



**TOWN OF LOS GATOS
TOWN PENSION AND OPEB TRUSTS OVERSIGHT
COMMITTEE AGENDA
DECEMBER 03, 2019
110 EAST MAIN STREET
LOS GATOS, CA**

*Marcia Jensen, Mayor
Barbara Spector, Vice Mayor
Steve Leonardis, Council Member
Rob Rennie, Council Member
Marico Sayoc, Council Member*

PARTICIPATION IN THE PUBLIC PROCESS

How to participate: The Town of Los Gatos strongly encourages your active participation in the public process, which is the cornerstone of democracy. If you wish to speak to an item on the agenda, please complete a “speaker’s card” located on the back of the chamber benches and return it to the Clerk Administrator. If you wish to speak to an item NOT on the agenda, you may do so during the “Verbal Communications” period. The time allocated to speakers may change to better facilitate the Town Council meeting.

Effective Proceedings: The purpose of the Town Council meeting is to conduct the business of the community in an effective and efficient manner. For the benefit of the community, the Town of Los Gatos asks that you follow the Town’s meeting guidelines while attending Town Council meetings and treat everyone with respect and dignity. This is done by following meeting guidelines set forth in State law and in the Town Code. Disruptive conduct is not tolerated, including but not limited to: addressing the Town Council without first being recognized; interrupting speakers, Town Council or Town staff; continuing to speak after the allotted time has expired; failing to relinquish the podium when directed to do so; and repetitiously addressing the same subject.

Deadlines for Public Comment and Presentations are as follows:

- Persons wishing to make an audio/visual presentation on any agenda item must submit the presentation electronically, either in person or via email, to the Clerk’s Office no later than 3:00 p.m. on the day of the Council meeting.
- Persons wishing to submit written comments to be included in the materials provided to Town Council must provide the comments as follows:
 - For inclusion in the regular packet: by 11:00 a.m. the Thursday before the Council meeting
 - For inclusion in any Addendum: by 11:00 a.m. the Monday before the Council meeting
 - For inclusion in any Desk Item: by 11:00 a.m. on the day of the Council Meeting

***Town Council Meetings Broadcast Live on KCAT, Channel 15 (on Comcast) on the 1st and 3rd Tuesdays at 7:00 p.m.
Rebroadcast of Town Council Meetings on the 2nd and 4th Mondays at 7:00 p.m.
Live & Archived Council Meetings can be viewed by going to:
www.losgatosca.gov/Councilvideos***

***IN COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT, IF YOU NEED SPECIAL ASSISTANCE TO PARTICIPATE IN THIS MEETING,
PLEASE CONTACT THE CLERK DEPARTMENT AT (408) 354-6834. NOTIFICATION 48 HOURS BEFORE THE MEETING WILL ENABLE THE TOWN
TO MAKE REASONABLE ARRANGEMENTS TO ENSURE ACCESSIBILITY TO THIS MEETING [28 CFR §35.102-35.104]***

TOWN OF LOS GATOS
TOWN PENSION AND OPEB TRUSTS OVERSIGHT COMMITTEE AGENDA
DECEMBER 03, 2019
6:00 PM

MEETING CALLED TO ORDER

ROLL CALL

CONSENT ITEMS *(Items appearing on the Consent Items are considered routine and may be approved by one motion. Any member of the Council or public may request to have an item removed from the Consent Items for comment and action. If an item is pulled, the Mayor has the sole discretion to determine when the item will be heard. Unless there are separate discussions and/or actions requested by Council, staff, or a member of the public, it is requested that items under the Consent Items be acted on simultaneously.)*

1. Approve the Town Pension and OPEB Trusts Oversight Committee Meeting Minutes of September 3, 2019.
2. Receive Performance Report for the Period Ending October 31, 2019 and Fund Balance Report for the Period Ending September 30, 2019 for the California Employers' Retiree Benefit Trust (CERBT).
3. Receive Monthly Performance and Account Summary Reports for the Town of Los Gatos IRS Section 115 Pension Trust for the Periods Ending September 30, 2019 and October 31, 2019.

VERBAL COMMUNICATIONS *(Members of the public are welcome to address the Town Council on any matter that is not listed on the agenda. To ensure all agenda items are heard and unless additional time is authorized by the Mayor, this portion of the agenda is limited to 30 minutes and no more than three (3) minutes per speaker. In the event additional speakers were not able to be heard during the initial Verbal Communications portion of the agenda, an additional Verbal Communications will be opened prior to adjournment.)*

OTHER BUSINESS *(Up to three minutes may be allotted to each speaker on any of the following items.)*

4. Receive CalPERS Actuarial Valuations Reports as of June 30, 2018.
5. Receive Bartel Associates, LLC OPEB Accounting Information Report as of the June 30, 2018.
6. Adopt Proposed Revisions to the Town of Los Gatos IRS Section 115 Pension Trust and California Employers' Retiree Benefit Trust (CERBT) Investment Policy.

ADJOURNMENT *(Council policy is to adjourn no later than midnight unless a majority of Council votes for an extension of time)*

Writings related to an item on the Town Council meeting agenda distributed to members of the Council within 72 hours of the meeting are available for public inspection at the front desk of the Los Gatos Town Library, located at 100 Villa Avenue, and are also available for review on the official Town of Los Gatos website. Copies of desk items distributed to members of the Council at the meeting are available for review in the Town Council Chambers

Note: The Town of Los Gatos has adopted the provisions of Code of Civil Procedure §1094.6; litigation challenging a decision of the Town Council must be brought within 90 days after the decision is announced unless a shorter time is required by State or Federal law.



**TOWN OF LOS GATOS
PENSION AND OPEB TRUST
OVERSIGHT COMMITTEE
REPORT**

MEETING DATE: 12/03/2019

ITEM NO: 1

**DRAFT
Minutes of the Pension and OPEB Trust Oversight Committee Meeting
September 3, 2019**

The Pension and OPEB Trust Oversight Committee of the Town of Los Gatos conducted a Regular Meeting on Tuesday, September 3, 2019, at 5:00 p.m.

MEETING CALLED TO ORDER AT 5:00 P.M.

ROLL CALL

Present: Mayor Steven Leonardis, Vice Mayor Marcia Jensen, Council Member Rob Rennie, Council Member Marico Sayoc, Council Member Barbara Spector.

Absent: None

CONSENT ITEMS (TO BE ACTED UPON BY A SINGLE MOTION)

1. Approve Town Pension and OPEB Trusts Oversight Committee meeting minutes of June 4, 2019.
2. Accept Year-End Performance and Account Summary Reports for the Period Ending June 30, 2019 for the Town of Los Gatos California Employers' Retiree Benefit Trust (CERBT) for the Period Ending June 30, 2019.
3. Accept Year-End Performance and Account Summary Reports for Period Ending June 30, 2019 for the Town of Los Gatos IRS Section 115 Pension Trust.

MOTION: **Motion by Vice Mayor Jensen** to approve the Consent Items. **Seconded** by **Council Member Spector**.

VOTE: **Motion passed unanimously.**

VERBAL COMMUNICATIONS

None.

OTHER BUSINESS

4. Review and Discuss CalPERS 2017 Actuarial Valuations for the Miscellaneous and Safety Pension Plans and Decide on an Additional Discretionary Payment (ADP) Strategy Based on the August 2019 Bartel and Associates Analysis.

Arn Andrews, Assistant Town Manager, presented the staff report.

PAGE 2 OF 2

SUBJECT: Minutes of the Pension and OPEB Trust Oversight Committee Meeting

DATE: September 3, 2019

Other Business Item #4 – continued

Opened Public Comment.

The following people provided Public Comment:

Rick Tinsley

Lee Fagot

Terry Dureya

Jack VanNada

Closed Public Comment.

Council discussed the matter.

MOTION: **Motion by Council Member Spector** to make a payment of \$8.2 million to CalPERS directly by using \$5 million from the Pension 115 Trust first, then paying off the remaining \$3.2 million balance on a long-term basis but not longer than 18 months and closing the PARS Pension 115 Trust account. **Seconded by Vice Mayor Jensen.**

VOTE: **Motion passed unanimously.**

ADJOURNMENT

The meeting adjourned at 6:54 p.m.

Attest:

Shelley Neis, Town Clerk



TOWN OF LOS GATOS
TOWN PENSION AND OPEB TRUSTS
OVERSIGHT COMMITTEE REPORT

MEETING DATE: 12/03/2019

ITEM NO: 2

DATE: November 21, 2019
TO: Town Pension and OPEB Trusts Oversight Committee
FROM: Laurel Prevetti, Town Manager
SUBJECT: Receive Performance Report for the Period Ending October 31, 2019 and Fund Balance Report for the Period Ending September 30, 2019 for the California Employers' Retiree Benefit Trust (CERBT)

RECOMMENDATION:

Receive Performance Report for the Period Ending October 31, 2019 and Fund Balance Report for the Period Ending September 30, 2019 for the California Employers' Retiree Benefit Trust (CERBT).

BACKGROUND:

In 2009, the Council approved participating in the California Employer's Retiree Benefit Trust Fund. The CERBT Fund is an IRS Section 115 trust fund dedicated to the prefunding of other post-employment benefits ("OPEB"). The CERBT is the single investment vehicle for the Town's OPEB Plan ("OPEB Plan").

DISCUSSION:

The Town's OPEB assets are invested in the CERBT Strategy 1 and are approximately \$18.6 million as of September 30, 2019 (Attachment 1). As of October 31, 2019, the CERBT account returned 2.84% gross of fees for the quarter (Attachment 2).

Attachments:

1. CERBT Account Summary as of September 30, 2019
2. CERBT Strategy 1 Performance Report as of October 30, 2019

PREPARED BY: Arn Andrews
Assistant Town Manager

Reviewed by: Town Manager and Finance Director



Market Value Summary:

	QTD Current Period	Fiscal Year to Date
Beginning Balance	\$18,379,772.40	\$18,379,772.40
Contribution	0.00	0.00
Disbursement	0.00	0.00
Transfer In	0.00	0.00
Transfer Out	0.00	0.00
Investment Earnings	232,634.44	232,634.44
Administrative Expenses	(2,274.70)	(2,274.70)
Investment Expense	(1,663.18)	(1,663.18)
Other	0.00	0.00
Ending Balance	\$18,608,468.96	\$18,608,468.96
FY End Contrib per GASB 74 Para 22	0.00	0.00
FY End Disbursement Accrual	0.00	0.00
Grand Total	\$18,608,468.96	\$18,608,468.96

Unit Value Summary:

	QTD Current Period	Fiscal Year to Date
Beginning Units	1,090,918.002	1,090,918.002
Unit Purchases from Contributions	0.000	0.000
Unit Sales for Withdrawals	0.000	0.000
Unit Transfer In	0.000	0.000
Unit Transfer Out	0.000	0.000
Ending Units	1,090,918.002	1,090,918.002
Period Beginning Unit Value	16.847987	16.847987
Period Ending Unit Value	17.057624	17.057624

Please note the Grand Total is your actual fund account balance at the end of the period, including all contributions per GASB 74 paragraph 22 and accrued disbursements. Please review your statement promptly. All information contained in your statement will be considered true and accurate unless you contact us within 30 days of receipt of this statement. If you have questions about the validity of this information, please contact CERBT4U@calpers.ca.gov.

Statement of Transaction Detail for the Quarter Ending 09/30/2019

Town of Los Gatos

Entity #: SKB0-4589482285



California Employers' Retiree Benefit Trust (CERBT) CERBT Strategy 1



October 31, 2019

Objective

The objective of the CERBT Strategy 1 portfolio is to seek returns that reflect the broad investment performance of the financial markets through capital appreciation and investment income. There is no guarantee that the portfolio will achieve its investment objective.

Strategy

The CERBT Strategy 1 portfolio is invested in various asset classes in percentages approved by the CalPERS Board. The specific percentages of portfolio assets allocated to each asset class are shown under "Composition". Generally, equities are intended to help build the value of the employer's portfolio over the long term while bonds are intended to help provide income and stability of principal. Also, strategies invested in a higher percentage of equities seek higher investment returns (but assume more risk) compared with strategies invested in a higher percentage of bonds.

Compared with CERBT Strategy 2 and Strategy 3, this portfolio consists of a higher percentage of equities than bonds and other assets. Historically, equities have displayed greater price volatility and therefore this portfolio may experience greater fluctuation of value. Employers that seek higher investment returns, and are able to accept greater risk and tolerate more fluctuation in returns, may wish to consider this portfolio.

CalPERS Board may change the list of approved asset classes, in composition as well as targeted allocation percentages and ranges at any time.

Assets Under Management

As of the specified reporting month-end, the aggregate total of assets under management for all CERBT Strategies was

\$10,597,092,262.

Composition

Asset Class Allocations and Benchmarks

The CERBT Strategy 1 portfolio consists of the following asset classes and corresponding benchmarks:

Asset Class	Target Allocation ¹	Target Range	Benchmark
Global Equity	59%	± 5%	MSCI All Country World Index IMI (net)
Fixed Income	25%	± 5%	Bloomberg Barclays Long Liability Index
Treasury Inflation-Protected Securities ("TIPS")	5%	± 3%	Bloomberg Barclays US TIPS Index, Series L
Real Estate Investment Trusts ("REITs")	8%	± 5%	FTSE EPRA/NAREIT Developed Liquid Index (net)
Commodities	3%	± 3%	S&P GSCI Total Return Index
Cash	-	+2%	91 Day Treasury Bill

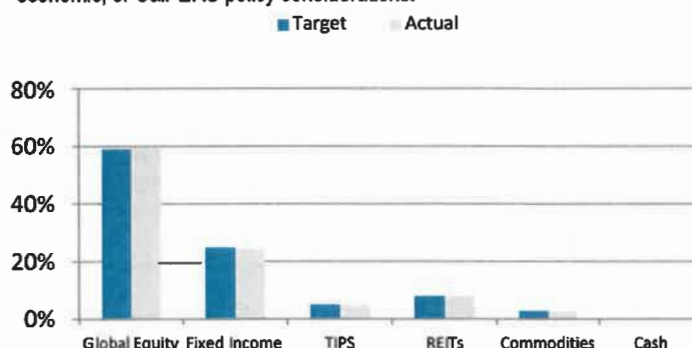
¹ Allocations were approved by the Board at the May 2018 Investment Committee meeting.

Portfolio Benchmark

The CERBT Strategy 1 benchmark is a composite of underlying asset class market indices, each assigned the target weight for the asset class it represents.

Target vs. Actual Asset Class Allocations

The following chart shows policy target allocations compared with actual asset allocations as of the specified reporting month-end. CalPERS may overweight or underweight an allocation to a particular asset class based on market, economic, or CalPERS policy considerations.



CERBT Strategy 1 Performance as of October 31, 2019

	1 Month	3 Months	Fiscal YTD	1 Year	3 Years*	5 Years*	10 Years*	Since Inception* (June 1, 2007)
Gross Return ^{1,3}	1.90%	2.84%	3.19%	13.66%	8.85%	6.00%	8.17%	5.05%
Net Return ^{2,3}	1.89%	2.82%	3.16%	13.56%	8.75%	5.91%	8.08%	4.98%
Benchmark returns	1.87%	2.78%	3.12%	13.46%	8.47%	5.62%	7.91%	4.62%
Standard Deviation ⁴	-	-	-	-	7.56%	7.83%	9.45%	12.45%

Performance quoted represents past performance, which is no guarantee of future results that may be achieved by the fund.

* Returns for periods greater than one year are annualized.

¹ Gross performance figures are provided net of SSGA operating expenses.

² Net Performance figures deduct all expenses to the fund, including investment management, administrative and recordkeeping fees.

³ See the Expense section of this document.

⁴ Standard deviation is based on gross returns.

October 31, 2019

General Information

Information Accessibility

The CERBT Strategy 1 portfolio consists of assets managed internally by CalPERS and/or by external advisors. Since it is not a mutual fund, a prospectus is not available nor is information available from a newspaper source. This summary is designed to provide descriptive information. CalPERS provides a quarterly statement of the employer's account and other information about the CERBT. For total market value, detailed asset allocation, investment policy and current performance information, including performance to the most recent month-end, please visit our website at: www.calpers.ca.gov.

Portfolio Manager Information

The CalPERS Investment Committee and Board of Administration directs the investment strategy and investments of the CERBT. State Street Global Advisors (SSGA) manages all asset classes for CERBT, which includes: Global Equity, Fixed Income, Real Estate Investment Trusts, Treasury Inflation-Protected Securities, and Commodities.¹

Custodian and Record Keeper

State Street Bank serves as custodian for the CERBT. Northeast Retirement Services serves as record keeper.

Expenses

CERBT is a self-funded trust in which participating employers pay for all administrative and investment expenses. Expenses reduce the gross investment return by the fee amount. The larger the fee, the greater the reduction of investment return. Currently, CERBT expenses are 0.10% which consist of administrative expenses borne by CalPERS to administer and oversee the Trust assets, investment management and administrative fees paid to SSGA to manage all asset classes, and recordkeeping fees paid to Northeast Retirement Services to administer individual employer accounts. The expenses described herein are reflected in the net asset value per share. CERBT's actual expenses may differ from the amount currently being accrued due to factors such as changes in average fund assets or market conditions. The expense accrual rate may change without notice in order to reflect changes in average portfolio assets or in expense amounts. The CalPERS Board annually reviews the operating expenses and changes may be made as appropriate. Even if the portfolio loses money during a period, the fee is still charged.

What Employers Own

Each employer choosing CERBT Strategy 1 owns a percentage of this portfolio, which invests in pooled asset classes managed by CalPERS and/or external advisors. Employers do not have direct ownership of the securities in the portfolio.

Price

The value of the portfolio changes daily based upon the market value of the underlying securities. Just as prices of individual securities fluctuate, the portfolio's value also changes with market conditions.

Principal Risks of the Portfolio

The CalPERS CERBT Fund provides California government employers with a trust through which they may prefund retiree medical costs and other post-employment benefits. CERBT is not, however, a defined benefit plan. There is no guarantee that the portfolio will achieve its investment objectives nor provide sufficient funding to meet these employer obligations. Further, CalPERS will not make up the difference between the employer's CERBT assets and the actual cost of Other Post Employment Benefits provided to employer's plan members.

An investment in the portfolio is not a bank deposit, and it is not insured nor guaranteed by the Federal Deposit Insurance Corporation (FDIC), CalPERS, the State of California or any other government agency.

There are risks associated with investing, including possible loss of principal. The portfolio's risk depends in part on the portfolio's asset class allocations and the selection, weighting and risks of the underlying investments. For more information about investment risks, please see the document entitled "CERBT Principal Investment Risks" located at www.calpers.ca.gov.

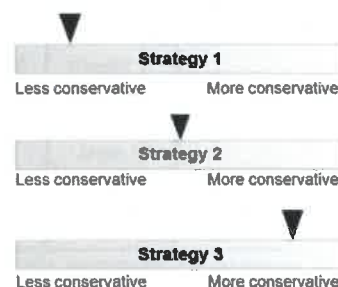
Fund Performance

Performance data shown on page 1 represents past performance and is no guarantee of future results. The investment return and principal value of an investment will fluctuate so that an employer's units, when redeemed, may be worth more or less than their original cost. Current performance may be higher or lower than historical performance data shown. For current performance information, please visit www.calpers.ca.gov and follow the links to California Employers' Retiree Benefit Trust.

CERBT Strategy Risk Levels

CalPERS offers employers the choice of one of three investment strategies. Risk levels among strategies vary, depending upon the target asset class allocations. Generally, equities carry more risk than fixed income securities.

Asset Class Target Allocations	Strategy 1	Strategy 2	Strategy 3
Global Equity	59%	40%	22%
Fixed Income	25%	43%	49%
Treasury Inflation-Protected Securities	5%	5%	16%
Real Estate Investment Trusts	8%	8%	8%
Commodities	3%	4%	5%





TOWN OF LOS GATOS
TOWN PENSION AND OPEB TRUSTS
OVERSIGHT COMMITTEE REPORT

MEETING DATE: 12/03/2019

ITEM NO: 3

DATE: November 21, 2019
TO: Town Pension and OPEB Trusts Oversight Committee
FROM: Laurel Prevetti, Town Manager
SUBJECT: Receive Monthly Performance and Account Summary Reports for the Town of Los Gatos IRS Section 115 Pension Trust for the Periods Ending September 30, 2019 and October 31, 2019

RECOMMENDATION:

Receive Monthly Performance and Account Summary Reports for the Town of Los Gatos IRS Section 115 Pension Trust for the Periods Ending September 30, 2019 (Attachment 1) and October 31, 2019 (Attachment 2).

BACKGROUND:

On August 15, 2017, Town Council approved Public Agency Retirement Services (PARS) as the administrator of the Town's Section 115 Pension Trust. The initial \$300,000 was deposited into the PARS account in March 2018 with additional \$300,000 deposits programmed monthly.

On September 17, 2019, the Town Council directed staff to terminate the PARS agreement, consistent with the Town Pension and OPEB Trusts Oversight Committee recommendation and utilize the assets to make additional discretionary payments directly to CalPERS. The first additional discretionary payment of \$4,753,965 was transferred to CalPERS from PARS on October 11, 2019.

DISCUSSION:

As of October 31, 2019, the PARS account returned -0.52% gross of fees for the month and 8.92% gross of fees for the one-year period. The ending account balance as of October 31, 2019 was \$294,764.63. The decline in assets reflected in the October statement is primarily the result of the aforementioned additional discretionary payment (ADP) to CalPERS.

PREPARED BY: Arn Andrews
Assistant Town Manager

Reviewed by: Town Manager and Finance Director

PAGE 2 OF 2

SUBJECT: Receive Monthly Performance and Account Summary Reports

DATE: November 21, 2019

DISCUSSION (continued):

Per previous Oversight Committee direction, the remaining account balance will be distributed directly to CalPERS as part of an ADP prior to September 2020.

Attachments:

1. PARS IRS 115 Pension Trust Account Summary as of September 30, 2019
2. PARS IRS 115 Pension Trust Account Summary as of October 31, 2019

TOWN OF LOS GATOS
PARS Post-Employment Benefits TrustAccount Report for the Period
9/1/2019 to 9/30/2019Stephen Conway
Director of Finance
Town of Los Gatos
110 E. Main Street
Los Gatos, CA 95030**Account Summary**

Source	Beginning Balance as of 9/1/2019	Contributions	Earnings	Expenses	Distributions	Transfers	Ending Balance as of 9/30/2019
PENSION	\$4,985,641.05	\$0.00	\$72,548.59	\$1,038.68	\$0.00	\$0.00	\$5,057,150.96
Totals	\$4,985,641.05	\$0.00	\$72,548.59	\$1,038.68	\$0.00	\$0.00	\$5,057,150.96

Investment Selection

Source

PENSION Capital Appreciation Index PLUS

Investment Objective

Source

PENSION The primary goal of the Capital Appreciation objective is growth of principal. The major portion of the assets are invested in equity securities and market fluctuations are expected.

Investment Return

Source	1-Month	3-Months	1-Year	Annualized Return			Plan's Inception Date
				3-Years	5-Years	10-Years	
PENSION	1.46%	0.91%	3.36%	-	-	-	3/20/2018

Information as provided by US Bank, Trustee for PARS; Not FDIC Insured; No Bank Guarantee; May Lose Value

Past performance does not guarantee future results. Performance returns may not reflect the deduction of applicable fees, which could reduce returns. Information is deemed reliable but may be subject to change.

Investment Return: Annualized rate of return is the return on an investment over a period other than one year multiplied or divided to give a comparable one-year return.

Account balances are inclusive of Trust Administration, Trustee and Investment Management fees

TOWN OF LOS GATOS
PARS Post-Employment Benefits Trust**Account Report for the Period**
10/1/2019 to 10/31/2019Stephen Conway
Director of Finance
Town of Los Gatos
110 E. Main Street
Los Gatos, CA 95030**Account Summary**

Source	Beginning Balance as of 10/1/2019	Contributions	Earnings	Expenses	Distributions	Transfers	Ending Balance as of 10/31/2019
PENSION	\$5,057,150.96	\$0.00	-\$7,367.76	\$1,053.57	\$4,753,965.00	\$0.00	\$294,764.63
Totals	\$5,057,150.96	\$0.00	-\$7,367.76	\$1,053.57	\$4,753,965.00	\$0.00	\$294,764.63

Investment Selection**Source**PENSION **Capital Appreciation Index PLUS****Investment Objective****Source**

PENSION The primary goal of the Capital Appreciation objective is growth of principal. The major portion of the assets are invested in equity securities and market fluctuations are expected.

Investment Return

Source	1-Month	3-Months	1-Year	Annualized Return			Plan's Inception Date
				3-Years	5-Years	10-Years	
PENSION	-0.52%	-0.13%	8.92%	-	-	-	3/20/2018

Information as provided by US Bank, Trustee for PARS; Not FDIC Insured; No Bank Guarantee; May Lose Value

Past performance does not guarantee future results. Performance returns may not reflect the deduction of applicable fees, which could reduce returns. Information is deemed reliable but may be subject to change.

Investment Return: Annualized rate of return is the return on an investment over a period other than one year multiplied or divided to give a comparable one-year return.

Account balances are inclusive of Trust Administration, Trustee and Investment Management fees

Headquarters - 4350 Von Karman Ave., Suite 100, Newport Beach, CA 92660 800.540.6369 Fax 949.250.1250 www.pars.org



TOWN OF LOS GATOS
TOWN PENSION AND OPEB TRUSTS
OVERSIGHT COMMITTEE REPORT

MEETING DATE: 12/03/2019

ITEM NO: 4

DATE: November 21, 2019
TO: Town Pension and OPEB Trusts Oversight Committee
FROM: Laurel Prevetti, Town Manager
SUBJECT: Receive CalPERS Actuarial Valuations Reports as of June 30, 2018

RECOMMENDATION:

Receive CalPERS Actuarial Valuations Reports as of June 30, 2018.

BACKGROUND:

The Town's pension plans are administered by the Board of Administration of the California Public Employees' Retirement System (CalPERS). The Board of Administration is responsible for the management and control of CalPERS. In addition, the Board has exclusive control of the administration and investment of funds. Sworn employees are covered under the Safety Plan which is a pooled plan, while all other employees are covered in the Miscellaneous Plan, which is a separate plan. The Miscellaneous Plan is administered by CalPERS in the Public Employees' Retirement Fund (PERF).

In order for the Town to understand the value of future pension benefit payments, an actuarial valuation is performed each year for the pension plan. The CalPERS actuary estimates the payments that will be made for all potential retirees from the plan in each future year. The actuary calculates the present value of future benefits the plan will be required to pay to its current participants: those still working who will retire in the future, retirees, and those who have terminated employment but have not yet begun drawing benefits.

DISCUSSION:

Staff has received the annual Actuarial Valuation Reports from CalPERS for the Miscellaneous Plan (Attachment 1), the Safety Plan (Attachment 2), and the PEPR Safety Police Plan (Attachment 3). The measurement date for each of the Plans, as proscribed by GASB 68, is as of June 30, 2018.

PREPARED BY: Arn Andrews
Assistant Town Manager

Reviewed by: Town Manager and Finance Director

The Town's Safety Plan funded status stood at 72.0% compared to 73.9% for the 2017 valuation. The Town's Safety PEPR Plan had a funded status of 91.6% versus 94.8% for 2017 and the Miscellaneous Plan funded status of 68.4% was also slightly lower compared to 2017 at 69.6%. While the Market Value of Assets (MVA) improved for all three Plans, larger corresponding increases in Accrued Liabilities offset those gains resulting increased Unfunded Accrued Liabilities (UAL) and reduced funding status.

June 30, 2018	Miscellaneous Plan	Safety Plan	PEPRA Safety Plan
Accrued Liability	\$107,075,648	\$91,111,357	\$414,453
Market Value of Assets	73,291,140	65,569,436	379,539
Unfunded Accrued Liability	33,784,508	25,541,921	34,914
Funded Ratio	68.4%	72.0%	91.6%

It should be noted that the funding percentage for the Miscellaneous Plan is as of June 30, 2018 and does not reflect recent Council actions to pay down approximately \$8.0 million of unfunded pension liabilities. The first additional discretionary payment of \$4,753,965 was transferred to CalPERS on October 11, 2019. Per GASB standards, assets held in the Town's PARS Section 115 Trust dedicated for pension obligations were not allowed to be added to the Town's CalPERS pension assets for valuation purposes. Had these assets been included there would have been a corresponding increase in the Town's funding status.

COORDINATION:

This report was coordinated with the Town Manager and Director of Finance

Attachments:

1. CalPERS Annual Valuation Report as of June 30, 2018 – Miscellaneous Plan of the Town of Los Gatos
2. CalPERS Annual Valuation Report as of June 30, 2018 – Safety Plan of the Town of Los Gatos
3. CalPERS Annual Valuation Report as of June 30, 2018 – PEPR Safety Police Plan of the Town of Los Gatos



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 2019

**Miscellaneous Plan of the Town of Los Gatos (CalPERS ID: 4589482285)
Annual Valuation Report as of June 30, 2018**

Dear Employer,

Attached to this letter, you will find the June 30, 2018 actuarial valuation report of your CalPERS pension plan. **Provided in this report is the determination of the minimum required employer contributions for Fiscal Year 2020-21.** In addition, the report also contains important information regarding the current financial status of the plan as well as projections and risk measures to aid in planning for the future.

Actuarial valuations are based on assumptions regarding future plan experience including investment return and payroll growth, eligibility for the types of benefits provided, and longevity among retirees. The CalPERS Board of Administration adopts these assumptions after considering the advice of CalPERS actuarial and investment teams and other professionals. Each actuarial valuation reflects all prior differences between actual and assumed experience and adjusts the contribution rates as needed. This valuation is based on an investment return assumption of 7.0% which was adopted by the board in December 2016. Other assumptions used in this report are those recommended in the CalPERS Experience Study and Review of Actuarial Assumptions report from December 2017.

Required Contributions

The exhibit below displays the minimum required employer contributions and the Employee PEPR Rate for Fiscal Year 2020-21 along with an estimate of the required contribution for Fiscal Year 2021-22. Member 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 you may have with your employees.**

Fiscal Year	Employer Normal Cost Rate	Employer Amortization of Unfunded Accrued Liability	Employee PEPR Rate
2020-21	10.458%	\$2,563,289	7.25%
<i>Projected Results</i>			
2021-22	10.5%	\$2,858,000	TBD

The actual investment return for Fiscal Year 2018-19 was not known at the time this report was prepared. The projections above assume the investment return for that year would be 7.00 percent. **To the extent the actual investment return for Fiscal Year 2018-19 differs from 7.00 percent, the actual contribution requirements for Fiscal Year 2021-22 will differ from those shown above.** For additional details regarding the assumptions and methods used for these projections please refer to the "Projected Employer Contributions" in the "Highlights and Executive Summary" section. This section also contains projected required contributions through fiscal year 2025-26.

Changes from previous Year's Valuations

CalPERS continues to strive to provide comprehensive risk assessments regarding plan funding and sustainability consistent with the Board of Administration's pension and investment beliefs. Your report this year includes new metrics on plan maturity in recognition of the fact that most pension plans at CalPERS are maturing as anticipated. As plans mature, they become much more sensitive to risks than plans that are less mature. The "Risk Analysis" section of your report will help you understand how your plan is affected by investment return volatility and other economic assumptions. We have included plan sensitivity analysis with respect to longevity and inflation to further that discussion and encourage you to review our most recent Annual Review of Funding Levels and Risks report on our website that takes a holistic view of the system.

