

AGENDA
1128th MEETING OF THE BOARD OF TRUSTEES
OF THE ALAMEDA COUNTY MOSQUITO ABATEMENT DISTRICT
AUGUST 14TH, 2024

TIME: 5:00 P.M.

PLACE: Join in person at the Office of the District
23187 Connecticut Street, Hayward, CA 94545 or
Join remotely via teleconference: <https://us02web.zoom.us/j/82188307384>
see below for additional details.

TRUSTEES: Cathy Roache, President, County-at-Large
Tyler Savage, Vice-President, City of Alameda
Valerie Arkin, Secretary, City of Pleasanton *from 3740 Newton Way, Pleasanton CA*
Robin López, City of Albany: *from 1249 Marin Avenue, Albany, CA*
P. Robert Beatty, City of Berkeley:
Kashef Qadri, City of Dublin
John Bauters, City of Emeryville: *from 4260 Halleck St, Emeryville, CA*
John Zlatnik, City of Fremont
George Syrop, City of Hayward
Maya Manoharan, City of Livermore
Eric Hentschke, City of Newark
Lisa Rasler, City of Oakland
Hope Salzer, City of Piedmont: *from 76 Cambrian Ave, Piedmont, CA*
Victor Aguilar, City of San Leandro:
Subru Bhat, City of Union City

1. Call to order.
2. Roll call.
3. President Roache invites any member of the public to speak at this time on any issue relevant to the District (each individual is limited to three minutes).
4. Approval of the minutes of the 1127th Regular Meeting held July 10th, 2024 (**Board action required**).
5. Presentation by Eric Haas-Stapleton, PhD: *California's Tiny Troublemakers: A Look at Mosquito-borne Diseases* (Information only)
6. Verbal update from the ad-hoc manager evaluation committee (Information only).
7. Review of CalPERS June 30th, 2023, valuation reports (Information only)
 - a. Staff report
 - b. Actuarial Valuation as of June 30, 2023, for the Miscellaneous Plan of the Alameda County Mosquito Abatement District
 - c. Actuarial Valuation as of June 30, 2023, for the PEPRA Miscellaneous Plan of the Alameda County Mosquito Abatement District
8. Financial Reports as of July 31st, 2024 (Information only).
 - a. Check Register
 - b. Credit card statements

- c. Income Statement
- d. Investments, reserves, and cash report
- e. Balance Sheet

9. Presentation of the Monthly Staff Report (Information only).

10. Presentation of the Manager's Report (Information only).

- a. Staff Anniversary Recognition
- b. CalPERS Audit preliminary results (verbal)
- c. CDPH report
- d. **Reminder:** September Regular Meeting is Cancelled
- e. Special District Leadership Academy: November 3-6, San Rafael, CA
- f. Required training expiration date: NONE

11. Board President asks for reports on conferences and seminars attended by Trustees.

12. Board President asks for announcements from members of the Board.

13. Board President asks trustees for items to be added to the agenda for the next Board meeting.

14. Adjournment.

RESIDENTS ATTENDING THE MEETING MAY SPEAK ON ANY AGENDA ITEM AT THEIR REQUEST.

Please Note: Board Meetings are accessible to people with disabilities and others who need assistance. Individuals who need special assistance or a disability-related modification or accommodation (including auxiliary aids or services) to observe and/or participate in this meeting and access meeting-related materials should contact Ryan Clausnitzer at least 48 hours before the meeting at 510-783-7744 or acmad@mosquitoes.org.

HOW TO OBSERVE THE MEETING:

Telephone: Listen to the meeting live by calling Zoom at **(669) 900-6833**

Enter the **Meeting ID#** 821 8830 7384 followed by the pound (#) key.

Computer: Watch the live streaming of the meeting from a computer by navigating to: <https://us02web.zoom.us/j/82188307384>

Mobile: Log in through the Zoom mobile app on a smartphone and enter **Meeting ID#** 821 8830 7384

HOW TO SUBMIT PUBLIC COMMENTS:

Before the Meeting: Please email your comments to acmad@mosquitoes.org, write "Public Comment" in the subject line. In the body of the email, include the agenda item number and title, as well as your comments. If you would like your comment to be read aloud at the meeting (not to exceed three minutes at staff's cadence), prominently write "Read Aloud at Meeting" at the top of the email. All comments received before 12:00 PM the day of the meeting will be included as an agenda supplement on the District's website under the relevant meeting date and provided to the Trustees at the meeting. Comments received after this time will be treated as contemporaneous comments.

Contemporaneous Comments: During the meeting, the Board President or designee will announce the opportunity to make public comments and identify the cut off time for submission. Please email your comments to acmad@mosquitoes.org, write "Public Comment" in the subject line. In the body of the email, include the agenda item number and title, as well as your comments. Once the public comment period is closed, all comments timely received will be read aloud at the meeting (not to exceed three minutes at staff's cadence). Comments received after the close of the public comment period will be added to the record after the meeting.

MINUTES

1127th MEETING OF THE BOARD OF TRUSTEES OF THE ALAMEDA COUNTY MOSQUITO ABATEMENT DISTRICT

July 10th, 2024

TIME: 5:00 P.M.
PLACE: Hybrid Meeting of the Board of Trustees
Physically held at the Office of the District
23187 Connecticut Street, Hayward, CA 94545 and
Teleconferencing at: <https://us02web.zoom.us/j/87903552981>
TRUSTEES: Cathy Roache, President, County-at-Large
Tyler Savage, Vice-President, City of Alameda
Valerie Arkin, Secretary, City of Pleasanton
Robin López, City of Albany
P. Robert Beatty, City of Berkeley
Kashef Qaadri, City of Dublin
John Bauters, City of Emeryville
John Zlatnik, City of Fremont
George Syrop, City of Hayward
Maya Manoharan, City of Livermore
Eric Hentschke, City of Newark
Lisa Rasler, City of Oakland
Hope Salzer, City of Piedmont: *from 76 Cambrian Ave., Piedmont*
Victor Aguilar, City of San Leandro
Subru Bhat, City of Union City

1. Board President Roache called the regularly scheduled board meeting to order at 5:04 pm.
2. Trustees Roache, Qaadri, Zlatnik, Syrop, Manoharan, Hentschke, Rasler and Bhat were present in person at the district. Trustee Salzer attended remotely from the publicly posted location above. Trustees Aguilar, Savage, Bauters and arrived in person at 5:06, 5:16, and 5:17, respectively. Trustees Arkin, Beatty and López were absent.
3. President Roache invited members of the public to speak on any issue relevant to the district. Vector Biologist, Sarah Lawton, was present to record the minutes. Information & Technology Director, Robert Ferdan, was present for technical support. Field Operations Supervisor Joseph Huston was present to report on item # 5.
4. Approval of the minutes of the 1126th meeting held June 12th, 2024.
Discussion: None
Motion: Trustee Hentschke moved to approve the minutes
Second: Trustee Zlatnik
Roll-Call Vote: Motion carries, Trustee Salzer abstains

5. Presentation by Joseph Huston: *Mosquito Species of Alameda County*.

Discussion: Trustee Manoharan asked if vector species are treated differently than other species (yes, our priority is preventing disease but depends it on the season, for example in the winter when there is minimal viral activity, different species will take priority.) She followed up asking if the treatment methods are the same for vectors versus non-vectors (yes.) Trustee Salzer asked about life cycle, she thought larvae need stagnant water, but some in the presentation are some listed to be found in streams and creeks, so can they come from moving water? What about moving air currents as well, she heard they are poor flyers in wind, is that true for all species (“standing” water may be a better term than “stagnant”, sections on the sides of streams and creeks tend to stop flowing. Some species are weak, some are very strong flyers.)

6. Closed session to discuss the General Manager’s twelve-month evaluation pursuant to Government Code Section 54957.6.

Discussion: No actions taken coming out of closed session.

7. Appointment of an ad-hoc manager evaluation committee to review proposed changes to the evaluation process.

Discussion: Trustee Bhat asked for Trustee Bauters opinion where he recommended that it is helpful to evaluate the evaluation process as the District must think of any future manager and we should make the process objective. Trustee Bhat does not know if anything needs to be changed or not. The General Manager expressed that he is open to new ideas. President Roache asked if we can choose a committee now or closer to January? Trustee Bhat says why not choose a committee now? To which Trustee Bauters agreed that now is a good time so the Board will be more prepared next year. President Roache asked for any volunteers. Trustees Hentschke, Bauters and Bhat volunteered, and President Roache appointed herself and Trustees Savage and Arkin as future Presidents. Trustee Syrop asked if there needs to be a quorum within the ad-hoc committee to make recommendations (no.)

Motion: Trustee Savage moved to appoint an ad-hoc committee.

Second: Trustee Bauters

Roll-Call Vote: Motion carries, Trustee Hentschke abstains

8. Financial Reports as of June 30th, 2024

Discussion: Trustee Aguilar asked what “Gannet California LocalIQ” is (a marketing firm). Trustee Rasler asked what GCJ Inc is (construction company for the aquaculture building). Trustee Bauter asked about the credit card purchases (the itemized receipts were once included, will be included again as currently, only the trustees signing checks review these). Trustee Savage asked about Medicare cost differences (did not hire as many seasonal employees as we expected).

9. Presentation of the Monthly Staff Report

Discussion: Joseph Huston presented the Operations section of the Staff Report. Trustee Hentschke asked if anyone else in the county monitors dead birds (no, we are the only agency that will test dead birds for arboviruses. Other agencies may receive them, but they will forward them to us). President Roache asked if Sulfer Creeks collects dead birds (no). Trustee Syrop asked if there's a budget to “promote posts” which would increase reach (will pass that idea to Judi.) Trustee Qaadri asked about Instagram (we have considered this, especially with the unique habitats we get to see which will be forwarded to Judi). Trustee Syrop believes Instagram appeals to the younger demographic and it allows posts to apply to both platforms at

once. Trustee Zlatnik suggested that the District look into working at the Niles Flea Market (will pass that along to Judi). Trustee Bauters commented about the unmaintained swimming pool images and how he would not want that to be his neighbor.

10. Presentation of the Manager's Report

Discussion: None.

11. Board President asks for reports on conferences and seminars attended by Trustees.

Discussion: None

12. Board President asks for announcements from members of the Board.

Discussion: Trustee Aguilar promoted San Leandro's inaugural Pride event at 222 Davis St. From 4-8 pm on 7/12/24 and would love to see ACMAD presence at next year's event. The General Manager will be away from the district from this Friday through August 1st.

13. Board President asks trustees for items to be added to the agenda for the next Board meeting.

Discussion: Trustee Syrop requested that today's presentation and next month's presentation be added to our website (good idea, will make sure presentation is suitable for posting). Trustee Savage requested a summary page of the species that were presented today (yes, we have one we can give you.)

14. Adjournment at 6:37 pm.

Respectfully submitted,

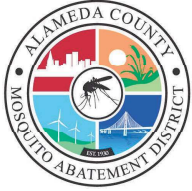
Approved as written and/or corrected
at the 1128th meeting of the Board of
Trustees held August 14th, 2024

Valerie Arkin, Secretary
BOARD OF TRUSTEES

Cathy Roache, President
BOARD OF TRUSTEES

California's Tiny Troublemakers:

A Look at Mosquito-borne Diseases



Eric Haas-Stapleton, PhD
Laboratory Director

Alameda County MAD Board of Trustees
August 14, 2024

Overview

- Comparing mosquito-borne pathogens
- Arboviruses with focus on:
 - West Nile virus, St. Louis Encephalitis virus, and Dengue virus
- Malaria
- Dog heartworm



Mosquito-borne pathogens of concern for CA

Protozoan

- Malaria (*Plasmodium vivax*)

Nematode

- Dog heart worm (*Dirofilaria immitis*)

Virus

- West Nile virus (WNV)
- St. Louis encephalitis virus (SLEV)
- Western equine encephalitis virus (WEEV)
- Yellow fever virus (YFV)
- Dengue virus (DENV)
- Chikungunya virus (CHIKV)
- Zika virus (ZIKV)

Mosquito-borne pathogens of concern for CA

Protozoan

- Malaria (*Plasmodium vivax*)

Nematode

- Dog heart worm (*Dirofilaria immitis*)

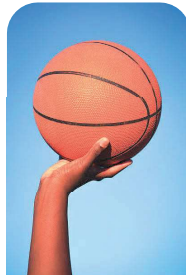
Virus

- **West Nile virus (WNV)**
- St. Louis encephalitis virus (SLEV)
- ~~○ Western equine encephalitis virus (WEEV)~~
- ~~○ Yellow fever virus (YFV)~~
- **Dengue virus (DENV)**
- Chikungunya virus (CHIKV)
- Zika virus (ZIKV)

Major differences among these parasites

Size

- Virus: 0.000006 cm
- Protozoan: 0.0002 cm
- Nematode: 38 cm



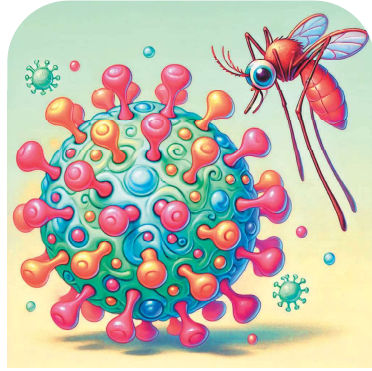
Major differences among these parasites

Life cycle

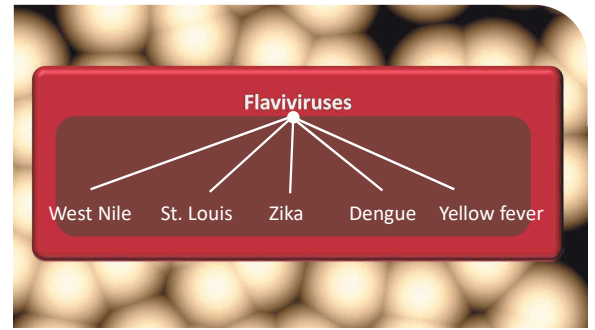
- Viruses are acellular, reproduce inside a living cell and inactive elsewhere
- Malaria protozoan are single-cell organisms that also reproduce inside cells, but are metabolically active outside
- Nematodes are multicellular worms that live outside of cells

Arboviruses

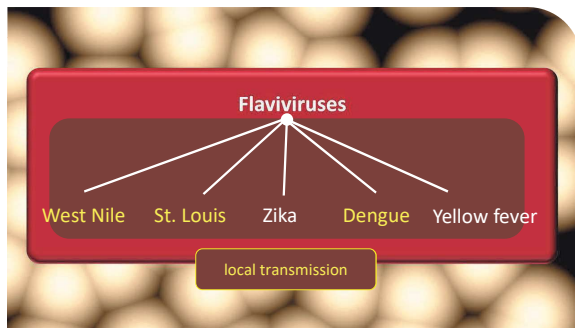
- West Nile virus
- St. Louis encephalitis virus
- Zika virus
- Yellow fever virus
- Chikungunya virus
- Dengue virus



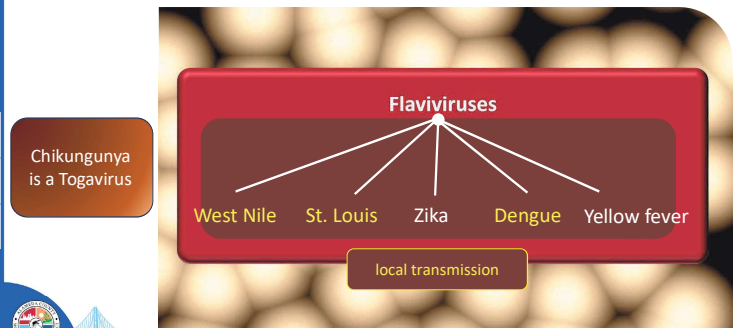
Most belong to the same family



Most belong to the same family

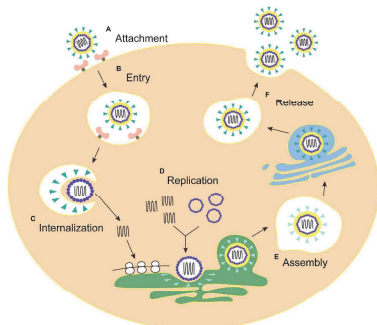


Most belong to the same family

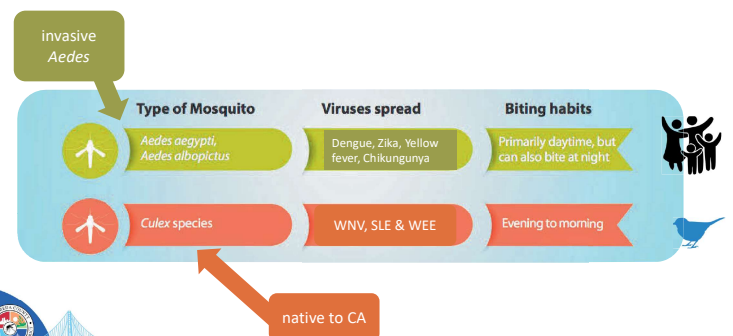


Flavivirus replication cycle

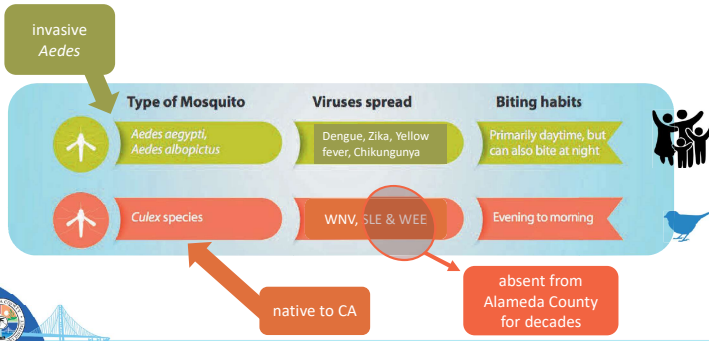
- Viral genome is like cellular messenger RNA
- Once inside, virus uses cellular processes to replicate
- Primary replication sites:
 - WNV: neurons
 - Immune response damages cell
 - Dengue: macrophage
 - Macrophage damage other cells and tissues



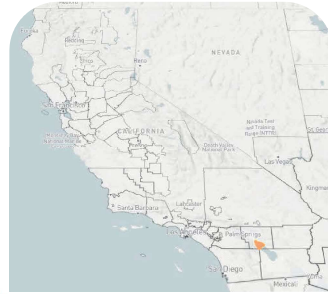
Arbovirus vectors in California



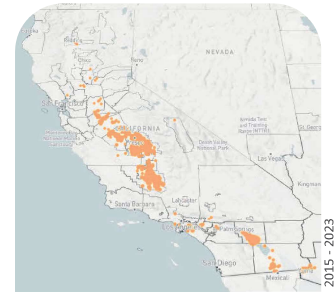
Arbovirus vectors in California



St. Louis encephalitis virus is in California



Returned during 2015 after a 12-year gap

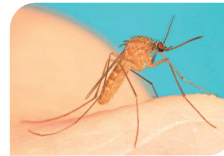


Now throughout much of California

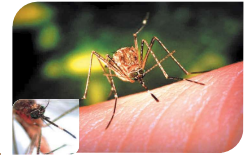
2015 - 2023



Main West Nile virus vectors in California



Culex pipiens: common house mosquito

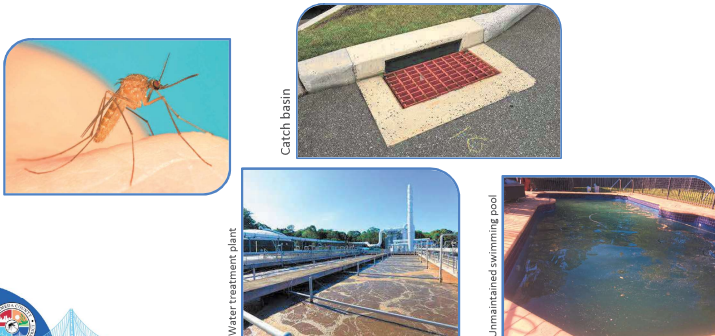


Culex tarsalis: western encephalitis mosquito

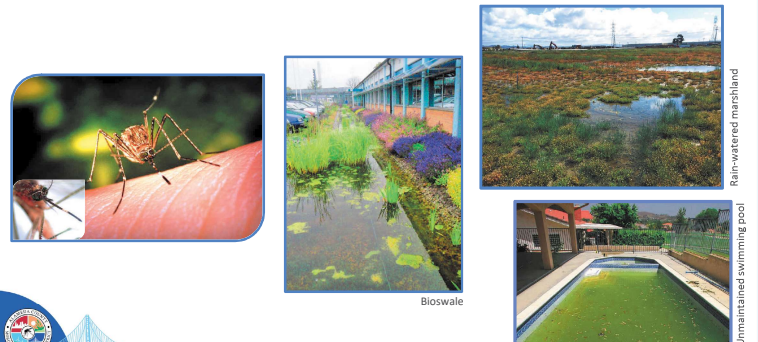


Culex erythrothorax: tule mosquito

Culex pipiens: common house mosquito



Culex tarsalis: western encephalitis mosquito

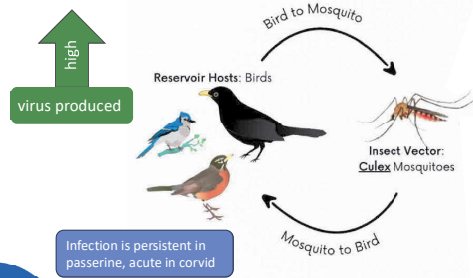


Culex erythrothorax: tule mosquito

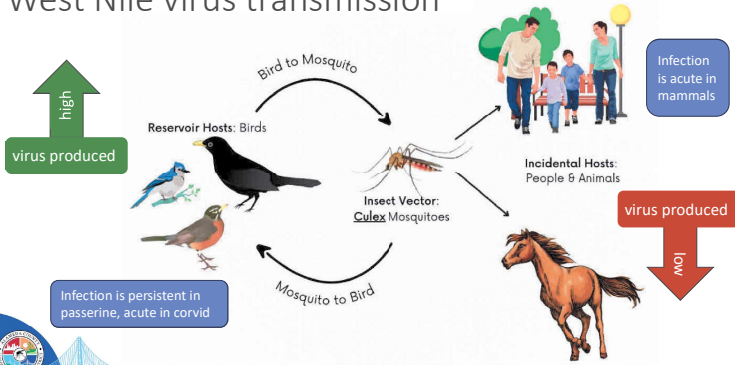


Tule marsh (exclusively)

West Nile virus transmission

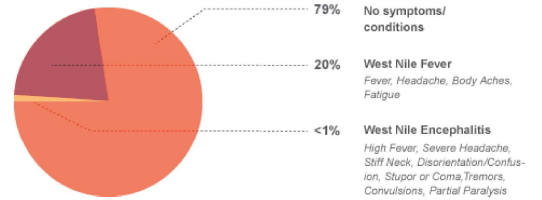


West Nile virus transmission



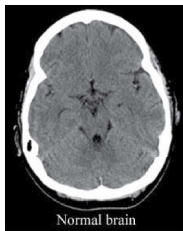
West Nile virus infection in people

Most people infected with West Nile virus have no symptoms



For the less than 1 %, it can be severe

- Viral encephalitis is inflammation of the brain
- Begins with flu-like symptoms that progress to confusion, seizures, and personality shifts
- No specific therapeutic
- Outcomes range from full recovery, neurological deficits, to death



www.cigna.com

Dengue virus



Tropical viral diseases are in Alameda County

Travelers routinely return to Alameda County with tropical diseases that can be spread by *Aedes aegypti*



Dengue human cases									
County	2016	2017	2018	2019	2020	2021	2022	2023	2024
Alameda Total	16	19	7	23	5	2	12	22	0
Alameda Total (City of Berkeley)	(4)	(1)	(0)	(0)	(1)	(0)	(4)	(0)	(0)

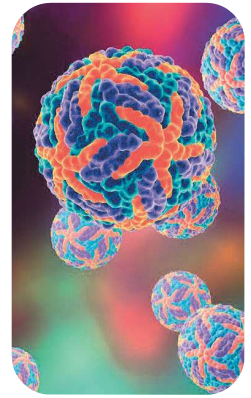
*ACPHD notifies ACMAD of more dengue cases than reported by CDPH

Chikungunya human cases									
County	2016	2017	2018	2019	2020	2021	2022	2023	2024
Alameda Total	10	3	2	0	0	0	4	2	0
Alameda Total (City of Berkeley)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

Zika human cases									
County	2015-2016	2017	2018	2019	2020	2021	2022	2023	2024
Alameda Total	35	10	7	2	1	0	1	0	0
Alameda Total (City of Berkeley)	(3)	(3)	(2)	(0)	(0)	(0)	(0)	(0)	(0)

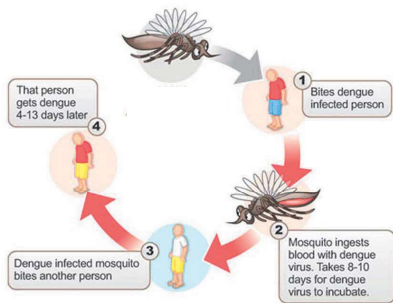
Dengue virus overview

- Flavivirus intracellular replication cycle
- Spread mainly by *Aedes aegypti*
- 390 million cases / year
 - 96 million clinical cases with 20,000 deaths
 - Southeast Asia, Latin America and Western Pacific most affected
- Vaccine available since 2015
 - Recommended only if previously exposed
 - 76 % effective in preventing symptomatic dengue

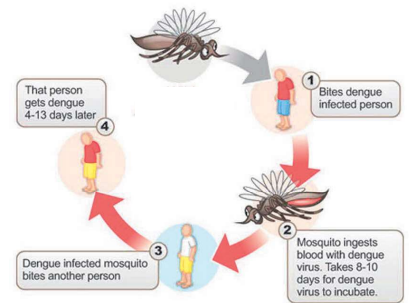


Dengue virus transmission

Of greatest concern are populated areas with inadequate infrastructure for controlling mosquitoes



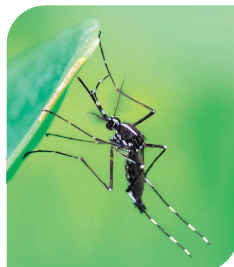
Dengue virus transmission



Dengue vectors in California



Aedes aegypti
(yellow fever mosquito)



Aedes albopictus
(tiger mosquito)

Aggressive daytime and evening biters



California Florida rooms more common

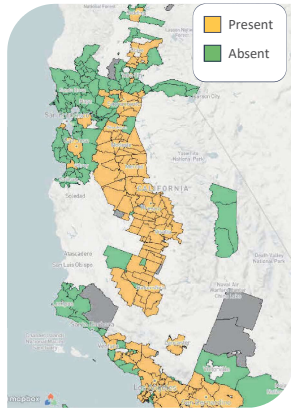


Multiple biters



Aedes aegypti is nearby

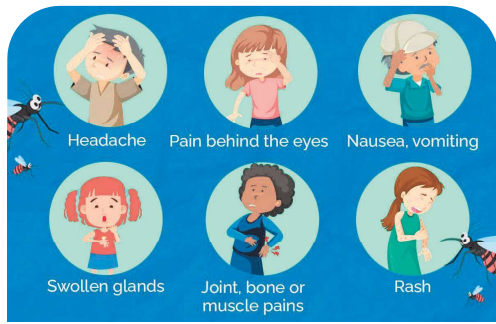
- Since 2022, detected in Contra Costa, Santa Clara & Santa Cruz counties
- 2 weeks ago in Santa Clara
 - They've been unable to eradicate this year from a small community



Finding where *Aedes aegypti* grow takes effort



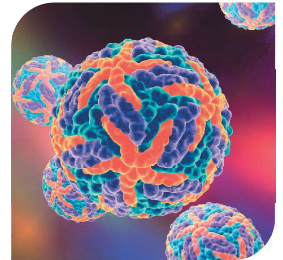
Dengue fever



Source: World Health Organization

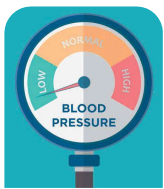
Four genetically-distinct serotypes of DENV

- Recovery from one gives life-long immunity to that serotype
- 2nd, 3rd and 4th serotype infection progressively increases the chance of life-threatening dengue hemorrhagic fever or shock syndrome



