



Schools Pool Actuarial Valuation

As of June 30, 2015

Establishing Required Contributions

for the Fiscal Year

July 1, 2016 through June 30, 2017

CALIFORNIA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

Schools Pool Actuarial Valuation as of June 30, 2015

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Actuarial Certification

To the best of our knowledge, this report is complete and accurate and contains sufficient information to fully and fairly disclose the funded condition of the CalPERS Schools Pool. This valuation is based on the member and financial data as of June 30, 2015 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 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 Employees' 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.

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HIGHLIGHTS AND EXECUTIVE SUMMARY

- **INTRODUCTION**
- **PURPOSE OF THE REPORT**
- **EMPLOYER REQUIRED CONTRIBUTION RATES**
- **EXPECTED FUTURE CHANGES**
- **HISTORY OF THE EXPECTED CONTRIBUTION REQUIREMENTS**
- **FUNDED STATUS OF THE PLAN**
- **CHANGES SINCE THE PRIOR YEAR'S VALUATION**
- **SUBSEQUENT EVENTS**

Introduction

This is the actuarial valuation report as of June 30, 2015 for the Schools Pool. This actuarial valuation was used to set the 2016-17 required employer contribution rate.

In February of 2014 the Board approved several changes to the demographic assumptions that more closely align with actual experience. The most significant of these is mortality improvement to acknowledge the greater life expectancies we are seeing in our membership and expected continued improvements. The new actuarial assumptions were used to set the Fiscal Year 2016-17 contribution rates for School employers. The increase in liability due to new actuarial assumptions were calculated in this 2015 actuarial valuation and are amortized over a twenty year period with a five year ramp-up/ramp-down in accordance with Board policy. The impact of assumption changes is included in the “Projected Rates” section of this report.

The CalPERS Board of Administration adopted a Risk Mitigation Policy which is designed to reduce funding risk over time. The policy establishes a mechanism whereby CalPERS investment performance that significantly outperforms the discount rate triggers adjustments to the discount rate, expected investment return and strategic asset allocation targets. A minimum excess investment return of 4% above the existing discount rate is necessary to cause a funding risk mitigation event. The Risk Mitigation Policy does not have an impact on the current year actuarial valuation. More details on the Risk Mitigation Policy can be found on our website.

Purpose of the Report

This actuarial valuation was performed by the CalPERS Actuarial Office using data as of June 30, 2015. The purpose of the report is to:

- Set forth the assets and accrued liabilities of the Schools Pool as of June 30, 2015
- Determine the required employer contribution rate for Fiscal Year July 1, 2016 through June 30, 2017
- Provide actuarial information as of June 30, 2015 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 Number 68 for a Cost-Sharing Multiple-Employer Defined Benefit Pension Plan.

The use of this report for any other purposes may be inappropriate.

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.”

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.

Employer Required Contribution Rate

The actuarially required employer contribution rate for Fiscal Year July 1, 2016 through June 30, 2017 is shown in the table below. For comparison purposes, the corresponding contribution rate for Fiscal Year July 1, 2015 through June 30, 2016 is also provided. The expected contribution amount that this rate is expected to generate is also shown.

	Fiscal Year 2015-16	Fiscal Year 2016-17
Actuarially Determined Employer Contributions		
1. Contribution in Projected Dollars		
a) Total Normal Cost	\$ 1,640,991,835	\$ 1,825,596,586
b) Employee Contribution ¹	780,289,924	828,474,846
c) Employer Normal Cost [(1a) – (1b)]	860,701,912	997,121,741
d) Unfunded Contribution	477,326,014	683,059,487
e) Required Employer Contribution [(1c) + (1d)]	\$ 1,338,027,926	\$ 1,680,181,228
Projected Annual Payroll for Contribution Year	\$ 11,293,818,549	\$ 12,098,055,576
2. Contribution as a Percentage of Payroll		
a) Total Normal Cost	14.530%	15.090%
b) Employee Contribution ¹	6.909%	6.848%
c) Employer Normal Cost [(2a) – (2b)]	7.621%	8.242%
d) Unfunded Rate	4.226%	5.646%
e) Required Employer Rate [(2c) + (2d)]	11.847%	13.888%

Note that the payroll used to calculate the expected dollar contributions is the payroll used in the valuation incorporating two years of payroll growth using the payroll growth assumption of 3 percent. To the extent that payroll in the contribution year is different than the projected payroll, the actual contribution amounts will be different than the expected contributions shown in the table above.

The supporting exhibit in this report entitled “Reconciliation of Employer Contributions” on page 24 provides explanations of the changes in required contribution rates and expected contribution amounts from Fiscal Year 2015-16 to Fiscal Year 2016-17. A history of the required contribution rates is included on page 25 of this report.

¹ For classic members this is the percentage specified in the Public Employees Retirement Law, net of any reduction from the use of a modified formula or other factors. For PEPRA members the member contribution rate is based on 50 percent of the total normal cost. A development of PEPRA member contribution rates can be found in Appendix D.

Reasons for Change in Employer Contributions for the Schools Pool

Overall, the required contributions for the Schools Pool have increased by \$342.2 million between Fiscal Year 2015-16 and Fiscal Year 2016-17, to approximately \$1,680 million. Note that the payroll used to calculate the expected dollar contributions is the payroll used in the valuation incorporating two years of payroll growth using the payroll growth assumption of 3 percent. To the extent that payroll in the contribution year is different than the projected payroll, the actual contribution amounts will be different than the expected contributions stated here. The change in required contributions is mainly driven by the factors listed below.

In February 2014 the CalPERS Board adopted new demographic actuarial assumptions to be used in the June 30, 2015 actuarial valuation for the Schools Pool. The adoption of these new actuarial assumptions accounted for about \$177.2 million of the total increase in contribution for the Schools Pool. The change in liability due to new actuarial assumptions has been amortized over twenty years and phased in over five years, beginning with the contribution requirement for Fiscal Year 2016-17. The increase of \$177.2 million accounts for the increase in normal cost and year one of the five year phase-in of the increase in unfunded liability.

CalPERS employs an amortization and smoothing policy that spreads rate increases or decreases over a five year period, and amortizes all experience gains and losses over a fixed thirty year period. This means that only one fifth of the total anticipated rate change caused by each gain or loss is realized in the first year, culminating in the full increase in the fifth year. As a result, the progression of these gain or loss amortization bases will affect contribution levels in increasing measure throughout the ramp period. A complete description of the actuarial methods used in the June 30, 2015 valuation is shown in Appendix A.

Payroll for Fiscal Year 2014-15 has increased by 7.1 percent due to an increase in active counts and individual salary increases. This is greater than the payroll growth assumption of 3 percent used in our valuation. As a result, required contributions are increasing by \$61.3 million.

The Public Employees' Pension Reform Act of 2013 (PEPRA) requires lower benefits for new members as defined by PEPRA, that are hired after January 1, 2013. The normal cost is lower than it would be otherwise due to the enrollment of new hires into the lower benefit level.

The net return on plan assets for the year ending June 30, 2015 of 2.4% was less than the assumed return of 7.5 percent. This has led to an experience loss that must be amortized with additional contributions over the next 30 years.

The table below highlights all major contributors to the change in required contributions.

Reason for Change	Change in Required Contribution (millions)
First year phase-in of the change in assumptions	\$177.2
Change due to normal progression of existing amortization bases	68.4
Change due to increase in overall payroll	61.3
Decrease in normal cost due to new hires in lower benefit levels	(17.2)
First installment of the 5-year phased-in 30-year amortization of the following gains and losses: <ul style="list-style-type: none"> <li data-bbox="277 821 743 852">• Impact of investment experience <li data-bbox="277 894 711 926">• Demographic gains and losses <li data-bbox="277 968 651 999">• All other gains and losses 	45.2 7.8 (0.5)
Total Change in Required Contributions	\$342.2

Expected Future Changes

The estimated 2017-18 employer rate for the Schools Pool is 15.8% based on a 0 percent investment return for Fiscal Year 2015-16. Note that the projected rate assumes that all other actuarial assumptions will be realized, that no changes to benefits will occur between now and the June 30, 2016. This projection takes into account the positive impact PEPPRA is expected to gradually have on the normal cost.

A scenario analysis was performed to determine the effects of various investment returns on future employer contribution rates for three years beyond the estimated 2017-18 employer rates shown above. That information is available in the “Risk Analysis” section of this report.

History of the Expected Contribution Requirements

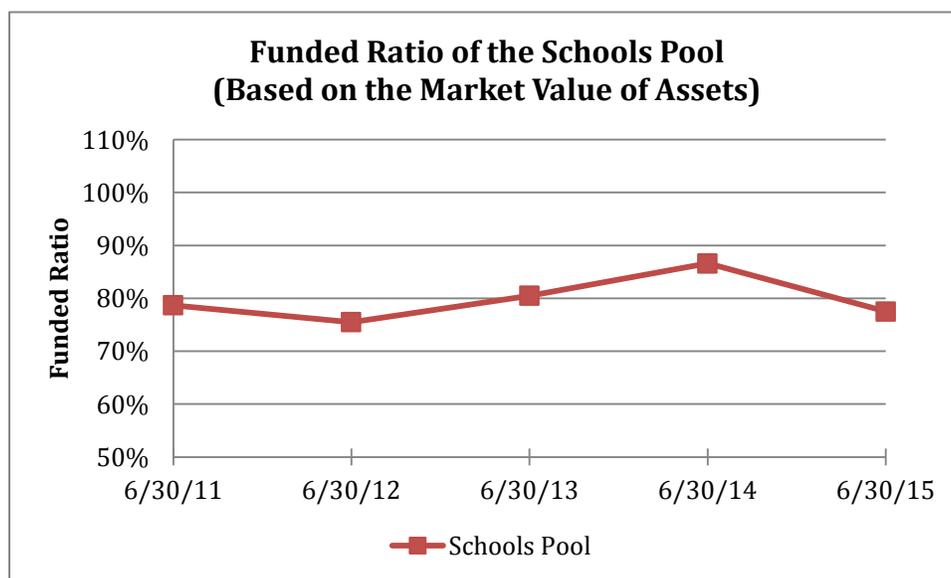
The following table shows a 10-year history of the employer contributions set by CalPERS based on projected payroll for the Schools Pool.

