Law Offices of
OLSON
HAGEL &
FISHBURN
LLP

MEMORANDUM

DATE: March 12, 2014

TO: BRIAN BARTOW, General Counsel, CalSTRS

FROM: CHRIS WADDELL, Senior Attorney

RE: LEGAL ANALYSIS OF ISSUES ASSOCIATED WITH GUARANTEEING THE 2% ANNUAL IMPROVEMENT FACTOR AND INCREASING MEMBER CONTRIBUTION RATES

We have been asked by CalSTRS to analyze a hypothetical change to the CalSTRS plan that would guarantee or "vest" the current 2% annual "improvement factor" applied to retirement benefits that is currently subject to legislative reduction and would increase the current member contribution of 8% (for pre-PEPRA members) or of 50 percent of normal cost of benefits (for members covered by PEPRA). You have further asked by what percentage the member contribution may be increased in light of the vesting of the 2% improvement factor.

We have concluded that that if the 2% annual adjustment is guaranteed by the State, some increase in member contribution rate would be permissible because the disadvantage associated with the increased member contribution rate would be offset by the "comparable new advantage" of vesting the 2% annual adjustment. There is insufficient case law on the issue of what constitutes a "comparable new advantage" to identify a precise number by which the member contribution may be increased. We believe, however, that the likely outside limit of such an increase is the actuarial cost of the annual improvement factor for active employees as well as future hires.

DISCUSSION

A. Overview of Vested Rights Doctrine

Both the United States Constitution[1] and the California Constitution[2] prohibit a state from passing ".....a law impairing the obligation of contracts." "Under well-settled principles, these clauses limit the power of a state to modify its own

[1] U.S. Const., Art. I, § 10, cl. 1.
[2] Cal. Const. Art. I, §9.

Lance H. Olson
Diane M. Fishburn
Deborah B. Caplan
Richard C. Miadich
Richard R. Rios

Bruce J. Hagel
of counsel
Christopher W. Waddell
Lacey E. Keys
Matthew R. Cody
Emily A. Andrews
M. Malia Vella
Benjamin C. Lee

555 Capitol Mall, Suite 1425 Sacramento, CA 95814-4602
Telephone: (916) 442-2952 Facsimile: (916) 442-1280 www.olsonhagel.com

contracts with other parties."[3] The Contracts clauses protect both express contracts[4] as well as contracts that are implied "from the texts and contexts of the statutes at issue."[5] For purposes of the Contracts clauses, express and implied contracts exist on equal footing with respect to the prohibitions against their impairment.[6] "A legislative intent to grant contractual rights can be implied from a statute if it contains an unambiguous element of exchange of consideration by a private party for consideration offered by the state." [7]

The best judicial summary of the principles applicable to the vested rights doctrine in California may be found in *Betts v. Board of Administration*[8]. The *Betts* court stated that:

> "A long line of California decisions has settled the principles applicable to the problems here presented. A public employee's pension constitutes an element of compensation, and a vested contractual right accrues upon acceptance of employment. Such a pension right may not be destroyed, once vested, without impairing a contractual obligation of the employing public entity (Cit. omitted). The employee does not obtain, prior to retirement, any absolute right to fixed or specific benefits, but only to a 'substantial or reasonable pension.' (Cit. omitted). Moreover, the employee's eligibility for benefits can, of course, be defeated 'upon the occurrence of a condition subsequent.' (Cit. omitted)
>
> However, there is a strict limitation on the conditions which may modify the pension system during employment. We have described the applicable principles as follows: 'An employee's vested contractual pension rights may be modified prior to retirement for the purpose of keeping a pension system flexible to permit adjustments in accord with changing conditions and at the same time maintain the integrity of the system. (Cit. omitted). Such modifications must be reasonable, and it is for the courts to determine upon the facts of each case what constitutes a permissible change. To be sustained as reasonable, alterations of employees' pension rights must bear some material relation to the theory of a pension system and its successful operation, *and changes in a pension plan which result in disadvantage to employees should be accompanied by comparable new advantages.* (Cit. omitted)
>
> …………
>
> Judicial attention has also been given to the subject of 'comparable new