Dengue hemorrhagic fever & shock syndrome

Circulatory system damage or failure

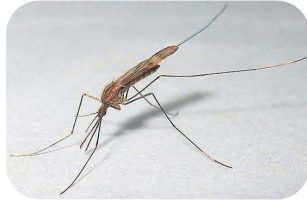


Malaria

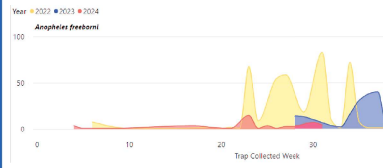


Anopheles freeborni

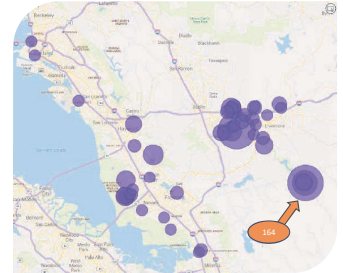
- Western malaria mosquito
- Primary vector of malaria in western US
- Found in stagnant water, often in algal masses



Anopheles freeborni in Alameda County



Collected infrequently, usually in the East County



Anopheles freeborni: 2022-2024



Malaria parasite

- *Anopheles freeborni* transmits the malaria parasite *Plasmodium vivax* (less severe form)
- *Plasmodium vivax* found only in primates
- *Plasmodium* in mosquitoes for at least 15 – 20 million years
- Single cell eukaryote

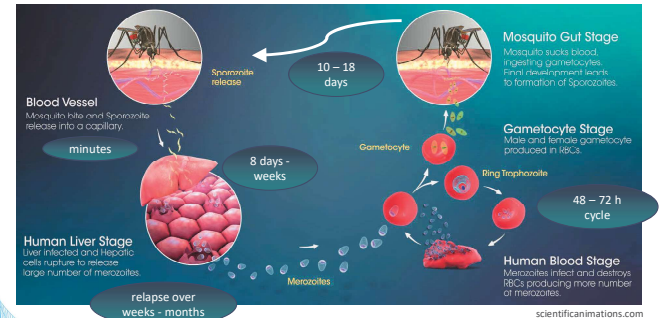


Photo by George Poinar, Jr., Oregon State University

Oldest mosquito fossil in amber with *Plasmodium dominicana*



Plasmodium lifecycle

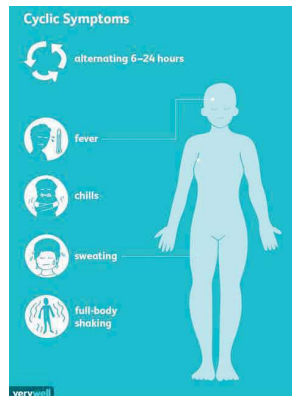


scientificanimations.com



Malaria disease

- Mild "off-on" symptoms: fever, chills, sweating, body shake
- Severe complications: respiratory distress (25 – 40 % of cases), kidney failure, encephalitis, enlarged kidney or spleen, stillbirth and infant mortality
- Travel-cases of malaria occur in Alameda County each year

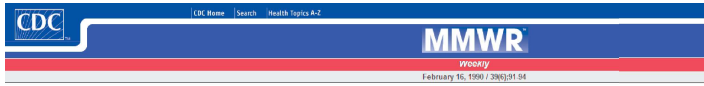


Preventing and treating malaria

- Limit mosquito bites where malaria is endemic
 - Repellant, bed nets, indoor mosquito control
- Prophylactic and treatment therapeutics
 - Atovaquone + Proguanil, doxycycline, mefloquine (neuro / psych side affects)
 - Resistance to most emerge a few decades after being deployed



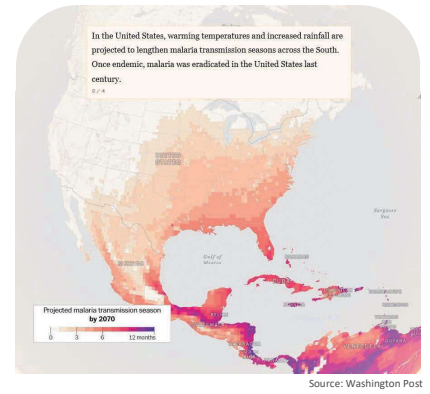
Last case of local malaria transmission in California was 1989



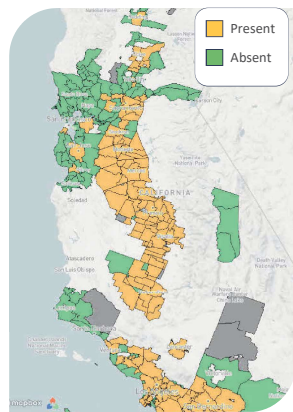
Transmission of *Plasmodium vivax* Malaria San Diego County, California, 1988 and 1989



Local malaria transmission not predicted for California through to 2070



But *Aedes aegypti* throughout Northern California was not expected



Dirofilaria immitis: Dog heartworm



Parasitic multicellular roundworm



Aedes sierrensis: western treehole mosquito

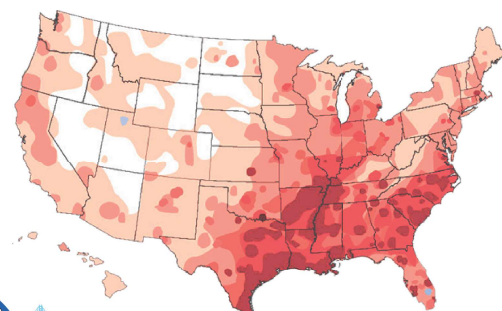
- Primary vector of dog heartworm in western US.
- Found in tree cavities that contain water



Delta MVCD



Dog heartworm incidence (2022)

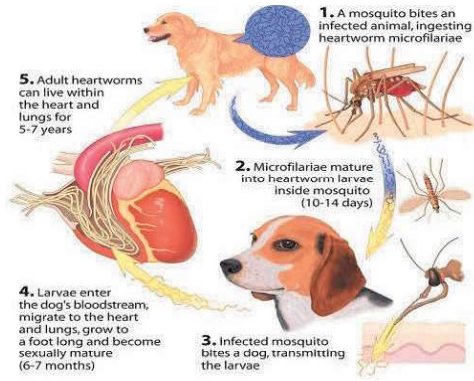


- < 1 case/clinic
- 1-5 cases/clinic
- 6-25 cases/clinic
- 26-50 cases/clinic
- 51-99 cases/clinic
- 100+ cases/clinic

American Heartworm Society

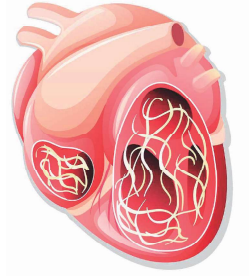


Life cycle of *Dirofilaria immitis*



Dog heartworm disease

- Labored breathing, coughing and fatigue
- Weight loss
- Vascular inflammation from heartworm death
- Blood-flow stoppage
- Vascular damage and failure



Dog heartworm therapeutics

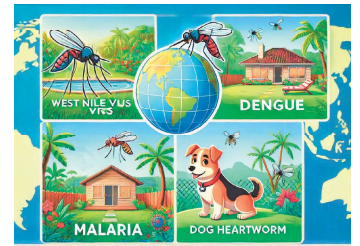
- Prevention: ivermectin and similar medications
- Treatment: melarsomine (arsenic-based drug)



Wrapping Up: Mosquito Mysteries Unveiled

Our vampire bug hitchhikers

- **West Nile virus:** The backyard lurker
- **Dengue:** The tropical traveler
- **Malaria:** The globe-trotter
- **Dog heartworm:** The silent threat to our furry friends



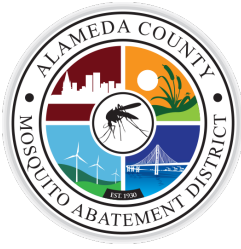
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Staff Report on CalPERS Actuarial Valuation – June 30, 2023

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Summary: The 2023 valuation report contains demographic data and financial information through June 30, 2023, to establish the required contributions for employers as well as certain members (e.g., PEPRA employees) for FY 2025-26. CalPERS recently announced a preliminary net return of 9.3% on its investments, this will be reflected in the June 30, 2024, valuation report (available August 2025).

Highlights of 2023 Valuation Results (report page listed):

Classic:

- Page 8: Employer contribution will increase from 13.31% to 13.38%.
- Page 8: The minimum required employer contribution towards the Unfunded Accrued Liability (UAL) for the 2025-26 FY increased by \$56,140.00 from 2024-25 FY's UAL payment.
- Page 12: Plan's Funded Status as of June 30, 2023 – Decreased by 1.6% to 69.7% (this funding status does not reflect the district's pension stabilization fund)
- Page 14: Lists the projected employer contributions for the next six fiscal years.
- Pages 21 & 22: Provides discount rate sensitivity due to investment return scenarios.
- Pages 27 & 28: Provides the district's participant data and lists the benefit options.

PEPRA:

- Page 8: Employer contribution increasing from 8.18% to 8.27%.
- Page 8: The minimum required employer contribution towards the UAL for the 2025-26 FY increased by \$4,337.00 from 2024-25 FY's UAL payment.
- Page 9: Member contributions will remain the same – 8.25%.
- Page 12: Plan's Funded Status as of June 30, 2023 – Decreased by 1.4% to 84.9%. (this funding status does not reflect the district's pension stabilization fund)
- Page 14: Lists the projected employer contributions for the next six fiscal years.
- Pages 26 & 27: Provides the district's participant data and lists the benefit options.

Attachments:

- Valuation Report – Classic Plan
- Valuation Report – PEPRA Plan



**California Public Employees' Retirement System
Actuarial Office**

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July 2024

**Miscellaneous Plan of the Alameda County Mosquito Abatement District (CalPERS ID: 5854416969)
Annual Valuation Report as of June 30, 2023**

Dear Employer,

Attached to this letter is Section 1 of the June 30, 2023 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) 2025-26.** In addition, the report 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.

Because this plan is in a risk pool, the following valuation report has been separated into two sections:

- Section 1 contains specific information for the plan including the development of the current and projected employer contributions, and
- Section 2 contains the Risk Pool Actuarial Valuation appropriate to the plan as of June 30, 2023.

[Section 2](#) can be found on the CalPERS website (www.calpers.ca.gov). From the home page, go to "Forms & Publications" and select "View All". In the search box, enter "Risk Pool" and from the results list download the Miscellaneous Risk Pool Actuarial Valuation Report for June 30, 2023.

Required Contributions

The table below shows the minimum required employer contributions for FY 2025-26 along with an estimate of the employer contribution requirements for FY 2026-27. 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
2025-26	13.38%	\$418,315
<i>Projected Results</i>		
2026-27	13.4%	\$449,000

The actual investment return for FY 2023-24 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 2023-24 differs from 6.8%, the actual contribution requirements for FY 2026-27 will differ from those shown above. For additional details regarding the assumptions and methods used for these projections, please refer to [Projected Employer Contributions](#). This section also contains projected required contributions through FY2030-31.

Report Enhancements

A number of enhancements were made to the report this year to ease navigation and allow the reader to find specific information more quickly. The tables of contents are now "clickable." This is true for the main table of contents that follows the title page and the intermediate tables of contents at the beginning of sections. The Adobe navigation pane on the left can also be used to skip to specific exhibits.

There are a number of links throughout the document in blue text. Links that are internal to the document are not underlined, while underlined links will take you to the CalPERS website. Examples are shown below.

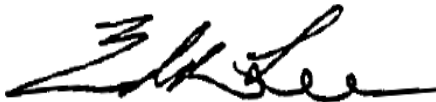
Internal Bookmarks	CalPERS Website Links
Required Employer Contributions	Required Employer Contribution Search Tool
Member Contribution Rates	Public Agency PEPRA Member Contribution Rates
Summary of Key Valuation Results	Pension Outlook Overview
Funded Status – Funding Policy Basis	Interactive Summary of Public Agency Valuation Results
Projected Employer Contributions	Public Agency Actuarial Valuation Reports

Further descriptions of general changes are included in the [Highlights and Executive Summary](#) section and in Appendix A - Actuarial Methods and Assumptions in Section 2.

Questions

A CalPERS actuary is available to answer questions about this report. Other questions may be directed to the Customer Contact Center at **888 CalPERS** (or **888-225-7377**).

Sincerely,



Eddie W. Lee, ASA, EA, FCA, MAAA
Senior Actuary, CalPERS



Randall Dziubek, ASA, MAAA
Deputy Chief Actuary, Valuation Services, CalPERS



Scott Terando, ASA, EA, MAAA, FCA, CFA
Chief Actuary, CalPERS

California Public Employees' Retirement System

Actuarial Valuation for the
Miscellaneous Plan
of the Alameda County Mosquito
Abatement District
as of June 30, 2023

(CalPERS ID: 5854416969)
(Rate Plan ID: 111)

Required Contributions for Fiscal Year

July 1, 2025 — June 30, 2026

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Section 2 – Risk Pool Actuarial Valuation Information

Section 1

California Public Employees' Retirement System

**Plan Specific Information
for the
Miscellaneous Plan
of the
Alameda County Mosquito Abatement District**

**(CalPERS ID: 5854416969)
(Rate Plan ID: 111)**

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Actuarial Certification

It is our opinion that the valuation has been performed in accordance with generally accepted actuarial principles as well as the applicable Standards of Practice promulgated by the Actuarial Standards Board. While this report, consisting of Section 1 and Section 2, is intended to be complete, our office is available to answer questions as needed. All of the undersigned are actuaries who satisfy the *Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States* of the American Academy of Actuaries with regard to pensions.

Actuarial Methods and Assumptions

It is our opinion that the assumptions and methods, as recommended by the Chief Actuary and adopted by the CalPERS Board of Administration, are internally consistent and reasonable for this plan.



Randall Dziubek, ASA, MAAA
Deputy Chief Actuary, Valuation Services, CalPERS



Scott Terando, ASA, EA, MAAA, FCA, CFA
Chief Actuary, CalPERS

Actuarial Data and Rate Plan Results

To the best of my knowledge and having relied upon the attestation above that the actuarial methods and assumptions are reasonable as well as the information in Section 2 of this report, this report is complete and accurate and contains sufficient information to disclose, fully and fairly, the funded condition of the Miscellaneous Plan of the Alameda County Mosquito Abatement District and satisfies the actuarial valuation requirements of Government Code section 7504. This valuation and related validation work was performed by the CalPERS Actuarial Office. The valuation was based on the member and financial data as of June 30, 2023, provided by the various CalPERS databases and the benefits under this plan with CalPERS as of the date this report was produced. Section 1 of this report is based on the member and financial data for Alameda County Mosquito Abatement District, while Section 2 is based on the corresponding information for all agencies participating in the Miscellaneous Risk Pool to which the plan belongs.



Eddie W. Lee, ASA, EA, FCA, MAAA
Senior Actuary, CalPERS

Highlights and Executive Summary

- **Introduction** 3
- **Purpose of Section 1** 3
- **Summary of Key Valuation Results** 4
- **Changes Since the Prior Year's Valuation** 5
- **Subsequent Events** 5

Introduction

This report presents the results of the June 30, 2023, actuarial valuation of the Miscellaneous Plan of the Alameda County Mosquito Abatement District of the California Public Employees' Retirement System (CalPERS). This actuarial valuation sets the minimum required contributions for fiscal year (FY) 2025-26.

Purpose of Section 1

This Section 1 report for the Miscellaneous Plan of the Alameda County Mosquito Abatement District of CalPERS was prepared by the Actuarial Office using data as of June 30, 2023. The purpose of the valuation is to:

- Set forth the assets and accrued liabilities of this rate plan as of June 30, 2023;
- Determine the minimum required employer contributions for this rate plan for FY July 1, 2025, through June 30, 2026;
- Determine the required member contribution rate for FY July 1, 2025, through June 30, 2026, for employees subject to the California Public Employees' Pension Reform Act of 2013 (PEPRA); and
- Provide actuarial information as of June 30, 2023, 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 a Cost Sharing Employer Defined Benefit Pension Plan. A separate accounting valuation report for such purposes is 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 a CalPERS 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 guidance 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 of 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.

Summary of Key Valuation Results

Below is a brief summary of key valuation results along with page references where more detailed information can be found.

Required Employer Contributions — page 8

	Fiscal Year 2024-25	Fiscal Year 2025-26
Employer Normal Cost Rate	13.31%	13.38%
Unfunded Accrued Liability (UAL) Contribution Amount	\$360,298	\$418,315
Paid either as		
Option 1) 12 Monthly Payments of	\$30,024.83	\$34,859.58
Option 2) Annual Prepayment in July	\$348,639	\$404,779

Member Contribution Rates — page 9

	Fiscal Year 2024-25	Fiscal Year 2025-26
Member Contribution Rate	7.00%	7.00%

Projected Employer Contributions — page 14

Fiscal Year	Normal Cost (% of payroll)	Annual UAL Payment
2026-27	13.4%	\$449,000
2027-28	13.4%	\$474,000
2028-29	13.4%	\$530,000
2029-30	13.4%	\$542,000
2030-31	13.4%	\$553,000

Funded Status — Funding Policy Basis — page 12

	June 30, 2022	June 30, 2023
Entry Age Accrued Liability (AL)	\$16,275,206	\$16,577,965
Market Value of Assets (MVA)	11,605,164	11,559,689
Unfunded Accrued Liability (UAL) [AL – MVA]	\$4,670,042	\$5,018,276
Funded Ratio [MVA ÷ AL]	71.3%	69.7%

Summary of Valuation Data — Page 27

	June 30, 2022	June 30, 2023
Active Member Count	10	9
Annual Covered Payroll	\$1,294,404	\$1,237,849
Transferred Member Count	3	3
Separated Member Count	4	4
Retired Members and Beneficiaries Count	20	20

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. For pooled rate plans, voluntary benefit changes by plan amendment are generally included in the first valuation with a valuation date on or after the effective date of the amendment.

Please refer to the [Plan's Major Benefit Options](#) in this report and Appendix B of the Section 2 Report for a summary of the plan provisions used in this valuation.

Actuarial Methods and Assumptions

There are no significant changes to the actuarial methods or assumptions for the June 30, 2023, actuarial valuation.

New Disclosure Items

In December 2021, the Actuarial Standards Board issued a revision of Actuarial Standard of Practice No. 4 (ASOP 4) requiring actuaries to disclose a low-default-risk obligation measure (LDROM) of the benefits earned. This information is shown in a new exhibit, [Funded Status – Low-Default-Risk Basis](#).

Subsequent Events

This actuarial valuation report reflects fund investment return through June 30, 2023, as well as statutory changes, regulatory changes and board actions through January 2024.

During the time period between the valuation date and the publication of this report, inflation has been higher than the expected inflation of 2.3% per annum. Since inflation influences cost-of-living increases for retirees and beneficiaries and active member pay increases, higher inflation is likely to put at least some upward pressure on contribution requirements and downward pressure on the funded status in the June 30, 2024, valuation. The actual impact of higher inflation on future valuation results will depend on, among other factors, how long higher inflation persists.

The 2023 annual benefit limit under Internal Revenue Code (IRC) section 415(b) and annual compensation limits under IRC section 401(a)(17) and Government Code section 7522.10 were used for this valuation and are assumed to increase 2.3% per year based on the price inflation assumption. The actual 2024 limits, determined in October 2023, are not reflected.

On April 16, 2024, the board took action to modify the Funding Risk Mitigation Policy to remove the automatic change to the discount rate when the investment return exceeds various thresholds. Rather than an automatic change to the discount rate, a board discussion would be placed on the calendar. The 95th percentile return in the [Future Investment Return Scenarios](#) exhibit in this report has not been modified and still reflects the projected contribution requirements associated with a reduction in the discount rate.

To the best of our knowledge, there have been no other subsequent events that could materially affect current or future certifications rendered in this report.

Liabilities and Contributions

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Determination of Required Contributions

Contributions to fund the plan are determined by an actuarial valuation performed each year. The valuation employs complex calculations based on a set of actuarial assumptions and methods. See Appendix A in Section 2 for information on the assumptions and methods used in this valuation. The valuation incorporates all plan experience through the valuation date and sets required contributions for the fiscal year that begins two years after the valuation date.

Contribution Components

Two components comprise required contributions:

- Normal Cost — expressed as a percentage of pensionable payroll
- Unfunded Accrued Liability (UAL) Contribution — expressed as a dollar amount

Normal Cost represents the value of benefits allocated to the upcoming year for active employees. If all plan experience exactly matched the actuarial assumptions, normal cost would be sufficient to fully fund all benefits. The employer and employees each pay a share of the normal cost with contributions payable as part of the regular payroll reporting process. The contribution rate for Classic members is set by statute based on benefit formula whereas for PEPRAs members it is based on 50% of the total normal cost.

When plan experience differs from the actuarial assumptions, unfunded accrued liability (UAL) emerges. The new UAL may be positive or negative. If the total UAL is positive (i.e., accrued liability exceeds assets), the employer is required to make contributions to pay off the UAL over time. This is called the Unfunded Accrued Liability Contribution component. There is an option to prepay this amount during July of each fiscal year, otherwise it is paid monthly.

In measuring the UAL each year, plan experience is split by source. Common sources of UAL include investment experience different than expected, non-investment experience different than expected, assumption changes and benefit changes. Each source of UAL (positive or negative) forms a base that is amortized, or paid off, over a specified period of time in accordance with the CalPERS [Actuarial Amortization Policy](#). The Unfunded Accrued Liability Contribution is the sum of the payments on all bases. See the [Schedule of Amortization Bases](#) section of this report for an inventory of existing bases and Appendix A in Section 2 for more information on the amortization policy.

Required Employer Contributions

The required employer contributions in this report do not reflect any cost sharing arrangement between the agency and the employees.

Required Employer Contributions	Fiscal Year 2025-26
Employer Normal Cost Rate	13.38%
<i>Plus</i>	
Unfunded Accrued Liability (UAL) Contribution Amount¹	\$418,315
<i>Paid either as</i>	
1) Monthly Payment	\$34,859.58
<i>Or</i>	
2) Annual Prepayment Option*	\$404,779

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) and the 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 [Member Contribution Rates](#) see the following page.

Development of Normal Cost as a Percentage of Payroll	Fiscal Year 2024-25	Fiscal Year 2025-26
Base Total Normal Cost for Formula	18.81%	18.87%
Surcharge for Class 1 Benefits ²		
a) FAC 1	0.64%	0.64%
b) PRSA	0.79%	0.80%
Plan's Total Normal Cost	20.24%	20.31%
Offset Due to Employee Contributions ³	6.93%	6.93%
Employer Normal Cost	13.31%	13.38%

¹ The required payment on amortization bases does not take into account any additional discretionary payment made after April 30, 2024.

² Section 2 of this report contains a list of Class 1 benefits and corresponding surcharges.

³ This is the expected employee contributions, taking into account individual benefit formula and any offset from the use of a modified formula, divided by projected annual payroll. For member contribution rates above the breakpoint for each benefit formula, see [Member Contribution Rates](#).

Member Contribution Rates

The required member contributions in this report do not reflect any cost sharing arrangement between the agency and the employees.

Each member contributes toward their retirement based upon the retirement formula. The standard Classic member contribution rate above the breakpoint, if any, is as described below.

Benefit Formula	Percent Contributed above the Breakpoint
Miscellaneous, 1.5% at age 65	2%
Miscellaneous, 2% at age 60	7%
Miscellaneous, 2% at age 55	7%
Miscellaneous, 2.5% at age 55	8%
Miscellaneous, 2.7% at age 55	8%
Miscellaneous, 3% at age 60	8%

Auxiliary organizations of the CSU system may elect reduced contribution rates for Miscellaneous members, in which case the contribution rate above the breakpoint is 6% if members are not covered by Social Security and 5% if they are.

Other Pooled Miscellaneous Risk Pool Rate Plans

All of the results presented in this Section 1 report, except those shown on this page, correspond to rate plan 111. In many cases, employers have additional rate plans within the same risk pool. For cost analysis and budgeting it is useful to consider contributions for these rate plans as a whole rather than individually. The estimated contribution amounts and rates for all of the employer's rate plans in the Miscellaneous Risk Pool are shown below and assume that the total employer payroll within the Miscellaneous Risk Pool will grow according to the overall payroll growth assumption of 2.80% per year for three years. Classic members who are projected to terminate employment are assumed to be replaced by PEPRA members.

Estimated Employer Contributions for all Pooled Miscellaneous Rate Plans	Fiscal Year	Fiscal Year
	2024-25	2025-26
Projected Payroll for the Contribution Year	\$2,260,466	\$2,386,749
Estimated Employer Normal Cost	\$246,533	\$257,184
Required Payment on Amortization Bases	\$364,247	\$426,746
Estimated Total Employer Contributions	\$610,780	\$683,930
Estimated Total Employer Contribution Rate (illustrative only)	27.02%	28.66%

Breakdown of Entry Age Accrued Liability

Active Members	\$5,952,003
Transferred Members	679,469
Separated Members	352,938
Members and Beneficiaries Receiving Payments	<u>9,593,555</u>
Total	\$16,577,965

Allocation of Plan's Share of Pool's Experience

It is the policy of CalPERS to ensure equity within the risk pools by allocating the pool's experience gains/losses and assumption changes in a manner that treats each employer equitably and maintains benefit security for the members of the System while minimizing substantial variations in employer contributions. The pool's experience gains/losses and impact of assumption/method changes is allocated to the plan as follows:

1. Plan's Accrued Liability	\$16,577,965
2. Projected UAL Balance at 6/30/2023	4,687,240
3. Other UAL Adjustments (Golden Handshake, Prior Service Purchase, etc.)	0
4. Adjusted UAL Balance at 6/30/2023 for Asset Share	4,687,240
5. Pool's Accrued Liability ¹	23,349,910,053
6. Sum of Pool's Individual Plan UAL Balances at 6/30/2023 ¹	5,227,602,209
7. Pool's 2022-23 Investment (Gain)/Loss ¹	114,855,623
8. Pool's 2022-23 Non-Investment (Gain)/Loss ¹	360,116,330
9. Plan's Share of Pool's Investment (Gain)/Loss: $[(1) - (4)] \div [(5) - (6)] \times (7)$	75,361
10. Plan's Share of Pool's Non-Investment (Gain)/Loss: $(1) \div (5) \times (8)$	255,675
11. Plan's New (Gain)/Loss as of 6/30/2023: $(9) + (10)$	331,036
12. Increase in Pool's Accrued Liability due to Change in Assumptions ¹	0
13. Plan's Share of Pool's Change in Assumptions: $(1) \div (5) \times (12)$	0
14. Increase in Pool's Accrued Liability due to Funding Risk Mitigation ¹	0
15. Plan's Share of Pool's Change due to Funding Risk Mitigation: $(1) \div (5) \times (14)$	0
16. Offset due to Funding Risk Mitigation	0
17. Plan's Investment (Gain)/Loss: $(9) - (16)$	75,361

¹ Does not include plans that transferred to the pool on the valuation date.

Development of the Plan's Share of Pool's Assets

18. Plan's UAL: $(2) + (3) + (11) + (13) + (15)$	\$5,018,276
19. Plan's Share of Pool's Market Value of Assets (MVA): $(1) - (18)$	\$11,559,689

For a reconciliation of the pool's Market Value of Assets (MVA), information on the fund's asset allocation and a history of CalPERS investment returns, see [Section 2](#), which can be found on the CalPERS website (www.calpers.ca.gov).

Funded Status – Funding Policy Basis

The table below provides information on the current funded status of the plan under the funding policy. The funded status for this purpose is based on the market value of assets relative to the funding target produced by the entry age actuarial cost method and actuarial assumptions adopted by the board. The actuarial cost method allocates the total expected cost of a member's projected benefit (Present Value of Benefits) to individual years of service (the Normal Cost). The value of the projected benefit that is not allocated to future service is referred to as the Accrued Liability and is the plan's funding target on the valuation date. The Unfunded Accrued Liability (UAL) equals the funding target minus the assets. The UAL is an absolute measure of funded status and can be viewed as employer debt. The funded ratio equals the assets divided by the funding target. The funded ratio is a relative measure of the funded status and allows for comparisons between plans of different sizes.

	June 30, 2022	June 30, 2023
1. Present Value of Benefits	\$18,259,709	\$18,476,018
2. Entry Age Accrued Liability	16,275,206	16,577,965
3. Market Value of Assets (MVA)	11,605,164	11,559,689
4. Unfunded Accrued Liability (UAL) [(2) – (3)]	\$4,670,042	\$5,018,276
5. Funded Ratio [(3) ÷ (2)]	71.3%	69.7%

A funded ratio of 100% (UAL of \$0) implies that the funding of the plan is on target and that future contributions equal to the normal cost of the active plan members will be sufficient to fully fund all retirement benefits if future experience matches the actuarial assumptions. A funded ratio of less than 100% (positive UAL) implies that in addition to normal costs, payments toward the UAL will be required. Plans with a funded ratio greater than 100% have a negative UAL (or surplus) but are required under current law to continue contributing the normal cost in most cases, preserving the surplus for future contingencies.

