County Connection
2477 Arnold Industrial Way Concord, CA 94520-5326 (925) 676-7500 countyconnection.com

ADMINISTRATION & FINANCE COMMITTEE
MEETING AGENDA

Wednesday, November 2, 2022
2:00 p.m.

PURSUANT TO THE PROVISIONS OF ASSEMBLY BILL 361, WHICH SUSPENDS CERTAIN REQUIREMENTS OF THE RALPH M. BROWN ACT, THIS MEETING WILL BE CONDUCTED AS A TELECONFERENCE.

MEMBERS OF THE PUBLIC MAY NOT ATTEND THIS MEETING IN PERSON.

Committee Directors, staff and the public may participate remotely by calling:

You are invited to a Zoom webinar.
When: November 2, 2022 at 2:00 PM Pacific Time (US and Canada)
Topic: Administration & Finance Committee Meeting

Please click the link below to join the webinar:
https://us02web.zoom.us/j/85278181182

Or One tap mobile :
+14086380968,,85278181182#

Or Telephone:
+1 408 638 0968

Webinar ID: 852 7818 1182

Public comment may be submitted via email to: hill@cccta.org. Please indicate in your email the agenda item to which your comment applies. Comments submitted before the meeting will be provided to the committee Directors before or during the meeting. Comments submitted after the meeting is called to order will be included in correspondence that will be provided to the full Board.

Should Zoom not be operational, please check online at: www.countyconnection.com for any updates or further instruction.

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*Enclosure
**Enclosure for Committee Members
***To be mailed under separate cover
****To be available at the meeting.
FY2022/2023 A&F Committee
Keith Haydon – Clayton, Laura Hoffmeister-Concord, Sue Noack-Pleasant Hill

The committee may take action on each item on the agenda. The action may consist of the recommended action, a related action or no action. Staff recommendations are subject to action and/or change by the committee.

1. Approval of Agenda

2. Public Communication

3. Approval of Minutes of October 5, 2022*

4. Cap and Trade Grant (LCTOP) Funds Transfer*
   (Staff requests that the A&F Committee forward the proposed transfer of LCTOP funds to the Board of Directors for approval.)

5. Revised OPEB Actuarial Valuation and GASB 75 Report for Fiscal Year Ending June 30, 2022*
   (Staff recommends that the A&F Committee accept the OPEB Actuarial Valuation and forward to the Board of Directors.)

6. PERS Actuarial Valuation for June 30, 2021; Rate for FY2024*-(Information Only)

7. Review of Vendor Bills, October 2022**

8. Approval of Legal Services Statement, August 2022 Labor, September 2022 General**

9. Next Scheduled Meeting – December 7, 2022

10. Closed Session:
    Conference with Labor Negotiator (pursuant to Government Code Section 54957.6)
    Employee Organization:
    Amalgamated Transit Union, Local 1605, AFL-CIO, Bus Operators
    Machinists Automotive Trades District Lodge No. 1173, Machinists

11. Open Session:
    Report of Action(s) taken during the Closed Session

12. Adjournment

General Information

Public Comment: If you wish to address the committee, please follow the directions at the top of the agenda. If you have anything that you wish distributed to the committee and included for the official record, please include it in your email. Comments that require a response may be deferred for staff reply.

Consent Items: All matters listed under the Consent Calendar are considered by the committee to be routine and will be enacted by one motion. There will be no separate discussion of these items unless requested by a committee member or a member of the public prior to when the committee votes on the motion to adopt.

Availability of Public Records: All public records relating to an open session item on this agenda, which are not exempt from disclosure pursuant to the California Public Records Act, that are distributed to a majority of the legislative body, will be made available for public inspection by posting them to County Connection's website at www.countyconnection.com. The agenda and enclosures for this meeting are posted also on our website at www.countyconnection.com.

Accessible Public Meetings: Upon request, County Connection will provide written agenda materials in appropriate alternative formats, or disability-related modification or accommodation, including auxiliary aids or services, to enable individuals with disabilities to participate in public meetings and provide comments at/related to public meetings. Please submit a request, including your name, phone number and/or email address, and a description of the modification, accommodation, auxiliary aid, service, or alternative format requested at least two days before the meeting. Requests should be sent to the Assistant to the General Manager, Lathina Hill, at 2477 Arnold Industrial Way, Concord, CA 94520 or hill@cccta.org. Requests made by mail must be received at least two days before the meeting. Requests will be granted whenever possible and resolved in favor of accessibility.

Currently Scheduled Board and Committee Meetings

Board of Directors:	November 17, 9:00 a.m., via teleconference
Administration & Finance:	Wednesday, December 7, via teleconference
Advisory Committee:	TBA. via teleconference
Marketing, Planning & Legislative:	Thursday, November 3, via teleconference
Operations & Scheduling:	Friday, November 4, via teleconference

The above meeting schedules are subject to change. Please check the County Connection Website (www.countyconnection.com) or contact County Connection staff at 925/676-1976 to verify date, time, and location.

This agenda is posted on County Connection's Website (www.countyconnection.com) and at the County Connection Administrative Offices, 2477 Arnold Industrial Way, Concord, California

County Connection

INTER OFFICE MEMO

Summary Minutes
Administration & Finance Committee
Wednesday, October 5, 2022, 2:00 p.m.

Due to COVID-19, this meeting was conducted as a teleconference pursuant to the provisions of Assembly Bill 361.

Directors: Sue Noack, Keith Haydon, Laura Hoffmeister*
Staff: Bill Churchill, Ruby Horta, Scott Mitchell, Amber Johnson, Lathina Hill, Julie Sherman
Public: None addressed the committee

Call to Order: Meeting called to order at 2:00 p.m. by Director Noack.

1. **Approval of Agenda**
   The Committee approved the agenda.

2. **Public Communication**
   None.

3. **Approval of Minutes of September 7, 2022**
   The Committee approved the minutes.

4. **Preliminary Income Statements for the Fiscal Year Ended June 30, 2022**
   Ms. Johnson presented the preliminary, unaudited income statements for the year-ended June 30, 2022. Ms. Johnson reported that the total expenses for the year came in under budget by about 12% or 5.6 million dollars, primarily due to underspending in salaries and benefits, services, and purchased transportation. In addition, the contingency reserve was not needed during the year. Savings in these categories was partially offset by a budget overage in the materials and supplies categories, which is where fuel costs are tracked. After a short discussion between the Committee and staff, the Committee approved the report to be forwarded to the full Board of Directors as an information item.

5. **Review of Vendor Bills, September 2022**
   The Committee reviewed the vendor bills for September 2022.

6. **Approval of Legal Services Statement, September 2022 General**
   The Committee approved the legal services statements for September 2022 General services.

7. **Next Scheduled Meeting**
   The next meeting was scheduled for November 2nd at 2:00 p.m. via teleconference.

8. **Closed Session:**
   Conference with Labor Negotiator (pursuant to Government Code Section 54957.6)
   Employee Organization:
   Amalgamated Transit Union, Local 1605, AFL-CIO, Bus Operators
   Machinists Automotive Trades District Lodge No. 1173, Machinists

9. **Open Session:**
   Report of Action(s) taken during the Closed Session – direction was given to staff.

10. **Adjournment**
    The meeting was adjourned at 2:27pm.

*Director Hoffmeister was present at the closed session only.

Minutes prepared and submitted by: Amber Johnson, Chief Financial Officer

County Connection

INTER OFFICE MEMO

To: Administration & Finance Committee **Date:** 10/24/2022

From: Melody Reebs, Director of Planning, Marketing, & Innovation **Reviewed by:** RR

SUBJECT: Cap and Trade Grant (LCTOP) Funds Transfer

Background:

The Low Carbon Transit Operations Program (LCTOP) provides cap-and-trade funding for transit to reduce greenhouse gas (GHG) emissions and improve mobility, with a priority on serving disadvantaged communities (DACs). Over time, the guidelines for eligible projects have been revised, allowing for increased flexibility in the use of these funds. In the last few years, County Connection has utilized these funds to operate Route 99X, connecting the Martinez Amtrak Station to North Concord BART via Pacheco Blvd. and Morello Ave., and to increase weekend service on Route 316. Both routes serve the DAC within County Connection's service area. Since FY 2018-19, with the passage of Senate Bill 1119, County Connection was able to implement the fare subsidy project in the Monument Corridor on Routes 11, 14, and 16, which was expanded in FY 2021-22 to include weekend Routes 311, 314, and 316.

Funds Transfer:

Due to the COVID-19 pandemic and its impact on ridership, some of the FY 2020-21 funds that were programmed to subsidize fares on Routes 11, 14, and 16 were not utilized. Staff is proposing to roll over the remaining balance of approximately $275,000 to this year's project, which was approved by the Board in March and includes expansion to the three weekend routes. This will provide close to $1.2M for subsidizing fares on all six routes serving the Monument Corridor. Based on recent ridership trends and particularly the significant increase on the weekend routes since becoming fare-free in July, staff anticipates being able to utilize all of the funds by the end of the current fiscal year.

Financial Implications:

The proposed funds transfer will provide an additional $275,000 for subsidized fares on routes serving the Monument Corridor.

Recommendation:

Staff recommends transferring the remaining LCTOP funds from FY 2020-21 to FY 2021-22 to subsidize fares on routes serving the Monument Corridor.

Action Requested:

Staff requests that the A&F Committee forward the proposed transfer of LCTOP funds to the Board for approval.

Attachments:

None

County Connection

INTER OFFICE MEMO

To: Administration & Finance Committee **Date:** 10/11/2022

From: Amber Johnson, Chief Financial Officer **Reviewed by:** WC.

SUBJECT: Revised OPEB Actuarial Valuation and GASB 75 Report for Fiscal Year Ending June 30, 2022

Background:

County Connection's actuarial valuation of its Other Post-Employment Benefits (OPEB) for the year ending June 30, 2022 was reviewed and approved by the Administration and Finance Committee and the Board of Directors in September of this year[1].

After the report was approved, staff discovered some minor errors in the calculation of contributions to the plan during the year. As a result, the report has been revised to correct these errors.

OPEB Valuation Report Revisions:

Corrections to the amount contributed to the plan have a ripple effect throughout the report and can be seen in the Deferred Inflow and Outflow calculations, as well as in the Actuarially Determined Contribution (ADC) calculation for the coming year. Fortunately, the correction resulted in a very small change to the ADC, having a de minimis impact on the fiscal position of the Authority's OPEB plan.

The following table summarizes the key elements of the valuation report, and how some of these elements changed between the original and revised version of the report.

Item	Original Report	Revised Report
Net OPEB Liability	$2,933,259	No change
Deferred Outflows of Resources	**(1,087,689)**	**(1,050,713)**
Deferred Inflows of Resources	**1,873,577**	**1,890,465**
OPEB Expense, FYE 6/30/22	(17,554)	No change
Fiduciary Net Position, FYE 6/30/22	5,174,920	No change
Employer Contributions, FYE 6/30/22	**617,452**	**563,588**
Actuarially Determined Contribution, FYE 6/30/23	**531,647**	**530,899**
ADC, Net of Implicit Subsidy Credits, FYE 6/30/23	**445,868**	**445,120**

Financial Implications:

Based on the revised valuation report, the ADC net of implicit subsidy credits for FY 2023 amounts to $445,120, which is slightly less than the amount previously reported ($445,868).

[1] http://countyconnection.com/wp-content/uploads/2022/09/4.e.-OPEB-Actuarial-Valuation-and-GASB-75-Report-for-Fiscal-Year-Ending-June-30-2022.pdf

Recommendation:

Staff recommends that the A&F Committee accept the Revised OPEB Actuarial Valuation and forward it to the Board of Directors.

Attachments:

Attachment 1: *Revised* Central Contra Costa Transit Authority Actuarial Valuation of Other Post-Employment Benefit Programs as of June 30, 2021 & GASB 75 Report for the Fiscal Year Ending June 30, 2022

MacLeod Watts

October 7, 2022

Ms. Amber Johnson, CPFO
Chief Financial Officer
Central Contra Costa Transit Authority
2477 Arnold Industrial Way
Concord, CA 94520

Re: Central Contra Costa Transit Authority Other Post-Employment Benefits Actuarial Valuation and GASB 75 Report for Fiscal Year Ending June 30, 2022 - Updated

Dear Ms. Johnson,

We are pleased to enclose our actuarial report providing financial information about the other post-employment benefit (OPEB) liabilities of the Central Contra Costa Transit Authority. *This updated report reflects the final OPEB contributions reported for fiscal year 2022.*

The primary purposes of this report are to:

1) Remeasure plan liabilities as of June 30, 2021, in accordance with GASB 75's biennial valuation requirement,
2) Develop Actuarially Determined Contributions levels for prefunding plan benefits, and
3) Provide information required by GASB 75 ("Accounting and Financial Reporting for Postemployment Benefits Other Than Pension") to be reported in the Authority's financial statements for the fiscal year ending June 30, 2022.

The information included in this report reflects our understanding that the Authority will contribute 100% or more of the Actuarially Determined Contributions each year. We assumed that OPEB trust assets remain in PARS Moderately Conservative portfolio. We based the valuation on the employee data, details on plan benefits and retiree benefit payments reported to us by the Authority. Please review our summary of this information to be comfortable that it matches your records.

We appreciate the opportunity to work on this analysis and acknowledge the efforts of Authority staff who provided valuable time and information to enable us to prepare this report. Please let us know if we can be of further assistance.

Sincerely,

Catherine L. MacLeod, FSA, FCA, EA, MAAA
Principal & Consulting Actuary

Enclosure

Central Contra Costa Transit Authority

Actuarial Valuation of Other Post-Employment Benefit Programs As of June 30, 2021

Development of OPEB Prefunding Levels & GASB 75 Report for the FYE June 20, 2022

Updated October 2022

MacLeod Watts

Table of Contents

A. Executive Summary

This report presents the results of the June 30, 2021, actuarial valuation and accounting information regarding the other post-employment benefit (OPEB) program of the Central Contra Costa Transit Authority (the Authority). The purposes of this report are to: 1) summarize the results of the valuation; 2) develop Actuarially Determined Contribution (ADC) levels for prefunding plan benefits; and 3) provide disclosure information as required by Statement No. 75 of the Governmental Accounting Standards Board (GASB 75) for the fiscal year ending June 30, 2022.

Important background information regarding the valuation process can be found in Addendum 1. We recommend users of the report read this information to familiarize themselves with the process and context of actuarial valuations, including the requirements of GASB 75. The pages following this executive summary present exhibits and other information relevant for disclosures under GASB 75.

Results of the June 30, 2021, valuation may be applied to prepare the Authority's GASB 75 report for the fiscal year ending June 30, 2023. If there are any significant changes in plan members, plan benefits or eligibility and/or OPEB funding policy, an earlier valuation might be required or appropriate.

OPEB Obligations of the Authority

The Authority offers continuation of medical coverage to retiring employees. This benefit creates one or more of the following types of OPEB liabilities:

- **Explicit subsidy liabilities**: An "explicit subsidy" exists when the employer contributes directly toward the cost of retiree healthcare. In this program, the Authority contributes a portion of medical premiums for qualifying retirees. These benefits are described in Section 2.
- **Implicit subsidy liabilities**: An "implicit subsidy" exists when premiums are developed using blended active and retiree claims experience. In this situation, premiums charged for retirees may not be sufficient to cover expected medical claims[1] and the premiums charged for active employees are said to "implicitly subsidize" retirees. This OPEB program includes implicit subsidy liabilities for retiree coverage prior to coverage under Medicare.
- **Other subsidy liabilities**: Pooled plans that do not blend active and retiree premiums likely generate subsidies between employers and retirees within the pool. In the CalPERS medical program, the premium rates for Medicare-covered retirees are based only on retiree claims experience of the pool. A recent actuarial practice note indicated these subsidies should be included in plan liabilities to the extent they are paid by the employer.[2] We generally expect these subsidies to be small and included any such liability with the implicit subsidy liability in this report.

We determine explicit subsidy liabilities using the expected direct payments promised by the plan toward retiree coverage. We determine the implicit and other subsidy liabilities as the projected difference between (a) retiree medical claim costs by age and (b) premiums charged for retiree coverage. For more information on this process Addendum 2: MacLeod Watts Age Rating Methodology.

[1] In rare situations, premiums for retiree coverage may be high enough that they subsidize active employees' claims.

[2] Exceptions exist for: 1) Medicare Advantage Plans: these plans are treated as if their premiums are age-based due to the nature of the Federal subsidies paid to these plans. 2) Plans with low explicit subsidies to Medicare-covered retirees: in these plans no part of any potential pool subsidy is expected to be paid by the employer.

Executive Summary
(Continued)

OPEB Funding Policy

The Authority's OPEB funding policy affects the calculation of liabilities by impacting the discount rate that is used to develop the plan liability and expense. "Prefunding" is the term used when an agency consistently contributes an amount based on an actuarially determined contribution (ADC) each year. GASB 75 allows prefunded plans to use a discount rate that reflects the expected earnings on trust assets. Pay-as-you-go, or "PAYGO", is the term used when an agency only contributes the required retiree benefits when due. When an agency finances retiree benefits on a pay-as-you-go basis, GASB 75 requires the use of a discount rate equal to a 20-year high grade municipal bond rate.

The Authority continues to prefund its OPEB liability, consistently contributing 100% or more of the Actuarially Determined Contributions each year. With the Authority's approval, the discount rate used for accounting purposes and to develop Actuarially Determined Contributions for plan funding is 4.75%. This rate reflects the current expectation of the long-term return on trust assets, based on information provided by PARS in April 2022. This rate is lower than the 5.10% return determined from prior PARS return projections. For more information, see Expected Return on Trust Assets on page 12.

Actuarial Assumptions

The actuarial "demographic" assumptions (i.e., rates of retirement, death, disability or other termination of employment) used in this report were chosen, for the most part, to be the same as the actuarial demographic assumptions used for the most recent valuation of the retirement plan(s) covering Authority employees. Other assumptions, such as age-related healthcare claims, healthcare trend, retiree participation rates and spouse coverage, were selected based on demonstrated plan experience and/or our best estimate of expected future experience. All these assumptions, and more, impact expected future benefits. Please note that this valuation has been prepared on a closed group basis. This means that only employees and retirees present as of the valuation date are considered. We do not consider replacement employees for those we project to leave the current population of plan participants until the valuation date following their employment.

We emphasize that this actuarial valuation provides a projection of future results based on many assumptions. Actual results are likely to vary to some extent and we will continue to monitor these assumptions in future valuations. See Section 3 for a description of assumptions used in this valuation.

Important Dates for GASB 75 in this Report

GASB 75 allows reporting liabilities as of any fiscal year end based on: (1) a *valuation date* no more than 30 months plus 1 day prior to the close of the fiscal year end; and (2) a *measurement date* up to one year prior to the close of the fiscal year. The following dates were used for this report:

Fiscal Year End	June 30, 2022
Measurement Date	June 30, 2021
Measurement Period	June 30, 2020, to June 30, 2021
Valuation Date	June 30, 2021

Executive Summary
(Concluded)

Significant Results and Differences from the Prior Valuation

No benefit changes were reported to MacLeod Watts relative to those in place at the time the June 2019 valuation was prepared. We reviewed and updated certain assumptions used to project the OPEB liability. We also collected updated census and premium data and recognized "plan experience", the differences between projected and actual results. Investment experience was also recognized, with higher than expected return on trust assets.

The Net OPEB Liability on the current measurement date is higher than that reported one year ago. Section C. presents the new valuation results and provides additional information on the impact of the new assumptions and plan experience. See *Recognition Period for Deferred Resources* on page 13 for details on how these changes are recognized.

Impact on Statement of Net Position and OPEB Expense for Fiscal Year Ending 2022

The plan's impact to Net Position will be the sum of difference between assets and liabilities as of the measurement date plus the unrecognized net outflows and inflows of resources. Different recognition periods apply to deferred resources depending on their origin. The plan's impact on Net Position on the measurement date can be summarized as follows:

Items	For Reporting At Fiscal Year Ending June 30, 2022
Total OPEB Liability	$ 8,108,179
Fiduciary Net Position	(5,174,920)
Net OPEB Liability	**$ 2,933,259**
Adjustment for Deferred Resources:	
Deferred (Outflows)	(1,061,361)
Deferred Inflows	1,890,465
Impact on Statement of Net Position	**$ 3,762,363**
OPEB Expense, FYE 6/30/2022	**$ (17,554)**

Important Notices

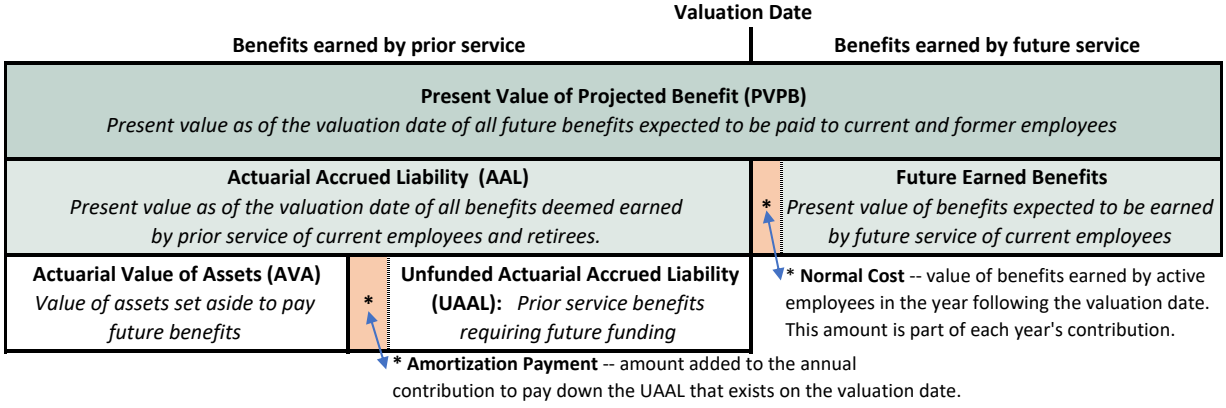
This report is intended to be used only to present the actuarial information relating to other postemployment benefits for the Authority's financial statements. The results of this report may not be appropriate for other purposes, where other assumptions, methodology and/or actuarial standards of practice may be required or more suitable. We note that various issues in this report may involve legal analysis of applicable law or regulations. The Authority should consult counsel on these matters; MacLeod Watts does not practice law and does not intend anything in this report to constitute legal advice. In addition, we recommend the Authority consult with their internal accounting staff or external auditor or accounting firm about the accounting treatment of OPEB liabilities.

B. Valuation Process

This valuation is based on employee census data and benefits initially submitted by the Authority and clarified in various related communications. A summary of the employee data is provided in Section 1 and a summary of the plan benefits is provided in Section 2. While individual employee records have been reviewed to verify that they are reasonable in various respects, the data has not been audited and we have otherwise relied on the Authority as to its accuracy. The valuation has been performed in accordance with the process described below using the actuarial methods and assumptions described in Section 3 and is consistent with our understanding of Actuarial Standards of Practice.

In projecting benefit values and liabilities, we first determine an expected premium or benefit stream over each current retiree's or active employee's future retirement. Benefits may include both direct employer payments (explicit subsidies) and any implicit subsidies arising when retiree premiums are expected to be partially subsidized by premiums paid for active employees. The projected benefit streams reflect assumed trends in the cost of those benefits and assumptions as to the expected dates when benefits will end. Assumptions regarding the probability that each employee will remain in service to receive benefits and the likelihood the employee will elect coverage for themselves and their dependents are also applied.

We then calculate a present value of these future benefit streams by discounting the value of each future expected employer payment back to the valuation date using the valuation discount rate. This present value is called the **Present Value of Projected Benefits (PVPB)** and represents the current value of all expected future plan payments to current retirees and current active employees. Note that this long-term projection does not anticipate entry of future employees.



The next step in the valuation process splits the Present Value of Projected Benefits into 1) the value of benefits already earned by prior service of current employees and retirees and 2) the value of benefits expected to be earned by future service of current employees. Actuaries employ an "attribution method" to divide the PVPB into prior service liabilities and future service liabilities. For this valuation we used the **Entry Age Normal** attribution method. This method is the most common used for government funding purposes and the only attribution method allowed for financial reporting under GASB 75.

We call the value of benefits deemed earned by prior service the **Actuarial Accrued Liability (AAL)**. Benefits deemed earned by service of active employees in a single year is called the **Normal Cost** of

Valuation Process
(Concluded)

benefits. The present value of all future normal costs (PVFNC) plus the Actuarial Accrued Liability will equal the Present Value of Projected Benefits (i.e., PVPB = AAL + PVFNC).

The difference between the value of trust assets (i.e., the Market Value of Assets), or a smoothed asset value (i.e., the Actuarial Value of Assets), and the Actuarial Accrued Liability yields the **Unfunded Actuarial Accrued Liability (UAAL)**. The UAAL represents, as of the valuation date, the present value of benefits already earned by past service that remain unfunded. A plan is generally considered "fully funded" when the UAAL is zero. The plan sponsor of a fully funded plan will still need to make future contributions for benefits earned by future service of actives employees. But in a fully funded plan, the plan sponsor has set aside sufficient assets to pay for benefits that have been earned by past service of current retirees and active employees if all valuation assumptions are realized.

Future contributions by the Authority will fund 1) the remaining part of OPEB benefits earned by past service (the Unfunded Actuarial Accrued Liability) and 2) the value of benefits earned each year by service of active employees. Various strategies might be employed to pay down the UAAL such as longer or shorter amortization payments, and flat or escalating payments depending on the plan sponsors goals and funding philosophy.

Variation in Future Results

Please note that projections of future benefits over such long periods (frequently 70 or more years) which are dependent on numerous assumptions regarding future economic and demographic variables are subject to substantial revision as future events unfold. While we believe that the assumptions and methods used in this valuation are reasonable for the purposes of this report, the costs to the Authority reflected in this report are subject to future revision, perhaps materially. Demonstrating the range of potential future plan costs was beyond the scope of our assignment except to the limited extent of providing liability information at various discount rates.

Certain actuarial terms and GASB 75 terms may be used interchangeably, as shown below. Specific results from this valuation are provided in the following Section C.

Actuarial Terminology	GASB 75 Terminology
Present Value of Projected Benefits (PVPB)	*No equivalent term*
Actuarial Accrued Liability (AAL)	Total OPEB Liability (TOL)
Market Value of Assets (MVA)	Fiduciary Net Position
Actuarial Value of Assets (AVA)	*No equivalent term*
Unfunded Actuarial Accrued Liability (UAAL)	Net OPEB Liability
Normal Cost	Service Cost

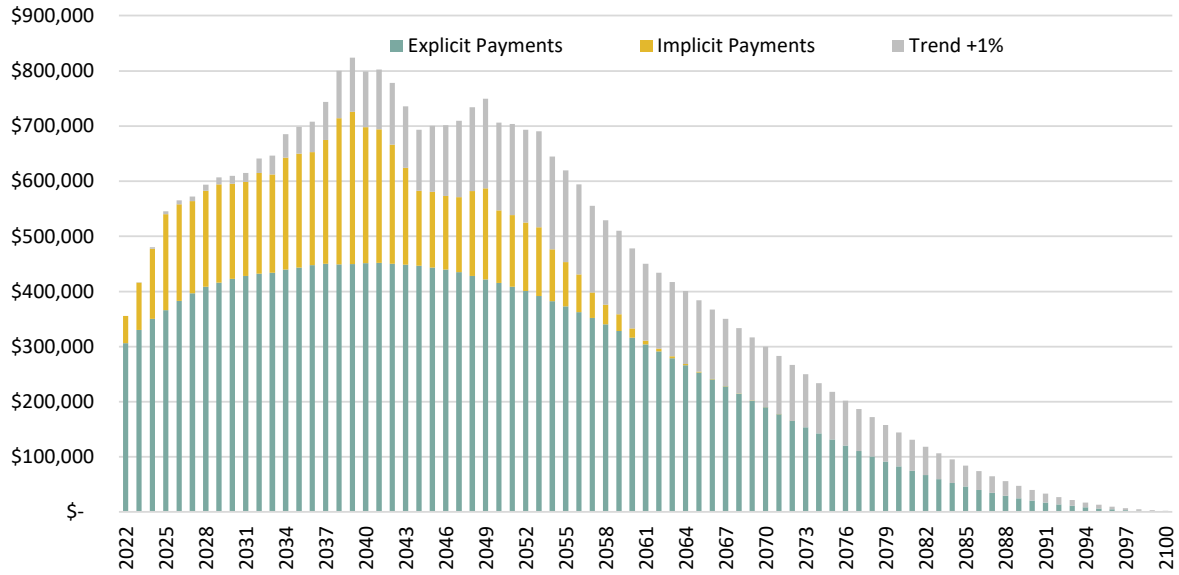
C. Valuation Results as of June 30, 2021

This section presents the basic results of our recalculation of the OPEB liability using the updated employee data, plan provisions and asset information provided to us for the June 2021 valuation. We described the general process for projecting all future benefits to be paid to retirees and current employees in the preceding Section. Expected annual benefits have been projected on the basis of the actuarial assumptions outlined in Supporting Information, Section 3.

Lifetime healthcare benefits are paid for qualifying Authority retirees. Please see Supporting Information, Section 2 for details.

The following graph illustrates the annual other post-employment benefits projected to be paid on behalf of current retirees and current employees expected to retire from the Authority.

OPEB Payments
Projected to be Paid During Retirement to Current Employees and Retirees



The amounts shown in green reflect the expected payment by the Authority toward retiree medical premiums while those in yellow reflect the implicit subsidy benefits (i.e., the excess of estimated retiree medical and prescription drug claims over the premiums expected to be charged during the year for retirees' coverage). The projections in gray reflect increases in benefit levels if healthcare trend were 1% higher.

The first 15 years of benefit payments from the graph above are shown in tabular form on page 20.

Liabilities relating to these projected benefits are shown beginning on the following page.

Valuation Results as of June 30, 2021
(Continued)

This chart compares the results measured as of June 30, 2020, with the results measured as of June 30, 2021, based on the current valuation.

Valuation Date	**6/30/2019**			**6/30/2021**		
Fiscal Year Ending	**6/30/2021**			**6/30/2022**		
Measurement Date	**6/30/2020**			**6/30/2021**		
Discount rate	5.10%			4.75%		
Number of Covered Employees						
Actives	212			199		
Retirees	54			64		
Total Participants	266			263		
OPEB Subsidy Type	Explicit	Implicit	Total	Explicit	Implicit	Total
Actuarial Present Value of Projected Benefits						
Actives	$ 5,103,249	$ 2,428,115	$ 7,531,364	$ 4,722,032	$ 2,812,810	$ 7,534,842
Retirees	2,286,817	(31,965)	2,254,852	3,024,764	31,010	3,055,774
Total APVPB	7,390,066	2,396,150	9,786,216	7,746,796	2,843,820	10,590,616
Total OPEB Liability (TOL)						
Actives	3,575,907	1,653,361	5,229,268	3,083,512	1,968,893	5,052,405
Retirees	2,286,817	(31,965)	2,254,852	3,024,764	31,010	3,055,774
TOL	5,862,724	1,621,396	7,484,120	6,108,276	1,999,903	8,108,179
Fiduciary Net Position			4,458,932			5,174,920
Net OPEB Liability			3,025,188			2,933,259
Service Cost For the period following the measurement date	225,790	103,009	328,799	209,966	104,205	314,171

The Net OPEB Liability has decreased by $91,929 from that reported one year ago. The NOL was expected to decrease by $60,496, reflecting additional service and interest costs accruing for the period offset by trust contributions and expected earnings. Unexpected changes are discussed on the following page.

Valuation Results as of June 30, 2021
(Concluded)

Unexpected changes decreased the Net OPEB Liability by $31,433 and fall into one of these categories:

- *Investment experience:* Trust asset return exceeded the expected earnings by $263,622.
- *Plan experience* recognizes results which are different than expected based on the prior valuation data and assumptions. Plan experience decreased the TOL by $184,833.
- *Assumption changes* collectively increased the TOL by $417,022. These changes are listed below, with additional information provided on the last page in Supporting Information, Section 3.

This chart reconciles results measured as of June 30, 2020, to results measured as of June 30, 2021.

Reconciliation of Changes During Measurement Period	Total OPEB Liability (a)	Fiduciary Net Position (b)	Net OPEB Liability (c) = (a) - (b)
Balance at Fiscal Year Ending 6/30/2021 *Measurement Date 6/30/2020*	$ 7,484,120	$ 4,458,932	$ 3,025,188
Expected Changes During the Period:			
Service Cost	328,799		328,799
Interest Cost	390,119		390,119
Expected Investment Income		232,999	(232,999)
Employer Contributions		546,415	(546,415)
Benefit Payments	(327,048)	(327,048)	-
Total Expected Changes During the Period	391,870	452,366	(60,496)
Expected at Fiscal Year Ending 6/30/2022 *Measurement Date 6/30/2021*	$ 7,875,990	$ 4,911,298	$ 2,964,692
Unexpected Changes During the Period:			
Change Due to Investment Experience		263,622	(263,622)
Plan Experience:			
Premiums and estimated claims other than expected	218,803		
Turnover other than expected	(276,702)		
More retiree deaths than expected	(94,806)		
Other plan experience	(32,128)		
Change Due to Plan Experience			(184,833)
Assumption Changes:			
Change in assumed trust return/discount rate	190,206		
Change in healthcare trend	(26,903)		
Updated assumed retiree participation rates	(50,891)		
Decreased assumed spouse coverage of future retirees	(268,682)		
Updated mortality improvement scale	113,115		
Added post-65 implicit liability for 2 members not paying Medicare tax	483,989		
Valued post-65 pool subsidy for applicable Medicare plans	(23,812)		
Change Due to Assumption Changes			417,022
Total Unexpected Changes During the Period	232,189	263,622	(31,433)
Balance at Fiscal Year Ending 6/30/2022 *Measurement Date 6/30/2021*	$ 8,108,179	$ 5,174,920	$ 2,933,259

D. Accounting Information (GASB 75)

The following exhibits are designed to satisfy the reporting and disclosure requirements of GASB 75 for the fiscal year end June 30, 2022.

