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February 14, 2013

TO: Members of the Legislature

As requested by the Legislature in Senate Concurrent Resolutions 105 (Negrete McLeod), enclosed is a report on funding the Defined Benefit Program, as administered by the California State Teachers' Retirement System (CalSTRS). This report reflects input from the representatives of CalSTRS member and employer organizations, as well as discussions by the Teachers' Retirement Board at various board meetings.

The report identifies the issues the Legislature and the Governor need to consider in addressing the funding shortfall in the Defined Benefit Program, and illustrates the implications of a number of options, as requested by SCR 105. As discussed in the report, from the board's perspective as fiduciaries, and consistent with both accounting and actuarial standards, the definitive approach is to fully fund the Defined Benefit Program within a 30-year period. Although there are other options available to the Legislature, any options that result either in a reduced ratio of fund assets to liabilities, or provide those assets over a longer time period, increase risks to the Defined Benefit Program. The report discusses those risks in detail.

As stated in the report, CalSTRS stands ready to assist you in projecting the implications of alternative approaches and providing information desired to address this important issue. If you have any questions about the report, or the funding of the Defined Benefit Program, please contact Ed Derman, Deputy Chief Executive Officer, at (916) 414-1100.

Sincerely,

A handwritten signature in blue ink that reads "Jack Ehnes". The signature is fluid and cursive, with a long, sweeping underline that extends to the left.

Jack Ehnes

Chief Executive Officer

Enclosure





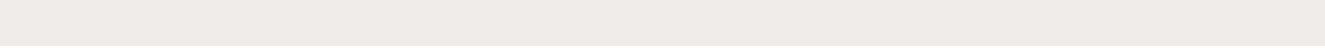
## Sustaining Retirement Security for Future Generations: Funding the California State Teachers' Retirement System

Submitted to the Legislature pursuant to  
Senate Concurrent Resolution 105 (Negrete McLeod)  
February 2013

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# Senate Concurrent Resolution No. 105

## RESOLUTION CHAPTER 123

Senate Concurrent Resolution No. 105—Relative to the State Teachers' Retirement System.

[Filed with Secretary of State September 10, 2012.]

### LEGISLATIVE COUNSEL'S DIGEST

SCR 105, Negrete McLeod. State Teachers' Retirement System. This measure would encourage the State Teachers' Retirement System to develop and submit to the Legislature, before February 15, 2013, 3 options that would address the long-term funding needs of the Defined Benefit Program.

The measure would also state the intent of the Legislature to enact legislation to address the long-term funding needs of the Defined Benefit Program of the State Teachers' Retirement Plan.

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WHEREAS, The Defined Benefit Program of the State Teachers' Retirement Plan has an unfunded liability primarily as a result of market downturns in the last 10 years and the total contributions made by members of the Defined Benefit Program, school employers, and the state have been insufficient since the 2001–02 fiscal year to reduce the unfunded liability in accordance with governmental accounting standards; and

WHEREAS, Any change in contributions to the Defined Benefit Program requires the enactment of legislation; now, therefore, be it

*Resolved by the Senate of the State of California, the Assembly thereof concurring,* That the Legislature encourages the State Teachers' Retirement System, in consultation with affected stakeholders, including, but not limited to, the Department of Finance and organizations representing members and school employers, to develop at least three options to address the long-term funding needs of the Defined Benefit Program in a manner that allocates any increased contributions among members of the system, school employers, and the state, consistent with the contractual rights of existing members, and submit those options to the Legislature before February 15, 2013; and be it further

*Resolved,* That it is the intent of the Legislature to enact legislation during the 2013–14 Regular Session that addresses the long-term funding needs of the Defined Benefit Program of the State Teachers' Retirement Plan; and be it further

*Resolved,* That the Secretary of the Senate transmit copies of this resolution to the author for appropriate distribution.



## EXECUTIVE SUMMARY

Since the market downturn in 2008, state legislatures around the country have been dealing with the financial challenges facing their public employee retirement plans. The legislative responses have addressed the benefits provided by the pension plans as well as the financing of those plans. Between 2010 and 2012, at least 27 states, besides California, enacted legislation increasing member and/or employer contributions to their pension plans. Last year, the California Legislature enacted Assembly Bill 340 (Furutani) to address the benefits provided by public employee retirement plans in California. In the legislative hearings that led to the passage of AB 340, frequent reference was made by the California State Teachers' Retirement System (CalSTRS) and others to the unfunded liability that CalSTRS is facing with respect to its Defined Benefit (DB) Program.

In response to those discussions, Senate Concurrent Resolution 105 (Negrete McLeod) of 2012 encourages CalSTRS to work with affected stakeholders to develop at least three options to address the long-term funding needs of the DB Program, and submit a report on those options by February 15, 2013. The DB Program is the primary, and often the exclusive, source of ongoing guaranteed retirement income paid to a public educator in California because California public educators do not earn Social Security benefits for their public education service. As of June 30, 2011, the liabilities of the DB Program exceeded the program assets by \$64 billion, and if current economic and demographic assumptions were to hold, the program would deplete all of its assets by 2046. At that point, the state, as plan sponsor and guarantor, would be responsible for ensuring that the constitutionally guaranteed benefits were distributed on a pay-as-you-go basis, whether from the state's General Fund and/or employer contributions, as determined by the Legislature. In 2011-12, DB Program benefit payments totaled \$10.3 billion, whereas contributions from all sources totaled only \$5.1 billion.

The resources generated from contributions made by members, employers and the state are projected to be more than sufficient to cover the ongoing costs of the DB Program (also known as the "normal cost"), if assumed investment returns are realized. The shortfall in funding benefits earned from service performed in the past was caused primarily by the weak financial markets since 2000. The shortfall has been exacerbated by contributions not being adjusted earlier to offset the investment losses. The benefits provided to current DB Program members are not excessive, and AB 340 addressed the weakest aspects of the plan design. Although the changes enacted in that legislation will reduce the liabilities accrued as a result of service of future members, those benefit changes are nowhere near sufficient to fully offset the funding shortfall. Any additional reductions to the benefits paid to members would have a limited impact on program funding because the reductions could only apply to future members. In addition, those reductions would likely significantly undermine the retirement security of those members.

The most effective means to provide long-term stability to the DB Program is to increase contributions made by members, employers and/or the state. Those contributions are fixed in statute; the Teachers' Retirement Board has no authority to establish the contribution rates. In addition, those rates have been remarkably stable. Member rates have not been increased since 1972, employer rates have not changed since 1990, and the state's rate is lower now than it was in 1997.

To provide long-term financial stability will require a significant increase in contributions. There are six key decisions the Legislature and the Governor must make in order to address the funding shortfall. They are:

1. What is the financial objective?
2. Over what period of time should that objective be achieved?
3. When should contribution rates begin to increase?
4. How quickly should those contribution rates be increased?
5. How should those contribution rate increases be allocated among current and future members, employers and the state?
6. When should the Legislature and the Governor re-evaluate the DB Program funding changes being made?

The report identifies four alternative financial outcomes. In order of descending long-term impact on the DB Program, they are:

1. Fully fund the DB Program.
2. Establish a target ratio of program assets to program liabilities.
3. Increase contributions to avoid fully depleting assets in the future.
4. Increase contributions to delay the date assets are fully depleted.

The definitive approach to addressing the long-term funding needs of the DB Program is to fully fund the program over a period of 30 years or less. This approach is consistent with the board's fiduciary duty and is strongly supported by Milliman, CalSTRS independent actuary. Further, the California Actuarial Advisory Panel has drafted a paper on model actuarial funding policies, which include guidelines for the amortization of a funding shortfall. Under the draft guidelines, the amortization period should generally be less than 25 years.

A delay in addressing the DB Program funding shortfall places the program at greater risk, particularly if there is another substantial market downturn. Nonetheless, CalSTRS recognizes that the Legislature and Governor may decide to increase contributions gradually over time, and perhaps not implement those increases for a period of time, in order to allow affected stakeholders to



make adjustments to their spending plans to accommodate the increases. A more rapid increase in contributions (for example, a 1 percentage point annual increase versus a one-half of 1 percentage point annual increase) has a greater positive impact on program funding than an earlier implementation (a 2014 implementation versus a 2016 implementation), if the increase in the contribution rate is significant. If the total increases are relatively small, when those increases begin, rather than how quickly they increase, will be of greater significance.

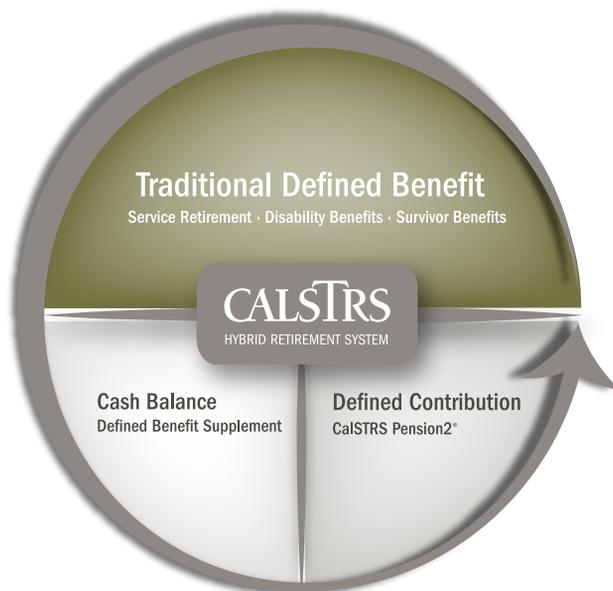
The timing of the enactment of legislation to address the funding shortfall, regardless of when the legislated changes become effective, can significantly affect the financial statements of public agencies. Accounting standards for public agencies recently adopted by the Governmental Accounting Standards Board will affect the financial statements of those agencies. If pension fund assets are expected to be exhausted in the future, the impact on financial statements changes significantly. If legislation is enacted in this legislative session that avoids an expected depletion of program assets in the future, future financial statements will not reflect pension liabilities based on excessively low expected rates of return. Requiring the disclosure of liabilities based on these low expected rates of return could make it appear that the public agencies have higher levels of existing debt. As a result, the ability of public agencies to implement their financial plans to improve their infrastructure could be hindered.

