



## **Item No. 4 Town of Atherton**

### **FINANCE COMMITTEE STAFF REPORT**

**TO: FINANCE COMMITTEE**

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

**DATE: OCTOBER 10, 2019**

**SUBJECT: REVIEW AND DISCUSSION ON CALPERS ACTUARIAL REPORTS AS OF JUNE 30, 2018, TO PROVIDE FUTURE ANALYSIS ON NEW PENSION DISCOUNT RATE ASSUMPTIONS FOR DISCUSSION OF PAYING DOWN LONG-TERM LIABILITIES AND IF APPROPRIATE MAKE RECOMMENDATIONS OF OPTIONS FOR COUNCIL CONSIDERATION**

#### **RECOMMENDATION**

Review and discuss the Town's CalPERS actuarial reports as of June 30, 2018, 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 CalPERS actuarial reports as of June 30, 2018 encompass these changes and the effects on the Town pension liabilities. The Committee reviews these reports to help the Town review strategies for reducing long-term liabilities. Last year the Committee may recall the San Mateo County Grand Jury filed a Report entitled "Soaring Pension Costs-Time for Hard Choices". This Report included findings and recommendations pertaining to cities in the County with respect to handling their pension liabilities.

The 2018-19 Grand Jury conducted a follow-up investigation on the Report with an update of financial information and sought to identify what progress had been made to address pension issues. This Grand Jury Report is a follow up to the 2017-18 report that discussed alternatives to meet potential rising costs and recommended cities to develop long-term financial plans to address their pension liabilities. Part of this discussion recommended that cities publish readily accessible

information on their websites regarding pension liabilities and long-term financial plans. There were some alternatives that were outlined by the 2017-18 Report. These included three categories:

- (1) Reducing future pension payments to CalPERS – paying Unfunded Liabilities early.
- (2) Managing future pension payments – contributions to reserves, negotiated cost sharing agreements with employees.
- (3) Adapting to future payment increases – reducing municipal operating costs and/or seeking revenue enhancements.

In the past several years there has been increased discussion regarding public pension costs and how much these costs are impacting annual budgets. With the recent changes in CalPERS assumptions on discount rates and demographics there is belief that within the next ten years pension costs could significantly increase.

## **FINDINGS**

In December 2016, the CalPERS Board made changes to the discount rate. Beginning with the June 30, 2016 Valuation Report, the discount rate was reduced from 7.5% to 7.375%, followed by 7.25% for June 30, 2017 and 7.0% on June 30, 2018. This policy change has been at the forefront of pension analysis over the past few years. The June 30, 2018 Valuation Reports are based on an investment return assumption of 7%. *This is the last of the known discount rate changes promulgated by CalPERS.*

During the preparation of these Valuation Reports, the Fiscal Year 2018-19 actual investment return was not known. CalPERS in late July reported a *preliminary* 6.7 percent net return on investments FY 2018-19. It is important to note that if the actual investment return differs from the assumed 7 percent, then actual contribution requirements for projected years will be differ from the ones in the reports. The difference will be adjusted for in the next year’s actuarial reports. Below is a snapshot of CalPERS’ actual net rate of return over several time periods.

CalPERS Returns time period	Net Rate of Return
5-year time period	5.8%
10-year	9.1%
20-year	5.8%
Over 30-years	8.1%

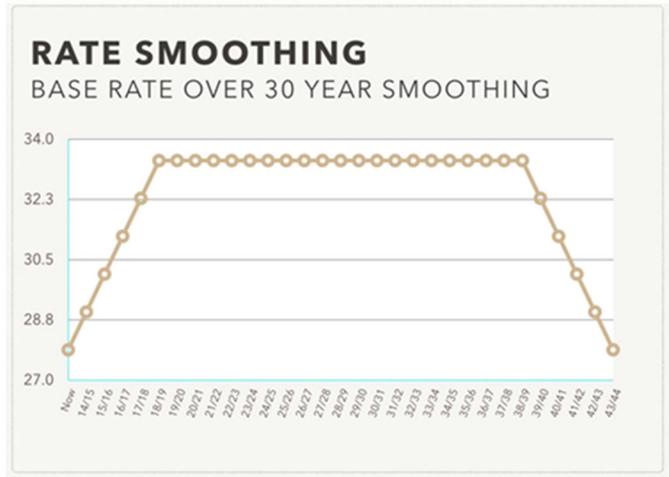
It is important to remember that the CalPERS pension perspective is that of a long-term investor, with an investment horizon that stretches years to decades.

## **Changes to the June 30, 2019 Valuations**

*As part of changes in actuary assumptions over the years, the CalPERS Board adopted a new amortization policy that will take effect in 2019 reports. This policy shortens the amortization of gains and losses from 30 years to 20 years and are included in the unfunded accrued liability payments. The policy also removes the previous 5 year ramp up and ramp down. The policy*

initially called for a 1.1% rate increase on individual employer plan rates each year over 5 years. From years 5 through 25 the projection was a flat smoothing of the rates. At year 25, CalPERS would institute a decline through a reverse cycle of 1.1% decreases per year.

The new policy change will only apply to any new UAL bases on or after the June 30, 2019 valuation.



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 Town’s Miscellaneous Employees future contribution assumes the investment return of 7.00% in FY 2018/19. The FY 2020/21 Employer Contribution rate for Miscellaneous Employees is 11.199% an increase of 0.872%. **The current FY 2019/20 Employer contribution rate for Miscellaneous employees is 10.327% and the unfunded liability payment (UAL) is \$295,438.**

(page 5 of Miscellaneous Valuation Report)

	<b>Required Contribution</b>	<b>Projected Future Employer Contributions (Assumes 7.00% Return for Fiscal Year 2018-19)</b>				
<b>Fiscal Year</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>	<b>2025-26</b>
<b>Normal Cost %</b>	11.199%	11.2%	11.2%	11.2%	11.2%	11.2%
<b>UAL Payment</b>	\$338,645	\$391,000	\$435,000	\$461,000	\$489,000	\$502,000

*The UAL payment for FY 2020/21 is \$338,645. This is an increase of \$43,207 over the current year. The Plan’s funded status as of June 30, 2018 for Miscellaneous Employees is currently at 73.3% with an unfunded liability of \$5,107,391.*

Below are projected future contribution rates for the Town Public Safety Employees and assumes the investment return of 7.00% in FY 2018/19. The projected employer rate and UAL for Safety is as follows:

(page 5 of Public Safety Valuation Report)

	<b>Required Contribution</b>	<b>Projected Future Employer Contributions (Assumes 7.00% Return for Fiscal Year 2018-19)</b>				
<b>Fiscal Year</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>	<b>2025-26</b>
<b>Normal Cost %</b>	25.540%	25.5%	25.5%	25.5%	25.5%	25.5%
<b>UAL Payment</b>	\$879,200	\$1,005,000	\$1,110,000	\$1,175,000	\$1,241,000	\$1,275,000

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The FY 2019/20 normal cost employer contribution rate as a percentage of payroll is 23.654% and the UAL \$771,853. Base on the valuation report, the FY 2021/21 contribution rate for Public Safety is 25.540%, an increase of 1.886%. The Town’s employer payment of the unfunded liability for FY 2020/21 Public Safety is \$879,200. This is an increase of \$107K in UAL from the current FY of \$771,853.

Based on the actuarial report, the Public Safety Employees Plan’s funded status as of June 30, 2018 is currently at 70.3% with an unfunded liability of \$13,037,296. The above required contribution for FY 2019/20 and the projected future contributions are at the assumed 7.00% rate of return. This discount rate reduction is the last of the changes the CalPERS Board of Administration approved over the last three years.

The Town has contributed its normal cost and UAL payment consistently over the years. Below is a table illustrating the last seven (7) fiscal years of CalPERS contributions:

CalPERS Contribution	Employer Required Contribution (NC) FY 2012/13	Employer Required Contribution (NC) FY 2013/14	Employer Required Contribution (NC) FY 2014/15	Employer Required Contribution (NC) FY 2015/16	Employer Required Contribution (NC) FY 2016/17	Employer Required Contribution (NC) FY 2017/18	Employer Required Contribution (NC) FY 2018/19
<b>Miscellaneous Employees</b>	\$232,478	\$184,808	\$195,111	\$157,046	\$158,938	\$172,239	\$180,604
<b>Public Safety Employees</b>	\$730,963	\$691,741	\$709,233	\$487,709	\$449,592	\$407,690	\$420,490
<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>	<b>\$601,095</b>
				<b>UAL FY 2015/16</b>	<b>UAL FY 2016/17</b>	<b>UAL FY 2017/18</b>	<b>UAL FY 2018/19</b>
<b>CalPERS Other</b>	<b>Side Fund</b>						
<b>Miscellaneous Employees</b>	\$647,650			\$116,323	\$140,897	\$177,126	\$230,536
<b>Public Safety Employees</b>				\$325,906	\$388,638	\$480,734	\$607,679
<b>Total UAL*</b>				<b>\$442,229</b>	<b>\$529,535</b>	<b>\$657,860</b>	<b>\$838,215</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>	<b>\$1,439,310</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 2020/21 the projected combined UAL payment is \$1,217,845 (\$338,645 Miscellaneous and \$879,200 Public Safety). The FY 2018/19 UAL payments for the Town illustrated above was \$838,215 which includes \$230,526 for Miscellaneous Employees and \$607,679 for Public Safety Employees. *This was an increase of \$180,355 from prior fiscal year.*

The FY 2019/20 UAL budget for Miscellaneous Employees was \$298,744 and \$777,538 for Public Safety for a total of \$1,076,282. The Town has the option of paying the UAL in lump sum or monthly. The FY 2019/20 UAL payments were made in July and included \$288,470 for

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Miscellaneous and \$750,799 for Public Safety for a total of \$1,039,269. Paying the UAL in lump sum netted a savings of \$37,013 for the Town. The projected FY 2020/21 UAL payment of \$1,217,845 is an increase of \$178,576 to FY 2019/20 UAL. Just recently, the Town has taken steps to pass on an additional maximum portion of the employer contribution to the employee allowable by CalPERS law. This includes an additional three percent (3%) to public Safety employees and an additional one percent (1%) to Miscellaneous employees. The Town also approved opening a Section 115 Trust for the exclusive purpose of meeting rising pension costs and/or accelerating amortization of Unfunded Liabilities as the town identifies opportunities to paying down its long-term pension liabilities.

Value of Assets (Page 5 of the Valuation Reports)

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, 2018, the MVA for Miscellaneous Employees is \$14,011,196 and the unfunded liability is \$5,107,391. For Public Safety Employees, the MVA is \$30,918,059 with an unfunded liability of \$13,037,296. This results in a total unfunded liability of \$18,144,687. This is a total increase of \$2,432,945 from previous year valuation reports.

Risk Analysis Tools

Included in the reports are risk analysis tools that used to estimate future Town Contributions toward unfunded liabilities, Employer normal cost rates and projection of paying down liabilities. At the time of the valuation reports were prepared the FY 2018/19 investment returns were not known and the assumed projection was 7%. The preliminary net investment returns were 6.7%, this is 0.3% below than expected. If the investment return was below or over the projection, these amounts will be used to set the rates in Fiscal Year 2021/22 calculations. In the reports there are different investment returns scenarios analysis of the effects on the Town UAL amount if the rate of return ranges between 1% to 12%

Miscellaneous Employees Investment Return Scenario (page 15 of Valuation Report)

Assumed Annual Return From 2018-19 through 2021-22	Projected Employer Contributions			
	2021-22	2022-23	2023-24	2024-25
<b>1.0%</b>				
Normal Cost	11.2%	11.2%	11.2%	11.2%
UAL Contribution	\$412,000	\$498,000	\$587,000	\$700,000
<b>4.0%</b>				
Normal Cost	11.2%	11.2%	11.2%	11.2%
UAL Contribution	\$402,000	\$467,000	\$525,000	\$598,000
<b>7.0%</b>				
Normal Cost	11.2%	11.2%	11.2%	11.2%
UAL Contribution	\$391,000	\$435,000	\$461,000	\$489,000
<b>9.0%</b>				
Normal Cost	11.4%	11.6%	11.9%	12.1%
UAL Contribution	\$386,000	\$419,000	\$430,000	\$436,000
<b>12.0%</b>				
Normal Cost	11.4%	11.6%	11.9%	12.1%
UAL Contribution	\$375,000	\$387,000	\$362,000	\$318,000

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The above illustrates the changes in the UAL contribution portion based on various investment returns. The changes of the projected UAL ranges from a \$387,000 (12% return) UAL payment to an increase of \$309,000 to \$700,000 (1% annual return).

