Regular Meeting

Item Number 8 – Open Session

Subject: Review of Actuarial Assumptions

Presenter(s): David Lamoureux and Rick Reed, CalSTRS / Nick Collier and Scott Preppernau, Milliman

Item Type: Action

Date & Time: January 10, 2024 – 60 minutes

Attachment(s): 2024 Experience Analysis Report

PowerPoint(s): Summary of Review and Recommended Actuarial Assumptions

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Item Purpose

The purpose of this item is to present the results of the 2024 Experience Analysis and to adopt the actuarial assumptions and methods that will be used in the various actuarial valuations of CalSTRS benefit programs, beginning with the June 30, 2023 actuarial valuations. The same assumptions will be used for all applicable member calculations required as part of the administration of CalSTRS benefits.

Recommendation

Staff recommends the board adopt the proposed actuarial assumptions and methods recommended by Milliman in the 2024 Experience Analysis report and begin using them in the June 30, 2023 actuarial valuations. Staff also recommends the board adopt using the proposed actuarial assumptions for member calculations for all retirements effective on or after September 1, 2024.

Executive Summary

CalSTRS' mission is to secure the financial future and sustain the trust of California's educators and provide retirement, disability and survivor benefits to them and their families. To ensure CalSTRS remains a financially sound retirement system, it is important to continually monitor the funding plan and the financial health of the fund. Formal assessments of funding levels and risks are provided to the board twice a year. These formal assessments are presented in the spring through the annual actuarial valuation report and in the fall through the Review of Funding Levels and Risks report. In addition to these two formal reports, CalSTRS provides updates to the board on the status of various funding-related risks as part of the semi-annual enterprise risk management report. These semi-annual reports are generally presented in March and September of each year.

When performing actuarial projections, actuaries rely on the use of various demographic and economic assumptions. It is important to periodically review these assumptions to ensure they remain reasonable, reflect the actual experience of the system and are appropriate for assessing funding levels and determining the contribution levels needed to achieve full funding.

A review of actuarial assumptions is performed through an experience analysis (also called an experience study). The board has a policy to review the actuarial assumptions every four years. The last review was completed and presented to the board in January 2020.

It is important to remember that the process of selecting and adopting actuarial assumptions has no impact on the timing or magnitude of the benefits that will be paid. Actuarial assumptions are used to determine an appropriate pattern of contributions to fund these benefits. To the extent future experience is significantly different than the actuarial assumptions, future contributions will be impacted either positively or negatively, depending on the actual experience. Aligning the actuarial assumptions as closely as possible with anticipated plan experience will always be the most cost-effective way of funding the benefits of CalSTRS members.

The 2024 Experience Analysis was performed by Milliman, CalSTRS' consulting actuary. As part of their analysis, they reviewed not only the demographic and economic actuarial assumptions but also the actuarial methodology and funding methods used in the actuarial valuations of the Defined Benefit Program, the Defined Benefit Supplement Program, the Cash Balance Benefit Program and the Medicare Premium Payment Program. Note that the actuarial assumptions used for the Defined Benefit Program are also used for the actuarial projections performed for the Supplemental Benefit Maintenance Account. A copy of the 2024 Experience Analysis report is attached to this item.

Based on the results of their study and their best estimate of future experience, Milliman is recommending changes to some of the assumptions and methods used in the actuarial valuations. Overall, the recommended assumptions will result in a slight improvement in funding levels and a reduction in the unfunded actuarial obligation for the Defined Benefit Program. Existing contribution rates for the state and employers remain sufficient and staff intends to recommend to the board in May 2024 to keep both the employer contribution rate and the state contribution rate at existing levels in fiscal year 2024-25. The member contribution rate for 2% at 62 members will also not be impacted by the proposed assumptions. Funding levels will also slightly improve for the Defined Benefit Supplement Program and the Cash Balance Program while the proposed assumptions are expected to result in a minimal increase in the actuarial obligation of the Medicare Premium Payment Program.

