

# Legislators' Retirement System

## Actuarial Valuation

*As of June 30, 2017*





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## Actuarial Certification

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February 2018

To the best of our knowledge, this report is complete and accurate and contains sufficient information to fully and fairly disclose the actuarial funded condition of the Legislators' Retirement System. This valuation is based on the member and financial data as of June 30, 2017 provided by the various CalPERS databases and the benefits under this plan with CalPERS as of the date this report was produced. In our opinion, this valuation has been performed in accordance with generally accepted actuarial principles, and in accordance with the standards of practice prescribed by the Actuarial Standards Board. The assumptions and methods are internally consistent and reasonable for this plan, as prescribed by the CalPERS Board of Administration according to provisions set forth in the California Public Employee's Retirement Law.

The undersigned are actuaries for CalPERS, who are members of the American Academy of Actuaries and the Society of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

A handwritten signature in black ink, appearing to read "David Clement".

David Clement, ASA, EA, MAAA  
*Senior Pension Actuary, CalPERS*

A handwritten signature in black ink, appearing to read "Scott Terando".

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

# Highlights and Executive Summary

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# Highlights and Executive Summary

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## INTRODUCTION

This is the actuarial valuation report as of June 30, 2017 for the Legislators' Retirement System. This actuarial valuation was used to set the FY 2018-2019 required employer contribution rates. The information included provides information regarding retirement and ancillary benefits for Senators and Members of the Assembly (first elected prior to November 7, 1990), Constitutional Officers (first elected prior to December 31, 2012), and Legislative Statutory Officers (first appointed prior to December 31, 2012).

Effective January 1, 2013, the system is closed to new members. The system was partially closed as a result of the Political Reform Act of 1990 (to Senators and Members of the Assembly first elected after November 7, 1990). As a result of Assembly Bill 340 which was signed by the Governor on September 12, 2012, the Legislators' Retirement System is also closed to Constitutional and Statutory Officers effective January 1, 2013.

Section 7522.52 requires that a public employer's contribution to a defined benefit plan, in combination with employee contributions to that defined benefit plan, shall not be less than the normal cost rate.

Effective December 7, 2009, elected officials salaries were reduced 18 percent. For the purposes of determining the present value of benefits, salaries prior to the reduction were used. However, actual salaries were used to calculate employer contribution rates.

## PURPOSE OF REPORT

This actuarial valuation of the Legislators' Retirement System was performed by the CalPERS Actuarial Office using data as of June 30, 2017 in order to:

- Set forth the assets, accrued liabilities, and funded status of this plan as of June 30, 2017.
- Establish the required employer contributions of the System for the fiscal year July 1, 2018 through June 30, 2019.
- Provide actuarial information as of June 30, 2017 to the CalPERS Board of Administration and other interested parties.

The pension funding information presented in this report should not be used in financial reports subject to Governmental Accounting Standards Board (GASB) Statement No. 68. A separate accounting valuation report for such purposes is available from CalPERS. The measurements shown in this actuarial valuation may not be applicable for other purposes.

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). Additionally, this report includes the following "Enhanced Risk Disclosures" also recommended by the CAAP in the Model

Disclosure Elements document:

- A "Deterministic Stress Test," projecting future results under different investment income scenarios
- A "Sensitivity Analysis," showing the impact on current valuation results using a 1 percent plus or minus change in the discount rate.

## Highlights and Executive Summary (continued)

### REQUIRED EMPLOYER CONTRIBUTION

This actuarial valuation sets forth the employer contribution rate for the fiscal year July 1, 2018 through June 30, 2019. The following table shows the Required Employer Contribution. The Required Employer Contribution is shown in dollars and as a percentage of projected payroll.

#### Actuarially Determined Employer Contribution

	Fiscal Year 2017/2018	Fiscal Year 2018/2019
1) Contribution in Projected Dollars		
a) Total Normal Cost	\$668,562	\$580,743
b) Employee Contribution	104,283	94,037
c) Employer Normal Cost [(1a) - (1b)]	\$584,279	\$486,706
d) Unfunded Accrued Liability Payment	(563,861)	(486,706)
<b>e) Actuarially Determined Employer Contribution [(1c) + (1d)]</b>	<b>\$20,418</b>	<b>\$0</b>
Projected Annual Payroll for Contribution Year	\$1,401,283	\$1,275,936
2) Contribution as a Percentage of Payroll		
a) Total Normal Cost	49.138%	45.515%
b) Employee Contribution	7.442%	7.370%
c) Employer Normal Cost [(2a) - (2b)]	41.696%	38.145%
d) Unfunded Accrued Liability Payment	(40.239%)	(38.145%)
<b>e) Actuarially Determined Employer Contribution [(2c) + (2d)]</b>	<b>1.457%</b>	<b>0.000%</b>
<b>MINIMUM EMPLOYER CONTRIBUTION RATE<sup>1</sup></b>	<b>41.696%</b>	<b>38.145%</b>

(1) The Minimum Employer Contribution Rate under PEPR is the greater of the Actuarially Determined Employer Contribution or the Employer Normal Cost.

### PLAN'S FUNDED STATUS

The table below summarizes the funded status of the Legislators' Retirement System over the last two years.

	June 30, 2016	June 30, 2017
1) Present Value of Projected Benefits	\$108,950,519	\$102,175,579
2) Entry Age Normal Accrued Liability	106,974,655	100,844,514
3) Market Value of Assets (MVA)	119,049,997	116,883,856
<b>4) Unfunded Accrued Liability [(2) - (3)]</b>	<b>(\$12,075,342)</b>	<b>(\$16,039,342)</b>
<b>5) Funded Ratio [(3) / (2)]</b>	<b>111.3%</b>	<b>115.9%</b>

This measure of funded status is an assessment of the need for future employer contributions. The Unfunded Accrued Liability, if positive, 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. This measure of funded status is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the employer's benefit obligations.

### CHANGES SINCE THE PRIOR YEAR'S VALUATION

#### Actuarial Assumptions

Consistent with the decision made by the CalPERS Board of Administration for plans participating in the Public Employees' Retirement Fund (PERF), the mortality assumption was changed in this valuation. The mortality table used in last year's valuation was developed from the February 2014 experience study and includes 20-years of projected on-going mortality improvement using Scale BB table published by the Society of Actuaries. The new mortality table used in this valuation was developed from the December 2017 experience study and includes 15 years of projected on-going mortality improvement using 90 percent of scale MP 2016 published by the Society of Actuaries. The complete 2017 experience study can be found on our website. The inflation assumption was reduced from 2.75 percent to 2.5 percent. The assumptions for individual salary increases and overall payroll growth were reduced from 3.0 percent to 2.75 percent. The overall payroll growth assumption was used in projecting the payroll over which the unfunded liability is amortized.