Public Safety Employees Investment Return Scenario (page 15 of Valuation report)

Assumed Annual Return From 2019-20 through 2021-22	Projected Employer Contributions			
	2021-22	2022-23	2023-24	2024-25
<b>1.0%</b>				
Normal Cost	25.5%	25.5%	25.5%	25.5%
UAL Contribution	\$1,052,000	\$1,248,000	\$1,452,000	\$1,702,000
<b>4.0%</b>				
Normal Cost	25.5%	25.5%	25.5%	25.5%
UAL Contribution	\$1,029,000	\$1,180,000	\$1,316,000	\$1,478,000
<b>7.0%</b>				
Normal Cost	25.5%	25.5%	25.5%	25.5%
UAL Contribution	\$1,005,000	\$1,110,000	\$1,175,000	\$1,241,000
<b>9.0%</b>				
Normal Cost	26.0%	26.4%	26.9%	27.3%
UAL Contribution	\$993,000	\$1,076,000	\$1,109,000	\$1,130,000
<b>12.0%</b>				
Normal Cost	26.0%	26.4%	26.9%	27.3%
UAL Contribution	\$970,000	\$1,005,000	\$960,000	\$872,000

The various investment returns for Public Safety employees' projects estimated changes in the UAL contribution portion increases from \$105,000 to \$697,000 through FY 2024/25.

CalPERS Discount Rate Changes Projections

It has been readily anticipated that changes in discount rate will result in some higher required employer contributions. CalPERS provided these impact projections when they changed the discount rate assumptions in December 2016. Staff for estimation purposes updated a projection of the impact of the reduction to the discount rate to the normal cost and UAL payments beginning with FY 2021/22. Taking the projected impact of the reduction of the discount rates above, staff projected the increase in the normal cost and the UAL payments for the next couple fiscal years. For continued illustrative

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%

purposes the middle of each range of adjustments is used for estimated cost. These are projections of estimated costs, as each year these will be based and set on the investment return of CalPERS.

Miscellaneous Employees (New Discount Rate Assumptions Forecast)

<i>Fiscal Year</i>	<i>2021-22</i>	<i>2022-23</i>	<i>2023--24</i>	<i>2024-25</i>
<i>Normal Cost</i>	11.2%	11.2%	11.2%	11.2%
<i>UAL \$ **</i>	\$391,000	\$435,000	\$461,000	\$489,000
<i>NC Adj. Factor</i>	2.0%	2.0%	2.0%	2.0%
<i>UAL Adj Factor</i>	17.5%	22.5%	12.5%	17.5%
<i>Estimated Normal Cost</i>	13.2%	13.2%	13.2%	13.2%
<i>Estimate UAL</i>	\$459,425	\$532,875	\$518,625	\$574,575

*\*\*The UAL projection in this year's valuation report for Miscellaneous Employees are \$6,000 to \$16,000 higher based on last year's valuation report projections.*

Public Safety Employees (New Discount Rate Assumptions Forecast)

<i>Fiscal Year</i>	<i>2021-22</i>	<i>2022-23</i>	<i>2023-24</i>	<i>2024-25</i>
<i>Normal Cost</i>	25.5%	25.5%	25.5%	25.5%
<i>UAL \$**</i>	\$1,005,000	\$1,110,000	\$1,175,000	\$1,241,000
<i>NC Adj. Factor</i>	3.5%	3.5%	3.5%	3.5%
<i>UAL Adj Factor</i>	17.5%	22.5%	12.5%	17.5%
<i>Estimated Normal Cost</i>	29%	29.5%	29.5%	29.5%
<i>Estimate UAL</i>	\$1,298,375	\$1,347,500	\$1,321,875	\$1,458,175

*\*\*The UAL projection in this year's valuation report for Public Safety are \$8,000 to \$23,000 higher based on last year's valuation report projections.*

Atherton Pension Costs Discussion and Review Analysis

As was mentioned earlier, the Civil Grand Jury issued a up follow-up investigation on their 2017/18 Report with an update of financial information and sought to identify what progress has been made to address pension issues.

The 2018/19 Report identifies steps taken by each jurisdiction to address pension costs and enhancement of the availability of public information on pension costs. Within the report are twenty-seven (27) findings broken into seven (7) key areas:

- 1) Status of Each Jurisdiction's Pension Obligation (Data within Appendix A of GJ Report)
- 2) Projections of Future Pension Costs
- 3) Long-Term Financial Forecasts
- 4) Jurisdictional Plans for Future Payments to CalPERS beyond the Annual Required Contribution (ARC)
- 5) Establishment of Reserves or Section 115 Trusts for Future Pension Payments

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- 6) Employee Cost-Sharing
- 7) Revenue Enhancement Ballot Initiatives

CITIES	Fiscal Year	Covered Payroll	Pension Contribution Cost	Contribution Rate (i.e., Pension Contribution Cost as % of Payroll)	Unfunded Liability	Funded Percentage	Unfunded Liability if Discount Rate is Reduced 1%	General Fund Spending	Pension Contribution Cost as % of General Fund Spending*
Atherton	2017-18	\$4,649	\$1,289	27.7%	\$16,122	72.9%	\$24,391	\$12,065	10.7%
	2016-17	\$4,327	\$1,155	26.7%	\$13,982	73.8%	\$21,344	\$11,437	10.1%
	2015-16	\$4,261	\$617	14.5%	\$10,674	78.5%	\$17,326	\$10,611	5.8%
	2014-15	\$3,988	\$826	20.7%	\$9,253	81.9%	\$16,088	\$11,622	7.1%

The 2018/19 Grand Jury updated Appendix A (above) from the prior report from the cities available pension cost data for the four-year period from FY 2014/15 through FY 2017/18. The Grand Jury anticipates that the data in Appendix A serves as source of information to help municipalities understand their pension costs.

Staff believes the Town has made strides to satisfy these seven keys areas in the FY 2018/19 Grand Jury report.

The Finance Committee over the years has reviewed opportunities to pay down long term liabilities. Such opportunities include developing an analysis with respect to changes in the discount rate and a forecast on how to reduce the Town’s CalPERS unfunded liability. *Provided in this staff report and the valuations are a projection of how these changes would impact the Town’s financial obligations.* We use these projection variables when creating a Five-Year General Fund forecast that is included as part of the Town’s budget review. The Grand Jury recommends a Ten-Year General Fund forecast. Staff believes any projections beyond five years is highly speculative.

The Committee has annually discussed these CalPERS Actuarial Reports and when appropriate has made recommendations to the Council for review and consideration. Some of the recommendations have included making supplemental payments, cost sharing pensions agreements, setting aside reserves, and establishing a Section 115 Trust. Some of these options were considered and acted upon by City Council.

The Town’s philosophy has been to keep our funds local and spend them where they make the most difference; rather than pay down a liability that fluctuates based on the investment decisions of an agency we do not control. It is for this reason the Town set up a Section 115 Trust; but, did so with the intent to fund it only after the Town Center was complete. The Grand Jury also

encourages agencies to pass ballot measures to pay for pension obligations. That is not something the Town has expressed any interest in doing nor is it something staff would recommend.

The City Council has developed a policy to direct ERAF funds toward pension obligations over time along with other budget priorities. It is not the current philosophy to contribute to CalPERS any more funds than our required normal cost and unfunded liability requires.

Staff believes that review of these reports provide a vital opportunity to analyze and project changes in the discount rate. We now see the effects of the discount rate reduction to 7% in these June 30, 2018 valuations as these set the rates for FY 2020/21. We will continue review of the pension liabilities as we embark on the budget cycle for FY 2020/21 and monitor the effects on long term expenditures. It is important that we continue to analyze pension liabilities and ensure we are prepared to mitigate any increases in future pension costs. Once the Town Center is complete, paying down long-term pension liabilities will be a suitable goal in a similar manner as the Town contributed in previous years to its OPEB liabilities.

### **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 providers (water, power, and sewer), and regional elected officials.

### **ATTACHMENTS**

CalPERS Miscellaneous Employees Valuation Report as of June 30, 2018

CalPERS Public Safety Employees Valuation Report as of June 30, 2018

CalPERS PEPRAs Miscellaneous Employees Valuation Report as of June 30, 2018

CalPERS PEPRAs Public Safety Employees Valuation Report as of June 30, 2018



**California Public Employees' Retirement System**

**Actuarial Office**

400 Q Street, Sacramento, CA 95811 | Phone: (916) 795-3000 | Fax: (916) 795-2744

888 CalPERS (or 888-225-7377) | TTY: (877) 249-7442 | [www.calpers.ca.gov](http://www.calpers.ca.gov)

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**July 2019**

**Miscellaneous Plan of the Town of Atherton  
(CalPERS ID: 1382390535)  
Annual Valuation Report as of June 30, 2018**

Dear Employer,

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

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

- Section 1 contains specific information for the plan including the development of the current and projected employer contributions, and
- Section 2 contains the Risk Pool Actuarial Valuation appropriate to the plan as of June 30, 2018.

Section 2 can be found on the CalPERS website ([www.calpers.ca.gov](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, 2018 actuarial valuation report contains important actuarial information about your pension plan at CalPERS. Your assigned CalPERS staff actuary, whose signature appears in the Actuarial Certification section on page 1, is available to discuss the report with you after August 1, 2019.

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

**Required Contribution**

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

Fiscal Year	Employer Normal Cost Rate	Employer Amortization of Unfunded Accrued Liability
2020-21	11.199%	\$338,645
<i>Projected Results</i>		
2021-22	11.2%	\$391,000

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

### **Changes from Previous Year's Valuation**

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

### **Upcoming Change for June 30, 2019 Valuations**

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

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

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

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

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

Sincerely,



SCOTT TERANDO  
Chief Actuary



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

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

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

## **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 Miscellaneous Plan of the Town of Atherton**

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

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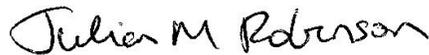
## Actuarial Certification

Section 1 of this report is based on the member and financial data contained in our records as of June 30, 2018 which was provided by your agency and the benefit provisions under your contract with CalPERS. Section 2 of this report is based on the member and financial data as of June 30, 2018 provided by employers participating in the 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, 2018 and employer contribution as of July 1, 2020, have been properly and accurately determined in accordance with the principles and standards stated above.

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



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, 2018 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 2020-21.

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

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

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

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

### California Actuarial Advisory Panel Recommendations

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

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

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

## Required Employer Contributions

	Fiscal Year
<b>Required Employer Contributions</b>	<b>2020-21</b>
<b>Employer Normal Cost Rate</b>	<b>11.199%</b>
<i>Plus, Either</i>	
<b>1) Monthly Employer Dollar UAL Payment</b>	<b>\$ 28,220.44</b>
<i>Or</i>	
<b>2) Annual UAL Prepayment Option*</b>	<b>\$ 327,381</b>
<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>	
<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>). Any prepayment totaling over \$5 million requires a 72-hour notice email to <a href="mailto:FCSD_public_agency_wires@calpers.ca.gov">FCSD_public_agency_wires@calpers.ca.gov</a>. 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>	
<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>	

	Fiscal Year 2019-20	Fiscal Year 2020-21
<b>Development of Normal Cost as a Percentage of Payroll<sup>1</sup></b>		
Base Total Normal Cost for Formula	16.586%	17.392%
Surcharge for Class 1 Benefits <sup>2</sup>		
a) PRSA	0.647%	0.715%
Phase out of Normal Cost Difference <sup>3</sup>	0.000%	0.000%
Plan's Total Normal Cost	17.233%	18.107%
Formula's Expected Employee Contribution Rate	6.906%	6.908%
Employer Normal Cost Rate	10.327%	11.199%
Projected Payroll for the Contribution Fiscal Year	\$ 1,701,269	\$ 1,603,887
<b>Estimated Employer Contributions Based on Projected Payroll</b>		
Plan's Estimated Employer Normal Cost	\$ 175,690	\$ 179,619
Plan's Payment on Amortization Bases <sup>4</sup>	295,438	338,645
% of Projected Payroll (illustrative only)	17.366%	21.114%
Estimated Total Employer Contribution	\$ 471,128	\$ 518,264
% of Projected Payroll (illustrative only)	27.693%	32.313%

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

<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 10 for a breakdown of the Amortization Bases.

