

Schools Pool Actuarial Valuation

As of June 30, 2016



Required Contributions for the Fiscal Year
July 1, 2017 through June 30, 2018

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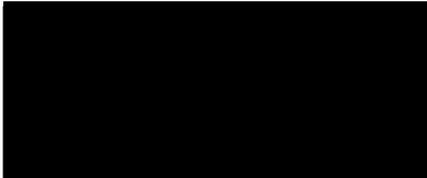
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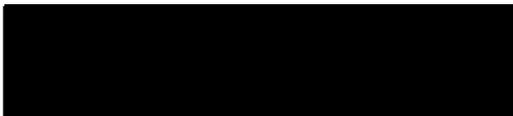
October, 2017

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 Schools Pool. This valuation is based on the member and financial data as of June 30, 2016 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.



May Yu, ASA, MAAA
Senior Pension Actuary, CalPERS



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

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Highlights and Executive Summary

INTRODUCTION

The Schools Pool provides retirement benefits to members employed by school districts and community college districts in California. It generally does not cover teachers as they are covered by a separate retirement system - the California State Teachers' Retirement System, also known as CalSTRS.

This actuarial valuation determines the funded status as of June 30, 2016 and sets forth the schools employer and employee contribution rates for the plan for Fiscal Year July 1, 2017 through June 30, 2018.

PURPOSE OF REPORT

This actuarial valuation was performed by the CalPERS Actuarial Office using data as of June 30, 2016. The purpose of the report is to:

- Set forth the assets and accrued liabilities of the Schools Pool as of June 30, 2016
- Determine the required employer contribution rate for Fiscal Year July 1, 2017 through June 30, 2018
- Determine the required employee contribution rate for Fiscal Year July 1, 2017 through June 30, 2018 for schools employees subject to the Public Employees' Pension Reform Act of 2013 (PEPRA)
- Provide actuarial information as of June 30, 2016 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.

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

California Actuarial Advisory Panel Recommendations

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

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

- A "Deterministic Stress Test," projecting future results under different investment income scenarios
- A "Sensitivity Analysis," showing the impact on current valuation results using alternative discount rates of 6.0 percent, 7.0 percent and 8.0 percent.

REQUIRED CONTRIBUTION RATES

Required Employer Contribution Rate

The actuarially required employer contribution rate for Fiscal Year July 1, 2017 through June 30, 2018 is shown in the table below. For comparison purposes, the corresponding contribution rate for Fiscal Year July 1, 2016 through June 30, 2017 is also provided. The expected contribution amounts are also shown in the table.

Actuarially Determined Employer Contributions

| | Fiscal Year 2016 - 17 | Fiscal Year 2017 - 18 |
|--|------------------------|------------------------|
| 1) Contribution as a Percentage of Payroll | | |
| a) Total Normal Cost | 15.090% | 14.896% |
| b) Employee Contribution ¹ | 6.848% | 6.793% |
| c) Employer Normal Cost [(1a) - (1b)] | 8.242% | 8.103% |
| d) Unfunded Rate | 5.646% | 7.428% |
| e) Required Employer Rate [(1c) + (1d)] | 13.888% | 15.531% |
| Projected Annual Payroll for Contribution Year | \$12,098,055,576 | \$13,021,669,245 |
| 2) Contribution in Projected Dollars | | |
| a) Total Normal Cost | \$1,825,596,586 | \$1,939,707,851 |
| b) Employee Contribution ¹ | 828,474,846 | 884,561,992 |
| c) Employer Normal Cost [(2a) - (2b)] | 997,121,741 | 1,055,145,859 |
| d) Unfunded Contribution | 683,059,487 | 967,270,839 |
| e) Required Employer Contribution [(2c) + (2d)] | \$1,680,181,228 | \$2,022,416,698 |

(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.

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.

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

Reasons for Change in Employer Contributions for the Schools Pool

Overall, the required contributions for the Schools Pool are expected to increase by \$342.2 million between Fiscal Year 2016-17 and Fiscal Year 2017-18.

The increase is driven mostly by recent investment experience and the continued phase-in of the change in actuarial assumptions that took place in the 2015 annual valuation.

The Board has adopted an amortization and smoothing policy that spreads rate increases or decreases over a 5-year period. In this valuation, the impact of the assumption changes adopted in 2014 and implemented in the 2015 annual valuation and the impact of previous investment experience are still being phased into the contribution requirement. The 2014 assumption change will continue to increase contribution requirements for another three years.

Highlights and Executive Summary (continued)

REQUIRED CONTRIBUTION RATES (CONTINUED)

In addition, the investment return for the fiscal year ending June 30, 2016 was 0.6 percent, less than the assumed return of 7.5 percent. The impact of this investment loss is being recognized for the first time and will be phased in over five years in accordance with the Board policy.

The Board's decision to lower the discount rate assumption has not yet affected the contribution requirement for the Schools Pools employers. The lowering of the discount rate assumption will first impact the schools contributions in Fiscal Year 2018-19.

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

| Reason for Change | Change in Required Contribution (Dollars in Millions) |
|---|---|
| Growth in overall payroll | \$76.1 |
| Decrease in normal cost due to PEPRA | (18.1) |
| Second year of 5-year phase in of 2014 change in assumptions | 90 |
| 5-year phase in policy for all previous gains and losses bases | 114.6 |
| Normal progression of existing amortization bases after 5-year ramping | 13.1 |
| First installment of the 5-year phased-in 30-year amortization of the following gains and losses: | |
| Investment loss in 2015-16 | 60.1 |
| Demographic gains and losses | 7.7 |
| Impact of greater than expected contributions received in 2015-16 | (1.3) |
| Total Change In Required Contributions | \$342.2 |

PEPRA Member Contribution Rates

With the enactment of PEPRA, new members hired on or after January 1, 2013 are subject to PEPRA and are required to contribute 50 percent of the total annual normal cost of their pension benefit as determined by the actuary. PEPRA schools members currently contribute 6 percent of salary. The contribution rate for schools members not subject to PEPRA, i.e. classic members, is set by statute and is currently 7 percent of salary for schools employees.

Current law contains a provision that requires a change in PEPRA member contribution rate when the total normal cost changes by more than 1 percent of payroll. When a change is triggered, the member contribution rate is adjusted to half the normal cost, rounded to the nearest quarter of one percent.