## Highlights and Executive Summary (continued)

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### CHANGES SINCE THE PRIOR YEAR'S VALUATION (CONTINUED)

A complete description of the actuarial methods and assumptions used in the June 30, 2017 valuation may be found in Appendix A of this report.

### Plan Provisions

No changes were made since the prior valuation. A complete description of the principal plan provisions used in the June 30, 2017 valuation may be found in Appendix B of this report.

### SUBSEQUENT EVENTS

No events that occurred after the valuation date are expected to have a material impact on this valuation.



# Assets

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## Assets

### RECONCILIATION OF THE MARKET VALUE OF ASSETS

The following displays the change in the market value of assets from the prior valuation date to June 30, 2017.

	Market Value
Beginning Balance as of June 30, 2016	\$119,049,997
Member Contributions	94,116
Employer Contributions	516,349
Benefit Payments and Refunds	(7,248,887)
Administration Expenses	(574,828)
Investment Earnings	5,047,109
<b>Ending Balance as of June 30, 2017</b>	<b><u><u>\$116,883,856</u></u></b>

### ASSET ALLOCATION

Shown below is the Market Value of Assets, by asset type, as of the valuation date.

	June 30, 2017
Cash	\$350,166
Investments at Market Value	
Global Equity Securities	\$37,060,609
Global Debt Securities	76,004,464
Short Term Investments	6,656,065
Securities Lending Collateral	766,143
Accounts Receivable	5,695,843
Subtotal of Investments	\$126,533,290
Liabilities	
Accounts Payable	(\$8,884,317)
Securities Lending Obligation	(765,118)
Subtotal of Accounts Receivable	(\$9,649,435)
<b>Fund Balance at Market Value on 6/30/2017</b>	<b><u><u>\$116,883,855</u></u></b>

# Liabilities and Required Employer Contributions

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Liabilities and Required Employer Contribution Rate (continued)

**COMPARISON OF CURRENT AND PRIOR YEAR RESULTS**

Shown below is the comparison of key valuation results for the current valuation date to the corresponding values from the prior valuation date.

	June 30, 2016	June 30, 2017
<b>1) Members Included in the Valuation</b>		
a) Active Members	9	8
b) Deferred Vested Terminated Members & QDRO's	11	7
c) Receiving Payments	238	232
<b>d) Total</b>	<b>258</b>	<b>247</b>
<b>2) Payroll</b>		
a) Covered Annual Payroll	\$1,320,844	\$1,208,552
b) Projected Covered Annual Payroll	1,401,283	1,275,936
c) Average Covered Annual Payroll [(2a) / (1a)]	\$146,760	\$151,069
<b>3) Age and Service for Actives</b>		
a) Average Attained Age for Actives	62.21	64.53
b) Average Service for Actives	9.12	10.57
<b>4) Present Value of Benefits at Valuation Date</b>		
a) Active Members	\$7,550,347	\$6,987,264
b) Inactive Members	4,856,124	2,649,409
c) Receiving Benefits	96,544,048	92,538,906
<b>d) Total</b>	<b>\$108,950,519</b>	<b>\$102,175,579</b>
<b>5) Present Value of Future Employee Contributions</b>	\$303,105	\$215,436
<b>6) Present Value of Future Employer Normal Cost</b>	\$1,672,759	\$1,115,629
<b>7) Accrued Actuarial Liability</b>		
a) Active Members	\$5,574,483	\$5,656,199
b) Inactive Members	4,856,124	2,649,409
c) Receiving Benefits	96,544,048	92,538,906
<b>d) Total</b>	<b>\$106,974,655</b>	<b>\$100,844,514</b>
<b>8) Assets</b>		
a) Market Value of Assets	\$119,049,997	\$116,883,856
b) Unfunded Accrued Actuarial Liability [(7d) - (8a)]	(\$12,075,342)	(\$16,039,342)
c) Funded Ratio [(8a) / (7d)]	111.3%	115.9%

Liabilities and Required Employer Contribution Rate (continued)

**(GAIN)/LOSS ANALYSIS**

Shown below is an analysis of the (Gain)/Loss for the fiscal year ending on the valuation date. The Gain or Loss is shown separately for assets, contributions, and liabilities.

<b>1) Total Gain/Loss Analysis</b>	
a) Unfunded Accrued Liability (UAL) as of 6/30/2016	(\$12,075,342)
b) Expected Payment on UAL During 2016/2017	(14,108)
c) Interest Through 6/30/2017 $[0.05 \times 1a - (1.05^{1/2} - 1) \times 1b]$	(603,419)
d) Expected UAL Before All Other Changes $[1a - 1b + 1c]$	(\$12,664,653)
e) Change Due to Revised Actuarial Methods	—
f) Change Due to New Actuarial Assumptions	(2,653,750)
g) Expected UAL After All Changes $[1d + 1e + 1f]$	(\$15,318,403)
h) Actual Unfunded Accrued Liability as of 6/30/2017	(16,039,342)
<b>i) Total (Gain)/Loss for 2016/2017 <math>[1h - 1g]</math></b>	<b>(\$720,939)</b>
<b>2) Contribution (Gain)/Loss for the Year</b>	
a) Expected Contribution (Employer and Employee)	\$654,399
b) Interest on Expected Contributions $[(1.05^{1/2} - 1) \times 2a]$	16,160
c) Actual Contribution	610,465
d) Interest on Actual Contributions $[(1.05^{1/2} - 1) \times 2c]$	15,075
<b>e) Contribution (Gain)/Loss <math>[(2a + 2b) - (2c + 2d)]</math></b>	<b>\$45,018</b>
<b>3) Asset (Gain)/Loss for the Year</b>	
a) Market Value of Assets as of 6/30/2016	\$119,049,997
b) Contributions Received	610,465
c) Benefits, Refunds Paid and Administrative Costs	(7,823,715)
d) Expected Interest $[0.05 \times 3a + (1.05^{1/2} - 1) \times (3b + 3c)]$	5,774,368
e) Expected Assets at 6/30/2017 $[3a + 3b + 3c + 3d]$	117,611,116
f) Market Value of Assets as of 6/30/2017	116,883,856
<b>g) Asset (Gain)/Loss <math>[3e - 3f]</math></b>	<b>\$727,260</b>
<b>4) Liability (Gain)/Loss for the Year</b>	
a) Total (Gain)/Loss (1i)	(\$720,939)
b) Contribution (Gain)/Loss (2e)	45,018
c) Asset (Gain)/Loss (3g)	727,260
<b>d) Liability (Gain)/Loss <math>[4a - 4b - 4c]</math></b>	<b>(\$1,493,217)</b>

**SCHEDULE OF AMORTIZATION BASES**

The schedule below shows the development of the proposed payment on the Amortization Bases<sup>1</sup>. In accordance with Board policy, the surplus of a plan must be amortized over a minimum of 30 years

Reason For Base	Date Established	Remaining Period	Balance on 6/30/17	Expected Payment on UAL 17-18	6/30/2018	Scheduled Payment Fiscal Year 2018-2019
Fresh Start	6/30/2017	66	(\$16,039,342)	\$44,096	(\$16,886,494)	(\$486,706)
<b>Total</b>			<b>(\$16,039,342)</b>	<b>\$44,096</b>	<b>(\$16,886,494)</b>	<b>(\$486,706)</b>

(1) The amortization bases shown above are used in developing the actuarially determined employer contribution but not in the recommended contribution because of the minimum contribution requirement pursuant to G.C. Section 7522.22.

