Tulare County Employees' Retirement Association

ACTUARIAL AUDIT

August 2011

Roeder Financial

TULARE COUNTY EMPLOYEES' RETIREMENT SYSTEM ACTUARIAL AUDIT

August 31, 2011

AUDIT SCOPE

TCERA asked us to complete what we would term a "Level 2" audit. This is not a parallel valuation nor a check on data quality but offers the next highest level of review. We asked the system actuary, Buck, to provide us with selected "sample life" data. The lives were selected to represent different demographics and different valuation groups.

We performed the following tasks in our review:

- We reviewed each of the last three actuarial valuations
- We reviewed the last experience investigation report
- We reviewed the active member data file used for the June 30, 2010 valuation
- We asked many (as in zillions) questions of both Dave Kehler and Charlie Chittenden
- We calculated present values and normal costs for 4 active employees
- We reviewed and checked two present value calculations for current retirants and two calculations for current beneficiaries (all non-SRBR benefits)
- We calculated two sample employee contribution rates

While this analysis is **not** designed to produce an audit as rigorous as if parallel valuations were completed, the scope of our audit did provide enough "meat" for us to make a host of suggestions that we believe will improve the actuarial process for TCERA. It also gave us the opportunity to affirm the areas where you are being well served.

It would have been optimal to have massive output of "sample" lives that we requested. Buck provided the next best level of information by providing requesting numbers. This necessitated a lot more "back and forth" dialogue so that the origins of the provided numbers could be better understood when there were significant differences in our calculations. Since there were some significant differences in the initial sets of numbers, this did slow down the anticipated completion time considerably. We attempted not to disclose our calculated numbers until we were provided with requested data but there were some times where we did so disclose in an effort to help pinpoint the reasons for any significant variance and to expedite the completion of our audit.

If we calculated a number which was within 95%-105% of the same number calculated by Buck, we were satisfied. If not, we asked for and/or provided further data in an effort to reconcile differences.

From Buck's standpoint, the process required a lot of patience as TCERA's benefit structure is complex (as is the case for all the 1937 Act Systems). We deeply appreciate their cooperation. We also appreciate Dave Kehler's considerable cooperation on this thankless task. Dave did review the summary of plan provisions in the 2010 Buck actuarial valuation report and found them to be accurate.

No Defined Benefit ("DB") plan can know with certainty the associated costs in a given year. An estimate is done through an actuarial valuation.

The most significant objective that actuarial funding can hope to achieve in a DB plan is to calculate long-term contribution estimates that do not produce intergenerational subsidies among different eras of taxpayers. However, "level" does not generally mean a level dollar payment from year-to-year but level in terms of ability of a system to make payments. The usual measure of "level" is to compare computed contributions as a percentage of active member payroll. Since payroll is expected to rise with inflation, nominal dollar contributions will also be expected to increase in a level-cost system.

Social Security would be the most prominent example of a pension program that violates this principle due to its extremely low level of trust assets to pay future promised benefits. This principle would also be violated if "excessive" contributions were received in an early period of plan operation such that long-term contribution rates would be permanently lower. This can happen if actuarial assumptions are too conservative. For example, if a system continually earns a greater return on trust assets than anticipated, well intended conservatism can conflict with this principle of level funding. In California, level funding also conflicts with Proposition 162. Fiduciaries have a secondary obligation to reasonably minimize contributions charged to both employer and employees.

It is absolutely impossible to accurately estimate the wide variety of factors that are used to determine contribution rates and liabilities in a relatively short time frame. One of the key elements to any viable funding program is to have a logical, clearly defined manner as to how to handle the inevitable differences between assumed and actual experience. In any accepted funding method, such differences are reflected as actuarial gains or losses and systematically reflected in adjusting future contribution rates.

Invested assets are a byproduct of level-cost funding and not the objective. Investment income, in effect, becomes an additional contributor to a system.

Normal Cost: The actuarial present value of retirement system benefits allocated to the current year by the actuarial funding method employed.

Actuarial Funding Method: A mathematical budgeting process for allocating the dollar amount of the accrued present value of retirement system benefits between future normal costs and actuarial accrued liability.

Actuarial Accrued Liability: The difference between the actuarial present value of system benefits and the actuarial value of future normal costs.

Actuarial Present Value: The amount of funds currently required to provide a payment or series of payments at predetermined rates of interest and by probabilities of payment.

Actuarial Equivalent: A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.

Accrued Service: Credited system service rendered prior to the actuarial valuation date.

Amortization: Paying off an Actuarial Accrued Liability with periodic payments of interest and principal.