---

[3] *Valdes v. Cory* (1983) 139 Cal. App. 3d 773, 783.
[4] See, e.g., *Sonoma County Organization of Public Employees v. County of Sonoma, et. al.,* (1979) 23 Cal. 3d 296, 304
[5] *California Teachers' Association v. Cory* (1984) 155 Cal. App. 3d 494, 505.
[6] Id.
[7] Id.
[8] (1978) 21 Cal. 3d 859.

> advantages.' The comparative analysis of disadvantages and compensating advantages must focus on the particular employee whose own vested pension rights are involved. (Cit. omitted). It has been said that the offsetting improvement must also 'relate generally to the benefit that has been diminished.'" (Cit. omitted)[9].

In the next two sections of our memorandum, we apply the above principles and conclude that CalSTRS active and retired members arguably do not have a vested right to future annual 2% benefit improvement factor increases but that CalSTRS active members do have a vested right to an employee contribution rate of either 8% of compensation for members hired prior to the effective date of PEPRA) or 50 percent of the normal cost rate of benefits (for members covered by PEPRA).

B. The 2% Benefit Improvement Factor is not a Vested Benefit for Current CalSTRS Members or Retirees

Education Code Section 22140 provides:

> (a) "Improvement factor," with respect to the Defined Benefit Program, means an increase of 2 percent in monthly allowances. The improvement factor shall be added to a monthly allowance each year on September 1, commencing on September 1 following the first anniversary of the effective date of retirement, or the date on which the monthly allowance commenced to accrue to any beneficiary, or other periods specifically stated in this part.
>
> (b) The improvement factor may not be compounded nor shall it be applicable to annuities payable from the accumulated annuity deposit contributions or the accumulated tax-sheltered annuity contributions. ***The Legislature reserves the right to adjust the amount of the improvement factor up or down as economic conditions dictate. Any adjustment of the improvement factor may not reduce the monthly retirement allowance or annuity below that which would be payable to the recipient under this part had this section not been enacted."*** (Emphasis added).

If the Legislature expressly reserves to itself the right to reduce a given pension benefit, members of the retirement system do not have a vested right to it. In the case of *Teachers' Retirement Board v. Genest,*[10] the court observed that in the situation where the Teachers' Retirement Law prior to 1998 provided that, with respect to the Supplemental Benefit Maintenance Program (SBMA):

---

[9] *Betts, supra,* 21 Cal. 3d at 863-865(emphasis original).

[10] (2007) 154 Cal. App. 4th 1012.

> "[n]othing in the sections establishing the Supplemental Benefit Maintenance Program shall be construed as a basis for any implied contractual obligation, or as an element of exchange of consideration by a private party for consideration offered by the state, or as an intent to grant private rights of contract, or as conferring an vested right whatsoever on any present or future member…"[11]

The court found that given this language, prior to 1998 "…there was no vested right to payments from the General Fund into the SBMA program."[12] The court went on to conclude that the repeal of the above language in 1998 and its replacement with provisions that included an express statement of legislative intent to establish the State's contributions to the SBMA program as vested benefits ***did*** result in the creation of a contractual obligation of the state to make contributions in the specified amount to the SBMA program.[13]

In light of the highlighted language of section 22140 above, the Legislature could determine, similar to the status quo in effect with respect to the SBMA program prior to 1998 that if economic conditions dictate, the amount of the improvement factor could be reduced prospectively to zero for current employees and retirees. Absent future legislation that eliminates the ability of the Legislature to take such action, current CalSTRS members and retirees likely do not have a vested right to future annual 2% benefit improvement factor increases.