Components of Net Position and Expense

The exhibit below shows the development of Net Position and Expense as of the Measurement Date.

Plan Summary Information for FYE June 30, 2022 *Measurement Date is June 30, 2021*	**CCCTA**
Items Impacting Net Position:	
Total OPEB Liability	$ 8,108,179
Fiduciary Net Position	(5,174,920)
Net OPEB Liability (Asset)	2,933,259
Deferred (Outflows) Due to:	
Assumption Changes	(470,237)
Plan Experience	-
Investment Experience	(16,888)
Deferred Contributions	(574,236)
Deferred Inflows Due to:	
Assumption Changes	302,318
Plan Experience	1,357,477
Investment Experience	230,670
Impact on Statement of Net Position, FYE 6/30/2022	**$ 3,762,363**
Items Impacting OPEB Expense:	
Service Cost	$ 328,799
Cost of Plan Changes	-
Interest Cost	390,119
Expected Earnings on Assets	(232,999)
Recognition of Deferred Outflows:	
Assumption Changes	93,599
Plan Experience	-
Investment Experience	22,674
Recognition of Deferred (Inflows):	
Assumption Changes	(138,511)
Plan Experience	(419,217)
Investment Experience	(62,018)
OPEB Expense, FYE 6/30/2022	**$ (17,554)**

Accounting Information
(Continued)

Change in Net Position During the Fiscal Year

The exhibit below shows the year-to-year changes in the components of Net Position.

For Reporting at Fiscal Year End *Measurement Date*	6/30/2021 *6/30/2020*	6/30/2022 *6/30/2021*	Change During Period
Total OPEB Liability	$ 7,484,120	$ 8,108,179	$ 624,059
Fiduciary Net Position	(4,458,932)	(5,174,920)	(715,988)
Net OPEB Liability (Asset)	3,025,188	2,933,259	(91,929)
Deferred (Outflows) Due to:			
Assumption Changes	(146,814)	(470,237)	(323,423)
Plan Experience	-	-	-
Investment Experience	(39,562)	(16,888)	22,674
Deferred Contributions	(546,415)	(574,236)	(27,821)
Deferred Inflows Due to:			
Assumption Changes	440,829	302,318	(138,511)
Plan Experience	1,591,861	1,357,477	(234,384)
Investment Experience	29,066	230,670	201,604
Impact on Statement of Net Position	$ 4,354,153	$ 3,762,363	$ (591,790)

Change in Net Position During the Fiscal Year	
Impact on Statement of Net Position, FYE 6/30/2021	$ 4,354,153
OPEB Expense (Income)	(17,554)
Employer Contributions During Fiscal Year	(574,236)
Impact on Statement of Net Position, FYE 6/30/2022	$ 3,762,363

OPEB Expense	
Employer Contributions During Fiscal Year	$ 574,236
Deterioration (Improvement) in Net Position	(591,790)
OPEB Expense (Income), FYE 6/30/2022	$ (17,554)

Accounting Information
(Continued)

Change in Fiduciary Net Position During the Measurement Period

	CCCTA
Fiduciary Net Position at Fiscal Year Ending 6/30/2021 *Measurement Date 6/30/2020*	**$ 4,458,932**
Changes During the Period:	
Investment Income	496,621
Employer Contributions	546,415
Benefit Payments	(327,048)
Net Changes During the Period	715,988
Fiduciary Net Position at Fiscal Year Ending 6/30/2022 *Measurement Date 6/30/2021*	**$ 5,174,920**

Expected Long-term Return on Trust Assets

In April 2022, PARS published an expected return of 5.30% for the Moderately Conservative, prior to offset for non-imbedded investment related fees. This expected return was determined using a building-block method and best-estimate ranges of expected future real rates of return for each major asset class (expected returns, net of OPEB plan investment expense and inflation). These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. The target allocation and best estimates of geometric real rates of return for each major class are summarized in this table.

Portfolio (Investment Strategy)		Moderately Conservative
Asset Class	Expected Return	Weight
Equity		**30.00%**
Large Cap Core	6.80%	15.50%
Mid Cap Core	7.10%	3.00%
Small Cap Core	7.90%	4.50%
Real Estate	6.60%	1.00%
International	7.30%	4.00%
Emerging Markets	7.30%	2.00%
Fixed Income		**65.00%**
Short Term Bond	3.30%	14.00%
Intermediate Term Bond	3.90%	49.25%
High Yield	6.10%	1.75%
Alternatives		
Cash	2.40%	**5.00%**
Expected Return		5.30%
Expected Standard Deviation		5.28%

Non-imbedded fees were estimated to reduce the expected yield above by 55 basis points (0.55%), reducing the net expected return on trust assets to 4.75% per year. Because the Authority is contributing at or above the ADC level each year, we used 4.75% as the discount rate to determine the OPEB liability in the plan.

Accounting Information
(Continued)

Recognition Period for Deferred Resources

Liability changes due to plan experience which differs from what was assumed in the prior measurement period and/or from assumption changes during the period are recognized over the plan's Expected Average Remaining Service Life ("EARSL"). The EARSL of 6.51 years is the period used to recognize such changes in the OPEB Liability arising during the current measurement period.

When applicable, changes in the Fiduciary Net Position due to investment performance different from the assumed earnings rate are always recognized over 5 years.

Liability changes attributable to benefit changes occurring during the period, if any, are recognized immediately.

Deferred Resources as of Fiscal Year End and Expected Future Recognition

The exhibit below shows deferred resources as of the fiscal year end June 30, 2022.

Central Contra Costa Transit Authority	Deferred Outflows of Resources	Deferred Inflows of Resources
Changes of Assumptions	$ 470,237	$ 302,318
Differences Between Expected and Actual Experience	-	1,357,477
Net Difference Between Projected and Actual Earnings on Investments	-	213,782
Deferred Contributions	574,236	-
Total	$ 1,044,473	$ 1,873,577

In addition, future recognition of these deferred resources is shown below.

For the Fiscal Year Ending June 30	Recognized Net Deferred Outflows (Inflows) of Resources
2023	$ (509,259)
2024	(526,147)
2025	(244,515)
2026	(177,273)
2027	35,667
Thereafter	18,187

Accounting Information
(Continued)

Sensitivity of Liabilities to Changes in the Discount Rate and Healthcare Cost Trend Rate

The discount rate used for accounting purposes for the fiscal year end 2022 is 4.75%. Healthcare Cost Trend Rate was assumed to start at 5.8% (increase effective January 1, 2023) and grade down to 3.9% for years 2076 and later. The impact of a 1% increase or decrease in these assumptions is shown in the chart below.

Sensitivity to:			
Change in Discount Rate	**Current - 1% 3.75%**	**Current 4.75%**	**Current + 1% 5.75%**
Total OPEB Liability	9,105,436	8,108,179	7,275,314
Increase (Decrease)	997,257		(832,865)
% Increase (Decrease)	12.3%		-10.3%
Net OPEB Liability (Asset)	3,930,516	2,933,259	2,100,394
Increase (Decrease)	997,257		(832,865)
% Increase (Decrease)	34.0%		-28.4%
Change in Healthcare Cost Trend Rate	**Current Trend - 1%**	**Current Trend**	**Current Trend + 1%**
Total OPEB Liability	7,478,060	8,108,179	8,967,037
Increase (Decrease)	(630,119)		858,858
% Increase (Decrease)	-7.8%		10.6%
Net OPEB Liability (Asset)	2,303,140	2,933,259	3,792,117
Increase (Decrease)	(630,119)		858,858
% Increase (Decrease)	-21.5%		29.3%

Accounting Information
(Continued)

Schedule of Changes in the Authority's Net OPEB Liability and Related Ratios

GASB 75 requires presentation of the 10-year history of changes in the Net OPEB Liability. Results for years since GASB 75 was implemented (fiscal years 2018 through 2022) are shown in the table.

Fiscal Year Ending	**FYE 2022**	**FYE 2021**	**FYE 2020**	**FYE 2019**	**FYE 2018**
Measurement Date	*6/30/2021*	*6/30/2020*	*6/30/2019*	*6/30/2018*	*6/30/2017*
Discount Rate on Measurement Date	*4.75%*	*5.10%*	*5.10%*	*5.10%*	*5.10%*
Total OPEB liability					
Service Cost	$ 328,799	$ 318,449	$ 331,211	$ 320,785	$ 350,850
Interest	390,119	369,885	406,509	385,114	482,126
Changes of benefit terms	-	-	-	-	-
Differences between expected and actual experience	(184,833)	-	(1,357,116)	-	(1,408,629)
Changes of assumptions	417,022	-	205,894	-	(994,873)
Benefit payments	(327,048)	(276,823)	(306,893)	(286,733)	(316,489)
Net change in total OPEB liability	624,059	411,511	(720,395)	419,166	(1,887,015)
Total OPEB liability - beginning	7,484,120	7,072,609	7,793,004	7,373,838	9,260,853
Total OPEB liability - ending (a)	$ 8,108,179	$ 7,484,120	$ 7,072,609	$ 7,793,004	$ 7,373,838
Plan fiduciary net position					
Contributions - employer	$ 546,415	$ 529,577	$ 606,839	$ 588,345	$ 748,139
Net investment income	496,621	215,875	224,930	80,538	111,685
Benefit payments	(327,048)	(276,823)	(306,893)	(286,733)	(316,489)
Administrative expenses	-	-	-	(1,550)	-
Net change in plan fiduciary net position	715,988	468,629	524,876	380,600	543,335
Plan fiduciary net position - beginning	4,458,932	3,990,303	3,465,427	3,084,827	2,541,492
Plan fiduciary net position - ending (b)	$ 5,174,920	$ 4,458,932	$ 3,990,303	$ 3,465,427	$ 3,084,827
Net OPEB liability - ending (a) - (b)	$ 2,933,259	$ 3,025,188	$ 3,082,306	$ 4,327,577	$ 4,289,011
Covered-employee payroll	$ 14,326,765	$ 15,543,046	$ 15,503,972	$ 14,836,604	$ 12,531,658
Net OPEB liability as a % of covered-employee payroll	20.47%	19.46%	19.88%	29.17%	34.23%

Accounting Information
(Continued)

Schedule of Contributions

The chart below shows the Actuarially Determined Contribution (ADC), the Authority's contribution, and the excess or shortfall.

Fiscal Year Ending	FYE 2022	FYE 2021	FYE 2020	FYE 2019	FYE 2018
Actuarially Determined Contribution	$ 561,678	$ 545,410	$ 529,577	$ 606,839	$ 588,345
Contributions in relation to the actuarially determined contribution	574,236	546,415	529,577	606,839	588,345
Contribution deficiency (excess)	$ (12,558)	$ (1,005)	$ -	$ -	$ -
Covered employee payroll	$ 16,518,765	$ 14,326,765	$ 15,543,046	$ 15,503,972	$ 14,836,604
Contributions as a percentage of covered employee payroll	3.48%	3.81%	3.41%	3.91%	3.97%

Notes to Schedule - assumptions used to deveop Actuarially Determined Contributions

Valuation Date	6/30/2019			7/1/2017	
Actuarial cost method	Entry Age Normal Level % of Pay			Entry Age Normal Level % of Pay	
Amortization method	Level % of Payroll 30 year closed			Level % of Payroll 30 year closed	
Amortization period	18 years remain	19 years remain	20 years remain	21 years remain	22 years remain
Asset valuation method	Market Value			Market Value	
Investment rate of return	5.10%			5.10%	
Inflation	2.75%			2.75%	
Salary increases	3.25%			3.25%	
Healthcare cost trend rates	6.5% in 2021, step down 0.5% per year to 5% in 2024			7.5% in 2019, step down 0.5% per year to 5% in 2024	
Retirement age	50 to 75			50 to 75	
Mortality	2017 CalPERS Experience Study			2014 CalPERS Experience Study	
Mortality Improvement	MacLeod Watts Scale 2018			MacLeod Watts Scale 2017	

Accounting Information
(Continued)

Detail of Changes to Net Position

The chart below details changes to all components of Net Position.

Central Contra Costa Transit Authority	Total OPEB Liability (a)	Fiduciary Net Position (b)	Net OPEB Liability (c) = (a) - (b)	(d) Deferred Outflows:				(e) Deferred Inflows:			Impact on Statement of Net Position (f) = (c) - (d) + (e)
				Assumption Changes	Plan Experience	Investment Experience	Deferred Contributions	Assumption Changes	Plan Experience	Investment Experience	
Balance at Fiscal Year Ending 6/30/2021 *Measurement Date 6/30/2020*	$ 7,484,120	$ 4,458,932	$ 3,025,188	$ 146,814	$ -	$ 39,562	$ 546,415	$ 440,829	$ 1,591,861	$ 29,066	$ 4,354,153
Changes During the Period:											
Service Cost	328,799		328,799								328,799
Interest Cost	390,119		390,119								390,119
Expected Investment Income		232,999	(232,999)								(232,999)
Employer Contributions		546,415	(546,415)								(546,415)
Changes of Benefit Terms	-		-								-
Benefit Payments	(327,048)	(327,048)	-								-
Assumption Changes	417,022		417,022	417,022							-
Plan Experience	(184,833)		(184,833)						184,833		-
Investment Experience		263,622	(263,622)							263,622	-
Recognized Deferred Resources				(93,599)	-	(22,674)	(546,415)	(138,511)	(419,217)	(62,018)	42,942
Employer Contributions in Fiscal Year							574,236				(574,236)
Net Changes in Fiscal Year 2021-2022	624,059	715,988	(91,929)	323,423	-	(22,674)	27,821	(138,511)	(234,384)	201,604	(591,790)
Balance at Fiscal Year Ending 6/30/2022 *Measurement Date 6/30/2021*	$ 8,108,179	$ 5,174,920	$ 2,933,259	$ 470,237	$ -	$ 16,888	$ 574,236	$ 302,318	$ 1,357,477	$ 230,670	$ 3,762,363

Accounting Information
(Continued)

Schedule of Deferred Outflows and Inflows of Resources

A listing of all deferred resource bases used to develop the Net Position and OPEB Expense is shown below. Deferred Contributions are not shown.

Measurement Date: June 30, 2021

Deferred Outflow or (Inflow)						Balance as of Jun 30, 2021	Recognition of Deferred Outflow or Deferred (Inflow) in Measurement Period:						
Date Created	Source	Impact on Net OPEB Liability (NOL)	Initial Amount	Period (Yrs)	Annual Recognition		2020-21 (FYE 2022)	2021-22 (FYE 2023)	2022-23 (FYE 2024)	2023-24 (FYE 2025)	2024-25 (FYE 2026)	2025-26 (FYE 2027)	Thereafter
6/30/2017	Assumption Changes	Decreased NOL	$ (994,873)	7.18	$ (138,511)	$ (302,318)	$ (138,511)	$ (138,511)	$ (138,511)	$ (25,296)	$ -	$ -	$ -
6/30/2017	Investment Earnings	Increased NOL	28,938	5.00	5,788	-	5,786	-	-	-	-	-	-
6/30/2017	Plan Experience	Decreased NOL	(1,408,629)	7.18	(196,117)	(428,044)	(196,117)	(196,117)	(196,117)	(35,810)	-	-	-
6/30/2018	Investment Earnings	Increased NOL	84,440	5.00	16,888	16,888	16,888	16,888	-	-	-	-	-
6/30/2019	Plan Experience	Decreased NOL	(1,357,116)	6.97	(194,708)	(772,992)	(194,708)	(194,708)	(194,708)	(194,708)	(188,868)	-	-
6/30/2019	Assumption Changes	Increased NOL	205,894	6.97	29,540	117,274	29,540	29,540	29,540	29,540	28,654	-	-
6/30/2019	Investment Earnings	Decreased NOL	(40,545)	5.00	(8,109)	(16,218)	(8,109)	(8,109)	(8,109)	-	-	-	-
6/30/2020	Investment Earnings	Decreased NOL	(5,924)	5.00	(1,185)	(3,554)	(1,185)	(1,185)	(1,185)	(1,184)	-	-	-
6/30/2021	Plan Experience	Decreased NOL	(184,833)	6.51	(28,392)	(156,441)	(28,392)	(28,392)	(28,392)	(28,392)	(28,392)	(28,392)	(14,481)
6/30/2021	Assumption Changes	Increased NOL	417,022	6.51	64,059	352,963	64,059	64,059	64,059	64,059	64,059	64,059	32,668
6/30/2021	Investment Earnings	Decreased NOL	(263,622)	5.00	(52,724)	(210,898)	(52,724)	(52,724)	(52,724)	(52,724)	(52,726)	-	-

Accounting Information
(Continued)

Detail of Authority Contributions to the Plan

Authority contributions to the Plan occur as benefits are paid to or on behalf of retirees. Benefit payments may occur in the form of direct payments for premiums ("explicit subsidies") and/or indirect payments to retirees in the form of higher premiums for active employees ("implicit subsidies"). Note that the implicit subsidy contribution does not represent cash payments to retirees, but rather the reclassification of a portion of active healthcare expense to be recognized as a retiree healthcare cost. For details, see Addendum 1 – Important Background Information.

Benefits and other contributions paid by the Authority during the measurement period are shown below.

For the Measurement Period, Jul 1, 2020 thru Jun 30, 2021	**CCCTA**
Employer	
(a) Contribution To Trust	$ 219,367
(b) Benefits Paid Directly to Retirees	239,144
(c) Implicit Subsidy Payment	87,904
Trust	
(d) Benefits Paid Directly to Retirees	-
(e) Reimbursements to Employer	-
Total Benefits Paid During the MP, (b)+(c)+(d)	327,048
Employer Contribution During the MP, (a)+(b)+(c)-(e)	546,415

Authority OPEB contributions made after the measurement date but prior to the current fiscal year end to be reported as deferred contributions are shown below.

For the Fiscal Year, Jul 1, 2021 thru Jun 30, 2022	**CCCTA**
Employer	
(f) Contribution To Trust	$ 176,021
(g) Benefits Paid Directly to Retirees	290,880
(h) Implicit Subsidy Payment	107,335
Trust	
(i) Benefits Paid Directly to Retirees	-
(j) Reimbursements to Employer	-
Total Benefits Paid During the Current FY, (g)+(h)+(i)	398,215
Employer Contribution During the Current FY, (f)+(g)+(h)-(j)	574,236

Accounting Information
(Continued)

Projected Benefit Payments (15-year projection)

The following is an estimate of other post-employment benefits to be paid on behalf of current retirees and current employees expected to retire from the Authority. Expected annual benefits have been projected on the basis of the actuarial assumptions outlined in Section 3.

Projected Annual Benefit Payments							
Fiscal Year Ending June 30	Explicit Subsidy			Implicit Subsidy			Total
	Current Retirees	Future Retirees	Total	Current Retirees	Future Retirees	Total	
2022	$ 290,880	$ -	$ 290,880	$ 107,335	$ -	$ 107,335	$ 398,215
2023	267,349	62,825	330,174	6,960	78,819	85,779	415,953
2024	260,683	89,617	350,300	7,927	119,397	127,324	477,624
2025	253,645	112,444	366,089	9,016	165,233	174,249	540,338
2026	246,230	136,617	382,847	10,220	165,194	175,414	558,261
2027	238,436	158,092	396,528	11,543	155,486	167,029	563,557
2028	230,267	178,269	408,536	-	174,428	174,428	582,964
2029	221,724	194,376	416,100	-	178,099	178,099	594,199
2030	212,812	210,093	422,905	-	172,301	172,301	595,206
2031	203,545	224,890	428,435	-	169,879	169,879	598,314
2032	193,934	238,655	432,589	-	182,217	182,217	614,806
2033	184,318	249,714	434,032	-	178,028	178,028	612,060
2034	176,090	263,656	439,746	-	202,899	202,899	642,645
2035	167,682	275,782	443,464	-	206,563	206,563	650,027
2036	159,148	288,306	447,454	-	205,095	205,095	652,549

The amounts shown in the Explicit Subsidy section of the table reflect the expected payment by the Authority toward retiree medical premiums in each of the years shown. The amounts are shown separately, and in total, for those retired on the valuation date ("current retirees") and those expected to retire after the valuation date ("future retirees").

The amounts shown in the Implicit Subsidy table reflect the expected excess of retiree medical and prescription drug claims over the premiums expected to be charged during the year for retirees' coverage. These amounts are also shown separately and in total for those currently retired on the valuation date and for those expected to retire in the future.

These projections do not include any benefits expected to be paid on behalf of current active employees *prior to* retirement, nor do they include any benefits for potential *future employees* (i.e., those who might be hired in future years).

Accounting Information
(Concluded)

Sample Journal Entries

OPEB Accounts at Beginning of Fiscal Year	*By Source*		*Sources Combined*	
	Debit	**Credit**	**Debit**	**Credit**
Net OPEB Liability		3,025,188		3,025,188
Deferred Outflow:				
Assumption Changes	146,814			
Plan Experience	-			
Investment Experience	39,562			
Contribution Subsequent to MD	546,415			
Deferred Outflows			732,791	
Deferred Inflow:				
Assumption Changes		440,829		
Plan Experience		1,591,861		
Investment Experience		29,066		
Deferred Inflows				2,061,756

Record Benefits Paid to Retirees	**Debit**	**Credit**
Net OPEB Liability	290,880	
Cash		290,880

Record Contributions to the Trust	**Debit**	**Credit**
Net OPEB Liability	176,021	
Cash		176,021

Record Implicit Subsidy Payment	**Debit**	**Credit**
Net OPEB Liability	107,335	
Premium Expense		107,335

Record End of Year Updates to OPEB Accounts	*By Source*		*Sources Combined*	
	Debit	**Credit**	**Debit**	**Credit**
Net OPEB Liability		482,307		482,307
Deferred Outflow:				
Assumption Changes	323,423			
Plan Experience				
Investment Experience		22,674		
Contribution Subsequent to MD	27,821			
Deferred Outflows			328,570	
Deferred Inflow:				
Assumption Changes	138,511			
Plan Experience	234,384			
Investment Experience		201,604		
Deferred Inflows			171,291	
OPEB Expense		17,554		17,554

E. Funding Information

The employer's OPEB funding policy and level of contributions to an irrevocable OPEB trust directly affects the discount rate which is used to calculate the OPEB liability to be reported in the employer's financial statements. Prefunding (setting aside funds to accumulate in an irrevocable OPEB trust) has certain advantages, one of which is the ability to (potentially) use a higher discount rate in the determination of liabilities for GASB 75 reporting purposes. Prefunding also improves the security of benefits for current and potential future recipients and contributes to intergenerational taxpayer equity by better matching the cost of the benefits to the service years in which they are "earned" and which correspond to years in which taxpayers benefit from those services.

Paying Down the UAAL

Once an employer decides to prefund, a decision must be made about how to pay for benefits related to accumulated prior service that have not yet been funded (the UAAL[3]). This is most often, though not always, handled through structured amortization payments. The period and method chosen for amortizing this unfunded liability can significantly affect the Actuarially Determined Contribution (ADC) or other basis selected for funding the OPEB program.

Much like paying off a mortgage, when the AAL exceeds plan assets, choosing a longer amortization period to pay off the UAAL means smaller payments, but the payments will be required for more years; plan investments will have less time to work toward helping reduce required contribution levels. When the plan is in a surplus position, the reverse is true, and a longer amortization period is usually preferable.

There are several ways the amortization payment can be determined. The most common methods are calculating the amortization payment as a level dollar amount or as a level percentage of payroll. The employer might also choose to apply a shorter period when the UAAL only when it is positive, i.e., when trust assets are lower than the AAL, but opt for a longer period or to exclude amortization of a negative UAAL, when assets exceed the AAL. The entire UAAL may be amortized as one single component or may be broken into multiple components reflecting the timing and source of each change, such as those arising from assumption changes, benefit changes and/or liability or investment experience.

The amortization period(s) should not exceed the number of years which would allow current trust assets plus future contributions and earnings to be sufficient to pay all future benefits and trust expenses each year. Prefunding of OPEB is optional and contributions at any level are permitted. However, if trust sufficiency is not expected, a discount rate other than the assumed trust return will likely be required for accounting purposes.

Funding and Prefunding of the Implicit Subsidy

An implicit subsidy liability is created when retiree medical claims are expected to exceed the premiums charged for retiree coverage. Recognition of the estimated implicit subsidy each year is handled by an accounting entry, reducing the amount paid for active employees and shifting that amount to be treated as a retiree healthcare expense/contribution (see Sample Journal Entries). The implicit subsidy is a true benefit to the retiree but can be difficult to see when medical premiums are set as a flat rate for both actives and pre-Medicare retirees.

[3] We use actuarial, rather than accounting, terminology to describe the components used to develop the ADCs.

Funding Information
(Continued)

This might lead some employers to believe the benefit is not real or is merely an accounting construct, and thus to forgo prefunding of retiree implicit benefits.

Consider what would happen if the retiree premiums were based only on expected retiree claims experience. Almost certainly, retiree premiums would increase while premiums for active employees would go down if the active premiums no longer had to help support the higher retiree claims. *Who would pay the increases in retiree premiums*? Current plan documents and bargaining agreements would have to be consulted. Depending on circumstances, the increase in retiree premiums might remain the responsibility of the employer, pass entirely to the retirees, or some blending of the two. The answer would determine whether separate retiree-only premium rates would result in a higher or lower employer OPEB liability. In the current premium structure, with blended active and pre-Medicare retiree premiums, the employer is clearly, though indirectly, paying the implicit retiree cost.

The prefunding decision is complex. OPEB materiality, budgetary concerns, desire to use the full trust rate in developing the liability for GASB 75, and other factors must be weighed by each employer. Since prefunding OPEB benefits is not required, each employer's OPEB prefunding strategy will depend on how they balance these competing perspectives.

Development of the Actuarially Determined Contributions

The Authority has approved development of ADCs based on the following two components, which are then adjusted with interest to each fiscal year end:

- The amounts attributed to service performed in the current fiscal year (the normal cost) and
- Amortization of the unfunded actuarial accrued liability (UAAL) over a closed 30-year period. Amortization payments are determined on a level % of pay basis; 17 years remain for FYE 2023.

Actuarially Determined Contributions, developed as described above for the Authority's fiscal years ending June 30, 2023, and 2024 are shown the exhibit on the next page. These ADCs incorporate both explicit (cash benefit) and implicit subsidy benefit liabilities. Contributions credited toward meeting the ADC will be comprised of:

1) direct payments to insurers toward retiree premiums, to the extent not reimbursed to the Authority by the trust; plus
2) each year's implicit subsidy payment; and
3) contributions to the OPEB trust.

ADCs determined on this basis should provide for trust sufficiency, based on the current plan provisions and census data, provided all assumptions are exactly realized and if the Authority contributes 100% or more of the ADC each year. When an agency commits to funding the trust at or above the ADC, the expected long-term trust return may be used as the discount rate in determining the plan liability for accounting purposes. Trust sufficiency cannot be guaranteed to a certainty, however, because of the non-trivial risk that the assumptions used to project future benefit liabilities may not be realized.

Funding Information
(Continued)

We develop the Actuarially Determined Contributions (ADCs) for fiscal years ending June 30, 2023, and June 30, 2024, from the results of this valuation. The ADC for fiscal year end June 30, 2022, was developed from the prior (2019) valuation and we have included this for reference as well.

Valuation date	**6/30/2019**	**6/30/2021**	
Discount rate	5.10%	4.75%	
Number of Covered Employees			
Actives	212	199	
Retirees	54	64	
Total Participants	266	263	
For fiscal year ending	6/30/2022	6/30/2023	6/30/2024
Actuarial Present Value of Projected Benefits	$ 9,841,828	$ 10,729,440	$ 10,813,257
Actuarial Accrued Liability (AAL)			
Actives	5,571,883	5,547,129	6,004,577
Retirees	2,209,833	2,911,053	2,768,504
Total AAL	7,781,716	8,458,182	8,773,081
Actuarial Value of Assets	4,809,768	5,538,522	5,920,043
Unfunded AAL (UAAL)	2,971,948	2,919,660	2,853,038
UAAL Amortization method	Level % of Pay	Level % of Pay	Level % of Pay
Remaining amortization period (years)	18	17	16
Amortization Factor	15.2456	14.9071	14.1434
Actuarially Determined Contribution (ADC)			
Normal Cost	339,484	$ 323,596	$ 333,304
Amortization of UAAL	194,938	195,857	201,723
Interest to fiscal year end	27,256	12,194	12,559
Total ADC	**561,678**	**531,647**	**547,586**

As described on the prior page, OPEB funding consists of 3 different sources. Actual contributions made for fiscal year end 2022 as reported to us are shown below. The chart estimates how these 3 contribution sources would apply toward satisfying the ADC for fiscal year ends 2023 and 2024.

1 Implicit subsidy contribution	107,335	$ 85,779	$ 127,324
Additional payments needed to meet ADC	454,343	445,868	420,262
2 *Estimated agency paid premiums for retirees*	290,880	*330,174*	*350,300*
3 *Estimated agency contribution to OPEB trust*	176,021	*115,694*	*69,962*
Total Expected Employer Contributions (1+2+3)	**574,236**	**$ 531,647**	**$ 547,586**

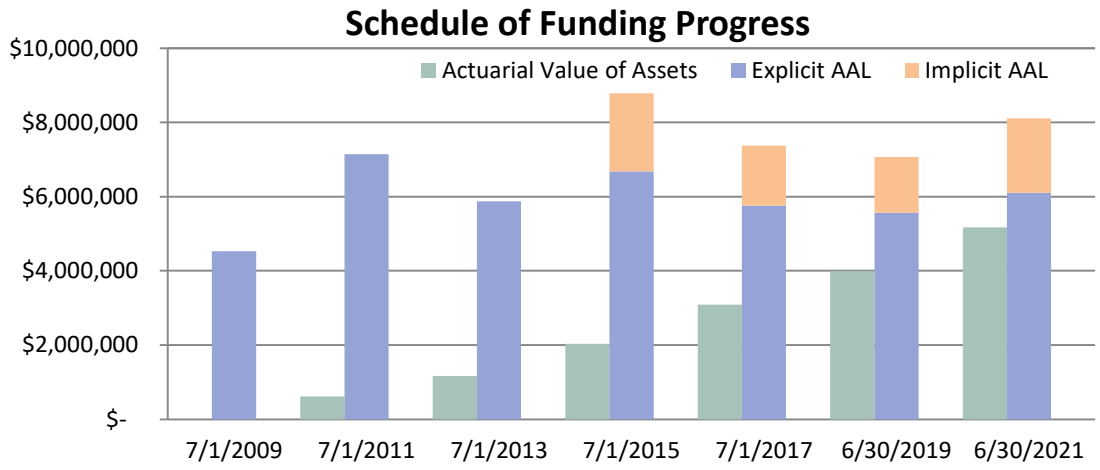
If retiree benefit payments for those years are lower than our projection, the contribution to the trust should be increased to balance so that total contributions equal or exceed the ADC each year.

Funding Information
(Concluded)

In this section, we provide a review of key components of valuation results from 2009 through 2021.

Schedule of Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (b)	Unfunded Actuarial Accrued Liability (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a)/c)	Discount Rate
7/1/2009	$ -	$ 4,534,658	$ 4,534,658	0.0%	$ 15,219,990	29.8%	5.50%
7/1/2011	$ 613,708	$ 7,145,685	$ 6,531,977	8.6%	$ 13,510,453	48.3%	5.50%
7/1/2013	$ 1,165,830	$ 5,875,942	$ 4,710,112	19.8%	$ 12,017,071	39.2%	5.50%
7/1/2015	$ 2,032,180	$ 8,785,647	$ 6,753,467	23.1%	$ 11,784,880	57.3%	5.10%
7/1/2017	$ 3,084,827	$ 7,373,838	$ 4,289,011	41.8%	$ 12,531,658	34.2%	5.10%
6/30/2019	$ 3,990,303	$ 7,072,609	$ 3,082,306	56.4%	$ 14,836,604	20.8%	5.10%
6/30/2021	$ 5,174,920	$ 8,108,180	$ 2,933,260	63.8%	$ 14,326,765	20.5%	4.75%



Significant changes during this period include:

- **July 1, 2015:** Discount rate decreased slightly; first time recognition of implicit subsidy liability and potential excise tax liability under the Affordable Care Act; introduced mortality rate improvement.
- **July 1, 2017**: Some decreases in assumed rates of participation for future retirees and their spouses; increase in future healthcare trend; experience gain, largely from lower-than-expected new retiree/spouse participation and medical premium increases.
- **June 30, 2019**: Updated demographic assumptions; elimination of liability for repealed excise tax 2019 repeal; significantly lower medical premiums than projected due to consolidated rate regions.
- **June 30, 2021:** Reflected lower future expected trust returns, though prior year returns exceeded expected; reflected post-65 liability for non-Medicare Advantage plans and for 2 members not expected to be covered by Medicare; adjusted assumed future rates of retiree and spouse coverage elections.

