
# Pension Debt Challenges for Equity in Education:

## The Effect of Teacher Pension Debt Costs on K–12 Education Funding in California

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# Executive Summary

California has sought to improve equity outcomes for students and to secure retirement benefits for teachers. However, promises of both haven't been completely fulfilled due to rising costs for public school retirement benefits which are squeezing school district budgets in California. Without a change to public school employee retirement benefit financing, those costs will continue to exacerbate already existing education finance inequities and draw away the resources from the students who have the greatest need.

Finding #1: An increasing share of state and local K–12 education spending is being spent to cover pension costs:

- In 2020, 9.7% of the California state's expenditures on education funding ultimately went to CalSTRS, a 104.7% increase since 2002.
- California's retirement costs for teachers and public school employees as a share of combined state and local K–12 spending have grown 176% between 2001 and 2020.
- For context, the $4.3 billion that the state spent on CalSTRS in FY2022 is roughly 1.4 times how much the state spent on all grants and programs intended for preparation, retention, and training of teachers and educators. Moreover, the $19 billion in total contributions paid to CalSTRS and CalPERS (including contributions from members) in FY2022 were more than ten times the federal funding California received to support economically disadvantaged students.

Finding #2: These growing pension costs are effectively education funding cuts. And these cuts disproportionately harm low-income communities in three ways:

- **Low-income communities have fewer resources to pay higher pension costs.** Low-wealth districts can only generate limited resources from local property taxes. Given these limited resources, even a slight increase in pension costs can have a much higher marginal cost for low-wealth communities compared to more affluent ones.
- **Low-income communities rely more heavily on state aid.** State funding comprises a disproportionate share of K–12 budgets in low-wealth communities. As such, pension spending consuming a greater share of state education spending more severely harms low-income districts that rely most heavily on state funding.
- **The state subsidy for pension costs is regressive.** Low-wealth communities typically pay lower teacher salaries. Since contributions to CalSTRS and CalPERS are based on salary, low-wealth communities typically receive less funding from the state to contribute to the pension funds.

Finding #3: CalSTRS board is likely to lower its investment assumption in the coming years, which will trigger a need for additional contributions. In addition, despite strong investment returns in 2021 and nearly 10-years of increased contributions into CalSTRS, unfunded liabilities have persisted for California's retirement systems for teachers and public school employees. Collectively, this means more money is needed to fiscally stabilize CalSTRS and CalPERS. The question for the legislature is how California will choose to distribute the additional pension costs when they are authorized.

# Prologue: Why the Cost of Teacher Pension Debt Matters for Students

> *"The percentage of our discretionary budget keeps getting smaller and smaller. So, I think we're down to something like 9%-10% that is discretionary, and the rest is completely tied to pension costs and salaries."*
>
> — Maggie Bove-LaMonica, Hermosa Beach City School District

There is a Southern California school district that has been struggling to accommodate growing pension costs over the past decade. In 2019, the Hermosa Beach City school district cut kindergarten to half-day programming, offered early retirement incentives, and even implemented a policy of only hiring lower-cost junior teachers with less than three years' experience. These drastic measures were taken explicitly to accommodate growing pension costs.

"The percentage of our discretionary budget keeps getting smaller and smaller," says Maggie Bove-LaMonica, board member and rotating president of Hermosa Beach City School District. "I think we're down to something like 9%-10% of our budget that is discretionary, and the rest is completely tied to pension costs and salaries."

Despite steady contribution rate increases since 2014, as of the close of fiscal 2022 the California State Teachers' Retirement System (CalSTRS) only has 81.2% funding and carries roughly $70 billion in unfunded liabilities. The costs of paying down this pension debt, which now account for 65% of every dollar contributed to the pension plan by CalSTRS employers, are directly siphoning funds from the classroom.

"I have parents ask me, 'How come we don't have foreign language?'" Maggie recounts. "And I have to say, 'Well, we just can't afford to have a teacher to teach foreign language.' And that's a really hard conversation to have."

The pandemic only worsened existing pension cost problems and Maggie told us that these are an "ongoing worry" for her amid a pandemic situation her school district just couldn't have prepared for.

During the spring of 2020, as the district faced mounting classroom pressures due to the pandemic, the Hermosa Beach City even went ahead with scheduled layoffs to cut costs.

"The district wasn't set up to handle a pandemic, where the superintendent is acting as a public health officer. But looking forward 'out of the pandemic,' there is no way out of that box and it weakens our ability to provide an excellent education for students."

Maggie does have cause for concern. Back in 2014, the state legislature adopted a policy of increasing school district contribution rates into the teacher pension fund by 1% of payroll each year. But since then, the funding shortfall for that retirement system has actually increased due to underwhelming investment returns. When the current contribution rate policy ends in 2023, it is entirely possible that the state legislature will ramp up costs for school districts yet again; in fact, such a proposal has already been presented to lawmakers.

This is particularly problematic because Hermosa Beach is a *wealthy area*.

As Maggie describes, Hermosa Beach consists of nearly 97% native English-speaking, dual-income households, just minutes from the famous beaches of Southern California. House prices average $2 million and family median incomes sits at $104,645. You'd reasonably assume this district is providing not only a comprehensive curriculum but every enrichment activity available. But even their teacher pension fund contribution rates have caused a school district to struggle in prioritizing the needs of all students.

And, if these increases aren't affordable for Hermosa Beach, they certainly aren't affordable for less well-off communities across the state either.

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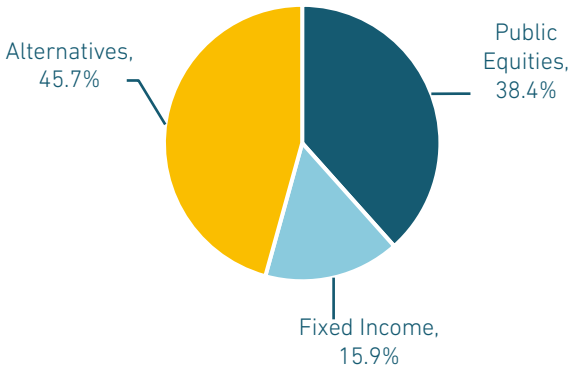
# Snapshot of Retirement Benefits: California State Teachers' Retirement System

## CALSTRS FINANCES, FY2022

| | |
|---|---|
| Total Pension Liability (TPL) | $369,542,000,000 |
| Fiduciary Net Position (FNP) | $300,056,000,000 |
| Net Pension Liability (NPL) | $69,486,000,000 |
| GASB-Funded Ratio | 81.20% |
| Actuarial Accrued Liability (AAL) | $322,127,000,000 |
| Actuarial Value of Assets (AVA) | $216,252,000,000 |
| Unfunded Actuarially Accrued Liabilities (UAAL) | $105,875,000,000 |
| AVA-Funded Ratio | 67.13% |
| Years until Full Funding (CalSTRS Estimate) | 30 years |

## ASSET ALLOCATION, FY2022




## PENSION CONTRIBUTIONS, FY2022

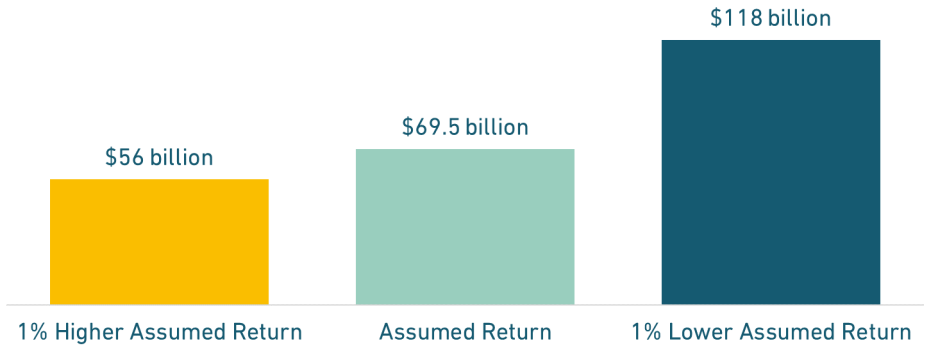
| PENSION PLAN | |
|---|---|
| State Contribution | 10.83% payroll |
| Employer Contribution | 15.92% payroll |
| Member Contribution 2% at 60 | 10.205% payroll |
| Member Contribution 2% at 62 | 10.05% payroll |
| **Total Contributions, FY2022** | $14,869,000,000 |
| **Total Benefit Payments, FY 2022** | $17,172,000,000 |

The larger the gap between contributions (inflows) and benefit payments (outflows), the more reliant a pension system is on generating large investment returns.

| | CALSTRS | NATIONAL AVERAGE |
|---|---|---|
| Assumed Rate of Return | 7.00% | 6.9% |
| Inflation Assumption | 2.75% | 2.5% |
| Member-to-Retiree Ratio | 1.38 | 1.23 |

The national average assumed rate of return has been falling every year for the past decade. CalPERS recently shifted below the national average to 6.8% and has signaled it will likely move toward 6% in the coming years. The third largest retirement system by assets, New York Common Fund, announced in the summer of 2021 that was shifting to a 5.9% investment assumption.

## ALTERNATIVE MEASURES OF CALSTRS UNFUNDED LIABILITY BASED ON DIFFERENT INVESTMENT RETURN ASSUMPTIONS



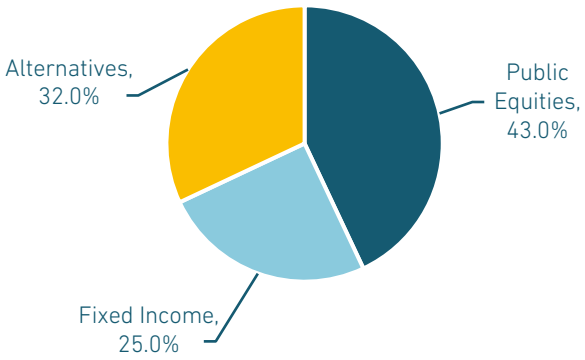

Source: Figures formally reflect the sensitivity of the net pension liabilities to different discount rates. Data are from the GASB 100 basis points +/- tables provided by CalSTRS.

# Snapshot of Retirement Benefits: CalPERS Public Employees' Retirement Fund B — Schools Plan

## PERF B FINANCES, FY2022

| | |
|---|---|
| Total Pension Liability (TPL) | $113,794,594,000 |
| Fiduciary Net Position (FNP) | $79,385,509,000 |
| Net Pension Liability (NPL) | $34,409,085,000 |
| GASB-Funded Ratio | 69.76% |
| Actuarial Accrued Liability (AAL) | $110,507,282,219 |
| Actuarial Value of Assets (AVA) | $86,519,422,772 |
| Unfunded Actuarially Accrued Liabilities (UAAL) | $23,987,859,447 |
| AVA-Funded Ratio | 78.29% |
| Years until Full Funding (CalPERS Estimate) | 30 years |

## ASSET ALLOCATION, FY2022




## PENSION CONTRIBUTIONS, FY2022

| PENSION PLAN | |
|---|---|
| Employer Contribution | 22.91% payroll |
| Member Contribution | 7.00% payroll |
| Total Contributions, FY 2022 | $4,615,579,000 |
| Total Benefit Payments, FY 2022 | $5,298,758,000 |

The larger the gap between contributions (inflows) and benefit payments (outflows), the more reliant a pension system is on generating large investment returns.

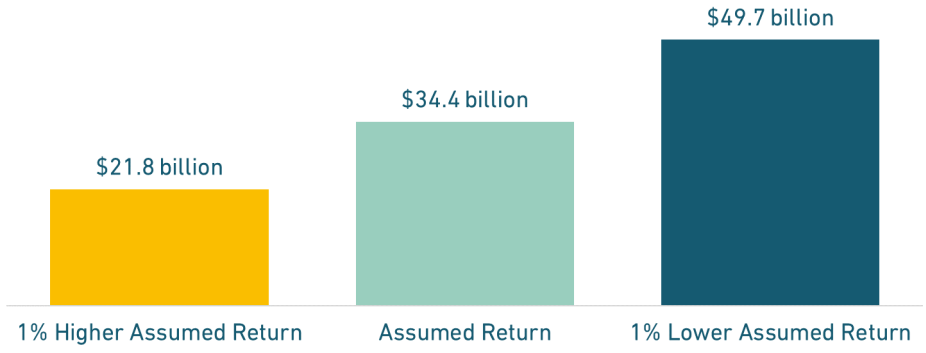
## FEATURES OF PERF B

| | CLASSIC 2% @ 55 | PEPRA 2% @ 62 |
|---|---|---|
| Multiplier | 2% at 55 up to 2.5% at 63 | 2% at 62 up to 2.5% at 67 |
| Vesting | 5 Years | 5 Years |
| Normal Retirement | Age 55 with 5 Service Years | Age 62 with 5 Service Years |
| Cost-of living Adjustment | Automatic, linked to inflation | |
| Social Security | Mixed Enrollment | |

| | PERF B | NATIONAL AVERAGE |
|---|---|---|
| Assumed Rate of Return | 6.8% | 6.9%* |
| Inflation Assumption | 2.30% | 2.5% |
| Member-to-Retiree Ratio | 1.40 | 1.23† |

The national average assumed rate of return has been falling every year for the past decade. CalPERS recently shifted below the national average to 6.8% and has signaled it will likely move toward 6% in the coming years. The third largest retirement system by assets, New York Common Fund, announced in the summer of 2021 that was shifting to a 5.9% investment assumption.

## ALTERNATIVE MEASURES OF CALPERS PERF B UNFUNDED LIABILITY BASED ON DIFFERENT INVESTMENT RETURN ASSUMPTIONS




Source: Figures formally reflect the sensitivity of the net pension liabilities to different discount rates. Data are from the GASB 100 basis points +/- tables provided by CalPERS.

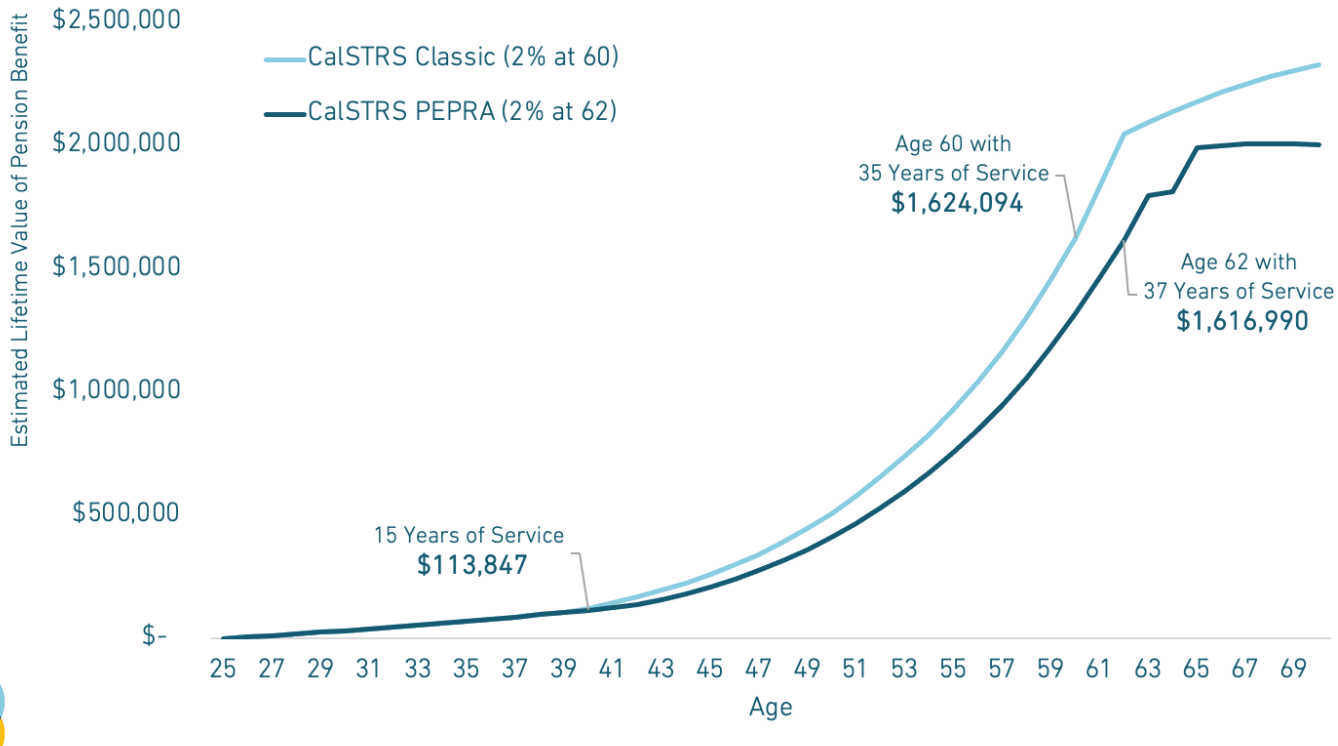
# Benefits Analysis: California State Teachers' Retirement System

FEATURES OF CALSTRS

| | CLASSIC 2% @ 60 | PEPRA 2% @ 62 |
|---|---|---|
| Hire Dates | Hired on/before 6/30/13 | Hired on/after 7/1/13 |
| Vesting | 5 Years | 5 Years |
| Normal Retirement | Age 60 with 5 Service Years | Age 62 with 5 Service Years |
| Normal Multiplier | 2% at 60 up to 2.4% at 63 | 2% at 62 up to 2.4% at 65 |
| Early Retirement | Age 55 with 5 Service Years<br>Age 50 with 30 Service Years | Age 55 with 5 Service Years |
| Early Multiplier | As low as 1.1% at 50 | As low as 1.16% at 55 |
| Cost-of living Adjustment | Automatic, linked to inflation; minimum 85% Purchasing Power | |
| Social Security | Not Enrolled | |

Over the past decade, CalSTRS contribution rates for members and school district employers have increased to better fund promised benefits. These increased contributions have not necessarily meant more generous benefits. The value of basic benefits for new teachers entering the profession has decreased over the past decade due to the introduction of a lower-cost tier of retirement benefits that requires more time to reach normal retirement eligibility. The figure below shows the expected lifetime value of retirement benefits earned over time for a new, 25-year-old teacher, depending on what year they were hired and how long they work.

COMPARING THE EXPECTED LIFETIME VALUE OF CALSTRS PENSION BENEFITS FOR CLASSIC MEMBERS (PRE-2011) VERSUS PEPRA MEMBERS



# Intro: Teacher Pension Debt is Creating Challenges for Education Resource Equity

**Rising costs for public school retirement benefits are squeezing K–12 school district budgets in California and compounding disparities between low- and high-wealth communities. Without a change to the way the state finances its public school employee retirement benefits, those costs will continue to exacerbate already existing education finance inequities and drain resources away from the classroom.**

California public schools make employer contributions to two separate state retirement systems: The California State Teachers' Retirement System (CalSTRS) enrolls certified teachers, and the California Public Employees' Retirement System (CalPERS) enrolls non-certified school staff in its "PERF B" pension plan.

Across the two systems, $19 billion in 2022 was spent by school districts, the state, and employees to finance retirement benefits — a 198.7% increase from 2001. To put the 2022 expenditure number in context, it is more than ten times the federal funding California received to support economically disadvantaged students the same year.[1]

Large pension costs are not inherently a problem, but what *is a problem* is pension costs that are rising faster generally than K–12 funding. From 2001 to 2020, even after adjusting for inflation, pension spending (across both CalSTRS and CalPERS) increased an average of 17.2 percentage points per year, while state and local K–12 funding rose at only three percentage points on average.

All of these costs have been driven by growing unfunded pension liabilities. And this "pension debt" has been caused by insufficient contributions established by the legislature, lower than expected investment performance relative to the assumed rate of return adopted by the CalSTRS board of trustees, and a need to update actuarial assumptions — such as how long people will live or what investment returns will be in the future.[2]

The net effect is that an increasing share of state and local K–12 education spending has been siphoned off to cover pension costs. For example, in 2020, 9.7% of state education funding went to CalSTRS, a 104.7% increase since 2002.

These growing pension costs have profound equity implications, since they are effectively education funding cuts. And these cuts disproportionately harm low-income communities in three ways:

- **Low-income communities have fewer resources to pay higher pension costs.** Low-wealth districts can only generate limited resources from local property taxes. Even a slight increase in pension costs can have a much higher marginal cost for low-wealth communities than more affluent ones.
- **Low-income communities rely more heavily on state aid.** State funding comprises a disproportionate share of K–12 budgets in low-wealth communities. As such, pension spending consuming a greater share of state education spending more severely harms low-income districts since they rely most heavily on state funding.
- **The state subsidy for pension costs is regressive.** Low-wealth communities typically pay lower teacher salaries. Since contributions to CalSTRS and CalPERS are based on salary, low-wealth communities typically receive less funding from the state to contribute to the pension funds.

[1] California Department of Education. "Schedule of Title I, Part A, 2021-22 Allocations."
[2] See Appendices A and B for more details. Notably, one area that CalSTRS has not struggled with is the rates of retirement, turnover, or disabilities, specifically because the actuaries who work for CalSTRS overestimated in numerous demographic categories, meaning that between 2001 and 2020 actual demographic experience reduced liabilities by $18.8 billion.

## "PENSION DEBT" IS THE PROBLEM

Skyrocketing unfunded liabilities — sometimes called pension debt or a funding shortfall — are the main factor driving the rising costs. CalSTRS's and CalPERS's PERF B unfunded liability — the difference between a fund's assets and the benefits it owes its members — has exploded over the past two decades.

In 2001, the two funds combined were nearly fully funded. But by June 2020, CalSTRS reported its unfunded liability to be $96.9 billion and CalPERS PERF B reported a $30.7 billion shortfall. Those figures improved in 2021, following strong investment performance, to a combined $65.8 billion shortfall (as reported by the two systems). But financial markets have been volatile and preliminary totals reported by CalSTRS and CalPERS PERF B estimate that the total unfunded liabilities *are back up to $103.9 billion as of 2022*.[3]

These funding shortfalls mean pensions are more costly for public employers and educators. With greater levels of pension debt, the legislature has increased annual contribution rates for teachers, districts, and the state. The most recent changes to CalSTRS were (a) increased contribution rates for members from 8% of salary in 2015 to 10.21% in 2021, plus (b) gradually increased district contributions up to 20.25% of payroll by 2025, and (c) increased state contributions from 5.95% of phased up to 10.481% of payroll as of 2019.

In general, these additional contributions were good for CalSTRS funding, but the policy has been insufficient to ensure costs don't continue to build and exacerbate inequities.