C. A Statutory Change Resulting in an Increase in Current Member Contributions Must be Accompanied by a Comparable New Advantage

Employee contributions for CalSTRS members who first entered into covered employment prior to the effective date of the Public Employees' Pension Reform Act (PEPRA) are governed by Education Code section 22901 (a), which provides:

> "Each member of the Defined Benefit Program shall contribute to the retirement fund an amount equivalent to 8 percent of the member's creditable compensation."

This 8 percent employee contribution rate was last changed in 1972 and has remained fixed in the Education Code since that date. The employee contribution rate for CalSTRS members hired after the effective date of PEPRA (January 1, 2013) is set by the Education Code at 50 percent of the normal cost rate of benefits and is subject to prospective adjustment to maintain the 50 percent ratio. [14]

---

[11] Id. at 1022.1029,
[12] Id. at 1029.
[13] Id. at 1029-1031.
[14] Education Code section 22901 (b).

Under existing case law, the general principle is that "where the employee's contribution rate is a fixed element of the pension system, the rate may not be increased unless the employee receives comparable new advantages for the increased contributions."[15] The lead case in this area is *Allen v. City of Long Beach*[16]. In *Allen*, an amendment to a city charter provision raised the rate of a current employee's contribution to the city pension fund from 2 to 10 percent of his salary, without any corresponding increase in the benefits he would receive upon retirement. The California Supreme Court held the increase to be an unconstitutional impairment[17]. The Court of Appeal reached a similar result in a case where a current city employee's contribution rate was increased from 1 to 8 percent of salary without a corresponding benefit increase.[18]

A public employee acquires a vested right to a pension based on the system then in effect upon acceptance of employment.[19] Given that both the 8 percent employee contribution rate for pre-PEPRA CalSTRS members and the "50 percent of normal cost" contribution rate for CalSTRS members covered by PEPRA are fixed in statute, under the above legal principles those rates constitute vested rights of CalSTRS members and may not be increased without their receipt of an offsetting comparable new advantage.

D. Sufficiency of Comparable New Advantage

Consistent with the general principle that "changes in a pension plan that result in disadvantage to employees should be accompanied by comparable new advantages,"[20] there are a number of cases from California and other jurisdictions that have invalidated employee contribution rate increases on the grounds that ***no*** comparable new advantage was provided.[21] However, we have found only two cases that address the sufficiency of a comparable new advantage to offset a corresponding disadvantage to plan members.

The first, *Claypool v. Wilson*[22], involved in pertinent part the repeal of cost-of-living adjustments (COLA) that could be as high as 80% but were contingent on extraordinary investment performance. In its place, the Legislature substituted a COLA of a lower amount (up to 75%) that was found by the court to be more likely to be paid with much greater frequency. The court found that the substituted COLA provided a comparable new advantage, observing that:

---

[15] *Pasadena Police Officers Association v. City of Pasadena* (1983) 147 Cal. App. 3d 695, 702-703.
[16] (1955) 45 Cal. 2d 128.
[17] *Allen, supra,* 45 Cal. 2d at 131.
[18] *Wisley v. City of San Diego* (1961) 188 Cal. App. 2d 484, 485-487.
[19] *Miller v. State of California* (1977) 18 Cal. 3d 808, 817.
[20] *Betts, supra,* 21 Cal. 3d at 864.
[21] *Allen v. City of Long Beach* (1955) 45 Cal. 2d 128; *Wisley v. City of San Diego* (1961) 188 Cal. App. 2d 484; *Singer v. City of Topeka* (1980) 227 Kan. 356; *Opinion of the Justices* (1973) 364 Mass. 847.
[22] (1992), 4 Cal. App. 4th 646.