Calculations for the funding target reflect the expected long-term investment return of 6.8%. If it were known on the valuation date that future investment returns will average something greater/less than the expected return, calculated normal costs and accrued liabilities provided in this report would be less/greater than the results shown. Therefore, for example, if actual average future returns are less than the expected return, calculated normal costs and UAL contributions will not be sufficient to fully fund all retirement benefits. Under this scenario, required future normal cost contributions will need to increase from those provided in this report, and the plan will develop unfunded liabilities that will also add to required future contributions. For illustrative purposes, funded statuses based on a 1% lower and higher average future investment return (discount rate) are as follows:

	1% Lower Average Return	Current Assumption	1% Higher Average Return
Discount Rate	5.8%	6.8%	7.8%
1. Entry Age Accrued Liability	\$18,691,359	\$16,577,965	\$14,817,695
2. Market Value of Assets (MVA)	11,559,689	11,559,689	11,559,689
3. Unfunded Accrued Liability (UAL) [(1) – (2)]	\$7,131,670	\$5,018,276	\$3,258,006
4. Funded Ratio [(2) ÷ (1)]	61.8%	69.7%	78.0%

The [Risk Analysis](#) section of the report provides additional information regarding the sensitivity of valuation results to the expected investment return and other factors. Also provided in that section are measures of funded status that are appropriate for assessing the sufficiency of plan assets to cover estimated termination liabilities.

Additional Employer Contributions

The minimum required employer contribution towards the Unfunded Accrued Liability (UAL) for this rate plan for FY 2025-26 is \$418,315. CalPERS allows agencies to make additional discretionary payments (ADPs) at any time. 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 2025-26 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 [Amortization Schedule and Alternatives](#). Agencies considering making an ADP should contact CalPERS for additional information.

Fiscal Year 2025-26 Employer Contributions — Illustrative Scenarios

Funding Approach	Estimated Normal Cost	Minimum UAL Contribution	ADP ¹	Total UAL Contribution	Estimated Total Contribution
Minimum required only	\$156,579	\$418,315	0	\$418,315	\$574,894
20 year funding horizon	\$156,579	\$418,315	\$33,423	\$451,738	\$608,317
15 year funding horizon	\$156,579	\$418,315	\$108,677	\$526,992	\$683,571
10 year funding horizon	\$156,579	\$418,315	\$267,401	\$685,716	\$842,295
5 year funding horizon	\$156,579	\$418,315	\$760,901	\$1,179,216	\$1,335,795

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.

The calculations above are based on the projected UAL as of June 30, 2025, as determined in the June 30, 2023, 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.

Additional Discretionary Payment History

The following table provides a recent history of actual ADPs made to the plan.

Fiscal Year	ADP	Fiscal Year	ADP
2019-20	\$0	2022-23	\$0
2020-21	\$0	2023-24 ²	\$0
2021-22	\$0		

² Excludes payments made after April 30, 2024

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 2023-24 is assumed to be 6.80% per year, net of investment and administrative expenses. 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 2023-24 and Beyond)				
Fiscal Year	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31
	Rate Plan 111 Results					
Normal Cost%	13.38%	13.4%	13.4%	13.4%	13.4%	13.4%
UAL Payment	\$418,315	\$449,000	\$474,000	\$530,000	\$542,000	\$553,000

For ongoing plans, investment gains and losses are amortized using a 5-year ramp up. For more information, please see Amortization of Unfunded Actuarial Accrued Liability in Appendix A of the Section 2 Report. 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 investment loss, the relatively small amortization payments during the ramp up period could result in contributions that are less than interest on the UAL (i.e. negative amortization) 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](#) exhibit. 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.

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, 2023.
- The required employer contributions determined by the valuation are for the fiscal year beginning two years after the valuation date: FY 2025-26.

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 FY 2023-24 is based on the actuarial valuation two years ago, adjusted for additional discretionary payments made on or before April 30, 2024, if necessary, and the expected payment for FY 2024-25 is based on the actuarial valuation one year ago.

Reason for Base	Date Est.	Ramp Level 2025-26	Ramp Shape	Escalation Rate	Amort. Period	Balance 6/30/23	Expected Payment 2023-24	Balance 6/30/24	Expected Payment 2024-25	Balance 6/30/25	Minimum Required Payment 2025-26
Investment (Gain)/Loss	6/30/13	100%	Up/Dn	2.80%	20	1,391,357	100,988	1,381,604	103,816	1,368,265	106,722
Non-Investment (Gain)/Loss	6/30/13	100%	Up/Dn	2.80%	20	(13,378)	(971)	(13,284)	(998)	(13,156)	(1,026)
Share of Pre-2013 Pool UAL	6/30/13	No Ramp		2.80%	12	672,923	62,915	653,663	64,676	631,273	66,487
Assumption Change	6/30/14	100%	Up/Dn	2.80%	11	577,538	65,376	549,248	67,207	517,142	69,088
Investment (Gain)/Loss	6/30/14	100%	Up/Dn	2.80%	21	(1,087,156)	(76,404)	(1,082,124)	(78,543)	(1,074,539)	(80,742)
Non-Investment (Gain)/Loss	6/30/14	100%	Up/Dn	2.80%	21	1,169	82	1,164	84	1,156	87
Investment (Gain)/Loss	6/30/15	100%	Up/Dn	2.80%	22	680,515	46,408	678,830	47,707	675,688	49,043
Non-Investment (Gain)/Loss	6/30/15	100%	Up/Dn	2.80%	22	(54,612)	(3,724)	(54,477)	(3,829)	(54,224)	(3,936)
Assumption Change	6/30/16	100%	Up/Dn	2.80%	13	233,847	23,190	225,783	23,840	216,499	24,507
Investment (Gain)/Loss	6/30/16	100%	Up/Dn	2.80%	23	840,134	55,704	839,696	57,263	837,617	58,867
Non-Investment (Gain)/Loss	6/30/16	100%	Up/Dn	2.80%	23	(102,969)	(6,827)	(102,916)	(7,018)	(102,662)	(7,215)
Assumption Change	6/30/17	100%	Up/Dn	2.80%	14	279,778	26,212	271,714	26,946	262,343	27,700
Investment (Gain)/Loss	6/30/17	100%	Up/Dn	2.80%	24	(450,169)	(29,071)	(450,737)	(29,885)	(450,503)	(30,722)
Non-Investment (Gain)/Loss	6/30/17	100%	Up/Dn	2.80%	24	(22,649)	(1,463)	(22,677)	(1,504)	(22,665)	(1,546)
Assumption Change	6/30/18	100%	Up/Dn	2.80%	15	468,748	33,942	465,546	43,616	452,129	44,837
Investment (Gain)/Loss	6/30/18	100%	Up/Dn	2.80%	25	(138,686)	(7,076)	(140,804)	(9,093)	(140,982)	(9,348)
Method Change	6/30/18	100%	Up/Dn	2.80%	15	129,188	9,355	128,305	12,021	124,607	12,357
Non-Investment (Gain)/Loss	6/30/18	100%	Up/Dn	2.80%	25	67,755	3,457	68,790	4,442	68,877	4,567
Investment (Gain)/Loss	6/30/19	100%	Up Only	0.00%	16	62,517	3,759	62,883	5,012	61,979	6,265
Non-Investment (Gain)/Loss	6/30/19	No Ramp		0.00%	16	58,360	5,533	56,610	5,533	54,741	5,533

Schedule of Amortization Bases (continued)

Reason for Base	Date Est.	Ramp Level 2025-26	Ramp Shape	Escalation Rate	Amort. Period	Balance 6/30/23	Expected Payment 2023-24	Balance 6/30/24	Expected Payment 2024-25	Balance 6/30/25	Minimum Required Payment 2025-26
Investment (Gain)/Loss	6/30/20	80%	Up Only	0.00%	17	299,152	12,297	306,786	18,446	308,585	24,595
Non-Investment (Gain)/Loss	6/30/20	No Ramp		0.00%	17	50,646	4,671	49,263	4,671	47,786	4,671
Assumption Change	6/30/21	No Ramp		0.00%	18	71,736	6,451	69,947	6,451	68,037	6,451
Net Investment (Gain)	6/30/21	60%	Up Only	0.00%	18	(1,450,106)	(31,170)	(1,516,501)	(62,339)	(1,555,199)	(93,509)
Non-Investment (Gain)/Loss	6/30/21	No Ramp		0.00%	18	(71,411)	(6,422)	(69,630)	(6,421)	(67,729)	(6,422)
Risk Mitigation	6/30/21	No Ramp		0.00%	0	441,329	456,087	0	0	0	0
Risk Mitigation Offset	6/30/21	No Ramp		0.00%	0	(441,329)	(456,087)	0	0	0	0
Investment (Gain)/Loss	6/30/22	40%	Up Only	0.00%	19	1,948,729	0	2,081,243	44,736	2,176,536	89,471
Non-Investment (Gain)/Loss	6/30/22	No Ramp		0.00%	19	244,284	0	260,895	23,461	254,390	23,461
Investment (Gain)/Loss	6/30/23	20%	Up Only	0.00%	20	75,361	0	80,486	0	85,959	1,848
Non-Investment (Gain)/Loss	6/30/23	No Ramp		0.00%	20	255,675	0	273,061	0	291,629	26,224
Total						5,018,276	297,212	5,052,367	360,298	5,023,579	418,315

The (gain)/loss bases are the plan's allocated share of the risk pool's (gain)/loss for the fiscal year as disclosed in [Allocation of Plan's Share of Pool's Experience](#) earlier in this report. These (gain)/loss bases will be amortized in accordance with the CalPERS amortization policy in effect at the time the base was established.

Amortization Schedule and Alternatives

The amortization schedule on the previous page(s) 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 a CalPERS 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 [Actuarial Amortization Policy](#).

Amortization Schedule and Alternatives (continued)

Date	Current Amortization Schedule		Alternative Schedules			
	Balance	Payment	15 Year Amortization		10 Year Amortization	
			Balance	Payment	Balance	Payment
6/30/2025	5,023,579	418,315	5,023,579	526,992	5,023,579	685,716
6/30/2026	4,932,874	449,112	4,820,567	526,992	4,656,535	685,715
6/30/2027	4,804,179	474,017	4,603,750	526,992	4,264,533	685,716
6/30/2028	4,640,992	530,356	4,372,190	526,992	3,845,874	685,715
6/30/2029	4,408,489	542,229	4,124,884	526,992	3,398,748	685,716
6/30/2030	4,147,906	552,543	3,860,761	526,992	2,921,216	685,715
6/30/2031	3,858,942	563,143	3,578,678	526,992	2,411,213	685,716
6/30/2032	3,539,375	557,271	3,277,413	526,992	1,866,529	685,716
6/30/2033	3,204,142	550,773	2,955,662	526,991	1,284,806	685,715
6/30/2034	2,852,835	537,322	2,612,033	526,992	663,527	685,716
6/30/2035	2,491,535	515,522	2,245,036	526,991		
6/30/2036	2,128,196	476,712	1,853,084	526,991		
6/30/2037	1,780,259	362,104	1,434,480	526,992		
6/30/2038	1,527,102	336,036	987,410	526,992		
6/30/2039	1,283,672	315,583	509,939	526,992		
6/30/2040	1,044,826	302,240				
6/30/2041	803,526	261,148				
6/30/2042	588,285	220,496				
6/30/2043	400,420	355,879				
6/30/2044	59,869	61,871				
6/30/2045						
6/30/2046						
6/30/2047						
6/30/2048						
6/30/2049						
Total		8,382,672		7,904,877		6,857,156
Interest Paid		3,359,093		2,881,298		1,833,577
Estimated Savings				477,795		1,525,516

Employer Contribution History

The table below provides a recent history of the employer contribution requirements for the plan, as determined by the annual actuarial valuation. Changes due to prepayments or plan amendments after the valuation report was finalized are not reflected.

Valuation Date	Contribution Year	Employer Normal Cost Rate	Unfunded Liability Payment
06/30/2014	2016 - 17	9.558%	\$101,476
06/30/2015	2017 - 18	9.599%	127,933
06/30/2016	2018 - 19	10.152%	151,625
06/30/2017	2019 - 20	10.868%	192,789
06/30/2018	2020 - 21	11.746%	223,400
06/30/2019	2021 - 22	11.60%	267,426
06/30/2020	2022 - 23	11.61%	310,190
06/30/2021	2023 - 24	13.26%	297,212
06/30/2022	2024 - 25	13.31%	360,298
06/30/2023	2025 - 26	13.38%	418,315

Funding History

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

Valuation Date	Accrued Liability (AL)	Share of Pool's Market Value of Assets (MVA)	Unfunded Accrued Liability (UAL)	Funded Ratio	Annual Covered Payroll
06/30/2014	\$11,279,511	\$9,569,301	\$1,710,210	84.8%	\$1,363,267
06/30/2015	11,663,490	9,392,360	2,271,130	80.5%	897,921
06/30/2016	12,080,425	9,177,513	2,902,912	76.0%	986,978
06/30/2017	12,861,499	9,978,719	2,882,780	77.6%	955,435
06/30/2018	13,785,793	10,392,461	3,393,332	75.4%	1,100,635
06/30/2019	13,968,713	10,373,669	3,595,044	74.3%	1,139,768
06/30/2020	14,550,670	10,598,648	3,952,022	72.8%	1,195,979
06/30/2021	15,484,380	12,793,951	2,690,429	82.6%	1,242,135
06/30/2022	16,275,206	11,605,164	4,670,042	71.3%	1,294,404
06/30/2023	16,577,965	11,559,689	5,018,276	69.7%	1,237,849

Risk Analysis

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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 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, 2043.

Assumed Annual Return FY 2023-24 through FY 2042-43	Projected Employer Contributions				
	2026-27	2027-28	2028-29	2029-30	2030-31
3.0% (5th percentile)					
Discount Rate	6.80%	6.80%	6.80%	6.80%	6.80%
Normal Cost Rate	13.4%	13.4%	13.4%	13.4%	13.4%
UAL Contribution	\$460,000	\$506,000	\$596,000	\$652,000	\$719,000
10.8% (95th percentile)					
Discount Rate	6.75%	6.70%	6.65%	6.60%	6.55%
Normal Cost Rate	13.6%	13.9%	14.2%	14.4%	14.7%
UAL Contribution	\$439,000	\$443,000	\$468,000	\$436,000	\$389,000

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 one and two standard deviation investment losses in FY 2023-24 on the FY 2026-27 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 2026-27.

Assumed Annual Return for Fiscal Year 2023-24	Required Employer Contributions	Projected Employer Contributions
	2025-26	2026-27
(17.2%) (2 standard deviation loss)		
Discount Rate	6.80%	6.80%
Normal Cost Rate	13.38%	13.4%
UAL Contribution	\$418,315	\$517,000
(5.2%) (1 standard deviation loss)		
Discount Rate	6.80%	6.80%
Normal Cost Rate	13.38%	13.4%
UAL Contribution	\$418,315	\$483,000

- Without investment gains (returns higher than 6.8%) in FY 2024-25 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 2023-24.
- The Pension Outlook Tool can be used to model projected contributions for these scenarios beyond FY 2026-27 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, 2023, 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, 2023	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	25.56%	20.31%	16.31%
b) Accrued Liability	\$18,691,359	\$16,577,965	\$14,817,695
c) Market Value of Assets	\$11,559,689	\$11,559,689	\$11,559,689
d) Unfunded Liability/(Surplus) [(b) - (c)]	\$7,131,670	\$5,018,276	\$3,258,006
e) Funded Ratio	61.8%	69.7%	78.0%

Sensitivity to the Price Inflation Assumption

As of June 30, 2023	1% Lower Price Inflation	Current Assumptions	1% Higher Price Inflation
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	21.29%	20.31%	18.54%
b) Accrued Liability	\$17,087,361	\$16,577,965	\$15,410,785
c) Market Value of Assets	\$11,559,689	\$11,559,689	\$11,559,689
d) Unfunded Liability/(Surplus) [(b) - (c)]	\$5,527,672	\$5,018,276	\$3,851,096
e) Funded Ratio	67.7%	69.7%	75.0%

Mortality Rate Sensitivity

The following table looks at the change in the June 30, 2023, 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 adopted in 2021. This type of analysis highlights the impact on the plan of a change in the mortality assumption.

As of June 30, 2023	10% Lower Mortality Rates	Current Assumptions	10% Higher Mortality Rates
a) Total Normal Cost	20.66%	20.31%	19.99%
b) Accrued Liability	\$16,939,783	\$16,577,965	\$16,246,160
c) Market Value of Assets	\$11,559,689	\$11,559,689	\$11,559,689
d) Unfunded Liability/(Surplus) [(b) - (c)]	\$5,380,094	\$5,018,276	\$4,686,471
e) Funded Ratio	68.2%	69.7%	71.2%

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 pension plan is impacted by investment return volatility, other economic variables and changes in longevity or other demographic assumptions.

Since it is the employer that bears the risk, it is appropriate to perform this analysis on a pension plan level considering all rate plans. The following measures are for one rate plan only. 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, 2022	June 30, 2023
1. Retiree Accrued Liability	\$9,265,536	\$9,593,555
2. Total Accrued Liability	\$16,275,206	\$16,577,965
3. Ratio of Retiree AL to Total AL [(1) ÷ (2)]	57%	58%

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 as of June 30, 2022, was 0.77 and was 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, 2022	June 30, 2023
1. Number of Actives	10	9
2. Number of Retirees	20	20
3. Support Ratio [(1) ÷ (2)]	0.50	0.45

Maturity Measures (continued)

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 increases, 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.

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 an AVR of 8 may experience twice the contribution volatility due to investment return volatility than a plan with an 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 an LVR of 8 is expected to have twice the contribution volatility of a plan with an 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, 2022	June 30, 2023
1. Market Value of Assets	\$11,605,164	\$11,559,689
2. Payroll	\$1,294,404	\$1,237,849
3. Asset Volatility Ratio (AVR) [(1) ÷ (2)]	9.0	9.3
4. Accrued Liability	\$16,275,206	\$16,577,965
5. Liability Volatility Ratio (LVR) [(4) ÷ (2)]	12.6	13.4

Maturity Measures History

Valuation Date	Ratio of Retiree Accrued Liability to Total Accrued Liability	Support Ratio	Asset Volatility Ratio	Liability Volatility Ratio
06/30/2017	70%	0.45	10.4	13.5
06/30/2018	66%	0.50	9.4	12.5
06/30/2019	65%	0.53	9.1	12.3
06/30/2020	62%	0.53	8.9	12.2
06/30/2021	59%	0.50	10.3	12.5
06/30/2022	57%	0.50	9.0	12.6
06/30/2023	58%	0.45	9.3	13.4

Funded Status – Termination Basis

The funded status measured on a termination basis is an estimate of the financial position of the plan had the contract with CalPERS been terminated as of June 30, 2023. The accrued liability on a termination basis (termination liability) is calculated differently from the plan’s ongoing funding liability. For the 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. Unlike the actuarial cost method used for ongoing plans, the termination liability is the present value of the benefits earned through the valuation date.

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 remainder of 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 discount rate used for actual termination valuations is a weighted average of the 10-year and 30-year Treasury yields where the weights are based on matching asset and liability durations as of the termination date. The discount rates used in the following analysis is based on 20-year Treasury bonds, which is a good proxy for most plans. The discount rate upon contract termination will depend on actual Treasury rates on the date of termination, which varies over time, as shown below.

Valuation Date	20-Year Treasury Rate	Valuation Date	20-Year Treasury Rate
06/30/2014	3.08%	06/30/2019	2.31%
06/30/2015	2.83%	06/30/2020	1.18%
06/30/2016	1.86%	06/30/2021	2.00%
06/30/2017	2.61%	06/30/2022	3.38%
06/30/2018	2.91%	06/30/2023	4.06%

As Treasury rates are variable, the table below shows a range for the termination liability using discount rates 1% below and above the 20-year Treasury rate on the valuation date. The price inflation assumption is the 20-year Treasury breakeven inflation rate, that is, the difference between the 20-year inflation indexed bond and the 20-year fixed-rate bond.

The Market Value of Assets (MVA) also varies with interest rates and will fluctuate depending on other market conditions on the date of termination. Since it is not possible to approximate how the MVA will change in different interest rate environments, the results below use the MVA as of the valuation date.

	Discount Rate: 3.06% Price Inflation: 2.50%	Discount Rate: 5.06% Price Inflation: 2.50%
1. Termination Liability ¹	\$26,263,123	\$19,873,253
2. Market Value of Assets (MVA)	11,559,689	11,559,689
3. Unfunded Termination Liability [(1) – (2)]	\$14,703,434	\$8,313,564
4. Funded Ratio [(2) ÷ (1)]	44.0%	58.2%

¹ The termination liabilities calculated above include a 5% contingency load. The contingency load and other actuarial assumptions can be found in Appendix A of the Section 2 report.

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 a CalPERS actuary to provide a preliminary termination valuation with a more up-to-date estimate of the plan’s assets and liabilities. Before beginning this process, please consult with a CalPERS actuary.

Funded Status – Low-Default-Risk Basis

Actuarial Standard of Practice (ASOP) No. 4, *Measuring Pension Obligations and Determining Pension Plan Costs or Contributions*, requires the disclosure of a low-default-risk obligation measure (LDROM) of benefit costs accrued as of the valuation date using a discount rate based on the yields of high quality fixed income securities with cash flows that replicate expected benefit payments. Conceptually, this measure represents the level at which financial markets would value the accrued plan costs, and would be approximately equal to the cost of a portfolio of low-default-risk bonds with similar financial characteristics to accrued plan costs.

As permitted in ASOP No. 4, the Actuarial Office uses the Entry Age Actuarial Cost Method to calculate the LDROM. This methodology is in line with the measure of “benefit entitlements” calculated by the Bureau of Economic Analysis and used by the Federal Reserve to report the indebtedness due to pensions of plan sponsors and, conversely, the household wealth due to pensions of plan members.

As shown below, the discount rate used for the LDROM is 4.82%, which is the Standard FTSE Pension Liability Index¹ discount rate as of June 30, 2023, net of assumed administrative expenses.

Selected Measures on a Low-Default-Risk Basis	June 30, 2023
Discount Rate	4.82%
1. Accrued Liability ² – Low-Default-Risk Basis (LDROM)	
a) Active Members	\$8,237,142
b) Transferred Members	998,609
c) Separated Members	458,466
d) Members and Beneficiaries Receiving Payments	11,507,475
e) Total	\$21,201,692
2. Market Value of Assets (MVA)	11,559,689
3. Unfunded Accrued Liability – Low-Default-Risk Basis [(1e) – (2)]	\$9,642,003
4. Unfunded Accrued Liability – Funding Policy Basis	5,018,276
5. Present Value of Unearned Investment Risk Premium [(3) – (4)]	\$4,623,727

The difference between the unfunded liabilities on a low-default-risk basis and on the funding policy basis represents the present value of the investment risk premium that must be earned in future years to keep future contributions for currently accrued plan costs at the levels anticipated by the funding policy.

Benefit security for members of the plan relies on a combination of the assets in the plan, the investment income generated from those assets, and the ability of the plan sponsor to make necessary future contributions. If future returns fall short of 6.8%, benefit security could be at risk without higher than currently anticipated future contributions.

The funded status on a low-default-risk basis is not appropriate for assessing the sufficiency of plan assets to cover the cost of settling the plan’s benefit obligations (see [Funded Status – Termination Basis](#)), nor is it appropriate for assessing the need for future contributions (see [Funded Status – Funding Policy Basis](#)).

¹ This index is based on a yield curve of hypothetical AA-rated zero coupon corporate bonds whose maturities range from 6 months to 30 years. The index represents the single discount rate that would produce the same present value as discounting a standardized set of liability cash flows for a fully open pension plan using the yield curve. The liability cash flows are reasonably consistent with the pattern of benefits expected to be paid from the entire Public Employees’ Retirement Fund for current and former plan members. A different index, hence a different discount rate, may be needed to measure the LDROM for a subset of the fund, such as a single rate plan or a group of retirees.

² If plan assets were invested entirely in the AA fixed income securities used to determine the discount rate of 4.82%, the CalPERS discount rate could, at various times, be below 4.5% or 5.25%, and some automatic annual retiree COLAs could be suspended (Gov. Code sections 21329 and 21335). Since there is currently no proposal to adopt an asset allocation entirely comprised of fixed income securities, the automatic COLAs have been fully valued in the measures above based on the assumptions used for plan funding. Removing future COLAs from the measurement would understate the statutory obligation.

Summary of Valuation Data

The table below shows a summary of the plan's member data upon which this valuation is based:

	June 30, 2022	June 30, 2023
Active Members		
Counts	10	9
Average Attained Age	51.5	51.2
Average Entry Age to Rate Plan	33.9	34.5
Average Years of Credited Service	16.4	16.7
Average Annual Covered Pay	\$129,440	\$137,539
Annual Covered Payroll	\$1,294,404	\$1,237,849
Present Value of Future Payroll	\$9,944,687	\$9,488,648
Transferred Members	3	3
Separated Members	4	4
Retired Members and Beneficiaries*		
Counts	20	20
Average Annual Benefits	\$39,259	\$41,220
Total Annual Benefits	\$785,186	\$824,406

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.

* Values include community property settlements.

List of Class 1 Benefit Provisions

This plan has the following Class 1 Benefit Provisions:

- One Year Final Compensation (FAC 1)
- Post-Retirement Survivor Allowance (PRSA)

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 Section 2.

Member Category	Benefit Group		
	Misc	Misc	Misc
Demographics			
Actives	Yes	No	No
Transfers/Separated	Yes	No	No
Receiving	Yes	Yes	Yes
Benefit Provision			
Benefit Formula	2% @ 55		
Social Security Coverage	No		
Full/Modified	Full		
Employee Contribution Rate	7.00%		
Final Average Compensation Period	One Year		
Sick Leave Credit	Yes		
Non-Industrial Disability	Standard		
Industrial Disability	No		
Pre-Retirement Death Benefits			
Optional Settlement 2	Yes		
1959 Survivor Benefit Level	Level 3		
Special	No		
Alternate (firefighters)	No		
Post-Retirement Death Benefits			
Lump Sum	\$2,000	\$2,000	\$2,000
Survivor Allowance (PRSA)	Yes	Yes	Yes
COLA	2%	2%	2%

Section 2

California Public Employees' Retirement System

Risk Pool Actuarial Valuation Information

[Section 2](#) may be found on the CalPERS website (www.calpers.ca.gov) in the Forms & Publications section



**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 2024

**PEPRA Miscellaneous Plan of the Alameda County Mosquito Abatement District (CalPERS ID: 5854416969)
Annual Valuation Report as of June 30, 2023**

Dear Employer,

Attached to this letter is Section 1 of the June 30, 2023 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) 2025-26.** In addition, the report 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.

Because this plan is in a risk pool, the following valuation report has been separated into two sections:

- Section 1 contains specific information for the plan including the development of the current and projected employer contributions, and
- Section 2 contains the Risk Pool Actuarial Valuation appropriate to the plan as of June 30, 2023.

[Section 2](#) can be found on the CalPERS website (www.calpers.ca.gov). From the home page, go to *"Forms & Publications"* and select *"View All"*. In the search box, enter *"Risk Pool"* and from the results list download the Miscellaneous Risk Pool Actuarial Valuation Report for June 30, 2023.

Required Contributions

The table below shows the minimum required employer contributions and the PEPRA member contribution rate for FY 2025-26 along with an estimate of the employer contribution requirements for FY 2026-27. 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 Contribution Rate
2025-26	8.27%	\$8,431	8.25%
<i>Projected Results</i>			
2026-27	8.3%	\$11,000	TBD

The actual investment return for FY 2023-24 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 2023-24 differs from 6.8%, the actual contribution requirements for FY 2026-27 will differ from those shown above. For additional details regarding the assumptions and methods used for these projections, please refer to [Projected Employer Contributions](#). This section also contains projected required contributions through FY2030-31.

Report Enhancements

A number of enhancements were made to the report this year to ease navigation and allow the reader to find specific information more quickly. The tables of contents are now "clickable." This is true for the main table of contents that follows the title page and the intermediate tables of contents at the beginning of sections. The Adobe navigation pane on the left can also be used to skip to specific exhibits.

There are a number of links throughout the document in blue text. Links that are internal to the document are not underlined, while underlined links will take you to the CalPERS website. Examples are shown below.