When the schools member PEPRA contribution rate was set in 2013, the normal cost was calculated to be 11.85 percent of payroll. To trigger a change in the PEPRA member contribution rate, the normal cost for schools PEPRA members has to increase above 12.85 percent of payroll. Last year, following the adoption of the 2014 change in actuarial assumptions, the PEPRA normal cost increased to 12.82 percent of payroll. The change in PEPRA normal cost was 0.97 percent of payroll, less than the 1 percent threshold in PEPRA. As a result, no change was made to the member contribution rate.

In this valuation, shifts in plan demographics have resulted in an increase in the PEPRA normal cost for schools members. The new normal cost is 12.91 percent of payroll. The normal cost has now changed by more than one percent since the last time the member contribution rate was established. As a result, an adjustment to the PEPRA member contribution rate is necessary. The member contribution rate for the Schools Pool PEPRA members will be increased to 6.5 percent effective July 1, 2017. This is 0.5 percent higher than the current 6.0 percent.

Highlights and Executive Summary (continued)

REQUIRED CONTRIBUTION RATES (CONTINUED)

The table below shows the determination of the member contribution rate based on 50 percent of the Total Normal Cost on June 30, 2016.

| Plan | Basis for Current Rate | | Rates Effective July 1, 2017 | | | |
|---------|--------------------------------|-------------|--------------------------------|--------|---------------|-------------|
| | Total Normal Cost ¹ | Member Rate | Total Normal Cost ² | Change | Change Needed | Member Rate |
| Schools | 11.85% | 6.00% | 12.91% | 1.06% | Yes | 6.50% |

(1) As of June 30, 2012 valuation date

(2) As of June 30, 2016 valuation date

PROJECTED FUTURE CONTRIBUTION RATES

The CalPERS Board of Administration approved a lowering of the CalPERS discount rate assumption at the December 21, 2016 meeting. The discount rate will be lowered from the current 7.50 percent to 7.00 percent over the next three years. For the Schools Pool, the discount rate will be lowered for the first time to 7.375 percent effective next year with the June 30, 2017 actuarial valuation, impacting the Schools Pool employer contribution rates beginning in Fiscal Year 2018-19. The discount rate will be lowered further over the following two valuations.

Lowering the discount rate means both the normal cost and the accrued liabilities will increase in the future. These increases will result in higher required employer contributions. Consistent with the existing board amortization and smoothing policy, the impact of each change in discount rate will be phased in over a five-year period. As a result, the full impact of the reduction in the discount rate will not be felt until fiscal year 2024-25.

In addition to increases in the schools employer contribution rate, active PEPRA members may also see their contribution rate rise in the future if the lowering of the discount rate results in another change in normal cost of more than 1 percent. At this time, it is estimated the normal cost will most likely increase by more than 1 percent when the discount rate is lowered to 7.0 percent. Therefore, an adjustment to the PEPRA member contribution rate is expected when the June 30, 2019 annual valuation is completed, resulting in a PEPRA member contribution rate of 7.25 percent effective for fiscal year 2020-21. This is only an estimate. The PEPRA normal cost will be reassessed each year in the future to determine whether or not a change is required.

The table below shows the projected employer contribution rates for the next seven fiscal years. It also shows the classic member employee contribution rate and the estimated PEPRA members employee contribution rate for the future. Projected results are based on the June 30, 2016 annual valuation for the Schools Pool, reflecting anticipated increases caused by the phasing in of the reduction in the discount rate assumption. The projections assume CalPERS earns 11.2 percent for fiscal year 2016-17, 7.375 percent for fiscal year 2017-18, 7.25 percent for fiscal year 2018-19 and 7.00 percent every fiscal year thereafter. The projections also assume that all other actuarial assumptions will be realized and no changes to assumptions, contributions, benefits or funding will occur during the projected period. The projections take into account the positive impact PEPRA is expected to gradually have on the normal cost.

Projected Future Schools Employer Contribution Rates

| Valuation Date | Fiscal Year Impact | Discount Rate | Projected Employer Contribution Rate (As Percentage of Payroll) | Classic Member Contribution Rate | Estimated PEPRA Member Contribution Rate |
|----------------|--------------------|---------------|---|----------------------------------|--|
| 6/30/2017 | 2018-19 | 7.375% | 17.7% | 7.0% | 6.50% |
| 6/30/2018 | 2019-20 | 7.25% | 20.0% | 7.0% | 6.50% |
| 6/30/2019 | 2020-21 | 7.00% | 22.7% | 7.0% | 7.25% |
| 6/30/2020 | 2021-22 | 7.00% | 23.7% | 7.0% | 7.25% |
| 6/30/2021 | 2022-23 | 7.00% | 24.3% | 7.0% | 7.25% |
| 6/30/2022 | 2023-24 | 7.00% | 24.8% | 7.0% | 7.25% |
| 6/30/2023 | 2024-25 | 7.00% | 25.1% | 7.0% | 7.25% |

Highlights and Executive Summary (continued)

PROJECTED FUTURE CONTRIBUTION RATES (CONTINUED)

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

PLAN'S FUNDED STATUS

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 July 1, 2015 to June 30, 2016 the funded status for the Schools Pool decreased by 5.6 percent. This was mainly due to the investment return for 2015-16 being less than expected.