> "…the new COLA program provides an obvious new advantage for such members, actual benefits for the theoretical but illusory higher benefits under the repealed programs."[23]

In *City of Downey v. Board of Administration*[24], the court analyzed changes to the Public Employees' Retirement Law relating to contracting local agencies. The changes had the effect of increasing local employee contributions to CalPERS and increasing the benefits ultimately payable upon retirement. The court found that the vested contract rights of the employees were not unconstitutionally impaired because the increase in the contribution rate was offset by the increase in the retirement allowance that the employees would be able to receive.[25]

E. Analysis and Conclusion

At present, the 2% annual improvement factor payable to CalSTRS retirees and beneficiaries could likely be reduced to any number less than 2% by the Legislature without abrogating the vested rights of CalSTRS members, retirees or beneficiaries because of the express reservation of legislative rights in Section 22140. The elimination of the potential for such a reduction would clearly provide an advantage to members, beneficiaries and retirees. Under the rationale of *Claypool* and *City of Downey*, that advantage could be used to offset the disadvantage associated with an increase in the employee contribution rate. However, the cases do not provide any in-depth framework or formulaic analysis for measuring the value of a comparable new advantage.

The only available benchmark for determining the comparable new advantage associated with vesting the annual improvement factor is the cost of providing that benefit. The rationale for using this as the benchmark is as follows. Assume that the Legislature, under its reserved rights to decrease the amount of the improvement factor, decreases the amount of the factor to zero.

Then, assume that the Legislature subsequently elects to increase the annual improvement factor back to its maximum level of 2% and, in connection with that action, also increases the employee contribution by the amount necessary to fund the improvement factor at that level (including both normal cost and amortization of the resulting unfunded liability). In our view, increasing the annual improvement factor back to 2% would constitute an advantage that would offset the increased contributions paid by active members.

It could be argued that because members, retirees and beneficiaries are already receiving the full 2% improvement factor, the value of vesting that benefit prospectively is something less than the full actuarial cost of providing the benefit. We believe that the rationale described above largely refutes this argument—i.e., if the Legislature could take the above-described actions in serial fashion then this forms a reasonable basis for evaluating the "value" of vesting the benefit, thereby eliminating the possibility of such a benefit reduction. However, the Legislature may

---

[23] *Claypool, supra* at 660.
[24] (1975) 47 Cal. App. 3d 621.
[25] Id. at 632. The presence of the comparable new advantage in the form of increased benefits is the distinguishing factor in the outcome of the *City of Downey* case as compared to the *Allen* and *Wisley* cases discussed in the text of this memorandum accompanying footnotes 17 through 19.

wish to use a value that is less than the full actuarial cost of providing the benefit improvement factor in targeting the amount of the employee contribution rate increase for which vesting this benefit serves as an offsetting comparable new advantage in order to provide an additional margin of safety in the event of a legal challenge.

In determining the current cost of providing the benefit improvement factor for purposes of determining the outside limit of its offsetting value for purposes of increasing the employee contribution rate, our view is that it should be limited to the actuarial cost of the benefit for active employees as well as future hires. The additional cost associated with providing the benefit to retirees and beneficiaries together with the cost of providing the benefit to inactive members might not be considered by a reviewing court in considering whether the new advantage is "comparable" because vesting the benefit for retirees, beneficiaries and inactive members does not confer an advantage to the active members who will be paying the increased contributions.

We note in closing that the ultimate applicability of our analysis on this point would have to be evaluated in the context of any other contribution or benefit changes proposed by the Legislature as a part of a global funding solution.

CWW:ab

1301 Fifth Avenue
Suite 3800
Seattle, WA 98101-2605
USA

Tel +1 206 624 7940
Fax +1 206 623 3485

milliman.com

April 19, 2013

Teachers' Retirement Board
California State Teachers' Retirement System

Re: Analysis of the Value of the 2% Annual Benefit Adjustment

Dear Members of the Board:

The purpose of this analysis is to calculate the value of the 2% annual benefit adjustment (2% ABA). Additionally, we calculate the impact if there was an increase in the member contribution rate equivalent in value to the 2% ABA. As the value of the 2% ABA will vary depending on each individual's specific situation, we have shown the expected value for several sample members. We have separately assessed the value to members of the DB Program as of June 30, 2012, and to new hires on or after January 1, 2013 under the provisions of Assembly Bill (AB) 340 (also commonly referred to as the California Public Employees' Pension Reform Act, or PEPRA). This analysis is an update of our previous study dated December 15, 2011 to reflect the most recent actuarial valuation and the impact of PEPRA.