Internal Bookmarks

[Required Employer Contributions](#)
[Member Contribution Rates](#)
[Summary of Key Valuation Results](#)
[Funded Status – Funding Policy Basis](#)
[Projected Employer Contributions](#)

CalPERS Website Links

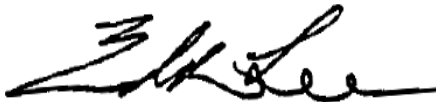
[Required Employer Contribution Search Tool](#)
[Public Agency PEPRA Member Contribution Rates](#)
[Pension Outlook Overview](#)
[Interactive Summary of Public Agency Valuation Results](#)
[Public Agency Actuarial Valuation Reports](#)

Further descriptions of general changes are included in the [Highlights and Executive Summary](#) section and in Appendix A - Actuarial Methods and Assumptions in Section 2.

Questions

A CalPERS actuary is available to answer questions about this report. Other questions may be directed to the Customer Contact Center at **888 CalPERS** (or **888-225-7377**).

Sincerely,



Eddie W. Lee, ASA, EA, FCA, MAAA
Senior Actuary, CalPERS



Randall Dziubek, ASA, MAAA
Deputy Chief Actuary, Valuation Services, CalPERS



Scott Terando, ASA, EA, MAAA, FCA, CFA
Chief Actuary, CalPERS

California Public Employees' Retirement System

Actuarial Valuation for the
PEPRA Miscellaneous Plan
of the Alameda County Mosquito
Abatement District
as of June 30, 2023

(CalPERS ID: 5854416969)
(Rate Plan ID: 26060)

Required Contributions for Fiscal Year

July 1, 2025 — June 30, 2026

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Section 2 – Risk Pool Actuarial Valuation Information

Section 1

California Public Employees' Retirement System

**Plan Specific Information
for the
PEPRA Miscellaneous Plan
of the
Alameda County Mosquito Abatement District**

**(CalPERS ID: 5854416969)
(Rate Plan ID: 26060)**

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Actuarial Certification

It is our opinion that the valuation has been performed in accordance with generally accepted actuarial principles as well as the applicable Standards of Practice promulgated by the Actuarial Standards Board. While this report, consisting of Section 1 and Section 2, is intended to be complete, our office is available to answer questions as needed. All of the undersigned are actuaries who satisfy the *Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States* of the American Academy of Actuaries with regard to pensions.

Actuarial Methods and Assumptions

It is our opinion that the assumptions and methods, as recommended by the Chief Actuary and adopted by the CalPERS Board of Administration, are internally consistent and reasonable for this plan.



Randall Dziubek, ASA, MAAA
Deputy Chief Actuary, Valuation Services, CalPERS



Scott Terando, ASA, EA, MAAA, FCA, CFA
Chief Actuary, CalPERS

Actuarial Data and Rate Plan Results

To the best of my knowledge and having relied upon the attestation above that the actuarial methods and assumptions are reasonable as well as the information in Section 2 of this report, this report is complete and accurate and contains sufficient information to disclose, fully and fairly, the funded condition of the PEPRA Miscellaneous Plan of the Alameda County Mosquito Abatement District and satisfies the actuarial valuation requirements of Government Code section 7504. This valuation and related validation work was performed by the CalPERS Actuarial Office. The valuation was based on the member and financial data as of June 30, 2023, provided by the various CalPERS databases and the benefits under this plan with CalPERS as of the date this report was produced. Section 1 of this report is based on the member and financial data for Alameda County Mosquito Abatement District, while Section 2 is based on the corresponding information for all agencies participating in the Miscellaneous Risk Pool to which the plan belongs.



Eddie W. Lee, ASA, EA, FCA, MAAA
Senior Actuary, CalPERS

Highlights and Executive Summary

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Introduction

This report presents the results of the June 30, 2023, actuarial valuation of the PEPRA Miscellaneous Plan of the Alameda County Mosquito Abatement District of the California Public Employees' Retirement System (CalPERS). This actuarial valuation sets the minimum required contributions for fiscal year (FY) 2025-26.

Purpose of Section 1

This Section 1 report for the PEPRA Miscellaneous Plan of the Alameda County Mosquito Abatement District of CalPERS was prepared by the Actuarial Office using data as of June 30, 2023. The purpose of the valuation is to:

- Set forth the assets and accrued liabilities of this rate plan as of June 30, 2023;
- Determine the minimum required employer contributions for this rate plan for FY July 1, 2025, through June 30, 2026;
- Determine the required member contribution rate for FY July 1, 2025, through June 30, 2026, for employees subject to the California Public Employees' Pension Reform Act of 2013 (PEPRA); and
- Provide actuarial information as of June 30, 2023, 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 a Cost Sharing Employer Defined Benefit Pension Plan. A separate accounting valuation report for such purposes is 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 a CalPERS 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 guidance 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 of 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.

Summary of Key Valuation Results

Below is a brief summary of key valuation results along with page references where more detailed information can be found.

Required Employer Contributions — page 8

	Fiscal Year 2024-25	Fiscal Year 2025-26
Employer Normal Cost Rate	8.18%	8.27%
Unfunded Accrued Liability (UAL) Contribution Amount	\$3,949	\$8,431
Paid either as		
Option 1) 12 Monthly Payments of	\$329.08	\$702.58
Option 2) Annual Prepayment in July	\$3,821	\$8,158

Member Contribution Rates — page 9

	Fiscal Year 2024-25	Fiscal Year 2025-26
Member Contribution Rate	8.25%	8.25%

Projected Employer Contributions — page 14

Fiscal Year	Normal Cost (% of payroll)	Annual UAL Payment
2026-27	8.3%	\$11,000
2027-28	8.3%	\$14,000
2028-29	8.3%	\$17,000
2029-30	8.3%	\$17,000
2030-31	8.3%	\$17,000

Funded Status — Funding Policy Basis — page 12

	June 30, 2022	June 30, 2023
Entry Age Accrued Liability (AL)	\$840,882	\$1,016,610
Market Value of Assets (MVA)	725,716	863,482
Unfunded Accrued Liability (UAL) [AL – MVA]	\$115,166	\$153,128
Funded Ratio [MVA ÷ AL]	86.3%	84.9%

Summary of Valuation Data — Page 26

	June 30, 2022	June 30, 2023
Active Member Count	8	9
Annual Covered Payroll	\$786,340	\$959,138
Transferred Member Count	0	0
Separated Member Count	1	2
Retired Members and Beneficiaries Count	0	0

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. For pooled rate plans, voluntary benefit changes by plan amendment are generally included in the first valuation with a valuation date on or after the effective date of the amendment.

Please refer to the [Plan's Major Benefit Options](#) in this report and Appendix B of the Section 2 Report for a summary of the plan provisions used in this valuation.

Actuarial Methods and Assumptions

There are no significant changes to the actuarial methods or assumptions for the June 30, 2023, actuarial valuation.

New Disclosure Items

In December 2021, the Actuarial Standards Board issued a revision of Actuarial Standard of Practice No. 4 (ASOP 4) requiring actuaries to disclose a low-default-risk obligation measure (LDROM) of the benefits earned. This information is shown in a new exhibit, [Funded Status – Low-Default-Risk Basis](#).

Subsequent Events

This actuarial valuation report reflects fund investment return through June 30, 2023, as well as statutory changes, regulatory changes and board actions through January 2024.

During the time period between the valuation date and the publication of this report, inflation has been higher than the expected inflation of 2.3% per annum. Since inflation influences cost-of-living increases for retirees and beneficiaries and active member pay increases, higher inflation is likely to put at least some upward pressure on contribution requirements and downward pressure on the funded status in the June 30, 2024, valuation. The actual impact of higher inflation on future valuation results will depend on, among other factors, how long higher inflation persists.

The 2023 annual benefit limit under Internal Revenue Code (IRC) section 415(b) and annual compensation limits under IRC section 401(a)(17) and Government Code section 7522.10 were used for this valuation and are assumed to increase 2.3% per year based on the price inflation assumption. The actual 2024 limits, determined in October 2023, are not reflected.

On April 16, 2024, the board took action to modify the Funding Risk Mitigation Policy to remove the automatic change to the discount rate when the investment return exceeds various thresholds. Rather than an automatic change to the discount rate, a board discussion would be placed on the calendar. The 95th percentile return in the [Future Investment Return Scenarios](#) exhibit in this report has not been modified and still reflects the projected contribution requirements associated with a reduction in the discount rate.

To the best of our knowledge, there have been no other subsequent events that could materially affect current or future certifications rendered in this report.

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Determination of Required Contributions

Contributions to fund the plan are determined by an actuarial valuation performed each year. The valuation employs complex calculations based on a set of actuarial assumptions and methods. See Appendix A in Section 2 for information on the assumptions and methods used in this valuation. The valuation incorporates all plan experience through the valuation date and sets required contributions for the fiscal year that begins two years after the valuation date.

Contribution Components

Two components comprise required contributions:

- Normal Cost — expressed as a percentage of pensionable payroll
- Unfunded Accrued Liability (UAL) Contribution — expressed as a dollar amount

Normal Cost represents the value of benefits allocated to the upcoming year for active employees. If all plan experience exactly matched the actuarial assumptions, normal cost would be sufficient to fully fund all benefits. The employer and employees each pay a share of the normal cost with contributions payable as part of the regular payroll reporting process. The contribution rate for Classic members is set by statute based on benefit formula whereas for PEPRA members it is based on 50% of the total normal cost.

When plan experience differs from the actuarial assumptions, unfunded accrued liability (UAL) emerges. The new UAL may be positive or negative. If the total UAL is positive (i.e., accrued liability exceeds assets), the employer is required to make contributions to pay off the UAL over time. This is called the Unfunded Accrued Liability Contribution component. There is an option to prepay this amount during July of each fiscal year, otherwise it is paid monthly.

In measuring the UAL each year, plan experience is split by source. Common sources of UAL include investment experience different than expected, non-investment experience different than expected, assumption changes and benefit changes. Each source of UAL (positive or negative) forms a base that is amortized, or paid off, over a specified period of time in accordance with the CalPERS [Actuarial Amortization Policy](#). The Unfunded Accrued Liability Contribution is the sum of the payments on all bases. See the [Schedule of Amortization Bases](#) section of this report for an inventory of existing bases and Appendix A in Section 2 for more information on the amortization policy.

Required Employer Contributions

The required employer contributions in this report do not reflect any cost sharing arrangement between the agency and the employees.

Required Employer Contributions	Fiscal Year 2025-26
Employer Normal Cost Rate	8.27%
<i>Plus</i>	
Unfunded Accrued Liability (UAL) Contribution Amount¹	\$8,431
<i>Paid either as</i>	
1) Monthly Payment	\$702.58
<i>Or</i>	
2) Annual Prepayment Option*	\$8,158

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) and the 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 [Member Contribution Rates](#) see the following page.

Development of Normal Cost as a Percentage of Payroll	Fiscal Year 2024-25	Fiscal Year 2025-26
Base Total Normal Cost for Formula	15.62%	15.71%
Surcharge for Class 1 Benefits ²		
a) PRSA	0.81%	0.81%
Plan's Total Normal Cost	16.43%	16.52%
Offset Due to Employee Contributions ³	8.25%	8.25%
Employer Normal Cost	8.18%	8.27%

¹ The required payment on amortization bases does not take into account any additional discretionary payment made after April 30, 2024.

² Section 2 of this report contains a list of Class 1 benefits and corresponding surcharges.

³ This is the expected employee contributions, taking into account individual benefit formula and any offset from the use of a modified formula, divided by projected annual payroll. For member contribution rates above the breakpoint for each benefit formula, see [Member Contribution Rates](#).

Member Contribution Rates

The required member contributions in this report do not reflect any cost sharing arrangement between the agency and the employees.

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 rate for the plan is dependent on the benefit levels, actuarial assumptions and demographics of the risk pool, particularly members' entry age. Should the total normal cost rate of the plan change by more than 1% from the base total normal cost rate established for the plan, the new member rate shall be 50% of the new normal cost rate rounded to the nearest quarter percent.

The table below shows the determination of the PEPRA member contribution rates effective July 1, 2025, based on 50% of the total normal cost rate as of the June 30, 2023, valuation.

Rate Plan Identifier	Benefit Group Name	Basis for Current Rate		Rates Effective July 1, 2025			
		Total Normal Cost	Member Rate	Total Normal Cost	Change	Change Needed	Member Rate
26060	Miscellaneous PEPRA Level	16.25%	8.25%	16.52%	0.27%	No	8.25%

Other Pooled Miscellaneous Risk Pool Rate Plans

All of the results presented in this Section 1 report, except those shown on this page, correspond to rate plan 26060. In many cases, employers have additional rate plans within the same risk pool. For cost analysis and budgeting it is useful to consider contributions for these rate plans as a whole rather than individually. The estimated contribution amounts and rates for all of the employer's rate plans in the Miscellaneous Risk Pool are shown below and assume that the total employer payroll within the Miscellaneous Risk Pool will grow according to the overall payroll growth assumption of 2.80% per year for three years. Classic members who are projected to terminate employment are assumed to be replaced by PEPRA members.

Estimated Employer Contributions for all Pooled Miscellaneous Rate Plans	Fiscal Year	Fiscal Year
	2024-25	2025-26
Projected Payroll for the Contribution Year	\$2,260,466	\$2,386,749
Estimated Employer Normal Cost	\$246,533	\$257,184
Required Payment on Amortization Bases	\$364,247	\$426,746
Estimated Total Employer Contributions	\$610,780	\$683,930
Estimated Total Employer Contribution Rate (illustrative only)	27.02%	28.66%

Breakdown of Entry Age Accrued Liability

Active Members	\$947,104
Transferred Members	0
Separated Members	69,506
Members and Beneficiaries Receiving Payments	0
Total	\$1,016,610

Allocation of Plan's Share of Pool's Experience

It is the policy of CalPERS to ensure equity within the risk pools by allocating the pool's experience gains/losses and assumption changes in a manner that treats each employer equitably and maintains benefit security for the members of the System while minimizing substantial variations in employer contributions. The pool's experience gains/losses and impact of assumption/method changes is allocated to the plan as follows:

1. Plan's Accrued Liability	\$1,016,610
2. Projected UAL Balance at 6/30/2023	131,842
3. Other UAL Adjustments (Golden Handshake, Prior Service Purchase, etc.)	0
4. Adjusted UAL Balance at 6/30/2023 for Asset Share	131,842
5. Pool's Accrued Liability ¹	23,349,910,053
6. Sum of Pool's Individual Plan UAL Balances at 6/30/2023 ¹	5,227,602,209
7. Pool's 2022-23 Investment (Gain)/Loss ¹	114,855,623
8. Pool's 2022-23 Non-Investment (Gain)/Loss ¹	360,116,330
9. Plan's Share of Pool's Investment (Gain)/Loss: $[(1) - (4)] \div [(5) - (6)] \times (7)$	5,607
10. Plan's Share of Pool's Non-Investment (Gain)/Loss: $(1) \div (5) \times (8)$	15,679
11. Plan's New (Gain)/Loss as of 6/30/2023: $(9) + (10)$	21,286
12. Increase in Pool's Accrued Liability due to Change in Assumptions ¹	0
13. Plan's Share of Pool's Change in Assumptions: $(1) \div (5) \times (12)$	0
14. Increase in Pool's Accrued Liability due to Funding Risk Mitigation ¹	0
15. Plan's Share of Pool's Change due to Funding Risk Mitigation: $(1) \div (5) \times (14)$	0
16. Offset due to Funding Risk Mitigation	0
17. Plan's Investment (Gain)/Loss: $(9) - (16)$	5,607

¹ Does not include plans that transferred to the pool on the valuation date.

Development of the Plan's Share of Pool's Assets

18. Plan's UAL: $(2) + (3) + (11) + (13) + (15)$	\$153,128
19. Plan's Share of Pool's Market Value of Assets (MVA): $(1) - (18)$	\$863,482

For a reconciliation of the pool's Market Value of Assets (MVA), information on the fund's asset allocation and a history of CalPERS investment returns, see [Section 2](#), which can be found on the CalPERS website (www.calpers.ca.gov).

Funded Status – Funding Policy Basis

The table below provides information on the current funded status of the plan under the funding policy. The funded status for this purpose is based on the market value of assets relative to the funding target produced by the entry age actuarial cost method and actuarial assumptions adopted by the board. The actuarial cost method allocates the total expected cost of a member's projected benefit (Present Value of Benefits) to individual years of service (the Normal Cost). The value of the projected benefit that is not allocated to future service is referred to as the Accrued Liability and is the plan's funding target on the valuation date. The Unfunded Accrued Liability (UAL) equals the funding target minus the assets. The UAL is an absolute measure of funded status and can be viewed as employer debt. The funded ratio equals the assets divided by the funding target. The funded ratio is a relative measure of the funded status and allows for comparisons between plans of different sizes.

	June 30, 2022	June 30, 2023
1. Present Value of Benefits	\$2,290,474	\$2,758,248
2. Entry Age Accrued Liability	840,882	1,016,610
3. Market Value of Assets (MVA)	725,716	863,482
4. Unfunded Accrued Liability (UAL) [(2) – (3)]	\$115,166	\$153,128
5. Funded Ratio [(3) ÷ (2)]	86.3%	84.9%

A funded ratio of 100% (UAL of \$0) implies that the funding of the plan is on target and that future contributions equal to the normal cost of the active plan members will be sufficient to fully fund all retirement benefits if future experience matches the actuarial assumptions. A funded ratio of less than 100% (positive UAL) implies that in addition to normal costs, payments toward the UAL will be required. Plans with a funded ratio greater than 100% have a negative UAL (or surplus) but are required under current law to continue contributing the normal cost in most cases, preserving the surplus for future contingencies.

Calculations for the funding target reflect the expected long-term investment return of 6.8%. If it were known on the valuation date that future investment returns will average something greater/less than the expected return, calculated normal costs and accrued liabilities provided in this report would be less/greater than the results shown. Therefore, for example, if actual average future returns are less than the expected return, calculated normal costs and UAL contributions will not be sufficient to fully fund all retirement benefits. Under this scenario, required future normal cost contributions will need to increase from those provided in this report, and the plan will develop unfunded liabilities that will also add to required future contributions. For illustrative purposes, funded statuses based on a 1% lower and higher average future investment return (discount rate) are as follows:

	1% Lower Average Return	Current Assumption	1% Higher Average Return
Discount Rate	5.8%	6.8%	7.8%
1. Entry Age Accrued Liability	\$1,304,144	\$1,016,610	\$798,951
2. Market Value of Assets (MVA)	863,482	863,482	863,482
3. Unfunded Accrued Liability (UAL) [(1) – (2)]	\$440,662	\$153,128	(\$64,531)
4. Funded Ratio [(2) ÷ (1)]	66.2%	84.9%	108.1%

The [Risk Analysis](#) section of the report provides additional information regarding the sensitivity of valuation results to the expected investment return and other factors. Also provided in that section are measures of funded status that are appropriate for assessing the sufficiency of plan assets to cover estimated termination liabilities.

Additional Employer Contributions

The minimum required employer contribution towards the Unfunded Accrued Liability (UAL) for this rate plan for FY 2025-26 is \$8,431. CalPERS allows agencies to make additional discretionary payments (ADPs) at any time. 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 2025-26 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 [Amortization Schedule and Alternatives](#). Agencies considering making an ADP should contact CalPERS for additional information.

Fiscal Year 2025-26 Employer Contributions — Illustrative Scenarios

Funding Approach	Estimated Normal Cost	Minimum UAL Contribution	ADP ¹	Total UAL Contribution	Estimated Total Contribution
Minimum required only	\$100,605	\$8,431	0	\$8,431	\$109,036
20 year funding horizon	\$100,605	\$8,431	\$6,908	\$15,339	\$115,944
15 year funding horizon	\$100,605	\$8,431	\$9,463	\$17,894	\$118,499
10 year funding horizon	\$100,605	\$8,431	\$14,853	\$23,284	\$123,889
5 year funding horizon	\$100,605	\$8,431	\$31,610	\$40,041	\$140,646

The minimum required contribution above is less than interest on the UAL. With no ADP the UAL is projected to increase over the following year. If the minimum UAL payment were split between interest and principal, the principal portion would be negative. This situation is referred to as **negative amortization**. If only the minimum required contribution is made, contributions are not expected to exceed interest on the UAL until FY **2027-28**, as shown in the [Amortization Schedule and Alternatives](#) section of the report (see columns labeled Current Amortization Schedule).

Fiscal Year 2025-26 Employer Contribution Necessary to Avoid Negative Amortization

Estimated Normal Cost	Minimum UAL Contribution	ADP ¹	Total UAL Contribution	Estimated Total Contribution
\$100,605	\$8,431	\$2,793	\$11,224	\$111,829

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.

The calculations above are based on the projected UAL as of June 30, 2025, as determined in the June 30, 2023, 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.

Additional Discretionary Payment History

The following table provides a recent history of actual ADPs made to the plan.

Fiscal Year	ADP	Fiscal Year	ADP
2019-20	\$0	2022-23	\$0
2020-21	\$0	2023-24 ²	\$0
2021-22	\$0		

² Excludes payments made after April 30, 2024

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 2023-24 is assumed to be 6.80% per year, net of investment and administrative expenses. 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 2023-24 and Beyond)				
Fiscal Year	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31
	Rate Plan 26060 Results					
Normal Cost%	8.27%	8.3%	8.3%	8.3%	8.3%	8.3%
UAL Payment	\$8,431	\$11,000	\$14,000	\$17,000	\$17,000	\$17,000

For ongoing plans, investment gains and losses are amortized using a 5-year ramp up. For more information, please see Amortization of Unfunded Actuarial Accrued Liability in Appendix A of the Section 2 Report. 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 investment loss, the relatively small amortization payments during the ramp up period could result in contributions that are less than interest on the UAL (i.e. negative amortization) while the contribution impact of the increase in the UAL is phased in.

The required contribution for FY 2025-26 is less than interest on the UAL, a situation referred to as **negative amortization**, as explained in the [Additional Employer Contributions](#) section earlier in this report. If only the minimum required contribution is made, contributions are not expected to exceed interest on the UAL until FY 2027-28, as shown in the [Amortization Schedule and Alternatives](#) section of the report (see columns labelled "Current Amortization Schedule").

For projected contributions under alternate investment return scenarios, please see the [Future Investment Return Scenarios](#) exhibit. 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.

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, 2023.
- The required employer contributions determined by the valuation are for the fiscal year beginning two years after the valuation date: FY 2025-26.

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 FY 2023-24 is based on the actuarial valuation two years ago, adjusted for additional discretionary payments made on or before April 30, 2024, if necessary, and the expected payment for FY 2024-25 is based on the actuarial valuation one year ago.

Reason for Base	Date Est.	Ramp Level 2025-26	Ramp Shape	Escalation Rate	Amort. Period	Balance 6/30/23	Expected Payment 2023-24	Balance 6/30/24	Expected Payment 2024-25	Balance 6/30/25	Minimum Required Payment 2025-26
Non-Investment (Gain)/Loss	6/30/22	No Ramp		0.00%	19	12,622	0	13,480	1,212	13,144	1,212
Partial Fresh Start	6/30/22	40%	Up Only	0.00%	19	119,220	0	127,327	2,737	133,157	5,474
Investment (Gain)/Loss	6/30/23	20%	Up Only	0.00%	20	5,607	0	5,988	0	6,395	137
Non-Investment (Gain)/Loss	6/30/23	No Ramp		0.00%	20	15,679	0	16,745	0	17,884	1,608
Total						153,128	0	163,540	3,949	170,580	8,431

The (gain)/loss bases are the plan's allocated share of the risk pool's (gain)/loss for the fiscal year as disclosed in [Allocation of Plan's Share of Pool's Experience](#) earlier in this report. These (gain)/loss bases will be amortized in accordance with the CalPERS amortization policy in effect at the time the base was established.

Amortization Schedule and Alternatives

The amortization schedule on the previous page(s) 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 a CalPERS 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 [Actuarial Amortization Policy](#).

Amortization Schedule and Alternatives (continued)

Date	Current Amortization Schedule		Alternative Schedules			
	Balance	Payment	20 Year Amortization		15 Year Amortization	
			Balance	Payment	Balance	Payment
6/30/2025	170,580	8,431	170,580	15,339	170,580	17,894
6/30/2026	173,466	11,306	166,327	15,339	163,687	17,895
6/30/2027	173,578	14,179	161,785	15,339	156,324	17,894
6/30/2028	170,729	17,054	156,934	15,339	148,462	17,895
6/30/2029	164,714	17,191	151,754	15,339	140,064	17,894
6/30/2030	158,148	17,191	146,221	15,339	131,096	17,895
6/30/2031	151,137	17,192	140,312	15,339	121,517	17,894
6/30/2032	143,648	17,192	134,001	15,339	111,288	17,895
6/30/2033	135,649	17,192	127,261	15,339	100,362	17,894
6/30/2034	127,107	17,192	120,063	15,339	88,694	17,894
6/30/2035	117,983	17,194	112,375	15,339	76,233	17,895
6/30/2036	108,238	17,194	104,165	15,339	62,923	17,894
6/30/2037	97,829	17,192	95,396	15,339	48,709	17,894
6/30/2038	86,714	17,193	86,031	15,339	33,529	17,895
6/30/2039	74,843	17,193	76,029	15,339	17,316	17,895
6/30/2040	62,165	17,194	65,347	15,339		
6/30/2041	48,623	17,192	53,939	15,340		
6/30/2042	34,162	17,193	41,754	15,339		
6/30/2043	18,717	17,193	28,741	15,339		
6/30/2044	2,222	2,296	14,843	15,339		
6/30/2045						
6/30/2046						
6/30/2047						
6/30/2048						
6/30/2049						
Total		311,154		306,781		268,417
Interest Paid		140,574		136,201		97,837
Estimated Savings				4,373		42,737

Employer Contribution History

The table below provides a recent history of the employer contribution requirements for the plan, as determined by the annual actuarial valuation. Changes due to prepayments or plan amendments after the valuation report was finalized are not reflected.

Valuation Date	Contribution Year	Employer Normal Cost Rate	Unfunded Liability Payment
06/30/2014	2016 - 17	6.930%	\$141
06/30/2015	2017 - 18	6.908%	360
06/30/2016	2018 - 19	7.266%	568
06/30/2017	2019 - 20	7.072%	929
06/30/2018	2020 - 21	7.874%	1,650
06/30/2019	2021 - 22	7.73%	2,637
06/30/2020	2022 - 23	7.76%	3,489
06/30/2021	2023 - 24	8.00%	0
06/30/2022	2024 - 25	8.18%	3,949
06/30/2023	2025 - 26	8.27%	8,431

Funding History

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

Valuation Date	Accrued Liability (AL)	Share of Pool's Market Value of Assets (MVA)	Unfunded Accrued Liability (UAL)	Funded Ratio	Annual Covered Payroll
06/30/2014	\$658	\$687	(\$29)	104.5%	\$61,347
06/30/2015	19,399	18,192	1,207	93.8%	212,227
06/30/2016	83,763	76,035	7,728	90.8%	516,269
06/30/2017	185,212	177,972	7,240	96.1%	574,230
06/30/2018	286,462	264,212	22,250	92.2%	577,005
06/30/2019	423,383	387,581	35,802	91.5%	666,618
06/30/2020	466,918	413,726	53,192	88.6%	692,790
06/30/2021	671,213	689,712	(18,499)	102.8%	765,689
06/30/2022	840,882	725,716	115,166	86.3%	786,340
06/30/2023	1,016,610	863,482	153,128	84.9%	959,138

Risk Analysis

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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 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, 2043.

Assumed Annual Return FY 2023-24 through FY 2042-43	Projected Employer Contributions				
	2026-27	2027-28	2028-29	2029-30	2030-31
3.0% (5th percentile)					
Discount Rate	6.80%	6.80%	6.80%	6.80%	6.80%
Normal Cost Rate	8.3%	8.3%	8.3%	8.3%	8.3%
UAL Contribution	\$12,000	\$17,000	\$22,000	\$25,000	\$30,000
10.8% (95th percentile)					
Discount Rate	6.75%	6.70%	6.65%	6.60%	6.55%
Normal Cost Rate	8.5%	8.7%	8.9%	8.6%	8.8%
UAL Contribution	\$11,000	\$12,000	\$13,000	\$9,400	\$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 one and two standard deviation investment losses in FY 2023-24 on the FY 2026-27 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 2026-27.