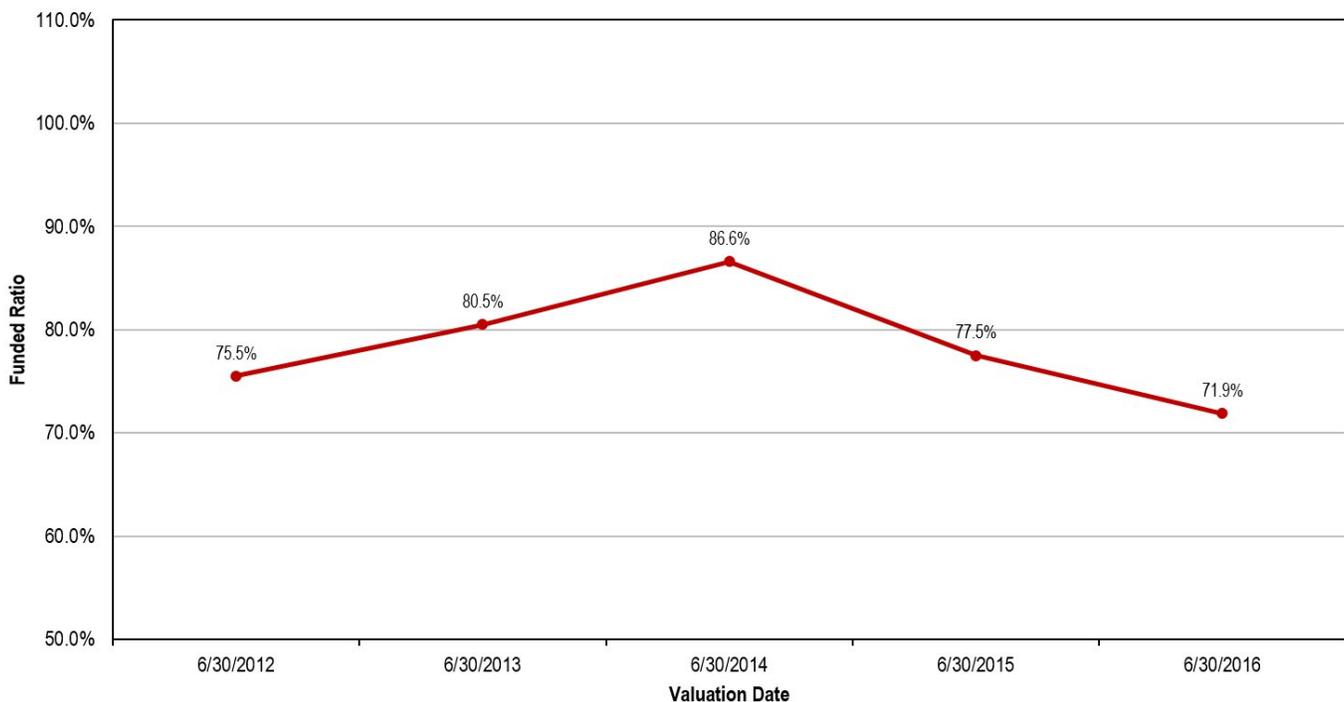
The table below shows the development of the funded status of the plan using the market value of assets on June 30, 2016.

Funded Status and Unfunded Liability

| | June 30, 2015 | June 30, 2016 |
|--|------------------|------------------|
| 1) Present Value of Projected Benefits | \$86,037,664,407 | \$91,058,726,935 |
| 2) Entry Age Normal Accrued Liability | 73,324,977,003 | 77,543,827,270 |
| 3) Market Value of Assets (MVA) | 56,814,247,327 | 55,784,854,423 |
| 4) Unfunded Liability [(2) - (3)] | \$16,510,729,676 | \$21,758,972,847 |
| 5) Funded Ratio [(3) / (2)] | 77.5% | 71.9% |

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

**Funded Ratio of the Schools Pool
(Based on the Market Value of Assets)**



CHANGES SINCE THE PRIOR YEAR'S VALUATION

Actuarial Methods and Assumptions

On December 21, 2016, the CalPERS Board of Administration lowered the discount rate from 7.50 percent to 7.00 percent using a three year phase-in beginning with the June 30, 2017 actuarial valuation for the Schools Pool. The minimum employer contributions for Fiscal Year 2017-18 determined in this valuation were calculated using a discount rate of 7.5 percent. The projected employer contributions shown in this report are calculated assuming that the discount rate will be lowered to 7.375 percent as of June 30, 2017, 7.25 percent as of June 30, 2018 and 7.0 percent as of June 30, 2019 as adopted by the Board. The decision to reduce the discount rate was primarily based on reduced capital market assumptions provided by external investment consultants and CalPERS investment staff. The specific decision adopted by the Board reflected recommendations from CalPERS staff and additional input from employer and employee stakeholder groups. Based on the investment allocation adopted by the Board and capital market assumptions, the reduced discount rate assumption provides a more realistic assumption for the long term investment return of the fund.

Notwithstanding the Board's decision to phase into a 7.0 percent discount rate, subsequent analysis of the expected investment return of CalPERS assets or changes to the investment allocation may result in a change to this three year discount rate schedule. A comprehensive analysis of all actuarial assumptions and methods including the discount rate will be conducted in late 2017.

A complete description of the actuarial methods and assumptions used in the June 30, 2016 valuation may be found in Appendix A of this report.

Plan Provisions

No changes were made since the prior valuation. Please refer to Appendix B for a summary of the plan provisions used in this valuation.

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 2 percent 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. However, this policy is temporarily suspended until June 30, 2019.

SUBSEQUENT EVENTS

This actuarial valuation report reflects statutory changes, regulatory changes and CalPERS Board actions through August 2017. Any subsequent changes or actions are not reflected.