Looking forward, the odds are that further contribution rate increases into CalSTRS and CalPERS PERF B are coming. One-time supplemental contributions made by the state before and after the start of the pandemic have not meaningfully addressed levels of unfunded liabilities. And if contribution rates continue to increase as a requirement to cover unfunded liabilities, fiscal pressure on school district budgets is only going to get worse, especially for districts serving low-income students.

## PAPER OUTLINE

This paper systematically lays out how growing teacher retirement costs are creating a challenge to efforts aiming to improve education resource equity in California.

Part 1 shows generally ***How Teacher Retirement Costs Affect School Finances***.

Part 2 shows specifically that ***Pension Spending Has Exacerbated Existing Funding Inequities***.

Part 3 shows in detail how ***Underperforming Investments and Contribution Shortfalls Caused Pension Debt to Grow for California School Districts.***

Part 4 asks ***Who Will Pay Pension Costs Increases in the Future?***

A series of appendices provide data on the source of pension debt for CalSTRS and CalPERS PERF B, how teacher pension benefits work, and how growing retirement costs are also creating a challenge for the value of those retirement benefits.

[3] Equable Institute, "State of Pensions 2022: January 2023 Update"

Relieving the pension pressure on school spending in the future will be difficult, but not impossible.

Doing so will require a greater understanding of the equity implications of pension underfunding to build the political will to make changes. The legislature, governor, and the board of trustees for CalSTRS and CalPERS will need to adopt a number of significant changes including:

1. Adjusting how the pension funds measure their unfunded liabilities, including using a more reasonable assumed rate of return,
2. Modifying how the costs of the retirement system are paid for, and;
3. Reversing the de-facto state pension subsidy that is being inequitably distributed.

If ignored, the unfunded liability is only likely to grow with the impact being borne disproportionately by low-wealth communities and the teachers that serve them.

# 1. How Teacher Retirement Costs Affect School Finances

California's public schools are served by two retirement systems:

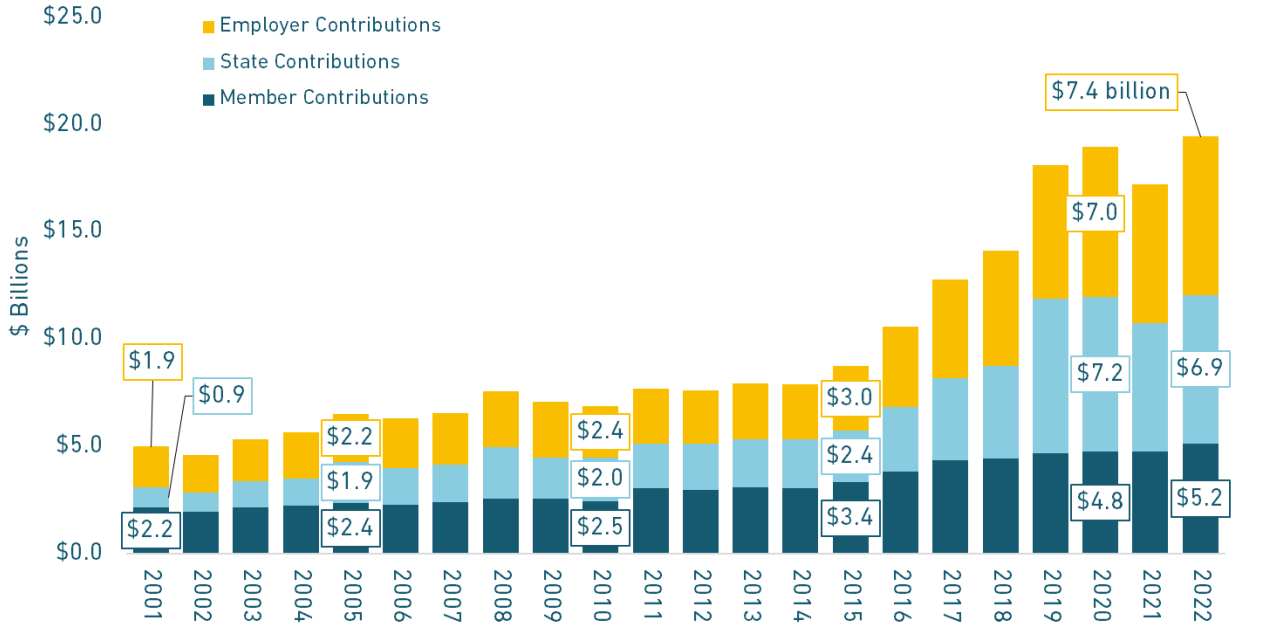
- The California State Teachers' Retirement System (CalSTRS) enrolls "certificated" instructional staff and administrators; this is commonly considered the "teacher pension" system and it covers K–12 teachers and some community college instructors.
- The California Public Employees' Retirement System (CalPERS) has three divisions, one of which covers non-certified school employees and is called the Public Employees Retirement Fund B (PERF B).

Contributions into these two retirement systems come from three sources: "members," the "state" (as a non-employer contributor), and "employers" (meaning the school, agency, or school district that is formally the member's employer). Over the past five years, on average 77.1% of employer contributions have been for CalSTRS members while the other 22.8% of contributions paid have gone into CalPERS PERF B.

Spending on teacher retirement, including both certified and non-certified staff, increased dramatically in California. As Figure 1 shows, between 2001 and 2020, nominal contributions to CalSTRS and PERF B increased by 289% — from $5 billion to $19.5 billion. Even after adjusting for inflation, total teacher retirement spending still increased 134%. (We discuss the reasons why in Appendix A below).

FIGURE 1: CALSTRS + PERF B PENSION CONTRIBUTIONS NEARLY QUADRUPLED FROM 2001 TO 2022

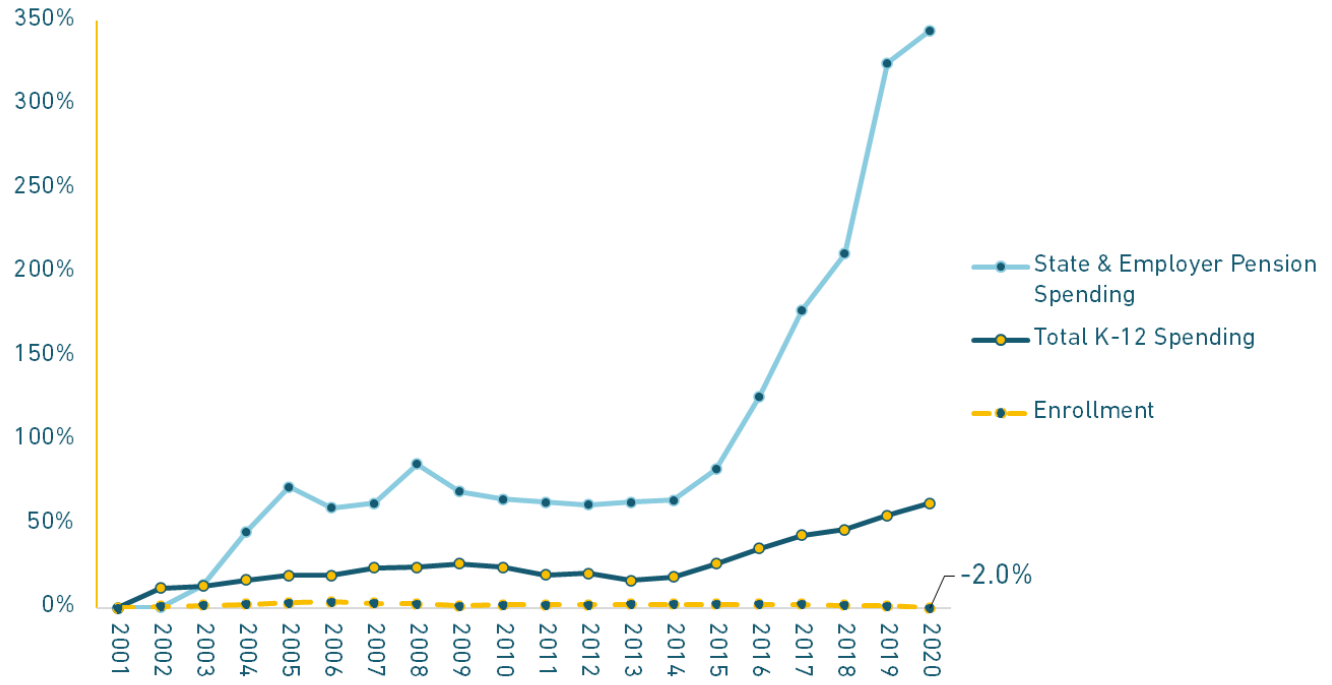
*Actual Contributions Paid, 2001–2022*




Source: Equable Institute analysis of public plan valuation reports and Annual Comprehensive Financial Reports (ACFRs). Figures are combined for CalPERS PERF B and CalSTRS. Totals are not adjusted for inflation.

## FIGURE 2: SPENDING ON TEACHER AND PUBLIC SCHOOL EMPLOYEE RETIREMENT BENEFITS GREW NEARLY SIX TIMES THE RATE AS K–12 SPENDING

*Growth in Total K–12 Expenditures and Actual State & Employer Contributions Paid, 2001–2020*




Source: Equable Institute analysis of public plan valuation reports and ACFRs, and National Center for Education Statistics. Figures are combined for CalPERS PERF B and CalSTRS. Financial figures are adjusted for inflation.

The increase in teacher and school staff retirement costs have outpaced the growth in K–12 spending across California, as shown in Figure 2.

State and employer spending combined across CalSTRS and CalPERS PERF B increased 4.9 percentage points every year on average from 2001 to 2014. The most dramatic growth — an average of 46.7 percentage points per year — occurred between 2014 and 2020, which was after the adoption of AB1469 (a state funding policy that required steady CalSTRS contribution increases for school districts, state, and plan members). State and local K–12 spending as a whole over the same five-year period only increased an average of 7.3 percentage points a year.

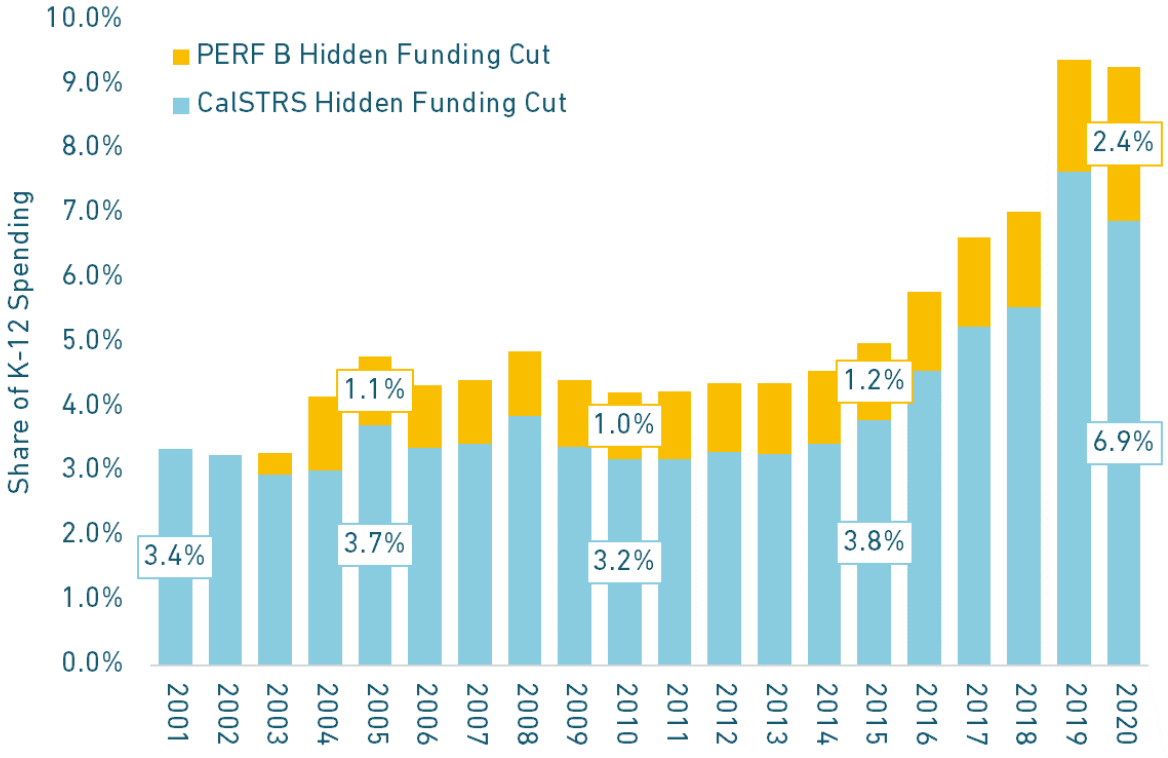
**In other words, retirement spending increased at more than six times the rate as K–12 spending from 2014 to 2020. This explosive change stands in sharp contrast to spending from 2001 to 2014 when pension spending grew at more than three times the rate of K–12 spending.**

To be clear, these increased dollars were important for preventing CalSTRS unfunded liabilities from getting worse, but they also have diverted resources from the classroom that could have been used to improve education.

Altogether, over the past two decades, pension spending for teachers and public school staff increased 18.1 percentage points on average per year. This growth is more than five times faster than the 3.3 percentage point on average annual growth in total K–12 spending.

## FIGURE 3: CALIFORNIA PUBLIC SCHOOL RETIREMENT COSTS ARE CONSUMING A GREATER SHARE OF K–12 EDUCATION SPENDING

*Actual State + Employer CALSTRS + PERF B Contributions as a Share of Total K–12 Spending, 2003–2020*




Source: Equable Institute analysis of public plan valuation reports and ACFRs. These figures are based on expenditures data adjusted for inflation.
Note: Employer contributions includes both state and employer spending.

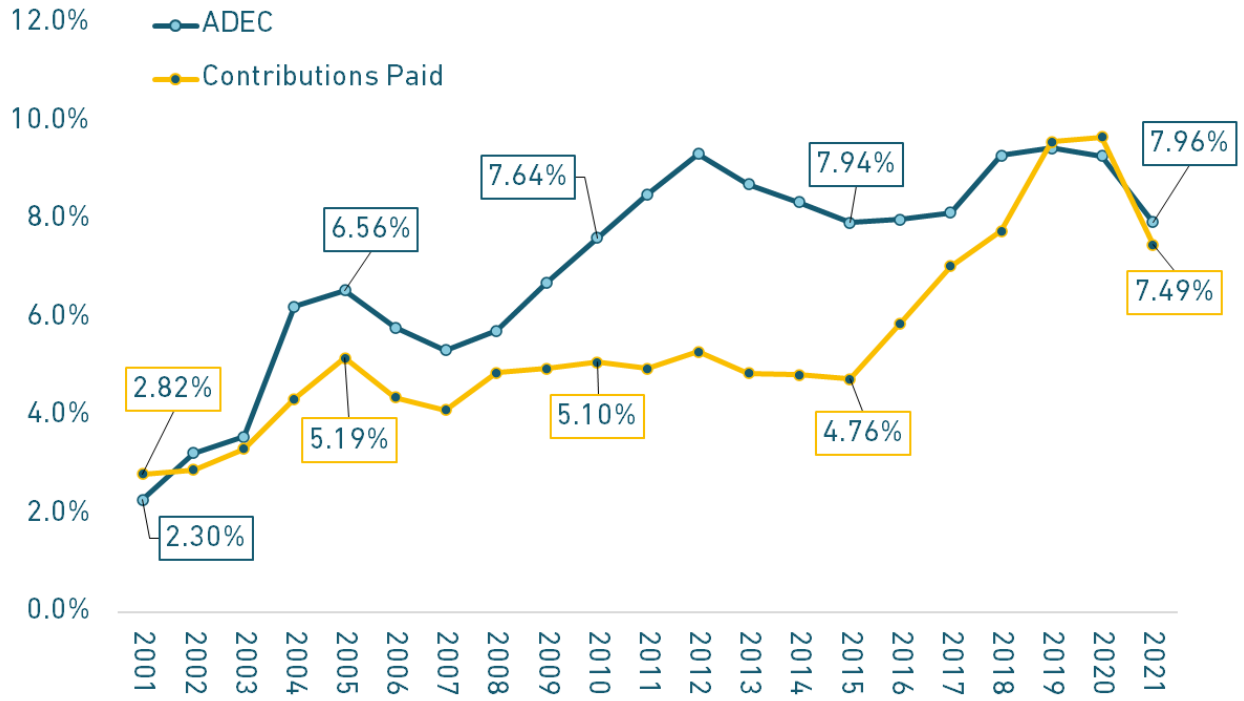
Because teacher retirement costs in California are growing faster than school budgets and money allocated to education, in effect there has been a kind of hidden education funding cut. Figure 3 above shows the share of state and local K–12 spending that has been rerouted to CalSTRS and CalPERS PERF B.

- Between 2001 and 2020, California public school retirement costs increased 176.5% as a share of state and local K–12 education spending.
- The growth in pension costs as a share of school spending increased 4.9% between 2009 and 2020, i.e., the period after the Great Recession.
- And after AB1469 accelerated contribution rates into CalSTRS, the share of education dollars going into state retirement plans jumped 103.2% between 2014 and 2020.

For a complete breakdown of these hidden education funding cuts as a share of just state or local spending on K–12, see Appendix C.

FIGURE 4: TEACHER AND PUBLIC SCHOOL EMPLOYEE RETIREMENT SPENDING HAS MORE THAN TRIPLED AS A SHARE OF CALIFORNIA'S GENERAL FUND

*Required & Actual CalSTRS & CalPERS Contributions as a Share of California's General Fund, 2001–2021*




Source: Equable Institute analysis of public plan valuation reports and ACFRs.

To put the cost of CalSTRS and CalPERS into further perspective, Figure 4 shows what the combined contributions to the two pension funds have been each year as a percentage of the California General Fund. The figure includes lines for both the actual amount paid and the amount that *should have* been paid each year (if the state had been responsibly funding the pension plan). The amount of funds actually paid to CalSTRS and CalPERS increased from 2.82% of the general fund's budget in 2001 to a peak of 9.69% in 2021, falling to 7.49% in 2021. That is an increase of more than 165.4%.

## PART 1 SUMMARY

Teacher pension costs in California have risen faster than K–12 spending, crowding out other potential investments in education. These rates could increase further, which would increase those stress points if the additional pension payments are not budgeted for separate from education spending.

# 2. Pension Spending Has Exacerbated Existing Funding Inequities

When AB1469 passed equal percent-of-payroll contribution rate increases on to school districts, some districts had more resources to manage those costs than others. Mill Valley School District in wealthy Marin County was able to convince local voters to increase taxes.[4] That money provided around 20% of the district's budget at the time and was in part used to pay the higher pension contribution requirements. By contrast, school leaders for Val Verde Unified School District had no chance to raise similar funds, as a notably less affluent portion of Riverside County compared to Marin.[5] Val Verde USD leaders reported that to deal with growing retirement costs, they expanded class sizes and reduced teacher headcounts through attrition.

Despite an across-the-board rise in state-level teacher pension spending, the effects of that increase are inequitably felt across the state, with low-wealth communities bearing a disproportionate weight of the burden.

The rise in the share of state funding dedicated to teacher pensions adversely affects low-wealth schools and districts in three distinct ways:

(1) Low-income communities have fewer resources to pay growing pension costs.

(2) Low-income districts rely more heavily on state aid and are disproportionately harmed by limits to those resources.

(3) State pension cost financing is regressive and provides a lower subsidy to low-income communities.

## LOW-INCOME COMMUNITIES HAVE FEWER RESOURCES TO PAY GROWING PENSION COSTS

As CalSTRS and CalPERS costs have increased, the California legislature has tried to find ways to shift some costs onto local employers. In 2014 through AB1469, the legislature raised contributions to CalSTRS for members, employers, and the state. As a part of that legislation, employers assumed a larger share of CalSTRS's annual cost. Figure 1 from Part 1 above shows the dollar effects of this shift.

While there are reasonable reasons for pension cost sharing between the state and school districts, increasing districts' pension obligations nevertheless disproportionately harms low-wealth districts. This is because the pension contribution acts as a flat tax and treats the teacher salaries each district in California needs to pay as the same regardless of context.

For a low-wealth district that generates only limited resources from local taxes, spending an increasing amount on pensions — even if just an increase equivalent to 1.5% to 2% of payroll — has a much higher marginal cost than it does in a wealthy district generating considerable local revenues. To use an everyday example, a $100 parking fee costs a lot more to a minimum wage worker than it does to a corporate executive. In this same way, increasing district pension costs similarly burdens low-wealth communities more than it does affluent ones.

[4] Specifically, through Measure E of 2016 which renewed an existing parcel tax and adopted a 5% annual increase in the amount. For more details see the County of Marin's elections website.

[5] In California, the use of parcel taxes as a way to raise revenue is a contentious issue due to the history of Proposition 13, which limits property tax revenue growth by capping the growth rate of assessed property values. For a history, see Eric McGhee and Margaret Weston, "Parcel Taxes for Education in California," Public Policy Institute of California.

## LOW-INCOME DISTRICTS RELY MORE HEAVILY ON STATE AID AND ARE DISPROPORTIONATELY HARMED BY LIMITS TO THOSE RESOURCES

It is a feature (and not a bug) that California districts serving higher concentrations of low-income students receive more state aid to fund their schools. However, that reliance on state aid means that any cuts to the California general education budget pass down financial stress to vulnerable communities. For these districts, cutting their greatest source of revenue has a disproportionately negative effect.

Since the state contributes to CalSTRS and CalPERS, growing teacher pension costs pose a direct budgetary threat to the state's willingness to fully fund the school finance formulas. And, since rising pension costs are not publicized as a budget cut for districts as a change in the funding formula, it is all the more difficult to prepare for, much less address, the revenue loss.

## STATE PENSION COST FINANCING IS REGRESSIVE AND PROVIDES A LOWER SUBSIDY TO LOW-INCOME COMMUNITIES

Formally, when the state makes contributions to CalSTRS, they do so on behalf of each district and other K–12 employers that participate in the retirement system. This process has profound resource equity implications for lower-income school districts.

Certain districts are able to pay educators more and retain them longer. These individuals build larger pension benefits and represent an outsized share of the liabilities, both in total and unfunded, for CalSTRS. School districts with abundant resources have been able to effectively avoid a considerable share of the growing costs of pension benefits because the state makes these payments.

In a way, this is a "pension subsidy" that is provided by the state to each school district. This effective subsidy is not factored into how the state otherwise looks to create resource equity.

