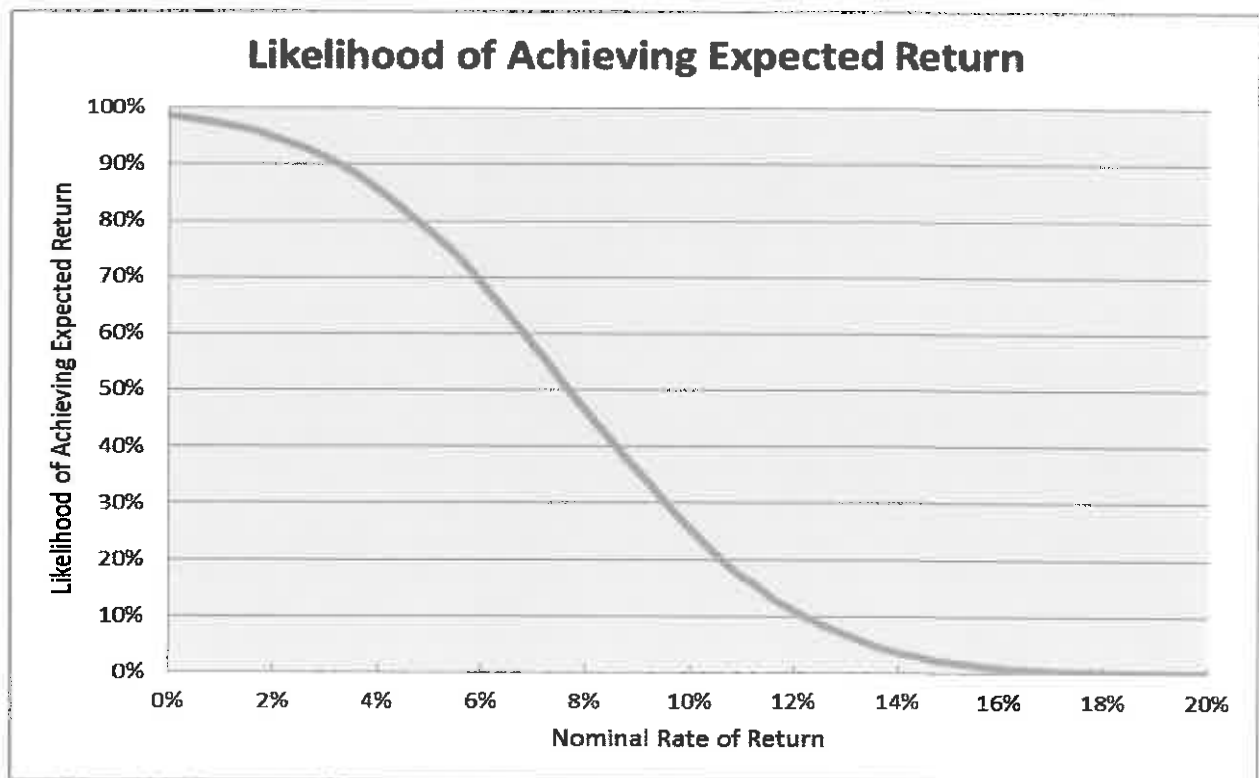
**Rate of expected return on plan assets**

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 represents a moderately optimistic outlook for the expected long-term return.

In the Chart below, we have simulated the return derived using FCERA's current target allocation. The simulated returns are derived by simulation, using the following algorithm:

1. The expected returns, standard deviation and correlation matrix for each asset class were provided by the investment consultant (Wurts Associates).
2. The expected returns for each class were modified to adjust for the difference in the inflation assumption used by the investment consultant (3.25%) and the proposed inflation assumption used for actuarial purposes (3.5%).
3. 10,000 simulation trials for repeated ten year periods were run, and the mean compound rate of return on FCERA assets was computed for each of them.
4. Given the distribution of returns, we have created a chart that shows the likelihood of the compound return for a specific trial exceeding a specified assumption over a ten year period, after adjusting for administrative expenses.

According to Article 31580.2 of the '37 Act, administrative expenses (excluding certain technology expenses) may not exceed 0.18% of the assets of the retirement system. The simulated rates of return shown below in the chart are reduced by 0.55% to allow for these expenses and for investment fees. This is the expense load adopted by Segal in its experience study.