Fiscal Year	Total School Contributions
2007-08	\$919,528,538
2008-09	966,316,743
2009-10	1,081,377,863
2010-11	1,189,482,769
2011-12	1,232,486,937
2012-13	1,203,430,156
2013-14	1,171,945,558
2014-15	1,226,981,694
2015-16	1,338,027,926
2016-17	1,680,181,228

Funded Status of the Plan

The funded status of a pension plan is defined as the ratio of assets to a plan’s accrued liabilities. Plans with a lower funded ratio are, all other things being equal, more at risk of not being able to meet their future benefit obligations. From June 30, 2014 to June 30, 2015 the funded status for the Schools Pool decreased by 9.1 percent. This was mainly caused by the increase in liability due to the change in assumptions. The investment return for Fiscal Year 2014-15 was less than expected and also contributed to the decrease.

The graph below shows the funded status for the past five years for the Schools Pool based on the market value of assets.



The table below shows the development of the funded status of the plan using the market value of assets on June 30, 2015.

Funded Status and Unfunded Liability on June 30, 2015

	June 30, 2014	June 30, 2015
1. Present Value of Projected Benefits	\$ 76,932,325,687	\$ 86,037,664,407
2. Entry Age Normal Accrued Liability	\$ 65,599,711,601	\$ 73,324,977,003
3. Market Value of Assets (MVA)	\$ 56,838,237,794	\$ 56,814,247,327
4. Unfunded Liability [(2) - (3)]	\$ 8,761,473,807	\$ 16,510,729,676
5. Funded Ratio [(3) / (2)]	86.6%	77.5%

The table below shows the funded status for the plan for the last five years.

Funded Ratio of the Retirement Program				
June 30, 2011	June 30, 2012	June 30, 2013	June 30, 2014	June 30, 2015
78.7%	75.5%	80.5%	86.6%	77.5%

Changes Since the Prior Year's Valuation

Actuarial Assumptions

In February of 2014 the Board approved several changes to the demographic assumptions that more closely align with actual experience. The most significant of these is mortality improvement to acknowledge the greater life expectancies we are seeing in our membership and expected continued improvements. The new actuarial assumptions were used to set the Fiscal Year 2016-17 contribution rates for School employers. The increase in liability due to new actuarial assumptions were calculated in this 2015 actuarial valuation and are amortized over a twenty year period with a five year ramp-up/ramp-down in accordance with Board policy. The impact of assumption changes is included in the "Projected Rates" section of this report.

Subsequent Events

Risk Mitigation

The CalPERS Board of Administration adopted a Risk Mitigation Policy which is designed to reduce funding risk over time. The policy establishes a mechanism whereby CalPERS investment performance that significantly outperforms the discount rate triggers adjustments to the discount rate, expected investment return and strategic asset allocation targets. A minimum excess investment return of 4% above the existing discount rate is necessary to cause a funding risk mitigation event. More details on the Risk Mitigation Policy can be found on our website.

ASSETS

- **RECONCILIATION OF THE MARKET VALUE OF ASSETS OVER THE PRIOR FISCAL YEAR**
- **ASSET ALLOCATION**
- **CALPERS HISTORY OF INVESTMENT RETURNS**

Reconciliation of the Market Value of Assets Over the Prior Fiscal Year

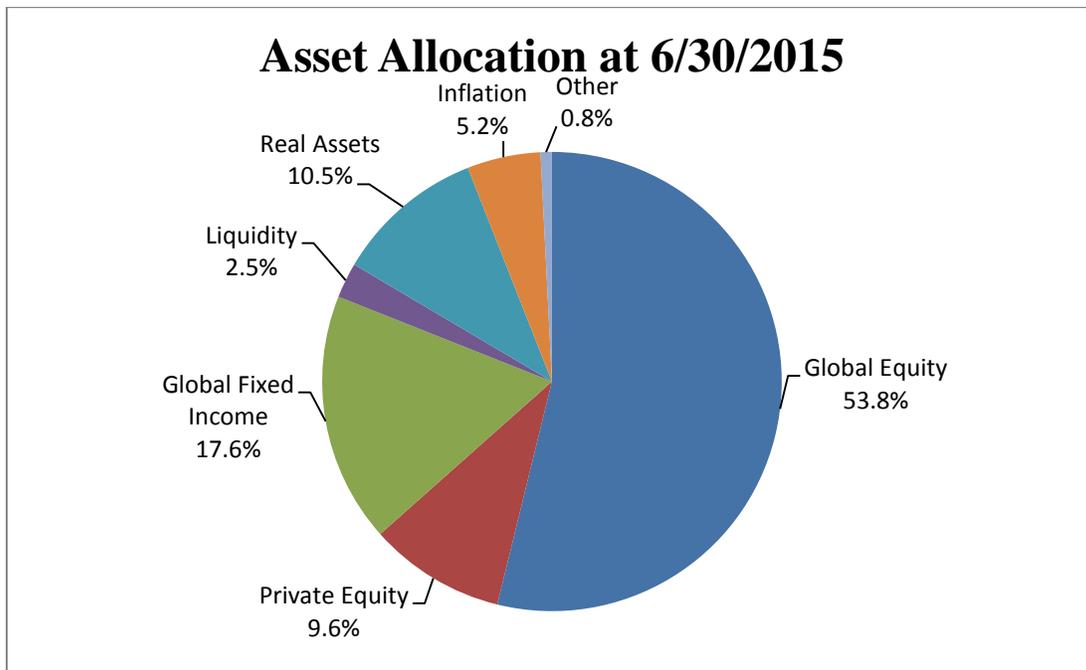
1. Market Value of Assets as of June 30, 2014 Including Receivables	\$56,838,237,794
2. Receivables for Service Buybacks as of June 30, 2014	\$103,681,751
3. Market Value of Assets as of June 30, 2014	\$56,734,556,043
4. Employer Contributions Received in 2014-15	1,309,012,256
5. Employee Contributions Received in 2014-15	789,845,425
6. Benefit Payments in 2014-15	(3,243,007,340)
7. Refunds in 2014-15	(91,074,588)
8. Administrative Expense	(58,780,985)
9. Transfers In/Out	(129,155)
10. Investment Return	<u>1,275,979,817</u>
11. Market Value of Assets as of June 30, 2015 Excluding Receivables [(3) + (4) + (5) + (6) + (7) + (8) + (9) + (10)]	56,716,401,473
12. Receivables for Service Buybacks as of June 30, 2015	97,845,854
13. Market Value of Assets as of June 30, 2015 Including Receivables	56,814,247,327

Asset Allocation

CalPERS adheres to an Asset Allocation Strategy which establishes asset class allocation policy targets and ranges, and manages those asset class allocations within their policy ranges. CalPERS Investment Beliefs No. 6 recognizes that strategic asset allocation is the dominant determinant of portfolio risk and return. On February 19, 2014 the CalPERS Board of Administration adopted changes to the current asset allocation as shown in the Policy Target Allocation below expressed as a percentage of total assets. The asset allocation has an expected long term blended rate of return of 7.5 percent.

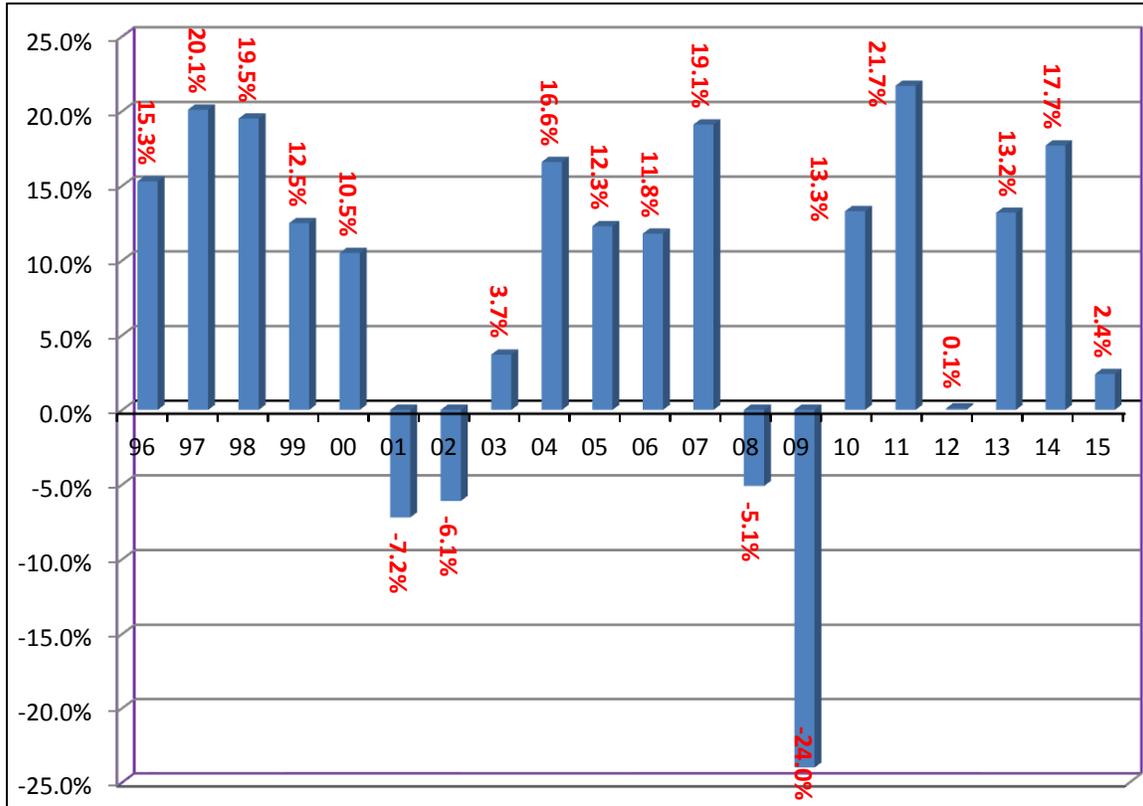
The asset allocation and market value of assets shown below reflect the values of the Public Employees Retirement Fund (PERF) in its entirety as of June 30, 2015. The assets of the Schools Pool are part of the Public Employees Retirement Fund (PERF) and are invested accordingly.