Unfunded Actuarial Accrued Liability: The difference between Actuarial Accrued Liability and valuation assets.

Selecting An Actuarial Funding Method

There are at least six actuarial funding methods which are recognized for pension accounting auspices of Statement #25 of the Government Accounting Standards Board. This is parallel to recognized acceptance for funding purposes. TCERA currently uses Entry Age Normal.

Under Entry Age Normal, the present value of projected benefits for each active member is spread as a level percent of an active member's compensation for each year from the member's entry age to the member's anticipated exit from active membership. If a member's anticipated compensation, five years after entering a plan, is 30% higher than at entry age, then the dollar normal cost for such year will also be 30% higher. The normal cost for the group is the sum of the normal costs for each active member of the group.

Entry Age Normal is the most popular method for public plans and is more conservative than certain other methods such as Projected Unit Credit funding. Most recent surveys indicate that this method is used by 70+% of public entities.

In any funding method, the amount of assets used for valuation purposes will have a direct and significant effect on overall plan costs.

In early years, many public plans used book value. This approach has long gone the way of the horse and carriage. Use of book value made some sense for those entities that had primarily fixed income investments held to maturity and had little or no exposure to equities or real estate. As of your 2010 valuation date, TCERA held 65.3% of fund assets in equities and another 8.5% in real estate.

Increasing investment in asset classes where book value and market value may diverge significantly strongly argues against the use of book value. The current pension accounting standard, Statement #25, indicates that the asset value should be "market related" in some rational way.

Why not use market value of assets at valuation date? If a system does, its pattern of contribution rates will likely prove to be volatile. The short-term vagaries of the market can be inconsistent with the intrinsic value of equities owned and are inconsistent with the long-term nature of pension funding. Was a plan's domestic equity portfolio intrinsically 23% less valuable at the end of Black Monday in October 1987 than at dawn? No. The subsequent market rebound in November and December affirmed that.

Subsequent to the 2008 valuation, asset smoothing was changed from 5 to 10 years for returns that diverge from the assumed rate of return. Using five years as an "averaging" period is still the most prevalent smoothing period even though other entities did the same as TCERA following the 2007-08 fall in equities. CalPERS uses a 15-year asset smoothing period in an effort to further stabilize contribution rates. This 15-year period is far from mainstream. To our way of thinking, use of a 15-year smoothing period would be like painting a wall and then sanding down the wall so extensively that you cannot tell the color of the new paint. We view the 10-year period as at the outer edge of what we would deem acceptable.

There is a related issue with which the Board should feel comfortable. GASB Statement #25 indicates that the actuarial value of assets should be market-related. In the past two actuarial valuations, there has been a wide variance between market value of assets and the actuarial value of assets, as follows:

Valuation	Market Value of Assets	Actuarial Value of Assets	Difference
		(millions)	
2010	$ 833.3	$ 1,093.6	$ 260.3
2009	761.0	1,066.9	305.9
2008	965.8	1,032.8	67.0

Subsequent to the 2008 actuarial valuation, the Board made a decision to eliminate the maximum permitted divergence between market and book value of 20%. This was done to minimize the increase in rates due to the significant 2007-08 market decline. In the past two valuations, the market value and actuarial values of assets are not close. Ideally, these values should be a bit closer.

Treatment of Actuarial Gains and Losses

Why should an actuary be very humble? Because we know that our calculations will inevitably be somewhat off target. In some years, such as your 2008-09 fiscal year, we will be way off in the aftermath of the equity market meltdown. To the extent that actuarial experience differs from assumed, a fund needs to make a rational adjustment in future contribution levels. Under Entry Age Normal, actuarial gains (losses) directly impact the unfunded liability. Other factors equal, actuarial losses lead to higher plan contributions; gains result in lower contributions.

Data Analysis

There are slightly more than 26 biweekly pay periods in a year. That has been accurately captured.

Analysis of Active Members

We believe Buck slightly understates the projected Final Average Compensation. Staff indicated that pay increases occur at various points in the fiscal year. In the case of Christine Tidwell, Buck underestimated her final average compensation by six months of projected earnings increases. This understates both the liability and normal cost for actives by a relative amount of 2.25%-2.5%.

RECOMMENDATION: Future assumed pay increases should be assumed to occur mid-year and not one year from the valuation date.

Buck assumed that non-duty disability decrements occur for all actives – not just those who have attained five years of credited service needed for this benefit. This probability of leaving the active member work force should be zero for those in their first five years of service.