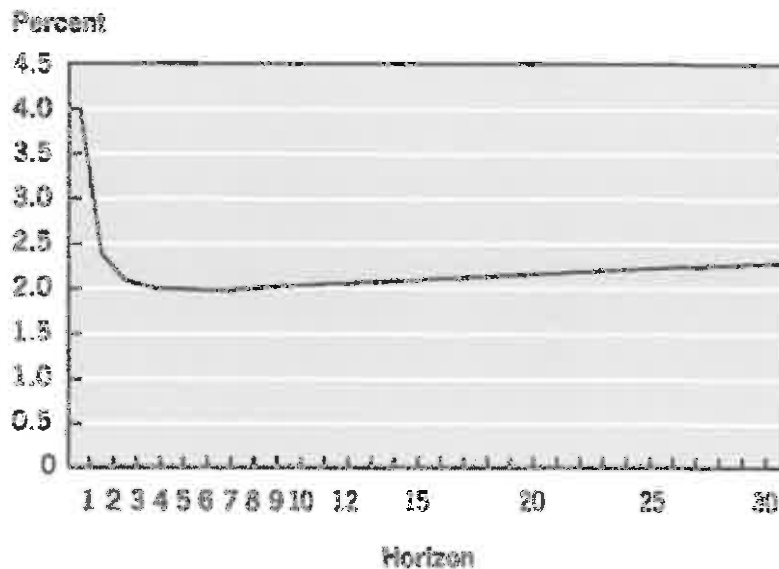
The mean return from this simulation was 7.66%, for a real return of 4.16%. Note that the curve crosses the 50% likelihood threshold right around this point, meaning that chances are slightly lower than 50/50 that a 7.75% return would be achieved over a ten year period. A lower return assumption would result in a higher likelihood of achieving the expected return.

All things considered, the 7.75% return assumption recommended by Segal is reasonable. However, our simulation results suggest that it is somewhat optimistic and, based on the assumptions provided by Wurts Associates (returns) and Segal (expenses), the odds of meeting the assumption over the next 10 years are about even. Therefore, we recommend that consideration be given to decreasing the assumed return to 7.5%. It should be noted that many other major plans in California and nationwide are considering comparable reductions in their assumed returns.

**Rates of salary increase and inflation**

The rate of future inflation was reduced from 3.75% to 3.50%, which we believe was a reasonable recommendation.

Financial markets offer evidence of what investors expect inflation to be in future years. Various securities, such as Treasury inflation-protected securities (TIPS), provide the necessary data for these analyses. As an example, a recent publication by the Federal Reserve Bank of Cleveland attempts to incorporate some of this market data. It contained the following 30-year projection of expected inflation rates:



(Source: Joseph G. Haubrich, Cleveland Federal Reserve website. As of September 1, 2009)  
 (<http://www.clevelandfed.org/research/commentary/2009/0809.cfm#back2fn2>)

An assumption of 2.50% may appear to match well with current market and professional expectations. However, the predictions of future inflation by experts are not unanimous. Some commentators note

that the large current and expected future deficits increase the likelihood of higher levels of inflation in the future.

In their recent experience study, Segal also recommended a rate of expected payroll growth (excluding individual increases based on longevity/merit) of 4.00%. Because of the reduction in the inflation assumption from 3.75% to 3.50%, this represents an increase in the real "across the board salary increase assumption from 0.25% to 0.50%. Segal provided evidence that the rates of average salary growth over the past several years have significantly exceeded the rate of inflation (measured by the actual change in CPI).

Although we feel that either 0.25% or 0.50% could provide a reasonable estimate for future real wage growth – caused in part by expected productivity increases over the long term - we do not agree that the evidence provided presents a strong case the recommended change. In fact, Segal's data could be used to argue for the opposite perspective: because the pay of public sector employees (and Fresno's employees in particular) has grown significantly faster than inflation over the past few years, there is less necessity for significant growth in real pay to remain competitive in hiring.

In addition, current budgetary constraints make it extremely unlikely that bargaining units will be successful in negotiating salary increases above inflation, at least until sponsors are able to recover from the current economic crisis. Finally, there are other areas of employee compensation - specifically pension contributions and healthcare costs - that are likely to increase more rapidly than general inflation over the next few years. Therefore, wages increases may have to increase *less* rapidly than inflation in order for overall compensation to avoid significant growth above inflation; we have seen evidence of this recently where bargaining groups are agreeing to at least temporary freezes or reductions in wages.

Although some of the arguments made above are specific to the current economic situation, and may not fully drive experience over the long term, we do not see how the evidence presented makes a strong argument for why the assumption of future real wage growth should be increased *at this time*.

### **Rates of COLA growth**

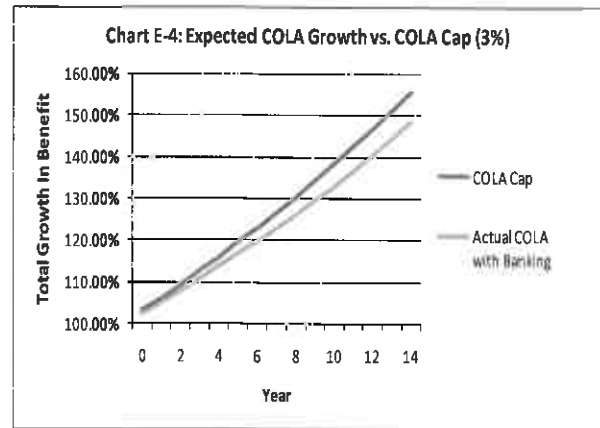
Segal recommended that the Board retain the current retiree cost-of-living assumption of 3.00% per year. Although they do not discuss the COLA assumption in any detail within the experience study, we assume that this is because the recommended rate of inflation (3.5%) is still above the COLA cap (3.00%).