In addition, there is a very high likelihood, given the 75 years over which this report makes projections and the probability that from year-to-year actual investment experience will vary from the assumed rate of return, that any increase in contributions will result in too little or too much money being generated for the DB Program during that time period, if no further adjustments to contribution rates are made in the future. As a result, the Legislature should anticipate that the contribution rate plan enacted in the legislation needs to be re-evaluated in approximately 10 to 15 years, so any needed adjustments can be made. That re-evaluation may have to occur sooner if there is a substantial change in the market in the meantime.

CalSTRS stands ready to assist the Legislature and the Governor in projecting the implications of alternative approaches requested and providing information desired to address this important issue.

## BACKGROUND ON THE DEFINED BENEFIT PROGRAM

The California State Teachers' Retirement System (CalSTRS) administers a hybrid retirement system consisting of a traditional defined benefit component (the Defined Benefit, or DB, Program), a cash balance component (the Defined Benefit Supplement, or DBS, Program) and a defined contribution component (Pension2, a voluntary 403(b)/457 program). By far, the most significant component of this hybrid system is the DB Program. The DB Program provides retirement, disability and survivor benefits to academic personnel in California public education (prekindergarten through grade 12 and community college), such as teachers and faculty, academic administrators, counselors, librarians, nurses and others who are required to hold a credential or meet appropriate minimum standards set by the Board of Governors of the California Community Colleges. Similar personnel who work in charter schools whose charter elects CalSTRS as their retirement administrator also participate in the DB Program. Members of the DB Program do not earn Social Security benefits for their public education service.



### Relatively Modest Benefits Paid to Defined Benefit Program Members First Hired Prior to 2013

The retirement benefit is based on the retiring member's years of service, age at retirement and final compensation. The member generally must have at least five years of service credit to retire. For members who were first hired prior to 2013, the normal retirement age is 60, and the benefit paid at that age equals 2 percent of final compensation per year of service. (By comparison, many



other current state and local non-safety employees can retire with a benefit of 2 percent of final compensation per year of service as early as age 55.) This is known as the “CalSTRS 2% at 60” formula. Members who retire after age 60 retire with a higher percentage of final compensation for each year of service. The maximum percentage of final compensation per year of service payable as a benefit is 2.4 percent at age 63. Members can retire as early as age 50 (if they have at least 30 years of service) or age 55 (if the member has less than 30 years of service) with a benefit that is based on a declining percentage of final compensation per year of service as the retirement age declines.

In addition, if the member retires with at least 30 years of service, the percentage of final compensation for each year of service upon which the retirement benefit is based is increased by 0.2 percent (an enhancement referred to as the career factor), up to the maximum of 2.4 percent, which would be reached at age 61½. For example, a member retiring at age 60 with less than 30 years of service will receive a benefit equal to 2 percent of final compensation per year of service, while a member retiring at age 60 with 30 or more years of service will receive a benefit equal to 2.2 percent of final compensation per year of service. For members retiring with at least 25 years of service, final compensation is based on the highest 12 consecutive months of the average annual full-time salary rate; otherwise, final compensation is generally based on the highest average annual full-time salary rate for three consecutive school years. All benefits are increased each year by an amount equal to 2 percent of the original benefit. The median benefit paid to the members who retired in 2011-12 replaced 53 percent of their final compensation.

### **Future Defined Benefit Program Members Will Have Lower Benefits**

For members first hired in 2013 or thereafter, the DB Program retirement benefit is smaller than that paid to CalSTRS 2% at 60 members. Although the benefit paid at normal retirement age remains 2 percent of final compensation for each year of service credit, the normal retirement age for these newer members is increased from age 60 to age 62. This is referred to as the “CalSTRS 2% at 62” formula. As a result, the initial benefit paid at age 60 to a CalSTRS 2% at 60 member will be paid to a CalSTRS 2% at 62 member with the same amount of service and final compensation at age 62, and the age that the maximum percentage of final compensation is paid will increase from age 63 to age 65. In fact, the percentage of final compensation per year of service paid to a CalSTRS 2% at 62 member generally will be the same as is paid to a CalSTRS 2% at 60 member who retired two years earlier. CalSTRS 2% at 62 members will not have their benefit enhanced by the career factor. Finally, the amount of compensation that will count towards retirement for a CalSTRS 2% at 62 member is limited to \$136,440 in 2013, an amount that will be adjusted each year for changes in the Consumer Price Index.

The benefit formula under AB 340 will reduce the median percentage of final compensation paid as a benefit (known as the "replacement ratio") from the current formula's 53 percent to about 47 percent.

The Teachers' Retirement Board has no authority to set contribution rates.

The minimum required service credit generally remains at five years, but the minimum retirement age is 55, regardless of how many years of service the member was credited. Final compensation will be based on the highest three consecutive school years, regardless of the number of years of service earned. The 2 percent annual benefit adjustment will continue to be paid. The benefit formula under AB 340 will reduce the median percentage of final compensation paid as a benefit (known as the "replacement ratio") from the current formula's 53 percent to about 47 percent, assuming the future member's age and service at retirement is the same as for recently retired members. This is very similar to what a private-sector employee with a similar amount of service would receive from a typical private-sector employer defined benefit plan, when combined with the Social Security benefits the employee would receive.

## Current Financial Status of the Defined Benefit Program

The DB Program is financed from four sources. The first three sources are the members, employers and the state, which each pay contributions at a rate that is determined by statute; the Teachers' Retirement Board has no authority to set contribution rates, nor are the rates subject to collective bargaining. Only the contributions from earnings attributable to a maximum of one year of service credit per school year are credited to the DB Program; contributions from earnings attributable to service in excess of one year per school year generally are credited to the member's DBS account. CalSTRS 2% at 60 members contribute 8 percent of their earnings (this DB Program contribution rate is equal to 44 percent of the ongoing, or "normal," cost of the DB Program benefit as of June 30, 2011). CalSTRS 2% at 62 members will contribute 50 percent of the normal cost of their benefit program, which currently results in a member contribution rate of 8 percent of earnings. Employers contribute 8.25 percent of the member's earnings.

The state's contribution rate is currently equal to 2.791 percent of the member's compensation earned two years ago for up to a year of service; the state makes no contributions for compensation from service in excess of a year. The state contribution rate will be increasing by one-quarter of 1 percentage point per year through 2015-16, when the state's contribution rate reaches 3.522 percent. (The state also makes a contribution of approximately 2.5 percent of the member's compensation from two years ago to finance a program that protects the purchasing power of the member's DB Program benefit.) The final source of funding for the DB Program is the investment of these contributions. From 1984-85 through 2011-12, investment earnings represented about 58 percent of total resources generated during that time to pay benefits. The following table summarizes the amount the DB Program (excluding the purchasing power program) received from the four sources in 2011-12:

## Revenue by Source (in millions of dollars) 2011-12

Member	\$2,229 (including redeposits of prior refunds)
Employer	\$2,167
State	\$689
Investment Earnings	\$932

As of June 30, 2011, the normal cost of benefits of the DB Program was equal to 18.299 percent of covered earnings. With an effective total contribution rate of 19.418 percent, the contributions paid by members, employers and the state, together with the investment of those contributions, are more than sufficient to pay the normal cost of benefits accrued in the DB Program, if all actuarial assumptions are met. However, because average annual investment returns from 2000-01 through 2011-12 were about 4 percent—well below the assumed return on investments (currently 7.5 percent, which is a reduction from the 8 percent return the board had assumed between 1995 and 2010)—the actuarial value of liabilities of the DB Program associated with service already performed by members was \$64 billion greater than the actuarial value of assets. Put another way, the actuarial value of assets was sufficient to fund 69 percent of the actuarial value of liabilities at that time.

Appendix A is a summary of the current status of the DB Program that was provided by Milliman, CalSTRS independent actuary. Milliman’s analysis indicates that the funded status of the DB Program will decline further in the June 30, 2012, valuation, primarily because interest on the unfunded liability will continue to accrue, prior year investment losses will continue to be recognized and the 2011-12 investment return was only 1.8 percent.

Based on current law specifying contributions paid by members, employers and the state, and assuming investment returns and other economic and demographic assumptions are realized, as of June 30, 2011, there were sufficient assets to fund benefits through 2046. The enactment of Assembly Bill 340 (Furutani) in 2012, also known as the California Public Employees’ Pension Reform Act, or PEPRA, will only slightly improve the financial status of the DB Program. The reduction in benefits accrued by CalSTRS 2% at 62 members under AB 340 will reduce the normal costs of the program for those members by 2.61 percent of earnings, and delay the projected date at which DB Program assets are depleted by one year, to 2047.

Other aspects of AB 340, however, such as the limitation on compensation used to determine final compensation of CalSTRS 2% at 62 members, will have a beneficial impact on program funding by substantially reducing the opportunity for members to “spike” their retirement with large end-of-career compensation increases. Nonetheless, the magnitude of the impact on program funding for these additional spiking controls will be relatively small because comparatively few members currently have such an opportunity to spike their benefit.

Average annual investment returns from 2000-01 through 2011-12 were about 4 percent.

The actuarial value of liabilities of the Defined Benefit Program associated with service already performed by members was \$64 billion greater than the actuarial value of assets.

Although assets would be depleted if no action was taken to address the funding shortfall, the benefits owed to members and beneficiaries are contractually guaranteed. As a result, the state, as the plan sponsor and guarantor, has a legal obligation to ensure that benefits continue to be paid.

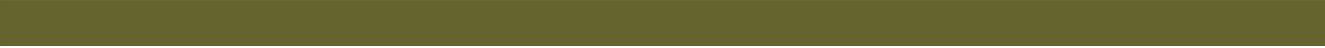
The principal cause of the \$64 billion unfunded liability is the weak financial markets since 2000.