Assets

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RECONCILIATION OF THE MARKET VALUE OF ASSETS

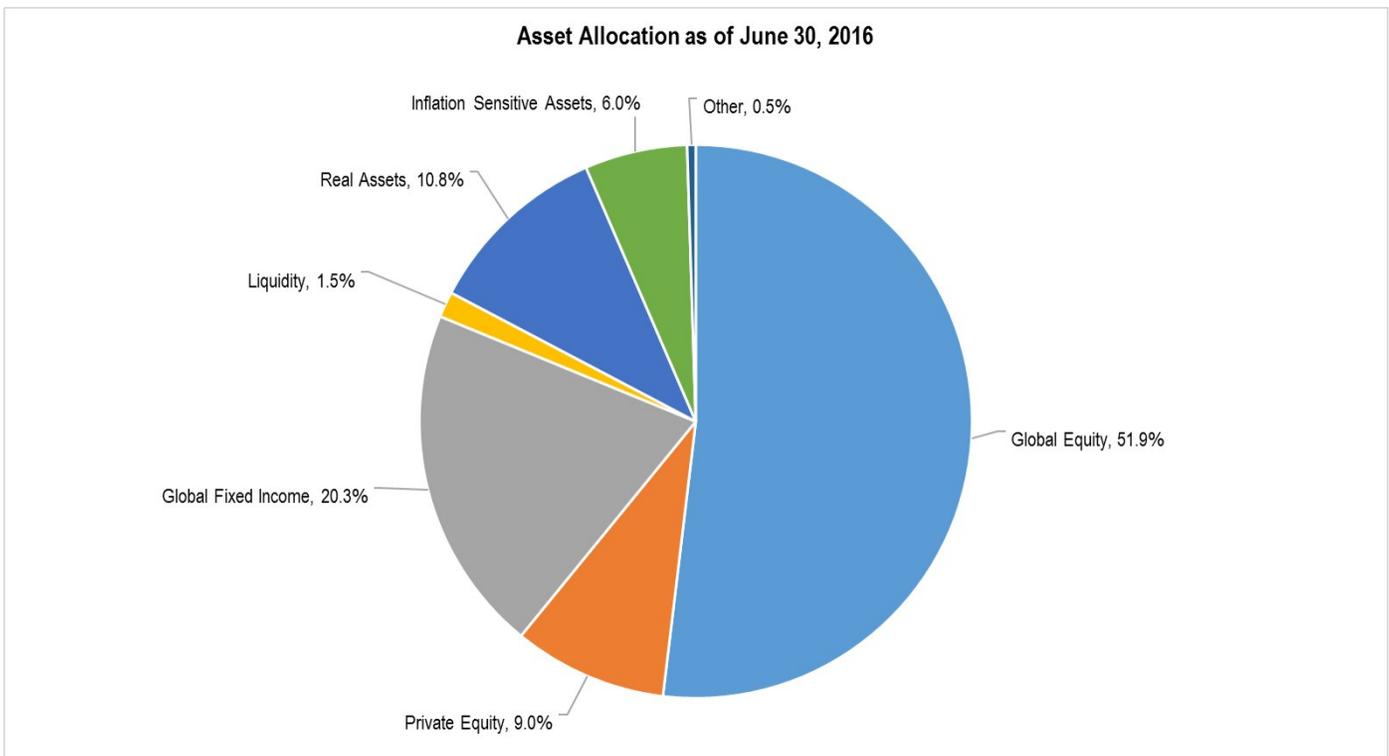
| | |
|--|------------------|
| 1) Market Value of Assets as of June 30, 2015 Including Receivables | \$56,814,247,327 |
| 2) Receivables for Service Buybacks as of June 30, 2015 | 97,845,854 |
| 3) Market Value of Assets as of June 30, 2015 [(1) - (2)] | \$56,716,401,473 |
| 4) Employer Contributions | 1,434,632,178 |
| 5) Employee Contributions | 853,248,748 |
| 6) Benefit Payments to Retirees and Beneficiaries | (3,457,558,270) |
| 7) Refunds | (89,278,327) |
| 8) Administrative Expense | (34,554,287) |
| 9) Transfers and Miscellaneous Adjustments | 3,406 |
| 10) Investment Return | 266,153,422 |
| 11) Market Value of Assets as of June 30, 2016 Excluding Receivables [(3) + (4) + (5) + (6) + (7) + (8) + (9) + (10)] | \$55,689,048,343 |
| 12) Receivables for Service Buybacks as of June 30, 2016 | \$95,806,080 |
| 13) Market Value of Assets as of June 30, 2016 Including Receivables [(11) + (12)] | \$55,784,854,423 |

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.

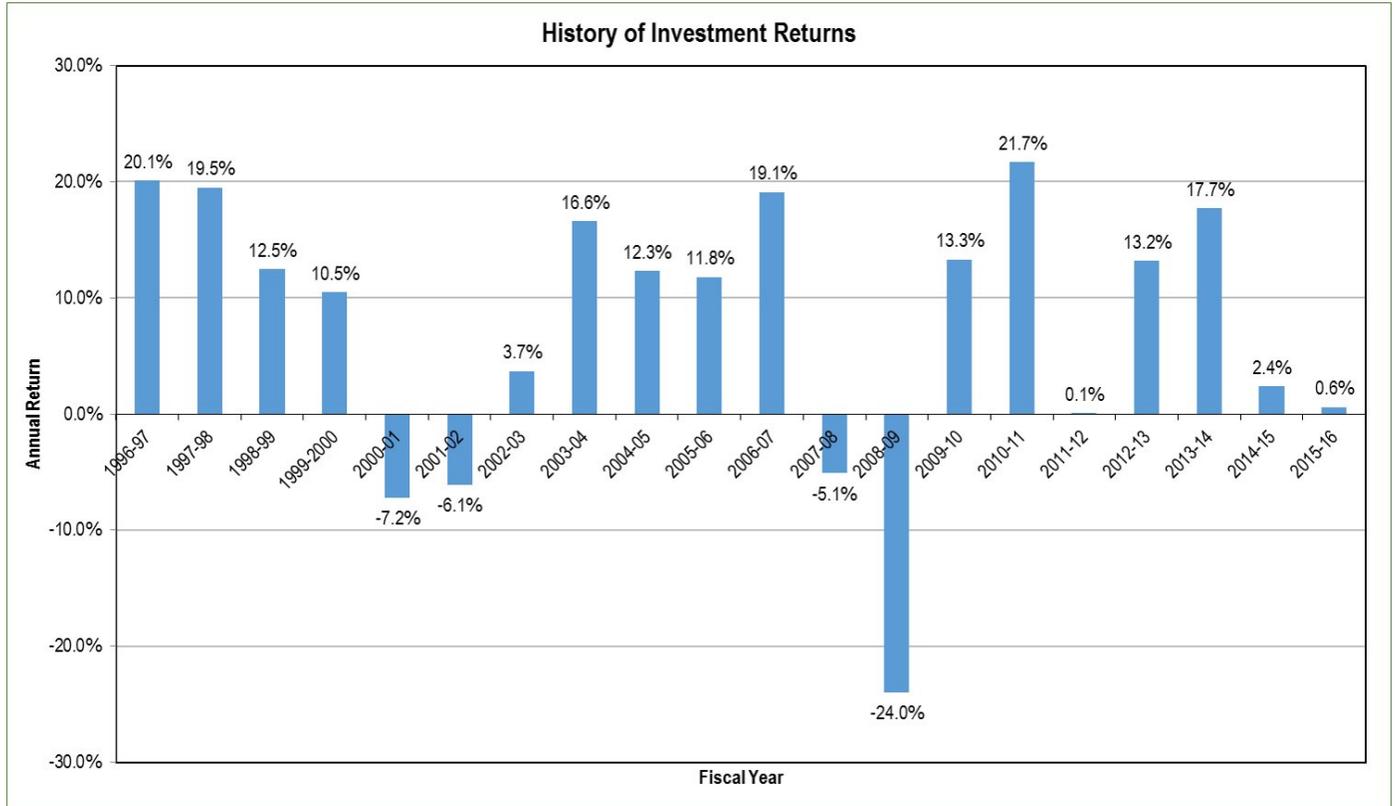
The asset allocation and market value of assets shown below reflect the values of the Public Employees Retirement Fund (PERF) in its entirety as of June 30, 2016. The assets of the Schools Pool are part of the Public Employees Retirement Fund (PERF) and are invested accordingly.