Mr. Nick Collier and Mr. Scott Preppernau of Milliman will be at the board meeting to present the results of the experience analysis and respond to questions about the process, the results and the recommendations.

Economic Assumptions

The key economic assumptions used for assessing funding levels and determining contribution rates include the long-term investment return, price inflation, wage growth and payroll growth.

Below is a table summarizing the recommendation for the key economic assumptions.

Summary of recommendation for key economic assumptions

Economic assumption	Current assumption	Recommendation
Long-term investment return (Defined Benefit & Defined Benefit Supplement)	7.00%	No Change
Long-term investment return (Cash Balance Benefit Program)	6.50%	7.00%
Price inflation	2.75%	No Change
Wage growth	3.50%	No Change
Payroll growth	3.50%	3.25%

Note that the recommendation to keep the investment return assumption of the Defined Benefit Program at 7.00% was based on the CalSTRS capital market assumptions adopted by the board in January 2023 and reflect the new asset allocation adopted by the board in May 2023.

In May 2023, the board also voted to use the same asset allocation for the assets of the Cash Balance Benefit Program. Since its inception, assets of the Cash Balance Benefit Program were not invested in any of the private asset classes, resulting in an assumption that the assets of that program would earn 0.5% less over the long-term. Now that the assets of the Cash Balance Benefit Program are subject to the same asset allocation as the other programs, it is recommended the long-term investment return assumption for the Cash balance Benefit program also be set at 7.00%, consistent with the assumption used for the other programs.

In October 2023, the State of California updated its projection of K–12 enrollments for California. The updated projection assumes the number of children enrolled in K–12 public schools will continue to decline for the next 20 years. The most recent projection anticipates a decline of approximately 11% over the next 10 years and 15% over the next 20 years. Since the payroll growth assumption is directly linked to the number of teachers who are members of the

Defined Benefit Program, it is reasonable to assume that a decline in enrollment might lead to the need for less teachers in California. As a result, it is recommended that the payroll growth assumption be reduced from 3.50% to 3.25%.

Note that a reduction in the payroll growth assumption has no impact on the current funded status and unfunded actuarial obligation. A reduction in the payroll growth assumption will result in lower projected payroll long-term. Since the contributions needed to reach full funding are set as a percentage of payroll, lowering the payroll growth assumption would normally result in higher contribution rates. However, since the board has kept the state and employer contribution rates at existing levels the last few years instead of lowering them, this change will not require increases in contribution rates. Current contribution rates for the employers and the state are still expected to be sufficient. The impact of all assumption changes is discussed in more detail later in this item.

Demographic Assumptions

Some of the key demographic assumptions used for assessing funding levels and determining contribution rates include the mortality rates (how long members live), service retirement rates (when members retire), termination rates (when members stop working and potentially leave the teaching profession) and the individual salary increases members may receive over the course of their career due to merit and/or promotions.

Being a large retirement system, CalSTRS has enough historical data to allow for the development of demographic assumptions that are fully based on the behavior of CalSTRS members. For this study, Milliman reviewed the experience for the 15-year period between 2007 and 2022, with an emphasis on the most recent 5 years.

Below is a table summarizing the recommendation for the key demographic assumptions.

Summary of recommendation for key demographic assumptions

Demographic assumption	Recommendation
Mortality rates for retired members	Decrease rates at lower ages & increase rates at higher ages
Mortality improvement factors	Adopt 100% of MP-2021 scale (currently use 110% of MP-2019 scale)
Service retirement rates	Increase rates at most ages
Termination rates	Reduce Rates
Individual salary increases	Increases & decreases to existing rates depending on age/service

For a full listing of all recommended changes to the demographic assumptions, please refer to page 2 of the attached experience analysis report.

As shown on page 10 of the attached experience analysis report, the proposed changes to the demographic assumptions will result in slightly higher funding levels. The biggest driver for the higher funding levels is the proposed change to the mortality rates and the mortality improvement factors.