However, we done extensive analyses for a number of our '37 Act clients who have identical COLA provisions - COLA equal to CPI growth, capped at 3.0%, with CPI increases above the cap "banked" for future years - and inflation assumptions which show that the rate of growth in the post-retirement benefits should average less than 3.0% over the long term.

As part of these analyses, we have produced statistical simulations of inflation, similar to our modeling of the investment return assumption, 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.

This chart demonstrates that the expected growth in the COLA is expected to be below the cap, even if the expected average increase in the CPI (3.50%) is higher than the cap itself (3.00%). 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.



Based on our analyses done at other '37 Act systems, we recommend an assumed COLA growth rate of 2.70% per year, given a 3.0% cap and 3.5% inflation assumption. The implementation of this recommended change alone would result in a reduction in the current cost of approximately 3.5% of pay.

### Actuarial Methods

The 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 FCERA 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.

### Amortization Policy

FCERA is currently amortizing the initial unfunded liabilities of the Plan (calculated as of June 30, 2003) over a 30 year period (with 23 years remaining from current valuation date) as a level percentage of payroll. All subsequent changes to the unfunded liability, other than plan amendments, are amortized over closed 15 year periods. Changes in the unfunded liability due to changes in the plan provisions are amortized over 30 years.

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 is in the process of reviewing their pension disclosure standards, and has indicated an intent to modify those standards in the coming years; shorter amortization periods are a likely outcome of this effort.

### **Asset Smoothing**

The actuarial (or smoothed) value of assets is determined using a five year smoothing method - broken up into 10 six month periods. The Board recently elected to increase the corridor around the market value of assets from 20% to 30%. We have confirmed that the Segal report applies the actuarial smoothing method as described.

The Actuarial Standard of Practice which governs asset valuation methods (ASOP #44) 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." Our view is that a 30% difference between the actuarial and market value could constitute a reasonable range.

The Standard also states that in lieu of satisfying both requirements above, the actuarial smoothing method can be deemed acceptable if the method either "(i) produces values within a sufficiently narrow range around market value or (ii) recognizes differences from market value in a sufficiently short period." Many actuaries consider five year smoothing to be a "sufficiently" short period, which thus removes the requirement that the actuarial asset value should fall within a reasonable range of the market value.

There are a number of '37 Act counties that use five year smoothing with no corridor around the market value of assets. We generally prefer to see both elements (reasonably close to market and reasonably short smoothing time) reflected in an actuarial smoothing policy, as is the case at FCERA.

However, we wish to highlight one issue that Boards should consider in their discussions of asset smoothing (or other funding policies such as amortization periods): the comparison of the assets of the Plan with the inactive-only liabilities. This has particular importance in those systems, such as FCERA, where the funding level of the Plan is in a severely stressed position. Currently, there is approximately \$2.5 billion in valuation assets - measured on a market basis - available to fund the retirement benefits of the Plan (i.e. excluding the Supplemental COLA and non-vested retiree health benefits.) This is only slightly greater than the liability associated with just the inactive members of the Plan (members currently in pay status or due a deferred vested benefit) – approximately \$2.4 billion as of June 30, 2010.

As a consequence, there is scarcely any money in real assets that has been set aside to pre-fund the benefits for the current active members. Any policy decision which reduces the level of employer contributions will contribute to the continuation of a funding level which does not set aside any assets

for the current active employees. Since one of the important goals of actuarial funding is to accumulate sufficient assets during a member's active service to provide a benefit at retirement (sometimes referred to as generational equity), it is clear that current funding levels reveal a failure to achieve this goal. We believe the Board should recognize and incorporate this fact into their decision making process.

### **Reserve Policies**

We also reviewed the Interest Crediting and Undistributed Earnings Policy adopted by FCERA. This Policy gives the Retirement Board wide discretion in the application of earnings in excess of the actuarial assumption. Because of the discretion given the Board, and the lack of any automatic mechanism for applying excess earnings in the Policy or in statute, the Policy falls outside the range of actuarial models: Human decisions cannot be predicted.