F. Certification

The primary purposes of this report are: (1) to provide actuarial information of the other postemployment benefits (OPEB) provided by the Central Contra Costa Transit Authority (the Authority) in compliance with Statement 75 of the Governmental Accounting Standards Board (GASB 75); and (2) to provide Actuarially Determined Contributions for prefunding of this program in conformity with the District's OPEB funding policy. The Authority is not required to contribute the ADC shown in this report and we make no representation that it will, in fact, fund the OPEB trust at any particular level).

In preparing this report we relied without audit on information provided by the Authority. This information includes, but is not limited to, plan provisions, census data, and financial information. We performed a limited review of this data and found the information to be reasonably consistent. The accuracy of this report is dependent on this information and if any of the information we relied on is incomplete or inaccurate, then the results reported herein will be different from any report relying on more accurate information.

We consider the actuarial assumptions and methods used in this report to be individually reasonable under the requirements imposed by GASB 75 and taking into consideration reasonable expectations of plan experience. The results provide an estimate of the plan's financial condition at one point in time. Future actuarial results may be significantly different due to a variety of reasons including, but not limited to, demographic and economic assumptions differing from future plan experience, changes in plan provisions, changes in applicable law, or changes in the value of plan benefits relative to other alternatives available to plan members.

Alternative assumptions may also be reasonable; however, demonstrating the range of potential plan results based on alternative assumptions was beyond the scope of our assignment except to the limited extent required by GASB 75 and in accordance with the Authority's stated OPEB funding policy. Results for accounting purposes may be materially different than results obtained for other purposes such as plan termination, liability settlement, or underlying economic value of the promises made by the plan.

This report is prepared solely for the use and benefit of the Authority and may not be provided to third parties without prior written consent of MacLeod Watts. Exceptions are: the Authority may provide copies of this report to their professional accounting and legal advisors who are subject to a duty of confidentiality, and the Authority may provide this work to any party if required by law or court order. No part of this report should be used as the basis for any representations or warranties in any contract or agreement without the written consent of MacLeod Watts.

The undersigned are unaware of any relationship that might impair the objectivity of this work. Nothing within this report is intended to be a substitute for qualified legal or accounting counsel. The signing actuary is a member of the American Academy of Actuaries and meets the qualification standards for rendering this opinion.

Signed: October 7, 2022

Catherine L. MacLeod, FSA, FCA, EA, MAAA	J. Kevin Watts, FSA, FCA, MAAA

G. Supporting Information

Section 1 - Summary of Employee Data

Active employees: The Authority reported 199 active members in the data provided to us for the June 2021 valuation. Of these, 169 were currently enrolled in the medical program, with 30 waiving coverage.

Distribution of Benefits-Eligible Active Employees								
	Years of Service							
Current Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 & Up	Total	Percent
Under 25							0	0%
25 to 29	1	3					4	2%
30 to 34	1	7	5				13	7%
35 to 39		1	6	3			10	5%
40 to 44		3	9	4	6	1	23	12%
45 to 49		6	2	4	4	5	21	11%
50 to 54		10	4	6	6	9	35	18%
55 to 59		3	4	2	5	17	31	16%
60 to 64		11	9	5	5	13	43	22%
65 to 69		2	2		3	6	13	7%
70 & Up						6	6	3%
Total	2	46	41	24	29	57	**199**	**100%**
Percent	1%	23%	21%	12%	15%	29%	**100%**	

Valuation	June 2019	June 2021
Average Attained Age for Actives	52.4	52.9
Average Years of Service	12.9	14.0

Retirees: There are also 64 retirees receiving benefits under this program on the valuation date. Their current ages are summarized in the chart at right, as well as the average age at retirement.

Retirees by Age		
Current Age	Number	Percent
Below 50	0	0%
50 to 54	0	0%
55 to 59	0	0%
60 to 64	1	2%
65 to 69	20	31%
70 to 74	21	33%
75 to 79	13	20%
80 & up	9	14%
Total	**64**	**100%**
Average Age:		
On 6/30/2021	73.7	
At retirement	63.9	

Summary of Plan Member Counts: The numbers of those members currently or potentially eligible to receive benefits under the OPEB plan are required to be reported in the notes to the financial statements.

Summary of Plan Member Counts	
Number of active plan members	199
Number of inactive plan members currently receiving benefits	64
Number of inactive plan members entitled to but not receiving benefits	110*

** Retirees eligible to return to the Authority for PEMHCA coverage*

Supporting Information
(Continued)

Section 1 - Summary of Employee Data
(continued)

The counts of plan members for each of the three primary bargaining groups are shown below:

Participants By Group				
		Retired		
Group	Active	Under 65	Over 65	Total
Administrative	46	-	28	74
ATU	145	1	33	179
Teamsters	8	-	2	10
Total	199	1	63	263

The chart below reconciles the number of actives and retirees included in the July 1, 2019, valuation of the Authority plan with those included in the June 30, 2021, valuation:

Reconciliation of Authority Plan Members Between Valuation Dates					
Status	Covered Actives	Waiving Actives	Covered Retirees	Covered Surviving Spouses	Total
Number reported as of June 30, 2019	172	40	51	3	266
New employees	18	3			21
Separated employees	(11)	(6)			(17)
New retiree, elected coverage	(10)	(1)	11		0
New retiree, waiving coverage	(4)	(4)			(8)
Previously covered, now waiving	(2)	2	(1)		(1)
Previously waiving, now covered	4	(4)	1	1	2
Previously ineligible, now covered	2				2
Deceased			(5)	3	(2)
Number reported as of June 30, 2021	**169**	**30**	**57**	**7**	**263**

The total plan population was fairly stable in the two-year period between valuations. The number of active plan members, both covered and waiving, declined by 13, from 212 to 199, representing a 6% decrease in active employees included in the valuation. The number of covered retirees and spouses increased by 10 (about 19%), from 54 to 64 covered members.

Of 19 new retirements reported as occurring between July 1, 2019, and June 30, 2021, 11 elected to continue medical coverage through the Authority; the other 8 declined coverage, though they retain the right to re-enroll in the future. We reviewed the percentages of retirees at various age and group affiliation and, as expected, there were some differences in the percentages retirees electing coverage in the different bargaining groups. There were also differences in the percentages of new retirees electing coverage over and under 65.

Recent Retiree Election by Group				
	Pre-65		Post-65	
Group	Elected	Waived	Elected	Waived
Aministrative	1	1	3	-
ATU	-	3	6	4
Teamsters	-	-	1	-
Total	1	4	10	4

Supporting Information
(Continued)

Section 2 - Summary of Retiree Benefit Provisions

OPEB provided: The Authority has indicated that the only OPEB provided is medical coverage.

Access to coverage: Medical coverage is currently provided through CalPERS as permitted under the Public Employees' Medical and Hospital Care Act (PEMHCA). This coverage requires the employee to satisfy the requirements for retirement under CalPERS: either (a) attainment of age 50 (if Classic) or 52 (if PEPRA) with 5 years of State or public agency service or (b) an approved disability retirement.

The employee must begin his or her retirement (pension) benefit within 120 days of terminating employment with the Authority to be eligible to continue medical coverage through the Authority and be entitled to the benefits described below. In other words, it is the timing of initiating CalPERS pension benefits and not timing of enrollment in the medical program which determines whether or not the retiree qualifies for lifetime medical coverage and any benefits defined in the PEMHCA resolution.

Once eligible, if an eligible employee is not already enrolled in the medical plan, he or she may enroll within 60 days of retirement, during any future open enrollment period or with a qualifying life event. Coverage may be continued at the retiree's option for his or her lifetime. A surviving spouse and other eligible dependents may also continue coverage

Benefits provided: As a condition of participation in the CalPERS medical program, the Authority is obligated to contribute toward the cost of retiree medical coverage for the retiree's lifetime or until coverage is discontinued. The Authority executed three resolutions, at differing dates, for the Administrative, Amalgamated Transit Union (ATU) and Teamster employee groups, respectively. Each of these resolutions was executed on an "unequal" contribution basis for retirees relative to the level of the Authority's contribution toward the cost of medical plan premiums.

- Under the unequal resolution, the employer's contribution toward *retiree* medical benefits is determined as follows: (1) 5% *multiplied by* (2) the number of prior years the agency group has been contracted with PEMHCA *multiplied by* (3) the contribution the employer makes toward active employee health benefits for that group.
- Note, however, that the monthly benefit may not be less than the required PEMHCA minimum employer contribution (MEC). The MEC was $143 per month in 2021 and increased to $149 per month in 2022. If the current benefits are not increased in the future, eventually the MEC will overtake the fixed subsidies and become the operative benefit. In Appendix 1, we have provided a projection of the years in which this is expected to occur.

The Administrative and Teamster groups have each participated in the CalPERS medical program under the unequal contribution resolutions for more than 20 years. Accordingly, contribution levels for these retirees are now equal to the applicable subsidy amounts stated in the PEMHCA resolutions for active employees. The first two charts at the top of the following page describe the subsidies provided to Administrative and Teamster actives and retirees, varying by group and CalPERS medical plan.

Continued on the following page

Summary of Retiree Benefit Provisions
(Continued)

Administrative Group			
Active and Retiree Monthly Subsidies by Plan			
Plan	Self	Self + 1	Self + Family
Anthem HMO Traditional	$ 494.86	$ 989.71	$ 1,286.63
Anthem HMO Select	270.71	541.42	703.85
Blue Shield Access	329.08	658.10	855.60
Blue Shield Access Advantage	329.08	658.10	855.60
Kaiser	303.56	607.12	789.26
PERS Platinum	392.42	784.84	1,020.29
PERS Gold	270.71	541.42	703.85
United Healthcare	303.56	607.12	789.26
Western Health Advantage HMO	303.56	607.12	789.26

Teamsters			
Active and Retiree Monthly Subsidies by Plan			
Plan	Self	Self + 1	Self + Family
Anthem HMO Traditional	$ 374.92	$ 749.83	$ 974.78
Anthem HMO Select	226.58	453.16	589.11
Blue Shield Access	280.29	560.57	728.74
Blue Shield Access Advantage	280.29	560.57	728.74
Kaiser	254.15	508.30	660.79
PERS Platinum	308.08	616.55	801.01
PERS Gold	226.58	453.16	589.11
United Healthcare	254.15	508.30	660.79
Western Health Advantage HMO	254.15	508.30	660.79

ATU's unequal resolution was executed in 2002; therefore, as of 2021 ATU has completed the last of the 20 year unequal phase-in period as of the valuation date. Thus, the Authority contributes the same amounts for ATU retirees as is contributed for active ATU employees. The subsidies for ATU members, varying by plan are shown below:

Amalgamated Transit Union (ATU)			
Active and Retiree Monthly Subsidies by Plan			
Plan	Self	Self + 1	Self + Family
Anthem HMO Traditional	$ 374.92	$ 749.83	$ 974.78
Anthem HMO Select	233.59	467.18	607.34
Blue Shield Access	266.47	532.93	692.81
Health Net	139.00	139.00	139.00
Kaiser	235.34	470.67	611.87
PERS Care	308.08	616.16	801.01
PERS Choice	233.59	467.18	607.34
United Healthcare	235.34	470.67	611.87

Summary of Retiree Benefit Provisions
(Concluded)

Current premium rates: The 2022 CalPERS monthly medical plan rates in the Region 1 rate group are shown in the table below. If different rates apply where the member resides outside of this area, those rates are reflected in the valuation, but not listed here. The CalPERS administration fee is assumed to be expensed each year and has not been projected as an OPEB liability in this valuation.

Region 1 2022 Health Plan Rates						
	Actives and Pre-Med Retirees			Medicare Eligible Retirees		
Plan	Ee Only	Ee & 1	Ee & 2+	Ee Only	Ee & 1	Ee & 2+
Anthem EPO Del Norte	$ 1,057.01	$ 2,114.02	$ 2,748.23	$ 381.94	$ 763.88	$1,398.09
Anthem Select HMO	1,015.81	2,031.62	2,641.11	360.19	720.38	1,329.87
Anthem Traditional HMO	1,304.00	2,608.00	3,390.40	360.19	720.38	1,502.78
Health Net SmartCare	1,153.00	2,306.00	2,997.80	*Not Available*		
Kaiser HMO	857.06	1,714.12	2,228.36	302.53	605.06	1,119.30
PERS Platinum PPO	1,057.01	2,114.02	2,748.23	381.94	763.88	1,398.09
PERS Gold PPO	701.23	1,402.46	1,823.20	377.41	754.82	1,175.56
UHC Alliance HMO*	1,020.28	2,040.56	2,652.73	347.21	694.42	1,306.59

**Medicare rates shown are for UHC Medicare Advantage Edge*

Supporting Information
(Continued)

Section 3 - Actuarial Methods and Assumptions

The ultimate real cost of an employee benefit plan is the value of all benefits and other expenses of the plan over its lifetime. These payments depend only on the terms of the plan and the administrative arrangements adopted. Actuarial assumptions are used to estimate the cost of these benefits; the funding method spreads the expected costs on a level basis over the life of the plan.

Important Dates

Valuation Date	June 30, 2021
Fiscal Year End	June 30, 2022
GASB 75 Measurement Date	June 30, 2021 (last day of the prior fiscal year)

Valuation Methods

Funding Method	Entry Age Normal Cost, level percent of pay
Asset Valuation Method	Market value of assets
Participants Valued	Only current active employees and retired participants and covered dependents are valued. No future entrants are considered in this valuation.
Development of Age-related Medical Premiums	Actual premium rates for retirees and their spouses were adjusted to an age-related basis by applying medical claim cost factors developed from the data presented in the report, "Health Care Costs – From Birth to Death", sponsored by the Society of Actuaries. A description of the use of claims cost curves can be found in MacLeod Watts's Age Rating Methodology (Addendum 2 to this report). Pre-Medicare retiree premiums are blended with premiums for active members. Medicare-eligible retirees are covered by plans which are rated solely on the experience of Medicare retirees with no subsidy by active employee premiums. Monthly baseline premium costs were set equal to the active single premiums shown in the chart in Section 2. Representative claims costs derived from the dataset provided by CalPERS are shown in the chart on the following page. Age-based claims were applied (a) for all retirees not yet eligible for Medicare and (b) for Medicare retirees receiving benefits in excess of the PEMHCA minimum *and* covered by Medicare Supplement plans.

Supporting Information
(Continued)

Section 3 - Actuarial Methods and Assumptions

Development of Age-related
Medical Premiums (continued)

Expected Monthly Claims by Medical Plan for Selected Ages														
		Non-Medicare Male Retirees					Medicare Male Retirees						
Region	**Medical Plan**	50	53	56	59	62	65	70	75	80	85	90	95
Region 1	Anthem EPO Del Norte	$ 1,028	$ 1,212	$ 1,408	$ 1,613	$ 1,834	*Claims not developed for Medicare Advantage plans*						
	Anthem Select HMO	1,026	1,210	1,406	1,611	1,831	*Claims not developed for Medicare Advantage plans*						
	Anthem Traditional HMO	1,146	1,352	1,570	1,800	2,046	*Claims not developed for Medicare Advantage plans*						
	Health Net SmartCare	1,015	1,197	1,390	1,593	1,811	*Plan not available to Medicare retirees*						
	Kaiser HMO	873	1,030	1,196	1,371	1,558	*Claims not developed for Medicare Advantage plans*						
	PERS Gold PPO	686	808	939	1,076	1,223	300	336	365	382	377	360	357
	PERS Platinum PPO	705	832	966	1,107	1,259	303	340	369	387	382	365	362
	UHC Alliance HMO	1,016	1,198	1,392	1,595	1,814	*Claims not developed for Medicare Advantage plans*						
Out of State	Kaiser HMO	$ 757	$ 892	$ 1,037	$ 1,188	$ 1,351	*Claims not developed for Medicare Advantage plans*						
	PERS Platinum	634	748	869	996	1,132	307	344	374	392	386	369	366
	PORAC	629	742	862	988	1,123	392	440	478	500	494	472	468
		Non-Medicare Female Retirees					Medicare Female Retirees						
Region	**Medical Plan**	50	53	56	59	62	65	70	75	80	85	90	95
Region 1	Anthem EPO Del Norte	$ 1,274	$ 1,399	$ 1,505	$ 1,626	$ 1,793	*Claims not developed for Medicare Advantage plans*						
	Anthem Select HMO	1,272	1,397	1,503	1,624	1,790	*Claims not developed for Medicare Advantage plans*						
	Anthem Traditional HMO	1,421	1,560	1,679	1,814	2,000	*Claims not developed for Medicare Advantage plans*						
	Health Net SmartCare	1,258	1,381	1,486	1,606	1,770	*Plan not available to Medicare retirees*						
	Kaiser HMO	1,082	1,189	1,279	1,382	1,523	*Claims not developed for Medicare Advantage plans*						
	PERS Gold PPO	850	933	1,004	1,085	1,196	287	324	351	367	370	363	357
	PERS Platinum PPO	874	960	1,033	1,116	1,230	291	329	356	372	375	367	361
	UHC Alliance HMO	1,259	1,383	1,488	1,608	1,773	*Claims not developed for Medicare Advantage plans*						
Out of State	Kaiser HMO	$ 938	$ 1,030	$ 1,108	$ 1,198	$ 1,320	*Claims not developed for Medicare Advantage plans*						
	PERS Platinum	786	863	929	1,004	1,106	294	333	360	376	380	372	366
	PORAC	780	856	922	996	1,098	376	425	460	481	485	475	467

Supporting Information
(Continued)

Section 3 - Actuarial Methods and Assumptions

Economic Assumptions

Long Term Return on Assets	4.75% as of June 30, 2021, and 5.10% as of June 30, 2020
Discount Rate for Funding	4.75% as of June 30, 2021, and 5.10% as of June 30, 2020
General Inflation Rate	2.5% per year
Salary Increase	3.0% per year; since benefits do not depend on salary, this is used to allocate the cost of benefits between service years.
Healthcare Trend	Medical plan premiums and claims costs by age are assumed to increase once each year. Increases over the prior year's levels were derived using the Getzen model and are assumed to be effective on the dates shown in the chart below.

Effective January 1	Premium Increase	Effective January 1	Premium Increase
2022	Actual	2044-2049	4.7%
2023	5.8%	2050-2059	4.6%
2024	5.6%	2060-2066	4.5%
2025	5.4%	2067-2068	4.4%
2026-2027	5.2%	2069-2070	4.3%
2028-2029	5.1%	2071	4.2%
2030-2038	5.0%	2072-2073	4.1%
2039	4.9%	2074-2075	4.0%
2040-2043	4.8%	2076 & later	3.9%

The healthcare trend shown above was developed using the Getzen Model 2022_b published by the Society of Actuaries using the following settings: CPI 2.5%; Real GDP Growth 1.4%; Excess Medical Growth 1.0%; Expected Health Share of GDP in 2028 20.3%; Resistance Point 20%; Year after which medical growth is limited to growth in GDP 2075.

The PEMHCA minimum employer contribution is assumed to increase by 4.5%

Employer Cost Sharing	We have assumed no increase in the fixed dollar amounts contributed by the Authority for active employees.
Medicare Eligibility	All individuals known to have paid into Medicare while actively employee with the Authority are assumed to be eligible for Medicare Parts A and B at age 65. Employees confirmed not to be paying into Medicare are assumed to have a 50% of becoming eligible for Medicare Parts A and B at age 65.

Supporting Information
(Continued)

Section 3 - Actuarial Methods and Assumptions

Participant Election Assumptions

Retiree Participation Rates

Active employees: The following chart shows the percent of current active employees are assumed to elect medical coverage in retirement:

Percent of Current Active Employees Assumed to Elect Medical Coverage in Retirement				
Group	Age at Retirement	With Medical Coverage and Retiring in FY 21/22	Decrease in Percent Electing Coverage	Minimum Percent Electing
Admin	Under 65	90%	1.5%	50%
Admin	65 or older	100%	1.5%	75%
ATU	Under 65	50%	1.5%	45%
ATU	65 or older	60%	n/a	60%
Teamster	Under 65	60%	1.5%	45%
Teamster	65 or older	80%	1.5%	60%

The applicable percentages above are multiplied by 50% for those employees not currently enrolled in medical coverage through the Authority.

Retired participants: Existing medical plan elections are assumed to be continued until the retiree's death.

Spouse Coverage

Active employees: 20% are assumed to be married and elect spouse coverage in retirement prior to age 65 while 45% are assumed to elect spouse coverage after the age 65. Surviving spouses are assumed to retain coverage until their death. Husbands are assumed to be 3 years older than their wives.

Retired participants: Existing elections for spouse coverage are assumed to be continued until the spouse's death. Actual spouse ages are used, where known; if not, husbands are assumed to be 3 years older than their wives.

Spouse gender is assumed to be the opposite of the employee.

Dependent Coverage

Active employees: 30% are assumed to cover eligible dependents other than a spouse at retirement; eligibility for coverage for the youngest dependent is assumed to end at the retiree's age 62.

Retired participants covering dependent children are assumed to end such coverage when the youngest currently covered dependent reaches age 26.

Supporting Information
(Continued)

Section 3 - Actuarial Methods and Assumptions

Demographic Assumptions

Demographic actuarial assumptions used in this valuation are based on the 2017 experience study of the California Public Employees Retirement System using data from 1997 to 2015, except for a different basis used to project future mortality improvements. Rates for selected age and service are shown below and on the following pages. The representative mortality rates were those published by CalPERS adjusted to back out 15 years of Scale MP 2016 to central year 2015.

Mortality Before Retirement

CalPERS Public Agency Miscellaneous Non-Industrial Deaths		
Age	Male	Female
15	0.00019	0.00004
20	0.00027	0.00008
30	0.00044	0.00018
40	0.00070	0.00040
50	0.00135	0.00090
60	0.00288	0.00182
70	0.00693	0.00438
80	0.01909	0.01080

Mortality After Retirement
(before improvement applied)

Healthy Lives

CalPERS Public Agency Miscellaneous, Police & Fire Post Retirement Mortality		
Age	Male	Female
40	0.00070	0.00040
50	0.00431	0.00390
60	0.00758	0.00524
70	0.01490	0.01044
80	0.04577	0.03459
90	0.14801	0.11315
100	0.35053	0.30412
110	1.00000	1.00000

Disabled Miscellaneous

CalPERS Public Agency Disabled Miscellaneous Post-Retirement Mortality		
Age	Male	Female
20	0.00027	0.00008
30	0.00044	0.00018
40	0.00070	0.00040
50	0.01371	0.01221
60	0.02447	0.01545
70	0.03737	0.02462
80	0.07218	0.05338
90	0.16585	0.14826

Mortality Improvement

MacLeod Watts Scale 2022 applied generationally from 2015 (see Addendum 3)

Supporting Information
(Continued)

Section 3 - Actuarial Methods and Assumptions

Termination Rates

Each rate in this table reflects the probability that an employee with that age and service will end its employment with the agency in the next 12 months for reasons other than retirement or death.

Miscellaneous Employees: Sum of Vested Terminated & Refund Rates From CalPERS Experience Study Report Issued December 2017						
Attained Age	Years of Service					
	0	3	5	10	15	20
15	0.1812	0.0000	0.0000	0.0000	0.0000	0.0000
20	0.1742	0.1193	0.0654	0.0000	0.0000	0.0000
25	0.1674	0.1125	0.0634	0.0433	0.0000	0.0000
30	0.1606	0.1055	0.0615	0.0416	0.0262	0.0000
35	0.1537	0.0987	0.0567	0.0399	0.0252	0.0184
40	0.1468	0.0919	0.0519	0.0375	0.0243	0.0176
45	0.1400	0.0849	0.0480	0.0351	0.0216	0.0168

Service Retirement Rates

The following miscellaneous retirement formulas apply:

If hired prior to 1/1/2013 or with prior PERS service: 2% @ 60
If hired on or after 1/1/2013, PEPRA: 2% @ 62

Sample rates of assumed future retirements applicable to each of these retirement benefit formulas are shown in tables below. Each rate reflects the probability that an employee with that age and service will take a service retirement in the next 12 months.

Sample rates of assumed future retirements applicable to each of these retirement benefit formulas are shown in tables on the following page. Each rate reflects the probability that an employee with that age and service will take a service retirement in the next 12 months.

Miscellaneous Employees: 2% at 60 formula From CalPERS Experience Study Report Issued December 2017						
Current Age	Years of Service					
	5	10	15	20	25	30
50	0.0200	0.0200	0.0200	0.0200	0.0200	0.1500
55	0.0190	0.0260	0.0330	0.0920	0.1360	0.1460
60	0.0700	0.0740	0.0890	0.1130	0.1370	0.1610
65	0.1400	0.1780	0.2150	0.2640	0.3210	0.3770
70	0.1400	0.1780	0.2150	0.2640	0.3210	0.3770
75 & over	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Miscellaneous "PEPRA" Employees: 2% at 62 formula From CalPERS Experience Study Report Issued December 2017						
Current Age	Years of Service					
	5	10	15	20	25	30
50	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
55	0.0100	0.0190	0.0280	0.0360	0.0610	0.0960
60	0.0310	0.0510	0.0710	0.0910	0.1110	0.1380
65	0.1080	0.1410	0.1730	0.2060	0.2390	0.3000
70	0.1200	0.1560	0.1930	0.2290	0.2650	0.3330
75 & over	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Supporting Information
(Continued)

Section 3 - Actuarial Methods and Assumptions

Disability Retirement Rates

CalPERS Public Agency Miscellaneous Disability From Dec 2017 Experience Study Report		
Age	Male	Female
20	0.00017	0.00010
25	0.00017	0.00010
30	0.00019	0.00024
35	0.00039	0.00071
40	0.00102	0.00135
45	0.00151	0.00188
50	0.00158	0.00199
55	0.00158	0.00149
60	0.00153	0.00105

Software and Models Used in the Valuation

ProVal - MacLeod Watts utilizes ProVal, a licensed actuarial valuation software product from Winklevoss Technologies (WinTech) to project future retiree benefit payments and develop the OPEB liabilities presented in this report. ProVal is widely used by the actuarial community. We review results at the plan level and for individual sample lives and find them to be reasonable and consistent with the results we expect. We are not aware of any material inconsistencies or limitations in the software that would affect this actuarial valuation.

Age-based premiums model – developed internally and reviewed by an external consultant at the time it was developed. See discussion on Development of Age-Related Medical Premiums and Addendum 3.

Getzen model – published by the Society of Actuaries; used to derive medical trend assumptions described earlier in this section.

Changes in assumptions or methods since the prior Measurement Date

Trust rate of return and discount rate	Decreased from 5.10% to 4.75%, reflecting updated long-term rates of return provided by PARS in April 2022
Mortality Improvement	The mortality improvement scale was updated from MacLeod Watts Scale 2018 to MacLeod Watts Scale 2022, reflecting continued updates in available information (see Addendum 3).
General Inflation Rate	Decreased from 2.75% to 2.5%
Salary Scale	Decreased from 3.25% to 3.0%
Healthcare Trend	Updated to Getzen Model 2022_b, as published by the Society of Actuaries

Supporting Information
(Concluded)

Section 3 - Actuarial Methods and Assumptions

Changes in assumptions or methods since the prior Measurement Date
(concluded)

Pool Subsidy for Medicare retirees

We applied age-based premiums and developed a liability for the projected pool subsidy for retirees enrolled in Medicare plans, under guidance provided by a new actuarial practice note

Retiree Participation Rates

We reviewed recent retiree participation elections by age and bargaining group and updated our assumptions about future retiree participation as described on page 34.

Prior participation rate assumptions are shown below for employees currently enrolled in coverage. Prior assumed rates for those waiving coverage while employed were the rates shown below multiplied by 75%.

Assumed to Elect Medical Coverage in Retirement					
Group	Age at Retirement	With Medical Coverage and Retiring in 2017	With Medical Coverage and Retiring in 2019	Annual Decrease in Percent Electing Coverage	Minimum Percent Electing
Admin	Under 62	70%	67%	1.5%	50%
Admin	62 or older	90%	87%	1.5%	70%
ATU	Under 62	55%	55%	1.5%*	45%
ATU	62 or older	60%	60%	n/a	60%
Teamster	Under 62	60%	57%	1.5%	45%
Teamster	62 or older	80%	77%	1.5%	60%

** Decreased election percentages for future ATU retirees are assumed to begin in 2020, since the retiree benefit level gradually increases until then.*

Spouse Coverage

Following a review of recent retiree elections, the percentage of future retirees assumed to elect spouse retirees were reduced from 30% to 20% for ages under 65 and decreased from 50% to 45% for ages 65 and older.

Medicare Eligibility

We added an assumption that unmarried employees identified as not paying into Medicare would have a 50% probability that such employees will remain ineligible for Medicare Part A and Part B coverage.

Appendix 1
Summary of Caps and Expected PEMHCA MEC Increases

The chart below summarizes each of the current single party coverage caps and provides the year in which the PEMHCA Minimum Employer Contribution (MEC) is expected to exceed the cap, based on the assumed annual increase in the MEC of 4.5%.

Single Party Coverage Caps & Years When MEC is Expected to Exceed the Cap						
Group	**Administrative**		**ATU**		**Teamsters**	
Plan	Single Party Subsidies	Year when MEC is projected to exceed subsidy	Single Party Subsidies	Year when MEC is projected to exceed subsidy	Single Party Subsidies	Year when MEC is projected to exceed subsidy
Anthem HMO Traditional	$ 494.86	2049	$ 374.92	2042	$ 374.92	2042
Anthem HMO Select	270.71	2035	233.59	2032	226.58	2031
Blue Shield HMO	329.08	2040	266.47	2035	280.29	2036
Kaiser	303.56	2038	235.34	2032	254.15	2034
PERS Platinum	392.42	2044	308.08	2038	308.08	2038
PERS Gold	270.71	2035	233.59	2032	226.58	2031
United Healthcare	303.56	2038	235.34	2032	254.15	2034

Addendum 1: Important Background Information

General Types of Other Post-Employment Benefits (OPEB)

Post-employment benefits other than pensions (OPEB) comprise a part of compensation that employers offer for services received. The most common OPEB are medical, prescription drug, dental, vision, and/or life insurance coverage. Other OPEB may include outside group legal, long-term care, or disability benefits outside of a pension plan. OPEB does not generally include COBRA, vacation, sick leave (unless converted to defined benefit OPEB), or other direct retiree payments.

A direct employer payment toward the cost of OPEB benefits is referred to as an "explicit subsidy". In addition, if claims experience of employees and retirees are pooled when determining premiums, retiree premiums are based on a pool of members which, on average, are younger and healthier. For certain types of coverage such as medical insurance, this results in an "implicit subsidy" of retiree premiums by active employee premiums since the retiree premiums are lower than they would have been if retirees were insured separately. GASB 75 and Actuarial Standards of Practice generally require that an implicit subsidy of retiree premium rates be valued as an OPEB liability.

<table>
<tr><td colspan="3">Expected retiree claims</td></tr>
<tr><td colspan="2">Premium charged for retiree coverage</td><td>Covered by higher active premiums</td></tr>
<tr><td>Retiree portion of premium</td><td>Agency portion of premium
Explicit subsidy</td><td>Implicit subsidy</td></tr>
</table>

This chart shows the sources of funds needed to cover expected medical claims for pre-Medicare retirees. The portion of the premium paid by the Agency does not impact the amount of the implicit subsidy.

Valuation Process

The valuation was based on employee census data and benefits provided by the Authority. A summary of the employee data is provided in Section 1 and a summary of the benefits provided under the Plan is provided in Section 2. While individual employee records have been reviewed to verify that they are reasonable in various respects, the data has not been audited and we have otherwise relied on the Authority as to its accuracy. The valuation was also based on the actuarial methods and assumptions described in Section 3.

In developing the projected benefit values and liabilities, we first determine an expected premium or benefit stream over the employee's future retirement. Benefits may include both direct employer payments (explicit subsidies) and/or an implicit subsidy, arising when retiree premiums are expected to be subsidized by active employee premiums. The projected benefit streams reflect assumed trends in the cost of those benefits and assumptions as to the expected date(s) when benefits will end. We then apply assumptions regarding:

- The probability that each individual employee will or will not continue in service to receive benefits.
- The probability of when such retirement will occur for each retiree, based on current age, service and employee type; and

Important Background Information
(Continued)

- The likelihood that future retirees will or will not elect retiree coverage (and benefits) for themselves and/or their dependents.

We then calculate a present value of these benefits by discounting the value of each future expected benefit payment, multiplied by the assumed expectation that it will be paid, back to the valuation date using the discount rate. These benefit projections and liabilities have a very long time horizon. The final payments for currently active employees may not be made for many decades.