Two Percent Annual Benefit Adjustment

State law provides for an automatic benefit increase equal to 2% percent of the member's initial benefit, beginning on September 1 after the first anniversary of their retirement. These adjustments are not compounded or tied to changes in the cost of living. It is our understanding that the California Legislature can reduce or eliminate the amount of the annual benefit adjustment for new and existing members, even if they have already retired, if economic conditions dictate.

Estimated Cost (Value) of 2% ABA – Pre-2013 DB Program Structure

We have calculated the value of the 2% ABA by comparing the cost of the pre-2013 CalSTRS benefit with the alternative benefit (i.e., the same benefit as the pre-2013 CalSTRS structure, except excluding the annual benefit adjustment). The best estimate of the ultimate cost of the 2% ABA is to compare the normal cost rate – the annual cost of benefits earned as a percentage of salary – under the current and alternative benefit provisions.

Note that we have looked only at recent entrants for the purposes of these calculations (see the Actuarial Certifications section of this letter for details). If the population of all current members were used, the additional member contribution rate needed to fund the 2% ABA would be greater than the additional contribution rate needed for recently hired members, since there is less time to receive the additional contributions being made by older members. By limiting the population studied to only recent new entrants, the resulting equivalent increase in the member contribution rate is effectively the lowest value of the potential increase in the member rate. It should be noted that if the member contribution rate increase were calculated based on the cost for the full population, some members would end up paying a rate that is greater than the equivalent value. The methodology used in these calculations is based on our understanding of CalSTRS' request for this analysis.

As shown in the following chart, there is estimated to be a decrease of 2.60% in the annual cost for recent entrants if the 2% ABA were excluded, as compared to the pre-2013 DB Program with the current 8.00% member contribution rate. However, the amount by which member contributions would need to be increased in order to fund the 2% ABA will be higher than 2.60%; this is because the potential refund of these additional member contributions will itself increase the costs.

The equivalent value of the 2% ABA when financed by member contributions, including the increased value of the return of the additional member contributions, is 2.83% of pay as outlined below.

Normal Cost Rate as a % of Pay for 2% Annual Benefit Adjustment (Pre-2013 Benefits)

	New Entrant Population (6/30/12 Valuation)		
	NC% with 2% ABA	NC% without 2% ABA	Value of 2% ABA
If No Change in Member Rate (8.00%)	18.51%	15.91%	2.60%
Increased Value of Refund Benefit	0.23%	n/a	0.23%
If Member Rate (10.83%) Increased for 2% ABA	18.74%	15.91%	2.83%

Estimated Cost (Value) of 2% ABA – PEPRA Benefit Structure

For most CalSTRS members hired on or after January 1, 2013, the provisions of PEPRA will apply. This will result in lower benefits for these members, and a lower normal cost. See our letter dated October 23, 2012 for an analysis of the impact of PEPRA on such members.

Since the value of the benefits under PEPRA differs from the value of benefits under the DB Program structure in place for non-PEPRA hires, the value of the 2% ABA will also be expected to be different for PEPRA hires.

We have calculated the value of the 2% ABA for new hires covered by PEPRA using the same methodology we used for the pre-2013 DB Program structure above. Specifically, we compared the cost of the current PEPRA benefit with the alternative benefit (i.e., the same benefit as the current PEPRA structure, except excluding the annual benefit adjustment). The best estimate of the ultimate cost of the 2% ABA is to compare the normal cost rate – the annual cost of benefits earned as a percentage of salary – under the current and alternative benefit provisions.

