



## **Item No. 5 Town of Atherton**

### **FINANCE COMMITTEE STAFF REPORT**

**TO: FINANCE COMMITTEE**

**FROM: ROBERT BARRON III, FINANCE DIRECTOR**

**DATE: NOVEMBER 13, 2018**

**SUBJECT: REVIEW AND DISCUSSION ON CALPERS ACTUARIAL REPORTS AS OF JUNE 30, 2017, PENSION DISCOUNT RATE ASSUMPTIONS FOR DISCUSSION OF PAYING DOWN LONG TERM LIABILITIES AND FUTURE REVIEW OF PENSIONS LIABILITIES**

#### **RECOMMENDATION**

Review and discuss CalPERS actuarial reports as of June 30, 2017, pension discount rate assumptions for paying down of long term liabilities and future review of pension liabilities.

#### **BACKGROUND**

Each year the Finance Committee reviews the actuary reports to develop an understanding of potential funding mechanisms for the Town pension liability. Some notable changes over the years included CalPERS implementing a rate smoothing policy, changes in actuary assumptions due to demographics, investment risk volatility with new asset allocations, and most notably changes in the discount rate. The committee over the years reviewed how discount rate changes could affect the Town in the short or long-term and reviewed possible pay-down strategies to reduce the Town's long-term liabilities.

In December 2016, the CalPERS board decided to make assumption changes to the discount rate. Beginning June 30, 2016 valuation report, the discount rate would be reduced from 7.5% to 7.375%, followed by 7.25% for June 30, 2017 and 7.0% on June 30, 2018. This is one policy assumption has been at the forefront of our pension analysis over the years.

**FINDINGS**

The discount rate policy has followed the gradual shifting of the asset allocation to lower investment risk. The lower investment earnings result in higher pension costs that will gradually occur over time as volatility decreases. This will vary by plan, but CalPERS anticipation is that these risk mitigation measures in the long term will produce a sustainable fund, less volatile investment returns, and more stable contribution rates. These actuarial reports project employer contribution rates through FY 2024/25. These rates will change as each valuation period CalPERS reassess investment returns in rate calculations. Due to the adoptive changes of the discount rate it is anticipated that there will be gradual increases in the required contributions. In December 2017 the CalPERS board adopted new actuarial assumption changes based on an experience study, which included retirement rates, termination rates, mortality rates, salary rate increases, and inflation. These assumptions are included in the actuarial valuations and impacted the required contribution for FY 2019-20 rates. The CalPERS Board adopted a new asset mix that supports a 7 percent discount rate, along with a reduction in the inflation assumption. Also adopted was a new amortization policy that will be effective with the June 30, 2019 valuation. It is a policy that shortens the amortization period from 30 to 20 years and removes the 5-year ramp up and ramp down on the UAL. Investment returns are the key driver on employer rates and funded status. We will review the Investment return scenarios in the actuarial report to gain understanding of any further changes in investment returns on the retirement plans.

The actual investment return for FY 2017/18 was not known when the valuations were prepared. The Town’s Miscellaneous Employees future contribution assumes the investment return of 7.25% in FY 2017/18. The FY 2019/20 Employer Contribution rate for Miscellaneous Employees is 10.327%, an increase of .692%. The current FY 18/19 Employer contribution rate for Miscellaneous employees is 9.635% and the unfunded liability payment (UAL) is \$230,536.

	<b>Required Contribution</b>	<b>Projected Future Employer Contributions (Assumes 7.25% Return for Fiscal Year 2017-18)</b>				
<b>Fiscal Year</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>
<b>Normal Cost %</b>	10.327%	11.0%	11.0%	11.0%	11.0%	11.0%
<b>UAL Payment</b>	\$295,438	\$336,000	\$385,000	\$426,000	\$448,000	\$473,000

*The UAL payment for FY 2019/20 is \$295,438, this is an increase of \$64,902 over the current year. The Plan’s funded status as of June 30, 2017 for Miscellaneous Employees is currently at 75.7% with an unfunded liability of \$4,364,474.*

Below are projected future contribution rates for the Town Public Safety Employees and assumes the investment return of 7.25% in FY 2017/18, however if the investment return does not meet 7.25%, the actual contribution requirements for the projected FY 2020/21 will be adjusted. The projected employer rate and UAL for Safety is as follows:

**Review & Discuss CalPERS Actuarial Reports as of June 30, 2017; Discuss Pension Discount Rate Assumptions**  
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	<b>Required Contribution</b>	<b>Projected Future Employer Contributions (Assumes 7.25% Return for Fiscal Year 2017-18)</b>				
<b>Fiscal Year</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>
<b>Normal Cost %</b>	23.654%	25.1%	25.1%	25.1%	25.1%	25.1%
<b>UAL Payment</b>	\$771,853	\$875,000	\$997,000	\$1,097,000	\$1,157,000	\$1,218,000

The normal cost employer contribution rate as a percentage of payroll is 22.346% for FY 18/19. Base on the valuation report, the FY 2019/20 contribution rate for Public Safety is 23.654%, an increase of 1.038%. The Town’s employer payment of the unfunded liability for FY 2019/20 Public Safety is \$771,853. This is an increase in UAL from the current FY of \$605,433. Based on the actuarial report, the Public Safety Employees Plan’s funded status as of June 30, 2017 is currently at 72.5% with an unfunded liability of \$11,365,268. The above required contribution for FY 18/19 and the projected future contributions are at the assumed 7.25% rate of return. The new CalPERS Board of Administration approved discount rate assumptions changes over the next three years began in the FY 18/19 rates. It is now becoming more important to forecast the UAL payments and the required contribution rates.

The Town has contributed its normal cost and UAL payment consistently over the years. Below is a table illustrating the last six (6) fiscal years of CalPERS contributions:

<b>CalPERS Contribution</b>	<b>Employer Required Contribution (NC) FY 2012/13</b>	<b>Employer Required Contribution (NC) FY 2013/14</b>	<b>Employer Required Contribution (NC) FY 2014/15</b>	<b>Employer Required Contribution (NC) FY 2015/16</b>	<b>Employer Required Contribution (NC) FY 2016/17</b>	<b>Employer Required Contribution (NC) FY 2017/18</b>
Miscellaneous Employees	\$232,478	\$184,808	\$195,111	\$157,046	\$158,938	\$172,239
Public Safety Employees	\$730,963	\$691,741	\$709,233	\$487,709	\$449,592	\$407,690
<b>Total NC</b>	<b>\$963,441</b>	<b>\$876,550</b>	<b>\$904,345</b>	<b>\$644,755</b>	<b>\$608,530</b>	<b>\$579,929</b>
CalPERS Other	<b>Side Fund</b>			<b>UAL FY 2015/16</b>	<b>UAL FY 2016/17</b>	<b>UAL FY 2017/18</b>
Miscellaneous Employees	\$647,650			\$116,323	\$140,897	\$177,126
Public Safety Employees				\$325,906	\$388,638	\$480,734
<b>Total UAL*</b>				<b>\$442,229</b>	<b>\$529,535</b>	<b>\$657,860</b>
<b>TOTAL NC &amp; UAL/OTHER</b>	<b>\$1,611,091</b>	<b>\$876,550</b>	<b>\$904,345</b>	<b>\$1,086,984</b>	<b>\$1,138,065</b>	<b>\$1,237,789</b>

(\*UAL includes Classic and PEPRA members)

With the addition of the CalPERS discount rates changes the normal cost contribution rates will go up as well as the UAL payments. For FY 2019/20 the projected combined UAL payment is

\$1,067,291. The FY 17/18 UAL payments for the Town illustrated above was \$657,860 which includes \$177,126 for Miscellaneous Employees and \$480,734 for Public Safety Employees. This was an increase of \$128,325 from prior fiscal year.

The FY 2018/19 UAL budget for Miscellaneous Employees was \$238,885 and \$629,688 for Public Safety for a total of \$868,573. The Town has the option of paying in lump sum the UAL or monthly. The FY 2018/19 UAL payments were made in July and included \$230,536 for Miscellaneous and \$607,679 for Public Safety for a total of \$838,215. Paying the UAL in lump sum netted a savings of \$30,358 for the Town.

The projected FY 2019/20 UAL payment of \$1,067,291, is an increase of \$229,076 to current the fiscal year. It is important to point out that the Town in FY 2016/17 implemented an additional cost sharing within the Pension plan amongst Public Safety employees. This included the employee picking up an additional cost of the employer PERS normal cost. The maximum allowed under CalPERS law for the picking up of the employer CalPERS share is 3% for Public Safety, and 1% for Miscellaneous. In FY 2016/17, this included Public Safety Employees picking up an additional 1% in employer normal costs. In FY 2017/18 it included an additional 1% for Public Safety employees. In FY 18/19, Miscellaneous employees will pick 1% of employer normal costs and Public Safety will pick up the last additional 1% to meet the maximum allowed for employer normal costs. Since the implementation in FY 2016/17 for Public Safety, the 2% pickup has netted a savings of \$68,827 in Town employer PERS normal cost. In FY 2018/19, the full 3% for Public Safety and the 1% for Miscellaneous additional pick up of employer normal costs will be in effect and projects additional savings above the \$68K.

### Value of Assets

Actuarial valuations of assets are based on the Market Value of Assets (MVA). This is used to illustrate the unfunded liability and the funded ratio. As of June 30, 2017 the MVA for Miscellaneous Employees is \$13,504,290 and the unfunded liability is \$4,346,474. For Public Safety Employees the MVA is \$29,968,235 with an unfunded liability of \$11,365,268. This calculates to a total unfunded liability of \$15,711,742.

### Risk Analysis Tools

Staff has reviewed the tools within the reports to estimate the Town Contributions payments toward unfunded liabilities, Employer normal cost rates, and an outlook on paying down liabilities. There will be continued focus on rates and UAL payments with the approaching last reduction in the discount rate to 7%. It is important to note that the investment return realized during a fiscal year first affects the contribution for the fiscal year two years later. It is explained in the reports that the investment returns for FY 2017/18 were not known at the time the report was prepared. The assumed projection used was 7.25%. If the investment return was below or over the projection, these amounts will be used to set the rates in Fiscal Year 2020/21 calculations.

Provided in the reports are analysis of five different investment returns scenarios and any estimated increases to the Unfunded Accrued Liability contribution. Since the changes in the discount rate

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assumptions were made, the discount rate is lowered to the assumed 7% in these actuarial valuations.

**Miscellaneous Employees Investment Return Scenario**

Assumed Annual Return From 2018-19 through 2020-21	Projected Employer Contributions			
	2020-21	2021-22	2022-23	2023-24
<b>1.0%</b>				
Normal Cost	11.0%	11.0%	11.0%	11.0%
UAL Contribution	\$336,000	\$399,000	\$467,000	\$533,000
<b>4.0%</b>				
Normal Cost	11.0%	11.0%	11.0%	11.0%
UAL Contribution	\$336,000	\$392,000	\$447,000	\$491,000
<b>7.0%</b>				
Normal Cost	11.0%	11.0%	11.0%	11.0%
UAL Contribution	\$336,000	\$385,000	\$426,000	\$448,000
<b>9.0%</b>				
Normal Cost	11.0%	11.2%	11.5%	11.7%
UAL Contribution	\$336,000	\$381,000	\$414,000	\$425,000
<b>12.0%</b>				
Normal Cost	11.0%	11.2%	11.5%	11.7%
UAL Contribution	\$336,000	\$374,000	\$393,000	\$380,000

The above illustrates the changes in the UAL contribution portion based on various investment returns. The changes of the projected UAL ranges from a \$374,000 UAL payment to an increase of \$159,000 to \$533,000.

**Public Safety Employees Investment Return Scenario**

Assumed Annual Return From 2018-19 through 2020-21	Projected Employer Contributions			
	2020-21	2021-22	2022-23	2023-24
<b>1.0%</b>				
Normal Cost	25.1%	25.1%	25.1%	25.1%
UAL Contribution	\$875,000	\$1,026,000	\$1,187,000	\$1,340,000
<b>4.0%</b>				
Normal Cost	25.1%	25.1%	25.1%	25.1%
UAL Contribution	\$875,000	\$1,012,000	\$1,142,000	\$1,251,000
<b>7.0%</b>				
Normal Cost	25.1%	25.1%	25.1%	25.1%
UAL Contribution	\$875,000	\$997,000	\$1,097,000	\$1,157,000
<b>9.0%</b>				
Normal Cost	25.1%	25.5%	26.0%	26.4%
UAL Contribution	\$875,000	\$987,000	\$1,071,000	\$1,108,000
<b>12.0%</b>				
Normal Cost	25.1%	25.5%	26.0%	26.4%
UAL Contribution	\$875,000	\$973,000	\$1,025,000	\$1,011,000

The various investment returns for Public Safety employees' projects estimated changes in the UAL contribution portion increases from \$98,000 to \$465,000 through FY 2023/24.