The resulting present value for each employee is allocated as a level percent of payroll each year over the employee's career using the entry age normal cost method and the amounts for each individual are then summed to get the results for the entire plan. This creates a cost expected to increase each year as payroll increases. Amounts attributed to prior fiscal years form the "Total OPEB Liability". The OPEB cost allocated for active employees in the current year is referred to as "Service Cost".

Where contributions have been made to an irrevocable OPEB trust, the accumulated value of trust assets ("Fiduciary Net Position") is applied to offset the "Total OPEB Liability", resulting in the "Net OPEB Liability". If a plan is not being funded, then the Net OPEB Liability is equal to the Total OPEB Liability.

It is important to remember that an actuarial valuation is, by its nature, a projection of one possible future outcome based on many assumptions. To the extent that actual experience is not what we assumed, future results will differ. Some possible sources of future differences may include:

- A significant change in the number of covered or eligible plan members
- A significant increase or decrease in the future premium rates
- A change in the subsidy provided by the Agency toward retiree premiums
- Longer life expectancies of retirees
- Significant changes in expected retiree healthcare claims by age, relative to healthcare claims for active employees and their dependents
- Higher or lower returns on plan assets or contribution levels other than were assumed, and/or
- Changes in the discount rate used to value the OPEB liability

Important Background Information
(Continued)

Requirements of GASB 75

The Governmental Accounting Standards Board (GASB) issued GASB Statement No. 75, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions*. This Statement establishes standards for the measurement, recognition, and disclosure of OPEB expense and related liabilities (assets), note disclosures, and, required supplementary information (RSI) in the financial reports of state and local governmental employers.

Important Dates

GASB 75 requires that the information used for financial reporting falls within prescribed timeframes. Actuarial valuations of the total OPEB liability are generally required at least every two years. If a valuation is not performed as of the Measurement Date, then liabilities are required to be based on roll forward procedures from a prior valuation performed no more than 30 months and 1 day prior to the most recent year-end. In addition, the net OPEB liability is required to be measured as of a date no earlier than the end of the prior fiscal year (the "Measurement Date").

Recognition of Plan Changes and Gains and Losses

Under GASB 75, gains and losses related to changes in Total OPEB Liability and Fiduciary Net Position are recognized in OPEB expense systematically over time.

- *Timing of recognition*: Changes in the Total OPEB Liability relating to changes in plan benefits are recognized immediately (fully expensed) in the year in which the change occurs. Gains and Losses are amortized, with the applicable period based on the type of gain or loss. The first amortized amounts are recognized in OPEB expense for the year the gain or loss occurs. The remaining amounts are categorized as deferred outflows and deferred inflows of resources related to OPEB and are to be recognized in future OPEB expense.

- *Deferred recognition periods:* These periods differ depending on the source of the gain or loss.

Difference between projected and actual trust earnings:	5 year straight-line recognition
All other amounts:	Straight-line recognition over the expected average remaining service lifetime (EARSL) of all members that are provided with benefits, determined as of the beginning of the Measurement Period. In determining the EARSL, all active, retired and inactive (vested) members are counted, with the latter two groups having 0 remaining service years.

Important Background Information
(Continued)

Implicit Subsidy Plan Contributions

An implicit subsidy occurs when expected retiree claims exceed the premiums charged for retiree coverage. When this occurs, we expect part of the premiums paid for active employees to cover a portion of retiree claims. This transfer represents the current year's "implicit subsidy". Because GASB 75 treats payments to an irrevocable trust *or directly to the insurer* as employer contributions, each year's implicit subsidy is treated as a contribution toward the payment of retiree benefits.

The following hypothetical example illustrates this treatment:

Hypothetical Illustration of Implicit Subsidy Recognition	For Active Employees	For Retired Employees
Prior to Implicit Subsidy Adjustment		
Premiums Paid by Agency During Fiscal Year	$ 411,000	$ 48,000
Accounting Treatment	Compensation Cost for Active Employees	Contribution to Plan & Benefits Paid from Plan
After Implicit Subsidy Adjustment		
Premiums Paid by Agency During Fiscal Year	$ 411,000	$ 48,000
Implicit Subsidy Adjustment	(23,000)	23,000
Accounting Cost of Premiums Paid	$ 388,000	$ 71,000
Accounting Treatment Impact	Reduces Compensation Cost for Active Employees	Increases Contributions to Plan & Benefits Paid from Plan

The example above shows that total payments toward active and retired employee healthcare premiums is the same, but for accounting purposes part of the total is shifted from actives to retirees. This shifted amount is recognized as an OPEB contribution and reduces the current year's premium expense for active employees.

Important Background Information
(Continued)

Discount Rate

When the financing of OPEB liabilities is on a pay-as-you-go basis, GASB 75 requires that the discount rate used for valuing liabilities be based on the yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher (or equivalent quality on another rating scale). When a plan sponsor makes regular, sufficient contributions to a trust in order to prefund the OPEB liabilities, GASB 75 allows use of a rate up to the expected rate of return of the trust. Therefore, prefunding has an advantage of potentially being able to report overall lower liabilities due to future expected benefits being discounted at a higher rate.

Actuarial Funding Method and Assumptions

The “ultimate real cost” of an employee benefit plan is the value of all benefits and other expenses of the plan over its lifetime. These expenditures are dependent only on the terms of the plan and the administrative arrangements adopted, and as such are not affected by the actuarial funding method.

The actuarial funding method attempts to spread recognition of these expected costs on a level basis over the life of the plan, and as such sets the “incidence of cost”. GASB 75 specifically requires that the actuarial present value of projected benefit payments be attributed to periods of employee service using the Entry Age Actuarial Cost Method, with each period’s service cost determined as a level percentage of pay.

The results of this report may not be appropriate for other purposes, where other assumptions, methodology and/or actuarial standards of practice may be required or more suitable.

Addendum 2: MacLeod Watts Age Rating Methodology

Both accounting standards (e.g., GASB 75) and actuarial standards (e.g. ASOP 6) require that expected retiree claims, not just premiums paid, be reflected in most situations where an actuary is calculating retiree healthcare liabilities. Unfortunately, the actuary is often required to perform these calculations without any underlying claims information. In most situations, the information is not available, but even when available, the information may not be credible due to the size of the group being considered.

Actuaries have developed methodologies to approximate healthcare claims from the premiums being paid by the plan sponsor. Any methodology requires adopting certain assumptions and using general studies of healthcare costs as substitutes when there is a lack of credible claims information for the specific plan being reviewed.

Premiums paid by sponsors are often uniform for all employee and retiree ages and genders, with a drop in premiums for those participants who are Medicare-eligible. While the total premiums are expected to pay for the total claims for the insured group, on average, the premiums charged would not be sufficient to pay for the claims of older insureds and would be expected to exceed the expected claims of younger insureds. An age-rating methodology takes the typically uniform premiums paid by plan sponsors and spreads the total premium dollars to each age and gender intended to better approximate what the insurer might be expecting in actual claims costs at each age and gender.

The process of translating premiums into expected claims by age and gender generally follows the steps below.

1. *Obtain or Develop Relative Medical Claims Costs by Age, Gender, or other categories that are deemed significant*. For example, a claims cost curve might show that, if a 50 year old male has $1 in claims, then on average a 50 year old female has claims of $1.25, a 30 year male has claims of $0.40, and an 8 year old female has claims of $0.20. The claims cost curve provides such relative costs for each age, gender, or any other significant factor the curve might have been developed to reflect. Section 3 provides the source of information used to develop such a curve and shows sample relative claims costs developed for the plan under consideration.
2. *Obtain a census of participants, their chosen medical coverage, and the premium charged for their coverage.* An attempt is made to find the group of participants that the insurer considered in setting the premiums they charge for coverage. That group includes the participant and any covered spouses and children. When information about dependents is unavailable, assumptions must be made about spouse age and the number and age of children represented in the population. These assumptions are provided in Section 3.
3. *Spread the total premium paid by the group to each covered participant or dependent based on expected claims.* The medical claims cost curve is used to spread the total premium dollars paid by the group to each participant reflecting their age, gender, or other relevant category. After this step, the actuary has a schedule of expected claims costs for each age and gender for the current premium year. It is these claims costs that are projected into the future by medical cost inflation assumptions when valuing expected future retiree claims.

The methodology described above is dependent on the data and methodologies used in whatever study might be used to develop claims cost curves for any given plan sponsor. These methodologies and assumptions can be found in the referenced paper cited as a source in the valuation report.

Addendum 3: MacLeod Watts Mortality Projection Methodology

Actuarial standards of practice (e.g., ASOP 35, Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations, and ASOP 6, Measuring Retiree Group Benefits Obligations) indicate that the actuary should reflect the effect of mortality improvement (i.e., longer life expectancies in the future), both before and after the measurement date. The development of credible mortality improvement rates requires the analysis of large quantities of data over long periods of time. Because it would be extremely difficult for an individual actuary or firm to acquire and process such extensive amounts of data, actuaries typically rely on large studies published periodically by organizations such as the Society of Actuaries or Social Security Administration.

As noted in a recent actuarial study on mortality improvement, key principles in developing a credible mortality improvement model would include the following:

(1) Short-term mortality improvement rates should be based on recent experience.
(2) Long-term mortality improvement rates should be based on expert opinion.
(3) Short-term mortality improvement rates should blend smoothly into the assumed long-term rates over an appropriate transition period.

The **MacLeod Watts Scale 2022** was developed from a blending of data and methodologies found in two published sources: (1) the Society of Actuaries Mortality Improvement Scale MP-2021 Report, published in October 2021 and (2) the demographic assumptions used in the 2021 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, published August 2021.

MacLeod Watts Scale 2022 is a two-dimensional mortality improvement scale reflecting both age and year of mortality improvement. The underlying base scale is Scale MP-2021 which has two segments – (1) historical improvement rates for the period 1951-2017 and (2) an estimate of future mortality improvement for years 2018-2020 using the Scale MP-2021 methodology but utilizing the assumptions used in generating Scale MP-2015. The MacLeod Watts scale then transitions from the 2020 improvement rate to the Social Security Administration (SSA) Intermediate Scale linearly over the 10-year period 2021-2030. After this transition period, the MacLeod Watts Scale uses the constant mortality improvement rate from the SSA Intermediate Scale from 2030-2044. The SSA's Intermediate Scale has a final step in 2045 which is reflected in the MacLeod Watts scale for years 2045 and thereafter. Over the ages 95 to 117, the age 95 improvement rate is graded to zero.

Scale MP-2021 can be found at the SOA website and the projection scales used in the 2021 Social Security Administrations Trustees Report at the Social Security Administration website.

Glossary

Actuarial Funding Method – A procedure which calculates the actuarial present value of plan benefits and expenses, and allocates these expenses to time periods, typically as a normal cost and an actuarial accrued liability

Actuarial Present Value of Projected Benefits (APVPB) – The amount presently required to fund all projected plan benefits in the future. This value is determined by discounting the future payments by an appropriate interest rate and the probability of nonpayment.

CalPERS – Many state governments maintain a public employee retirement system; CalPERS is the California program, covering all eligible state government employees as well as other employees of other governments within California who have elected to join the system

Defined Benefit (DB) – A pension or OPEB plan which defines the monthly income or other benefit which the plan member receives at or after separation from employment

Deferred Contributions – When an employer makes contributions after the measurement date and prior to the fiscal year end, recognition of these contributions is deferred to a subsequent accounting period by creating a deferred resource. We refer to these contributions as Deferred Contributions.

Defined Contribution (DC) – A pension or OPEB plan which establishes an individual account for each member and specifies how contributions to each active member's account are determined and the terms of distribution of the account after separation from employment

Discount Rate - Interest rate used to discount future potential benefit payments to the valuation date. Under GASB 75, if a plan is prefunded, then the discount rate is equal to the expected trust return. If a plan is not prefunded (pay-as-you-go), then the rate of return is based on a yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher.

Expected Average Remaining Service Lifetime (EARSL) – Average of the expected remaining service lives of all employees that are provided with benefits through the OPEB plan (active employees and inactive employees), beginning in the current period

Entry Age Actuarial Cost Method – An actuarial funding method where, for each individual, the actuarial present value of benefits is levelly spread over the individual's projected earnings or service from entry age to the last age at which benefits can be paid

Explicit Subsidy – The projected dollar value of future retiree healthcare costs expected to be paid directly by the Employer, e.g., the Employer's payment of all or a portion of the monthly retiree premium billed by the insurer for the retiree's coverage

Fiduciary Net Position –The value of trust assets used to offset the Total OPEB Liability to determine the Net OPEB Liability.

Government Accounting Standards Board (GASB) – A private, not-for-profit organization which develops generally accepted accounting principles (GAAP) for U.S. state and local governments; like FASB, it is part of the Financial Accounting Foundation (FAF), which funds each organization and selects the members of each board

Health Care Trend – The assumed rate(s) of increase in future dollar values of premiums or healthcare claims, attributable to increases in the cost of healthcare; contributing factors include medical inflation, frequency or extent of utilization of services and technological developments.

Glossary
(Continued)

Implicit Subsidy – The projected difference between future retiree claims and the premiums to be charged for retiree coverage; this difference results when the claims experience of active and retired employees are pooled together and a 'blended' group premium rate is charged for both actives and retirees; a portion of the active employee premiums subsidizes the retiree premiums.

Net OPEB Liability (NOL) – The liability to employees for benefits provided through a defined benefit OPEB. Only assets administered through a trust that meet certain criteria may be used to reduce the Total OPEB Liability.

Net Position – The Impact on Statement of Net Position is the Net OPEB Liability adjusted for deferred resource items

OPEB Expense – The OPEB expense reported in the Agency's financial statement. OPEB expense is the annual cost of the plan recognized in the financial statements.

Other Post-Employment Benefits (OPEB) – Post-employment benefits other than pension benefits, most commonly healthcare benefits but also including life insurance if provided separately from a pension plan

Pay-As-You-Go (PAYGO) – Contributions to the plan are made at about the same time and in about the same amount as benefit payments and expenses coming due

PEMHCA – The Public Employees' Medical and Hospital Care Act, established by the California legislature in 1961, provides community-rated medical benefits to participating public employers. Among its extensive regulations are the requirements that a contracting Agency contribute toward medical insurance premiums for retired annuitants and that a contracting Agency file a resolution, adopted by its governing body, with the CalPERS Board establishing any new contribution.

Plan Assets – The value of cash and investments considered as 'belonging' to the plan and permitted to be used to offset the AAL for valuation purposes. To be considered a plan asset, GASB 75 requires (a) contributions to the OPEB plan be irrevocable, (b) OPEB assets to dedicated to providing OPEB benefit to plan members in accordance with the benefit terms of the plan, and (c) plan assets be legally protected from creditors, the OPEB plan administrator and the plan members.

Public Agency Miscellaneous (PAM) – Non-safety public employees.

Select and Ultimate – Actuarial assumptions which contemplate rates which differ by year initially (the select period) and then stabilize at a constant long-term rate (the ultimate rate)

Service Cost – Total dollar value of benefits expected to be earned by plan members in the current year, as assigned by the actuarial funding method; also called normal cost

Total OPEB Liability (TOL) – Total dollars required to fund all plan benefits attributable to service rendered as of the valuation date for current plan members and vested prior plan members; a subset of "Actuarial Present Value"

Vesting – As defined by the plan, requirements which when met make a plan benefit nonforfeitable on separation of service before retirement eligibility

County Connection

INTER OFFICE MEMO

To: Administration & Finance Committee **Date:** 10/24/2022

From: Amber Johnson, Chief Financial Officer **Reviewed by:** WC.

SUBJECT: PERS Actuarial Valuation for June 30, 2021; Rate for FY 2024

Background:

The CalPERS Actuarial Valuation Report (Report) for the period ending June 30, 2021, is used to set the rate for the next fiscal year and provides County Connection's funded status. The employer rate for FY 2024 will be 9.88% and there will be no required unfunded liability payment. County Connection's funded status is currently 100% funded, which is up from 87.9% the prior year. CalPERS return on investment (ROI) for 2021 was 21.3%. This unusually high ROI represented a significant deviation from the established discount rate of 7.0%, triggering the CalPERS Funding Risk Mitigation Policy which reduced the discount rate from 7.0% to 6.8%.

CalPERS Assumptions & Projections

The projections shown below will be incorporated in the FY 2024 budget and forecast. The large ROI has caused our plan to be fully funded as of June 30, 2021. As a result, the Authority's plan has been given a "fresh start" and there are no unfunded liability payments *projected* for the next several years in this Report.

As shown in Table 1, the payments for unfunded liability payments over the next 6 fiscal years are projected to decrease by $8.3 million, as compared to last year's forecast. The full actuarial report is attached.

Table 1: CalPERS normal cost rate and UAL payment projections – current and prior year

	Current		Prior Forecast		Difference	
	Payroll Rate +	Unfunded Liability Payment	Payroll Rate +	Unfunded Liability Payment	Payroll Rate +	Unfunded Liability Payment
FY 2023 Actual	9.880%	$ -	9.000%	$ 890,950	9.778%	$ (890,950)
FY 2024	9.900%	$ -	8.900%	$ 1,000,000	11.236%	$ (1,000,000)
FY 2025	9.900%	$ -	9.000%	$ 1,149,000	10.000%	$ (1,149,000)
FY 2026	9.900%	$ -	9.100%	$ 1,246,000	8.791%	$ (1,246,000)
FY 2027	9.900%	$ -	9.100%	$ 1,331,000	8.791%	$ (1,331,000)
FY 2028	9.900%	$ -	9.200%	$ 1,361,000	7.609%	$ (1,361,000)
FY 2029	9.900%	$ -	9.200%	$ 1,361,000	7.609%	$ (1,361,000)
Unfunded Liab Payment Total		$ -		$ 8,338,950		$ (8,338,950)

Plan's Funded Status, Based on Market Value of Assets

As stated earlier, the funded status is 100% with no unfunded accrued liability (UAL). The prior year funded status was 87.9%, with a UAL of $13.2 million. More information about this calculation can be found on page 6 of the Report. The primary reason for the elimination of the UAL was the 21.3% ROI in FY 2021. When ROI exceeds the established discount rate of the plan, assets can grow to the point where a liability no longer exists.

Investment Rate of Return

It is CalPERS' policy to use a constant investment return rate for the actuarial report rather than the actual rate of return. This is called asset smoothing – the delayed recognition of part of the investment gains or losses dampens the effect of short-term market value fluctuations in setting employers' rates. Prior to fiscal year 2019, CalPERS employed a policy that amortized all gains and losses over a fixed 30-year period which was smoothed by ramping up/down the increase or decrease over a 5-year period. This method is referred to as "direct rate smoothing." Beginning with the June 30, 2019 valuations (affecting FY 2022 rates), the CalPERS Board approved amortizing gains/losses over a 20-year period based on a level dollar amount and removed the 5-year ramping. Finally, CalPERS does not use the actuarial value of assets, but uses the market value of assets.

The CalPERS history of investment returns is shown on Page 12 of the actuarial report.

Other Information

Changes to the demographics of the plan have an impact on the normal cost rate, and ultimately impact the calculation used to arrive at the UAL. Table 2 provides a summary of certain demographic characteristics of County Connection's plan. Overall, the demographic characteristics of the plan have remained relatively constant from last year's valuation report to this year's report.

Table 2: County Connection's CalPERS Plan demographics

	Valuation Date:	
	6/30/2020	**6/30/2021**
RETIRED:		
Retirees receiving benefits	212	223
Average annual benefit	20,138	20,936
Average age of retiree	71.04	71.62
ACTIVE:		
Active members	233	222
Average annual payroll of active members	62,198	64,532
Covered annual payroll	14,492,018	14,326,073
Average age for active members	52.10	52.33
Employees over 60 years of age	62 (27%)	67 (30%)

Current and Future Performance

In July 2022, CalPERS reported a preliminary ROI of <6.1%> for FY 2022. This is CalPERS' first loss since the global financial crisis of 2009, which was also driven by tumultuous global markets. The negative return, combined with CalPERS' 6.8% discount rate, led to a roughly 9% drop in the estimated overall

funded status of the fund, which now stands at 72%. As a result, employer contributions are expected to increase in the coming years.

Table 3 reflects the projected impact to County Connection's funded status and required UAL payments as a result of the selection of the 6.8% discount rate, <6.1%> ROI for 2021-22, and other changes in assumptions, according to the CalPERS Pension Outlook Tool. The actuarial valuations that incorporate these assumption changes will take effect for the pension contributions for FY 2025, which should become available in July/August 2023.

Table 3: Estimated impacts to CalPERS Plan after incorporating 2022 plan updates

	Funded % (current projection)	Funded % (estimated projection)	Estimated increase/(decrease) to unfunded liability payment
FY 2025	101.13%	88.22%	$ 330,000
FY 2026	101.18%	88.14%	$ 660,000
FY 2027	101.23%	88.25%	$ 990,000
FY 2028	101.28%	88.57%	$ 1,320,000
FY 2029	101.34%	89.08%	$ 1,650,000
			$ 4,950,000

The above estimates of future funded status and changes to the UAL payment rely upon a variety of factors:

- Future investment returns of 6.80%.
- Payroll growth of 2.8%.
- Inflation growth of 2.30%.
- Demographic assumptions including employee turnover and retiree mortality rates.

It is important to remember that future increases to County Connections staffing levels and potential shortfalls in future CalPERS ROI will have a significant impact on these projections.

Options to Reduce Pension Liability

In 2019, the Board authorized reducing County Connection's pension liability by making smaller direct payments to CalPERS to achieve interest saving over time. The following was the framework of how to make those additional payments could be made:

1. If the estimates for pension related costs are under budget as of the May budget presentation, and would not require a draw on the contingency, nor additional TDA allocations; the General Manager is allowed to authorize additional payments to CalPERS up to $100,000.
2. Additional payment amounts over $100,000 could be recommended by staff and approved by the A&F and Board as part of the May budget review.
3. Any additional payments made by Authority to CalPERS would be adjusted for in the Wage Increase determination performed by the auditors each year. In the auditors Agreed Upon Procedure report, that additional payment amount will be reduced from total pension expense for that fiscal year. This amount shall not be included as part of the increase of additional pension costs of $1,000,000 for that fiscal year which might cause a reduction of wage increases.

No additional payments towards the pension liability have been made since this framework was adopted.

Staff recommends that the Committee take a fresh look at this pension funding strategy and consider other pension stabilization options such as a 115 trust for pensions (rather than sending excess funds to CalPERS). Utilizing the 115 trust approach would dedicate funds to satisfy pension obligations, while retaining some flexibility to utilize these funds if needed during economic downturns. Additionally, discussion of different funding triggers could be considered.

Financial Implications:

These rates will be used for the FY 2024 budget and forecast.

Action Requested:

Information only.

Attachments:

Attachment 1: County Connection CalPERS Actuarial Valuation as of June 30, 2021

California Public Employees' Retirement System
Actuarial Office
400 Q Street, Sacramento, CA 95811 | Phone: (916) 795-3000 | Fax: (916) 795-2744
888 CalPERS (or **888**-225-7377) | TTY: (877) 249-7442 | **www.calpers.ca.gov**

July 2022

Miscellaneous Plan of the Central Contra Costa Transit Authority (CalPERS ID: 2146548042)
Annual Valuation Report as of June 30, 2021

Dear Employer,

Attached to this letter, you will find the June 30, 2021 actuarial valuation report for the rate plan noted above. **Provided in this report is the determination of the minimum required employer contributions for fiscal year (FY) 2023-24**. In addition, the report also contains important information regarding the current financial status of the plan as well as projections and risk measures to aid in planning for the future.

Actuarial valuations are based on assumptions regarding future plan experience including investment return and payroll growth, eligibility for the types of benefits provided, and longevity among retirees. The CalPERS Board of Administration (board) adopts these assumptions after considering the advice of CalPERS actuarial and investment teams and other professionals. Each actuarial valuation reflects all prior differences between actual and assumed experience and adjusts the contribution requirements as needed. This valuation is based on an investment return assumption of 6.8%, which was adopted by the board in November 2021. Other assumptions used in this report are those recommended in the CalPERS Experience Study and Review of Actuarial Assumptions report from November 2021.

Required Contributions

The table below shows the minimum required employer contributions and the PEPRA member rate for FY 2023-24 along with an estimate of the required contribution for FY 2024-25. Employee contributions other than cost sharing (whether paid by the employer or the employee) are in addition to the results shown below. **The required employer contributions in this report do not reflect any cost sharing arrangement between the agency and the employees.**

Fiscal Year	Employer Normal Cost Rate	Employer Amortization of Unfunded Accrued Liability	PEPRA Member Rate
2023-24	9.88%	$0	8.25%
Projected Results			
2024-25	*9.9%*	*$0*	*TBD*

The actual investment return for FY 2021-22 was not known at the time this report was prepared. The projections above assume the investment return for that year would be 6.8%. ***To the extent the actual investment return for FY 2021-22 differs from 6.8%, the actual contribution requirements for FY 2024-25 will differ from those shown above.*** For additional details regarding the assumptions and methods used for these projections, please refer to the "Projected Employer Contributions" in the "Highlights and Executive Summary" section. This section also contains projected required contributions through FY *2028-29*.

Changes from Previous Year's Valuations

On July 12, 2021, CalPERS reported a preliminary 21.3% net return on investments for FY 2020-21. Since the return exceeded the 7.00% discount rate sufficiently, the CalPERS Funding Risk Mitigation policy allows CalPERS to use a portion of the investment gain to offset the cost of reducing the expected volatility of future investment returns. Based on the thresholds specified in the policy, the excess return of 14.3% prescribes a reduction in investment volatility that corresponds to a reduction in the discount rate of 0.20%, from 7.00% to 6.80%.

On November 17, 2021, the board adopted new actuarial assumptions based on the recommendations in the November 2021 CalPERS Experience Study and Review of Actuarial Assumptions. This study reviewed the retirement rates, termination rates, mortality rates, rates of salary increases, and inflation assumption for public agencies. These new assumptions are incorporated in this actuarial valuation and will impact the required contribution for FY 2023-24. In addition, the board adopted a new strategic asset allocation as part of its Asset Liability Management process. The new

asset allocation, along with the new capital market assumptions and economic assumptions, support a discount rate of 6.80%. This includes a reduction in the price inflation assumption from 2.50% to 2.30%.

Besides the above noted changes, there may also be changes specific to the plan such as contract amendments and funding changes.

Further descriptions of general changes are included in the "Highlights and Executive Summary" section and in Appendix A, "Actuarial Methods and Assumptions." The effects of the changes on the required contributions are included in the "Reconciliation of Required Employer Contributions" section.

Questions

We understand that you might have questions about these results, and the plan actuary whose signature is on the valuation report is available to discuss. If you have other questions, you may call the Customer Contact Center at (888)-CalPERS or (**888-225-7377**).

Sincerely,

SCOTT TERANDO, ASA, EA, MAAA, FCA, CFA
Chief Actuary, CalPERS

Actuarial Valuation as of June 30, 2021

for the Miscellaneous Plan of the Central Contra Costa Transit Authority

(CalPERS ID: 2146548042)
(Rate Plan ID: 1380)

Required Contributions for Fiscal Year July 1, 2023 – June 30, 2024

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Actuarial Certification

To the best of our knowledge, this report is complete and accurate and contains sufficient information to disclose, fully and fairly, the funded condition of the Miscellaneous Plan of the Central Contra Costa Transit Authority and satisfies the actuarial valuation requirements of Government Code section 7504. This valuation is based on the member and financial data as of June 30, 2021 provided by the various CalPERS databases and the benefits under this plan with CalPERS as of the date this report was produced. It is our opinion that the valuation has been performed in accordance with generally accepted actuarial principles, in accordance with standards of practice prescribed by the Actuarial Standards Board, and that the assumptions and methods are internally consistent and reasonable for this plan, as prescribed by the CalPERS Board of Administration according to provisions set forth in the California Public Employees' Retirement Law.

The undersigned is an actuary who satisfies the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States with regard to pensions.

TONY CUNY, ASA, MAAA
Senior Pension Actuary, CalPERS

Highlights and Executive Summary

- **Introduction**
- **Purpose of the Report**
- **Required Contributions**
- **Additional Discretionary Employer Contributions**
- **Plan's Funded Status**
- **Projected Employer Contributions**
- **Cost**
- **Changes Since the Prior Year's Valuation**
- **Subsequent Events**

Introduction

This report presents the results of the June 30, 2021 actuarial valuation of the Miscellaneous Plan of the Central Contra Costa Transit Authority of the California Public Employees' Retirement System (CalPERS). This actuarial valuation sets the minimum required employer contributions for fiscal year (FY) 2023-24.

Purpose of the Report

The actuarial valuation was prepared by the CalPERS Actuarial Office using data as of June 30, 2021. The purpose of the report is to:

- Set forth the assets and accrued liabilities of this plan as of June 30, 2021;
- Determine the minimum required employer contributions for the FY July 1, 2023 through June 30, 2024;
- Provide actuarial information as of June 30, 2021 to the CalPERS Board of Administration (board) and other interested parties.

The pension funding information presented in this report should not be used in financial reports subject to Governmental Accounting Standards Board (GASB) Statement No. 68 for an Agent Employer Defined Benefit Pension Plan. A separate accounting valuation report for such purposes is available from CalPERS and details for ordering are available on the CalPERS website (www.calpers.ca.gov).

The measurements shown in this actuarial valuation may not be applicable for other purposes. The agency should contact the plan actuary before disseminating any portion of this report for any reason that is not explicitly described above.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; changes in actuarial policies; changes in plan provisions or applicable law; and differences between the required contributions determined by the valuation and the actual contributions made by the agency.

Assessment and Disclosure of Risk

This report includes the following risk disclosures consistent with the recommendations of Actuarial Standards of Practice No. 51 and recommended by the California Actuarial Advisory Panel (CAAP) in the Model Disclosure Elements document:

- A "Scenario Test," projecting future results under different investment income returns.
- A "Sensitivity Analysis," showing the impact on current valuation results using alternative discount rates 5.8% and 7.8%.
- A "Sensitivity Analysis," showing the impact on current valuation results assuming rates of mortality are 10% lower or 10% higher than our current post-retirement mortality assumptions adopted in 2021.
- Plan maturity measures indicating how sensitive a plan may be to the risks noted above.

Required Contributions

	Fiscal Year
Required Employer Contributions	**2023-24**
Employer Normal Cost Rate	**9.88%**
Plus	
Required Payment on Amortization Bases	**$0**
Paid either as	
1) Monthly Payment	**$0**
Or	
2) Annual Prepayment Option*	**$0**
Required PEPRA Member Contribution Rate	**8.25%**

The total minimum required employer contribution is the sum of the Plan's Employer Normal Cost Rate (expressed as a percentage of payroll and paid as payroll is reported) plus the Employer Unfunded Accrued Liability (UAL) Contribution Amount (billed monthly (1) or prepaid annually (2) in dollars).

** Only the UAL portion of the employer contribution can be prepaid **(which must be received in full no later than July 31)**.*

For additional detail regarding the determination of the required contribution for PEPRA members, see "PEPRA Member Contribution Rates" in the "Liabilities and Contributions" section. Required member contributions for Classic members can be found in Appendix B.

	Fiscal Year 2022-23	Fiscal Year 2023-24
Normal Cost Contribution as a Percentage of Payroll		
Total Normal Cost	16.09%	17.34%
Employee Contribution[1]	7.09%	7.46%
Employer Normal Cost[2]	9.00%	9.88%
Projected Annual Payroll for Contribution Year	$15,720,790	$15,563,473
Estimated Employer Contributions Based On Projected Payroll		
Total Normal Cost	$2,529,475	$2,698,706
Employee Contribution	1,114,604	1,161,035
Employer Normal Cost	1,414,871	1,537,671
Unfunded Liability Contribution	890,950	0
% of Projected Payroll (illustrative only)	5.67%	0.00%
Estimated Total Employer Contribution	$2,305,821	$1,537,671
% of Projected Payroll (illustrative only)	14.67%	9.88%

[1] For classic members, this is the percentage specified in the Public Employees' Retirement Law, net of any reduction from the use of a modified formula or other factors. For PEPRA members, the member contribution rate is based on 50% of the normal cost. A development of PEPRA member contribution rates can be found in the "Liabilities and Contributions" section. Employee cost sharing is not shown in this report.

[2] The Employer Normal Cost is a blended rate for all benefit groups in the plan. For a breakout of normal cost by benefit group, see "Normal Cost by Benefit Group" in the "Liabilities and Contributions" section.

Additional Discretionary Employer Contributions

The minimum required employer contribution towards the Unfunded Accrued Liability (UAL) for this rate plan for FY 2023-24 is $0. CalPERS allows agencies to make additional discretionary payments (ADPs) at any time and in any amount. These optional payments serve to reduce the UAL and future required contributions and can result in significant long-term savings. Agencies can also use ADPs to stabilize annual contributions as a fixed dollar amount, percent of payroll or percent of revenue.

Provided below are select ADP options for consideration. Making such an ADP during FY 2023-24 does not require an ADP be made in any future year, nor does it change the remaining amortization period of any portion of unfunded liability. For information on permanent changes to amortization periods, see the "Amortization Schedule and Alternatives" section of the report.