The previous analysis of the normal cost for DB Program members subject to PEPRA was limited to a recent hire population in order to give the best estimate of the cost for those hired on or after January 1, 2013 and subject to PEPRA. We have based the calculation of the value of the 2% ABA on this same group of recent hires. See the Actuarial Certifications section of this letter for details.

As shown in the chart below, there is estimated to be a decrease of 2.20% in the annual cost for new members covered under PEPRA if the 2% ABA were excluded, as compared to the currently anticipated normal cost for these members. However, the amount by which member contributions should be increased in order to fund the 2% ABA (ignoring any member contributions currently being made toward the 2% ABA, as discussed later) will be higher than 2.20%; this is because the potential refund of these additional member contributions will itself increase the costs.

The equivalent value of the 2% ABA when financed by member contributions, including the increased value of the return of the additional member contributions, is 2.39% of pay as outlined below.

The member contribution rate under PEPRA is rounded to the nearest quarter percent. For purposes of comparison, we have shown the unrounded member rate to provide the best comparison of the value of the 2% ABA.

Normal Cost Rate as a % of Pay for 2% Annual Benefit Adjustment (PEPRA)

	New Entrant Population		
	NC% with 2% ABA	**NC% without 2% ABA**	**Value of 2% ABA**
If No Change in Member Rate (7.95%)	15.90%	13.70%	2.20%
Increased Value of Refund Benefit	0.19%	n/a	0.19%
If Member Rate (10.34%) Increased for 2% ABA	16.09%	13.70%	2.39%

Note that, because the member contribution rate under PEPRA is defined based on one-half of the PEPRA normal cost rate, an argument can be made that members subject to PEPRA already contribute one-half of the cost of the 2% ABA. It is therefore unclear whether the adjustment to the member rate to reflect the value of the 2% ABA should be 2.39%, as previously shown, or one-half of this amount.

Another way to look at this is that if the 2% ABA was removed, the normal cost rate would go down by the value of the 2% ABA (2.39%), including the reduced value of the member refund. Therefore, the member rate under PEPRA would decrease by one-half of that, or about 1.19% (prior to any adjustment for the one-quarter percent rounding). If the 2.39% was then added to the member rate to reflect the 2% ABA, the actual increase to the member rate would only be 1.20% (one half of the 2.39%).

The equivalent value of the 2% ABA when financed by member contributions, including the increased value of the return of the additional member contributions, is 2.39% of pay as outlined above. However, if this were adjusted for the fact that members are already paying for one-half of the 2% ABA, the increase in the member rate would only be 1.20%.

Alternative Value of 2% Annual Benefit Adjustment (PEPRA)		
	New Entrant Population	
	Normal Cost %	Member Rate(1)
PEPRA Plan with 2% ABA	15.90%	7.95%
PEPRA Plan without 2% ABA	13.51%	6.75%
Additional Value of 2% ABA	2.39%	1.20%

(1) *50% of Normal Cost Rate*

Cost will Vary Depending on the Individual

The ultimate value of the annual benefit adjustment for any individual will vary due to a number of factors. These factors include:

- **How Long a Member Lives:** The longer a member lives after retirement, the greater the value of the 2% ABA. In the extreme case, if a member dies within a year of retirement and no survivor benefit is payable, there is no value to the adjustment. For purposes of this analysis, we have assumed that the member's lifetime after retirement will be consistent with the valuation assumptions.
- **Retirement Age:** The 2% ABA is most valuable for members who retire at younger ages. For purposes of our analysis of sample members, we have shown various retirement ages.
- **Termination Age:** For members who terminate prior to retirement and defer commencement of their benefit, the relative value of the 2% ABA will be much less than for those who work until retirement.
- **Form of Payment:** The annual benefit adjustment is most valuable for members who elect benefits with a survivor continuance, particularly for those with a much younger beneficiary. For purposes of this analysis, we have assumed that the member will receive an unmodified benefit with no survivor continuance. This results in the lowest value and is consistent with the valuation assumption.
- **Future vs. Existing Member:** For current members, the value of the 2% ABA is roughly equivalent to future members; however, the equivalent increase in the member rate needed to fund this benefit is much greater for current members, since there is a shorter period to contribute. For purposes of this analysis, we have not considered the costs associated with past years of service for existing members, as detailed above.