Assumed Annual Return for Fiscal Year 2023-24	Required Employer Contributions	Projected Employer Contributions
	2025-26	2026-27
(17.2%) (2 standard deviation loss)		
Discount Rate	6.80%	6.80%
Normal Cost Rate	8.27%	8.3%
UAL Contribution	\$8,431	\$16,000
(5.2%) (1 standard deviation loss)		
Discount Rate	6.80%	6.80%
Normal Cost Rate	8.27%	8.3%
UAL Contribution	\$8,431	\$14,000

- Without investment gains (returns higher than 6.8%) in FY 2024-25 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 2023-24.
- The Pension Outlook Tool can be used to model projected contributions for these scenarios beyond FY 2026-27 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, 2023, 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, 2023	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	20.67%	16.52%	13.37%
b) Accrued Liability	\$1,304,144	\$1,016,610	\$798,951
c) Market Value of Assets	\$863,482	\$863,482	\$863,482
d) Unfunded Liability/(Surplus) [(b) - (c)]	\$440,662	\$153,128	(\$64,531)
e) Funded Ratio	66.2%	84.9%	108.1%

Sensitivity to the Price Inflation Assumption

As of June 30, 2023	1% Lower Price Inflation	Current Assumptions	1% Higher Price Inflation
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	17.42%	16.52%	15.02%
b) Accrued Liability	\$1,082,263	\$1,016,610	\$907,824
c) Market Value of Assets	\$863,482	\$863,482	\$863,482
d) Unfunded Liability/(Surplus) [(b) - (c)]	\$218,781	\$153,128	\$44,342
e) Funded Ratio	79.8%	84.9%	95.1%

Mortality Rate Sensitivity

The following table looks at the change in the June 30, 2023, 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 adopted in 2021. This type of analysis highlights the impact on the plan of a change in the mortality assumption.

As of June 30, 2023	10% Lower Mortality Rates	Current Assumptions	10% Higher Mortality Rates
a) Total Normal Cost	16.81%	16.52%	16.25%
b) Accrued Liability	\$1,033,674	\$1,016,610	\$1,000,799
c) Market Value of Assets	\$863,482	\$863,482	\$863,482
d) Unfunded Liability/(Surplus) [(b) - (c)]	\$170,192	\$153,128	\$137,317
e) Funded Ratio	83.5%	84.9%	86.3%

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 pension plan is impacted by investment return volatility, other economic variables and changes in longevity or other demographic assumptions.

Since it is the employer that bears the risk, it is appropriate to perform this analysis on a pension plan level considering all rate plans. The following measures are for one rate plan only. 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, 2022	June 30, 2023
1. Retiree Accrued Liability	\$0	\$0
2. Total Accrued Liability	\$840,882	\$1,016,610
3. Ratio of Retiree AL to Total AL [(1) ÷ (2)]	0%	0%

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 as of June 30, 2022, was 0.77 and was 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, 2022	June 30, 2023
1. Number of Actives	8	9
2. Number of Retirees	0	0
3. Support Ratio [(1) ÷ (2)]	N/A	N/A

Maturity Measures (continued)

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 increases, 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.

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 an AVR of 8 may experience twice the contribution volatility due to investment return volatility than a plan with an 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 an LVR of 8 is expected to have twice the contribution volatility of a plan with an 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, 2022	June 30, 2023
1. Market Value of Assets	\$725,716	\$863,482
2. Payroll	\$786,340	\$959,138
3. Asset Volatility Ratio (AVR) [(1) ÷ (2)]	0.9	0.9
4. Accrued Liability	\$840,882	\$1,016,610
5. Liability Volatility Ratio (LVR) [(4) ÷ (2)]	1.1	1.1

Maturity Measures History

Valuation Date	Ratio of Retiree Accrued Liability to Total Accrued Liability	Support Ratio	Asset Volatility Ratio	Liability Volatility Ratio
06/30/2017	0%	N/A	0.3	0.3
06/30/2018	0%	N/A	0.5	0.5
06/30/2019	0%	N/A	0.6	0.6
06/30/2020	0%	N/A	0.6	0.7
06/30/2021	0%	N/A	0.9	0.9
06/30/2022	0%	N/A	0.9	1.1
06/30/2023	0%	N/A	0.9	1.1

Funded Status – Termination Basis

The funded status measured on a termination basis is an estimate of the financial position of the plan had the contract with CalPERS been terminated as of June 30, 2023. The accrued liability on a termination basis (termination liability) is calculated differently from the plan’s ongoing funding liability. For the 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. Unlike the actuarial cost method used for ongoing plans, the termination liability is the present value of the benefits earned through the valuation date.

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 remainder of 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 discount rate used for actual termination valuations is a weighted average of the 10-year and 30-year Treasury yields where the weights are based on matching asset and liability durations as of the termination date. The discount rates used in the following analysis is based on 20-year Treasury bonds, which is a good proxy for most plans. The discount rate upon contract termination will depend on actual Treasury rates on the date of termination, which varies over time, as shown below.

Valuation Date	20-Year Treasury Rate	Valuation Date	20-Year Treasury Rate
06/30/2014	3.08%	06/30/2019	2.31%
06/30/2015	2.83%	06/30/2020	1.18%
06/30/2016	1.86%	06/30/2021	2.00%
06/30/2017	2.61%	06/30/2022	3.38%
06/30/2018	2.91%	06/30/2023	4.06%

As Treasury rates are variable, the table below shows a range for the termination liability using discount rates 1% below and above the 20-year Treasury rate on the valuation date. The price inflation assumption is the 20-year Treasury breakeven inflation rate, that is, the difference between the 20-year inflation indexed bond and the 20-year fixed-rate bond.

The Market Value of Assets (MVA) also varies with interest rates and will fluctuate depending on other market conditions on the date of termination. Since it is not possible to approximate how the MVA will change in different interest rate environments, the results below use the MVA as of the valuation date.

	Discount Rate: 3.06% Price Inflation: 2.50%	Discount Rate: 5.06% Price Inflation: 2.50%
1. Termination Liability ¹	\$1,494,381	\$845,897
2. Market Value of Assets (MVA)	863,482	863,482
3. Unfunded Termination Liability [(1) – (2)]	\$630,899	(\$17,585)
4. Funded Ratio [(2) ÷ (1)]	57.8%	102.1%

¹ The termination liabilities calculated above include a 5% contingency load. The contingency load and other actuarial assumptions can be found in Appendix A of the Section 2 report.

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 a CalPERS actuary to provide a preliminary termination valuation with a more up-to-date estimate of the plan’s assets and liabilities. Before beginning this process, please consult with a CalPERS actuary.

Funded Status – Low-Default-Risk Basis

Actuarial Standard of Practice (ASOP) No. 4, *Measuring Pension Obligations and Determining Pension Plan Costs or Contributions*, requires the disclosure of a low-default-risk obligation measure (LDROM) of benefit costs accrued as of the valuation date using a discount rate based on the yields of high quality fixed income securities with cash flows that replicate expected benefit payments. Conceptually, this measure represents the level at which financial markets would value the accrued plan costs, and would be approximately equal to the cost of a portfolio of low-default-risk bonds with similar financial characteristics to accrued plan costs.

As permitted in ASOP No. 4, the Actuarial Office uses the Entry Age Actuarial Cost Method to calculate the LDROM. This methodology is in line with the measure of “benefit entitlements” calculated by the Bureau of Economic Analysis and used by the Federal Reserve to report the indebtedness due to pensions of plan sponsors and, conversely, the household wealth due to pensions of plan members.

As shown below, the discount rate used for the LDROM is 4.82%, which is the Standard FTSE Pension Liability Index¹ discount rate as of June 30, 2023, net of assumed administrative expenses.

Selected Measures on a Low-Default-Risk Basis	June 30, 2023
Discount Rate	4.82%
1. Accrued Liability ² – Low-Default-Risk Basis (LDROM)	
a) Active Members	\$1,558,031
b) Transferred Members	0
c) Separated Members	119,880
d) Members and Beneficiaries Receiving Payments	0
e) Total	\$1,677,911
2. Market Value of Assets (MVA)	863,482
3. Unfunded Accrued Liability – Low-Default-Risk Basis [(1e) – (2)]	\$814,429
4. Unfunded Accrued Liability – Funding Policy Basis	153,128
5. Present Value of Unearned Investment Risk Premium [(3) – (4)]	\$661,301

The difference between the unfunded liabilities on a low-default-risk basis and on the funding policy basis represents the present value of the investment risk premium that must be earned in future years to keep future contributions for currently accrued plan costs at the levels anticipated by the funding policy.

Benefit security for members of the plan relies on a combination of the assets in the plan, the investment income generated from those assets, and the ability of the plan sponsor to make necessary future contributions. If future returns fall short of 6.8%, benefit security could be at risk without higher than currently anticipated future contributions.

The funded status on a low-default-risk basis is not appropriate for assessing the sufficiency of plan assets to cover the cost of settling the plan’s benefit obligations (see [Funded Status – Termination Basis](#)), nor is it appropriate for assessing the need for future contributions (see [Funded Status – Funding Policy Basis](#)).

¹ This index is based on a yield curve of hypothetical AA-rated zero coupon corporate bonds whose maturities range from 6 months to 30 years. The index represents the single discount rate that would produce the same present value as discounting a standardized set of liability cash flows for a fully open pension plan using the yield curve. The liability cash flows are reasonably consistent with the pattern of benefits expected to be paid from the entire Public Employees’ Retirement Fund for current and former plan members. A different index, hence a different discount rate, may be needed to measure the LDROM for a subset of the fund, such as a single rate plan or a group of retirees.

² If plan assets were invested entirely in the AA fixed income securities used to determine the discount rate of 4.82%, the CalPERS discount rate could, at various times, be below 4.5% or 5.25%, and some automatic annual retiree COLAs could be suspended (Gov. Code sections 21329 and 21335). Since there is currently no proposal to adopt an asset allocation entirely comprised of fixed income securities, the automatic COLAs have been fully valued in the measures above based on the assumptions used for plan funding. Removing future COLAs from the measurement would understate the statutory obligation.

Summary of Valuation Data

The table below shows a summary of the plan's member data upon which this valuation is based:

	June 30, 2022	June 30, 2023
Active Members		
Counts	8	9
Average Attained Age	37.0	36.4
Average Entry Age to Rate Plan	31.4	31.3
Average Years of Credited Service	5.7	5.2
Average Annual Covered Pay	\$98,293	\$106,571
Annual Covered Payroll	\$786,340	\$959,138
Present Value of Future Payroll	\$9,856,040	\$12,049,065
Transferred Members	0	0
Separated Members	1	2
Retired Members and Beneficiaries*		
Counts	0	0
Average Annual Benefits	\$0	\$0
Total Annual Benefits	\$0	\$0

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.

* Values include community property settlements.

List of Class 1 Benefit Provisions

This plan has the following Class 1 Benefit Provisions:

- Post-Retirement Survivor Allowance (PRSA)

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 Section 2.

	Benefit Group	
Member Category	Misc	
Demographics		
Actives	Yes	
Transfers/Separated	Yes	
Receiving	No	
Benefit Provision		
Benefit Formula	2% @ 62	
Social Security Coverage	No	
Full/Modified	Full	
Employee Contribution Rate	8.25%	
Final Average Compensation Period	Three Year	
Sick Leave Credit	Yes	
Non-Industrial Disability	Standard	
Industrial Disability	No	
Pre-Retirement Death Benefits		
Optional Settlement 2	Yes	
1959 Survivor Benefit Level	Level 3	
Special	No	
Alternate (firefighters)	No	
Post-Retirement Death Benefits		
Lump Sum	\$2,000	
Survivor Allowance (PRSA)	Yes	
COLA	2%	

Section 2

California Public Employees' Retirement System

Risk Pool Actuarial Valuation Information

[Section 2](#) may be found on the CalPERS website (www.calpers.ca.gov) in the Forms & Publications section

Alameda County Mosquito Abatement Dist.
Check Register
For the Period From Jul 1, 2024 to Jul 15, 2024

Filter Criteria includes: Report order is by Date.

Check #	Date	Payee	Amount
4507	7/10/24	Adapco	5,422.32
4508	7/10/24	Airgas	1,824.94
4509	7/10/24	Alameda County LAFCO	689.00
4510	7/10/24	All-Ways Green Services	565.00
4511	7/10/24	AT&T	149.15
4512	7/10/24	Bay Alarm	599.75
4513	7/10/24	Bay Central Printing	250.30
4514	7/10/24	Beck's Shoes	171.65
4515	7/10/24	CarQuest	36.64
4516	7/10/24	Cintas	1,083.40
4517	7/10/24	Clarke	23,011.37
4518	7/10/24	Delta Dental	4,837.68
4519	7/10/24	Industrial Park Landscape Maintenance	261.00
4520	7/10/24	JamLoop LLC	3,000.00
4521	7/10/24	MVCAC	11,500.00
4522	7/10/24	NBC Supply Corp	598.05
4523	7/10/24	PFM Asset Management LLC	1,869.47
4524	7/10/24	PG&E	123.53
4525	7/10/24	Port of Oakland	1.00
4526	7/10/24	Robles, Michelle	208.92
4527	7/10/24	Rusmiser, Benjamin	3,793.50
4528	7/10/24	Target Specialty Products	18,595.36
4529	7/10/24	The Hartford	117.33
4530	7/10/24	UMPQUA Bank Commercial Card OPS (Credit card)	22,795.84
4531	7/10/24	UMPQUA Bank Commercial Card OPS (Fuel)	5,675.01
4532	7/10/24	VCJPA	196,831.00
4533	7/10/24	Voya Institutional Trust Company	261.90
ACH	7/10/24	Alameda County Mosquito Abatement Dist (Payroll)	102,453.51
ACH	7/10/24	CalPERS	348,639.00
ACH	7/10/24	CalPERS	3,821.00
ACH	7/10/24	CalPERS Retirement	20,074.67
ACH	7/10/24	CalPERS 457	5,427.43
Total Expenditures - July 15, 2024			784,688.72

Alameda County Mosquito Abatement Dist.
Check Register
 For the Period From Jul 16, 2024 to Jul 31, 2024

Filter Criteria includes: Report order is by Date.

Check #	Date	Payee	Amount
4534	7/26/24	Adapco	25,797.01
4535	7/26/24	Airgas	2,713.01
4536	7/26/24	Bay Alarm	356.42
4537	7/26/24	Cintas	1,587.81
4538	7/26/24	Clarke	91.15
4539	7/26/24	Gannett California LocaliQ	2,000.11
4540	7/26/24	Jarvis Fay LLP	216.00
4541	7/26/24	KBA Docusys	658.69
4542	7/26/24	NBC Supply Corp	598.05
4543	7/26/24	PC Professional	2,496.00
4544	7/26/24	PG&E	25.46
4545	7/26/24	Pitney Bowes	507.00
4546	7/26/24	Verizon	366.46
4547	7/26/24	Voya Institutional Trust Company	261.90
4548	7/26/24	VSP	612.62
4549	7/26/24	WEX Bank	538.65
ACH	7/26/24	Alameda County Mosquito Abatement Dist (Payroll)	106,713.02
ACH	7/26/24	Alameda County Mosquito Abatement Dist (Payroll Float)	100,000.00
ACH	7/26/24	CalPERS Health	44,937.37
ACH	7/26/24	CalPERS Retirement	20,546.42
ACH	7/26/24	CalPERS 457	5,427.43
Total Expenditures - July 31, 2024			316,450.58



UMPQUA BANK

BL ACCT [REDACTED]

ACMAD

Account Number: [REDACTED]

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Account Summary

Billing Cycle		06/30/2024
Days In Billing Cycle		30
Previous Balance		\$41,434.58
Purchases	+	\$23,339.45
Cash	+	\$0.00
Balance Transfers	+	\$0.00
Special	+	\$0.00
Credits	-	\$544.15-
Payments	-	\$41,434.58-
Other Charges	+	\$0.54
Finance Charges	+	\$0.00

NEW BALANCE \$22,795.84

Credit Summary

Total Credit Line	\$105,000.00
Available Credit Line	\$82,204.16
Available Cash	\$0.00
Amount Over Credit Line	\$0.00
Amount Past Due	\$0.00
Disputed Amount	\$0.00

Account Inquiries



Call us at: (866) 777-9013
Lost or Stolen Card: (866) 839-3485



Go to www.umpquabank.com



Write us at PO BOX 35142 - LB1181, SEATTLE, WA 98124-5142

Payment Summary

NEW BALANCE	\$22,795.84
MINIMUM PAYMENT	\$22,795.84
PAYMENT DUE DATE	07/26/2024

NOTE: Grace period to avoid a finance charge on purchases, pay entire new balance by payment due date. Finance charge accrues on cash advances until paid and will be billed on your next statement.

Corporate Activity

TOTAL CORPORATE ACTIVITY \$41,434.58-

Trans Date	Post Date	Reference Number	Transaction Description	Amount
06/18	06/18	0000000LBX2406184457003	PAYMENT - THANK YOU	\$41,434.58-

Cardholder Account Summary

RYAN CLAUDSITZER [REDACTED]	Payments & Other Credits \$0.00	Purchases & Other Charges \$807.31	Cash Advances \$0.00	Total Activity \$807.31
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Cardholder Account Detail

Trans Date	Post Date	Plan Name	Reference Number	Description	Amount
05/31	06/02	PPLN01	24445004153001051899555	OAKLAND PARK METER IPS OAKLAND CA	\$0.50
06/04	06/05	PPLN01	24755424157151574923729	ENGRAVIT CASTRO VALLEY CA	\$66.15
06/05	06/06	PPLN01	24431064157081920282874	FASTRAK CSC 415-486-8655 CA	\$25.00
06/10	06/12	PPLN01	24137464163500806819062	TRADER JOE S #077 FREMONT CA	\$39.01

PLEASE DETACH COUPON AND RETURN PAYMENT USING THE ENCLOSED ENVELOPE - ALLOW UP TO 7 DAYS FOR RECEIPT

BL ACCT [REDACTED]

ACMAD *

Account Number: [REDACTED]

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Cardholder Account Detail Continued					
Trans Date	Post Date	Plan Name	Reference Number	Description	Amount
06/12	06/13	PPLN01	24137464164100318900895	TST* BURMA BURMA - FIRST DUBLIN CA	\$49.50
06/13	06/16	PPLN01	24692164166109145435711	SOUTHWES 5262527334303 800-435-9792 TX CLAUSNITZER/RYAN 110924 OAK PHX WN A OAK WN A	\$9.00
06/14	06/17	PPLN01	24733344168030019263368	FALAFAL CORNER SACRAMENTO CA	\$14.98
06/17	06/18	PPLN01	24431064169003720976709	TARGET.COM * 800-591-3869 MN	\$88.59
06/18	06/19	PPLN01	24801974171690844443521	MOSQUITO & VECTOR CONTRO 916-440-0826 CA	\$450.00
06/19	06/20	PPLN01	24493984172001760044833	EAST BAY TIMES HTTP://WWW.EA CA	\$4.00
06/19	06/21	PPLN01	24055234172694202998119	PZG**PARKSMART INC WALNUT CREEK CA	\$3.00
06/25	06/26	PPLN01	24011344177000056520667	LIME*RIDE HTTPSWWW.LI.M CA	\$11.76
06/28	06/30	PPLN01	24431064180009111055115	FASTRAK CSC 415-486-8655 CA	\$25.00
06/27	06/30	PPLN01	24013394180006296076624	ROUND TABLE PIZZA 1198 ALBANY CA	\$20.82

Cardholder Account Summary					
MICHELLE ROBLES [REDACTED]		Payments & Other Credits \$0.00	Purchases & Other Charges \$2,962.40	Cash Advances \$0.00	Total Activity \$2,962.40

Cardholder Account Detail					
Trans Date	Post Date	Plan Name	Reference Number	Description	Amount
06/06	06/07	PPLN01	24231684158878520715054	CALPERS CVENT 916-795-3433 CA	\$549.00
06/07	06/09	PPLN01	24692164160104138883288	SOUTHWES 5262523752611 800-435-9792 TX SHARKEY/DANIEL 110924 OAK / PHX WN A PHX / OAK WN J	\$248.95
06/07	06/10	PPLN01	24000974161765007632622	TOWN AND COUNTRY - LOD SAN DIEGO CA	\$261.70
06/13	06/16	PPLN01	24692164166109145435695	SOUTHWES 5262527502385 800-435-9792 TX LAWTON/SARAH BETH 110924 OAK PHX WN A OAK WN J	\$196.51
06/14	06/16	PPLN01	24692164166108683185498	CITY OF HAYWARD 510-583-4600 CA	\$56.12
06/14	06/16	PPLN01	24692164166108683229569	CITY OF HAYWARD 510-583-4600 CA	\$633.98
06/17	06/18	PPLN01	24011344169000055994558	ZOOM.US 888-799-9666 WWW.ZOOM.US CA	\$16.87
06/20	06/21	PPLN01	24431064172004512728584	AMAZON.COM*1M6WE52T3 SEATTLE WA	\$160.53
06/21	06/23	PPLN01	24943004173005183143298	WASTE MGMT WM EZPAY 866-834-2080 TX	\$348.74
06/27	06/28	PPLN01	24005944179300740246775	GOVERNMENT FINANCE OFFIC CHICAGO IL	\$490.00

Cardholder Account Summary					
ERIC HAAS-STAPLETON [REDACTED]		Payments & Other Credits \$149.49-	Purchases & Other Charges \$1,714.47	Cash Advances \$0.00	Total Activity \$1,564.98

Cardholder Account Detail					
Trans Date	Post Date	Plan Name	Reference Number	Description	Amount
06/03	06/04		74692164155109787853757	CREDIT VOUCHER Amazon.com Amzn.com/bill WA	\$149.49-
06/06	06/07	PPLN01	24692164158102116483216	AMZN Mktp US*I90AE2R13 Amzn.com/bill WA	\$386.52
06/06	06/07	PPLN01	24692164158102534339669	AMZN Mktp US*376VQ9Z33 Amzn.com/bill WA	\$60.86
06/18	06/19	PPLN01	24692164170102502971471	IN *LEADING EDGE AERIAL T 828-2462111 NC	\$203.00
06/20	06/21	PPLN01	74601004172424089920957	ISOCKET 358-923-1630	\$26.88
06/20	06/21	PPLN01	74601004172424089920957	INTERNATIONAL TRANS FEE	\$0.54
06/21	06/23	PPLN01	24492154173715590804302	ADOBE INC. 408-536-6000 CA	\$659.88
06/21	06/23	PPLN01	24692164173104986246872	AMZN Mktp US*T72NL6F73 Amzn.com/bill WA	\$86.36
06/24	06/24	PPLN01	24492164176000006902222	DAVIS INSTRUMENTS WWW.DAVISINST CA	\$240.00
06/24	06/25	PPLN01	24692164176107352263493	APPLE.COM/BILL 866-712-7753 CA	\$9.99
06/26	06/27	PPLN01	24692164178109163970215	AMZN Mktp US*RC1UG68J0 Amzn.com/bill WA	\$14.34

Cardholder Account Detail Continued

Trans Date	Post Date	Plan Name	Reference Number	Description	Amount
06/26	06/27	PPLN01	24692164178109192487249	Amazon.com*RC71R9LY1 Amzn.com/bill WA	\$10.73
06/26	06/27	PPLN01	24692164178109360455002	AMAZON MKTPL*RC5RH5ZR1 Amzn.com/bill WA	\$15.37

Cardholder Account Summary

ROBERT FERDAN [REDACTED]		Payments & Other Credits	Purchases & Other Charges	Cash Advances	Total Activity
		\$171.07-	\$4,062.19	\$0.00	\$3,891.12

Cardholder Account Detail

Trans Date	Post Date	Plan Name	Reference Number	Description	Amount
06/03	06/04	PPLN01	24000774155000016588793	WWW.USMOBILE.COM 187-82050088 NY	\$500.00
06/02	06/05	PPLN01	24000974156741802335627	STARLINK INTERNET 310-6828100 CA	\$120.00
06/05	06/07	PPLN01	24000974158751705354540	MARGARITAVILLE LAKE TA S LAKE TAHOE CA	\$11.42
06/10	06/11	PPLN01	24692164162105834625251	GoToCom*GoToConnect goto.com MA	\$311.45
06/11	06/11	PPLN01	24692164163106090353538	COMCAST CALIFORNIA 800-COMCAST CA	\$262.89
06/10	06/11	PPLN01	24431064162083734073344	AMAZON.COM*PD1013SU3 SEATTLE WA	\$171.07
06/14	06/14	PPLN01	24692164166108468606072	PLEASANTON COMPUTER RE 925-460-5200 CA	\$33.08
06/14	06/17	PPLN01	24000974168805202038390	MARGARITAVILLE LAKE TA S LAKE TAHOE CA	\$336.35
06/20	06/21	PPLN01	24116414172067033355996	BACKUPIFY 800-571-4984 CT	\$2,070.00
06/21	06/23	PPLN01	24692164173104774262891	BUSINESS.APPLE.COM 800-275-2273 CA	\$2.99
06/21	06/23		74431064173005123718348	CREDIT VOUCHER AMAZON.COM SEATTLE WA	\$171.07-
06/25	06/26	PPLN01	24692164177108259465446	AMAZON MKTPL*RG5HN7IW2 Amzn.com/bill WA	\$102.94
06/27	06/30	PPLN01	24000974180879906051342	STARLINK INTERNET 310-6828100 CA	\$120.00
06/28	06/30	PPLN01	24492164180000039259891	WWW.PERPLEXITY.AI WWW.PERPLEXIT CA	\$20.00

Cardholder Account Summary

JOSEPH HUSTON [REDACTED]		Payments & Other Credits	Purchases & Other Charges	Cash Advances	Total Activity
		\$0.00	\$864.92	\$0.00	\$864.92

Cardholder Account Detail

Trans Date	Post Date	Plan Name	Reference Number	Description	Amount
06/19	06/20	PPLN01	24323044171042900066294	GREG S AUTOMOTIVE SERVICE HAYWARD CA	\$767.93
06/19	06/21	PPLN01	24445004172500591345802	DSW PACIFIC COMMONS FREMONT CA	\$96.99

Cardholder Account Summary

DEREJE ALEMAYEHU [REDACTED]		Payments & Other Credits	Purchases & Other Charges	Cash Advances	Total Activity
		\$0.00	\$12.44	\$0.00	\$12.44

Cardholder Account Detail

Trans Date	Post Date	Plan Name	Reference Number	Description	Amount
06/03	06/05	PPLN01	24943014156010186209088	THE HOME DEPOT #6678 LIVERMORE CA	\$12.44

Cardholder Account Summary

MARK WIELAND [REDACTED]		Payments & Other Credits	Purchases & Other Charges	Cash Advances	Total Activity
		\$0.00	\$3,243.15	\$0.00	\$3,243.15

Cardholder Account Detail

Trans Date	Post Date	Plan Name	Reference Number	Description	Amount
06/03	06/04	PPLN01	24275394155900018700079	BECKS SHOES - 06 SAN LORENZO CA	\$146.37
06/03	06/04	PPLN01	24692164155109474343414	AMZN Mktp US*766T097T3 Amzn.com/bill WA	\$64.02
06/05	06/06	PPLN01	24755424158731586659806	GRAINGER 800-4724643 IL	\$127.74
06/05	06/06	PPLN01	24692164157101397778626	AMZN Mktp US*NO9ED2Z03 Amzn.com/bill WA	\$160.40
06/05	06/06	PPLN01	24692164157101549341737	AMZN Mktp US*1H1BP7P83 Amzn.com/bill WA	\$99.66
06/06	06/06	PPLN01	24692164158101758119072	AMZN Mktp US*P060Q1S73 Amzn.com/bill WA	\$31.52
06/06	06/07	PPLN01	24755424159161592138141	GRAINGER 800-4724643 IL	\$52.63
06/06	06/07	PPLN01	24692164158102039389367	AMZN Mktp US*807JG50M3 Amzn.com/bill WA	\$32.52
06/07	06/09	PPLN01	24692164159102780756888	AMZN Mktp US*IT82E4QJ3 Amzn.com/bill WA	\$33.21