RECOMMENDATION: There should be consistency with the changes Buck recently made for other decrements and have the decrement only applied if eligibility conditions are met.

Analysis of Vested Deferred Members

We analyzed Robert Rose, a Safety deferred vested member, and found the Buck calculations to be reasonable with one exception. With Rose, the actuarial present value of his pension was less than his accumulated employee contributions. Buck used the greater of the two figures as the current actuarial liability – which was well done. However, with both deferred vested members valued, Buck used the final pay to estimate benefits. Since both were subject to high three year final average compensation, this overstated the actuarial value of the deferred annuity by 9-10% based on Buck's assumed set of pay increases. In the case of Rose, this happened not to matter due to his accumulated employee contributions.

However, this overstatement did apply to the General Tier 3 vested deferred we analyzed, Agnes Cabatu. Further, with Ms. Cabatu, we discovered that Buck was not using the current 2% multiplier for service after the benefit change that went into effect on July 1, 2005. Buck kept using the old "1/60th multiplier" for all service. Fortunately, the two issues we identified will offset each other to some degree.

There also is one inconsistency in the valuation of benefits between deferred vested and active members. In the initial year of benefit eligibility, a deferred vested member is assumed to receive benefits for six months whereas a service retirant is assumed to receive the benefit for the entire 12 months.

RECOMMENDATIONS: Buck should use the post-2005 benefit factor. Buck should reflect an estimate of high 3-year average earnings where appropriate Be consistent in the amount of payments assumed to be made in the initial year of benefit receipt.

Analysis of Retirants and Beneficiaries

Our figures and Buck's figures were all within a reasonable tolerance.

Analysis of Employee Contributions

The two sample lives we checked were within range. We do have a suggestion. Currently, employee rates change annually. Given some of the communication issues that can exist when there are significant changes in employee rates, we suggest that they change subsequent to each experience study but be unchanged in the subsequent two years. This would save administrative staff from having to explain annual changes in rates. One of the changes recommended in the 2010 valuation really caught our eye: the increase in employee rate skyrocketed from 1.28% to 4.60% for the small number of remaining Safety Tier 1 actives. There was no communication in the report as to why this occurred. Whenever there is a significant change from one year to the next, we recommend that Buck explain the reason for such change in layperson terms.

Assumption Recommendations

Pay Increases: We believe it is unlikely that either Tulare County or the State will return to robust financial health in the foreseeable future. Currently, over half of the County's revenues come from Sacramento. Thus, it will be unlikely that the County can financially be in significantly better condition until the state has better times. **Current pay increase assumptions reflect a robust financial condition that does not exist, has not existed for several years and is unlikely to exist in the foreseeable future.** Pay increase assumptions are extremely optimistic for General employees in the first fifteen years of their career and for Safety employees in their first twenty years. It is assumed that such employees receive assumptions well in excess of the 4% assumed inflation assumption; 6% for General and 6.25% for Safety. We believe both assumptions to be too conservative in light of recent layoffs and the County's foreseeable economic condition.

To boot, all entities are struggling with increasing pension contributions which will further impair the ability to grant pay increases over the next generation. Two of the other elements that will determine a reasonable projection as to future pay increases may not have been present in the 2008 analysis. Sharply rising pension contribution rates can lead to pay freezes and hiring freezes. While rates have not risen sharply in Tulare County, they have for three entities who indirectly impact Tulare County from a standpoint of nearby competitive governmental employers: Fresno County, Kern County and CalPERS.

One of the considerations in projecting pay increases is to be mindful of pay levels in surrounding comparable entities for competitive reasons. Fresno County has a contribution rate that has skied to 44% of pay. In Kern County, the contribution rate is slightly smaller, at 39%, but still staggering when one considers that the County also is paying debt service on Pension Obligation Bonds. So, it is extremely difficult to see that the nearest 1937 Act Counties will be able to offer significant pay increases given their daunting pension contribution requirements. The increasing pension contribution rates of CalPERS matter because over half of Tulare County's revenue comes from the state. Even if the economy dramatically improves, the pension contribution burden that nobody envisioned a decade ago, will remain for at least the next decade due to the significant deferred asset losses that have not yet had a direct impact on contributions. Further, once some fiscal strength returns to the state, there is a generation backlog of infrastructure needs that will need to be addressed.