CalPERS Discount Rate Changes

A result of the changes in discount rate has seen some higher required employer contributions. Below is a projection of the impact of the reduction to the discount rate to the normal cost and UAL payments beginning in FY 2019/20. CalPERs provided these impact projections when they changed the discount rate assumptions in December 2016. Taking the projected impact of the

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reduction of the discount rates to the right, staff projected the increase in the normal

Valuation Date	Fiscal Year Impact	Normal Cost		UAL Payments	
		Misc. Plans	Safety Plans	Misc. Plans	Safety Plans
6/30/2016	2018-19	0.25% - 0.75%	0.5% - 1.25%	2% - 3%	2% - 3%
6/30/2017	2019-20	0.5% - 1.5%	1.0% - 2.5%	4% - 6%	4% - 6%
6/30/2018	2020-21	1.0% - 3.0%	2.0% - 5.0%	10% - 15%	10% - 15%
6/30/2019	2021-22	1.0% - 3.0%	2.0% - 5.0%	15% - 20%	15% - 20%
6/30/2020	2022-23	1.0% - 3.0%	2.0% - 5.0%	20% - 25%	20% - 25%

cost and the UAL payments for the next couple fiscal years. For illustrative purposes the middle of the range of adjustments is used for estimated cost.

These are projections, as each year these will be based and set on the investment return of CalPERS.

**Miscellaneous Employees (New Discount Rate Assumptions)**

Fiscal Year	2020-21	2021-22	2022-23	2023-24	2024-25
Normal Cost	11.0%	11%	11%	11%	11%
UAL \$	\$336,000	\$385,000	\$426,000	\$448,000	\$473,000
NC Adj. Factor	1.0%	2.0%	2.0%	2.0%	2.0%
UAL Adj. Factor	5.0%	12.5%	17.5%	22.5%	22.5%
Estimated Normal Cost	12%	13%	13%	13%	13%
Estimate UAL	\$352,800	\$433,125	\$500,550	\$548,800	579,425

**Public Safety Employees (New Discount Rate Assumptions)**

Fiscal Year	2020-21	2021-22	2022-23	2023-24	2024-25
Normal Cost	25.1%	25.1%	25.1%	25.1%	25.1%
UAL \$	\$875,000	\$997,000	\$1,097,00	\$1,157,000	\$1,218,000
NC Adj. Factor	1.5%	3.0%	3.0%	3.0%	3.0%
UAL Adj. Factor	5.0%	12.5%	17.5%	22.5%	22.5%
Estimated Normal Cost	26.6%	28.1%	28.1%	28.1%	28.1%
Estimate UAL	\$918,750	\$1,121,625	\$1,288,975	\$1,417,325	\$1,492,050

**Pension Risk Mitigation Strategy and Other Changers**

The CalPERS Risk Mitigation Policy has been temporarily suspended during the years the discount rate is being lowered. CalPERS had adopted a Funding Risk Mitigation Policy that addressed risk factors such plan demographics (plans are maturing; public employees living longer) and

investment volatility (market return). With investment risk, CalPERS implemented thresholds to mitigate for reductions in the discount rate over time. This was done to lower the level of risk borne by employers and members. The mitigation thresholds for discount rate reductions are suspended since changes were made to lower the discount rate from 7.5% to 7%.

**Thresholds - Proposed**

Thresholds are defined as the investment return in excess of the discount rate required to trigger a risk mitigation event

Discount Rate Reduction	Additional Investment Return Required	Total Investment Return Required (Currently)
0.05%	4.0%	11.5%
0.10%	7.0%	14.5%
0.15%	10.0%	17.5%
0.20%	13.0%	20.5%
0.25%	17.0%	24.5%

Continued Future Discussion and Review Analysis

Staff believes that review of these reports provide an opportunity to analyze and project changes in the discount rate. We will see the effects of the discount rate of 7% on the June 30, 2018 valuation as it will set the rates for FY 2020/21. From this year out we should see a better understanding of rates and pension liabilities. Reminder that the investment returns each plan year will play a key role in the establishment of future rates and the UAL payments toward the funding of the long term pension liabilities. We will continue review of the pension liabilities as we enter into the budget cycle for FY 2019/20 and monitor the effects on long term expenditures. We will also continue with a future review to analyze pension liabilities and ensure we are prepared to mitigate any increases in future pension costs.

**FISCAL IMPACT**

None

**PUBLIC NOTICE**

Public notification was achieved by posting the agenda, with this agenda item being listed, at least 72 hours prior to the meeting in print and electronically. Information about the project is also disseminated via the Town’s electronic News Flash and Atherton Online. There are approximately 1,200 subscribers to the Town’s electronic News Flash publications. Subscribers include residents as well as stakeholders – to include, but be not limited to, media outlets, school districts, Menlo Park Fire District, service provides (water, power, and sewer), and regional elected officials.

**ATTACHMENTS**

- CalPERS Miscellaneous Employees Valuation Report as of June 30, 2017
- CalPERS Public Safety Employees Valuation Report as of June 30, 2017
- CalPERS PEPR Miscellaneuous Employees Valuation Report as of June 30, 2017
- CalPERS PEPR Public Safety Employees Valuation Report as of June 30, 2017



**California Public Employees' Retirement System**  
**Actuarial Office**  
 P.O. Box 942709  
 Sacramento, CA 94229-2709  
 TTY: (916) 795-3240  
 (888) 225-7377 phone – (916) 795-2744 fax  
[www.calpers.ca.gov](http://www.calpers.ca.gov)

**August 2018**

**Miscellaneous Plan of the Town of Atherton  
 (CalPERS ID: 1382390535)  
 Annual Valuation Report as of June 30, 2017**

Dear Employer,

As an attachment to this letter, you will find a copy of the June 30, 2017 actuarial valuation report of the pension plan.

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, 2017.

Section 2 can be found on the CalPERS website at ([www.calpers.ca.gov](http://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, 2017 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, 2018.

The exhibit below displays the minimum employer contributions, before any cost sharing, for Fiscal Year 2019-20 along with estimates of the required contributions for Fiscal Year 2020-21. 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.**

**Required Contribution**

Fiscal Year	Employer Normal Cost Rate	Employer Payment of Unfunded Liability
2019-20	10.327%	\$295,438
<i>Projected Results</i>		
2020-21	11.0%	\$336,000

The actual investment return for Fiscal Year 2017-18 was not known at the time this report was prepared. The projections above assume the investment return for that year would be 7.25 percent. ***If the actual investment return for Fiscal Year 2017-18 differs from 7.25 percent, the actual contribution requirements for the projected years will differ from those shown above.***

Moreover, the projected results for Fiscal Year 2020-21 assume that there are no future plan changes, no further changes in assumptions other than those recently approved, and no liability gains or losses. Such changes can have a significant impact on required contributions. Since they cannot be predicted in advance, the projected employer results shown above are estimates. The actual required employer contributions for Fiscal Year 2020-21 will be provided in next year's report.

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.

The "Risk Analysis" section of the valuation report also contains estimated employer contributions in future years under a variety of investment return scenarios.

### Changes since the Prior Year's Valuation

At its December 2016 meeting, 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 2019-20 determined in this valuation were calculated using a discount rate of 7.25 percent. The projected employer contributions on Page 5 are calculated under the assumption that the discount rate will be lowered to 7.00 percent next year as adopted by the Board.

On December 19, 2017, the CalPERS Board of Administration adopted new actuarial assumptions based on the recommendations in the December 2017 CalPERS Experience Study and Review of Actuarial Assumptions. This study reviewed the retirement rates, termination rates, mortality rates, rates of salary increases and inflation assumption for Public Agencies. These new assumptions are incorporated in your actuarial valuations and will impact the required contribution for FY 2019-20. In addition, the Board adopted a new asset portfolio as part of its Asset Liability Management. The new asset mix supports a 7.00 percent discount rate. The reduction of the inflation assumption will be implemented in two steps in conjunction with the decreases in the discount rate. For the June 30, 2017 valuation an inflation rate of 2.625 percent was used and a rate of 2.50 percent will be used in the following valuation.

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 CalPERS Board of Administration adopted a Risk Mitigation Policy which is designed to reduce funding risk over time. This Policy has been temporarily suspended during the period over which the discount rate is being lowered. More details on the Risk Mitigation Policy can be found on our website.

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 to contact us with actuarial related 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, 2017**

**for the  
Miscellaneous Plan  
of the  
Town of Atherton  
(CalPERS ID: 1382390535)**

**Required Contributions  
for Fiscal Year  
July 1, 2019 - June 30, 2020**

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# Section 1

CALIFORNIA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

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## **Plan Specific Information for the Miscellaneous Plan of the Town of Atherton**

**(CalPERS ID: 1382390535)  
(Rate Plan: 64)**

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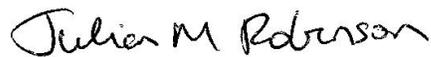
## Actuarial Certification

Section 1 of this report is based on the member and financial data contained in our records as of June 30, 2017 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, 2017 provided by employers participating in the Miscellaneous 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 Miscellaneous 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, 2017 and employer contribution as of July 1, 2019, 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.



JULIAN ROBINSON, FSA, EA, MAAA  
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, 2017 actuarial valuation of the Miscellaneous Plan of the Town of Atherton of the California Public Employees' Retirement System (CalPERS). This actuarial valuation sets the required employer contributions for Fiscal Year 2019-20.

## Purpose of Section 1

This Section 1 report for the Miscellaneous Plan of the Town of Atherton 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, 2017;
- Determine the minimum required employer contribution for this plan for the fiscal year July 1, 2019 through June 30, 2020; and
- Provide actuarial information as of June 30, 2017 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 9.

Additionally, this report includes the following "Enhanced Risk Disclosures" also recommended by the CAAP in the Model Disclosure Elements document:

- A "Deterministic Stress 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, 7.0 percent and 8.0 percent.

## Required Employer Contributions

Required Employer Contributions	Fiscal Year
<b>Employer Normal Cost Rate</b>	<b>2019-20</b>
	<b>10.327%</b>
<i>Plus, Either</i>	
<b>1) Monthly Employer Dollar UAL Payment</b>	<b>\$ 24,619.81</b>
<i>Or</i>	
<b>2) Annual Lump Sum Prepayment Option</b>	<b>\$ 285,277</b>
<p><i>The total minimum required employer contribution is the <b>sum</b> of the Plan's Employer Normal Cost Rate (expressed as a percentage of payroll) <b>plus</b> the Employer Unfunded Accrued Liability (UAL) Contribution Amount (billed monthly in dollars).</i></p> <p><i>Only the UAL portion of the employer contribution can be prepaid (<b>which must be received in full no later than July 31</b>). 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.</i></p> <p><i>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.</i></p>	

	Fiscal Year	Fiscal Year
	2018-19	2019-20
<b>Development of Normal Cost as a Percentage of Payroll<sup>1</sup></b>		
Base Total Normal Cost for Formula	15.794%	16.586%
Surcharge for Class 1 Benefits <sup>2</sup>		
a) PRSA	0.743%	0.647%
Phase out of Normal Cost Difference <sup>3</sup>	0.000%	0.000%
Plan's Total Normal Cost	16.537%	17.233%
Formula's Expected Employee Contribution Rate	6.902%	6.906%
Employer Normal Cost Rate	9.635%	10.327%
Projected Payroll for the Contribution Fiscal Year	\$ 1,529,115	\$ 1,701,269
<b>Estimated Employer Contributions Based on Projected Payroll</b>		
Plan's Estimated Employer Normal Cost	\$ 147,330	\$ 175,690
Plan's Payment on Amortization Bases <sup>4</sup>	237,450	295,438
% of Projected Payroll (illustrative only)	15.529%	17.366%
Estimated Total Employer Contribution	\$ 384,780	\$ 471,128
% of Projected Payroll (illustrative only)	25.164%	27.693%

<sup>1</sup> The results shown for Fiscal Year 2018-19 reflect the prior year valuation and may not take into account any lump sum payment, side fund payoff, or rate adjustment made after June 30, 2017.

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

<sup>3</sup> 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.

<sup>4</sup> See page 9 for a breakdown of the Amortization Bases.

## Plan's Funded Status

	<b>June 30, 2016</b>	<b>June 30, 2017</b>
1. Present Value of Projected Benefits (PVB)	\$ 18,618,599	\$ 20,287,718
2. Entry Age Normal Accrued Liability (AL)	16,506,054	17,850,764
3. Plan's Market Value of Assets (MVA)	12,141,574	13,504,290
4. Unfunded Accrued Liability (UAL) [(2) - (3)]	4,364,480	4,346,474
5. Funded Ratio [(3) / (2)]	73.6%	75.7%

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.

Fiscal Year	Projected Future Employer Contributions (Assumes 7.25% Return for Fiscal Year 2017-18)						
	Required Contribution	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Normal Cost %	10.327%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%
UAL Payment	\$295,438	\$336,000	\$385,000	\$426,000	\$448,000	\$473,000	

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.

Due to the adopted changes in the discount rate for next year's valuation in combination with the 5-year phase-in ramp, the increases in the required contributions are expected to continue for six years from Fiscal Year 2019-20 through Fiscal Year 2024-25.

For projected contributions under alternate investment return scenarios, please see the "Analysis of 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

At its December 2016 meeting, 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 2019-20 determined in this valuation were calculated using a discount rate of 7.25 percent. The projected employer contributions on page 5 are calculated assuming that the discount rate will be lowered to 7.00 percent next year as adopted by the Board. 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.

On December 19, 2017, the CalPERS Board of Administration adopted new actuarial assumptions based on the recommendations in the December 2017 CalPERS Experience Study and Review of Actuarial Assumptions. This study reviewed the retirement rates, termination rates, mortality rates, rates of salary increases and inflation assumption for Public Agencies. These new assumptions are incorporated in this actuarial valuation and will impact the required contribution for FY 2019-20. In addition, the Board adopted a new asset portfolio as part of its Asset Liability Management. The new asset mix supports a 7.00 percent discount rate. The reduction of the inflation assumption will be implemented in two steps in conjunction with the decreases in the discount rate. For the June 30, 2017 valuation an inflation rate of 2.625 percent will be used and a rate of 2.50 percent in the following valuation.