Agencies considering making an ADP should contact CalPERS for additional information.

Minimum Required Employer Contribution for Fiscal Year 2023-24

Estimated Normal Cost	Minimum UAL Payment	ADP	Total UAL Contribution	Estimated Total Contribution
$1,537,671	$0	$0	$0	$1,537,671

Alternative Fiscal Year 2023-24 Employer Contributions for Greater UAL Reduction

Funding Target	Estimated Normal Cost	Minimum UAL Payment	ADP[1]	Total UAL Contribution	Estimated Total Contribution
5 years	N/A	N/A	N/A	N/A	N/A

[1] The ADP amounts are assumed to be made in the middle of the fiscal year. A payment made earlier or later in the fiscal year would have to be less or more than the amount shown to have the same effect on the UAL amortization.

Note that the calculations above are based on the projected Unfunded Accrued Liability as of June 30, 2023 as determined in the June 30, 2021 actuarial valuation. New unfunded liabilities can emerge in future years due to assumption or method changes, changes in plan provisions, and actuarial experience different than assumed. Making an ADP illustrated above for the indicated number of years will not result in a plan that is exactly 100% funded in the indicated number of years. Valuation results will vary from one year to the next and can diverge significantly from projections over a period of several years.

Plan's Funded Status

	June 30, 2020	June 30, 2021
1. Present Value of Projected Benefits	$125,078,128	$135,277,987
2. Entry Age Accrued Liability	109,297,796	115,614,286
3. Market Value of Assets (MVA)	96,052,712	115,636,553
4. Unfunded Accrued Liability (UAL) [(2) – (3)]	$13,245,084	($22,267)
5. Funded Ratio [(3) / (2)]	87.9%	100.0%

The UAL and funded ratio are assessments of the need for future employer contributions based on the actuarial cost method used to fund the plan. The UAL is the present value of future employer contributions for service that has already been earned and is in addition to future normal cost contributions for active members. The funded ratio, on the other hand, is a relative measure of funded status that allows for comparison between plans of different sizes. For measures of funded status that are appropriate for assessing the sufficiency of plan assets to cover estimated termination liabilities, please see "Hypothetical Termination Liability" in the "Risk Analysis" section.

Projected Employer Contributions

The table below shows the required and projected employer contributions (before cost sharing) for the next six fiscal years. The projection assumes that all actuarial assumptions will be realized and that no further changes to assumptions, contributions, benefits, or funding will occur during the projection period. In particular, the investment return beginning with FY 2021-22 is assumed to be 6.80% per year, net of investment and administrative expenses. Actual contribution rates during this projection period could be significantly higher or lower than the projection shown below. The projected normal cost percentages below reflect that the normal cost will continue to decline over time as new employees are hired into lower cost benefit tiers. Future contribution requirements may differ significantly from those shown below. The actual long-term cost of the plan will depend on the actual benefits and expenses paid and the actual investment experience of the fund.

	Required Contribution	Projected Future Employer Contributions (Assumes 6.80% Return for Fiscal Year 2021-22 and Beyond)				
Fiscal Year	**2023-24**	**2024-25**	**2025-26**	**2026-27**	**2027-28**	**2028-29**
Normal Cost %	9.88%	9.9%	9.9%	9.9%	9.9%	9.9%
UAL Payment	$0	$0	$0	$0	$0	$0
*Total as a % of Payroll**	*9.88%*	*9.9%*	*9.9%*	*9.9%*	*9.9%*	*9.9%*
Projected Payroll	*$15,563,473*	*$15,999,250*	*$16,447,229*	*$16,907,752*	*$17,381,168*	*$17,867,841*

*Illustrative only and based on the projected payroll shown.

For some sources of UAL, the change in UAL is amortized using a 5-year ramp up. For more information, please see "Amortization of the Unfunded Actuarial Accrued Liability" under "Actuarial Methods" in Appendix A. This method phases in the impact of the change in UAL over a 5-year period in order to reduce employer cost volatility from year to year. As a result of this methodology, dramatic changes in the required employer contributions in any one year are less likely. However, required contributions can change gradually and significantly over the next five years. In years when there is a large increase in UAL, the relatively small amortization payments during the ramp up period could result in a funded ratio that is projected to decrease initially while the contribution impact of the increase in the UAL is phased in.

For projected contributions under alternate investment return scenarios, please see the "Future Investment Return Scenarios" in the "Risk Analysis" section. Our online pension plan projection tool, Pension Outlook, is available in the Employers section of the CalPERS website. Pension Outlook can help plan and budget pension costs under various scenarios.

Cost

Actuarial Determination of Plan Cost

Contributions to fund the plan are comprised of two components:

- Normal Cost, expressed as a percentage of total active payroll
- Amortization of the Unfunded Accrued Liability (UAL), expressed as a dollar amount

For fiscal years prior to 2017-18, the Amortization of UAL component was expressed as a percentage of total active payroll. Starting with FY 2017-18, the Amortization of UAL component is expressed as a dollar amount and invoiced on a monthly basis. There is an option to prepay this amount during July of each fiscal year.

The Normal Cost component is expressed as a percentage of active payroll with employer and employee contributions payable as part of the regular payroll reporting process.

The determination of both components requires complex actuarial calculations. The calculations are based on a set of actuarial assumptions which can be divided into two categories:

- Demographic assumptions (e.g., mortality rates, retirement rates, employment termination rates, disability rates)
- Economic assumptions (e.g., future investment earnings, inflation, salary growth rates)

These assumptions reflect CalPERS' best estimate of future experience of the plan and are long term in nature. We recognize that all assumptions will not be realized in any given year. For example, the investment earnings at CalPERS have averaged 6.9% over the 20 years ending June 30, 2021, yet individual fiscal year returns have ranged from -23.6% to +21.3%. In addition, CalPERS reviews all actuarial assumptions by conducting in-depth experience studies every four years, with the most recent experience study completed in 2021.

Changes Since the Prior Year's Valuation

Benefits

The standard actuarial practice at CalPERS is to recognize mandated legislative benefit changes in the first annual valuation following the effective date of the legislation. Voluntary benefit changes by plan amendment are generally included in the first valuation that is prepared after the amendment becomes effective, even if the valuation date is prior to the effective date of the amendment.

This valuation generally reflects plan changes by amendments effective before the date of the report. Please refer to the "Plan's Major Benefit Options" and Appendix B for a summary of the plan provisions used in this valuation. The effect of any mandated benefit changes or plan amendments on the unfunded liability is shown in the "(Gain) / Loss Analysis 6/30/20 – 6/30/21" and the effect on the employer contribution is shown in the "Reconciliation of Required Employer Contributions." It should be noted that no change in liability or contribution is shown for any plan changes which were already included in the prior year's valuation.

Actuarial Methods and Assumptions

On November 17, 2021, the board adopted new actuarial assumptions based on the recommendations in the 2021 CalPERS Experience Study and Review of Actuarial Assumptions. This study reviewed the retirement rates, termination rates, mortality rates, rates of salary increases, and inflation assumptions for Public Agencies. These new assumptions are incorporated in this actuarial valuation and will impact the required contribution for FY 2023-24. In addition, the board adopted a new asset portfolio as part of its Asset Liability Management process. The new asset mix supports a 6.80% discount rate, which reflects a change in the price inflation assumption to 2.30%.

Subsequent Events

The contribution requirements determined in this actuarial valuation report are based on demographic and financial information as of June 30, 2021. Changes subsequent to that date are not reflected. Investment returns below the assumed rate of return may increase future required contributions while investment returns above the assumed rate of return may decrease future required contributions.

The projected employer contributions on Page 6 are calculated under the assumption that the discount rate remains at 6.8% going forward and that the realized rate of return on assets for FY 2021-22 is 6.8%.

This actuarial valuation report reflects statutory changes, regulatory changes, and board actions through January 2022. Any subsequent changes or actions are not reflected.

Assets

- **Reconciliation of the Market Value of Assets**
- **Asset Allocation**
- **CalPERS History of Investment Returns**

Reconciliation of the Market Value of Assets

1.	Market Value of Assets as of 6/30/20 including Receivables	$96,052,712
2.	Change in Receivables for Service Buybacks	(20,220)
3.	Employer Contributions	1,799,854
4.	Employee Contributions	1,018,662
5.	Benefit Payments to Retirees and Beneficiaries	(4,577,520)
6.	Refunds	(256,912)
7.	Transfers	0
8.	Service Credit Purchase (SCP) Payments and Interest	27,308
9.	Administrative Expenses	(121,708)
10.	Miscellaneous Adjustments	1
11.	Investment Return (Net of Investment Expenses)	21,714,377
12.	Market Value of Assets as of 6/30/21 including Receivables	$115,636,553

Asset Allocation

CalPERS adheres to an Asset Allocation Strategy which establishes asset class allocation policy targets and ranges and manages those asset class allocations within their policy ranges. CalPERS Investment Belief No. 6 recognizes that strategic asset allocation is the dominant determinant of portfolio risk and return.

The asset allocation shown below reflects the allocation of the Public Employees' Retirement Fund (PERF) in its entirety as of June 30, 2021. The assets for Central Contra Costa Transit Authority Miscellaneous Plan are part of the PERF and are invested accordingly.

Asset Class	Current Allocation as of 6/30/2021	Policy Target Allocation as of 6/30/2021
Public Equity	51.4%	50.0%
Private Equity	8.3%	8.0%
Global Fixed Income	29.8%	28.0%
Real Assets	9.6%	13.0%
Liquidity	1.0%	1.0%
Total Fund Level Portfolios	2.5%	0.0%
Trust Level Financing	(2.6%)	0.0%
Total Fund	**100.0%**	**100.0%**

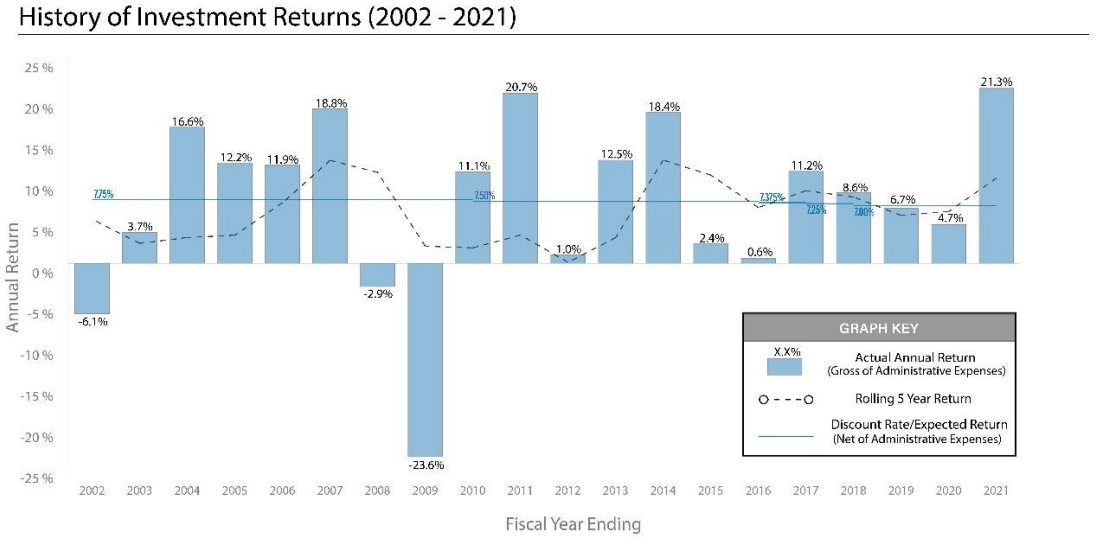
On November 17, 2021, the board adopted changes to the strategic asset allocation as shown in the Policy Target Allocation below expressed as a percentage of total assets.

Strategic Asset Allocation Policy Targets

Asset Class	Policy Target Allocation effective 11/17/2021
Global Equity Cap-weighted	30.0%
Global Equity Non-cap-weighted	12.0%
Private Equity	13.0%
Private Debt	5.0%
Emerging Market Sovereign Bonds	5.0%
High Yield Bonds	5.0%
Investment Grade Corporates	10.0%
Mortgage-backed Securities	5.0%
Treasuries	5.0%
Real Assets	15.0%
Leverage	(5.0%)
Total Fund	**100.0%**

CalPERS History of Investment Returns

The following is a chart with the 20-year historical annual returns of the PERF for each fiscal year ending on June 30 as reported by the Investment Office. Investment returns reported are net of investment expenses but without reduction for administrative expenses. The assumed rate of return, however, is net of both investment and administrative expenses. The Investment Office uses a three-month lag on private assets for investment performance reporting purposes. This can lead to a timing difference in the returns below and those used for financial reporting purposes. The investment gain or loss calculation in this report relies on assets that have been audited and are appropriate for financial reporting. Because of these differences, it is possible for the Investment Office to report a return higher than the discount rate while the rate plan experiences an investment loss, or a return lower than the discount rate while the rate plan experiences an investment gain.



The table below shows annualized investment returns of the PERF for various time periods ending on June 30, 2021 (figures reported are net of investment expenses but without reduction for administrative expenses). These returns are the annual rates that if compounded over the indicated number of years would equate to the actual time-weighted investment performance of the PERF. It should be recognized that in any given year the rate of return is volatile. The portfolio has an expected volatility of 12.0% per year based on the most recent Asset Liability Management study. The realized volatility is a measure of the risk of the portfolio expressed as the standard deviation of the fund's total monthly return distribution, expressed as an annual percentage. Due to their volatile nature, when looking at investment returns, it is more instructive to look at returns over longer time horizons.

History of CalPERS Compound Annual Rates of Return and Volatilities					
	1 year	**5 year**	**10 year**	**20 year**	**30 year**
Compound Annual Return	21.3%	10.3%	8.5%	6.9%	8.4%
Realized Volatility	–	7.3%	7.2%	8.5%	8.5%

Liabilities and Contributions

- **Development of Accrued and Unfunded Liabilities**
- **(Gain) / Loss Analysis 6/30/20 - 6/30/21**
- **Schedule of Amortization Bases**
- **Amortization Schedule and Alternatives**
- **Reconciliation of Required Employer Contributions**
- **Employer Contribution History**
- **Funding History**
- **Normal Cost by Benefit Group**
- **PEPRA Member Contribution Rates**

Development of Accrued and Unfunded Liabilities

	June 30, 2020	June 30, 2021
1. Present Value of Projected Benefits		
a) Active Members	$68,662,039	$74,537,124
b) Transferred Members	1,390,393	1,049,652
c) Terminated Members	4,163,245	4,220,866
d) Members and Beneficiaries Receiving Payments	50,862,451	55,470,345
e) Total	$125,078,128	$135,277,987
2. Present Value of Future Employer Normal Costs	$8,523,491	$11,084,380
3. Present Value of Future Employee Contributions	$7,256,841	$8,579,321
4. Entry Age Accrued Liability		
a) Active Members [(1a) - (2) - (3)]	$52,881,707	$54,873,423
b) Transferred Members (1b)	1,390,393	1,049,652
c) Terminated Members (1c)	4,163,245	4,220,866
d) Members and Beneficiaries Receiving Payments (1d)	50,862,451	55,470,345
e) Total	$109,297,796	$115,614,286
5. Market Value of Assets (MVA)	$96,052,712	$115,636,553
6. Unfunded Accrued Liability (UAL) [(4e) - (5)]	$13,245,084	($22,267)
7. Funded Ratio [(5) / (4e)]	87.9%	100.0%

(Gain)/Loss Analysis 6/30/20 – 6/30/21

To calculate the cost requirements of the plan, assumptions are made about future events that affect the amount and timing of benefits to be paid and assets to be accumulated. Each year, actual experience is compared to the expected experience based on the actuarial assumptions. This results in actuarial gains or losses, as shown below.

1.	**Total (Gain)/Loss for the Year**	
a)	Unfunded Accrued Liability (UAL) as of 6/30/20	$13,245,084
b)	Expected Payment on the UAL during 2020-21	537,865
c)	Interest through 6/30/21 [.07 x (1a) - ((1.07)^{½} - 1) x (1b)]	908,650
d)	Expected UAL before all other changes [(1a) - (1b) + (1c)]	13,615,869
e)	Change due to plan changes	0
f)	Change due to AL Significant Increase	0
g)	Change due to assumption change	(872,429)
h)	Change due to method change	0
i)	Change due to Funding Risk Mitigation	2,615,054
j)	Expected UAL after all other changes [(1d) + (1e) + (1f) + (1g) + (1h) + (1i)]	15,358,494
k)	Actual UAL as of 6/30/21	(22,267)
l)	Total (Gain)/Loss for 2020-21 [(1k) - (1j)]	($15,380,761)
2.	**Investment (Gain)/Loss for the Year**	
a)	Market Value of Assets as of 6/30/20	$96,052,712
b)	Prior Fiscal Year Receivables	(149,247)
c)	Current Fiscal Year Receivables	129,026
d)	Contributions Received	2,818,515
e)	Benefits and Refunds Paid	(4,834,432)
f)	Transfers, SCP Payments and Interest, and Miscellaneous Adjustments	27,309
g)	Expected Return at 7% per year	6,644,818
h)	Expected Assets as of 6/30/21 [(2a) + (2b) + (2c) + (2d) + (2e) + (2f) + (2g)]	100,688,702
i)	Actual Market Value of Assets as of 6/30/21	115,636,553
j)	Investment (Gain)/Loss [(2h) - (2i)]	($14,947,851)
3.	**Non-Investment (Gain)/Loss for the Year**	
a)	Total (Gain)/Loss (1l)	($15,380,761)
b)	Investment (Gain)/Loss (2j)	(14,947,851)
c)	Non-Investment (Gain)/Loss [(3a) - (3b)]	($432,910)

Schedule of Amortization Bases

Below is the schedule of the plan's amortization bases. Note that there is a two-year lag between the valuation date and the start of the contribution year.

- The assets, liabilities, and funded status of the plan are measured as of the valuation date: June 30, 2021.
- The required employer contributions determined by the valuation are for the fiscal year beginning two years after the valuation date: FY 2023-24.

This two-year lag is necessary due to the amount of time needed to extract and test the membership and financial data, and the need to provide public agencies with their required employer contribution well in advance of the start of the fiscal year.

The Unfunded Accrued Liability (UAL) is used to determine the employer contribution and therefore must be rolled forward two years from the valuation date to the first day of the fiscal year for which the contribution is being determined. The UAL is rolled forward each year by subtracting the expected payment on the UAL for the fiscal year and adjusting for interest. The expected payment on the UAL for a fiscal year is equal to the Expected Employer Contribution for the fiscal year minus the Expected Normal Cost for the year. The Employer Contribution for the first fiscal year is determined by the actuarial valuation two years ago and the contribution for the second year is from the actuarial valuation one year ago. Additional discretionary payments are reflected in the Expected Payments column in the fiscal year they were made by the agency.

Reason for Base	Date Est.	Ramp Level 2023-24	Ramp Shape	Escalation Rate	Amort. Period	Balance 6/30/21	Expected Payment 2021-22	Balance 6/30/22	Expected Payment 2022-23	Balance 6/30/23	Minimum Required Payment 2023-24
Fresh Start	6/30/21				N/A	(22,267)	537,677	(579,438)	669,912	(1,311,155)	0
Total						**(22,267)**	**537,677**	**(579,438)**	**669,912**	**(1,311,155)**	**0**

Amortization Schedule and Alternatives

The amortization schedule on the previous page shows the minimum contributions required according to the CalPERS amortization policy. Many agencies have expressed a desire for a more stable pattern of payments or have indicated interest in paying off the unfunded accrued liabilities more quickly than required. As such, we have provided alternative amortization schedules to help analyze the current amortization schedule and illustrate the potential savings of accelerating unfunded liability payments.

Shown on the following page are future year amortization payments based on 1) the current amortization schedule reflecting the individual bases and remaining periods shown on the previous page, and 2) alternative "fresh start" amortization schedules using two sample periods that would both result in interest savings relative to the current amortization schedule. To initiate a Fresh Start, please contact the plan actuary.

The Current Amortization Schedule typically contains both positive and negative bases. Positive bases result from plan changes, assumption changes, method changes or plan experience that increase unfunded liability. Negative bases result from plan changes, assumption changes, method changes, or plan experience that decrease unfunded liability. The combination of positive and negative bases within an amortization schedule can result in unusual or problematic circumstances in future years, such as:

- When a negative payment would be required on a positive unfunded actuarial liability; or
- When the payment would completely amortize the total unfunded liability in a very short time period, and results in a large change in the employer contribution requirement.

In any year when one of the above scenarios occurs, the actuary will consider corrective action such as replacing the existing unfunded liability bases with a single "fresh start" base and amortizing it over an appropriate period.

The Current Amortization Schedule on the following page may appear to show that, based on the current amortization bases, one of the above scenarios will occur at some point in the future. It is impossible to know today whether such a scenario will in fact arise since there will be additional bases added to the amortization schedule in each future year. Should such a scenario arise in any future year, the actuary will take appropriate action based on guidelines in the CalPERS amortization policy.

Amortization Schedule and Alternatives (continued)

	Current Amortization Schedule		Alternative Schedules			
			0 Year Amortization		0 Year Amortization	
Date	**Balance**	**Payment**	**Balance**	**Payment**	**Balance**	**Payment**
6/30/2023	N/A	N/A	N/A	N/A	N/A	N/A
6/30/2024						
6/30/2025						
6/30/2026						
6/30/2027						
6/30/2028						
6/30/2029						
6/30/2030						
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6/30/2048						
6/30/2049						
6/30/2050						
6/30/2051						
6/30/2052						
Total		**N/A**		**N/A**		**N/A**
Interest Paid		**N/A**		**N/A**		**N/A**
Estimated Savings				**N/A**		**N/A**

Reconciliation of Required Employer Contributions

Normal Cost (% of Payroll)

1. For Period 7/1/22 – 6/30/23	
a) Employer Normal Cost	9.00%
b) Employee contribution	7.09%
c) Total Normal Cost	16.09%
2. Changes since the prior year annual valuation	
a) Effect of demographic experience	(0.21%)
b) Effect of plan changes	0.00%
c) Effect of Funding Risk Mitigation	0.69%
d) Effect of assumption changes	0.77%
e) Effect of method changes	0.00%
f) Net effect of the changes above [sum of (a) through (e)]	1.25%
3. For Period 7/1/23 – 6/30/24	
a) Employer Normal Cost	9.88%
b) Employee contribution	7.46%
c) Total Normal Cost	17.34%
Employer Normal Cost Change [(3a) – (1a)]	0.88%
Employee Contribution Change [(3b) – (1b)]	0.37%

Unfunded Liability Contribution ($)

1. For Period 7/1/22 – 6/30/23	890,950
2. Changes since the prior year annual valuation	
a) Effect of adjustments to prior year's amortization schedule	0
b) Effect of elimination of amortization bases	0
c) Effect of progression of amortization bases[1]	109,112
d) Effect of net investment (gain) after Funding Risk Mitigation[2]	(297,636)
e) Effect of non-investment (gain)/loss during the prior year	(44,403)
f) Effect of Funding Risk Mitigation (re-amortize existing bases at 6.8%)	(17,833)
g) Effect of Golden Handshake	0
h) Effect of plan changes	0
i) Effect of AL Significant Increase	0
j) Effect of assumption changes	(70,486)
k) Effect of changes due to Fresh Start or one year recognition of small balances	(569,704)
l) Effect of method change	0
m)Net effect of the changes above [sum of (a) through (l)]	(890,950)
3. For Period 7/1/23 – 6/30/24 [(1) + (2m)]	0

The amounts shown for the period 7/1/22 – 6/30/23 may be different if a prepayment of unfunded actuarial liability is made or a plan change became effective after the prior year's actuarial valuation was performed.

[1] Includes scheduled escalation in individual amortization base payments due to the 5-year ramp and payroll growth assumption used in the pre-2019 amortization policy.

[2] The unfunded liability contribution for the investment (gain)/loss during the year prior to the valuation date is 20% of the "full" annual requirement due to the 5-year ramp. Increases to this amount that occur during the ramp period will be included in line c) in future years.

Employer Contribution History

The table below provides a recent history of the required employer contributions for the plan. The amounts are based on the actuarial valuation from two years prior and does not account for prepayments or benefit changes made during a fiscal year. Additional discretionary payments before July 1, 2018 or after June 30, 2021 are not included.

Fiscal Year	Employer Normal Cost	Unfunded Rate	Unfunded Liability Payment ($)	Additional Discretionary Payments
2014 - 15	7.105%	(2.436%)	N/A	N/A
2015 - 16	7.355%	1.642%	N/A	N/A
2016 - 17	7.553%	0.000%	N/A	N/A
2017 - 18	7.471%	N/A	47,020	N/A
2018 - 19	8.114%	N/A	210,673	0
2019 - 20	8.313%	N/A	349,903	0
2020 - 21	8.785%	N/A	537,865	0
2021 - 22	8.91%	N/A	752,695	
2022 - 23	9.00%	N/A	890,950	
2023 - 24	9.88%	N/A	0	

Funding History

The table below shows the recent history of actuarial accrued liability, market value of assets, unfunded accrued liability, funded ratio and annual covered payroll.

Valuation Date	Accrued Liability (AL)	Market Value of Assets (MVA)	Unfunded Accrued Liability (UAL)	Funded Ratio	Annual Covered Payroll
6/30/2012	$65,329,327	$58,524,861	$6,804,466	89.6%	$12,207,294
6/30/2013	69,119,201	65,752,326	3,366,875	95.1%	13,158,323
6/30/2014	76,635,740	76,596,542	39,198	99.9%	13,217,024
6/30/2015	80,811,155	77,394,156	3,416,999	95.8%	13,509,930
6/30/2016	86,472,939	76,862,633	9,610,306	88.9%	14,355,851
6/30/2017	91,813,858	84,006,011	7,807,847	91.5%	14,280,946
6/30/2018	99,433,809	89,262,391	10,171,418	89.8%	14,831,366
6/30/2019	104,866,557	93,584,576	11,281,981	89.2%	14,670,139
6/30/2020	109,297,796	96,052,712	13,245,084	87.9%	14,492,018
6/30/2021	115,614,286	115,636,553	(22,267)	100.0%	14,326,073

Normal Cost by Benefit Group

The table below displays the Total Normal Cost broken out by benefit group for FY 2023-24. The Total Normal Cost is the annual cost of service accrual for the fiscal year for active employees and can be viewed as the long-term contribution rate for the benefits contracted. Generally, the normal cost for a benefit group subject to more generous benefit provisions will exceed the normal cost for a group with less generous benefits. However, based on the characteristics of the members (particularly when the number of actives is small), this may not be the case. Future measurements of the Total Normal Cost for each group may differ significantly from the current values due to such factors as: changes in the demographics of the group, changes in economic and demographic assumptions, changes in plan benefits or applicable law.

Rate Plan Identifier	Benefit Group Name	Total Normal Cost FY 2023-24	Number of Actives	Payroll on 6/30/2021
1380	Miscellaneous First Level	16.84%	134	$9,161,745
26946	Miscellaneous PEPRA Level	18.22%	88	$5,164,328
	Plan Total	**17.34%**	**222**	**$14,326,073**

Note that if a Benefit Group above has multiple bargaining units, each of which has separately contracted for different benefits such as Employer Paid Member Contributions, then the Normal Cost shown for the respective benefit level does not reflect those differences. Additionally, if a Second Level Benefit Group amended to the same benefit formula as a First Level Benefit Group, their Normal Costs may be dissimilar due to demographic or other population differences. For questions in these situations, please contact the plan actuary.

PEPRA Member Contribution Rates

The California Public Employees' Pension Reform Act of 2013 ("PEPRA") established new benefit formulas, final compensation period, and contribution requirements for "new" employees (generally those first hired into a CalPERS-covered position on or after January 1, 2013). In accordance with Government Code section 7522.30(b), "new members … shall have an initial contribution rate of at least 50% of the normal cost rate." The normal cost for the plan is dependent on the benefit levels, actuarial assumptions, and demographics of the plan, particularly members' entry age into the plan. Should the total normal cost of the plan change by more than 1% from the base total normal cost established for the plan, the new member rate shall be 50% of the new normal cost rounded to the nearest quarter percent.

The table below shows the determination of the PEPRA member contribution rates effective July 1, 2023, based on 50% of the Total Normal Cost for each respective plan as of the June 30, 2021 valuation.

		Basis for Current Rate		Rates Effective July 1, 2023			
Rate Plan Identifier	**Benefit Group Name**	**Total Normal Cost**	**Member Rate**	**Total Normal Cost**	**Change**	**Change Needed**	**Member Rate**
26946	Miscellaneous PEPRA Level	15.430%	7.75%	16.63%	1.200%	Yes	8.25%

For purposes of setting member rates, it is preferable to determine total normal cost using a large active population so that the rate remains relatively stable. While each CalPERS non-pooled plan has a sufficiently large active population for this purpose, the PEPRA active population by itself may not be sufficiently large. The total PEPRA normal cost will be determined based on the plan's PEPRA membership only if the number of members covered under the PEPRA formula meets either:

1. 50% of the active population, or
2. 25% of the active population and 100 or more PEPRA members

Until one of these conditions is met, the plan's total PEPRA normal cost will be determined using the entire active plan population (both PEPRA and Classic) based on the PEPRA benefit provisions. For this reason, the PEPRA member contribution rate determined in the table above may not equal 50% of the total normal cost of the PEPRA group shown on the "Normal Cost by Benefit Group" page.

Risk Analysis

- **Future Investment Return Scenarios**
- **Discount Rate Sensitivity**
- **Mortality Rate Sensitivity**
- **Maturity Measures**
- **Maturity Measures History**
- **Hypothetical Termination Liability**

Future Investment Return Scenarios

Analysis using the investment return scenarios from the Asset Liability Management process completed in 2021 was performed to determine the effects of various future investment returns on required employer contributions. The projections below reflect the impact of the CalPERS Funding Risk Mitigation policy. The projected normal cost rates reflect that the rates are anticipated to decline over time as new employees are hired into lower-cost benefit tiers. The projections also assume that all other actuarial assumptions will be realized and that no further changes in assumptions, contributions, benefits, or funding will occur.

The first table shows projected contribution requirements if the fund were to earn either 3.0% or 10.8% annually. These alternate investment returns were chosen because 90% of long-term average returns are expected to fall between them over the 20-year period ending June 30, 2041.

Assumed Annual Return FY 2021-22 through FY 2040-41	Projected Employer Contributions				
	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29
3.0% (5th percentile)					
Normal Cost Rate	9.9%	9.9%	9.9%	9.9%	9.9%
UAL Contribution	$77,000	$262,000	$556,000	$962,000	$1,479,000
10.8% (95th percentile)					
Normal Cost Rate	10.1%	10.3%	10.6%	10.8%	11.0%
UAL Contribution	$0	$0	$0	$0	$0

Required contributions outside of this range are also possible. In particular, whereas it is unlikely that investment returns will average less than 3.0% or greater than 10.8% over a 20-year period, the likelihood of a single investment return less than 3.0% or greater than 10.8% in any given year is much greater. The following analysis illustrates the effect of an extreme, single year investment return.

The portfolio has an expected volatility (or standard deviation) of 12.0% per year. Accordingly, in any given year there is a 16% probability that the annual return will be -5.2% or less and a 2.5% probability that the annual return will be -17.2% or less. These returns represent one and two standard deviations below the expected return of 6.8%.

The following table shows the effect of a one or two standard deviation investment loss in FY 2021-22 on the FY 2024-25 contribution requirements. Note that a single-year investment gain or loss decreases or increases the required UAL contribution amount incrementally for each of the next five years, not just one, due to the 5-year ramp in the amortization policy. However, the contribution requirements beyond the first year are also impacted by investment returns beyond the first year. Historically, significant downturns in the market are often followed by higher than average returns. Such investment gains would offset the impact of these single year negative returns in years beyond FY 2024-25.

Assumed Annual Return for Fiscal Year 2021-22	Required Employer Contributions	Projected Employer Contributions
	FY 2023-24	FY 2024-25
(17.2%) (2 standard deviation loss)		
Normal Cost Rate	9.88%	9.9%
UAL Contribution	$0	$644,000
(5.2%) (1 standard deviation loss)		
Normal Cost Rate	9.88%	9.9%
UAL Contribution	$0	$307,000

- Without investment gains (returns higher than 6.8%) in year FY 2022-23 or later, projected contributions rates would continue to rise over the next four years due to the continued phase-in of the impact of the illustrated investment loss in FY 2021-22.
- The Pension Outlook Tool can be used to model projected contributions for these scenarios beyond FY 2024-25 as well as to model other investment return scenarios.

Discount Rate Sensitivity

The discount rate assumption is calculated as the sum of the assumed real rate of return and the assumed annual price inflation, currently 4.5% and 2.3%, respectively. Changing either the price inflation assumption or the real rate of return assumption will change the discount rate. The sensitivity of the valuation results to the discount rate assumption depends on which component of the discount rate is changed. Shown below are various valuation results as of June 30, 2021 assuming alternate discount rates by changing the two components independently. Results are shown using the current discount rate of 6.8% as well as alternate discount rates of 5.8% and 7.8%. The rates of 5.8% and 7.8% were selected since they illustrate the impact of a 1.0% increase or decrease to the 6.8% assumption.