(A) Asset Class	(B) Market Value (\$ Billion)	(C) Policy Target Allocation
1) Global Equity	162.5	51.0%
2) Private Equity	29.0	10.0%
3) Global Fixed Income	53.1	20.0%
4) Liquidity	7.5	1.0%
5) Real Assets	31.8	12.0%
6) Inflation Sensitive Assets	15.6	6.0%
7) Other	4.5	0.0%
Total Fund	\$301.9	100.0%



CalPERS History of Investment Returns

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



The table below shows historical geometric mean annual returns of the Public Employees Retirement Fund for various time periods ending on June 30, 2015, (figures are reported as gross of fees). The geometric mean rate of return is the average rate per period compounded over multiple periods. It should be recognized that in any given year the rate of return is volatile. Although the expected rate of return on the recently adopted new asset allocation is 7.5 percent, the portfolio has an expected volatility of 11.76 percent per year. The volatility is a measure of the risk of the portfolio expressed in the standard deviation percentage of the fund’s total return distribution. Consequently when looking at investment returns it is more instructive to look at returns over longer time horizons.

History of CalPERS Geometric Mean Rates of Return and Volatilities					
	1 year	5 year	10 year	20 year	30 year
Geometric Return	2.4%	10.7%	6.1%	7.7%	9.1%
Volatility	–	9.4%	14.0%	11.8%	10.5%

LIABILITIES AND RATES

- **COMPARISON OF CURRENT AND PRIOR YEAR**
- **DEVELOPMENT OF ACCRUED AND UNFUNDED LIABILITIES**
- **DEVELOPMENT OF EMPLOYER CONTRIBUTION RATES**
- **SCHEDULE OF AMORTIZATION BASES FOR THE RETIREMENT PROGRAM**
- **GAIN AND LOSS ANALYSIS**
- **RECONCILIATION OF EMPLOYER CONTRIBUTIONS**
- **EMPLOYER CONTRIBUTION RATE HISTORY**
- **HISTORY OF FUNDED STATUS AND FUNDING PROGRESS**

Comparison of Current and Prior Year

Shown below are the key valuation results for the current valuation compared to the corresponding results from the prior valuation.

Participant Information

	June 30, 2014	June 30, 2015
Members Included in the Valuation ¹		
Active Members	287,736	297,951
Transfers from Schools	22,672	18,700
Vested Terminations ²	175,032	180,266
Receiving Payments	207,400	212,940
Total	692,840	709,857
Average Entry Age of Active Members	36.4	36.3
Average Age of Active Members	47.6	47.3
Average Age of Retired Members	72.3	72.4
Average Pay	\$ 36,997	\$ 38,273
Covered Payroll Prior Fiscal Year	\$ 10,645,507,163	\$ 11,403,577,694
Projected Payroll for Contribution Rate	\$ 11,293,818,549	\$ 12,098,055,576

1 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 coverage group. This does not result in double counting of liabilities.

2 Includes non-vested terminated participants with employee contributions remaining in the plan.

Funded Status of the Retirement Program

	June 30, 2014	June 30, 2015
Present Value of Benefits	\$ 76,932,325,687	\$ 86,037,664,407
Accrued Liability	\$ 65,599,711,601	\$ 73,324,977,003
Market Value of Assets	\$ 56,838,237,794	\$ 56,814,247,327
Unfunded Liability/(Surplus) on a Market Value of Assets Basis	\$ 8,761,473,807	\$ 16,510,729,676
Funded Status	86.6%	77.5%

Employer Contribution

	June 30, 2014	June 30, 2015
Contribution Required in Dollars		
Total Normal Cost	\$ 1,640,991,835	\$ 1,825,596,586
Employee Contribution	\$ 780,289,924	\$ 828,474,846
Employer Normal Costs	\$ 860,701,912	\$ 997,121,741
Amortization of Unfunded Liability	477,326,014	683,059,487
Total	\$ 1,338,027,926	\$ 1,680,181,228
Contribution Required (Percent of Payroll)		
Total Normal Cost	14.530%	15.090%
Employee Contribution	6.909%	6.848%
Employer Normal Costs	7.621%	8.242%
Amortization of Unfunded Liability	4.226%	5.646%
Total	11.847%	13.888%

Development of Accrued and Unfunded Liabilities

The following table shows the development of the accrued liabilities and the unfunded liabilities.

1. Present Value of Projected Benefits	
a) Active and Inactives	\$ 48,897,495,695
b) Retired	37,140,168,712
c) Total	<u>\$ 86,037,664,407</u>
2. Present Value of Future Employee Contributions	\$ 6,023,367,791
3. Present Value of Future Employer Normal Costs	\$ 6,689,319,613
4. Accrued Liability [(1c) – (2) – (3)]	\$ 73,324,977,003
5. Market Value of Assets (MVA)	\$ 56,814,247,327
6. Unfunded Liability/(Surplus) [(4) – (5)]	\$ 16,510,729,676
7. Funded Status [(5) / (4)]	77.5%

Development of Employer Contribution Rates

The following table shows the development of the employer contribution rates which includes the amortization of the unfunded liability.

Employer Contribution Amount	
Normal Cost	\$ 997,121,741
Payment on the Unfunded Liability	683,059,487
Total Employer Contribution Amount	<u>\$ 1,680,181,228</u>
 Projected Payroll	 \$ 12,098,055,576
 Employer Contribution (as a percent of payroll)	
Normal Cost	8.242%
Payment on the Unfunded Liability	5.646%
Total Employer Contribution Rate	<u>13.888%</u>

Schedule of Amortization Bases for the Retirement Program

The schedule below shows the development of the payment on the amortization bases used to determine the employer contribution rate. Each row of the schedule gives a brief description of a base (or portion of the Unfunded Actuarial Liability), the date the base was established, the balance of the base on the valuation date, and the number of years remaining in the amortization period. In addition, we show the expected payment for the year immediately following the valuation date, the balance on the date a year after the valuation date, and the scheduled payment for Fiscal Year 2016-17. Please refer to Appendix A for an explanation of how amortization periods are determined.

Reason for Base	Date Established	Remaining Amortization Period	Balance on 6/30/2015	Expected Payment in 2015-16	Amount Remaining on 6/30/2016	Scheduled Payment for 2016-17	Payment as Percentage of Payroll
Assumption Change	6/30/2011	16	\$ 1,350,583,805	\$ 113,464,196	\$ 1,334,235,408	\$ 116,868,121	0.966%
Assumption Change	6/30/2009	14	1,017,037,361	93,231,342	996,650,850	96,028,282	0.794%
Fresh Start	6/30/2004	19	2,810,861,023	212,235,264	2,801,625,394	218,602,322	1.807%
(Gain)/Loss in 2009	6/30/2009	24	849,717,641	56,161,608	855,216,869	57,846,456	0.478%
(Gain)/Loss in 2010	6/30/2010	25	412,547,636	26,683,099	415,823,083	27,483,592	0.227%
(Gain)/Loss in 2011	6/30/2011	26	(901,228,969)	(57,118,293)	(909,599,635)	(58,831,842)	(0.486%)
(Gain)/Loss	Various	28	(437,904,291)	(26,744,595)	(443,017,726)	(27,546,933)	(0.228%)
Payment (Gain)/Loss	Various	28	113,401,818	6,925,910	114,726,018	7,133,687	0.059%
(Gain)/Loss	6/30/2014	29	3,731,770,520	52,487,483	3,957,233,129	108,124,214	0.894%
Assumption Change	6/30/2015	20	4,057,967,724	(89,737,034)	4,455,356,640	84,864,239	0.701%
(Gain)/Loss	6/30/2015	30	3,505,975,408	35,842,965	3,731,760,787	52,487,346	0.434%
Total			\$ 16,510,729,676	\$ 423,431,945	\$ 17,310,010,817	\$ 683,059,487	5.646%

Gain and Loss Analysis

A. Total (Gain)/Loss for the Year		
1.	Unfunded Liability/(Surplus) as of June 30, 2014	\$ 8,761,473,807
2.	Expected Payment on the Unfunded Liability during 2014-15	455,042,204
3.	Interest through June 30, 2015 $[0.075 \times (A1) - ((1 + 0.075)^{\frac{1}{2}} - 1) \times (A2)]$	640,354,941
4.	Expected Unfunded Liability as of June 30, 2015 after all changes $[(A1) - (A2) + (A3)]$	8,946,786,544
5.	Change due to Plan changes	0
6.	Change due to Assumption change	4,057,967,724
7.	Expected Unfunded Liability after all other changes $[(A4) + (A5) + (A6)]$	\$ 13,004,754,268
8.	Actual Unfunded Liability as of June 30, 2015	<u>16,510,729,676</u>
9.	Total (Gain)/Loss for 2014-15 $[(A8) - (A7)]$	\$ 3,505,975,408
B. Contribution (Gain)/Loss for the Year		
1.	Expected Contribution for 2014-15	\$ 2,055,365,327
2.	Actual Contribution for 2014-15	<u>2,098,857,681</u>
3.	Contribution (Gain)/Loss for 2014-15 $[(B1) - (B2)]$	\$ (43,492,354)
C. Asset (Gain)/Loss for the Year		
1.	Market Value of Assets as of June 30, 2014	\$ 56,838,237,794
2.	Receivables PY	(103,681,751)
3.	Receivables CY	97,845,854
4.	Contributions Received during 2014-15	2,098,857,681
5.	Benefits and Refunds Paid during 2014-15	(3,334,081,928)
6.	Transfers In/Out 2014-15	(129,155)
7.	Expected Interest for 2014-15 $[0.075 \times (C1 + C2) + ((1 + 0.075)^{\frac{1}{2}} - 1) \times ((C4) + (C5) + (C6))]$	4,209,603,437
8.	Expected Assets as of June 30, 2015 $[(C1) + (C2) + (C3) + (C4) + (C5) + (C6) + (C7)]$	\$ 59,806,651,932
9.	Actual Market Value of Assets as of June 30, 2015	<u>56,814,247,327</u>
10.	Asset (Gain)/Loss for 2014-15 $[(C8) - (C9)]$	\$ 2,992,404,605
D. Liability (Gain)/Loss for the Year		
1.	Total (Gain)/Loss for 2014-15 (A9)	\$ 3,505,975,408
2.	Contribution (Gain)/Loss for 2014-15 (B3)	(43,492,354)
3.	Asset (Gain)/Loss for 2014-15 (C10)	<u>2,992,404,605</u>
4.	Liability (Gain)/Loss for 2014-15 $[(D1) - (D2) - (D3)]$	\$ 557,063,157