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 three-year discount rate schedule.

## 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, 2017. Changes in the value of assets subsequent to that date are not reflected. Investment returns below the assumed rate of return will increase the retired contribution, while investment returns above the assumed rate of return will decrease the retired contribution.

This actuarial valuation report reflects statutory changes, regulatory changes and CalPERS Board actions through January 2018. 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 MVA**
- **Schedule of Plan's Amortization Bases**
- **Amortization Schedule and Alternatives**
- **Employer Contribution History**
- **Funding History**

## Breakdown of Entry Age Normal Accrued Liability

Active Members	\$	3,291,202
Transferred Members		1,017,189
Terminated Members		1,403,190
Members and Beneficiaries Receiving Payments		<u>12,139,183</u>
Total	\$	17,850,764

## 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	\$	17,850,764
2. Projected UAL balance at 6/30/17		4,541,454
3. Pool's Accrued Liability <sup>1</sup>	\$	15,780,998,593
4. Sum of Pool's Individual Plan UAL Balances at 6/30/17 <sup>1</sup>		3,912,002,885
5. Pool's 2016/17 Investment & Asset (Gain)/Loss		(413,206,167)
6. Pool's 2016/17 Other (Gain)/Loss		(21,126,605)
7. Plan's Share of Pool's Asset (Gain)/Loss $[(1) - (2)] / [(3) - (4)] * (5)$		(463,349)
8. Plan's Share of Pool's Other (Gain)/Loss $[(1)] / [(3)] * (6)$		(23,897)
9. Plan's New (Gain)/Loss as of 6/30/2017 $[(7) + (8)]$	\$	(487,247)
10. Increase in Pool's Accrued Liability due to Change in Assumptions <sup>1</sup>		258,379,047
11. Plan's Share of Pool's Change in Assumptions $[(1)] / [(3)] * (10)$	\$	292,267

<sup>1</sup> 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

12. Plan's UAL $[(2) + (9) + (11)]$	\$	4,346,474
13. Plan's Share of Pool's MVA $[(1) - (12)]$	\$	<b>13,504,290</b>

## Schedule of Plan's Amortization Bases

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, 2017.
- The employer contribution determined by the valuation is for the fiscal year beginning two years after the valuation date: Fiscal Year 2019-20.

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 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 payment on the UAL for the fiscal year and adjusting for interest. Additional discretionary payments are reflected in the Expected Payments column in the fiscal year they were made by the agency.

Reason for Base	Date Established	Ramp Up/Down 2019-20	Amortization Period	Balance 6/30/17	Payment 2017-18	Balance 6/30/18	Payment 2018-19	Amounts for Fiscal 2019-20	
								Balance 6/30/19	Scheduled Payment for 2019-20
SHARE OF PRE-2013 POOL UAL	06/30/13	No Ramp	18	\$1,356,335	\$102,534	\$1,348,483	\$104,339	\$1,338,193	\$107,176
ASSET (GAIN)/LOSS	06/30/13	100% →	26	\$1,906,758	\$76,994	\$1,965,262	\$104,205	\$1,999,827	\$133,821
NON-ASSET (GAIN)/LOSS	06/30/13	100% →	26	\$(18,329)	\$(740)	\$(18,891)	\$(1,002)	\$(19,223)	\$(1,286)
ASSET (GAIN)/LOSS	06/30/14	80% ↗	27	\$(1,361,849)	\$(37,254)	\$(1,422,002)	\$(56,686)	\$(1,466,392)	\$(77,654)
NON-ASSET (GAIN)/LOSS	06/30/14	80% ↗	27	\$1,476	\$40	\$1,542	\$61	\$1,591	\$84
ASSUMPTION CHANGE	06/30/14	80% ↗	17	\$843,666	\$31,408	\$872,305	\$47,989	\$885,849	\$65,726
ASSET (GAIN)/LOSS	06/30/15	60% ↗	28	\$792,575	\$11,161	\$838,478	\$22,625	\$875,837	\$34,871
NON-ASSET (GAIN)/LOSS	06/30/15	60% ↗	28	\$(64,402)	\$(907)	\$(68,132)	\$(1,838)	\$(71,168)	\$(2,833)
ASSET (GAIN)/LOSS	06/30/16	40% ↗	29	\$923,350	\$0	\$990,293	\$13,742	\$1,047,858	\$28,241
NON-ASSET (GAIN)/LOSS	06/30/16	40% ↗	29	\$(114,311)	\$0	\$(122,599)	\$(1,701)	\$(129,726)	\$(3,496)
ASSUMPTION CHANGE	06/30/16	40% ↗	19	\$276,185	\$(6,428)	\$302,865	\$5,715	\$318,904	\$11,743
ASSET (GAIN)/LOSS	06/30/17	20% ↗	30	\$(463,349)	\$0	\$(496,942)	\$0	\$(532,970)	\$(7,387)
NON-ASSET (GAIN)/LOSS	06/30/17	20% ↗	30	\$(23,897)	\$0	\$(25,630)	\$0	\$(27,488)	\$(381)
ASSUMPTION CHANGE	06/30/17	20% ↗	20	\$292,267	\$(11,646)	\$325,517	\$(11,981)	\$361,525	\$6,813
<b>TOTAL</b>				<b>\$4,346,475</b>	<b>\$165,162</b>	<b>\$4,490,549</b>	<b>\$225,468</b>	<b>\$4,582,617</b>	<b>\$295,438</b>

The (gain)/loss bases are the plan's allocated share of the risk pool's (gain)/loss for the fiscal year as disclosed on the previous page. 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 PEPRAs 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 2.875 percent for each year into the future. **The schedules do not attempt to reflect any experience after June 30, 2017 that may deviate from the actuarial assumptions. Therefore, future amortization payments displayed in the Current Amortization Schedule may not match projected amortization payments shown in connection with Projected Employer Contributions provided elsewhere in this report.**

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	20 Year Amortization		15 Year Amortization	
			Balance	Payment	Balance	Payment
6/30/2019	4,582,616	295,438	4,582,616	342,500	4,582,616	416,701
6/30/2020	4,608,895	329,658	4,560,156	352,347	4,483,313	428,682
6/30/2021	4,601,642	368,735	4,525,871	362,477	4,364,403	441,006
6/30/2022	4,553,393	398,159	4,478,610	372,898	4,224,110	453,685
6/30/2023	4,471,175	408,536	4,417,130	383,619	4,060,514	466,729
6/30/2024	4,372,248	420,282	4,340,090	394,648	3,871,550	480,147
6/30/2025	4,253,986	432,365	4,246,042	405,994	3,654,990	493,951
6/30/2026	4,114,636	444,795	4,133,426	417,667	3,408,433	508,152
6/30/2027	3,952,310	457,583	4,000,557	429,675	3,129,294	522,762
6/30/2028	3,764,972	470,739	3,845,619	442,028	2,814,787	537,791
6/30/2029	3,550,429	484,272	3,666,656	454,736	2,461,914	553,253
6/30/2030	3,306,315	498,195	3,461,556	467,810	2,067,446	569,159
6/30/2031	3,030,084	512,518	3,228,048	481,259	1,627,906	585,522
6/30/2032	2,718,993	503,501	2,963,682	495,096	1,139,554	602,356
6/30/2033	2,394,686	493,541	2,665,820	509,330	598,362	619,673
6/30/2034	2,057,182	473,610	2,331,622	523,973		
6/30/2035	1,715,850	441,402	1,958,030	539,037		
6/30/2036	1,383,127	406,950	1,541,752	554,534		
6/30/2037	1,061,959	219,007	1,079,245	570,477		
6/30/2038	912,144	203,568	566,695	586,878		
6/30/2039	767,457	197,410				
6/30/2040	618,656	203,086				
6/30/2041	453,190	159,473				
6/30/2042	320,893	150,404				
6/30/2043	188,397	119,596				
6/30/2044	78,201	61,762				
6/30/2045	19,908	16,737				
6/30/2046	4,019	4,162				
6/30/2047						
6/30/2048						
<b>Totals</b>		<b>9,175,483</b>		<b>9,086,985</b>		<b>7,679,568</b>
<b>Interest Paid</b>		<b>4,592,867</b>		<b>4,504,369</b>		<b>3,096,953</b>
<b>Estimated Savings</b>				<b>88,498</b>		<b>1,495,914</b>

\* This schedule does not reflect the impact of adopted discount rate changes that will become effective beyond June 30, 2017. For Projected Employer Contributions, please see page 5.

## 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.

<b>Fiscal Year</b>	<b>Employer Normal Cost</b>	<b>Unfunded Liability Payment (\$)</b>
2016 - 17	9.055%	\$146,085
2017 - 18	9.096%	\$183,236
2018 - 19	9.635%	\$237,450
2019 - 20	10.327%	\$295,438

## 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.

<b>Valuation Date</b>	<b>Accrued Liability (AL)</b>	<b>Share of Pool's Market Value of Assets (MVA)</b>	<b>Plan's Share of Pool's Unfunded Liability</b>	<b>Funded Ratio</b>	<b>Annual Covered Payroll</b>
06/30/2011	\$ 14,126,030	\$ 10,943,760	\$ 3,182,270	77.5%	\$ 2,098,024
06/30/2012	14,084,104	10,326,106	3,757,998	73.3%	1,062,063
06/30/2013	14,539,412	11,816,121	2,723,291	81.3%	1,369,806
06/30/2014	15,466,674	13,003,838	2,462,836	84.1%	1,395,887
06/30/2015	15,806,251	12,571,337	3,234,914	79.5%	1,452,348
06/30/2016	16,506,054	12,141,574	4,364,480	73.6%	1,399,357
06/30/2017	17,850,764	13,504,290	4,346,474	75.7%	1,562,584

## **Risk Analysis**

- **Analysis of Future Investment Return Scenarios**
- **Analysis of Discount Rate Sensitivity**
- **Volatility Ratios**
- **Hypothetical Termination Liability**

## Analysis of 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 (2017-18, 2018-19, 2019-20 and 2020-21). 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.

Each of the five investment return scenarios assumes a return of 7.25 percent for fiscal year 2017-18. For fiscal years 2018-19, 2019-20, and 2020-21 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.

The alternate investment returns were chosen based on stochastic analysis of possible future investment returns over the four-year period ending June 30, 2021. 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 5<sup>th</sup>, 25<sup>th</sup>, 50<sup>th</sup>, 75<sup>th</sup>, and 95<sup>th</sup> 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 2020-21	Projected Employer Contributions			
	2020-21	2021-22	2022-23	2023-24
<b>1.0%</b>				
Normal Cost	11.0%	11.0%	11.0%	11.0%
UAL Contribution	\$336,000	\$399,000	\$467,000	\$533,000
<b>4.0%</b>				
Normal Cost	11.0%	11.0%	11.0%	11.0%
UAL Contribution	\$336,000	\$392,000	\$447,000	\$491,000
<b>7.0%</b>				
Normal Cost	11.0%	11.0%	11.0%	11.0%
UAL Contribution	\$336,000	\$385,000	\$426,000	\$448,000
<b>9.0%</b>				
Normal Cost	11.0%	11.2%	11.5%	11.7%
UAL Contribution	\$336,000	\$381,000	\$414,000	\$425,000
<b>12.0%</b>				
Normal Cost	11.0%	11.2%	11.5%	11.7%
UAL Contribution	\$336,000	\$374,000	\$393,000	\$380,000

Given the temporary suspension of the Risk Mitigation Policy during the period over which the discount rate assumption is being phased down to 7.0 percent, the projections above were performed without reflection of any possible impact of this Policy for Fiscal Year 2020-21. In addition, the projections above do not reflect the recent changes to the new amortization policy effective with the June 30, 2019 valuation but the impact on the results above is expected to be minimal.

## Analysis of Discount Rate Sensitivity

Shown below are various valuation results as of June 30, 2017 assuming alternate discount rates. Results are shown using the current discount rate of 7.25 percent as well as alternate discount rates of 6.0 percent, 7.0 percent, and 8.0 percent. The alternate rate of 7.0 percent was selected since the Board has adopted this rate as the final discount rate at the end of the three-year phase-in of the reduction in this assumption. 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, 7.0 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.

<b>Sensitivity Analysis</b>				
<b>As of June 30, 2017</b>	<b>Plan's Total Normal Cost</b>	<b>Accrued Liability</b>	<b>Unfunded Accrued Liability</b>	<b>Funded Status</b>
7.25% (current discount rate)	17.233%	\$17,850,764	\$4,346,474	75.7%
6.0%	22.321%	\$20,656,164	\$7,151,874	65.4%
7.0%	17.922%	\$18,331,240	\$4,826,950	73.7%
8.0%	14.553%	\$16,416,541	\$2,912,251	82.3%

## Volatility Ratios

Actuarial calculations are based on a number of 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 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. Since the liability volatility ratio is a long-term measure, it is shown below at the current discount rate (7.25 percent) as well as the discount rate the Board has adopted to determine the contribution requirement in the June 30, 2018 actuarial valuation (7.00 percent).