Liabilities and Required Employer Contribution Rate (continued)

**RECONCILIATION OF REQUIRED EMPLOYER CONTRIBUTIONS**

This table illustrates how the contribution rate is calculated and, more importantly, why the Employer Contribution Rate differs this year from the previous year.

	Percentage of Projected Payroll	Estimated \$ Based on Projected Payroll
1) 2017-18 Actuarially Determined Employer Contribution (from prior year annual report)	1.457%	\$20,418
2) Effect of Changes Since the Prior Annual Valuation		
a) Effect of Change in Payroll	(3.303%)	(\$46,285)
b) Effect of (Gain)/Loss	(2.698%)	(37,813)
c) Effect of Plan Changes	0.000%	0
d) Effect of Method Changes	0.000%	0
e) Effect of Assumption Changes	(5.372%)	(75,274)
f) Effect of Fresh Start	9.916%	138,953
<b>g) Net Effect of Changes [Sum of a - f]</b>	<b>(1.457%)</b>	<b>(\$20,418)</b>
<b>3) 2018-19 Actuarially Determined Employer Contribution</b>	<b>0.000%</b>	<b>\$0</b>
<b>4) 2018-19 Minimum Employer Contribution</b>	<b>38.145%</b>	<b>\$486,706</b>

**REQUIRED EMPLOYER CONTRIBUTION RATE HISTORY**

This table provides the 10-year history of employer contribution rates for the Legislators' Retirement System.

Fiscal Year	Actuarially Determined Employer Contribution	Minimum Employer Contribution Rate
2018-19	0.000%	38.145%
2017-18	1.457%	41.696%
2016-17	0.000%	40.659%
2015-16	8.859%	42.265%
2014-15	17.166%	42.257%
2013-14	1.554%	38.381%
2012-13	5.380%	N/A
2011-12	0.000%	N/A
2010-11	0.000%	N/A
2009-10	0.000%	N/A

**FUNDING HISTORY**

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

Valuation Date	Entry Age Normal Accrued Liability <sup>1</sup>	Market Value of Assets (MVA)	Funded Ratio (MVA)	Annual Covered Payroll
6/30/17	\$100,844,514	\$116,883,856	115.9%	\$1,208,552
6/30/16	106,974,655	119,049,997	111.3%	1,320,844
6/30/15	105,746,107	121,468,928	114.9%	1,275,083
6/30/14	111,274,434	130,353,307	117.1%	1,500,257
6/30/13	115,805,781	122,147,891	105.5%	1,427,241
6/30/12	108,585,275	123,029,188	113.3%	1,983,348
6/30/11	108,976,845	123,569,795	113.4%	2,269,390
6/30/10	112,355,875	114,104,852	101.6%	2,159,181
6/30/09	111,898,151	111,829,179	99.9%	2,057,335
6/30/08	103,035,982	134,140,160	130.2%	2,216,469

(1) The aggregate funding method was used in the June 30, 2010 and prior valuations. The Entry Age Normal Accrued Liability (EANAL) was not used for funding purposes. However, the EANAL was disclosed for accounting purposes due to GASB Statement #50.

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# RISK ANALYSIS

## VOLATILITY RATIOS

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

### Asset Volatility Ratio

Plans that have higher asset to payroll ratios produce more volatile employer rates 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. Below we have shown your asset volatility ratio, a measure of the plan's current rate 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

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

Rate Volatility	As of June 30, 2017
1) Market Value of Assets	\$116,883,856
2) Payroll	\$1,208,552
<b>3) Asset Volatility Ratio [(1) / (2)]</b>	<b>96.7</b>
4) Accrued Liability	\$100,844,514
<b>5) Liability Volatility Ratio [(4) / (2)]</b>	<b>83.4</b>

The volatility ratios for this plan are extremely high due to the closed nature of the plan. This would normally indicate a very high level of contribution volatility. However, while the plan remains in surplus, that may not be the case due to the effect of the minimum contribution requirement pursuant to G.C. Section 7522.22.

## ANALYSIS OF FUTURE INVESTMENT RETURN SCENARIOS

As of December 31, 2017, the investment return for the fiscal year to date was announced to be 3.75 percent. For purposes of projecting future employer rates, we are assuming a negative 3.75 percent investment return for fiscal year 2017-18.

The investment return realized during a fiscal year first affects the contribution rate for the fiscal year one year later. Specifically, the investment return for 2017-18 will first be reflected in the June 30, 2018 actuarial valuation that will be used to set the 2019-20 employer contribution rates. The 2018-19 investment return will first be reflected in the June 30, 2019 actuarial valuation that will be used to set the 2020-21 employer contribution rates and so forth.

Based on a negative 3.75 percent investment return for Fiscal Year 2017-18 and assuming that all other actuarial assumptions will be realized and that no further changes to assumptions, contributions, benefits, or funding will occur between now and the beginning of The Fiscal Year 2019-20, the effect on the 2019-20 Employer Rate is as follows:

Estimated 2019-20 Actuarially Determined Employer Contribution	Estimated Increase in the Actuarially Determined Employer Contribution Between 2018-19 and 2019-20
0.0%	0.0%



Risk Analysis (continued)

ANALYSIS OF FUTURE INVESTMENT RETURN SCENARIOS (CONTINUED)

As mentioned earlier, due to the closed nature of this plan, the volatility of the actuarially determined employer contribution can be very high. However, as can be seen in the table below, this may not mean volatility in the minimum employer contribution since this plan is in surplus and in effect pays the normal cost pursuant to G.C. Section 7522.22.

Estimated 2019-20 Minimum Employer Contribution	Estimated Increase in the Minimum Employer Contribution Between 2018-19 and 2019-20
38.1%	0.0%

Analysis was performed to determine the effects of various future investment returns on required employer contributions. The projections below provide a range of results based on five investment return scenarios assumed to occur during the next four fiscal years (2017-18, 2018-19, 2019-20, and 2020-21). The projections also assume that all other actuarial assumptions will be realized and that no further changes to assumptions, contributions, benefits, or funding will occur.