Reconciliation of Employer Contributions

	Percentage of Projected Payroll		Estimated \$ Based on Projected Payroll
1. Contribution for 7/1/15-6/30/16	11.847%	\$	1,338,027,926
2. Effect of changes since the prior year annual valuation			
a) Effect of unexpected changes in demographics and financial results	0.577%	\$	103,689,994
b) Effect of plan changes	0.000%		0
c) Effect of changes in assumptions/methods	1.464%	\$	177,172,404
d) Effect of change in payroll	-	\$	61,290,904
e) Net effect of the changes above [sum of a through d]	2.041%	\$	342,153,302
3. Contribution for 7/1/16-6/30/17	13.888%	\$	1,680,181,228

Employer Contribution Rate History

The table below provides a history of the contribution rates for the Schools Pool. In cases where the contribution rate changed during the course of a fiscal year, the entry shown is the weighted average of the rates effective during the fiscal year.

Fiscal Year	Schools
1979-80	12.515%
1980-81	13.119%
1981-82	13.020%
1982-83	12.045%
1983-84	12.378%
1984-85	12.378%
1985-86	11.969%
1986-87	11.015%
1987-88	9.718%
1988-89	8.454%
1989-90	8.210%
1990-91	7.282%
1991-92	8.162%
1992-93	7.273%
1993-94	7.066%
1994-95	3.849%
1995-96	6.979%
1996-97	7.787%
1997-98	6.172%
1998-99	0.000%
1999-00	0.000%
2000-01	0.000%
2001-02	0.000%
2002-03	2.894%
2003-04	10.420%
2004-05	9.952%
2005-06	9.116%
2006-07	9.124%
2007-08	9.306%
2008-09	9.428%
2009-10	9.709%
2010-11	10.707%
2011-12	10.923%
2012-13	11.417%
2013-14	11.442%
2014-15	11.771%
2015-16	11.847%
2016-17	13.888%

History of Funded Status and Funding Progress

Shown below is the history of funding progress for the plan. One could view the trend in the ratio of the unfunded liability to covered payroll as a measure of the ability of the employer to address the unfunded liability.

Schools

(Dollars in Millions)

Valuation Date	Actuarial Accrued Liabilities	Market Value of Assets (MVA)	Funded Status (MVA)	Unfunded Liabilities/ (Surplus) (MVA)	Projected Payroll for Contribution	Unfunded/ (Surplus) as a % of Payroll
6/30/87	\$8,582.66	\$8,173.59	95.2%	\$409.07	\$3,605.26	11.3%
6/30/88	\$9,395.40	\$8,341.39	88.8%	\$1,054.01	\$3,768.65	28.0%
6/30/89	\$9,941.35	\$9,925.64	99.8%	\$15.72	\$4,054.28	0.4%
6/30/90	\$11,249.14	\$9,297.76	82.7%	\$1,951.37	\$4,392.59	44.4%
6/30/91	\$12,022.48	\$13,300.78	110.8%	(\$1,298.30)	\$4,849.84	-26.8%
6/30/92	\$12,855.90	\$13,815.63	107.5%	(\$959.73)	\$4,882.78	-19.7%
6/30/93	\$13,575.13	\$14,955.70	110.2%	(\$1,380.57)	\$4,852.84	-28.4%
6/30/94	\$15,135.82	\$15,373.38	101.6%	(\$237.56)	\$5,140.41	-4.6%
6/30/95	\$16,421.90	\$17,314.37	105.4%	(\$892.46)	\$5,350.87	-16.7%
6/30/96	\$17,571.63	\$19,706.46	112.1%	(\$2,134.83)	\$5,145.78	-41.5%
6/30/97	\$17,583.43	\$23,499.15	133.6%	(\$5,915.72)	\$4,907.43	-120.5%
6/30/98	\$19,499.14	\$27,873.56	142.9%	(\$8,374.42)	\$5,444.66	-153.8%
6/30/99	\$21,216.00	\$30,917.57	145.7%	(\$9,701.57)	\$5,961.02	-162.8%
6/30/00	\$25,473.96	\$33,295.07	130.7%	(\$7,821.11)	\$7,052.94	-110.9%
6/30/01	\$27,946.43	\$30,307.55	108.4%	(\$2,361.12)	\$7,912.23	-29.8%
6/30/02	\$31,271.16	\$27,689.90	88.5%	\$3,581.27	\$8,344.24	42.9%
6/30/03	\$33,792.88	\$28,182.01	83.4%	\$5,610.86	\$9,079.11	61.8%
6/30/04	\$35,932.74	\$32,828.49	91.4%	\$3,104.24	\$9,068.75	34.2%
6/30/05	\$38,367.52	\$36,898.25	96.2%	\$1,469.27	\$9,222.78	15.9%
6/30/06	\$41,408.65	\$40,852.35	98.7%	\$556.31	\$9,880.89	5.6%
6/30/07	\$44,810.07	\$48,292.93	107.8%	(\$3,482.86)	\$10,249.83	-34.0%
6/30/08	\$48,537.68	\$45,547.90	93.8%	\$2,989.78	\$11,137.70	26.8%
6/30/09	\$52,493.08	\$34,146.45	65.0%	\$18,346.63	\$11,109.76	165.1%
6/30/10	\$55,306.96	\$38,435.17	69.5%	\$16,871.79	\$11,283.40	149.5%
6/30/11	\$58,358.41	\$45,900.99	78.7%	\$12,457.42	\$10,540.43	118.2%
6/30/12	\$59,439.13	\$44,853.80	75.5%	\$14,585.33	\$10,242.25	142.4%
6/30/13	\$61,487.18	\$49,481.90	80.5%	\$12,005.28	\$10,423.82	115.2%
6/30/14	\$65,599.71	\$56,838.24	86.6%	\$8,761.47	\$11,293.82	77.6%
6/30/15	\$73,324.98	\$56,814.25	77.5%	\$16,510.73	\$12,098.06	136.5%

RISK ANALYSIS

- **VOLATILITY RATIOS**
- **PROJECTED RATES**
- **ANALYSIS OF FUTURE INVESTMENT RETURN SCENARIOS**
- **ANALYSIS OF DISCOUNT RATE SENSITIVITY**

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 volatility. 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 the asset volatility ratio. 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

<u>Rate Volatility</u>	<u>As of June 30, 2015</u>
1. Market Value of Assets without Receivables	\$ 56,716,401,473
2. Payroll	\$ 11,403,577,694
3. Asset Volatility Ratio [(1) / (2)]	5.0
4. Accrued Liability	\$ 73,324,977,003
5. Liability Volatility Ratio [(4) / (2)]	6.4

Projected Rates

The table below shows projected employer contribution rates for the next five fiscal years, assuming CalPERS earns 0 percent for fiscal year 2015-16 and 7.50 percent every fiscal year thereafter, and assuming that all other actuarial assumptions will be realized and no changes to assumptions, contributions, benefits, or funding will occur during the projection period. These projections take into account the positive impact PEPRAs is expected to gradually have on the normal cost.

New Rate	Projected Future Employer Contribution Rates				
	2017-18	2018-19	2019-20	2020-21	2021-22
2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
13.888%	15.8%	17.7%	19.7%	21.1%	21.5%

Analysis of Future Investment Return Scenarios

As part of this report, a sensitivity analysis was performed to determine the effects of various investment returns during fiscal years 2016-17, 2017-18 and 2018-19 on the 2018-19, 2019-20 and 2020-21 employer rates. The projected rates assume that all other actuarial assumptions will be realized and that no further changes to assumptions, contributions, benefits, or funding will occur. These projected rates also reflect that new hires will be entering into lower benefit formulas with a lower normal cost, and the demographic assumption change adopted by the Board in February 2014.

Five different investment return scenarios were selected.

- The first scenario is what one would expect if the markets were to give us a 5th percentile return from July 1, 2016 through June 30, 2019. The 5th percentile return corresponds to a -3.8 percent return for each of the 2016-17, 2017-18 and 2018-19 fiscal years.
- The second scenario is what one would expect if the markets were to give us a 25th percentile return from July 1, 2016 through June 30, 2019. The 25th percentile return corresponds to a 2.8 percent return for each of the 2016-17, 2017-18 and 2018-19 fiscal years.
- The third scenario return for 2016-17, 2017-18, and 2018-19 would be our assumed 7.5 percent investment return which represents about a 49th percentile event.
- The fourth scenario is what one would expect if the markets were to give us a 75th percentile return from July 1, 2016 through June 30, 2019. The 75th percentile return corresponds to a 12.0 percent return for each of the 2016-17, 2017-18 and 2018-19 fiscal years.
- Finally, the last scenario is what one would expect if the markets were to give us a 95th percentile return from July 1, 2016 through June 30, 2019. The 95th percentile return corresponds to an 18.9 percent return for each of the 2016-17, 2017-18 and 2018-19 fiscal years. The tables below show the projected contribution rates for 2018-19 through 2020-21 for the Schools Pool under the five different scenarios.