## Plan's Funded Status

	<b>June 30, 2017</b>	<b>June 30, 2018</b>
1. Present Value of Projected Benefits (PVB)	\$ 20,287,718	\$ 21,673,433
2. Entry Age Normal Accrued Liability (AL)	17,850,764	19,118,587
3. Plan's Market Value of Assets (MVA)	13,504,290	14,011,196
4. Unfunded Accrued Liability (UAL) [(2) - (3)]	4,346,474	5,107,391
5. Funded Ratio [(3) / (2)]	75.7%	73.3%

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 7.00% Return for Fiscal Year 2018-19)				
		2020-21	2021-22	2022-23	2023-24	2024-25
Normal Cost %	11.199%	11.2%	11.2%	11.2%	11.2%	11.2%
UAL Payment	\$338,645	\$391,000	\$435,000	\$461,000	\$489,000	\$502,000

Changes in the UAL due to actuarial gains or losses as well as changes in actuarial assumptions or methods are amortized using a 5-year ramp up. For more information, please see "Amortization of the Unfunded Actuarial Accrued Liability" under "Actuarial Methods" in Appendix A of Section 2. This method phases in the impact of unanticipated changes in UAL over a 5-year period and attempts to minimize employer cost volatility from year to year. As a result of this methodology, dramatic changes in the required employer contributions in any one year are less likely. However, required contributions can change gradually and significantly over the next five years. In years where there is a large increase in UAL the relatively small amortization payments during the ramp up period could result in a funded ratio that is projected to decrease initially while the contribution impact of the increase in the UAL is phased in.

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

## Changes Since the Prior Year's Valuation

### Benefits

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

### Actuarial Methods and Assumptions

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

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

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

## Subsequent Events

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

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

The contribution requirements determined in this actuarial valuation report are based on demographic and financial information as of June 30, 2018, and may reflect additional discretionary payments made by the employer through April 30, 2019. Changes in the value of assets subsequent to that date are not reflected. Investment returns below the assumed rate of return will increase the required contribution, while investment returns above the assumed rate of return will decrease the required contribution.

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

## **Assets and Liabilities**

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

## Breakdown of Entry Age Normal Accrued Liability

Active Members	\$	2,657,119
Transferred Members		1,220,163
Terminated Members		1,407,061
Members and Beneficiaries Receiving Payments		<u>13,834,244</u>
Total	\$	19,118,587

## 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	\$	19,118,587
2. Projected UAL balance at 6/30/18		4,490,549
3. Pool's Accrued Liability <sup>1</sup>		17,424,237,070
4. Sum of Pool's Individual Plan UAL Balances at 6/30/18 <sup>1</sup>		3,777,499,883
5. Pool's 2017/18 Investment & Asset (Gain)/Loss <sup>1</sup>		(135,628,188)
6. Pool's 2017/18 Other (Gain)/Loss <sup>1</sup>		66,272,613
7. Plan's Share of Pool's Asset (Gain)/Loss: $[(1) - (2)] \div [(3) - (4)] \times (5)$		(145,381)
8. Plan's Share of Pool's Other (Gain)/Loss: $(1) \div (3) \times (6)$		72,717
9. Plan's New (Gain)/Loss as of 6/30/2018: $(7) + (8)$		(72,664)
10. Increase in Pool's Accrued Liability due to Change in Assumptions <sup>1</sup>		453,914,155
11. Plan's Share of Pool's Change in Assumptions: $(1) \div (3) \times (10)$		498,053
12. Increase in Pool's Accrued Liability due to Change in Method <sup>1</sup>		128,995,852
13. Plan's Share of Pool's Change in Method: $(1) \div (3) \times (12)$		141,540

<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

14. Plan's UAL: $(2) + (9) + (11) + (13)$	\$	5,107,391
15. Plan's Share of Pool's MVA: $(1) - (14)$	\$	<b>14,011,196</b>

## **Schedule of Plan's Amortization Bases**

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

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

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

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

## Schedule of Plan's Amortization Bases

Reason for Base	Date Established	Ramp Up/Down 2020-21	Escalation Rate	Amortization Period	Balance 6/30/18	Payment 2018-19	Balance 6/30/19	Amounts for Fiscal 2020-21		
								Payment 2019-20	Balance 6/30/20	Scheduled Payment for 2020-21
SHARE OF PRE-2013 POOL UAL	06/30/13	No Ramp	2.750%	17	\$1,348,483	\$104,339	\$1,334,948	\$107,176	\$1,317,531	\$108,716
NON-ASSET (GAIN)/LOSS	06/30/13	100% →	2.750%	25	\$(18,891)	\$(1,002)	\$(19,177)	\$(1,286)	\$(19,189)	\$(1,302)
ASSET (GAIN)/LOSS	06/30/13	100% →	2.750%	25	\$1,965,262	\$104,205	\$1,995,040	\$133,821	\$1,996,267	\$135,421
NON-ASSET (GAIN)/LOSS	06/30/14	100% →	2.750%	26	\$1,542	\$61	\$1,587	\$84	\$1,611	\$107
ASSET (GAIN)/LOSS	06/30/14	100% →	2.750%	26	\$(1,422,002)	\$(56,686)	\$(1,462,906)	\$(77,654)	\$(1,484,983)	\$(98,197)
ASSUMPTION CHANGE	06/30/14	100% →	2.750%	16	\$872,305	\$47,989	\$883,726	\$65,726	\$877,599	\$83,450
NON-ASSET (GAIN)/LOSS	06/30/15	80% ↗	2.750%	27	\$(68,132)	\$(1,838)	\$(71,000)	\$(2,833)	\$(73,040)	\$(3,820)
ASSET (GAIN)/LOSS	06/30/15	80% ↗	2.750%	27	\$838,478	\$22,625	\$873,768	\$34,871	\$898,861	\$47,014
NON-ASSET (GAIN)/LOSS	06/30/16	60% ↗	2.750%	28	\$(122,599)	\$(1,701)	\$(129,421)	\$(3,496)	\$(134,864)	\$(5,300)
ASSET (GAIN)/LOSS	06/30/16	60% ↗	2.750%	28	\$990,293	\$13,742	\$1,045,399	\$28,241	\$1,089,364	\$42,811
ASSUMPTION CHANGE	06/30/16	60% ↗	2.750%	18	\$302,865	\$5,715	\$318,154	\$11,743	\$328,278	\$17,873
NON-ASSET (GAIN)/LOSS	06/30/17	40% ↗	2.750%	29	\$(25,630)	\$0	\$(27,424)	\$(381)	\$(28,950)	\$(770)
ASSET (GAIN)/LOSS	06/30/17	40% ↗	2.750%	29	\$(496,942)	\$0	\$(531,728)	\$(7,387)	\$(561,308)	\$(14,920)
ASSUMPTION CHANGE	06/30/17	40% ↗	2.750%	19	\$325,517	\$(11,981)	\$360,696	\$6,813	\$378,897	\$13,817
AL SIGNIFICANT INCREASE*	06/30/18	20% ↗	2.750%	30	\$49,913	\$0	\$53,407	\$0	\$57,145	\$780
NON-ASSET (GAIN)/LOSS	06/30/18	20% ↗	2.750%	30	\$72,717	\$0	\$77,807	\$0	\$83,254	\$1,137
ASSET (GAIN)/LOSS	06/30/18	20% ↗	2.750%	30	\$(145,381)	\$0	\$(155,558)	\$0	\$(166,447)	\$(2,273)
METHOD CHANGE	06/30/18	20% ↗	2.750%	20	\$141,540	\$(690)	\$152,161	\$(709)	\$163,546	\$3,049
ASSUMPTION CHANGE	06/30/18	20% ↗	2.750%	20	\$498,053	\$(10,434)	\$543,710	\$(10,721)	\$592,859	\$11,054
<b>TOTAL</b>					<b>\$5,107,391</b>	<b>\$214,344</b>	<b>\$5,243,189</b>	<b>\$284,008</b>	<b>\$5,316,431</b>	<b>\$338,645</b>

\*Government Code Section 20791 requires that a significant increase in actuarial liability to a contracting agency due to increased compensation by a subsequent employer to a non-represented employee is borne by the agency that created the increase in liability.

The (gain)/loss bases are the plan's allocated share of the risk pool's (gain)/loss for the fiscal year as disclosed in "Allocation of Plan's Share of Pool's Experience/Assumption Change" earlier in this section. These (gain)/loss bases will be amortized according to Board policy over 30 years with a 5-year ramp-up.

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

## Amortization Schedule and Alternatives

The amortization schedule on the previous page shows the minimum contributions required according to CalPERS amortization policy. There has been considerable interest from many agencies in paying off these unfunded accrued liabilities sooner and the possible savings in doing so. As a result, we have provided alternate amortization schedules to help analyze the current amortization schedule and illustrate the advantages of accelerating unfunded liability payments.

Shown on the following page are future year amortization payments based on: 1) the current amortization schedule reflecting the individual bases and remaining periods shown on the previous page, and 2) alternate "fresh start" amortization schedules using two sample periods that would both result in interest savings relative to the current amortization schedule. Note that the payments under each alternate scenario increase by 2.75 percent for each year into the future, except for inactive plans.

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

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

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

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

## Amortization Schedule and Alternatives

Date	<u>Current Amortization Schedule</u>		<u>Alternate Schedules</u>			
	Balance	Payment	15 Year Amortization		10 Year Amortization	
			Balance	Payment	Balance	Payment
6/30/2020	5,316,432	338,645	5,316,432	479,509	5,316,432	655,514
6/30/2021	5,338,285	391,185	5,192,575	492,695	5,010,513	673,541
6/30/2022	5,307,320	434,958	5,046,407	506,244	4,664,533	692,063
6/30/2023	5,228,908	460,816	4,875,992	520,166	4,275,174	711,095
6/30/2024	5,118,260	488,811	4,679,248	534,471	3,838,874	730,650
6/30/2025	4,970,908	502,253	4,453,934	549,169	3,351,805	750,743
6/30/2026	4,799,337	516,065	4,197,645	564,271	2,809,856	771,389
6/30/2027	4,601,468	530,257	3,907,794	579,788	2,208,616	792,602
6/30/2028	4,375,068	544,839	3,581,602	595,732	1,543,345	814,398
6/30/2029	4,117,737	559,822	3,216,084	612,115	808,959	836,794
6/30/2030	3,826,894	575,218	2,808,033	628,948		
6/30/2031	3,499,767	591,036	2,354,006	646,244		
6/30/2032	3,133,378	584,177	1,850,307	664,016		
6/30/2033	2,748,437	576,495	1,292,965	682,276		
6/30/2034	2,344,497	559,237	677,720	701,039		
6/30/2035	1,930,132	530,217				
6/30/2036	1,516,780	477,410				
6/30/2037	1,129,117	275,349				
6/30/2038	923,332	238,974				
6/30/2039	740,769	210,365				
6/30/2040	575,020	191,887				
6/30/2041	416,782	149,746				
6/30/2042	291,058	140,776				
6/30/2043	165,812	111,046				
6/30/2044	62,552	55,598				
6/30/2045	9,419	9,744				
6/30/2046						
6/30/2047						
6/30/2048						
6/30/2049						
<b>Totals</b>		<b>10,044,928</b>		<b>8,756,684</b>		<b>7,428,789</b>
<b>Interest Paid</b>		<b>4,728,496</b>		<b>3,440,252</b>		<b>2,112,358</b>
<b>Estimated Savings</b>				<b>1,288,245</b>		<b>2,616,140</b>

## 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
2020 - 21	11.199%	\$338,645

## 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
06/30/2018	19,118,587	14,011,196	5,107,391	73.3%	1,478,524

## **Risk Analysis**

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

## Future Investment Return Scenarios

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

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

These alternate investment returns were chosen based on stochastic analysis of possible future investment returns over the four-year period ending June 30, 2022. Using the expected returns and volatility of the asset classes in which the funds are invested, we produced five thousand stochastic outcomes for this period based on the most recently completed Asset Liability Management process. We then selected annual returns that approximate the 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 2021-22	Projected Employer Contributions			
	2021-22	2022-23	2023-24	2024-25
<b>1.0%</b>				
Normal Cost	11.2%	11.2%	11.2%	11.2%
UAL Contribution	\$412,000	\$498,000	\$587,000	\$700,000
<b>4.0%</b>				
Normal Cost	11.2%	11.2%	11.2%	11.2%
UAL Contribution	\$402,000	\$467,000	\$525,000	\$598,000
<b>7.0%</b>				
Normal Cost	11.2%	11.2%	11.2%	11.2%
UAL Contribution	\$391,000	\$435,000	\$461,000	\$489,000
<b>9.0%</b>				
Normal Cost	11.4%	11.6%	11.9%	12.1%
UAL Contribution	\$386,000	\$419,000	\$430,000	\$436,000
<b>12.0%</b>				
Normal Cost	11.4%	11.6%	11.9%	12.1%
UAL Contribution	\$375,000	\$387,000	\$362,000	\$318,000