<b>Rate Volatility</b>	<b>As of June 30, 2017</b>	
1. Market Value of Assets	\$	13,504,290
2. Payroll		1,562,584
3. Asset Volatility Ratio (AVR) [(1) / (2)]		8.6
4. Accrued Liability	\$	17,850,764
5. Liability Volatility Ratio (LVR) [(4) / (2)]		11.4
6. Accrued Liability (7.00% discount rate)		18,331,240
7. Projected Liability Volatility Ratio [(6) / (2)]		11.7

## 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, 2017. 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.

<b>Market Value of Assets (MVA)</b>	<b>Hypothetical Termination Liability<sup>1,2</sup> @ 1.75%</b>	<b>Funded Status</b>	<b>Unfunded Termination Liability @ 1.75%</b>	<b>Hypothetical Termination Liability<sup>1,2</sup> @ 3.00%</b>	<b>Funded Status</b>	<b>Unfunded Termination Liability @ 3.00%</b>
\$13,504,290	\$34,891,460	38.7%	\$21,387,170	\$31,199,651	43.3%	\$17,695,361

<sup>1</sup> 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.

<sup>2</sup> 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 2.61 percent on June 30, 2017, and was 2.83 percent on January 31, 2018.

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:

	<b>June 30, 2016</b>	<b>June 30, 2017</b>
Reported Payroll	\$ 1,399,357	\$ 1,562,584
Projected Payroll for Contribution Purposes	\$ 1,529,115	\$ 1,701,269
Number of Members		
Active	15	17
Transferred	14	10
Separated	27	27
Retired	57	61

## 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**

**SECTION 1 – Plan Specific Information for the Miscellaneous Plan of the Town of Atherton**

**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 Appendix B within Section 2 of this report.

Benefit Provision	Contract package	
	Active Misc	Receiving Misc
Benefit Formula	2.0% @ 55	
Social Security Coverage	No	
Full/Modified	Full	
Employee Contribution Rate	7.00%	
Final Average Compensation Period	Three Year	
Sick Leave Credit	Yes	
Non-Industrial Disability	Standard	
Industrial Disability	No	
Pre-Retirement Death Benefits		
Optional Settlement 2	Yes	
1959 Survivor Benefit Level	level 3	
Special	No	
Alternate (firefighters)	No	No
Post-Retirement Death Benefits		
Lump Sum	\$500	\$500
Survivor Allowance (PRSA)	Yes	Yes
COLA	2%	2%

# Section 2

CALIFORNIA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

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



**California Public Employees' Retirement System**  
**Actuarial Office**  
 P.O. Box 942709  
 Sacramento, CA 94229-2709  
 TTY: (916) 795-3240  
 (888) 225-7377 phone – (916) 795-2744 fax  
[www.calpers.ca.gov](http://www.calpers.ca.gov)

**August 2018**

**Safety Plan of the Town of Atherton  
 (CalPERS ID: 1382390535)  
 Annual Valuation Report as of June 30, 2017**

Dear Employer,

As an attachment to this letter, you will find a copy of the June 30, 2017 actuarial valuation report of the pension plan.

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, 2017.

Section 2 can be found on the CalPERS website at ([www.calpers.ca.gov](http://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, 2017 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, 2018.

The exhibit below displays the minimum employer contributions, before any cost sharing, for Fiscal Year 2019-20 along with estimates of the required contributions for Fiscal Year 2020-21. 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.**

**Required Contribution**

Fiscal Year	Employer Normal Cost Rate	Employer Payment of Unfunded Liability
2019-20	23.654%	\$771,853
<i>Projected Results</i>		
2020-21	25.1%	\$875,000

The actual investment return for Fiscal Year 2017-18 was not known at the time this report was prepared. The projections above assume the investment return for that year would be 7.25 percent. ***If the actual investment return for Fiscal Year 2017-18 differs from 7.25 percent, the actual contribution requirements for the projected years will differ from those shown above.***

Moreover, the projected results for Fiscal Year 2020-21 assume that there are no future plan changes, no further changes in assumptions other than those recently approved, and no liability gains or losses. Such changes can have a significant impact on required contributions. Since they cannot be predicted in advance, the projected employer results shown above are estimates. The actual required employer contributions for Fiscal Year 2020-21 will be provided in next year's report.

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.

The "Risk Analysis" section of the valuation report also contains estimated employer contributions in future years under a variety of investment return scenarios.

### Changes since the Prior Year's Valuation

At its December 2016 meeting, 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 2019-20 determined in this valuation were calculated using a discount rate of 7.25 percent. The projected employer contributions on Page 5 are calculated under the assumption that the discount rate will be lowered to 7.00 percent next year as adopted by the Board.

On December 19, 2017, the CalPERS Board of Administration adopted new actuarial assumptions based on the recommendations in the December 2017 CalPERS Experience Study and Review of Actuarial Assumptions. This study reviewed the retirement rates, termination rates, mortality rates, rates of salary increases and inflation assumption for Public Agencies. These new assumptions are incorporated in your actuarial valuations and will impact the required contribution for FY 2019-20. In addition, the Board adopted a new asset portfolio as part of its Asset Liability Management. The new asset mix supports a 7.00 percent discount rate. The reduction of the inflation assumption will be implemented in two steps in conjunction with the decreases in the discount rate. For the June 30, 2017 valuation an inflation rate of 2.625 percent was used and a rate of 2.50 percent will be used in the following valuation.

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 CalPERS Board of Administration adopted a Risk Mitigation Policy which is designed to reduce funding risk over time. This Policy has been temporarily suspended during the period over which the discount rate is being lowered. More details on the Risk Mitigation Policy can be found on our website.

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 to contact us with actuarial related 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, 2017**

**for the  
Safety Plan  
of the  
Town of Atherton  
(CalPERS ID: 1382390535)**

**Required Contributions  
for Fiscal Year  
July 1, 2019 - June 30, 2020**

# **Table of Contents**

**Section 1 – Plan Specific Information**

**Section 2 – Risk Pool Actuarial Valuation Information**

# Section 1

CALIFORNIA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

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## **Plan Specific Information for the Safety Plan of the Town of Atherton**

**(CalPERS ID: 1382390535)  
(Rate Plan: 65)**

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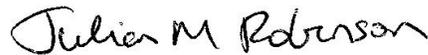
## Actuarial Certification

Section 1 of this report is based on the member and financial data contained in our records as of June 30, 2017 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, 2017 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, 2017 and employer contribution as of July 1, 2019, 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.



JULIAN ROBINSON, FSA, EA, MAAA  
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, 2017 actuarial valuation of the Safety Plan of the Town of Atherton of the California Public Employees' Retirement System (CalPERS). This actuarial valuation sets the required employer contributions for Fiscal Year 2019-20.

## Purpose of Section 1

This Section 1 report for the Safety Plan of the Town of Atherton 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, 2017;
- Determine the minimum required employer contribution for this plan for the fiscal year July 1, 2019 through June 30, 2020; and
- Provide actuarial information as of June 30, 2017 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 9.

Additionally, this report includes the following "Enhanced Risk Disclosures" also recommended by the CAAP in the Model Disclosure Elements document:

- A "Deterministic Stress 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, 7.0 percent and 8.0 percent.

## Required Employer Contributions

Required Employer Contributions	Fiscal Year
<b>Employer Normal Cost Rate</b>	<b>2019-20</b>
	<b>23.654%</b>
<i>Plus, Either</i>	
<b>1) Monthly Employer Dollar UAL Payment</b>	<b>\$ 64,321.12</b>
<i>Or</i>	
<b>2) Annual Lump Sum Prepayment Option</b>	<b>\$ 745,309</b>
<p><i>The total minimum required employer contribution is the <b>sum</b> of the Plan's Employer Normal Cost Rate (expressed as a percentage of payroll) <b>plus</b> the Employer Unfunded Accrued Liability (UAL) Contribution Amount (billed monthly in dollars).</i></p> <p><i>Only the UAL portion of the employer contribution can be prepaid (<b>which must be received in full no later than July 31</b>). 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.</i></p> <p><i>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.</i></p>	

	Fiscal Year	Fiscal Year
	2018-19	2019-20
<b>Development of Normal Cost as a Percentage of Payroll<sup>1</sup></b>		
Base Total Normal Cost for Formula	28.405%	29.696%
Surcharge for Class 1 Benefits <sup>2</sup>		
a) FAC 1	1.140%	1.220%
b) PRSA	1.790%	1.727%
Phase out of Normal Cost Difference <sup>3</sup>	0.000%	0.000%
Plan's Total Normal Cost	31.335%	32.643%
Formula's Expected Employee Contribution Rate	8.989%	8.989%
Employer Normal Cost Rate	22.346%	23.654%
Projected Payroll for the Contribution Fiscal Year	\$ 2,196,490	\$ 1,461,227
<b>Estimated Employer Contributions Based on Projected Payroll</b>		
Plan's Estimated Employer Normal Cost	\$ 490,828	\$ 345,639
Plan's Payment on Amortization Bases <sup>4</sup>	627,361	771,853
% of Projected Payroll (illustrative only)	28.562%	52.822%
Estimated Total Employer Contribution	\$ 1,118,189	\$ 1,117,492
% of Projected Payroll (illustrative only)	50.908%	76.476%

<sup>1</sup> The results shown for Fiscal Year 2018-19 reflect the prior year valuation and may not take into account any lump sum payment, side fund payoff, or rate adjustment made after June 30, 2017.

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

<sup>3</sup> 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.

<sup>4</sup> See page 9 for a breakdown of the Amortization Bases.

## Plan's Funded Status

		<b>June 30, 2016</b>		<b>June 30, 2017</b>
1. Present Value of Projected Benefits (PVB)	\$	43,567,323	\$	45,179,714
2. Entry Age Normal Accrued Liability (AL)		38,454,832		41,333,503
3. Plan's Market Value of Assets (MVA)		27,292,457		29,968,235
4. Unfunded Accrued Liability (UAL) [(2) - (3)]		11,162,375		11,365,268
5. Funded Ratio [(3) / (2)]		71.0%		72.5%

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.

Fiscal Year	Required Contribution	Projected Future Employer Contributions (Assumes 7.25% Return for Fiscal Year 2017-18)				
		2019-20	2020-21	2021-22	2022-23	2023-24
<b>Normal Cost %</b>	23.654%	25.1%	25.1%	25.1%	25.1%	25.1%
<b>UAL Payment</b>	\$771,853	\$875,000	\$997,000	\$1,097,000	\$1,157,000	\$1,218,000

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.

Due to the adopted changes in the discount rate for next year's valuation in combination with the 5-year phase-in ramp, the increases in the required contributions are expected to continue for six years from Fiscal Year 2019-20 through Fiscal Year 2024-25.

For projected contributions under alternate investment return scenarios, please see the "Analysis of 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

At its December 2016 meeting, 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 2019-20 determined in this valuation were calculated using a discount rate of 7.25 percent. The projected employer contributions on page 5 are calculated assuming that the discount rate will be lowered to 7.00 percent next year as adopted by the Board. 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.

On December 19, 2017, the CalPERS Board of Administration adopted new actuarial assumptions based on the recommendations in the December 2017 CalPERS Experience Study and Review of Actuarial Assumptions. This study reviewed the retirement rates, termination rates, mortality rates, rates of salary increases and inflation assumption for Public Agencies. These new assumptions are incorporated in this actuarial valuation and will impact the required contribution for FY 2019-20. In addition, the Board adopted a new asset portfolio as part of its Asset Liability Management. The new asset mix supports a 7.00 percent discount rate. The reduction of the inflation assumption will be implemented in two steps in conjunction with the decreases in the discount rate. For the June 30, 2017 valuation an inflation rate of 2.625 percent will be used and a rate of 2.50 percent in the following valuation.

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 three-year discount rate schedule.

## 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, 2017. Changes in the value of assets subsequent to that date are not reflected. Investment returns below the assumed rate of return will increase the retired contribution, while investment returns above the assumed rate of return will decrease the retired contribution.

This actuarial valuation report reflects statutory changes, regulatory changes and CalPERS Board actions through January 2018. 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 MVA**
- **Schedule of Plan's Amortization Bases**
- **Amortization Schedule and Alternatives**
- **Employer Contribution History**
- **Funding History**

## Breakdown of Entry Age Normal Accrued Liability

Active Members	\$	6,238,658
Transferred Members		2,645,713
Terminated Members		841,416
Members and Beneficiaries Receiving Payments		<u>31,607,716</u>
Total	\$	41,333,503

## 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	\$	41,333,503
2. Projected UAL balance at 6/30/17		11,585,021
3. Pool's Accrued Liability <sup>1</sup>	\$	20,966,498,823
4. Sum of Pool's Individual Plan UAL Balances at 6/30/17 <sup>1</sup>		5,939,788,240
5. Pool's 2016/17 Investment & Asset (Gain)/Loss		(513,476,842)
6. Pool's 2016/17 Other (Gain)/Loss		13,232,897
7. Plan's Share of Pool's Asset (Gain)/Loss $[(1) - (2)] / [(3) - (4)] * (5)$		(1,016,534)
8. Plan's Share of Pool's Other (Gain)/Loss $[(1)] / [(3)] * (6)$		26,087
9. Plan's New (Gain)/Loss as of 6/30/2017 $[(7) + (8)]$	\$	(990,446)
10. Increase in Pool's Accrued Liability due to Change in Assumptions <sup>1</sup>		390,935,533
11. Plan's Share of Pool's Change in Assumptions $[(1)] / [(3)] * (10)$	\$	770,693

<sup>1</sup> 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

12. Plan's UAL $[(2) + (9) + (11)]$	\$	11,365,268
13. Plan's Share of Pool's MVA $[(1) - (12)]$	\$	<b>29,968,235</b>

## Schedule of Plan's Amortization Bases

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, 2017.
- The employer contribution determined by the valuation is for the fiscal year beginning two years after the valuation date: Fiscal Year 2019-20.