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

Upcoming Change for June 30, 2019 Valuations

The CalPERS Board of Administration has adopted a new amortization policy effective with the June 30, 2019 actuarial valuation. The new policy shortens the period over which actuarial gains and losses are amortized from 30 years to 20 years with the payments computed using a level dollar amount. In addition, the new policy removes the 5-year ramp-up and ramp-down on UAL bases attributable to assumption changes and non-investment gains/losses. The new policy removes the 5-year ramp-down on investment gains/losses. These changes will apply only to new UAL bases established on or after June 30, 2019.

Over the past few years, CalPERS adopted measures to strengthen the long-term future of the system. These measures include lowering the discount rate from 7.5% to 7.0% and shortening the amortization period for future unexpected changes in unfunded liability. While these changes can result in short-term increases to required employer contributions, they are not expected to increase the long-term cost of the plan. We firmly believe these changes were necessary in order to maintain the security of promised benefits and to equitably spread benefit costs over the current and future generations.

We understand that you might have some questions about these results. While we are very interested in discussing these results with your agency, in the interest of allowing us to give every public agency their results, we ask that you wait until after August 1, 2019 to contact us with actuarial questions. If you have other questions, you may call the Customer Contact Center at (888)-CalPERS or **(888-225-7377)**.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott Terando", with a long horizontal flourish extending to the right.

SCOTT TERANDO
Chief Actuary



**Actuarial Valuation
as of June 30, 2018**

**for the
Miscellaneous Plan
of the
Town of Los Gatos**
(CalPERS ID: 4589482285)
(Valuation Rate Plan ID: 946)

**Required Contributions
for Fiscal Year
July 1, 2020 – June 30, 2021**

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Actuarial Certification

To the best of our knowledge, this report is complete and accurate and contains sufficient information to disclose, fully and fairly, the funded condition of the Miscellaneous Plan of the Town of Los Gatos. This valuation is based on the member and financial data as of June 30, 2018 provided by the various CalPERS databases and the benefits under this plan with CalPERS as of the date this report was produced. It is our opinion that the valuation has been performed in accordance with generally accepted actuarial principles, in accordance with standards of practice prescribed by the Actuarial Standards Board, and that the assumptions and methods are internally consistent and reasonable for this plan, as prescribed by the CalPERS Board of Administration according to provisions set forth in the California Public Employees' Retirement Law.

The undersigned is an actuary for CalPERS, a member of the American Academy of Actuaries and the Society of Actuaries and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.



DAVID CLEMENT, ASA, MAAA, EA
Senior Pension Actuary, CalPERS

Highlights and Executive Summary

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

Introduction

This report presents the results of the June 30, 2018 actuarial valuation of the Miscellaneous Plan of the Town of Los Gatos of the California Public Employees' Retirement System (CalPERS). This actuarial valuation sets the minimum required employer contributions for Fiscal Year 2020-21.

Purpose of the Report

The actuarial valuation was prepared by the CalPERS Actuarial Office using data as of June 30, 2018. The purpose of the report is to:

- Set forth the assets and accrued liabilities of this plan as of June 30, 2018;
- Determine the minimum required employer contributions for the fiscal year July 1, 2020 through June 30, 2021;
- Provide actuarial information as of June 30, 2018 to the CalPERS Board of Administration and other interested parties.

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

The measurements shown in this actuarial valuation may not be applicable for other purposes. The employer should contact their 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; and changes in plan provisions or applicable law.

California Actuarial Advisory Panel Recommendations

This report includes all the basic disclosure elements as described in the *Model Disclosure Elements for Actuarial Valuation Reports* recommended in 2011 by the California Actuarial Advisory Panel (CAAP), with the exception of including the original base amounts of the various components of the unfunded liability in the Schedule of Amortization Bases shown on page 16.

Additionally, this report includes the following "Enhanced Risk Disclosures" also recommended by the CAAP in the Model Disclosure Elements document and consistent with the recommendations of Actuarial Standards of Practice No. 51:

- 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 6.0 percent and 8.0 percent.
- A "Sensitivity Analysis," showing the impact on current valuation results using a 1.0 percent plus or minus change in the inflation rate.
- A "Sensitivity Analysis," showing the impact on current valuation results assuming rates of mortality are 10 percent lower or 10 percent higher than our current mortality assumptions adopted in 2017. This type of analysis highlights the impact on the plan of improving or worsening mortality over the long-term.
- Plan maturity measures which indicate how sensitive a plan may be to the risks noted above.

Required Contributions

Required Employer Contribution		Fiscal Year 2020-21
Employer Normal Cost Rate		10.458%
<i>Plus, Either</i>		
1) Monthly Employer Dollar UAL Payment	\$	213,607
<i>Or</i>		
2) Annual UAL Prepayment Option*	\$	2,478,025
Required PEPR Member Contribution Rate		7.25%
<p>The total minimum required employer contribution is the sum of the Plan's Employer Normal Cost Rate (expressed as a percentage of payroll) plus the Employer Unfunded Accrued Liability (UAL) Contribution Amount (billed monthly in dollars).</p> <p>* Only the UAL portion of the employer contribution can be prepaid (which must be received in full no later than July 31). Any prepayment totaling over \$5 million requires a 72-hour notice email to FCSD_public_agency_wires@calpers.ca.gov. Plan Normal Cost contributions will be made as part of the payroll reporting process. If there is contractual cost sharing or other change, this amount will change.</p> <p>In accordance with Sections 20537 and 20572 of the Public Employees' Retirement Law, if a contracting agency fails to remit the required contributions when due, interest and penalties may apply.</p> <p>For additional detail regarding the determination of the required contribution for PEPR members, see Appendix D. Required member contributions for Classic members can be found in Appendix B.</p>		

	Fiscal Year 2019-20	Fiscal Year 2020-21
Normal Cost Contribution as a Percentage of Payroll		
Total Normal Cost	17.608%	17.913%
Employee Contribution ¹	7.382%	7.455%
Employer Normal Cost ²	10.226%	10.458%
Projected Annual Payroll for Contribution Year	\$ 10,147,031	\$ 10,781,348
Estimated Employer Contributions Based On Projected Payroll		
Total Normal Cost	\$ 1,786,689	\$ 1,931,263
Employee Contribution ¹	749,054	803,749
Employer Normal Cost ²	1,037,635	1,127,514
Unfunded Liability Contribution	2,328,669	2,563,289
% of Projected Payroll (illustrative only)	22.949%	23.775%
Estimated Total Employer Contribution	\$ 3,366,304	\$ 3,690,803
% of Projected Payroll (illustrative only)	33.175%	34.233%

¹ For classic members, this is the percentage specified in the Public Employees' Retirement Law, net of any reduction from the use of a modified formula or other factors. For PEPR members, the member contribution rate is based on 50 percent of the normal cost. A development of PEPR member contribution rates can be found in Appendix D. Employee cost sharing is not shown in this report.

² The Employer Normal Cost is a blended rate for all benefit groups in the plan. A breakout of normal cost by benefit group is shown in Appendix D.

Plan's Funded Status

	June 30, 2017	June 30, 2018
1. Present Value of Projected Benefits	\$ 112,980,783	\$ 121,942,346
2. Entry Age Normal Accrued Liability	99,902,777	107,075,648
3. Market Value of Assets (MVA)	\$ 69,526,822	\$ 73,291,140
4. Unfunded Accrued Liability (UAL) [(2) - (3)]	\$ 30,375,955	\$ 33,784,508
5. Funded Ratio [(3) / (2)]	69.6%	68.4%

This measure of funded status is an assessment of the need for future employer contributions based on the selected actuarial cost method used to fund the plan. The UAL is the present value of future employer contributions for service that has already been earned and is in addition to future normal cost contributions for active members. For a measure of funded status that is appropriate for assessing the sufficiency of plan assets to cover estimated termination liabilities, please see "Hypothetical Termination Liability" in the "Risk Analysis" section.

Projected Employer Contributions

The table below shows the required and projected employer contributions (before cost sharing) for the next six fiscal years. Projected results reflect the adopted changes to the discount rate described in Appendix A, "Actuarial Methods and Assumptions." The projections also assume that all actuarial assumptions will be realized and that no further changes to assumptions, contributions, benefits, or funding will occur during the projection period. The projected normal cost percentages in the projections below do not reflect that the normal cost will decline over time as new employees are hired into PEPPRA or other lower cost benefit tiers.

	Required Contribution	Projected Future Employer Contributions (Assumes 7.00% Return for Fiscal Year 2018-19)				
Fiscal Year	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
Normal Cost %	10.458%	10.5%	10.5%	10.5%	10.5%	10.5%
UAL Payment	2,563,289	2,858,000	3,115,000	3,277,000	3,443,000	3,210,000
Total as a % of Payroll*	34.2%	36.3%	37.8%	38.5%	39.1%	36.5%
Projected Payroll	10,781,348	11,077,835	11,382,475	11,695,494	12,017,120	12,347,590

*Illustrative only and based on the projected payroll shown.

Changes in the UAL due to actuarial gains or losses as well as changes in actuarial assumptions or methods are amortized using a 5-year ramp up. For more information, please see "Amortization of the Unfunded Actuarial Accrued Liability" under "Actuarial Methods" in Appendix A. This method phases in the impact of changes in UAL over a 5-year period and attempts to minimize 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 where there is a large increase in UAL the relatively small amortization payments during the ramp up period could result in a funded ratio that is projected to decrease initially while the contribution impact of the increase in the UAL is phased in.

For projected contributions under alternate investment return scenarios, please see the "Future Investment Return Scenarios" in the "Risk Analysis" section.

Cost

Actuarial Cost Estimates in General

What is the cost of the pension plan?

Contributions to fund the pension plan are comprised of two components:

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

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

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

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

- Demographic assumptions (which includes mortality rates, retirement rates, employment termination rates and disability rates)
- Economic assumptions (which includes future investment earnings, inflation, salary growth rates)

These assumptions reflect CalPERS best estimate of the future experience of the plan and are long term in nature. We recognize that all the assumptions will not be realized in any given year. For example, the investment earnings at CalPERS have averaged 6.0 percent over the 20 years ending June 30, 2018, yet individual fiscal year returns have ranged from -24.0 percent to +21.7 percent. In addition, CalPERS reviews all the actuarial assumptions on an ongoing basis by conducting in-depth experience studies every four years, with the most recent experience study completed in 2017.

Changes since the Prior Year's Valuation

Benefits

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

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

Actuarial Methods and Assumptions

In December of 2016 the CalPERS Board of Administration lowered the discount rate from 7.50 percent to 7.00 percent using a three-year phase-in beginning with the June 30, 2016 actuarial valuation. The minimum employer contributions for Fiscal Year 2020-21 determined in this valuation were calculated using a discount rate of 7.00 percent, payroll growth of 2.75 percent and an inflation rate of 2.50 percent. The projected employer contributions on Page 5 are calculated under the assumption that the discount rate remains at 7.00 percent going forward and that furthermore the realized rate of return on assets for Fiscal Year 2018-19 is 7.00 percent.

The decision to reduce the discount rate was primarily based on reduced capital market assumptions provided by external investment consultants and CalPERS investment staff. The specific decision adopted by the Board reflected recommendations from CalPERS staff and additional input from employer and employee stakeholder groups. Based on the investment allocation adopted by the Board and capital market assumptions, the reduced discount rate assumption provides a more realistic assumption for the long-term investment return of the fund.

CalPERS has implemented a new actuarial valuation software system for the June 30, 2018 valuation. With this new system we have refined and improved some of our calculation methodology. Any difference in liability between the old software and new software calculations is captured as a method change line item.

Subsequent Events

The CalPERS Board of Administration has adopted a new amortization policy effective with the June 30, 2019 actuarial valuation. The new policy shortens the period over which actuarial gains and losses are amortized from 30 years to 20 years with the payments computed using a level dollar amount. In addition, the new policy removes the 5-year ramp-up and ramp-down on UAL bases attributable to assumption changes and non-investment gains/losses. The new policy removes the 5-year ramp-down on investment gains/losses. These changes will apply only to new UAL bases established on or after June 30, 2019.

For inactive employers the new amortization policy imposes a maximum amortization period of 15 years for all unfunded accrued liabilities effective June 30, 2017. Furthermore, the plan actuary has the ability to shorten the amortization period on any valuation date based on the life expectancy of plan members and projected cash flow needs to the plan. The impact of this has been reflected in the current valuation results.

The contribution requirements determined in this actuarial valuation report are based on demographic and financial information as of June 30, 2018. Changes in the value of assets subsequent to that date are not reflected. Investment returns below the assumed rate of return will increase the required contribution, while investment returns above the assumed rate of return will decrease the required contribution.

This actuarial valuation report reflects statutory changes, regulatory changes and CalPERS Board actions through January 2019. Any subsequent changes or actions are not reflected.

Assets

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

Reconciliation of the Market Value of Assets

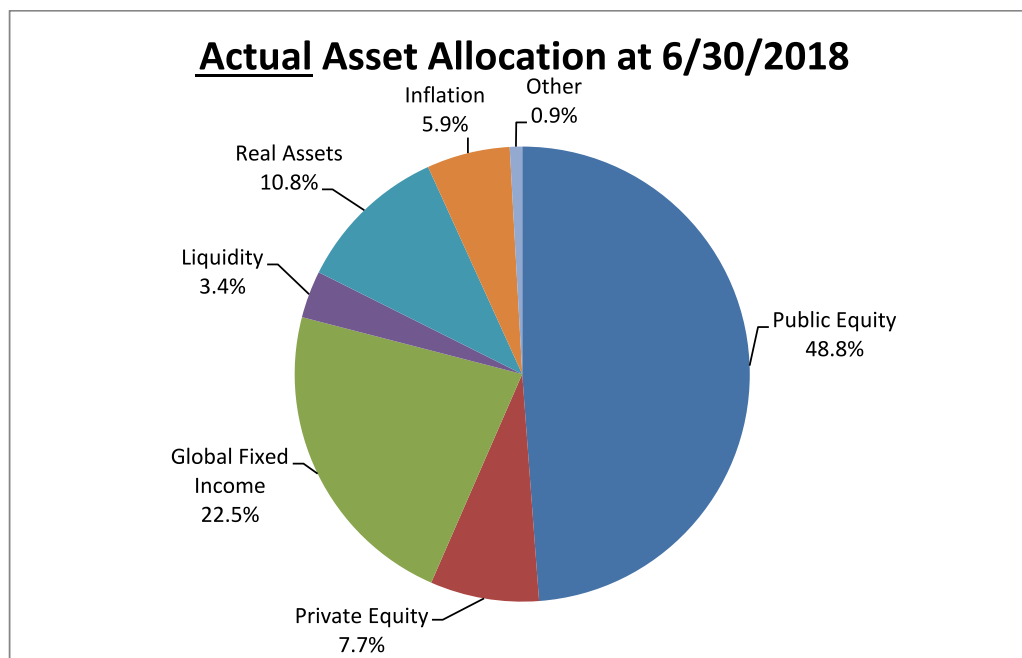
1. Market Value of Assets as of 6/30/17 including Receivables	\$	69,526,822
2. Change in Receivables for Service Buybacks		(7,255)
3. Employer Contributions		2,669,104
4. Employee Contributions		758,294
5. Benefit Payments to Retirees and Beneficiaries		(5,441,550)
6. Refunds		(6,824)
7. Transfers		(170)
8. Service Credit Purchase (SCP) Payments and Interest		10,667
9. Miscellaneous Adjustments		1
10. Net Investment Return		<u>5,782,049</u>
11. Market Value of Assets as of 6/30/18 including Receivables	\$	73,291,140

Asset Allocation

CalPERS adheres to an Asset Allocation Strategy which establishes asset class allocation policy targets and ranges, and manages those asset class allocations within their policy ranges. CalPERS Investment Belief No. 6 recognizes that strategic asset allocation is the dominant determinant of portfolio risk and return. On December 19, 2017, the CalPERS Board of Administration adopted changes to the current asset allocation as shown in the Policy Target Allocation below expressed as a percentage of total assets.

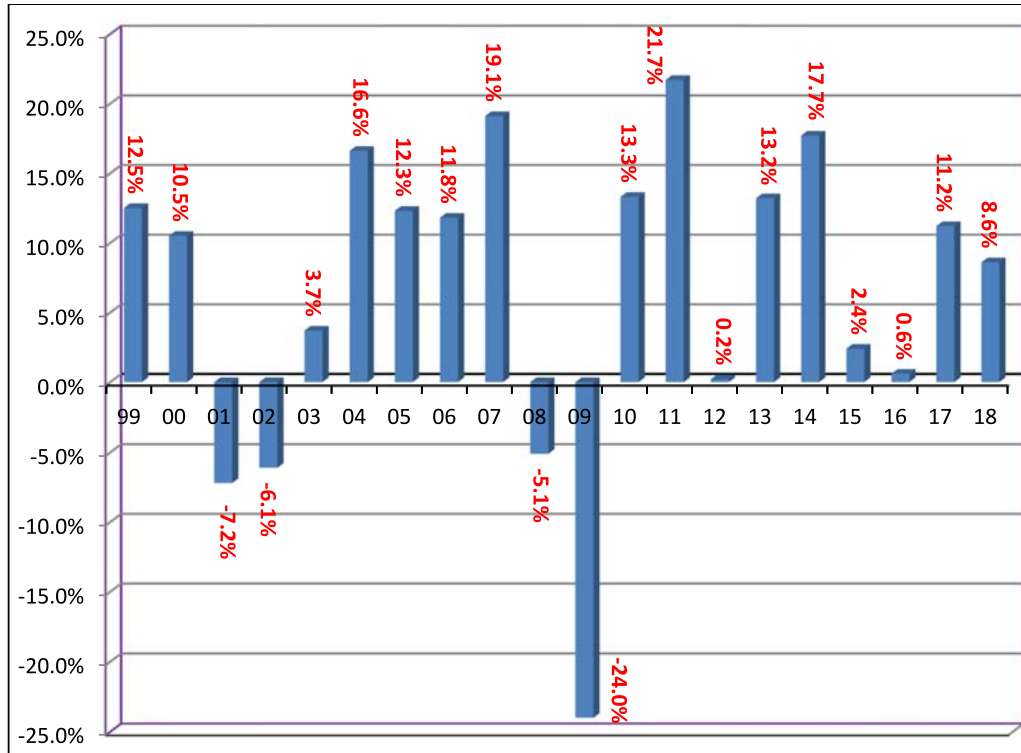
The asset allocation and market value of assets shown below reflect the values of the Public Employees' Retirement Fund (PERF) in its entirety as of June 30, 2018. The assets for Town of Los Gatos Miscellaneous Plan are part of the PERF and are invested accordingly.

(A) Asset Class	(B) Market Value (\$ Billion)	(C) Policy Target Allocation
Public Equity	171.8	49.0%
Private Equity	27.2	8.0%
Global Fixed Income	79.1	22.0%
Liquidity	11.8	3.0%
Real Assets	38.1	12.0%
Inflation Sensitive Assets	20.8	6.0%
Other	3.1	0.0%
Total Fund	\$351.9	100.0%



CalPERS History of Investment Returns

The following is a chart with the 20-year historical annual returns of the Public Employees Retirement Fund for each fiscal year ending on June 30. Beginning in 2002, the figures are reported as gross of fees.



The table below shows historical geometric mean annual returns of the Public Employees Retirement Fund for various time periods ending on June 30, 2018 (figures are reported as gross of fees). The geometric mean rate of return is the average rate per period compounded over multiple periods. It should be recognized that in any given year the rate of return is volatile. The portfolio has an expected volatility of 11.4 percent per year based on the most recent Asset Liability Modelling study. The volatility is a measure of the risk of the portfolio expressed in the standard deviation of the fund's total return distribution, expressed as a percentage. Consequently, when looking at investment returns, it is more instructive to look at returns over longer time horizons.

History of CalPERS Geometric Mean Rates of Return and Volatilities					
	1 year	5 year	10 year	20 year	30 year
Geometric Return	8.6%	7.9%	5.7%	6.0%	8.3%
Volatility	—	6.9%	12.9%	11.1%	10.1%

Liabilities and Contributions

- **Development of Accrued and Unfunded Liabilities**
- **(Gain) / Loss Analysis 06/30/17 - 06/30/18**
- **Schedule of Amortization Bases**
- **Amortization Schedule and Alternatives**
- **Reconciliation of Required Employer Contributions**
- **Employer Contribution History**
- **Funding History**

Development of Accrued and Unfunded Liabilities

	June 30, 2017	June 30, 2018
1. Present Value of Projected Benefits		
a) Active Members	\$ 34,490,723	37,153,532
b) Transferred Members	10,433,335	11,496,983
c) Terminated Members	2,402,056	2,629,642
d) Members and Beneficiaries Receiving Payments	65,654,669	70,662,189
e) Total	\$ 112,980,783	121,942,346
2. Present Value of Future Employer Normal Costs	\$ 7,251,446	8,238,413
3. Present Value of Future Employee Contributions	\$ 5,826,560	6,628,285
4. Entry Age Normal Accrued Liability		
a) Active Members [(1a) - (2) - (3)]	\$ 21,412,717	22,286,834
b) Transferred Members (1b)	10,433,335	11,496,983
c) Terminated Members (1c)	2,402,056	2,629,642
d) Members and Beneficiaries Receiving Payments (1d)	65,654,669	70,662,189
e) Total	\$ 99,902,777	107,075,648
5. Market Value of Assets (MVA)	\$ 69,526,822	73,291,140
6. Unfunded Accrued Liability (UAL) [(4e) - (5)]	\$ 30,375,955	33,784,508
7. Funded Ratio [(5) / (4e)]	69.6%	68.4%

(Gain)/Loss Analysis 6/30/17 – 6/30/18

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

1. Total (Gain)/Loss for the Year

a) Unfunded Accrued Liability (UAL) as of 6/30/17	\$	30,375,955
b) Expected Payment on the UAL during 2017-18		1,608,258
c) Interest through 6/30/18 $[(.0725 \times (1a) - ((1.0725)^{1/2} - 1) \times (1b))]$		2,144,977
d) Expected UAL before all other changes $[(1a) - (1b) + (1c)]$		30,912,674
e) Change due to plan changes		0
f) Change due to assumption change		2,810,280
g) Change due to method change		653,789
h) Expected UAL after all other changes $[(1d) + (1e) + (1f) + (1g)]$		34,376,743
i) Actual UAL as of 6/30/18		33,784,508
j) Total (Gain)/Loss for 2017-18 $[(1i) - (1h)]$	\$	(592,235)

2. Contribution (Gain)/Loss for the Year

a) Expected Contribution (Employer and Employee)	\$	3,360,635
b) Interest on Expected Contributions		119,692
c) Actual Contributions		3,427,398
d) Interest on Actual Contributions		122,069
e) Expected Contributions with Interest $[(2a) + (2b)]$		3,480,327
f) Actual Contributions with Interest $[(2c) + (2d)]$		3,549,467
g) Contribution (Gain)/Loss $[(2e) - (2f)]$	\$	(69,140)

3. Asset (Gain)/Loss for the Year

a) Market Value of Assets as of 6/30/17	\$	69,526,822
b) Prior Fiscal Year Receivables		(61,682)
c) Current Fiscal Year Receivables		54,427
d) Contributions Received		3,427,398
e) Benefits and Refunds Paid		(5,448,374)
f) Transfers, SCP Payments and Interest, and Miscellaneous Adjustments		10,498
g) Expected Int. $[(.0725 \times (3a + 3b) + ((1.0725)^{1/2} - 1) \times ((3d) + (3e) + (3f))]$		4,964,618
h) Expected Assets as of 6/30/18 $[(3a) + (3b) + (3c) + (3d) + (3e) + (3f) + (3g)]$		72,473,707
i) Market Value of Assets as of 6/30/18		73,291,140
j) Asset (Gain)/Loss $[(3h) - (3i)]$	\$	(817,433)

4. Liability (Gain)/Loss for the Year

a) Total (Gain)/Loss (1j)	\$	(592,235)
b) Contribution (Gain)/Loss (2g)		(69,140)
c) Asset (Gain)/Loss (3j)		(817,433)
d) Liability (Gain)/Loss $[(4a) - (4b) - (4c)]$	\$	294,337

Schedule of Amortization Bases

On the next page 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 fiscal year.

- The assets, liabilities, and funded status of the plan are measured as of the valuation date: June 30, 2018.
- The required employer contributions determined by the valuation are for the fiscal year beginning two years after the valuation date: Fiscal Year 2020-21.

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

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

Schedule of Amortization Bases

Reason for Base	Date Established	Ramp Up/Down 2020-21	Escalat- ion Rate	Amorti- zation Period	Balance 6/30/18	Expected Payment 2018-19	Balance 6/30/19	Expected Payment 2019-20	Balance 6/30/20	Scheduled Payment for 2020-21
ASSUMPTION CHANGE	06/30/03	No Ramp	2.750%	5	\$1,632,584	\$273,196	\$1,464,268	\$280,479	\$1,276,637	\$285,943
METHOD CHANGE	06/30/04	No Ramp	2.750%	6	\$(154,698)	\$(23,102)	\$(141,630)	\$(23,720)	\$(127,008)	\$(24,173)
BENEFIT CHANGE	06/30/07	No Ramp	2.750%	8	\$1,568,412	\$194,828	\$1,476,670	\$200,062	\$1,373,091	\$203,722
ASSUMPTION CHANGE	06/30/09	No Ramp	2.750%	11	\$2,496,373	\$252,637	\$2,409,789	\$259,458	\$2,310,089	\$263,862
SPECIAL (GAIN)/LOSS	06/30/09	No Ramp	2.750%	21	\$2,105,604	\$144,524	\$2,103,499	\$148,467	\$2,097,168	\$150,357
SPECIAL (GAIN)/LOSS	06/30/10	No Ramp	2.750%	22	\$1,762,739	\$117,992	\$1,764,079	\$121,214	\$1,762,180	\$122,709
ASSUMPTION CHANGE	06/30/11	No Ramp	2.750%	13	\$1,679,253	\$152,924	\$1,638,615	\$157,063	\$1,590,851	\$159,591
SPECIAL (GAIN)/LOSS	06/30/11	No Ramp	2.750%	23	\$813,831	\$53,210	\$815,758	\$54,664	\$816,316	\$55,317
PAYMENT (GAIN)/LOSS	06/30/12	No Ramp	2.750%	24	\$201,234	\$12,870	\$202,008	\$13,222	\$202,472	\$13,375
(GAIN)/LOSS	06/30/12	No Ramp	2.750%	24	\$1,803,946	\$115,376	\$1,810,876	\$118,531	\$1,815,028	\$119,902
(GAIN)/LOSS	06/30/13	100% →	2.750%	25	\$10,706,787	\$567,711	\$10,869,017	\$729,061	\$10,875,702	\$737,775
ASSUMPTION CHANGE	06/30/14	100% →	2.750%	16	\$4,637,116	\$255,108	\$4,697,828	\$349,398	\$4,665,256	\$443,615
(GAIN)/LOSS	06/30/14	100% →	2.750%	26	\$(7,730,575)	\$(308,168)	\$(7,952,944)	\$(422,159)	\$(8,072,965)	\$(533,840)
(GAIN)/LOSS	06/30/15	80% ↗	2.750%	27	\$3,512,507	\$94,780	\$3,660,342	\$146,078	\$3,765,461	\$196,949
ASSUMPTION CHANGE	06/30/16	60% ↗	2.750%	18	\$1,655,372	\$31,238	\$1,738,936	\$64,186	\$1,794,267	\$97,689
(GAIN)/LOSS	06/30/16	60% ↗	2.750%	28	\$4,531,497	\$62,882	\$4,783,656	\$129,230	\$4,984,835	\$195,897
ASSUMPTION CHANGE	06/30/17	40% ↗	2.750%	19	\$1,314,221	\$(51,586)	\$1,459,577	\$27,570	\$1,533,229	\$55,910
(GAIN)/LOSS	06/30/17	40% ↗	2.750%	29	\$(1,623,528)	\$0	\$(1,737,175)	\$(24,135)	\$(1,833,812)	\$(48,746)
METHOD CHANGE	06/30/18	20% ↗	2.750%	20	\$653,789	\$5,208	\$694,167	\$5,351	\$737,224	\$13,745
ASSUMPTION CHANGE	06/30/18	20% ↗	2.750%	20	\$2,810,280	\$(73,220)	\$3,082,739	\$(75,233)	\$3,376,352	\$62,951
(GAIN)/LOSS	06/30/18	20% ↗	2.750%	30	\$(592,236)	\$0	\$(633,693)	\$0	\$(678,052)	\$(9,261)
TOTAL					\$33,784,508	\$1,878,408	\$34,206,383	\$2,258,787	\$34,264,321	\$2,563,289

Amortization Schedule and Alternatives

The amortization schedule on the previous page shows the minimum contributions required according to CalPERS amortization policy. There has been considerable interest from many agencies in paying off these unfunded accrued liabilities sooner and the possible savings in doing so. As a result, we have provided alternate amortization schedules to help analyze the current amortization schedule and illustrate the advantages 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) alternate "fresh start" amortization schedules using two sample periods that would both result in interest savings relative to the current amortization schedule. Note that the payments under each alternate scenario increase by 2.75 percent per year.

The Current Amortization Schedule typically contains individual bases that are both positive and negative. Positive bases result from plan changes, assumption changes or plan experience that result in increases to unfunded liability. Negative bases result from plan changes, assumption changes or plan experience that result in decreases to 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:

- A positive total unfunded liability with a negative total payment,
- A negative total unfunded liability with a positive total payment, or
- Total payments that completely amortize the unfunded liability over a very short period of time

In any year where 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 a reasonable period.