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

## Discount Rate Sensitivity

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

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

<b>Sensitivity Analysis</b>				
<b>As of June 30, 2018</b>	<b>Plan's Total Normal Cost</b>	<b>Accrued Liability</b>	<b>Unfunded Accrued Liability</b>	<b>Funded Status</b>
7.0% (current discount rate)	18.107%	\$19,118,587	\$5,107,391	73.3%
6.0%	22.552%	\$21,519,131	\$7,507,935	65.1%
8.0%	14.697%	\$17,135,436	\$3,124,240	81.8%

## Mortality Rate Sensitivity

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

<b>As of June 30, 2018</b>	<b>Current Mortality</b>	<b>10% Lower Mortality Rates</b>	<b>10% Higher Mortality Rates</b>
a) Accrued Liability	\$19,118,587	\$19,490,267	\$18,775,864
b) Market Value of Assets	\$14,011,196	\$14,011,196	\$14,011,196
c) Unfunded Liability (Surplus) [(a)-(b)]	\$5,107,391	\$5,479,071	\$4,764,668
d) Funded Status	73.3%	71.9%	74.6%

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

## Inflation Rate Sensitivity

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

As of June 30, 2018	Current Inflation Rate	-1% Inflation Rate	+1% Inflation Rate
a) Accrued Liability	\$19,118,587	\$18,033,835	\$19,846,144
b) Market Value of Assets	\$14,011,196	\$14,011,196	\$14,011,196
c) Unfunded Liability (Surplus) [(a)-(b)]	\$5,107,391	\$4,022,639	\$5,834,948
d) Funded Status	73.3%	77.7%	70.6%

A decrease of 1 percent in the liability inflation rate (2.50 percent to 1.50 percent) reduces the Accrued Liability by 5.7 percent. However, a 1 percent increase in the liability inflation rate (2.50 percent to 3.50 percent) increases the Accrued Liability by 3.8 percent.

## Maturity Measures

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

Ratio of Retiree Accrued Liability to Total Accrued Liability	June 30, 2017	June 30, 2018
1. Retired Accrued Liability	12,139,183	13,834,244
2. Total Accrued Liability	17,850,764	19,118,587
3. Ratio of Retiree AL to Total AL [(1) / (2)]	0.68	0.72

Another way to look at the maturity level of CalPERS and its plans is to look at the ratio of actives to retirees. A pension plan in its infancy will have a very high ratio of active to retired members. As the plan matures, and members retire, the ratio starts declining. A mature plan will often have a ratio near or below one. The average support ratio for CalPERS public agency plans is 1.25.

Support Ratio	June 30, 2017	June 30, 2018
1. Number of Actives	17	13
2. Number of Retirees	61	64
3. Support Ratio [(1) / (2)]	0.28	0.20

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

**Asset Volatility Ratio (AVR)**

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

**Liability Volatility Ratio (LVR)**

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

<b>Contribution Volatility</b>	<b>June 30, 2017</b>		<b>June 30, 2018</b>	
1. Market Value of Assets	\$	13,504,290	\$	14,011,196
2. Payroll		1,562,584		1,478,524
3. Asset Volatility Ratio (AVR) [(1) / (2)]		8.6		9.5
4. Accrued Liability	\$	17,850,764	\$	19,118,587
5. Liability Volatility Ratio (LVR) [(4) / (2)]		11.4		12.9
6. Accrued Liability (7.00% discount rate)		18,331,240		19,118,587
7. Projected Liability Volatility Ratio [(6) / (2)]		11.7		12.9

## Hypothetical Termination Liability

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

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

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

<b>Market Value of Assets (MVA)</b>	<b>Hypothetical Termination Liability<sup>1,2</sup> @ 2.50%</b>	<b>Funded Status</b>	<b>Unfunded Termination Liability @ 2.50%</b>	<b>Hypothetical Termination Liability<sup>1,2</sup> @ 3.25%</b>	<b>Funded Status</b>	<b>Unfunded Termination Liability @ 3.25%</b>
\$14,011,196	\$33,437,686	41.9%	\$19,426,490	\$30,661,823	45.7%	\$16,650,627

<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 of the Section 2 report.

<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 2.91 percent on June 30, 2018, and was 2.83 percent on January 31, 2019.

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

## Participant Data

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

	<b>June 30, 2017</b>	<b>June 30, 2018</b>
Reported Payroll	\$ 1,562,584	\$ 1,478,524
Projected Payroll for Contribution Purposes	\$ 1,701,269	\$ 1,603,887
Number of Members		
Active	17	13
Transferred	10	14
Separated	27	25
Retired	61	64

## List of Class 1 Benefit Provisions

This plan has the additional Class 1 Benefit Provisions:

- Post-Retirement Survivor Allowance (PRSA)

## Plan's Major Benefit Options

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

Member Category	Benefit Group			
	Misc	Misc	EXL*	
<b>Demographics</b>				
Actives	Yes	No	No	
Transfers/Separated	Yes	No	No	
Receiving	Yes	Yes	Yes	
<b>Benefit Provision</b>				
Benefit Formula	2% @ 55	2% @ 60	2% @ 55	
Social Security Coverage	No	No	No	
Full/Modified	Full	Full	Full	
Employee Contribution Rate	7.00%			
Final Average Compensation Period	Three Year	Three Year	One Year	
Sick Leave Credit	Yes	No	Yes	
Non-Industrial Disability	Standard	Standard	Standard	
Industrial Disability	No	No	No	
Pre-Retirement Death Benefits				
Optional Settlement 2	Yes	No	No	
1959 Survivor Benefit Level	Level 3	Level 3	Level 3	
Special	No	No	No	
Alternate (firefighters)	No	No	No	
Post-Retirement Death Benefits				
Lump Sum	\$500	\$500	\$0	
Survivor Allowance (PRSA)	Yes	Yes	No	
COLA	2%	2%	2%	

\* The benefits listed here are those associated with the plan where an accrued liability adjustment has been made in accordance with Government Code Section 20791 and not of the contracting agency.

## 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**

400 Q Street, Sacramento, CA 95811 | Phone: (916) 795-3000 | Fax: (916) 795-2744

888 CalPERS (or 888-225-7377) | TTY: (877) 249-7442 | [www.calpers.ca.gov](http://www.calpers.ca.gov)

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**July 2019**

**Safety Plan of the Town of Atherton  
(CalPERS ID: 1382390535)  
Annual Valuation Report as of June 30, 2018**

Dear Employer,

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

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

- Section 1 contains specific information for the plan including the development of the current and projected employer contributions, and
- Section 2 contains the Risk Pool Actuarial Valuation appropriate to the plan as of June 30, 2018.

Section 2 can be found on the CalPERS website ([www.calpers.ca.gov](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, 2018 actuarial valuation report contains important actuarial information about your pension plan at CalPERS. Your assigned CalPERS staff actuary, whose signature appears in the Actuarial Certification section on page 1, is available to discuss the report with you after August 1, 2019.

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

**Required Contribution**

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

Fiscal Year	Employer Normal Cost Rate	Employer Amortization of Unfunded Accrued Liability
2020-21	25.540%	\$879,200
<i>Projected Results</i>		
2021-22	25.5%	\$1,005,000

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

### **Changes from Previous Year's Valuation**

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

### **Upcoming Change for June 30, 2019 Valuations**

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

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

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

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

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

Sincerely,



SCOTT TERANDO  
Chief Actuary



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

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

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

## **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)  
(Valuation Rate Plan ID: 65)**

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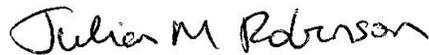
## Actuarial Certification

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

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

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

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



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, 2018 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 2020-21.

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

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

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

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

### California Actuarial Advisory Panel Recommendations

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

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

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

## Required Employer Contributions

	Fiscal Year
<b>Required Employer Contributions</b>	<b>2020-21</b>
<b>Employer Normal Cost Rate</b>	<b>25.540%</b>
<i>Plus, Either</i>	
<b>1) Monthly Employer Dollar UAL Payment</b>	<b>\$ 73,266.67</b>
<i>Or</i>	
<b>2) Annual UAL Prepayment Option*</b>	<b>\$ 849,955</b>
<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>	
<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>). Any prepayment totaling over \$5 million requires a 72-hour notice email to <a href="mailto:FCSD_public_agency_wires@calpers.ca.gov">FCSD_public_agency_wires@calpers.ca.gov</a>. 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>	
<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>	

	Fiscal Year 2019-20	Fiscal Year 2020-21
<b>Development of Normal Cost as a Percentage of Payroll<sup>1</sup></b>		
Base Total Normal Cost for Formula	29.696%	31.427%
Surcharge for Class 1 Benefits <sup>2</sup>		
a) FAC 1	1.220%	1.237%
b) PRSA	1.727%	1.866%
Phase out of Normal Cost Difference <sup>3</sup>	0.000%	0.000%
Plan's Total Normal Cost	32.643%	34.530%
Formula's Expected Employee Contribution Rate	8.989%	8.990%
Employer Normal Cost Rate	23.654%	25.540%
Projected Payroll for the Contribution Fiscal Year	\$ 1,461,227	\$ 1,788,600
<b>Estimated Employer Contributions Based on Projected Payroll</b>		
Plan's Estimated Employer Normal Cost	\$ 345,639	\$ 456,808
Plan's Payment on Amortization Bases <sup>4</sup>	771,853	879,200
% of Projected Payroll (illustrative only)	52.822%	49.156%
Estimated Total Employer Contribution	\$ 1,117,492	\$ 1,336,008
% of Projected Payroll (illustrative only)	76.476%	74.696%

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

<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 10 for a breakdown of the Amortization Bases.

## Plan's Funded Status

		<b>June 30, 2017</b>		<b>June 30, 2018</b>
1. Present Value of Projected Benefits (PVB)	\$	45,179,714	\$	48,917,285
2. Entry Age Normal Accrued Liability (AL)		41,333,503		43,955,355
3. Plan's Market Value of Assets (MVA)		29,968,235		30,918,059
4. Unfunded Accrued Liability (UAL) [(2) - (3)]		11,365,268		13,037,296
5. Funded Ratio [(3) / (2)]		72.5%		70.3%

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 7.00% Return for Fiscal Year 2018-19)				
		2020-21	2021-22	2022-23	2023-24	2024-25
<b>Normal Cost %</b>	25.540%	25.5%	25.5%	25.5%	25.5%	25.5%
<b>UAL Payment</b>	\$879,200	\$1,005,000	\$1,110,000	\$1,175,000	\$1,241,000	\$1,275,000

Changes in the UAL due to actuarial gains or losses as well as changes in actuarial assumptions or methods are amortized using a 5-year ramp up. For more information, please see "Amortization of the Unfunded Actuarial Accrued Liability" under "Actuarial Methods" in Appendix A of Section 2. This method phases in the impact of unanticipated changes in UAL over a 5-year period and attempts to minimize employer cost volatility from year to year. As a result of this methodology, dramatic changes in the required employer contributions in any one year are less likely. However, required contributions can change gradually and significantly over the next five years. In years where there is a large increase in UAL the relatively small amortization payments during the ramp up period could result in a funded ratio that is projected to decrease initially while the contribution impact of the increase in the UAL is phased in.