The magnitude of the shortfall has increased throughout the decade because the amount contributed to the Defined Benefit Program has been a decreasing percentage of the amount needed to maintain full funding of the program.

Although assets would be depleted if no action was taken to address the funding shortfall, the benefits owed to members and beneficiaries are contractually guaranteed. One exception to this is an annual adjustment to benefits paid to members and beneficiaries. This is discussed in more detail on page 25. As a result, the state, as the plan sponsor and guarantor, would have a legal obligation to ensure that benefits continue to be paid even after the DB Program assets are depleted. These additional payments would be made on a pay-as-you-go basis, whether from the state's General Fund and/or employer contributions, as determined by the Legislature. It is currently estimated that the cost of distributing benefits on a pay-as-you-go basis would be approximately 50 percent of covered earnings because CalSTRS would have no opportunity to invest assets to help fund the cost of benefits. If such a pay-as-you-go arrangement was required in 2011-12, the payment would have been \$5.2 billion (in addition to previously scheduled contributions), representing the difference between contributions and benefit payments, with that amount increasing annually for an unlimited period of time.

As stated above, the principal cause of the \$64 billion unfunded liability is the weak financial markets since 2000. (Over the past 20 years, however, investment returns met the current 7.5 percent annual investment return assumption.) If investment returns had equaled the currently assumed rate of return of 7.5 percent since 2000, the DB Program would have had sufficient assets as of June 30, 2011, to fund 103 percent of its liabilities. Moreover, the magnitude of the shortfall has increased throughout the decade because the amount contributed to the DB Program has been a decreasing percentage of the amount needed to maintain full funding of the program. One means by which pension funds disclose the adequacy of funding for a benefit program is reporting the percentage of the contributions required to be paid, after considering member contributions, to fully fund the program over 30 years. In 2001-02, when the DB Program first became underfunded, the state and employer contributed 90 percent of the amount needed to fully fund the program within 30 years. By 2011-12, that percentage had declined to 46 percent. In the absence of any increase in contributions, that percentage will continue to decline, even if CalSTRS earns its assumed investment returns.

CalSTRS first explored options to address the unfunded liability in 2004, following adoption of the June 30, 2003, actuarial valuation, which determined (1) there was a \$23.1 billion unfunded liability; (2) the actuarial value of assets represented 82 percent of program liabilities; and (3) the future contributions and investment returns were projected to be insufficient to amortize the unfunded liability over any time period. Since that time, CalSTRS has regularly communicated with the Legislature and the Governor about the increasing size of the funding shortfall in transmitting both the annual actuarial valuation of the DB Program and CalSTRS annual financial report. During that time, CalSTRS has also continually communicated with stakeholder groups on the funding shortfall, and facilitated their understanding of the need to increase contributions to address the funding shortfall.



## History of Defined Benefit Program Funding

The funding of the DB Program has changed substantially in the 100 years since CalSTRS was established by the State of California in 1913. This is summarized in the timeline shown on the next page.

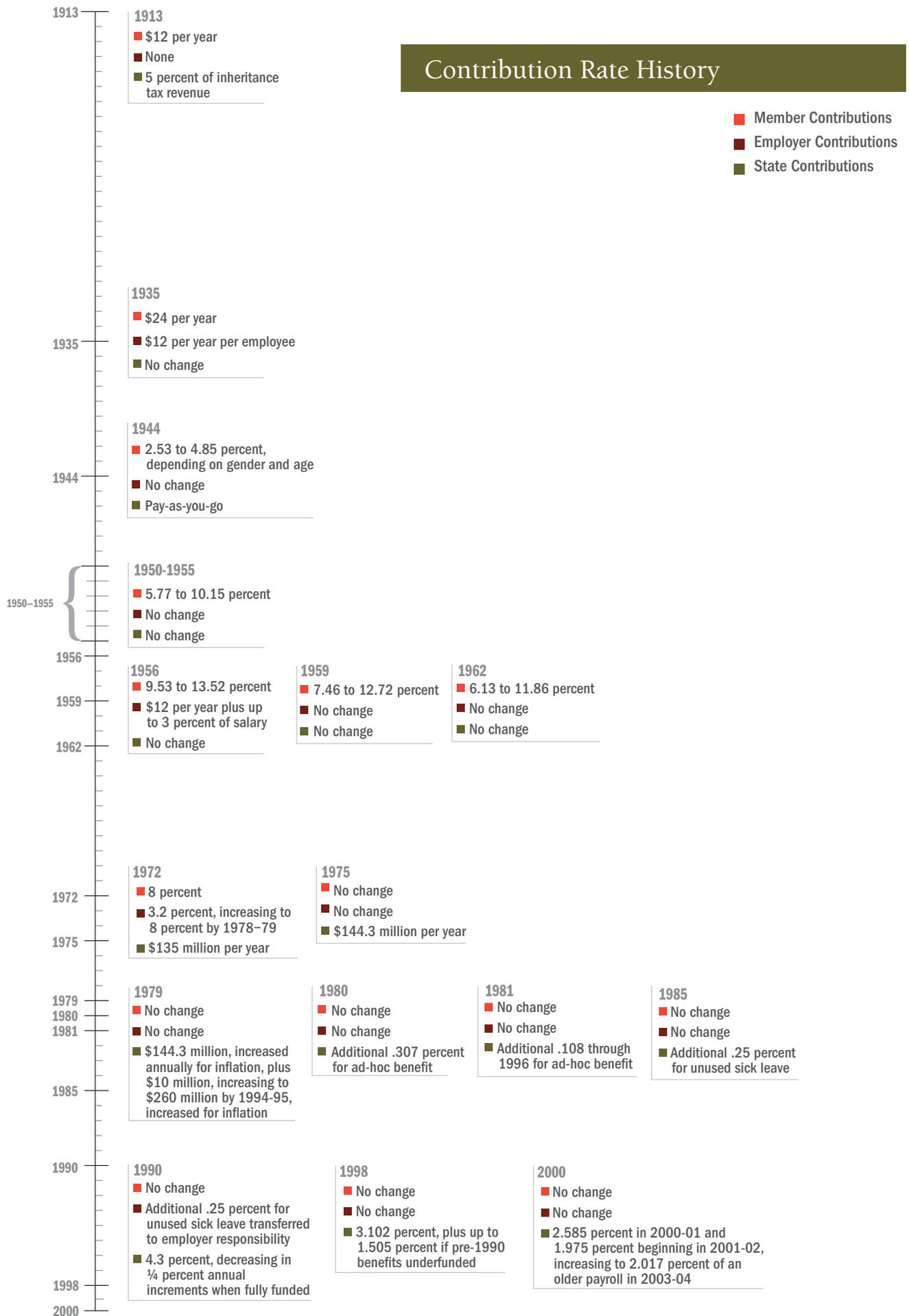
In 1913, what is now the DB Program had only two sources of contributions—a \$12 per year contribution from each member and a state contribution equal to 5 percent of the revenue generated by the state's inheritance tax. The employer did not make a contribution until 1935, when it began to make a \$12 per member annual contribution. The member's contribution increased to \$24 per year at the same time. Members who were first hired in 1935 or afterward contributed a total of 4 percent of salary, of which only the first \$24 was credited to the monthly benefit, with the balance credited to the member's annuity account, similar to the current DBS account.

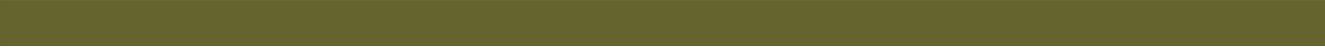
The next significant change in program funding occurred nine years later in 1944, when the member's contribution changed from a flat dollar amount to a percentage of compensation that depended on the age and gender of the member. In addition, the state's contribution changed from a percentage of inheritance tax revenue to a pay-as-you-go payment, in which the state paid the difference between the resources available and the cost of benefits in a given year.

The contribution rate charged to members, still based on the member's age and gender, varied for 28 years, from 1944 until 1972, when it became a flat 8 percent for all members. The payment made by the state also changed in 1972, when it shifted from a pay-as-you-go contribution to a flat dollar amount of \$135 million. This flat dollar amount was modified a few times throughout the 1970's. It reached about \$400 million by 1990 and increased each year thereafter. Additional state contributions, based on a percentage of pay, were enacted in the 1980's to fund specific benefit enhancements. The employer contribution was changed in 1972 to a flat 3.2 percent of earnings, and that contribution rate increased gradually over the balance of the decade until it reached 8 percent in 1978-79.

The next significant change in program funding occurred 12 years later, in 1990. The employer's contribution was increased from 8 percent to 8.25 percent when the financial responsibility for funding the conversion of unused sick leave to service credit at retirement was shifted from the state to the employer. In addition, the flat dollar contribution by the state was replaced with a contribution rate equal to 4.3 percent of the member's compensation, in addition to the other contributions levied for previously authorized benefit enhancements, for a total of 4.607 percent in 1997. The 4.3 percent contribution would gradually be eliminated if and when the DB Program became fully funded, which at the time was anticipated to be in 40 years. As a result of the superior investment returns in the 1990's, however, the DB Program became fully funded in 1998. In

# Contribution Rate History





1998 and in 2000, the state's contribution was reduced but made permanent in legislation that also provided additional benefit enhancements to members, most of which will not apply to CalSTRS 2% at 62 members. The enhancements were primarily intended to encourage educators to continue to work rather than retire. The 1998 legislation also provided for a limited increase in the state's contribution if there was a normal cost deficit or unfunded liability associated with the benefit program in place on July 1, 1990. Because there currently is an unfunded liability associated with the July 1, 1990, benefit program, the state's contribution has been increasing annually, and will continue to do so under current law until it reaches its maximum statutory rate of 3.522 percent in 2015-16. For the 10 years beginning in 2001, the member's contribution to the DB Program was reduced to 6 percent, with the remaining 2 percent of compensation the member contributed to CalSTRS being credited to the member's DBS Program account. In 2011, the member's contribution to the DB Program was returned to the prior rate of 8 percent.