The following table compares the assumed pay increases, above inflation, for TCERA and the two adjacent 1937 Act Counties during an employee's first 15 years of service:

Years of	**TCERA**		**Fresno County**		**Kern County**	
Service	General	Safety	General	Safety	General	Safety
0	2%	2.25%	7%	7%	6%	6%
1	2	2.25	6	6	5	5
2	2	2.25	5.5	5.75	4	4
3	2	2.25	5	5.25	3.25	3.25
4	2	2.25	4.25	4.35	2.5	2.5
5	2	2.25	2	3.75	2.25	2.25
6	2	2.25	1.5	3.75	2	2
7	2	2.25	1.25	3.5	1.75	1.75
8	2	2.25	1	1.5	1.5	1.5
9	2	2.25	1	1.5	1.3	1.3
10	2	2.25	1	1.5	1.1	1.1
11	2	2.25	1	1.5	0.9	0.9
12	2	2.25	1	1.5	0.8	0.8
13	2	2.25	1	1.5	0.7	0.75
14	2	2.25	1	1.5	0.6	0.75
15	2	2.25	1	1.5	0.5	0.75

In both Fresno County and Kern County, the pattern of assumed pay increases is much more typical than that used in Tulare County. For both FCERA and KCERA, more promotional opportunities are assumed to be available early in careers and fewer available as more seniority accrues. Assumed pay increases in later years of service usually carry "more weight" in the actuarial process since longer service employees are less likely to terminate and have higher accrued liabilities. We believe that not only are pay increase assumptions too high but that higher pay increases should be assumed in the early years of employment than later years. A difference of 1% a year in assumed pay increases may not seem significant but, over the course of a career, can produce a benefit 30% higher than if a lower pay increase assumption was used.

Deferred Vested and Termination Assumptions

There is one actuarial principle that is not followed in the valuation: The longer that an employee works for an employer, the less likely that they will be likely to terminate or withdraw in any given year. Highest levels of termination occur during the earliest years of employment. This principle is not being followed in the current actuarial model and is basic to virtually every valuation we have done or reviewed. Inappropriate levels of assumed employee turnover can have a large impact on calculated values.

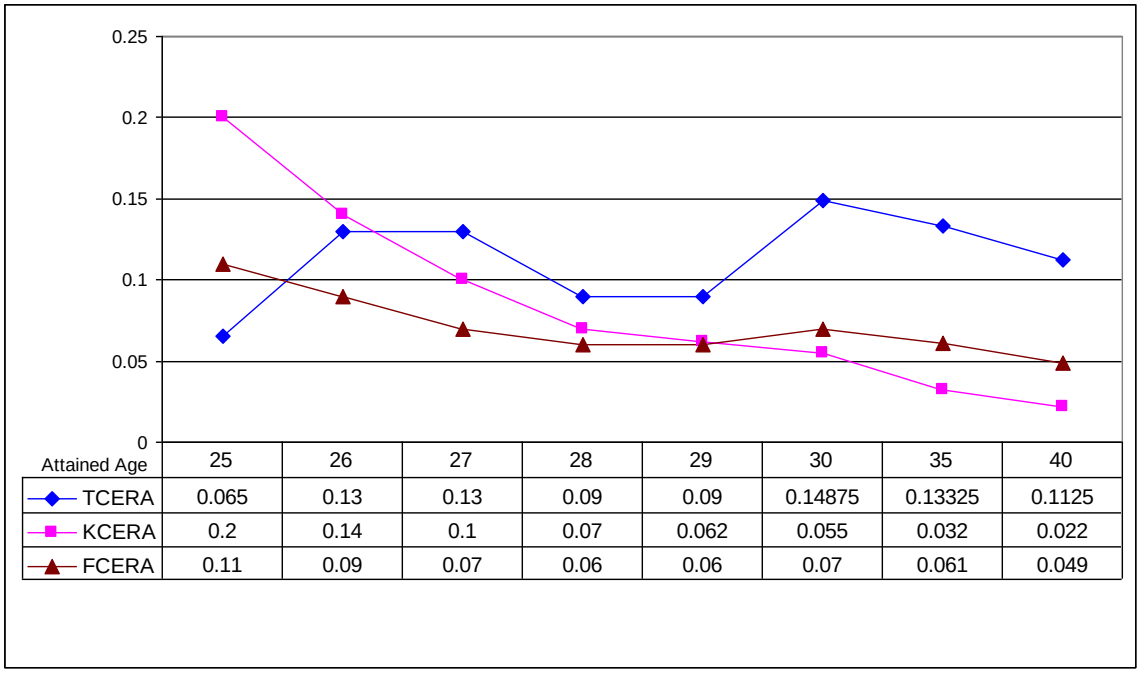
Pursuant to the 2008 Experience Study, Buck made a decision to significantly increase the deferred vested assumption. For example, the probabilities at many of the younger ages **tripled** for both General Females and General Males after the 2008 study was completed. In the 2008 Experience Study report, Buck characterized the increases as "moderate." We would characterize such increases as much more than moderate. Prior to the experience study, the probability for a 30-year old Female employee terminating in the next year was 2.625%. After the new assumptions were implemented, this tripled to 7.875%. For a 35-year old General Male, the deferred vested rates tripled from 4.125% to 12.375%.