Table 1 shows how much the state contributed to CalSTRS in FY2022 on behalf of some of the largest districts in the state. The table also shows how these "on-behalf" of district contributions break out on a per student basis.

The current structure of state legislative contributions for pension benefits is, in effect, a subsidy for districts. Contributions to the pension fund, from both teachers and their employers, are based on salary. The higher a teacher's salary, the more she and her employer contribute to the fund. Districts don't receive the money directly, but the district-level salary decisions are passing a share of overall compensation costs up to the state, which provides the subsidy via an "on-behalf" payment to CalSTRS and CalPERS.

But this structure of state pension funding acts as a subsidy for wealthier communities.[6] Each year, the districts that pay higher salaries for teachers with the same level of experience receive greater amounts of state pension resources.[7]

[6] Carrie Hahnel, "California's Hidden Pension Gap: State Spending on Teacher Pensions Exacerbates School District Inequities," The Opportunity Institute, TeacherPensions.org, September 24, 2019 & Max Marchitello , "Expensive, Inequitable, and Out of Reach: The Problems with California's Teacher Pension System - and What Can be Done," Opportunity Institute, March 2022.
[7] Max Marchitello, "Problems with Pay: How Teacher Pensions Exacerbate Salary Inequities," TeacherPensions.org, July 10, 2019.

## TABLE 1: HIGHER STATE PENSION COSTS MEAN MILLIONS THAT COULD BE BETTER SPENT BY DISTRICTS

*State Pension Contributions on Behalf of Districts ("On-Behalf"), FY2022*

| | STATE "ON-BEHALF" CONTRIBUTIONS | ENROLLMENT | PER STUDENT STATE PENSION SUBSIDY |
|---|---|---|---|
| Los Angeles USD | $305,014,613 | 435,958 | $699.64 |
| San Diego USD | $62,201,452 | 95,233 | $653.15 |
| Fresno USD | $46,997,886 | 69,873 | $672.62 |
| San Francisco USD | $44,001,562 | 49,204 | $894.27 |
| Long Beach USD | $41,948,526 | 67,292 | $623.38 |
| Elk Grove USD | $34,624,180 | 62,229 | $556.40 |
| San Bernardino City USD | $30,795,545 | 46,509 | $662.14 |
| Santa Ana USD | $29,519,333 | 41,835 | $705.61 |
| Corona-Norco USD | $28,908,971 | 50,889 | $568.08 |
| Garden Grove USD | $25,191,311 | 38,560 | $653.30 |

Note: USD = Unified School District

Source: GASB 68 Allocation of Non-Employer Contributing Entity On-Behalf Payments, Fiscal Year 2022. National Center for Education Statistics, Public Schools, 2021–2022, excludes adult education.

A notable finding in Table 1 is how much larger the per student pension subsidy is for San Francisco USD from other districts. The Bay Area is known for having higher costs of living and it would be reasonable to pay teachers more who live there than in other parts of the state. These larger salaries will mean earning larger pension checks, which also means that teachers coming from San Francisco will represent a larger relative share of unfunded liabilities in CalSTRS than in other parts of the state. The net effect of this, however, is that the state's contributions to CalSTRS wind up supporting those higher compensation costs in San Francisco with per student subsidies that could be allocated to other parts of the state with less resources to pay teachers in the first place.

**Given that more experienced educators earn higher salaries, the status quo structure is designed to reward teachers who remain in the profession for their entire career. And that kind of policy is logical and honors educators for their service. An unintentional consequence of that policy, however, is low-wealth districts increasingly cannot afford to pay higher teacher salaries if they effectively receive less in state aid due to pension costs.**

This regressive effect is compounded by higher teacher turnover rates in high-poverty districts as well. This is because higher turnover districts have a lower rate of educators vesting in the system, and with more teachers leaving the district or profession, they may also have a lower rate of educators spending their highest earning years in the district. Both workforce trends lead to lower state pension investments in high-poverty districts.

Consider two districts:

- District A is in a wealthy community and has a maximum teacher salary of $100,000, while district B is less wealthy and can only pay a top salary of $90,000. In 2021, the state spent 10.6% of teacher salary to fund CalSTRS.

- For a teacher at the highest salary, that amounts to $10,600 for District A and $9,539 for District B: a gap of $1,059. In this example, the state is compensating one teacher with $1,059 more in contributions to CalSTRS simply by virtue of that teacher being in wealthier district. Over 10 years, that would be nearly $11,000 more in compensation.

While this subsidy is going directly to CalSTRS, in effect, the higher-wealth district is receiving an additional $7,710 in state aid to compensate the teacher over the course of a decade. And, in reality, the number would be higher because this example holds contribution rates constant. However, since the state contribution in California is set to increase over the next few years, the disparity would be even larger than estimated here. When considered across an entire school district, this disparity in total teacher compensation is likely to be considerable.

The inequities created by the structure of California's pension finance policy are even worse once a teacher retires.

- In the above example, a $10,000 disparity in salary is mirrored and compounded in retirement through the pension formula. If each teacher in the example above works for 35 years and their final average salary works out to be $100,000 and $90,000, respectively, the teacher in District A qualifies for an annual pension of $80,500, while the teacher in District B earns a yearly benefit of $72,450.
- If they each retire at age 60 and live another 25 years in retirement, the teacher from District A will receive $201,250 more in state funds throughout retirement. The teachers did the same job for the same number of years, and both reached the maximum salary their employer pays.
- Yet, due to the way pensions are designed, far fewer state funds are invested in educators in high-poverty districts — and by extension, on the education of the district's students.

Inequities in retirement wealth would exist under a retirement planned structured differently (e.g., a defined contribution plan). The difference is that the disparity would not be compounded throughout retirement. This example likely understates the problem as the salary disparity between the highest- and lowest-wealth districts will be far larger than just $10,000 per year. Nevertheless, the total cost of a teacher pension goes beyond the contribution rate in a given year and in practice exacerbates existing school finance inequities between high- and low-poverty communities.

## THE DISTRIBUTION OF STATE PENSION SUBSIDY DOLLARS

Had CalSTRS been managed more effectively, and costs remained closer to previous levels, these millions of dollars could have been invested in other education endeavors.[8] To put this into context, the $4.3 billion that the state spent on CalSTRS in FY2022 is roughly 1.4 times how much the state spent on the all of the grants and programs outlined for teacher and educator preparation, training, and retention in the 2021-22 budget.[9]

In theory, the state could have paid a lower pension subsidy on-behalf of San Francisco USD (requiring the district to make larger CalSTRS contributions to account for the higher wages it pays) and instead directed more money to low-income areas, such as with additional LCFF supplemental and concentration grants. While we don't know exactly how low-income communities would have otherwise spent additional hypothetical dollars, we do know what districts cut for lack of such additional funding.

In the years before the pandemic, California school board members were surveyed about what they saw as the ramifications of growing costs of pensions (for both CalSTRS and PERF B). They reported a range of cuts and deferrals, including cutting back on much-needed building repairs or technology updates (a particularly vexing problem during COVID-19), adding short-term debt and limiting some enrichment or extracurricular activities.[10]

[8] The drivers of rising pension costs are discussed in detail in Sections 6 and 7.
[9] California Department of Education, "Budget Act for 2021-22: Information," retrieved December 26, 2022.
[10] Hannah Melnicoe et al. "The Big Squeeze: How Unfunded Pension Costs Threaten Educational Equity," Pivot Learning, April 2019.

For more details on concrete ways that school districts reported having to reduce services, cut programs, delay technology purchases and maintenance, or take on debt, we recommend reading the following three reports:

- "The Big Squeeze: How Unfunded Pension Costs Threaten Educational Equity," Pivot Learning, April 2019
- "California's Hidden Pension Gap: State Spending on Teacher Pensions Exacerbates School District Inequities," Opportunity Institute & Bellwether Education Partners, September 2019
- "California School District Profiles of Teacher Pension Debt Payments Eating into K–12 Education Budgets," Equable Institute, April 2020

## PART 2 SUMMARY

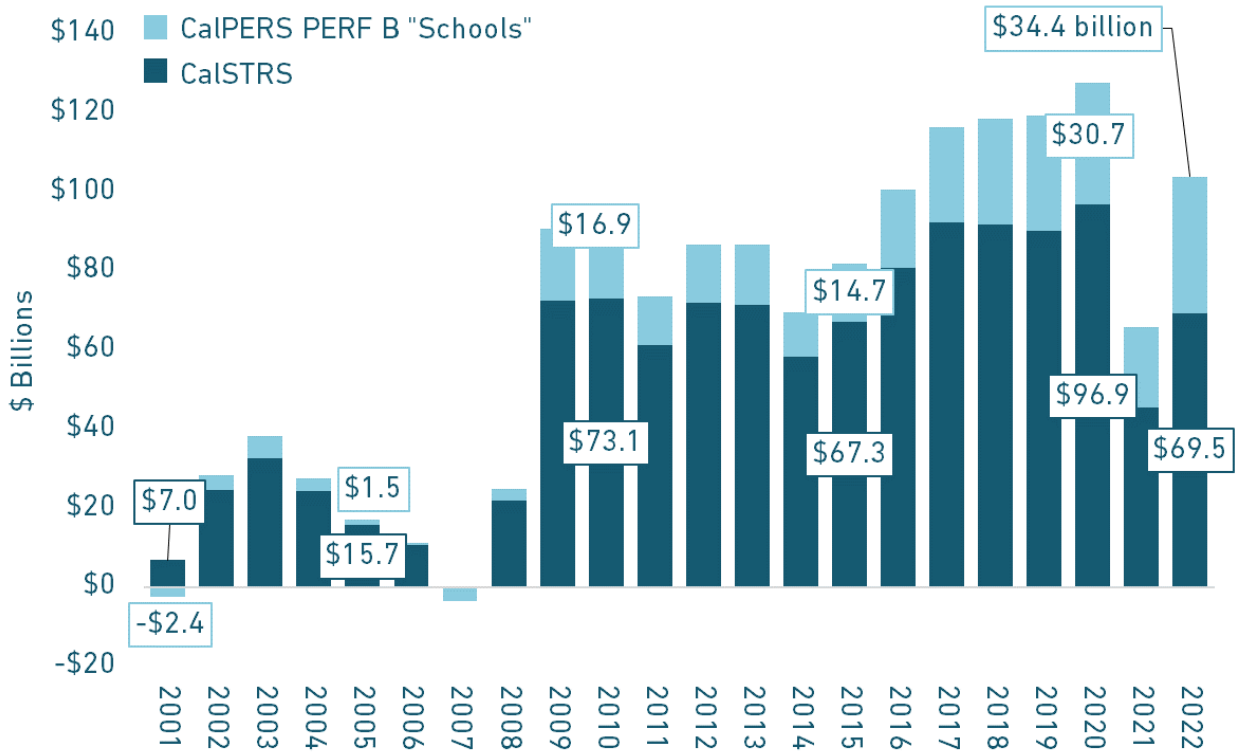
The growing pension cost implications are also not distributed evenly from district to district. Already facing significant funding challenges and heavily reliant on state aid to fill out their budgets, the students in California's low-wealth districts experience the most harm from resource reductions.

# 3. Underperforming Investments and Contribution Shortfalls Caused Pension Debt to Grow for California School Districts.

California's total unfunded liability across its school pension systems ballooned over the past two decades. Combined, the two funds were in surplus in 2001. The total debt grew steadily until skyrocketing after the Great Recession. From 2010, the total unfunded liability grew from $89.9 billion to $103.9 billion in 2022, as shown in Figure 5. The state's combined school pension debt in 2022 is equivalent to more than four-fifths of the California General Fund's $124.3 billion spent on the Department of Education in 2022.[11]

FIGURE 5: COMBINED UNFUNDED LIABILITY CARRIED BY CALIFORNIA PUBLIC SCHOOLS

*CalSTRS and CalPERS PERF B Market Valued Unfunded Liability, 2001–2022*




Source: Equable Institute analysis of public plan valuation reports and ACFRs.

After accounting for the once-in-a-generation returns both CalSTRS and CalPERS saw in 2021, plus historically sharp investment losses in 2022, preliminary documents from the plans report the total unfunded liabilities will increase up to $103.9 billion as of June 2022. (See Appendix A for a breakdown of the unfunded liability accumulation for CalSTRS and PERF B separately.)

Unfortunately, even if the two state retirement systems report $103.9 billion in unfunded liabilities as of 2022, that figure will be based on unrealistic estimates about future investment returns that both California retirement systems are using. It is likely that CalSTRS and CalPERS will both reduce their investment assumptions in the coming years, and when that happens the valuation of unfunded liabilities will be marked up.

11 California Department of Education, "Budget Act for 2019-20: Information," retrieved February 9, 2022.

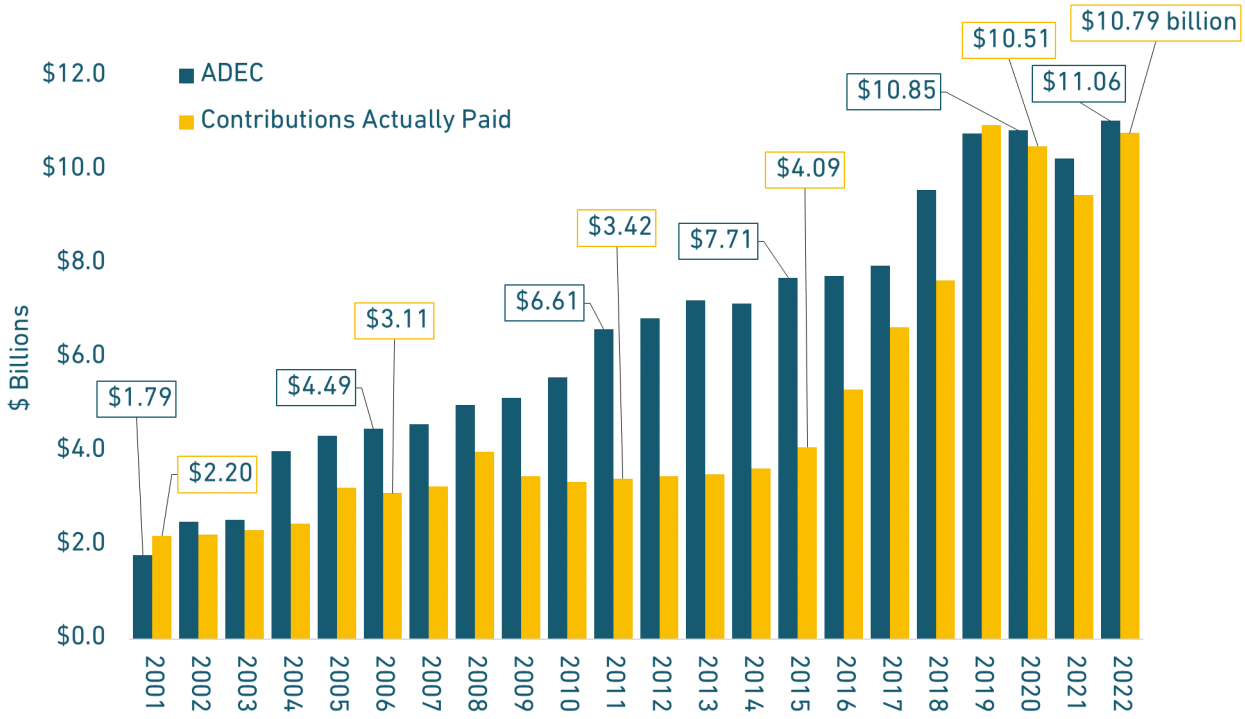
In fact, according to CalSTRS, if they had lowered their investment assumption to 6.1% in 2022, the actual value of unfunded liabilities would have been recognized as $118 billion (instead of the $69.5 billion reported that year) with a funded status around 81.2%.

Having a realistic investment return is important because one of the major reasons why CalSTRS and CalPERS PERF B have accumulated unfunded liabilities is underperforming investments. That is, the boards of both retirement plans adopted assumptions about future investment income that didn't materialize, and, in effect, that meant that contribution rates paid in the past weren't sufficient to fully fund retirement benefits.

But the single largest contributor to growth in public school employer unfunded pension liabilities has been state law limiting the size of contributions into CalSTRS. California chronically underfunded its teacher pension system by billions of dollars over the past two decades, shown in Figure 6. (For a complete breakdown of what caused CalSTRS unfunded liabilities, see Appendix B.)

## FIGURE 6: CALIFORNIA REGULARLY CONTRIBUTED BILLIONS LESS THAN ACTUARIAL REQUIREMENTS FOR FULLY FUNDING CALSTRS

*Required (ADEC) and Actual Contributions Paid to CalSTRS, 2001–2022*




Source: Equable Institute analysis of public plan valuation reports and ACFRs.

For example, in 2013 the state was required to provide $7.2 billion, but only provided $3.5 billion, resulting in a $3.7 billion shortfall. Across the past two decades, the consistent underpayment of the actuarially required contribution resulted in the addition of $34.6 billion in unfunded liability to CalSTRS. That said, in 2019 the state and employers did spend more than was actuarially required for CalSTRS and in 2020 the same was done for CalPERS PERF B, which could be the start of a positive trend.

## TABLE 2: CALSTRS AND PERF B TOTAL UNFUNDED LIABILITY IS MORE THAN $21,000 PER STUDENT

*Total K–12 Funding and Pension Debt per Student, 2001–2020*

| YEAR | TOTAL K–12 SPENDING PER STUDENT | PER STUDENT SHARE OF CALSTRS UNFUNDED LIABILITY | PER STUDENT SHARE OF PERF B UNFUNDED LIABILITY | TOTAL PER STUDENT SHARE OF SCHOOL UNFUNDED LIABILITY |
|---|---|---|---|---|
| 2001 | $16,776 | $1,126 | -$382 | $744 |
| 2002 | $18,627 | $3,981 | $575 | $4,556 |
| 2003 | $18,706 | $5,219 | $894 | $6,114 |
| 2004 | $19,130 | $3,868 | $491 | $4,360 |
| 2005 | $19,459 | $2,475 | $231 | $2,706 |
| 2006 | $19,306 | $1,667 | $87 | $1,754 |
| 2007 | $20,240 | $36 | -$549 | -$513 |
| 2008 | $20,385 | $3,475 | $473 | $3,948 |
| 2009 | $20,915 | $11,574 | $2,929 | $14,503 |
| 2010 | $20,493 | $11,618 | $2,683 | $14,301 |
| 2011 | $19,736 | $9,743 | $1,981 | $11,725 |
| 2012 | $19,866 | $11,441 | $2,315 | $13,756 |
| 2013 | $19,133 | $11,317 | $2,439 | $13,756 |
| 2014 | $19,468 | $9,258 | $1,789 | $11,047 |
| 2015 | $20,801 | $10,677 | $2,338 | $13,015 |
| 2016 | $22,281 | $12,820 | $3,130 | $15,950 |
| 2017 | $23,563 | $14,662 | $3,785 | $18,446 |
| 2018 | $24,236 | $14,652 | $4,251 | $18,902 |
| 2019 | $25,750 | $14,453 | $4,664 | $19,117 |
| 2020 | $27,771 | $15,980 | $5,059 | $21,039 |

Source: Total K–12 education spending data are drawn from U.S. Census Bureau, 2020 Annual Surveys of State and Local Government Finances. Unfunded Liability data are drawn from public plan valuation reports and ACFRs. All spending figures are adjusted for inflation. Enrollment data are drawn from the Federal Department of Education's National Center for Education Statistics.

The unfunded liability of CalSTRS and PERF B can also be thought of on a per-student basis. Table 2 shows the unfunded liability of both systems, separate and combined, distributed across the total K–12 enrollment in California from 2001 to 2020. During that period, per-pupil spending increased approximately $11,000, from $16,776 in 2001 to $27,771 in 2020. At the same time, a student's "share" of CalSTRS pension debt jumped from $1,126 in 2001, to nearly $16,000 by 2020. And the per-student share of PERF B pension debt grew to $5,059.

Relative to the state GDP, California's public school unfunded liability is small. But compared to the amount spent on K–12 education the unfunded liability is considerable. The magnitude of the combined unfunded liability is such that the state would need to shut down the K–12 education system for nearly an entire school year and funnel all of what would be spent on schools into CalSTRS and PERF B to completely pay down the debt.

Fortunately, there is no reason to do this for any one year. It is reasonable to pay off the pension debt over time. But the annual costs of paying down unfunded liabilities in installments are still considerable.

Table 3 shows that per-pupil CalSTRS pension costs consumed a larger and larger share of total K–12 spending from 2001 to 2020. Over this period, K–12 per-pupil expenditures increased 66% compared with an increase of 162% in per-pupil CalSTRS pension costs. The state paid more than three times as much per pupil to CalSTRS in 2020 as in 2001, while local districts more than doubled their payment over the same period. As these figures make clear, rising pension debt exacts real costs for students.

## TABLE 3: PER-STUDENT CALSTRS + CALPERS PERF B PENSION COSTS ARE NEARLY 10% OF TOTAL K–12 PER-STUDENT SPENDING

*K–12 Spending and Pensions Spending by Source per Student, 2001–20120*

| YEAR | STATE PENSION COST | DISTRICT PENSION COST | TOTAL PENSION COST | DISTRICT K–12 SPENDING | DISTRICT K–12 SPENDING MINUS DISTRICT PENSION COST | TOTAL K–12 SPENDING | TOTAL K–12 SPENDING MINUS TOTAL PENSION COST |
|---|---|---|---|---|---|---|---|
| 2001 | $234 | $464 | $698 | $5,303 | $4,839 | $16,776 | $16,079 |
| 2002 | $222 | $417 | $639 | $5,726 | $5,309 | $18,627 | $17,987 |
| 2003 | $286 | $462 | $747 | $5,712 | $5,251 | $18,706 | $17,959 |
| 2004 | $285 | $488 | $773 | $5,769 | $5,281 | $19,130 | $18,357 |
| 2005 | $419 | $490 | $909 | $5,899 | $5,409 | $19,459 | $18,550 |
| 2006 | $354 | $485 | $839 | $5,904 | $5,420 | $19,306 | $18,467 |
| 2007 | $367 | $494 | $861 | $6,173 | $5,679 | $20,240 | $19,379 |
| 2008 | $473 | $508 | $981 | $6,516 | $6,008 | $20,385 | $19,404 |
| 2009 | $387 | $522 | $909 | $6,989 | $6,467 | $20,915 | $20,007 |
| 2010 | $405 | $477 | $881 | $7,553 | $7,076 | $20,493 | $19,611 |
| 2011 | $390 | $496 | $887 | $7,558 | $7,061 | $19,736 | $18,850 |
| 2012 | $403 | $473 | $876 | $7,672 | $7,199 | $19,866 | $18,990 |
| 2013 | $409 | $482 | $892 | $7,299 | $6,817 | $19,133 | $18,241 |
| 2014 | $412 | $465 | $877 | $7,495 | $7,030 | $19,468 | $18,591 |
| 2015 | $434 | $542 | $976 | $7,786 | $7,244 | $20,801 | $19,825 |
| 2016 | $537 | $669 | $1,206 | $8,246 | $7,576 | $22,281 | $21,074 |
| 2017 | $669 | $812 | $1,480 | $6,322 | $5,510 | $23,563 | $22,083 |
| 2018 | $745 | $925 | $1,669 | $6,568 | $5,643 | $24,236 | $22,567 |
| 2019 | $1,224 | $1,064 | $2,288 | $7,562 | $6,498 | $25,750 | $23,462 |
| 2020 | $1,250 | $1,216 | $2,466 | $8,564 | $7,348 | $27,771 | $25,305 |

Source: Total K–12 education spending data are drawn from U.S. Census Bureau, 2020 Annual Surveys of State and Local Government Finances. Unfunded liability are drawn from public plan valuation reports and ACFRs. All spending figures are adjusted for inflation. Enrollment data are drawn from the Federal Department of Education's National Center for Education Statistics.