## Means to Improve Defined Benefit Program Funding

There are three ways to improve the funding of the DB Program. The first approach is to improve the return from the investment of program assets. CalSTRS regularly evaluates the allocation of program assets to maximize its return on investment while maintaining an appropriate level of risk. Although CalSTRS could increase its allocation of assets in a manner that would be expected to provide higher returns in the long-run, doing so would expose the investment portfolio to even greater volatility and risk. In addition, even though investment returns in the past have enabled the DB Program to eliminate an unfunded liability much sooner than expected, based on the June 30, 2011, actuarial valuation as adjusted for the impact of AB 340 and the 2011-12 investment return, it would require five consecutive years of over 17 percent annual returns, followed by 25 years of meeting the assumed investment return of 7.5 percent annually, to become fully funded in 30 years, or almost 10 percent annual returns for 30 years to achieve full funding. Given the current allocation of program assets, there is about a 15 percent chance that investment returns would be sufficient to the address the funding shortfall.

Given the current allocation of program assets, there is about a 15 percent chance that investment returns would be sufficient to the address the funding shortfall.

The second approach is to reduce program liabilities by reducing benefits, without a corresponding reduction in contributions, in order to apply these additional net resources to retire the unfunded liability. As mentioned before, the benefits provided by a public retirement plan, such as the DB Program, are contractual obligations, and California Supreme Court decisions effectively prohibit a reduction in the accrual of future benefits for existing members. Generally, DB Program benefits only can be reduced for future members, as occurred in AB 340. Moreover, as discussed earlier, the financial challenges facing the DB Program were not caused by the benefit structure, but by the extraordinarily weak financial markets since 2000. In addition, as stated earlier, the revenues generated from



contributions made by members, employers and the state, together with the investment of these contributions, are more than adequate to cover the normal costs of both the current and the new benefit formula, if actuarial assumptions are met.

AB 340 addressed the weakest aspects of the plan design.

Moreover, AB 340 addressed the weakest aspects of the plan design by further reducing opportunities for future members to enhance their benefits through late-career compensation increases, which are not adequately funded. Finally, the impact of such additional reductions in benefits would likely significantly undermine the retirement security of affected members. For example, assuming there is no significant change in when future members retire, the benefit as a percentage of final compensation that the average retiring member will receive under the CalSTRS 2% at 62 formula is likely to be under 50 percent, and because DB Program members do not participate in Social Security, this would represent the only ongoing source of retirement income from their public education service. As discussed earlier, the benefits that will be paid to future members are comparable to the benefits paid to those receiving typical corporate pension plan benefits, when the latter's Social Security benefits are included. Any significant further reduction in benefits paid to future CalSTRS members would likely reduce the financial security of those members to a level below retiring private sector employees.

Including Defined Benefit Program members into Social Security would either require substantially increased costs to employees and employers or further undermine the retirement security of California's educators.

One specific approach to reducing DB Program liabilities for future members that has been raised is to require future members to participate in Social Security for their public education service, and reduce the benefits paid under the DB Program. Milliman, CalSTRS independent actuary, analyzed the cost of mandating Social Security for future members. Their analysis indicated that including DB Program members in Social Security would either (1) require substantially increased costs to employees and employers to pay the Social Security payroll tax, even after considering the reduction in their CalSTRS-related costs, or (2) further undermine the retirement security of California's educators by reducing DB Program benefits in order to reduce DB Program contributions to offset the cost of the Social Security payroll tax. In other words, the cost of providing benefits to California public educators exclusively through the DB Program is less than it would cost to provide those same benefits from a combination of a reduced DB Program and Social Security. This is primarily because CalSTRS reduces its program costs by pre-funding its benefits, that is, investing contributions received while the member is working, an attribute that does not exist in Social Security.

The final approach is to increase contributions. As stated before, contribution rates are set in statute, not by the Teachers' Retirement Board. As the previously discussed history of those rates indicates, they have been extraordinarily stable, with the member and employer contribution rate not having been increased since 1972 and 1990, respectively, and the state's contribution rate being lower than it was in 1997. Moreover, the percentage of compensation

that is contributed toward the retirement of a DB Program member in 2012-13 is considerably less than the percentage contributed toward the retirement of California school or state employees covered by CalPERS, when the payments made towards Social Security are included. This indicates that the financial burden imposed on members, employers and the state to finance the retirement of public educators is less than for many other public employees, as illustrated in the following table.

<b>Contribution Rates 2012-13</b>						
	<b>Employee Defined Benefit</b>	<b>Employee Social Security</b>	<b>Employer Defined Benefit</b>	<b>Employer Social Security</b>	<b>State</b>	<b>Totals</b>
<b>CalSTRS</b>	8.00%	N/A	8.25%	N/A	5.29%	21.54%
<b>CalPERS School</b>	7.00%	6.20%	11.42%	6.20%	N/A	30.82%
<b>CalPERS State Misc.</b>	8.00%	6.20%	19.65%	6.20%	N/A	40.05%

As previously noted, since 2004, CalSTRS has worked to educate stakeholder groups on the need to increase contributions to address the funding shortfall. As a result, organizations representing CalSTRS members have expressed a willingness to increase the contribution rate imposed on all affected parties, including members.

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## ADDRESSING THE DEFINED BENEFIT PROGRAM SHORTFALL

The definitive approach to addressing the long-term funding needs of the Defined Benefit Program is to fully fund the program over a period of 30 years or less.

The definitive approach to addressing the long-term funding needs of the DB Program is to fully fund the program over a period of 30 years or less, an approach that is consistent with the board's fiduciary duty, governmental accounting standards and actuarial guidelines. To the extent the contribution rates are less than the rates required to fully fund the DB Program over 30 years, the DB Program is at greater risk of asset depletion in the future. Specifically, if a substantial market downturn occurs before the funded ratio begins to increase, the level of funding could decline to a point where it would become substantially more expensive to provide long-term viability for program funding. For example, if the funded ratio of the DB Program on a market basis is 63 percent, and investments decline the following two years by 10 percent annually, which is 17.5 percent less per year than assumed, the funded ratio would decline to about 40 percent by the end of the second year.

The Legislature recognized the need to address the funding of the DB Program in 2012 when it adopted Senate Concurrent Resolution 105 (Negrete McLeod). SCR 105 encourages CalSTRS, "in consultation with affected stakeholders, including, but not limited to, the Department of Finance and organizations representing members and school employers, to develop at least three options to address the long-term funding needs of the Defined Benefit Program in a manner that allocates any increased contributions among members of the system, school employers, and the state, consistent with the contractual rights of existing members, and submit those options to the Legislature before February 15, 2013." CalSTRS has been meeting with stakeholders to identify a variety of approaches that could be taken by the Legislature and the Governor to address the funding of the shortfall.

**In developing the options for inclusion in this report, CalSTRS identified six primary issues that the Legislature and the Governor need to consider in developing a funding program. The primary issues are:**

- 1. What is the financial objective?**
- 2. Over what period of time should that objective be achieved?**
- 3. When should contribution rates begin to increase?**
- 4. How quickly should those contribution rates be increased?**
- 5. How should those contribution rate increases be allocated among current and future members, employers and the state?**
- 6. When should the Legislature and the Governor re-evaluate the DB Program funding changes being made?**

## 1. Define the Financial Objective

The first issue that must be decided is the financial objective that the Legislature and the Governor desire to achieve. CalSTRS has identified four alternative objectives, and for purposes of responding to SCR 105, CalSTRS considers these alternatives to represent the options that the Legislature encouraged CalSTRS to develop.

- **Fully fund the DB Program.** Accounting standards, actuarial practices and fiduciary responsibility would dictate that the program be fully funded, that is, to have sufficient assets on hand at a specific time to pay all liabilities that have accrued as of that date. (As of June 30, 2011, the actuarial value of assets was sufficient to fund 69 percent of the program liabilities.) Having sufficient funds on hand minimizes the long-term cost of the program because CalSTRS can invest those funds to generate assets to pay liabilities that would otherwise have to be funded from increased contributions. This would ultimately reduce the need for future employer and/or state contributions to pay for benefits associated with prior service.

Although fully funding the DB Program would be the most desirable outcome with respect to the long-term financing of benefits, the increase required to fully fund the program would be significant. If implemented on July 1, 2014, the total contribution rate from all sources would have to increase by the equivalent of a projected 15.1 percent of compensation to fully fund the program in 30 years. It is projected that such a change would require an increased initial total annual contribution at that time of about \$4.5 billion from all combined sources.

- **Establish a funding target.** An alternative objective is to achieve a specific funded ratio. Under this objective, the contribution rate is set such that a specific targeted funded ratio is projected to be reached by a specified date. Policymakers often cite a perspective that a pension fund that is at least 70 or 80 percent funded is fiscally healthy. Under the federal Pension Protection Act of 2006, large private sector pension plans are considered at risk of defaulting on their liabilities if they have less than 80 percent funded ratios under standard actuarial assumptions and less than 70 percent funded ratios under certain additional "worst-case" actuarial assumptions.

Although useful as a general benchmark, the level of funding is less relevant in determining the long-term viability of a pension fund than the direction in which that funding level is headed. For example, a pension program that is currently 85 percent funded but whose current contribution rates, liability accruals and economic and demographic expectations are projected to result in continuing declines in that funding level is, in fact, in worse shape in the long-run than a plan that is currently 50 percent funded but, given those same considerations, is projected to be heading toward full funding.



Nonetheless, program financing could be set to target a specified funding level for a specified future date. Given the current trajectory of the DB Program funded ratio towards 0 percent, establishing a reasonably high target would, in fact, substantially improve the financial viability of the program. If implemented as of July 1, 2014, the total contribution rate from all combined sources would have to increase by the equivalent of a projected 12.1 percent of compensation to fund 80 percent of program liabilities in 30 years. It is projected that such a change would require an increased initial total annual contribution of about \$3.6 billion from all combined sources.