What follows is are the combined probabilities of voluntarily leaving the Tulare County work force for a General employee who starts working at age 25: Withdrawal is abbreviated by "W". Deferred Vested is abbreviated by "DV."

	General Female			General Male		
Yrs of Service	W	DV	Total	W	DV	Total
25	.065	--	.065	.075	--	.075
26	.13	--	.13	.075	--	.075
27	.13	--	.13	.15	--	.15
28	.09	--	.09	.09	--	.09
29	.09	--	.09	.09	--	.09
30	.08	.07875	.15875	.09	.12375	.21375
35	.047	.08625	.13325	.044	.12375	.16775
40	.03	.0825	.1125	.027	.12375	.15075

We see no rationale for aggregate probabilities being significantly higher at age 40 than at age 29. In fact, this anomaly continues throughout years in which the active member is in their forties.

The following graph illustrates the probability of voluntarily leaving the active member work force for this 25-year-old General, female hire compared to that of a like General female in Fresno and Kern counties.



Attained Age	25	26	27	28	29	30	35	40
TCERA	0.065	0.13	0.13	0.09	0.09	0.14875	0.13325	0.1125
KCERA	0.2	0.14	0.1	0.07	0.062	0.055	0.032	0.022
FCERA	0.11	0.09	0.07	0.06	0.06	0.07	0.061	0.049

The trend in TCERA "exit" rates (in blue) are significantly different than for KCERA or FCERA.

	KCERA General Female			FCERA General Male		
Attained Age	W	DV	Total	W	DV	Total
25	.2	--	.2	.094	.016	.11
26	.14	--	.14	.077	.013	.09
27	.10	--	.10	.06	.01	.07
28	.07	--	.07	.051	.009	.06
29	.062	--	.062	.051	.009	.06
30	.025	. 03	.055	.021	.049	.07
35	.012	.02	.032	.018	.043	.061
40	.005	.017	.022	.015	.034	.049

NOTE: FCERA shows a positive probability of receiving a deferred vested benefit for those with less than 5 years of service. Presumably, this relates to past and potential future reciprocal employment.

The graph illustrates the technical issue with the deferred vested rates. We also have a judgment issue with Buck in the striking increase in the deferred vested probabilities. The 2008 Experience Study was completed at a time when both the California and national economies were in free fall. Through several recessions over the past 40 years, our experience has been that people are more likely to cling to their existing job in a recession than when the economy is more robust. This general principle has been supported by the demographics of the active member work force in recent years: The average attained age has increased by an actuarially significant 0.8 years from your 2007 valuation, 42.36, to your 2010 valuation, 43.16. The average length of service has increased markedly during such time from 7.92 to 9.36 years. These sets of statistics suggest that actual rates of employee turnover proved to be lower than previously assumed. These recent statistics are consistent with the byproduct of a weak economy.

RECOMMENDATION: An overall rate of voluntary termination should be determined for each attained age with special consideration given to short-service employees (as Buck reasonably does for those with fewer than five years of service). Such rates should be internally consistent and reasonably "smoothed" so that the current anomalies are eliminated. Once the overall rates of voluntary termination are determined, then a percentage of the overall voluntary terminations should be deemed to be "vested deferreds" depending on previous TCERA experience and whether the five year eligibility criteria has been satisfied.

There should be **much** greater smoothing than currently exists between adjacent ages. For example, the probability that a General Male, age 49, terminates with a vested benefit is 6.375%. The probability for service retirement for a 50-year-old General Male is 2% or less than one-third of the age 49 rate. This marked drop off is difficult to rationalize.

Last, we see no reason why the assumed rates of termination in the first year of employment are less than in years 2-5. Typically, the year one rates are higher than subsequent years.

Amortization of Unfunded Liabilities

TCERA's current funding policy is to amortize unfunded liabilities over a rolling 15-year period. We believe this is a sound policy. Critics of your policy may say that you will never fully amortize unfunded liabilities. This is true in a theoretical sense but there will be progress made every year in amortizing the unfunded liability. Also, we would point out that a System with a 90%-95% funded ratio is, paradoxically, more stable, than a fund with a 100+% funded ratio from a political standpoint. While we hope that plan sponsors learned a good lesson from 100+% funded ratios of a decade ago, there has always been pressure on the Trustees and the plan sponsor to provide more benefits or contribution relief if a system's funded ratio attains or exceeds 100%.