| Asset Class | Market Value (Dollars in Billions) | Policy Target Allocation |
|----------------------------|---------------------------------------|-----------------------------|
| Global Equity | \$153.1 | 51.0% |
| Private Equity | 26.4 | 10.0% |
| Global Fixed Income | 59.9 | 20.0% |
| Liquidity | 4.5 | 1.0% |
| Real Assets | 31.8 | 12.0% |
| Inflation Sensitive Assets | 17.8 | 6.0% |
| Other | 1.6 | 0.0% |
| Total Fund | \$295.1 | 100.0% |



CaIPERS 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, 2016, (figures are reported as gross of fees). The geometric mean rate of return is the average rate per period compounded over multiple periods. It should be recognized that in any given year the rate of return is volatile. The portfolio has an expected volatility of 11.8 percent per year based on the most recent Asset Liability Modeling study. The volatility is a measure of the risk of the portfolio expressed in the standard deviation of the fund’s total return distribution, expressed as a percentage. Consequently when looking at investment returns it is more instructive to look at returns over longer time horizons.

History of CaIPERS Geometric Mean Rates of Return and Volatilities

| | 1 Year | 5 Year | 10 Year | 20 Year | 30 Year |
|------------------|--------|--------|---------|---------|---------|
| Geometric Return | 0.6% | 6.6% | 5.0% | 7.0% | 8.2% |
| Volatility | —% | 8.1% | 14.0% | 11.8% | 10.1% |

Liabilities and Rates

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Liabilities and Rates

DEVELOPMENT OF ACCRUED AND UNFUNDED LIABILITIES

| | June 30, 2015 | June 30, 2016 |
|--|------------------|------------------|
| Members Included in the Valuation ¹ | | |
| Active Members | 297,951 | 307,354 |
| Transfers from Schools | 18,700 | 19,313 |
| Vested Terminations ² | 180,266 | 187,617 |
| Receiving Payments | 212,940 | 218,824 |
| Total | 709,857 | 733,108 |
| Average Entry Age of Active Members | 36.3 | 36.2 |
| Average Age of Active Members | 47.3 | 46.9 |
| Average Age of Retired Members | 72.4 | 72.5 |
| Average Pay | \$38,273 | \$39,935 |
| Covered Payroll Prior Fiscal Year | \$11,403,577,694 | \$12,274,172,160 |
| Projected Payroll for Contribution Rate | \$12,098,055,576 | \$13,021,669,245 |

| | June 30, 2015 | June 30, 2016 |
|--|------------------|------------------|
| 1) Present Value of Projected Benefits | | |
| a) Active Members | \$39,667,591,494 | \$42,897,213,782 |
| b) Transferred Members | \$7,517,583,127 | \$7,195,160,203 |
| c) Terminated Members | \$1,712,321,074 | \$1,824,101,140 |
| d) Members and Beneficiaries Receiving Payments | \$37,140,168,712 | \$39,142,251,810 |
| e) Total | \$86,037,664,407 | \$91,058,726,935 |
| 2) Present Value of Future Employer Normal Costs | \$6,689,319,613 | \$7,064,795,326 |
| 3) Present Value of Future Employee Contributions | \$6,023,367,791 | \$6,450,104,339 |
| 4) Entry Age Normal Accrued Liability | | |
| a) Active Members [(1a) - (2) - (3)] | \$26,954,904,090 | \$29,382,314,117 |
| b) Transferred Members (1b) | \$7,517,583,127 | \$7,195,160,203 |
| c) Terminated Members (1c) | \$1,712,321,074 | \$1,824,101,140 |
| d) Members and Beneficiaries Receiving Payments (1d) | \$37,140,168,712 | \$39,142,251,810 |
| e) Total | \$73,324,977,003 | \$77,543,827,270 |
| 5) Market Value of Assets (MVA) | \$56,814,247,327 | \$55,784,854,423 |
| 6) Unfunded Accrued Liability (UAL) [(4e) - (5)] | \$16,510,729,676 | \$21,758,972,847 |
| 7) Funded Ratio [(5) / (4e)] | 77.5% | 71.9% |

(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 liabilities.

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

DEVELOPMENT OF REQUIRED EMPLOYER CONTRIBUTIONS

| | June 30, 2015 | June 30, 2016 |
|--|------------------------|------------------------|
| Contribution Required (as a Percentage of Payroll) | | |
| Total Normal Cost | 15.090% | 14.896% |
| Employee Contribution | 6.848% | 6.793% |
| Employer Normal Cost | 8.242% | 8.103% |
| Unfunded Liability Contribution | 5.646% | 7.428% |
| Total | 13.888% | 15.531% |
| Contribution Required in Dollars | | |
| Total Normal Cost | \$1,825,596,586 | \$1,939,707,851 |
| Employee Contribution | 828,474,846 | 884,561,992 |
| Employer Normal Cost | 997,121,741 | 1,055,145,859 |
| Unfunded Liability Contribution | 683,059,487 | 967,270,839 |
| Total | \$1,680,181,228 | \$2,022,416,698 |

SCHEDULE OF AMORTIZATION BASES

The schedule on the next page 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.

There is a one-year lag between the valuation date and the start of the contribution fiscal year.

- The assets, liabilities, and funded status of the plan are measured as of the valuation date: June 30, 2016.
- The required employer contributions determined by the valuation are for the fiscal year beginning one year after the valuation date: Fiscal Year 2017-18.