- **Increase contributions to *avoid full depletion of assets*.** Although full funding of the DB Program is the definitive goal, it is not necessary to achieve that level of funding in order for the program to have long-term financial viability. A third, more modest outcome would be to set contribution rates such that, given actuarial assumptions, there is always projected to be sufficient assets in the fund to pay benefits that are payable in that year, even if the DB Program never becomes fully funded. Because this objective is more modest than full funding, the cost of avoiding a depletion of assets requires lower increases in contributions. If increased as of July 1, 2014, the total contribution rate from all combined sources would have to increase by the equivalent of a projected 9.5 percent of compensation. It is projected that such an increase would require an initial additional annual contribution of about \$2.9 billion from all combined sources and would maintain a funded ratio above 60 percent.
- **Increase contributions to *delay full depletion of assets*.** Finally, contribution rates could be increased to delay when the DB Program fully depletes its assets. This outcome requires the smallest short-term increases in contribution rates, but also accomplishes the least in addressing the long-term funding needs of the DB Program. As a result, it is the least desirable and ultimately the most expensive alternative identified. Under this outcome, the DB Program would ultimately deplete its assets, given its actuarial assumptions, but that depletion would be delayed for a period of time. A 5 percentage point increase in the contribution rate beginning in 2014 would, for example, delay the projected date on which program assets were depleted to 2058. The projected initial annual cost of such an increase would be \$1.5 billion. Such an approach would not solve the problem; the Legislature would almost certainly have to make further changes at a future date to provide long-term viability to the program.

## 2. Determine the Period of Time to Achieve Objective

The required contribution rate increases cited previously assume that, where applicable, the financial objective is achieved within 30 years. That is a timeframe consistent with governmental pension accounting standards and cited by Milliman in the appendix as what they believe should be the maximum funding period. This timeframe is also slightly greater than the 25 year maximum amortization period reflected in draft guidelines adopted by the California Actuarial Advisory Panel (CAAP), which was created by statute to provide public agencies with impartial independent information and best practices on pensions and other post-employment benefits. It should be noted that the CAAP guidelines are just recommendations for California public plans and not a legal requirement for CalSTRS. In addition, the faster the objective is achieved, the less it costs to achieve that objective in the long run because CalSTRS has assets to invest earlier.

There is no legal requirement, however, that an objective be achieved within any specific timeframe. Lengthening the number of years available to achieve the objective will reduce the required increased contribution because the unfunded liability is being paid off over more years, but ultimately require higher total contributions. This is analogous to a home mortgage—a homeowner with a 30-year mortgage will have lower individual mortgage payments than a second homeowner with a 15-year mortgage. This is because the first homeowner is paying off the mortgage over twice as long a period of time and less of the mortgage principal is being paid off in any single payment. Nonetheless, as interest continues to accrue on the mortgage, the first homeowner will end up paying more in total than the second homeowner.

Extending the period of time that a specific objective in funding the DB Program is achieved would have a similar impact. Fully funding the DB Program over 30 years, beginning in 2014, requires a projected increased contribution rate of 15.1 percent. A 75-year amortization period only requires a projected increased contribution rate of about 9.7 percent to achieve full funding, and the projected initial annual cost would be reduced from \$4.5 billion to \$2.9 billion. In the first instance, a projected total of \$121 billion (adjusted for inflation) in increased contributions would be paid, while the longer amortization period, even though the annual payment is less, would require a projected total payment of \$254 billion. Similarly, achieving an 80 percent funded ratio in 30 years would require a projected increase in contribution rates of 12.1 percent, beginning in 2014. Reaching that level over 75 years would reduce the required projected increase in the contribution rate to 9.3 percent, reducing the projected initial annual cost by \$864 million. However, the total projected increased contributions would increase from \$97 billion to \$243 billion.

Lengthening the number of years available to achieve the objective will reduce the required increased contribution because the unfunded liability is being paid off over more years, but ultimately require higher total contributions.

### 3. Determine When Contribution Rate Increases Begin

A third issue is when contribution rates begin to increase. As indicated earlier, fully funding the DB Program over 30 years beginning in 2014 would require a projected contribution rate increase of 15.1 percentage points. The projected fiscal year 2014–15 cost of that increase would be \$4.5 billion. If legislation was enacted in 2013 to impose such a contribution rate, the parties responsible for paying that increase would have less than a year to accommodate that increase in their spending plans. Each one percentage point increase in contributions paid by employers in 2014 is projected to increase their costs by \$300 million, while a similar increase in the state contribution rate would cost the General Fund about \$279 million. A one percentage point increase in the member's contribution rate would cost the average member about \$700 per year.

Just as the period of time over which an objective is achieved can be extended, the implementation of a higher contribution rate can be deferred. This would allow time for adjustments to be made to spending plans to accommodate the increased cost. Because the unfunded liability would continue to increase as implementation of a contribution rate increase is deferred, the contribution rate required to achieve that objective also would increase. As a result, a trade-off is created between short-term avoidance of increased costs and long-term increased costs. For example, delaying an increased contribution to fully fund the program in 30 years from 2014 until 2016 would increase the projected required contribution rate increase by about 1 percentage point. There would be a similar projected impact of a two-year delay in a plan to increase the funded ratio to 80 percent in 30 years.

Although the implementation of a plan to address the funding shortfall can be delayed, an earlier enactment of a funding plan through legislation, even with delayed implementation, could materially and positively affect the finances of public agencies. The Governmental Accounting Standards Board (GASB) is an independent organization that sets accounting and financial reporting standards for state and local governments. Under recently approved GASB standards, public agencies who are responsible for funding pension liabilities are required to disclose those liabilities within their financial statements. Although these standards do not affect how a pension fund is actually financed, the net pension liabilities reported in the financial statements may affect (1) the interest rate that the public agency pays when it has to issue debt to, for example, construct or improve its infrastructure, such as schools or other capital facilities, and (2) the perceived impact of pensions on public agency finances.

One component of that disclosure is how the liability is calculated if projected assets are insufficient to pay projected benefit payments. For those payments in which projected assets are sufficient, the liabilities are determined based on the assumed investment return, or 7.5 percent in the case of the DB Program. If the assets are insufficient to pay all projected benefits, then the liabilities for

An earlier enactment of a funding plan through legislation, even with delayed implementation, could materially and positively affect the finances of public agencies.



which there are no projected assets are calculated based on the 20-year general obligation municipal bond index rate, which is currently about 3.5 percent. This will significantly increase the liability public agencies disclose on their financial statements, which could affect other aspects of their financial plans.

The new standards first apply to financial statements issued for the 2014–15 fiscal year. The liabilities disclosed in that initial statement will be based on the valuation of assets and liabilities as of June 30, 2014. If legislation is enacted in this legislative session materially affects DB Program funding, even if the enacted changes are not implemented until a future year, the June 30, 2014, valuation will reflect those projected additional resources available to fund the program liabilities. Depending on the magnitude of those increases, the liabilities reflected in those initial statements would, to at least a greater extent, be calculated based on the assumed investment return rather than the municipal bond rate, significantly reducing liabilities on financial statements and potentially reducing the interest rate paid on bonds issued for other parts of public agency plans. In order to fully avoid reflecting a lower discount rate in projecting liabilities, that legislation must increase contributions in the future to a level that avoids a projected point in which program assets are entirely depleted, in accordance with GASB standards. Consequently, achieving this objective would necessarily preclude funding approaches that only marginally increase contribution rates. If the legislation is enacted in 2015 or later, the initial financial statements will reflect a larger liability based on the municipal bond rate.

#### 4. Establish the Speed of Contribution Rate Increases

The previous estimates are based on contribution rates being increased all at one time. Just as an immediate increase in contributions would strain budgets, so too would increasing the contribution rates to the new level in one step. A delay in addressing the DB Program funding shortfall places the program at greater risk, particularly if there is another substantial market downturn. Nonetheless, CalSTRS recognizes that the Legislature and Governor may decide to increase contributions gradually over time, and perhaps not implement those increases for a number of years in order to allow affected stakeholders to make adjustments in their spending plans to accommodate the increases. A gradual increase in contribution rates, however, has the same type of impact as a deferred implementation of the increase. Although the increased cost per year will be less if the increases occur gradually, the total cost will be higher, as will the total increased contribution rate required to achieve an objective. For example, fully funding the DB Program in 30 years requires an increased projected contribution rate of 15.1 percentage points. Imposing that increased contribution rate in 3 percentage point annual increments requires the contribution rate to increase by a projected total of 17.2 percentage points. Increasing the funded ratio to 80 percent in 30 years requires a projected 12.1 percentage point increase in contributions. Increasing the contribution rates in 3 percentage point annual

A delay in addressing the Defined Benefit Program funding shortfall places the program at greater risk, particularly if there is another substantial market downturn.

Between the timing of the contribution rate increase and the number of years over which that increase takes place, the rate of speed of the increase in contribution rates can have a more substantial impact on the effectiveness of a contribution rate increase than would the commencement of the increase, if the contribution rates are increased significantly.

There is a limit on how small the annual increment in the contribution rate can be and still have a meaningful impact on funding the Defined Benefit Program.

increments would increase the total required projected increase to 13.3 percentage points. Although the increased costs of achieving either objective would occur more gradually over time if the increases are implemented incrementally, the ultimate cost of achieving either objective would be higher.

Between the timing of the contribution rate increase and the number of years over which that increase takes place, the rate of speed of the increase in contribution rates can have a more substantial impact on the effectiveness of a contribution rate increase than would the commencement of the increase, if the contribution rates are increased significantly. For example, if the total contribution rate from all combined sources were to increase by the equivalent of 15.1 percent of earnings in 2014, the DB Program is projected to be fully funded in 2044. If that increase were delayed by two years until 2016, the projected funded ratio in 2044 would be reduced to about 89 percent, and the full funding of the program is projected to be delayed by five years, until 2049. On the other hand, if total contributions were increased by 1 percentage point each year beginning in 2014, until the total rate had increased by a total of 15 percentage points, the projected funded ratio in 2050 would be 73 percent. If the contribution rate increased by the same 15 percentage points, in increments of only one-half of 1 percentage point each year beginning in 2014, the projected 2050 funded ratio would be 41 percent, and a one-quarter of 1 percentage point annual increase in the contribution rate would result in a projected 2050 funded ratio of 7 percent. If, however, the total contribution rate increase is relatively small, the timing of when those increases begin is more significant than how quickly they increase.