Mortality rates are key when it comes to projecting how long members are expected to live. These rates have materially changed over the last few decades as a result of significant improvements in life expectancies. In 2017, the board adopted a more dynamic approach to project how long members are expected to live by adopting a generational mortality assumption. This approach reflects anticipated increases in life expectancies each year into the future in the funding of the system.

As part of the experience analysis, recent trends, including the time period of the COVID-19 pandemic, were compared to the current assumption for mortality rates and mortality improvement factors. As anticipated, CalSTRS experienced higher than expected deaths over the study period. Consistent with the approach being used by most actuaries world-wide, the COVID-19 pandemic is being treated like an isolated event that will not impact long-term mortality rates. As a result, the higher-than-expected mortality rates during the COVID-19 pandemic were not given full weight when setting the recommended mortality rates. The recommended changes in the mortality rates are expected to have minimal impact on the projected life expectancy of CalSTRS members.

When it comes to mortality improvement factors, even a system like CalSTRS does not have enough data to be able to reasonably derive its own improvement factors. Since the adoption of the generational mortality assumption, CalSTRS has used mortality improvement factors derived by the Society of Actuaries. The current assumption uses 110% of the ultimate factors from the MP-2019 mortality improvement scale. At the time, 110% of the 2019 scale was recommended due to the fact the 2019 scale had some inconsistencies when compared to the experience of the U.S. Social Security system. For this study, Milliman compared the MP-2021 scale to the most recent 60 years of experience of the U.S. Social Security system and found the experience to be consistent to the MP-2021 scale. Given this consistency, Milliman is recommending that the assumption be updated to use 100% of the most recent scale developed by the Society of Actuaries, the MP-2021 mortality improvement scale. In general, this change will result in smaller improvements in mortality rates over time leading to a reduction in the projected life expectancy of CalSTRS members compared to the current assumptions.

The table below compares the projected age at death for a CalSTRS member retiring at age 63 today between the current assumptions and the proposed assumptions. The table shows the projected age at death with and without projected improvements in mortality rates. Showing the projected age at death without mortality improvements helps demonstrate how long a member retiring today would be expected to live if life expectancy was not expected to improve over time. The projected age at death with mortality improvements helps show how the use of generational mortality and the assumed mortality improvement scale impact the projected age at death.

Projected age at death for a member retiring at age 63 today

	No mortality improvements		With mortality improvements	
	Current assumptions	**Proposed assumptions**	**Current assumptions**	**Proposed assumptions**
Female	89.2	89.0	91.0	90.3
Male	86.7	86.6	88.4	87.9