# 4. Who Will Pay Pension Costs Increases in the Future?

In response to rising teacher pension costs driven by burgeoning debt, the California legislature adopted a set of policy changes to improve funding to CalSTRS in 2014. The policy set out three ways to raise additional funds for CalSTRS. First, teacher contribution rates would increase. Second, employer contribution rates would increase. Third, the state would increase its own contributions.

Through the collective increases in contributions to the fund, CalSTRS estimated that it would be able to chip away gradually at the pension debt. The current goals set by the CalSTRS board are to reach 100% funding by 2046.[12]

The issue is that even though CalSTRS receives greater contributions, the financial health of the system is still predicated on earning more than 7% return on their investments from 2014 to 2016, and a 7% return thereafter. But the retirement system has not been able to consistently meet their assumed rate of return, which has driven up the debt (see Appendices A and B for details). In short, California's unfunded teacher pension liability continued to grow despite these reforms.

As a result, it is likely that further contribution rate increases will be required for CalSTRS in the coming years, perhaps on top of the growth in costs already scheduled. The question is who will pay for these additional increases.

As we've previously demonstrated and written, additional pension spending pushes out other expenditures, leaving school districts with fewer dollars to spend on salaries as well as services and resources for students, such as enrichment opportunities, after-school activities, access to critical technology, and supports for English language learners. The point should not be subtle: growing pension costs are posing a real threat to the quality of education California provides to its students and further threatens public confidence in the school system overall.

## IS AB1469 THE MODEL FOR FUTURE COST INCREASES?

The AB1469 (2014) funding policy was predicated on a projection of public school salary growth that has not materialized. The contribution rates priced as a percentage of total payroll were counting on large payroll bases in the future, generating large dollar amount of contributions that won't actually occur.

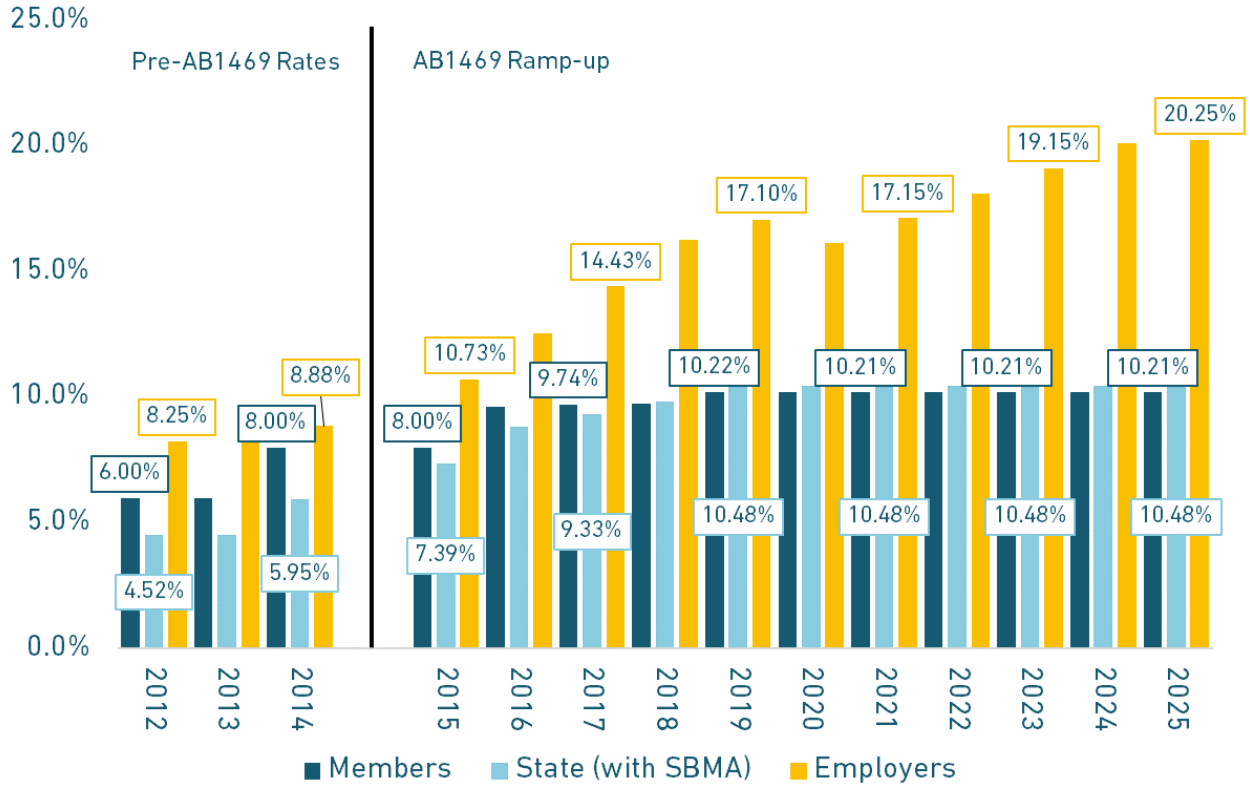
As shown in Figure 7 below, the plan was for contribution rate increases according to the following schedule:

- The State of California increased its contribution rate from 3.454% (5.95% after including supplemental state payments) of payroll in 2014 to gradually increase to 10.481% in 2019. It will remain at that level through 2025.
- School districts, including independent schools, increased their contributions gradually from 8.88% in 2014 to 20.25% in 2025.
- CalSTRS members increased their contribution rate gradually from 8% in 2014 to 10.21% in 2021. It will remain at that level through 2025.

12 Legislative Analyst's Office, "Update on the Progress of the CalSTRS Funding Plan," Legislative Analyst's Office, Nov. 19, 2021.

## FIGURE 7: CONTRIBUTION RATE INCREASES AS SCHEDULED FOR MEMBERS, EMPLOYERS, AND THE STATE ACCORDING TO AB1469 OF 2014

*Member, Employer, and State Contribution Rates Pre- and Post-AB1469*




Source: Equable Institute analysis of public plan valuation reports and ACFRs.

Actual contributions from the state and employers have varied slightly from this schedule, as the state made supplemental contributions in the fiscal years ending 2020, 2021, and 2022 that provided "contribution rate relief" to employers. As a result, school districts didn't have to pay as high of contribution rates in those years. However, such contribution rate relief is not scheduled for the 2023 fiscal year, which means a scheduled 19.1% employer contribution rate will be in effect.

The combined effect of persistent underperforming investments (even with large one-year returns in 2021) and a misguided payroll growth assumption have already led to recommendations for increased CalSTRS contributions beyond this ramp. The Legislative Analyst's Office of the California legislature laid out a proposal for "Strengthening the CalSTRS Funding Plan" in March 2021 and then doubled down on the recommendation with an update in November 2021.[13] However, the legislature has not yet taken action.

When they do, they should learn from the shortcomings of the AB1469 approach: (1) school districts were asked to take on a large share of pension debt payments to fix an unfunded liability problem that they did not cause; (2) no consideration was given to the effects of requiring low-income communities to have to pay the same contribution rates as districts in higher-income areas; and (3) no consideration was given to the inequitable way that the state's pension subsidy is effectively distributed through its on-behalf contributions.

13 Ibid.

## WILL THE CALSTRS BOARD INCREASE RATES ON ITS OWN?

Under current law, the CalSTRS board can increase school district employer contribution rates up to 20.25% of payroll (in increments of no more than 1% of payroll per year), if the contribution increases are necessary to meet the goal of 100% funded status by 2046. As of the 2022-23 school year, employer contribution rates will be 19.1% of payroll, meaning that even if the CalSTRS board wanted to nudge contribution rates up they will soon be at their statutory ceiling.[14]

In short, the legislature is going to have to authorize a plan to better fund CalSTRS in the future.

While CalSTRS and most other pensions nationwide have enjoyed excellent investment performance in 2021, the results are unlikely to be sustainable. The current funding plan is still built on the back of an unrealistic investment return assumption: 7%. The national average assumed rate of return across all public pension funds is now down to 6.9% and falling,[15] the most popular survey of capital market forecasts estimates roughly a 40% chance that pension funds will earn a 7% investment return in the coming decade,[16] and even CalPERS has lowered their investment assumption to 6.8% (and their board investment advisors suggest targeting 6%).[17]

Other large pension funds have taken note of these projections and adjusted their assumptions accordingly. For example, the New York State Common Fund, one of the best managed in the country and third largest by assets behind only CalPERS and CalSTRS, recently dropped their investment assumption to 5.9%.[18] All of the trends are moving down and away from 7% assumed returns or higher. And this means contribution rate increases going forward are inevitable.

## WHAT QUESTIONS SHOULD THE LEGISLATURE CONSIDER?

Despite the positive reforms in AB1469, the law will never be sufficient to achieve long-term financial sustainability for CalSTRS because the plan is still operating on an optimistic investment return assumption and outdated payroll growth assumption.

There are three critical questions that arise when considering the strategy CalSTRS will take when it ultimately decides to lower its assumed rate of return:

- Will they again decrease the rate only marginally (e.g., 6.75%), or will they make the full adjustment necessary and drop it to between 5.75% and 6.25%?
- How much will contribution rates need to increase based on the new assumed rate of return and how will the funded status of CalSTRS change due to the performance of its investments as it has gradually lowered its rate in recent years?
- How will the state distribute those cost increases among the legislative budget, K–12 employers, and CalSTRS members?

[14] "CalSTRS Funding Plan 2022," California State Teachers' Retirement System, September 2022
[15] Anthony Randazzo and Jonathan Moody, "State of Pensions 2022," Equable Institute.
[16] Ibid.
[17] Equable Institute, "CalPERS Strong Investment News Triggers Lower Assumed Rate of Return," August 13, 2021.
[18] Office of the New York State Comptroller, "DiNapoli Announces Reduction in Employer Contribution Rates," August 25, 2021.

## WILL FUTURE COSTS FOR CALPERS PERF B GO UP?

Until recently CalPERS maintained an optimistic 7.25% assumed rate of return that was applicable to all three of its retirement funds, including PERF B. In general, CalPERS has not been able to reach that investment return mark, which in turn has increased their unfunded liability and pushed contribution rates higher. Fortunately, beginning in FY2022, CalPERS made the important decision to lower its assumed rate of return to 6.8%.

Strong investment returns in 2021 will have helped balance out the reduction in investment return assumption, mitigating part of what could have been a sharp contribution rate increase. However, financial losses in 2022 are certain to put upward pressure on contribution rates for PERF B going forward.

More important is that investment advisors for CalPERS have said it would be more reasonable to target a 6% rate of return assumption — in line with what New York State has done recently for their Common Fund. The main hesitation by the CalPERS board in making such a move is what it would mean to contribution rates. But the financial reality is that unless CalPERS can leverage complex, high-risk investments into outperforming both its 6.8% investment assumption and the market generally, those higher contribution rates are likely to come in the near term, anyway.

## OUR POLICY VIEW

Despite recent reforms and investment performance, California faces considerable challenges in funding and improving CalSTRS and CalPERS. The state will once again need to make important changes in the near future.

Based on the analysis in this paper, our policy view is the following:

- Investment assumptions for CalSTRS and CalPERS should be reduced to create a more realistic baseline for measuring the contribution rates necessary to get the pension funds back to full funding.
- The legislature should pass legislation requiring that the state pay the full actuarially determined contribution rate for CalSTRS every year, instead of its statutory pricing. There should be no maximum total contribution rate determined by the CalSTRS board.
- Ideally, any future contribution rate increases for CalSTRS or CalPERS will not cut into K–12 funding. While this may be challenging, at a minimum the legislature should increase transparency by officially showing the portion of state and local K–12 resources (excluding itemized federal dollars) that are spent on retirement and other benefit costs. In addition, the legislature could require additional reporting that shows what portion of any additional increases in K–12 funding are actually required to cover growing retirement costs. The legislature might also use general funds or more one-time contributions that are designed to offset local district contributions that are needed to cover unfunded liability amortization payments.
- At the same time, the state should be reviewing how its process of subsidizing districts is exacerbating inequities. Currently, a flat pension contribution rate is applied across all districts in the state and the status quo state pension system invests most heavily in affluent communities. The state could solve this by adopting an adjustment to the school funding formula that requires higher-income districts that pay larger salaries to contribute more to CalSTRS. Or the state could directly assume a greater share of contribution rate requirements in in lower wealth districts (which would lead to a more equitable distribution of state pension funding).

- Finally, the benefits provided for teachers and staff through CalSTRS and CalPERS also should be improved — the one-size-fits-all benefit design currently offered is not optimal for all educators and public school employees, nor do the actual benefits themselves meet reasonable standards of adequacy. (This is discussed at more length in Appendices D and E.)

Addressing these kinds of issues and, in particular, better integrating teacher pension costs with school finance will involve a number of policy choices and trade-offs. However, ignoring these issues simply means that students and educators lose.

For students: The status quo state pension spending is regressive, sending greater amounts of state aid to higher wealth school districts that are able to pay higher teacher salaries. Rising state pension spending contravenes California's efforts to promote funding equity through its state school finance system by providing *more* state funding to wealthier communities.

For educators: The status quo puts most of the cost of paying down unfunded pension liabilities on school districts, which in turns restricts their resources that would be available to improve salaries. Moreover, the costs of unfunded pension liabilities have created a political context that favors lower benefit values and larger contribution requirements from teachers themselves — the longer that the pension funding problem persists the harder it will be to honor the service of educators with better quality benefits.

Together, these elements mean the California teacher pension system is currently structured as a subsidy to wealthy communities. Something must be done to implement equitable policy in California and lessen the financial burden on low-wealth districts that already struggle to generate sufficient revenue to support their students and educators.

# GLOSSARY OF TERMS

Pension plans are designed to collect contributions every year and then invest those funds. The combined assets and investment returns are used to pay promised benefits.

**Total Pension Liability (TPL) or Actuarial Accrued Liability (AAL) —** The value of those promised benefits measured in today's dollars.

**Fiduciary Net Position (FNP) or Actuarial Value of Assets (AVA) —** The value of assets on hand being invested to generate returns.

**Net Pension Liability (NPL) or Unfunded Actuarial Accrued Liability (UAAL) —** When the value of promised benefits (in today's dollars) is greater than the value of assets on hand to be invested, then a pension fund is said to have an "Unfunded Actuarial Liability." Under Government Accounting Standards Board (GASB) methodology, this is defined as the "Net Pension Liability," but colloquially it can be thought of as a "funding shortfall" or as "pension debt" owed by the government that created the pension fund.

**Funded Ratio —** The percentage of assets on hand compared to promised benefits. Pension funds should target 100% funded ratio, which means that all future pension checks measured in today's dollars are equal to the assets on hand generating investment returns.

Contributions into a pension plan come from three sources: "members," "participating employers," and "non-participating employers."

**Member Contributions —** Automatically deducted on a pre-tax basis from the paychecks of active employees who work for a public school employer. Some states allow employers to pay this contribution on the members' behalf instead, and usually this "pick up" of member contributions results in lower negotiated salaries than would otherwise be demanded.

**Employer Contributions:**

**Participating —** Dollars that flow from a school district, independent school, or public school agency with members enrolled in a retirement system. Generally, we refer to these as "district" contributions to distinguish from money paid in by the state, though some state agencies that serve K–12 public schools are also considered "employers."

**Non-Participating —** Dollars that flow from the state legislature's budget directly into a retirement system, paid on behalf of participating employers. Generally, this is when the state makes a lump sum payment instead of distributing money out to districts and then having them pay the amount back.

Retirement systems are intended to provide income to their members after retiring from public service. Whether those benefits are sufficient to retire comfortably is typically defined via measures of "benefit adequacy."

**Pension Plan Benefit Adequacy —** Typically measured by looking at "replacement rates" provided by a pension plan (e.g., the percentage of income earned during a teacher's working years that get paid to a pension plan member during their retirement). Adequate replacement rate targets range from 60% to 80% depending on who you ask.

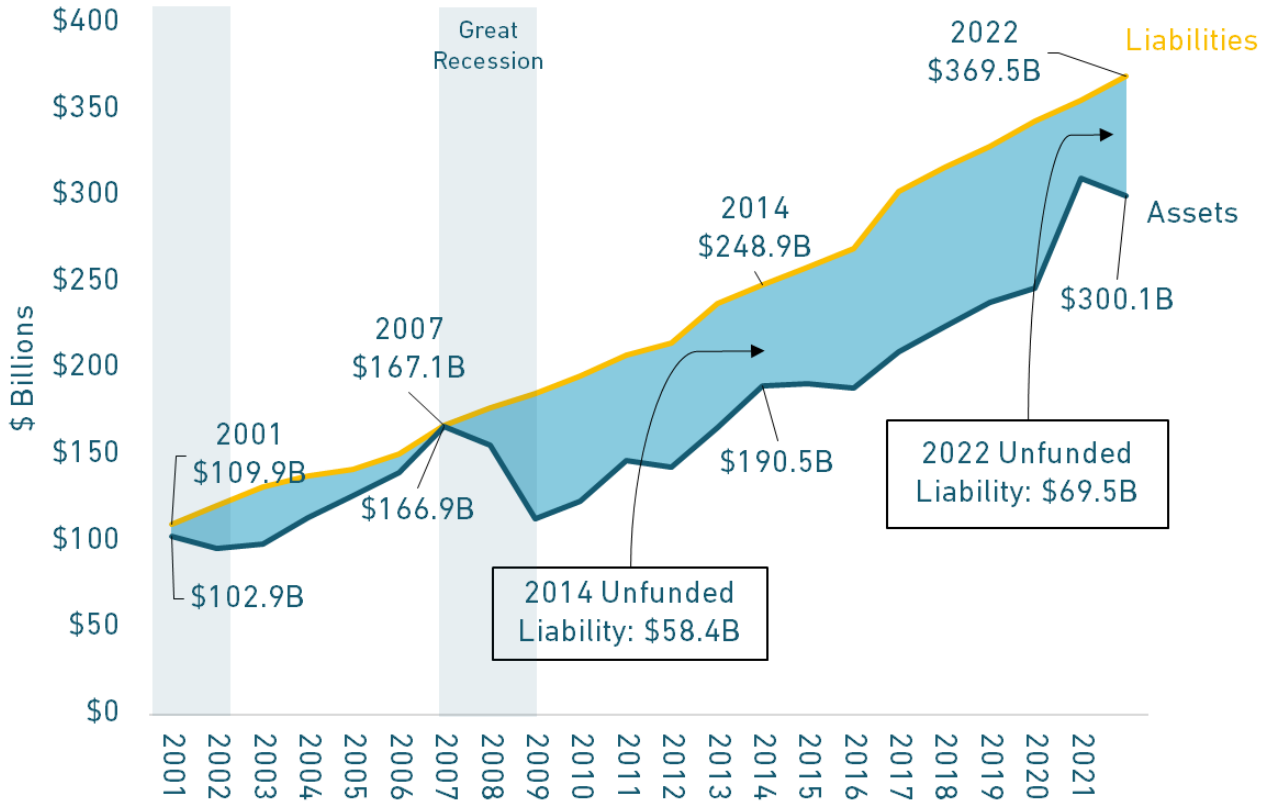
**Defined Contribution Plan Benefit Adequacy —** Typically measured based on the value of contribution rates flowing into the plan. Adequate rates typically are 10% to 15% for those also enrolled in Social Security, and 15% to 20% for those without Social Security access.

# Appendices

# Appendix A: What Has Caused Pension Debt Costs to Increase? Growing Unfunded Liabilities

FIGURE A1: CALSTRS UNFUNDED LIABILITY IS NEARLY $70 BILLION, ASSUMING 7% RETURNS

*CalSTRS Market Valued Assets and Actuarially Accrued Liability, 2001–2022*




Source: Equable Institute analysis of public plan valuation reports and ACFRs.

California's retirement systems appeared to be well managed in the years before the financial crisis of 2008, and CalSTRS was no exception. The funded status around the turn of the century was reasonable with only a small unfunded liability, and the plan was formally overfunded in 2007. The financial crisis put a significant dent in CalSTRS funded status, but even during the bull market after the financial crisis, unfunded liabilities continued to accumulate, shown in Figure A1.

The single largest contributor to growth in unfunded liability has been state law limiting the size of contributions into CalSTRS. With a $58.4 billion unfunded liability for CalSTRS in 2014, the state legislature authorized a ramp-up in contributions from their own coffers and local employers. But these have been persistently less than actuarially required.