Regardless of the funding method selected, the results of one valuation are relatively inconclusive. The long-term nature of plan liability is illustrated by a new age 21 hire possibly receiving benefits in 2090! Since there is no high degree of "ultimate actuarial truth" in any single valuation, it is only through a series of actuarial valuations over a period of 5+ years that increasing credibility can emerge. A pattern of both contribution rates and actuarial gains (losses) will likely emerge. If the selected actuarial assumptions are reasonable, such gains and losses will tend to offset each other over a period of time. If there are recurring actuarial gains, this indicates that selected assumptions are overly "conservative." Conservative means that current contribution levels are higher than the long-term contributions needed to support plan benefits. Conversely, if there are ongoing actuarial losses, selected assumptions may be overly "aggressive" in that long-term contributions will need to be higher than current contributions for a system to be financially sound.

A big note of caution: The inflation assumption and the real rate of investment return are usually the two most significant factors in determining contribution rates for a given set of benefits. The economic cycles in both bear and bull markets tend to be lengthy. There have been three sustained cycles over the past four decades:

1973-1982 BEAR
1983-2000 BULL
2001-2011 BEAR

In the actuarial valuation report, there should be enough historical information over the past ten years to give the reader a more appropriate long-term perspective. The need for a long-term view also argues strongly against changing actuarial assumptions too frequently. Frequent changes obscure reasonable comparisons of recent actuarial valuations and are inconsistent with the long-term nature of pension funding. If assumptions are changed more frequently than once every three years, a plan's decision makers should reflect whether undue micromanagement is occurring. Frequent assumption changes also open a political Pandora's box. Once this precedent is set, politicians or others with short-term agendas may find it easier to lobby for a set of assumption changes which produces a desired result.

The following indices should be provided in a valuation report over a period of 5-10 years to give the reader added perspective:

- Contribution rates
- Funded ratio (Actuarial Value of Assets *divided by* Actuarial Value of Liabilities)
- Unfunded liability
- Ratio of unfunded liability to active member payroll (This ratio should be declining over a period of years in absence of benefit enhancements)
- Overall actuarial gain (loss)
- Ratio of actuarial gain (loss) to Actuarial Value of Liabilities

Comparative schedules should be footnoted when an "apples to apples" comparison does not exist. This could occur when assumptions, benefits or funding methods are changed. When such changes are made, historical schedules should reflect both "before" and "after" status.

The GASB disclosures on page 33 of the valuation report do a good job of summarizing funded ratios, unfunded liabilities and employer contributions over the past decade. There was no historical reference to historical actuarial gains and losses over more than 4 years.

RECOMMENDATION: There should be a schedule in the report which shows actuarial gains (losses) in each of the past 6-10 years. We recommend that such gains (losses) be split out between investments and all other elements as is done in page 34 of the valuation report for the past four years. The reason for the suggested bifurcation is that investment returns in the short run can vary dramatically. In your past two valuations, the market value of returns were -20.79% and +10.29%, respectively. Even with asset smoothing, there are significant variations in the actuarial rate of return (which is determined based on smoothed asset values).

SRBR Status

Tulare County is one of three 1937 Act Counties which offer additional benefits based on excess reserves accumulated during "good' investment times. During these "not-so-good" times, plan sponsors are looking at every conceivable way (for better or worse) to keep pension costs at a manageable level. It would not be shocking if the Board of Supervisors evaluates SRBR status at some point in the future.

SRBR funds represent the following percents of assets and liabilities during the past three valuations

	SRBR Reserve	Assets (Market)	SRBR/ Assets	Accrued Liability	Deferred Losses	SRBR/ Losses
			(numbers in millions)			
2010	123.7	833.3	14.8%	1,353.5	260.3	47.5%
2009	123.1	761.0	16.2	1,393.9	305.9	40.2
2008	120.5	965.8	12.5	1,437.6	67.0	179.9

Benefits Paid Out

Fiscal Year End	SRBR Benefits	Total Benefits	SRBR / Total
	(millions)		
2009	6.0	45.9	13.1%
2010	6.2	49.4	12.6

An actuarial audit should typically make no comment on benefit origin or benefit levels. The actuary should act like a mirror which says, "This is the cost for the benefits you have agreed to provide."