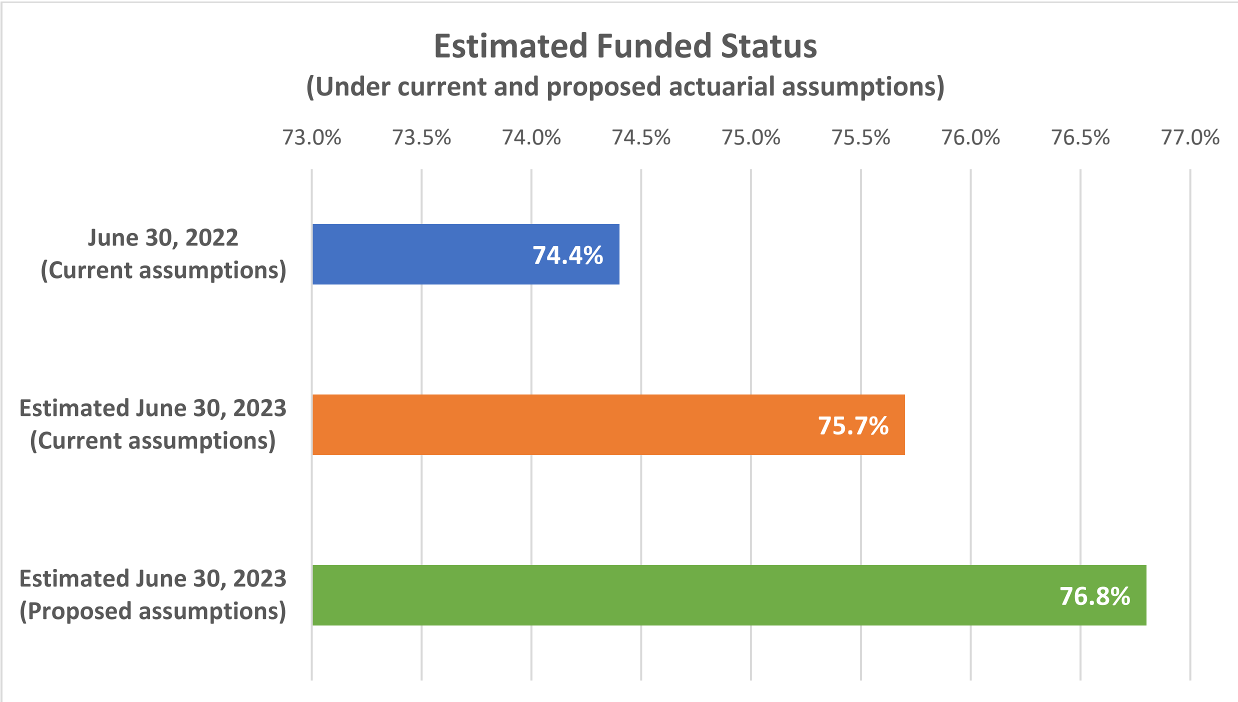
As can be seen in the table above, the projected age at death without mortality improvement rates is expected to be slightly lower under the proposed assumption. With the recommended change to 100% of the MP-2021 mortality improvement scale, the projected age at death for a member retiring at age 63 today is expected to go down about two-thirds of a year for females and half a year for males. This reduction in life expectancy is the main driver as to why the proposed changes to the demographic assumptions are expected to slightly improve funding levels.

Impact on Funding Status and the Unfunded Actuarial Obligation of the DB Program

In the most recent actuarial valuation, as of June 30, 2022, the funded status for the Defined Benefit Program was reported as 74.4% and the unfunded actuarial obligation was estimated to be $88.6 billion.

To evaluate the impact of the proposed assumptions, Milliman first estimated the funded status and the unfunded actuarial obligation as of June 30, 2023 under the current assumptions by reflecting the investment return in the last fiscal year and the contributions made by the state and employers. It then reflected the impact of the proposed assumption on the estimated June 30, 2023 funded status.

The table that follows shows the June 30, 2022 funded status under the current assumptions, the estimated June 30, 2023 funded status under the current assumptions and the estimated June 30, 2023 funded status under the proposed assumptions.

