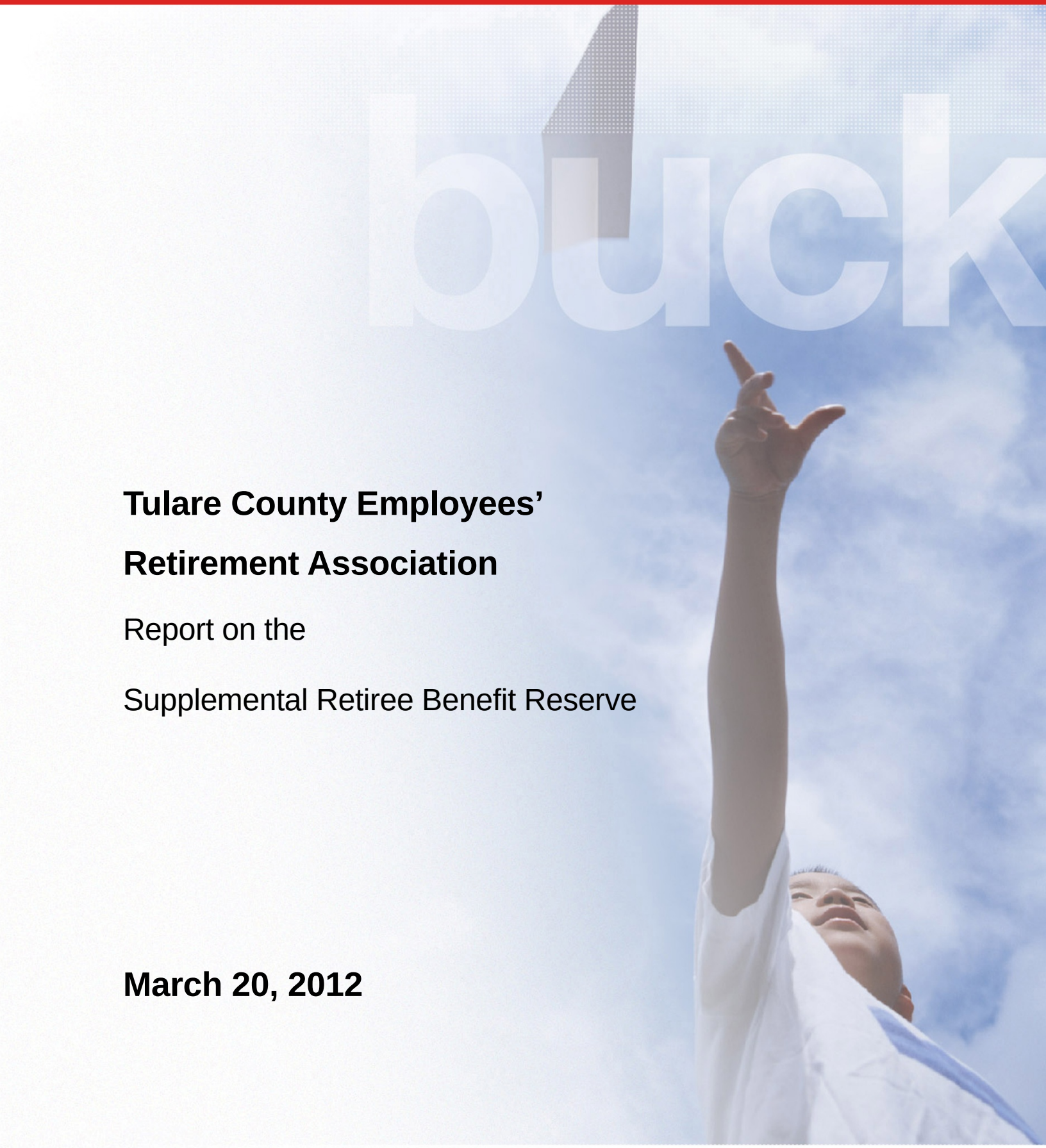

Tulare County Employees' Retirement Association

Report on the

Supplemental Retiree Benefit Reserve

March 20, 2012

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March 20, 2012

Board of Retirement
Tulare County Employees'
Retirement Association
136 N. Akers
Visalia, CA 93291

Members of the Board:

We are pleased to present our report on the Supplemental Retiree Benefit Reserve (SRBR) of the Tulare County Employees' Retirement Association, the results of which are based on our valuation as of June 30, 2011. This report, like the actuarial valuation, is based on unaudited financial information and member data provided by the Retirement Association.

All costs, liabilities and other factors under the plan were determined in accordance with generally accepted actuarial principles and procedures. The purpose of the report is to project the SRBR reserve and liabilities, using reasonable assumptions and three sets of capital market assumptions. This report fully and fairly discloses the actuarial position of the SRBR.

This report reflects the incorporation of all recommendations from the audit report of Roeder Financial and those of the 2011 experience study.