In the actuarial process, there is a basic question that should be addressed in each valuation:

Is there any meaningful way in which the actuarial process affects the ultimate benefits offered?

ANSWER in Nirvana: NO.

ANSWER in Tulare County: YES.

The setting of the assumed investment return by the actuary acts as a "bar" in determining allocated reserves to different accounts including the SRBR reserve. The lower that the assumed return is set, the more likely that reserves will flow into SRBR reserves.

Is the actuarial process, one of the basic tenets is to strive for a "neutral" approach in every feasible way. For example, a dollar of actuarial gain in one year and a dollar of actuarial loss in the subsequent year should have a largely offsetting impact on long-term actuarial rates.

Is the Actuarial Approach "Neutral" in Nirvana: YES.

Is the approach neutral in Tulare County: NO.

The reason for the lack of policy neutrality with SRBR is that actuarial losses do not offset actuarial gains. In other words, actuarial "gains" from investments go into the SRBR account but investment shortfalls do not flow out. This can be mitigated to a degree by recognizing certain past shortfalls before contributing any additional monies to the SRBR reserve. However, both bear markets and bull markets run in long cycles. As we have seen from 1983-2000, it is possible to have a long-term, euphoria-fueled bull market before reality comes crashing down.

Bear in mind that the only opinions expressed regarding SRBR are **strictly** from an actuarial nature and **not** from any policy standpoint. **Actuaries should not be involved in policy for a variety of reasons.** I am sure that a good case could be made that the existence of the SRBR eased some of the pressure on County Supervisors to increase benefit formulas when it was in vogue to do so a decade ago.

Because of SRBR, your assumption setting is more critical in regard to the assumed investment return than for a non-SRBR county. In page 37 of your actuarial report, Buck goes thru an analysis relating to your asset holdings in various classes that, in conjunction with the 1926-2005, Ibbotson-Sinquefield yield returns, show that your aggregate real return, after considering inflation and before expenses, is 5.65% per year.

Buck's report then opines that there should be a degree of conservatism in setting the rate. To the extent that expenses are not explicitly reflected in the actuarial assumption package, this is certainly a sound idea. However, administrative and investment expenses ran less than 0.60% during the 2009-10 fiscal year. There is no stated justification as to how their 1.75% (the real rate of return of 3.9% is 1.75% less than 5.65%) per year "conservative buffer" is calculated or derived. This is a significant element of "conservatism" and is different than the underlying philosophy with all other assumptions where Buck, presumably, is using a "best estimate" approach. The interest assumption affects benefits paid out of SRBR monies and impacts the County's ability to use actuarial gains from investment earnings. Given the sensitivity of SRBR entities to the investment rate assumption, we believe it quite important for Buck to actively engage the Board and Staff in the desired level of conservatism due to the impact on potential SRBR benefits.

Regardless as to Buck's approach, the assumed rate of investment return, net of expenses, of 7.90% and the assumed inflation return are both reasonably close to the median based on the last two annual assumption surveys conducted by Roeder Financial for the California governmental retirement systems (Please see roederfinancial.com and click on the Ramble to see the surveys). In the past 18 months, there has been a marked trend to slightly reduce assumed investment returns. CalPERS did resist their chief actuary's recommendation to reduce their assumed investment return from 7.75% earlier this year. Undoubtedly, a key element in their decision was the fact that reducing assumed investment returns would increase contributions required from cash-strapped employers. However, many other entities have reduced their assumed return rate in the past two years.

Major Issues

One large variance exists in the past two valuations. The present value of deferred vested benefits decreased from $223.5 million to $157.3 million in the 2010 valuation. Staff had indicated that they were unclear as to the reason for the significant decrease. The present value of age and service benefits increased from $453.2 million to $524.1 million. These marked changes are related and, perhaps not coincidentally, almost offset. When we talked to Buck, they indicated that they changed methodology in the 2010 valuation. Prior to the 2010 valuation, they had calculated vesting probabilities at a given age without regard to the years of service eligibility requirement (5 years) associated with the benefit.

In other words, prior to the 2010 valuation, if there were 100 people age 30 each year and 10 people terminated each year at age 30, Buck would have assumed a 10% probability, 10/100, of receiving a deferred vested benefit. This method was flawed in that there is a positive probability assigned to those who have fewer than five years of service and, thus, no chance to receive the benefit in the next year. In 2010, Buck made a significant technical improvement so that those, who had not become eligible for a benefit, would be assigned a "zero probability.". In the above example, suppose that 40 of the 100 people have fewer than five years of service in each valuation. For those eligible, the actual probability of those service eligible to receive a vested deferred benefit is 17% (10 divided by (100-40)). However, 40 people would have no deferred vested benefit in the coming year. We heartily endorse the improvement Buck made to their valuation process. By correctly imposing the 5-year eligibility limit in their calculations, it makes sense that the present values of deferred vested benefits would decrease. One of the byproducts is that the reduction of actives, assumed to collect a deferred vested benefit,

means that there will be an increase in the pool of actives potentially eligible for a service retirement benefit.