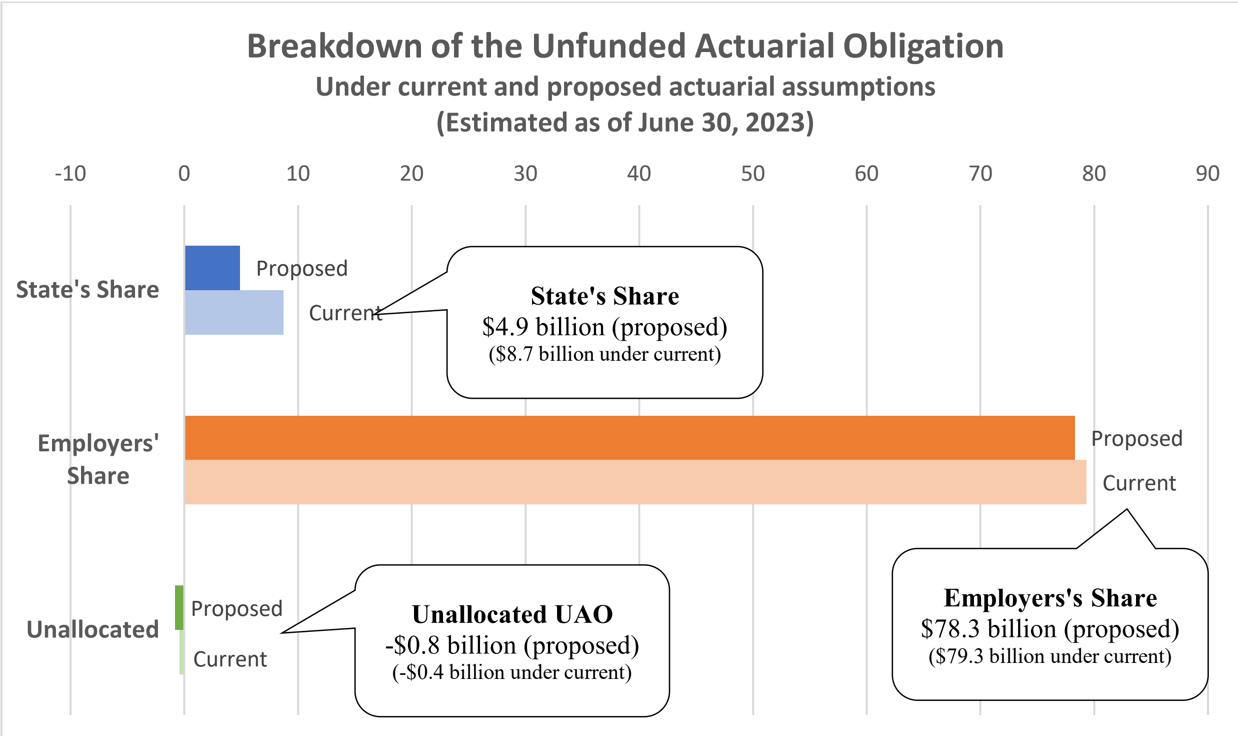


As can be seen above, the funded status is expected to increase to 75.7% in the June 30, 2023 actuarial valuation. The proposed assumptions would result in a further improvement of about 1.1%, resulting in an estimated funded status of 76.8% as of June 30, 2023. These are estimates. The actual funded status will vary somewhat when the June 30, 2023 is completed due to normal year-to-year changes.

With the funded status expected to improve, the unfunded actuarial obligation is expected to decrease. Under the current assumptions, the unfunded actuarial obligation is expected to decrease by about $1 billion, to $87.6 billion as of June 30, 2023. The proposed assumptions would result in a further reduction of about $5.2 billion, resulting in an estimated unfunded actuarial obligation of about $82.4 billion as of June 30, 2023.

As per the rules of the funding plan, the unfunded actuarial obligation is divided between the state, the employers and the unallocated portion. The unallocated portion of the unfunded actuarial obligation is the portion for which the funding plan did not provide any authority to CalSTRS to adjust contribution rates to pay it down.

The chart below shows how the proposed actuarial assumptions would impact the breakdown of the estimated June 30, 2023 unfunded actuarial obligation.