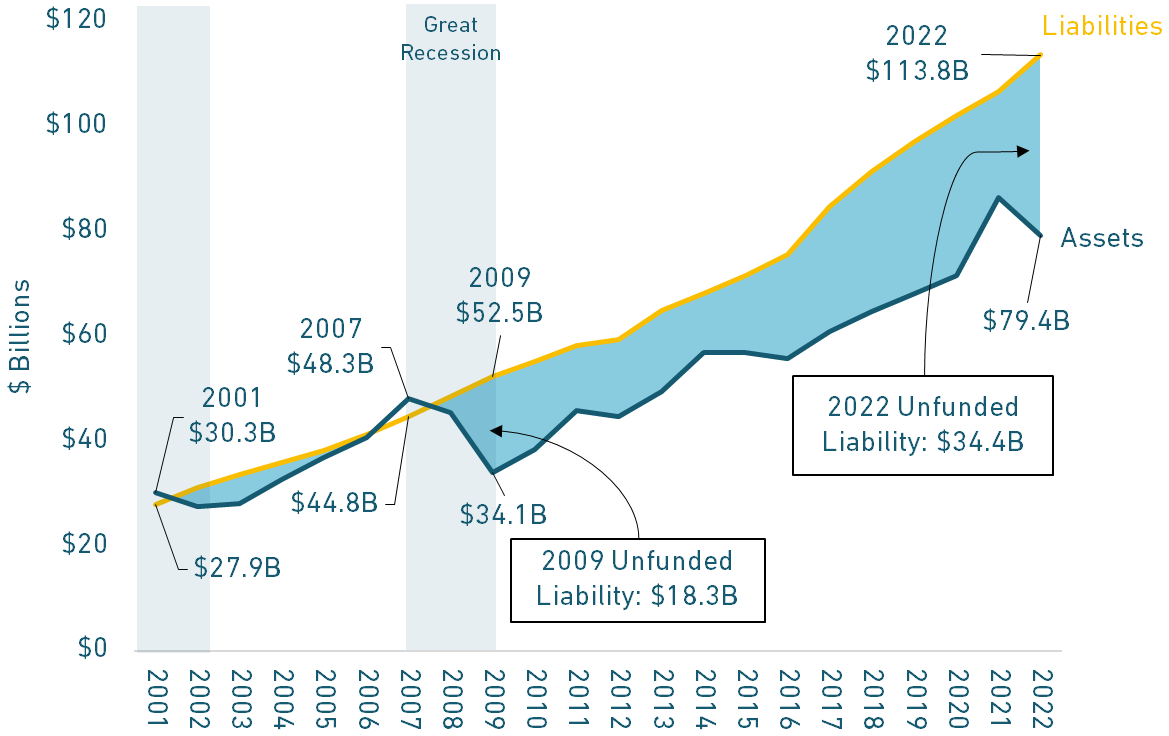
The value of unfunded liabilities peaked at nearly $100 billion in 2020 before dropping considerably with 2021 investment returns. CalSTRS reported their funded status based on fair market valued assets improved to 87.2% with $45.5 billion in unfunded liabilities for the fiscal year ending 2021, after accounting for a 27.2% investment return.[19] However, fiscal 2022 saw significant investment losses, with CalSTRS reporting an increase to $69.5 billion in unfunded liabilities, resulting in a reduced funded status of 81.2%.[20]

[19] CalSTRS Annual Comprehensive Financial Report for Fiscal Year Ending 2021, p. 82.
[20] CalSTRS Annual Comprehensive Financial Report for Fiscal Year Ending 2022, p. 33.

However, this measurement of CalSTRS unfunded liabilities is based on their realistic assumed rate of return — which is certain to be reduced in the coming years. When that happens the valuation of unfunded liabilities will be marked up. In fact, according to CalSTRS, if they had lowered their investment assumption to 6.1% in 2022, the actual value of unfunded liabilities would have been recognized as $118.0 billion (instead of the $69.5 billion reported that year).

## FIGURE A2: CALPERS PERF B UNFUNDED LIABILITY HAS EXPANDED TO ALMOST $35 BILLION

*PERF B Market Valued Assets and Actuarially Accrued Liability, 2001–2022*




Source: Equable Institute analysis of public plan valuation reports and ACFRs.

The funding of CalPERS PERF B has followed a similar pattern as CalSTRS, even if for slightly different reasons. Figure A2 shows that CalPERS carried a slight funding surplus in 2001 and 2007 before a substantial increase in unfunded liability to $18.3 billion in just two years during the financial crisis. Since then, the CalPERS fund experienced steady growth in its funding shortfall to a peak of $34.4 billion in 2022.

Based on totals returns reported by CalPERS, the funded status of PERF B improved to a $20.3 billion unfunded liability, reflecting a roughly 81.0% funding ratio in 2021. Reported totals to close fiscal 2022 indicate a growth in unfunded liabilities to $34.4 billion, lowering the funded ratio to 69.8% However, that is based on an optimistic assumed rate of return. The actual funding shortfall could be as much as $49.7 billion using a 5.8% assumed rate of return instead. It is important to understand the full scope of the unfunded liability that public schools in California are carrying. They are not only dealing with the costs of CalSTRS, but also PERF B. This is a significant combination. On its own, the unfunded liability of PERF B is among the 15 largest of any statewide retirement system in America.[21]

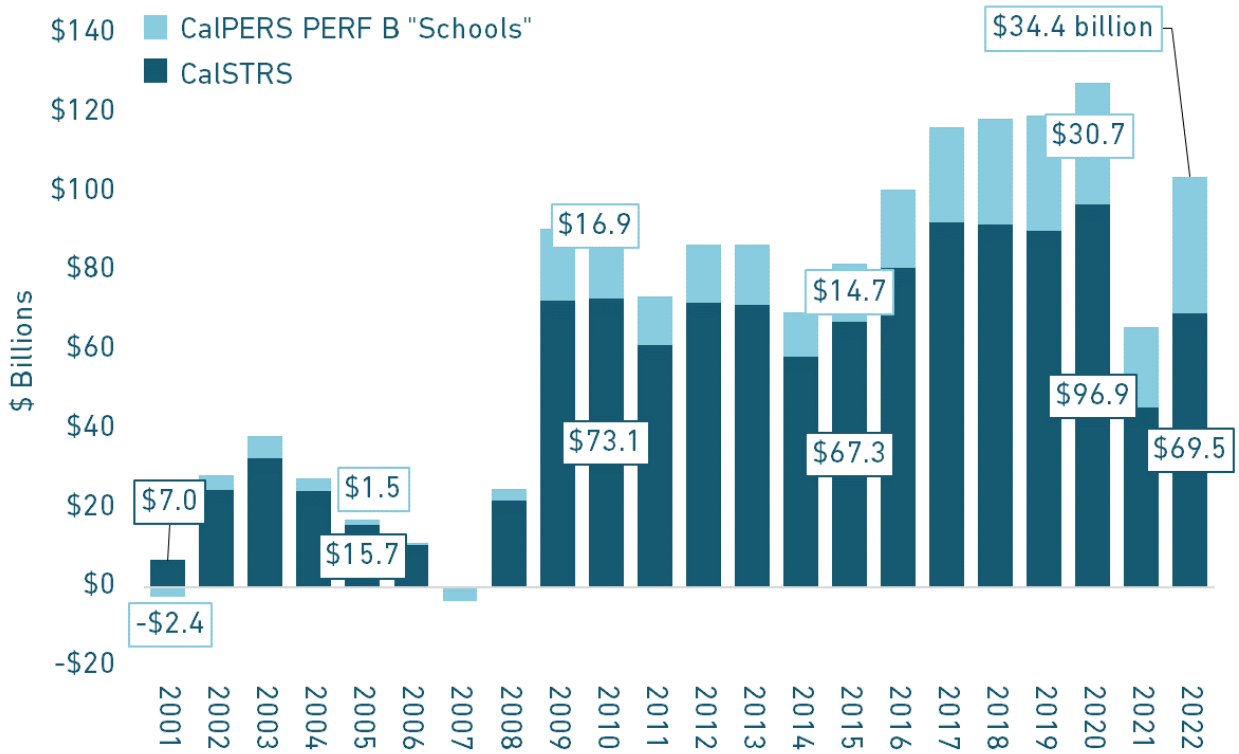
[21] There are 164 statewide retirement plans with actuarial accrued liabilities over $1 billion or that have assets that are commingled with other large plans that are part of the same statewide retirement system.

Consider that the unfunded liability of PERF B — which does not include teachers — is larger than the public school unfunded liability portion of the Florida Retirement System, which does include teachers. And PERF B unfunded liabilities are similar in scope to the Teacher Retirement System of Texas funding shortfall for K–12 teachers, public school employees, state education agency workers, and public university employees.

This means that there are two large retirement systems — separately managed with separate dynamics — which could generate significant costs for public school retirement systems in California.

## FIGURE A3: COMBINED UNFUNDED LIABILITY CARRIED BY CALIFORNIA PUBLIC SCHOOLS

*CalSTRS and CalPERS PERF B Market Valued Unfunded Liability, 2001–2022*




Source: Equable Institute analysis of public plan valuation reports and ACFRs.

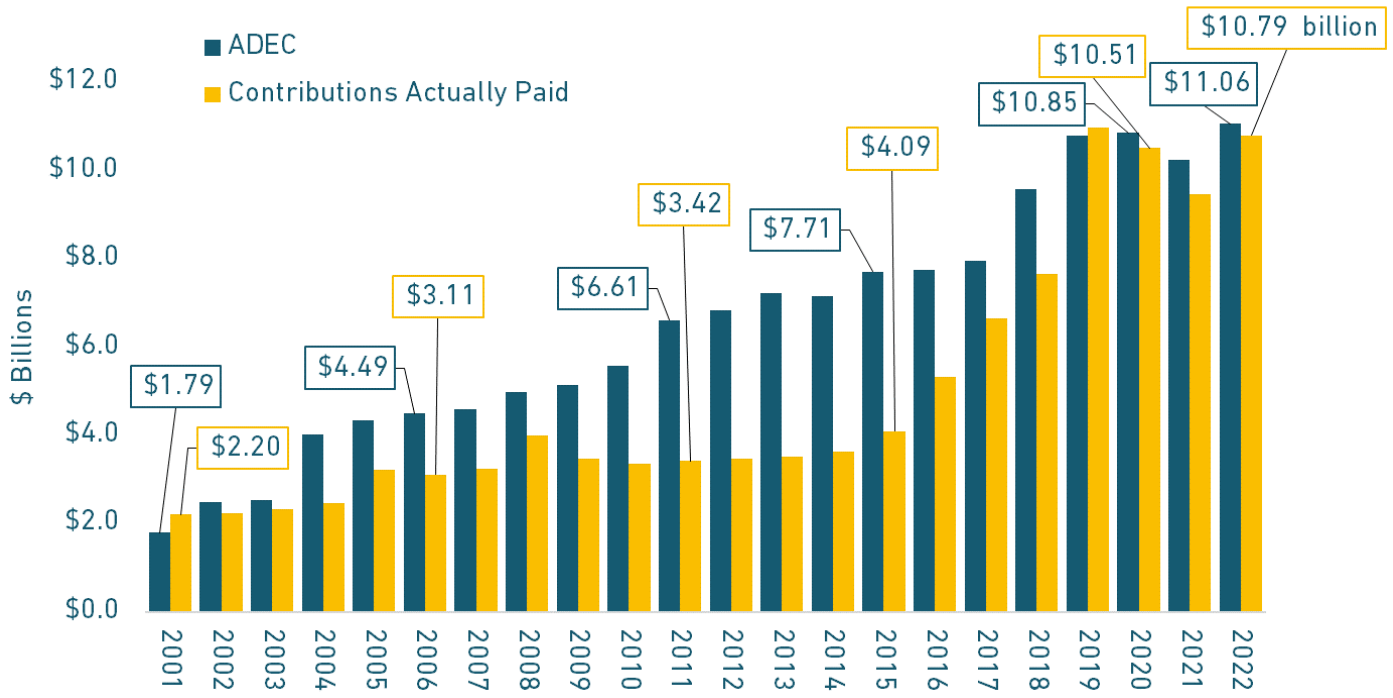
California's total unfunded liability across its school pension systems ballooned over the past two decades. Combined, the two funds had less than $5 billion in unfunded liabilities in 2001. The total debt was actually fully resolved in 2007 where, across both retirement systems, they held a slight surplus of funds. However, unfunded liabilities skyrocketed after the Great Recession. From 2010, the total unfunded liability grew from $89.9 billion to $103.9 billion in 2022, as shown in Figure 5. The state's combined school pension debt in 2022 is nearly equivalent to the California General Fund's $124.3 billion allocated to fund K–12 according to the state Department of Education for the 2021-22 school year.[22]

After accounting for the once-in-a-generation returns both CalSTRS and CalPERS saw in 2021 plus historically sharp investment losses in 2022, the total unfunded liabilities increased to $103.9 billion as of June 2022.

22 California Department of Education, "Budget Act for 2021-22: Information," retrieved December 26, 2022.

## FIGURE A4: CALIFORNIA REGULARLY CONTRIBUTED BILLIONS LESS THAN ACTUARIAL REQUIREMENTS FOR FULLY FUNDING CALSTRS

*Required (ADEC) and Actual Contributions Paid to CalSTRS, 2001–2022*




Source: Equable Institute analysis of public plan valuation reports and ACFRs.

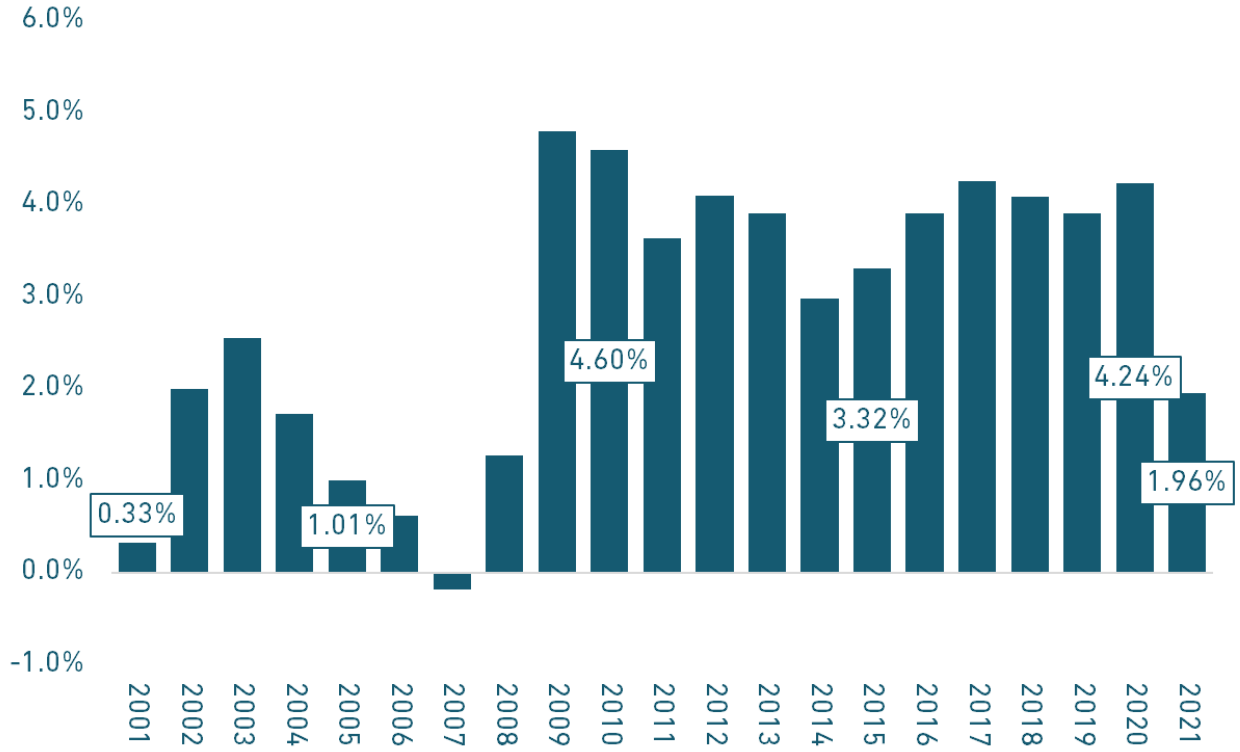
California chronically underfunded its teacher pension system by billions of dollars over the past two decades, shown in Figure A4. For example, in 2013 the state was required to provide $8.43 billion across the two systems, but only provided $4.71, resulting in a $3.72 billion shortfall. Across the past two decades, the consistent underfunding resulted in the addition of $34.6 billion in unfunded liability to CalSTRS. That said, in 2019, the state did spend *more* than was actuarially required across its two education pension systems. Moreover, contributions to CalPERS PERF B have consistently met or exceeded the actuarially determined costs every year since 2014. Taken together, these could be the start of a positive trend toward paying the full actuarial bill for the state's retirement systems.

California's current $103.9 billion in unfunded liabilities across CalSTRS and CalPERS PERF B can feel like a paralyzing amount of debt but considering the sheer size of the state's budget, this number is much less threatening. It can be difficult to understand intuitively if that figure is actually all that large in the context of a state like California. So, comparing unfunded liabilities to the economic activity in the state gives a helpful sense of scale.

Figure A5 below shows the reported unfunded liabilities each year from 2001 to 2021 as a share of California's GDP.

## FIGURE A5: CALIFORNIA'S PUBLIC SCHOOL PENSION SHORTFALL AMOUNTED TO AROUND 2% OF GDP IN 2021

*Market Valued CalSTRS and CalPERS PERF B Unfunded Liability as a Share of California's GDP, 2001–2021*




Source: Equable Institute analysis of public plan valuation reports and ACFRs. U.S. Bureau of Economic Analysis, "GDP by State."

In 2020, the combined unfunded teacher pension liability reported by CalSTRS and CalPERS PEFF B was $127.6 billion, and that was 4.24% of the state's economic output. In 2021, the once-in-a-generation investment returns reduced the combined unfunded liability to only $65.8 billion, which is 1.96% of California's GDP. However, the investment losses in 2022 resulted in unfunded liabilities climbing back to $103.9 billion, which would be roughly 3% of GDP (using 2021 GDP, the most recent figure available). Then if we account for using more realistic investment assumptions the current funding shortfall is likely closer to $170 billion, but this is still only around 5% of California's economic output.

Relative to something like the federal deficit, this 3% to 5% of GDP is a manageable number— which means the unfunded liability should be considered a manageable dollar number whether $70 billion or $170 billion. And that means the functional roadblock for fixing California's school pension system funding is a political issue — does the state want to spend the money necessary to fix the funding shortfall? And can the state legislature adopt an approach that does not cut into state funding for public schools or add budgetary pressure on school districts directly? Put another way, to the degree that state leaders want to solve this problem, can they do so in such a way that holds schools and students harmless?

The unfunded liability of CalSTRS and PERF B can also be thought of on a per-student basis. Table A1 shows that per-pupil CalSTRS pension costs consumed a larger and larger share of total K–12 spending from 2001 to 2020. Over this period, K–12 per-pupil expenditures increased 66% compared with an increase of 162% in per-pupil CalSTRS pension costs. The state paid more than three times as much per pupil to CalSTRS in 2020 as in 2001, while local districts more than doubled their payment over the same period. As these figures make clear, rising pension debt exacts real costs for students.

## TABLE A1: CALSTRS PENSION COSTS PER STUDENT MORE THAN DOUBLED BY 2019

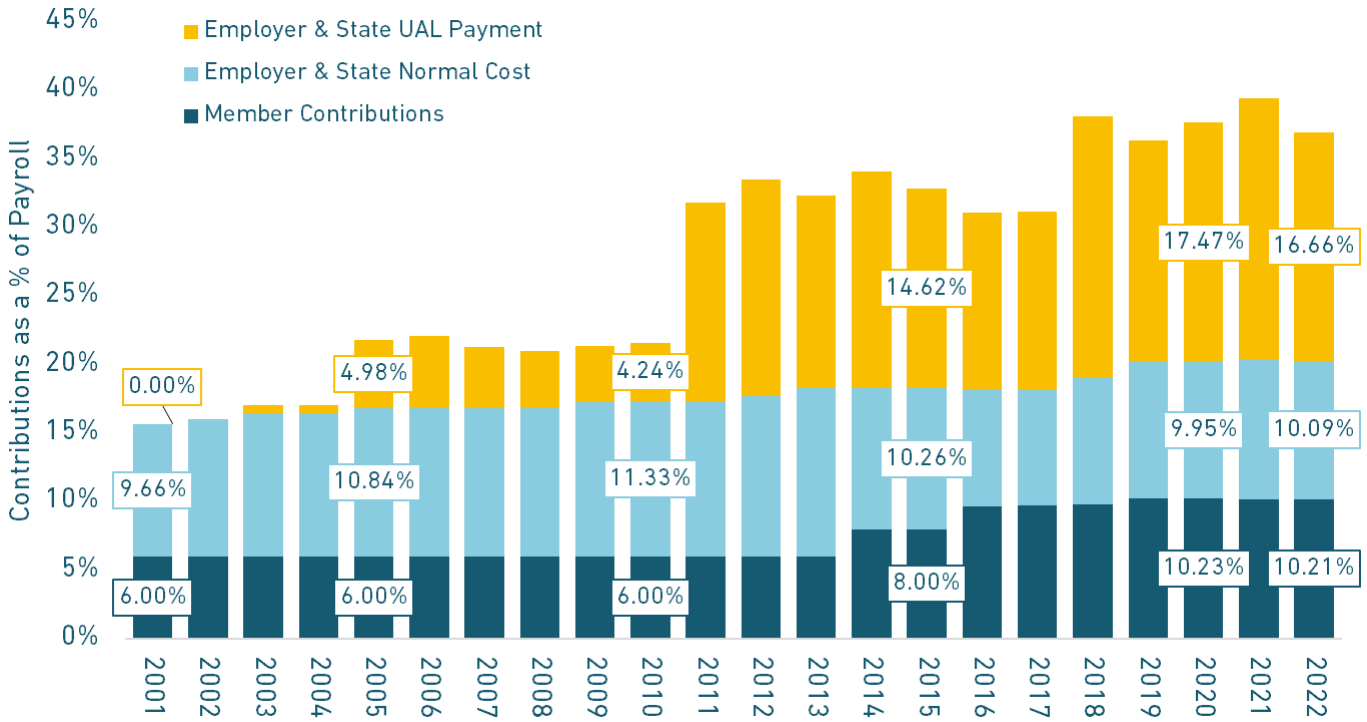
*K–12 Spending and Pensions Spending by Source per Student, 2001–2019*

| YEAR | STATE PENSION COST | DISTRICT PENSION COST | **TOTAL PENSION COST** | DISTRICT K–12 SPENDING | DISTRICT K–12 SPENDING MINUS DISTRICT PENSION COST | TOTAL K–12 SPENDING | TOTAL K–12 SPENDING MINUS TOTAL PENSION COST |
|---|---|---|---|---|---|---|---|
| 2001 | $218 | $433 | **$651** | $10,708 | $10,057 | $15,658 | $15,007 |
| 2002 | $205 | $386 | **$591** | $11,922 | $11,331 | $17,216 | $16,625 |
| 2003 | $221 | $411 | **$632** | $11,982 | $11,350 | $17,250 | $16,618 |
| 2004 | $115 | $402 | **$517** | $12,356 | $11,839 | $17,691 | $17,173 |
| 2005 | $249 | $410 | **$659** | $12,635 | $11,975 | $18,132 | $17,473 |
| 2006 | $201 | $413 | **$613** | $12,634 | $12,020 | $18,200 | $17,587 |
| 2007 | $210 | $420 | **$630** | $13,262 | $12,631 | $19,082 | $18,452 |
| 2008 | $302 | $431 | **$733** | $13,069 | $12,336 | $19,213 | $18,480 |
| 2009 | $216 | $442 | **$658** | $13,126 | $12,468 | $19,715 | $19,057 |
| 2010 | $228 | $398 | **$626** | $12,204 | $11,577 | $19,325 | $18,699 |
| 2011 | $215 | $417 | **$632** | $11,473 | $10,840 | $18,599 | $17,966 |
| 2012 | $231 | $398 | **$629** | $11,528 | $10,899 | $18,781 | $18,152 |
| 2013 | $232 | $405 | **$637** | $11,224 | $10,586 | $18,141 | $17,504 |
| 2014 | $237 | $390 | **$627** | $11,361 | $10,734 | $18,475 | $17,849 |
| 2015 | $244 | $458 | **$702** | $12,333 | $11,631 | $19,713 | $19,011 |
| 2016 | $327 | $571 | **$898** | $13,228 | $12,330 | $21,001 | $20,103 |
| 2017 | $411 | $692 | **$1,103** | $16,257 | $15,155 | $22,216 | $21,114 |
| 2018 | $452 | $786 | **$1,238** | $16,607 | $15,370 | $22,780 | $21,542 |
| 2019 | $850 | $899 | **$1,749** | $17,075 | $15,327 | $24,172 | $22,423 |

Source: Total K–12 education spending data are drawn from U.S. Census Bureau, 2019 Annual Surveys of State and Local Government Finances. Unfunded liability are drawn from public plan valuation reports and ACFRs. All spending figures are adjusted for inflation.