In the future, we strongly recommend Buck make a comment in their report when they make a significant methodology change so as to reduce any potential confusion. There was no disclosure in the 2010 report regarding the change in treatment of vested deferreds or the tripling of the Safety Tier I employee rates.

In another regard, Buck handles eligibility to receive a benefit with probability decrements very well. When an employee becomes eligible to service retire, the decrements of vesting and terminations are "turned off." We whole heartedly agree with this approach. Otherwise, you would potentially be undervaluing a potential service retirement benefit if the actuarial process allowed a service retirement-eligible employee to take a refund and thereby forfeit a significant pension.

Buck is assuming that 100% of Safety members will be married at retirement. This is important because of the 60% survivor allowance – even more so since most Safety members are male and, thus, a large majority of the beneficiaries will be female. Since women generally outlive men, there is more actuarial value to the survivor allowance for a male retirant than a female retirant, other factors equal. We see no reason why Safety members are assumed to be more likely to have a qualified survivor than a General male – for whom the survivor percentage is 88%. Empirically, Safety members go thru more divorces than non-Safety members. We recommend that there be one percentage for females and one percentage for males that be applied uniformly to Safety and non-Safety members.

Buck is not consistent in the manner in which the 60% survivor benefit is valued. For the general deferred vested we valued, a weighted survivor benefit, averaging out to 39%, was valued. 60% multiplied by an assumed survivor probability of 39%. This is correct. However, for existing actives, a joint & 60% survivor annuity is assumed. This overstates the value of the survivor benefits since some annuitants will not have eligible survivors.

RECOMMENDATION: For current actives, the 60% survivor percentage should be reduced to reflect those who do not have a surviving spouse at retirement. For male retirants, the equivalent survivor percent would be 52.8%; for females, 39%.

Minor Issues (Or Don't Read This if You Do Not Have the Time)

We discovered that Buck was using mortality rates for Females at ages 20-21 which were 10 times higher than they should be. Since mortality rates are quite low and that most do not enter the Tulare County work force until after age 21, the impact of this correction on the valuation rate is de minimus. Buck said they will correct this at their next valuation.

Buck did not use any assumed rates of death for active Safety members who have attained age 60. We recommend Buck do so. This will not produce a meaningful difference in their numbers since a large majority of Safety members retire prior to age 60.

There is a small contingency reserve, mandated by the 1937 Act, which is excluded from valuation assets. This is a popular actuarial treatment among 1937 Act actuaries. We apply this litmus test to including or excluding reserves from the actuarial value of assets which is Forrest Gump simple: If a reserve can be used to pay a benefit valued and included in actuarial liabilities, such reserve should count as an actuarial asset; otherwise, it should not. Using the Forrest Gump test, we would include the contingency reserve as a valuation asset.

SUMMARY

We recommend that Buck redo the June 30, 2010 valuation. We offer eight recommendations which relate to technical improvements or corrections of errors (ie, the incorrect benefit factor for General vested deferreds). However, these issues are overshadowed by technical issues relating to the assumed level of voluntary termination. We have an issue that such rates often increase as an employee works more years for an employee. We also believe it likely that the sharp increase in the deferred vested assumption in the previous experience study were unwarranted.

We believe that the ongoing weakness of the economy should be reflected in lower rates of assumed pay increases and lower rates of assumed employee turnover.

We also recommend that the valuation correctly reflect the survivor percentage to potential survivors of active employees. Buck has agreed that they will use the correct benefit formula for General deferred vested benefits.

Some of these recommended changes will offset each other to a significant degree. Thus, we make no comment on the suitability of the overall rates charged to the County unless a valuation was completed that reflect both our technical and judgment recommendations.

Sincerely,

Rick Roeder, FSA, MAAA

We wish to stress that Rick no longer serves as system actuary for any large retirement system (as he once was for TCERA and a number of retirement systems in California). Both Roeder Financial and Rick limit their activities to "one-shot" work and valuation work on smaller retiree health plans. This is important because we do not want this audit process to be perceived by any party as an effort to be overly critical in the hope of obtaining future retainer work.