Each of the five investment return scenarios assumes a return of 3.75 percent for fiscal year 2017-18. For fiscal years 2018-19, 2019-20, and 2020-21, each scenario assumes an alternate fixed annual return. The fixed return assumptions for the five scenarios are -3.0 percent, 1.5 percent, 5.0 percent, 7.5 percent and 12.0 percent.

The alternate investment returns were chosen based on stochastic analysis of possible future investment returns over the four year period ending June 30, 2021. Using the expected returns and volatility of the asset classes in which the funds are invested, we produced ten thousand stochastic outcomes for this period. We then selected annual returns that approximate the 5th, 25th, 50th, 75th, and 95th percentiles for these outcomes. For example, of all of the 4-year outcomes generated in the stochastic analysis, approximately 25 percent of them had an average annual return of 3.0 percent or less.

Required contributions outside of this range are also possible. In particular, while it is unlikely that investment returns will average less than -3.0 percent or greater than 17.0 percent over this four year period, the possibility of a single investment return less than -3.0 percent or greater than 17.0 percent in any given year is much greater.

The table below shows the estimated projected actuarially determined employer contribution along with the minimum employer contribution rates and the estimated increases for the plan under the five investment different scenarios.

2018-2021 Investment Return Scenario	Estimated Actuarially Determined/ Minimum Employer Rate			Estimated Increase in Employer Rate Between 2019-20 and 2022-23
	2020-21	2021-22	2022-23	
(3.00%) (5 <sup>th</sup> Percentile)	4.9% / 38.1%	34.1% / 38.1%	66.2% / 66.2%	66.2% / 28.1%
1.50% (25 <sup>th</sup> Percentile)	0.0% / 38.1%	0.4% / 38.1%	13.2% / 38.1%	13.2% / 0.0%
5.00%	0.0% / 38.1%	0.0% / 38.1%	0.0% / 38.1%	0.0% / 0.0%
7.50% (75 <sup>th</sup> Percentile)	0.0% / 38.1%	0.0% / 38.1%	0.0% / 38.1%	0.0% / 0.0%
12.00% (95 <sup>th</sup> Percentile)	0.0% / 38.1%	0.0% / 38.1%	0.0% / 38.1%	0.0% / 0.0%

The volatility of the actuarially determined employer contribution can be very high. However, as can be seen in the table above, this may not mean volatility in the minimum employer contribution when the plan is in surplus and in effect pays the normal cost (38.1 percent) pursuant to G.C. Section 7522.22.

Risk Analysis (continued)

**ANALYSIS OF DISCOUNT RATE SENSITIVITY**

The following analysis looks at the 2018-19 employer contribution rates under two different discount rate scenarios. Shown below are the employer contribution rates assuming discount rates that are 1 percent lower and 1 percent higher than the current valuation discount rate.

This type of analysis gives the reader a sense of the long-term risk to the employer contribution rates.

2018-19 Employer Contribution			
As of June 30, 2017	4.00% Discount Rate (-1%)	5.00% Return (Assumed Rate)	6.00% Discount Rate (+1%)
Normal Cost	46.7%	38.1%	31.2%
UAL Payment	(41.9%)	(38.1%)	(31.2%)
Actuarially Determined Minimum	4.8%	0.0%	0.0%
	46.7%	38.1%	31.2%

The minimum contribution would be equal to the normal cost shown for each discount rate in the table above where the UAL Payment is negative.

The following table presents the funded status on a MVA basis of the Legislators' Retirement System calculated using the discount rate of 5.00 percent, as well as what the Legislators' Retirement System's funded status would be if it were calculated using a discount rate that is 1-percentage-point lower, 4.00 percent, or 1-percentage-point higher, 6.00 percent, than the current rate:

Funded Status on a MVA Basis			
As of June 30, 2017	4.00% Discount Rate (-1%)	5.00% Return (Assumed Rate)	6.00% Discount Rate (+1%)
AL	\$113,071,608	\$100,844,514	\$90,896,281
MVA	116,883,856	116,883,856	116,883,856
UAL	(3,812,248)	(16,039,342)	(25,987,575)
Funded Status	103.4%	115.9%	128.6%

This measure of funded status is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the employer's benefit obligations.

# Appendix A

## Statement of Actuarial Methods and Assumptions

### ACTUARIAL DATA

As stated in the Actuarial Certification, the data, which serves as the basis of this valuation, has been obtained from the various CalPERS databases. We have reviewed the valuation data and believe that it is reasonable and appropriate in aggregate.

### ACTUARIAL FUNDING METHOD

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

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

The excess of the total accrued liability over the market value of plan assets is called the unfunded accrued liability (UAL). Funding requirements are determined by adding the normal cost and an amortization of the unfunded liability as a level percentage of assumed future payrolls. Commencing with the June 30, 2013 valuation all new gains or losses are tracked and amortized over a fixed 30-year period with a five year ramp up at the beginning and a five year ramp down at the end of the amortization period. All changes in liability due to plan amendments, changes in actuarial assumptions, or changes in actuarial methodology are amortized separately over a 20-year period with a five year ramp up at the beginning and a five year ramp down at the end of the amortization period.

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

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

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

It should be noted that the actuary may choose to use a fresh start under other circumstances. In all cases, the fresh start period is set by the actuary at what they deem appropriate.

The following table provides a brief history of the actuarial cost method.

Valuation Year June 30	Funding Method
1996	Entry Age Normal
1997 to 2010	Aggregate
2011 to Current	Entry Age Normal

## Appendix A - Statement of Actuarial Methods and Assumptions (continued)

### INVESTMENT RETURN (INTEREST)

5.00 percent compounded per year, net of expenses.

The following table provides a brief history of the Investment Return Assumption.

Time Frame	Investment Return
7/1/2016 - Current	5.00%
7/1/2011 - 6/30/2016	5.75%
7/1/2010 - 6/30/11	6.00%
7/1/2004 - 6/30/2010	7.00%
7/1/1998 - 6/30/2004	7.50%

### INDIVIDUAL SALARY INCREASES

2.75 percent compounded per year.

### INFLATION

2.50 percent compounded per year. The current inflation assumption is based on the most recent CalPERS Experience Study adopted by the CalPERS Board in December 2017. The following table provides a brief history of the Inflation Return Assumption.

Time Frame	Inflation
7/1/2017 - Current	2.50%
7/1/2011 - 6/30/2017	2.75%
7/1/2004 - 6/30/2011	3.00%
7/1/1998 - 6/30/2004	3.50%

### DEMOGRAPHIC ASSUMPTIONS

The demographic assumptions used in the valuation, with the exception of the mortality assumption, have been in place for many years and have not produced significant experience gains or losses for the plan. The actuary has concluded that the continued use of these assumptions is reasonable for valuation purposes. More information on the mortality assumption is available in the mortality assumption section of this appendix.