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

Amortization Schedule and Alternatives

Date	<u>Current Amortization Schedule</u>		<u>Alternate Schedules</u>			
	Balance	Payment	15 Year Amortization		10 Year Amortization	
			Balance	Payment	Balance	Payment
6/30/2020	34,264,321	2,563,289	34,264,321	3,090,426	34,264,321	4,224,779
6/30/2021	34,011,335	2,857,896	33,466,062	3,175,413	32,292,678	4,340,961
6/30/2022	33,435,899	3,114,785	32,524,013	3,262,737	30,062,840	4,460,337
6/30/2023	32,554,455	3,277,477	31,425,692	3,352,462	27,553,430	4,582,997
6/30/2024	31,443,017	3,442,776	30,157,677	3,444,655	24,741,482	4,709,029
6/30/2025	30,082,793	3,209,967	28,705,536	3,539,383	21,602,328	4,838,527
6/30/2026	28,868,172	3,326,688	27,053,757	3,636,716	18,109,480	4,971,587
6/30/2027	27,447,791	3,418,171	25,185,671	3,736,726	14,234,494	5,108,305
6/30/2028	25,833,354	3,259,070	23,083,369	3,839,486	9,946,837	5,248,784
6/30/2029	24,270,480	3,348,697	20,727,610	3,945,072	5,213,731	5,393,125
6/30/2030	22,505,492	3,440,787	18,097,729	4,053,561		
6/30/2031	20,521,698	3,179,794	15,171,534	4,165,034		
6/30/2032	18,669,011	3,144,377	11,925,197	4,279,572		
6/30/2033	16,723,274	2,877,527	8,333,137	4,397,261		
6/30/2034	14,917,364	2,779,341	4,367,895	4,518,185		
6/30/2035	13,086,610	2,631,584				
6/30/2036	11,280,541	2,355,218				
6/30/2037	9,633,923	2,202,370				
6/30/2038	8,030,150	2,039,335				
6/30/2039	6,482,755	1,920,192				
6/30/2040	4,950,286	1,841,048				
6/30/2041	3,392,413	1,365,043				
6/30/2042	2,217,869	1,105,617				
6/30/2043	1,229,460	864,768				
6/30/2044	420,998	335,121				
6/30/2045	103,815	86,319				
6/30/2046	21,794	22,544				
6/30/2047						
6/30/2048						
6/30/2049						
Total		64,009,801		56,436,689		47,878,431
Interest Paid		29,745,480		22,172,368		13,614,110
Estimated Savings				7,573,112		16,131,370

Reconciliation of Required Employer Contributions

Normal Cost (% of Payroll)

1. For Period 7/1/19 – 6/30/20	
a) Employer Normal Cost	10.226%
b) Employee Contribution	7.382%
c) Total Normal Cost	17.608%
2. Changes since the prior year annual valuation	
a) Effect of changes in demographics results	(0.361%)
b) Effect of plan changes	0.000%
c) Effect of changes in assumptions	0.717%
d) Effect of method changes	(0.051%)
e) Net effect of the changes above [sum of (a) through (d)]	0.305%
3. For Period 7/1/20 – 6/30/21	
a) Employer Normal Cost	10.458%
b) Employee Contribution	7.455%
c) Total Normal Cost	17.913%
Employer Normal Cost Change [(3a) – (1a)]	0.232%
Employee Contribution Change [(3b) – (1b)]	0.073%

Unfunded Liability Contribution (\$)

1. For Period 7/1/19 – 6/30/20	2,328,669
2. Changes since the prior year annual valuation	
a) Effect of (gain)/loss during prior year ¹	(9,261)
b) Effect of plan changes	0
c) Effect of changes in assumptions ²	62,951
d) Changes to prior year amortization payments ³	167,185
e) Effect of changes due to Fresh Start	0
f) Effect of elimination of amortization base	0
g) Effect of method change ²	13,745
h) Net effect of the changes above [sum of (a) through (g)]	234,620
3. For Period 7/1/20 – 6/30/21 [(1) + (2h)]	2,563,289

The amounts shown for the period 7/1/19 – 6/30/20 may be different if a prepayment of unfunded actuarial liability is made or a plan change became effective after the prior year's actuarial valuation was performed.

¹ The unfunded liability contribution for the (gain)/loss during the year prior to the valuation date is 20 percent of the "full" annual requirement due to the 5-year ramp. Increases to this amount that occur during the ramp period will be included in line d) in future years. This line item also captures the impact of any additional discretionary payment during the fiscal year.

² The unfunded liability contribution for the change in assumptions or method is 20 percent of the "full" annual requirement due to the 5-year ramp. Increases to this amount that occur during the ramp period will be included in line d) in future years.

³ Includes changes due to 5-year ramp, payroll growth assumption, and re-amortization under new discount rate.

Employer Contribution History

The table below provides a recent history of the required employer contributions for the plan, as determined by the annual actuarial valuation. It does not account for prepayments or benefit changes made during a fiscal year.

Fiscal Year	Employer Normal Cost	Unfunded Rate	Unfunded Liability Payment (\$)
2013 - 14	11.029%	10.870%	N/A
2014 - 15	10.737%	11.638%	N/A
2015 - 16	10.530%	14.900%	N/A
2016 - 17	10.441%	16.515%	N/A
2017 - 18	9.932%	N/A	1,700,602
2018 - 19	10.001%	N/A	1,998,006
2019 - 20	10.226%	N/A	2,328,669
2020 - 21	10.458%	N/A	2,563,289

Funding History

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

Valuation Date	Accrued Liability	Market Value of Assets (MVA)	Unfunded Liability	Funded Ratio	Annual Covered Payroll
06/30/11	\$ 75,549,721	\$ 54,862,646	\$ 20,687,075	72.6%	\$ 8,616,783
06/30/12	78,518,032	53,401,456	25,116,576	68.0%	9,138,998
06/30/13	81,189,610	58,626,172	22,563,438	72.2%	8,161,471
06/30/14	87,887,082	66,990,804	20,896,278	76.2%	8,240,718
06/30/15	90,796,173	66,288,507	24,507,666	73.0%	8,930,406
06/30/16	94,603,822	64,502,429	30,101,393	68.2%	8,761,524
06/30/17	99,902,777	69,526,822	30,375,955	69.6%	9,319,861
06/30/18	107,075,648	73,291,140	33,784,508	68.4%	9,938,654

Risk Analysis

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

Future Investment Return Scenarios

Analysis was performed to determine the effects of various future investment returns on required employer contributions. The projections below provide a range of results based on five investment return scenarios assumed to occur during the next four fiscal years (2018-19, 2019-20, 2020-21 and 2021-22). The projections also assume that all other actuarial assumptions will be realized and that no further changes to assumptions, contributions, benefits, or funding will occur.

For fiscal years 2018-19, 2019-20, 2020-21, and 2021-22 each scenario assumes an alternate fixed annual return. The fixed return assumptions for the five scenarios are 1.0 percent, 4.0 percent, 7.0 percent, 9.0 percent and 12.0 percent.

These alternate investment returns were chosen based on stochastic analysis of possible future investment returns over the four-year period ending June 30, 2022. Using the expected returns and volatility of the asset classes in which the funds are invested, we produced five thousand stochastic outcomes for this period based on the recently completed Asset Liability Management process. We then selected annual returns that approximate the 5th, 25th, 50th, 75th, and 95th percentiles for these outcomes. For example, of all the 4-year outcomes generated in the stochastic analysis, approximately 25 percent of them had an average annual return of 4.0 percent or less.

Required contributions outside of this range are also possible. In particular, whereas it is unlikely that investment returns will average less than 1.0 percent or greater than 12.0 percent over this four-year period, the possibility of a single investment return less than 1.0 percent or greater than 12.0 percent in any given year is much greater.

Assumed Annual Return From 2018-19 through 2021-22	Projected Employer Contributions			
	2021-22	2022-23	2023-24	2024-25
1.0%				
Normal Cost	10.5%	10.5%	10.5%	10.5%
UAL Contribution	\$2,967,000	\$3,439,000	\$3,924,000	\$4,517,000
4.0%				
Normal Cost	10.5%	10.5%	10.5%	10.5%
UAL Contribution	\$2,912,000	\$3,279,000	\$3,607,000	\$3,996,000
7.0%				
Normal Cost	10.5%	10.5%	10.5%	10.5%
UAL Contribution	\$2,858,000	\$3,115,000	\$3,277,000	\$3,443,000
9.0%				
Normal Cost	10.7%	10.9%	11.1%	11.3%
UAL Contribution	\$2,827,000	\$3,031,000	\$3,115,000	\$3,172,000
12.0%				
Normal Cost	10.7%	10.9%	11.1%	11.3%
UAL Contribution	\$2,773,000	\$2,863,000	\$2,767,000	\$2,572,000

The projected normal cost percentages do not reflect that the normal cost will decline over time as new employees are hired into PEPRA or other lower cost benefit tiers. In addition, the projections above reflect the recent changes to the amortization policy effective with the June 30, 2019 valuation. The projections above do incorporate the impact of the CalPERS risk mitigation policy which reduces the discount when investment returns are above specified trigger points.

Discount Rate Sensitivity

Shown below are various valuation results as of June 30, 2018 assuming alternate discount rates. Results are shown using the current discount rate of 7.0 percent as well as alternate discount rates of 6.0 percent and 8.0 percent. The rates of 6.0 percent and 8.0 percent were selected since they illustrate the impact of a 1 percent increase or decrease to the 7.0 percent assumption. This analysis shows the potential plan impacts if the PERF were to realize investment returns of 6.0 percent or 8.0 percent over the long-term.

This type of analysis gives the reader a sense of the long-term risk to required contributions. For a measure of funded status that is appropriate for assessing the sufficiency of plan assets to cover estimated termination liabilities, please see "Hypothetical Termination Liability" at the end of this section.

Sensitivity Analysis				
As of June 30, 2018	Plan's Normal Cost	Accrued Liability	Unfunded Accrued Liability	Funded Status
7.0% (current discount rate)	17.913%	\$107,075,648	\$33,784,508	68.4%
6.0%	22.350%	\$120,955,506	\$47,664,366	60.6%
8.0%	14.530%	\$95,623,404	\$22,332,264	76.6%

Mortality Rate Sensitivity

The following table looks at the change in the June 30, 2018 plan costs and funded ratio under two different longevity scenarios, namely assuming rates of mortality are 10 percent lower or 10 percent higher than our current mortality assumptions adopted in 2017. This type of analysis highlights the impact on the plan of improving or worsening mortality over the long-term.

As of June 30, 2018	Current Mortality	10% Lower Mortality Rates	10% Higher Mortality Rates
a) Accrued Liability	\$107,075,648	\$109,213,958	\$105,105,590
b) Market Value of Assets	\$73,291,140	\$73,291,140	\$73,291,140
c) Unfunded Liability (Surplus) [(a)-(b)]	\$33,784,508	\$35,922,818	\$31,814,450
d) Funded Status	68.4%	67.1%	69.7%

A 10 percent increase (decrease) in assumed mortality rates over the long-term would result in approximately a 1.3 percentage point increase (decrease) to the funded ratio.

Inflation Rate Sensitivity

The following analysis looks at the change in the June 30, 2018 plan costs and funded ratio under two different inflation rate scenarios, namely assuming the inflation rate is 1 percent lower or 1 percent higher than our current valuation inflation rate assumption of 2.50%, while holding the discount rate fixed at 7.0%. This type of analysis highlights the impact on the plan of increased or decreased inflation over the long-term.

As of June 30, 2018	Current Inflation Rate	-1% Inflation Rate	+1% Inflation Rate
a) Accrued Liability	\$107,075,648	\$100,281,791	\$111,962,519
b) Market Value of Assets	\$73,291,140	\$73,291,140	\$73,291,140
c) Unfunded Liability (Surplus) [(a)-(b)]	\$33,784,508	\$26,990,651	\$38,671,379
d) Funded Status	68.4%	73.1%	65.5%

A decrease of 1 percent in the inflation rate assumption (2.50 percent to 1.50 percent) reduces the Accrued Liability by 6.3 percent. However, a 1 percent increase in the inflation rate (2.50 percent to 3.50 percent) increases the Accrued Liability by 4.6 percent.

Maturity Measures

As pension plans mature they become much more sensitive to risks than plans that are less mature. Understanding plan maturity and how it affects the ability of a pension plan to tolerate risk is important in understanding how the plan is impacted by investment return volatility, other economic variables and changes in longevity or other demographic assumptions. One way to look at the maturity level of CalPERS and its plans is to look at the ratio of a plan's retiree liability to its total liability. A pension plan in its infancy will have a very low ratio of retiree liability to total liability. As the plan matures, the ratio starts increasing. A mature plan will often have a ratio above 60-65 percent. For both CalPERS and other retirement systems in the United States, these ratios have been steadily increasing in recent years.

Ratio of Retiree Accrued Liability to Total Accrued Liability	June 30, 2017	June 30, 2018
1. Retiree Accrued Liability	65,654,669	70,662,189
2. Total Accrued Liability	99,902,777	107,075,648
3. Ratio of Retiree AL to Total AL [(1) / (2)]	66%	66%

Another way to look at the maturity level of CalPERS and its plans is to look at the ratio of actives to retirees. 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 starts declining. A mature plan will often have a ratio near or below one. The average support ratio for CalPERS public agency plans is 1.25.

Support Ratio	June 30, 2017	June 30, 2018
1. Number of Actives	111	113
2. Number of Retirees	228	236
3. Support Ratio [(1) / (2)]	0.49	0.48

The actuarial calculations supplied in this communication are based on various assumptions about long-term demographic and economic behavior. Unless these assumptions (terminations, deaths, disabilities, retirements, salary growth, and 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 (AVR)

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

Liability Volatility Ratio (LVR)

Plans that have higher liability-to-payroll ratios experience more volatile employer contributions (as a percentage of payroll) due to investment return and changes in liability. For example, a plan with a liability-to-payroll ratio of 8 is expected to have twice the contribution volatility of a plan with a liability-to-payroll ratio of 4. The liability volatility ratio is also included in the table below. It should be noted that this ratio indicates a longer-term potential for contribution volatility. The asset volatility ratio, described above, will tend to move closer to the liability volatility ratio as the plan matures.

Contribution Volatility	June 30, 2017		June 30, 2018	
1. Market Value of Assets without Receivables	\$	69,465,140	\$	73,236,713
2. Payroll		9,319,861		9,938,654
3. Asset Volatility Ratio (AVR) [(1) / (2)]		7.5		7.4
4. Accrued Liability	\$	99,902,777	\$	107,075,648
5. Liability Volatility Ratio (LVR) [(4) / (2)]		10.7		10.8

Hypothetical Termination Liability

The hypothetical termination liability is an estimate of the financial position of the plan had the contract with CalPERS been terminated as of June 30, 2018. The plan liability on a termination basis is calculated differently from the plan's ongoing funding liability. For this hypothetical termination liability calculation, both compensation and service are frozen as of the valuation date and no future pay increases or service accruals are assumed. This measure of funded status is not appropriate for assessing the need for future employer contributions in the case of an ongoing plan, that is, for an employer that continues to provide CalPERS retirement benefits to active employees.

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

The effective termination discount rate will depend on actual market rates of return for risk-free securities on the date of termination. As market discount rates are variable the table below shows a range for the hypothetical termination liability based on the lowest and highest interest rates observed during an approximate 2-year period centered around the valuation date.

Market Value of Assets (MVA)	Hypothetical Termination Liability^{1,2} @ 2.50%	Funded Status	Unfunded Termination Liability @ 2.50%	Hypothetical Termination Liability^{1,2} @ 3.25%	Funded Status	Unfunded Termination Liability @ 3.25%
\$73,291,140	\$178,992,325	40.9%	\$105,701,185	\$164,155,179	44.6%	\$90,864,039

¹ The hypothetical liabilities calculated above include a 5 percent contingency load in accordance with Board policy. Other actuarial assumptions can be found in Appendix A.

² The current discount rate assumption used for termination valuations is a weighted average of the 10-year and 30-year U.S. Treasury yields where the weights are based on matching asset and liability durations as of the termination date. The discount rates used in the table are based on 20-year Treasury bonds, rounded to the nearest quarter percentage point, which is a good proxy for most plans. The 20-year Treasury yield was 2.91 percent on June 30, 2018, and was 2.83 percent on January 31, 2019.

In order to terminate the plan, you must first contact our Retirement Services Contract Unit to initiate a Resolution of Intent to Terminate. The completed Resolution will allow the plan actuary to give you a preliminary termination valuation with a more up-to-date estimate of the plan liabilities. CalPERS advises you to consult with the plan actuary before beginning this process.

Plan's Major Benefit Provisions

Plan's Major Benefit Options

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

Member Category	Benefit Group					
	Misc	Misc	Misc	Misc	Misc	
Demographics						
Actives	No	Yes	Yes	Yes	No	
Transfers/Separated	Yes	Yes	Yes	Yes	No	
Receiving	Yes	Yes	No	No	Yes	
Benefit Provision						
Benefit Formula	2% @ 55	2.5% @ 55	2% @ 62	2% @ 60	2% @ 60	
Social Security Coverage	No	No	No	No	No	
Full/Modified	Full	Full	Full	Full	Full	
Employee Contribution Rate	8.00%	8.00%	7.25%	7.00%	8.00%	
Final Average Compensation Period	One Year	One Year	Three Year	Three Year	One Year	
Sick Leave Credit	No	No	No	No	No	
Non-Industrial Disability	Standard	Standard	Standard	Standard	Standard	
Industrial Disability	No	No	No	No	No	
Pre-Retirement Death Benefits						
Optional Settlement 2	No	No	No	No	No	
1959 Survivor Benefit Level	Level 4	Level 4	Level 4	Level 4	Level 4	
Special	No	No	No	No	No	
Alternate (firefighters)	No	No	No	No	No	
Post-Retirement Death Benefits						
Lump Sum	\$500	\$500	\$500	\$500	\$500	
Survivor Allowance (PRSA)	Yes	Yes	Yes	Yes	Yes	
COLA	2%	2%	2%	2%	2%	

Appendices

- **Appendix A – Actuarial Methods and Assumptions**
- **Appendix B – Principal Plan Provisions**
- **Appendix C – Participant Data**
- **Appendix D – Normal Cost by Benefit Group and PEPRA Member Contribution Rates**
- **Appendix E – Glossary of Actuarial Terms**

Appendix A

Actuarial Methods and Assumptions

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

Actuarial Data

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

Actuarial Methods

Actuarial Cost Method

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

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

Amortization of Unfunded Actuarial Accrued Liability

The excess of the total actuarial accrued liability over the market value of plan assets is called the unfunded actuarial accrued liability (UAL). Funding requirements are determined by adding the normal cost and an amortization payment toward the unfunded liability. The unfunded liability is amortized as a "level percent of pay". Commencing with the June 30, 2013 valuation, all new gains or losses are amortized over a fixed 30-year period with a 5-year ramp up at the beginning and a 5-year ramp down at the end of the amortization period. All changes in liability due to plan amendments (other than golden handshakes) are amortized over a 20-year period with no ramp. Changes in actuarial assumptions or changes in actuarial methodology are amortized over a 20-year period with a 5-year ramp up at the beginning and a 5-year ramp down at the end of the amortization period. Changes in unfunded accrued liability due to a Golden Handshake will be amortized over a period of five years. A summary of the current policy is provided in the table below:

Driver	Source				
	(Gain)/Loss		Assumption/Method Change	Benefit Change	Golden Handshake
	Investment	Non-investment			
Amortization Period	30 Years	30 Years	20 Years	20 Years	5 Years
Escalation Rate					
- Active Plans	2.75%	2.75%	2.75%	2.75%	2.75%
- Inactive Plans	0%	0%	0%	0%	0%
Ramp Up	5	5	5	0	0
Ramp Down	5	5	5	0	0

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

Exceptions for Inconsistencies:

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

- When a positive payment would be required on a negative unfunded actuarial liability (or conversely a negative payment on a positive unfunded actuarial liability); or
- When there are excess assets, rather than an unfunded liability. In this situation, a 30-year fresh start is used.

It should be noted that the actuary may determine that a fresh start is necessary under other circumstances. In all cases of a fresh start, the period is set by the actuary at what is deemed appropriate; however, the period will not be greater than 30 years.

Exceptions for Inactive Plans:

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

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

Asset Valuation Method

It is the policy of the CalPERS Board of Administration to use professionally accepted amortization methods to eliminate a surplus or an unfunded accrued liability in a manner that maintains benefit security for the members of the System while minimizing substantial variations in required employer contributions. On April 17, 2013, the CalPERS Board of Administration approved a recommendation to change the CalPERS amortization and rate smoothing policies. Beginning with the June 30, 2013 valuations that set the employer contribution for Fiscal Year 2015-16, CalPERS employs a policy that amortizes all gains and losses over a fixed 30-year period. The increase or decrease in the rate is then spread directly over a 5-year period. This method is referred to as “direct rate smoothing.” CalPERS no longer uses an actuarial value of assets and only uses the market value of assets. The direct rate smoothing method is equivalent to a method using a 5-year asset smoothing period with no actuarial value of asset corridor and a 25-year amortization period for gains and losses.

PEPRA Normal Cost Rate Methodology

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

Each non-pooled plan is stable with a sufficiently large demographic representation of active employees. It is preferable to determine normal cost using a large active population ongoing so that this rate remains relatively stable. The total PEPPA normal cost will be calculated using all active members within a non-pooled plan until the number of members covered under the PEPPA formula meets either:

1. 50 percent of the active population, or
2. 25 percent of the active population and 100 or more PEPPA members

Once either of the conditions above is met for a non-pooled plan, the total PEPPA normal cost will be based on the active PEPPA population in the plan.

Accordingly, the total normal cost will be funded equally between employer and employee based on the demographics of the employees of that employer.

Actuarial Assumptions

In 2017, CalPERS completed its most recent asset liability management study incorporating actuarial assumptions and strategic asset allocation. In December 2017, the CalPERS Board of Administration adopted relatively modest changes to the asset allocation that reduced the expected volatility of returns. The adopted asset allocation was expected to have a long-term blended return that continued to support a discount rate assumption of 7.00 percent. The Board also approved several changes to the demographic assumptions that more closely aligned with actual experience.

On December 21, 2016, the CalPERS Board of Administration lowered the discount rate from 7.50 percent to 7.00 percent using a three-year phase-in beginning with the June 30, 2016 actuarial valuations. The minimum employer contributions for Fiscal Year 2020-21 determined in this valuation were calculated using a discount rate of 7.00 percent. The decision to reduce the discount rate was primarily based on reduced capital market assumptions provided by external investment consultants and CalPERS investment staff. The specific decision adopted by the Board reflected recommendations from CalPERS staff and additional input from employer and employee stakeholder groups. Based on the investment allocation adopted by the Board and capital market assumptions, the reduced discount rate schedule provides a more realistic assumption for the long-term investment return of the fund.

Notwithstanding the Board's decision to phase into a 7.0 percent discount rate, subsequent analysis of the expected investment return of CalPERS assets or changes to the investment allocation may result in a change to this discount rate schedule.

For more details and additional rationale for the selection of the actuarial assumptions, please refer to the CalPERS Experience Study and Review of Actuarial Assumptions report from December 2017 that can be found on the CalPERS website under: "Forms and Publications". Click on "View All" and search for Experience Study.

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

Economic Assumptions

Discount Rate

The prescribed discount rate assumption, adopted by the Board on December 21, 2016, is 7.00 percent compounded annually (net of investment and administrative expenses) as of June 30, 2018.

Termination Liability Discount Rate

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

The hypothetical termination liabilities in this report are calculated using an observed range of market interest rates. This range is based on the lowest and highest 20-year Treasury bond observed during an approximate 2-year period centered around the valuation date. The 20-year Treasury bond has a similar duration to most plan liabilities and serves as a good proxy for the termination discount rate. The 20-year Treasury yield was 2.83 percent on June 30, 2018.

Salary Growth

Annual increases vary by category, entry age, and duration of service. A sample of assumed increases are shown below. Wage inflation assumption in the valuation year (2.75% for 2018) is added to these factors for total salary growth.

Public Agency Miscellaneous

Duration of Service	(Entry Age 20)	(Entry Age 30)	(Entry Age 40)
0	0.0850	0.0775	0.0650
1	0.0690	0.0635	0.0525
2	0.0560	0.0510	0.0410
3	0.0470	0.0425	0.0335
4	0.0400	0.0355	0.0270
5	0.0340	0.0295	0.0215
10	0.0160	0.0135	0.0090
15	0.0120	0.0100	0.0060
20	0.0090	0.0075	0.0045
25	0.0080	0.0065	0.0040
30	0.0080	0.0065	0.0040

Public Agency Fire

Duration of Service	(Entry Age 20)	(Entry Age 30)	(Entry Age 40)
0	0.1700	0.1700	0.1700
1	0.1100	0.1100	0.1100
2	0.0700	0.0700	0.0700
3	0.0580	0.0580	0.0580
4	0.0473	0.0473	0.0473
5	0.0372	0.0372	0.0372
10	0.0165	0.0165	0.0165
15	0.0144	0.0144	0.0144
20	0.0126	0.0126	0.0126
25	0.0111	0.0111	0.0111
30	0.0097	0.0097	0.0097

Public Agency Police

Duration of Service	(Entry Age 20)	(Entry Age 30)	(Entry Age 40)
0	0.1027	0.1027	0.1027
1	0.0803	0.0803	0.0803
2	0.0628	0.0628	0.0628
3	0.0491	0.0491	0.0491
4	0.0384	0.0384	0.0384
5	0.0300	0.0300	0.0300
10	0.0145	0.0145	0.0145
15	0.0150	0.0150	0.0150
20	0.0155	0.0155	0.0155
25	0.0160	0.0160	0.0160
30	0.0165	0.0165	0.0165

Salary Growth (continued)

Public Agency County Peace Officers

<u>Duration of Service</u>	<u>(Entry Age 20)</u>	<u>(Entry Age 30)</u>	<u>(Entry Age 40)</u>
0	0.1320	0.1320	0.1320
1	0.0960	0.0960	0.0960
2	0.0657	0.0657	0.0657
3	0.0525	0.0525	0.0525
4	0.0419	0.0419	0.0419
5	0.0335	0.0335	0.0335
10	0.0170	0.0170	0.0170
15	0.0150	0.0150	0.0150
20	0.0150	0.0150	0.0150
25	0.0175	0.0175	0.0175
30	0.0200	0.0200	0.0200

Schools

<u>Duration of Service</u>	<u>(Entry Age 20)</u>	<u>(Entry Age 30)</u>	<u>(Entry Age 40)</u>
0	0.0428	0.0419	0.0380
1	0.0428	0.0419	0.0380
2	0.0428	0.0419	0.0380
3	0.0354	0.0332	0.0280
4	0.0305	0.0279	0.0224
5	0.0262	0.0234	0.0180
10	0.0171	0.0154	0.0112
15	0.0152	0.0134	0.0098
20	0.0135	0.0117	0.0086
25	0.0120	0.0103	0.0076
30	0.0087	0.0071	0.0048

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

Overall Payroll Growth

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

Inflation

2.50 percent compounded annually.

Non-valued Potential Additional Liabilities

The potential liability loss for a cost-of-living increase exceeding the 2.50 percent inflation assumption and any potential liability loss from future member service purchases are not reflected in the valuation.

Miscellaneous Loading Factors

Credit for Unused Sick Leave

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

Conversion of Employer Paid Member Contributions (EPMC)

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

Norris Decision (Best Factors)

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

Termination Liability

The termination liabilities include a 5 percent contingency load. This load is for unforeseen negative experience.

Demographic Assumptions

Pre-Retirement Mortality

Non-industrial death rates vary by age and gender. Industrial death rates vary by age. See sample rates in table below. The non-industrial death rates are used for all plans. The industrial death rates are used for safety plans (except for Local Prosecutor safety members where the corresponding miscellaneous plan does not have the Industrial Death Benefit).

Age	Non-Industrial Death (Not Job-Related)		Industrial Death (Job-Related)
	Male	Female	Male and Female
20	0.00022	0.00007	0.00004
25	0.00029	0.00011	0.00006
30	0.00038	0.00015	0.00007
35	0.00049	0.00027	0.00009
40	0.00064	0.00037	0.00010
45	0.00080	0.00054	0.00012
50	0.00116	0.00079	0.00013
55	0.00172	0.00120	0.00015
60	0.00255	0.00166	0.00016
65	0.00363	0.00233	0.00018
70	0.00623	0.00388	0.00019
75	0.01057	0.00623	0.00021
80	0.01659	0.00939	0.00022

Miscellaneous plans usually have industrial death rates set to zero unless the agency has specifically contracted for industrial death benefits. If so, each non-industrial death rate shown above will be split into two components; 99 percent will become the non-industrial death rate and 1 percent will become the industrial death rate.

Post-Retirement Mortality

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

Age	Healthy Recipients		Non-Industrially Disabled (Not Job-Related)		Industrially Disabled (Job-Related)	
	Male	Female	Male	Female	Male	Female
50	0.00372	0.00346	0.01183	0.01083	0.00372	0.00346
55	0.00437	0.00410	0.01613	0.01178	0.00437	0.00410
60	0.00671	0.00476	0.02166	0.01404	0.00671	0.00476
65	0.00928	0.00637	0.02733	0.01757	0.01113	0.00765
70	0.01339	0.00926	0.03358	0.02183	0.01607	0.01111
75	0.02316	0.01635	0.04277	0.02969	0.02779	0.01962
80	0.03977	0.03007	0.06272	0.04641	0.04773	0.03609
85	0.07122	0.05418	0.09793	0.07847	0.08547	0.06501
90	0.13044	0.10089	0.14616	0.13220	0.14348	0.11098
95	0.21658	0.17698	0.21658	0.21015	0.21658	0.17698
100	0.32222	0.28151	0.32222	0.32226	0.32222	0.28151
105	0.46691	0.43491	0.46691	0.43491	0.46691	0.43491
110	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

The post-retirement mortality rates above include 15 years of projected on-going mortality improvement using 90 percent of Scale MP 2016 published by the Society of Actuaries.

Marital Status

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

Member Category	Percent Married
Miscellaneous Member	70%
Local Police	85%
Local Fire	90%
Other Local Safety	70%
School Police	85%
Local County Peace Officers	75%

Age of Spouse

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

Terminated Members

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

Termination with Refund

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

Public Agency Miscellaneous

Duration of Service	Entry Age 20	Entry Age 25	Entry Age 30	Entry Age 35	Entry Age 40	Entry Age 45
0	0.1742	0.1674	0.1606	0.1537	0.1468	0.1400
1	0.1545	0.1477	0.1409	0.1339	0.1271	0.1203
2	0.1348	0.1280	0.1212	0.1142	0.1074	0.1006
3	0.1151	0.1083	0.1015	0.0945	0.0877	0.0809
4	0.0954	0.0886	0.0818	0.0748	0.0680	0.0612
5	0.0212	0.0193	0.0174	0.0155	0.0136	0.0116
10	0.0138	0.0121	0.0104	0.0088	0.0071	0.0055
15	0.0060	0.0051	0.0042	0.0032	0.0023	0.0014
20	0.0037	0.0029	0.0021	0.0013	0.0005	0.0001
25	0.0017	0.0011	0.0005	0.0001	0.0001	0.0001
30	0.0005	0.0001	0.0001	0.0001	0.0001	0.0001
35	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

Public Agency Safety

Duration of Service	Fire	Police	County Peace Officer
0	0.1298	0.1013	0.1188
1	0.0674	0.0636	0.0856
2	0.0320	0.0271	0.0617
3	0.0237	0.0258	0.0445
4	0.0087	0.0245	0.0321
5	0.0052	0.0086	0.0121
10	0.0005	0.0053	0.0053
15	0.0004	0.0027	0.0025
20	0.0003	0.0017	0.0012
25	0.0002	0.0012	0.0005
30	0.0002	0.0009	0.0003
35	0.0001	0.0009	0.0002

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

Schools

Duration of Service	Entry Age 20	Entry Age 25	Entry Age 30	Entry Age 35	Entry Age 40	Entry Age 45
0	0.2107	0.2107	0.1827	0.1546	0.1375	0.1203
1	0.1807	0.1807	0.1526	0.1246	0.1105	0.0963
2	0.1526	0.1526	0.1259	0.0992	0.0878	0.0765
3	0.1266	0.1266	0.1023	0.0780	0.0691	0.0603
4	0.1026	0.1026	0.0815	0.0605	0.0537	0.0469
5	0.0808	0.0808	0.0634	0.0461	0.0409	0.0358
10	0.0202	0.0202	0.0157	0.0112	0.0087	0.0063
15	0.0107	0.0107	0.0077	0.0048	0.0034	0.0021
20	0.0056	0.0056	0.0037	0.0017	0.0016	0.0016
25	0.0026	0.0026	0.0018	0.0009	0.0012	0.0015
30	0.0013	0.0013	0.0011	0.0009	0.0012	0.0015
35	0.0008	0.0008	0.0009	0.0009	0.0012	0.0015

Termination with Vested Benefits

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

Public Agency Miscellaneous

Duration of Service	Entry Age 20	Entry Age 25	Entry Age 30	Entry Age 35	Entry Age 40
5	0.0422	0.0422	0.0393	0.0364	0.0344
10	0.0278	0.0278	0.0271	0.0263	0.0215
15	0.0192	0.0192	0.0174	0.0156	0.0120
20	0.0139	0.0139	0.0109	0.0079	0.0047
25	0.0083	0.0083	0.0048	0.0014	0.0007
30	0.0015	0.0015	0.0007	0.0000	0.0000
35	0.0000	0.0000	0.0000	0.0000	0.0000

Public Agency Safety

Duration of Service	Fire	Police	County Peace Officer
5	0.0094	0.0163	0.0187
10	0.0064	0.0126	0.0134
15	0.0048	0.0082	0.0092
20	0.0038	0.0065	0.0064
25	0.0026	0.0058	0.0042
30	0.0014	0.0056	0.0022
35	0.0000	0.0000	0.0000

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

Schools

Duration of Service	Entry Age 20	Entry Age 25	Entry Age 30	Entry Age 35	Entry Age 40
5	0.0405	0.0405	0.0346	0.0288	0.0264
10	0.0324	0.0324	0.0280	0.0235	0.0211
15	0.0202	0.0202	0.0179	0.0155	0.0126
20	0.0144	0.0144	0.0114	0.0083	0.0042
25	0.0091	0.0091	0.0046	0.0000	0.0000
30	0.0015	0.0015	0.0007	0.0000	0.0000
35	0.0000	0.0000	0.0000	0.0000	0.0000

Non-Industrial (Not Job-Related) Disability

Rates vary by age and gender for miscellaneous plans. Rates vary by age and category for safety plans.