## FIGURE A6: CALSTRS UNFUNDED LIABILITY COSTS CONSUME TWO-THIRDS OF THE MONEY THAT EMPLOYERS PAY INTO THE RETIREMENT FUND

*Actual Contribution Rates as a Percentage of Payroll, 2001–2022*




Source: Equable Institute analysis of public plan valuation reports and ACFRs.

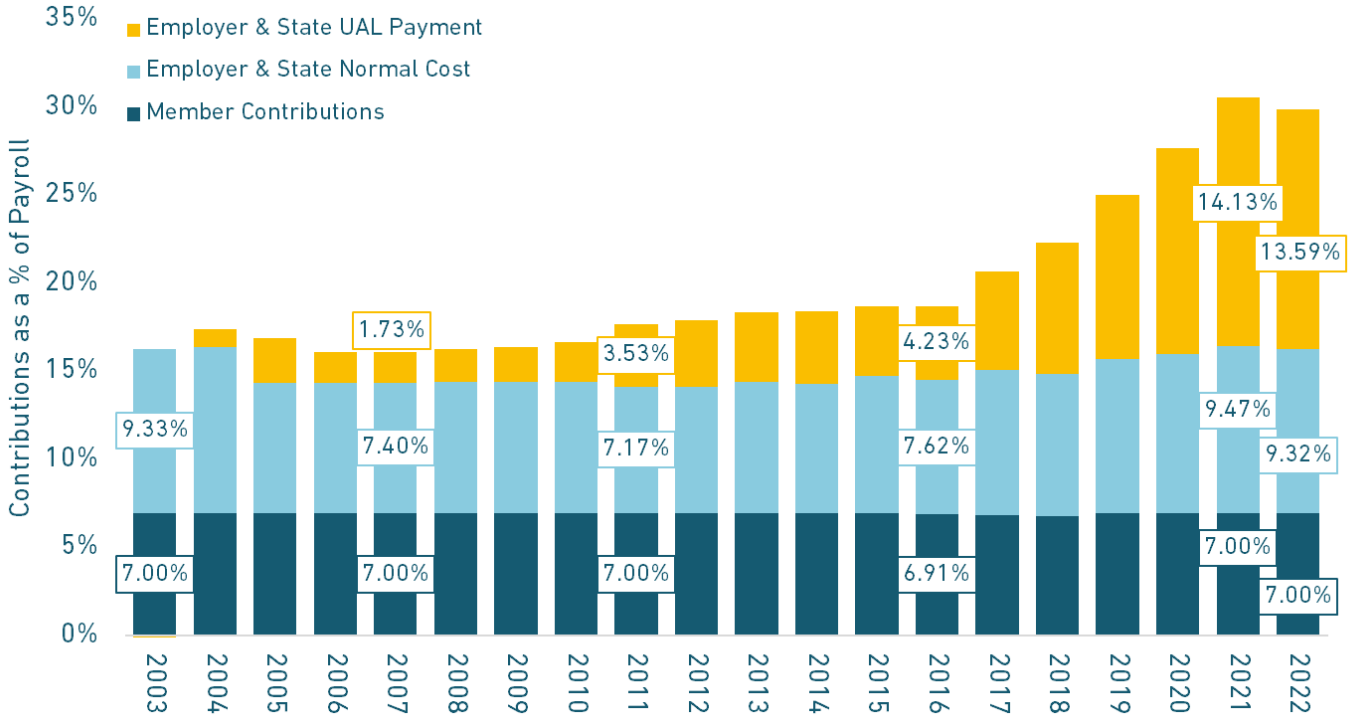
To be clear, the problems here are not a function of regular benefit increases that mean more expensive or so-called "gold plated" pensions. Neither are the problems caused solely because teachers are living longer or retiring earlier than expected and, therefore, requiring more pension checks than expected. The reason that CalSTRS costs are going up are mainly because the retirement system has not received sufficient money to cover the normally promised benefits — and this shortfall is called an unfunded liability. It is the unfunded liability amortization payments that are leading to higher contribution rates for teachers, school districts, and the state. (See Appendix B for details on the cause of unfunded liabilities.)

In addition, a greater share of the total employer (state and district) contribution to CalSTRS goes to pay down debts rather than to pay the normal cost of benefits for teachers. As shown in Figure A6, the share of the total state and employer contribution going to pay debts has steadily increased over the past two decades. In 2001, CalSTRS did not finance any debt. But from 2005 to 2021, as total contributions skyrocketed, the share of employer contributions going toward paying down the pension debt rose from around a third of employer contributions to two-thirds (62% in 2022) of employer contributions.

Another consequence of rising debt cost is teachers now more or less share evenly the normal cost of their retirement benefits. In other words, teachers contribute about the same amount as their employer and the state for CalSTRS. This wasn't always the case. In 2006, for example, when rising debt cost began to pick up in earnest, teachers accounted for only 36% of the cost of their retirement benefits. But in 2022, the cost was divided evenly. Simply put, teachers in California now pay more and account for a greater share of less valuable retirement benefits.

## FIGURE A7: CALPERS PERF B UNFUNDED LIABILITY COSTS CONSUME ALMOST 60 PERCENT OF THE MONEY THAT EMPLOYERS PAY INTO THE RETIREMENT FUND

*Actual Contribution Rates as a Percentage of Payroll, 2003–2022*




Source: Equable Institute analysis of public plan valuation reports and ACFRs. Data are available for 2001 and 2002, but they do not document employer contributions during those years.

Rising debt cost in both absolute terms and as a share of the total state and employer contribution rate is also a problem for CalPERS, shown in Figure A7. Over the past two decades, the employee contribution rate to the pension system remained more or less the same year to year. However, employee and state contributions increased steadily beginning with the Great Recession. The primary driver of that change was rising debt cost. In 2009, 21% of the total employer and state contribution to PERF B went to pay down unfunded liabilities. That amount roughly tripled to 59.3% of employer contributions in 2022.

Unlike with CalSTRS, CalPERS members still assume a smaller share of the normal cost of retirement benefits than their employers and the state. The issue is that the state and employers have had to raise their contributions considerably to cover the rising pension debt cost.

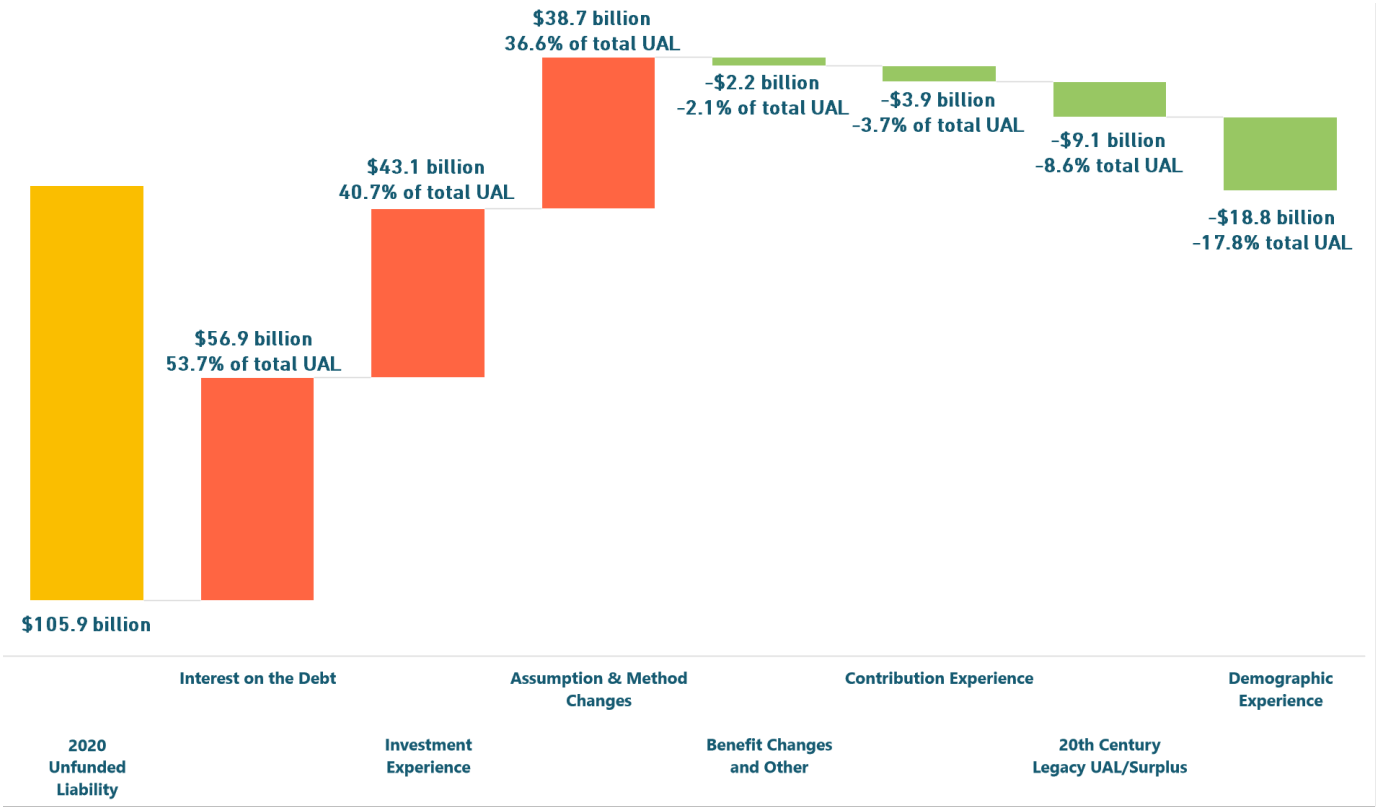
# Appendix B: What Has Caused Unfunded Liabilities to Increase? Underperforming Investment Returns

Despite the historic investment performance in 2021, the second largest contributor to CalSTRS's unfunded liability has been underperforming assets. This is not to say California has experienced large investment losses or even an argument they've made bad investments. Rather, actual investment returns have underperformed actuarial assumptions. Put another way, the average CalSTRS investment return wasn't good enough to effectively hit their assumed rate of return. CalSTRS assumed a return of 8% from 2001 to 2009, and gradually lowered it thereafter. Since 2017 the plan has assumed a 7% rate of return.

Figure B1 below breaks out the main factors that contributed to the emergence of unfunded liabilities. CalSTRS reports these data as shares of their "actuarially valued assets" — a metric that accounts for only a portion of asset gains or losses each year. For FY2020, the unfunded actuarial accrued liability was reported at $105.9 billion, and this chart shows the various factors to that measurement of the CalSTRS funding shortfall.

## FIGURE B1: CONTRIBUTION SHORTFALLS ARE HALF OF CALSTRS'S UNFUNDED LIABILITY

*CalSTRS's Gains and Losses by Source, 2001–2020*




Source: Equable Institute analysis of public plan valuation reports and ACFRs.

Figure B1 shows the composition of CalSTRS unfunded liabilities, reflected in the far-left yellow column. The elements that have built up to that figure are shown from left to right:

1. **Interest on the Debt:** Failing to ensure that actuarially required contributions are paid each year has led to billions in negative contribution experience. The legislature had to consider the trade-offs of demanding school districts pay the actuarially required rate, but the downside of a slow ramp-up in costs has been the accumulation of more unfunded liabilities. And in addition to just not paying the bills, there has been interest growing on the pension debt that persists. The total effect of shortchanging the pension fund and interest accrual is $56.9 billion in unfunded liability accumulation over the past two decades.
2. **Investment Experience:** Between 2001 and 2020, there were good years and bad years of investment returns, but all added together there was enough underperformance to add $43.1 billion to the CalSTRS unfunded liabilities.
3. **Demographic Experience:** CalSTRS did not always get its demographic assumptions correct about factors like mortality rates or payroll growth. Ironically, because salaries have not increased at the rates expected, the value of pensions earned has been less than expected. And this created a $18.8 billion "actuarial gain."
4. **Assumption and Method Changes:** Changes to actuarial assumptions to adapt to a changing world and improve accuracy have meant recognizing an additional $38.7 billion in pension debt. Some of this has come from changing the assumed rate of return to avoid even larger underperformance, and some of this will reflect needing to update mortality tables or other demographic assumptions.
5. **Benefit Changes & Other:** The legislature marginally enhanced benefits toward the beginning of the century, which increased unfunded liabilities $1.2 billion. But other adjustments to benefit values and liabilities wound up decreasing benefits, and netting a total $2.2 billion decline in pension debt.
6. **20th Century Legacy:** Some of the unspecified actuarial experience from CalSTRS has been a small net positive. And it certainly helps that, on an actuarial value of assets basis, the pension fund started this century already $9.1 billion overfunded.

The net effect of all of these factors works out to $105.9 billion in actuarially valued unfunded liabilities as of the end of 2020.

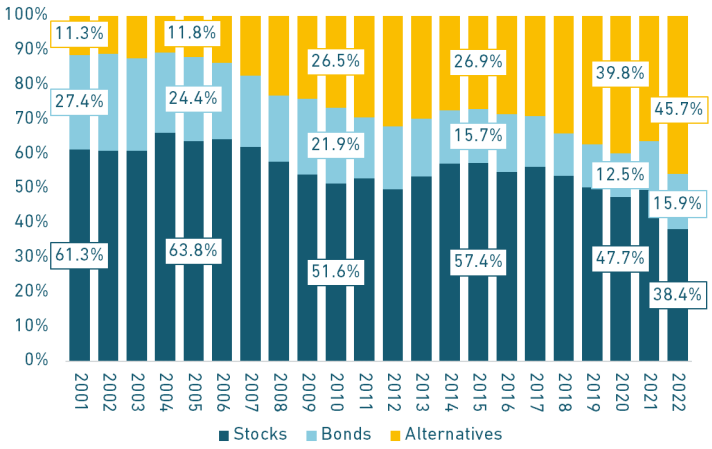
This total unfunded liability number will be lower once the 2021 actuarial valuation is published. Only a portion of the investment gains from last year will be recognized, though, along with some investment gains and losses from previous years. Thus, the overall figure might not change dramatically. In general, the actuarial experience data will largely align with the categories as they state, perhaps with a slight reduction in the investment experience category.

The trend lines for the factors that have caused CalPERS PERF B unfunded liabilities are roughly similar. As of 2020, the underperforming investments were the largest factor (52%) contributing to the shortfall, and changes to actuarial assumptions (40%) were the second largest factor. The primary difference is that contribution experience is not as large of an issue, as the state legislature mostly directed school districts to make required contributions to CalPERS.

It is important to note that over the next few years, the investment experience share of the unfunded liabilities for CalSTRS and CalPERS will change due to the accounting recognition of 2021 investment returns and 2022 investment losses. CalSTRS will need to consistently earn an average 7% return and CalPERS will need to earn a 6.8% return to prevent this category from growing in the future.

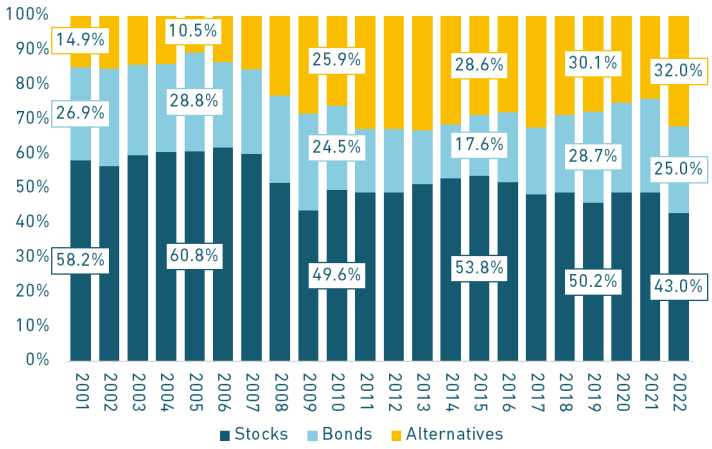
## FIGURE B2: RISKY AND NONTRANSPARENT ASSET CLASSES COMPRISE MORE THAN 40% OF CALSTRS' INVESTMENTS

*California CalSTRS's Asset Allocation, 2001–2022*




## FIGURE B3: RISKY AND NONTRANSPARENT ASSET CLASSES ROUGHLY ONE-THIRD OF CALPERS' INVESTMENTS

*California CalPERS's Asset Allocation, 2001–2022*




Source: Equable Institute analysis of public plan valuation reports and ACFRs.

In an effort to achieve their assumed investment returns, CalSTRS shifted its investing strategy over the past few years into riskier asset classes. Figure B2 shows that since 2001, when CalSTRS was nearly fully funded, the share of the plan's assets allocated to alternatives has increased dramatically from 11.3% to 45.7%. Alternative assets include investments in real estate, private equity, and hedge funds, among other asset classes. These investments are high risk, high reward, but they also come with higher volatility from year to year.

CalPERS also shifted their investing strategy into riskier asset classes relative to the early 2000s, though that exposure has tapered a bit in recent years. Figure B3 shows that since 2001, when CalPERS was in surplus, the share of the plan's assets allocated to alternatives has increased from 14.9% to 32.0%.

The failure of the state legislature to directly invest in CalSTRS and CalPERS and pay down the debt directly is pushing California's school pension systems into making these riskier investments. This strategy makes CalSTRS and CalPERS increasingly susceptible to market volatility. Making riskier investments to pay a larger and larger bill raises the likelihood of another down year, as alternative investments can have higher returns, but can also lead to larger losses. Without a substantial change in state-level fiscal policy, this pattern will likely continue, digging both CalSTRS and CalPERS more deeply into debt.

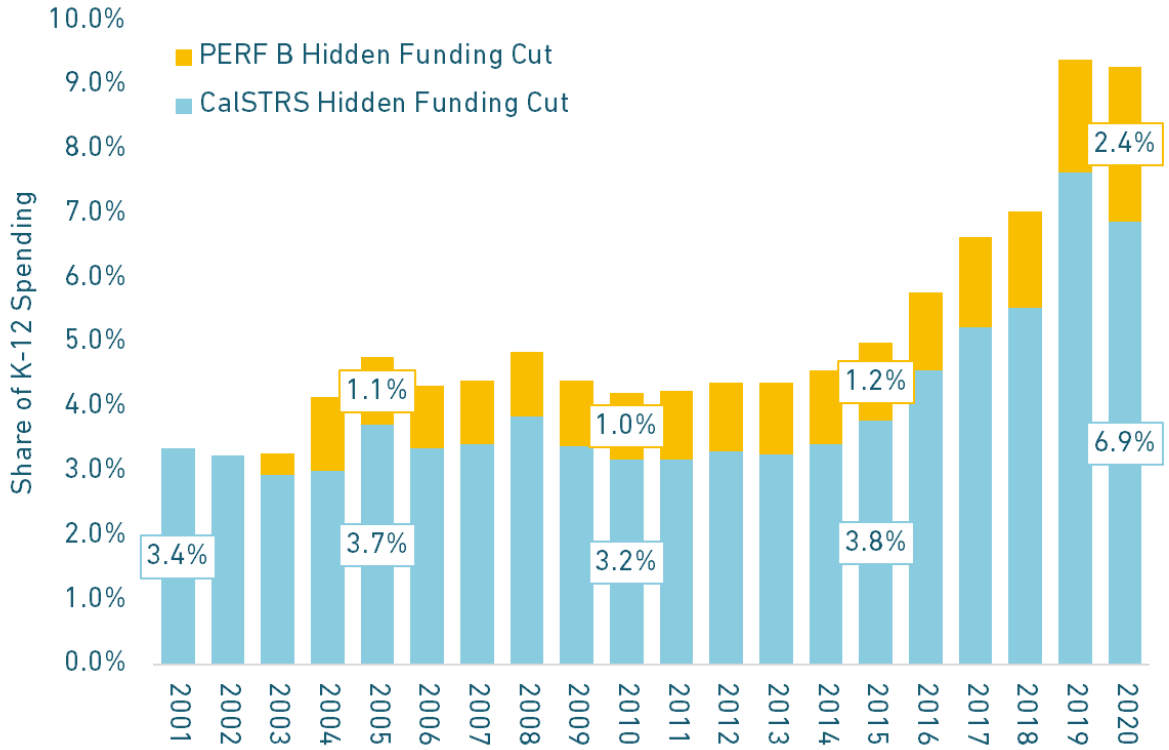
# Appendix C: California's Hidden Education Funding Cuts, A Detailed State & Local Breakdown

The share of California's K–12 education spending on retirement benefits can be broken out into what portion is going to CalSTRS and CalPERS PERF B, as well as how much contributions to both retirement plans are as a share of state and local K–12 spending separately. In this appendix we breakdown these varying levels showing the different ways to look at hidden education funding cuts.