Sensitivity to the Real Rate of Return Assumption

As of June 30, 2021	1% Lower Real Return Rate	Current Assumptions	1% Higher Real Return Rate
Discount Rate	**5.8%**	**6.8%**	**7.8%**
Price Inflation	2.3%	2.3%	2.3%
Real Rate of Return	**3.5%**	**4.5%**	**5.5%**
a) Total Normal Cost	21.85%	17.34%	13.94%
b) Accrued Liability	$130,615,804	$115,614,286	$103,104,480
c) Market Value of Assets	$115,636,553	$115,636,553	$115,636,553
d) Unfunded Liability/(Surplus) [(b) - (c)]	$14,979,251	($22,267)	($12,532,073)
e) Funded Ratio	88.5%	100.0%	112.2%

Sensitivity to the Price Inflation Assumption

As of June 30, 2021	1% Lower Inflation Rate	Current Assumptions	1% Higher Inflation Rate
Discount Rate	**5.8%**	**6.8%**	**7.8%**
Price Inflation	**1.3%**	**2.3%**	**3.3%**
Real Rate of Return	4.5%	4.5%	4.5%
a) Total Normal Cost	18.31%	17.34%	15.72%
b) Accrued Liability	$119,795,760	$115,614,286	$106,306,406
c) Market Value of Assets	$115,636,553	$115,636,553	$115,636,553
d) Unfunded Liability/(Surplus) [(b) - (c)]	$4,159,207	($22,267)	($9,330,147)
e) Funded Ratio	96.5%	100.0%	108.8%

Mortality Rate Sensitivity

The following table looks at the change in the June 30, 2021 plan costs and funded status under two different longevity scenarios, namely assuming rates of post-retirement mortality are 10% lower or 10% higher than our current mortality assumptions. This type of analysis highlights the impact on the plan of improving or worsening mortality over the long term.

As of June 30, 2021	10% Lower Mortality Rates	Current Assumptions	10% Higher Mortality Rates
a) Total Normal Cost	17.65%	17.34%	17.06%
b) Accrued Liability	$118,195,390	$115,614,286	$113,247,014
c) Market Value of Assets	$115,636,553	$115,636,553	$115,636,553
d) Unfunded Liability/(Surplus) [(b) - (c)]	$2,558,837	($22,267)	($2,389,539)
e) Funded Ratio	97.8%	100.0%	102.1%

Maturity Measures

As pension plans mature they become more sensitive to risks. Understanding plan maturity and how it affects the ability of a pension plan sponsor to tolerate risk is important in understanding how the plan is impacted by investment return volatility, other economic variables and changes in longevity or other demographic assumptions. One way to look at the maturity level of CalPERS and its plans is to look at the ratio of a plan's retiree liability to its total liability. A pension plan in its infancy will have a very low ratio of retiree liability to total liability. As the plan matures, the ratio increases. A mature plan will often have a ratio above 60%-65%.

Ratio of Retiree Accrued Liability to Total Accrued Liability	June 30, 2020	June 30, 2021
1. Retiree Accrued Liability	50,862,451	55,470,345
2. Total Accrued Liability	109,297,796	115,614,286
3. Ratio of Retiree AL to Total AL [(1) / (2)]	47%	48%

Another measure of the maturity level of CalPERS and its plans is the ratio of actives to retirees, also called the support ratio. A pension plan in its infancy will have a very high ratio of active to retired members. As the plan matures and members retire, the ratio declines. A mature plan will often have a ratio near or below one.

To calculate the support ratio for the rate plan, retirees and beneficiaries receiving a continuance are each counted as one, even though they may have only worked a portion of their careers as an active member of this rate plan. For this reason, the support ratio, while intuitive, may be less informative than the ratio of retiree liability to total accrued liability above. For comparison, the support ratio for all CalPERS public agency plans is 0.82 and is calculated consistently with how it is for the individual rate plan. Note that to calculate the support ratio for all public agency plans, a retiree with service from more than one CalPERS agency is counted as a retiree more than once.

Support Ratio	June 30, 2020	June 30, 2021
1. Number of Actives	233	222
2. Number of Retirees	212	223
3. Support Ratio [(1) / (2)]	1.10	1.00

The actuarial calculations supplied in this communication are based on various assumptions about long-term demographic and economic behavior. Unless these assumptions (e.g., terminations, deaths, disabilities, retirements, salary growth, investment return) are exactly realized each year, there will be differences on a year-to-year basis. The year-to-year differences between actual experience and the assumptions are called actuarial gains and losses and serve to lower or raise required employer contributions from one year to the next. Therefore, employer contributions will inevitably fluctuate, especially due to the ups and downs of investment returns.

Maturity Measures (continued)

Asset Volatility Ratio

Shown in the table below is the asset volatility ratio (AVR), which is the ratio of market value of assets to payroll. Plans that have a higher AVR experience more volatile employer contributions (as a percentage of payroll) due to investment return. For example, a plan with AVR of 8 may experience twice the contribution volatility due to investment return volatility than a plan with AVR of 4. It should be noted that this ratio is a measure of the current situation. It increases over time but generally tends to stabilize as a plan matures.

Liability Volatility Ratio

Also shown in the table below is the liability volatility ratio (LVR), which is the ratio of accrued liability to payroll. Plans that have a higher LVR experience more volatile employer contributions (as a percentage of payroll) due to changes in liability. For example, a plan with LVR of 8 is expected to have twice the contribution volatility of a plan with LVR of 4 when there is a change in accrued liability, such as when there is a change in actuarial assumptions. It should be noted that this ratio indicates a longer-term potential for contribution volatility, since the AVR, described above, will tend to move closer to the LVR as the funded ratio approaches 100%.

Contribution Volatility	June 30, 2020	June 30, 2021
1. Market Value of Assets without Receivables	$95,903,465	$115,507,526
2. Payroll	14,492,018	14,326,073
3. Asset Volatility Ratio (AVR) [(1) / (2)]	6.6	8.1
4. Accrued Liability	$109,297,796	$115,614,286
5. Liability Volatility Ratio (LVR) [(4) / (2)]	7.5	8.1

Maturity Measures History

Valuation Date	Ratio of Retiree Accrued Liability to Total Accrued Liability	Support Ratio	Asset Volatility Ratio	Liability Volatility Ratio
6/30/2017	43%	1.24	5.9	6.4
6/30/2018	43%	1.27	6.0	6.7
6/30/2019	44%	1.18	6.4	7.1
6/30/2020	47%	1.10	6.6	7.5
6/30/2021	48%	1.00	8.1	8.1

Hypothetical Termination Liability

The hypothetical termination liability is an estimate of the financial position of the plan had the contract with CalPERS been terminated as of June 30, 2021. The plan liability on a termination basis is calculated differently from the plan's ongoing funding liability. For this hypothetical termination liability calculation, both compensation and service are frozen as of the valuation date and no future pay increases or service accruals are assumed. This measure of funded status is not appropriate for assessing the need for future employer contributions in the case of an ongoing plan, that is, for an employer that continues to provide CalPERS retirement benefits to active employees.

A more conservative investment policy and asset allocation strategy was adopted by the board for the Terminated Agency Pool. The Terminated Agency Pool has limited funding sources since no future employer contributions will be made. Therefore, expected benefit payments are secured by risk-free assets and benefit security for members is increased while limiting the funding risk. However, this asset allocation has a lower expected rate of return than the PERF and consequently, a lower discount rate assumption. The lower discount rate for the Terminated Agency Pool results in higher liabilities for terminated plans.

The effective termination discount rate will depend on actual market rates of return for risk-free securities on the date of termination. As market discount rates are variable the table below shows a range for the hypothetical termination liability based on the lowest and highest interest rates observed during an approximate 19-month period from 12 months before the valuation date to seven months after.

Market Value of Assets (MVA)	Hypothetical Termination Liability[1,2] at 1.00%	Funded Ratio	Unfunded Termination Liability at 1.00%	Hypothetical Termination Liability[1,2] at 2.25%	Funded Ratio	Unfunded Termination Liability at 2.25%
$115,636,553	$250,451,213	46.2%	$134,814,660	$210,081,473	55.0%	$94,444,920

[1] The hypothetical liabilities calculated above include a 5% contingency load. The contingency load and other actuarial assumptions can be found in Appendix A.

[2] The discount rate used for termination valuations is a weighted average of the 10-year and 30-year U.S. Treasury yields where the weights are based on matching asset and liability durations as of the termination date. The discount rates used in the table are based on 20-year Treasury bonds, rounded to the nearest quarter percentage point, which is a good proxy for most plans. The 20-year Treasury yield was 2.00% on June 30, 2021, the valuation date.

In order to terminate the plan, first contact our Pension Contract Services unit to initiate a Resolution of Intent to Terminate. The completed Resolution will allow the plan actuary to provide a preliminary termination valuation with a more up-to-date estimate of the plan liabilities. Before beginning this process, please consult with the plan actuary.

Plan's Major Benefit Provisions

Plan's Major Benefit Options

Shown below is a summary of the major optional benefits for which the agency has contracted. A description of principal standard and optional plan provisions is in Appendix B.

	Benefit Group		
Member Category	Misc	Misc	
Demographics			
Actives	Yes	Yes	
Transfers/Separated	Yes	Yes	
Receiving	Yes	Yes	
Benefit Provision			
Benefit Formula	2% @ 60	2% @ 62	
Social Security Coverage	No	No	
Full/Modified	Full	Full	
Employee Contribution Rate	7.00%	7.75%	
Final Average Compensation Period	Three Year	Three Year	
Sick Leave Credit	Yes	Yes	
Non-Industrial Disability	Standard	Standard	
Industrial Disability	No	No	
Pre-Retirement Death Benefits			
Optional Settlement 2	No	No	
1959 Survivor Benefit Level	No	No	
Special	No	No	
Alternate (firefighters)	No	No	
Post-Retirement Death Benefits			
Lump Sum	$500	$500	
Survivor Allowance (PRSA)	Yes	Yes	
COLA	2%	2%	

Appendices

- **Appendix A – Actuarial Methods and Assumptions**
- **Appendix B – Principal Plan Provisions**
- **Appendix C – Participant Data**
- **Appendix D – Glossary of Actuarial Terms**

Appendix A

Actuarial Methods and Assumptions

- **Actuarial Data**
- **Actuarial Methods**
- **Actuarial Assumptions**
- **Miscellaneous**

Actuarial Data

As stated in the Actuarial Certification, the data which serves as the basis of this valuation has been obtained from the various CalPERS databases. We have reviewed the valuation data and believe that it is reasonable and appropriate in aggregate. We are unaware of any potential data issues that would have a material effect on the results of this valuation, except that data does not always contain the latest salary information for former members now in reciprocal systems and does not recognize the potential for unusually large salary deviation in certain cases such as elected officials. Therefore, salary information in these cases may not be accurate. These situations are relatively infrequent, however, and generally do not have a material impact on the required employer contributions.

Actuarial Methods

Actuarial Cost Method

The actuarial cost method used is the Entry Age Actuarial Cost Method. Under this method, projected benefits are determined for all members and the associated liabilities are spread in a manner that produces level annual cost as a percentage of pay in each year from the member's entry age to their assumed retirement age on the valuation date. The cost allocated to the current fiscal year is called the normal cost.

The actuarial accrued liability for active members is then calculated as the portion of the total cost of the plan allocated to prior years. The actuarial accrued liability for members currently receiving benefits and for members entitled to deferred benefits is equal to the present value of the benefits expected to be paid. No normal costs are applicable for these participants.

CalPERS uses an in-house proprietary actuarial model for calculating plan costs. We believe this model is fit for its intended purpose and meets all applicable Actuarial Standards of Practice. Furthermore, the actuarial results of our model are independently confirmed periodically by outside auditing actuaries. The actuarial assumptions used are internally consistent and the generated results are reasonable.

Amortization of Unfunded Actuarial Accrued Liability

The excess of the total actuarial accrued liability over the market value of plan assets is called the unfunded actuarial accrued liability (UAL). Funding requirements are determined by adding the normal cost and a payment toward the UAL. The UAL payment is equal to the sum of individual amortization payments, each representing a different source of UAL for a given measurement period.

Amortization payments are determined according to the CalPERS amortization policy. The board adopted a new policy effective for the June 30, 2019 actuarial valuation. The new policy applies prospectively only; amortization bases (sources of UAL) established prior to the June 30, 2019 valuation will continue to be amortized according to the prior policy.

Prior Policy (Bases Established prior to June 30, 2019)

Amortization payments are determined as a level percentage of payroll whereby the payment increases each year at an escalation rate. Gains or losses are amortized over a fixed 30-year period with a 5-year ramp up at the beginning and a 5-year ramp down at the end of the amortization period. All changes in liability due to plan amendments (other than golden handshakes) are amortized over a 20-year period with no ramp. Changes in actuarial assumptions or changes in actuarial methodology are amortized over a 20-year period with a 5-year ramp up at the beginning and a 5-year ramp down at the end of the amortization period. Changes in unfunded accrued liability due to a Golden Handshake will be amortized over a period of five years. Bases established prior to June 30, 2013 may be amortized differently. A summary is provided in the following table:

Driver	Source				
	(Gain)/Loss				
	Investment	Non-investment	Assumption/Method Change	Benefit Change	Golden Handshake
Amortization Period	30 Years	30 Years	20 Years	20 Years	5 Years
Escalation Rate - Active Plans - Inactive Plans	2.80% 0%	2.80% 0%	2.80% 0%	2.80% 0%	2.80% 0%
Ramp Up	5	5	5	0	0
Ramp Down	5	5	5	0	0

The 5-year ramp up means that the payments in the first four years of the amortization period are 20%, 40%, 60% and 80% of the "full" payment which begins in year five. The 5-year ramp down means that the reverse is true in the final four years of the amortization period.

Current Policy (Bases Established on or after June 30, 2019)

Amortization payments are determined as a level dollar amount. Investment gains or losses are amortized over a fixed 20-year period with a 5-year ramp up at the beginning of the amortization period. Non-investment gains or losses are amortized over a fixed 20-year period with no ramps. All changes in liability due to plan amendments (other than golden handshakes) are amortized over a 20-year period with no ramps. Changes in actuarial assumptions or changes in actuarial methodology are amortized over a 20-year period with no ramps. Changes in unfunded accrued liability due to a Golden Handshake are amortized over a period of five years. A summary is provided in the table below:

	Source				
	(Gain)/Loss				
	Investment	Non-investment	Assumption/ Method Change	Benefit Change	Golden Handshake
Amortization Period	20 Years	20 Years	20 Years	20 Years	5 Years
Escalation Rate	0%	0%	0%	0%	0%
Ramp Up	5	0	0	0	0
Ramp Down	0	0	0	0	0

Exceptions for Inconsistencies

An exception to the amortization rules above is used whenever their application results in inconsistencies. In these cases, a "fresh start" approach is used. This means that the current unfunded actuarial liability is projected and amortized over a set number of years. For example, a fresh start is needed in the following situations:

- When a negative payment would be required on a positive unfunded actuarial liability; or
- When the payment would completely amortize the total unfunded liability in a very short time period, and results in a large change in the employer contribution requirement.

It should be noted that the actuary may determine that a fresh start is necessary under other circumstances. In all cases of a fresh start, the period is set by the actuary at what is deemed appropriate; however, the period will not be greater than 20 years.

Exceptions for Plans in Surplus

If a surplus exists (i.e., the Market Value of Assets exceeds the plan's accrued liability) any prior amortization layers shall be considered fully amortized, and the surplus shall not be amortized.

In the event of any subsequent unfunded liability, a Fresh Start shall be used with an amortization period of 20 years or less.

Exceptions for Small Amounts

Where small unfunded liabilities are identified in annual valuations which result in small payment amounts, the actuary may shorten the remaining period for these bases.

- When the balance of a single amortization base has an absolute value less than $250, the amortization period is reduced to one year.
- When the entire unfunded liability is a small amount, the actuary may perform a Fresh Start and use an appropriate amortization period.

Exceptions for Inactive Plans

The following exceptions apply to plans classified as Inactive. These plans have no active members and no expectation to have active members in the future.

- Amortization of the unfunded liability is on a "level dollar" basis rather than a "level percent of pay" basis. For amortization layers, which utilize a ramp up and ramp down, the "ultimate" payment is constant.
- Actuarial judgment will be used to shorten amortization periods for Inactive plans with existing periods that are deemed too long given the duration of the liability. The specific demographics of the plan will be used to determine if shorter periods may be more appropriate.

Exceptions for Inactive Agencies

For a public agency with no active members in any CalPERS rate plan, the unfunded liability shall be amortized over a closed amortization period of no more than 15 years.

Asset Valuation Method

The Actuarial Value of Assets is set equal to the market value of assets. Asset values include accounts receivable.

PEPRA Normal Cost Rate Methodology

Per Government Code Section 7522.30(b), the "normal cost rate" shall mean the annual actuarially determined normal cost for the plan of retirement benefits provided to the new member and shall be established based on actuarial assumptions used to determine the liabilities and costs as part of the annual actuarial valuation. The plan of retirement benefits shall include any elements that would impact the actuarial determination of the normal cost, including, but not limited to, the retirement formula, eligibility and vesting criteria, ancillary benefit provisions, and any automatic cost-of-living adjustments as determined by the public retirement system.

For purposes of setting member rates, it is preferable to determine total normal cost using a large active population so that the rate remains relatively stable. While each CalPERS non-pooled plan has a sufficiently large active population for this purpose, the PEPRA active population by itself may not be sufficiently large. The total PEPRA normal cost will be determined based on the plan's PEPRA membership only if the number of members covered under the PEPRA formula meets either:

1. 50% of the active population, or
2. 25% of the active population and 100 or more PEPRA members

Until one of these conditions is met, the plan's total PEPRA normal cost will be determined using the entire active plan population (both PEPRA and Classic) based on the PEPRA benefit provisions.

Actuarial Assumptions

In 2021, CalPERS completed its most recent asset liability management study incorporating actuarial assumptions and strategic asset allocation. In November 2021, the board adopted changes to the asset allocation that increased the expected volatility of returns. The adopted asset allocation was expected to have a long-term blended return that continued to support a discount rate assumption of 6.80%. The board also approved several changes to the demographic assumptions that more closely aligned with actual experience.

For more details and additional rationale for the selection of the actuarial assumptions, please refer to the CalPERS Experience Study and Review of Actuarial Assumptions report from November 2021 that can be found on the CalPERS website under: Forms and Publications. Click on "View All" and search for Experience Study.

All actuarial assumptions (except the discount rates used for the hypothetical termination liability) represent an estimate of future experience rather than observations of the estimates inherent in market data.

Economic Assumptions

Discount Rate

The prescribed discount rate assumption, adopted by the board on November 17, 2021, is 6.80% compounded annually (net of investment and administrative expenses) as of June 30, 2021.

Termination Liability Discount Rate

The current discount rate assumption used for termination valuations is a weighted average of the 10-year and 30-year U.S. Treasury yields where the weights are based on matching asset and liability durations as of the termination date.

The hypothetical termination liabilities in this report are calculated using an observed range of market interest rates. This range is based on the lowest and highest 20-year Treasury bond observed during an approximate 19-month period from 12 months before the valuation date to seven months after. The 20-year Treasury bond has a similar duration to most plan liabilities and serves as a good proxy for the termination discount rate. The 20-year Treasury yield was 2.00% on June 30, 2021.

Salary Growth

Annual increases vary by category, entry age, and duration of service. A sample of assumed increases are shown below. Wage inflation assumption in the valuation year (2.80% for 2021) is added to these factors for total salary growth.

Public Agency Miscellaneous

Duration of Service	(Entry Age 20)	(Entry Age 30)	(Entry Age 40)
0	0.0764	0.0621	0.0521
1	0.0663	0.0528	0.0424
2	0.0576	0.0449	0.0346
3	0.0501	0.0381	0.0282
4	0.0435	0.0324	0.0229
5	0.0378	0.0276	0.0187
10	0.0201	0.0126	0.0108
15	0.0155	0.0102	0.0071
20	0.0119	0.0083	0.0047
25	0.0091	0.0067	0.0031
30	0.0070	0.0054	0.0020

Public Agency Fire

Duration of Service	(Entry Age 20)	(Entry Age 30)	(Entry Age 40)
0	0.1517	0.1549	0.0631
1	0.1191	0.1138	0.0517
2	0.0936	0.0835	0.0423
3	0.0735	0.0613	0.0346
4	0.0577	0.0451	0.0284
5	0.0453	0.0331	0.0232
10	0.0188	0.0143	0.0077
15	0.0165	0.0124	0.0088
20	0.0145	0.0108	0.0101
25	0.0127	0.0094	0.0115
30	0.0112	0.0082	0.0132

Public Agency Police

Duration of Service	(Entry Age 20)	(Entry Age 30)	(Entry Age 40)
0	0.1181	0.1051	0.0653
1	0.0934	0.0812	0.0532
2	0.0738	0.0628	0.0434
3	0.0584	0.0485	0.0353
4	0.0462	0.0375	0.0288
5	0.0365	0.0290	0.0235
10	0.0185	0.0155	0.0118
15	0.0183	0.0150	0.0131
20	0.0181	0.0145	0.0145
25	0.0179	0.0141	0.0161
30	0.0178	0.0136	0.0179

Salary Growth (continued)

Public Agency County Peace Officers

Duration of Service	(Entry Age 20)	(Entry Age 30)	(Entry Age 40)
0	0.1238	0.1053	0.0890
1	0.0941	0.0805	0.0674
2	0.0715	0.0616	0.0510
3	0.0544	0.0471	0.0387
4	0.0413	0.0360	0.0293
5	0.0314	0.0276	0.0222
10	0.0184	0.0142	0.0072
15	0.0174	0.0124	0.0073
20	0.0164	0.0108	0.0074
25	0.0155	0.0094	0.0075
30	0.0147	0.0083	0.0077

Schools

Duration of Service	(Entry Age 20)	(Entry Age 30)	(Entry Age 40)
0	0.0275	0.0275	0.0200
1	0.0422	0.0373	0.0298
2	0.0422	0.0373	0.0298
3	0.0422	0.0373	0.0298
4	0.0388	0.0314	0.0245
5	0.0308	0.0239	0.0179
10	0.0236	0.0160	0.0121
15	0.0182	0.0135	0.0103
20	0.0145	0.0109	0.0085
25	0.0124	0.0102	0.0058
30	0.0075	0.0053	0.0019

- The Miscellaneous salary scale is used for Local Prosecutors.
- The Police salary scale is used for Other Safety, Local Sheriff, and School Police.

Price Inflation

2.30% compounded annually.

Wage Inflation

2.80% compounded annually (used in projecting individual salary increases).

Payroll Growth

2.80% compounded annually (used in projecting the payroll over which the unfunded liability is amortized for level percent of payroll bases). This assumption is used for all plans with active members.

Non-valued Potential Additional Liabilities

The potential liability loss for a cost-of-living increase exceeding the 2.30% price inflation assumption and any potential liability loss from future member service purchases that are not reflected in the valuation.

Miscellaneous Loading Factors

Credit for Unused Sick Leave

Total years of service is increased by 1% for those plans that have adopted the provision of providing Credit for Unused Sick Leave.

Conversion of Employer Paid Member Contributions (EPMC)

Total years of service is increased by the Employee Contribution Rate for those plans with the provision providing for the Conversion of Employer Paid Member Contributions (EPMC) during the final compensation period.

Norris Decision (Best Factors)

Employees hired prior to July 1, 1982 have projected benefit amounts increased in order to reflect the use of "Best Factors" in the calculation of optional benefit forms. This is due to a 1983 Supreme Court decision, known as the Norris decision, which required males and females to be treated equally in the determination of benefit amounts. Consequently, anyone already employed at that time is given the best possible conversion factor when optional benefits are determined. No loading is necessary for employees hired after July 1, 1982.

Termination Liability

The termination liabilities include a 5% contingency load. This load is for unforeseen improvements in mortality.

Demographic Assumptions

Pre-Retirement Mortality

The mortality assumptions are based on mortality rates resulting from the most recent CalPERS Experience Study adopted by the CalPERS Board in November 2021. For purposes of the mortality rates, the rates incorporate generational mortality to capture on-going mortality improvement. Generational mortality explicitly assumes that members born more recently will live longer than the members born before them thereby capturing the mortality improvement seen in the past and expected continued improvement. For more details, please refer to the 2021 experience study report that can be found on the CalPERS website

Rates vary by age and gender are shown in the table below. This table only contains a sample of the 2017 base table rates for illustrative purposes. The non-industrial death rates are used for all plans. The industrial death rates are used for Safety plans (except for local Safety members described in Section 20423.6 where the agency has not specifically contracted for industrial death benefits.)

	Miscellaneous		Safety			
	Non-Industrial Death (Not Job-Related)		Non-Industrial Death (Not Job-Related)		Industrial Death (Job-Related)	
Age	Male	Female	Male	Female	Male	Female
20	0.00039	0.00014	0.00038	0.00014	0.00004	0.00002
25	0.00033	0.00013	0.00034	0.00018	0.00004	0.00002
30	0.00044	0.00019	0.00042	0.00025	0.00005	0.00003
35	0.00058	0.00029	0.00048	0.00034	0.00005	0.00004
40	0.00075	0.00039	0.00055	0.00042	0.00006	0.00005
45	0.00093	0.00054	0.00066	0.00053	0.00007	0.00006
50	0.00134	0.00081	0.00092	0.00073	0.00010	0.00008
55	0.00198	0.00123	0.00138	0.00106	0.00015	0.00012
60	0.00287	0.00179	0.00221	0.00151	0.00025	0.00017
65	0.00403	0.00250	0.00346	0.00194	0.00038	0.00022
70	0.00594	0.00404	0.00606	0.00358	0.00067	0.00040
75	0.00933	0.00688	0.01099	0.00699	0.00122	0.00078
80	0.01515	0.01149	0.02027	0.01410	0.00225	0.00157

- The pre-retirement mortality rates above are for 2017 and are projected generationally for future years using 80% of the Society of Actuaries' Scale MP-2020.
- Miscellaneous plans usually have industrial death rates set to zero unless the agency has specifically contracted for industrial death benefits. If so, each non-industrial death rate shown above will be split into two components: 99% will become the non-industrial death rate and 1% will become the industrial death rate.

Post-Retirement Mortality

Rates vary by age, type of retirement, and gender. See sample rates in table below. These rates are used for all plans.

	Healthy Recipients		Non-Industrially Disabled (Not Job-Related)		Industrially Disabled (Job-Related)	
Age	Male	Female	Male	Female	Male	Female
50	0.00267	0.00199	0.01701	0.01439	0.00430	0.00311
55	0.00390	0.00325	0.02210	0.01734	0.00621	0.00550
60	0.00578	0.00455	0.02708	0.01962	0.00944	0.00868
65	0.00857	0.00612	0.03334	0.02276	0.01394	0.01190
70	0.01333	0.00996	0.04001	0.02910	0.02163	0.01858
75	0.02391	0.01783	0.05376	0.04160	0.03446	0.03134
80	0.04371	0.03403	0.07936	0.06112	0.05853	0.05183
85	0.08274	0.06166	0.11561	0.09385	0.10137	0.08045
90	0.14539	0.11086	0.16608	0.14396	0.16584	0.12434
95	0.24665	0.20364	0.24665	0.20364	0.24665	0.20364
100	0.36198	0.31582	0.36198	0.31582	0.36198	0.31582
105	0.52229	0.44679	0.52229	0.44679	0.52229	0.44679
110	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

The post-retirement mortality rates above are for 2017 and are projected generationally for future years using 80% of the Society of Actuaries' Scale MP-2020.

Marital Status

For active members, a percentage who are married upon retirement is assumed according to the member category as shown in the following table.

Member Category	Percent Married
Miscellaneous Member	70%
Local Police	85%
Local Fire	85%
Other Local Safety	70%
School Police	85%
Local County Peace Officers	75%

Age of Spouse

It is assumed that female spouses are 3 years younger than male spouses. This assumption is used for all plans.

Terminated Members

It is assumed that terminated members refund immediately if non-vested. Terminated members who are vested are assumed to retire at age 59 for Miscellaneous members and age 54 for Safety members.

Termination with Refund

Rates vary by entry age and service for Miscellaneous plans. Rates vary by service for Safety plans. See sample rates in tables below.

Public Agency Miscellaneous

Duration of Service	Entry Age 20		Entry Age 25		Entry Age 30		Entry Age 35		Entry Age 40		Entry Age 45	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
0	0.1851	0.1944	0.1769	0.1899	0.1631	0.1824	0.1493	0.1749	0.1490	0.1731	0.1487	0.1713
1	0.1531	0.1673	0.1432	0.1602	0.1266	0.1484	0.1101	0.1366	0.1069	0.1323	0.1037	0.1280
2	0.1218	0.1381	0.1125	0.1307	0.0970	0.1183	0.0815	0.1058	0.0771	0.0998	0.0726	0.0938
3	0.0927	0.1085	0.0852	0.1020	0.0727	0.0912	0.0601	0.0804	0.0556	0.0737	0.0511	0.0669
4	0.0672	0.0801	0.0616	0.0752	0.0524	0.0670	0.0431	0.0587	0.0392	0.0523	0.0352	0.0459
5	0.0463	0.0551	0.0423	0.0517	0.0358	0.0461	0.0292	0.0404	0.0261	0.0350	0.0230	0.0296
10	0.0112	0.0140	0.0101	0.0129	0.0083	0.0112	0.0064	0.0094	0.0048	0.0071	0.0033	0.0049
15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
35	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Public Agency Safety

Duration of Service	Fire		Police		County Peace Officer	
	Male	Female	Male	Female	Male	Female
0	0.1022	0.1317	0.1298	0.1389	0.1086	0.1284
1	0.0686	0.1007	0.0789	0.0904	0.0777	0.0998
2	0.0441	0.0743	0.0464	0.0566	0.0549	0.0759
3	0.0272	0.0524	0.0274	0.0343	0.0385	0.0562
4	0.0161	0.0349	0.0170	0.0206	0.0268	0.0402
5	0.0092	0.0214	0.0113	0.0128	0.0186	0.0276
10	0.0015	0.0000	0.0032	0.0047	0.0046	0.0038
15	0.0000	0.0000	0.0000	0.0000	0.0023	0.0036
20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
35	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

- The police termination and refund rates are also used for Public Agency Local Prosecutors, Other Safety, Local Sheriff, and School Police.

Termination with Refund (continued)

Schools

Duration of Service	Entry Age 20		Entry Age 25		Entry Age 30		Entry Age 35		Entry Age 40		Entry Age 45	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
0	0.2054	0.2120	0.1933	0.1952	0.1730	0.1672	0.1527	0.1392	0.1423	0.1212	0.1318	0.1032
1	0.1922	0.2069	0.1778	0.1883	0.1539	0.1573	0.1300	0.1264	0.1191	0.1087	0.1083	0.0910
2	0.1678	0.1859	0.1536	0.1681	0.1298	0.1383	0.1060	0.1086	0.0957	0.0934	0.0853	0.0782
3	0.1384	0.1575	0.1256	0.1417	0.1042	0.1155	0.0829	0.0893	0.0736	0.0774	0.0643	0.0656
4	0.1085	0.1274	0.0978	0.1143	0.0800	0.0925	0.0622	0.0707	0.0542	0.0620	0.0462	0.0533
5	0.0816	0.0991	0.0732	0.0887	0.0590	0.0713	0.0449	0.0539	0.0383	0.0476	0.0317	0.0413
10	0.0222	0.0248	0.0200	0.0221	0.0163	0.0174	0.0125	0.0128	0.0094	0.0100	0.0063	0.0072
15	0.0106	0.0132	0.0095	0.0113	0.0077	0.0083	0.0058	0.0052	0.0040	0.0039	0.0021	0.0026
20	0.0059	0.0065	0.0050	0.0054	0.0035	0.0036	0.0021	0.0019	0.0010	0.0009	0.0000	0.0000
25	0.0029	0.0034	0.0025	0.0029	0.0018	0.0020	0.0010	0.0012	0.0005	0.0006	0.0000	0.0000
30	0.0012	0.0015	0.0011	0.0013	0.0011	0.0011	0.0010	0.0009	0.0005	0.0005	0.0000	0.0000
35	0.0006	0.0007	0.0006	0.0007	0.0005	0.0006	0.0005	0.0005	0.0003	0.0002	0.0000	0.0000

Termination with Vested Benefits

Rates vary by entry age and service for Miscellaneous plans. Rates vary by service for Safety plans. See sample rates in tables below.