Age	Miscellaneous		Fire	Police	County Peace Officer	Schools	
	Male	Female	Male and Female	Male and Female	Male and Female	Male	Female
20	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
25	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
30	0.0002	0.0002	0.0001	0.0002	0.0001	0.0001	0.0002
35	0.0004	0.0007	0.0001	0.0003	0.0004	0.0005	0.0004
40	0.0010	0.0014	0.0001	0.0004	0.0007	0.0012	0.0008
45	0.0015	0.0019	0.0002	0.0005	0.0013	0.0020	0.0017
50	0.0016	0.0020	0.0005	0.0008	0.0018	0.0026	0.0022
55	0.0016	0.0015	0.0007	0.0013	0.0010	0.0025	0.0018
60	0.0015	0.0011	0.0007	0.0020	0.0006	0.0022	0.0011

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

Industrial (Job-Related) Disability

Rates vary by age and category.

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

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

Service Retirement

Retirement rates vary by age, service, and formula, except for the safety $\frac{1}{2}$ @ 55 and 2% @ 55 formulas, where retirement rates vary by age only.

Public Agency Miscellaneous 1.5% @ 65

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

Public Agency Miscellaneous 2% @ 60

Age	Duration of Service					
	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.020	0.020	0.020	0.020	0.020	0.150
51	0.006	0.019	0.027	0.031	0.035	0.038
52	0.011	0.024	0.031	0.034	0.037	0.040
53	0.010	0.015	0.021	0.027	0.033	0.040
54	0.025	0.025	0.029	0.035	0.041	0.048
55	0.019	0.026	0.033	0.092	0.136	0.146
56	0.030	0.034	0.038	0.060	0.093	0.127
57	0.030	0.046	0.061	0.076	0.090	0.104
58	0.040	0.044	0.059	0.080	0.101	0.122
59	0.024	0.044	0.063	0.083	0.103	0.122
60	0.070	0.074	0.089	0.113	0.137	0.161
61	0.080	0.086	0.093	0.118	0.156	0.195
62	0.100	0.117	0.133	0.190	0.273	0.357
63	0.140	0.157	0.173	0.208	0.255	0.301
64	0.140	0.153	0.165	0.196	0.239	0.283
65	0.140	0.178	0.215	0.264	0.321	0.377
66	0.140	0.178	0.215	0.264	0.321	0.377
67	0.140	0.178	0.215	0.264	0.321	0.377
68	0.112	0.142	0.172	0.211	0.257	0.302
69	0.112	0.142	0.172	0.211	0.257	0.302
70	0.140	0.178	0.215	0.264	0.321	0.377

Service Retirement

Public Agency Miscellaneous 2% @ 55

Age	Duration of Service					
	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.008	0.013	0.018	0.021	0.022	0.033
51	0.009	0.016	0.020	0.023	0.026	0.036
52	0.015	0.018	0.020	0.021	0.025	0.030
53	0.016	0.020	0.024	0.028	0.031	0.035
54	0.018	0.022	0.026	0.030	0.034	0.038
55	0.040	0.040	0.056	0.093	0.109	0.154
56	0.034	0.050	0.066	0.092	0.107	0.138
57	0.042	0.048	0.058	0.082	0.096	0.127
58	0.046	0.054	0.062	0.090	0.106	0.131
59	0.045	0.055	0.066	0.097	0.115	0.144
60	0.058	0.075	0.093	0.126	0.143	0.169
61	0.065	0.088	0.111	0.146	0.163	0.189
62	0.136	0.118	0.148	0.190	0.213	0.247
63	0.130	0.133	0.174	0.212	0.249	0.285
64	0.113	0.129	0.165	0.196	0.223	0.249
65	0.145	0.173	0.201	0.233	0.266	0.289
66	0.170	0.199	0.229	0.258	0.284	0.306
67	0.250	0.204	0.233	0.250	0.257	0.287
68	0.227	0.175	0.193	0.215	0.240	0.262
69	0.200	0.180	0.180	0.198	0.228	0.246
70	0.150	0.171	0.192	0.239	0.304	0.330

Public Agency Miscellaneous 2.5% @ 55

Age	Duration of Service					
	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.008	0.014	0.020	0.026	0.033	0.050
51	0.008	0.015	0.023	0.030	0.037	0.059
52	0.009	0.016	0.023	0.030	0.037	0.061
53	0.014	0.021	0.028	0.035	0.042	0.063
54	0.014	0.022	0.030	0.039	0.047	0.068
55	0.020	0.038	0.055	0.073	0.122	0.192
56	0.025	0.047	0.069	0.091	0.136	0.196
57	0.030	0.048	0.065	0.083	0.123	0.178
58	0.035	0.054	0.073	0.093	0.112	0.153
59	0.035	0.054	0.073	0.092	0.131	0.183
60	0.044	0.072	0.101	0.130	0.158	0.197
61	0.050	0.078	0.105	0.133	0.161	0.223
62	0.055	0.093	0.130	0.168	0.205	0.268
63	0.090	0.124	0.158	0.192	0.226	0.279
64	0.080	0.112	0.144	0.175	0.207	0.268
65	0.120	0.156	0.193	0.229	0.265	0.333
66	0.132	0.172	0.212	0.252	0.292	0.366
67	0.132	0.172	0.212	0.252	0.292	0.366
68	0.120	0.156	0.193	0.229	0.265	0.333
69	0.120	0.156	0.193	0.229	0.265	0.333
70	0.120	0.156	0.193	0.229	0.265	0.333

Service Retirement

Public Agency Miscellaneous 2.7% @ 55

Age	Duration of Service					
	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.003	0.010	0.016	0.034	0.033	0.045
51	0.009	0.016	0.023	0.042	0.038	0.047
52	0.015	0.019	0.024	0.040	0.036	0.046
53	0.012	0.020	0.028	0.047	0.046	0.060
54	0.020	0.027	0.035	0.054	0.056	0.073
55	0.033	0.055	0.078	0.113	0.156	0.234
56	0.039	0.067	0.095	0.135	0.169	0.227
57	0.050	0.067	0.084	0.113	0.142	0.198
58	0.043	0.066	0.089	0.124	0.151	0.201
59	0.050	0.070	0.090	0.122	0.158	0.224
60	0.060	0.086	0.112	0.150	0.182	0.238
61	0.071	0.094	0.117	0.153	0.184	0.241
62	0.091	0.122	0.152	0.194	0.226	0.279
63	0.143	0.161	0.179	0.209	0.222	0.250
64	0.116	0.147	0.178	0.221	0.254	0.308
65	0.140	0.174	0.208	0.254	0.306	0.389
66	0.170	0.209	0.247	0.298	0.310	0.324
67	0.170	0.199	0.228	0.269	0.296	0.342
68	0.150	0.181	0.212	0.255	0.287	0.339
69	0.150	0.181	0.212	0.255	0.287	0.339
70	0.150	0.181	0.212	0.243	0.291	0.350

Public Agency Miscellaneous 3% @ 60

Age	Duration of Service					
	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.013	0.019	0.026	0.042	0.038	0.064
51	0.035	0.037	0.039	0.052	0.047	0.062
52	0.023	0.030	0.038	0.055	0.051	0.056
53	0.025	0.032	0.040	0.057	0.056	0.066
54	0.035	0.042	0.050	0.067	0.066	0.076
55	0.040	0.052	0.064	0.085	0.095	0.120
56	0.043	0.056	0.070	0.094	0.102	0.150
57	0.045	0.060	0.074	0.099	0.109	0.131
58	0.053	0.056	0.059	0.099	0.126	0.185
59	0.050	0.068	0.085	0.113	0.144	0.202
60	0.089	0.106	0.123	0.180	0.226	0.316
61	0.100	0.117	0.133	0.212	0.230	0.298
62	0.130	0.155	0.180	0.248	0.282	0.335
63	0.120	0.163	0.206	0.270	0.268	0.352
64	0.150	0.150	0.150	0.215	0.277	0.300
65	0.200	0.242	0.283	0.330	0.300	0.342
66	0.220	0.264	0.308	0.352	0.379	0.394
67	0.250	0.279	0.309	0.338	0.371	0.406
68	0.170	0.196	0.223	0.249	0.290	0.340
69	0.220	0.261	0.302	0.344	0.378	0.408
70	0.220	0.255	0.291	0.326	0.358	0.388

Service Retirement

Public Agency Miscellaneous 2% @ 62						
Age	Duration of Service					
	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.000	0.000	0.000	0.000	0.000	0.000
51	0.000	0.000	0.000	0.000	0.000	0.000
52	0.005	0.008	0.012	0.015	0.019	0.031
53	0.007	0.011	0.014	0.018	0.021	0.032
54	0.007	0.011	0.015	0.019	0.023	0.034
55	0.010	0.019	0.028	0.036	0.061	0.096
56	0.014	0.026	0.038	0.050	0.075	0.108
57	0.018	0.029	0.039	0.050	0.074	0.107
58	0.023	0.035	0.048	0.060	0.073	0.099
59	0.025	0.038	0.051	0.065	0.092	0.128
60	0.031	0.051	0.071	0.091	0.111	0.138
61	0.038	0.058	0.079	0.100	0.121	0.167
62	0.044	0.074	0.104	0.134	0.164	0.214
63	0.077	0.105	0.134	0.163	0.192	0.237
64	0.072	0.101	0.129	0.158	0.187	0.242
65	0.108	0.141	0.173	0.206	0.239	0.300
66	0.132	0.172	0.212	0.252	0.292	0.366
67	0.132	0.172	0.212	0.252	0.292	0.366
68	0.120	0.156	0.193	0.229	0.265	0.333
69	0.120	0.156	0.193	0.229	0.265	0.333
70	0.120	0.156	0.193	0.229	0.265	0.333

Service Retirement

Public Agency Fire ½ @ 55 and 2% @ 55			
Age	Rate	Age	Rate
50	0.0159	56	0.1108
51	0.0000	57	0.0000
52	0.0344	58	0.0950
53	0.0199	59	0.0441
54	0.0413	60	1.00000
55	0.0751		

Public Agency Police ½ @ 55 and 2% @ 55			
Age	Rate	Age	Rate
50	0.0255	56	0.0692
51	0.0000	57	0.0511
52	0.0164	58	0.0724
53	0.0272	59	0.0704
54	0.0095	60	0.3000
55	0.1667		

Service Retirement

Public Agency Police 2% @ 50

Age	Duration of Service					
	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.050	0.050	0.050	0.050	0.050	0.100
51	0.040	0.040	0.040	0.040	0.058	0.094
52	0.040	0.040	0.040	0.040	0.061	0.087
53	0.040	0.040	0.040	0.040	0.082	0.123
54	0.040	0.040	0.040	0.046	0.098	0.158
55	0.072	0.072	0.072	0.096	0.141	0.255
56	0.066	0.066	0.066	0.088	0.129	0.228
57	0.060	0.060	0.060	0.080	0.118	0.213
58	0.080	0.080	0.080	0.088	0.138	0.228
59	0.080	0.080	0.080	0.092	0.140	0.228
60	0.150	0.150	0.150	0.150	0.150	0.228
61	0.144	0.144	0.144	0.144	0.144	0.170
62	0.150	0.150	0.150	0.150	0.150	0.213
63	0.150	0.150	0.150	0.150	0.150	0.213
64	0.150	0.150	0.150	0.150	0.150	0.319
65	1.000	1.000	1.000	1.000	1.000	1.000

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

Service Retirement

Public Agency Fire 2% @ 50

Age	Duration of Service					
	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.009	0.009	0.009	0.009	0.013	0.020
51	0.013	0.013	0.013	0.013	0.020	0.029
52	0.018	0.018	0.018	0.018	0.028	0.042
53	0.052	0.052	0.052	0.052	0.079	0.119
54	0.067	0.067	0.067	0.067	0.103	0.154
55	0.089	0.089	0.089	0.089	0.136	0.204
56	0.083	0.083	0.083	0.083	0.127	0.190
57	0.082	0.082	0.082	0.082	0.126	0.189
58	0.088	0.088	0.088	0.088	0.136	0.204
59	0.074	0.074	0.074	0.074	0.113	0.170
60	0.100	0.100	0.100	0.100	0.154	0.230
61	0.072	0.072	0.072	0.072	0.110	0.165
62	0.099	0.099	0.099	0.099	0.152	0.228
63	0.114	0.114	0.114	0.114	0.175	0.262
64	0.114	0.114	0.114	0.114	0.175	0.262
65	1.000	1.000	1.000	1.000	1.000	1.000

Service Retirement

Public Agency Police 3% @ 55

Age	Duration of Service					
	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.035	0.035	0.035	0.035	0.070	0.090
51	0.028	0.028	0.028	0.029	0.065	0.101
52	0.032	0.032	0.032	0.039	0.066	0.109
53	0.028	0.028	0.028	0.043	0.075	0.132
54	0.038	0.038	0.038	0.074	0.118	0.333
55	0.070	0.070	0.070	0.120	0.175	0.340
56	0.060	0.060	0.060	0.110	0.165	0.330
57	0.060	0.060	0.060	0.110	0.165	0.320
58	0.080	0.080	0.080	0.100	0.185	0.350
59	0.090	0.090	0.095	0.130	0.185	0.350
60	0.150	0.150	0.150	0.150	0.185	0.350
61	0.120	0.120	0.120	0.120	0.160	0.350
62	0.150	0.150	0.150	0.150	0.200	0.350
63	0.150	0.150	0.150	0.150	0.200	0.400
64	0.150	0.150	0.150	0.150	0.175	0.350
65	1.000	1.000	1.000	1.000	1.000	1.000

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

Service Retirement

Public Agency Fire 3% @ 55

Age	Duration of Service					
	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.001	0.001	0.001	0.006	0.016	0.069
51	0.002	0.002	0.002	0.006	0.018	0.071
52	0.012	0.012	0.012	0.021	0.040	0.098
53	0.032	0.032	0.032	0.049	0.085	0.149
54	0.057	0.057	0.057	0.087	0.144	0.217
55	0.073	0.073	0.073	0.109	0.179	0.259
56	0.064	0.064	0.064	0.097	0.161	0.238
57	0.063	0.063	0.063	0.095	0.157	0.233
58	0.065	0.065	0.065	0.099	0.163	0.241
59	0.088	0.088	0.088	0.131	0.213	0.299
60	0.105	0.105	0.105	0.155	0.251	0.344
61	0.118	0.118	0.118	0.175	0.282	0.380
62	0.087	0.087	0.087	0.128	0.210	0.295
63	0.067	0.067	0.067	0.100	0.165	0.243
64	0.067	0.067	0.067	0.100	0.165	0.243
65	1.000	1.000	1.000	1.000	1.000	1.000

Service Retirement

Public Agency Police 3% @ 50

Age	Duration of Service					
	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.050	0.050	0.050	0.100	0.155	0.400
51	0.040	0.040	0.040	0.090	0.140	0.380
52	0.040	0.040	0.040	0.070	0.115	0.350
53	0.040	0.040	0.040	0.080	0.135	0.350
54	0.040	0.040	0.040	0.090	0.145	0.350
55	0.070	0.070	0.070	0.120	0.175	0.340
56	0.060	0.060	0.060	0.110	0.165	0.330
57	0.060	0.060	0.060	0.110	0.165	0.320
58	0.080	0.080	0.080	0.100	0.185	0.350
59	0.090	0.090	0.095	0.130	0.185	0.350
60	0.150	0.150	0.150	0.150	0.185	0.350
61	0.120	0.120	0.120	0.120	0.160	0.350
62	0.150	0.150	0.150	0.150	0.200	0.350
63	0.150	0.150	0.150	0.150	0.200	0.400
64	0.150	0.150	0.150	0.150	0.175	0.350
65	1.000	1.000	1.000	1.000	1.000	1.000

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

Service Retirement

Public Agency Fire 3% @ 50

Age	Duration of Service					
	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.020	0.020	0.020	0.040	0.130	0.192
51	0.008	0.008	0.008	0.023	0.107	0.164
52	0.023	0.023	0.023	0.043	0.136	0.198
53	0.023	0.023	0.023	0.043	0.135	0.198
54	0.027	0.027	0.027	0.048	0.143	0.207
55	0.043	0.043	0.043	0.070	0.174	0.244
56	0.053	0.053	0.053	0.085	0.196	0.269
57	0.054	0.054	0.054	0.086	0.197	0.271
58	0.052	0.052	0.052	0.084	0.193	0.268
59	0.075	0.075	0.075	0.116	0.239	0.321
60	0.065	0.065	0.065	0.102	0.219	0.298
61	0.076	0.076	0.076	0.117	0.241	0.324
62	0.068	0.068	0.068	0.106	0.224	0.304
63	0.027	0.027	0.027	0.049	0.143	0.208
64	0.094	0.094	0.094	0.143	0.277	0.366
65	1.000	1.000	1.000	1.000	1.000	1.000

Service Retirement

Public Agency Police 2% @ 57

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

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

Service Retirement

Public Agency Fire 2% @ 57

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

Service Retirement

Public Agency Police 2.5% @ 57

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

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

Service Retirement

Public Agency Fire 2.5% @ 57

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

Service Retirement

Public Agency Police 2.7% @ 57

Age	Duration of Service					
	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.0500	0.0500	0.0500	0.0500	0.0500	0.1000
51	0.0400	0.0400	0.0400	0.0400	0.0575	0.0942
52	0.0380	0.0380	0.0380	0.0380	0.0580	0.0825
53	0.0380	0.0380	0.0380	0.0380	0.0774	0.1169
54	0.0380	0.0380	0.0380	0.0437	0.0931	0.1497
55	0.0684	0.0684	0.0684	0.0912	0.1340	0.2423
56	0.0627	0.0627	0.0627	0.0836	0.1228	0.2168
57	0.0600	0.0600	0.0600	0.0800	0.1175	0.2125
58	0.0800	0.0800	0.0800	0.0880	0.1375	0.2275
59	0.0800	0.0800	0.0800	0.0920	0.1400	0.2275
60	0.1500	0.1500	0.1500	0.1500	0.1500	0.2275
61	0.1440	0.1440	0.1440	0.1440	0.1440	0.1700
62	0.1500	0.1500	0.1500	0.1500	0.1500	0.2125
63	0.1500	0.1500	0.1500	0.1500	0.1500	0.2125
64	0.1500	0.1500	0.1500	0.1500	0.1500	0.3188
65	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

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

Service Retirement

Public Agency Fire 2.7% @ 57

Age	Duration of Service					
	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.0065	0.0065	0.0065	0.0065	0.0101	0.0151
51	0.0081	0.0081	0.0081	0.0081	0.0125	0.0187
52	0.0164	0.0164	0.0164	0.0164	0.0254	0.0380
53	0.0442	0.0442	0.0442	0.0442	0.0680	0.1018
54	0.0606	0.0606	0.0606	0.0606	0.0934	0.1397
55	0.0825	0.0825	0.0825	0.0825	0.1269	0.1900
56	0.0740	0.0740	0.0740	0.0740	0.1140	0.1706
57	0.0901	0.0901	0.0901	0.0901	0.1387	0.2077
58	0.0790	0.0790	0.0790	0.0790	0.1217	0.1821
59	0.0729	0.0729	0.0729	0.0729	0.1123	0.1681
60	0.1135	0.1135	0.1135	0.1135	0.1747	0.2615
61	0.1136	0.1136	0.1136	0.1136	0.1749	0.2618
62	0.1136	0.1136	0.1136	0.1136	0.1749	0.2618
63	0.1136	0.1136	0.1136	0.1136	0.1749	0.2618
64	0.1136	0.1136	0.1136	0.1136	0.1749	0.2618
65	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Service Retirement

Schools 2% @ 55						
Age	Duration of Service					
	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.004	0.007	0.011	0.012	0.013	0.015
51	0.004	0.008	0.011	0.014	0.016	0.017
52	0.005	0.010	0.014	0.016	0.018	0.021
53	0.006	0.012	0.016	0.020	0.022	0.025
54	0.008	0.017	0.023	0.027	0.031	0.034
55	0.021	0.042	0.058	0.069	0.077	0.086
56	0.019	0.037	0.053	0.062	0.069	0.078
57	0.019	0.038	0.054	0.064	0.071	0.079
58	0.022	0.045	0.062	0.074	0.082	0.092
59	0.025	0.049	0.069	0.082	0.090	0.101
60	0.033	0.066	0.092	0.109	0.121	0.135
61	0.037	0.072	0.101	0.119	0.133	0.149
62	0.066	0.131	0.184	0.218	0.242	0.271
63	0.064	0.126	0.178	0.209	0.233	0.261
64	0.059	0.117	0.163	0.193	0.215	0.240
65	0.080	0.158	0.221	0.261	0.291	0.326
66	0.081	0.160	0.224	0.265	0.296	0.330
67	0.070	0.139	0.194	0.229	0.255	0.286
68	0.063	0.124	0.173	0.205	0.228	0.255
69	0.066	0.130	0.183	0.216	0.241	0.270
70	0.071	0.140	0.196	0.231	0.258	0.289

Miscellaneous

Internal Revenue Code Section 415

The limitations on benefits imposed by Internal Revenue Code Section 415 are taken into account in this valuation. Each year the impact of any changes in this limitation since the prior valuation is included and amortized as part of the actuarial gain or loss base. This results in lower contributions for those employers contributing to the Replacement Benefit Fund and protects CalPERS from prefunding expected benefits in excess of limits imposed by federal tax law. The Section 415 dollar limit for the 2018 calendar year is \$220,000.

Internal Revenue Code Section 401(a) (17)

The limitations on compensation imposed by Internal Revenue Code Section 401(a) (17) are taken into account in this valuation. Each year, the impact of any changes in the compensation limitation since the prior valuation is included and amortized as part of the actuarial gain or loss base. The compensation limit for classic members for the 2018 calendar year is \$275,000.

Appendix B

Principal Plan Provisions

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

Service Retirement

Eligibility

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

Benefit

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

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

Miscellaneous Plan Formulas

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

Safety Plan Formulas

Retirement Age	½ at 55 *	2% at 55	2% at 50	3% at 55	3% at 50
50	1.783%	1.426%	2.000%	2.400%	3.000%
51	1.903%	1.522%	2.140%	2.520%	3.000%
52	2.035%	1.628%	2.280%	2.640%	3.000%
53	2.178%	1.742%	2.420%	2.760%	3.000%
54	2.333%	1.866%	2.560%	2.880%	3.000%
55 & Up	2.500%	2.000%	2.700%	3.000%	3.000%

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

PEPRA Safety Plan Formulas

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

- The *years of service* is the amount credited by CalPERS to a member while he or she is employed in this group (or for other periods that are recognized under the employer's contract with CalPERS). For a member who has earned service with multiple CalPERS employers, the benefit from each employer is calculated separately according to each employer's contract, and then added together for the total allowance. An agency may contract for an optional benefit where any unused sick leave accumulated at the time of retirement will be converted to credited service at a rate of 0.004 years of service for each day of sick leave.
- The *final compensation* is the monthly average of the member's highest 36 or 12 consecutive months' full-time equivalent monthly pay (no matter which CalPERS employer paid this compensation). The standard benefit is 36 months. Employers had the option of providing a final compensation equal to the highest 12 consecutive months for classic plans only. Final compensation must be defined by the highest 36 consecutive months' pay under the 1.5% at 65 formula. PEPRA members have a cap on the annual salary that can be used to calculate final compensation for all new members based on the Social Security contribution and benefit base. For employees that participate in Social Security this cap is \$121,388 for 2018 and for those employees that do not participate in Social Security the cap for 2018 is \$145,666. Adjustments to the caps are permitted annually based on changes to the CPI for all urban consumers.
- Employees must be covered by Social Security with the 1.5% at 65 formula. Social Security is optional for all other benefit formulas. For employees covered by Social Security, the modified formula is the standard benefit. Under this type of formula, the final compensation is offset by \$133.33 (or by one third if the final compensation is less than \$400). Employers may contract for the full benefit with Social Security that will eliminate the offset applicable to the final compensation. For employees not covered by Social Security, the full benefit is paid with

no offsets. Auxiliary organizations of the CSUC system may elect reduced contribution rates, in which case the offset is \$317 if members are not covered by Social Security or \$513 if members are covered by Social Security.

- The miscellaneous and PEPRSA safety service retirement benefit is not capped. The classic Safety service retirement benefit is capped at 90 percent of final compensation.

Vested Deferred Retirement

Eligibility for Deferred Status

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

Eligibility to Start Receiving Benefits

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

Benefit

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

Non-Industrial (Non-Job Related) Disability Retirement

Eligibility

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

Standard Benefit

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

- *Service* is CalPERS credited service, for members with less than 10 years of service or greater than 18.518 years of service; or
- *Service* is CalPERS credited service plus the additional number of years that the member would have worked until age 60, for members with at least 10 years but not more than 18.518 years of service. The maximum benefit in this case is 33 1/3 percent of final compensation.

Improved Benefit

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

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

Industrial (Job Related) Disability Retirement

All safety members have this benefit. For miscellaneous members, employers have the option of providing this benefit. An employer may choose to provide the increased benefit option or the improved benefit option.

Eligibility

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

Standard Benefit

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

Increased Benefit (75 percent of Final Compensation)

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

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

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

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

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

Post-Retirement Death Benefit

Standard Lump Sum Payment

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

Improved Lump Sum Payment

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

Form of Payment for Retirement Allowance

Standard Form of Payment

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

Improved Form of Payment (Post-Retirement Survivor Allowance)

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

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

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

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

Pre-Retirement Death Benefits

Basic Death Benefit

This is a standard benefit.

Eligibility

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

Benefit

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

1957 Survivor Benefit

This is a standard benefit.

Eligibility

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

Benefit

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

Optional Settlement 2 Death Benefit

This is an optional benefit.

Eligibility

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

Benefit

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

Special Death Benefit

This is a standard benefit for safety members. An employer may elect to provide this benefit for miscellaneous members.

Eligibility

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

Benefit

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

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

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

Alternate Death Benefit for Local Fire Members

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

Eligibility

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

Benefit

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

Cost-of-Living Adjustments (COLA)

Standard Benefit

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

Improved Benefit

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

Purchasing Power Protection Allowance (PPPA)

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

Employee Contributions

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

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

Benefit Formula	Percent Contributed above the Breakpoint
Miscellaneous, 1.5% at 65	2%
Miscellaneous, 2% at 60	7%
Miscellaneous, 2% at 55	7%
Miscellaneous, 2.5% at 55	8%
Miscellaneous, 2.7% at 55	8%
Miscellaneous, 3% at 60	8%
Miscellaneous, 2% at 62	50% of the Total Normal Cost
Miscellaneous, 1.5% at 65	50% of the Total Normal Cost
Safety, 1/2 at 55	Varies by entry age
Safety, 2% at 55	7%
Safety, 2% at 50	9%
Safety, 3% at 55	9%
Safety, 3% at 50	9%
Safety, 2% at 57	50% of the Total Normal Cost
Safety, 2.5% at 57	50% of the Total Normal Cost
Safety, 2.7% at 57	50% of the Total Normal Cost

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

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

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

Refund of Employee Contributions

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

1959 Survivor Benefit

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

This benefit is not included in the results presented in this valuation. More information on this benefit is available on the CalPERS website at www.calpers.ca.gov.