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

The Unfunded Accrued Liability (UAL) is used to determine the employer contribution and therefore must be rolled forward one year from the valuation date to the first day of the fiscal year for which the contribution is being determined. The UAL is rolled forward each year by subtracting the expected payment on the UAL for the fiscal year and adjusting for interest. The expected payment on the UAL for a fiscal year is equal to the Expected Employer Contribution for the fiscal year minus the Expected Normal Cost for the year. The Employer Contribution for the first fiscal year is determined by the actuarial valuation one year ago. The Normal Cost Rate for the fiscal year is assumed to be the same as the rate determined by the current valuation. All expected dollar amounts are determined by multiplying the rate by the expected payroll for the applicable fiscal year, based on payroll as of the valuation date.

Liabilities and Rates (continued)

SCHEDULE OF AMORTIZATION BASES (CONTINUED)

| Reason for Base | Date Established | Remaining Amortization Period | Balance on 6/30/2016 | Expected Payment in 2016-17 | Amount Remaining on 6/30/2017 | Scheduled Payment for Fiscal Year 2017-18 | Payment as Percentage of Payroll |
|---------------------|------------------|-------------------------------|-------------------------|-----------------------------|-------------------------------|---|----------------------------------|
| Assumption Change | 6/30/2009 | 13 | \$996,650,850 | \$96,028,282 | \$971,835,421 | \$98,909,131 | 0.760% |
| Assumption Change | 6/30/2011 | 15 | 1,334,235,408 | 116,868,121 | 1,313,131,616 | 120,374,165 | 0.924% |
| Assumption Change | 6/30/2015 | 19 | 4,455,356,640 | 84,864,239 | 4,701,519,272 | 174,820,333 | 1.343% |
| Fresh Start | 6/30/2004 | 18 | 2,801,625,394 | 218,602,322 | 2,785,095,587 | 225,160,392 | 1.729% |
| (Gain)/Loss in 2009 | 6/30/2009 | 23 | 855,216,869 | 57,846,456 | 859,381,652 | 59,581,850 | 0.458% |
| (Gain)/Loss in 2010 | 6/30/2010 | 24 | 415,823,083 | 27,483,592 | 418,514,220 | 28,308,100 | 0.217% |
| (Gain)/Loss in 2011 | 6/30/2011 | 25 | (909,599,635) | (58,831,842) | (916,821,456) | (60,596,797) | (0.465%) |
| (Gain)/Loss | Various | 27 | (328,291,708) | (20,413,246) | (331,748,683) | (21,025,643) | (0.162%) |
| (Gain)/Loss | 6/30/2014 | 28 | 3,957,233,129 | 108,124,214 | 4,141,920,042 | 167,051,911 | 1.283% |
| (Gain)/Loss | 6/30/2015 | 29 | 3,731,760,787 | 52,487,346 | 3,957,222,807 | 108,123,932 | 0.830% |
| (Gain)/Loss | 6/30/2016 | 30 | 4,448,962,030 | 48,306,615 | 4,732,548,818 | 66,563,464 | 0.511% |
| Total | | | \$21,758,972,847 | \$731,366,099 | \$22,632,599,296 | \$967,270,839 | 7.428% |

Liabilities and Rates (continued)

(GAIN)/LOSS ANALYSIS

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

| | |
|---|------------------------|
| 1) Total (Gain)/Loss for the Year | |
| a) Unfunded Accrued Liability (UAL) as of 6/30/15 | \$16,510,729,676 |
| b) Expected Payment on the UAL during 2015-2016 | 423,431,945 |
| c) Interest through 6/30/16 $[0.075 \times (1a) - ((1.075)^{1/2} - 1) \times (1b)]$ | 1,222,713,086 |
| d) Expected UAL before other changes $[(1a) - (1b) + (1c)]$ | \$17,310,010,817 |
| e) Change due to plan changes | — |
| f) Change due to assumptions change | — |
| g) Expected UAL after all other changes $[(1d) + (1e) + (1f)]$ | \$17,310,010,817 |
| h) Actual Unfunded Accrued Liability as of 6/30/16 | 21,758,972,847 |
| i) Total (Gain)/Loss $[(1h) - (1g)]$ | \$4,448,962,030 |
| 2) Contribution (Gain)/Loss for the Year | |
| a) Expected Contribution (Employer and Employee) | \$2,203,020,683 |
| b) Actual Contributions | \$2,287,880,926 |
| c) Contributions (Gain)/Loss $[(2a) - (2b)]$ | (\$84,860,243) |
| 3) Asset (Gain)/Loss for the Year | |
| a) Market Value of Assets as of 06/30/2015 | \$56,814,247,327 |
| b) Prior Fiscal Year Receivables | (97,845,854) |
| c) Current Fiscal Year Receivables | 95,806,080 |
| d) Contributions Received | 2,287,880,926 |
| e) Benefits and Refunds Paid | (3,546,836,597) |
| f) Transfers and Miscellaneous Adjustments | 3,406 |
| g) Expected Interest $[0.075 \times (3a + 3b) + ((1.075)^{1/2} - 1) \times ((3d) + (3e) + (3f))]$ | 4,207,372,885 |
| h) Expected Assets as of 6/30/16 $[(3a) + (3b) + (3c) + (3d) + (3e) + (3f) + (3g)]$ | 59,760,628,173 |
| i) Market Value of Assets as of 6/30/16 | 55,784,854,423 |
| j) Asset (Gain)/Loss $[(3h) - (3i)]$ | \$3,975,773,750 |
| 4) Liability (Gain)/Loss for the Year | |
| a) Total (Gain)/Loss (1i) | \$4,448,962,030 |
| b) Contribution (Gain)/Loss (2c) | (84,860,243) |
| c) Asset (Gain)/Loss (3j) | 3,975,773,750 |
| d) Liability (Gain)/Loss $[(4a) - (4b) - (4c)]$ | \$558,048,523 |