Cardholder Account Detail Continued					
Trans Date	Post Date	Plan Name	Reference Number	Description	Amount
06/07	06/09	PPLN01	24692164159102780839312	AMZN Mktp US*AJ1LJ9NV3 Amzn.com/bill WA	\$74.66
06/09	06/10	PPLN01	24692164161104973500772	AMZN Mktp US*NIGX89QF3 Amzn.com/bill WA	\$37.63
06/10	06/11	PPLN01	24692164162105384100770	AMZN Mktp US*HH5724BA3 Amzn.com/bill WA	\$25.22
06/10	06/11	PPLN01	24692164162105745832020	AMZN Mktp US*LL2KW4ZR3 Amzn.com/bill WA	\$20.92
06/11	06/12	PPLN01	24755424164731645059065	GRAINGER 800-4724643 IL	\$24.45
06/11	06/12	PPLN01	24692164163106452334993	WALMART.COM 800-925-6278 AR	\$82.94
06/11	06/12	PPLN01	24164074163091007345936	TARGET 00027714 DUBLIN CA	\$18.82
06/11	06/12	PPLN01	24692164163106185214645	AMZN Mktp US*VD9XL9EY3 Amzn.com/bill WA	\$16.60
06/12	06/13	PPLN01	24755424165731655583722	GRAINGER 800-4724643 IL	\$398.16
06/25	06/26	PPLN01	24692164177108273567557	SQ *FITO'S TOWING Hayward CA	\$125.00
06/25	06/26	PPLN01	24692164177108458345035	AMAZON MKTPL*RG4456WS2 Amzn.com/bill WA	\$204.89
06/25	06/26	PPLN01	24692164177108478063162	AMZN Mktp US*RG5LX3Y12 Amzn.com/bill WA	\$53.10
06/26	06/27	PPLN01	24692164178108728283676	CARPARTSCOM * 866-529-0412 CA	\$35.31
06/27	06/27	PPLN01	24692164179109486140578	CARPARTSCOM * 866-529-0412 CA	\$87.97
06/27	06/27	PPLN01	24692164179109486141451	CARPARTSCOM * 866-529-0412 CA	\$87.99
06/26	06/27	PPLN01	24692164178108864764331	AMAZON MKTPL*RC68U7OU1 Amzn.com/bill WA	\$33.96
06/26	06/27	PPLN01	24323044178048400066448	GREG S AUTOMOTIVE SERVICE HAYWARD CA	\$891.60
06/27	06/28	PPLN01	24755424180731808118864	GRAINGER 800-4724643 IL	\$77.88
06/27	06/28	PPLN01	24692164179100037972437	CARPARTSCOM * 866-529-0412 CA	\$197.98

Cardholder Account Summary				
MIGUEL BARRETTO [REDACTED]	Payments & Other Credits \$0.00	Purchases & Other Charges \$7,260.06	Cash Advances \$0.00	Total Activity \$7,260.06

Cardholder Account Detail					
Trans Date	Post Date	Plan Name	Reference Number	Description	Amount
06/06	06/07	PPLN01	24492154158719097481977	LINDE GAS & EQUIPMENT INC DANBURY CT	\$106.52
06/08	06/09	PPLN01	24492154160713330649090	LIFETECHCORP12144782 800-955-6288 CA	\$503.86
06/11	06/12	PPLN01	24692164163106331941471	TFS*FISHERSCI ECOM CHU 800-766-7000 TX	\$355.93
06/11	06/12	PPLN01	24692164163106331942263	TFS*FISHERSCI ECOM CHU 800-766-7000 TX	\$355.93
06/21	06/21	PPLN01	24492154173713469824402	LIFETECHCORP12208371 800-955-6288 CA	\$2,461.37
06/28	06/28	PPLN01	24492154180717638360165	LIFETECHCORP12248932 800-955-6288 CA	\$2,055.58
06/29	06/30	PPLN01	24692164181101629162458	TFS*FISHERSCI ECOM CHU 800-766-7000 TX	\$1,067.78
06/28	06/30	PPLN01	24692164180100565700710	AMAZON MKTPL*RC1U75191 Amzn.com/bill WA	\$39.18
06/28	06/30	PPLN01	24692164180100957412114	AMZN Mktp US*RC0457GQ2 Amzn.com/bill WA	\$313.91

Cardholder Account Summary				
ERIKA CASTILLO [REDACTED]	Payments & Other Credits \$0.00	Purchases & Other Charges \$659.88	Cash Advances \$0.00	Total Activity \$659.88

Cardholder Account Detail					
Trans Date	Post Date	Plan Name	Reference Number	Description	Amount
06/20	06/21	PPLN01	24492154172715390130792	ADOBE INC. 408-536-6000 CA	\$659.88

Cardholder Account Summary				
JUDITH PIERCE [REDACTED]	Payments & Other Credits \$223.59-	Purchases & Other Charges \$1,753.17	Cash Advances \$0.00	Total Activity \$1,529.58

Cardholder Account Detail					
Trans Date	Post Date	Plan Name	Reference Number	Description	Amount
06/04	06/05	PPLN01	24431064157083078643592	TARGET.COM * 800-591-3869 MN	\$77.51
06/05	06/06	PPLN01	24941664157602862518106	QUALITY LOGO PRODUCTS 866-312-5646 IL	\$1,088.08
06/10	06/11	PPLN01	24164074162091007558414	TARGET 00021857 HAYWARD CA	\$154.78
06/11	06/11	PPLN01	74692164163106048417190	CREDIT VOUCHER ACT*SanLeandro RecDept 866-5610647 CA	\$135.00-

Cardholder Account Detail Continued					
Trans Date	Post Date	Plan Name	Reference Number	Description	Amount
06/14	06/16	PPLN01	24492164166000035287530	SOLANO AVE ASSOCIATION WWW.SOLANOAVE CA	\$205.80
06/21	06/23	PPLN01	24492164173000022597850	HAYWARD* CA WWW.HAYWARD.O CA	\$100.00
06/24	06/25		74164074176091012359237	CREDIT VOUCHER	\$88.59-
06/27	06/28	PPLN01	24755424180731801216467	TARGET 00021857 HAYWARD CA BENZON RESEARCH INC 717-2581183 PA	\$127.00

Finance Charge Summary / Plan Level Information									
Plan Name	Plan Description	FCM ¹	Average Daily Balance	Periodic Rate *	Corresponding APR	Finance Charges	Effective APR Fees **	Effective APR	Ending Balance
Purchases									
PPLN01 001	PURCHASE	E	\$0.00	0.06008%(D)	21.9900%	\$0.00	\$0.00	0.0000%	\$22,795.84
Cash									
CPLN01 001	CASH	A	\$0.00	0.06554%(D)	23.9900%	\$0.00	\$0.00	0.0000%	\$0.00
* Periodic Rate (M)=Monthly (D)=Daily							Days In Billing Cycle: 30		
** includes cash advance and foreign currency fees							APR = Annual Percentage Rate		
¹ FCM = Finance Charge Method									
(V) = Variable Rate If you have a variable rate account the periodic rate and Annual Percentage Rate (APR) may vary.									

Alameda County Mosquito Abatement District
Income Statement
July 31, 2024. (1 of 12 mth, 8%)

REVENUES	Actual 2022/23	Actual 2023/24	Current Month	Year to Date 2024/25	Budget 2024/25	Actual vs Budget
Total Revenue	\$ 5,926,614.00	\$ 5,933,154.64	\$ -	\$ -	\$ 5,473,754.00	0%

EXPENDITURES	Actual 2022/23	Actual 2023/24 ¹	Current Month ²	Year to Date 2024/25	Budget 2024/25	Actual vs Budget
Salaries	\$ 2,129,077.24	\$ 2,467,139.80	\$ 233,424.65	\$ 233,424.65	\$2,790,566	8%
CalPERS Retirement	\$ 471,085.19	\$ 550,197.73	\$ 376,543.96	\$ 376,543.96	\$651,622	58%
Medicare & Social Security	\$ 30,025.60	\$ 33,316.10	\$ 3,657.67	\$ 3,657.67	\$46,370	8%
Fringe Benefits	\$ 484,487.10	\$ 609,707.18	\$ 50,505.00	\$ 50,505.00	\$683,134	7%
Total Salaries, Retirement, & Benefits	\$ 3,114,675.13	\$ 3,660,360.81	\$ 664,131.28	\$ 664,131.28	\$4,171,692	16%
Clothing and personal supplies (purchased)	\$ 7,881.80	\$ 4,962.23	\$ -	\$ -	\$9,500	0%
Laundry service and supplies (rented)	\$ 10,417.41	\$ 14,403.58	\$ 2,128.25	\$ 2,128.25	\$16,000	13%
Utilities	\$ 18,134.35	\$ 20,058.86	\$ 25.46	\$ 25.46	\$26,000	0%
Communications-IT	\$ 74,950.03	\$ 81,050.81	\$ 366.46	\$ 366.46	\$125,500	0%
Maintenance: structures & improvements	\$ 26,671.36	\$ 20,777.24	\$ -	\$ -	\$30,000	0%
Maintenance of equipment	\$ 25,354.56	\$ 31,326.10	\$ -	\$ -	\$28,000	0%
Transportation, travel, training, & board	\$ 120,418.29	\$ 129,998.25	\$ 4,165.66	\$ 4,165.66	\$114,525	4%
Professional services	\$ 97,726.00	\$ 95,036.45	\$ -	\$ -	\$160,600	0%
Memberships, dues, & subscriptions	\$ 25,103.23	\$ 22,113.94	\$ 11,500.00	\$ 11,500.00	\$29,000	40%
Insurance - (VCJPA, UAS)	\$ 160,932.64	\$ 209,342.00	\$ 196,831.00	\$ 196,831.00	\$203,198	97%
Community education	\$ 26,225.45	\$ 40,530.19	\$ -	\$ -	\$55,000	0%
Operations	\$ 182,575.57	\$ 304,478.37	\$ 53,507.66	\$ 53,507.66	\$287,500	19%
Household expenses	\$ 25,388.02	\$ 18,597.53	\$ 1,521.17	\$ 1,521.17	\$22,700	7%
Office expenses	\$ 7,002.84	\$ 9,974.95	\$ 507.00	\$ 507.00	\$10,000	5%
Laboratory supplies	\$ 82,354.03	\$ 139,128.04	\$ 5,587.67	\$ 5,587.67	\$130,000	4%
Small tools and instruments	\$ 1,963.31	\$ 1,644.91	\$ -	\$ -	\$3,000	0%
Total Staff Budget	\$ 893,098.89	\$ 1,143,423.45	\$ 276,140.33	\$ 276,140.33	\$1,250,523	22%
Total Operating Expenditures	\$ 4,007,774.02	\$ 4,803,784.26	\$ 940,271.61	\$ 940,271.61	\$5,422,215	17%

1 - As of June 30, 2024. Unaudited.

2 - Total Operating Expenditures in current month may not match the check register due to accounts receivable, petty cash transactions, and transactions related to the previous fiscal year.

**Alameda County Mosquito Abatement District
Investment, Reserves, and Cash Balance Report
July 31, 2024. (1 of 12 mth, 8%)**

Account #	Investment Accounts	Beginning Balance	Deposits	Withdrawals	Earnings ¹	Ending Balance
1004	LAIF	\$ 110,568.55	\$ -	\$ -	\$ 1,247.54	\$ 111,816.09
1005	OPEB Fund	\$ 5,002,222.18	\$ -	\$ -	\$ 117,072.06	\$ 5,119,294.24
1006	VCJPA Member Contingency ²	\$ 321,595.00	\$ -	\$ -	\$ 2,988.00	\$ 324,583.00
1011	CAMP: Capital Reserve Fund	\$ 354.58	\$ -	\$ -	\$ 1.63	\$ 356.21
1012	PARS: Pension Stabilization ³	\$ 2,574,960.42	\$ -	\$ -	\$ 29,038.32	\$ 2,603,998.74
1014	California CLASS: Operational Fund ⁴	\$ 4,560,597.83	\$ -	\$ (1,101,139.30)	\$ 18,470.22	\$ 3,477,928.75
1015	California CLASS: Repair and Replace Fund	\$ 3,321,091.74	\$ -	\$ -	\$ 15,248.19	\$ 3,336,339.93
1016	California CLASS: Operating Reserve Fund ⁵	\$ 0.01	\$ -	\$ (0.01)	\$ -	\$ -
1017	California CLASS Enhanced: Public Health Emergency Fund	\$ 550,562.18	\$ -	\$ -	\$ 2,530.23	\$ 553,092.41
1018	California CLASS Enhanced: Operating Reserve Fund ⁵	\$ 2,133,436.08	\$ 0.01	\$ -	\$ 9,804.66	\$ 2,143,240.75
Total		\$ 18,575,388.57	\$ 0.01	\$ (1,101,139.31)	\$ 196,400.85	\$ 17,670,650.12

Account #	Cash Accounts	Beginning Balance	Withdrawals	Activity	Ending Balance
1001	Bank of America (Payroll Account) * ⁶	\$ 0.94	\$ (0.94)	\$ -	\$ -
1003	County Account	\$ 374,596.33	\$ -	\$ -	\$ 374,596.33
1019	Five Star Bank (Transfer Account) *	\$ 240,338.95	\$ -	\$ -	\$ 312,537.07
1020	Five Star Bank (Payroll Account) *	\$ 48,610.40	\$ -	\$ -	\$ 144,567.54
1021	Petty Cash	\$ 438.59	\$ -	\$ -	\$ 438.59
Total		\$ 663,985.21	\$ (0.94)	\$ -	\$ 832,139.53

1 - Earnings are booked as unrealized gains/losses. These earnings would not be recognized as "realized" gains/losses until the accounts are liquidated.

2 - VCJPA Member Contingency balance is as of June 30, 2024.

3 - PARS - Pension Stabilization balance is as of June 30, 2024.

4 - \$1,101,139.30 transferred from CA CLASS: Operational Fund to Five Star Bank for July expenditures.

5 - \$0.01 transferred from CA CLASS Prime: Operating Reserve Fund to CA CLASS Enhanced: Operating Reserve Fund. Account closed July 2024.

6 - The payroll account with Bank of America was closed July 2024.

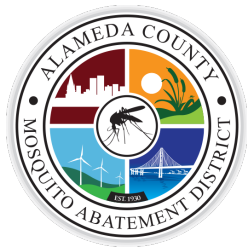
* - Ending balance differs from beginning balance due to checks clearing the account.

Alameda County Mosquito Abatement District
Balance Sheet Comparison
July

ASSETS	7/31/2024	7/31/2023	7/31/2022
Current Assets			
Bank of America payroll ¹	-	\$ 148,437.34	\$ 157,249.82
Bank of the West ²	-	-	443,437.00
County	374,596.33	470,585.08	397,580.31
Cash with LAIF	111,816.09	107,343.54	2,074,406.42
VCJPA- Member Contingency	324,583.00	352,689.00	351,141.00
CAMP - Repair and Replace ³	-	-	2,641,853.76
CAMP - Public Health Emergency ⁴	-	-	424.69
CAMP - Operating Reserve ⁵	-	-	1,952,115.00
CAMP - Capital Reserve Fund	356.21	369,420.78	370,213.94
PARS	2,603,998.74	2,164,114.55	2,123,230.54
Five Star Bank - Transfer account	202,175.50	192,703.76	-
Five Star Bank - Payroll account	239,516.96	-	-
California CLASS: Public Health Emergency Fund ⁶	-	550,493.97	527,778.03
California CLASS: Operational Fund	3,477,928.75	3,364,738.52	-
California CLASS: Repair and Replace Fund	3,336,339.93	2,735,642.55	-
California CLASS: Operating Reserve Fund ⁷	-	2,029,723.23	-
California CLASS Enhanced: Public Health Emergency Fund	553,092.41	-	-
California CLASS Enhanced: Operating Reserve Fund	2,143,240.75	-	-
Accounts Receivable	-	533.54	-
Petty cash	438.59	404.27	387.16
	<u>13,368,083.26</u>	<u>12,486,830.13</u>	<u>11,039,817.67</u>
Total Current Assets			
Property and Equipment			
Acc Dep - equipment	(1,737,755.00)	(1,737,755.00)	(1,709,382.00)
Acc Dep - stru & improv	(2,833,179.00)	(2,833,179.00)	(2,723,997.00)
Construction in progress	760,009.06	26,127.93	-
Equipment	1,918,551.34	1,778,277.00	1,806,769.00
Structure/improvement	4,760,618.00	4,760,618.00	4,760,618.00
Land	61,406.00	61,406.00	61,406.00
	<u>2,929,650.40</u>	<u>2,055,494.93</u>	<u>2,195,414.00</u>
Total Property and Equipment			
Other Assets			
Net OPEB Asset	1,199,826.00	1,199,826.00	1,225,311.00
	<u>1,199,826.00</u>	<u>1,199,826.00</u>	<u>1,225,311.00</u>
Total Other Assets			
Total Assets	<u>\$ 17,497,559.66</u>	<u>\$ 15,742,151.06</u>	<u>\$ 14,460,542.67</u>
LIABILITIES AND CAPITAL			
Current Liabilities			
Accounts payable	\$ 204,220.34	\$ 141,452.78	\$ 143,175.14
Acc payroll/vacation	237,815.12	210,892.93	201,023.94
Def inflow - 75	667,236.00	667,236.00	1,046,869.00
Def inflow pen defer GASB 68	272,874.00	272,874.00	1,941,395.00
Defer outflow pen cont GASB 68	(1,900,029.00)	(1,900,029.00)	(822,206.00)
Net pension liability GASB 68	4,327,920.00	4,327,920.00	2,034,280.00
	<u>3,810,036.46</u>	<u>3,720,346.71</u>	<u>4,544,537.08</u>
Total Current Liabilities			
Total Liabilities	3,810,036.46	3,720,346.71	4,544,537.08
Capital			
Designated fund balances	3,851,684.55	3,851,684.55	3,044,832.55
Investment in general fixed as	10,729,570.29	8,970,984.88	7,642,845.18
Net Income	(893,731.64)	(800,865.08)	(771,672.14)
	<u>13,687,523.20</u>	<u>12,021,804.35</u>	<u>9,916,005.59</u>
Total Capital			
Total Liabilities & Capital	<u>\$ 17,497,559.66</u>	<u>\$ 15,742,151.06</u>	<u>\$ 14,460,542.67</u>

1 - Bank of America account is in the process of being closed.
2 - Bank of the West account closed June 2023.
3 - CAMP: Repair and Replace Fund closed February 2023.
4 - CAMP: Public Health Emergency Fund closed September 2022.

5 - CAMP: Operating Reserve Fund closed February 2023.
6 - California CLASS: Public Health Emergency Fund closed June 2024.
7 - California CLASS: Operating Reserve Fund closed July 2024.



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OPERATIONS REPORT

For operations staff, July continued the course set in the latter half of June. West Nile virus (WNV) detection in birds and mosquitoes was made via the district lab from July 2nd on through July 31st.

Operations staff concentrated on inspecting and treating sources for *Culex spp.* mosquitoes in numerous regions of the county with an emphasis placed in areas of WNV detections. Union City topped the list of cities in the number of detections however, several other cities had areas of new detections including Oakland, Piedmont, Alameda, Fremont, and Livermore. Extensive treatments were conducted for all three of our main potential WNV vectoring species: *Culex tarsalis*, *Culex pipiens*, and *Culex erythrothorax* by hand, backpack, jeep, Argo, and with the ACMAD treatment UAS (drone). There are a variety of habitats conducive to breeding for these mosquito species such as, freshwater marshes, canals, creeks, catch basins, storm drains, wastewater treatment plants, cemetery vases, sumps, containers, and unmaintained swimming pools.

The ACMAD aerial unmaintained swimming pool program targets the latter-most of these sources. An unmaintained pool can produce tens of thousands of WNV-competent mosquitoes in a season. Close to 500 unmaintained pools were identified during this year's survey. A presentation describing this process, and this year's results, will be given at the October board meeting.

Inspections and treatments for *Cx. spp.* mosquitoes in all the above-mentioned sources will continue until the weather shifts, temperatures cool, and the first rains of the season begin. It is this period when these species tend to sequester for the winter months curtailing the potential spread of WNV in both birds and mammals, including humans. Coinciding with significant efforts toward our WNV program, including the unmaintained swimming pool program, operations put significant efforts and resources to use toward our tidal-marsh mosquito program in July. Several high tide events caused the hatching of eggs of *Aedes dorsalis*, including one that generated the most numbers of larvae in the most sources seen so far this year. This necessitated operations staff to work together in teams to conduct treatments by hand, backpack and with the ACMAD A-1 Super Duty mist blower. Based on lab adult mosquito trapping and service request data, our treatments were effective. Service request data for July is presented below.

Field Operations Supervisor

Joseph Huston

Service Requests July 2024

July SR Count

131

July 10 Year Min Count

62

July 10 Year Max Count

169

July 10 Year Average

116.90

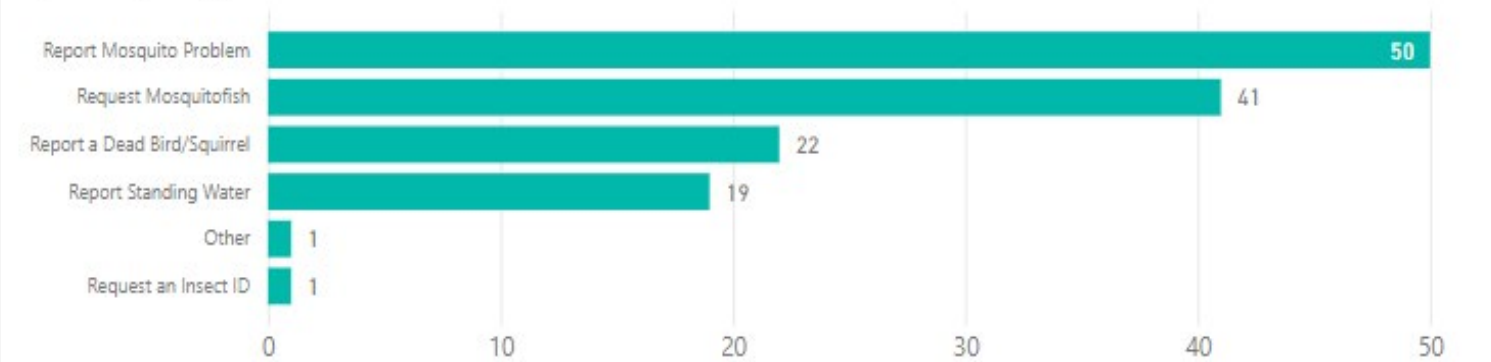
July SR's by Year - 10 Year History



Year Over Year Comparison



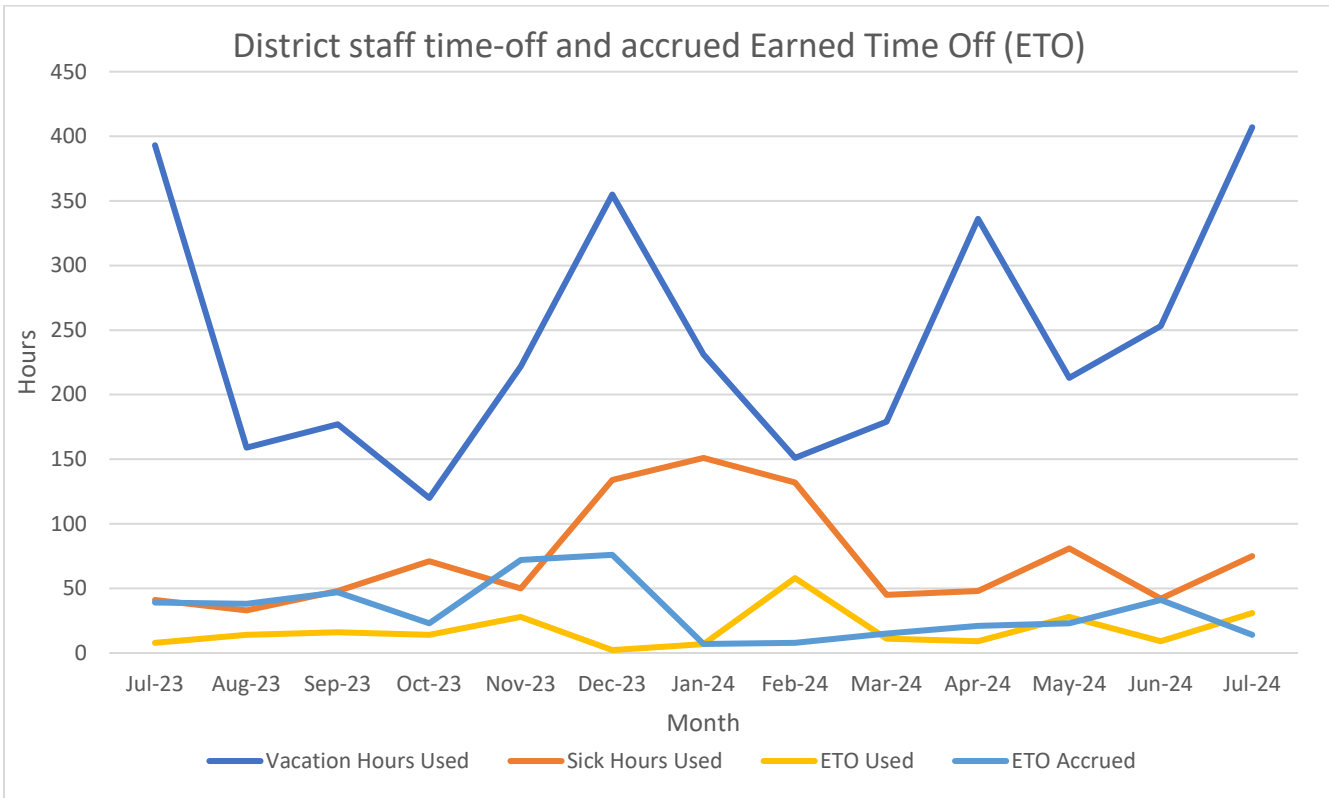
July Count by SR Type



July SR's by City

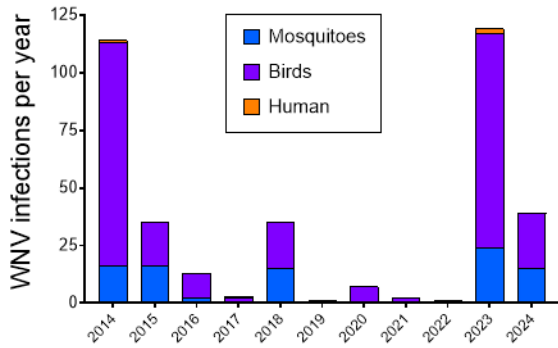


Activity Report

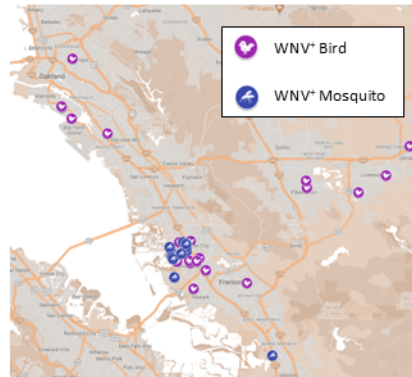


WNV Activity Report

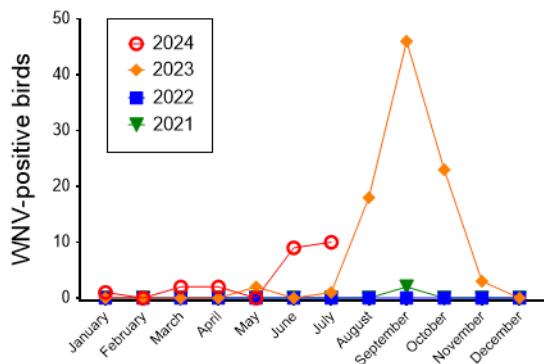
WNV trends in Alameda County
2014 – 2024



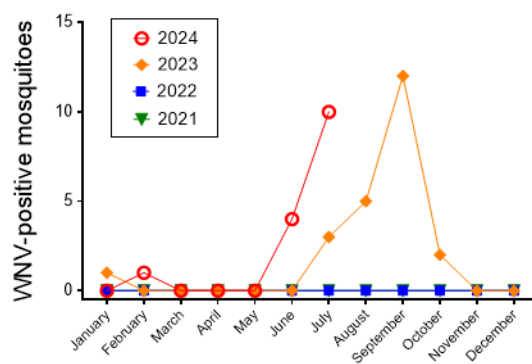
Location of WNV-infected mosquitoes and birds in Alameda County during 2024



WNV-infected birds from Alameda County



WNV-infected mosquitoes from Alameda County



A. LAB

Summary

- *Arboviruses in mosquitoes.* Nine traps from Union City and one from Fremont contained mosquitoes that were infected with West Nile virus (WNV). To date, we have collected fifteen traps that contained WNV-infected mosquitoes. Please see the figures above for WNV Activity in Alameda County.
- *Arboviruses in birds.* Ten birds from July were infected with WNV. There were three birds from Livermore, one from Alameda and two each from Fremont, Union City and Oakland. This year, we have collected 24 birds that were infected with WNV.
- *Native mosquitoes.* 908 CO₂-baited encephalitis virus survey (EVS) traps were placed this month, catching 49,053 adult female mosquitoes (54.0 mosquitos per trap). This represents a 12% increase in abundance relative to the prior month.
- *Human cases.* Human cases of mosquito-borne diseases that may have been acquired in the county have not been reported to us this year (e.g., WNV).
- Invasive *Aedes* mosquitoes have not been detected in Alameda County during 2024.