Appendix C

Participant Data

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

Summary of Valuation Data

	June 30, 2017	June 30, 2018
1. Active Members		
a) Counts	111	113
b) Average Attained Age	44.34	43.45
c) Average Entry Age to Rate Plan	36.37	36.10
d) Average Years of Credited Service	7.97	7.27
e) Average Annual Covered Pay	\$ 83,963	\$ 87,953
f) Annual Covered Payroll	9,319,861	9,938,654
g) Projected Annual Payroll for Contribution Year	10,147,031	10,781,348
h) Present Value of Future Payroll	79,863,650	89,334,583
2. Transferred Members		
a) Counts	98	99
b) Average Attained Age	46.12	46.84
c) Average Years of Credited Service	3.46	3.46
d) Average Annual Covered Pay	\$ 116,943	\$ 120,705
3. Terminated Members		
a) Counts	79	87
b) Average Attained Age	46.50	45.75
c) Average Years of Credited Service	2.58	2.51
d) Average Annual Covered Pay	\$ 57,746	\$ 60,221
4. Retired Members and Beneficiaries		
a) Counts	228	236
b) Average Attained Age	68.85	69.19
c) Average Annual Benefits	\$ 23,338	\$ 23,678
5. Active to Retired Ratio [(1a) / (4a)]	0.49	0.48

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

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

Active Members

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

Distribution of Active Members by Age and Service

Attained Age	Years of Service at Valuation Date						Total
	0-4	5-9	10-14	15-19	20-24	25+	
15-24	4	0	0	0	0	0	4
25-29	17	0	0	0	0	0	17
30-34	9	1	0	0	0	0	10
35-39	8	2	2	1	0	0	13
40-44	7	3	5	0	2	0	17
45-49	9	2	2	1	2	0	16
50-54	8	2	3	4	0	1	18
55-59	6	0	0	4	0	0	10
60-64	1	0	0	2	0	3	6
65 and over	0	0	1	0	0	1	2
All Ages	69	10	13	12	4	5	113

Distribution of Average Annual Salaries by Age and Service

Attained Age	Years of Service at Valuation Date						Average
	0-4	5-9	10-14	15-19	20-24	25+	
15-24	\$71,318	\$0	\$0	\$0	\$0	\$0	\$71,318
25-29	67,713	0	0	0	0	0	67,713
30-34	80,757	90,584	0	0	0	0	81,739
35-39	62,767	92,581	90,768	83,808	0	0	73,280
40-44	86,968	83,772	90,014	0	80,046	0	86,485
45-49	99,050	51,237	113,111	179,845	111,084	0	101,385
50-54	81,127	81,992	89,498	79,466	0	145,933	85,850
55-59	159,310	0	0	80,878	0	0	127,937
60-64	145,933	0	0	148,689	0	103,990	125,880
65 and over	0	0	1,800	0	0	58,066	29,933
All Ages	\$85,745	\$79,352	\$86,778	\$100,200	\$95,565	\$103,194	\$87,953

Transferred and Terminated Members

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

Attained Age	Years of Service at Valuation Date						Total	Average Salary
	0-4	5-9	10-14	15-19	20-24	25+		
15-24	0	0	0	0	0	0	0	\$0
25-29	1	0	0	0	0	0	1	110,388
30-34	8	0	0	0	0	0	8	98,775
35-39	12	2	0	0	0	0	14	121,763
40-44	18	4	0	2	0	0	24	123,130
45-49	11	3	2	0	0	0	16	100,642
50-54	8	3	0	0	0	0	11	133,688
55-59	11	4	2	0	0	0	17	131,090
60-64	2	3	1	1	0	0	7	141,005
65 and over	1	0	0	0	0	0	1	93,018
All Ages	72	19	5	3	0	0	99	120,705

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

Attained Age	Years of Service at Valuation Date						Total	Average Salary
	0-4	5-9	10-14	15-19	20-24	25+		
15-24	0	0	0	0	0	0	0	\$0
25-29	5	0	0	0	0	0	5	62,181
30-34	7	0	0	0	0	0	7	56,167
35-39	15	2	0	0	0	0	17	60,942
40-44	16	1	1	0	0	0	18	61,005
45-49	9	1	1	1	0	0	12	75,643
50-54	11	1	0	0	0	0	12	69,263
55-59	5	0	1	0	0	0	6	45,041
60-64	2	0	1	0	0	0	3	37,111
65 and over	5	2	0	0	0	0	7	40,087
All Ages	75	7	4	1	0	0	87	60,221

Retired Members and Beneficiaries

Distribution of Retirees and Beneficiaries by Age and Retirement Type*

Attained Age	Service Retirement	Non-Industrial Disability	Industrial Disability	Non-Industrial Death	Industrial Death	Death After Retirement	Total
Under 30	0	0	0	0	0	0	0
30-34	0	0	0	0	0	0	0
35-39	0	0	0	0	0	0	0
40-44	0	0	1	0	0	0	1
45-49	0	0	2	0	0	0	2
50-54	6	0	0	0	0	0	6
55-59	12	0	4	0	0	4	20
60-64	50	2	0	0	0	3	55
65-69	42	0	1	0	0	0	43
70-74	52	1	0	0	0	0	53
75-79	27	0	0	0	0	7	34
80-84	8	1	0	0	0	2	11
85 and Over	6	0	0	0	0	5	11
All Ages	203	4	8	0	0	21	236

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

Attained Age	Service Retirement	Non-Industrial Disability	Industrial Disability	Non-Industrial Death	Industrial Death	Death After Retirement	Average
Under 30	\$0	\$0	\$0	\$0	\$0	\$0	\$0
30-34	0	0	0	0	0	0	0
35-39	0	0	0	0	0	0	0
40-44	0	0	292	0	0	0	292
45-49	0	0	1,356	0	0	0	1,356
50-54	15,715	0	0	0	0	0	15,715
55-59	24,569	0	1,000	0	0	6,426	16,226
60-64	30,815	20,639	0	0	0	11,501	29,391
65-69	27,703	0	518	0	0	0	27,070
70-74	21,232	1,874	0	0	0	0	20,867
75-79	23,180	0	0	0	0	22,286	22,996
80-84	29,173	4,787	0	0	0	13,189	24,050
85 and Over	28,026	0	0	0	0	13,043	21,215
All Ages	\$25,738	\$11,985	\$940	\$0	\$0	\$14,657	\$23,678

Retired Members and Beneficiaries (continued)

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

Years Retired	Service Retirement	Non-Industrial Disability	Industrial Disability	Non-Industrial Death	Industrial Death	Death After Retirement	Total
Under 5 Yrs	59	0	3	0	0	7	69
5-9	59	0	1	0	0	4	64
10-14	43	1	2	0	0	2	48
15-19	21	1	1	0	0	4	27
20-24	14	1	1	0	0	1	17
25-29	7	0	0	0	0	2	9
30 and Over	0	1	0	0	0	1	2
All Years	203	4	8	0	0	21	236

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

Years Retired	Service Retirement	Non-Industrial Disability	Industrial Disability	Non-Industrial Death	Industrial Death	Death After Retirement	Average
Under 5 Yrs	\$29,883	\$0	\$846	\$0	\$0	\$20,919	\$27,711
5-9	25,761	0	2,407	0	0	20,032	25,038
10-14	24,338	37,839	760	0	0	6,648	22,899
15-19	24,875	3,438	518	0	0	10,427	21,038
20-24	16,082	1,874	541	0	0	1,290	13,462
25-29	21,117	0	0	0	0	8,024	18,208
30 and Over	0	4,787	0	0	0	8,902	6,844
All Years	\$25,738	\$11,985	\$940	\$0	\$0	\$14,657	\$23,678

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

Appendix D

Normal Cost Information by Group

- **Normal Cost by Benefit Group**
- **PEPRA Member Contribution Rates**

Normal Cost by Benefit Group

The table below displays the Total Normal Cost broken out by benefit group for Fiscal Year 2020-21. The Total Normal Cost is the annual cost of service accrual for the fiscal year for active employees and can be viewed as the long-term contribution rate for the benefits contracted. Generally, the normal cost for a benefit group subject to more generous benefit provisions will exceed the normal cost for a group with less generous benefits. However, based on the characteristics of the members (particularly when the number of actives is small), this may not be the case. Future measurements of the Total Normal Cost for each group may differ significantly from the current values due to such factors as: changes in the demographics of the group, changes in economic and demographic assumptions, changes in plan benefits or applicable law.

Rate Plan Identifier	Benefit Group Name	Total Normal Cost FY 2020-21	Number of Actives	Payroll on 6/30/2018
946	Miscellaneous First Level	19.967%	41	3,772,148
27442	Miscellaneous PEPRAL Level	13.270%	47	3,183,806
30563	Miscellaneous Second Level	20.352%	25	2,982,700

Note that if a Benefit Group above has multiple bargaining units, each of which has separately contracted for different benefits such as Employer Paid Member Contributions, then the Normal Cost split does not reflect those differences. Additionally, if a 2nd Level Benefit Group amended to the same benefit formula as a 1st Level Benefit Group their Normal Costs may be dissimilar due to demographic or other population differences. In these situations you should consult with your plan actuary.

PEPRA Member Contribution Rates

The table below shows the determination of the PEPRA Member contribution rates based on 50 percent of the Total Normal Cost for each respective plan on June 30, 2018. Assembly Bill (AB) 340 created PEPRA that implemented new benefit formulas and a final compensation period as well as new contribution requirements for new employees. In accordance with Section Code 7522.30(b), "new members ... shall have an initial contribution rate of at least 50 percent of the normal cost rate." The normal cost for the plan is dependent on the benefit levels, actuarial assumptions and demographics of the plan particularly the entry age into the plan. Should the total normal cost of the plan change by one percent or more from the base total normal cost established for the plan, the new member rate shall be 50 percent of the new normal cost rounded to the nearest quarter percent.

Rate Plan Identifier	Benefit Group Name	Basis for Current Rate		Rates Effective July 1, 2020			
		Total Normal Cost	Member Rate	Total Normal Cost	Change	Change Needed	Member Rate
27442	Miscellaneous PEPRA Level	14.430%	7.250%	14.923%	0.493%	No	7.250%

The PEPRA employee contribution rate determined in the table above may not necessarily be 50 percent of the Total Normal Cost by Group based on the PEPRA Normal Cost calculation methodology. Each non-pooled plan is stable with a sufficiently large demographic representation of active employees. It is preferable to determine normal cost using a large active population ongoing so that this rate remains relatively stable. The total PEPRA normal cost will be calculated using all active members within a non-pooled plan until the number of members covered under the PEPRA formula meets either:

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

Once either of the conditions above is met for a non-pooled plan, the total PEPRA normal cost will be based on the active PEPRA population in the plan.

Accordingly, the total normal cost will be funded equally between employer and employee based on the demographics of the employees of that employer.

Appendix E

Glossary of Actuarial Terms

Glossary of Actuarial Terms

Accrued Liability (*also called Actuarial Accrued Liability or Entry Age Normal Accrued Liability*)

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

Actuarial Assumptions

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

Actuarial Methods

Procedures employed by actuaries to achieve certain funding goals of a pension plan. Actuarial methods include funding method, setting the length of time to fund the Accrued Liability and determining the Value of Assets.

Actuarial Valuation

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

Amortization Bases

Separate payment schedules for different portions of the Unfunded Liability. The total Unfunded Liability of a Risk Pool or non-pooled plan can be segregated by "cause," creating "bases" and each such base will be separately amortized and paid for over a specific period of time. However, all bases are amortized using investment and payroll assumptions from the current valuation. This can be likened to a home having a first mortgage of 24 years remaining payments and a second mortgage that has 10 years remaining payments. Each base or each mortgage note has its own terms (payment period, principal, etc.)

Generally, in an actuarial valuation, the separate bases consist of changes in unfunded liability due to contract amendments, actuarial assumption changes, actuarial methodology changes, and/or gains and losses. Payment periods are determined by Board policy and vary based on the cause of the change.

Amortization Period

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

Classic Member (under PEPR)

A classic member is a member who joined CalPERS prior to January 1, 2013 and who is not defined as a new member under PEPR. (See definition of new member below)

Discount Rate Assumption

The actuarial assumption that was called "investment return" in earlier CalPERS reports or "actuarial interest rate" in Section 20014 of the California Public Employees' Retirement Law (PERL).

Entry Age

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

Entry Age Normal Cost Method

An actuarial cost method designed to fund a member's total plan benefit over the course of his or her career. This method is designed to yield a rate expressed as a level percentage of payroll.
(The assumed retirement age less the entry age is the amount of time required to fund a member's total benefit. Generally, the older a member on the date of hire, the greater the entry age normal cost. This is mainly because there is less time to earn investment income to fund the future benefits.)

Fresh Start

A Fresh Start is when multiple amortization bases are collapsed to one base and amortized together over a new funding period.

Funded Status

A measure of how well funded, or how "on track" a plan or risk pool is with respect to assets versus accrued liabilities. A ratio greater than 100 percent means the plan or risk pool has more assets than liabilities and a ratio less than 100 percent means liabilities are greater than assets.

GASB 68

Statement No. 68 of the Governmental Accounting Standards Board. The accounting standard governing a state or local governmental employer's accounting and financial reporting for pensions. GASB 68 replaces GASB 27 effective the first fiscal year beginning after June 15, 2014.

New Member (under PEPPRA)

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

Normal Cost

The annual cost of service accrual for the upcoming fiscal year for active employees. The normal cost should be viewed as the long-term contribution rate.

Pension Actuary

A business professional that is authorized by the Society of Actuaries and the American Academy of Actuaries to perform the calculations necessary to properly fund a pension plan.

PEPPRA

The California Public Employees' Pension Reform Act of 2013

Prepayment Contribution

A payment made by the employer to reduce or eliminate the year's required employer contribution towards the UAL.

Present Value of Benefits (PVB)

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

Unfunded Accrued Liability (UAL)

When a plan or pool's value of assets is less than its Accrued Liability, the difference is the plan or pool's Unfunded Accrued Liability (or unfunded liability). If the unfunded liability is positive, the plan or pool will have to pay contributions exceeding the Normal Cost.



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 2019

Safety Plan of the Town of Los Gatos

(CalPERS ID: 4589482285)

Annual Valuation Report as of June 30, 2018

Dear Employer,

Attached to this letter, you will find the June 30, 2018 actuarial valuation report of your CalPERS pension plan. **Provided in this report is the determination of the minimum required employer contributions for Fiscal Year 2020-21.** 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, 2018.

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 or Safety Risk Pool Actuarial Valuation Report as appropriate.

Your June 30, 2018 actuarial valuation report contains important actuarial information about your pension plan at CalPERS. Your assigned CalPERS staff actuary, whose signature appears in the Actuarial Certification section on page 1, is available to discuss the report with you after August 1, 2019.

Actuarial valuations are based on assumptions regarding future plan experience including investment return and payroll growth, eligibility for the types of benefits provided, and longevity among retirees. The CalPERS Board of Administration adopts these assumptions after considering the advice of CalPERS actuarial and investment teams and other professionals. Each actuarial valuation reflects all prior differences between actual and assumed experience and adjusts the contribution rates as needed. This valuation is based on an investment return assumption of 7.0% which was adopted by the board in December 2016. Other assumptions used in this report are those recommended in the CalPERS Experience Study and Review of Actuarial Assumptions report from December 2017.

Required Contribution

The exhibit below displays the minimum employer contributions, before any cost sharing, for Fiscal Year 2020-21 along with estimates of the required contributions for Fiscal Year 2021-22. Member contributions other than cost sharing (whether paid by the employer or the employee) are in addition to the results shown below. **The employer contributions in this report do not reflect any cost sharing arrangements you may have with your employees.**

Fiscal Year	Employer Normal Cost Rate	Employer Amortization of Unfunded Accrued Liability
2020-21	25.540%	\$1,708,222
<i>Projected Results</i>		
2021-22	25.5%	\$1,969,000

The actual investment return for Fiscal Year 2018-19 was not known at the time this report was prepared. The projections above assume the investment return for that year would be 7.00 percent. ***If the actual investment return for Fiscal Year 2018-19 differs from 7.00 percent, the actual contribution requirements for the projected years will differ from those shown above.*** For additional details regarding the assumptions and methods used for these projections please refer to the "Projected Employer Contributions" in the "Highlights and Executive Summary" section. This section also contains projected required contributions through fiscal year 2025-26.

Changes from Previous Year's Valuation

CalPERS continues to strive to provide comprehensive risk assessments regarding plan funding and sustainability consistent with the Board of Administration's pension and investment beliefs. Your report this year includes new metrics on plan maturity in recognition of the fact that most pension plans at CalPERS are maturing as anticipated. As plans mature, they become more sensitive to risks than plans that are less mature. The "Risk Analysis" section of your report will help you understand how your plan is affected by investment return volatility and other economic assumptions. We have included plan sensitivity analysis with respect to longevity and inflation to further that discussion and encourage you to review our most recent Annual Review of Funding Levels and Risks report on our website that takes a holistic view of the system.

Upcoming Change for June 30, 2019 Valuations

The CalPERS Board of Administration has adopted a new amortization policy effective with the June 30, 2019 actuarial valuation. The new policy shortens the period over which actuarial gains and losses are amortized from 30 years to 20 years with the payments computed using a level dollar amount. In addition, the new policy removes the 5-year ramp-up and ramp-down on Unfunded Accrued Liability (UAL) bases attributable to assumption changes and non-investment gains/losses. The new policy removes the 5-year ramp-down on investment gains/losses. These changes will apply only to new UAL bases established on or after June 30, 2019.

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

Further descriptions of general changes are included in the "Highlights and Executive Summary" section and in Appendix A, "Statement of Actuarial Data, Methods and Assumptions" of the Section 2 report.

We understand that you might have a number of questions about these results. While we are very interested in discussing these results with your agency, in the interest of allowing us to give every public agency their results, we ask that you wait until after August 1 2019 to contact us with actuarial questions.

If you have other questions, please call our customer contact center at (888) CalPERS or **(888-225-7377)**.

Sincerely,



SCOTT TERANDO
Chief Actuary



**Actuarial Valuation
as of June 30, 2018**

**for the
Safety Plan
of the
Town of Los Gatos
(CalPERS ID: 4589482285)**

**Required Contributions
for Fiscal Year
July 1, 2020 - June 30, 2021**

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Section 2 – Risk Pool Actuarial Valuation Information

Section 1

CALIFORNIA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

Plan Specific Information for the Safety Plan of the Town of Los Gatos

**(CalPERS ID: 4589482285)
(Valuation Rate Plan ID: 947)**

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Actuarial Certification

Section 1 of this report is based on the member and financial data contained in our records as of June 30, 2018 which was provided by your agency and the benefit provisions under your contract with CalPERS. Section 2 of this report is based on the member and financial data as of June 30, 2018 provided by employers participating in the Safety Risk Pool to which the plan belongs and benefit provisions under the CalPERS contracts for those agencies.

As set forth in Section 2 of this report, the pool actuaries have certified that, in their opinion, the valuation of the risk pool containing your Safety Plan has been performed in accordance with generally accepted actuarial principles consistent with standards of practice prescribed by the Actuarial Standards Board, and that the assumptions and methods are internally consistent and reasonable for the risk pool as of the date of this valuation and as prescribed by the CalPERS Board of Administration according to provisions set forth in the California Public Employees' Retirement Law.

Having relied upon the information set forth in Section 2 of this report and based on the census and benefit provision information for the plan, it is my opinion as the plan actuary that Unfunded Accrued Liability amortization bases as of June 30, 2018 and employer contribution as of July 1, 2020, have been properly and accurately determined in accordance with the principles and standards stated above.

The undersigned is an actuary for CalPERS, a member of both the American Academy of Actuaries and Society of Actuaries and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.



DAVID CLEMENT, ASA, MAAA, EA
Senior Pension Actuary, CalPERS
Plan Actuary

Highlights and Executive Summary

- **Introduction**
- **Purpose of Section 1**
- **Required Employer Contributions**
- **Plan's Funded Status**
- **Projected Employer Contributions**
- **Changes Since the Prior Year's Valuation**
- **Subsequent Events**

Introduction

This report presents the results of the June 30, 2018 actuarial valuation of the Safety Plan of the Town of Los Gatos of the California Public Employees' Retirement System (CalPERS). This actuarial valuation sets the required employer contributions for Fiscal Year 2020-21.

Purpose of Section 1

This Section 1 report for the Safety Plan of the Town of Los Gatos of the California Public Employees' Retirement System (CalPERS) was prepared by the plan actuary in order to:

- Set forth the assets and accrued liabilities of this plan as of June 30, 2018;
- Determine the minimum required employer contribution for this plan for the fiscal year July 1, 2020 through June 30, 2021; and
- Provide actuarial information as of June 30, 2018 to the CalPERS Board of Administration and other interested parties.

The pension funding information presented in this report should not be used in financial reports subject to GASB Statement No. 68 for a Cost Sharing Employer Defined Benefit Pension Plan. A separate accounting valuation report for such purposes is available from CalPERS and details for ordering are available on our website.

The measurements shown in this actuarial valuation may not be applicable for other purposes. The employer should contact their 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; and changes in plan provisions or applicable law.

California Actuarial Advisory Panel Recommendations

This report includes all the basic disclosure elements as described in the *Model Disclosure Elements for Actuarial Valuation Reports* recommended in 2011 by the California Actuarial Advisory Panel (CAAP), with the exception of including the original base amounts of the various components of the unfunded liability in the Schedule of Amortization Bases shown on page 10.

Additionally, this report includes the following "Enhanced Risk Disclosures" also recommended by the CAAP in the Model Disclosure Elements document and consistent with the recommendations of Actuarial Standard of Practice No. 51:

- A "Scenario Test," projecting future results under different investment income scenarios.
- A "Sensitivity Analysis," showing the impact on current valuation results using alternative discount rates of 6.0 percent and 8.0 percent.
- A "Sensitivity Analysis," showing the impact on current valuation results using a 1.0 percent plus or minus change in the inflation rate.
- A "Sensitivity Analysis," showing the impact on current valuation results assuming post-retirement rates of mortality are 10 percent lower or 10 percent higher than our current mortality assumptions adopted in 2017. This type of analysis highlights the impact on the plan of improving or worsening mortality over the long-term.
- Plan maturity measures which indicate how sensitive a plan may be to the risks noted above.

Required Employer Contributions

		Fiscal Year
Required Employer Contributions		2020-21
Employer Normal Cost Rate		25.540%
Plus, Either		
1) Monthly Employer Dollar UAL Payment	\$	142,351.83
Or		
2) Annual UAL Prepayment Option*	\$	1,651,401
The total minimum required employer contribution is the sum of the Plan's Employer Normal Cost Rate (expressed as a percentage of payroll) plus the Employer Unfunded Accrued Liability (UAL) Contribution Amount (billed monthly in dollars).		
* Only the UAL portion of the employer contribution can be prepaid (which must be received in full no later than July 31). Any prepayment totaling over \$5 million requires a 72-hour notice email to FCSD_public_agency_wires@calpers.ca.gov . Plan Normal Cost contributions will be made as part of the payroll reporting process. If there is contractual cost sharing or other change, this amount will change.		
In accordance with Sections 20537 and 20572 of the Public Employees' Retirement Law, if a contracting agency fails to remit the required contributions when due, interest and penalties may apply.		

	Fiscal Year	Fiscal Year
	2019-20	2020-21
Development of Normal Cost as a Percentage of Payroll¹		
Base Total Normal Cost for Formula	29.696%	31.427%
Surcharge for Class 1 Benefits ²		
a) FAC 1	1.220%	1.237%
b) PRSA	1.727%	1.866%
Phase out of Normal Cost Difference ³	0.000%	0.000%
Plan's Total Normal Cost	32.643%	34.530%
Formula's Expected Employee Contribution Rate	8.989%	8.990%
Employer Normal Cost Rate	23.654%	25.540%
Projected Payroll for the Contribution Fiscal Year	\$ 4,706,483	\$ 4,687,916
Estimated Employer Contributions Based on Projected Payroll		
Plan's Estimated Employer Normal Cost	\$ 1,113,271	\$ 1,197,294
Plan's Payment on Amortization Bases ⁴	1,485,723	1,708,222
% of Projected Payroll (illustrative only)	31.568%	36.439%
Estimated Total Employer Contribution	\$ 2,598,994	\$ 2,905,516
% of Projected Payroll (illustrative only)	55.222%	61.979%

¹ The results shown for Fiscal Year 2019-20 reflect the prior year valuation and may not take into account any lump sum payment, side fund payoff, or rate adjustment made after April 30, 2018.

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

³ The normal cost difference is phased out over a five-year period. The phase out of normal cost difference is 100 percent for the first year of pooling, and is incrementally reduced by 20 percent of the original normal cost difference for each subsequent year. This is non-zero only for plans that joined a pool within the past 5 years. Most plans joined a pool June 30, 2003, when risk pooling was implemented.

⁴ See page 10 for a breakdown of the Amortization Bases.

Plan's Funded Status

		June 30, 2017		June 30, 2018
1. Present Value of Projected Benefits (PVB)	\$	96,506,873	\$	102,944,270
2. Entry Age Normal Accrued Liability (AL)		84,570,154		91,111,357
3. Plan's Market Value of Assets (MVA)		62,493,962		65,569,436
4. Unfunded Accrued Liability (UAL) [(2) - (3)]		22,076,192		25,541,921
5. Funded Ratio [(3) / (2)]		73.9%		72.0%

This measure of funded status is an assessment of the need for future employer contributions based on the selected actuarial cost method used to fund the plan. The UAL is the present value of future employer contributions for service that has already been earned and is in addition to future normal cost contributions for active members. For a measure of funded status that is appropriate for assessing the sufficiency of plan assets to cover estimated termination liabilities, please see "Hypothetical Termination Liability" in the "Risk Analysis" section.

Projected Employer Contributions

The table below shows projected employer contributions (before cost sharing) for the next six fiscal years. Projected results reflect the adopted changes to the discount rate described in Appendix A, "Statement of Actuarial Data, Methods and Assumptions" of the Section 2 report. The projections also assume that all actuarial assumptions will be realized and that no further changes to assumptions, contributions, benefits, or funding will occur during the projection period.

	Required Contribution	Projected Future Employer Contributions (Assumes 7.00% Return for Fiscal Year 2018-19)				
Fiscal Year	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
Normal Cost %	25.540%	25.5%	25.5%	25.5%	25.5%	25.5%
UAL Payment	\$1,708,222	\$1,969,000	\$2,186,000	\$2,318,000	\$2,452,000	\$2,519,000

Changes in the UAL due to actuarial gains or losses as well as changes in actuarial assumptions or methods are amortized using a 5-year ramp up. For more information, please see "Amortization of the Unfunded Actuarial Accrued Liability" under "Actuarial Methods" in Appendix A of Section 2. This method phases in the impact of unanticipated changes in UAL over a 5-year period and attempts to minimize 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 where there is a large increase in UAL the relatively small amortization payments during the ramp up period could result in a funded ratio that is projected to decrease initially while the contribution impact of the increase in the UAL is phased in.

For projected contributions under alternate investment return scenarios, please see the "Future Investment Return Scenarios" in the "Risk Analysis" section.

Changes Since the Prior Year's Valuation

Benefits

None. This valuation generally reflects plan changes by amendments effective before the date of the report. Please refer to the "Plan's Major Benefit Options" and Appendix B of Section 2 for a summary of the plan provisions used in this valuation.

Actuarial Methods and Assumptions

In December of 2016 the CalPERS Board of Administration lowered the discount rate from 7.50 percent to 7.00 percent using a three-year phase-in beginning with the June 30, 2016 actuarial valuation. The minimum employer contributions for Fiscal Year 2020-21 determined in this valuation were calculated using a discount rate of 7.00 percent, payroll growth of 2.75 percent and an inflation rate of 2.50 percent. The projected employer contributions on Page 5 are calculated under the assumption that the discount rate remains at 7.00 percent going forward and that furthermore the realized rate of return on assets for Fiscal Year 2018-19 is 7.00 percent.

The decision to reduce the discount rate was primarily based on reduced capital market assumptions provided by external investment consultants and CalPERS investment staff. The specific decision adopted by the Board reflected recommendations from CalPERS staff and additional input from employer and employee stakeholder groups. Based on the investment allocation adopted by the Board and capital market assumptions, the reduced discount rate assumption provides a more realistic assumption for the long-term investment return of the fund.

CalPERS has implemented a new actuarial valuation software system for the June 30, 2018 valuation. With this new system we have refined and improved some of our calculation methodology. Any difference in liability between the old software and new software calculations is captured as a method change line item.

Subsequent Events

The CalPERS Board of Administration has adopted a new amortization policy effective with the June 30, 2019 actuarial valuation. The new policy shortens the period over which actuarial gains and losses are amortized from 30 years to 20 years with the payments computed using a level dollar amount. In addition, the new policy removes the 5-year ramp-up and ramp-down on UAL bases attributable to assumption changes and non-investment gains/losses. The new policy removes the 5-year ramp-down on investment gains/losses. These changes will apply only to new UAL bases established on or after June 30, 2019.

For inactive employers the new amortization policy imposes a maximum amortization period of 15 years for all unfunded accrued liabilities effective June 30, 2018. Furthermore, the plan actuary has the ability to shorten the amortization period on any valuation date based on the life expectancy of plan members and projected cash flow needs to the plan. The impact of this has been reflected in the current valuation results.

The contribution requirements determined in this actuarial valuation report are based on demographic and financial information as of June 30, 2018. Changes in the value of assets subsequent to that date are not reflected. Investment returns below the assumed rate of return will increase the required contribution, while investment returns above the assumed rate of return will decrease the required contribution.

This actuarial valuation report reflects statutory changes, regulatory changes and CalPERS Board actions through January 2019. Any subsequent changes or actions are not reflected.

Assets and Liabilities

- **Breakdown of Entry Age Normal Accrued Liability**
- **Allocation of Plan's Share of Pool's Experience/Assumption Change**
- **Development of Plan's Share of Pool's Market Value of Assets**
- **Schedule of Plan's Amortization Bases**
- **Amortization Schedule and Alternatives**
- **Employer Contribution History**
- **Funding History**

Breakdown of Entry Age Normal Accrued Liability

Active Members	\$	20,931,892
Transferred Members		2,975,756
Terminated Members		1,757
Members and Beneficiaries Receiving Payments		67,201,952
Total	\$	91,111,357

Allocation of Plan's Share of Pool's Experience/Assumption Change

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	\$	91,111,357
2. Projected UAL balance at 6/30/18		22,808,796
3. Pool's Accrued Liability ¹		22,716,935,494
4. Sum of Pool's Individual Plan UAL Balances at 6/30/18 ¹		5,835,345,753
5. Pool's 2017/18 Investment & Asset (Gain)/Loss ¹		(166,826,991)
6. Pool's 2017/18 Other (Gain)/Loss ¹		79,829,358
7. Plan's Share of Pool's Asset (Gain)/Loss: $[(1) - (2)] \div [(3) - (4)] \times (5)$		(674,979)
8. Plan's Share of Pool's Other (Gain)/Loss: $(1) \div (3) \times (6)$		320,174
9. Plan's New (Gain)/Loss as of 6/30/2018: $(7) + (8)$		(354,805)
10. Increase in Pool's Accrued Liability due to Change in Assumptions ¹		623,352,408
11. Plan's Share of Pool's Change in Assumptions: $(1) \div (3) \times (10)$		2,500,094
12. Increase in Pool's Accrued Liability due to Change in Method ¹		146,565,925
13. Plan's Share of Pool's Change in Method: $(1) \div (3) \times (12)$		587,835

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

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

14. Plan's UAL: $(2) + (9) + (11) + (13)$	\$	25,541,921
15. Plan's Share of Pool's MVA: $(1) - (14)$	\$	65,569,436

Schedule of Plan's Amortization Bases

On the next page 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 fiscal year.

- The assets, liabilities, and funded status of the plan are measured as of the valuation date: June 30, 2018.
- The required employer contributions determined by the valuation are for the fiscal year beginning two years after the valuation date: Fiscal Year 2020-21.

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

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

Schedule of Plan's Amortization Bases

Reason for Base	Date Established	Ramp Up/Down 2020-21	Escalation Rate	Amortization Period	Amounts for Fiscal 2020-21					
					Balance 6/30/18	Payment 2018-19	Balance 6/30/19	Payment 2019-20	Balance 6/30/20	Scheduled Payment for 2020-21
SHARE OF PRE-2013 POOL UAL	06/30/13	No Ramp	2.750%	17	\$7,337,507	\$567,743	\$7,263,855	\$583,177	\$7,169,082	\$591,555
NON-ASSET (GAIN)/LOSS	06/30/13	100% →	2.750%	25	\$(107,824)	\$(5,717)	\$(109,458)	\$(7,342)	\$(109,525)	\$(7,430)
ASSET (GAIN)/LOSS	06/30/13	100% →	2.750%	25	\$8,791,411	\$466,151	\$8,924,619	\$598,636	\$8,930,108	\$605,792
NON-ASSET (GAIN)/LOSS	06/30/14	100% →	2.750%	26	\$81,215	\$3,238	\$83,551	\$4,435	\$84,812	\$5,608
ASSET (GAIN)/LOSS	06/30/14	100% →	2.750%	26	\$(6,619,908)	\$(263,893)	\$(6,810,329)	\$(361,507)	\$(6,913,106)	\$(457,142)
ASSUMPTION CHANGE	06/30/14	100% →	2.750%	16	\$4,378,124	\$240,860	\$4,435,445	\$329,883	\$4,404,693	\$418,839
NON-ASSET (GAIN)/LOSS	06/30/15	80% ↗	2.750%	27	\$(14,240)	\$(384)	\$(14,840)	\$(592)	\$(15,266)	\$(798)
ASSET (GAIN)/LOSS	06/30/15	80% ↗	2.750%	27	\$3,925,138	\$105,915	\$4,090,338	\$163,239	\$4,207,806	\$220,085
NON-ASSET (GAIN)/LOSS	06/30/16	60% ↗	2.750%	28	\$(778,754)	\$(10,807)	\$(822,088)	\$(22,209)	\$(856,661)	\$(33,666)
ASSET (GAIN)/LOSS	06/30/16	60% ↗	2.750%	28	\$4,790,550	\$66,477	\$5,057,124	\$136,617	\$5,269,805	\$207,096
ASSUMPTION CHANGE	06/30/16	60% ↗	2.750%	18	\$1,487,490	\$28,069	\$1,562,580	\$57,676	\$1,612,300	\$87,781
NON-ASSET (GAIN)/LOSS	06/30/17	40% ↗	2.750%	29	\$57,246	\$0	\$61,253	\$851	\$64,660	\$1,719
ASSET (GAIN)/LOSS	06/30/17	40% ↗	2.750%	29	\$(2,272,396)	\$0	\$(2,431,464)	\$(33,781)	\$(2,566,723)	\$(68,228)
ASSUMPTION CHANGE	06/30/17	40% ↗	2.750%	19	\$1,753,237	\$(61,631)	\$1,939,715	\$36,639	\$2,037,595	\$74,302
NON-ASSET (GAIN)/LOSS	06/30/18	20% ↗	2.750%	30	\$320,174	\$0	\$342,586	\$0	\$366,567	\$5,007
ASSET (GAIN)/LOSS	06/30/18	20% ↗	2.750%	30	\$(674,979)	\$0	\$(722,227)	\$0	\$(772,783)	\$(10,555)
ASSUMPTION CHANGE	06/30/18	20% ↗	2.750%	20	\$2,500,094	\$(56,570)	\$2,733,617	\$(58,125)	\$2,985,096	\$55,656
METHOD CHANGE	06/30/18	20% ↗	2.750%	20	\$587,835	\$(1,306)	\$630,335	\$(1,342)	\$675,846	\$12,601
TOTAL					\$25,541,920	\$1,078,145	\$26,214,612	\$1,426,255	\$26,574,306	\$1,708,222

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/Assumption Change" earlier in this section. These (gain)/loss bases will be amortized according to Board policy over 30 years with a 5-year ramp-up.