2016-19 Investment Return Scenario	Estimated Employer Rate			Estimated Change in Employer Rate between 2017-18 and 2020-21
	2018-19	2019-20	2020-21	
-3.8% (5th percentile)	18.5%	21.8%	25.2%	9.4%
2.8% (25th percentile)	18.0%	20.6%	22.9%	7.1%
7.5%	17.7%	19.7%	21.1%	5.3%
12.0% (75th percentile)	17.5%	18.9%	19.7%	3.9%
18.9% (95th percentile)	17.0%	17.8%	17.5%	1.7%

Analysis of Discount Rate Sensitivity

The discount rate reflects expectations of what the markets will deliver in the future and it is calculated based on two components: expected price inflation and real rate of return. A change in either of those components over the long term would necessitate further evaluation of the discount rate.

The following analysis looks at the 2016-17 employer contribution rates under two different discount rate scenarios. Shown below are the employer contribution rates assuming discount rates are 1 percent lower and 1 percent higher than the current valuation discount rate. This analysis gives an indication of the potential required employer contribution rates if the PERF were to realize investment returns of 6.50 percent or 8.50 percent over the long term.

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

2016-17 Employer Contribution Rate			
As of June 30, 2015	6.50% Discount Rate (-1%)	7.50% Discount Rate (assumed rate)	8.50% Discount Rate (+1%)
Employer Normal Cost	12.0%	8.242%	5.4%
Unfunded Rate Payment	11.2%	5.646%	0.2%
Total	23.2%	13.888%	5.6%
Funded Status	68.6%	77.5%	86.8%

Note that the change in accrued liability due to the discount rate change, in the scenarios above, was amortized over 20 years as a level percentage of pay. In the case of a surplus, rates were calculated to equal the employer normal cost rate. This is based on a provision in the Public Employees' Pension Reform Act of 2013 (PEPRA) that requires a minimum employer contribution rate in combination with employee contributions shall not be less than the normal cost rate. Numbers may not add, due to rounding.

APPENDIX A

STATEMENT OF ACTUARIAL METHODS AND ASSUMPTIONS

- **ACTUARIAL DATA**

- **ACTUARIAL METHODS**

- **ACTUARIAL ASSUMPTIONS**
 - **ECONOMIC ASSUMPTIONS**
 - **DEMOGRAPHIC ASSUMPTIONS**
 - **MISCELLANEOUS LOADING FACTORS**

Actuarial Data

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

Actuarial Methods

Actuarial Cost Method

The actuarial cost method used for this report 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 age of hire (entry age) to their assumed retirement age on the valuation date. The cost allocated to the current fiscal year is called the normal cost.

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

Amortization of Unfunded Actuarial Accrued Liability

The excess of the total actuarial accrued liability over the market value of plan assets is called the unfunded actuarial accrued liability (UAL). Funding requirements are determined by adding the normal cost and an amortization payment toward the unfunded liability. Commencing with the June 30, 2014 valuation, all new gains or losses are tracked and amortized over a fixed 30-year period with a 5 year ramp up at the beginning and a 5 year ramp down at the end of the amortization period. All changes in liability due to plan amendments (other than golden handshakes) are amortized over a 20-year period with no ramp. Changes in actuarial assumptions, or changes in actuarial methodology are amortized over a 20-year period with a 5 year ramp up at the beginning and a 5 year ramp down at the end of the amortization period. Changes in unfunded accrued liability due to a Golden Handshake will be amortized over a period of 5 years.

Exceptions for Inconsistencies:

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

- 1) 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

2) When there are excess assets, rather than an unfunded liability. In this situation, a 30-year fresh start is used.

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

The 1959 Survivor Program valuation is not provided in this report. A separate report for that program is available.

Purchasing Power Protection Act (PPPA) Method

PPPA benefits are cost-of-living adjustments intended to maintain the individual's current retirement benefit at 75 percent of the original benefit at retirement adjusted for inflation since retirement. The PPPA benefit is paid, if necessary, in addition to any other cost-of-living adjustment provided under the terms of the plan. Prior to January 1, 2001, there was a single PPPA pool covering all CalPERS employers. However, commencing January 1, 2001, separate PPPA pools were established. A pool was set up for all State plans and a separate pool for School employers. The public agencies were removed entirely from PPPA pooling resulting in each public agency plan paying for its own PPPA benefits. The creation of separate pools effectively eliminates the cross subsidization between the State, Schools and public agencies.

For the Schools Pool, the total annual outlay for PPPA benefits is limited by State statute to earnings of up to 1.1 percent of accumulated member contributions. If this annual outlay is insufficient to provide the PPPA benefits in a given fiscal year, the 75 percent maintenance target would be proportionately reduced. Since the inception of the PPPA benefit program, 1.1 percent has proved more than sufficient to provide the 75 percent maintenance. Under the inflation assumption of 2.75 percent compounded annually, the 1.1 percent appears to remain more than sufficient in the foreseeable future.

The actuarial model mimics the PPPA administrative procedure by deriving the employer contribution rate for the plan as the lesser of two separate actuarially computed rates:

- 1) The rate that results if a full 1.1 percent investment return on the value of each future year's employee assets in the plan is used for that plan's PPPA payments; or
- 2) The rate that results if the plan pays the full 75 percent purchasing power for itself.

In this way, those plans for which future PPPA costs equal or exceed a 1.1 percent return on current and future employee assets are charged an employer rate that replaces the 1.1 percent return on employee assets. Those plans that require less than the 1.1 percent return on current and future employee assets to maintain 75 percent purchasing power are charged the rate necessary to maintain the 75 percent purchasing power. It must be noted that nothing is charged in the rates for any cross-subsidization.

Internal Revenue Code Section 415

The limitations on benefits imposed by Internal Revenue Code Section 415 are taken into account in this valuation.

Internal Revenue Code Section 401(a)(17)

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

PEPRA Assumptions

The Public Employees' Pension Reform Act of 2013 (PEPRA) mandated new benefit formulas and new member contributions for new members (as defined by PEPRA) hired after January 1, 2013. Different assumptions for these new PEPRA members are disclosed below.

Asset Valuation Method

It is the policy of the CalPERS Board of Administration to use professionally accepted amortization methods to eliminate a surplus or an unfunded liability in a manner that maintains benefit security for the members of the System while minimizing substantial variations in required employer contribution rates. On April 17, 2013, the CalPERS Board of Administration approved a recommendation to change the CalPERS amortization and rate smoothing policies. Beginning with the June 30, 2014 valuation for the Schools Pool that sets the 2015-16 rates, CalPERS employs a policy that amortizes all gains and losses over a fixed 30-year period. The increase or decrease in the rate is then spread directly over a 5-year period. This method is referred to as "direct rate smoothing." CalPERS no longer uses an actuarial value of assets and only uses the market value of assets. The direct rate smoothing method is comparable to a method using a 5-year asset smoothing period with no actuarial value of asset corridor and a 25-year amortization period for gains and losses.

Accounts Receivable

In preparing valuations and setting employer contribution rates, the asset figures used include accounts receivable. The CalPERS Actuarial Office assumes that all assets are accruing interest at the actuarially assumed rate. Therefore, the rates depicted assume that all payments have been made and are accruing interest.

Actuarial Assumptions

In 2014, CalPERS completed a 2-year asset liability management study incorporating actuarial assumptions and strategic asset allocation. On February 19, 2014, the CalPERS Board of Administration adopted relatively modest changes to the current asset allocation that will reduce the expected volatility of returns. The adopted asset allocation is expected to have a long-term blended return that continues to support a discount rate assumption of 7.5 percent. The Board also approved several changes to the demographic assumptions that more closely align with actual experience. The most significant of these is mortality improvement to acknowledge the greater life expectancies we are seeing in our membership and expected continued improvements. The new actuarial assumptions were first used in the June 30, 2015 valuation to set the Fiscal Year 2016-17 contribution for the Schools Pool. The increase in liability due to new actuarial assumptions is amortized over a 20-year period with a 5-year ramp-up/ramp-down in accordance with Board policy. These new actuarial assumptions are set forth in this section.

For more details and additional rationale for the selection of the actuarial assumptions, please refer to the CalPERS Experience Study and Review of Actuarial Assumptions report from January 2014 that can be found on the CalPERS website under: “Forms and Publications”. Click on “View All” and search for Experience Study.

All actuarial assumptions represent an estimate of future experience rather than observations of the estimates inherent in market data.

Economic Assumptions:

Discount Rate

7.5% compounded annually (net of administrative expenses).

Salary Growth

Annual increases vary by entry age and duration of service. A sample of the assumed increases is shown below.

Duration of Service	Schools		
	Entry Age		
	20	30	40
0	9.00%	8.80%	8.20%
3	6.50%	6.30%	5.80%
5	5.80%	5.60%	5.10%
10	4.60%	4.50%	4.10%
15	4.20%	4.10%	3.80%
20	3.90%	3.80%	3.50%
25	3.70%	3.50%	3.30%
30	3.50%	3.30%	3.10%

Overall Payroll Growth

3 percent compounded annually (used in projecting the payroll over which the unfunded liability is amortized).

Inflation

2.75 percent compounded annually.

Demographic Assumptions:

Post-retirement Mortality

Rates vary by age, type of retirement and gender. See sample rates in the table below.

Age	Healthy Recipients		Non-Industrially Disabled (Not Job-Related)		Industrially Disabled (Job-Related)	
	Male	Female	Male	Female	Male	Female
50	0.00501	0.00466	0.01680	0.01158	0.00501	0.00466
55	0.00599	0.00416	0.01973	0.01149	0.00599	0.00416
60	0.00710	0.00436	0.02289	0.01235	0.00754	0.00518
65	0.00829	0.00588	0.02451	0.01607	0.01122	0.00838
70	0.01305	0.00993	0.02875	0.02211	0.01635	0.01395
75	0.02205	0.01722	0.03990	0.03037	0.02834	0.02319
80	0.03899	0.02902	0.06083	0.04725	0.04899	0.03910
85	0.06969	0.05243	0.09731	0.07762	0.07679	0.06251
90	0.12974	0.09887	0.14804	0.12890	0.12974	0.09887
95	0.22444	0.18489	0.22444	0.21746	0.22444	0.18489
100	0.32536	0.30017	0.32536	0.30017	0.32536	0.30017

The post-retirement mortality rates above include 20 years of projected on-going mortality improvements using Scale BB published by the Society of Actuaries.