In our opinion, the actuarial assumptions used are reasonable, taking into account the experience of the plan and reasonable expectations, and represent our best estimate of the anticipated experience under the plan. A summary of the actuarial assumptions and methods used in this study valuation are shown in the Methodology section.

I am an Enrolled Actuary and a Member of the American Academy of Actuaries. I meet the qualification standards of the American Academy of Actuaries to render the actuarial opinions contained in this report. This report has been prepared in accordance with all applicable Actuarial Standards of Practice.

We look forward to discussing this report with the Board and wish to express our appreciation for the invaluable cooperation extended to us by the Retirement Staff during the course of this study.

Respectfully submitted,

Charlie E Chittenden

Charlie Chittenden, FSA, EA, MAAA
Principal and Consulting Actuary

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Executive Summary

The Supplemental Retiree Benefit Reserve (SRBR) provides additional benefits to certain retirees. This provision is not subject to the same funding process as the other benefits of Tulare County Employees' Retirement Association (TCERA), namely, actuarial funding through annual valuations. Instead, SRBR benefits are "funded" through the allocation of "excess" investment returns. When investment returns on actuarial assets exceed the actuarially assumed rate of 7.90% per annum, half of the excess is credited to the SRBR reserves.

The trustees have become concerned in recent years that the SRBR is not keeping up with the SRBR liabilities. The excess of reserves over liabilities has diminished from $14.5 million in 2009 to $7.6 million in 2010, and then to a negative $1.4 million in 2011. Accordingly, the trustees approved this study to determine the likelihood and severity of future deficits, i.e., occasions when the SRBR will have been totally depleted.

This study modeled future investment returns under three different sets of capital market assumptions. It finds that TCERA is unlikely to experience a deficit in the next 14 years. After that time, the prevalence of deficits will very much depend on investment performance during the next 14 years. If there is a recovery from the recession that began in 2008 and investment returns realign with long-term norms, the probability of a future deficit in the next 29 years is under 20%. If investment returns do not recover, the probability of a deficit is nearly 50% in the year 2030 and in each of the years beyond. If the fund were to invest in risk-free securities, there is practically no chance of a deficit before 2025, but also practically no chance of avoiding deficits in 2030 and beyond.

Accordingly, we recommend continuing to monitor the SRBR versus the liability for SRBR benefits on an annual basis. If returns and the outlook for returns have not improved by 2016, we recommend that the trustees adopt a systematic method of trimming SRBR benefits for future retirees that constrains some of the metrics presented in this report to an acceptable tolerance. For example, the trustees might require trimming benefits enough to keep the probability of a deficit in the next 10 years below 10%.

Background

TCERA maintains a plan covered under the County Employees Retirement Law of 1937 (the 1937 Act) which includes a Supplemental Retiree Benefit Reserve (SRBR), as described in paragraph § 31618 of the 1937 Act. The SRBR is credited with interest at the rate earned on actuarial assets and, if the rate earned on actuarial assets exceeds the assumed rate (currently 7.90% per annum), half of the "excess" returns are allocated to the SRBR. This structure presents an opportunity for the SRBR to be significantly increased when investments have outperformed the 7.90% assumption for a sustained period. In the 2011 valuation, total market assets were $1,121.7 million and the SRBR was $117.8 million. If the rate of return on actuarial assets for fiscal 2011 had been 9.90%, the SRBR would have received a credit for ½ x 2% x $ 1,121.7 million = $11.2 million, which would be a 9.5% increase in the SRBR.

The SRBR provides benefits to retired members as follows:

Level 1

A monthly benefit of $360 for members with 20 or more years of service at retirement. This amount is reduced by 5% for each year that a member's service falls short of 20 years, and there is no benefit for members who retire with less than 10 years of service. For this purpose, only years with Tulare County are counted. After a member's death, 50% of the Level 1 benefit continues to an eligible spouse.

Level 2

A supplemental COLA for retirees and beneficiaries who have lost at least 15% of their purchasing power since retirement as measured by their COLA banks.

Level 3

A 60% survivor benefit to a spouse to whom the member was not married at retirement, provided the spouse is at least age 55 and has been married to the member for at least two years at the date of the member's death, and the member elected the Unmodified Allowance retirement option at his retirement.

In annual valuations, the actuary compares the value of the SRBR reserve with the liabilities for all three levels of SRBR benefits described above. In recent years, the excess of the reserve over SRBR liabilities has diminished sharply, from $14.5 million in the 2009 valuation to $7.6 million in the 2010 valuation, and then to an unfunded SRBR liability of $1.4 million in the 2011 valuation. As a result, the board authorized a stochastic study of the SRBR to determine how likely it is that the reserve will be depleted, how long it will likely take to deplete the reserve, and whether it is necessary now or likely will become necessary in the near future to reduce SRBR benefits.