Arbovirus Monitoring

- Ten birds collected this month were infected with WNV. For the year, a total of 24 birds have tested positive for WNV. Nine mosquito collections from Union City and one from Fremont tested positive this month for WNV. Each WNV detection prompted a lab response, involving the placement of 8 – 15 traps around the area where environmental WNV was detected.
- Our lab analyzed 238 mosquito collections from traps for WNV using RT-PCR, finding a positivity rate of 4.2% for the month. To date, mosquitoes in 15 separate traps this year have been confirmed to carry WNV. Most of the WNV detections have occurred in a relatively small region around Union City and Fremont (see the map above in WNV Activity in Alameda County).
- Saint Louis encephalitis virus (SLEV) and Western equine encephalitis virus (WEEV) have not been detected in Alameda County for nearly two decades.

Native Mosquito Abundance

- In California, the main transmitters of WNV, SLEV, and WEEV are: *Culex pipiens* (typically in urban settings), *Culex tarsalis* (associated with marsh and peri-urban areas), and *Culex erythrothorax* (occurs exclusively in marsh but adults can disperse into nearby communities).
- Our mosquito monitoring program for late spring – late fall consists of 181 sites that are routinely surveyed for adult mosquitoes. Of those, 87 are assessed at least every other week, and the remaining 94 are trapped monthly. Additionally, we trap in response to environmental detections of WNV in birds or mosquitoes, and reports of travel-related human arbovirus cases that are reported by Alameda County Public Health Department.
- This month, 908 EVS traps collected a total of 49,053 adult female mosquitoes (54.0 mosquitos per trap; Figure 1). This represents a 12% increase in adult mosquitoes compared to last month. Abundance for this month was 1.2-fold higher than July of last year, and approximately 6-fold higher relative to 2022 (Figure 1).
- Overall adult mosquito abundance during July was higher than the 5-year average and moderately higher than last year (Figure 2). Only *Culex erythrothorax* abundance was appreciably higher than the prior two years, with *Culex tarsalis* and *Culex pipiens* lower or similar to the prior two years, respectively (Figure 3). *Aedes dorsalis* abundance rose earlier in the year compared to the prior two years, but peak abundance was lower (Figure 3).
- In addition to the species noted above, *Aedes vexans* was the third most-common species collected in traps this month (Figure 4). Fortunately, it is geographically constrained to the area around Del Valle Regional Park Figure 5A).
- The northern regions of the county had relatively low abundance with most traps capturing 10 or fewer mosquitoes for the month (Figure 5B). Traps in the central bayside and southern regions of the county collected the most mosquitoes; some trap sites in the area near to Sea Breeze Park in Union City Park collected more than 10,000 mosquitoes this month (Figure 5C). However, intensified larvicide applications and the deployment of

Mosquito Magnet Traps reduced tarp catches by 10-fold by the end of July. Similar to the northern region, traps in the east of the county collected relatively few mosquitoes (Figure 5D). However, those traps continued to collect a higher diversity of mosquitoes (e.g., *Anopheles spp.*)

- Only 3.6% of the traps placed this month did not contain mosquitoes (Figure 5A), which points to adult mosquitoes being broadly distributed throughout the county.

Non-native Mosquitoes

- Non-native mosquitoes, including *Aedes aegypti*, have not been detected in Alameda County since 2015.

Lab Figures

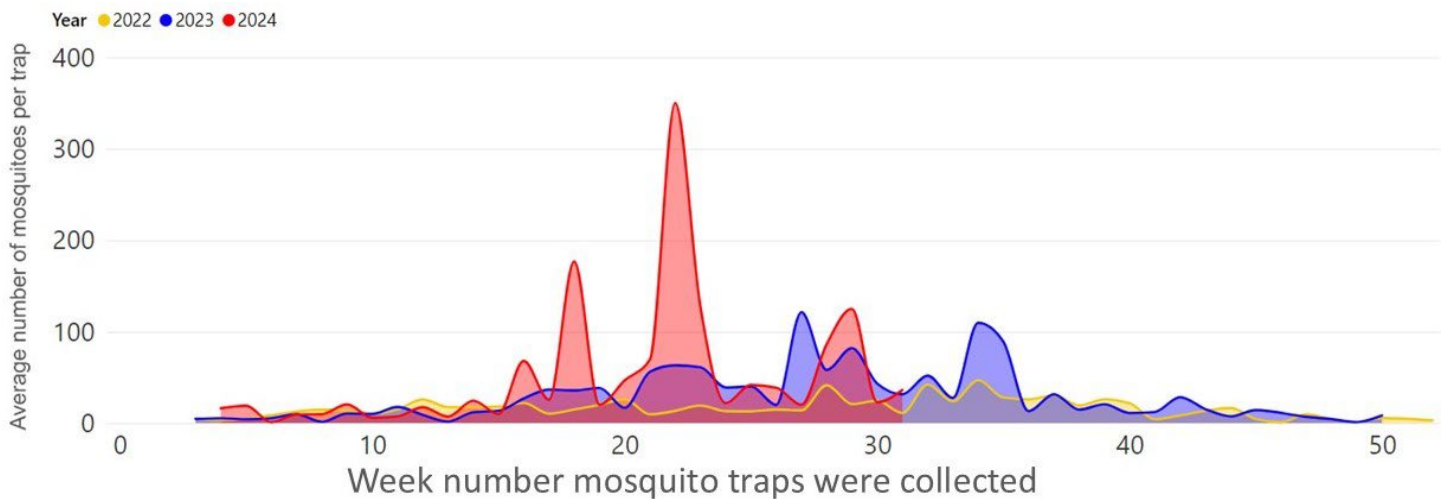


Figure 1. Weekly mosquito abundance during 2022, 2023 and 2024. A total of 49,053 adult female mosquitoes were captured in CO₂-baited traps during the month and identified to species (an average of 54.0 mosquitoes per trap).

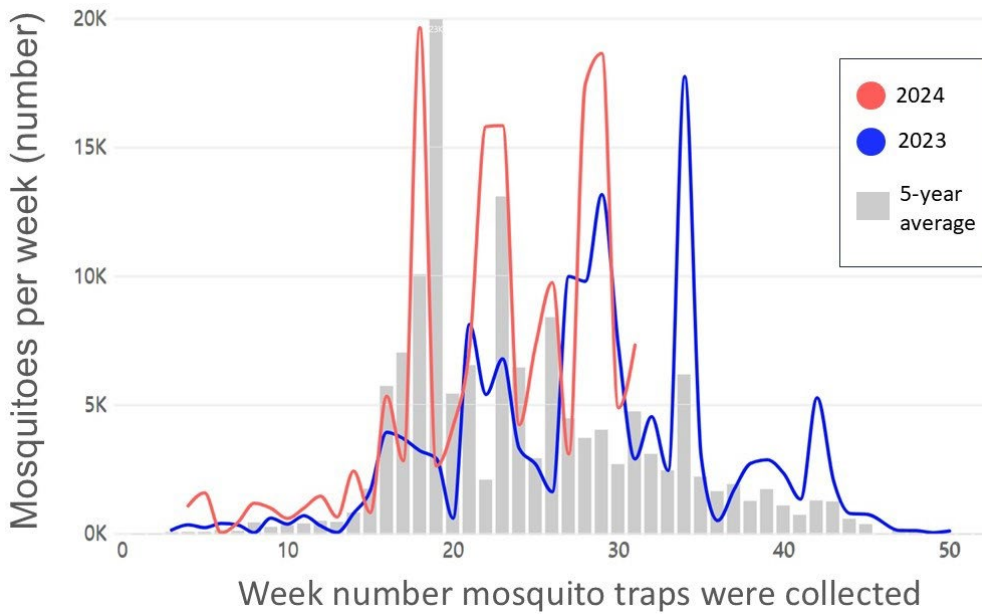


Figure 2. Five-year average of mosquito abundance compared to the current and prior year.

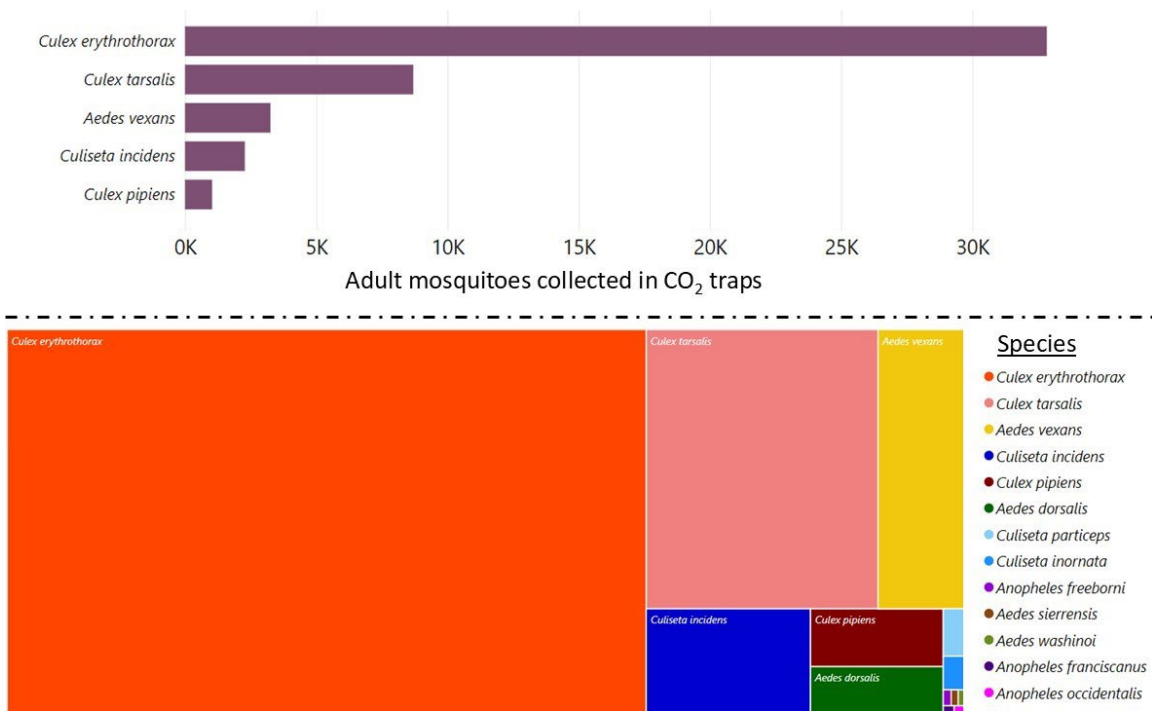


Figure 3. The most abundant species of mosquito captured using EVS CO₂ traps during the month of this report. Larger squares and rectangles indicate higher abundance of that species.

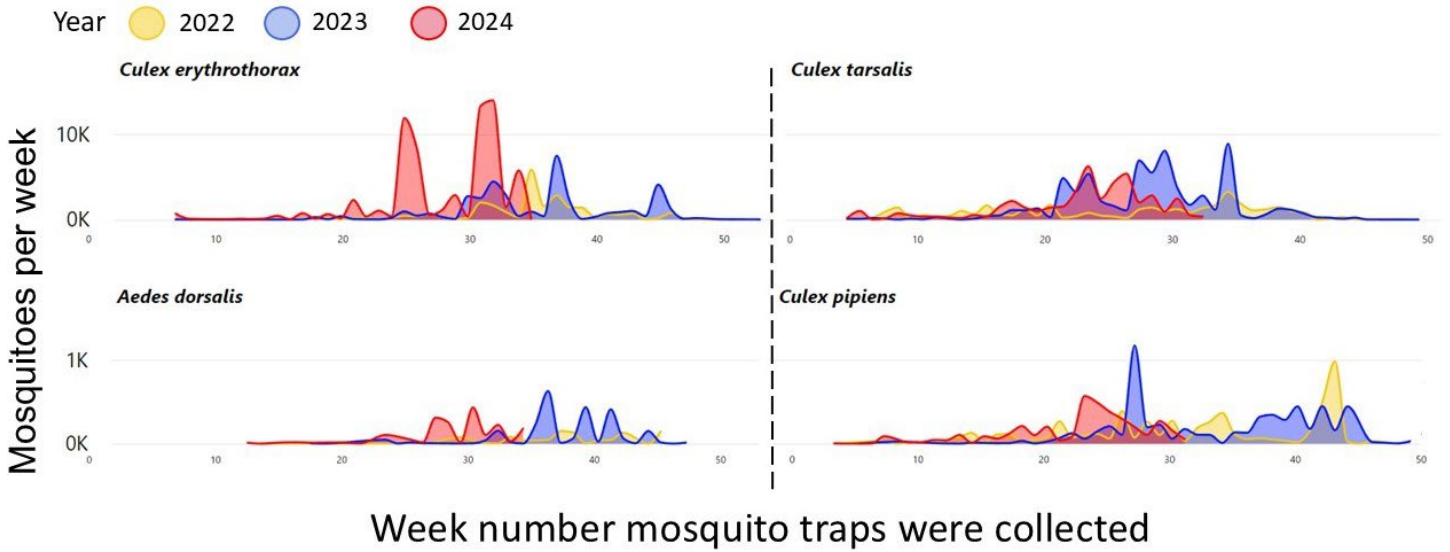
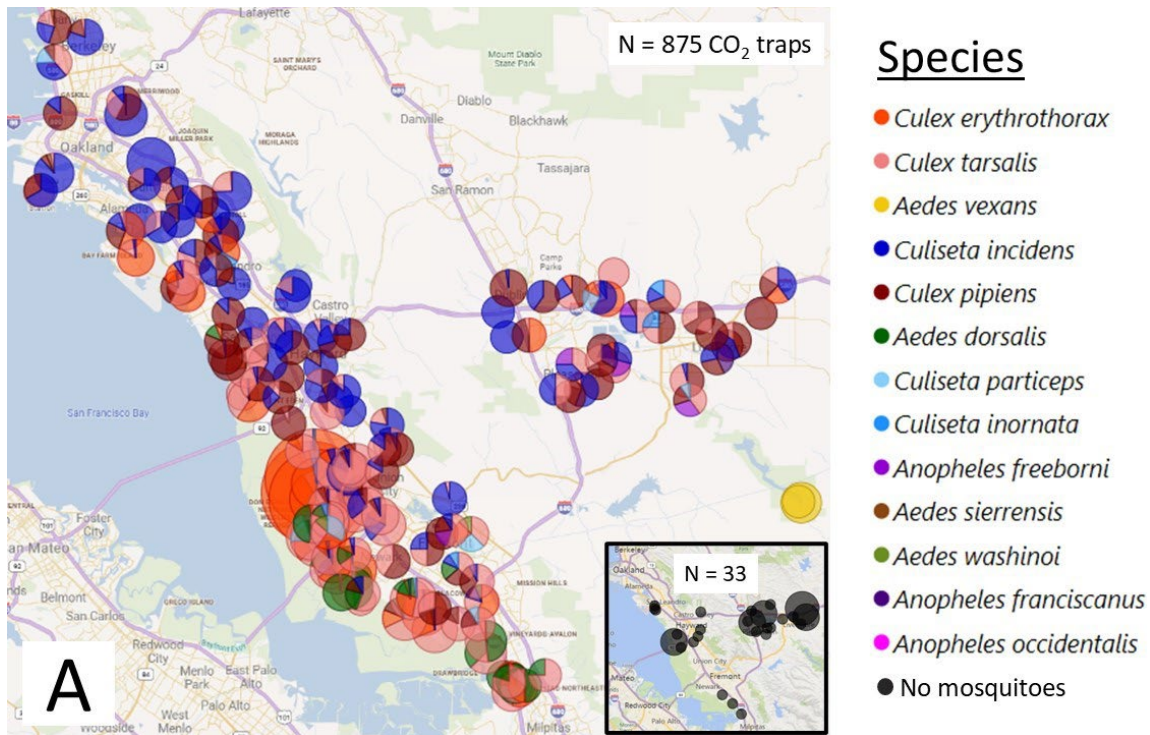


Figure 4. Weekly abundance of important mosquito species during 2022, 2023 and 2024.



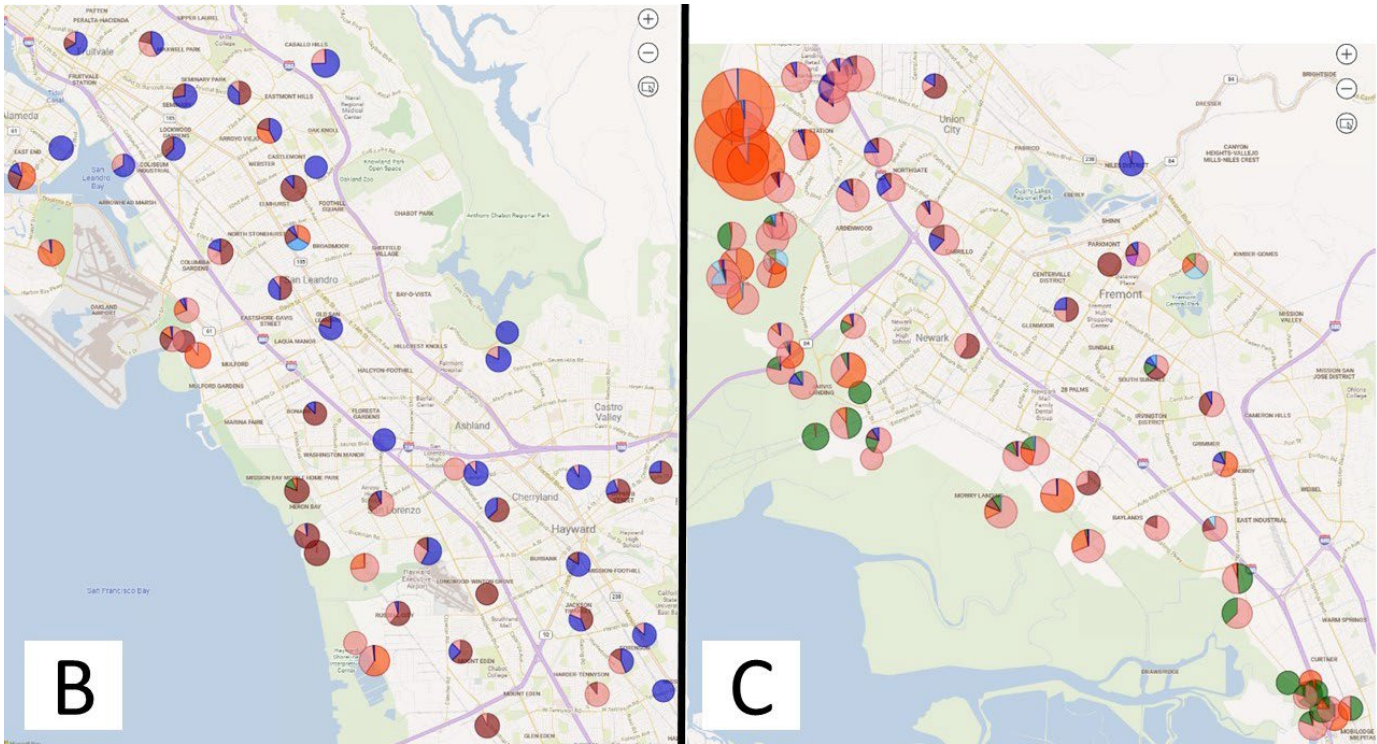


Figure 5. Mosquito abundance by trap site evaluated using EVS CO₂ traps. Pie charts indicate the distribution of mosquito species collected in the traps at that site. The size of each pie chart indicates the relative number of mosquitoes at each site during the month in (A) Alameda County (insert with black ellipses show traps that were placed but did not collect mosquitoes), (B) the northern, (C) southern, and (D) eastern regions of the county.

Analysis and report by Eric Haas-Stapleton PhD, Laboratory Director

B. Outreach and Engagement

Education Program

- Presented to the Peralta Hacienda campers twice, once with the support of Field Operations Supervisor, Joseph Huston, with aquatic insects.

Community Outreach

- Participated in the 4th of July Parade in Alameda. Mechanical Specialist, Mark Wieland, on the Argo along with Public Outreach Coordinator, Judith Pierce, and Associate Vector Scientist, Miguel Barretto, on bikes.
- Tabled a booth at Safe Kids Day in Oakland on July 13th.
- Broke down ACMAD booth at the Alameda County Fair after being displayed for four weeks.
- Reallocated money within our advertising campaign budget to target zip codes in Union City and Fremont in response to WNV activity.



Top left image: Associate Vector Scientist, Miguel Barretto, tabled at Safe Kids Day inside the Oracle Arena in Oakland. **Top Middle Image:** A close up of a shrimp Field Operations Supervisor, Joseph Huston, brought to Peralta Hacienda ACE Camp students. **Far right image:** A screenshot of the map Public Outreach Coordinator, Judith Pierce, sends to residents contending with an *Ae. dorsalis* fly off issue in southern Alameda County. **Middle image:** Judith and Miguel at the Alameda 4th of July Parade. **Middle bottom image:** Mechanical Specialist, Mark Wieland, driving the Argo, which was captured by KTVU local news. **Bottom right image:** Miguel handing out pencils while riding a bike during the 4th of July parade. **Bottom left image:** Joseph showing campers insects he caught in Peralta Creek in Oakland.

Media and Conferences

- Judith Pierce spoke with a reporter from the *Piedmont Exedra*.

Social Media



Twitter impressions: 1034
Followers: 834



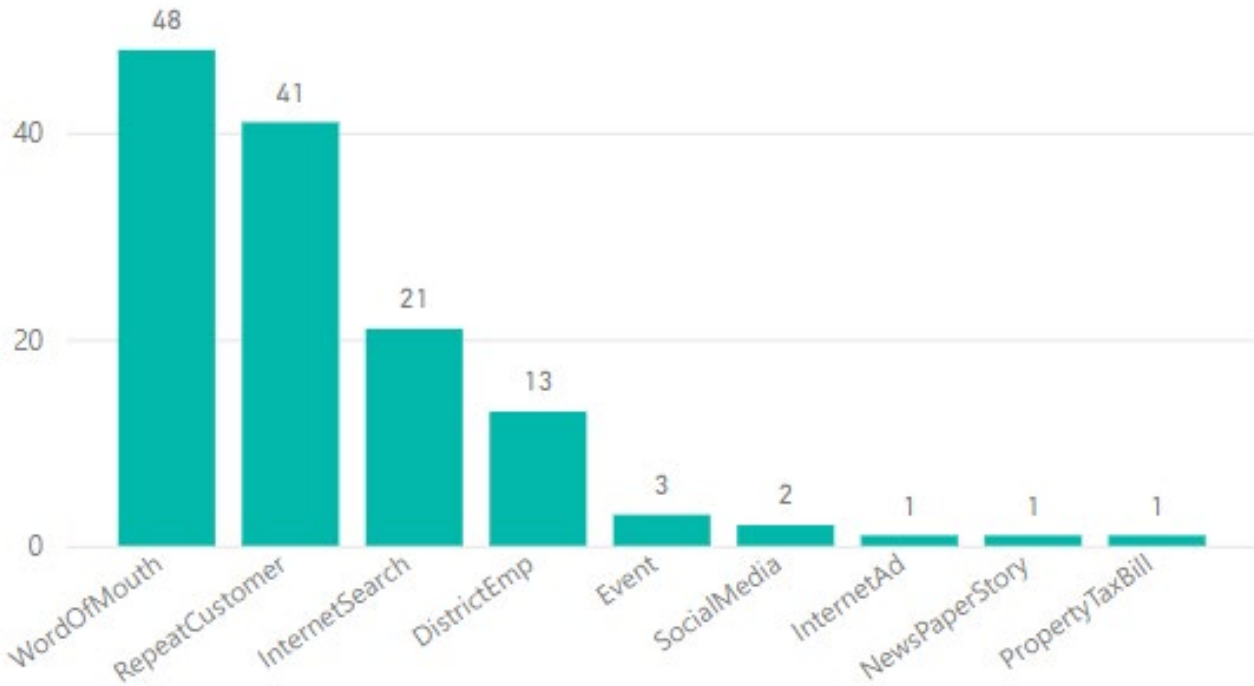
Facebook impressions: 1034
Followers: 534

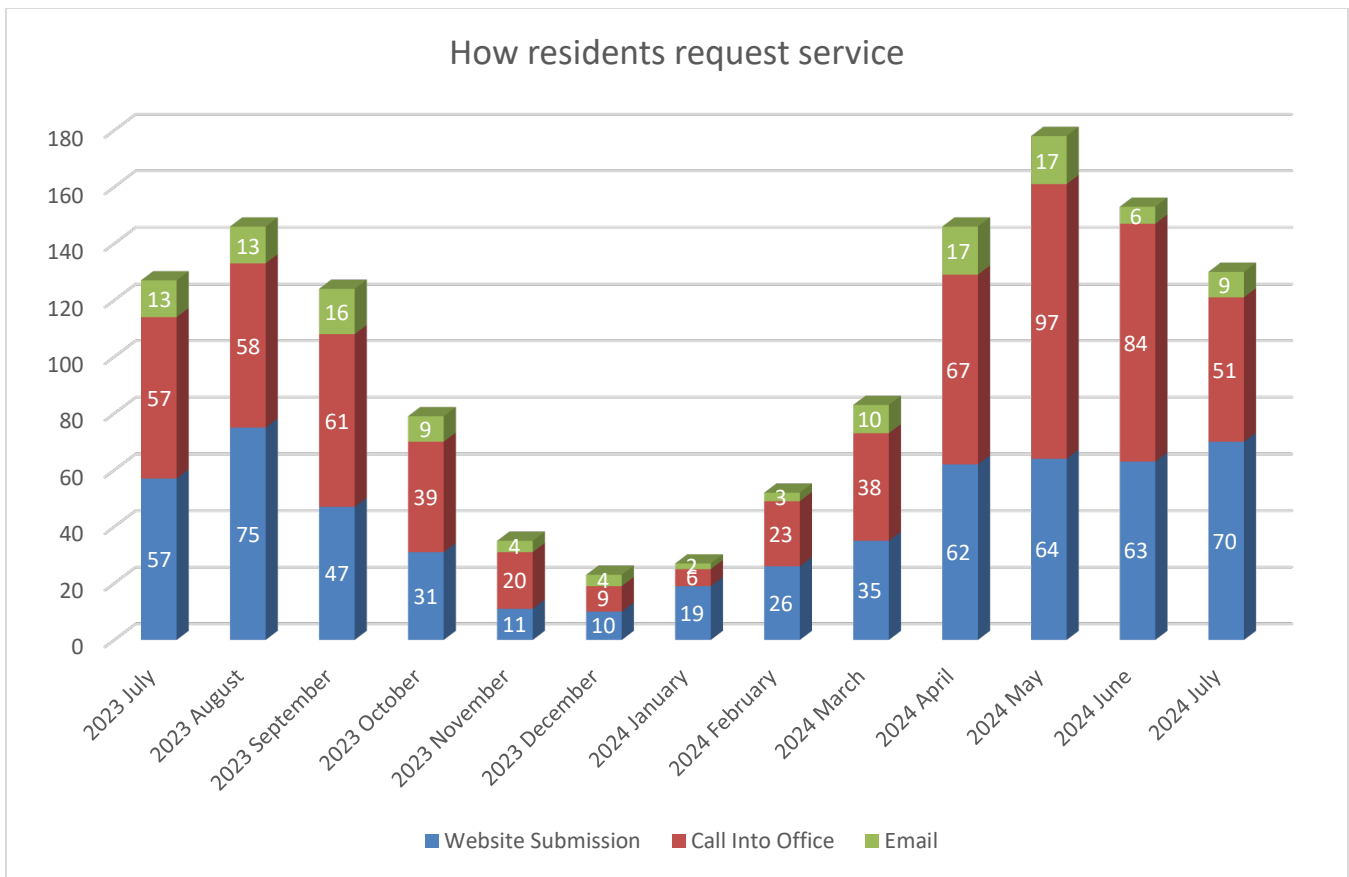


Instagram impressions: 1034
Followers: 834

Service Request Trend Data

Number of Requests by Channel





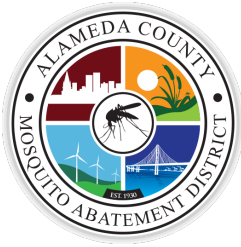
C. REGULATORY UPDATE

Project Design Engagements

- Attended the San Francisco Bay Restoration Authority Advisory Committee tour of the South Bay Salt Ponds Restoration Project and the South San Francisco Bay Shoreline Project. The tour included visits to marshes that have been restored for over a decade, in the construction phase, and recently breached.
- Spoke with the new Executive Director of the Diablo Firesafe Council about several upcoming projects they will be embarking on with grant funds they have received from the State Coastal Conservancy.