Figure C1 below shows a fully combined chart, with the costs of retirement benefits for all non-certificated public school employees and certificated teachers growing as a share of state plus local K–12 spending. (Note: since Federal dollars are largely narrowly prescribed and not used for normal staffing uses, they are removed from this analysis.)

## FIGURE C1: CALIFORNIA PUBLIC SCHOOL RETIREMENT COSTS ARE CONSUMING A GREATER SHARE OF K–12 EDUCATION SPENDING

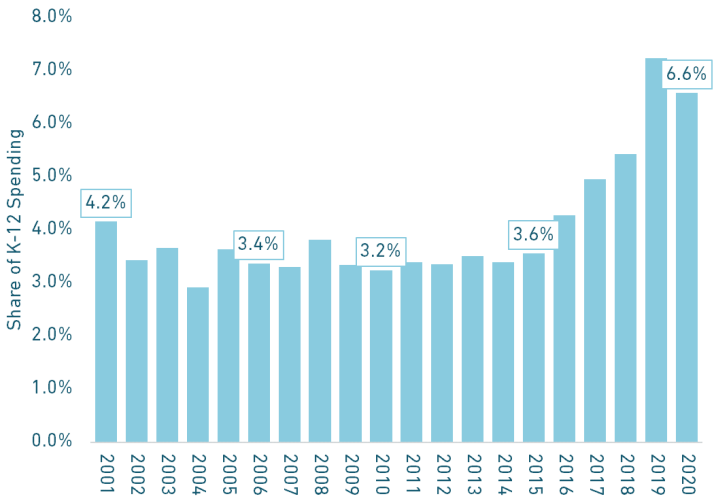
*Actual State + Employer CALSTRS + PERF B Contributions as a Share of Total K–12 Spending, 2003–2020*




Source: Equable Institute analysis of public plan valuation reports and ACFRs. These figures are based on expenditures data adjusted for inflation. Note: Employer contributions includes both state and employer spending.

## FIGURE C2: CALSTRS SPENDING IS CONSUMING A GREATER SHARE OF K–12 EDUCATION SPENDING

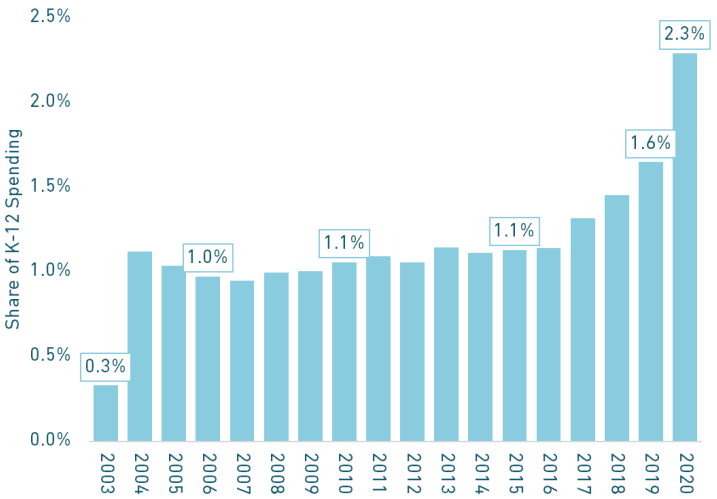
*Actual State + Employer CalSTRS Contributions as a Share of Total K–12 Spending, 2001–2020*




Source: Equable Institute analysis of public plan valuation reports and ACFRs. These figures are based on expenditures data adjusted for inflation. Note: Employer contributions includes both state and employer spending.

## FIGURE C3: PERF B SPENDING IS CONSUMING A GREATER SHARE OF K–12 EDUCATION SPENDING

*Actual State + Employer PERF B Contributions as a Share of Total K–12 Spending, 2003–2020*




Source: Equable Institute analysis of public plan valuation reports and ACFRs. These figures are based on expenditures data adjusted for inflation. Note: Employer contributions includes both state and employer spending.

These rising pension costs eroded other education investments. Figures C2 and C3 show the share of total K–12 spending consumed by state and employer contributions to CalSTRS and CalPERS PERF B, respectively.

- Figure C2 shows that in 2001, contributions to CalSTRS consumed 4.2% of total K–12 spending. By 2020 that increased to 6.6%. That amounts to a 58.4% increase.
- Over 2003-2019, Figure C3 shows that state and employer contributions to CalPERS consumed 0.3% of total K–12 spending in 2003 and 2.3% in 2020. This amounts to a 592.4% increase.

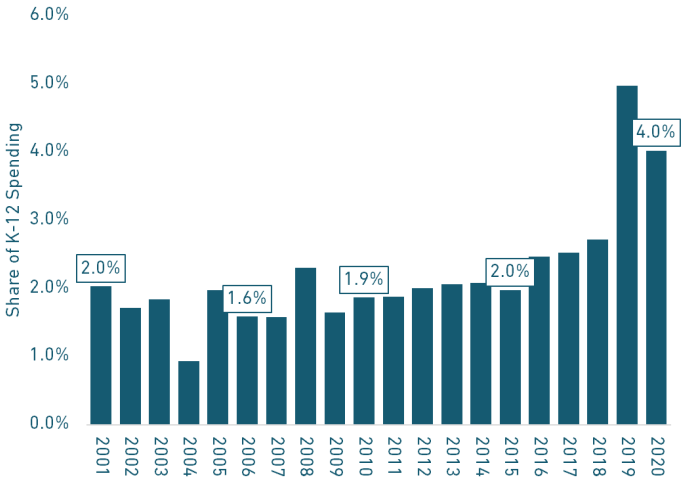
These figures can be broken down by what share of state education spending is going toward retirement costs, and what share of local employer budgets are being rerouted to CalSTRS and PERF B. Figure C4 (next page) shows that in 2001, state contributions to CalSTRS comprised 2.0% of state education spending. And for most of the past two decades, that remained fairly consistent, increasing relatively slowly through 2018. However, in 2019, state contributions to CalSTRS increased considerably, resulting in a clear spike in Figure C4. A reduction in contributions in 2020, resulted in CalSTRS contributions consuming 4.0% of the state's K–12 budget. Overall, from 2001 to 2020, the share of state education investments going to CalSTRS increased 97.7%.

A similar trend can be seen in the growth of state contributions to CalPERS as a share of state K–12 spending, shown in Figure C5. In 2003, state contributions to CalPERS consumed only 0.4% of state K–12 spending. But that increased by 595.6% over the following two decades to account for 2.5% of state K–12 spending in 2020.

Pension costs are also a larger share of local school employer budgets, too. Figure C6 shows a 41.0% increase in employer contributions between 2001 and 2020 (from 8.8% of local K–12 education spending up to 12.3%). And Figure C7 shows a more dramatic 585.6% jump over the same time period for PERF B contributions as a share of local K–12 spending.

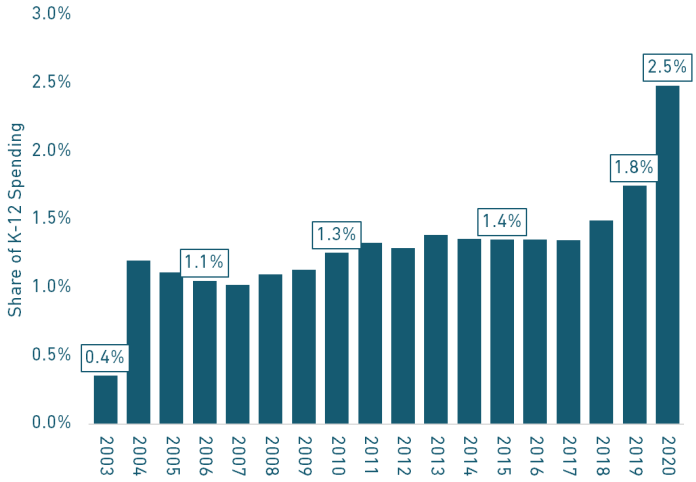
## FIGURE C4: CALSTRS CONSUMES A GREATER SHARE OF STATE EDUCATION SPENDING

*Actual State Contributions to CalSTRS as a Share of State K–12 Spending, 2001–2020*




## FIGURE C5: PERF B CONSUMES A GREATER SHARE OF STATE EDUCATION SPENDING

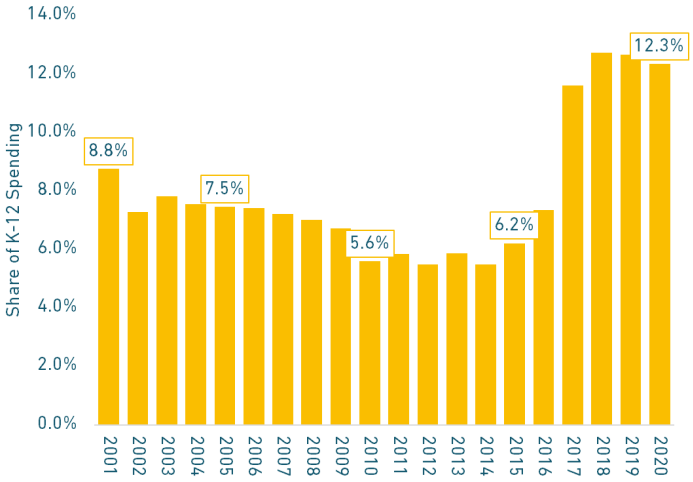
*Actual State Contributions to CalPERS PERF B as a Share of State K–12 Spending, 2001–2020*




Source: Equable Institute analysis of public plan valuation reports and ACFRs. These figures are based on expenditures data adjusted for inflation. Note: the scale of the Y-axis differs between these two graphs to improve readability.

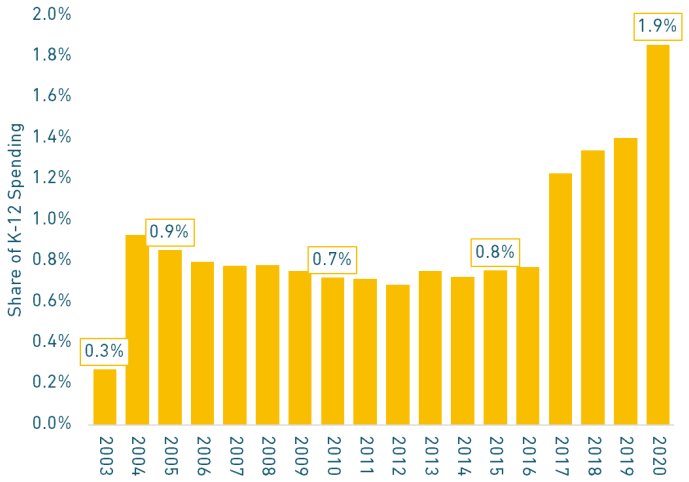
## FIGURE C6: CALSTRS CONSUMES A GREATER SHARE OF LOCAL EDUCATION SPENDING

*Actual Employer Contributions to CalSTRS as a Share of Local K–12 Spending, 2001–2020*




## FIGURE C7: PERF B CONSUMES A GREATER SHARE OF LOCAL EDUCATION SPENDING

*Actual Employer Contributions to PERF B as a Share of Local K–12 Spending, 2001–2020*




Source: Equable Institute analysis of public plan valuation reports and ACFRs. These figures are based on expenditures data adjusted for inflation. Note: the scale of the Y-axis differs between these two graphs to improve readability.

# Appendix D: Teacher Pension Benefit Structure in California

It is important to note that the high costs of teacher retirement benefits in California are not due to lavish benefit levels. As previously shown in the appendices for this paper, the driving factor for costs are unfunded liability payments. And unfunded liabilities have been primarily caused by underperforming investments.

In fact, the benefits for teachers in California are not universally putting educators on a path to retirement income security. Those who work their full career teaching in California are likely to end up with a good benefit, but that is not the case for most teachers. Less than 3 in 4 new educators is expected to vest in retirement benefits, and just 33% are expected to make it all the way to CalSTRS normal retirement age. The lack of Social Security participation creates an added complication that does not support retirement income security.

In effect, there are two classes of public school employees in California — those for whom retirement benefits are working and those for whom they are not. The current system benefits long-term workers, administrators who earn large salaries, and wealthy school districts that pay teachers above average salaries. Those who are losing out include new teachers (who are enrolled in less valuable benefits and have a lower probability of working a full career than those hired in the 20th century), teachers who will spend less than 20 years teaching in California, and teachers who do not vest in CalSTRS.

This appendix breaks down how CalSTRS and CalPERS PERF B benefits are structured. And, the following Appendix E provides an evaluation of the quality of benefits relative to a retirement income adequacy benchmark.

Moreover, none of the analysis accounts for the indirect effect of higher pension costs which can reduce the capacity to districts to give teachers raises, and in turn, results in lower valued retirement benefits earned. These indirect effects are discussed at more length in other research papers (see footnote) but altogether, higher pension contribution rates have eaten away at wage growth for teachers—and that's before considering the effects of other rising costs, like health care and special education.[23] And again, the erosion of teacher salaries by rising pension spending is likely felt unevenly across the state. For instance, lower wealth districts may not have been able to raise teacher salaries as much as the average district in California. Yet teachers in those districts still must pay the higher teacher pension contribution rates.

## PLAN STRUCTURE: CALSTRS

California CalSTRS is a salary-based Defined Benefit retirement plan, typically called a "pension." As with many states, California's teacher pension system has different tiers based on a hire date.[24] The current tier of CalSTRS applies to those educators hired on or after January 1, 2013. All new hires join this version of the plan.

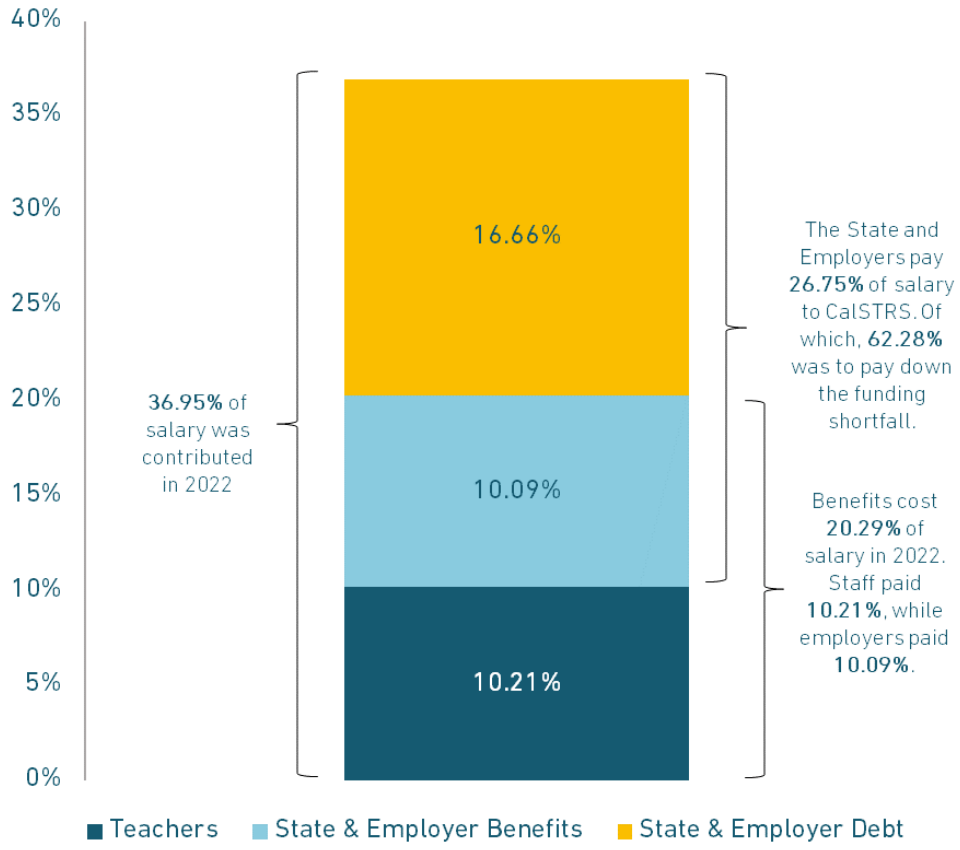
In 2022, teachers contributed 10.205% of their salary to CalSTRS. The employer — both the state and the teacher's school district — combined to contribute another 26.75% of payroll. In total, 36.95% of teacher payroll was contributed to CalSTRS in 2021. This full breakout is shown in Figure D1.

[23] Max Marchitello , "Expensive, Inequitable, and Out of Reach: The Problems with California's Teacher Pension System - and What Can be Done," Opportunity Institute, March 2022

24 California Teachers' Retirement System, "CalSTRS Member Handbook," 2022.

## FIGURE D1: TEACHERS PAY THE MAJORITY OF THE COST OF THEIR RETIREMENT BENEFITS

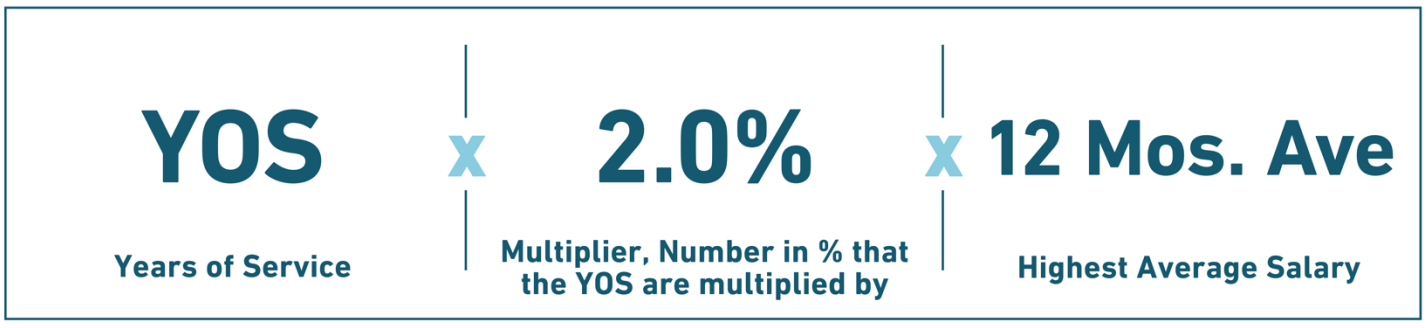
*Member and Employer Contribution Rates, 2022*




Source: Defined Benefit Program of the California State Teachers' Retirement System: Actuarial Valuation as of June 30, 2020.

A key feature of salary-based defined benefit pension is that the retirement income guaranteed to members is based on a formula that considers years of service and average salary. This is unlike many other retirement plan designs where retirement income is related to contributions and investments. While contributions are necessary to provide money to pay out promised benefits, what teachers put in does not directly relate with what they will get out of the system. The formula used to calculate benefits is shown in Figure D2: If teachers vest in their benefits (see section on vesting below), their years of service are multiplied by 2% (the "multiplier"), and this number is used to measure the percentage of highest average salary (the average of the highest 12 consecutive months of salary).

## FIGURE D2: CALSTRS BENEFIT FORMULA



## VESTING, CALSTRS

Not every teacher in California qualifies for a pension. Educators must serve at least five years before they "vest" in the system and are eligible for a pension. Unfortunately, only 28% of new teachers are expected to reach that mark according to CalSTRS's own actuarial assumptions.[25] In addition to failing to qualify for a pension, educators who either leave the profession or the state before five years of service are eligible only for their own contributions, plus a 2.84%[26] crediting interest rate.[27] That is a poor return on their investment. It is far less than even conservative estimates of what a teacher could yield investing in the market. In fact, it is even lower than CalSTRS's assumed annual inflation rate of 2.75%.[28]

## NORMAL RETIREMENT, CALSTRS

In California, a teacher may retire will full benefits at age 65 with at least 5 years of service. A teacher who worked 25 years and retired with a final average salary of $90,000 would qualify for a pension worth $45,000 per year, or 50% of their salary. Unfortunately, since California does not enroll its teachers in Social Security, retired educators will not receive any of those benefits in retirement.

On its own, this replacement rate would be considered inadequate retirement income by almost any financial expert. As a general rule, financial experts recommend final salary replacement rates of 70% or higher.[29] For most people, this replacement rate target includes Social Security income. Additionally, personal savings beyond an employer-sponsored retirement plan can build toward that replacement rate target. In California, a new teacher would need to work 35 years to cross that threshold and qualify for a pension benefit that will provide sufficient income in retirement.

Unfortunately, the majority of Californian educators do not spend their entire professional life in a California classroom. According to CalSTRS's own assumptions, only 28% of educators will serve at least 35 years.[30] This means that for 72% of teachers, CalSTRS will not provide an adequate retirement benefit.

## COST-OF-LIVING ADJUSTMENTS, CALSTRS

CalSTRS provides an annual 2% COLA to ensure that benefits keep pace with inflation. However, it is important to note that the state assumes an annual inflation rate of 2.75%. In other words, the COLA CalSTRS provides to offset the impact of inflation on teacher salaries does not do enough to compensate for the level of inflation the state assumes will occur.

## SOCIAL SECURITY, CALSTRS

California teachers are not enrolled in Social Security. Without Social Security, teachers are wholly dependent on CalSTRS to provide sufficient benefits in retirement — but remember that even CalSTRS does not expect most teachers to remain long enough to earn those benefits.