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 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 payment on the UAL for the fiscal year and adjusting for interest. Additional discretionary payments are reflected in the Expected Payments column in the fiscal year they were made by the agency.

Reason for Base	Date Established	Ramp Up/Down 2019-20	Amortization Period	Balance 6/30/17	Payment 2017-18	Balance 6/30/18	Payment 2018-19	Amounts for Fiscal 2019-20	
								Balance 6/30/19	Scheduled Payment for 2019-20
NON-ASSET (GAIN)/LOSS	06/30/13	100% →	26	\$(50,576)	\$(2,042)	\$(52,128)	\$(2,764)	\$(53,045)	\$(3,550)
ASSET (GAIN)/LOSS	06/30/13	100% →	26	\$4,455,200	\$179,899	\$4,591,896	\$243,478	\$4,672,659	\$312,677
SHARE OF PRE-2013 POOL UAL	06/30/13	No Ramp	18	\$3,957,858	\$299,201	\$3,934,945	\$304,468	\$3,904,917	\$312,745
ASSET (GAIN)/LOSS	06/30/14	80% ↗	27	\$(3,066,925)	\$(83,896)	\$(3,202,393)	\$(127,659)	\$(3,302,361)	\$(174,880)
ASSUMPTION CHANGE	06/30/14	80% ↗	17	\$2,073,905	\$77,206	\$2,144,307	\$117,968	\$2,177,600	\$161,569
NON-ASSET (GAIN)/LOSS	06/30/14	80% ↗	27	\$38,282	\$1,047	\$39,973	\$1,593	\$41,221	\$2,183
ASSET (GAIN)/LOSS	06/30/15	60% ↗	28	\$1,785,366	\$25,140	\$1,888,770	\$50,966	\$1,972,925	\$78,550
NON-ASSET (GAIN)/LOSS	06/30/15	60% ↗	28	\$(6,611)	\$(93)	\$(6,994)	\$(189)	\$(7,305)	\$(291)
ASSET (GAIN)/LOSS	06/30/16	40% ↗	29	\$2,099,739	\$0	\$2,251,970	\$31,250	\$2,382,875	\$64,222
NON-ASSET (GAIN)/LOSS	06/30/16	40% ↗	29	\$(349,994)	\$0	\$(375,369)	\$(5,209)	\$(397,189)	\$(10,705)
ASSUMPTION CHANGE	06/30/16	40% ↗	19	\$648,777	\$(16,777)	\$713,188	\$13,458	\$750,957	\$27,653
ASSUMPTION CHANGE	06/30/17	20% ↗	20	\$770,693	\$(18,600)	\$845,831	\$(19,135)	\$926,969	\$17,469
ASSET (GAIN)/LOSS	06/30/17	20% ↗	30	\$(1,016,534)	\$0	\$(1,090,232)	\$0	\$(1,169,274)	\$(16,207)
NON-ASSET (GAIN)/LOSS	06/30/17	20% ↗	30	\$26,087	\$0	\$27,979	\$0	\$30,007	\$416
<b>TOTAL</b>				<b>\$11,365,267</b>	<b>\$461,085</b>	<b>\$11,711,743</b>	<b>\$608,225</b>	<b>\$11,930,956</b>	<b>\$771,851</b>

The (gain)/loss bases are the plan's allocated share of the risk pool's (gain)/loss for the fiscal year as disclosed on the previous page. 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 2.875 percent for each year into the future. **The schedules do not attempt to reflect any experience after June 30, 2017 that may deviate from the actuarial assumptions. Therefore, future amortization payments displayed in the Current Amortization Schedule may not match projected amortization payments shown in connection with Projected Employer Contributions provided elsewhere in this report.**

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	20 Year Amortization		15 Year Amortization	
			Balance	Payment	Balance	Payment
6/30/2019	11,930,957	771,854	11,930,957	891,708	11,930,957	1,084,893
6/30/2020	11,996,608	861,497	11,872,484	917,345	11,672,419	1,116,083
6/30/2021	11,974,181	958,602	11,783,222	943,719	11,362,836	1,148,171
6/30/2022	11,849,566	1,032,176	11,660,176	970,851	10,997,578	1,181,181
6/30/2023	11,639,722	1,063,731	11,500,111	998,763	10,571,653	1,215,140
6/30/2024	11,381,985	1,094,313	11,299,534	1,027,477	10,079,680	1,250,075
6/30/2025	11,073,891	1,125,775	11,054,679	1,057,017	9,515,859	1,286,015
6/30/2026	10,710,877	1,158,141	10,761,480	1,087,406	8,873,942	1,322,988
6/30/2027	10,288,027	1,191,437	10,415,552	1,118,669	8,147,196	1,361,023
6/30/2028	9,800,038	1,225,691	10,012,169	1,150,831	7,328,370	1,400,153
6/30/2029	9,241,195	1,260,930	9,546,232	1,183,917	6,409,657	1,440,407
6/30/2030	8,605,343	1,297,182	9,012,251	1,217,955	5,382,648	1,481,819
6/30/2031	7,885,848	1,334,476	8,404,306	1,252,971	4,238,295	1,524,421
6/30/2032	7,075,568	1,314,453	7,716,022	1,288,994	2,966,857	1,568,248
6/30/2033	6,227,278	1,292,177	6,940,531	1,326,053	1,557,851	1,613,336
6/30/2034	5,340,557	1,246,380	6,070,438	1,364,177		
6/30/2035	4,436,977	1,169,389	5,097,782	1,403,397		
6/30/2036	3,547,620	1,086,940	4,013,992	1,443,744		
6/30/2037	2,679,171	545,146	2,809,842	1,485,252		
6/30/2038	2,308,849	507,193	1,475,405	1,527,953		
6/30/2039	1,950,984	490,980				
6/30/2040	1,583,964	505,096				
6/30/2041	1,175,716	404,276				
6/30/2042	842,281	380,102				
6/30/2043	509,707	302,700				
6/30/2044	233,180	166,181				
6/30/2045	77,986	54,559				
6/30/2046	27,138	28,105				
6/30/2047						
6/30/2048						
<b>Totals</b>		<b>23,869,480</b>		<b>23,658,197</b>		<b>19,993,953</b>
<b>Interest Paid</b>		<b>11,938,523</b>		<b>11,727,238</b>		<b>8,062,995</b>
<b>Estimated Savings</b>				<b>211,283</b>		<b>3,875,527</b>

\* This schedule does not reflect the impact of adopted discount rate changes that will become effective beyond June 30, 2017. For Projected Employer Contributions, please see page 5.

## 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.

<b>Fiscal Year</b>	<b>Employer Normal Cost</b>	<b>Unfunded Liability Payment (\$)</b>
2016 - 17	21.230%	\$402,865
2017 - 18	21.418%	\$496,462
2018 - 19	22.346%	\$627,361
2019 - 20	23.654%	\$771,853

## 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.

<b>Valuation Date</b>	<b>Accrued Liability (AL)</b>	<b>Share of Pool's Market Value of Assets (MVA)</b>	<b>Plan's Share of Pool's Unfunded Liability</b>	<b>Funded Ratio</b>	<b>Annual Covered Payroll</b>
06/30/2011	\$ 28,919,573	\$ 21,722,502	\$ 7,197,071	75.1%	\$ 1,942,071
06/30/2012	30,999,471	22,860,016	8,139,455	73.7%	1,824,609
06/30/2013	32,050,359	24,846,630	7,203,729	77.5%	1,971,765
06/30/2014	35,213,417	28,436,146	6,777,271	80.8%	1,840,375
06/30/2015	36,891,116	28,263,430	8,627,686	76.6%	2,046,383
06/30/2016	38,454,832	27,292,457	11,162,375	71.0%	2,010,099
06/30/2017	41,333,503	29,968,235	11,365,268	72.5%	1,342,110

## **Risk Analysis**

- **Analysis of Future Investment Return Scenarios**
- **Analysis of Discount Rate Sensitivity**
- **Volatility Ratios**
- **Hypothetical Termination Liability**

## Analysis of 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 (2017-18, 2018-19, 2019-20 and 2020-21). 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.

Each of the five investment return scenarios assumes a return of 7.25 percent for fiscal year 2017-18. For fiscal years 2018-19, 2019-20, and 2020-21 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.

The alternate investment returns were chosen based on stochastic analysis of possible future investment returns over the four-year period ending June 30, 2021. 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 5<sup>th</sup>, 25<sup>th</sup>, 50<sup>th</sup>, 75<sup>th</sup>, and 95<sup>th</sup> 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 2020-21	Projected Employer Contributions			
	2020-21	2021-22	2022-23	2023-24
<b>1.0%</b>				
Normal Cost	25.1%	25.1%	25.1%	25.1%
UAL Contribution	\$875,000	\$1,026,000	\$1,187,000	\$1,340,000
<b>4.0%</b>				
Normal Cost	25.1%	25.1%	25.1%	25.1%
UAL Contribution	\$875,000	\$1,012,000	\$1,142,000	\$1,251,000
<b>7.0%</b>				
Normal Cost	25.1%	25.1%	25.1%	25.1%
UAL Contribution	\$875,000	\$997,000	\$1,097,000	\$1,157,000
<b>9.0%</b>				
Normal Cost	25.1%	25.5%	26.0%	26.4%
UAL Contribution	\$875,000	\$987,000	\$1,071,000	\$1,108,000
<b>12.0%</b>				
Normal Cost	25.1%	25.5%	26.0%	26.4%
UAL Contribution	\$875,000	\$973,000	\$1,025,000	\$1,011,000

Given the temporary suspension of the Risk Mitigation Policy during the period over which the discount rate assumption is being phased down to 7.0 percent, the projections above were performed without reflection of any possible impact of this Policy for Fiscal Year 2020-21. In addition, the projections above do not reflect the recent changes to the new amortization policy effective with the June 30, 2019 valuation but the impact on the results above is expected to be minimal.

## Analysis of Discount Rate Sensitivity

Shown below are various valuation results as of June 30, 2017 assuming alternate discount rates. Results are shown using the current discount rate of 7.25 percent as well as alternate discount rates of 6.0 percent, 7.0 percent, and 8.0 percent. The alternate rate of 7.0 percent was selected since the Board has adopted this rate as the final discount rate at the end of the three-year phase-in of the reduction in this assumption. 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, 7.0 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.

<b>Sensitivity Analysis</b>				
<b>As of June 30, 2017</b>	<b>Plan's Total Normal Cost</b>	<b>Accrued Liability</b>	<b>Unfunded Accrued Liability</b>	<b>Funded Status</b>
7.25% (current discount rate)	32.643%	\$41,333,503	\$11,365,268	72.5%
6.0%	43.035%	\$48,673,000	\$18,704,765	61.6%
7.0%	34.044%	\$42,564,742	\$12,596,507	70.4%
8.0%	27.219%	\$37,629,071	\$7,660,836	79.6%

## Volatility Ratios

Actuarial calculations are based on a number of 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 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. Since the liability volatility ratio is a long-term measure, it is shown below at the current discount rate (7.25 percent) as well as the discount rate the Board has adopted to determine the contribution requirement in the June 30, 2018 actuarial valuation (7.00 percent).

<b>Rate Volatility</b>	<b>As of June 30, 2017</b>	
1. Market Value of Assets	\$	29,968,235
2. Payroll		1,342,110
3. Asset Volatility Ratio (AVR) [(1) / (2)]		22.3
4. Accrued Liability	\$	41,333,503
5. Liability Volatility Ratio (LVR) [(4) / (2)]		30.8
6. Accrued Liability (7.00% discount rate)		42,564,742
7. Projected Liability Volatility Ratio [(6) / (2)]		31.7

## 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, 2017. 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.

<b>Market Value of Assets (MVA)</b>	<b>Hypothetical Termination Liability<sup>1,2</sup> @ 1.75%</b>	<b>Funded Status</b>	<b>Unfunded Termination Liability @ 1.75%</b>	<b>Hypothetical Termination Liability<sup>1,2</sup> @ 3.00%</b>	<b>Funded Status</b>	<b>Unfunded Termination Liability @ 3.00%</b>
\$29,968,235	\$88,158,226	34.0%	\$58,189,991	\$78,522,365	38.2%	\$48,554,130

<sup>1</sup> 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.

<sup>2</sup> 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 2.61 percent on June 30, 2017, and was 2.83 percent on January 31, 2018.