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

## Changes Since the Prior Year's Valuation

### Benefits

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

### Actuarial Methods and Assumptions

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

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

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

## Subsequent Events

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

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

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

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

## **Assets and Liabilities**

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

## Breakdown of Entry Age Normal Accrued Liability

Active Members	\$	7,482,940
Transferred Members		3,198,875
Terminated Members		874,571
Members and Beneficiaries Receiving Payments		<u>32,398,969</u>
Total	\$	43,955,355

## 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	\$	43,955,355
2. Projected UAL balance at 6/30/18		11,711,743
3. Pool's Accrued Liability <sup>1</sup>		22,716,935,494
4. Sum of Pool's Individual Plan UAL Balances at 6/30/18 <sup>1</sup>		5,835,345,753
5. Pool's 2017/18 Investment & Asset (Gain)/Loss <sup>1</sup>		(166,826,991)
6. Pool's 2017/18 Other (Gain)/Loss <sup>1</sup>		79,829,358
7. Plan's Share of Pool's Asset (Gain)/Loss: $[(1) - (2)] \div [(3) - (4)] \times (5)$		(318,637)
8. Plan's Share of Pool's Other (Gain)/Loss: $(1) \div (3) \times (6)$		154,463
9. Plan's New (Gain)/Loss as of 6/30/2018: $(7) + (8)$		(164,174)
10. Increase in Pool's Accrued Liability due to Change in Assumptions <sup>1</sup>		623,352,408
11. Plan's Share of Pool's Change in Assumptions: $(1) \div (3) \times (10)$		1,206,134
12. Increase in Pool's Accrued Liability due to Change in Method <sup>1</sup>		146,565,925
13. Plan's Share of Pool's Change in Method: $(1) \div (3) \times (12)$		283,593

<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

14. Plan's UAL: $(2) + (9) + (11) + (13)$	\$	13,037,296
15. Plan's Share of Pool's MVA: $(1) - (14)$	\$	<b>30,918,059</b>

## **Schedule of Plan's Amortization Bases**

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

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

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

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

## Schedule of Plan's Amortization Bases

Reason for Base	Date Established	Ramp Up/Down 2020-21	Escalation Rate	Amortization Period	Balance 6/30/18	Payment 2018-19	Balance 6/30/19	Amounts for Fiscal 2020-21		
								Payment 2019-20	Balance 6/30/20	Scheduled Payment for 2020-21
SHARE OF PRE-2013 POOL UAL	06/30/13	No Ramp	2.750%	17	\$3,934,945	\$304,468	\$3,895,447	\$312,745	\$3,844,622	\$317,238
NON-ASSET (GAIN)/LOSS	06/30/13	100% →	2.750%	25	\$(52,128)	\$(2,764)	\$(52,918)	\$(3,550)	\$(52,950)	\$(3,592)
ASSET (GAIN)/LOSS	06/30/13	100% →	2.750%	25	\$4,591,896	\$243,478	\$4,661,473	\$312,677	\$4,664,341	\$316,415
NON-ASSET (GAIN)/LOSS	06/30/14	100% →	2.750%	26	\$39,973	\$1,593	\$41,123	\$2,183	\$41,743	\$2,760
ASSET (GAIN)/LOSS	06/30/14	100% →	2.750%	26	\$(3,202,393)	\$(127,659)	\$(3,294,509)	\$(174,880)	\$(3,344,227)	\$(221,143)
ASSUMPTION CHANGE	06/30/14	100% →	2.750%	16	\$2,144,307	\$117,968	\$2,172,381	\$161,569	\$2,157,319	\$205,138
NON-ASSET (GAIN)/LOSS	06/30/15	80% ↗	2.750%	27	\$(6,994)	\$(189)	\$(7,288)	\$(291)	\$(7,497)	\$(392)
ASSET (GAIN)/LOSS	06/30/15	80% ↗	2.750%	27	\$1,888,770	\$50,966	\$1,968,264	\$78,550	\$2,024,790	\$105,905
NON-ASSET (GAIN)/LOSS	06/30/16	60% ↗	2.750%	28	\$(375,369)	\$(5,209)	\$(396,257)	\$(10,705)	\$(412,922)	\$(16,227)
ASSET (GAIN)/LOSS	06/30/16	60% ↗	2.750%	28	\$2,251,970	\$31,250	\$2,377,283	\$64,222	\$2,477,261	\$97,353
ASSUMPTION CHANGE	06/30/16	60% ↗	2.750%	18	\$713,188	\$13,458	\$749,190	\$27,653	\$773,029	\$42,087
NON-ASSET (GAIN)/LOSS	06/30/17	40% ↗	2.750%	29	\$27,979	\$0	\$29,938	\$416	\$31,603	\$840
ASSET (GAIN)/LOSS	06/30/17	40% ↗	2.750%	29	\$(1,090,232)	\$0	\$(1,166,548)	\$(16,207)	\$(1,231,442)	\$(32,734)
ASSUMPTION CHANGE	06/30/17	40% ↗	2.750%	19	\$845,831	\$(19,135)	\$924,833	\$17,469	\$971,501	\$35,426
NON-ASSET (GAIN)/LOSS	06/30/18	20% ↗	2.750%	30	\$154,463	\$0	\$165,275	\$0	\$176,845	\$2,415
ASSET (GAIN)/LOSS	06/30/18	20% ↗	2.750%	30	\$(318,637)	\$0	\$(340,942)	\$0	\$(364,808)	\$(4,982)
ASSUMPTION CHANGE	06/30/18	20% ↗	2.750%	20	\$1,206,134	\$(21,583)	\$1,312,890	\$(22,177)	\$1,427,732	\$26,620
METHOD CHANGE	06/30/18	20% ↗	2.750%	20	\$283,593	\$(498)	\$303,960	\$(512)	\$325,766	\$6,074
<b>TOTAL</b>					<b>\$13,037,296</b>	<b>\$586,144</b>	<b>\$13,343,595</b>	<b>\$749,162</b>	<b>\$13,502,706</b>	<b>\$879,200</b>

The (gain)/loss bases are the plan's allocated share of the risk pool's (gain)/loss for the fiscal year as disclosed in "Allocation of Plan's Share of Pool's Experience/Assumption Change" earlier in this section. These (gain)/loss bases will be amortized according to Board policy over 30 years with a 5-year ramp-up.

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

## Amortization Schedule and Alternatives

The amortization schedule on the previous page shows the minimum contributions required according to CalPERS amortization policy. There has been considerable interest from many agencies in paying off these unfunded accrued liabilities sooner and the possible savings in doing so. As a result, we have provided alternate amortization schedules to help analyze the current amortization schedule and illustrate the advantages of accelerating unfunded liability payments.

Shown on the following page are future year amortization payments based on: 1) the current amortization schedule reflecting the individual bases and remaining periods shown on the previous page, and 2) alternate "fresh start" amortization schedules using two sample periods that would both result in interest savings relative to the current amortization schedule. Note that the payments under each alternate scenario increase by 2.75 percent for each year into the future.

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

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

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

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

## Amortization Schedule and Alternatives

Date	<u>Current Amortization Schedule</u>		<u>Alternate Schedules</u>			
	Balance	Payment	15 Year Amortization		10 Year Amortization	
			Balance	Payment	Balance	Payment
6/30/2020	13,502,707	879,200	13,502,707	1,217,859	13,502,707	1,664,879
6/30/2021	13,538,445	1,005,452	13,188,133	1,251,350	12,725,732	1,710,664
6/30/2022	13,446,089	1,110,133	12,816,896	1,285,763	11,847,010	1,757,707
6/30/2023	13,238,985	1,175,258	12,384,075	1,321,121	10,858,114	1,806,044
6/30/2024	12,950,017	1,241,157	11,884,382	1,357,452	9,749,996	1,855,710
6/30/2025	12,572,655	1,275,289	11,312,130	1,394,782	8,512,935	1,906,742
6/30/2026	12,133,572	1,310,360	10,661,205	1,433,138	7,136,491	1,959,177
6/30/2027	11,627,476	1,346,394	9,925,040	1,472,550	5,609,456	2,013,055
6/30/2028	11,048,678	1,383,420	9,096,575	1,513,045	3,919,798	2,068,414
6/30/2029	10,391,064	1,421,464	8,168,230	1,554,654	2,054,600	2,125,295
6/30/2030	9,648,064	1,460,555	7,131,860	1,597,406		
6/30/2031	8,812,620	1,500,720	5,978,720	1,641,335		
6/30/2032	7,877,146	1,485,175	4,699,420	1,686,472		
6/30/2033	6,892,269	1,467,641	3,283,880	1,732,850		
6/30/2034	5,856,588	1,427,509	1,721,277	1,780,503		
6/30/2035	4,789,923	1,357,450				
6/30/2036	3,721,060	1,231,997				
6/30/2037	2,707,147	660,559				
6/30/2038	2,213,360	573,722				
6/30/2039	1,774,832	505,100				
6/30/2040	1,376,590	462,744				
6/30/2041	994,286	364,871				
6/30/2042	686,460	340,598				
6/30/2043	382,194	265,484				
6/30/2044	134,329	134,125				
6/30/2045	4,992	5,163				
6/30/2046						
6/30/2047						
6/30/2048						
6/30/2049						
<b>Totals</b>		<b>25,391,543</b>		<b>22,240,280</b>		<b>18,867,686</b>
<b>Interest Paid</b>		<b>11,888,835</b>		<b>8,737,572</b>		<b>5,364,978</b>
<b>Estimated Savings</b>				<b>3,151,263</b>		<b>6,523,857</b>

## Employer Contribution History

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

Fiscal Year	Employer Normal Cost	Unfunded Liability Payment (\$)
2016 - 17	21.230%	\$402,865
2017 - 18	21.418%	\$496,462
2018 - 19	22.346%	\$627,361
2019 - 20	23.654%	\$771,853
2020 - 21	25.540%	\$879,200

## Funding History

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

Valuation Date	Accrued Liability (AL)	Share of Pool's Market Value of Assets (MVA)	Plan's Share of Pool's Unfunded Liability	Funded Ratio	Annual Covered Payroll
06/30/2011	\$ 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
06/30/2018	43,955,355	30,918,059	13,037,296	70.3%	1,648,799

## **Risk Analysis**

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

## Future Investment Return Scenarios

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

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

These alternate investment returns were chosen based on stochastic analysis of possible future investment returns over the four-year period ending June 30, 2022. Using the expected returns and volatility of the asset classes in which the funds are invested, we produced five thousand stochastic outcomes for this period based on the most recently completed Asset Liability Management process. We then selected annual returns that approximate the 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 2019-20 through 2021-22	Projected Employer Contributions			
	2021-22	2022-23	2023-24	2024-25
<b>1.0%</b>				
Normal Cost	25.5%	25.5%	25.5%	25.5%
UAL Contribution	\$1,052,000	\$1,248,000	\$1,452,000	\$1,702,000
<b>4.0%</b>				
Normal Cost	25.5%	25.5%	25.5%	25.5%
UAL Contribution	\$1,029,000	\$1,180,000	\$1,316,000	\$1,478,000
<b>7.0%</b>				
Normal Cost	25.5%	25.5%	25.5%	25.5%
UAL Contribution	\$1,005,000	\$1,110,000	\$1,175,000	\$1,241,000
<b>9.0%</b>				
Normal Cost	26.0%	26.4%	26.9%	27.3%
UAL Contribution	\$993,000	\$1,076,000	\$1,109,000	\$1,130,000
<b>12.0%</b>				
Normal Cost	26.0%	26.4%	26.9%	27.3%
UAL Contribution	\$970,000	\$1,005,000	\$960,000	\$872,000

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

## Discount Rate Sensitivity

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

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

<b>Sensitivity Analysis</b>				
<b>As of June 30, 2018</b>	<b>Plan's Total Normal Cost</b>	<b>Accrued Liability</b>	<b>Unfunded Accrued Liability</b>	<b>Funded Status</b>
7.0% (current discount rate)	34.530%	\$43,955,355	\$13,037,296	70.3%
6.0%	43.524%	\$50,048,658	\$19,130,599	61.8%
8.0%	27.688%	\$38,987,078	\$8,069,019	79.3%

## Mortality Rate Sensitivity

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

<b>As of June 30, 2018</b>	<b>Current Mortality</b>	<b>10% Lower Mortality Rates</b>	<b>10% Higher Mortality Rates</b>
a) Accrued Liability	\$43,955,355	\$44,619,281	\$43,339,766
b) Market Value of Assets	\$30,918,059	\$30,918,059	\$30,918,059
c) Unfunded Liability (Surplus) [(a)-(b)]	\$13,037,296	\$13,701,222	\$12,421,707
d) Funded Status	70.3%	69.3%	71.3%

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

## Inflation Rate Sensitivity

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

As of June 30, 2018	Current Inflation Rate	-1% Inflation Rate	+1% Inflation Rate
a) Accrued Liability	\$43,955,355	\$41,101,596	\$46,388,454
b) Market Value of Assets	\$30,918,059	\$30,918,059	\$30,918,059
c) Unfunded Liability (Surplus) [(a)-(b)]	\$13,037,296	\$10,183,537	\$15,470,395
d) Funded Status	70.3%	75.2%	66.7%

A decrease of 1 percent in the liability inflation rate (2.50 percent to 1.50 percent) reduces the Accrued Liability by 6.5 percent. However, a 1 percent increase in the liability inflation rate (2.50 percent to 3.50 percent) increases the Accrued Liability by 5.5 percent.