Public Agency Miscellaneous

Duration of Service	Entry Age 20		Entry Age 25		Entry Age 30		Entry Age 35		Entry Age 40	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
5	0.0381	0.0524	0.0381	0.0524	0.0358	0.0464	0.0334	0.0405	0.0301	0.0380
10	0.0265	0.0362	0.0265	0.0362	0.0254	0.0334	0.0244	0.0307	0.0197	0.0236
15	0.0180	0.0252	0.0180	0.0252	0.0166	0.0213	0.0152	0.0174	0.0119	0.0132
20	0.0141	0.0175	0.0141	0.0175	0.0110	0.0131	0.0079	0.0087	0.0000	0.0000
25	0.0084	0.0108	0.0084	0.0108	0.0064	0.0076	0.0000	0.0000	0.0000	0.0000
30	0.0047	0.0056	0.0047	0.0056	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
35	0.0038	0.0041	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Public Agency Safety

Duration of Service	Fire		Police		County Peace Officer	
	Male	Female	Male	Female	Male	Female
5	0.0089	0.0224	0.0156	0.0272	0.0177	0.0266
10	0.0066	0.0164	0.0113	0.0198	0.0126	0.0189
15	0.0048	0.0120	0.0083	0.0144	0.0089	0.0134
20	0.0035	0.0088	0.0060	0.0105	0.0063	0.0095
25	0.0024	0.0061	0.0042	0.0073	0.0042	0.0063
30	0.0012	0.0031	0.0021	0.0037	0.0021	0.0031
35	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

- After termination with vested benefits, a Miscellaneous member is assumed to retire at age 59 and a Safety member at age 54.
- The Police termination with vested benefits rates are also used for Public Agency Local Prosecutors, Other Safety, Local Sheriff, and School Police.

Schools

Duration of Service	Entry Age 20		Entry Age 25		Entry Age 30		Entry Age 35		Entry Age 40	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
5	0.0359	0.0501	0.0359	0.0501	0.0332	0.0402	0.0305	0.0304	0.0266	0.0272
10	0.0311	0.0417	0.0311	0.0417	0.0269	0.0341	0.0228	0.0265	0.0193	0.0233
15	0.0193	0.0264	0.0193	0.0264	0.0172	0.0220	0.0151	0.0175	0.0123	0.0142
20	0.0145	0.0185	0.0145	0.0185	0.0113	0.0141	0.0080	0.0097	0.0000	0.0000
25	0.0089	0.0123	0.0089	0.0123	0.0074	0.0093	0.0000	0.0000	0.0000	0.0000
30	0.0057	0.0064	0.0057	0.0064	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
35	0.0040	0.0049	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Non-Industrial (Not Job-Related) Disability

Rates vary by age and gender for Miscellaneous plans. Rates vary by age and category for Safety plans.

	Miscellaneous		Fire	Police	County Peace Officer	Schools	
Age	Male	Female	Male and Female	Male and Female	Male and Female	Male	Female
20	0.0001	0.0000	0.0001	0.0001	0.0001	0.0000	0.0002
25	0.0001	0.0001	0.0001	0.0001	0.0001	0.0000	0.0002
30	0.0002	0.0003	0.0001	0.0001	0.0001	0.0002	0.0002
35	0.0004	0.0007	0.0001	0.0002	0.0003	0.0005	0.0004
40	0.0009	0.0012	0.0001	0.0002	0.0006	0.0010	0.0008
45	0.0015	0.0019	0.0002	0.0003	0.0011	0.0019	0.0015
50	0.0015	0.0019	0.0004	0.0005	0.0016	0.0027	0.0021
55	0.0014	0.0013	0.0006	0.0007	0.0009	0.0024	0.0017
60	0.0012	0.0009	0.0006	0.0011	0.0005	0.0020	0.0010

- The Miscellaneous non-industrial disability rates are used for Local Prosecutors.
- The police non-industrial disability rates are also used for Other Safety, Local Sheriff, and School Police.

Industrial (Job-Related) Disability

Rates vary by age and category.

Age	Fire	Police	County Peace Officer
20	0.0001	0.0000	0.0004
25	0.0002	0.0017	0.0013
30	0.0006	0.0048	0.0025
35	0.0012	0.0079	0.0037
40	0.0023	0.0110	0.0051
45	0.0040	0.0141	0.0067
50	0.0208	0.0185	0.0092
55	0.0307	0.0479	0.0151
60	0.0438	0.0602	0.0174

- The police industrial disability rates are also used for Local Sheriff and Other Safety.
- 50% of the police industrial disability rates are used for School Police.
- 1% of the police industrial disability rates are used for Local Prosecutors.
- Normally, rates are zero for Miscellaneous plans unless the agency has specifically contracted for industrial disability benefits. If so, each Miscellaneous non-industrial disability rate will be split into two components: 50% will become the non-industrial disability rate and 50% will become the industrial disability rate.

Service Retirement

Retirement rates vary by age, service, and formula, except for the Safety Half Pay at 55 and 2% at 55 formulas, where retirement rates vary by age only.

Public Agency Miscellaneous 1.5% at 65

	Duration of Service					
Age	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.008	0.011	0.013	0.015	0.017	0.019
51	0.007	0.010	0.012	0.013	0.015	0.017
52	0.010	0.014	0.017	0.019	0.021	0.024
53	0.008	0.012	0.015	0.017	0.019	0.022
54	0.012	0.016	0.019	0.022	0.025	0.028
55	0.018	0.025	0.031	0.035	0.038	0.043
56	0.015	0.021	0.025	0.029	0.032	0.036
57	0.020	0.028	0.033	0.038	0.043	0.048
58	0.024	0.033	0.040	0.046	0.052	0.058
59	0.028	0.039	0.048	0.054	0.060	0.067
60	0.049	0.069	0.083	0.094	0.105	0.118
61	0.062	0.087	0.106	0.120	0.133	0.150
62	0.104	0.146	0.177	0.200	0.223	0.251
63	0.099	0.139	0.169	0.191	0.213	0.239
64	0.097	0.136	0.165	0.186	0.209	0.233
65	0.140	0.197	0.240	0.271	0.302	0.339
66	0.092	0.130	0.157	0.177	0.198	0.222
67	0.129	0.181	0.220	0.249	0.277	0.311
68	0.092	0.129	0.156	0.177	0.197	0.221
69	0.092	0.130	0.158	0.178	0.199	0.224
70	0.103	0.144	0.175	0.198	0.221	0.248

Public Agency Miscellaneous 2% at 60

	Duration of Service					
Age	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.010	0.011	0.014	0.014	0.017	0.017
51	0.017	0.013	0.014	0.010	0.010	0.010
52	0.014	0.014	0.018	0.015	0.016	0.016
53	0.015	0.012	0.013	0.010	0.011	0.011
54	0.006	0.010	0.017	0.016	0.018	0.018
55	0.012	0.016	0.024	0.032	0.036	0.036
56	0.010	0.014	0.023	0.030	0.034	0.034
57	0.006	0.018	0.030	0.040	0.044	0.044
58	0.022	0.023	0.033	0.042	0.046	0.046
59	0.039	0.033	0.040	0.047	0.050	0.050
60	0.063	0.069	0.074	0.090	0.137	0.116
61	0.044	0.058	0.066	0.083	0.131	0.113
62	0.084	0.107	0.121	0.153	0.238	0.205
63	0.173	0.166	0.165	0.191	0.283	0.235
64	0.120	0.145	0.164	0.147	0.160	0.172
65	0.138	0.160	0.214	0.216	0.237	0.283
66	0.198	0.228	0.249	0.216	0.228	0.239
67	0.207	0.242	0.230	0.233	0.233	0.233
68	0.201	0.234	0.225	0.231	0.231	0.231
69	0.152	0.173	0.164	0.166	0.166	0.166
70	0.200	0.200	0.200	0.200	0.200	0.200

Service Retirement

Public Agency Miscellaneous 2% at 55

	Duration of Service					
Age	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.014	0.014	0.017	0.021	0.023	0.024
51	0.013	0.017	0.017	0.018	0.018	0.019
52	0.013	0.018	0.018	0.020	0.020	0.021
53	0.013	0.019	0.021	0.024	0.025	0.026
54	0.017	0.025	0.028	0.032	0.033	0.035
55	0.045	0.042	0.053	0.086	0.098	0.123
56	0.018	0.036	0.056	0.086	0.102	0.119
57	0.041	0.046	0.056	0.076	0.094	0.120
58	0.052	0.044	0.048	0.074	0.106	0.123
59	0.043	0.058	0.073	0.092	0.105	0.126
60	0.059	0.064	0.083	0.115	0.154	0.170
61	0.087	0.074	0.087	0.107	0.147	0.168
62	0.115	0.123	0.151	0.180	0.227	0.237
63	0.116	0.127	0.164	0.202	0.252	0.261
64	0.084	0.138	0.153	0.190	0.227	0.228
65	0.167	0.187	0.210	0.262	0.288	0.291
66	0.187	0.258	0.280	0.308	0.318	0.319
67	0.195	0.235	0.244	0.277	0.269	0.280
68	0.228	0.248	0.250	0.241	0.245	0.245
69	0.188	0.201	0.209	0.219	0.231	0.231
70	0.229	0.229	0.229	0.229	0.229	0.229

Public Agency Miscellaneous 2.5% at 55

	Duration of Service					
Age	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.014	0.017	0.027	0.035	0.046	0.050
51	0.019	0.021	0.025	0.030	0.038	0.040
52	0.018	0.020	0.026	0.034	0.038	0.037
53	0.013	0.021	0.031	0.045	0.052	0.053
54	0.025	0.025	0.030	0.046	0.057	0.068
55	0.029	0.042	0.064	0.109	0.150	0.225
56	0.036	0.047	0.068	0.106	0.134	0.194
57	0.051	0.047	0.060	0.092	0.116	0.166
58	0.035	0.046	0.062	0.093	0.119	0.170
59	0.029	0.053	0.072	0.112	0.139	0.165
60	0.039	0.069	0.094	0.157	0.177	0.221
61	0.080	0.077	0.086	0.140	0.167	0.205
62	0.086	0.131	0.149	0.220	0.244	0.284
63	0.135	0.135	0.147	0.214	0.222	0.262
64	0.114	0.128	0.158	0.177	0.233	0.229
65	0.112	0.174	0.222	0.209	0.268	0.273
66	0.235	0.254	0.297	0.289	0.321	0.337
67	0.237	0.240	0.267	0.249	0.267	0.277
68	0.258	0.271	0.275	0.207	0.210	0.212
69	0.117	0.208	0.266	0.219	0.250	0.270
70	0.229	0.229	0.229	0.229	0.229	0.229

Service Retirement

Public Agency Miscellaneous 2.7% at 55

	Duration of Service					
Age	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.011	0.016	0.022	0.033	0.034	0.038
51	0.018	0.019	0.023	0.032	0.031	0.031
52	0.019	0.020	0.026	0.035	0.034	0.037
53	0.020	0.020	0.025	0.043	0.048	0.053
54	0.018	0.030	0.040	0.052	0.053	0.070
55	0.045	0.058	0.082	0.138	0.208	0.278
56	0.057	0.062	0.080	0.121	0.178	0.222
57	0.045	0.052	0.071	0.106	0.147	0.182
58	0.074	0.060	0.074	0.118	0.163	0.182
59	0.058	0.067	0.086	0.123	0.158	0.187
60	0.087	0.084	0.096	0.142	0.165	0.198
61	0.073	0.084	0.101	0.138	0.173	0.218
62	0.130	0.133	0.146	0.187	0.214	0.249
63	0.122	0.140	0.160	0.204	0.209	0.243
64	0.104	0.124	0.154	0.202	0.214	0.230
65	0.182	0.201	0.242	0.264	0.293	0.293
66	0.272	0.249	0.273	0.285	0.312	0.312
67	0.182	0.217	0.254	0.249	0.264	0.264
68	0.223	0.197	0.218	0.242	0.273	0.273
69	0.217	0.217	0.217	0.217	0.217	0.217
70	0.227	0.227	0.227	0.227	0.227	0.227

Public Agency Miscellaneous 3% at 60

	Duration of Service					
Age	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.015	0.020	0.025	0.039	0.040	0.044
51	0.041	0.034	0.032	0.041	0.036	0.037
52	0.024	0.020	0.022	0.039	0.040	0.041
53	0.018	0.024	0.032	0.047	0.048	0.057
54	0.033	0.033	0.035	0.051	0.049	0.052
55	0.137	0.043	0.051	0.065	0.076	0.108
56	0.173	0.038	0.054	0.075	0.085	0.117
57	0.019	0.035	0.059	0.088	0.111	0.134
58	0.011	0.040	0.070	0.105	0.133	0.162
59	0.194	0.056	0.064	0.081	0.113	0.163
60	0.081	0.085	0.133	0.215	0.280	0.333
61	0.080	0.090	0.134	0.170	0.223	0.292
62	0.137	0.153	0.201	0.250	0.278	0.288
63	0.128	0.140	0.183	0.227	0.251	0.260
64	0.174	0.147	0.173	0.224	0.239	0.264
65	0.152	0.201	0.262	0.299	0.323	0.323
66	0.272	0.273	0.317	0.355	0.380	0.380
67	0.218	0.237	0.268	0.274	0.284	0.284
68	0.200	0.228	0.269	0.285	0.299	0.299
69	0.250	0.250	0.250	0.250	0.250	0.250
70	0.245	0.245	0.245	0.245	0.245	0.245

Service Retirement

Public Agency Miscellaneous 2% at 62

	Duration of Service					
Age	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.000	0.000	0.000	0.000	0.000	0.000
51	0.000	0.000	0.000	0.000	0.000	0.000
52	0.005	0.008	0.012	0.015	0.019	0.031
53	0.007	0.011	0.014	0.018	0.021	0.032
54	0.007	0.011	0.015	0.019	0.023	0.034
55	0.010	0.019	0.028	0.036	0.061	0.096
56	0.014	0.026	0.038	0.050	0.075	0.108
57	0.018	0.029	0.039	0.050	0.074	0.107
58	0.023	0.035	0.048	0.060	0.073	0.099
59	0.025	0.038	0.051	0.065	0.092	0.128
60	0.031	0.051	0.071	0.091	0.111	0.138
61	0.038	0.058	0.079	0.100	0.121	0.167
62	0.044	0.074	0.104	0.134	0.164	0.214
63	0.077	0.105	0.134	0.163	0.192	0.237
64	0.072	0.101	0.129	0.158	0.187	0.242
65	0.108	0.141	0.173	0.206	0.239	0.300
66	0.132	0.172	0.212	0.252	0.292	0.366
67	0.132	0.172	0.212	0.252	0.292	0.366
68	0.120	0.156	0.193	0.229	0.265	0.333
69	0.120	0.156	0.193	0.229	0.265	0.333
70	0.120	0.156	0.193	0.229	0.265	0.333

Service Retirement

Public Agency Fire Half Pay at 55 and 2% at 55

Age	Rate	Age	Rate
50	0.016	56	0.111
51	0.000	57	0.000
52	0.034	58	0.095
53	0.020	59	0.044
54	0.041	60	1.000
55	0.075		

Public Agency Police Half Pay at 55 and 2% at 55

Age	Rate	Age	Rate
50	0.026	56	0.069
51	0.000	57	0.051
52	0.016	58	0.072
53	0.027	59	0.070
54	0.010	60	0.300
55	0.167		

Service Retirement

Public Agency Police 2% at 50

	Duration of Service					
Age	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.018	0.077	0.056	0.046	0.043	0.046
51	0.022	0.087	0.060	0.048	0.044	0.047
52	0.020	0.102	0.081	0.071	0.069	0.075
53	0.016	0.072	0.053	0.045	0.042	0.046
54	0.006	0.071	0.071	0.069	0.072	0.080
55	0.009	0.040	0.099	0.157	0.186	0.186
56	0.020	0.051	0.108	0.165	0.194	0.194
57	0.036	0.072	0.106	0.139	0.156	0.156
58	0.001	0.046	0.089	0.130	0.152	0.152
59	0.066	0.094	0.119	0.143	0.155	0.155
60	0.177	0.177	0.177	0.177	0.177	0.177
61	0.134	0.134	0.134	0.134	0.134	0.134
62	0.184	0.184	0.184	0.184	0.184	0.184
63	0.250	0.250	0.250	0.250	0.250	0.250
64	0.177	0.177	0.177	0.177	0.177	0.177
65	1.000	1.000	1.000	1.000	1.000	1.000

- These rates also apply to County Peace officers, Local Prosecutors, Local Sheriff, School Police, and Other Safety.

Service Retirement

Public Agency Fire 2% at 50

	Duration of Service					
Age	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.054	0.054	0.056	0.080	0.064	0.066
51	0.020	0.020	0.021	0.030	0.024	0.024
52	0.037	0.037	0.038	0.054	0.043	0.045
53	0.051	0.051	0.053	0.076	0.061	0.063
54	0.082	0.082	0.085	0.121	0.097	0.100
55	0.139	0.139	0.139	0.139	0.139	0.139
56	0.129	0.129	0.129	0.129	0.129	0.129
57	0.085	0.085	0.085	0.085	0.085	0.085
58	0.119	0.119	0.119	0.119	0.119	0.119
59	0.167	0.167	0.167	0.167	0.167	0.167
60	0.152	0.152	0.152	0.152	0.152	0.152
61	0.179	0.179	0.179	0.179	0.179	0.179
62	0.179	0.179	0.179	0.179	0.179	0.179
63	0.179	0.179	0.179	0.179	0.179	0.179
64	0.179	0.179	0.179	0.179	0.179	0.179
65	1.000	1.000	1.000	1.000	1.000	1.000

Service Retirement

Public Agency Police 3% at 55

	Duration of Service					
Age	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.019	0.053	0.045	0.054	0.057	0.061
51	0.002	0.017	0.028	0.044	0.053	0.060
52	0.002	0.031	0.037	0.051	0.059	0.066
53	0.026	0.049	0.049	0.080	0.099	0.114
54	0.019	0.034	0.047	0.091	0.121	0.142
55	0.006	0.115	0.141	0.199	0.231	0.259
56	0.017	0.188	0.121	0.173	0.199	0.199
57	0.008	0.137	0.093	0.136	0.157	0.157
58	0.017	0.126	0.105	0.164	0.194	0.194
59	0.026	0.146	0.110	0.167	0.195	0.195
60	0.155	0.155	0.155	0.155	0.155	0.155
61	0.210	0.210	0.210	0.210	0.210	0.210
62	0.262	0.262	0.262	0.262	0.262	0.262
63	0.172	0.172	0.172	0.172	0.172	0.172
64	0.227	0.227	0.227	0.227	0.227	0.227
65	1.000	1.000	1.000	1.000	1.000	1.000

- These rates also apply to County Peace officers, Local Prosecutors, Local Sheriff, School Police, and Other Safety.

Service Retirement

Public Agency Fire 3% at 55

	Duration of Service					
Age	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.003	0.006	0.013	0.019	0.025	0.028
51	0.004	0.008	0.017	0.026	0.034	0.038
52	0.005	0.011	0.022	0.033	0.044	0.049
53	0.005	0.034	0.024	0.038	0.069	0.138
54	0.007	0.047	0.032	0.051	0.094	0.187
55	0.010	0.067	0.046	0.073	0.134	0.266
56	0.010	0.063	0.044	0.069	0.127	0.253
57	0.135	0.100	0.148	0.196	0.220	0.220
58	0.083	0.062	0.091	0.120	0.135	0.135
59	0.137	0.053	0.084	0.146	0.177	0.177
60	0.162	0.063	0.099	0.172	0.208	0.208
61	0.598	0.231	0.231	0.231	0.231	0.231
62	0.621	0.240	0.240	0.240	0.240	0.240
63	0.236	0.236	0.236	0.236	0.236	0.236
64	0.236	0.236	0.236	0.236	0.236	0.236
65	1.000	1.000	1.000	1.000	1.000	1.000

Service Retirement

Public Agency Police 3% at 50

	Duration of Service					
Age	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.124	0.103	0.113	0.143	0.244	0.376
51	0.060	0.081	0.087	0.125	0.207	0.294
52	0.016	0.055	0.111	0.148	0.192	0.235
53	0.072	0.074	0.098	0.142	0.189	0.237
54	0.018	0.049	0.105	0.123	0.187	0.271
55	0.069	0.074	0.081	0.113	0.209	0.305
56	0.064	0.108	0.113	0.125	0.190	0.288
57	0.056	0.109	0.160	0.182	0.210	0.210
58	0.108	0.129	0.173	0.189	0.214	0.214
59	0.093	0.144	0.204	0.229	0.262	0.262
60	0.343	0.180	0.159	0.188	0.247	0.247
61	0.221	0.221	0.221	0.221	0.221	0.221
62	0.213	0.213	0.213	0.213	0.213	0.213
63	0.233	0.233	0.233	0.233	0.233	0.233
64	0.234	0.234	0.234	0.234	0.234	0.234
65	1.000	1.000	1.000	1.000	1.000	1.000

- These rates also apply to County Peace officers, Local Prosecutors, Local Sheriff, School Police, and Other Safety.

Service Retirement

Public Agency Fire 3% at 50

	Duration of Service					
Age	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.095	0.048	0.053	0.093	0.134	0.175
51	0.016	0.032	0.053	0.085	0.117	0.149
52	0.013	0.032	0.054	0.087	0.120	0.154
53	0.085	0.044	0.049	0.089	0.129	0.170
54	0.038	0.065	0.074	0.105	0.136	0.167
55	0.042	0.043	0.049	0.085	0.132	0.215
56	0.133	0.103	0.075	0.113	0.151	0.209
57	0.062	0.048	0.060	0.124	0.172	0.213
58	0.124	0.097	0.092	0.153	0.194	0.227
59	0.092	0.071	0.078	0.144	0.192	0.233
60	0.056	0.044	0.061	0.131	0.186	0.233
61	0.282	0.219	0.158	0.198	0.233	0.260
62	0.292	0.227	0.164	0.205	0.241	0.269
63	0.196	0.196	0.196	0.196	0.196	0.196
64	0.197	0.197	0.197	0.197	0.197	0.197
65	1.000	1.000	1.000	1.000	1.000	1.000

Service Retirement

Public Agency Police 2% at 57

	Duration of Service					
Age	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.040	0.040	0.040	0.040	0.040	0.080
51	0.028	0.028	0.028	0.028	0.040	0.066
52	0.028	0.028	0.028	0.028	0.043	0.061
53	0.028	0.028	0.028	0.028	0.057	0.086
54	0.028	0.028	0.028	0.032	0.069	0.110
55	0.050	0.050	0.050	0.067	0.099	0.179
56	0.046	0.046	0.046	0.062	0.090	0.160
57	0.054	0.054	0.054	0.072	0.106	0.191
58	0.060	0.060	0.060	0.066	0.103	0.171
59	0.060	0.060	0.060	0.069	0.105	0.171
60	0.113	0.113	0.113	0.113	0.113	0.171
61	0.108	0.108	0.108	0.108	0.108	0.128
62	0.113	0.113	0.113	0.113	0.113	0.159
63	0.113	0.113	0.113	0.113	0.113	0.159
64	0.113	0.113	0.113	0.113	0.113	0.239
65	1.000	1.000	1.000	1.000	1.000	1.000

- These rates also apply to County Peace officers, Local Prosecutors, Local Sheriff, School Police, and Other Safety.

Service Retirement

Public Agency Fire 2% at 57

	Duration of Service					
Age	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.005	0.005	0.005	0.005	0.008	0.012
51	0.006	0.006	0.006	0.006	0.009	0.013
52	0.012	0.012	0.012	0.012	0.019	0.028
53	0.033	0.033	0.033	0.033	0.050	0.075
54	0.045	0.045	0.045	0.045	0.069	0.103
55	0.061	0.061	0.061	0.061	0.094	0.140
56	0.055	0.055	0.055	0.055	0.084	0.126
57	0.081	0.081	0.081	0.081	0.125	0.187
58	0.059	0.059	0.059	0.059	0.091	0.137
59	0.055	0.055	0.055	0.055	0.084	0.126
60	0.085	0.085	0.085	0.085	0.131	0.196
61	0.085	0.085	0.085	0.085	0.131	0.196
62	0.085	0.085	0.085	0.085	0.131	0.196
63	0.085	0.085	0.085	0.085	0.131	0.196
64	0.085	0.085	0.085	0.085	0.131	0.196
65	1.000	1.000	1.000	1.000	1.000	1.000

Service Retirement

Public Agency Police 2.5% at 57

	Duration of Service					
Age	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.050	0.050	0.050	0.050	0.050	0.100
51	0.038	0.038	0.038	0.038	0.055	0.089
52	0.038	0.038	0.038	0.038	0.058	0.082
53	0.036	0.036	0.036	0.036	0.073	0.111
54	0.036	0.036	0.036	0.041	0.088	0.142
55	0.061	0.061	0.061	0.082	0.120	0.217
56	0.056	0.056	0.056	0.075	0.110	0.194
57	0.060	0.060	0.060	0.080	0.118	0.213
58	0.072	0.072	0.072	0.079	0.124	0.205
59	0.072	0.072	0.072	0.083	0.126	0.205
60	0.135	0.135	0.135	0.135	0.135	0.205
61	0.130	0.130	0.130	0.130	0.130	0.153
62	0.135	0.135	0.135	0.135	0.135	0.191
63	0.135	0.135	0.135	0.135	0.135	0.191
64	0.135	0.135	0.135	0.135	0.135	0.287
65	1.000	1.000	1.000	1.000	1.000	1.000

- These rates also apply to County Peace officers, Local Prosecutors, Local Sheriff, School Police, and Other Safety.

Service Retirement

Public Agency Fire 2.5% at 57

	Duration of Service					
Age	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.007	0.007	0.007	0.007	0.010	0.015
51	0.008	0.008	0.008	0.008	0.012	0.018
52	0.016	0.016	0.016	0.016	0.025	0.038
53	0.042	0.042	0.042	0.042	0.064	0.096
54	0.057	0.057	0.057	0.057	0.088	0.132
55	0.074	0.074	0.074	0.074	0.114	0.170
56	0.066	0.066	0.066	0.066	0.102	0.153
57	0.090	0.090	0.090	0.090	0.139	0.208
58	0.071	0.071	0.071	0.071	0.110	0.164
59	0.066	0.066	0.066	0.066	0.101	0.151
60	0.102	0.102	0.102	0.102	0.157	0.235
61	0.102	0.102	0.102	0.102	0.157	0.236
62	0.102	0.102	0.102	0.102	0.157	0.236
63	0.102	0.102	0.102	0.102	0.157	0.236
64	0.102	0.102	0.102	0.102	0.157	0.236
65	1.000	1.000	1.000	1.000	1.000	1.000

Service Retirement

Public Agency Police 2.7% at 57

	Duration of Service					
Age	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.050	0.050	0.050	0.050	0.050	0.100
51	0.040	0.040	0.040	0.040	0.058	0.094
52	0.038	0.038	0.038	0.038	0.058	0.083
53	0.038	0.038	0.038	0.038	0.077	0.117
54	0.038	0.038	0.038	0.044	0.093	0.150
55	0.068	0.068	0.068	0.091	0.134	0.242
56	0.063	0.063	0.063	0.084	0.123	0.217
57	0.060	0.060	0.060	0.080	0.118	0.213
58	0.080	0.080	0.080	0.088	0.138	0.228
59	0.080	0.080	0.080	0.092	0.140	0.228
60	0.150	0.150	0.150	0.150	0.150	0.228
61	0.144	0.144	0.144	0.144	0.144	0.170
62	0.150	0.150	0.150	0.150	0.150	0.213
63	0.150	0.150	0.150	0.150	0.150	0.213
64	0.150	0.150	0.150	0.150	0.150	0.319
65	1.000	1.000	1.000	1.000	1.000	1.000

- These rates also apply to County Peace officers, Local Prosecutors, Local Sheriff, School Police, and Other Safety.

Service Retirement

Public Agency Fire 2.7% at 57

	Duration of Service					
Age	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.007	0.007	0.007	0.007	0.010	0.015
51	0.008	0.008	0.008	0.008	0.013	0.019
52	0.016	0.016	0.016	0.016	0.025	0.038
53	0.044	0.044	0.044	0.044	0.068	0.102
54	0.061	0.061	0.061	0.061	0.093	0.140
55	0.083	0.083	0.083	0.083	0.127	0.190
56	0.074	0.074	0.074	0.074	0.114	0.171
57	0.090	0.090	0.090	0.090	0.139	0.208
58	0.079	0.079	0.079	0.079	0.122	0.182
59	0.073	0.073	0.073	0.073	0.112	0.168
60	0.114	0.114	0.114	0.114	0.175	0.262
61	0.114	0.114	0.114	0.114	0.175	0.262
62	0.114	0.114	0.114	0.114	0.175	0.262
63	0.114	0.114	0.114	0.114	0.175	0.262
64	0.114	0.114	0.114	0.114	0.175	0.262
65	1.000	1.000	1.000	1.000	1.000	1.000

Service Retirement

Schools 2% at 55

	Duration of Service					
Age	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.003	0.004	0.006	0.007	0.010	0.010
51	0.004	0.005	0.007	0.008	0.011	0.011
52	0.005	0.007	0.008	0.009	0.012	0.012
53	0.007	0.008	0.010	0.012	0.015	0.015
54	0.006	0.009	0.012	0.015	0.020	0.021
55	0.011	0.023	0.034	0.057	0.070	0.090
56	0.012	0.027	0.036	0.056	0.073	0.095
57	0.016	0.027	0.036	0.055	0.068	0.087
58	0.019	0.030	0.040	0.062	0.078	0.103
59	0.023	0.034	0.046	0.070	0.085	0.109
60	0.022	0.043	0.062	0.095	0.113	0.141
61	0.030	0.051	0.071	0.103	0.124	0.154
62	0.065	0.098	0.128	0.188	0.216	0.248
63	0.075	0.112	0.144	0.197	0.222	0.268
64	0.091	0.116	0.138	0.180	0.196	0.231
65	0.163	0.164	0.197	0.232	0.250	0.271
66	0.208	0.204	0.243	0.282	0.301	0.315
67	0.189	0.185	0.221	0.257	0.274	0.287
68	0.127	0.158	0.200	0.227	0.241	0.244
69	0.168	0.162	0.189	0.217	0.229	0.238
70	0.191	0.190	0.237	0.250	0.246	0.254

Schools 2% at 62

	Duration of Service					
Age	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.000	0.000	0.000	0.000	0.000	0.000
51	0.000	0.000	0.000	0.000	0.000	0.000
52	0.004	0.007	0.010	0.011	0.013	0.015
53	0.004	0.008	0.010	0.013	0.014	0.016
54	0.005	0.011	0.015	0.018	0.020	0.022
55	0.014	0.027	0.038	0.045	0.050	0.056
56	0.013	0.026	0.037	0.043	0.048	0.055
57	0.013	0.027	0.038	0.045	0.050	0.055
58	0.017	0.034	0.047	0.056	0.062	0.069
59	0.019	0.037	0.052	0.062	0.068	0.076
60	0.026	0.053	0.074	0.087	0.097	0.108
61	0.030	0.058	0.081	0.095	0.106	0.119
62	0.053	0.105	0.147	0.174	0.194	0.217
63	0.054	0.107	0.151	0.178	0.198	0.222
64	0.053	0.105	0.147	0.174	0.194	0.216
65	0.072	0.142	0.199	0.235	0.262	0.293
66	0.077	0.152	0.213	0.252	0.281	0.314
67	0.070	0.139	0.194	0.229	0.255	0.286
68	0.063	0.124	0.173	0.205	0.228	0.255
69	0.066	0.130	0.183	0.216	0.241	0.270
70	0.071	0.140	0.196	0.231	0.258	0.289

Miscellaneous

Internal Revenue Code Section 415

The limitations on benefits imposed by Internal Revenue Code Section 415 are taken into account in this valuation. Each year the impact of any changes in this limitation since the prior valuation is included and amortized as part of the actuarial gain or loss base. This results in lower contributions for those employers contributing to the Replacement Benefit Fund and protects CalPERS from prefunding expected benefits in excess of limits imposed by federal tax law. The Section 415(b) dollar limit for the 2021 calendar year is $230,000.

Internal Revenue Code Section 401(a)(17)

The limitations on compensation imposed by Internal Revenue Code Section 401(a)(17) are taken into account in this valuation. Each year, the impact of any changes in the compensation limitation since the prior valuation is included and amortized as part of the actuarial gain or loss base. The compensation limit for classic members for the 2021 calendar year is $290,000.

Appendix B

Principal Plan Provisions

The following is a description of the principal plan provisions used in calculating costs and liabilities. We have indicated whether a plan provision is standard or optional. Standard benefits are applicable to all members while optional benefits vary among employers. Optional benefits that apply to a single period of time, such as Golden Handshakes, have not been included. Many of the statements in this summary are general in nature, and are intended to provide an easily understood summary of the Public Employees' Retirement Law. The law itself governs in all situations.

Service Retirement

Eligibility

A classic CalPERS member or PEPRA Safety member becomes eligible for Service Retirement upon attainment of age 50 with at least 5 years of credited service (total service across all CalPERS employers, and with certain other retirement systems with which CalPERS has reciprocity agreements). For employees hired into a plan with the 1.5% at age 65 formula, eligibility for service retirement is age 55 with at least 5 years of service. PEPRA Miscellaneous members become eligible for service retirement upon attainment of age 52 with at least 5 years of service.