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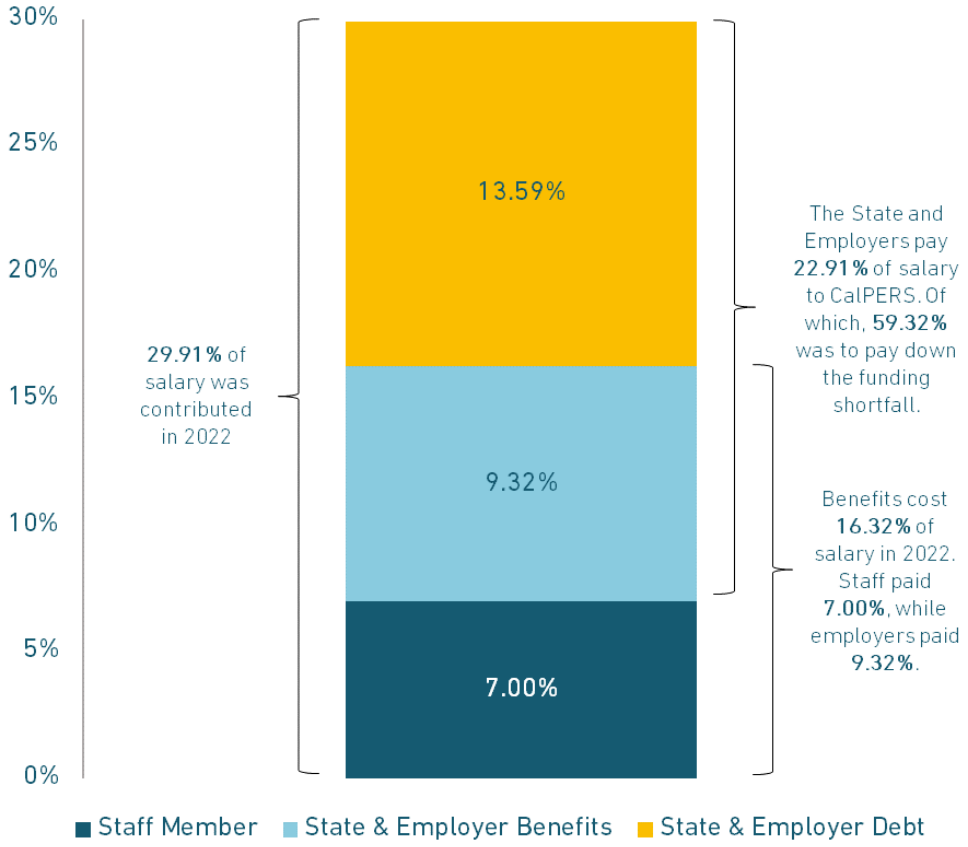
[25] Defined Benefit Program of the California State Teachers' Retirement System: Actuarial Valuation as of June 30, 2020.
[26] Interest is credited at the end of each fiscal year based on rates adopted by the Teachers' Retirement Board. Currently, rates are approximately equal to two-year Treasury notes. As such, 2.84% was the two-year Treasury note value as of July 1, 2022, the start of fiscal year 2023.
[27] Ibid.
[28] California State Teachers' Retirement System, "Comprehensive Annual Financial Report," June 30, 2021.
[29] Jonathan Moody and Anthony Randazzo, "Retirement Security Report," Equable Institute, 2021.
[30] Ibid.

# PLAN STRUCTURE: CALPERS

California CalPERS is a salary-based defined benefit retirement plan, typically called a "pension." In 2021, teachers contributed 7% of their salary to CalPERS. The employer — both the state and the school district — combined to contribute another 22.9% of payroll. In total, 29.9% of payroll was contributed to CalPERS in 2021. This full breakout is shown in Figure D3.

## FIGURE D3: NEARLY HALF OF TOTAL CONTRIBUTIONS TO PAY SCHOOL STAFF RETIREMENT BENEFITS GO TO DEBT PAYMENTS

*Member and Employer Contribution Rates, 2021*

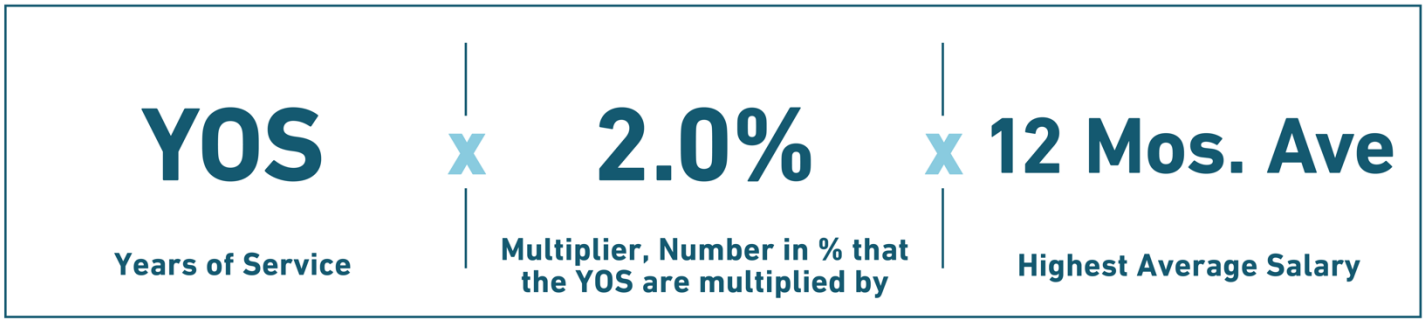



Source: CalPERS Schools Pool Actuarial Valuation: Required Contributions for Fiscal Year 2020 through 2021.
Note: In 2021, the actual contribution was reduced by a one-time direct contribution of 2.9% by the state under Sec. 20825.2, lowering the total employer contribution rate to 20.7%.

A key feature of salary-based defined benefit pension is that the retirement income guaranteed to members is based on a formula that considers years of service and average salary. This is unlike many other retirement plan designs where retirement income is related to contributions and investments. While contributions are necessary to provide money to pay out promised benefits, what staff put in does not directly relate with what they will get out of the system. The formula used to calculate benefits is shown in

Figure D4: If public school employees vest in their benefits (see section on vesting below), their years of service are multiplied by 2% (the "multiplier"), and this number is used to measure the percentage of highest average salary (the average of the highest salary over a consecutive 12-month or 36-month period).[31]

FIGURE D4: CALPERS BENEFIT FORMULA




## VESTING, CALPERS

Not every non-certified school staff member in California qualifies for a pension. They must serve at least five years before they "vest" in the system and are eligible for a pension. In addition to failing to qualify for a pension, educators who either leave the profession or the state before five years of service are eligible only for their own contributions, plus a 6% crediting interest rate.[32] That is a good return on their investment.

## NORMAL RETIREMENT, CALPERS

In California, school staff may retire will full benefits at age 65 with at least 5 years of service. A non-certified staff member who worked 25 years and retired with a final average salary of $60,000 would qualify for a pension worth $30,000 per year, or 50% of their salary.

On its own, this replacement rate would be considered inadequate retirement income by almost any financial expert. As a general rule, financial experts recommend final salary replacement rates of 70% or higher.[33] (For most people, this replacement rate target includes Social Security income, however many public workers in California are not enrolled in the federal retirement program). Additionally, personal savings beyond an employer-sponsored retirement plan can build toward that replacement rate target. In California, a new staff member would need to work 35 years to cross that threshold and qualify for a pension benefit that will provide sufficient income in retirement.

## COST-OF-LIVING ADJUSTMENTS, CALPERS

CalPERS provides an automatic COLA linked with inflation to ensure that benefits keep pace with rising costs.

## SOCIAL SECURITY, CALPERS

Social Security replaces approximately 40% of a public school employee's salary in retirement, depending on how much they earned during their career and outside of public service. Depending on district-level choices, school staff are enrolled in Social Security. Those staff without Social Security are wholly dependent on CalPERS to provide sufficient benefits in retirement.

[31] CalPERS, "Welcome to CalPERS: A Benefits Guide for School Members," July 2021.
[32] Ibid.
[33] Jonathan Moody and Anthony Randazzo, "Retirement Security Report," Equable Institute, 2021.

# Appendix E: Retirement Security Report, CalSTRS and CalPERS PERF B Analyses

In Equable Institute's "Retirement Security Report," the benefits provided through CalSTRS and CalPERS PERF B are evaluated and scored a wide range of variables to determine the quality of the benefit provided though California's teacher pension programs.[34] Given that the quality of a retirement benefit varies by employee tenure, the report assesses how well CalSTRS and CalPERS work for members at three stages in their career: Short-Term Worker (10 years or less), Medium-Term Worker (10 to 20 years), Full-Career Worker (retires at normal retirement age).

Figures E1 and E2 below detail our overall evaluations of the quality of benefits provided by CalSTRS and CalPERS PERF B, respectively, as well as the caliber of benefits provided to workers based on tenure. Figures E2 to E6 show a forecast of benefit values at different career stages compared to an adequacy threshold target of 70% replacement rate. A complete discussion of how variables are scored is available in the "Retirement Security Report."[35]

The two graphs model the salary replacement rate of the benefits provided by CalSTRS and CalPERS PERF B compared with a minimum standard of 70%. Since the age a teacher or staff member enters the system matters for the quality of their benefit, we modeled the replacement rates for a 25-year-old entrant and a 40-year-old entrant.

[34] Jonathan Moody and Anthony Randazzo, "Retirement Security Report," Equable Institute, 2021.
[35] Ibid.

## FIGURE E1: DISTRIBUTION OF RETIREMENT SECURITY REPORT SCORES, CALSTRS

| | AVERAGE FOR ALL WORKERS | SHORT-TERM WORKERS >10 YEARS OF SERVICE | MEDIUM-TERM 10–20 YEARS OF SERVICE | FULL-CAREER <20 YEARS OF SERVICE |
|---|---|---|---|---|
| TOTAL SCORE | 58.2% | 38.3% | 56.4% | 80.0% |
| WHO IS SERVED | Serves all members moderately well | Does not serve all members well | Serves all members moderately well | Serves all members well |

| | SHORT-TERM WORKERS >10 YEARS OF SERVICE | MEDIUM-TERM 10–20 YEARS OF SERVICE | FULL-CAREER <20 YEARS OF SERVICE |
|---|---|---|---|
| Eligibility: Vesting | 3 out of 5 points | Not Applicable | Not Applicable |
| Income Adequacy: Benefit Value – 25 Y/O Entrant | 5 out of 15 points | 6 out of 15 points | 20 out of 25 points |
| Income Adequacy: Benefit Value – 40 Y/O Entrant | 4 out of 15 points | 10 out of 15 points | 18 out of 25 points |
| Income Adequacy: COLA Policy | Not Applicable | 5 out of 5 points | 5 out of 5 points |
| COLA Policy Terms | Not Applicable | 2.0%, automatic, fixed | 2.0%, automatic, fixed |
| Flexibility & Mobility: Refunding Policy | 2 out of 5 points | 2 out of 5 points | Not Applicable |
| Policy Terms | All member contributions refunded with interest | All member contributions refunded with interest | Not Applicable |
| Flexibility & Mobility: Interest Rate Credited When Leaving Early | 2 out of 5 points | 2 out of 5 points | Not Applicable |
| Crediting Rate | 1.50% | 1.50% | Not Applicable |

For more details see CalSTRS complete Retirement Security Score for each type of worker available for download at: http://retirementsecurity.report/.

## FIGURE E2: DISTRIBUTION OF RETIREMENT SECURITY REPORT SCORES, CALPERS PERF B

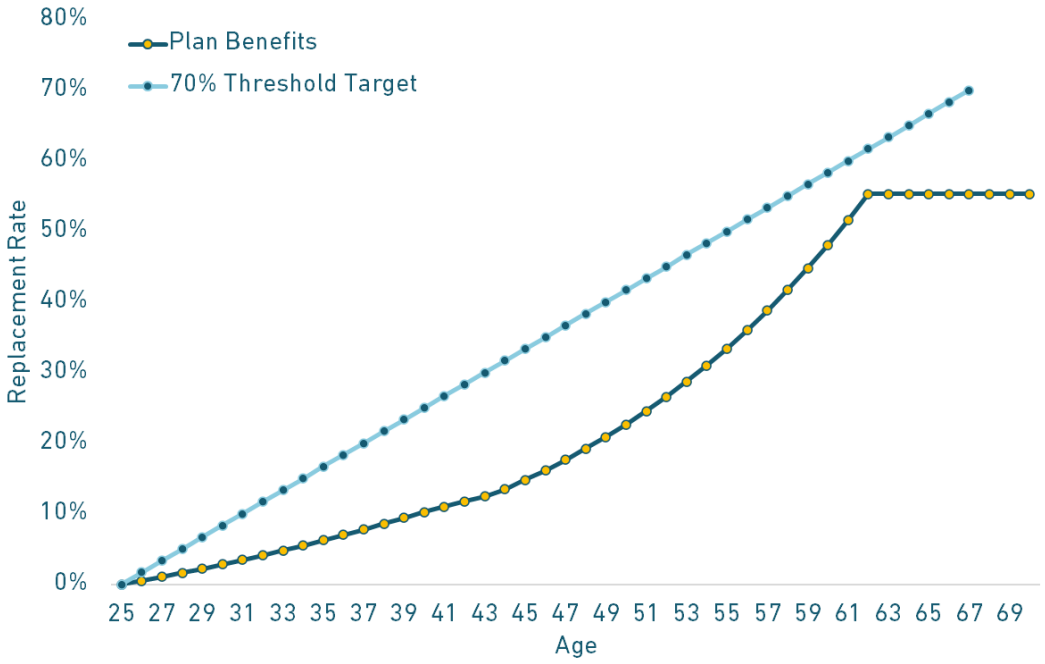
| | AVERAGE FOR ALL WORKERS | SHORT-TERM WORKERS >10 YEARS OF SERVICE | MEDIUM-TERM 10–20 YEARS OF SERVICE | FULL-CAREER <20 YEARS OF SERVICE |
|---|---|---|---|---|
| TOTAL SCORE | 50.9% | 41.6% | 55.3% | 55.9% |
| WHO IS SERVED | Serves all members moderately well | Does not serve all members well | Serves all members moderately well | Serves all members moderately well |

| | SHORT-TERM WORKERS >10 YEARS OF SERVICE | MEDIUM-TERM 10–20 YEARS OF SERVICE | FULL-CAREER <20 YEARS OF SERVICE |
|---|---|---|---|
| Eligibility: Vesting | 3 out of 5 points | Not Applicable | Not Applicable |
| Income Adequacy: Benefit Value – 25 Y/O Entrant | 2 out of 15 points | 4 out of 15 points | 13 out of 25 points |
| Income Adequacy: Benefit Value – 40 Y/O Entrant | 3 out of 15 points | 8 out of 15 points | 13 out of 25 points |
| Income Adequacy: COLA Policy | Not Applicable | 4 out of 5 points | 4 out of 5 points |
| COLA Policy Terms | Not Applicable | Up to 2% automatic, linked to inflation | Up to 2% automatic, linked to inflation |
| Flexibility & Mobility: Refunding Policy | 2 out of 5 points | 2 out of 5 points | Not Applicable |
| Policy Terms | All member contributions refunded with interest | All member contributions refunded with interest | Not Applicable |
| Flexibility & Mobility: Interest Rate Credited When Leaving Early | 5 out of 5 points | 5 out of 5 points | Not Applicable |
| Crediting Rate | 6.00% | 6.00% | Not Applicable |

For more details see CalPERS PERF B complete Retirement Security Score for each type of worker available for download at: http://retirementsecurity.report/.

## FIGURE E3: CALSTRS BENEFITS FALL SHORT OF REACHING A 70% REPLACEMENT RATE TARGET FOR ADEQUATE RETIREMENT INCOME AT ALL STAGES OF A MEMBER'S CAREER

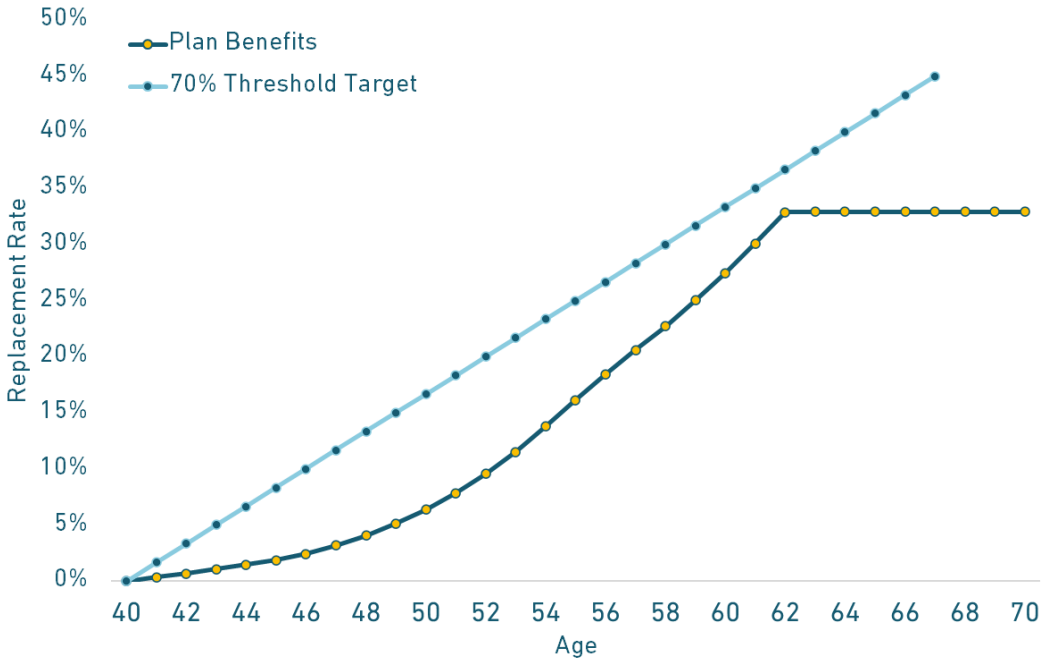
*Adequacy of CalSTRS Benefits for a 25-Year-Old Entrant*




Source: Jonathan Moody and Anthony Randazzo, "Retirement Security Report," Equable Institute, 2021.

## FIGURE E4: CALSTRS BENEFITS ARE SLIGHTLY BETTER FOR MID-CAREER ENTRANTS, BUT STILL FALL SHORT OF A 70% REPLACEMENT RATE TARGET AT ALL STAGES OF A MEMBER'S CAREER

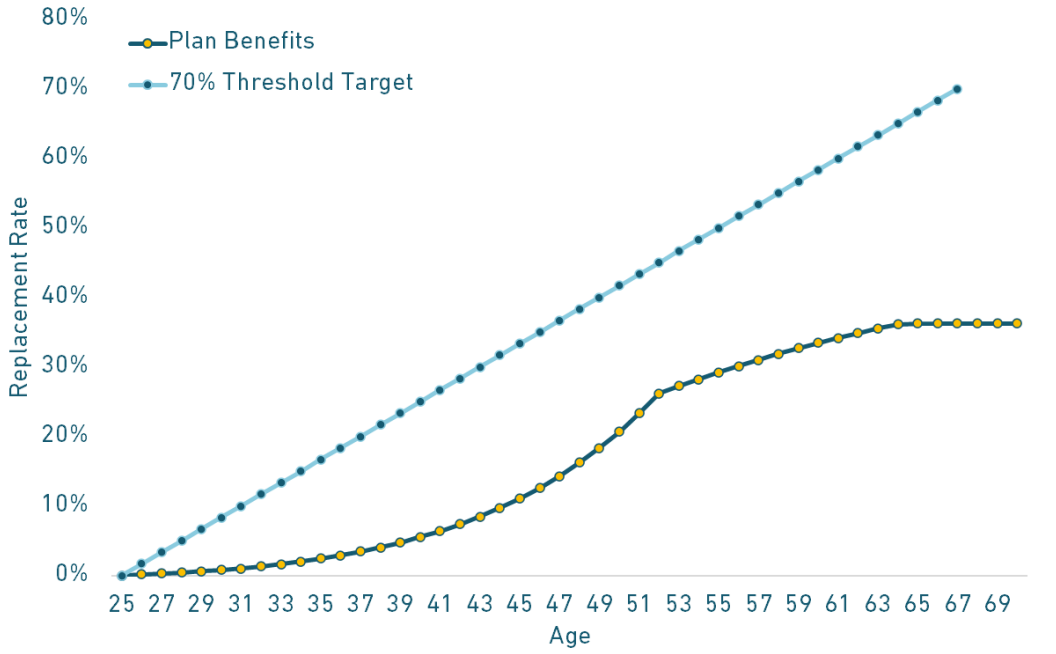
*Adequacy of CalSTRS Benefits for a 40-Year-Old Entrant*




Source: Jonathan Moody and Anthony Randazzo, "Retirement Security Report," Equable Institute, 2021.

## FIGURE E5: CALPERS PERF B BENEFITS FALL SHORT OF REACHING A 70% REPLACEMENT RATE TARGET FOR ADEQUATE RETIREMENT INCOME AT ALL STAGES OF A MEMBER'S CAREER

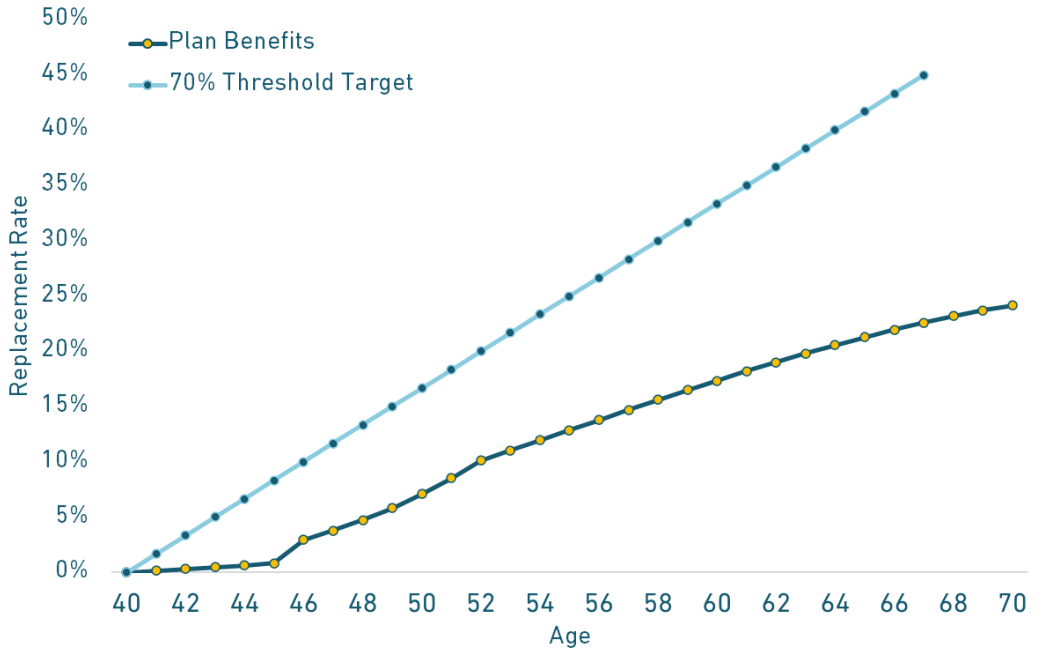
*Adequacy of CalPERS Benefits for a 25-Year-Old Entrant*




Source: Jonathan Moody and Anthony Randazzo, "Retirement Security Report," Equable Institute, 2021.

## FIGURE E6: CALPERS PERF B BENEFITS ARE SLIGHTLY BETTER FOR MID-CAREER ENTRANTS, BUT STILL FALL SHORT OF A 70% REPLACEMENT RATE TARGET AT ALL STAGES OF A MEMBER'S CAREER

*Adequacy of CalPERS Benefits for a 40-Year-Old Entrant*




Source: Jonathan Moody and Anthony Randazzo, "Retirement Security Report," Equable Institute, 2021.