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:

	<b>June 30, 2016</b>	<b>June 30, 2017</b>
Reported Payroll	\$ 2,010,099	\$ 1,342,110
Projected Payroll for Contribution Purposes	\$ 2,196,490	\$ 1,461,227
Number of Members		
Active	15	10
Transferred	20	20
Separated	9	8
Retired	53	58

## 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**

**SECTION 1 – Plan Specific Information for the Safety Plan of the Town of Atherton**

## 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 Appendix B within Section 2 of this report.

Benefit Provision	Contract package	
	Active Police	Receiving Police
Benefit Formula	3.0% @ 50	
Social Security Coverage	No	
Full/Modified	Full	
Employee Contribution Rate	9.00%	
Final Average Compensation Period	One Year	
Sick Leave Credit	Yes	
Non-Industrial Disability	Standard	
Industrial Disability	Yes	
Pre-Retirement Death Benefits		
Optional Settlement 2	Yes	
1959 Survivor Benefit Level	level 3	
Special	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

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



**California Public Employees' Retirement System**  
**Actuarial Office**  
 P.O. Box 942709  
 Sacramento, CA 94229-2709  
 TTY: (916) 795-3240  
 (888) 225-7377 phone – (916) 795-2744 fax  
[www.calpers.ca.gov](http://www.calpers.ca.gov)

**August 2018**

**PEPRA Miscellaneous Plan of the Town of Atherton  
 (CalPERS ID: 1382390535)  
 Annual Valuation Report as of June 30, 2017**

Dear Employer,

As an attachment to this letter, you will find a copy of the June 30, 2017 actuarial valuation report of the pension plan.

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, 2017.

Section 2 can be found on the CalPERS website at ([www.calpers.ca.gov](http://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, 2017 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, 2018.

The exhibit below displays the minimum employer contributions, before any cost sharing, for Fiscal Year 2019-20 along with estimates of the required contributions for Fiscal Year 2020-21. 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.**

**Required Contribution**

Fiscal Year	Employer Normal Cost Rate	Employer Payment of Unfunded Liability
2019-20	7.072%	\$3,306
<i>Projected Results</i>		
2020-21	7.6%	\$3,600

The actual investment return for Fiscal Year 2017-18 was not known at the time this report was prepared. The projections above assume the investment return for that year would be 7.25 percent. ***If the actual investment return for Fiscal Year 2017-18 differs from 7.25 percent, the actual contribution requirements for the projected years will differ from those shown above.***

Moreover, the projected results for Fiscal Year 2020-21 assume that there are no future plan changes, no further changes in assumptions other than those recently approved, and no liability gains or losses. Such changes can have a significant impact on required contributions. Since they cannot be predicted in advance, the projected employer results shown above are estimates. The actual required employer contributions for Fiscal Year 2020-21 will be provided in next year's report.

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.

The "Risk Analysis" section of the valuation report also contains estimated employer contributions in future years under a variety of investment return scenarios.

### Changes since the Prior Year's Valuation

At its December 2016 meeting, 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 2019-20 determined in this valuation were calculated using a discount rate of 7.25 percent. The projected employer contributions on Page 5 are calculated under the assumption that the discount rate will be lowered to 7.00 percent next year as adopted by the Board.

On December 19, 2017, the CalPERS Board of Administration adopted new actuarial assumptions based on the recommendations in the December 2017 CalPERS Experience Study and Review of Actuarial Assumptions. This study reviewed the retirement rates, termination rates, mortality rates, rates of salary increases and inflation assumption for Public Agencies. These new assumptions are incorporated in your actuarial valuations and will impact the required contribution for FY 2019-20. In addition, the Board adopted a new asset portfolio as part of its Asset Liability Management. The new asset mix supports a 7.00 percent discount rate. The reduction of the inflation assumption will be implemented in two steps in conjunction with the decreases in the discount rate. For the June 30, 2017 valuation an inflation rate of 2.625 percent was used and a rate of 2.50 percent will be used in the following valuation.

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 CalPERS Board of Administration adopted a Risk Mitigation Policy which is designed to reduce funding risk over time. This Policy has been temporarily suspended during the period over which the discount rate is being lowered. More details on the Risk Mitigation Policy can be found on our website.

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 to contact us with actuarial related 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, 2017**

**for the  
PEPRA Miscellaneous Plan  
of the  
Town of Atherton  
(CalPERS ID: 1382390535)**

**Required Contributions  
for Fiscal Year  
July 1, 2019 - June 30, 2020**

# **Table of Contents**

**Section 1 – Plan Specific Information**

**Section 2 – Risk Pool Actuarial Valuation Information**

# Section 1

CALIFORNIA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

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## **Plan Specific Information for the PEPRA Miscellaneous Plan of the Town of Atherton**

**(CalPERS ID: 1382390535)  
(Rate Plan: 26036)**

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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, 2017 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, 2017 provided by employers participating in the Miscellaneous 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 Miscellaneous 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, 2017 and employer contribution as of July 1, 2019, 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.



JULIAN ROBINSON, FSA, EA, MAAA  
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, 2017 actuarial valuation of the PEPRA Miscellaneous Plan of the Town of Atherton of the California Public Employees' Retirement System (CalPERS). This actuarial valuation sets the required employer contributions for Fiscal Year 2019-20.

## Purpose of Section 1

This Section 1 report for the PEPRA Miscellaneous Plan of the Town of Atherton 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, 2017;
- Determine the minimum required employer contribution for this plan for the fiscal year July 1, 2019 through June 30, 2020; and
- Provide actuarial information as of June 30, 2017 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 9.

Additionally, this report includes the following "Enhanced Risk Disclosures" also recommended by the CAAP in the Model Disclosure Elements document:

- A "Deterministic Stress 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, 7.0 percent and 8.0 percent.

## Required Employer Contributions

	<b>Fiscal Year</b>	
<b>Required Employer Contributions</b>	<b>2019-20</b>	
<b>Employer Normal Cost Rate</b>	<b>7.072%</b>	
<i>Plus, Either</i>		
<b>1) Monthly Employer Dollar UAL Payment</b>	<b>\$</b>	<b>275.53</b>
<i>Or</i>		
<b>2) Annual Lump Sum Prepayment Option</b>	<b>\$</b>	<b>3,193</b>
<p><i>The total minimum required employer contribution is the <b>sum</b> of the Plan's Employer Normal Cost Rate (expressed as a percentage of payroll) <b>plus</b> the Employer Unfunded Accrued Liability (UAL) Contribution Amount (billed monthly in dollars).</i></p> <p><i>Only the UAL portion of the employer contribution can be prepaid (<b>which must be received in full no later than July 31</b>). 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.</i></p> <p><i>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.</i></p>		

	<b>Fiscal Year</b>	<b>Fiscal Year</b>
	<b>2018-19</b>	<b>2019-20</b>
<b>Development of Normal Cost as a Percentage of Payroll<sup>1</sup></b>		
Base Total Normal Cost for Formula	13.092%	13.735%
Surcharge for Class 1 Benefits <sup>2</sup>		
a) PRSA	0.674%	0.587%
Phase out of Normal Cost Difference <sup>3</sup>	0.000%	0.000%
Plan's Total Normal Cost	13.766%	14.322%
Plan's Employee Contribution Rate	6.500%	7.250%
Employer Normal Cost Rate	7.266%	7.072%
Projected Payroll for the Contribution Fiscal Year	\$ 337,757	\$ 477,040
<b>Estimated Employer Contributions Based on Projected Payroll</b>		
Plan's Estimated Employer Normal Cost	\$ 24,541	\$ 33,736
Plan's Payment on Amortization Bases <sup>4</sup>	1,435	3,306
% of Projected Payroll (illustrative only)	0.425%	0.693%
Estimated Total Employer Contribution	\$ 25,976	\$ 37,042
% of Projected Payroll (illustrative only)	7.691%	7.765%

<sup>1</sup> The results shown for Fiscal Year 2018-19 reflect the prior year valuation and may not take into account any lump sum payment, side fund payoff, or rate adjustment made after June 30, 2017.

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

<sup>3</sup> 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.

<sup>4</sup> See page 9 for a breakdown of the Amortization Bases.

## Plan's Funded Status

	<b>June 30, 2016</b>	<b>June 30, 2017</b>
1. Present Value of Projected Benefits (PVB)	\$ 513,158	\$ 818,075
2. Entry Age Normal Accrued Liability (AL)	83,679	162,209
3. Plan's Market Value of Assets (MVA)	75,884	155,277
4. Unfunded Accrued Liability (UAL) [(2) - (3)]	7,795	6,932
5. Funded Ratio [(3) / (2)]	90.7%	95.7%

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.

Fiscal Year	Required Contribution	Projected Future Employer Contributions (Assumes 7.25% Return for Fiscal Year 2017-18)				
	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
<b>Normal Cost %</b>	7.072%	7.6%	7.6%	7.6%	7.6%	7.6%
<b>UAL Payment</b>	\$3,306	\$3,600	\$3,900	\$4,300	\$4,600	\$1,200

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.

Due to the adopted changes in the discount rate for next year's valuation in combination with the 5-year phase-in ramp, the increases in the required contributions are expected to continue for six years from Fiscal Year 2019-20 through Fiscal Year 2024-25.

For projected contributions under alternate investment return scenarios, please see the "Analysis of 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

At its December 2016 meeting, 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 2019-20 determined in this valuation were calculated using a discount rate of 7.25 percent. The projected employer contributions on page 5 are calculated assuming that the discount rate will be lowered to 7.00 percent next year as adopted by the Board. 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.

On December 19, 2017, the CalPERS Board of Administration adopted new actuarial assumptions based on the recommendations in the December 2017 CalPERS Experience Study and Review of Actuarial Assumptions. This study reviewed the retirement rates, termination rates, mortality rates, rates of salary increases and inflation assumption for Public Agencies. These new assumptions are incorporated in this actuarial valuation and will impact the required contribution for FY 2019-20. In addition, the Board adopted a new asset portfolio as part of its Asset Liability Management. The new asset mix supports a 7.00 percent discount rate. The reduction of the inflation assumption will be implemented in two steps in conjunction with the decreases in the discount rate. For the June 30, 2017 valuation an inflation rate of 2.625 percent will be used and a rate of 2.50 percent in the following valuation.

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 three-year discount rate schedule.

## 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, 2017. Changes in the value of assets subsequent to that date are not reflected. Investment returns below the assumed rate of return will increase the retired contribution, while investment returns above the assumed rate of return will decrease the retired contribution.

This actuarial valuation report reflects statutory changes, regulatory changes and CalPERS Board actions through January 2018. 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 MVA**
- **Schedule of Plan's Amortization Bases**
- **Amortization Schedule and Alternatives**
- **Employer Contribution History**
- **Funding History**

## Breakdown of Entry Age Normal Accrued Liability

Active Members	\$	162,209
Transferred Members		0
Terminated Members		0
Members and Beneficiaries Receiving Payments		0
Total	\$	162,209

## 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	\$	162,209
2. Projected UAL balance at 6/30/17		9,799
3. Pool's Accrued Liability <sup>1</sup>	\$	15,780,998,593
4. Sum of Pool's Individual Plan UAL Balances at 6/30/17 <sup>1</sup>		3,912,002,885
5. Pool's 2016/17 Investment & Asset (Gain)/Loss		(413,206,167)
6. Pool's 2016/17 Other (Gain)/Loss		(21,126,605)
7. Plan's Share of Pool's Asset (Gain)/Loss $[(1) - (2)] / [(3) - (4)] * (5)$		(5,306)
8. Plan's Share of Pool's Other (Gain)/Loss $[(1)] / [(3)] * (6)$		(217)
9. Plan's New (Gain)/Loss as of 6/30/2017 $[(7) + (8)]$	\$	(5,523)
10. Increase in Pool's Accrued Liability due to Change in Assumptions <sup>1</sup>		258,379,047
11. Plan's Share of Pool's Change in Assumptions $[(1)] / [(3)] * (10)$	\$	2,656

<sup>1</sup> 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

12. Plan's UAL $[(2) + (9) + (11)]$	\$	6,932
13. Plan's Share of Pool's MVA $[(1) - (12)]$	\$	<b>155,277</b>

## Schedule of Plan's Amortization Bases

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, 2017.
- The employer contribution determined by the valuation is for the fiscal year beginning two years after the valuation date: Fiscal Year 2019-20.

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 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 payment on the UAL for the fiscal year and adjusting for interest. Additional discretionary payments are reflected in the Expected Payments column in the fiscal year they were made by the agency.

Reason for Base	Date Established	Ramp Up/Down 2019-20	Amortization Period	Balance 6/30/17	Payment 2017-18	Balance 6/30/18	Payment 2018-19	Amounts for Fiscal 2019-20	
								Balance 6/30/19	Scheduled Payment for 2019-20
FRESH START	06/30/17	No Ramp	5	\$6,932	\$(4,274)	\$11,860	\$(1,925)	\$14,713	\$3,306
<b>TOTAL</b>				<b>\$6,932</b>	<b>\$(4,274)</b>	<b>\$11,860</b>	<b>\$(1,925)</b>	<b>\$14,713</b>	<b>\$3,306</b>

The (gain)/loss bases are the plan's allocated share of the risk pool's (gain)/loss for the fiscal year as disclosed on the previous page. 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 2.875 percent for each year into the future. **The schedules do not attempt to reflect any experience after June 30, 2017 that may deviate from the actuarial assumptions. Therefore, future amortization payments displayed in the Current Amortization Schedule may not match projected amortization payments shown in connection with Projected Employer Contributions provided elsewhere in this report.**

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
6/30/2019	14,713	3,306	N/A	N/A	N/A	N/A
6/30/2020	12,356	3,402				
6/30/2021	9,729	3,499				
6/30/2022	6,810	3,600				
6/30/2023	3,576	3,703				
6/30/2024						
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6/30/2048						
<b>Totals</b>		<b>17,511</b>		<b>N/A</b>		<b>N/A</b>
<b>Interest Paid</b>		<b>2,797</b>		<b>N/A</b>		<b>N/A</b>
<b>Estimated Savings</b>				<b>N/A</b>		<b>N/A</b>

\* This schedule does not reflect the impact of adopted discount rate changes that will become effective beyond June 30, 2017. For Projected Employer Contributions, please see page 5.