There is also a limit on how small the annual increment in the contribution rate can be and still have a meaningful impact on funding the DB Program. The smaller the annual increase, the less time CalSTRS has to invest the additional funds, and the larger the total increase in the contribution rate would need to be to achieve a particular objective. Moreover, there may not be sufficient number of years for the contribution rate to reach its ultimate total. For example, if the annual increase in the contribution rate imposed were to be limited to one-quarter of 1 percentage point annually for 30 years, the rate would only be able to increase by 7.5 percentage points, and the DB Program would be projected to deplete its assets in 2053. If the annual increment were one-half of percentage point, increased contributions would be invested sooner, and the total contribution could increase by 15 percentage points within the same period of time. Under that approach, the DB Program would be projected to be 53 percent funded in 75 years.



## Scenarios for Funding the Defined Benefit Program

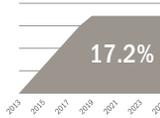
The figures discussed earlier project the impact of changing either an alternative objective, an alternative time period, an alternative starting point or an alternative rate of contribution increases. The following exhibits illustrate the implications of varying more than one of these considerations. The first set of examples illustrate the impact of fully funding the DB Program over either 30 or 75 years, beginning in either 2014-15 or 2016-17, and with contributions increasing at the rate of either 3 percentage points per year or 1.5 percentage points per year. The second set of examples illustrates the impact of targeting an 80 percent funded ratio, with the same variations in the different issues. The examples also illustrate how the ratio of program assets to program liabilities is projected to change over time under each specific example.

## Contribution Increases for Specific Targets

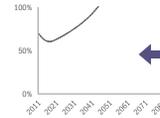
All scenarios based on the June 30, 2011, Actuarial Valuation, adjusted per AB 340 and 2011-12 investment return.

Once full funding is reached, the increased contribution rates can be eliminated.

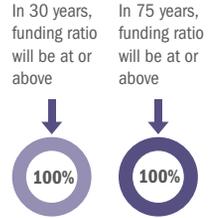
Scenario	Target Funding	Timeframe	Annual Rate Increase	Start Date
Example	100%	30 years	3%	2014-15



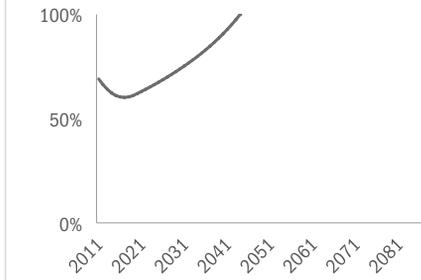
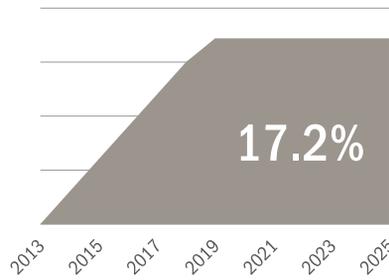
**Contribution rate increase, as a percent of payroll** The total additional contribution needed to meet the target funded ratio over the specified timeframe. Contribution rate will be slightly higher if allocated among members and the state.



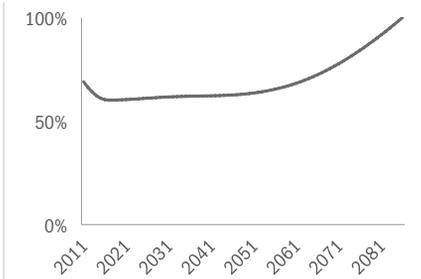
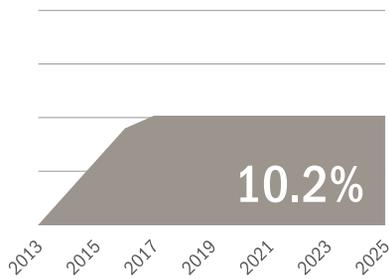
**Resulting funded ratio** Note that in each scenario, the funded ratio is expected to decline before increasing to the target funded ratio.



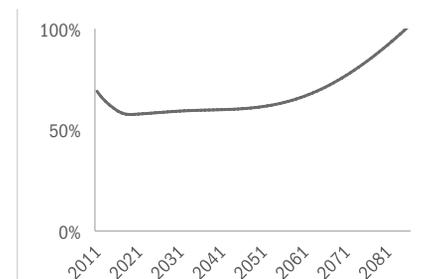
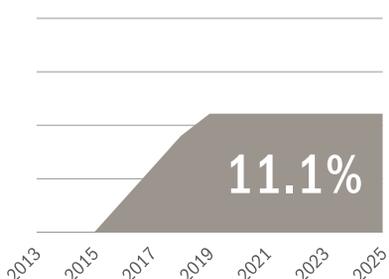
Scenario	Target Funding	Timeframe	Annual Rate Increase	Start Date
1	100%	30 years	3%	2014-15



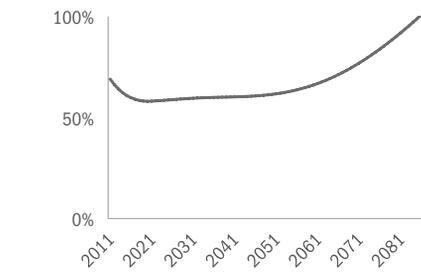
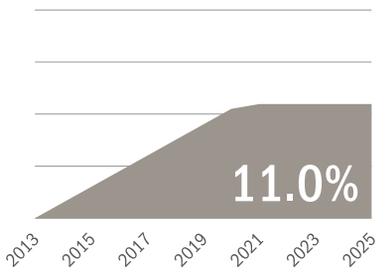
Scenario	Target Funding	Timeframe	Annual Rate Increase	Start Date
2	100%	75 years	3%	2014-15



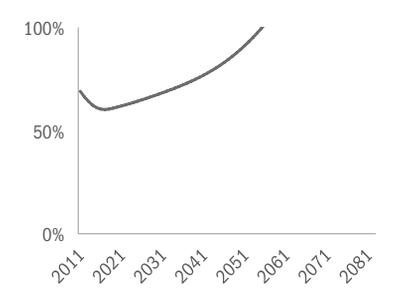
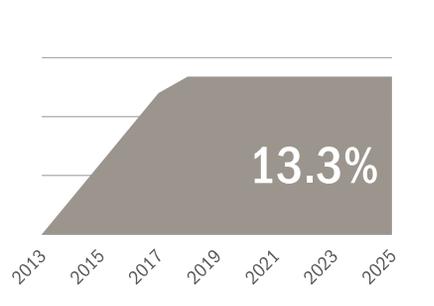
Scenario	Target Funding	Timeframe	Annual Rate Increase	Start Date
3	100%	75 years	3%	2016-17



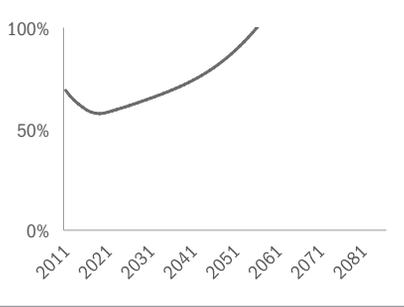
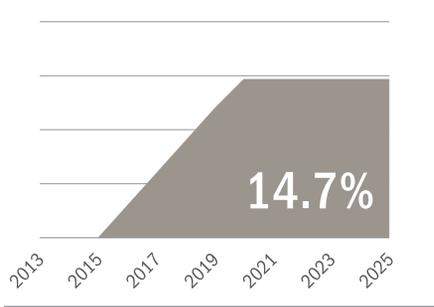
Scenario	Target Funding	Timeframe	Annual Rate Increase	Start Date
4	100%	75 years	1.5%	2014-15



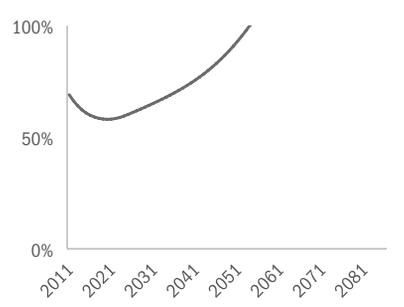
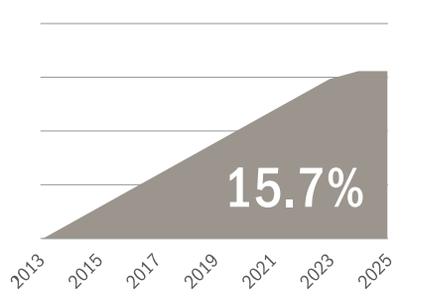
Scenario	Target Funding	Timeframe	Annual Rate Increase	Start Date
5	80%	30 years	3%	2014-15



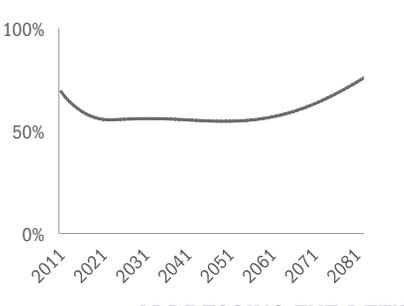
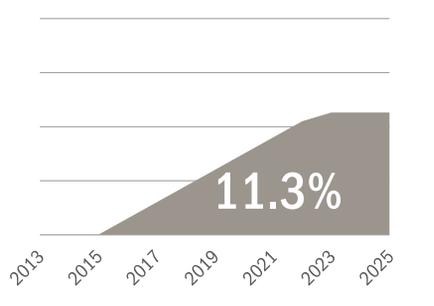
Scenario	Target Funding	Timeframe	Annual Rate Increase	Start Date
6	80%	30 years	3%	2016-17



Scenario	Target Funding	Timeframe	Annual Rate Increase	Start Date
7	80%	30 years	1.5%	2014-15



Scenario	Target Funding	Timeframe	Annual Rate Increase	Start Date
8	80%	75 years	1.5%	2016-17



The four scenarios that illustrate contribution rate increases to achieve an 80 percent funded ratio demonstrate the impact of earlier rate increases compared to rapid accelerations of contribution rates. The difference between Scenario 5 and Scenario 6 is that the contribution rates in Scenario 5 begin to increase in 2014-15, while the increases in Scenario 6 begin in 2016-17. Because of that two year delay, the projected total required increase in contribution rates is 1.3 percentage points more in Scenario 6. On the other hand, the difference between Scenario 5 and Scenario 7 is that in Scenario 5, contribution rates increase by three percentage points per year, compared to the 1.5 percentage point annual increase in Scenario 7. Because contribution rates increase more rapidly under Scenario 5, the projected total increase in contribution rates required in Scenario 5 is 2.3 percentage points less than is required in Scenario 7. In addition, as a comparison of the projections in Scenario 3 and Scenario 4 indicate, a more rapid annual increase in contribution rates (as assumed in Scenario 3) can offset the effect of a delayed implementation.