Specifically, this means the normal costs for future years of service will be financed, but not the normal costs for past years, or the interest that would have accumulated on those normal costs for past years.

- **Hire Age:** Similarly, members hired at older ages will generally be more expensive since there will be less time for investment earnings to grow their contributions.

Examples for New Employees

As previously noted, the value of the 2% ABA varies by individual. There are some situations where a member would be better off having the 2% ABA and making the additional contributions and others where they would be worse off (compared to not having the 2% ABA and having no change in the member's contribution rate).

The following is a comparison of the value of the 2% ABA for several individuals under the pre-2013 DB Program structure with the additional contribution rate (2.83% of pay) previously calculated. We have shown both typical members and outliers. The outliers are designed to show situations where members are expected to receive a benefit that is less valuable than the actuarial cost.

Value of 2% Annual Adjustment for Sample Members (Pre-2013 Benefit Structure)

	Age at:					
Benefit Type	Hire	Term.	Ret.	Svc	Sex	Value of 2% Annual Adjustment
Typical Members						
Non-Vested Refund	35	38	na	3	M	Value of Additional Refund is 2.83% of Pay
Average Retiree	35	62	62	27	F	3.30% of Pay
Typical Retiree #1 (Early Career Hire)	25	60	60	35	M	2.93% of Pay
Typical Retiree #2 (Mid-Career Hire)	35	64	64	29	M	2.91% of Pay
Typical Retiree #3 (Late Career Hire)	45	65	65	20	M	3.02% of Pay
Outliers						
Deferred Retiree	30	40	60	10	M	0.87% of Pay
Late Retiree	35	70	70	35	M	1.95% of Pay

As can be seen from the above examples, the value of the 2% ABA for a typical CalSTRS retiree is generally slightly greater than the estimated average cost of 2.83% of pay for new hires. However, there are situations where the value is much less.

Note that we have used male members in our examples (except for the average retiree example), as this results in the lowest value of the 2% ABA. For the typical retirees, we used the expected retirement age based on individual hire age.

A similar analysis for members under the PEPRA benefit structure is presented below. Note that for purposes of this comparison we have used the first scenario where the current member contribution rate is increased by the full value of the 2% ABA.

The results are comparable to the pre-2013 benefit structure. The only difference of note is that the value of the 2% ABA under PEPRA benefits for the Early Career Hire is projected to be slightly less valuable than the additional contributions; whereas, under the pre-2013 benefit structure the value of the 2% ABA was slightly more. The difference is that pre-2013 benefit structure includes the additional 0.2% career factor, making the value of the 2% ABA relatively greater than the additional contributions.

Value of 2% Annual Adjustment for Sample Members (PEPRA)

Benefit Type	Age at: Hire	Age at: Term.	Age at: Ret.	Svc	Sex	Value of 2% Annual Adjustment
Typical Members						
Non-Vested Refund	35	38	na	3	M	Value of Additional Refund is 2.39% of Pay
Average Retiree	35	62	62	27	F	2.91% of Pay
Typical Retiree #1 (Early Career Hire)	25	60	60	35	M	2.34% of Pay
Typical Retiree #2 (Mid-Career Hire)	35	64	64	29	M	2.75% of Pay
Typical Retiree #3 (Late Career Hire)	45	65	65	20	M	3.02% of Pay
Outliers						
Deferred Retiree	30	40	60	10	M	0.77% of Pay
Late Retiree	35	70	70	35	M	1.95% of Pay

Alternative Approaches

We believe that the approach used in this analysis to determine the equivalent value of the 2% ABA is reasonable and consistent with the actuarial valuation. However, it should be noted that there are alternative approaches that would have yielded different results. Two other possible calculation methods are as follows:

- **Investment Return Assumption:** In our analysis, we used the valuation investment return assumption of 7.50% in the determination of the value of the 2% ABA. Since the purpose of this analysis is to determine an equivalent member contribution rate, a case could be made that the crediting rate on member contributions should be used. If the assumed crediting rate used in the valuation of 4.50% were utilized in this analysis, this would result in a significantly higher equivalent value of the 2% ABA.