Methodology

The assumptions and methods used are the same as those used in the 2011 valuation of the TCERA plan. The most important assumption for the purpose of this study is the actuarial interest rate, which is 7.90% per annum. Please see Section 8 of the valuation report for all of the actuarial assumptions and methods. We project liabilities in a deterministic way using the 7.90% assumption and adding enough new members to hold the number of active members in both the General and Safety groups constant. The chart below shows the anticipated number of active and inactive members for each group and in total throughout our projection:

		6/30/2015	6/30/2020	6/30/2025	6/30/2030	6/30/2035	6/30/2040
Active	General	3,383	3,383	3,383	3,383	3,383	3,383
	Safety	814	814	814	814	814	814
	Total	4,197	4,197	4,197	4,197	4,197	4,197
Inactive	General	4,615	6,323	7,832	9,008	9,970	10,205
	Safety	878	1,321	1,731	2,140	2,513	2,791
	Total	5,493	7,644	9,563	11,148	12,483	12,996
Total	General	7,998	9,706	11,215	12,391	13,353	13,588
	Safety	1,692	2,135	2,545	2,954	3,327	3,605
	Total	9,690	11,841	13,760	15,345	16,680	17,193

We have modeled 999 stochastic paths for 29 years, from 2011 to 2040. We have used capital market assumptions of Buck Consultants and Wurts Associates, as well as risk-free rates. We have applied the Buck and Wurts assumptions to the current asset allocation, which is given in the table below:

Asset Class	Target Allocation
Domestic Equity	**25%**
Large Cap	20%
Small Mid Cap	5%
Non-U.S. Equity	**25%**
Large Cap	19%
Emerging Markets	6%
Domestic Fixed Income	**25%**
Core-Plus Fixed Income	17%
High Yield	3%
Global Credit	5%
Inflation Overlay	**15%**
TIPS	5%
Commodities	5%
Real Estate	5%
Non-Public Investments	**10%**
Private Equity / Venture Capital	5%
Liquid Alternatives / Hedge Fund of Funds	5%

Since this fund has a heavy allocation to non-U.S. equity, it is important to note that currency risk is not hedged. Returns on international equity are subject to both equity and currency risk.

The following table compares the capital market assumptions of Buck Consultants and Wurts Associates:

Asset Class	Buck 30yr	Buck 10yr	Wurts	Difference	Weighted Difference
US Large Cap	9.55%	8.20%	7.00%	1.20%	0.24%
US Small Cap	10.63%	9.21%	5.50%	3.71%	0.19%
MSCI EAFE	8.88%	8.86%	7.60%	1.26%	0.24%
MSCI Emerging Markets	9.91%	9.37%	8.60%	0.77%	0.05%
Aggregate Bonds	5.97%	4.16%	2.20%	1.96%	0.33%
Long Corporate	7.07%	4.87%	3.50%	1.37%	0.00%
High Yield	6.08%	4.61%	5.70%	-1.09%	-0.03%
TIPS	5.70%	4.07%	2.60%	1.47%	0.07%
Emerging Market Debt	8.45%	7.12%	5.80%	1.32%	0.00%
Global Treasuries	5.64%	3.49%	4.40%	-0.91%	-0.05%
NCREIF	9.51%	9.33%	6.00%	3.33%	0.17%
REIT	8.42%	7.17%	6.00%	1.17%	0.00%
Hedge Funds	9.47%	8.45%	5.60%	2.85%	0.14%
Commodities	10.80%	10.47%	5.40%	5.07%	0.25%
Private Equity	12.63%	10.52%	10.00%	0.52%	0.03%
Cash	4.22%	2.98%	2.70%	0.28%	0.00%
					0.19%
Expected Return	8.61%	7.51%	5.88%		

Buck assumptions use a General Economy and Market Simulator (GEMS) program, described in the Appendix, which anticipates market cycles. Wurts assumptions are intended for at most ten years of forecasting and do not anticipate changes in the economy.

Under the above three capital market assumptions, average portfolio returns over 10-, 20-, and 30-year time horizons are as follows:

Capital Market Assumptions	Average Annual Portfolio Returns		
	10 Years	20 Years	30 Years
Buck	7.51%	8.18%	8.61%
Wurts	5.80%	5.81%	5.88%
Risk Free	2.96%	3.91%	4.38%

Please note that both the Buck and Risk Free assumptions incorporate economic cycles as modeled in our GEMS software which is described in the Appendix.

We analyzed the results using the following metrics:

1. The number of paths (of the 999) that contain at least one deficit (a year in our projection period when the reserve is depleted).
2. The total number of cumulative deficits in the projection period.
3. The probability of a deficit in the years 2015, 2020, 2025, 2030, 2035, or 2040.
4. The average number of cumulative deficits along a path.
5. The average number of years before the first deficit occurs in paths with deficits.
6. The distribution of the size of the SRBR.
7. The distribution of the SRBR funded ratio.