RECONCILIATION OF REQUIRED EMPLOYER CONTRIBUTIONS

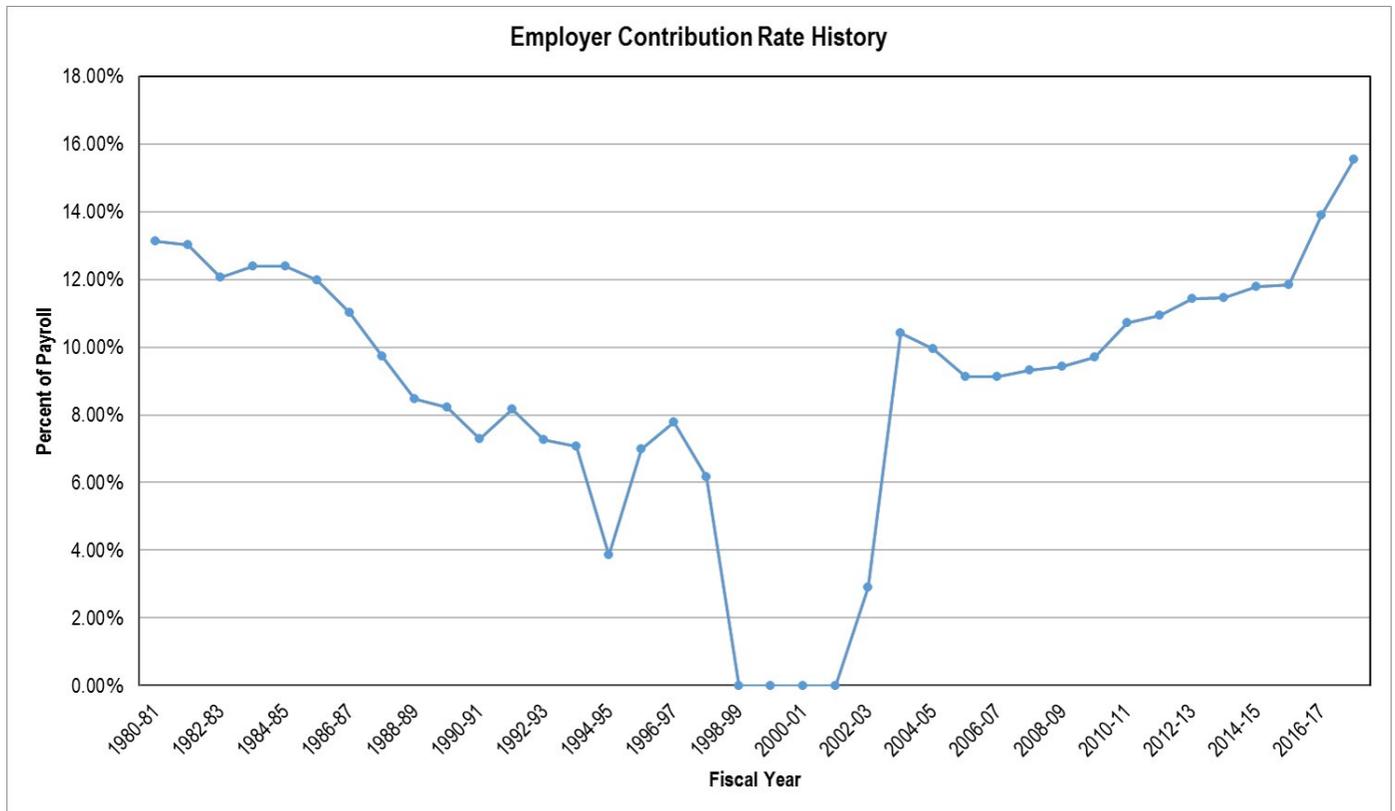
Change in Employer Contribution from 2016-17 to 2017-18

| | Percentage of Projected Payroll | Estimated \$ Based on Projected Payroll |
|---|---------------------------------|---|
| 1) Contribution for 7/1/16-6/30/17 | 13.888% | \$1,680,181,228 |
| 2) Effect of changes since the prior year annual valuation | | |
| a) Effect of unexpected changes in demographics and financial results | 0.372% | \$45,004,767 |
| b) Effect of plan changes | 0.000% | \$0 |
| c) Effect of changes in assumptions/methods | 0.000% | \$0 |
| d) Effect of progression of amortization bases and change in payroll | 1.271% | \$297,230,703 |
| e) Net effect of the changes above [sum of a through d] | 1.643% | \$342,235,470 |
| 3) Contribution for 7/1/17-6/30/18 $[(1) + (2e)]$ | 15.531% | \$2,022,416,698 |

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 | Valuation Date | Employer Normal Cost | Unfunded Liability Contribution | Total Employer Contribution |
|-------------|----------------|----------------------|---------------------------------|-----------------------------|
| 2017-18 | 6/30/2016 | 8.103% | 7.428% | 15.531% |
| 2016-17 | 6/30/2015 | 8.242% | 5.646% | 13.888% |
| 2015-16 | 6/30/2014 | 7.621% | 4.226% | 11.847% |
| 2014-15 | 6/30/2013 | 7.814% | 3.957% | 11.771% |
| 2013-14 | 6/30/2012 | 7.313% | 4.129% | 11.442% |
| 2012-13 | 6/30/2011 | 7.415% | 4.002% | 11.417% |
| 2011-12 | 6/30/2010 | 7.132% | 3.791% | 10.923% |
| 2010-11 | 6/30/2009 | 7.173% | 3.534% | 10.707% |
| 2009-10 | 6/30/2008 | 7.410% | 2.299% | 9.709% |
| 2008-09 | 6/30/2007 | 7.414% | 2.014% | 9.428% |



Liabilities and Rates (continued)

FUNDING HISTORY (Dollars in Millions)

Shown below is the history of funding progress for the plans. 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.