## Maturity Measures

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

Ratio of Retiree Accrued Liability to Total Accrued Liability	June 30, 2017	June 30, 2018
1. Retired Accrued Liability	31,607,716	32,398,969
2. Total Accrued Liability	41,333,503	43,955,355
3. Ratio of Retiree AL to Total AL [(1) / (2)]	0.76	0.74

Another way to look at the maturity level of CalPERS and its plans is to look at the ratio of actives to retirees. A pension plan in its infancy will have a very high ratio of active to retired members. As the plan matures, and members retire, the ratio starts declining. A mature plan will often have a ratio near or below one. The average support ratio for CalPERS public agency plans is 1.25.

Support Ratio	June 30, 2017	June 30, 2018
1. Number of Actives	10	12
2. Number of Retirees	58	58
3. Support Ratio [(1) / (2)]	0.17	0.21

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

**Asset Volatility Ratio (AVR)**

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

**Liability Volatility Ratio (LVR)**

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

<b>Contribution Volatility</b>	<b>June 30, 2017</b>		<b>June 30, 2018</b>	
1. Market Value of Assets	\$	29,968,235	\$	30,918,059
2. Payroll		1,342,110		1,648,799
3. Asset Volatility Ratio (AVR) [(1) / (2)]		22.3		18.8
4. Accrued Liability	\$	41,333,503	\$	43,955,355
5. Liability Volatility Ratio (LVR) [(4) / (2)]		30.8		26.7
6. Accrued Liability (7.00% discount rate)		42,564,742		43,955,355
7. Projected Liability Volatility Ratio [(6) / (2)]		31.7		26.7

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

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

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

<b>Market Value of Assets (MVA)</b>	<b>Hypothetical Termination Liability<sup>1,2</sup> @ 2.50%</b>	<b>Funded Status</b>	<b>Unfunded Termination Liability @ 2.50%</b>	<b>Hypothetical Termination Liability<sup>1,2</sup> @ 3.25%</b>	<b>Funded Status</b>	<b>Unfunded Termination Liability @ 3.25%</b>
\$30,918,059	\$82,165,122	37.6%	\$51,247,063	\$74,838,017	41.3%	\$43,919,958

<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 of the Section 2 report.

<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 2.91 percent on June 30, 2018, and was 2.83 percent on January 31, 2019.

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

## Participant Data

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

	<b>June 30, 2017</b>	<b>June 30, 2018</b>
Reported Payroll	\$ 1,342,110	\$ 1,648,799
Projected Payroll for Contribution Purposes	\$ 1,461,227	\$ 1,788,600
Number of Members		
Active	10	12
Transferred	20	21
Separated	8	7
Retired	58	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

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

Member Category	Benefit Group			
	Police	Police	Police	
<b>Demographics</b>				
Actives	Yes	No	No	
Transfers/Separated	Yes	No	No	
Receiving	Yes	Yes	Yes	
<b>Benefit Provision</b>				
Benefit Formula	3% @ 50	1/2 @ 55	2% @ 50	
Social Security Coverage	No	No	No	
Full/Modified	Full	Full	Full	
Employee Contribution Rate	9.00%			
Final Average Compensation Period	One Year	Three Year	One Year	
Sick Leave Credit	Yes	No	No	
Non-Industrial Disability	Standard	Standard	Standard	
Industrial Disability	Standard	Standard	Standard	
Pre-Retirement Death Benefits				
Optional Settlement 2	Yes	No	No	
1959 Survivor Benefit Level	Level 3	No	Level 3	
Special	Yes	Yes	Yes	
Alternate (firefighters)	No	No	No	
Post-Retirement Death Benefits				
Lump Sum	\$500	\$500	\$500	
Survivor Allowance (PRSA)	Yes	Yes	Yes	
COLA	2%	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**

400 Q Street, Sacramento, CA 95811 | Phone: (916) 795-3000 | Fax: (916) 795-2744

888 CalPERS (or 888-225-7377) | TTY: (877) 249-7442 | [www.calpers.ca.gov](http://www.calpers.ca.gov)

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**July 2019**

**PEPRA Miscellaneous Plan of the Town of Atherton**

**(CalPERS ID: 1382390535)**

**Annual Valuation Report as of June 30, 2018**

Dear Employer,

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

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

- Section 1 contains specific information for the plan including the development of the current and projected employer contributions, and
- Section 2 contains the Risk Pool Actuarial Valuation appropriate to the plan as of June 30, 2018.

Section 2 can be found on the CalPERS website ([www.calpers.ca.gov](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, 2018 actuarial valuation report contains important actuarial information about your pension plan at CalPERS. Your assigned CalPERS staff actuary, whose signature appears in the Actuarial Certification section on page 1, is available to discuss the report with you after August 1, 2019.

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

**Required Contribution**

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

Fiscal Year	Employer Normal Cost Rate	Employer Amortization of Unfunded Accrued Liability	PEPRA Employee Rate
2020-21	7.874%	\$6,600	7.250%
<i>Projected Results</i>			
2021-22	7.9%	\$6,800	TBD

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

### **Changes from Previous Year's Valuation**

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

### **Upcoming Change for June 30, 2019 Valuations**

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

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

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

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

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

Sincerely,



SCOTT TERANDO  
Chief Actuary



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

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

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

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### **Section 1 – Plan Specific Information**

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

# Section 1

CALIFORNIA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

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

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

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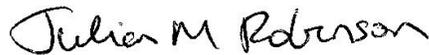
## Actuarial Certification

Section 1 of this report is based on the member and financial data contained in our records as of June 30, 2018 which was provided by your agency and the benefit provisions under your contract with CalPERS. Section 2 of this report is based on the member and financial data as of June 30, 2018 provided by employers participating in the 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, 2018 and employer contribution as of July 1, 2020, have been properly and accurately determined in accordance with the principles and standards stated above.

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



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, 2018 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 2020-21.

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

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

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

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

### California Actuarial Advisory Panel Recommendations

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

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

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

## Required Employer Contributions

	Fiscal Year
<b>Required Employer Contributions</b>	<b>2020-21</b>
<b>Employer Normal Cost Rate</b>	<b>7.874%</b>
<i>Plus, Either</i>	
<b>1) Monthly Employer Dollar UAL Payment</b>	<b>\$ 550.00</b>
<i>Or</i>	
<b>2) Annual UAL Prepayment Option*</b>	<b>\$ 6,381</b>
<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>	
<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>). Any prepayment totaling over \$5 million requires a 72-hour notice email to <a href="mailto:FCSD_public_agency_wires@calpers.ca.gov">FCSD_public_agency_wires@calpers.ca.gov</a>. 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>	
<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>	

	Fiscal Year 2019-20	Fiscal Year 2020-21
<b>Development of Normal Cost as a Percentage of Payroll<sup>1</sup></b>		
Base Total Normal Cost for Formula	13.735%	14.482%
Surcharge for Class 1 Benefits <sup>2</sup>		
a) PRSA	0.587%	0.642%
Phase out of Normal Cost Difference <sup>3</sup>	0.000%	0.000%
Plan's Total Normal Cost	14.322%	15.124%
Plan's Employee Contribution Rate <sup>4</sup>	7.250%	7.250%
Employer Normal Cost Rate	7.072%	7.874%
Projected Payroll for the Contribution Fiscal Year	\$ 477,040	\$ 579,575
<b>Estimated Employer Contributions Based on Projected Payroll</b>		
Plan's Estimated Employer Normal Cost	\$ 33,736	\$ 45,636
Plan's Payment on Amortization Bases <sup>5</sup>	3,306	6,600
% of Projected Payroll (illustrative only)	0.693%	1.139%
Estimated Total Employer Contribution	\$ 37,042	\$ 52,236
% of Projected Payroll (illustrative only)	7.765%	9.013%

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

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

<sup>5</sup> See page 10 for a breakdown of the Amortization Bases.

## Plan's Funded Status

	<b>June 30, 2017</b>	<b>June 30, 2018</b>
1. Present Value of Projected Benefits (PVB)	\$ 818,075	\$ 1,133,381
2. Entry Age Normal Accrued Liability (AL)	162,209	266,039
3. Plan's Market Value of Assets (MVA)	155,277	246,793
4. Unfunded Accrued Liability (UAL) [(2) - (3)]	6,932	19,246
5. Funded Ratio [(3) / (2)]	95.7%	92.8%

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 7.00% Return for Fiscal Year 2018-19)				
		2020-21	2021-22	2022-23	2023-24	2024-25
Normal Cost %	7.874%	7.9%	7.9%	7.9%	7.9%	7.9%
UAL Payment	\$6,600	\$6,800	\$7,000	\$7,200	\$7,400	\$0

Changes in the UAL due to actuarial gains or losses as well as changes in actuarial assumptions or methods are amortized using a 5-year ramp up. For more information, please see "Amortization of the Unfunded Actuarial Accrued Liability" under "Actuarial Methods" in Appendix A of Section 2. This method phases in the impact of unanticipated changes in UAL over a 5-year period and attempts to minimize employer cost volatility from year to year. As a result of this methodology, dramatic changes in the required employer contributions in any one year are less likely. However, required contributions can change gradually and significantly over the next five years. In years where there is a large increase in UAL the relatively small amortization payments during the ramp up period could result in a funded ratio that is projected to decrease initially while the contribution impact of the increase in the UAL is phased in.

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

## Changes Since the Prior Year's Valuation

### Benefits

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

### Actuarial Methods and Assumptions

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

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

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

## Subsequent Events

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

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

The contribution requirements determined in this actuarial valuation report are based on demographic and financial information as of June 30, 2018, and may reflect additional discretionary payments made by the employer through April 30, 2019. Changes in the value of assets subsequent to that date are not reflected. Investment returns below the assumed rate of return will increase the required contribution, while investment returns above the assumed rate of return will decrease the required contribution.

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

## **Assets and Liabilities**

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

## Breakdown of Entry Age Normal Accrued Liability

Active Members	\$	261,333
Transferred Members		0
Terminated Members		4,706
Members and Beneficiaries Receiving Payments		0
<b>Total</b>	<b>\$</b>	<b>266,039</b>

## 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	\$	266,039
2. Projected UAL balance at 6/30/18		11,860
3. Pool's Accrued Liability <sup>1</sup>		17,424,237,070
4. Sum of Pool's Individual Plan UAL Balances at 6/30/18 <sup>1</sup>		3,777,499,883
5. Pool's 2017/18 Investment & Asset (Gain)/Loss <sup>1</sup>		(135,628,188)
6. Pool's 2017/18 Other (Gain)/Loss <sup>1</sup>		66,272,613
7. Plan's Share of Pool's Asset (Gain)/Loss: $[(1) - (2)] \div [(3) - (4)] \times (5)$		(2,526)
8. Plan's Share of Pool's Other (Gain)/Loss: $(1) \div (3) \times (6)$		1,012
9. Plan's New (Gain)/Loss as of 6/30/2018: $(7) + (8)$		(1,514)
10. Increase in Pool's Accrued Liability due to Change in Assumptions <sup>1</sup>		453,914,155
11. Plan's Share of Pool's Change in Assumptions: $(1) \div (3) \times (10)$		6,931
12. Increase in Pool's Accrued Liability due to Change in Method <sup>1</sup>		128,995,852
13. Plan's Share of Pool's Change in Method: $(1) \div (3) \times (12)$		1,970

<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

14. Plan's UAL: $(2) + (9) + (11) + (13)$	\$	19,246
15. Plan's Share of Pool's MVA: $(1) - (14)$	\$	<b>246,793</b>

## Schedule of Plan's Amortization Bases

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

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

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

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

## Schedule of Plan's Amortization Bases

Reason for Base	Date Established	Ramp Up/Down 2020-21	Escalation Rate	Amortization Period	Balance 6/30/18	Payment 2018-19	Balance 6/30/19	Amounts for Fiscal 2020-21		
								Payment 2019-20	Balance 6/30/20	Scheduled Payment for 2020-21
FRESH START	06/30/18	No Ramp	2.750%	5	\$19,246	\$(5,945)	\$26,742	\$(824)	\$29,467	\$6,600
<b>TOTAL</b>					<b>\$19,246</b>	<b>\$(5,945)</b>	<b>\$26,742</b>	<b>\$(824)</b>	<b>\$29,467</b>	<b>\$6,600</b>

The (gain)/loss bases are the plan's allocated share of the risk pool's (gain)/loss for the fiscal year as disclosed in "Allocation of Plan's Share of Pool's Experience/Assumption Change" earlier in this section. These (gain)/loss bases will be amortized according to Board policy over 30 years with a 5-year ramp-up.

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

## Amortization Schedule and Alternatives

The amortization schedule on the previous page shows the minimum contributions required according to CalPERS amortization policy. There has been considerable interest from many agencies in paying off these unfunded accrued liabilities sooner and the possible savings in doing so. As a result, we have provided alternate amortization schedules to help analyze the current amortization schedule and illustrate the advantages of accelerating unfunded liability payments.