Interagency Collaborations

- Signed on to the San Francisco Bay Joint Venture letters to Senators Padilla and Butler requesting the inclusion of language in the Senate Water Resources Development Act of 2024 (WRDA) providing for a basin study for the San Francisco Bay. The effort for the language inclusion is being led by the State Coastal Conservancy.
- Signed on to the California Special Districts Association Coalition letter to Senators Padilla and Butler requesting they cosponsor the Senate companion measure of the Special District Grant Accessibility Act, S. 4673.
- Approved the HASPA comment letter on the Capitol Corridor South Bay Connect project. The project borders the Oro Loma Marsh and falls within the HASPA service area. The letter asks the project to reference and consider the impacts to the HASPA Master Plan, the right-of-way potential expansion into Oro Loma Marsh, and the First Mile Horizontal Levee Project.



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Lisa Rasler

Oakland

Eric Hentschke

Newark

Hope Salzer

Piedmont

Victor Aguilar

San Leandro

Subru Bhat

Union City

Ryan Clausnitzer

General Manager

Background:

ACMAD is pleased to recognize and thank the following employee on their anniversary in August.

Employee	Job Title	Years of Service	Anniversary Date
Miguel Barretto	Associate Vector Scientist	6	August 1 st

California Arbovirus Surveillance Bulletin #17

Week 31 Friday, August 2, 2024



WEEKLY UPDATE

Humans

West Nile virus

A total of 3 human cases of West Nile virus (WNV) disease were reported this week from 3 counties: Contra Costa (1), Kings (1), and Yuba (1). **These are the first human cases of WNV disease reported for Contra Costa and Kings counties this year.** In 2024, 5 human cases of WNV disease were reported from 4 counties. Of the 5 cases, 4 (80%) had neuroinvasive disease and 1 (20%) was fatal. The median age of the case-patients was 47 years and 4 (80%) of the case-patients were male. The dates of symptom onset ranged from May 28 to July 21. In addition to the 5 cases of WNV disease, 5 asymptomatic WNV-positive blood donors have been reported from 3 counties: Fresno (3), San Bernardino (1), and Stanislaus (1). At this time last year, 8 human cases of WNV disease had been reported from 5 counties.

St. Louis encephalitis virus

No human cases of St. Louis encephalitis virus (SLEV) disease have been reported. At this time last year, 1 human case of SLEV disease had been reported from 1 county.

Dead Birds

A total of 28 new WNV positive dead birds were reported from 7 counties: Alameda (1), Lake (1), Los Angeles (1), Sacramento (5), San Mateo (2), Santa Clara (17), and Yuba (1). **These are the first WNV positive dead birds from Lake and Yuba counties.** In 2024, 184 WNV positive dead birds have been reported from 15 counties. At this time last year, 181 WNV positive dead birds had been reported from 20 counties.

Mosquito Pools

West Nile virus

A total of 149 new WNV positive mosquito pools were reported from 18 counties: Alameda (3), Butte (10), Fresno (12), Kern (4), Kings (12), Lake (2), Los Angeles (10), Madera (8), Merced (2), Orange (2), Placer (9), Riverside (4), San Bernardino (4), San Joaquin (29), Santa Clara (2), Shasta (3), Stanislaus (10), and Tulare (23). In 2024, 732 WNV positive mosquito pools have been reported from 24 counties. At this time last year, 1,582 WNV positive mosquito pools had been reported from 27 counties.

St. Louis encephalitis virus

No new SLEV positive mosquito pools were reported. In 2024, 13 SLEV positive mosquito pools have been reported from 3 counties: Fresno (9), Imperial (1), and Tulare (3). At this time last year, 162 SLEV positive mosquito pools had been reported from 9 counties.

Sentinel Chickens

A total of 9 new WNV positive chickens were reported this week from 2 counties: Merced (5) and Solano (4). **These are the first WNV positive sentinel chickens reported from Merced and Solano counties this year.** In 2024, 20 WNV positive sentinel chickens have been reported from 6 counties. At this time last year, 27 WNV positive chickens had been reported from 4 counties.

California Arbovirus Surveillance Bulletin #17

Week 31 Friday, August 2, 2024

2023 & 2024 YTD West Nile Virus Comparisons		
	2023	2024
Total No. Dead Bird Reports	3,602	3,955
No. Positive Counties	31	27
No. Human Cases	8	5
No. Positive Dead Birds / No. Tested	181 / 913	184 / 1,058
No. Positive Mosquito Pools / No. Tested	1,582 / 28,718	732 / 26,502
No. Seroconversions / No. Tested	27 / 2,074	20 / 2,444

YTD WNV Activity by Element and County, 2024					
County	Humans	Horses	Dead Birds	Mosquito Pools	Sentinel Chickens
Alameda			22	14	
Butte			4	17	1
Contra Costa	1		4		5
Fresno	1			122	
Imperial				2	
Kern				15	
Kings	1			26	
Lake			1	7	2
Los Angeles			4	30	
Madera				13	
Merced				9	5
Orange			1	12	
Placer		1		25	
Riverside			2	191	
Sacramento			42	20	
San Bernardino			5	39	
San Diego			2		
San Joaquin			3	75	
San Mateo			9		
Santa Clara			83	9	
Shasta				7	
Solano				2	4
Stanislaus				17	
Sutter				14	
Tulare				34	3
Yolo			1	10	
Yuba	2	1	1	22	
Totals	5	2	184	732	20

California Arbovirus Surveillance Bulletin #17

Week 31 Friday, August 2, 2024

TESTING SUMMARIES

		WNV	SLEV	WEEV
Human Cases	Week	3	0	0
	YTD	5	0	0

Positive / Total Tested					
WNV	SLEV	WEEV	CHIK	DENV	ZIKA

Dead Birds	Week	28 / 55
	YTD	184 / 1,058

Chicken Sera	Week	9 / 278	0 / 278	0 / 278
	YTD	20 / 2,444	0 / 2,444	0 / 2,444

Mosquito Pools	Week	149 / 1,443	0 / 1,317	0 / 1,317	0 / 59	0 / 59	0 / 59
	YTD	732 / 26,502	13 / 24,697	0 / 24,720	0 / 402	0 / 402	0 / 402

POSITIVES

Dead Birds

County	Submitting Agency	City	Zip Code	Species	Date Reported	Virus
Alameda	Alameda Co MAD	Alameda	94501	Sparrow	7/29/2024	WNV
Lake	Lake Co VCD	Kelseyville	95451	American Crow	7/22/2024	WNV
Los Angeles	Greater Los Angeles Co Sylmar	Porter Ranch	91326	Red-tailed Hawk	7/17/2024	WNV
Sacramento	Sacramento-Yolo MVCD	Sacramento	95811	American Crow	7/25/2024	WNV
Sacramento	Sacramento-Yolo MVCD	Carmichael	95608	House Finch	7/25/2024	WNV
Sacramento	Sacramento-Yolo MVCD	Folsom	95630	American Crow	7/26/2024	WNV
Sacramento	Sacramento-Yolo MVCD	Sacramento	95822	California Scrub-Jay	7/27/2024	WNV
Sacramento	Sacramento-Yolo MVCD	Sacramento	95831	California Scrub-Jay	7/29/2024	WNV
San Mateo	San Mateo Co MVCD	Menlo Park	94025	American Crow	7/22/2024	WNV
San Mateo	San Mateo Co MVCD	San Carlos	94070	American Crow	7/24/2024	WNV
Santa Clara	Santa Clara Co VCD	San Jose	95122	American Crow	7/24/2024	WNV
Santa Clara	Santa Clara Co VCD	San Jose	95132	American Crow	7/24/2024	WNV
Santa Clara	Santa Clara Co VCD	San Jose	95112	American Crow	7/25/2024	WNV
Santa Clara	Santa Clara Co VCD	Mountain View	94041	American Crow	7/25/2024	WNV
Santa Clara	Santa Clara Co VCD	Palo Alto	94301	American Crow	7/26/2024	WNV
Santa Clara	Santa Clara Co VCD	San Jose	95123	American Crow	7/26/2024	WNV
Santa Clara	Santa Clara Co VCD	Milpitas	95035	Unknown - songbird	7/27/2024	WNV
Santa Clara	Santa Clara Co VCD	San Jose	95118	Unknown - Crow or Raven	7/28/2024	WNV
Santa Clara	Santa Clara Co VCD	Palo Alto	94306	American Crow	7/29/2024	WNV
Santa Clara	Santa Clara Co VCD	Stanford	94305	Unknown - Crow or Raven	7/29/2024	WNV
Santa Clara	Santa Clara Co VCD	Los Gatos	95032	American Crow	7/29/2024	WNV
Santa Clara	Santa Clara Co VCD	Palo Alto	94306	American Crow	7/29/2024	WNV
Santa Clara	Santa Clara Co VCD	Palo Alto	94306	American Crow	7/29/2024	WNV
Santa Clara	Santa Clara Co VCD	Palo Alto	94301	American Crow	7/29/2024	WNV
Santa Clara	Santa Clara Co VCD	San Jose	95125	American Crow	7/29/2024	WNV
Santa Clara	Santa Clara Co VCD	Palo Alto	94306	Bluebird	7/30/2024	WNV

California Arbovirus Surveillance Bulletin #17

Week 31 Friday, August 2, 2024

Santa Clara	Santa Clara Co VCD	San Jose	95118	American Crow	7/30/2024	WNV
Yuba	Sutter-Yuba MVCD	Marysville	95901	Unknown - songbird	7/24/2024	WNV

Mosquito Pools

County	Site	Pool No	Species	City	Pool Size	Trap	Collected	Virus
Alameda	ALCO 7071	32982	Cx tarsalis	Union City	45	CO2	7/24/2024	WNV
Alameda	ALCO 792432	33018	Cx erythrothorax	Union City	22	CO2	7/23/2024	WNV
Alameda	ALCO 792432	33020	Cx tarsalis	Union City	34	CO2	7/23/2024	WNV
Butte	BUCO 141	174	Cx tarsalis	Oroville	50	CO2	7/22/2024	WNV
Butte	BUCO 141	175	Cx tarsalis	Oroville	50	CO2	7/22/2024	WNV
Butte	BUCO 141	176	Cx tarsalis	Oroville	50	CO2	7/22/2024	WNV
Butte	BUCO 147	180	Cx tarsalis	Gridley	25	CO2	7/23/2024	WNV
Butte	BUCO 174	185	Cx tarsalis	Chico	50	CO2	7/22/2024	WNV
Butte	BUCO 174	187	Cx tarsalis	Chico	50	CO2	7/22/2024	WNV
Butte	BUCO 174	188	Cx tarsalis	Chico	35	CO2	7/22/2024	WNV
Butte	BUCO 185	181	Cx tarsalis	Gridley	50	CO2	7/23/2024	WNV
Butte	BUCO 185	184	Cx tarsalis	Gridley	50	CO2	7/23/2024	WNV
Butte	BUCO 36	195	Cx tarsalis	Gridley	50	CO2	7/24/2024	WNV
Fresno	CNSL 2083	170	Cx quinquefasciatus	Sanger	50	GRVD	7/25/2024	WNV
Fresno	CNSL 2561	171	Cx quinquefasciatus	Sanger	50	GRVD	7/25/2024	WNV
Fresno	CNSL 2703	497	Cx quinquefasciatus	Del Rey	50	GRVD	7/25/2024	WNV
Fresno	CNSL 4150	162	Cx quinquefasciatus	Selma	50	GRVD	7/24/2024	WNV
Fresno	CNSL 4286	163	Cx quinquefasciatus	Selma	50	GRVD	7/24/2024	WNV
Fresno	CNSL 4318	165	Cx tarsalis	Selma	50	CO2	7/24/2024	WNV
Fresno	CNSL 5032	155	Cx quinquefasciatus	Kingsburg	50	GRVD	7/23/2024	WNV
Fresno	CNSL 8145	160	Cx quinquefasciatus	Fresno	50	GRVD	7/24/2024	WNV
Fresno	CNSL 8247	175	Cx quinquefasciatus	Fresno	50	GRVD	7/26/2024	WNV
Fresno	FRNO 270	428	Cx quinquefasciatus	Fresno	11	GRVD	7/30/2024	WNV
Fresno	FRNO 40	430	Cx quinquefasciatus	Fresno	16	GRVD	7/30/2024	WNV
Fresno	FRWS 300031	110	Cx tarsalis	Firebaugh	27	CO2	7/30/2024	WNV
Kern	DLNO 237	105	Cx tarsalis	Delano	42	CO2	7/16/2024	WNV
Kern	KERN 114	275	Cx quinquefasciatus	Bakersfield	50	CO2	7/23/2024	WNV
Kern	KERN 115	281	Cx tarsalis	Bakersfield	50	CO2	7/25/2024	WNV
Kern	KERN 55	276	Cx tarsalis	Arvin	50	CO2	7/23/2024	WNV
Kings	KNGS 3022	81	Cx tarsalis	Hanford	50	CO2	7/25/2024	WNV
Kings	KNGS 3083	71	Cx tarsalis	Lemoore	14	CO2	7/24/2024	WNV
Kings	KNGS 3131	67	Cx tarsalis	Stratford	50	CO2	7/23/2024	WNV
Kings	KNGS 3131	68	Cx tarsalis	Stratford	50	CO2	7/23/2024	WNV
Kings	KNGS 3131	69	Cx pipiens	Stratford	50	CO2	7/23/2024	WNV
Kings	KNGS 3131	70	Cx pipiens	Stratford	19	CO2	7/23/2024	WNV
Kings	KNGS 8010	83	Cx tarsalis	Hanford	50	CO2	7/25/2024	WNV
Kings	KNGS 8010	84	Cx tarsalis	Hanford	50	CO2	7/25/2024	WNV
Kings	KNGS 8010	85	Cx tarsalis	Hanford	50	CO2	7/25/2024	WNV
Kings	KNGS 8014	88	Cx pipiens	Laton	18	CO2	7/25/2024	WNV
Kings	KNGS 8022	73	Cx tarsalis	Lemoore	50	CO2	7/24/2024	WNV
Kings	KNGS 8022	74	Cx tarsalis	Lemoore	26	CO2	7/24/2024	WNV
Lake	LAKE 202	194	Cx tarsalis	Cobb	50	CO2	7/24/2024	WNV
Lake	LAKE 305	196	Cx tarsalis	Middletown	39	CO2	7/30/2024	WNV
Los Angeles	GRLA 2295	529	Cx quinquefasciatus	Los Angeles	34	GRVD	7/24/2024	WNV
Los Angeles	GRLA 2414	5611	Cx quinquefasciatus	Granada Hills	50	GRVD	7/23/2024	WNV
Los Angeles	GRLA 2550	5633	Cx quinquefasciatus	Mission Hills	50	GRVD	7/26/2024	WNV
Los Angeles	GRLA 2637	5607	Cx quinquefasciatus	Van Nuys	50	GRVD	7/23/2024	WNV
Los Angeles	GRLA 2950	5628	Cx quinquefasciatus	Sunland	50	GRVD	7/26/2024	WNV
Los Angeles	GRLA 3047	542	Cx quinquefasciatus	Downey	50	GRVD	7/26/2024	WNV
Los Angeles	SGVA 1070	481	Cx quinquefasciatus	Bradbury	46	GRVD	7/30/2024	WNV
Los Angeles	SGVA 1077	473	Cx quinquefasciatus	La Puente	34	GRVD	7/30/2024	WNV
Los Angeles	SGVA 1458	501	Cx quinquefasciatus	Monterey Park	31	GRVD	8/1/2024	WNV
Los Angeles	SGVA 285	471	Cx quinquefasciatus	Baldwin Park	21	GRVD	7/30/2024	WNV
Madera	MADR 12360	311	Cx tarsalis	Madera	50	CO2	7/26/2024	WNV
Madera	MADR 12361	295	Cx tarsalis	Madera	50	CO2	7/25/2024	WNV

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Madera	MADR 12362	302	Cx tarsalis	Madera	50	CO2	7/26/2024	WNV
Madera	MADR 12363	312	Cx tarsalis	Madera	50	CO2	7/26/2024	WNV
Madera	MADR 12363	313	Cx quinquefasciatus	Madera	50	CO2	7/26/2024	WNV
Madera	MADR 750	314	Cx tarsalis	Firebaugh	50	CO2	7/26/2024	WNV
Madera	MADR 751	272	Cx quinquefasciatus	Chowchilla	50	CO2	7/23/2024	WNV
Madera	MADR 975	305	Cx tarsalis	Madera	50	CO2	7/26/2024	WNV
Merced	MERC 201741	224	Cx tarsalis	Merced	10	CO2	7/25/2024	WNV
Merced	MERC 748377	222	Cx tarsalis	Merced	38	CO2	7/25/2024	WNV
Orange	ORCO 331	1501	Cx quinquefasciatus	Placentia	11	GRVD	7/23/2024	WNV
Orange	ORCO 343	1646	Cx quinquefasciatus	Orange	28	GRVD	7/30/2024	WNV
Placer	PLCR 139	816	Cx tarsalis	Roseville	50	CO2	7/30/2024	WNV
Placer	PLCR 17	843	Cx tarsalis	Sheridan	49	CO2	7/30/2024	WNV
Placer	PLCR 197802	824	Cx tarsalis	Elverta	50	CO2	7/30/2024	WNV
Placer	PLCR 197802	825	Cx tarsalis	Elverta	50	CO2	7/30/2024	WNV
Placer	PLCR 197802	826	Cx tarsalis	Elverta	50	CO2	7/30/2024	WNV
Placer	PLCR 197802	827	Cx tarsalis	Elverta	50	CO2	7/30/2024	WNV
Placer	PLCR 25	841	Cx tarsalis	Lincoln	50	CO2	7/30/2024	WNV
Placer	PLCR 30	833	Cx pipiens	Lincoln	50	CO2	7/30/2024	WNV
Placer	PLCR 678519	862	Cx tarsalis	Elverta	50	CO2	7/31/2024	WNV
Riverside	COAV 121	4430	Cx tarsalis	Mecca	50	CO2	7/30/2024	WNV
Riverside	COAV 45	4435	Cx tarsalis	Mecca	50	CO2	7/30/2024	WNV
Riverside	COAV 778	4416	Cx quinquefasciatus	La Quinta	26	BGSENT	7/30/2024	WNV
Riverside	NWST 442	227	Cx quinquefasciatus	Corona	27	GRVD	7/30/2024	WNV
San Bernardino	SANB 37	212	Cx tarsalis	San Bernardino	50	CO2	7/24/2024	WNV
San Bernardino	WVAL 2044	1448	Cx quinquefasciatus	Ontario	50	BGSENT	8/1/2024	WNV
San Bernardino	WVAL 3376	1381	Cx quinquefasciatus	Chino	10	BGSENT	7/30/2024	WNV
San Bernardino	WVAL 4721	1386	Cx quinquefasciatus	Chino	50	BGSENT	7/30/2024	WNV
San Joaquin	SJCM 8008	1079	Cx tarsalis	Manteca	50	CO2	7/30/2024	WNV
San Joaquin	SJCM 8008	1080	Cx tarsalis	Manteca	50	CO2	7/30/2024	WNV
San Joaquin	SJCM 8008	1083	Cx tarsalis	Manteca	50	CO2	7/30/2024	WNV
San Joaquin	SJCM 8008	1085	Cx tarsalis	Manteca	46	CO2	7/30/2024	WNV
San Joaquin	SJCM 8018	1088	Cx tarsalis	Stockton	50	CO2	7/30/2024	WNV
San Joaquin	SJCM 8018	1089	Cx tarsalis	Stockton	50	CO2	7/30/2024	WNV
San Joaquin	SJCM 8018	1090	Cx tarsalis	Stockton	50	CO2	7/30/2024	WNV
San Joaquin	SJCM 8018	1091	Cx tarsalis	Stockton	50	CO2	7/30/2024	WNV
San Joaquin	SJCM 8018	1092	Cx tarsalis	Stockton	50	CO2	7/30/2024	WNV
San Joaquin	SJCM 8018	1093	Cx tarsalis	Stockton	50	CO2	7/30/2024	WNV
San Joaquin	SJCM 8018	1094	Cx tarsalis	Stockton	50	CO2	7/30/2024	WNV
San Joaquin	SJCM 8018	1095	Cx tarsalis	Stockton	50	CO2	7/30/2024	WNV
San Joaquin	SJCM 8018	1096	Cx tarsalis	Stockton	39	CO2	7/30/2024	WNV
San Joaquin	SJCM 8027	1053	Cx tarsalis	Stockton	50	CO2	7/30/2024	WNV
San Joaquin	SJCM 8076	1070	Cx tarsalis	Stockton	34	CO2	7/30/2024	WNV
San Joaquin	SJCM 8083	1108	Cx pipiens	Escalon	50	CO2	7/30/2024	WNV
San Joaquin	SJCM 8083	1109	Cx pipiens	Escalon	50	CO2	7/30/2024	WNV
San Joaquin	SJCM 8083	1113	Cx pipiens	Escalon	50	CO2	7/30/2024	WNV
San Joaquin	SJCM 8094	1076	Cx tarsalis	Manteca	21	CO2	7/30/2024	WNV
San Joaquin	SJCM 8196	1097	Cx tarsalis	Ripon	7	CO2	7/30/2024	WNV
San Joaquin	SJCM 8204	1071	Cx tarsalis	Stockton	50	CO2	7/30/2024	WNV
San Joaquin	SJCM 8204	1072	Cx tarsalis	Stockton	50	CO2	7/30/2024	WNV
San Joaquin	SJCM 8204	1073	Cx tarsalis	Stockton	49	CO2	7/30/2024	WNV
San Joaquin	SJCM 8206	1127	Cx tarsalis	Lodi	100	CO2	7/30/2024	WNV
San Joaquin	SJCM 8206	1129	Cx tarsalis	Lodi	100	CO2	7/30/2024	WNV
San Joaquin	SJCM 8206	1131	Cx tarsalis	Lodi	100	CO2	7/30/2024	WNV
San Joaquin	SJCM 8206	1132	Cx tarsalis	Lodi	100	CO2	7/30/2024	WNV
San Joaquin	SJCM 8206	1133	Cx tarsalis	Lodi	100	CO2	7/30/2024	WNV
San Joaquin	SJCM 8228	1118	Cx pipiens	Escalon	39	CO2	7/30/2024	WNV
Santa Clara	STCL 31172	1947	Cx pipiens	San Jose	4	GRVD	7/26/2024	WNV
Santa Clara	STCL 31291	2030	Cx tarsalis	San Jose	15	CO2	7/23/2024	WNV
Shasta	SHAS 10020	437	Cx pipiens	Anderson	25	CO2	7/30/2024	WNV
Shasta	SHAS 10140	443	Cx tarsalis	Anderson	36	CO2	7/30/2024	WNV
Shasta	SHAS 459	466	Cx tarsalis	Redding	15	CO2	7/31/2024	WNV
Stanislaus	EAST 1004	24054	Cx tarsalis	Modesto	16	CO2	7/25/2024	WNV

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Stanislaus	EAST 2016	24055	Cx pipiens	Oakdale	37	GRVD	7/25/2024	WNV
Stanislaus	TRLK 1107	377	Cx tarsalis	Denair	27	CO2	7/30/2024	WNV
Stanislaus	TRLK 1219	393	Cx pipiens	Modesto	50	CO2	7/30/2024	WNV
Stanislaus	TRLK 19519	378	Cx tarsalis	Denair	9	CO2	7/30/2024	WNV
Stanislaus	TRLK 2418	369	Cx pipiens	Turlock	17	CO2	7/30/2024	WNV
Stanislaus	TRLK 613	380	Cx tarsalis	Hickman	50	CO2	7/30/2024	WNV
Stanislaus	TRLK 613	385	Cx tarsalis	Hickman	50	CO2	7/30/2024	WNV
Stanislaus	TRLK 613	386	Cx tarsalis	Hickman	50	CO2	7/30/2024	WNV
Stanislaus	TRLK 613	387	Cx tarsalis	Hickman	50	CO2	7/30/2024	WNV
Tulare	DLNO 243	124	Cx quinquefasciatus	Earlimart	50	CO2	7/25/2024	WNV
Tulare	DLNO 243	125	Cx tarsalis	Earlimart	50	CO2	7/25/2024	WNV
Tulare	DLNO 8	116	Cx quinquefasciatus	Delano	50	CO2	7/25/2024	WNV
Tulare	DLTA 162326	2343	Cx quinquefasciatus	Dinuba	47	GRVD	7/26/2024	WNV
Tulare	DLTA 184191	2389	Cx quinquefasciatus	Visalia	27	GRVD	7/31/2024	WNV
Tulare	DLTA 623614	2246	Cx stigmatosoma	Kingsburg	50	CO2	7/19/2024	WNV
Tulare	DLTA 623614	2247	Cx stigmatosoma	Kingsburg	10	CO2	7/19/2024	WNV
Tulare	DLTA 63124	2337	Cx quinquefasciatus	Dinuba	11	GRVD	7/26/2024	WNV
Tulare	DLTA 633024	2249	Cx stigmatosoma	Kingsburg	21	CO2	7/23/2024	WNV
Tulare	DLTA 63304	2245	Cx stigmatosoma	Kingsburg	20	GRVD	7/19/2024	WNV
Tulare	DLTA 63312	2243	Cx stigmatosoma	Kingsburg	13	CO2	7/19/2024	WNV
Tulare	DLTA 63312	2304	Cx stigmatosoma	Kingsburg	13	CO2	7/24/2024	WNV
Tulare	DLTA 64071	2266	Cx quinquefasciatus	Dinuba	10	GRVD	7/23/2024	WNV
Tulare	DLTA 6417	2418	Cx quinquefasciatus	Dinuba	30	GRVD	7/31/2024	WNV
Tulare	DLTA 64174	2322	Cx quinquefasciatus	Dinuba	28	GRVD	7/25/2024	WNV
Tulare	DLTA 73024	2417	Cx quinquefasciatus	Dinuba	22	GRVD	7/31/2024	WNV
Tulare	DLTA 83222	2425	Cx quinquefasciatus	Goshen	43	BGSENT	7/31/2024	WNV
Tulare	DLTA 83231	2292	Cx tarsalis	Goshen	14	CO2	7/24/2024	WNV
Tulare	DLTA 8324	2359	Cx quinquefasciatus	Goshen	23	GRVD	7/30/2024	WNV
Tulare	DLTA 8422	2427	Cx quinquefasciatus	Goshen	50	BGSENT	7/31/2024	WNV
Tulare	DLTA 8436	2282	Cx quinquefasciatus	Visalia	12	GRVD	7/24/2024	WNV
Tulare	DLTA 8536	2258	Cx quinquefasciatus	Farmersville	21	GRVD	7/23/2024	WNV
Tulare	DLTA 94032	2349	Cx quinquefasciatus	Visalia	12	GRVD	7/26/2024	WNV

Sentinel Chickens

County	Site Code	Nearest City	Date Bled	Virus	Band 01	Band 02	Band 03	Band 04
Merced	MERC 6	Merced	7/29/2024	WNV	2369			
Merced	MERC 502	Hilmar	7/19/2024	WNV	2384	2385	2387	2389
Solano	SOLA 15	Winters	7/29/2024	WNV	3251	3252	3254	3256

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TEST PROTOCOLS

Humans:

Specimens are tested by local laboratories with an IgM or IgG immunofluorescent assay (IFA) and/or an IgM enzyme immunoassay (EIA). Specimens with inconclusive results are forwarded to the California Department of Public Health Viral and Rickettsial Disease Laboratory (VRDL) for further testing with a plaque reduction neutralization test (PRNT).

Dead Birds

Oral swab samples collected from bird carcasses are tested at the UC Davis Arbovirus Research and Training laboratory (DART) or at a local agency for West Nile virus by RT-qPCR.

Sentinel Chickens:

Dried blood spot samples from sentinel chickens are tested at the California Department of Public Health Vector-Borne Disease Laboratory for IgG antibodies to West Nile, St. Louis encephalitis, and western equine encephalomyelitis viruses by an EIA. Positive samples are confirmed by IFA, western-blot, or PRNT.

Mosquito Pools:

Mosquito pools are tested at DART or at a local agency for West Nile, western equine encephalomyelitis, and St. Louis encephalitis viral RNA using a multiplex RT-qPCR. Invasive *Aedes* mosquitoes (*Ae. aegypti* and *Ae. albopictus*) are also tested at DART for chikungunya, dengue, and Zika viral RNA by a separate RT-qPCR.

Website Information: For updated information on WNV in California, please visit the California WNV website, <https://westnile.ca.gov>, or the California Vector-Borne Disease Surveillance System website, <https://maps.vectorsurv.org>

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