CalSTRS recognizes that the Legislature may ultimately decide to address the funding shortfall through a plan of deferred and gradual increases in contributions, and any increase in contributions to the program would improve the funding situation compared to current law. Nonetheless, as discussed earlier, the Legislature should be aware that the longer it takes for additional resources to be made available to fund the program, the more vulnerable the program is, particularly if there is a substantial investment downturn in the near future. In each scenario illustrated above, it takes until at least 2027, and as late as 2077, for the funded ratio to return to its current level. If there should be a substantial downturn in the market in the meantime, the level of funding could decline to a point where it would become substantially more expensive to provide long-term viability to the funding of the program.

## 5. Decide How Contribution Rate Increases Get Allocated

Contributions paid by DB Program members cannot be increased once they are hired to perform service subject to coverage in the program, unless the members receive a corresponding, offsetting advantage.

Once the total amount by which contribution rates need to be increased is determined, the Legislature must determine how to allocate those increases among members, employers and the state. Although there are no contractual impediments to increasing the contribution rates paid by future members, employers and the state, the ability to increase the contributions paid by current members is limited by the contractual nature of that contribution rate. Consistent with a 1983 California Supreme Court decision, contributions paid by DB Program members cannot be increased once they are hired to perform service subject to coverage in the program, unless the members receive a corresponding, offsetting advantage. The only means by which the contribution rate can be increased is to provide the member with an increased benefit of comparable value. Generally, the cost of the increased benefit would offset any revenue associated with the increased contribution, negating any value of the higher contribution in addressing the funding shortfall.



One instance in which the contribution paid by current members could be increased without requiring an offsetting increase in liabilities is the annual 2 percent benefit adjustment. This benefit is not contractually guaranteed because the Legislature explicitly reserved the right to reduce or eliminate the 2 percent annual benefit adjustment. As a result, the Legislature could reduce liabilities for existing members by making changes to the adjustment. However, because the statute requires the adjustment be paid, subject to the enactment of future legislation to modifying the adjustment, the actuarial valuation of the DB Program reflects the cost of providing the adjustment. If legislation was enacted to eliminate that explicit legislative reservation, such that the 2 percent benefit adjustment was guaranteed in the same manner as the other DB Program benefits, there may be a legal basis to increase the contributions paid by current members because they would receive a comparable advantage from the benefit now being guaranteed. There would be no additional cost to the program because the cost of providing the benefit adjustment is already reflected in the financing of the DB Program. Based upon legal analysis by outside counsel and an actuarial analysis, a guarantee of the 2 percent improvement factor would likely be determined to be a comparable advantage that permits an increase of up to 2.6 percentage points in the contribution rate paid by current members. (The actuarial analysis was based on a prior investment return assumption of 7.75 percent annually; given the current assumption of 7.5 percent, the maximum increase in contributions is now slightly higher.)

Although there is no legal impediment to an increase in employer contributions, such increases could ultimately require the state to provide more funding to K-12 and community college education under Proposition 98. Both the Legislative Counsel and the Attorney General were asked in 2006 whether an increase in the statutorily required employer contribution to the DB Program would result in an increase in the state's obligation to schools under Proposition 98. The Attorney General concluded it did not, but the Legislative Counsel opined that if the increased contribution was to fund the benefit program in effect in 1986–87, the state's obligation under Proposition 98 would increase to offset that amount. Some stakeholder groups might believe the state's obligations would increase under any circumstances of an increased employer contribution. Resolution of outstanding legal issues should be attempted in order for the Legislature and the Governor to understand the true impacts of changes in contribution rate increases.

A specific increase in the contribution rate will have a slightly greater impact if paid by the employer rather than the member or the state. This is because for members who terminate their employment and refund their contributions, those contributions are not available to fund benefits in the DB Program. In contrast, the employer's contribution for that member remains in the program and is available to fund benefits paid to the remaining members of the DB Program. In addition, the contribution paid by the state is based on the compensation paid to members two years before the contribution is paid by the state, whereas the

Resolution of outstanding legal issues in regards to Proposition 98 should be attempted in order for the Legislature and the Governor to understand the true impacts of changes in contribution rate increases.

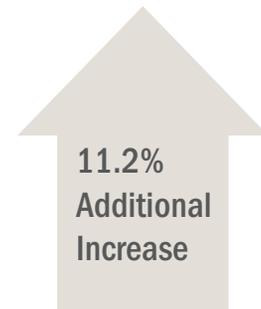
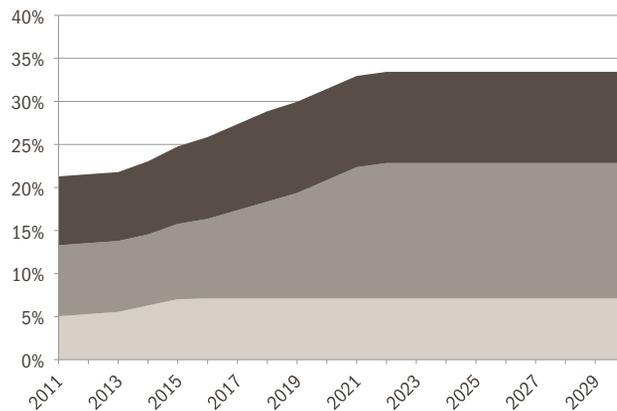


employer contribution is made on the current payroll. To the extent that total compensation increases annually, the amount of money contributed by the state from a specific increase in the rate will, therefore, be less than the amount paid by an employer for that same percentage increase in the contribution rate. The difference in the dollar amount contributed by the state for the same percentage increase in the rate paid by the employer is currently 6.6 percent, while the difference in the net dollar amount contributed by members from the same percentage increase in the rate paid by the employer is about 3 percent.

The following examples demonstrate how contributions increased under two of the scenarios illustrated earlier (Scenario 4 and Scenario 8) could be allocated among current and future members, employers and the state in a manner that reflects the legal constrictions imposed on member contributions. Although the approach ultimately adopted in legislation to address the funding shortfall will likely differ from any of these examples, they illustrate the implications of these approaches on individual stakeholders.

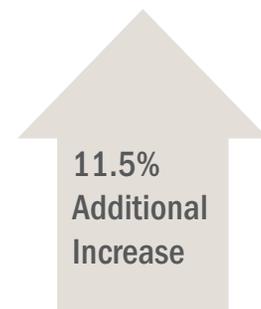
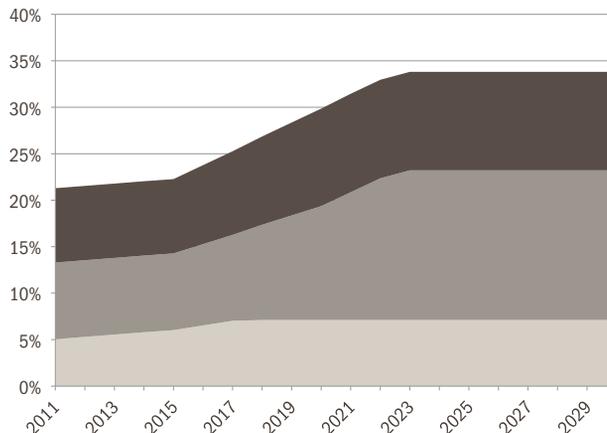
Scenario	Target Funding	Timeframe	Start Date
4	100%	75 years	2014-15

	Annual rate of increase	Total additional contribution	Existing contribution rate	Total contribution rate
Members	0.5%	2.6%	8%	10.6%
Employers	Initially 0.5%, increasing to 1% in 2016-17, increasing to 1.5% in 2019-20	7.48%	8.25%	15.73%
State	0.5%	1.085%	3.522% and 2.5% for SBMA	7.107%



Scenario	Target Funding	Timeframe	Start Date
8	80%	75 years	2016-17

	Annual rate of increase	Total additional contribution	Existing contribution rate	Total contribution rate
Members	0.5%	2.6%	8%	10.6%
Employers	0.5%, increasing to 1% in 2018-19, increasing to 1.5% in 2021-22	7.86%	8.25%	16.11%
State	0.5%	1.085%	3.522% and 2.5% for SBMA	7.107%