- **Inclusion of Additional Member Contributions:** As outlined above, the ultimate purpose of this analysis is to express the cost of the 2% ABA as an equivalent member contribution rate. We have therefore reflected the value of the potential refund of additional member contribution in the calculation of the equivalent value of the 2% ABA. We have also shown the value of the 2% ABA if these additional contributions were not included in the calculations, as noted above, which results in a smaller value of the 2% ABA.

Actuarial Certification

All data, methods and assumptions are the same as those used in our June 30, 2012 actuarial valuation of the DB Program, except where noted. Please refer to that report for further details. Also, see our letter dated October 23, 2012 for additional details of the determination of the current PEPRA rates. It should be noted that member behavior may change if the 2% ABA was eliminated or if additional member contributions were required. We have not anticipated any changes in member behavior in the assumptions used in our analysis.

In determining the actuarial cost of the 2% ABA, only a recent entrant group is used. The new entrant group for the pre-2013 DB Program calculations consists of all members hired from July 1, 2010 to June 30, 2012. Members working less than 60% of full time were excluded so that average part-time service of the new entrant group was consistent with the overall active population. The new entrant group used for the PEPRA calculations is the same new entrant population used in our previous PEPRA analysis; see our letter dated October 23, 2012 for details.

The cost estimates presented in this letter reflect possible changes in the benefits provided to DB Program members, as described in this letter. These cost estimates are subject to the uncertainties of a regular actuarial valuation; the costs are inexact because they are based on assumptions that are themselves necessarily inexact, even though we consider them reasonable.

In preparing the valuation upon which this letter was based, we relied without audit, on information (some oral and some in writing) supplied by CalSTRS staff. This information includes, but is not limited to, statutory provisions, employee data and financial information. In our examination of these data, we have found them to be reasonably consistent and comparable with data used for other purposes. It should be noted that if any data or other information is materially inaccurate or incomplete, our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for CalSTRS have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of CalSTRS and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting CalSTRS.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements. The Retirement Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in Appendix B of the June 30, 2012 valuation report.

Actuarial computations presented in this letter are for purposes of determining the estimated impact of potential changes to the DB Program. The calculations in this letter have been made on a basis consistent with our understanding of CalSTRS current funding requirements. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this letter. Accordingly, additional determinations may be needed for other purposes.

Milliman's work is prepared solely for the internal business use of CalSTRS. To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exceptions:

(a) CalSTRS may provide a copy of Milliman's work, in its entirety, to the System's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit the System.
(b) CalSTRS may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law.

No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are pension actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel. These possible changes should be reviewed by counsel. Note that we have not explored these or any other legal issues with respect to the potential plan changes. We are not attorneys and cannot give legal advice on such issues.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this cost study letter is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Actuarial Standards of Practice promulgated by the Actuarial Standards Board and the applicable Guides to Professional Conduct, amplifying Opinions, and supporting Recommendations of the American Academy of Actuaries.

We respectfully submit this analysis and we look forward to discussing it with you.
We are consulting actuaries for Milliman, Inc. We are also members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

If you have any questions, please contact us.

Sincerely,

Nick J. Collier, ASA, EA, MAAA
Principal and Consulting Actuary

Mark C. Olleman, FSA, EA, MAAA
Principal and Consulting Actuary

NJC/MCO/nlo

cc: Mr. Rick Reed