### PERCENTAGE MARRIED

90 percent

### AGE OF SPOUSE

Female spouses are assumed four years younger than male spouses.

### ADMINISTRATIVE EXPENSES

0.25 percent of end of year assets.

### RETIREMENT

Active members are assumed to retire immediately at the end of their term limit, if eligible.

### NORMAL FORM OF PAYMENT

The normal form of payment is assumed a 100 percent Joint and Survivor Annuity for all members of the Legislature. While the normal form is a 50 percent Joint and Survivor Annuity for this group, it is valued as a 100 percent Joint and Survivor Annuity to reflect employer subsidies used in the calculation of other optional benefit forms available to the member. The normal form of payment for all Constitutional and Legislative Statutory Officers is assumed a straight life annuity.

Appendix A - Statement of Actuarial Methods and Assumptions (continued)

**MORTALITY RATES**

The mortality assumptions are based on mortality rates resulting from the most recent CalPERS Experience Study adopted by the CalPERS Board in December 2017. For purposes of the mortality rates, the rates include a 15-year mortality improvement projection using 90 percent of Scale MP 2016.

Sample mortality rates are shown in the following table

Age	Healthy Recipients		Disabled Recipients	
	Male	Female	Male	Female
35	0.00049	0.00027	0.00049	0.00027
40	0.00064	0.00037	0.00064	0.00037
45	0.00080	0.00054	0.00080	0.00054
50	0.00372	0.00346	0.01183	0.01083
55	0.00437	0.00410	0.01613	0.01178
60	0.00671	0.00476	0.02166	0.01404
65	0.00928	0.00637	0.02733	0.01757
70	0.01339	0.00926	0.03358	0.02183
75	0.02316	0.01635	0.04277	0.02969
80	0.03977	0.03007	0.06272	0.04641
85	0.07122	0.05418	0.09793	0.07847
90	0.13044	0.10089	0.14616	0.13220
95	0.21658	0.17698	0.21658	0.21015
100	0.32222	0.28151	0.32222	0.32226
105	0.46691	0.43491	0.46691	0.43491
110	1.00000	1.00000	1.00000	1.00000

**PROBABILITY OF DECREMENT FOR ACTIVE PARTICIPANTS**

**Vested Withdrawal** - Sample vested withdrawal rates are shown in the following table.

**Disability** - Sample disability rates are shown in the following table.

**Non-vested Withdrawal** - Sample rates for non-vested withdrawal are shown in the following

For each 1,000 active participants at the age shown, the following number will leave within a year on account of:

Age	Vested Withdrawal	Disability	Non-Vested Withdrawal
30	50.0	0.1	25.0
35	50.0	0.2	25.0
40	50.0	0.7	20.0
45	40.0	1.2	15.0
50	40.0	2.2	10.0
55	40.0	5.0	0.0
60	40.0	9.5	0.0

For those members subject to a term limit, the Vested Withdrawal assumption is 100 percent at the end of the term limit.

**RETIREMENT AGE**

The maximum retirement age was assumed age 60, except for participants who would not meet the service requirements at age 60 or are older than age 60. Retirement for these participants was assumed to occur at the age when the service requirements were met or when their term limits expires, whichever is later.

## Appendix A - Statement of Actuarial Methods and Assumptions (continued)

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### VALUATION DATE

Liabilities are calculated as of June 30<sup>th</sup>. Data is collected as of June 30<sup>th</sup>, and is supplied by CalPERS' Judges' and Legislators' Office.

### PURCHASE OF NON-CONTRIBUTORY SERVICE

Current active and non-retired inactive members are assumed to have purchased 100 percent of all non-contributory service as a member of the Legislature, as a Constitutional Officer other than a Judge, or as a Legislative Statutory Officer. Contributions made for the purchase of non-contributory service are based on their current or final compensation.

### ASSET VALUATION METHOD

The value of assets is the market value of assets.

### INTERNAL REVENUE CODE SECTION 415

The limitations on benefits imposed by Internal Revenue Code Section 415 were taken into account in this valuation. The effect of these limitations has been deemed immaterial on the overall results of this valuation.

### INTERNAL REVENUE CODE SECTION 401 (a) (17)

The limitations on benefits imposed by Internal Revenue Code Section 401(a) (17) was taken into account in this valuation. The effect of these limitations has been deemed immaterial on the overall results of this valuation.

## Appendix B

### Summary of Principal Plan Provisions

#### POLITICAL REFORM ACT OF 1990

Proposition 140, the Political Reform Act of 1990, required that Senators and members of the Assembly, first elected after November 7, 1990, participate in the Federal Social Security Program and in no other retirement system.

#### NAME

Legislators' Retirement System

#### EFFECTIVE DATE

Effective 1947 by Chapter 879, Statutes of 1947.

#### AUTHORIZATION

This System is authorized by the Legislators' Retirement Law. The System was first established by Chapter 879, Statutes of 1947. The Legislators' Retirement Law is contained in Sections 9350 through 9378 of the Government Code. Section 9354 of the Code established the Legislators' Retirement Fund.

#### ADMINISTRATION OF PLAN

Administration is by the Board of Administration of the California Public Employees' Retirement System.

#### ELIGIBILITY FOR MEMBERSHIP

Members of the Legislature first elected prior to November 7, 1990. Prior to January 1, 2013, all Constitutional Officers upon electing to join the System, the Insurance Commissioner, and the Legislative Statutory Officers. Currently, these include the Chief Clerk of the Assembly, the Secretary of the Senate, the Sergeant-at-Arms of the Assembly, and the Sergeant-at-Arms of the Senate. Effective January 1, 2013, the system is closed to new members. The system was partially closed as a result of the Political Reform Act of 1990 (to Senators and Members of the Assembly first elected after November 7, 1990). As a result of Assembly Bill 340 which was signed by the Governor on September 12, 2012, the Legislators' Retirement System is also closed to Constitutional and Statutory Officers effective January 1, 2013.

#### PLAN YEAR

The twelve-month period ending June 30th.

#### CREDITED SERVICE

The period of time computed in years and/or fractions thereof as a member of the Senate or Assembly, an elective officer of the state, or statutory officer from date of electing membership in the system to termination date. For the purpose of crediting service, each full term as a Member of the Senate shall constitute four calendar years; each full term as a Member of the Assembly shall constitute two calendar years.

#### MEMBER CONTRIBUTIONS

**Members of the Legislature and Constitutional Officers** - 4 percent of compensation if elected before March 4, 1972 and 8 percent of compensation if elected after March 4, 1972. Contributions may be made at any time up to benefit commencement date, provided the individual elected to join the system while in service. No interest is charged on contributions made after the applicable service is performed.