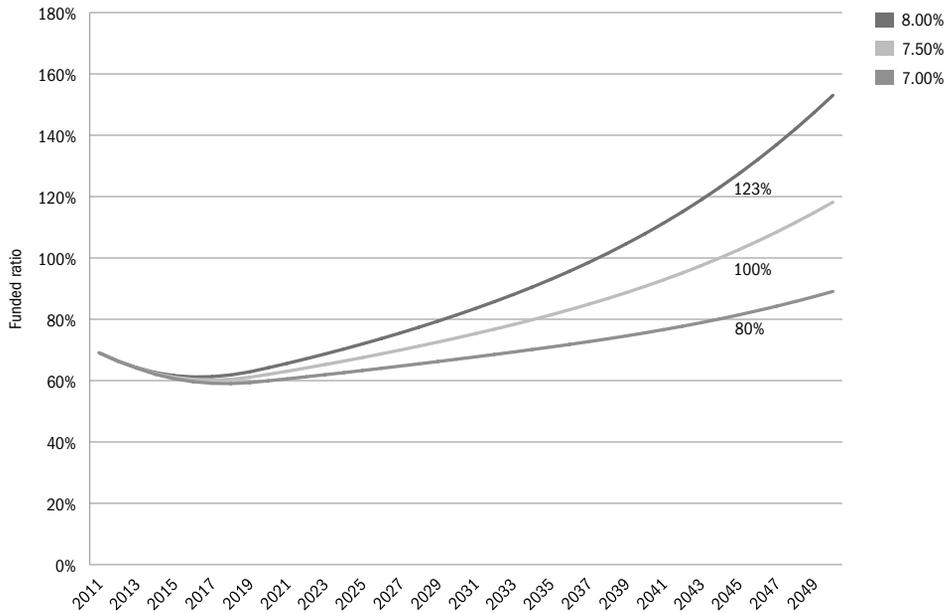
These examples illustrate that, depending on how much of the increased contribution is allocated to members and the state, the total increase in required contributions will be higher than the increases indicated for those scenarios on pages 22 and 23 because, as discussed earlier, a 1 percentage point increase in the member or the state contribution rate generates less in contributions than a 1 percentage point increase in the employer contribution rate. In addition, it is likely that the employer rate will increase by more percentage points per year in later years as member or state contribution rates reach whatever maximum contribution rate is enacted in the legislation that increases contribution rates. Finally, because of the two-year delay in implementing the increase under Scenario 8, a larger total contribution rate is required in Scenario 8, even though it results in a lower funded ratio than Scenario 4.

## 6. Establish a Date to Re-evaluate Defined Benefit Program Funding

The outcomes shown previously assume that CalSTRS meets all the economic and demographic assumptions underlying the actuarial valuation of the DB Program, in particular, that CalSTRS earns 7.5 percent annually from investing program assets. It is expected that in any one year, the rate of return on the portfolio will either be higher or lower than the assumed rate. As a result, over the long-term, such as 75 years, there is a high probability that implementation of any of these scenarios will either result in (1) too little funding being provided to prevent the complete depletion of program assets, although at a later date than the 2046 date projected in the June 30, 2011 valuation, or (2) too much funding, resulting in the accumulation of program assets over 75 years that exceed 110 percent of program liabilities. In fact, in any of these scenarios, and in any other scenario that CalSTRS analyzed, the probability of too little or too much funding being provided during the next 75 years exceeded 85 percent. Some scenarios, however, have a relatively greater likelihood of resulting in excess funding, while others have a greater likelihood of resulting in inadequate funding. To the extent that the desired outcome is a substantially greater level of funding, there is a higher probability that assets could ultimately significantly exceed liabilities; conversely, if the desired outcome is more modest, there is a greater probability that assets will be insufficient to pay future liabilities.

One means of illustrating this sensitivity is by comparing projected funded ratios over time based on different investment assumptions. The following graphic shows how the projected funded ratio under Scenario 1 would change if contribution rates were increased by the amount needed to fully fund the DB Program in 30 years beginning in 2014, based on a 7.5 percent investment return. It compares those funded ratios to the projected ratios over time that would be achieved if investment returns were 7 percent or 8 percent annually.

## Investment Performance and the Funded Ratio (Scenario 1)



This uncertainty of investment returns, and its impact on the ultimate success of a funding strategy, indicates that the Legislature, in enacting a funding plan during the 2013-14 Regular Session as intended by SCR 105, should expect to re-evaluate the need for additional changes in program funding sometime in the next 10 to 15 years and, if the returns are significantly different from expectations, that re-evaluation may need to occur sooner than 10 years. This re-evaluation would occur either to address a situation in which investments continue to generate returns below expectations, in which case further increases in contribution rates would be required, or investment returns exceed expectations, in which case some of the enacted increases in contributions could be reversed. This re-evaluation could be in the form of either (1) the Governor sponsoring legislation at a specific future date that modifies future contribution rates to maintain an appropriate level of long-term funding or (2) the 2013-14 legislation enacting specific future adjustments to the contribution rate plan in response to specified funding conditions.

The Legislature, in enacting a funding plan during the 2013-14 Regular Session as intended by SCR 105, should expect to re-evaluate the need for additional changes in program funding sometime in the next 10 to 15 years.

## CONCLUSIONS

The weak financial markets of the past decade, together with the fact that contribution rates were not adjusted in response to the low returns, have undermined the long-term funding of the Defined Benefit Program, which can only be effectively addressed by increasing the contributions paid by a combination of members, employers and the state. Implementation of that funding plan requires the enactment of legislation by the Legislature that is approved by the Governor. This report identifies the decisions the Legislature and Governor must consider in order to address the long-term funding shortfall in the CalSTRS DB Program.

The definitive approach to addressing the long-term funding needs of the DB Program is to fully fund the program over a period of 30 years or less. Nonetheless, CalSTRS recognizes that the Legislature and the Governor might ultimately decide on a less ambitious objective, with a more gradual implementation of a funding plan that is sensitive to the budgetary needs of the stakeholders, in order to limit and mitigate the impact of the higher contributions.

Although increases in contributions can be deferred and gradually implemented, the sooner these increases become effective, the less risk the DB Program faces, particularly if a substantial market downturn occurs in the near future, the less costly it ultimately will be to those who pay the higher contributions, and the less impact that a pension funding shortfall will have on a public agency's ability to implement its own financial plan. In addition, it is extremely likely that any contribution plan will result in excessive or inadequate resources to fund the benefits in the long run if the funding program is never adjusted. Consequently, the Legislature will need to establish a mechanism in the funding legislation that facilitates the adjustments needed to maintain an appropriately funded benefit program.

CalSTRS stands ready to assist the Legislature and the Governor as requested to help them enact a solution to provide long-term viability in this important component of a public educator's retirement security.



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February 1, 2013

Teachers' Retirement Board  
 California State Teachers' Retirement System

Re: Updated Funded Status for CalSTRS DB Program

Dear Members of the Board:

CalSTRS is providing a report to the legislature on several alternatives to address the funding shortfall of the DB Program. This report is pursuant to Senate Concurrent Resolution 105 which encourages CalSTRS to submit at least three funding options to the Legislature designed to address CalSTRS long-term funding needs. In conjunction with that report, CalSTRS has requested that we provide an update on the current funded status of the DB Program.

**DB Program Funded Status**

The purpose of this letter is to provide an estimate of the key funding measurements as of June 30, 2012. Our estimate reflects the actual investment return for the fiscal year ended June 30, 2012 (estimated by CalSTRS to be 1.8%) and the projected impact of the California Public Employees' Pension Reform Act of 2013 (PEPRA). Note that we have not completed the June 30, 2012 actuarial valuation of the DB Program, so these are estimates based on the June 30, 2011 valuation, and the actual 2012 values will vary to the extent actual experience varies from that assumed.

Key Funding Measurements for DB Program		
Measurement	June 30, 2012 (Estimated)	June 30, 2011 (Actual)
Unfunded Actuarial Obligation (UAO)	\$73 billion	\$64 billion
Funded Ratio (Actuarial Value)	66%	69%
Projected Date of Asset Depletion	2044	2046
Additional Revenue Needed*	13.5%	12.9%

\* Assumes contribution rate increase effective on the valuation date.

Note that the Additional Revenue Needed for June 30, 2012 is the additional contribution rate needed to amortize the UAO (the funding shortfall) over a 30-year period effective July of 2012. To the extent the increase is effective later, the Additional Revenue Needed will increase. For example, if the increase were effective July of 2014, a 15.1% increase would be needed to amortize the UAO over 30 years as of June 30, 2012.

This work product was prepared solely for CalSTRS for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

### **Future Variability and Funding Sufficiency**

Actuarial calculations are based on assumptions about future events. Since actual experience in the future will deviate from these assumptions, it is almost certain that the actual revenue needed will vary from our estimates. Therefore, even if additional funding for CalSTRS is secured, it still may not be sufficient in the long run.

One of the best ways to address potential future adverse experience is to set a strong current level of contributions. Additionally, higher contribution rates in the short term should decrease the long-term costs. The California Actuary Advisory Panel (CAAP) has drafted a paper on model actuarial funding policies which include guidelines for the amortization of the funding shortfall. Under the draft guidelines, the amortization period should generally be less than 25 years to satisfy one of the "Acceptable" categories. It should be noted that the CAAP guidelines are just recommendations for California public plans and not requirements for CalSTRS.

Although we believe a 30-year amortization of the funding shortfall should be the minimum funding target, we recognize there are other factors that are outside our purview that have been factored in to the scenarios presented by CalSTRS. If requested, we can provide additional analysis on any of these scenarios.

### **Actuarial Certification**

All data, methods, and assumptions are the same as those used in our June 30, 2011 actuarial valuation of the DB Program, except where noted. Please refer to those reports for further details. It should be noted that member behavior may change as a result of PEPRA. We have not anticipated any changes in member behavior in the assumptions used in our analysis.

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

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the final decision regarding the appropriateness of the assumptions and adopted them as shown in Appendix B of the 2011 Valuation report. Please see our letter dated October, 2012 for additional details regarding the assumptions and methods used in our PEPRA analysis.

Actuarial computations presented in this report are for purposes of assessing the funding of CalSTRS. The calculations in the enclosed report have been made on a basis consistent with our understanding of CalSTRS' funding. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

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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 changes in contribution rates.

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. We are 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.

We respectfully submit this analysis and we look forward to discussing it with you.

If you have any questions, please contact us.

Sincerely,

Handwritten signature of Nick J. Collier in black ink.

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

cc: Mr. Ed Derman  
Mr. Rick Reed

Handwritten signature of Mark C. Olleman in black ink.

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

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