Marital Status

For active members 85 percent are assumed to be married upon retirement.

Age of Spouse

It is assumed that female spouses are 3 years younger than male spouses.

Terminated Members

It is assumed that terminated members refund immediately if non-vested. Terminated members who are vested are assumed to follow the same service retirement pattern as active members but with a load to reflect the expected higher rates of retirement, especially at lower ages. The following table shows the load factors that are applied to the service retirement assumption for active members to obtain the service retirement pattern for separated vested members:

Age	Load Factor
50	190%
51	110%
52	110%
53 through 54	100%
55	100%
56 and above	100%

Termination with Refund

Rates vary by entry age and service. See sample rates in the table below.

Duration of Service	Entry Age				
	20	25	30	35	40
0	0.1730	0.1627	0.1525	0.1422	0.1319
1	0.1585	0.1482	0.1379	0.1277	0.1174
2	0.1440	0.1336	0.1234	0.1131	0.1028
3	0.1295	0.1192	0.1089	0.0987	0.0884
4	0.1149	0.1046	0.0944	0.0841	0.0738
5	0.0278	0.0249	0.0221	0.0192	0.0164
10	0.0172	0.0147	0.0122	0.0098	0.0074
15	0.0115	0.0094	0.0074	0.0053	0.0032
20	0.0073	0.0055	0.0038	0.0020	0.0002
25	0.0037	0.0023	0.0010	0.0002	0.0002
30	0.0015	0.0003	0.0002	0.0002	0.0002

Termination with Vested Deferred Benefits

Rates vary by entry age and service. See sample rates in the table below.

Duration of Service	Entry Age				
	20	25	30	35	40
5	0.0816	0.0733	0.0649	0.0566	0.0482
6	0.0782	0.0697	0.0613	0.0527	0.0443
7	0.0745	0.0660	0.0573	0.0487	0.0400
8	0.0708	0.0621	0.0534	0.0446	0.0359
9	0.0671	0.0582	0.0493	0.0404	0.0316
10	0.0629	0.0540	0.0450	0.0359	-
14	0.0558	0.0462	0.0367	0.0272	-
15	0.0537	0.0440	0.0344	-	-
19	0.0443	0.0344	0.0243	-	-
20	0.0420	0.0317	-	-	-
24	0.0319	0.0211	-	-	-
25	0.0291	-	-	-	-
29	0.0170	-	-	-	-
30	-	-	-	-	-

- When a member is eligible to retire, the termination with vested benefits probability is set to zero.
- After termination with vested benefits, a miscellaneous member is assumed to retire at age 59 and a safety member at 54.

Non-Industrial Death (Not Job-Related)

Rates vary by age and gender. See sample rates in the table below.

Non-Industrial Disability (Not Job-Related)

Rates vary by age and gender. See sample rates in the table below.

Attained Age	Male		Female	
	Non-Industrial Death	Non-Industrial Disability	Non-Industrial Death	Non-Industrial Disability
20	0.00031	0.00028	0.00020	0.00026
25	0.00040	0.00010	0.00023	0.00012
30	0.00049	0.00011	0.00025	0.00016
35	0.00057	0.00053	0.00035	0.00043
40	0.00075	0.00149	0.00050	0.00101
45	0.00106	0.00295	0.00071	0.00188
50	0.00155	0.00388	0.00100	0.00244
55	0.00228	0.00358	0.00138	0.00205
60	0.00308	0.00306	0.00182	0.00139

Service Retirement – Classic Members

Rates vary by age and service. See sample rates in the table below.

Attained Age	Years of Service						
	5	10	15	20	25	30	35
50	0.005	0.009	0.013	0.015	0.016	0.018	0.022
52	0.006	0.012	0.017	0.020	0.022	0.025	0.029
54	0.012	0.024	0.033	0.039	0.044	0.049	0.057
56	0.020	0.039	0.055	0.065	0.072	0.081	0.095
58	0.025	0.050	0.070	0.083	0.092	0.103	0.121
60	0.037	0.073	0.102	0.121	0.134	0.150	0.176
62	0.076	0.151	0.212	0.250	0.278	0.311	0.366
65	0.091	0.180	0.251	0.297	0.331	0.370	0.435
70	0.066	0.131	0.183	0.216	0.241	0.270	0.316
75	0.055	0.108	0.151	0.179	0.199	0.223	0.262

Service Retirement – PEPRA Members

Rates vary by age and service. See sample rates in the table below.

Attained Age	Years of Service						
	5	10	15	20	25	30	35
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000
52	0.004	0.008	0.012	0.014	0.015	0.018	0.020
54	0.008	0.017	0.023	0.027	0.031	0.034	0.040
56	0.014	0.027	0.039	0.046	0.050	0.057	0.067
58	0.019	0.038	0.053	0.062	0.069	0.077	0.091
60	0.030	0.058	0.082	0.097	0.107	0.120	0.293
62	0.061	0.121	0.170	0.200	0.222	0.249	0.293
65	0.082	0.162	0.226	0.267	0.298	0.333	0.392
70	0.066	0.131	0.183	0.216	0.241	0.270	0.316
75	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Miscellaneous Loading Factors:*Credit for Unused Sick Leave*

Total years of service are increased by 1 percent for those plans with the provision providing Credit for Unused Sick Leave.

Norris Decision (Best Factors)

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

APPENDIX B

PRINCIPAL PLAN PROVISIONS

- **SUMMARY OF PRINCIPAL PLAN PROVISIONS**

Summary of Principal Plan Provisions

The following is a summary of the major plan provisions for the most representative group used in calculating costs and liabilities of this plan. Many of the statements in this summary are general in nature, and are intended to provide a summary of the complex Public Employees' Retirement Law. The law itself governs in all situations.

RETIREMENT PROGRAM

Service Retirement

Eligibility

A CalPERS Classic member becomes eligible for Service Retirement upon attainment of age 50 with at least 5 years of credited service (total service across all CalPERS employers, and with certain other Retirement Systems with which CalPERS has reciprocity agreements). PEPRA Schools members become eligible for Service Retirement upon attainment of age 52 with at least 5 years of service.

Benefit

The Service Retirement benefit calculated for service earned by this group of employees is a monthly allowance equal to the product of the *benefit factor*, *years of service*, and *final compensation*, where

- The *benefit factor* for this group of employees comes from the **2% at 55** benefit factor table. New PEPRA members hired on or after January 1, 2013 are subject to the **2% at 62** benefit factor table. The factor depends on the member's age at retirement. Listed below are the factors for retirement at whole year ages:

Retirement	2% at 55	Retirement	2% at 62
<u>Age</u>	<u>Factor</u>	<u>Age</u>	<u>Factor</u>
50	1.100%	50	N/A
51	1.280%	51	N/A
52	1.460%	52	1.000%
53	1.640%	53	1.100%
54	1.820%	54	1.200%
55	2.000%	55	1.300%
56	2.064%	56	1.400%
57	2.126%	57	1.500%
58	2.188%	58	1.600%
59	2.250%	59	1.700%
60	2.314%	60	1.800%
61	2.376%	61	1.900%
62	2.438%	62	2.000%
63 & Up	2.500%	63	2.100%
		64	2.200%
		65	2.300%
		66	2.400%
		67 & Up	2.500%

- The *years of service* is the amount credited by CalPERS to a member while he or she is employed in this group (or for other periods that are recognized under the employer's contract with CalPERS). For a member who has earned service with multiple CalPERS employers, the benefit from each employer is calculated separately according to each employer's contract, and then added together for the total allowance. Any unused sick leave accumulated at the time of retirement will be converted to credited service at the rate of 0.004 years of service for each day of sick leave.
- The *final compensation* is the monthly average of the member's highest 12 consecutive months' full-time equivalent monthly pay (no matter which CalPERS employer paid this compensation). For new PEPRA members hired after January 1, 2013 final compensation is based on the monthly average of the member's highest 36 consecutive months' full-time equivalent monthly pay. PEPRA members have a cap on the annual salary that can be used to calculate final compensation for all new members based on the Social Security Contribution and Benefit Base. For employees that participate in Social Security this cap is \$117,020 for 2015 and for those employees that do not participate in social security the cap for 2015 is \$140,424, the equivalent of 120% of the 2015 Contribution and Benefit Base. Adjustments to the caps are permitted annually based on changes to the CPI for All Urban Consumers.
- The employees in this plan may or may not be covered by Social Security. For employees with service prior to January 1, 2001 covered by Social Security, the final compensation is offset by \$133.33 (or by one-third if, the final compensation is less than \$400). For PEPRA members, the final compensation is not offset.
- The Service Retirement benefit is not capped.

Vested Deferred Retirement

Eligibility for Deferred Status

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

Eligibility to Start Receiving Benefits

The CalPERS classic member becomes eligible to receive the deferred retirement benefit upon satisfying the eligibility requirements for Deferred Status and upon attainment of age 50. PEPRA Schools members become eligible to receive the deferred retirement benefit upon satisfying the eligibility requirements for Deferred Status and upon attainment of age 52.

Benefit

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

Non-Industrial (Non-Job Related) Disability Retirement

Eligibility

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

Benefit

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

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

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

Post-Retirement Death Benefit

Lump Sum Payment

Upon the death of a retiree, a one-time lump sum payment of \$2,000 will be made to the retiree's designated survivor(s), or to the retiree's estate.

Form of Payment for Retirement Allowance

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

For retirement allowances with respect to service earned by employment in this group, 25 percent of the retirement allowance will automatically be continued to certain statutory beneficiaries upon the death of the retiree, *without* a reduction in the retiree's allowance (50 percent for service not covered

by Social Security). This additional benefit is often referred to as *post retirement survivor allowance* (PRSA) or simply as *survivor continuance*.

In other words, 25 percent of the allowance (or 50 percent for service not covered by Social Security), the *continuance portion*, is paid to the retiree for as long as he or she is alive, and that same amount is continued to the retiree's spouse (or if no eligible spouse, to unmarried children until they attain age 18; or, if no eligible children, to a qualifying dependent parent) for the rest of his or her lifetime.