Shown on the following page are future year amortization payments based on: 1) the current amortization schedule reflecting the individual bases and remaining periods shown on the previous page, and 2) alternate "fresh start" amortization schedules using two sample periods that would both result in interest savings relative to the current amortization schedule. Note that the payments under each alternate scenario increase by 2.75 percent for each year into the future, except for inactive plans.

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	Balance	Payment
6/30/2020	29,466	6,600	N/A	N/A	N/A	N/A
6/30/2021	24,702	6,781				
6/30/2022	19,416	6,968				
6/30/2023	13,568	7,160				
6/30/2024	7,112	7,356				
6/30/2025						
6/30/2026						
6/30/2027						
6/30/2028						
6/30/2029						
6/30/2030						
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6/30/2045						
6/30/2046						
6/30/2047						
6/30/2048						
6/30/2049						
<b>Totals</b>		<b>34,865</b>		<b>N/A</b>		<b>N/A</b>
<b>Interest Paid</b>		<b>5,399</b>		<b>N/A</b>		<b>N/A</b>
<b>Estimated Savings</b>				<b>N/A</b>		<b>N/A</b>

## 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
2020 - 21	7.874%	\$6,600

## 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
06/30/2018	266,039	246,793	19,246	92.8%	534,274

## **Risk Analysis**

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

## Future Investment Return Scenarios

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

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

These alternate investment returns were chosen based on stochastic analysis of possible future investment returns over the four-year period ending June 30, 2022. Using the expected returns and volatility of the asset classes in which the funds are invested, we produced five thousand stochastic outcomes for this period based on the most recently completed Asset Liability Management process. We then selected annual returns that approximate the 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 2021-22	Projected Employer Contributions			
	2021-22	2022-23	2023-24	2024-25
<b>1.0%</b>				
Normal Cost	7.9%	7.9%	7.9%	7.9%
UAL Contribution	\$7,200	\$8,100	\$9,400	\$11,000
<b>4.0%</b>				
Normal Cost	7.9%	7.9%	7.9%	7.9%
UAL Contribution	\$7,000	\$7,500	\$8,300	\$9,300
<b>7.0%</b>				
Normal Cost	7.9%	7.9%	7.9%	7.9%
UAL Contribution	\$6,800	\$7,000	\$7,200	\$7,400
<b>9.0%</b>				
Normal Cost	8.1%	7.7%	7.9%	8.1%
UAL Contribution	\$6,700	\$6,700	\$6,700	\$0
<b>12.0%</b>				
Normal Cost	8.1%	7.7%	7.9%	8.1%
UAL Contribution	\$6,500	\$0	\$0	\$0

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

## Discount Rate Sensitivity

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

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

Sensitivity Analysis				
As of June 30, 2018	Plan's Total Normal Cost	Accrued Liability	Unfunded Accrued Liability	Funded Status
7.0% (current discount rate)	15.124%	\$266,039	\$19,246	92.8%
6.0%	18.723%	\$334,057	\$87,264	73.9%
8.0%	12.363%	\$213,522	\$(33,271)	115.6%

## Mortality Rate Sensitivity

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

As of June 30, 2018	Current Mortality	10% Lower Mortality Rates	10% Higher Mortality Rates
a) Accrued Liability	\$266,039	\$270,787	\$261,646
b) Market Value of Assets	\$246,793	\$246,793	\$246,793
c) Unfunded Liability (Surplus) [(a)-(b)]	\$19,246	\$23,994	\$14,853
d) Funded Status	92.8%	91.1%	94.3%

A 10 percent increase (decrease) in assumed mortality rates over the long-term would result in approximately a 1.5 percent increase (decrease) to the funded ratio.

## Inflation Rate Sensitivity

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

As of June 30, 2018	Current Inflation Rate	-1% Inflation Rate	+1% Inflation Rate
a) Accrued Liability	\$266,039	\$227,737	\$304,036
b) Market Value of Assets	\$246,793	\$246,793	\$246,793
c) Unfunded Liability (Surplus) [(a)-(b)]	\$19,246	\$(19,056)	\$57,243
d) Funded Status	92.8%	108.4%	81.2%

A decrease of 1 percent in the liability inflation rate (2.50 percent to 1.50 percent) reduces the Accrued Liability by 14.4 percent. However, a 1 percent increase in the liability inflation rate (2.50 percent to 3.50 percent) increases the Accrued Liability by 14.3 percent.

## Maturity Measures

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

Ratio of Retiree Accrued Liability to Total Accrued Liability	June 30, 2017	June 30, 2018
1. Retired Accrued Liability	0	0
2. Total Accrued Liability	162,209	266,039
3. Ratio of Retiree AL to Total AL [(1) / (2)]	0.00	0.00

Another way to look at the maturity level of CalPERS and its plans is to look at the ratio of actives to retirees. A pension plan in its infancy will have a very high ratio of active to retired members. As the plan matures, and members retire, the ratio starts declining. A mature plan will often have a ratio near or below one. The average support ratio for CalPERS public agency plans is 1.25.

Support Ratio	June 30, 2017	June 30, 2018
1. Number of Actives	6	7
2. Number of Retirees	0	0
3. Support Ratio [(1) / (2)]	N/A	N/A

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

**Asset Volatility Ratio (AVR)**

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

**Liability Volatility Ratio (LVR)**

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

<b>Contribution Volatility</b>	<b>June 30, 2017</b>		<b>June 30, 2018</b>	
1. Market Value of Assets	\$	155,277	\$	246,793
2. Payroll		438,152		534,274
3. Asset Volatility Ratio (AVR) [(1) / (2)]		0.4		0.5
4. Accrued Liability	\$	162,209	\$	266,039
5. Liability Volatility Ratio (LVR) [(4) / (2)]		0.4		0.5
6. Accrued Liability (7.00% discount rate)		169,251		266,039
7. Projected Liability Volatility Ratio [(6) / (2)]		0.4		0.5

## Hypothetical Termination Liability

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

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

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

<b>Market Value of Assets (MVA)</b>	<b>Hypothetical Termination Liability<sup>1,2</sup> @ 2.50%</b>	<b>Funded Status</b>	<b>Unfunded Termination Liability @ 2.50%</b>	<b>Hypothetical Termination Liability<sup>1,2</sup> @ 3.25%</b>	<b>Funded Status</b>	<b>Unfunded Termination Liability @ 3.25%</b>
\$246,793	\$433,475	56.9%	\$186,681	\$359,340	68.7%	\$112,547

<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 of the Section 2 report.

<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 2.91 percent on June 30, 2018, and was 2.83 percent on January 31, 2019.

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

## Participant Data

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

	<b>June 30, 2017</b>	<b>June 30, 2018</b>
Reported Payroll	\$ 438,152	\$ 534,274
Projected Payroll for Contribution Purposes	\$ 477,040	\$ 579,575
Number of Members		
Active	6	7
Transferred	0	0
Separated	0	2
Retired	0	0

## List of Class 1 Benefit Provisions

This plan has the additional Class 1 Benefit Provisions:

- Post-Retirement Survivor Allowance (PRSA)

## Plan's Major Benefit Options

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

Member Category	Benefit Group	
	Misc	
<b>Demographics</b>		
Actives	Yes	
Transfers/Separated	Yes	
Receiving	No	
<b>Benefit Provision</b>		
Benefit Formula	2% @ 62	
Social Security Coverage	No	
Full/Modified	Full	
Employee Contribution Rate	7.25%	
Final Average Compensation Period	Three Year	
Sick Leave Credit	Yes	
Non-Industrial Disability	Standard	
Industrial Disability	No	
Pre-Retirement Death Benefits		
Optional Settlement 2	Yes	
1959 Survivor Benefit Level	Level 3	
Special	No	
Alternate (firefighters)	No	
Post-Retirement Death Benefits		
Lump Sum	\$500	
Survivor Allowance (PRSA)	Yes	
COLA	2%	

## PEPRA Member Contribution Rates

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

Rate Plan Identifier	Benefit Group Name	Basis for Current Rate		Rates Effective July 1, 2020			
		Total Normal Cost	Member Rate	Total Normal Cost	Change	Change Needed	Member Rate
26036	Miscellaneous PEPRA Level	14.322%	7.250%	15.124%	0.802%	No	7.250%

## 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**

400 Q Street, Sacramento, CA 95811 | Phone: (916) 795-3000 | Fax: (916) 795-2744

888 CalPERS (or 888-225-7377) | TTY: (877) 249-7442 | [www.calpers.ca.gov](http://www.calpers.ca.gov)

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**July 2019**

**PEPRA Safety Police Plan of the Town of Atherton  
(CalPERS ID: 1382390535)  
Annual Valuation Report as of June 30, 2018**

Dear Employer,

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

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

- Section 1 contains specific information for the plan including the development of the current and projected employer contributions, and
- Section 2 contains the Risk Pool Actuarial Valuation appropriate to the plan as of June 30, 2018.

Section 2 can be found on the CalPERS website ([www.calpers.ca.gov](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, 2018 actuarial valuation report contains important actuarial information about your pension plan at CalPERS. Your assigned CalPERS staff actuary, whose signature appears in the Actuarial Certification section on page 1, is available to discuss the report with you after August 1, 2019.

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

**Required Contribution**

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

Fiscal Year	Employer Normal Cost Rate	Employer Amortization of Unfunded Accrued Liability	PEPRA Employee Rate
2020-21	13.884%	\$10,518	13.750%
<i>Projected Results</i>			
2021-22	13.9%	\$11,000	TBD

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

### **Changes from Previous Year's Valuation**

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

### **Upcoming Change for June 30, 2019 Valuations**

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

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

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

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

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

Sincerely,



SCOTT TERANDO  
Chief Actuary



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

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

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

## **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)  
(Valuation Rate Plan ID: 25053)**

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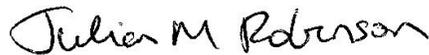
## Actuarial Certification

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

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

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

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



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, 2018 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 2020-21.

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

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

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

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

### California Actuarial Advisory Panel Recommendations

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

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

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

## Required Employer Contributions

	Fiscal Year	
<b>Required Employer Contributions</b>	<b>2020-21</b>	
<b>Employer Normal Cost Rate</b>	<b>13.884%</b>	
<i>Plus, Either</i>		
<b>1) Monthly Employer Dollar UAL Payment</b>	\$	<b>876.50</b>
<i>Or</i>		
<b>2) Annual UAL Prepayment Option*</b>	\$	<b>10,168</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>). Any prepayment totaling over \$5 million requires a 72-hour notice email to <a href="mailto:FCSD_public_agency_wires@calpers.ca.gov">FCSD_public_agency_wires@calpers.ca.gov</a>. 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 2019-20	Fiscal Year 2020-21
<b>Development of Normal Cost as a Percentage of Payroll<sup>1</sup></b>		
Base Total Normal Cost for Formula	25.034%	26.044%
Surcharge for Class 1 Benefits <sup>2</sup>		
a) PRSA	1.502%	1.590%
Phase out of Normal Cost Difference <sup>3</sup>	0.000%	0.000%
Plan's Total Normal Cost	26.536%	27.634%
Plan's Employee Contribution Rate <sup>4</sup>	12.750%	13.750%
Employer Normal Cost Rate	13.786%	13.884%
Projected Payroll for the Contribution Fiscal Year	\$ 857,997	\$ 940,385
<b>Estimated Employer Contributions Based on Projected Payroll</b>		
Plan's Estimated Employer Normal Cost	\$ 118,283	\$ 130,563
Plan's Payment on Amortization Bases <sup>5</sup>	5,685	10,518
% of Projected Payroll (illustrative only)	0.663%	1.118%
Estimated Total Employer Contribution	\$ 123,968	\$ 141,081
% of Projected Payroll (illustrative only)	14.449%	15.002%

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

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

<sup>5</sup> See page 10 for a breakdown of the Amortization Bases.