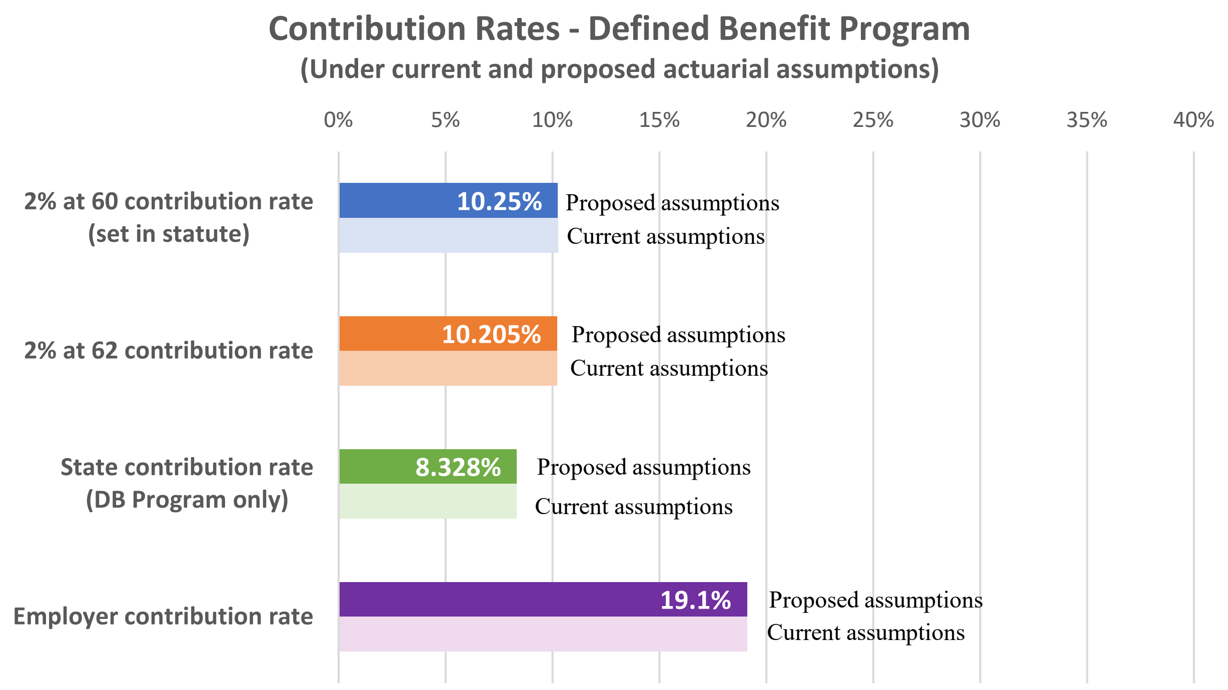


As per the rules of the funding plan, the state bears most of the risk and financial responsibility for changes in the unfunded actuarial obligation caused by investment performance, demographic changes and actuarial assumption changes. This is due in part to the fact the actuarial obligation for the pre-1990 benefit structure, for which the state is responsible, accounts for more than 80% of the total actuarial obligation for the Defined Benefit Program. As a result, the state's share is expected to be most impacted by the proposed assumptions.

Impact on Contribution Rates

When changing actuarial assumptions, the pattern of the future contributions needed to reach full funding may be impacted. However, under the proposed assumptions, all existing contribution rates remain sufficient and will not need to increase in fiscal year 2024-25.

Next is a chart comparing the current contribution rates and those under the proposed assumptions for the Defined Benefit Program.



Note: The state contributes an additional 2.5% of payroll to fund the Supplemental Benefit Maintenance Account (SBMA) that is used to provide inflation protection to CalSTRS retirees and their beneficiaries.

CalSTRS active members are subject to a contribution rate that varies based on their benefit formula. The contribution rate for 2% at 60 members is 10.25% of creditable compensation. This rate is set in statute. The contribution rate for 2% at 62 members is currently 10.205% of creditable compensation. This rate is subject to change as per rules set in statute.

Under the Public Employees' Pension Reform Act of 2013 (PEPRA), 2% at 62 members are required to pay at least one-half of the normal cost of their Defined Benefit Program benefits. The normal cost is the annual cost applied to each year of service that is necessary to adequately fund the benefit over time. The normal cost does not include costs associated with amortizing, or paying down, any funding shortfalls. As shown on page 10 of the attached report, the proposed changes in actuarial assumptions will result in a slightly lower normal cost. Therefore, the proposed changes in actuarial assumptions will not impact the contribution rate for 2% at 62 members. The contribution rate for 2% at 62 members will remain at 10.205% for fiscal year 2024-25.