The remaining 75 percent of the retirement allowance (or 50 percent for service not covered by Social Security), which may be referred to as the *option portion* of the benefit, is paid to the retiree as an annuity for as long as he or she is alive. Or, the retiree may choose to provide for some of this *option portion* to be paid to **any** designated beneficiary after the retiree's death. Benefit options applicable to the *option portion* are the same as those offered with the standard form. The reduction is calculated in the same manner but is applied only to the *option portion*.

Pre-Retirement Death Benefits

Basic Death Benefit

Eligibility

An employee's beneficiary (or estate) may receive the Basic Death benefit if the member dies while actively employed. A CalPERS member who is no longer actively employed with **any** CalPERS employer is not eligible for this benefit. A member's survivor who is eligible for any other pre-retirement death benefit described below may choose to receive that death benefit instead of this Basic Death benefit.

Benefit

The Basic Death Benefit is a lump sum in the amount of the member's accumulated contributions, where interest is currently credited at 7.5 percent per year. In addition, a lump sum in the amount of six months' salary is paid. For purposes of this benefit, one month's salary is defined as the member's average monthly full-time rate of compensation during the 12 months preceding death.

1957 Survivor Benefit

Eligibility

An employee's *eligible survivor(s)* may receive the 1957 Survivor benefit if the member dies while actively employed, has attained at least age 50 for classic members and age 52 for PEPRAs school members, and has at least 5 years of credited service (total service across all CalPERS employers and with certain other Retirement Systems with which CalPERS has reciprocity agreements). A CalPERS member who is no longer actively employed with **any** CalPERS employer is not eligible for this benefit. An *eligible survivor* means the surviving spouse to whom the member was married at least one year before death or, if there is no eligible spouse, to the member's unmarried children under age 18. A member's survivor may choose this benefit in lieu of the Basic Death benefit or the Special Death benefit.

Benefit

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

Cost-of-Living Adjustments

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

Purchasing Power Protection Allowance (PPPA)

Retirement and survivor allowances are protected against inflation by PPPA. PPPA benefits are cost-of-living adjustments that are intended to maintain an individual's allowance at 75 percent of the initial allowance at retirement adjusted for inflation since retirement. The PPPA benefit will be coordinated with other cost-of-living adjustments provided under the plan. The total annual outlay for PPPA is limited to 1.1 percent of accumulated member contributions. If this amount of member contributions were insufficient to provide for PPPA payments, the 75 percent target would be proportionately reduced.

Employee Contributions

Each employee contributes toward his or her retirement based upon one of the following schedules. The employer may choose to "pick-up" these contributions for the employees.

The contribution schedule is as follows:

The percent contributed below the monthly compensation breakpoint is 0 percent.

The monthly compensation breakpoint is \$0.

The percent contributed above the monthly compensation breakpoint is 7 percent for classic members and 6 percent for PEPRA members.

Refund of Employee Contributions

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

1959 SURVIVOR BENEFITS PROGRAM

For these benefits, please refer to the 1959 Survivor Report

APPENDIX C

PARTICIPANT DATA

- **SOURCE OF THE PARTICIPANT DATA**
- **DATA VALIDATION TESTS AND ADJUSTMENTS**
- **DATA STATEMENT**
- **RECONCILIATION OF PARTICIPANTS**
- **ACTIVE MEMBERS**
- **TERMINATED AND TRANSFERRED PARTICIPANTS**
- **RETIRED MEMBERS AND BENEFICIARIES**

Source of the Participant Data

The data was extracted from various databases within CalPERS and placed in a data warehouse by a series of extract programs. Included in this data is:

- Individual member and beneficiary information,
- Employment and payroll information,
- Accumulated contributions with interest,
- Service information,
- Benefit payment information,
- Information about the various organizations which contract with CalPERS, and
- Detailed information about the plan provisions applicable to each group of members.

Data Validation Tests and Adjustments

Once the information is extracted from the various computer systems into the data warehouse, update queries are then run against this data to correct for flaws found in the data. This part of the process is intended to validate the participant data for all CalPERS plans. It is not specific to the Schools pool.

Checks on the data included:

- A reconciliation of the membership of the plan,
- Comparisons of various member statistics (average attained age, average entry age, average salary, etc.) for the plan with those from the prior valuation
- Pension amounts for each retiree and beneficiary receiving payments were compared with the pension amounts from the prior valuation
- Checks for invalid ages and dates, and
- Reasonableness checks on various key data elements such as service and salary.

As a result of the tests on the data, a number of adjustments were determined to be necessary. These included:

- Dates of hire and dates of entry were adjusted where necessary to be consistent with the service fields, the date of birth and each other, and
- The annual earnings rate for most Schools members were overwritten with the annualized earnings based on their yearly contributions.

Data Statement

The data does not contain information about reciprocal systems and hence salary information for terminated participants covered by reciprocal systems may not be up to date. This situation is not expected to have a material impact on the employer contribution rates since the total present value for all terminated participants represents less than 2 percent of the present value of benefits for all members.

We are unaware of any other data issues that would have a material effect on the results of this valuation.

It is our opinion that, after the adjustments noted above, the participant data was sufficient and reliable for the purposes of the valuation.

Reconciliation of Participants

For the Fiscal Year Ending June 30, 2015

Schools

	Active	Transfer	Terminated	Receiving	Total
As of June 30, 2014	287,736	22,672	175,032	207,400	692,840
Retirements	(8,054)	(981)	(1,464)	10,493	(6)
Industrial Disabilities	(2)	(37)	(1)	40	-
Ordinary Disabilities	(247)	(26)	(82)	361	6
Deaths ²	(413)	(27)	(294)	(7,380)	(8,114)
New Survivors	n/a	n/a	n/a	1,489	1,489
Non-vested Terminations ¹	(10,012)	(195)	10,207	-	-
Vested Terminations	(3,749)	(228)	3,981	(4)	-
Refunds of Contributions	(1,741)	(104)	(3,822)	-	(5,667)
Transfers	(1,198)	2,158	(941)	(19)	-
Redeposits/Rehires	3,939	(221)	(3,653)	(65)	-
First Year in Status	31,844	274	2,030	717	34,865
Data Corrections ³	(152)	(4,585)	(727)	(92)	(5,556)
As of June 30, 2015	297,951	18,700	180,266	212,940	709,857

¹ Includes non-vested terminated participants with employee contributions left in the plan.

² Includes both deaths without survivors and deaths with survivors receiving a benefit.

³ May include the combining of data records into a single record.

Active Members

Distribution of Active Members By Age and Service

As of June 30, 2015

Schools

Attained Age	Years of Service at Valuation Date						Total	Payroll
	0-4	5-9	10-14	15-19	20-24	25+		
15-24	9,718	28	0	0	0	0	9,746	\$ 252,727,637
25-29	18,887	2,790	54	0	0	0	21,731	637,669,572
30-34	15,449	8,104	2,195	87	0	0	25,835	907,288,818
35-39	12,949	8,455	5,664	1,800	40	0	28,908	1,105,872,237
40-44	12,956	8,404	6,531	4,020	880	53	32,844	1,277,657,794
45-49	13,482	10,142	7,609	5,146	2,311	1,125	39,815	1,565,074,656
50-54	12,241	11,774	10,083	7,065	3,439	4,030	48,632	1,973,154,099
55-59	8,656	10,197	10,080	8,043	4,214	5,528	46,718	1,938,211,178
60-64	4,570	6,245	6,747	5,805	3,312	3,926	30,605	1,258,385,279
65 and Over	2,353	2,859	2,820	2,201	1,340	1,544	13,117	487,536,424
Total	111,261	68,998	51,783	34,167	15,536	16,206	297,951	\$11,403,577,694

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 Average Annual Salaries By Age and Service

As of June 30, 2015

Schools

Attained Age	Years of Service at Valuation Date						Average Salary
	0-4	5-9	10-14	15-19	20-24	25+	
15-24	25,905	35,105	0	0	0	0	\$25,931
25-29	28,336	35,858	45,387	0	0	0	29,344
30-34	31,199	38,921	47,732	58,804	0	0	35,119
35-39	30,792	39,564	48,001	55,113	61,402	0	38,289
40-44	29,384	38,444	46,460	54,070	57,345	68,370	38,931
45-49	28,485	36,137	44,703	52,706	58,251	61,820	39,334
50-54	27,824	34,187	42,165	50,961	55,905	62,927	40,594
55-59	27,494	33,138	40,733	48,070	53,607	61,475	41,501
60-64	25,699	32,453	39,290	47,038	51,211	58,715	41,117
65 and Over	21,467	30,156	37,891	44,229	46,950	54,207	37,168
Average	\$28,572	\$35,796	\$43,071	\$50,048	\$53,954	\$60,528	\$38,273

Terminated and Transferred Participants

Distributions By Age and Service

Transfers to Other CalPERS Plans

As of June 30, 2015

Schools

Attained Age	Years of Service at Valuation Date						Total	Average Salary
	0-4	5-9	10-14	15-19	20-24	25+		
15-24	80	0	0	0	0	0	80	\$34,228
25-29	741	26	2	0	0	0	769	45,153
30-34	1,506	154	9	0	0	0	1,669	54,775
35-39	1,939	286	62	5	0	0	2,292	62,134
40-44	1,946	351	97	21	0	0	2,415	65,076
45-49	1,917	452	133	53	9	2	2,566	67,301
50-54	2,231	562	204	73	27	11	3,108	66,082
55-59	2,071	527	210	66	16	9	2,899	61,324
60-64	1,436	406	120	46	15	6	2,029	58,690
65 and Over	671	141	44	10	6	1	873	53,576
Total	14,538	2,905	881	274	73	29	18,700	\$61,506