The last two metrics are displayed as floating bar graphs showing the 75th, 50th, and 25th percentile results. Thus, for example, we display the size of the SRBR in the year 2040 (using Buck assumptions) by showing a bar graph where:

- The middle of the bar shows the 50th percentile result -- $987 million
- The top of the bar shows the 75th percentile result -- $2,481 million
- The bottom of the bar shows the 25th percentile result -- $213 million

Results

The tables on the following pages show the results using Buck and Wurts capital market assumptions and using risk-free rates.

	Number of Paths with at Least One Deficit					
Capital Market Assumptions	6/30/2015	6/30/2020	6/30/2025	6/30/2030	6/30/2035	6/30/2040
Buck	0	0	24	170	250	278
Wurts	0	0	35	446	586	641
Risk-free rates	0	0	1	940	960	962

On Buck assumptions, 278 of the 999 paths have at least one deficit by the end of the projection period, versus 641 on the Wurts assumptions, and 962 using risk-free rates. As of June 30, 2025, however, there are very few paths on any of the three assumption sets that have a deficit. And as of June 30, 2020, there are none.
A risk-free portfolio would have low returns and low volatility. The lack of volatility means there are very few deficits before June 30, 2025. The low returns nearly guarantee that there would be a deficit by the year 2030.

	Total Number of Cumulative Deficits					
Capital Market Assumptions	**6/30/2015**	**6/30/2020**	**6/30/2025**	**6/30/2030**	**6/30/2035**	**6/30/2040**
Buck	0	0	29	516	1,368	2,060
Wurts	0	0	38	1,372	3,705	6,031
Risk-free rates	0	0	1	3,439	8,056	12,564

Each path includes 29 measuring points, so there are 29 x 999 = 28,971 possible deficits on each assumption set. Over the entire projection period, the percentage of these possibilities that are deficits is:

- 7.1% on Buck assumptions
- 20.8% on Wurts assumptions
- 43.4% on risk-free rates

	Probability of a Deficit in Illustrated Years					
Capital Market Assumptions	**6/30/2015**	**6/30/2020**	**6/30/2025**	**6/30/2030**	**6/30/2035**	**6/30/2040**
Buck	0.0%	0.0%	2.4%	15.4%	16.6%	12.2%
Wurts	0.0%	0.0%	3.4%	41.8%	47.6%	47.0%
Risk-free rates	0.0%	0.0%	0.1%	93.4%	91.9%	88.8%

Buck assumptions are calibrated to current economic conditions and then they trend toward longer-term equilibrium. Correlations and returns are dynamic and simulate different economic environments. Please see the appendix for a description of our General Economy and Market Simulator (GEMS). On Buck assumptions, there is very little possibility of a deficit before 2025, and only about a 15% chance in years after 2025.

Wurts assumptions are intended for ten-year projections; they do not anticipate future economic cycles. On Wurts assumptions, there is very little chance of a deficit before 2025, but nearly an even chance of a deficit in years after 2025.

Risk-free rates allow almost no possibility of a deficit before 2025, but the low returns are almost sure to yield deficits in 2030 and beyond.

In analyzing the paths, we find that when investment returns are above expectations for a few years, there is a huge potential upside for the SRBR as it would receive half of the return on actuarial assets above 7.9%. The assets of the pension plan, excluding contingency and SRBR reserves are more than eight times the size of the SRBR. Accordingly, receiving half the excess return on the whole fund can provide a large increase in SRBR reserves.