Accordingly, no computer or mathematical model of the Interest Crediting Policy was constructed. However, we did have a few observations:

1. Because of the current low funded ratio of the Plan, and the existence of a Contra Tracking Account with a significant balance, we do not anticipate any diversion of earnings or additional benefit awards in the near term.
2. In general, we have found it advantageous to include in such policies a mechanism for reconciling the various valuation reserves with the liabilities computed by the Fund actuary. Such a "true-up" of valuation reserves and liabilities should be undertaken periodically.
3. In the calculation of Available Earnings in Step 1 of Section V of the Policy, retirement fund earnings are computed based on the Actuarial Value of Assets. Given the delay in the recognition of investment gains and losses in the Actuarial Value of assets, there could be circumstances in which Available Earnings exist on an Actuarial Value basis, but would not exist using Market Value. For example, the Available Earnings could result from the delayed recognition of prior years' gains, when there has been a recent market loss. This issue needs to be examined before Available Earnings occur.



## 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 results are within the desired 5% tolerance level.

### Liabilities and Cost

(\$ in Millions)	June 30, 2010	EFI Independent	
	<u>Valuation</u>	<u>Review</u>	<u>Ratio</u>
Present Value of Projected Benefits	4,961.5	4,886.9	98.5%
Actuarial Accrued Liabilities	4,092.5	4,041.7	98.8%
Actuarial Value of Assets	2,983.0	2,983.0	100.0%
Unfunded Accrued Liability (UAL)	1,109.5	1,058.7	95.4%
UAL Amortization	99.7	95.2	95.5%
<u>Normal Cost</u>	<u>80.3</u>	<u>77.9</u>	97.0%
Total	180.0	173.1	96.2%

The table below contains the comparison of the costs by Tier shown in the Segal report and our independent calculations. There is one discrepancy slightly greater than 5% between our results and Segal's with respect to the normal cost for one of the tiers. However, the net employer contribution is within the desired tolerance level. Therefore, we are comfortable that the results Segal has produced are accurate and reasonable.

### Employee Contribution Rates

We have verified the calculations of the individual employee contribution rates based on the applicable provisions of the CERL and have found these rates to be correct – our rates were within 0.01% of Segal's rates.

### Actuarial Balance Sheet

We have one additional comment about a specific exhibit in the report: Exhibit F, the Actuarial Balance Sheet. We were informed by Segal that the row corresponding to the "Present Value of Future Contributions by Members" was calculated under the assumption that the contributions made by the members are assumed to be paid in full at the beginning of each Plan year. Our independent calculations appear to confirm this statement.

We believe that a more accurate estimate of this value would result if an interest adjustment were made to these contributions to reflect the way they are actually made, which we assume be at the time of each pay period. This would have the effect of reducing the Present Value of Future Contributions by Members in this exhibit by approximately 4%.

**Costs by Detailed Group**

(Shown as % of Payroll)	<b>June 30, 2010</b>	<b>EFI Independent</b>	
	<u>Valuation</u>	<u>Review</u>	<u>Ratio</u>
<b>Employee Contributions</b>			
General Tier 1	8.69%	8.70%	100.1%
General Tier 2	6.23%	6.22%	99.8%
General Tier 3	6.79%	6.78%	99.9%
Safety Tier 1	10.91%	10.85%	99.5%
<u>Safety Tier 2</u>	9.64%	9.64%	100.0%
Total	8.87%	8.86%	99.9%
(Shown as % of Payroll)	<b>June 30, 2010</b>	<b>EFI Independent</b>	
	<u>Valuation</u>	<u>Review</u>	<u>Ratio</u>
<b>Employer Normal Cost</b>			
General Tier 1	18.57%	17.85%	96.1%
General Tier 2	16.32%	16.38%	100.4%
General Tier 3	14.96%	14.76%	98.7%
Safety Tier 1	26.91%	26.94%	100.1%
<u>Safety Tier 2</u>	25.92%	27.44%	<b>105.9%</b>
Total	19.63%	19.10%	97.3%
<b>Amortization of Unfunded Accrued Liability</b>			
General	22.46%	21.53%	95.9%
<u>Safety</u>	34.34%	32.80%	95.5%
Total	24.38%	23.35%	95.8%
<b>Total Employer Cost</b>			
General Tier 1	41.03%	39.38%	96.0%
General Tier 2	38.78%	37.91%	97.8%
General Tier 3	37.42%	36.29%	97.0%
Safety Tier 1	61.25%	59.74%	97.5%
<u>Safety Tier 2</u>	60.26%	60.24%	100.0%
Total	44.01%	42.45%	96.5%

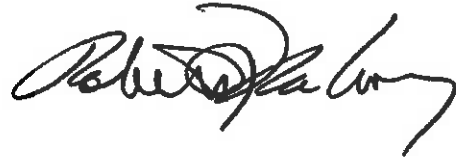
## Certification

We certify that this review was performed in accordance with generally accepted actuarial principles and practices.

Respectfully Submitted,



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