If the total Unfunded Liability is negative (i.e., plan has a surplus), the scheduled payment is \$0, because the minimum required contribution under PEPRa must be at least equal to the normal cost.

Amortization Schedule and Alternatives

The amortization schedule on the previous page shows the minimum contributions required according to CalPERS amortization policy. There has been considerable interest from many agencies in paying off these unfunded accrued liabilities sooner and the possible savings in doing so. As a result, we have provided alternate amortization schedules to help analyze the current amortization schedule and illustrate the advantages 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) alternate "fresh start" amortization schedules using two sample periods that would both result in interest savings relative to the current amortization schedule. Note that the payments under each alternate scenario increase by 2.75 percent for each year into the future.

The Current Amortization Schedule typically contains individual bases that are both positive and negative. Positive bases result from plan changes, assumption changes or plan experience that result in increases to unfunded liability. Negative bases result from plan changes, assumption changes or plan experience that result in decreases to 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:

- A positive total unfunded liability with a negative total payment,
- A negative total unfunded liability with a positive total payment, or
- Total payments that completely amortize the unfunded liability over a very short period of time

In any year where 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 a reasonable period.

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

Amortization Schedule and Alternatives

Date	<u>Current Amortization Schedule</u>		<u>Alternate Schedules</u>			
	Balance	Payment	15 Year Amortization		10 Year Amortization	
			Balance	Payment	Balance	Payment
6/30/2020	26,574,305	1,708,222	26,574,305	2,396,835	26,574,305	3,276,603
6/30/2021	26,667,508	1,969,429	25,955,201	2,462,748	25,045,162	3,366,710
6/30/2022	26,497,040	2,185,833	25,224,578	2,530,474	23,315,772	3,459,294
6/30/2023	26,090,789	2,318,196	24,372,756	2,600,062	21,369,554	3,554,425
6/30/2024	25,519,184	2,451,843	23,389,324	2,671,564	19,188,698	3,652,171
6/30/2025	24,769,320	2,519,269	22,263,090	2,745,032	16,754,071	3,752,606
6/30/2026	23,897,220	2,588,549	20,982,024	2,820,520	14,045,130	3,855,803
6/30/2027	22,892,410	2,659,734	19,533,197	2,898,084	11,039,816	3,961,837
6/30/2028	21,743,629	2,732,877	17,902,719	2,977,782	7,714,447	4,070,788
6/30/2029	20,438,773	2,808,031	16,075,668	3,059,671	4,043,602	4,182,735
6/30/2030	18,964,838	2,885,252	14,036,017	3,143,812		
6/30/2031	17,307,849	2,964,596	11,766,554	3,230,266		
6/30/2032	15,452,796	2,930,122	9,248,799	3,319,099		
6/30/2033	13,503,550	2,891,510	6,462,913	3,410,374		
6/30/2034	11,457,797	2,805,780	3,387,599	3,504,159		
6/30/2035	9,357,521	2,657,340				
6/30/2036	7,263,773	2,393,259				
6/30/2037	5,296,631	1,307,316				
6/30/2038	4,315,097	1,123,816				
6/30/2039	3,454,669	978,228				
6/30/2040	2,684,609	887,698				
6/30/2041	1,954,290	700,560				
6/30/2042	1,366,425	666,487				
6/30/2043	772,655	527,697				
6/30/2044	280,887	269,910				
6/30/2045	21,352	22,087				
6/30/2046						
6/30/2047						
6/30/2048						
6/30/2049						
Totals		49,953,642		43,770,481		37,132,971
Interest Paid		23,379,337		17,196,175		10,558,666
Estimated Savings				6,183,161		12,820,670

Employer Contribution History

The table below provides a recent history of the required employer contributions for the plan, as determined by the annual actuarial valuation. It does not account for prepayments or benefit changes made during a fiscal year.

Fiscal Year	Employer Normal Cost	Unfunded Liability Payment (\$)
2016 - 17	21.230%	\$755,232
2017 - 18	21.418%	\$936,513
2018 - 19	22.346%	\$1,197,652
2019 - 20	23.654%	\$1,485,723
2020 - 21	25.540%	\$1,708,222

Funding History

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

Valuation Date		Accrued Liability (AL)		Share of Pool's Market Value of Assets (MVA)		Plan's Share of Pool's Unfunded Liability	Funded Ratio		Annual Covered Payroll
06/30/2011	\$	60,452,902	\$	43,313,227	\$	17,139,675	71.7%	\$	5,210,341
06/30/2012		63,382,845		42,847,766		20,535,079	67.6%		4,865,092
06/30/2013		66,292,581		47,576,183		18,716,398	71.8%		4,773,335
06/30/2014		71,547,336		58,842,584		12,704,752	82.2%		4,622,908
06/30/2015		75,115,894		58,735,321		16,380,573	78.2%		4,720,142
06/30/2016		79,779,856		58,072,244		21,707,612	72.8%		4,616,986
06/30/2017		84,570,154		62,493,962		22,076,192	73.9%		4,322,818
06/30/2018		91,111,357		65,569,436		25,541,921	72.0%		4,321,498

Risk Analysis

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

Future Investment Return Scenarios

Analysis was performed to determine the effects of various future investment returns on required employer contributions. The projections below provide a range of results based on five investment return scenarios assumed to occur during the next four fiscal years (2018-19, 2019-20, 2020-21 and 2021-22). The projections also assume that all other actuarial assumptions will be realized and that no further changes to assumptions, contributions, benefits, or funding will occur.

For fiscal years 2018-19, 2019-20, 2020-21, and 2021-22, each scenario assumes an alternate fixed annual return. The fixed return assumptions for the five scenarios are 1.0 percent, 4.0 percent, 7.0 percent, 9.0 percent and 12.0 percent.

These alternate investment returns were chosen based on stochastic analysis of possible future investment returns over the four-year period ending June 30, 2022. Using the expected returns and volatility of the asset classes in which the funds are invested, we produced five thousand stochastic outcomes for this period based on the most recently completed Asset Liability Management process. We then selected annual returns that approximate the 5th, 25th, 50th, 75th, and 95th percentiles for these outcomes. For example, of all the 4-year outcomes generated in the stochastic analysis, approximately 25 percent of them had an average annual return of 4.0 percent or less.

Required contributions outside of this range are also possible. In particular, whereas it is unlikely that investment returns will average less than 1.0 percent or greater than 12.0 percent over this four-year period, the possibility of a single investment return less than 1.0 percent or greater than 12.0 percent in any given year is much greater.

Assumed Annual Return From 2019-20 through 2021-22	Projected Employer Contributions			
	2021-22	2022-23	2023-24	2024-25
1.0%				
Normal Cost	25.5%	25.5%	25.5%	25.5%
UAL Contribution	\$2,067,000	\$2,479,000	\$2,904,000	\$3,429,000
4.0%				
Normal Cost	25.5%	25.5%	25.5%	25.5%
UAL Contribution	\$2,018,000	\$2,334,000	\$2,617,000	\$2,955,000
7.0%				
Normal Cost	25.5%	25.5%	25.5%	25.5%
UAL Contribution	\$1,969,000	\$2,186,000	\$2,318,000	\$2,452,000
9.0%				
Normal Cost	26.0%	26.4%	26.9%	27.3%
UAL Contribution	\$1,944,000	\$2,115,000	\$2,180,000	\$2,219,000
12.0%				
Normal Cost	26.0%	26.4%	26.9%	27.3%
UAL Contribution	\$1,896,000	\$1,964,000	\$1,865,000	\$1,673,000

In addition, the projections above reflect the recent changes to the new amortization policy effective with the June 30, 2019 valuation. The projections above incorporate the impact of the CalPERS risk mitigation policy which reduces the discount rate when investment returns are above specified trigger points.

Discount Rate Sensitivity

Shown below are various valuation results as of June 30, 2018 assuming alternate discount rates. Results are shown using the current discount rate of 7.0 percent as well as alternate discount rates of 6.0 percent and 8.0 percent. The rates of 6.0 percent and 8.0 percent were selected since they illustrate the impact of a 1 percent increase or decrease to the 7.0 percent assumption. This analysis shows the potential plan impacts if the PERF were to realize investment returns of 6.0 percent or 8.0 percent over the long-term.

This type of analysis gives the reader a sense of the long-term risk to required contributions. For a measure of funded status that is appropriate for assessing the sufficiency of plan assets to cover estimated termination liabilities, please see "Hypothetical Termination Liability" at the end of this section.

Sensitivity Analysis				
As of June 30, 2018	Plan's Total Normal Cost	Accrued Liability	Unfunded Accrued Liability	Funded Status
7.0% (current discount rate)	34.530%	\$91,111,357	\$25,541,921	72.0%
6.0%	43.524%	\$103,632,676	\$38,063,240	63.3%
8.0%	27.688%	\$80,865,509	\$15,296,073	81.1%

Mortality Rate Sensitivity

The following table looks at the change in the June 30, 2018 plan costs and funded ratio under two different longevity scenarios, namely assuming post-retirement rates of mortality are 10 percent lower or 10 percent higher than our current mortality assumptions adopted in 2017. This type of analysis highlights the impact on the plan of improving or worsening mortality over the long-term.

As of June 30, 2018	Current Mortality	10% Lower Mortality Rates	10% Higher Mortality Rates
a) Accrued Liability	\$91,111,357	\$92,457,350	\$89,861,031
b) Market Value of Assets	\$65,569,436	\$65,569,436	\$65,569,436
c) Unfunded Liability (Surplus) [(a)-(b)]	\$25,541,921	\$26,887,914	\$24,291,595
d) Funded Status	72.0%	70.9%	73.0%

A 10 percent increase (decrease) in assumed mortality rates over the long-term would result in approximately a 1.0 percent increase (decrease) to the funded ratio.

Inflation Rate Sensitivity

The following analysis looks at the change in the June 30, 2018 plan costs and funded ratio under two different inflation rate scenarios, namely assuming the liability inflation rate is 1 percent lower or 1 percent higher than the current valuation inflation rate assumption of 2.50%, while holding the discount rate fixed at 7.0%. This type of analysis highlights the impact on the plan of increased or decreased inflation of active salaries and retiree COLAs over the long-term.

As of June 30, 2018	Current Inflation Rate	-1% Inflation Rate	+1% Inflation Rate
a) Accrued Liability	\$91,111,357	\$85,198,324	\$96,074,623
b) Market Value of Assets	\$65,569,436	\$65,569,436	\$65,569,436
c) Unfunded Liability (Surplus) [(a)-(b)]	\$25,541,921	\$19,628,888	\$30,505,187
d) Funded Status	72.0%	77.0%	68.2%

A decrease of 1 percent in the liability inflation rate (2.50 percent to 1.50 percent) reduces the Accrued Liability by 6.5 percent. However, a 1 percent increase in the liability inflation rate (2.50 percent to 3.50 percent) increases the Accrued Liability by 5.4 percent.

Maturity Measures

As pension plans mature they become much more sensitive to risks than plans that are less mature. Understanding plan maturity and how it affects the ability of a pension plan to tolerate risk is important in understanding how the plan is impacted by investment return volatility, other economic variables and changes in longevity or other demographic assumptions. One way to look at the maturity level of CalPERS and its plans is to look at the ratio of a plan's retiree liability to its total liability. A pension plan in its infancy will have a very low ratio of retiree liability to total liability. As the plan matures, the ratio starts increasing. A mature plan will often have a ratio above 0.60 to 0.65. For both CalPERS and other retirement systems in the United States, these ratios have been steadily increasing in recent years.

Ratio of Retiree Accrued Liability to Total Accrued Liability	June 30, 2017	June 30, 2018
1. Retired Accrued Liability	60,448,349	67,201,952
2. Total Accrued Liability	84,570,154	91,111,357
3. Ratio of Retiree AL to Total AL [(1) / (2)]	0.71	0.74

Another way to look at the maturity level of CalPERS and its plans is to look at the ratio of actives to retirees. 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 starts declining. A mature plan will often have a ratio near or below one. The average support ratio for CalPERS public agency plans is 1.25.

Support Ratio	June 30, 2017	June 30, 2018
1. Number of Actives	32	31
2. Number of Retirees	73	79
3. Support Ratio [(1) / (2)]	0.44	0.39

Actuarial calculations are based on a number of assumptions about long-term demographic and economic behavior. Unless these assumptions (e.g., terminations, deaths, disabilities, retirements, salary growth, and 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 (AVR)

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

Liability Volatility Ratio (LVR)

Plans that have higher liability-to-payroll ratios experience more volatile employer contributions (as a percentage of payroll) due to investment return and changes in liability. For example, a plan with a liability-to-payroll ratio of 8 is expected to have twice the contribution volatility of a plan with a liability-to-payroll ratio of 4. The liability volatility ratio is also shown in the table below. It should be noted that this ratio indicates a longer-term potential for contribution volatility. The asset volatility ratio, described above, will tend to move closer to the liability volatility ratio as the plan matures.

Contribution Volatility	June 30, 2017		June 30, 2018	
1. Market Value of Assets	\$	62,493,962	\$	65,569,436
2. Payroll		4,322,818		4,321,498
3. Asset Volatility Ratio (AVR) [(1) / (2)]		14.5		15.2
4. Accrued Liability	\$	84,570,154	\$	91,111,357
5. Liability Volatility Ratio (LVR) [(4) / (2)]		19.6		21.1
6. Accrued Liability (7.00% discount rate)		87,026,963		91,111,357
7. Projected Liability Volatility Ratio [(6) / (2)]		20.1		21.1

Hypothetical Termination Liability

The hypothetical termination liability is an estimate of the financial position of the plan had the contract with CalPERS been terminated as of June 30, 2018. The plan liability on a termination basis is calculated differently compared to the plan's ongoing funding liability. For the hypothetical termination liability calculation, both compensation and service are frozen as of the valuation date and no future pay increases or service accruals are assumed. This measure of funded status is not appropriate for assessing the need for future employer contributions in the case of an ongoing plan, that is, for an employer that continues to provide CalPERS retirement benefits to active employees.

A more conservative investment policy and asset allocation strategy was adopted by the CalPERS 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 funding risk is limited. However, this asset allocation has a lower expected rate of return than the PERF and consequently, a lower discount rate is assumed. The lower discount rate for the Terminated Agency Pool results in higher liabilities for terminated plans.

The effective termination discount rate will depend on actual market rates of return for risk-free securities on the date of termination. As market discount rates are variable, the table below shows a range for the hypothetical termination liability based on the lowest and highest interest rates observed during an approximate 2-year period centered around the valuation date.

Market Value of Assets (MVA)	Hypothetical Termination Liability^{1,2} @ 2.50%	Funded Status	Unfunded Termination Liability @ 2.50%	Hypothetical Termination Liability^{1,2} @ 3.25%	Funded Status	Unfunded Termination Liability @ 3.25%
\$65,569,436	\$168,330,735	39.0%	\$102,761,299	\$153,407,387	42.7%	\$87,837,951

¹ The hypothetical liabilities calculated above include a 5 percent mortality contingency load in accordance with Board policy. Other actuarial assumptions can be found in Appendix A of the Section 2 report.

² The current discount rate assumption used for termination valuations is a weighted average of the 10-year and 30-year U.S. Treasury yields where the weights are based on matching asset and liability durations as of the termination date. The discount rates used in the table are based on 20-year Treasury bonds, rounded to the nearest quarter percentage point, which is a good proxy for most plans. The 20-year Treasury yield was 2.91 percent on June 30, 2018, and was 2.83 percent on January 31, 2019.

In order to terminate the plan, you must first contact our Retirement Services Contract Unit to initiate a Resolution of Intent to Terminate. The completed Resolution will allow the plan actuary to give you a preliminary termination valuation with a more up-to-date estimate of the plan liabilities. CalPERS advises you to consult with the plan actuary before beginning this process.

Participant Data

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

	June 30, 2017	June 30, 2018
Reported Payroll	\$ 4,322,818	\$ 4,321,498
Projected Payroll for Contribution Purposes	\$ 4,706,483	\$ 4,687,916
Number of Members		
Active	32	31
Transferred	17	13
Separated	1	1
Retired	73	79

List of Class 1 Benefit Provisions

This plan has the additional 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 your agency has contracted. A description of principal standard and optional plan provisions is in the following section of this Appendix.

	Benefit Group		
Member Category	Police	Police	
Demographics			
Actives	Yes	No	
Transfers/Separated	Yes	No	
Receiving	Yes	Yes	
Benefit Provision			
Benefit Formula	3% @ 50	2% @ 50	
Social Security Coverage	No	No	
Full/Modified	Full	Full	
Employee Contribution Rate	9.00%		
Final Average Compensation Period	One Year	One Year	
Sick Leave Credit	Yes	No	
Non-Industrial Disability	Standard	Standard	
Industrial Disability	Standard	Standard	
Pre-Retirement Death Benefits			
Optional Settlement 2	Yes	No	
1959 Survivor Benefit Level	Level 4	Level 4	
Special	Yes	Yes	
Alternate (firefighters)	No	No	
Post-Retirement Death Benefits			
Lump Sum	\$500	\$500	
Survivor Allowance (PRSA)	Yes	Yes	
COLA	2%	2%	

Section 2

CALIFORNIA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

**Section 2 may be found on the CalPERS website
(www.calpers.ca.gov) in the Forms and
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 2019

PEPRA Safety Police Plan of the Town of Los Gatos

(CalPERS ID: 4589482285)

Annual Valuation Report as of June 30, 2018

Dear Employer,

Attached to this letter, you will find the June 30, 2018 actuarial valuation report of your CalPERS pension plan. **Provided in this report is the determination of the minimum required employer contributions for Fiscal Year 2020-21.** 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, 2018.

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 or Safety Risk Pool Actuarial Valuation Report as appropriate.

Your June 30, 2018 actuarial valuation report contains important actuarial information about your pension plan at CalPERS. Your assigned CalPERS staff actuary, whose signature appears in the Actuarial Certification section on page 1, is available to discuss the report with you after August 1, 2019.

Actuarial valuations are based on assumptions regarding future plan experience including investment return and payroll growth, eligibility for the types of benefits provided, and longevity among retirees. The CalPERS Board of Administration adopts these assumptions after considering the advice of CalPERS actuarial and investment teams and other professionals. Each actuarial valuation reflects all prior differences between actual and assumed experience and adjusts the contribution rates as needed. This valuation is based on an investment return assumption of 7.0% which was adopted by the board in December 2016. Other assumptions used in this report are those recommended in the CalPERS Experience Study and Review of Actuarial Assumptions report from December 2017.

Required Contribution

The exhibit below displays the minimum employer contributions, before any cost sharing, for Fiscal Year 2020-21 along with estimates of the required contributions for Fiscal Year 2021-22. Member contributions other than cost sharing (whether paid by the employer or the employee) are in addition to the results shown below. **The employer contributions in this report do not reflect any cost sharing arrangements you may have with your employees.**

Fiscal Year	Employer Normal Cost Rate	Employer Amortization of Unfunded Accrued Liability	PEPRA Employee Rate
2020-21	13.884%	\$15,282	13.750%
<i>Projected Results</i>			
2021-22	13.9%	\$16,000	TBD

The actual investment return for Fiscal Year 2018-19 was not known at the time this report was prepared. The projections above assume the investment return for that year would be 7.00 percent. ***If the actual investment return for Fiscal Year 2018-19 differs from 7.00 percent, the actual contribution requirements for the projected years will differ from those shown above.*** For additional details regarding the assumptions and methods used for these projections please refer to the "Projected Employer Contributions" in the "Highlights and Executive Summary" section. This section also contains projected required contributions through fiscal year 2025-26.

Changes from Previous Year's Valuation

CalPERS continues to strive to provide comprehensive risk assessments regarding plan funding and sustainability consistent with the Board of Administration's pension and investment beliefs. Your report this year includes new metrics on plan maturity in recognition of the fact that most pension plans at CalPERS are maturing as anticipated. As plans mature, they become more sensitive to risks than plans that are less mature. The "Risk Analysis" section of your report will help you understand how your plan is affected by investment return volatility and other economic assumptions. We have included plan sensitivity analysis with respect to longevity and inflation to further that discussion and encourage you to review our most recent Annual Review of Funding Levels and Risks report on our website that takes a holistic view of the system.

Upcoming Change for June 30, 2019 Valuations

The CalPERS Board of Administration has adopted a new amortization policy effective with the June 30, 2019 actuarial valuation. The new policy shortens the period over which actuarial gains and losses are amortized from 30 years to 20 years with the payments computed using a level dollar amount. In addition, the new policy removes the 5-year ramp-up and ramp-down on Unfunded Accrued Liability (UAL) bases attributable to assumption changes and non-investment gains/losses. The new policy removes the 5-year ramp-down on investment gains/losses. These changes will apply only to new UAL bases established on or after June 30, 2019.

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

Further descriptions of general changes are included in the "Highlights and Executive Summary" section and in Appendix A, "Statement of Actuarial Data, Methods and Assumptions" of the Section 2 report.

We understand that you might have a number of questions about these results. While we are very interested in discussing these results with your agency, in the interest of allowing us to give every public agency their results, we ask that you wait until after August 1 2019 to contact us with actuarial questions.

If you have other questions, please call our customer contact center at (888) CalPERS or **(888-225-7377)**.

Sincerely,



SCOTT TERANDO
Chief Actuary



**Actuarial Valuation
as of June 30, 2018**

**for the
PEPRA Safety Police Plan
of the
Town of Los Gatos
(CalPERS ID: 4589482285)**

**Required Contributions
for Fiscal Year
July 1, 2020 - June 30, 2021**

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Section 1 – Plan Specific Information

Section 2 – Risk Pool Actuarial Valuation Information

Section 1

CALIFORNIA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

Plan Specific Information for the PEPRA Safety Police Plan of the Town of Los Gatos

**(CalPERS ID: 4589482285)
(Valuation Rate Plan ID: 25874)**

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Actuarial Certification

Section 1 of this report is based on the member and financial data contained in our records as of June 30, 2018 which was provided by your agency and the benefit provisions under your contract with CalPERS. Section 2 of this report is based on the member and financial data as of June 30, 2018 provided by employers participating in the Safety Risk Pool to which the plan belongs and benefit provisions under the CalPERS contracts for those agencies.

As set forth in Section 2 of this report, the pool actuaries have certified that, in their opinion, the valuation of the risk pool containing your PEPRA Safety Police Plan has been performed in accordance with generally accepted actuarial principles consistent with standards of practice prescribed by the Actuarial Standards Board, and that the assumptions and methods are internally consistent and reasonable for the risk pool as of the date of this valuation and as prescribed by the CalPERS Board of Administration according to provisions set forth in the California Public Employees' Retirement Law.

Having relied upon the information set forth in Section 2 of this report and based on the census and benefit provision information for the plan, it is my opinion as the plan actuary that Unfunded Accrued Liability amortization bases as of June 30, 2018 and employer contribution as of July 1, 2020, have been properly and accurately determined in accordance with the principles and standards stated above.

The undersigned is an actuary for CalPERS, a member of both the American Academy of Actuaries and Society of Actuaries and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.



DAVID CLEMENT, ASA, MAAA, EA
Senior Pension Actuary, CalPERS
Plan Actuary

Highlights and Executive Summary

- **Introduction**
- **Purpose of Section 1**
- **Required Employer Contributions**
- **Plan's Funded Status**
- **Projected Employer Contributions**
- **Changes Since the Prior Year's Valuation**
- **Subsequent Events**

Introduction

This report presents the results of the June 30, 2018 actuarial valuation of the PEPRA Safety Police Plan of the Town of Los Gatos of the California Public Employees' Retirement System (CalPERS). This actuarial valuation sets the required employer contributions for Fiscal Year 2020-21.

Purpose of Section 1

This Section 1 report for the PEPRA Safety Police Plan of the Town of Los Gatos of the California Public Employees' Retirement System (CalPERS) was prepared by the plan actuary in order to:

- Set forth the assets and accrued liabilities of this plan as of June 30, 2018;
- Determine the minimum required employer contribution for this plan for the fiscal year July 1, 2020 through June 30, 2021; and
- Provide actuarial information as of June 30, 2018 to the CalPERS Board of Administration and other interested parties.

The pension funding information presented in this report should not be used in financial reports subject to GASB Statement No. 68 for a Cost Sharing Employer Defined Benefit Pension Plan. A separate accounting valuation report for such purposes is available from CalPERS and details for ordering are available on our website.

The measurements shown in this actuarial valuation may not be applicable for other purposes. The employer should contact their 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; and changes in plan provisions or applicable law.

California Actuarial Advisory Panel Recommendations

This report includes all the basic disclosure elements as described in the *Model Disclosure Elements for Actuarial Valuation Reports* recommended in 2011 by the California Actuarial Advisory Panel (CAAP), with the exception of including the original base amounts of the various components of the unfunded liability in the Schedule of Amortization Bases shown on page 10.

Additionally, this report includes the following "Enhanced Risk Disclosures" also recommended by the CAAP in the Model Disclosure Elements document and consistent with the recommendations of Actuarial Standard of Practice No. 51:

- A "Scenario Test," projecting future results under different investment income scenarios.
- A "Sensitivity Analysis," showing the impact on current valuation results using alternative discount rates of 6.0 percent and 8.0 percent.
- A "Sensitivity Analysis," showing the impact on current valuation results using a 1.0 percent plus or minus change in the inflation rate.
- A "Sensitivity Analysis," showing the impact on current valuation results assuming post-retirement rates of mortality are 10 percent lower or 10 percent higher than our current mortality assumptions adopted in 2017. This type of analysis highlights the impact on the plan of improving or worsening mortality over the long-term.
- Plan maturity measures which indicate how sensitive a plan may be to the risks noted above.

Required Employer Contributions

		Fiscal Year
Required Employer Contributions		2020-21
Employer Normal Cost Rate		13.884%
Plus, Either		
1) Monthly Employer Dollar UAL Payment	\$	1,273.54
Or		
2) Annual UAL Prepayment Option*	\$	14,774
The total minimum required employer contribution is the sum of the Plan's Employer Normal Cost Rate (expressed as a percentage of payroll) plus the Employer Unfunded Accrued Liability (UAL) Contribution Amount (billed monthly in dollars).		
* Only the UAL portion of the employer contribution can be prepaid (which must be received in full no later than July 31). Any prepayment totaling over \$5 million requires a 72-hour notice email to FCSD_public_agency_wires@calpers.ca.gov . Plan Normal Cost contributions will be made as part of the payroll reporting process. If there is contractual cost sharing or other change, this amount will change.		
In accordance with Sections 20537 and 20572 of the Public Employees' Retirement Law, if a contracting agency fails to remit the required contributions when due, interest and penalties may apply.		

	Fiscal Year	Fiscal Year
	2019-20	2020-21
Development of Normal Cost as a Percentage of Payroll¹		
Base Total Normal Cost for Formula	25.034%	26.044%
Surcharge for Class 1 Benefits ²		
a) PRSA	1.502%	1.590%
Phase out of Normal Cost Difference ³	0.000%	0.000%
Plan's Total Normal Cost	26.536%	27.634%
Plan's Employee Contribution Rate ⁴	12.750%	13.750%
Employer Normal Cost Rate	13.786%	13.884%
Projected Payroll for the Contribution Fiscal Year	\$ 491,619	\$ 740,113
Estimated Employer Contributions Based on Projected Payroll		
Plan's Estimated Employer Normal Cost	\$ 67,775	\$ 102,757
Plan's Payment on Amortization Bases ⁵	6,059	15,282
% of Projected Payroll (illustrative only)	1.233%	2.065%
Estimated Total Employer Contribution	\$ 73,834	\$ 118,039
% of Projected Payroll (illustrative only)	15.019%	15.949%

¹ The results shown for Fiscal Year 2019-20 reflect the prior year valuation and may not take into account any lump sum payment, side fund payoff, or rate adjustment made after April 30, 2018.

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

³ The normal cost difference is phased out over a five-year period. The phase out of normal cost difference is 100 percent for the first year of pooling, and is incrementally reduced by 20 percent of the original normal cost difference for each subsequent year. This is non-zero only for plans that joined a pool within the past 5 years. Most plans joined a pool June 30, 2003, when risk pooling was implemented.

⁴ For detail regarding the determination of the required PEPRA employee contribution rate see Section on PEPRA Member Contribution Rates.

⁵ See page 10 for a breakdown of the Amortization Bases.

Plan's Funded Status

		June 30, 2017		June 30, 2018
1. Present Value of Projected Benefits (PVB)	\$	1,705,277	\$	2,724,674
2. Entry Age Normal Accrued Liability (AL)		237,225		414,453
3. Plan's Market Value of Assets (MVA)		224,872		379,539
4. Unfunded Accrued Liability (UAL) [(2) - (3)]		12,353		34,914
5. Funded Ratio [(3) / (2)]		94.8%		91.6%

This measure of funded status is an assessment of the need for future employer contributions based on the selected actuarial cost method used to fund the plan. The UAL is the present value of future employer contributions for service that has already been earned and is in addition to future normal cost contributions for active members. For a measure of funded status that is appropriate for assessing the sufficiency of plan assets to cover estimated termination liabilities, please see "Hypothetical Termination Liability" in the "Risk Analysis" section.

Projected Employer Contributions

The table below shows projected employer contributions (before cost sharing) for the next six fiscal years. Projected results reflect the adopted changes to the discount rate described in Appendix A, "Statement of Actuarial Data, Methods and Assumptions" of the Section 2 report. The projections also assume that all actuarial assumptions will be realized and that no further changes to assumptions, contributions, benefits, or funding will occur during the projection period.

	Required Contribution	Projected Future Employer Contributions (Assumes 7.00% Return for Fiscal Year 2018-19)				
Fiscal Year	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
Normal Cost %	13.884%	13.9%	13.9%	13.9%	13.9%	13.9%
UAL Payment	\$15,282	\$16,000	\$16,000	\$17,000	\$0	\$0

Changes in the UAL due to actuarial gains or losses as well as changes in actuarial assumptions or methods are amortized using a 5-year ramp up. For more information, please see "Amortization of the Unfunded Actuarial Accrued Liability" under "Actuarial Methods" in Appendix A of Section 2. This method phases in the impact of unanticipated changes in UAL over a 5-year period and attempts to minimize 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 where there is a large increase in UAL the relatively small amortization payments during the ramp up period could result in a funded ratio that is projected to decrease initially while the contribution impact of the increase in the UAL is phased in.