At the May 2023 meeting, the board voted to keep the state contribution rate to the Defined Benefit Program at 8.328% of payroll and the employer contribution rate at 19.1% of payroll. Although both contribution rates could have been reduced and still allowed the Defined Benefit Program to reach full funding by 2046, the board took the prudent approach of keeping contribution rates at existing levels knowing CalSTRS would likely earn less than its assumed 7% investment return in fiscal year 2022–23. In July 2023, CalSTRS reported a time-weighted rate of return of 6.3% for fiscal year 2022–23.

With the anticipated reduction in the state's share of the unfunded actuarial obligation under the proposed assumptions, the current contribution rate for the state continues to be sufficient. Given the sensitivity of the state's contribution rate to investment volatility, the fact that investment markets remain volatile, and that the Defined Benefit Program has a long way to go until reaching a 100% funded status, staff intends to recommend to the board in May 2024 to keep the state contribution rate at existing levels for another year.

Similarly, the current employer contribution rate will continue to be sufficient even under the proposed assumptions. Note that under the proposed assumptions, the employer contribution rate calculated as per the board valuation policy is increasing slightly but still below the current rate of 19.1%. The increase is mostly the result of the proposed reduction in the payroll growth assumption. Staff intends to recommend to the board in May 2024 to keep the employer contribution rate at 19.1% for another year.

Impact on Member Calculations

Once the board adopts new actuarial assumptions to be used in the actuarial valuations of the various programs, these same actuarial assumptions will also be used in all applicable member calculations. The implementation of the new assumptions will occur at different times for member calculations.

For service credit purchases, new assumptions adopted by the board will be reflected in the service credit purchase factors the board will be asked to adopt at the May 2024 meeting. These factors will become effective July 1, 2024. The impact of this change has not yet been quantified but it is expected to be minimal. The actual impact will be provided in May when the Board will be asked to adopt the new factors.

For all other applicable member calculations such as for retirement options, the new assumptions will be implemented for all retirements effective on or after September 1, 2024. This time frame will give staff time to implement the factors in the existing computer systems and is consistent with past practices. When a member elects an option at retirement, they pay for it through a reduction in benefit. The proposed assumptions will impact the amount of the reduction needed to fund the benefit. The impact of the proposed assumption changes on retirement factors is expected to be minimal and, in some cases, could benefit members, resulting in smaller reductions in benefits.

Assumptions Specific to the Medicare Premium Payment Program

Actuarial assumptions that are specific to the Medicare Premium Payment Program were also reviewed as part of this experience analysis. The two main assumptions specific to the Medicare Premium Payment Program include enrollment rates into the program and the expected increases in Medicare premiums, called the Medicare premium trend rates. The recommendation is to keep assumed enrollment rates the same and increase trend rates. Trends rates are being increased to be consistent with the projections from the 2023 Annual Report of the Boards of

Trustees of the Federal Hospital Insurance Trust Fund and the Federal Supplementary Medical Insurance Trust Fund. The combined impact of these changes is expected to result in a minimal increase in the actuarial obligation of the program.

Review of the Experience Analysis

CalSTRS actuarial staff worked closely with Milliman throughout the process of performing the experience analysis and has reviewed the recommended assumptions and methods and agrees with the proposed methods and assumptions.

CalSTRS also retained the services of an actuarial firm, Segal, to perform an independent review of this experience analysis and the methods and assumptions being proposed by Milliman.

Segal began working on their review in December and should complete their review in the spring of 2024. Once completed, a copy of their review report will be shared with the board and made available on the CalSTRS website. Segal was also retained to review and replicate the June 30, 2023 actuarial valuations that will be presented to the board in May 2024 and use the recommended assumptions for the first time. The review of the valuations will be performed in the summer/fall of 2024. Once completed, a copy of their review report will be shared with the board and made available on the CalSTRS website.

Strategic Plan Linkage: Goal 1: Ensure a well-governed, financially sound trust fund.