## 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.

<b>Fiscal Year</b>	<b>Employer Normal Cost</b>	<b>Unfunded Liability Payment (\$)</b>
2016 - 17	6.930%	\$0
2017 - 18	6.908%	\$412
2018 - 19	7.266%	\$1,435
2019 - 20	7.072%	\$3,306

## 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.

<b>Valuation Date</b>	<b>Accrued Liability (AL)</b>	<b>Share of Pool's Market Value of Assets (MVA)</b>	<b>Plan's Share of Pool's Unfunded Liability</b>	<b>Funded Ratio</b>	<b>Annual Covered Payroll</b>
06/30/2013	\$ 377	\$ 506	\$ (129)	134.2%	\$ 60,372
06/30/2014	12,473	13,179	(706)	105.7%	64,827
06/30/2015	34,451	33,187	1,264	96.3%	233,018
06/30/2016	83,679	75,884	7,795	90.7%	309,096
06/30/2017	162,209	155,277	6,932	95.7%	438,152

## **Risk Analysis**

- **Analysis of Future Investment Return Scenarios**
- **Analysis of Discount Rate Sensitivity**
- **Volatility Ratios**
- **Hypothetical Termination Liability**

## Analysis of 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 (2017-18, 2018-19, 2019-20 and 2020-21). 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.

Each of the five investment return scenarios assumes a return of 7.25 percent for fiscal year 2017-18. For fiscal years 2018-19, 2019-20, and 2020-21 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.

The alternate investment returns were chosen based on stochastic analysis of possible future investment returns over the four-year period ending June 30, 2021. 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 5<sup>th</sup>, 25<sup>th</sup>, 50<sup>th</sup>, 75<sup>th</sup>, and 95<sup>th</sup> 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 2020-21	Projected Employer Contributions			
	2020-21	2021-22	2022-23	2023-24
<b>1.0%</b>				
Normal Cost	7.6%	7.6%	7.6%	7.6%
UAL Contribution	\$3,600	\$4,100	\$4,700	\$5,600
<b>4.0%</b>				
Normal Cost	7.6%	7.6%	7.6%	7.6%
UAL Contribution	\$3,600	\$4,000	\$4,500	\$5,100
<b>7.0%</b>				
Normal Cost	7.6%	7.6%	7.6%	7.6%
UAL Contribution	\$3,600	\$3,900	\$4,300	\$4,600
<b>9.0%</b>				
Normal Cost	7.6%	7.8%	8.0%	7.7%
UAL Contribution	\$3,600	\$3,900	\$4,200	\$2,000
<b>12.0%</b>				
Normal Cost	7.6%	7.8%	8.0%	7.7%
UAL Contribution	\$3,600	\$3,800	\$580	\$0

Given the temporary suspension of the Risk Mitigation Policy during the period over which the discount rate assumption is being phased down to 7.0 percent, the projections above were performed without reflection of any possible impact of this Policy for Fiscal Year 2020-21. In addition, the projections above do not reflect the recent changes to the new amortization policy effective with the June 30, 2019 valuation but the impact on the results above is expected to be minimal.

## Analysis of Discount Rate Sensitivity

Shown below are various valuation results as of June 30, 2017 assuming alternate discount rates. Results are shown using the current discount rate of 7.25 percent as well as alternate discount rates of 6.0 percent, 7.0 percent, and 8.0 percent. The alternate rate of 7.0 percent was selected since the Board has adopted this rate as the final discount rate at the end of the three-year phase-in of the reduction in this assumption. 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, 7.0 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.

<b>Sensitivity Analysis</b>				
<b>As of June 30, 2017</b>	<b>Plan's Total Normal Cost</b>	<b>Accrued Liability</b>	<b>Unfunded Accrued Liability</b>	<b>Funded Status</b>
7.25% (current discount rate)	14.322%	\$162,209	\$6,932	95.7%
6.0%	18.424%	\$213,256	\$57,979	72.8%
7.0%	14.883%	\$169,251	\$13,974	91.7%
8.0%	12.165%	\$135,317	\$(19,960)	114.8%

## Volatility Ratios

Actuarial calculations are based on a number of 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 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. Since the liability volatility ratio is a long-term measure, it is shown below at the current discount rate (7.25 percent) as well as the discount rate the Board has adopted to determine the contribution requirement in the June 30, 2018 actuarial valuation (7.00 percent).

<b>Rate Volatility</b>	<b>As of June 30, 2017</b>	
1. Market Value of Assets	\$	155,277
2. Payroll		438,152
3. Asset Volatility Ratio (AVR) [(1) / (2)]		0.4
4. Accrued Liability	\$	162,209
5. Liability Volatility Ratio (LVR) [(4) / (2)]		0.4
6. Accrued Liability (7.00% discount rate)		169,251
7. Projected Liability Volatility Ratio [(6) / (2)]		0.4

## 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, 2017. 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.

<b>Market Value of Assets (MVA)</b>	<b>Hypothetical Termination Liability<sup>1,2</sup> @ 1.75%</b>	<b>Funded Status</b>	<b>Unfunded Termination Liability @ 1.75%</b>	<b>Hypothetical Termination Liability<sup>1,2</sup> @ 3.00%</b>	<b>Funded Status</b>	<b>Unfunded Termination Liability @ 3.00%</b>
\$155,277	\$370,268	41.9%	\$214,990	\$272,824	56.9%	\$117,546

<sup>1</sup> 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.

<sup>2</sup> 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 2.61 percent on June 30, 2017, and was 2.83 percent on January 31, 2018.

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:

	<b>June 30, 2016</b>	<b>June 30, 2017</b>
Reported Payroll	\$ 309,096	\$ 438,152
Projected Payroll for Contribution Purposes	\$ 337,757	\$ 477,040
Number of Members		
Active	4	6
Transferred	0	0
Separated	0	0
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**

**SECTION 1 – Plan Specific Information for the PEPR Miscellaneous Plan of the Town of Atherton**

## 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 Appendix B within Section 2 of this report.

	Contract package	
<b>Benefit Provision</b>	Active Misc	
Benefit Formula	2.0% @ 62	
Social Security Coverage	No	
Full/Modified	Full	
Employee Contribution Rate	6.50%	
Final Average Compensation Period	Three Year	
Sick Leave Credit	Yes	
Non-Industrial Disability	Standard	
Industrial Disability	No	
Pre-Retirement Death Benefits		
Optional Settlement 2	Yes	
1959 Survivor Benefit Level	level 3	
Special	No	
Alternate (firefighters)	No	
Post-Retirement Death Benefits		
Lump Sum	\$500	
Survivor Allowance (PRSA)	Yes	
COLA	2%	

# Section 2

CALIFORNIA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

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



**California Public Employees' Retirement System**  
**Actuarial Office**  
 P.O. Box 942709  
 Sacramento, CA 94229-2709  
 TTY: (916) 795-3240  
 (888) 225-7377 phone – (916) 795-2744 fax  
[www.calpers.ca.gov](http://www.calpers.ca.gov)

**August 2018**

**PEPRA Safety Police Plan of the Town of Atherton  
 (CalPERS ID: 1382390535)  
 Annual Valuation Report as of June 30, 2017**

Dear Employer,

As an attachment to this letter, you will find a copy of the June 30, 2017 actuarial valuation report of the pension plan.

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, 2017.

Section 2 can be found on the CalPERS website at ([www.calpers.ca.gov](http://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, 2017 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, 2018.

The exhibit below displays the minimum employer contributions, before any cost sharing, for Fiscal Year 2019-20 along with estimates of the required contributions for Fiscal Year 2020-21. 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.**

**Required Contribution**

Fiscal Year	Employer Normal Cost Rate	Employer Payment of Unfunded Liability
2019-20	13.786%	\$5,685
<i>Projected Results</i>		
2020-21	13.9%	\$6,400

The actual investment return for Fiscal Year 2017-18 was not known at the time this report was prepared. The projections above assume the investment return for that year would be 7.25 percent. ***If the actual investment return for Fiscal Year 2017-18 differs from 7.25 percent, the actual contribution requirements for the projected years will differ from those shown above.***

Moreover, the projected results for Fiscal Year 2020-21 assume that there are no future plan changes, no further changes in assumptions other than those recently approved, and no liability gains or losses. Such changes can have a significant impact on required contributions. Since they cannot be predicted in advance, the projected employer results shown above are estimates. The actual required employer contributions for Fiscal Year 2020-21 will be provided in next year's report.

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.

The "Risk Analysis" section of the valuation report also contains estimated employer contributions in future years under a variety of investment return scenarios.

### Changes since the Prior Year's Valuation

At its December 2016 meeting, 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 2019-20 determined in this valuation were calculated using a discount rate of 7.25 percent. The projected employer contributions on Page 5 are calculated under the assumption that the discount rate will be lowered to 7.00 percent next year as adopted by the Board.

On December 19, 2017, the CalPERS Board of Administration adopted new actuarial assumptions based on the recommendations in the December 2017 CalPERS Experience Study and Review of Actuarial Assumptions. This study reviewed the retirement rates, termination rates, mortality rates, rates of salary increases and inflation assumption for Public Agencies. These new assumptions are incorporated in your actuarial valuations and will impact the required contribution for FY 2019-20. In addition, the Board adopted a new asset portfolio as part of its Asset Liability Management. The new asset mix supports a 7.00 percent discount rate. The reduction of the inflation assumption will be implemented in two steps in conjunction with the decreases in the discount rate. For the June 30, 2017 valuation an inflation rate of 2.625 percent was used and a rate of 2.50 percent will be used in the following valuation.

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 CalPERS Board of Administration adopted a Risk Mitigation Policy which is designed to reduce funding risk over time. This Policy has been temporarily suspended during the period over which the discount rate is being lowered. More details on the Risk Mitigation Policy can be found on our website.

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 to contact us with actuarial related 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, 2017**

**for the  
PEPRA Safety Police Plan  
of the  
Town of Atherton  
(CalPERS ID: 1382390535)**

**Required Contributions  
for Fiscal Year  
July 1, 2019 - June 30, 2020**

# **Table of Contents**

**Section 1 – Plan Specific Information**

**Section 2 – Risk Pool Actuarial Valuation Information**

# Section 1

CALIFORNIA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

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## **Plan Specific Information for the PEPRA Safety Police Plan of the Town of Atherton**

**(CalPERS ID: 1382390535)  
(Rate Plan: 25053)**

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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, 2017 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, 2017 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, 2017 and employer contribution as of July 1, 2019, 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.



JULIAN ROBINSON, FSA, EA, MAAA  
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, 2017 actuarial valuation of the PEPRA Safety Police Plan of the Town of Atherton of the California Public Employees' Retirement System (CalPERS). This actuarial valuation sets the required employer contributions for Fiscal Year 2019-20.

## Purpose of Section 1

This Section 1 report for the PEPRA Safety Police Plan of the Town of Atherton 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, 2017;
- Determine the minimum required employer contribution for this plan for the fiscal year July 1, 2019 through June 30, 2020; and
- Provide actuarial information as of June 30, 2017 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 9.

Additionally, this report includes the following "Enhanced Risk Disclosures" also recommended by the CAAP in the Model Disclosure Elements document:

- A "Deterministic Stress 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, 7.0 percent and 8.0 percent.

## Required Employer Contributions

Required Employer Contributions	Fiscal Year
<b>Employer Normal Cost Rate</b>	<b>2019-20</b>
	<b>13.786%</b>
<i>Plus, Either</i>	
<b>1) Monthly Employer Dollar UAL Payment</b>	<b>\$ 473.76</b>
<i>Or</i>	
<b>2) Annual Lump Sum Prepayment Option</b>	<b>\$ 5,490</b>
<p><i>The total minimum required employer contribution is the <b>sum</b> of the Plan's Employer Normal Cost Rate (expressed as a percentage of payroll) <b>plus</b> the Employer Unfunded Accrued Liability (UAL) Contribution Amount (billed monthly in dollars).</i></p> <p><i>Only the UAL portion of the employer contribution can be prepaid (<b>which must be received in full no later than July 31</b>). 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.</i></p> <p><i>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.</i></p>	

	Fiscal Year	Fiscal Year
	2018-19	2019-20
<b>Development of Normal Cost as a Percentage of Payroll<sup>1</sup></b>		
Base Total Normal Cost for Formula	24.141%	25.034%
Surcharge for Class 1 Benefits <sup>2</sup>		
a) PRSA	1.574%	1.502%
Phase out of Normal Cost Difference <sup>3</sup>	0.000%	0.000%
Plan's Total Normal Cost	25.715%	26.536%
Plan's Employee Contribution Rate	12.750%	12.750%
Employer Normal Cost Rate	12.965%	13.786%
Projected Payroll for the Contribution Fiscal Year	\$ 476,849	\$ 857,997
<b>Estimated Employer Contributions Based on Projected Payroll</b>		
Plan's Estimated Employer Normal Cost	\$ 61,824	\$ 118,283
Plan's Payment on Amortization Bases <sup>4</sup>	2,327	5,685
% of Projected Payroll (illustrative only)	0.488%	0.663%
Estimated Total Employer Contribution	\$ 64,151	\$ 123,968
% of Projected Payroll (illustrative only)	13.453%	14.449%

<sup>1</sup> The results shown for Fiscal Year 2018-19 reflect the prior year valuation and may not take into account any lump sum payment, side fund payoff, or rate adjustment made after June 30, 2017.