For projected contributions under alternate investment return scenarios, please see the "Future Investment Return Scenarios" in the "Risk Analysis" section.

Changes Since the Prior Year's Valuation

Benefits

None. This valuation generally reflects plan changes by amendments effective before the date of the report. Please refer to the "Plan's Major Benefit Options" and Appendix B of Section 2 for a summary of the plan provisions used in this valuation.

Actuarial Methods and Assumptions

In December of 2016 the CalPERS Board of Administration lowered the discount rate from 7.50 percent to 7.00 percent using a three-year phase-in beginning with the June 30, 2016 actuarial valuation. The minimum employer contributions for Fiscal Year 2020-21 determined in this valuation were calculated using a discount rate of 7.00 percent, payroll growth of 2.75 percent and an inflation rate of 2.50 percent. The projected employer contributions on Page 5 are calculated under the assumption that the discount rate remains at 7.00 percent going forward and that furthermore the realized rate of return on assets for Fiscal Year 2018-19 is 7.00 percent.

The decision to reduce the discount rate was primarily based on reduced capital market assumptions provided by external investment consultants and CalPERS investment staff. The specific decision adopted by the Board reflected recommendations from CalPERS staff and additional input from employer and employee stakeholder groups. Based on the investment allocation adopted by the Board and capital market assumptions, the reduced discount rate assumption provides a more realistic assumption for the long-term investment return of the fund.

CalPERS has implemented a new actuarial valuation software system for the June 30, 2018 valuation. With this new system we have refined and improved some of our calculation methodology. Any difference in liability between the old software and new software calculations is captured as a method change line item.

Subsequent Events

The CalPERS Board of Administration has adopted a new amortization policy effective with the June 30, 2019 actuarial valuation. The new policy shortens the period over which actuarial gains and losses are amortized from 30 years to 20 years with the payments computed using a level dollar amount. In addition, the new policy removes the 5-year ramp-up and ramp-down on UAL bases attributable to assumption changes and non-investment gains/losses. The new policy removes the 5-year ramp-down on investment gains/losses. These changes will apply only to new UAL bases established on or after June 30, 2019.

For inactive employers the new amortization policy imposes a maximum amortization period of 15 years for all unfunded accrued liabilities effective June 30, 2018. Furthermore, the plan actuary has the ability to shorten the amortization period on any valuation date based on the life expectancy of plan members and projected cash flow needs to the plan. The impact of this has been reflected in the current valuation results.

The contribution requirements determined in this actuarial valuation report are based on demographic and financial information as of June 30, 2018. Changes in the value of assets subsequent to that date are not reflected. Investment returns below the assumed rate of return will increase the required contribution, while investment returns above the assumed rate of return will decrease the required contribution.

This actuarial valuation report reflects statutory changes, regulatory changes and CalPERS Board actions through January 2019. Any subsequent changes or actions are not reflected.

Assets and Liabilities

- **Breakdown of Entry Age Normal Accrued Liability**
- **Allocation of Plan's Share of Pool's Experience/Assumption Change**
- **Development of Plan's Share of Pool's Market Value of Assets**
- **Schedule of Plan's Amortization Bases**
- **Amortization Schedule and Alternatives**
- **Employer Contribution History**
- **Funding History**

Breakdown of Entry Age Normal Accrued Liability

Active Members	\$	411,573
Transferred Members		0
Terminated Members		2,880
Members and Beneficiaries Receiving Payments		0
Total	\$	414,453

Allocation of Plan's Share of Pool's Experience/Assumption Change

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	\$	414,453
2. Projected UAL balance at 6/30/18		23,277
3. Pool's Accrued Liability ¹		22,716,935,494
4. Sum of Pool's Individual Plan UAL Balances at 6/30/18 ¹		5,835,345,753
5. Pool's 2017/18 Investment & Asset (Gain)/Loss ¹		(166,826,991)
6. Pool's 2017/18 Other (Gain)/Loss ¹		79,829,358
7. Plan's Share of Pool's Asset (Gain)/Loss: $[(1) - (2)] \div [(3) - (4)] \times (5)$		(3,866)
8. Plan's Share of Pool's Other (Gain)/Loss: $(1) \div (3) \times (6)$		1,456
9. Plan's New (Gain)/Loss as of 6/30/2018: $(7) + (8)$		(2,409)
10. Increase in Pool's Accrued Liability due to Change in Assumptions ¹		623,352,408
11. Plan's Share of Pool's Change in Assumptions: $(1) \div (3) \times (10)$		11,373
12. Increase in Pool's Accrued Liability due to Change in Method ¹		146,565,925
13. Plan's Share of Pool's Change in Method: $(1) \div (3) \times (12)$		2,674

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

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

14. Plan's UAL: $(2) + (9) + (11) + (13)$	\$	34,914
15. Plan's Share of Pool's MVA: $(1) - (14)$	\$	379,539

Schedule of Plan's Amortization Bases

On the next page 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 fiscal year.

- The assets, liabilities, and funded status of the plan are measured as of the valuation date: June 30, 2018.
- The required employer contributions determined by the valuation are for the fiscal year beginning two years after the valuation date: Fiscal Year 2020-21.

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

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

Schedule of Plan's Amortization Bases

Reason for Base	Date Established	Ramp Up/Down 2020-21	Escalation Rate	Amortization Period	Balance 6/30/18	Payment 2018-19	Balance 6/30/19	Payment 2019-20	Amounts for Fiscal 2020-21	
									Balance 6/30/20	Scheduled Payment for 2020-21
FRESH START	06/30/18	No Ramp	2.750%	4	\$34,914	\$(11,068)	\$48,807	\$(3,329)	\$55,668	\$15,282
TOTAL					\$34,914	\$(11,068)	\$48,807	\$(3,329)	\$55,668	\$15,282

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/Assumption Change" earlier in this section. These (gain)/loss bases will be amortized according to Board policy over 30 years with a 5-year ramp-up.

If the total Unfunded Liability is negative (i.e., plan has a surplus), the scheduled payment is \$0, because the minimum required contribution under PEPRA must be at least equal to the normal cost.

Amortization Schedule and Alternatives

The amortization schedule on the previous page shows the minimum contributions required according to CalPERS amortization policy. There has been considerable interest from many agencies in paying off these unfunded accrued liabilities sooner and the possible savings in doing so. As a result, we have provided alternate amortization schedules to help analyze the current amortization schedule and illustrate the advantages 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) alternate "fresh start" amortization schedules using two sample periods that would both result in interest savings relative to the current amortization schedule. Note that the payments under each alternate scenario increase by 2.75 percent for each year into the future.

The Current Amortization Schedule typically contains individual bases that are both positive and negative. Positive bases result from plan changes, assumption changes or plan experience that result in increases to unfunded liability. Negative bases result from plan changes, assumption changes or plan experience that result in decreases to 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:

- A positive total unfunded liability with a negative total payment,
- A negative total unfunded liability with a positive total payment, or
- Total payments that completely amortize the unfunded liability over a very short period of time

In any year where 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 a reasonable period.

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

Amortization Schedule and Alternatives

Date	<u>Current Amortization Schedule</u>		<u>Alternate Schedules</u>			
	Balance	Payment	0 Year Amortization		0 Year Amortization	
			Balance	Payment	Balance	Payment
6/30/2020	55,667	15,282	N/A	N/A	N/A	N/A
6/30/2021	43,756	15,703				
6/30/2022	30,576	16,134				
6/30/2023	16,027	16,578				
6/30/2024						
6/30/2025						
6/30/2026						
6/30/2027						
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6/30/2046						
6/30/2047						
6/30/2048						
6/30/2049						
Totals		63,697		N/A		N/A
Interest Paid		8,030		N/A		N/A
Estimated Savings				N/A		N/A

Employer Contribution History

The table below provides a recent history of the required employer contributions for the plan, as determined by the annual actuarial valuation. It does not account for prepayments or benefit changes made during a fiscal year.

Fiscal Year	Employer Normal Cost	Unfunded Liability Payment (\$)
2017 - 18	12.729%	\$30
2018 - 19	12.965%	\$4,507
2019 - 20	13.786%	\$6,059
2020 - 21	13.884%	\$15,282

Funding History

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

Valuation Date		Accrued Liability (AL)		Share of Pool's Market Value of Assets (MVA)		Plan's Share of Pool's Unfunded Liability	Funded Ratio		Annual Covered Payroll
06/30/2015	\$	35,246	\$	33,422	\$	1,824	94.8%	\$	281,865
06/30/2016		126,390		115,322		11,068	91.2%		414,054
06/30/2017		237,225		224,872		12,353	94.8%		451,543
06/30/2018		414,453		379,539		34,914	91.6%		682,264

Risk Analysis

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

Future Investment Return Scenarios

Analysis was performed to determine the effects of various future investment returns on required employer contributions. The projections below provide a range of results based on five investment return scenarios assumed to occur during the next four fiscal years (2018-19, 2019-20, 2020-21 and 2021-22). The projections also assume that all other actuarial assumptions will be realized and that no further changes to assumptions, contributions, benefits, or funding will occur.

For fiscal years 2018-19, 2019-20, 2020-21, and 2021-22, each scenario assumes an alternate fixed annual return. The fixed return assumptions for the five scenarios are 1.0 percent, 4.0 percent, 7.0 percent, 9.0 percent and 12.0 percent.

These alternate investment returns were chosen based on stochastic analysis of possible future investment returns over the four-year period ending June 30, 2022. Using the expected returns and volatility of the asset classes in which the funds are invested, we produced five thousand stochastic outcomes for this period based on the most recently completed Asset Liability Management process. We then selected annual returns that approximate the 5th, 25th, 50th, 75th, and 95th percentiles for these outcomes. For example, of all the 4-year outcomes generated in the stochastic analysis, approximately 25 percent of them had an average annual return of 4.0 percent or less.

Required contributions outside of this range are also possible. In particular, whereas it is unlikely that investment returns will average less than 1.0 percent or greater than 12.0 percent over this four-year period, the possibility of a single investment return less than 1.0 percent or greater than 12.0 percent in any given year is much greater.

Assumed Annual Return From 2019-20 through 2021-22	Projected Employer Contributions			
	2021-22	2022-23	2023-24	2024-25
1.0%				
Normal Cost	13.9%	13.9%	13.9%	13.9%
UAL Contribution	\$16,000	\$18,000	\$20,000	\$5,700
4.0%				
Normal Cost	13.9%	13.9%	13.9%	13.9%
UAL Contribution	\$16,000	\$17,000	\$18,000	\$2,900
7.0%				
Normal Cost	13.9%	13.9%	13.9%	13.9%
UAL Contribution	\$16,000	\$16,000	\$17,000	\$0
9.0%				
Normal Cost	14.2%	14.6%	14.4%	14.7%
UAL Contribution	\$16,000	\$16,000	\$0	\$0
12.0%				
Normal Cost	14.2%	14.6%	14.4%	14.7%
UAL Contribution	\$15,000	\$0	\$0	\$0

In addition, the projections above reflect the recent changes to the new amortization policy effective with the June 30, 2019 valuation. The projections above incorporate the impact of the CalPERS risk mitigation policy which reduces the discount rate when investment returns are above specified trigger points.

Discount Rate Sensitivity

Shown below are various valuation results as of June 30, 2018 assuming alternate discount rates. Results are shown using the current discount rate of 7.0 percent as well as alternate discount rates of 6.0 percent and 8.0 percent. The rates of 6.0 percent and 8.0 percent were selected since they illustrate the impact of a 1 percent increase or decrease to the 7.0 percent assumption. This analysis shows the potential plan impacts if the PERF were to realize investment returns of 6.0 percent or 8.0 percent over the long-term.

This type of analysis gives the reader a sense of the long-term risk to required contributions. For a measure of funded status that is appropriate for assessing the sufficiency of plan assets to cover estimated termination liabilities, please see "Hypothetical Termination Liability" at the end of this section.

Sensitivity Analysis				
As of June 30, 2018	Plan's Total Normal Cost	Accrued Liability	Unfunded Accrued Liability	Funded Status
7.0% (current discount rate)	27.634%	\$414,453	\$34,914	91.6%
6.0%	34.443%	\$511,431	\$131,892	74.2%
8.0%	22.438%	\$339,100	\$(40,439)	111.9%

Mortality Rate Sensitivity

The following table looks at the change in the June 30, 2018 plan costs and funded ratio under two different longevity scenarios, namely assuming post-retirement rates of mortality are 10 percent lower or 10 percent higher than our current mortality assumptions adopted in 2017. This type of analysis highlights the impact on the plan of improving or worsening mortality over the long-term.

As of June 30, 2018	Current Mortality	10% Lower Mortality Rates	10% Higher Mortality Rates
a) Accrued Liability	\$414,453	\$420,199	\$408,976
b) Market Value of Assets	\$379,539	\$379,539	\$379,539
c) Unfunded Liability (Surplus) [(a)-(b)]	\$34,914	\$40,660	\$29,437
d) Funded Status	91.6%	90.3%	92.8%

A 10 percent increase (decrease) in assumed mortality rates over the long-term would result in approximately a 1.2 percent increase (decrease) to the funded ratio.

Inflation Rate Sensitivity

The following analysis looks at the change in the June 30, 2018 plan costs and funded ratio under two different inflation rate scenarios, namely assuming the liability inflation rate is 1 percent lower or 1 percent higher than the current valuation inflation rate assumption of 2.50%, while holding the discount rate fixed at 7.0%. This type of analysis highlights the impact on the plan of increased or decreased inflation of active salaries and retiree COLAs over the long-term.

As of June 30, 2018	Current Inflation Rate	-1% Inflation Rate	+1% Inflation Rate
a) Accrued Liability	\$414,453	\$362,527	\$466,313
b) Market Value of Assets	\$379,539	\$379,539	\$379,539
c) Unfunded Liability (Surplus) [(a)-(b)]	\$34,914	\$(17,012)	\$86,774
d) Funded Status	91.6%	104.7%	81.4%

A decrease of 1 percent in the liability inflation rate (2.50 percent to 1.50 percent) reduces the Accrued Liability by 12.5 percent. However, a 1 percent increase in the liability inflation rate (2.50 percent to 3.50 percent) increases the Accrued Liability by 12.5 percent.

Maturity Measures

As pension plans mature they become much more sensitive to risks than plans that are less mature. Understanding plan maturity and how it affects the ability of a pension plan to tolerate risk is important in understanding how the plan is impacted by investment return volatility, other economic variables and changes in longevity or other demographic assumptions. One way to look at the maturity level of CalPERS and its plans is to look at the ratio of a plan's retiree liability to its total liability. A pension plan in its infancy will have a very low ratio of retiree liability to total liability. As the plan matures, the ratio starts increasing. A mature plan will often have a ratio above 0.60 to 0.65. For both CalPERS and other retirement systems in the United States, these ratios have been steadily increasing in recent years.

Ratio of Retiree Accrued Liability to Total Accrued Liability	June 30, 2017	June 30, 2018
1. Retired Accrued Liability	0	0
2. Total Accrued Liability	237,225	414,453
3. Ratio of Retiree AL to Total AL [(1) / (2)]	0.00	0.00

Another way to look at the maturity level of CalPERS and its plans is to look at the ratio of actives to retirees. 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 starts declining. A mature plan will often have a ratio near or below one. The average support ratio for CalPERS public agency plans is 1.25.

Support Ratio	June 30, 2017	June 30, 2018
1. Number of Actives	4	6
2. Number of Retirees	0	0
3. Support Ratio [(1) / (2)]	N/A	N/A

Actuarial calculations are based on a number of assumptions about long-term demographic and economic behavior. Unless these assumptions (e.g., terminations, deaths, disabilities, retirements, salary growth, and 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 (AVR)

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

Liability Volatility Ratio (LVR)

Plans that have higher liability-to-payroll ratios experience more volatile employer contributions (as a percentage of payroll) due to investment return and changes in liability. For example, a plan with a liability-to-payroll ratio of 8 is expected to have twice the contribution volatility of a plan with a liability-to-payroll ratio of 4. The liability volatility ratio is also shown in the table below. It should be noted that this ratio indicates a longer-term potential for contribution volatility. The asset volatility ratio, described above, will tend to move closer to the liability volatility ratio as the plan matures.

Contribution Volatility	June 30, 2017		June 30, 2018	
1. Market Value of Assets	\$	224,872	\$	379,539
2. Payroll		451,543		682,264
3. Asset Volatility Ratio (AVR) [(1) / (2)]		0.5		0.6
4. Accrued Liability	\$	237,225	\$	414,453
5. Liability Volatility Ratio (LVR) [(4) / (2)]		0.5		0.6
6. Accrued Liability (7.00% discount rate)		247,061		414,453
7. Projected Liability Volatility Ratio [(6) / (2)]		0.5		0.6

Hypothetical Termination Liability

The hypothetical termination liability is an estimate of the financial position of the plan had the contract with CalPERS been terminated as of June 30, 2018. The plan liability on a termination basis is calculated differently compared to the plan's ongoing funding liability. For the hypothetical termination liability calculation, both compensation and service are frozen as of the valuation date and no future pay increases or service accruals are assumed. This measure of funded status is not appropriate for assessing the need for future employer contributions in the case of an ongoing plan, that is, for an employer that continues to provide CalPERS retirement benefits to active employees.

A more conservative investment policy and asset allocation strategy was adopted by the CalPERS 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 funding risk is limited. However, this asset allocation has a lower expected rate of return than the PERF and consequently, a lower discount rate is assumed. The lower discount rate for the Terminated Agency Pool results in higher liabilities for terminated plans.

The effective termination discount rate will depend on actual market rates of return for risk-free securities on the date of termination. As market discount rates are variable, the table below shows a range for the hypothetical termination liability based on the lowest and highest interest rates observed during an approximate 2-year period centered around the valuation date.

Market Value of Assets (MVA)	Hypothetical Termination Liability^{1,2} @ 2.50%	Funded Status	Unfunded Termination Liability @ 2.50%	Hypothetical Termination Liability^{1,2} @ 3.25%	Funded Status	Unfunded Termination Liability @ 3.25%
\$379,539	\$755,118	50.3%	\$375,579	\$613,197	61.9%	\$233,658

¹ The hypothetical liabilities calculated above include a 5 percent mortality contingency load in accordance with Board policy. Other actuarial assumptions can be found in Appendix A of the Section 2 report.

² The current discount rate assumption used for termination valuations is a weighted average of the 10-year and 30-year U.S. Treasury yields where the weights are based on matching asset and liability durations as of the termination date. The discount rates used in the table are based on 20-year Treasury bonds, rounded to the nearest quarter percentage point, which is a good proxy for most plans. The 20-year Treasury yield was 2.91 percent on June 30, 2018, and was 2.83 percent on January 31, 2019.

In order to terminate the plan, you must first contact our Retirement Services Contract Unit to initiate a Resolution of Intent to Terminate. The completed Resolution will allow the plan actuary to give you a preliminary termination valuation with a more up-to-date estimate of the plan liabilities. CalPERS advises you to consult with the plan actuary before beginning this process.

Participant Data

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

	June 30, 2017	June 30, 2018
Reported Payroll	\$ 451,543	\$ 682,264
Projected Payroll for Contribution Purposes	\$ 491,619	\$ 740,113
Number of Members		
Active	4	6
Transferred	0	0
Separated	0	1
Retired	0	0

List of Class 1 Benefit Provisions

This plan has the additional 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 your agency has contracted. A description of principal standard and optional plan provisions is in the following section of this Appendix.

	Benefit Group	
Member Category	Police	
Demographics		
Actives	Yes	
Transfers/Separated	Yes	
Receiving	No	
Benefit Provision		
Benefit Formula	2.7% @ 57	
Social Security Coverage	No	
Full/Modified	Full	
Employee Contribution Rate	12.75%	
Final Average Compensation Period	Three Year	
Sick Leave Credit	Yes	
Non-Industrial Disability	Standard	
Industrial Disability	Standard	
Pre-Retirement Death Benefits		
Optional Settlement 2	Yes	
1959 Survivor Benefit Level	Level 4	
Special	Yes	
Alternate (firefighters)	No	
Post-Retirement Death Benefits		
Lump Sum	\$500	
Survivor Allowance (PRSA)	Yes	
COLA	2%	

PEPRA Member Contribution Rates

The table below shows the determination of the PEPRA Member contribution rates based on 50 percent of the Total Normal Cost for each respective plan on June 30, 2018. Assembly Bill (AB) 340 created PEPRA that implemented new benefit formulas and a final compensation period as well as new contribution requirements for new employees. In accordance with Section Code 7522.30(b), "new members ... shall have an initial contribution rate of at least 50 percent of the normal cost rate." The normal cost for the plan is dependent on the benefit levels, actuarial assumptions and demographics of the plan particularly the entry age into the plan. Should the total normal cost of the plan change by one percent or more from the base total normal cost established for the plan, the new member rate shall be 50 percent of the new normal cost rounded to the nearest quarter percent.

Rate Plan Identifier	Benefit Group Name	Basis for Current Rate		Rates Effective July 1, 2020			
		Total Normal Cost	Member Rate	Total Normal Cost	Change	Change Needed	Member Rate
25874	Safety Police PEPRA Level	25.715%	12.750%	27.634%	1.919%	Yes	13.750%

Section 2

CALIFORNIA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

**Section 2 may be found on the CalPERS website
(www.calpers.ca.gov) in the Forms and
Publications section**



TOWN OF LOS GATOS
TOWN PENSION AND OPEB TRUSTS
OVERSIGHT COMMITTEE REPORT

MEETING DATE: 12/03/2019

ITEM NO: 4

ADDENDUM

DATE: December 2, 2019
TO: Town Pension and OPEB Trusts Oversight Committee
FROM: Laurel Prevetti, Town Manager
SUBJECT: Receive CalPERS Actuarial Valuations Reports as of June 30, 2018

REMARKS:

Attachment 4 includes public comment received between 11:01 a.m., Thursday, November 28, 2019 to 11:01 a.m., Monday, December 2, 2019.

Attachments previously received with the December 3, 2019 Staff Report:

1. CalPERS Annual Valuation Report as of June 30, 2018 – Miscellaneous Plan of the Town of Los Gatos
2. CalPERS Annual Valuation Report as of June 30, 2018 – Safety Plan of the Town of Los Gatos
3. CalPERS Annual Valuation Report as of June 30, 2018 – PEPRSA Safety Police Plan of the Town of Los Gatos

Attachment received with this Addendum:

4. Public comment received between 11:01 a.m., Thursday, November 28, 2019 to 11:01 a.m., Monday, December 2, 2019.

PREPARED BY: Arn Andrews
Assistant Town Manager

Reviewed by: Town Manager and Finance Director

Date: December 1, 2019

To: Mayor and Pension and OPEB Trusts Oversight Committee Members

From: Terry Duryea, member of Town Council Finance Committee

Subject: Comments on Agenda Item 4 "Receive CALPERs Actuarial Valuations Reports as of June 30, 2018" and Item 5 "Bartel Associates OPPEB Accounting Information Report as of June 30, 2018"

For your information, at the October 14, 2019 Town Council Finance Committee meeting, the Committee reviewed and discussed extensively both Items 4 and 5

To give you greater insight into the Reports, presented in semi-outline form, are 3 key points discussed at the Finance Committee meeting

Item 4: Staff Memo Page 2 shows that the PEPRAs Safety Plan is 91.6% funded, down from 94.8%

- This funding percentage is better than the approximately 70% funded for our other plans, BUT to see the significance of the 91.6% funded ratio you need to understand history
 - The State set up a separate PEPRAs Plan in 2013 to address the high cost of pensions—i.e. it provided for reduced pension benefits for employees hired after 2012
 - So where are we 5 years after the plan was implemented?
 - During those years we have seen superior stock market performance, BUT
 - The PEPRAs pooled Safety Fund that Los Gatos participates in has an unfunded liability, i.e. it is 91.4% funded (which has declined from 94.8% in 2017)
 - One reason, although not necessarily the most significant is that CALPERs assumes a 2.75% annual payroll raise
 - Therefore, anytime the Town Council approves raises over 2.75%, they are authorizing an increase in our unfunded liability

Conclusion 1: All the information you, Town Staff, our employees, and Town residents rely on to make decisions and make judgements is based on unrealistically optimistic assumptions, methodologies, and reporting

Conclusion 2: PEPRAs will not solve our unfunded pension obligation problem as the Plan is currently managed and reported

Item 4: Observations from the 2018 Actuarial Valuation discussed at the Finance Committee meeting

- Both Misc Plan and Safety Plan are very mature plans which according to the report increases the Town's financial risk significantly
- Here is information for the Miscellaneous Plan included as Attachment 1 to Item 4:
 - Many more people are collecting their benefits than are contributing into the plan—here is the information for the Misc Plan:

▪ Collecting benefits from the plan	238
▪ Contributing to the plan	113
▪ Ratio	2.1 to 1
 - 58% of Town's total pension liability of \$121M (per CALPERs) is due to members currently receiving benefits
 - Current payout exceeds current annual contributions (\$5.9M outflow—\$3.4M inflow) in 2018

- That indicates the fund is being liquidated, and the primary reason for the high risk to the Town
- Imagine what the funding ratio will look like in the next stock market correction—pension obligations will remain fixed while assets that are being invaded to meet current payment obligations decline
- Unfortunately, that’s not the worst information: Based on Los Gatos’s risk metrics in the Valuation Report, the Report states our risk is expected to get even worse

Conclusion: When Staff compares our funding percentages to other communities to justify how well we are doing on a relative basis, you should ask them the question “do the comparison cities have the same risk profile as Los Gatos”? And if not, ask for comparisons with cities that have a similar risk profile

Item 4: Finance Committee discussed the conflict of interest that exists when the Town Staff negotiate for their own benefits

- The following ideas were raised to address this conflict:
 - While the Finance Committee can’t be involved in labor negotiations, possibly this Committee could provide input to Town Council as you prepare for labor negotiations
 - It was stated that Palo Alto’s City Council Finance Committee is involved in prepping the Palo Alto City Council
 - At the Finance Committee meeting, the Town Manager said she would talk with the Town Attorney to see if and how this can be done
 - I have not heard anything further from the Town Manager
- Budgeting at the top of the pay scale does not help this situation—it’s easier to give raises if one budgets at the top of the pay scale, since you don’t have accountability for salaries

Thank you for reading this. I will be at the meeting to summarize these 3 items and more importantly to answer any questions you might have.

Respectfully,
Terry Duryea



TOWN OF LOS GATOS
TOWN PENSION AND OPEB TRUSTS
OVERSIGHT COMMITTEE REPORT

MEETING DATE: 12/03/2019

ITEM NO: 5

DATE: November 21, 2019
TO: Town Pension and OPEB Trusts Oversight Committee
FROM: Laurel Prevetti, Town Manager
SUBJECT: Receive Bartel Associates, LLC OPEB Accounting Information Report as of the June 30, 2018

RECOMMENDATION:

Receive Bartel OPEB Accounting Information Reports as of the June 30, 2018 measurement date.

BACKGROUND:

The Town's healthcare plan pays all, or a portion of, health insurance premiums for qualified retirees and their survivors and dependents. Healthcare benefits are also referred to as Other Post-Employment Benefits or OPEB. The Town's healthcare plan is an Internal Revenue Code Section 115 Trust which is administered by the Town Pension and OPEB Trusts Oversight Committee. The Oversight Committee is responsible for the management and control of the healthcare assets. The healthcare assets are maintained at CalPERS and invested in the CalPERS managed California Employers' Retiree Benefit Trust (CERBT) Strategy 1.

For the healthcare plan, the Town Pension and OPEB Trusts Oversight Committee retain the services of Bartel and Associates to analyze the respective assets and liabilities of the Healthcare Plan. In order for the Town to understand the value of future healthcare benefit payments, an actuarial valuation is performed every other year for the healthcare plan with the next valuation scheduled for next year. Annually, Bartel and Associates provides the Town with accounting information necessary for the development of the Comprehensive Annual Financial Report. While not a complete actuarial valuation, the Accounting Information Report provides useful information regarding the Town's OPEB Trusts.

PREPARED BY: Arn Andrews
Assistant Town Manager

Reviewed by: Town Manager and Finance Director

SUBJECT: Receive Bartel Associates, LLC OPEB Accounting Information Report as of the June 30, 2018.

DATE: November 21, 2019

DISCUSSION:

Staff has received Accounting Information Report from the Town's actuary, Bartel and Associates. The measurement date as set forth by GASB 75 is as of June 30, 2018. The report utilizes the June 30, 2017 OPEB actuarial valuation with a 6.75% discount rate which is updated and rolled forward to serve as the valuation for the June 30, 2018 measurement date.

The total OPEB liability increased from \$24.8 million to \$26.3 million as of June 30, 2018. However, the Net OPEB liability decreased from approximately \$11.2 million as of June 30, 2017 to \$10.1 M as of the June 30, 2018 as a result of an increase in the Fiduciary Net Position from the prior year. The net result is an increase in the funded status for the OPEB plan as of June 30, 2018 to 61.8% from 54.9%. The 61.8% funding level brings the Town in the top 20% of funded plans based on a recent survey by Bartel and Associates with the average of the survey being 24% funded. A similar survey of 88 California cities completed by the Town's auditor, Badawi and Associates indicated an average funded status of approximately 22% for their OPEB plans.

	June 30, 2018	June 30, 2019
Total OPEB Liability	\$24,773,000	\$26,321,184
Fiduciary Net Position	13,608,000	16,265,716
Net OPEB Liability	11,165,000	10,055,468
Funded Status	54.9%	61.8%

It should be noted that the elimination of retiree healthcare benefits prospectively for future employees does not impact the 6/30/17 valuation or the 6/30/19 disclosure. In addition, the pre-funding payment of approximately \$1,100,000 made in FY 2018/19 will be reflected in next year's valuation.

COORDINATION:

This report was coordinated with the Town Manager and Director of Finance.

Attachment:

1. Bartel Associates, LLC OPEB Accounting Information Report as of June 30, 2018
Measurement Date



Town of Los Gatos Retiree Healthcare Plan

June 30, 2019 GASBS 75

Accounting Information

As of Measurement Date June 30, 2018

Based on the June 30, 2017 Actuarial Valuation

Joseph R. D'Onofrio, Assistant Vice President

Katherine Moore, Associate Actuary

Wai Man Yam, Actuarial Analyst

Bartel Associates, LLC

September 27, 2019

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ATTACHMENT 1

Applicable Dates

Applicable Dates and Periods

	Fiscal Year Ending June 30, 2019
■ Measurement date	June 30, 2018
■ Measurement period	July 1, 2017 to June 30, 2018
■ Actuarial valuation date	June 30, 2017

Update procedures were used to roll forward the Total OPEB Liability from the valuation date (June 30, 2017) to the measurement date (June 30, 2018).



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Town of Los Gatos

Note Disclosures

Plan Information

	Fiscal Year Ending June 30, 2019
■ Plan type	Agent Multiple Employer
■ OPEB trust	Yes
■ Special funding situation	No
■ Nonemployer contributing entities	No



Note Disclosures

Expected Long-Term Rate of Return

	Target Allocation* CERBT-Strategy 1	Expected Real Rate of Return
■ Asset Class Component		
● Global Equity	57%	4.82%
● Fixed Income	27%	1.47%
● TIPS	5%	1.29%
● Commodities	3%	0.84%
● REITs	8%	3.76%
■ Assumed Long-Term Rate of Inflation		2.75%
■ Expected Long-Term Net Rate of Return, Rounded		6.75%

The long-term expected real rates of return are presented as geometric means.