Benefit

The service retirement benefit is a monthly allowance equal to the product of the *benefit factor*, *years of service*, and *final compensation.*

- The *benefit factor* depends on the benefit formula specified in the agency's contract. The table below shows the factors for each of the available formulas. Factors vary by the member's age at retirement. Listed are the factors for retirement at whole year ages:

Miscellaneous Plan Formulas

Retirement Age	1.5% at 65	2% at 60	2% at 55	2.5% at 55	2.7% at 55	3% at 60	PEPRA 2% at 62
50	0.5000%	1.092%	1.426%	2.000%	2.000%	2.000%	N/A
51	0.5667%	1.156%	1.522%	2.100%	2.140%	2.100%	N/A
52	0.6334%	1.224%	1.628%	2.200%	2.280%	2.200%	1.000%
53	0.7000%	1.296%	1.742%	2.300%	2.420%	2.300%	1.100%
54	0.7667%	1.376%	1.866%	2.400%	2.560%	2.400%	1.200%
55	0.8334%	1.460%	2.000%	2.500%	2.700%	2.500%	1.300%
56	0.9000%	1.552%	2.052%	2.500%	2.700%	2.600%	1.400%
57	0.9667%	1.650%	2.104%	2.500%	2.700%	2.700%	1.500%
58	1.0334%	1.758%	2.156%	2.500%	2.700%	2.800%	1.600%
59	1.1000%	1.874%	2.210%	2.500%	2.700%	2.900%	1.700%
60	1.1667%	2.000%	2.262%	2.500%	2.700%	3.000%	1.800%
61	1.2334%	2.134%	2.314%	2.500%	2.700%	3.000%	1.900%
62	1.3000%	2.272%	2.366%	2.500%	2.700%	3.000%	2.000%
63	1.3667%	2.418%	2.418%	2.500%	2.700%	3.000%	2.100%
64	1.4334%	2.418%	2.418%	2.500%	2.700%	3.000%	2.200%
65	1.5000%	2.418%	2.418%	2.500%	2.700%	3.000%	2.300%
66	1.5000%	2.418%	2.418%	2.500%	2.700%	3.000%	2.400%
67 & up	1.5000%	2.418%	2.418%	2.500%	2.700%	3.000%	2.500%

Safety Plan Formulas

Retirement Age	Half Pay at 55*	2% at 55	2% at 50	3% at 55	3% at 50
50	1.783%	1.426%	2.000%	2.400%	3.000%
51	1.903%	1.522%	2.140%	2.520%	3.000%
52	2.035%	1.628%	2.280%	2.640%	3.000%
53	2.178%	1.742%	2.420%	2.760%	3.000%
54	2.333%	1.866%	2.560%	2.880%	3.000%
55 & Up	2.500%	2.000%	2.700%	3.000%	3.000%

* For this formula, the benefit factor also varies by entry age. The factors shown are for members with an entry age of 35 or greater. If entry age is less than 35, then the age 55 benefit factor is 50% divided by the difference between age 55 and entry age. The benefit factor for ages prior to age 55 is the same proportion of the age 55 benefit factor as in the above table.

PEPRA Safety Plan Formulas

Retirement Age	2% at 57	2.5% at 57	2.7% at 57
50	1.426%	2.000%	2.000%
51	1.508%	2.071%	2.100%
52	1.590%	2.143%	2.200%
53	1.672%	2.214%	2.300%
54	1.754%	2.286%	2.400%
55	1.836%	2.357%	2.500%
56	1.918%	2.429%	2.600%
57 & Up	2.000%	2.500%	2.700%

- The *years of service* is the amount credited by CalPERS to a member while he or she is employed in this group (or for other periods that are recognized under the employer's contract with CalPERS). For a member who has earned service with multiple CalPERS employers, the benefit from each employer is calculated separately according to each employer's contract, and then added together for the total allowance. An agency may contract for an optional benefit where any unused sick leave accumulated at the time of retirement will be converted to credited service at a rate of 0.004 years of service for each day of sick leave.

- The *final compensation* is the monthly average of the member's highest 36 or 12 consecutive months' full-time equivalent monthly pay (no matter which CalPERS employer paid this compensation). The standard benefit is 36 months. Employers had the option of providing a final compensation equal to the highest 12 consecutive months for classic plans only. Final compensation must be defined by the highest 36 consecutive months' pay under the 1.5% at 65 formula. PEPRA members have a cap on the annual salary that can be used to calculate final compensation for all new members based on the Social Security contribution and benefit base. For employees that participate in Social Security this cap is $128,059 for 2021 and for those employees that do not participate in Social Security the cap for 2021 is $153,671. Adjustments to the caps are permitted annually based on changes to the CPI for all urban consumers.

- Employees must be covered by Social Security with the 1.5% at 65 formula. Social Security is optional for all other benefit formulas. For employees covered by Social Security, the modified formula is the standard benefit. Under this type of formula, the final compensation is offset by $133.33 (or by one third if the final compensation is less than $400). Employers may contract for the full benefit with Social Security that will eliminate the offset applicable to the final compensation. For employees not covered by Social Security, the full benefit is paid with no offsets.

Auxiliary organizations of the CSUC system may elect reduced contribution rates, in which case the offset is $317 if members are not covered by Social Security or $513 if members are covered by Social Security.

- The Miscellaneous and PEPRA Safety service retirement benefit is not capped. The classic Safety service retirement benefit is capped at 90% of final compensation.

Vested Deferred Retirement

Eligibility for Deferred Status

A CalPERS member becomes eligible for a deferred vested retirement benefit when he or she leaves employment, keeps his or her contribution account balance on deposit with CalPERS, **and** has earned at least 5 years of credited service (total service across all CalPERS employers, and with certain other retirement systems with which CalPERS has reciprocity agreements).

Eligibility to Start Receiving Benefits

The CalPERS classic members and PEPRA Safety members become eligible to receive the deferred retirement benefit upon satisfying the eligibility requirements for deferred status and upon attainment of age 50 (55 for employees hired into a 1.5% at 65 plan). PEPRA Miscellaneous members become eligible to receive the deferred retirement benefit upon satisfying the eligibility requirements for deferred status and upon attainment of age 52.

Benefit

The vested deferred retirement benefit is the same as the service retirement benefit, where the benefit factor is based on the member's age at allowance commencement. For members who have earned service with multiple CalPERS employers, the benefit from each employer is calculated separately according to each employer's contract, and then added together for the total allowance.

Non-Industrial (Non-Job Related) Disability Retirement

Eligibility

A CalPERS member is eligible for Non-Industrial Disability Retirement if he or she becomes *disabled* and has at least 5 years of credited service (total service across all CalPERS employers, and with certain other retirement systems with which CalPERS has reciprocity agreements). There is no special age requirement. *Disabled* means the member is unable to perform his or her job because of an illness or injury, which is expected to be permanent or to last indefinitely. The illness or injury does not have to be job related. A CalPERS member must be actively employed by any CalPERS employer at the time of disability in order to be eligible for this benefit.

Standard Benefit

The standard Non-Industrial Disability Retirement benefit is a monthly allowance equal to 1.8% of final compensation, multiplied by *service*, which is determined as follows:

- *Service* is CalPERS credited service, for members with less than 10 years of service or greater than 18.518 years of service; or

- *Service* is CalPERS credited service plus the additional number of years that the member would have worked until age 60, for members with at least 10 years but not more than 18.518 years of service. The maximum benefit in this case is 33⅓% of final compensation.

Improved Benefit

Employers have the option of providing the improved Non-Industrial Disability Retirement benefit. This benefit provides a monthly allowance equal to 30% of final compensation for the first 5 years of service, plus 1% for each additional year of service to a maximum of 50% of final compensation.

Members who are eligible for a larger service retirement benefit may choose to receive that benefit in lieu of a disability benefit. Members eligible to retire, and who have attained the normal retirement age determined by their service retirement benefit formula, will receive the same dollar amount for disability retirement as that payable for service retirement. For members who have earned service with multiple CalPERS employers, the benefit attributed to each employer is the total disability allowance multiplied by the ratio of service with a particular employer to the total CalPERS service.

Industrial (Job Related) Disability Retirement

This is a standard benefit for Safety members except those described in Section 20423.6. For excluded Safety members and all Miscellaneous members, employers have the option of providing this benefit. An employer may choose to provide the increased benefit option or the improved benefit option.

Eligibility

An employee is eligible for Industrial Disability Retirement if he or she becomes disabled while working, where disabled means the member is unable to perform the duties of the job because of a work-related illness or injury, which is expected to be permanent or to last indefinitely. A CalPERS member who has left active employment within this group is not eligible for this benefit, except to the extent described below.

Standard Benefit

The standard Industrial Disability Retirement benefit is a monthly allowance equal to 50% of final compensation.

Increased Benefit (75% of Final Compensation)

The increased Industrial Disability Retirement benefit is a monthly allowance equal to 75% of final compensation for total disability.

Improved Benefit (50% to 90% of Final Compensation)

The improved Industrial Disability Retirement benefit is a monthly allowance equal to the Workman's Compensation Appeals Board permanent disability rate percentage (if 50% or greater, with a maximum of 90%) times the final compensation.

For a CalPERS member not actively employed in this group who became disabled while employed by some other CalPERS employer, the benefit is a return of accumulated member contributions with respect to employment in this group. With the standard or increased benefit, a member may also choose to receive the annuitization of the accumulated member contributions.

If a member is eligible for service retirement and if the service retirement benefit is more than the industrial disability retirement benefit, the member may choose to receive the larger benefit.

Post-Retirement Death Benefit

Standard Lump Sum Payment

Upon the death of a retiree, a one-time lump sum payment of $500 will be made to the retiree's designated survivor(s), or to the retiree's estate.

Improved Lump Sum Payment

Employers have the option of providing an improved lump sum death benefit of $600, $2,000, $3,000, $4,000 or $5,000.

Form of Payment for Retirement Allowance

Standard Form of Payment

Generally, the retirement allowance is paid to the retiree in the form of an annuity for as long as he or she is alive. The retiree may choose to provide for a portion of his or her allowance to be paid to any designated beneficiary after the retiree's death. CalPERS provides for a variety of such benefit options, which the retiree pays for by taking a reduction in his or her retirement allowance. Such reduction takes into account the amount to be provided to the beneficiary and the probable duration of payments (based on the ages of the member and beneficiary) made subsequent to the member's death.

Improved Form of Payment (Post-Retirement Survivor Allowance)

Employers have the option to contract for the post-retirement survivor allowance.

For retirement allowances with respect to service subject to the modified formula, 25% of the retirement allowance will automatically be continued to certain statutory beneficiaries upon the death of the retiree, without a reduction in the retiree's allowance. For retirement allowances with respect to service subject to the full or supplemental formula, 50% of the retirement allowance will automatically be continued to certain statutory beneficiaries upon the death of the retiree, without a reduction in the retiree's allowance. This additional benefit is referred to as post-retirement survivor allowance (PRSA) or simply as survivor continuance.

In other words, 25% or 50% of the allowance, the continuance portion, is paid to the retiree for as long as he or she is alive, and that same amount is continued to the retiree's spouse (or if no eligible spouse, to unmarried child(ren) until they attain age 18; or, if no eligible child(ren), to a qualifying dependent parent) for the rest of his or her lifetime. This benefit will not be discontinued in the event the spouse remarries.

The remaining 75% or 50% of the retirement allowance, which may be referred to as the option portion of the benefit, is paid to the retiree as an annuity for as long as he or she is alive. Or, the retiree may choose to provide for some of this option portion to be paid to any designated beneficiary after the retiree's death. Benefit options applicable to the option portion are the same as those offered with the standard form. The reduction is calculated in the same manner but is applied only to the option portion.

Pre-Retirement Death Benefits

Basic Death Benefit

This is a standard benefit.

Eligibility

An employee's beneficiary (or estate) may receive the basic death benefit if the member dies while actively employed. A CalPERS member must be actively employed with the CalPERS employer providing this benefit to be eligible for this benefit. A member's survivor who is eligible for any other pre-retirement death benefit may choose to receive that death benefit instead of this basic death benefit.

Benefit

The basic death benefit is a lump sum in the amount of the member's accumulated contributions, where interest is credited annually at the greater of 6% or the prevailing discount rate through the date of death, plus a lump sum in the amount of one month's salary for each completed year of current service, up to a maximum of six months' salary. For purposes of this benefit, one month's salary is defined as the member's average monthly full-time rate of compensation during the 12 months preceding death.

1957 Survivor Benefit

This is a standard benefit.

Eligibility

An employee's *eligible survivor(s)* may receive the 1957 Survivor benefit if the member dies while actively employed, has attained at least age 50 for classic and PEPRA Safety members and age 52 for PEPRA Miscellaneous members, and has at least 5 years of credited service (total service across all CalPERS employers and with certain other retirement systems with which CalPERS has reciprocity agreements). A CalPERS member must be actively employed with the CalPERS employer providing this benefit to be eligible for this benefit. An eligible survivor means the surviving spouse to whom the member was married at least one year before death or, if there is no eligible spouse, to the member's unmarried child(ren) under age 18. A member's survivor who is eligible for any other pre-retirement death benefit may choose to receive that death benefit instead of this 1957 Survivor benefit.

Benefit

The 1957 Survivor benefit is a monthly allowance equal to one-half of the unmodified service retirement benefit that the member would have been entitled to receive if the member had retired on the date of his or her death. If the benefit is payable to the spouse, the benefit is discontinued upon the death of the spouse. If the benefit is payable to dependent child(ren), the benefit will be discontinued upon death or attainment of age 18, unless the child(ren) is disabled. The total amount paid will be at least equal to the basic death benefit.

Optional Settlement 2 Death Benefit

This is an optional benefit.

Eligibility

An employee's *eligible survivor* may receive the Optional Settlement 2 Death benefit if the member dies while actively employed, has attained at least age 50 for classic and PEPRA Safety members and age 52 for PEPRA Miscellaneous members, and has at least 5 years of credited service (total service across all CalPERS employers and with certain other retirement systems with which CalPERS has reciprocity agreements). A CalPERS member who is no longer actively employed with **any** CalPERS employer is not eligible for this benefit. An *eligible survivor* means the surviving spouse to whom the member was married at least one year before death. A member's survivor who is eligible for any other pre-retirement death benefit may choose to receive that death benefit instead of this Optional Settlement 2 Death benefit.

Benefit

The Optional Settlement 2 Death benefit is a monthly allowance equal to the service retirement benefit that the member would have received had the member retired on the date of his or her death and elected 100% to continue to the eligible survivor after the member's death. The allowance is payable as long as the surviving spouse lives, at which time it is continued to any unmarried child(ren) under age 18, if applicable. The total amount paid will be at least equal to the basic death benefit.

Special Death Benefit

This is a standard benefit for Safety members except those described in Section 20423.6. For excluded Safety members and all Miscellaneous members, employers have the option of providing this benefit.

Eligibility

An employee's *eligible survivor(s)* may receive the special death benefit if the member dies while actively employed and the death is job-related. A CalPERS member who is no longer actively employed with **any** CalPERS employer is not eligible for this benefit. An *eligible survivor* means the surviving spouse to whom the member was married prior to the onset of the injury or illness that resulted in death. If there is no eligible spouse, an eligible survivor means the member's unmarried child(ren) under age 22. An eligible survivor who chooses to receive this benefit will not receive any other death benefit.

Benefit

The special death benefit is a monthly allowance equal to 50% of final compensation and will be increased whenever the compensation paid to active employees is increased but ceasing to increase when the member would have attained age 50. The allowance is payable to the surviving spouse until death at which time the allowance is continued to any unmarried child(ren) under age 22. There is a guarantee that the total amount paid will at least equal the basic death benefit.

If the member's death is the result of an accident or injury caused by external violence or physical force incurred in the performance of the member's duty, and there are *eligible* surviving child(ren) (*eligible* means unmarried child(ren) under age 22) in addition to an eligible spouse, then an **additional monthly allowance** is paid equal to the following:

- if 1 eligible child: 12.5% of final compensation
- if 2 eligible children: 20.0% of final compensation
- if 3 or more eligible children: 25.0% of final compensation

Alternate Death Benefit for Local Fire Members

This is an optional benefit available only to local fire members.

Eligibility

An employee's *eligible survivor(s)* may receive the alternate death benefit in lieu of the basic death benefit or the 1957 Survivor benefit if the member dies while actively employed and has at least 20 years of total CalPERS service. A CalPERS member who is no longer actively employed with **any** CalPERS employer is not eligible for this benefit. An *eligible survivor* means the surviving spouse to whom the member was married prior to the onset of the injury or illness that resulted in death. If there is no eligible spouse, an eligible survivor means the member's unmarried child(ren) under age 18.

Benefit

The Alternate Death benefit is a monthly allowance equal to the service retirement benefit that the member would have received had the member retired on the date of his or her death and elected Optional Settlement 2. (A retiree who elects Optional Settlement 2 receives an allowance that has been reduced so that it will continue to be paid after his or her death to a surviving beneficiary.) If the member has not yet attained age 50, the benefit is equal to that which would be payable if the member had retired at age 50, based on service credited at the time of death. The allowance is payable as long as the surviving spouse lives, at which time it is continued to any unmarried child(ren) under age 18, if applicable. The total amount paid will be at least equal to the basic death benefit.

Cost-of-Living Adjustments (COLA)

Standard Benefit

Retirement and survivor allowances are adjusted each year in May for cost of living, beginning the second calendar year after the year of retirement. The standard cost-of-living adjustment (COLA) is 2%. Annual adjustments are calculated by first determining the lesser of 1) 2% compounded from the end of the year of retirement or 2) actual rate of price inflation. The resulting increase is divided by the total increase provided in prior years. For any given year, the COLA adjustment may be less than 2% (when the rate of price inflation is low), may be greater than the rate of price inflation (when the rate of price inflation is low after several years of high price inflation) or may even be greater than 2% (when price inflation is high after several years of low price inflation).

Improved Benefit

Employers have the option of providing a COLA of 3%, 4%, or 5%, determined in the same manner as described above for the standard 2% COLA. An improved COLA is not available with the 1.5% at 65 formula.

Purchasing Power Protection Allowance (PPPA)

Retirement and survivor allowances are protected against price inflation by PPPA. PPPA benefits are cost-of-living adjustments that are intended to maintain an individual's allowance at 80% of the initial allowance at retirement adjusted for price inflation since retirement. The PPPA benefit will be coordinated with other cost-of-living adjustments provided under the plan.

Employee Contributions

Each employee contributes toward his or her retirement based upon the retirement formula. The standard employee contribution is as described below.

- The percent contributed below the monthly compensation breakpoint is 0%.
- The monthly compensation breakpoint is $0 for full and supplemental formula members and $133.33 for employees covered by the modified formula.
- The percent contributed above the monthly compensation breakpoint depends upon the benefit formula, as shown in the table below.

Benefit Formula	Percent Contributed above the Breakpoint
Miscellaneous, 1.5% at 65	2%
Miscellaneous, 2% at 60	7%
Miscellaneous, 2% at 55	7%
Miscellaneous, 2.5% at 55	8%
Miscellaneous, 2.7% at 55	8%
Miscellaneous, 3% at 60	8%
Miscellaneous, 2% at 62	50% of the Total Normal Cost
Miscellaneous, 1.5% at 65	50% of the Total Normal Cost
Safety, Half Pay at 55	Varies by entry age
Safety, 2% at 55	7%
Safety, 2% at 50	9%
Safety, 3% at 55	9%
Safety, 3% at 50	9%
Safety, 2% at 57	50% of the Total Normal Cost
Safety, 2.5% at 57	50% of the Total Normal Cost
Safety, 2.7% at 57	50% of the Total Normal Cost

The employer may choose to "pick-up" these contributions for classic members (Employer Paid Member Contributions or EPMC). EPMC is prohibited for new PEPRA members.

An employer may also include Employee Cost Sharing in the contract, where employees agree to share the cost of the employer contribution. These contributions are paid in addition to the member contribution.

Auxiliary organizations of the CSU system may elect reduced contribution rates, in which case the offset is $317 and the contribution rate is 6% if members are not covered by Social Security. If members are covered by Social Security, the offset is $513 and the contribution rate is 5%.

Refund of Employee Contributions

If the member's service with the employer ends, and if the member does not satisfy the eligibility conditions for any of the retirement benefits above, the member may elect to receive a refund of his or her employee contributions, which are credited with 6% interest compounded annually.

1959 Survivor Benefit

This is a pre-retirement death benefit available only to members not covered by Social Security. Any agency joining CalPERS subsequent to 1993 is required to provide this benefit if the members are not covered by Social Security. The benefit is optional for agencies joining CalPERS prior to 1994. Levels 1, 2, and 3 are now closed. Any new agency or any agency wishing to add this benefit or increase the current level may only choose the 4th or Indexed Level.

This benefit is not included in the results presented in this valuation. More information on this benefit is available on the CalPERS website.

Appendix C

Participant Data

- **Summary of Valuation Data**
- **Active Members**
- **Transferred and Terminated Members**
- **Retired Members and Beneficiaries**

Summary of Valuation Data

	June 30, 2020	June 30, 2021
1. **Active Members**		
a) Counts	233	222
b) Average Attained Age	52.10	52.33
c) Average Entry Age to Rate Plan	38.93	38.55
d) Average Years of Credited Service	12.93	13.49
e) Average Annual Covered Pay	$62,198	$64,532
f) Annual Covered Payroll	14,492,018	14,326,073
g) Projected Annual Payroll for Contribution Year	15,720,790	15,563,473
h) Present Value of Future Payroll	102,009,518	117,157,209
2. **Transferred Members**		
a) Counts	30	25
b) Average Attained Age	51.52	52.46
c) Average Years of Credited Service	2.46	2.13
d) Average Annual Covered Pay	$74,199	$79,201
3. **Terminated Members**		
a) Counts	148	146
b) Average Attained Age	51.51	51.43
c) Average Years of Credited Service	3.09	2.94
d) Average Annual Covered Pay	$41,856	$42,213
4. **Retired Members and Beneficiaries**		
a) Counts	212	223
b) Average Attained Age	71.04	71.62
c) Average Annual Benefits	$20,138	$20,936
5. **Active to Retired Ratio** [(1a) / (4a)]	1.10	1.00

Counts of members included in the valuation are counts of the records processed by the valuation. Multiple records may exist for those who have service in more than one valuation group. This does not result in double counting of liabilities.

Average Annual Benefits represents benefit amounts payable by this plan only. Some members may have service with another agency and would therefore have a larger total benefit than would be included as part of the average shown here.

Active Members

Counts of members included in the valuation are counts of the records processed by the valuation. Multiple records may exist for those who have service in more than one valuation group. This does not result in double counting of liabilities.

Distribution of Active Members by Age and Service

	Years of Service at Valuation Date						
Attained Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25+**	**Total**
15-24	1	0	0	0	0	0	1
25-29	5	0	0	0	0	0	5
30-34	10	5	0	0	0	0	15
35-39	2	9	2	1	0	0	14
40-44	6	8	5	4	2	0	25
45-49	5	4	3	6	5	0	23
50-54	11	6	8	5	6	2	38
55-59	3	5	2	4	7	13	34
60-64	12	10	4	7	3	9	45
65 and Over	2	2	1	4	4	9	22
All Ages	**57**	**49**	**25**	**31**	**27**	**33**	**222**

Distribution of Average Annual Salaries by Age and Service

	Years of Service at Valuation Date						
Attained Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25+**	**Average Salary**
15-24	$46,122	$0	$0	$0	$0	$0	$46,122
25-29	57,306	0	0	0	0	0	57,306
30-34	60,013	72,226	0	0	0	0	64,084
35-39	55,245	69,795	73,514	75,941	0	0	68,686
40-44	59,779	77,003	56,572	60,632	70,110	0	65,612
45-49	59,761	70,763	61,031	68,314	67,682	0	65,793
50-54	58,094	58,810	51,558	63,892	75,439	54,137	60,124
55-59	58,277	75,983	52,563	66,877	82,700	85,135	76,854
60-64	52,003	51,549	55,617	55,514	58,997	91,639	61,163
65 and Over	48,722	59,393	55,896	64,023	50,974	59,424	57,588
Average	**$56,773**	**$66,437**	**$56,357**	**$63,226**	**$70,039**	**$78,018**	**$64,532**

Transferred and Terminated Members

Distribution of Transfers to Other CalPERS Plans by Age, Service, and average Salary

	Years of Service at Valuation Date							
Attained Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25+**	**Total**	**Average Salary**
15-24	0	0	0	0	0	0	0	$0
25-29	0	0	0	0	0	0	0	0
30-34	1	0	0	0	0	0	1	47,084
35-39	1	0	0	0	0	0	1	87,097
40-44	4	0	0	0	0	0	4	61,940
45-49	2	0	0	0	0	0	2	89,262
50-54	7	0	0	0	0	0	7	87,253
55-59	2	1	1	0	0	0	4	101,556
60-64	5	0	0	0	0	0	5	70,359
65 and Over	1	0	0	0	0	0	1	50,760
All Ages	**23**	**1**	**1**	**0**	**0**	**0**	**25**	**$79,201**

Distribution of Terminated Participants with Funds on Deposit by Age, Service, and average Salary

	Years of Service at Valuation Date							
Attained Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25+**	**Total**	**Average Salary**
15-24	1	0	0	0	0	0	1	$44,658
25-29	4	1	0	0	0	0	5	46,943
30-34	8	0	1	0	0	0	9	39,756
35-39	8	0	0	0	0	0	8	49,033
40-44	15	1	0	2	0	0	18	48,437
45-49	17	1	0	0	0	0	18	43,283
50-54	18	3	2	0	0	1	24	43,647
55-59	17	0	5	1	0	1	24	45,490
60-64	23	5	0	0	0	0	28	34,152
65 and Over	9	2	0	0	0	0	11	35,196
All Ages	**120**	**13**	**8**	**3**	**0**	**2**	**146**	**$42,213**

Retired Members and Beneficiaries

Distribution of Retirees and Beneficiaries by Age and Retirement Type*

Attained Age	Service Retirement	Non-Industrial Disability	Industrial Disability	Non-Industrial Death	Industrial Death	Death After Retirement	Total
Under 30	0	0	0	0	0	1	1
30-34	0	0	0	0	0	0	0
35-39	0	0	0	0	0	1	1
40-44	0	0	0	0	0	0	0
45-49	0	0	0	0	0	0	0
50-54	1	0	0	1	0	1	3
55-59	5	3	0	0	0	1	9
60-64	17	2	0	0	0	5	24
65-69	43	3	0	1	0	9	56
70-74	50	2	0	0	0	8	60
75-79	28	4	0	1	0	5	38
80-84	11	0	0	1	0	5	17
85 and Over	13	0	0	0	0	1	14
All Ages	**168**	**14**	**0**	**4**	**0**	**37**	**223**

Distribution of Average Annual Disbursements to Retirees and Beneficiaries by Age and Retirement Type*

Attained Age	Service Retirement	Non-Industrial Disability	Industrial Disability	Non-Industrial Death	Industrial Death	Death After Retirement	Average
Under 30	$0	$0	$0	$0	$0	$3,889	$3,889
30-34	0	0	0	0	0	0	0
35-39	0	0	0	0	0	19,128	19,128
40-44	0	0	0	0	0	0	0
45-49	0	0	0	0	0	0	0
50-54	16,374	0	0	11,330	0	7,600	11,768
55-59	9,601	23,230	0	0	0	10,686	14,264
60-64	22,907	9,167	0	0	0	7,298	18,510
65-69	28,933	16,414	0	8,375	0	16,372	25,876
70-74	21,596	18,624	0	0	0	9,928	19,942
75-79	29,558	10,488	0	541	0	12,691	24,568
80-84	12,164	0	0	3,943	0	14,114	12,254
85 and Over	18,689	0	0	0	0	7,470	17,888
All Ages	**$23,703**	**$15,462**	**$0**	**$6,047**	**$0**	**$12,056**	**$20,936**

Retired Members and Beneficiaries (continued)

Distribution of Retirees and Beneficiaries by Years Retired and Retirement Type*

Years Retired	Service Retirement	Non-Industrial Disability	Industrial Disability	Non-Industrial Death	Industrial Death	Death After Retirement	Total
Under 5 Yrs	51	0	0	1	0	18	70
5-9	58	1	0	0	0	9	68
10-14	26	3	0	0	0	5	34
15-19	22	3	0	1	0	4	30
20-24	8	5	0	2	0	1	16
25-29	3	2	0	0	0	0	5
30 and Over	0	0	0	0	0	0	0
All Years	**168**	**14**	**0**	**4**	**0**	**37**	**223**

Distribution of Average Annual Disbursements to Retirees and Beneficiaries by Years Retired and Retirement Type*

Years Retired	Service Retirement	Non-Industrial Disability	Industrial Disability	Non-Industrial Death	Industrial Death	Death After Retirement	Average
Under 5 Yrs	$29,943	$0	$0	$11,330	$0	$12,727	$25,250
5-9	25,577	19,209	0	0	0	11,585	23,632
10-14	19,766	12,200	0	0	0	11,879	17,938
15-19	13,549	19,300	0	8,375	0	11,428	13,669
20-24	17,748	16,054	0	2,242	0	7,600	14,646
25-29	5,853	11,243	0	0	0	0	8,009
30 and Over	0	0	0	0	0	0	0
All Years	**$23,703**	**$15,462**	**$0**	**$6,047**	**$0**	**$12,056**	**$20,936**

* Counts of members do not include alternate payees receiving benefits while the member is still working. Therefore, the total counts may not match information on C-1 of the report. Multiple records may exist for those who have service in more than one coverage group. This does not result in double counting of liabilities.

Appendix D

Glossary of Actuarial Terms

Glossary of Actuarial Terms

Accrued Liability *(Actuarial Accrued Liability)*
The portion of the Present Value of Benefits allocated to prior years. Based on CalPERS funding policies, the accrued liability is the target level of assets on any valuation date.

Actuarial Assumptions
Assumptions made about certain events that will affect pension costs. Assumptions generally can be broken down into two categories: demographic and economic. Demographic assumptions include such things as mortality, disability, and retirement rates. Economic assumptions include discount rate, salary growth, and inflation.

Actuarial Methods
Procedures employed by actuaries to achieve certain funding goals of a pension plan. Actuarial methods include an actuarial cost method, an amortization policy, and an asset valuation method.

Actuarial Valuation
The determination as of a valuation date of the Normal Cost, Accrued Liability, and related actuarial present values for a pension plan. These valuations are performed annually or when an employer is contemplating a change in plan provisions.

Amortization Bases
Separate payment schedules for different portions of the Unfunded Accrued Liability (UAL). The total UAL of a rate plan can be segregated by cause. The impact of such individual causes on the UAL are quantified at the time of their occurrence, resulting in new amortization bases. Each base is separately amortized and paid for over a specific period of time. Generally, in an actuarial valuation, the separate bases consist of changes in UAL due to contract amendments, actuarial assumption changes, method changes, and/or gains and losses.

Amortization Period
The number of years required to pay off an Amortization Base.

Classic Member (under PEPRA)
A member who joined a public retirement system prior to January 1, 2013 and who is not defined as a new member under PEPRA. (See definition of New Member below.)

Discount Rate
This is the rate used to discount the expected future benefit payments to the valuation date to determine the Projected Value of Benefits. The discount rate is based on the assumed long-term rate of return on plan assets, net of investment and administrative expenses. This rate is called the "actuarial interest rate" in Section 20014 of the California Public Employees' Retirement Law.

Entry Age
The earliest age at which a plan member begins to accrue benefits under a defined benefit pension plan. In most cases, this is the age of the member on their date of hire.

Entry Age Actuarial Cost Method
An actuarial cost method designed to fund a member's total plan benefit evenly over the course of his or her career. This method yields a total normal cost rate, expressed as a percentage of payroll, which is designed to remain level throughout the member's career.

Fresh Start
A Fresh Start is when multiple amortization bases are combined into a single base and amortized over a new Amortization Period.

Funded Ratio
Defined as the Market Value of Assets divided by the Accrued Liability. It is a measure of how well funded a rate plan is. A ratio greater than 100% means the rate plan has more assets than the target established by CalPERS

funding policies on the valuation date and the employer need only contribute the Normal Cost. A ratio less than 100% means assets are less than the funding target and contributions in addition to Normal Cost are required.

GASB 68

Statement No. 68 of the Governmental Accounting Standards Board. The accounting standard governing a state or local governmental employer's accounting and financial reporting for pensions.

New Member (under PEPRA)

A new member includes an individual who becomes a member of a public retirement system for the first time on or after January 1, 2013, and who was not a member of another public retirement system prior to that date, and who is not subject to reciprocity with another public retirement system.

Normal Cost

The portion of the Present Value of Benefits allocated to the upcoming fiscal year for active employees. The normal cost plus the required amortization of the UAL, if any, make up the required contributions.

Pension Actuary

A business professional proficient in mathematics and statistics who performs the calculations necessary to properly fund a pension plan and allow the plan sponsor to disclose its liabilities. A pension actuary must satisfy the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States with regard to pensions.

PEPRA

The California Public Employees' Pension Reform Act of 2013

Present Value of Benefits (PVB)

The total dollars needed as of the valuation date to fund all benefits earned in the past or expected to be earned in the future for *current* members.

Unfunded Accrued Liability (UAL)

The Accrued Liability minus the Market Value of Assets. If the UAL for a rate plan is positive, the employer is required to make contributions in excess of the Normal Cost.