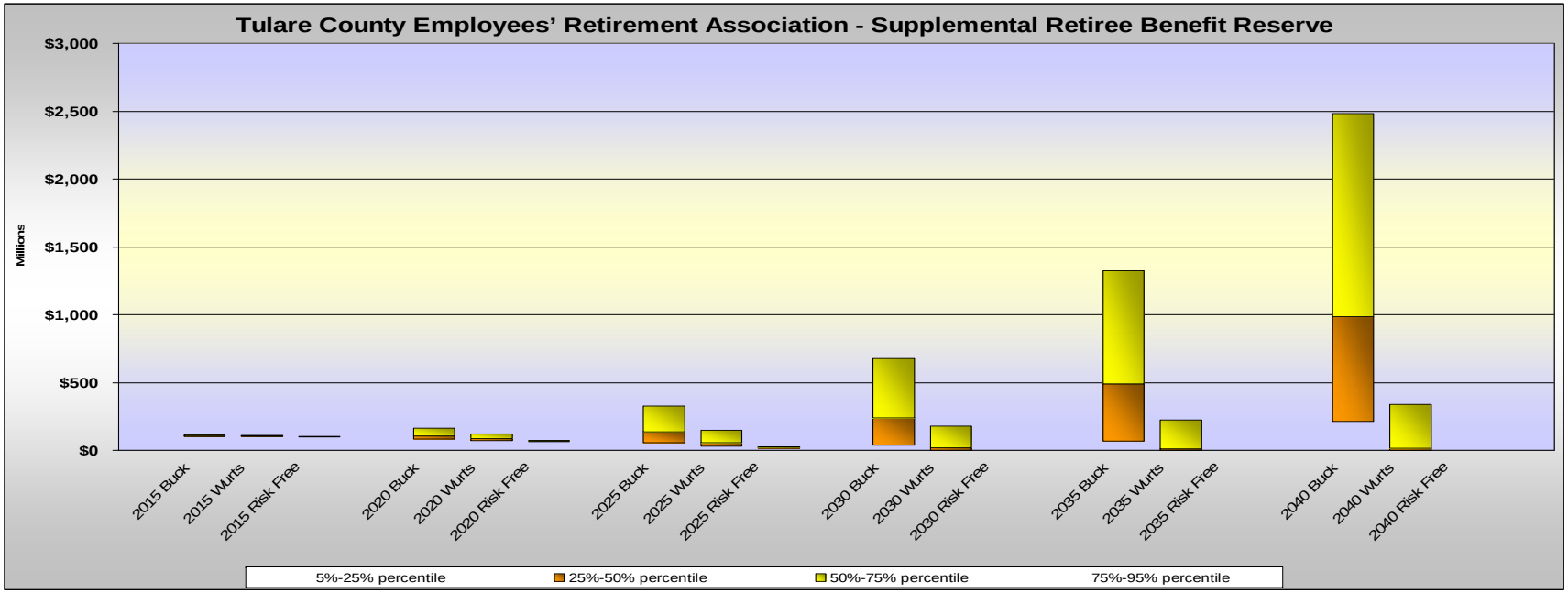
	Average Number of Cumulative Deficits along a Path					
Capital Market Assumptions	**6/30/2015**	**6/30/2020**	**6/30/2025**	**6/30/2030**	**6/30/2035**	**6/30/2040**
Buck	0.00	0.00	0.03	0.47	1.00	1.15
Wurts	0.00	0.00	0.04	1.31	3.21	4.95
Risk-free rates	0.00	0.00	0.00	3.42	7.85	11.98

On Buck assumptions, the average path has 1.15 deficits in 29 years. For Wurts and risk-free rates, the average is 4.95 and 11.98, respectively. This metric shows that there are almost no deficits before 2025 under any assumption set. The deficits are concentrated in the later years of the projection.

	Average Years Before First Deficit Occurs in Paths with Deficits					
Capital Market Assumptions	**6/30/2015**	**6/30/2020**	**6/30/2025**	**6/30/2030**	**6/30/2035**	**6/30/2040**
Buck	N/A	N/A	13.8	16.7	18.3	19.1
Wurts	N/A	N/A	13.9	16.8	17.9	18.7
Risk-free rates	N/A	N/A	14.0	16.3	16.4	16.5

This metric shows that there are no deficits on any assumption set through 2020. The first deficits that have occurred by 2025 take place in 2024 or 2025. The metric continues to increase, on all assumption sets, through 2040. Therefore, there are some paths on which no deficits occur until the last five years of the projection.