**Legislative Statutory Officers** - 6 1/2 percent of compensation if elected before March 4, 1972 and 8 percent of compensation if elected after March 4, 1972.

## Appendix B - Summary of Principal Plan Provisions (continued)

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### STATE CONTRIBUTIONS

Per Section 9358 of the Legislators' Retirement System Law, which was amended because of Assembly Bill 817, Chapter 897, Statutes of 1999, the State now contributes the actuarially required employer contribution rate determined by the Annual Actuarial Valuation as of June 30th.

### COMPENSATION

Compensation means remuneration paid in cash out of funds controlled by the state, excluding mileage, reimbursement for expenses incurred in the performance of official duties, and any per diem allowance paid in lieu of such expenses.

Effective December 7, 2009, elected officials salaries were reduced 18 percent. For the purposes of determining the present value of benefits, salaries prior to the reduction were used. Actual salaries were used to calculate employer contribution rates.

### ELIGIBILITY FOR UNREDUCED SERVICE RETIREMENT ALLOWANCE

A member is eligible for an unreduced service retirement allowance provided the member has satisfied all of the following requirements:

- The member has attained the age of 60 years and has completed 4 or more years of credited service or
- The member, regardless of attained age, has completed 20 or more years of credited service.
- Legislative Statutory Officers are eligible upon the attainment of age 55 years regardless of the number of years of credited service.

### AMOUNT OF UNREDUCED SERVICE RETIREMENT ALLOWANCE

The monthly normal retirement benefit equal to the following:

**Members of the Legislature** - 3 percent of the highest compensation multiplied by the years of credited service plus 2 percent of the first \$500 of monthly compensation multiplied by the years of credited service up to 15 years with a maximum benefit of 66 2/3 percent of the highest monthly compensation

**Constitutional Officers** - 5 percent of the highest compensation multiplied by the years of credited service up to 8 years plus (if the member has 24 or more years of credited service) 1 2/3 percent of monthly compensation multiplied by the years of credited service in excess of 8 years, not to exceed 12 years of credited service. The maximum percentage of compensation is 60 percent of highest monthly compensation.

**Legislative Statutory Officers** - 3 percent of the final compensation multiplied by the years of credited service. The allowance may not exceed 66 2/3 percent of the greater of the member's compensation at the time the member vacates the office or the compensation of the incumbent of that office at the time the payments of the allowance fall due.

### COST-OF-LIVING INCREASES

All benefits are subject to the full cost-of-living adjustment from the benefit commencement date based on the United States city average of the Consumer Price Index for all Urban Consumers. Compensation rates are not adjusted for increases in the incumbent's compensation after the member leaves office.

### NORMAL FORM OF SERVICE RETIREMENT ALLOWANCE

For Legislators a 50 percent Joint Survivor Annuity, for Constitutional Officers a Single Straight Life Annuity, and for Legislative Statutory Officers a Single Straight Life Annuity.

### ELIGIBILITY FOR A REDUCED EARLY RETIREMENT ALLOWANCE

A member, other than a Legislative Statutory Officer is eligible for a reduced early retirement allowance benefit provided the member has completed 15 or more years of credited service regardless of age. Legislative Statutory Officers are not eligible for a reduced early retirement allowance.



## Appendix B - Summary of Principal Plan Provisions (continued)

### AMOUNT OF REDUCED EARLY RETIREMENT ALLOWANCE

The monthly-reduced early retirement is the unreduced service retirement allowance reduced 2 percent for each year by which the member's age at the time of retirement is below age 60. Reduction Factors are shown for ages 50 to 59 in the table below.

Age at Retirement	% of Service Retirement Benefit Paid	Age at Retirement	% of Service Retirement Benefit Paid
59	98%	54	88%
58	96%	53	86%
57	94%	52	84%
56	92%	51	82%
55	90%	50	80%

### FORMS OF RETIREMENT ALLOWANCE PAYMENTS

**Optional Settlement 1** - Single Life Annuity, with the payment of the balance of the member's contributions at the death of the member to the member's beneficiary.

**Optional Settlement 2** - 100 percent Joint and Survivor Annuity.

**Optional Settlement 3** - 50 percent Joint and Survivor Annuity.

**Optional Settlement 4** - Subject to the approval of the Board of Administration, a member may select other benefits that are the actuarial equivalent of his/her retirement allowance.

**Members of the Legislature** - The member's retirement allowance is unreduced due to the selection of any of the above optional settlements.

### ELIGIBILITY FOR DISABILITY ALLOWANCE

All members are eligible and there is no minimum age or service requirements. A medical examination may be required if the applicant is below the minimum age for Service or Early Retirement.

### AMOUNT OF DISABILITY ALLOWANCE

The disability allowance is the same as the service retirement allowance that would be payable to the member if the member had retired for reasons other than disability.

### ELIGIBILITY FOR PRE-RETIREMENT DEATH ALLOWANCE

All members are eligible for a Pre-Retirement Death Allowance.

### AMOUNT OF PRE-RETIREMENT DEATH ALLOWANCE

**Prior to eligibility for Service or Early Retirement** - Refund of the member's contributions with interest plus one-twelfth of the member's annual compensation during the last 12 months in office immediately preceding the member's death multiplied by the member's years of credited service.

**Subsequent to eligibility for Service or Early Retirement** - If the member had elected an optional settlement before death, the surviving spouse will receive the same benefit the surviving spouse would have received had the member's retirement preceded death. If the member had not elected an optional settlement, then the surviving spouse would receive the same benefits had the member elected Optional Settlement 2, a 100 percent Joint and Survivor Annuity, retired and then died.

Appendix B - Summary of Principal Plan Provisions (continued)

**ELIGIBILITY FOR SPECIAL SURVIVOR ALLOWANCE**

The surviving spouse who has the care of unmarried children under the age of 18 or unmarried incapacitated children if over the age of 18 or if there is not a spouse with these responsibilities, the guardian who has the care of unmarried children under the age of 18 or unmarried incapacitated children if over the age of 18. In the case where there are no incapacitated children, but a surviving spouse, a deferment age of 62 is required before receiving a benefit. In the case where there is not a surviving spouse or guardian, the dependent parents of the member are eligible and shall be paid the Survivor's Allowance once the age of 62 is attained. This allowance is payable only if the member is not covered by Social Security.

**AMOUNT OF SPECIAL SURVIVOR ALLOWANCE**

Survivor	Monthly Allowance
Spouse or One Child	\$180
Spouse and One Child or Two Children	\$360
Spouse and Two Children or Three Children	\$430

Benefit payments under this provision are reduced by any other survivor benefits under any other provision under this system.

**IN SERVICE DEATH ALLOWANCE**

In addition to any benefits paid, the beneficiary of a member who died while in office or employed as a Legislative or Statutory Officer will receive an allowance equal to the member's compensation during the 12 months immediately preceding the member's death.