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

<sup>3</sup> 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.

<sup>4</sup> See page 9 for a breakdown of the Amortization Bases.

## Plan's Funded Status

	June 30, 2016		June 30, 2017	
1. Present Value of Projected Benefits (PVB)	\$	1,509,564	\$	2,630,201
2. Entry Age Normal Accrued Liability (AL)		134,082		230,501
3. Plan's Market Value of Assets (MVA)		116,603		210,826
4. Unfunded Accrued Liability (UAL) [(2) - (3)]		17,479		19,675
5. Funded Ratio [(3) / (2)]		87.0%		91.5%

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.

Fiscal Year	Required Contribution	Projected Future Employer Contributions (Assumes 7.25% Return for Fiscal Year 2017-18)				
		2019-20	2020-21	2021-22	2022-23	2023-24
Normal Cost %	13.786%	13.9%	13.9%	13.9%	13.9%	13.9%
UAL Payment	\$5,685	\$6,400	\$7,100	\$7,900	\$8,700	\$9,600

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.

Due to the adopted changes in the discount rate for next year's valuation in combination with the 5-year phase-in ramp, the increases in the required contributions are expected to continue for six years from Fiscal Year 2019-20 through Fiscal Year 2024-25.

For projected contributions under alternate investment return scenarios, please see the "Analysis of 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

At its December 2016 meeting, 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 2019-20 determined in this valuation were calculated using a discount rate of 7.25 percent. The projected employer contributions on page 5 are calculated assuming that the discount rate will be lowered to 7.00 percent next year as adopted by the Board. 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.

On December 19, 2017, the CalPERS Board of Administration adopted new actuarial assumptions based on the recommendations in the December 2017 CalPERS Experience Study and Review of Actuarial Assumptions. This study reviewed the retirement rates, termination rates, mortality rates, rates of salary increases and inflation assumption for Public Agencies. These new assumptions are incorporated in this actuarial valuation and will impact the required contribution for FY 2019-20. In addition, the Board adopted a new asset portfolio as part of its Asset Liability Management. The new asset mix supports a 7.00 percent discount rate. The reduction of the inflation assumption will be implemented in two steps in conjunction with the decreases in the discount rate. For the June 30, 2017 valuation an inflation rate of 2.625 percent will be used and a rate of 2.50 percent in the following valuation.

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 three-year discount rate schedule.

## 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, 2017. Changes in the value of assets subsequent to that date are not reflected. Investment returns below the assumed rate of return will increase the retired contribution, while investment returns above the assumed rate of return will decrease the retired contribution.

This actuarial valuation report reflects statutory changes, regulatory changes and CalPERS Board actions through January 2018. 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 MVA**
- **Schedule of Plan's Amortization Bases**
- **Amortization Schedule and Alternatives**
- **Employer Contribution History**
- **Funding History**

## Breakdown of Entry Age Normal Accrued Liability

Active Members	\$	230,501
Transferred Members		0
Terminated Members		0
Members and Beneficiaries Receiving Payments		0
Total	\$	230,501

## 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	\$	230,501
2. Projected UAL balance at 6/30/17		22,345
3. Pool's Accrued Liability <sup>1</sup>	\$	20,966,498,823
4. Sum of Pool's Individual Plan UAL Balances at 6/30/17 <sup>1</sup>		5,939,788,240
5. Pool's 2016/17 Investment & Asset (Gain)/Loss		(513,476,842)
6. Pool's 2016/17 Other (Gain)/Loss		13,232,897
7. Plan's Share of Pool's Asset (Gain)/Loss $[(1) - (2)] / [(3) - (4)] * (5)$		(7,113)
8. Plan's Share of Pool's Other (Gain)/Loss $[(1)] / [(3)] * (6)$		145
9. Plan's New (Gain)/Loss as of 6/30/2017 $[(7) + (8)]$	\$	(6,967)
10. Increase in Pool's Accrued Liability due to Change in Assumptions <sup>1</sup>		390,935,533
11. Plan's Share of Pool's Change in Assumptions $[(1)] / [(3)] * (10)$	\$	4,298

<sup>1</sup> 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

12. Plan's UAL $[(2) + (9) + (11)]$	\$	19,675
13. Plan's Share of Pool's MVA $[(1) - (12)]$	\$	<b>210,826</b>

## Schedule of Plan's Amortization Bases

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, 2017.
- The employer contribution determined by the valuation is for the fiscal year beginning two years after the valuation date: Fiscal Year 2019-20.

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 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 payment on the UAL for the fiscal year and adjusting for interest. Additional discretionary payments are reflected in the Expected Payments column in the fiscal year they were made by the agency.

Reason for Base	Date Established	Ramp Up/Down 2019-20	Amortization Period	Balance 6/30/17	Payment 2017-18	Balance 6/30/18	Payment 2018-19	Amounts for Fiscal 2019-20	
								Balance 6/30/19	Scheduled Payment for 2019-20
FRESH START	06/30/17	No Ramp	10	\$19,675	\$(12,589)	\$34,140	\$(8,908)	\$45,840	\$5,685
<b>TOTAL</b>				<b>\$19,675</b>	<b>\$(12,589)</b>	<b>\$34,140</b>	<b>\$(8,908)</b>	<b>\$45,840</b>	<b>\$5,685</b>

The (gain)/loss bases are the plan's allocated share of the risk pool's (gain)/loss for the fiscal year as disclosed on the previous page. 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 2.875 percent for each year into the future. **The schedules do not attempt to reflect any experience after June 30, 2017 that may deviate from the actuarial assumptions. Therefore, future amortization payments displayed in the Current Amortization Schedule may not match projected amortization payments shown in connection with Projected Employer Contributions provided elsewhere in this report.**

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	5 Year Amortization		0 Year Amortization	
			Balance	Payment	Balance	Payment
6/30/2019	45,840	5,685	45,840	10,301	N/A	N/A
6/30/2020	43,276	5,849	38,495	10,598		
6/30/2021	40,357	6,017	30,311	10,902		
6/30/2022	37,052	6,190	21,218	11,216		
6/30/2023	33,328	6,368	11,141	11,538		
6/30/2024	29,150	6,551				
6/30/2025	24,479	6,739				
6/30/2026	19,275	6,933				
6/30/2027	13,493	7,132				
6/30/2028	7,085	7,337				
6/30/2029						
6/30/2030						
6/30/2031						
6/30/2032						
6/30/2033						
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6/30/2044						
6/30/2045						
6/30/2046						
6/30/2047						
6/30/2048						
<b>Totals</b>		<b>64,799</b>		<b>54,555</b>		<b>N/A</b>
<b>Interest Paid</b>		<b>18,959</b>		<b>8,715</b>		<b>N/A</b>
<b>Estimated Savings</b>				<b>10,244</b>		<b>N/A</b>

\* This schedule does not reflect the impact of adopted discount rate changes that will become effective beyond June 30, 2017. For Projected Employer Contributions, please see page 5.

## 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.

<b>Fiscal Year</b>	<b>Employer Normal Cost</b>	<b>Unfunded Liability Payment (\$)</b>
2016 - 17	12.821%	\$84
2017 - 18	12.729%	\$1,974
2018 - 19	12.965%	\$2,327
2019 - 20	13.786%	\$5,685

## 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.

<b>Valuation Date</b>	<b>Accrued Liability (AL)</b>	<b>Share of Pool's Market Value of Assets (MVA)</b>	<b>Plan's Share of Pool's Unfunded Liability</b>	<b>Funded Ratio</b>	<b>Annual Covered Payroll</b>
06/30/2014	\$ 1,842	\$ 1,920	\$ (78)	104.2%	\$ 201,037
06/30/2015	71,655	66,027	5,628	92.1%	443,135
06/30/2016	134,082	116,603	17,479	87.0%	436,385
06/30/2017	230,501	210,826	19,675	91.5%	788,055

## **Risk Analysis**

- **Analysis of Future Investment Return Scenarios**
- **Analysis of Discount Rate Sensitivity**
- **Volatility Ratios**
- **Hypothetical Termination Liability**

## Analysis of 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 (2017-18, 2018-19, 2019-20 and 2020-21). 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.

Each of the five investment return scenarios assumes a return of 7.25 percent for fiscal year 2017-18. For fiscal years 2018-19, 2019-20, and 2020-21 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.

The alternate investment returns were chosen based on stochastic analysis of possible future investment returns over the four-year period ending June 30, 2021. 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 5<sup>th</sup>, 25<sup>th</sup>, 50<sup>th</sup>, 75<sup>th</sup>, and 95<sup>th</sup> 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 2020-21	Projected Employer Contributions			
	2020-21	2021-22	2022-23	2023-24
<b>1.0%</b>				
Normal Cost	13.9%	13.9%	13.9%	13.9%
UAL Contribution	\$6,400	\$7,300	\$8,500	\$10,000
<b>4.0%</b>				
Normal Cost	13.9%	13.9%	13.9%	13.9%
UAL Contribution	\$6,400	\$7,200	\$8,200	\$9,400
<b>7.0%</b>				
Normal Cost	13.9%	13.9%	13.9%	13.9%
UAL Contribution	\$6,400	\$7,100	\$7,900	\$8,700
<b>9.0%</b>				
Normal Cost	13.9%	14.2%	14.6%	14.4%
UAL Contribution	\$6,400	\$7,100	\$7,700	\$8,400
<b>12.0%</b>				
Normal Cost	13.9%	14.2%	14.6%	14.4%
UAL Contribution	\$6,400	\$7,000	\$7,400	\$7,700

Given the temporary suspension of the Risk Mitigation Policy during the period over which the discount rate assumption is being phased down to 7.0 percent, the projections above were performed without reflection of any possible impact of this Policy for Fiscal Year 2020-21. In addition, the projections above do not reflect the recent changes to the new amortization policy effective with the June 30, 2019 valuation but the impact on the results above is expected to be minimal.

## Analysis of Discount Rate Sensitivity

Shown below are various valuation results as of June 30, 2017 assuming alternate discount rates. Results are shown using the current discount rate of 7.25 percent as well as alternate discount rates of 6.0 percent, 7.0 percent, and 8.0 percent. The alternate rate of 7.0 percent was selected since the Board has adopted this rate as the final discount rate at the end of the three-year phase-in of the reduction in this assumption. 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, 7.0 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.

<b>Sensitivity Analysis</b>				
<b>As of June 30, 2017</b>	<b>Plan's Total Normal Cost</b>	<b>Accrued Liability</b>	<b>Unfunded Accrued Liability</b>	<b>Funded Status</b>
7.25% (current discount rate)	26.536%	\$230,501	\$19,675	91.5%
6.0%	34.414%	\$288,713	\$77,887	73.0%
7.0%	27.630%	\$239,279	\$28,453	88.1%
8.0%	22.451%	\$200,586	\$(10,240)	105.1%

## Volatility Ratios

Actuarial calculations are based on a number of 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 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. Since the liability volatility ratio is a long-term measure, it is shown below at the current discount rate (7.25 percent) as well as the discount rate the Board has adopted to determine the contribution requirement in the June 30, 2018 actuarial valuation (7.00 percent).

Rate Volatility	As of June 30, 2017	
1. Market Value of Assets	\$	210,826
2. Payroll		788,055
3. Asset Volatility Ratio (AVR) [(1) / (2)]		0.3
4. Accrued Liability	\$	230,501
5. Liability Volatility Ratio (LVR) [(4) / (2)]		0.3
6. Accrued Liability (7.00% discount rate)		239,279
7. Projected Liability Volatility Ratio [(6) / (2)]		0.3

## 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, 2017. 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.

<b>Market Value of Assets (MVA)</b>	<b>Hypothetical Termination Liability<sup>1,2</sup> @ 1.75%</b>	<b>Funded Status</b>	<b>Unfunded Termination Liability @ 1.75%</b>	<b>Hypothetical Termination Liability<sup>1,2</sup> @ 3.00%</b>	<b>Funded Status</b>	<b>Unfunded Termination Liability @ 3.00%</b>
\$210,826	\$700,678	30.1%	\$489,852	\$559,780	37.7%	\$348,955

<sup>1</sup> 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.

<sup>2</sup> 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 2.61 percent on June 30, 2017, and was 2.83 percent on January 31, 2018.

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:

	<b>June 30, 2016</b>	<b>June 30, 2017</b>
Reported Payroll	\$ 436,385	\$ 788,055
Projected Payroll for Contribution Purposes	\$ 476,849	\$ 857,997
Number of Members		
Active	4	7
Transferred	0	0
Separated	0	0
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**

**SECTION 1 – Plan Specific Information for the PEPR Safety Police Plan of the Town of Atherton**

## 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 Appendix B within Section 2 of this report.

	Contract package	
<b>Benefit Provision</b>	Active Police	
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	Yes	
Pre-Retirement Death Benefits		
Optional Settlement 2	Yes	
1959 Survivor Benefit Level	level 3	
Special	Yes	
Alternate (firefighters)	No	
Post-Retirement Death Benefits		
Lump Sum	\$500	
Survivor Allowance (PRSA)	Yes	
COLA	2%	

# Section 2

CALIFORNIA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

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