Size of the Supplemental Retiree Benefit Reserve

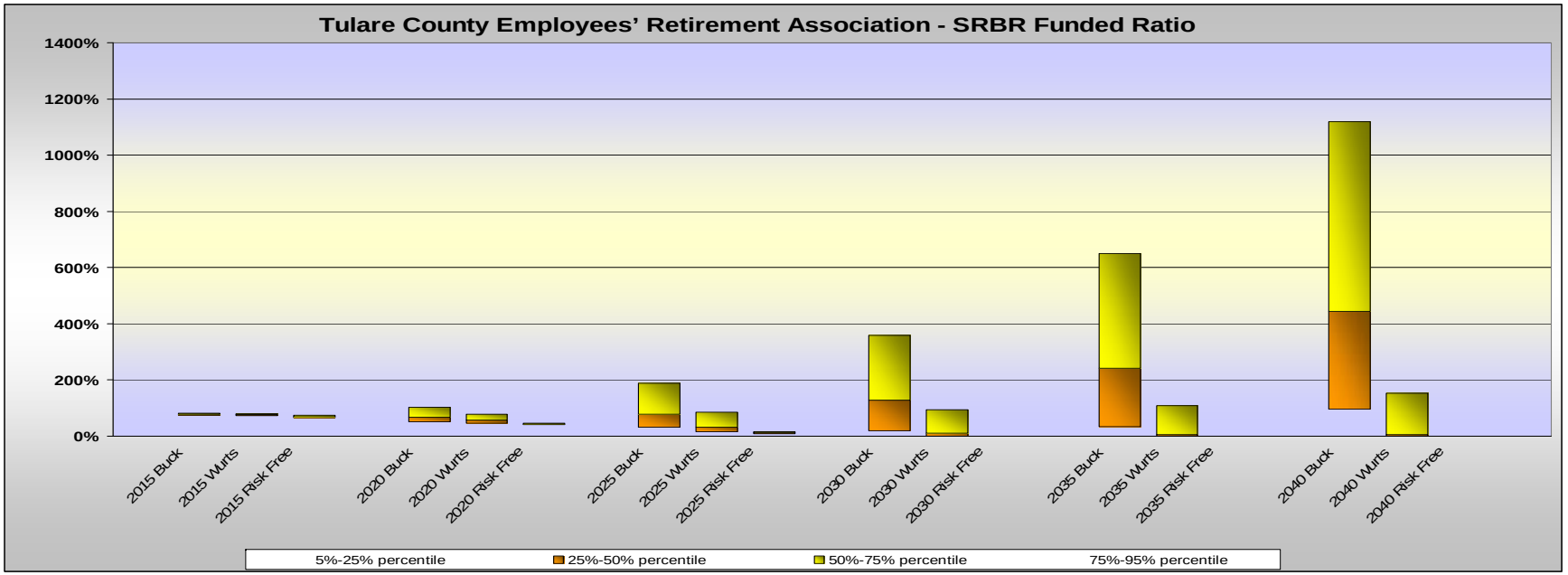


Supplemental Retiree Benefit Reserve (millions)

	6/30/2015			6/30/2020			6/30/2025			6/30/2030			6/30/2035			6/30/2040		
	Buck	Wurts	Risk Free	Buck	Wurts	Risk Free	Buck	Wurts	Risk Free	Buck	Wurts	Risk Free	Buck	Wurts	Risk Free	Buck	Wurts	Risk Free
75th percentile	$113	$112	$101	$162	$122	$72	$328	$149	$28	$678	$178	$0	$1,324	$223	$0	$2,481	$339	$0
50th percentile	$108	$106	$101	$105	$88	$68	$136	$55	$21	$241	$20	$0	$491	$12	$0	$987	$14	$0
25th percentile	$103	$101	$100	$82	$72	$66	$55	$29	$16	$36	$0	$0	$69	$0	$0	$213	$0	$0

The bar graphs summarize the results of 999 paths. The top of the bar indicates the 75th percentile result, the middle gives the 50th percentile result, and the bottom gives the 25th percentile result. On Buck assumptions in the year 2040, the 75th percentile is $2,481 million, the 50th percentile is $987 million, and the 25th percentile is $213 million.

SRBR Funded Ratio



SRBR Funded Ratio

	6/30/2015			6/30/2020			6/30/2025			6/30/2030			6/30/2035			6/30/2040		
	Buck	Wurts	Risk Free	Buck	Wurts	Risk Free	Buck	Wurts	Risk Free	Buck	Wurts	Risk Free	Buck	Wurts	Risk Free	Buck	Wurts	Risk Free
75th percentile	81%	81%	73%	103%	78%	46%	189%	86%	16%	360%	95%	0%	650%	109%	0%	1119%	153%	0%
50th percentile	78%	76%	73%	67%	56%	44%	79%	32%	12%	128%	11%	0%	241%	6%	0%	445%	6%	0%
25th percentile	74%	73%	72%	52%	46%	42%	32%	17%	9%	19%	0%	0%	34%	0%	0%	96%	0%	0%

This metric represents the ratio of the SRBR to the present value of future SRBR benefits. Because of the volatility of investments under the Buck assumptions, the funded ratio has the potential to increase greatly by the end of the projection period. Wurts assumptions are less optimistic and do not reflect a return to long-term trends in returns, so there is much less potential for large SRBR funded ratios under these assumptions. And even a smaller possibility under risk-free rates.

Modifying SRBR Benefits to Reduce or Eliminate Deficits

It is our understanding that SRBR benefits are not guaranteed. The board can reduce them if it feels that it is necessary to do so to avoid a future deficit situation. We examined the effects of maintaining all SRBR benefits for current retirees and reducing SRBR benefits for future retirees (whether currently active or deferred vested) by 25% or 50%. The following slides show the effects of these changes on our first two metrics:

Tulare County Employees' Retirement Association

SRBR Funding Summary – No Change to SRBR Benefits

	Number of Paths with at Least One Deficit					
Capital Market Assumptions	6/30/2015	6/30/2020	6/30/2025	6/30/2030	6/30/2035	6/30/2040
Buck	0	0	24	170	250	278
Wurts	0	0	35	446	586	641
Risk-free rates	0	0	1	940	960	962

Tulare County Employees' Retirement Association

SRBR Funding Summary – 25% Reduction for Future Retirees

	Number of Paths with at Least One Deficit					
Capital Market Assumptions	6/30/2015	6/30/2020	6/30/2025	6/30/2030	6/30/2035	6/30/2040
Buck	0	0	5	84	167	202
Wurts	0	0	3	249	465	543
Risk-free rates	0	0	0	777	926	943

The numbers are reduced but, even with a 25% reduction in SRBR benefits for new retirees, there is still a significant chance of a deficit in 2030 or beyond.