Distributions By Age and Service

Terminated Participants With Funds on Deposit

As of June 30, 2015

Schools

Attained Age	Years of Service at Valuation Date						Total	Average Salary
	0-4	5-9	10-14	15-19	20-24	25+		
15-24	2,731	0	0	0	0	0	2,731	\$26,428
25-29	13,218	229	0	0	0	0	13,447	28,937
30-34	20,676	1,216	69	0	0	0	21,961	30,428
35-39	22,855	1,702	317	2	0	0	24,876	31,032
40-44	20,828	1,924	401	11	0	1	23,165	31,446
45-49	18,799	2,392	713	26	2	1	21,933	32,156
50-54	19,821	3,025	1,018	130	8	3	24,005	32,046
55-59	19,049	2,605	749	146	31	1	22,581	31,372
60-64	14,280	1,748	506	81	30	5	16,650	30,409
65 and Over	7,904	780	201	22	7	3	8,917	29,259
Total	160,161	15,621	3,974	418	78	14	180,266	\$30,973

Retired Members and Beneficiaries

Number of Retirees and Beneficiaries

By Age and Retirement Type

As of June 30, 2015

Schools

Attained Age	Service Retirement	Non-Industrial Disability	Industrial Disability	Non-Industrial Death	Industrial Death	Death After Retirement	Total
Under 30	0	1	0	2	1	193	197
30-34	0	10	4	0	0	132	146
35-39	0	46	12	0	0	167	225
40-44	0	116	35	4	0	194	349
45-49	0	315	53	14	0	341	723
50-54	1,330	958	93	31	2	586	3,000
55-59	10,251	1,799	133	107	4	944	13,238
60-64	28,094	2,136	192	153	0	1,525	32,100
65-69	42,553	2,082	173	182	2	2,341	47,333
70-74	33,016	1,863	96	122	1	2,794	37,892
75-79	23,636	1,295	43	82	4	3,323	28,383
80-84	17,530	755	22	55	3	3,878	22,243
85 and Over	19,321	717	11	44	0	7,018	27,111
Total	175,731	12,093	867	796	17	23,436	212,940

Counts of members do not include alternate payees receiving benefits while the member is still working. Multiple records may exist for those who have service in more than one coverage group. This does not result in double counting of liabilities.

Annual Allowance Amounts for**Retirees and Beneficiaries****By Age and Retirement Type****As of June 30, 2015****Annual Amounts not Including PPPA Payments****Schools**

Attained Age	Service Retirement	Non-Industrial Disability	Industrial Disability	Non-Industrial Death	Industrial Death	Death After Retirement	Total
Under 30	\$0	\$4,096	\$0	\$16,183	\$4	\$874,649	\$894,932
30-34	0	82,692	337	0	0	815,939	898,968
35-39	0	385,650	7,043	0	0	1,213,909	1,606,602
40-44	0	1,189,696	19,666	36,018	0	1,547,105	2,792,485
45-49	0	3,161,418	54,977	112,412	0	2,546,286	5,875,093
50-54	10,880,765	10,993,132	119,575	267,134	1,068	4,980,962	27,242,636
55-59	166,344,003	21,978,190	220,254	1,082,622	4,215	9,392,266	199,021,550
60-64	531,405,199	25,705,437	502,793	1,142,397	0	16,427,351	575,183,177
65-69	819,407,806	23,940,230	474,949	1,567,763	1,200	25,962,733	871,354,681
70-74	594,182,338	20,460,200	289,366	948,429	3,402	30,886,138	646,769,873
75-79	373,550,162	13,235,171	72,673	532,767	2,397	35,816,678	423,209,848
80-84	239,017,269	6,887,729	141,176	381,109	2,541	38,190,488	284,620,312
85 and Over	216,646,209	5,844,605	7,388	356,192	0	57,429,885	280,284,279
Total	\$2,951,433,751	\$133,868,246	\$1,910,197	\$6,443,026	\$14,827	\$226,084,389	\$3,319,754,436

Counts of members do not include alternate payees receiving benefits while the member is still working. Multiple records may exist for those who have service in more than one coverage group. This does not result in double counting of liabilities.

Number of Retirees and Beneficiaries
By Years Retired and Retirement Type
As of June 30, 2015

Schools

Years Retired	Service Retirement	Non-Industrial Disability	Industrial Disability	Non-Industrial Death	Industrial Death	Death After Retirement	Total
Under 5 Yrs	50,738	1,786	174	220	1	8,382	61,298
5-9	40,712	1,685	150	245	1	5,876	48,669
10-14	33,124	2,458	217	170	2	4,043	40,014
15-19	20,863	2,555	111	68	1	2,499	26,097
20-24	14,866	1,842	98	43	2	1,501	18,352
25-29	8,775	869	49	31	5	765	10,494
30 and Over	6,656	898	68	19	5	370	8,016
Total	175,731	12,093	867	796	17	23,436	212,940

Counts of members do not include alternate payees receiving benefits while the member is still working. Multiple records may exist for those who have service in more than one coverage group. This does not result in double counting of liabilities.

Annual Allowance Amounts for Retirees and Beneficiaries**By Years Retired and Retirement Type****As of June 30, 2015****Annual Amounts not Including PPPA Payments****Schools**

Years Retired	Service Retirement	Non-Industrial Disability	Industrial Disability	Non-Industrial Death	Industrial Death	Death After Retirement	Total
Under 5 Yrs	\$980,355,243	\$22,084,982	\$495,720	\$2,021,284	\$4	\$88,475,870	\$1,093,433,103
5-9	778,421,384	20,982,914	478,320	2,120,219	827	58,225,191	860,228,855
10-14	596,590,115	30,753,835	583,897	1,163,436	823	38,900,705	667,992,811
15-19	277,253,642	26,824,494	108,012	465,078	3,402	20,918,957	325,573,585
20-24	186,335,791	19,260,890	163,471	313,619	2,947	11,672,989	217,749,707
25-29	86,030,035	7,712,393	62,601	214,436	4,774	5,508,793	99,533,032
30 and Over	46,447,541	6,248,738	18,176	144,954	2,050	2,381,884	55,243,343
Total	\$2,951,433,751	\$133,868,246	\$1,910,197	\$6,443,026	\$14,827	\$226,084,389	\$3,319,754,436

Counts of members do not include alternate payees receiving benefits while the member is still working. Multiple records may exist for those who have service in more than one coverage group. This does not result in double counting of liabilities.

Retirees and Beneficiaries**Number Counts and Benefits****By Year of Retirement****As of June 30, 2015****Schools**

Year Retired	Total Retirement	Total Benefits	Average Benefits
2015	4,909	\$ 81,568,784	\$ 16,616
2014	10,835	207,180,785	19,121
2013	10,385	190,032,613	18,299
2012	10,655	196,756,685	18,466
2011	10,388	194,046,528	18,680
2010	11,210	219,581,663	19,588
2009	10,324	205,278,616	19,884
2008	8,481	162,003,392	19,102
2007	8,140	149,371,576	18,350
2006	8,457	145,512,567	17,206
2005	8,626	144,266,239	16,725
2004	8,926	149,590,000	16,759
2003	9,339	167,700,791	17,957
2002	7,231	127,018,594	17,566
2001	6,415	109,859,934	17,125
2000	8,079	131,439,782	16,269
1999	4,575	54,600,878	11,935
1998	5,463	66,968,867	12,259
1997	5,095	59,399,965	11,658
1996	4,875	56,904,500	11,673
1995	4,979	58,091,056	11,667
1994	4,537	53,442,398	11,779
1993	4,465	55,098,053	12,340
1992	4,260	51,245,276	12,029
1991	3,897	46,074,789	11,823
1990	3,338	35,504,448	10,636
1989	3,126	32,392,225	10,362
1988	2,848	28,414,772	9,977
1987	2,533	23,398,357	9,237
1986	2,289	19,659,879	8,589
1985	2,027	15,501,324	7,647
1984 and earlier	12,233	81,849,100	6,961
Totals	212,940	\$ 3,319,754,436	\$ 15,590

Counts of members include alternate payees receiving benefits while the member is still working. Multiple records may exist for those who have service in more than one coverage group. This does not result in double counting of liabilities.

1 – The numbers for 2015 are for the first 6 months of the calendar year only.

APPENDIX D

NORMAL COST INFORMATION

- **NORMAL COST CHART**
- **DEVELOPMENT OF PEPRA MEMBER CONTRIBUTION RATE**

Normal Cost Chart

The normal cost is determined using the Entry Age Normal Cost method. Some important features of this method are that the costs are dependent upon a member's entry age in the plan and benefit level of the plan. In general the lower the entry age the lower the total normal cost. Note that future costs may vary as the entry age of the members change. FAC means Final Average Compensation.

Schools	Total Normal Cost	Employee Contribution ¹	Range of Breakpoints	Average Effective Member Rate	Employer Normal Cost
Schools 2% @ 62 - 3 Year FAC	12.8%	6.0%	-	6.0%	6.8%
Schools 2% @ 55 - 1 Year FAC	15.5%	7.0%	-	7.0%	8.5%

Notes:

1-Employee contribution rates are based on rates in effect during the 2016-17 fiscal year.

Development of PEPRAs Member Contribution Rate

The table below shows the determination of the Member contribution rate based on 50 percent of the Total Normal Cost on June 30, 2015.

Assembly Bill (AB) 340 created PEPRAs 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.

Plan	Basis for Current Rate		Rate Effective July 1, 2016			
	Total Normal Cost ¹	Member Rate	Total Normal Cost ²	Change	Change Needed	Member Rate
Schools	12.08%	6.00%	12.82%	0.74%	No	6.00%
¹ As of June 30, 2012 valuation date			² As of June 30, 2015 valuation date			

APPENDIX E

GLOSSARY OF ACTUARIAL TERMS

- **GLOSSARY OF ACTUARIAL TERMS**

Glossary of Actuarial Terms

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

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

Actuarial Assumptions

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

Actuarial Methods

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

Actuarial Valuation

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

Amortization Bases

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

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

Amortization Period

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

Classic Member (under PEPRA)

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

Discount Rate Assumption

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

Entry Age

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

Entry Age Normal Cost Method

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

Fresh Start

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

Funded Status

A measure of how well funded, or how "on track" a plan or risk pool is with respect to assets verses 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

GASB 68

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

New Member (under PEPR)

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

Normal Cost

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

Pension Actuary

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

PEPRA

The California Public Employees' Pension Reform Act of 2013

Prepayment Contribution

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

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

When a plan or pool's Market 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.