**POST RETIREMENT DEATH BENEFIT**

Upon the death of a retiree, a one-time lump sum payment of \$600 will be made to the retiree's designated survivor(s), or to the retiree's estate.

## Appendix C Participant Data

### SUMMARY OF VALUATION DATA

The table below illustrates a reconciliation of the participant data over the course of the valuation year. It identifies numerically who entered the plan, who left the plan and who remained in the plan in the same status as on the previous valuation date or who moved to a new status over the course of the year counts of records processed by the valuation.

	June 30, 2016	June 30, 2017
<b>1) Active Members</b>		
a) Counts	9	8
b) Average Attained Age	62.21	64.53
c) Average Entry Age to Rate Plan	53.09	53.96
d) Average Years of Service	9.12	10.57
e) Average Annual Covered Pay	\$146,760	\$151,069
f) Annual Covered Payroll	1,320,844	1,208,552
g) Projected Annual Payroll for Contribution Year	1,401,283	1,275,936
h) Present Value of Future Payroll	4,098,318	2,923,360
<b>2) Transferred and Vested Termination Members</b>		
a) Counts	11	7
<b>3) Retired Members and Beneficiaries</b>		
a) Counts	238	232
b) Average Attained Age	73.63	74.90
c) Average Annual Benefits	\$30,220	\$30,693
4) Active to Retired Ratio [(1a) / (3)]	0.04	0.03

### RECONCILIATION OF PARTICIPANTS

The table below illustrates the change in members from June 30, 2016 to June 30, 2017.

#### Reconciliation of Participants For the Fiscal Year Ending June 30, 2017

	Actives	Inactive	Retirees and Beneficiaries	Total
<b>As of June 30, 2016</b>	<b>9</b>	<b>11</b>	<b>238</b>	<b>258</b>
New Entrants	—	—	—	—
Rehires	—	—	—	—
Refunds	—	(1)	—	(1)
Retirements	—	(4)	4	—
Disabilities	—	—	—	—
Terminations	(1)	1	—	—
Community Property Splits	—	—	—	—
Death with Beneficiary	—	—	(6)	(6)
Death without Beneficiary	—	—	(3)	(3)
New Beneficiary	—	—	6	6
Beneficiary Death	—	—	(7)	(7)
<b>As of June 30, 2017</b>	<b>8</b>	<b>7</b>	<b>232</b>	<b>247</b>

Appendix C - Participant Data (continued)

**DISTRIBUTION OF ACTIVE MEMBERS**

The table below illustrates a distribution of active member counts based on age and service.

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

Distribution of Active Participants Attained Age and Years of Credited Service as of June 30, 2017

Attained Age	Years of Service at Valuation Date							Total	Annual Valuation Salary
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+		
15 - 19	0	0	0	0	0	0	0	0	\$0
20 - 24	—	—	—	—	—	—	—	—	—
25 - 29	—	—	—	—	—	—	—	—	—
30 - 34	—	—	—	—	—	—	—	—	—
35 - 39	—	—	—	—	—	—	—	—	—
40 - 44	—	—	—	—	—	—	—	—	—
45 - 49	—	—	—	—	—	—	—	—	—
50 - 54	—	—	—	1	—	—	—	1	152,081
55 - 59	—	1	1	—	—	—	—	2	304,162
60 - 64	—	1	—	—	—	—	—	1	142,577
65+	—	3	—	—	1	—	—	4	609,732
<b>Total</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>\$1,208,552</b>

**DISTRIBUTION OF AVERAGE ANNUAL SALARIES**

The table below illustrates a distribution of active member annual salaries based on age and service.

Distribution of Average Annual Salaries by Age and Credited Service as of June 30, 2017

Attained Age	Years of Service at Valuation Date							Average Annual Salary
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	
15 - 19	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
20 - 24	—	—	—	—	—	—	—	—
25 - 29	—	—	—	—	—	—	—	—
30 - 34	—	—	—	—	—	—	—	—
35 - 39	—	—	—	—	—	—	—	—
40 - 44	—	—	—	—	—	—	—	—
45 - 49	—	—	—	—	—	—	—	—
50 - 54	—	—	—	152,081	—	—	—	152,081
55 - 59	—	152,081	152,081	—	—	—	—	152,081
60 - 64	—	142,577	—	—	—	—	—	142,577
65+	—	139,876	—	—	190,103	—	—	152,433
<b>All Ages</b>	<b>\$0</b>	<b>\$142,857</b>	<b>\$152,081</b>	<b>\$152,081</b>	<b>\$190,103</b>	<b>\$0</b>	<b>\$0</b>	<b>\$151,069</b>

Appendix C - Participant Data (continued)

**DISTRIBUTION OF VESTED TERMINATED PARTICIPANTS**

The table below illustrates a distribution of inactive member counts based on age and service.

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

Distribution of Vested Inactive Terminated by Age and Service as of June 30, 2017

Attained Age	Years of Service at Valuation Date							Total	Average Annual Salary
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+		
15 - 19	0	0	0	0	0	0	0	0	\$0
20 - 24	—	—	—	—	—	—	—	—	—
25 - 29	—	—	—	—	—	—	—	—	—
30 - 34	—	—	—	—	—	—	—	—	—
35 - 39	—	—	—	—	—	—	—	—	—
40 - 44	—	—	—	—	—	—	—	—	—
45 - 49	1	—	—	—	—	—	—	1	130,490
50 - 54	—	1	—	—	—	—	—	1	165,126
55 - 59	1	2	—	—	—	—	—	3	100,456
60 - 64	1	—	—	—	—	—	—	1	159,134
65+	—	—	1	—	—	—	—	1	52,500
<b>Total</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>\$115,517</b>

**RETIREEES & BENEFICIARIES**

The table below illustrates a summary of Retiree and Beneficiary counts and annual benefits by year of retirement.