Tulare County Employees' Retirement Association

SRBR Funding Summary – 50% Reduction for Future Retirees

	Number of Paths with at Least One Deficit					
Capital Market Assumptions	**6/30/2015**	**6/30/2020**	**6/30/2025**	**6/30/2030**	**6/30/2035**	**6/30/2040**
Buck	0	0	0	27	77	108
Wurts	0	0	0	73	264	364
Risk-free rates	0	0	0	84	796	886

Note that there are no deficits in 2025 after this change.

Tulare County Employees' Retirement Association

SRBR Funding Summary – No Change to SRBR Benefits

	Total Number of Cumulative Deficits					
Capital Market Assumptions	**6/30/2015**	**6/30/2020**	**6/30/2025**	**6/30/2030**	**6/30/2035**	**6/30/2040**
Buck	0	0	29	516	1,368	2,060
Wurts	0	0	38	1,372	3,705	6,031
Risk-free rates	0	0	1	3,439	8,056	12,564

Tulare County Employees' Retirement Association

SRBR Funding Summary – 25% Reduction for Future Retirees

	Total Number of Cumulative Deficits					
Capital Market Assumptions	**6/30/2015**	**6/30/2020**	**6/30/2025**	**6/30/2030**	**6/30/2035**	**6/30/2040**
Buck	0	0	5	226	756	1,268
Wurts	0	0	3	577	2,321	4,305
Risk-free rates	0	0	0	1,583	6,036	10,449

Tulare County Employees' Retirement Association

SRBR Funding Summary – 50% Reduction for Future Retirees

	Total Number of Cumulative Deficits					
Capital Market Assumptions	**6/30/2015**	**6/30/2020**	**6/30/2025**	**6/30/2030**	**6/30/2035**	**6/30/2040**
Buck	0	0	0	66	302	570
Wurts	0	0	0	133	958	2,300
Risk-free rates	0	0	0	92	3,010	7,190

Note that this change eliminates deficits through 2025.

Conclusions

Although the 2011 valuation report shows that total SRBR liabilities exceed the reserve by $1.4 million, there is very little chance of depleting the reserve before 2025. If the economy recovers in the next ten years and investment returns revert to long-term averages, the probability of a deficit in any future year is always below 20%. If the economy does not recover and the low returns that are likely for the next ten years remain likely for the remainder of the forecast period, there is a high probability (slightly under 50%) of a deficit in fiscal 2030 and in each of the years beyond that.

Risk-free rates, with their low returns and low volatility, almost certainly would prevent deficits before 2025, but would nearly guarantee deficits by 2030.

The board can diminish the probability of future deficits by reducing SRBR benefits for future retirees by 25% or 50%, as illustrated. Because forecast deficits occur overwhelmingly after 2025, however, it may well turn out to be unnecessary to do so.

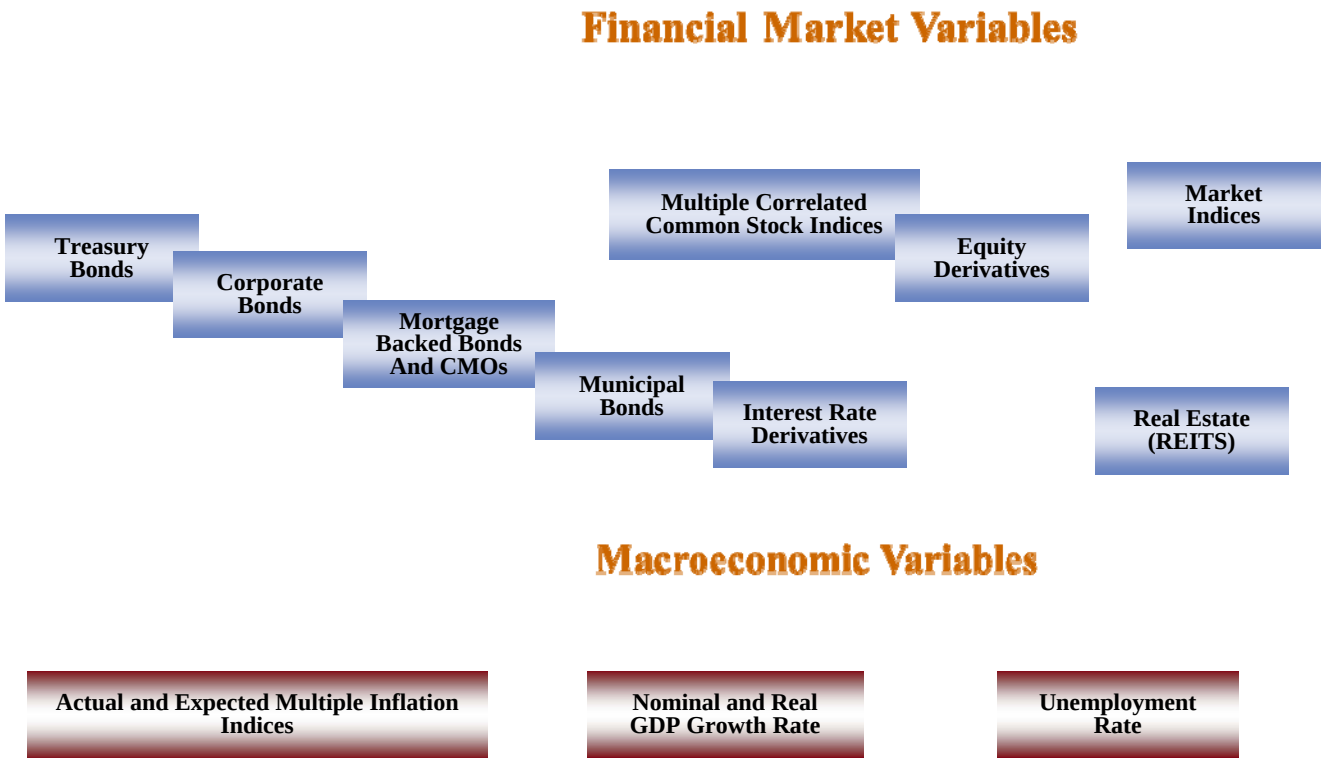
We recommend continuing to monitor the SRBR balance versus the liability for future SRBR benefits annually. If returns have not improved by 2016, we would recommend another study of the SRBR outlook. If poor investment returns persist, it may be prudent for the board to trim SRBR benefits enough to reduce one of our metrics to an acceptable tolerance. For example, the trustees might decide to reduce SRBR benefits sufficiently to keep the probability of a deficit in the next ten years under 10%.