## Plan's Funded Status

	<b>June 30, 2017</b>	<b>June 30, 2018</b>
1. Present Value of Projected Benefits (PVB)	\$ 2,630,201	\$ 3,305,851
2. Entry Age Normal Accrued Liability (AL)	230,501	528,785
3. Plan's Market Value of Assets (MVA)	210,826	479,753
4. Unfunded Accrued Liability (UAL) [(2) - (3)]	19,675	49,032
5. Funded Ratio [(3) / (2)]	91.5%	90.7%

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 7.00% Return for Fiscal Year 2018-19)				
		2020-21	2021-22	2022-23	2023-24	2024-25
<b>Normal Cost %</b>	13.884%	13.9%	13.9%	13.9%	13.9%	13.9%
<b>UAL Payment</b>	\$10,518	\$11,000	\$11,000	\$11,000	\$12,000	\$12,000

Changes in the UAL due to actuarial gains or losses as well as changes in actuarial assumptions or methods are amortized using a 5-year ramp up. For more information, please see "Amortization of the Unfunded Actuarial Accrued Liability" under "Actuarial Methods" in Appendix A of Section 2. This method phases in the impact of unanticipated changes in UAL over a 5-year period and attempts to minimize employer cost volatility from year to year. As a result of this methodology, dramatic changes in the required employer contributions in any one year are less likely. However, required contributions can change gradually and significantly over the next five years. In years where there is a large increase in UAL the relatively small amortization payments during the ramp up period could result in a funded ratio that is projected to decrease initially while the contribution impact of the increase in the UAL is phased in.

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

## Changes Since the Prior Year's Valuation

### Benefits

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

### Actuarial Methods and Assumptions

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

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

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

## Subsequent Events

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

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

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

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

## **Assets and Liabilities**

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

## Breakdown of Entry Age Normal Accrued Liability

Active Members	\$	528,785
Transferred Members		0
Terminated Members		0
Members and Beneficiaries Receiving Payments		0
<b>Total</b>	<b>\$</b>	<b>528,785</b>

## 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	\$	528,785
2. Projected UAL balance at 6/30/18		34,140
3. Pool's Accrued Liability <sup>1</sup>		22,716,935,494
4. Sum of Pool's Individual Plan UAL Balances at 6/30/18 <sup>1</sup>		5,835,345,753
5. Pool's 2017/18 Investment & Asset (Gain)/Loss <sup>1</sup>		(166,826,991)
6. Pool's 2017/18 Other (Gain)/Loss <sup>1</sup>		79,829,358
7. Plan's Share of Pool's Asset (Gain)/Loss: $[(1) - (2)] \div [(3) - (4)] \times (5)$		(4,888)
8. Plan's Share of Pool's Other (Gain)/Loss: $(1) \div (3) \times (6)$		1,858
9. Plan's New (Gain)/Loss as of 6/30/2018: $(7) + (8)$		(3,030)
10. Increase in Pool's Accrued Liability due to Change in Assumptions <sup>1</sup>		623,352,408
11. Plan's Share of Pool's Change in Assumptions: $(1) \div (3) \times (10)$		14,510
12. Increase in Pool's Accrued Liability due to Change in Method <sup>1</sup>		146,565,925
13. Plan's Share of Pool's Change in Method: $(1) \div (3) \times (12)$		3,412

<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

14. Plan's UAL: $(2) + (9) + (11) + (13)$	\$	49,032
15. Plan's Share of Pool's MVA: $(1) - (14)$	\$	<b>479,753</b>

## Schedule of Plan's Amortization Bases

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

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

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

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

## Schedule of Plan's Amortization Bases

Reason for Base	Date Established	Ramp Up/Down 2020-21	Escalation Rate	Amortization Period	Balance 6/30/18	Payment 2018-19	Balance 6/30/19	Amounts for Fiscal 2020-21		
								Payment 2019-20	Balance 6/30/20	Scheduled Payment for 2020-21
FRESH START	06/30/18	No Ramp	2.750%	10	\$49,032	\$(20,518)	\$73,687	\$(6,244)	\$85,304	\$10,518
<b>TOTAL</b>					<b>\$49,032</b>	<b>\$(20,518)</b>	<b>\$73,687</b>	<b>\$(6,244)</b>	<b>\$85,304</b>	<b>\$10,518</b>

The (gain)/loss bases are the plan's allocated share of the risk pool's (gain)/loss for the fiscal year as disclosed in "Allocation of Plan's Share of Pool's Experience/Assumption Change" earlier in this section. These (gain)/loss bases will be amortized according to Board policy over 30 years with a 5-year ramp-up.

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

## Amortization Schedule and Alternatives

The amortization schedule on the previous page shows the minimum contributions required according to CalPERS amortization policy. There has been considerable interest from many agencies in paying off these unfunded accrued liabilities sooner and the possible savings in doing so. As a result, we have provided alternate amortization schedules to help analyze the current amortization schedule and illustrate the advantages of accelerating unfunded liability payments.

Shown on the following page are future year amortization payments based on: 1) the current amortization schedule reflecting the individual bases and remaining periods shown on the previous page, and 2) alternate "fresh start" amortization schedules using two sample periods that would both result in interest savings relative to the current amortization schedule. Note that the payments under each alternate scenario increase by 2.75 percent for each year into the future.

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

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

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

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

## Amortization Schedule and Alternatives

Date	<u>Current Amortization Schedule</u>		<u>Alternate Schedules</u>			
	Balance	Payment	5 Year Amortization		0 Year Amortization	
	Balance	Payment	Balance	Payment	Balance	Payment
6/30/2020	85,304	10,518	85,304	19,107	N/A	N/A
6/30/2021	80,395	10,807	71,511	19,632		
6/30/2022	74,844	11,104	56,210	20,172		
6/30/2023	68,597	11,410	39,278	20,727		
6/30/2024	61,596	11,724	20,588	21,297		
6/30/2025	53,781	12,046				
6/30/2026	45,085	12,377				
6/30/2027	35,438	12,718				
6/30/2028	24,763	13,067				
6/30/2029	12,980	13,427				
6/30/2030						
6/30/2031						
6/30/2032						
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6/30/2049						
<b>Totals</b>		<b>119,197</b>		<b>100,933</b>		<b>N/A</b>
<b>Interest Paid</b>		<b>33,893</b>		<b>15,630</b>		<b>N/A</b>
<b>Estimated Savings</b>				<b>18,264</b>		<b>N/A</b>

## 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
2020 - 21	13.884%	\$10,518

## 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
06/30/2018	528,785	479,753	49,032	90.7%	866,882

## **Risk Analysis**

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

## Future Investment Return Scenarios

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

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

These alternate investment returns were chosen based on stochastic analysis of possible future investment returns over the four-year period ending June 30, 2022. Using the expected returns and volatility of the asset classes in which the funds are invested, we produced five thousand stochastic outcomes for this period based on the most recently completed Asset Liability Management process. We then selected annual returns that approximate the 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 2019-20 through 2021-22	Projected Employer Contributions			
	2021-22	2022-23	2023-24	2024-25
<b>1.0%</b>				
Normal Cost	13.9%	13.9%	13.9%	13.9%
UAL Contribution	\$12,000	\$13,000	\$16,000	\$19,000
<b>4.0%</b>				
Normal Cost	13.9%	13.9%	13.9%	13.9%
UAL Contribution	\$11,000	\$12,000	\$14,000	\$15,000
<b>7.0%</b>				
Normal Cost	13.9%	13.9%	13.9%	13.9%
UAL Contribution	\$11,000	\$11,000	\$11,000	\$12,000
<b>9.0%</b>				
Normal Cost	14.2%	14.6%	14.4%	14.7%
UAL Contribution	\$11,000	\$11,000	\$11,000	\$10,000
<b>12.0%</b>				
Normal Cost	14.2%	14.6%	14.4%	14.7%
UAL Contribution	\$10,000	\$9,600	\$0	\$0

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

## Discount Rate Sensitivity

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

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

Sensitivity Analysis				
As of June 30, 2018	Plan's Total Normal Cost	Accrued Liability	Unfunded Accrued Liability	Funded Status
7.0% (current discount rate)	27.634%	\$528,785	\$49,032	90.7%
6.0%	34.443%	\$637,696	\$157,943	75.2%
8.0%	22.438%	\$443,612	\$(36,141)	108.1%

## Mortality Rate Sensitivity

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

As of June 30, 2018	Current Mortality	10% Lower Mortality Rates	10% Higher Mortality Rates
a) Accrued Liability	\$528,785	\$536,981	\$521,189
b) Market Value of Assets	\$479,753	\$479,753	\$479,753
c) Unfunded Liability (Surplus) [(a)-(b)]	\$49,032	\$57,228	\$41,436
d) Funded Status	90.7%	89.3%	92.0%

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

## Inflation Rate Sensitivity

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

As of June 30, 2018	Current Inflation Rate	-1% Inflation Rate	+1% Inflation Rate
a) Accrued Liability	\$528,785	\$474,370	\$580,543
b) Market Value of Assets	\$479,753	\$479,753	\$479,753
c) Unfunded Liability (Surplus) [(a)-(b)]	\$49,032	\$(5,383)	\$100,790
d) Funded Status	90.7%	101.1%	82.6%

A decrease of 1 percent in the liability inflation rate (2.50 percent to 1.50 percent) reduces the Accrued Liability by 10.3 percent. However, a 1 percent increase in the liability inflation rate (2.50 percent to 3.50 percent) increases the Accrued Liability by 9.8 percent.

## Maturity Measures

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

Ratio of Retiree Accrued Liability to Total Accrued Liability	June 30, 2017	June 30, 2018
1. Retired Accrued Liability	0	0
2. Total Accrued Liability	230,501	528,785
3. Ratio of Retiree AL to Total AL [(1) / (2)]	0.00	0.00

Another way to look at the maturity level of CalPERS and its plans is to look at the ratio of actives to retirees. A pension plan in its infancy will have a very high ratio of active to retired members. As the plan matures, and members retire, the ratio starts declining. A mature plan will often have a ratio near or below one. The average support ratio for CalPERS public agency plans is 1.25.

Support Ratio	June 30, 2017	June 30, 2018
1. Number of Actives	7	8
2. Number of Retirees	0	0
3. Support Ratio [(1) / (2)]	N/A	N/A

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

**Asset Volatility Ratio (AVR)**

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

**Liability Volatility Ratio (LVR)**

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

<b>Contribution Volatility</b>	<b>June 30, 2017</b>		<b>June 30, 2018</b>	
1. Market Value of Assets	\$	210,826	\$	479,753
2. Payroll		788,055		866,882
3. Asset Volatility Ratio (AVR) [(1) / (2)]		0.3		0.6
4. Accrued Liability	\$	230,501	\$	528,785
5. Liability Volatility Ratio (LVR) [(4) / (2)]		0.3		0.6
6. Accrued Liability (7.00% discount rate)		239,279		528,785
7. Projected Liability Volatility Ratio [(6) / (2)]		0.3		0.6

## Hypothetical Termination Liability

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

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

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

<b>Market Value of Assets (MVA)</b>	<b>Hypothetical Termination Liability<sup>1,2</sup> @ 2.50%</b>	<b>Funded Status</b>	<b>Unfunded Termination Liability @ 2.50%</b>	<b>Hypothetical Termination Liability<sup>1,2</sup> @ 3.25%</b>	<b>Funded Status</b>	<b>Unfunded Termination Liability @ 3.25%</b>
\$479,753	\$1,017,422	47.2%	\$537,668	\$877,406	54.7%	\$397,653

<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 of the Section 2 report.

<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 2.91 percent on June 30, 2018, and was 2.83 percent on January 31, 2019.

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

## Participant Data

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

	<b>June 30, 2017</b>	<b>June 30, 2018</b>
Reported Payroll	\$ 788,055	\$ 866,882
Projected Payroll for Contribution Purposes	\$ 857,997	\$ 940,385
Number of Members		
Active	7	8
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

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

Member Category	Benefit Group	
	Police	
<b>Demographics</b>		
Actives	Yes	
Transfers/Separated	No	
Receiving	No	
<b>Benefit Provision</b>		
Benefit Formula	2.7% @ 57	
Social Security Coverage	No	
Full/Modified	Full	
Employee Contribution Rate	12.75%	
Final Average Compensation Period	Three Year	
Sick Leave Credit	Yes	
Non-Industrial Disability	Standard	
Industrial Disability	Standard	
Pre-Retirement Death Benefits		
Optional Settlement 2	Yes	
1959 Survivor Benefit Level	Level 3	
Special	Yes	
Alternate (firefighters)	No	
Post-Retirement Death Benefits		
Lump Sum	\$500	
Survivor Allowance (PRSA)	Yes	
COLA	2%	

## PEPRA Member Contribution Rates

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

Rate Plan Identifier	Benefit Group Name	Basis for Current Rate		Rates Effective July 1, 2020			
		Total Normal Cost	Member Rate	Total Normal Cost	Change	Change Needed	Member Rate
25053	Safety Police PEPRA Level	25.715%	12.750%	27.634%	1.919%	Yes	13.750%

## 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**