Retirees and Beneficiaries Number Counts and Annual Benefits By Year of Retirement as of June 30, 2017

Year Retired	Total Retirees	Total Annual Benefits	Average Annual Benefits	Year Retired	Total Retirees	Total Annual Benefits	Average Annual Benefits
2017	2	\$52,861	\$26,431	1997	6	\$139,208	\$23,201
2016	3	114,805	38,268	1996	22	843,336	38,333
2015	1	64,457	64,457	1995	8	270,840	33,855
2014	2	43,132	21,566	1994	10	343,144	34,314
2013	2	112,251	56,126	1993	4	109,043	27,261
2012	1	82,568	82,568	1992	10	407,498	40,750
2011	1	115,722	115,722	1991	8	370,871	46,359
2010	6	158,412	26,402	1990	10	192,682	19,268
2009	1	88,557	88,557	1989	6	103,406	17,234
2008	2	131,640	65,820	1988	2	74,858	37,429
2007	2	82,036	41,018	1987	3	101,382	33,794
2006	4	329,078	82,270	1986	5	103,490	20,698
2005	4	55,966	13,992	1985	3	45,190	15,063
2004	8	364,491	45,561	1984	9	126,074	14,008
2003	3	64,563	21,521	1983	1	23,082	23,082
2002	8	465,955	58,244	1982	13	232,869	17,913
2001	4	106,520	26,630	1981	3	63,807	21,269
2000	5	292,212	58,442	1980	12	114,981	9,582
1999	3	135,541	45,180	1979	11	49,744	4,522
1998	4	103,163	25,791	1978 & Earlier	20	441,280	22,064
				<b>Totals</b>	<b>232</b>	<b>\$7,120,715</b>	<b>\$30,693</b>

Appendix C - Participant Data (continued)

**DISTRIBUTION OF RETIREES & BENEFICIARIES**

The table below illustrates a distribution of Retiree and Beneficiary counts by age and retirement type.

Distribution of Retirees and Beneficiaries by Age and Retirement Type (counts only) as of June 30, 2017

Retiree Age	Service Retiree	Disability Retiree		Death in Service		Death After Service Retirement	Total
		Non-Industrial	Industrial	Non-Industrial	Industrial		
Under 30	3	6	0	0	0	0	9
30 - 34	—	—	—	—	—	—	—
35 - 39	—	—	—	—	—	—	—
40 - 44	—	—	—	—	—	—	—
45 - 49	—	—	—	—	—	—	—
50 - 54	3	—	—	—	—	—	3
55 - 59	11	—	—	—	—	—	11
60 - 64	20	—	—	—	—	—	20
65 - 69	25	1	—	—	—	—	26
70 - 74	34	—	—	—	—	—	34
75 - 79	41	—	—	—	—	—	41
80 - 84	23	—	—	—	—	—	23
85 and Over	65	—	—	—	—	—	65
<b>Total</b>	<b>225</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>—</b>	<b>232</b>

The table below illustrates a distribution of Retiree and Beneficiary total annual benefit amounts by age and retirement type.

Distribution of Total Annual Benefits for Retirees and Beneficiaries by Age and Retirement Type as of June 30, 2017

Retiree Age	Service Retiree	Disability Retiree		Death in Service		Death After Service Retirement	Total Annual Benefits
		Non-Industrial	Industrial	Non-Industrial	Industrial		
Under 30	\$93,521	\$10,531	\$0	\$0	\$0	\$0	\$104,052
30 - 34	—	—	—	—	—	—	—
35 - 39	—	—	—	—	—	—	—
40 - 44	—	—	—	—	—	—	—
45 - 49	—	—	—	—	—	—	—
50 - 54	47,732	—	—	—	—	—	47,732
55 - 59	181,534	—	—	—	—	—	181,534
60 - 64	726,361	—	—	—	—	—	726,361
65 - 69	882,109	28,537	—	—	—	—	910,646
70 - 74	952,535	—	—	—	—	—	952,535
75 - 79	1,231,405	—	—	—	—	—	1,231,405
80 - 84	909,618	—	—	—	—	—	909,618
85 and Over	2,056,832	—	—	—	—	—	2,056,832
<b>Total</b>	<b>\$7,081,647</b>	<b>\$39,068</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$7,120,715</b>

Appendix C - Participant Data (continued)

DISTRIBUTION OF RETIREES & BENEFICIARIES (CONTINUED)

The table below illustrates a distribution of Retiree and Beneficiary counts by years retired and retirement type.

Distribution of Retirees and Beneficiaries by Years Retired and Retirement Type (counts only) as of June 30, 2017

Years Retired	Service Retiree	Disability Retiree		Death in Service		Death After Service Retirement	Total
		Non-Industrial	Industrial	Non-Industrial	Industrial		
Under 5	8	0	0	0	0	0	8
5-9	11	—	—	—	—	—	11
10-14	20	—	—	—	—	—	20
15-19	23	—	—	—	—	—	23
20-24	50	—	—	—	—	—	50
25-29	38	—	—	—	—	—	38
30 & Over	75	7	—	—	—	—	82
<b>Total</b>	<b>225</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>232</b>

The table below illustrates a distribution of Retiree and Beneficiary total annual benefit amounts by years retired and retirement type.

Distribution of Retirees and Beneficiaries by Years Retired and Retirement Type as of June 30, 2017

Years Retired	Service Retiree	Disability Retiree		Death in Service		Death After Service Retirement	Total Annual Benefits
		Non-Industrial	Industrial	Non-Industrial	Industrial		
Under 5	\$275,255	\$0	\$0	\$0	\$0	\$0	\$275,255
5-9	557,510	—	—	—	—	—	557,510
10-14	963,211	—	—	—	—	—	963,211
15-19	1,064,791	—	—	—	—	—	1,064,791
20-24	1,699,691	—	—	—	—	—	1,699,691
25-29	1,183,500	—	—	—	—	—	1,183,500
30 & Over	1,337,689	39,068	—	—	—	—	1,376,757
<b>Total</b>	<b>\$7,081,647</b>	<b>\$39,068</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$7,120,715</b>

## Appendix D

### Glossary of Actuarial Terms

**Accrued Liability:** (also called Actuarial Accrued Liability or Entry Age Normal Accrued Liability) The total dollars needed as of the valuation date to fund all benefits earned in the past for *current* members.

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

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

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

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

Generally, in an actuarial valuation, the separate bases consist of changes in unfunded liability due to contract amendments, actuarial assumption changes, actuarial methodology changes, and/or gains and losses. Amortization methodology is determined by Board policy.

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

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

**Entry Age Normal Cost Method:** An actuarial cost method designed to fund a member's total plan benefit over the course of his or her career. This method is designed to yield a rate expressed as a level percentage of payroll.

(The assumed retirement age less the entry age is the amount of time required to fund a member's total benefit. Generally, the older a member on the date of hire, the greater the entry age normal cost. This is mainly because there is less time to earn investment income to fund the future benefits.)

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

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



## Appendix D -Glossary of Actuarial Terms (continued)

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

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

**Present Value of Benefits (PVB):** The total dollars needed as of the valuation date to fund all benefits earned in the past or expected to be earned in the future for *current* members.

**Superfunded:** A condition existing when a plan's Market Value of Assets exceeds its Present Value of Benefits. Prior to the passage of PEPRA, when this condition existed on a given valuation date for a given plan, employee contributions for the rate year covered by that valuation could be waived.

**Unfunded Liability (UAL):** When a plan or pool's Value of Assets is less than its Accrued Liability, the difference is the plan or pool's Unfunded Liability. If the Unfunded Liability is positive, the plan or pool will have to pay contributions exceeding the Normal Cost.





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