Appendix – Description of the GEMS Program

Capital Markets Model

Overview

Buck Uses GEMS* from Conning Asset Management



- **Model calibrated to current economic conditions and can be recalibrated quarterly**
- **Economic variables trend toward longer-term equilibrium state**
- **Simulations reflect many different environments (e.g. high and low equity returns, inflation, and bond yields)**
- **Asset relationships change based on underlying economic conditions being modelled**
  - **Dynamic correlations and volatility**
- **Scalable model that can incorporate new asset classes**

* GEMS is an acronym for General Economy and Market Simulator

Capital Markets Model Summary

Overview

- GEMS simulates 1,000 or more paths of economic and capital market environments
  - Then results are collected and percentiles are computed
- Model incorporates historical data (back to inception of various indices), and uses a factor model to forecast future values
- GEMS captures the real-life fact that means, volatilities and correlations are determined dynamically and can change over time
  - This means that expected returns over, say, a 10-year horizon may not equal those over a 20-year horizon
  - Based on Monte Carlo analysis, we derive sample means, standard deviations and correlations for reporting purposes

Capital Markets Model Summary

Additional details on GEMS model

- Cash
  - Cash is modeled as an investment in short term government paper paying a nominal or inflation linked rate
- Treasuries
  - GEMS uses a three factor model of interest rates to model treasuries

Capital Markets Model Summary

Additional details on GEMS model

- Corporate Bond Model

  - In the Bond Model, individual bonds are modeled and zero coupon corporate yields are generated by adding the credit spreads to the corresponding zero coupon treasury yield. The credit spread is driven by a default intensity process, which also determines each bond's rating. The evolution of the default intensity determines the migration, if any, of a bond's rating from one class to another.

  - Bond indices are created based on characteristics of bonds currently representing the index in question

    – Throughout a given scenario, bonds that mature or default are replaced by bonds with characteristics expected to prevail at that time

Capital Markets Model Summary

Additional details on GEMS model

- Equity Indices
  - All equity return series are generated using stochastic volatility with jumps (SVJ). This means that unlike a standard mean-variance model, the simulation incorporates the possibility of large swings in values that would not be anticipated taking values from a standard normal (Gaussian) distribution.

  - The equity models generate extreme behavior (fat tails) via the specification of an independent stochastic jump (SVJ) process. The features of the returns generated by the model include volatility clustering, low frequency/high severity jumps, and jump clustering behaviors, all of which are observed in actual markets.

    - It has been Buck's observation that results at the 5th and 95th percentiles are similar to a pure mean-variance model, but in the extreme tails (1st and 99th percentiles and beyond), the GEMS model can produce fatter tails with more extreme results than a plain mean-variance model

Capital Markets Model

Additional details on GEMS model

- Models the economies of the USA, UK, Switzerland, Canada, and Germany in an internally consistent manner
  - Can therefore capture forecast currency effects and interest disparities between and among the U.S. Dollar, Canadian Dollar, Euro, Pound and Swiss Franc
  - Australia, Japan, Norway, Sweden, and Denmark also available
- GEMS includes the major equity indices for all the economies it models. In addition, Buck has created, with guidance from Conning, our own user-specified models of equity sectors, and alternative investment classes (e.g., hedge funds) using the GEMS Market Indices facility.