* Policy target effective on the measurement date (June 30, 2018). Changes to the target investment allocation effective October 1, 2018 do not have a significant impact on the expected long-term rate of return.



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Town of Los Gatos

Note Disclosures

Covered Participants

At June 30, 2018, the measurement date, the following numbers of participants were covered by the benefit terms:

	Number of Covered Participants
■ Inactives currently receiving benefits	126
■ Inactives entitled to but not yet receiving benefits	50
■ Active employees	149
■ Total	325



Note Disclosures

Net OPEB Liability/(Asset)

	Fiscal Year Ending	
	6/30/18	6/30/19
	Measurement Date 6/30/17	Measurement Date 6/30/18
■ Total OPEB Liability (TOL)	\$ 24,773,000	\$ 26,321,184
■ Fiduciary Net Position (FNP)	13,608,000	16,265,716
■ Net OPEB Liability (NOL)	11,165,000	10,055,468
■ Funded status (FNP/TOL)	54.9%	61.8%



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Town of Los Gatos

Note Disclosures

Changes in Net OPEB Liability/(Asset)

	Total OPEB Liability	Fiduciary Net Position	Net OPEB Liability
■ Balance at 6/30/18 (6/30/17 measurement date)	\$24,773,000	\$13,608,000	\$11,165,000
■ Changes for the year			
● Service Cost	1,168,227	-	1,168,227
● Interest	1,706,270	-	1,706,270
● Changes of benefit terms	-	-	-
● Actual vs. expected experience	-	-	-
● Assumption changes	-	-	-
● Contributions - employer*	-	2,935,313	(2,935,313)
● Contributions - employee	-	-	-
● Net investment income**	-	1,082,977	(1,082,977)
● Benefit payments*	(1,326,313)	(1,326,313)	-
● Administrative expenses***	-	(34,261)	34,261
■ Net Changes	1,548,184	2,657,716	(1,109,532)
■ Balance at 6/30/19 (6/30/18 measurement date)	\$26,321,184	\$16,265,716	\$10,055,468

* See the measurement period column on page 20 for details.

** Includes an adjustment of -\$296 for removing rounding dollars to thousands.

*** \$9,000 healthcare administrative expenses (page 20) plus \$25,261 CERBT trust administrative expenses (page 26).



Note Disclosures

Sensitivity of Net OPEB Liability/(Asset)

■ Changes in the Discount Rate

	Discount Rate		
	1% Decrease (5.75%)	Current Rate (6.75%)	1% Increase (7.75%)
■ Net OPEB Liability	\$ 13,482,106	\$ 10,055,468	\$ 7,226,415

■ Changes in the Healthcare Trend Rate

	Healthcare Trend Rate		
	1% Decrease	Current Trend	1% Increase
■ Net OPEB Liability	\$ 7,459,605	\$ 10,055,468	\$ 12,779,309



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Town of Los Gatos

Note Disclosures

OPEB Expense for Fiscal Year

	2018/19 Measurement Period 2017/18
■ OPEB Expense*	\$ 1,883,013

* See page 25 for OPEB expense detail, which is not required disclosure.



Note Disclosures

Deferred Outflows/Inflows Balances at June 30, 2019

	June 30, 2019	
	Deferred Outflows of Resources	Deferred Inflows of Resources
■ Differences between expected and actual experience	\$ -	\$ -
■ Changes in assumptions	-	-
■ Net difference between projected and actual earnings on plan investments	-	358,232
■ Employer contributions made subsequent to the measurement date*	2,406,636	-
■ Total	2,406,636	358,232

* See page 20 for details.



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Town of Los Gatos

Note Disclosures

Recognition of Deferred Outflows and Inflows of Resources in Future OPEB Expense

FYE June 30	Deferred Outflows/(Inflows) of Resources
■ 2020	\$ (108,058)
■ 2021	(108,058)
■ 2022	(109,058)
■ 2023	(33,058)
■ 2024	-
■ Thereafter	-



Significant Actuarial Assumptions Used for Total OPEB Liability

Actuarial Assumption	June 30, 2018 Measurement Date
■ Actuarial Valuation Date	■ June 30, 2017
■ Contribution Policy	■ Pre-funded through CERBT with the Strategy 1 asset allocation. ■ Town contributes at least the ADC
■ Discount Rate and Long-Term Expected Rate of Return on Assets	■ 6.75% at June 30, 2018 ■ 6.75% at June 30, 2017 ■ Expected Town contributions projected to keep sufficient plan assets to pay all benefits from trust
■ General Inflation	■ 2.75% annually
■ Mortality, Retirement, Disability, Termination	■ CalPERS 1997-2015 Experience Study
■ Mortality Improvement	■ Post-retirement mortality projected fully generational with Scale MP-2017



Significant Actuarial Assumptions Used for Total OPEB Liability

Actuarial Assumption	June 30, 2018 Measurement Date
■ Salary Increases	■ Aggregate - 3% annually ■ Merit - CalPERS 1997-2015 Experience Study
■ Medical Trend	■ Non-Medicare - 7.5% for 2019, decreasing to an ultimate rate of 4.0% in 2076 ■ Medicare - 6.5% for 2019, decreasing to an ultimate rate of 4.0% in 2076
■ Participation at Retirement	■ Actives: • Insurance Program - 100% • Cash Allocation Program - 90% ■ Retirees with sick leave conversion accounts will continue to participate after account exhausted ■ Waived Retirees: • < 65 - 20% elect at 65 • ≥ 65 - 0%



Note Disclosures

Changes Since June 30, 2017 Measurement Date

	June 30, 2018 Measurement Date
■ Changes of assumptions	■ None
■ Changes of benefit terms	■ Plan benefits were changed for hires after the measurement date. This does not impact the 6/30/17 valuation or the 6/30/19 disclosure.



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Town of Los Gatos

Required Supplementary Information

Schedule of Changes in Net OPEB Liability/(Assets) and Related Ratios

	2018/19
	Measurement Period 2017/18
■ Changes in Total OPEB Liability	
● Service Cost	\$ 1,168,227
● Interest	1,706,270
● Changes of benefit terms	-
● Actual vs. expected experience	-
● Assumption changes	-
● Benefit payments	(1,326,313)
■ Net Changes	1,548,184
■ Total OPEB Liability (beginning of year)	24,773,000
■ Total OPEB Liability (end of year)	26,321,184



Required Supplementary Information

Schedule of Changes in Net OPEB Liability/(Assets) and Related Ratios

	2018/19
	Measurement Period 2017/18
■ Changes in Plan Fiduciary Net Position	
● Contributions - employer	\$ 2,935,313
● Contributions - employee	-
● Net investment income	1,082,977
● Benefit payments	(1,326,313)
● Administrative expenses	(34,261)
● Other changes	-
● Net Changes	2,657,716
■ Plan Fiduciary Net Position (beginning of year)	13,608,000
■ Plan Fiduciary Net Position (end of year)	16,265,716



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Town of Los Gatos

Required Supplementary Information

Schedule of Changes in Net OPEB Liability/(Assets) and Related Ratios

	2018/19
■ Net OPEB Liability/(Asset)	\$ 10,055,468
■ Fiduciary Net Position as a percentage of the Total OPEB Liability	61.8%
■ Covered employee payroll*	16,192,060
■ Net OPEB Liability as a percentage of covered employee payroll	62.1%

* For the 12-month period ending on June 30, 2018 (Measurement Date).



Required Supplementary Information

Schedule of Employer Contributions

	Fiscal Year 2018/19
■ Actuarially Determined Contribution (ADC)	\$ 2,108,000
■ Contributions in relation to the actuarially determined contribution*	<u>2,406,636</u>
■ Contribution deficiency/(excess)	(298,636)
■ Covered employee payroll**	17,338,201
■ Contributions as a percentage of covered employee payroll	13.9%

* See page 20 for details.

** For the 12-month period ending on June 30, 2019 (fiscal year end).



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Town of Los Gatos

Required Supplementary Information

Notes to Schedule of Employer Contribution Methods and Assumptions for 2018/19 Actuarially Determined Contribution

■ Valuation Date	■ June 30, 2017
■ Actuarial Cost Method	■ Entry Age Normal, Level % of pay
■ Amortization Method	■ Level % of pay
■ Amortization Period	■ 20-year fixed period for 2018/19
■ Asset Valuation Method	■ Investment gains and losses spread over 5-year rolling period
■ Discount Rate	■ 6.75%
■ General Inflation	■ 2.75%
■ Medical Trend	■ Non-Medicare - 7.5% for 2019, decreasing to an ultimate rate of 4.0% in 2076 ■ Medicare - 6.5% for 2019, decreasing to an ultimate rate of 4.0% in 2076
■ Mortality	■ CalPERS 1997-2015 experience study
■ Mortality Improvement	■ Post-retirement mortality projected fully generational with Scale MP-2017



Actuarial Certification

This report presents Town of Los Gatos Retiree Healthcare Plan 2018/19 disclosure under Governmental Accounting Standards Board Statement No. 75 (GASBS 75). The Journal Entries in this report are provided for the Town's convenience and are not an actuarial communication and this actuarial certification does not apply to them.

The report provides information intended for reporting under GASBS 75, but may not be appropriate for other purposes. Information provided in this report may be useful to the Town for the Plan's financial management. The total OPEB liability has been calculated from the June 30, 2017 actuarial valuation. Future valuations may differ significantly if the Plan's experience differs from our assumptions or if there are changes in Plan design, actuarial methods, or actuarial assumptions. The project scope did not include an analysis of this potential variation.

The June 30, 2017 valuation is based on Plan provisions and participant data provided by the Town, and asset information, all of which we relied on and did not audit. We reviewed the census data for reasonableness. Additional information on participants included in the valuation and actuarial assumptions can be found in the June 30, 2017 funding actuarial valuation report. As the actuary, Bartel Associates has recommended the assumptions used in this report, and we believe they are reasonable.

To the best of our knowledge, this report is complete and accurate and has been conducted using generally accepted actuarial principles and practices. Additionally, in our opinion, actuarial methods and assumptions comply with GASBS 75. As members of the American Academy of Actuaries meeting the Academy Qualification Standards, we certify the actuarial results and opinions herein.

Respectfully submitted,



Joseph R. D'Onofrio, FSA, EA, FCA, MAAA
Assistant Vice President
Bartel Associates, LLC
September 27, 2019



Katherine Moore, ASA, MAAA
Associate Actuary
Bartel Associates, LLC
September 27, 2019



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Town of Los Gatos

Supporting Calculations

Employer Contributions

	Measurement Period	Measurement Date to FYE	Prior Measurement Date to Prior FYE
	7/1/17 to 6/30/18	7/1/18 to 6/30/19	Same as Measurement Period
■ Cash benefit payments	\$ 1,138,313	\$ 1,104,025	\$ 1,138,313
■ Implied subsidy benefit payments	188,000	194,598	188,000
■ Total benefit payments	1,326,313	1,298,623	1,326,313
■ Trust reimbursements	-	-	-
■ Benefit payments paid outside of trust	1,326,313	1,298,623	1,326,313
■ Administrative expenses paid outside of trust	9,000	8,013	9,000
■ Trust contributions	1,600,000	1,100,000	1,600,000
■ Total employer contributions	2,935,313	2,406,636	2,935,313

Measurement period (7/1/17 to 6/30/18): \$2,935,313

Fiscal year (7/1/18 to 6/30/19): \$2,406,636



Supporting Calculations

Recognition of Deferred Outflows/Inflows at June 30, 2019 Differences between Expected and Actual Experience

Fiscal Year	Initial Amt	Initial Recog Period	Amount Recognized in OPEB Expense for FY							Deferred Balances June 30, 2019	
			18/19	19/20	20/21	21/22	22/23	23/24	24/25+	Outflows	(Inflows)
17/18	-	-	-	-	-	-	-	-	-	-	-
18/19	-	-	-	-	-	-	-	-	-	-	-
Total			-	-	-	-	-	-	-	-	-



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Town of Los Gatos

Supporting Calculations

Recognition of Deferred Outflows/Inflows at June 30, 2019 Changes of Assumptions

Fiscal Year	Initial Amt	Initial Recog Period	Amount Recognized in OPEB Expense for FY							Deferred Balances June 30, 2019	
			18/19	19/20	20/21	21/22	22/23	23/24	24/25+	Outflows	(Inflows)
17/18	-	-	-	-	-	-	-	-	-	-	-
18/19	-	-	-	-	-	-	-	-	-	-	-
Total			-	-	-	-	-	-	-	-	-



Supporting Calculations

Recognition of Deferred Outflows/Inflows at June 30, 2019 **Projected Versus Actual Earnings on Investments**

Fiscal Year	Initial Amt	Initial Recog Period	Amount Recognized in OPEB Expense for FY							Deferred Balances June 30, 2019	
			18/19	19/20	20/21	21/22	22/23	23/24	24/25+	Outflows	(Inflows)
17/18	(376,000)	5.0	(75,000)	(75,000)	(75,000)	(76,000)	-	-	-	-	(226,000)
18/19	(165,290)	5.0	(33,058)	(33,058)	(33,058)	(33,058)	(33,058)	-	-	-	(132,232)
Total			(108,058)	(108,058)	(108,058)	(109,058)	(33,058)	-	-	-	(358,232)
Net Deferred Outflows/(Inflows)										-	(358,232)

Calculation of initial amount for 2018/19 (2017/18 measurement period)

Projected earnings on investments of \$917,687 (page 26), less

Actual earnings on investments of \$1,082,977 (net investment income, page 15)



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Supporting Calculations

Recognition of Deferred Outflows/Inflows in Future OPEB Expense

	19/20	20/21	21/22	22/23	23/24	Thereafter 24/25+
■ Differences between Expected and Actual Experience	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
■ Changes of Assumptions	-	-	-	-	-	-
■ Projected Versus Actual Earnings on Investments	(108,058)	(108,058)	(109,058)	(33,058)	-	-
■ Total	(108,058)	(108,058)	(109,058)	(33,058)	-	-



Supporting Calculations

Components of GASBS 75 OPEB Expense

	2018/19
	Measurement Period 2017/18
■ Service Cost	\$ 1,168,227
■ Interest on Total OPEB Liability	1,706,270
■ Projected earnings on investments	(917,687)
■ Employee contributions	-
■ Administrative expense	34,261
■ Changes of benefit terms	-
■ Recognition of deferred outflows/(inflows)	
● Experience	-
● Assumptions	-
● Asset returns	(108,058)
■ OPEB Expense	1,883,013



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Town of Los Gatos

Supporting Calculations

Components of GASBS 75 OPEB Expense Calculation of Projected Earnings on Investments*

	Dollar Amount	Expected Return	Portion of Year	Projected Earnings
■ Fiduciary Net Position (beginning of year)	\$ 13,608,000	6.75%	100%	\$ 918,540
■ Employer contributions	1,600,000	6.75%	0%	-
■ Employee contributions	-	6.75%	0%	-
■ Benefit payments	-	6.75%	0%	-
■ Administrative expenses	(25,261)	6.75%	50%	(853)
■ Projected earnings				917,687

* Reflects trust activity only.



Supporting Calculations

Components of GASBS 75 OPEB Expense Calculation of Interest on Total OPEB Liability

	Dollar Amount	Discount Rate	Portion of Year	Interest
■ Total OPEB Liability	\$ 24,773,000	6.75%	100%	\$ 1,672,178
■ Service Cost	1,168,227	6.75%	100%	78,855
■ Changes of benefit terms	-	6.75%	0%	-
■ Assumption changes	-	6.75%	0%	-
■ Benefit payments	(1,326,313)	6.75%	50%	(44,763)
■ Total interest				1,706,270



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Town of Los Gatos

Supporting Calculations

GASBS 75 Balance Equation

	Fiscal Year Ending	
	6/30/18	6/30/19
	Measurement Date 6/30/17	Measurement Date 6/30/18
■ Total OPEB Liability	\$ 24,773,000	\$ 26,321,184
■ Fiduciary Net Position	13,608,000	16,265,716
■ Net OPEB Liability	11,165,000	10,055,468
■ Deferred inflows of resources	301,000	358,232
■ Deferred (outflows) of resources	-	-
■ Balance Sheet	11,466,000	10,413,700

Check:

■ Balance Sheet 6/30/18	\$ 11,466,000
● OPEB Expense	1,883,013
● Employer Contributions*	(2,935,313)
■ Balance Sheet 6/30/19	10,413,700



Journal Entries

Employer Contributions

The entries below assume cash benefit payments, Trust contributions, and administrative expenses have been charged to OPEB Expense when paid, and that no accounting entries have been made for the current year implied subsidy payment, which is recorded as a reduction to active employee health care costs. See page 20 for details.

Following records the impact of employer contributions as deferred outflows of resources and as a reduction to Net OPEB Liability.

	Debit	(Credit)
■ Net OPEB Liability - (for Contributions paid 7/1/17 to 6/30/18)	\$ 2,935,313	\$ -
■ Deferred Outflow - 7/1/17 to 6/30/18 contributions	-	(2,935,313)
■ Deferred Outflow - 7/1/18 to 6/30/19 contributions	2,406,636	-
■ Active employee health care costs - (implied subsidy payments 7/1/18 to 6/30/19)	-	(194,598)
■ OPEB Expense - (for contributions paid 7/1/18 to 6/30/19)	-	(2,212,038)

Check

5,341,949 (5,341,949)



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Town of Los Gatos

Journal Entries

Summary Journal Entries - OPEB Expense

Following records the impact of current year OPEB expense

	Debit	(Credit)
■ Deferred Outflows*	\$ -	\$ -
■ Deferred Inflows**	-	(57,232)
■ OPEB Expense/Credit	1,883,013	-
■ Net OPEB Liability	-	(1,825,781)

Check

1,883,013 (1,883,013)

* See page 32 ('Subtotal' row) for details.

** See page 33 for details.



Journal Entries

Ending Balances at June 30, 2019

	Debit	(Credit)
■ Deferral: Differences between expected and actual experience	\$ -	\$ -
■ Deferral: Changes of assumptions	-	-
■ Deferral: Net differences between projected and actual earnings on plan investments	-	(358,232)
■ Net OPEB Liability (NOL)	-	(10,055,468)
■ Contributions after the Measurement Date	2,406,636	-
■ Net Impact	8,007,064	-

Check: 10,413,700 (10,413,700)

■ Total OPEB expense/(income) for FYE 2019	1,883,013	-
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Journal Entries

Reconciliation of Deferred Outflows

Detail for page 30

Deferred Outflows	Opening Balance - Debit	Journal Entry - Debit	Journal Entry - (Credit)	Ending Balance - Debit
■ Differences between actual and expected experience	\$ -	\$ -	\$ -	\$ -
■ Change in assumptions	-	-	-	-
■ Differences between projected and actual earnings on plan investments	-	-	-	-
■ Subtotal - actuarial deferrals	-	-	-	-
■ Contributions after the Measurement Date	2,935,313	2,406,636	(2,935,313)	2,406,636
■ Total Deferred Outflows	2,935,313	2,406,636	(2,935,313)	2,406,636



Journal Entries

Reconciliation of Deferred Inflows

Detail for page 30

Deferred Inflows	Opening Balance - (Credit)	Journal Entry- (Credit)	Journal Entry - Debit	Ending Balance - (Credit)
■ Differences between actual and expected experience	\$ -	\$ -	\$ -	\$ -
■ Change in assumptions	-	-	-	-
■ Differences between projected and actual earnings on plan investments	(301,000)	(57,232)	-	(358,232)
■ Total Deferred (Inflows)	(301,000)	(57,232)	-	(358,232)



September 27, 2019

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Town of Los Gatos

Journal Entries

Reconciliation of Deferred Outflows/(Inflows)

Summary of Balances

	Fiscal Year Ending	
	6/30/18	6/30/19
	Measurement Date 6/30/17	Measurement Date 6/30/18
■ Total OPEB (Liability)	\$ (24,773,000)	\$ (26,321,184)
■ Fiduciary Net Position	13,608,000	16,265,716
■ Net OPEB (Liability)/Asset	(11,165,000)	(10,055,468)
■ Deferred (inflows) of resources	(301,000)	(358,232)
■ Deferred outflows of resources	2,935,313	2,406,636
■ Balance Sheet Impact	(8,530,687)	(8,007,064)

Deferred Outflows include contributions after the measurement date.





TOWN OF LOS GATOS
TOWN PENSION AND OPEB TRUSTS
OVERSIGHT COMMITTEE REPORT

MEETING DATE: 12/03/2019

ITEM NO: 6

DATE: November 21, 2019
TO: Town Pension and OPEB Trusts Oversight Committee
FROM: Laurel Prevetti, Town Manager
SUBJECT: Adopt Proposed Revisions to the Town of Los Gatos IRS Section 115 Pension Trust and California Employers' Retiree Benefit Trust (CERBT) Investment Policy

RECOMMENDATION:

Adopt Proposed Revisions to the Town of Los Gatos IRS Section 115 Pension Trust and California Employers' Retiree Benefit Trust (CERBT) Investment Policy.

BACKGROUND:

At its November 7, 2017 meeting, the Town Council reviewed and discussed the IRS Section 115 Trust governance. At the conclusion of the meeting, the Town Council established the Town Council as an Oversight Committee for the Town of Los Gatos IRS Section 115 Pension Trust and CERBT and adopted an Investment Policy for the Trusts (Attachment 1).

At its December 18, 2019 meeting, the Town Pension and OPEB Trusts Oversight Committee adopted revisions to the Investment Policy to reflect that the "purpose" of the 115 pension funds is for "long-term capital accumulation and appreciation, additional discretionary payments (ADPs), and pension contribution management strategies. "

DISCUSSION:

The current proposed revisions to the Investment Policy include simplifying the Title of the Investment Policy, acknowledging the closure of the PARS 115 pension trust, identifying the Town's participation in the CalPERS California Employers' Pension Prefunding Trust (CEPPT), and stating that the OPEB actuarial valuations occur biennially (Attachment 2).

PREPARED BY: Arn Andrews
Assistant Town Manager

Reviewed by: Town Manager and Finance Director

PAGE 2 OF 2

SUBJECT: Investment Policy Updates

DATE: November 21, 2019

CONCLUSION:

Approval of the recommended updates will bring the Investment Policy in conformity with practice and reflect current trust providers.

COORDINATION:

This report was coordinated with the Town Manager and Director of Finance.

Attachments:

1. Existing Town of Los Gatos IRS Section 115 Pension Trust and California Employers' Retiree Benefit Trust (CERBT) Investment Policy
2. Town of Los Gatos IRS Section 115 Trust and OPEB Trust Investment Policy (redlined)

TITLE: Town of Los Gatos IRS Section 115 Pension Trust and California Employers' Retiree Benefit Trust(CERBT) Investment Policy

POLICY NUMBER: 4-04

EFFECTIVE DATE: 11/7/17

PAGES: 3

ENABLING ACTIONS: 2017-062

REVISED DATES: 12/18/2018

APPROVED:

PURPOSE

The Town of Los Gatos (the "Town") has established the Town of Los Gatos IRS Section 115 Pension Trust (the "115 Pension Trust") and the California Employers' Retiree Benefit Trust (the "CERBT"), collectively the "115 Trusts", in order to provide for funding of pension, retiree health and other post-employment benefits for the City's eligible retirees. The 115 Pension Trust acts as an additional investment vehicle for the overall funding of pension liabilities associated with the Town's Miscellaneous and Safety Pension Plans (the "Pension Plans"). Funds in the 115 Pension Trust may be used for long-term capital accumulation and appreciation, additional discretionary payments (ADPs), and pension contribution management strategies. The CERBT is the single investment vehicle for the Town's OPEB Plan ("OPEB Plan"). The Town has established the 115 Trusts Oversight Committee (the "Oversight Committee") to oversee the assets of the 115 Trusts and to perform the duties and responsibilities set forth in this Investment Policy (IP).

COMPOSITION

The membership of the Oversight Committee is composed of the entire Town Council.

FIDUCIARY DUTIES AND RESPONSIBILITIES

1. The Oversight Committee has exclusive control of the investments of the 115 Trusts. The Oversight Committee will manage the funds under the Trusts:
 - a) solely in the interest of, and for the exclusive purposes of providing for funding of benefits for participants and their beneficiaries, minimizing employer contributions thereto, and defraying reasonable expenses of administering the Trusts;
 - b) with the care, skill, prudence and diligence under the circumstances then prevailing that a prudent person acting in a like capacity and familiar with these matters would use in the conduct of an enterprise of a like character and with like aims; and

c) by diversifying the investments of the Trusts so as to minimize the risk of loss and to maximize the rate of return, unless under the circumstances it is clearly prudent not to do so.

2. The work of the Oversight Committee shall be consistent with written statement of Investment Policy (i.e., this Investment Policy for the Trusts). At least once every three years, the Oversight Committee will evaluate the appropriateness of the Investment Policy and, based on such evaluation, either confirm the tenets of the Investment Policy as then in effect, or amend the 115 Trusts Investment Policy as appropriate. The Investment Policy must include the following:

a) document investment objectives, performance expectations and investment guidelines for assets under the Trusts;

b) establish an appropriate investment strategy for managing all assets under the Trusts, including an investment time horizon, risk tolerance ranges and asset allocation to provide sufficient diversification and overall return over the long-term time horizon of the Trusts; and

d) establish periodic performance reporting requirements that will effectively monitor investment results and ensure that the investment policy is being followed.

INVESTMENT OBJECTIVES

1. The primary objective of the 115 Trusts investment portfolios is to satisfy the Pension Plans and OPEB Plan obligations to pay benefits to members and their beneficiaries. To do so, the 115 Trusts will seek to achieve long-term net returns in excess of the actuarial investment return assumption while maintaining a reasonable level of investment risk.
2. The funds will be managed as an ongoing concern with a long-term investment horizon, consistent with demographic profile of the members and beneficiaries of the plans.
3. A range of risks will be managed in connection with the trusts, with an emphasis on the following:
 - a) The impact of the investment decisions on the funded status of the plans and the resulting volatility of contributions.
 - b) Risk of loss of plan assets.
4. In determining the investment strategies of the 115 Trusts, various factors will be considered including, but not limited to:
 - a) The structure and duration of the Pension Plans and OPEB Plan liabilities.
 - b) Modern Portfolio Theory.
 - c) The liquidity needs of Pension Plans and OPEB Plan.

INVESTMENT STRATEGY/ASSET ALLOCATION

The Oversight Committee has delegated the investment management function to third parties. These third parties offer multiple asset allocation options with varying degrees of risk return profiles. The Oversight Committee has the sole discretion to select the asset allocation which best aligns with the aforementioned fiduciary standards and investment objectives.

The Oversight Committee will review the selected asset allocations annually. However, the Oversight Committee can review the current asset allocation selections at any time in light of market conditions.

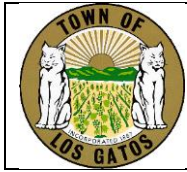
MONITORING AND REPORTING

1. Monitor the 115 Trusts investment managers on an ongoing basis and may be terminated by Oversight Committee at any time due to performance or other developments that call into question the investment manager's ability to continue to effectively manage assets of the 115 Trusts.
2. Review and assess the performance of any Investment Manager(s) appointed by the Oversight Committee to perform services related to the Trusts quarterly.
3. Measure and evaluate the annual and quarterly performance of investment managers relative to appropriate long-term performance benchmark.
4. Measure and evaluate annual and quarterly fees.
5. Review quarterly cash flow statements associated with the Trusts.
6. Review the actuarial evaluations annually.
7. Monitor compliance with this Investment Policy for the Trusts.

APPROVED AS TO FORM:



Robert Schultz, Town Attorney



TITLE: Town of Los Gatos IRS Section 115 Pension Trust and OPEB Trust and ~~California Employers' Retiree Benefit Trust (CERBT)~~ Investment Policy

POLICY NUMBER: 4-04

EFFECTIVE DATE: 11/7/17

PAGES: 3

ENABLING ACTIONS: 2017-062

REVISED DATES: 12/18/2018

APPROVED:

PURPOSE

The Town of Los Gatos (the "Town") has established ~~the Town of Los Gatos~~ IRS Section 115 ~~Trusts for both pension and other post-employment benefits (OPEB). The Pension Trust (the "115 Pension Trust")~~ is administered by the CalPERS California Employers' Pension Prefunding Trust (the "CEPPT") and the ~~OPEB trust is administered by the~~ California Employers' Retiree Benefit Trust (the "CERBT"), collectively the "115 Trusts"; ~~The 115 Trusts in order to~~ provide for funding of pension, retiree health and other post-employment benefits for the City's eligible retirees. The ~~CEPPT 115 Pension Trust~~ acts as an additional investment vehicle for the overall funding of pension liabilities associated with the Town's Miscellaneous and Safety Pension Plans (the "Pension Plans"). Funds in the 115 Pension Trust may be used for long-term capital accumulation and appreciation, additional discretionary payments (ADPs), and pension contribution management strategies. The CERBT is the single investment vehicle for the Town's OPEB Plan ("OPEB Plan"). The Town has established the 115 Trusts Oversight Committee (the "Oversight Committee") to oversee the assets of the 115 Trusts and to perform the duties and responsibilities set forth in this Investment Policy (IP).

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 - b) with the care, skill, prudence and diligence under the circumstances then prevailing that a prudent person acting in a like capacity and familiar with these matters would use in the conduct of an enterprise of a like character and with like aims; and

TITLE: Town of Los Gatos IRS Section 115 Pension Trust and OPEB Trust and California Employers' Retiree Benefit Trust(CERBT) Investment Policy	PAGE: 2 of 3	POLICY NUMBER: 4-04
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c) by diversifying the investments of the Trusts so as to minimize the risk of loss and to maximize the rate of return, unless under the circumstances it is clearly prudent not to do so.

2. The work of the Oversight Committee shall be consistent with written statement of Investment Policy (i.e., this Investment Policy for the Trusts). At least once every three years, the Oversight Committee will evaluate the appropriateness of the Investment Policy and, based on such evaluation, either confirm the tenets of the Investment Policy as then in effect, or amend the 115 Trusts Investment Policy as appropriate. The Investment Policy must include the following:
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 - b) establish an appropriate investment strategy for managing all assets under the Trusts, including an investment time horizon, risk tolerance ranges and asset allocation to provide sufficient diversification and overall return over the long-term time horizon of the Trusts; and
 - d) establish periodic performance reporting requirements that will effectively monitor investment results and ensure that the investment policy is being followed.

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1. The primary objective of the 115 Trusts investment portfolios is to satisfy the Pension Plans and OPEB Plan obligations to pay benefits to members and their beneficiaries. To do so, the 115 Trusts will seek to achieve long-term net returns in excess of the actuarial investment return assumption while maintaining a reasonable level of investment risk.
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TITLE: Town of Los Gatos IRS Section 115 Pension Trust and OPEB Trust and California Employers' Retiree Benefit Trust(CERBT) Investment Policy	PAGE: 3 of 3	POLICY NUMBER: 4-04
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2. Review and assess the performance of any Investment Manager(s) appointed by the Oversight Committee to perform services related to the Trusts quarterly.
3. Measure and evaluate the annual and quarterly performance of investment managers relative to appropriate long-term performance benchmark.
4. Measure and evaluate annual and quarterly fees.
5. Review quarterly cash flow statements associated with the Trusts.
6. Review the actuarial ~~pension~~ evaluations annually.
7. Review the actuarial OPEB evaluation biennially.
8. Monitor compliance with this Investment Policy for the Trusts.

APPROVED AS TO FORM:

Robert Schultz, Town Attorney