| Valuation Date | Accrued Liabilities | Market Value of Assets (MVA) | Unfunded Liabilities/ (Surplus) | Funded Ratio | Projected Payroll for Contribution | Unfunded/ (Surplus) as a % of Payroll |
|----------------|---------------------|------------------------------|---------------------------------|--------------|------------------------------------|---------------------------------------|
| 6/30/16 | \$77,544 | \$55,785 | \$21,759 | 71.9% | \$13,022 | 167.1% |
| 6/30/15 | 73,325 | 56,814 | 16,511 | 77.5% | 12,098 | 136.5% |
| 6/30/14 | 65,600 | 56,838 | 8,761 | 86.6% | 11,294 | 77.6% |
| 6/30/13 | 61,487 | 49,482 | 12,005 | 80.5% | 10,424 | 115.2% |
| 6/30/12 | 59,439 | 44,854 | 14,585 | 75.5% | 10,242 | 142.4% |
| 6/30/11 | 58,358 | 45,901 | 12,457 | 78.7% | 10,540 | 118.2% |
| 6/30/10 | 55,307 | 38,435 | 16,872 | 69.5% | 11,283 | 149.5% |
| 6/30/09 | 52,493 | 34,146 | 18,347 | 65.0% | 11,110 | 165.1% |
| 6/30/08 | 48,538 | 45,548 | 2,990 | 93.8% | 11,138 | 26.8% |
| 6/30/07 | 44,810 | 48,293 | (3,483) | 107.8% | 10,250 | (34.0%) |
| 6/30/06 | 41,409 | 40,852 | 556 | 98.7% | 9,881 | 5.6% |
| 6/30/05 | 38,368 | 36,898 | 1,469 | 96.2% | 9,223 | 15.9% |
| 6/30/04 | 35,933 | 32,828 | 3,104 | 91.4% | 9,069 | 34.2% |
| 6/30/03 | 33,793 | 28,182 | 5,611 | 83.4% | 9,079 | 61.8% |
| 6/30/02 | 31,271 | 27,690 | 3,581 | 88.5% | 8,344 | 42.9% |
| 6/30/01 | 27,946 | 30,308 | (2,361) | 108.4% | 7,912 | (29.8%) |
| 6/30/00 | 25,474 | 33,295 | (7,821) | 130.7% | 7,053 | (110.9%) |
| 6/30/99 | 21,216 | 30,918 | (9,702) | 145.7% | 5,961 | (162.8%) |
| 6/30/98 | 19,499 | 27,874 | (8,374) | 142.9% | 5,445 | (153.8%) |
| 6/30/97 | 17,583 | 23,499 | (5,916) | 133.6% | 4,907 | (120.5%) |
| 6/30/96 | 17,572 | 19,706 | (2,135) | 112.1% | 5,146 | (41.5%) |
| 6/30/95 | 16,422 | 17,314 | (892) | 105.4% | 5,351 | (16.7%) |
| 6/30/94 | 15,136 | 15,373 | (238) | 101.6% | 5,140 | (4.6%) |
| 6/30/93 | 13,575 | 14,956 | (1,381) | 110.2% | 4,853 | (28.4%) |
| 6/30/92 | 12,856 | 13,816 | (960) | 107.5% | 4,883 | (19.7%) |
| 6/30/91 | 12,022 | 13,301 | (1,298) | 110.8% | 4,850 | (26.8%) |
| 6/30/90 | 11,249 | 9,298 | 1,951 | 82.7% | 4,393 | 44.4% |
| 6/30/89 | 9,941 | 9,926 | 16 | 99.8% | 4,054 | 0.4% |
| 6/30/88 | 9,395 | 8,341 | 1,054 | 88.8% | 3,769 | 28.0% |
| 6/30/87 | 8,583 | 8,174 | 409 | 95.2% | 3,605 | 11.3% |

Risk Analysis

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- 23 VOLATILITY RATIOS

ANALYSIS OF FUTURE INVESTMENT RETURN SCENARIOS

Analysis was performed to determine the effects of various future investment returns on required employer contributions. The projections below provide a range of results based on five investment return scenarios assumed to occur during the next four fiscal years (2016-17, 2017-18, 2018-19 and 2019-20). 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 11.2 percent for fiscal year 2016-17. For fiscal years 2017-18, 2018-19, and 2019-20 each scenario assumes an alternate fixed annual return. The fixed return assumptions for the five scenarios are -3.0 percent, 3.0 percent, 7.0 percent (7.375 percent for 2017-18 and 7.25 percent for 2018-19), 11.0 percent and 17.0 percent.

The alternate investment returns were chosen based on stochastic analysis of possible future investment returns over the four year period ending June 30, 2020. 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.

| Assumed Annual Return From 2017-18 through 2019-20 | Projected Employer Contributions | | | |
|---|----------------------------------|---------|---------|---------|
| | 2018-19 | 2019-20 | 2020-21 | 2021-22 |
| (3.0%) | 17.7% | 20.7% | 24.6% | 27.4% |
| 3.0% | 17.7% | 20.3% | 23.5% | 25.3% |
| Assumed 7.0% | 17.7% | 20.0% | 22.7% | 23.7% |
| 11.0% | 17.7% | 19.8% | 22.0% | 22.3% |
| 17.0% | 17.7% | 19.4% | 20.8% | 19.8% |

Given the temporary suspension of the Risk Mitigation Policy during the period over which the discount rate assumption is being phased down to 7.0 percent, the projections above were performed without reflection of any possible impact of this Policy.

The projected normal cost percentages do reflect that the normal cost will decline over time as new employees are hired into PEPPRA or other lower cost benefit tiers.

ANALYSIS OF DISCOUNT RATE SENSITIVITY

Shown below are various valuation results as of June 30, 2016 assuming alternate discount rates. Results are shown using the current discount rate of 7.5 percent as well as alternate discount rates of 6.0 percent, 7.0 percent, and 8.0 percent. The alternate rate of 7.0 percent was selected since the Board has adopted this rate as the final discount rate at the end of the three year phase-in of the reduction in this assumption. The rates of 6.0 percent and 8.0 percent were selected since they illustrate the impact of a 1 percent increase or decrease to the 7.0 percent assumption. This analysis shows the potential plan impacts if the PERF were to realize investment returns of 6.0 percent, 7.0 percent, or 8.0 percent over the long-term.

This type of analysis gives the reader a sense of the long-term risk to required contributions.

| Sensitivity Analysis | | | | | | |
|------------------------------|----------------------|-------------------------|---------------------|-------------------|----------------------------|---------------|
| As of June 30, 2016 | Employer Normal Cost | Unfunded Liability Rate | Total Employer Rate | Accrued Liability | Unfunded Accrued Liability | Funded Status |
| 7.5% (current discount rate) | 8.103% | 7.428% | 15.531% | \$77,543,827,270 | \$21,758,972,847 | 71.9% |
| 6.0% | 14.1% | 15.4% | 29.5% | \$93,353,878,552 | \$37,569,024,129 | 59.8% |
| 7.0% | 9.8% | 10.1% | 19.9% | \$82,324,166,458 | \$26,539,312,035 | 67.8% |
| 8.0% | 6.6% | 4.8% | 11.4% | \$73,185,030,752 | \$17,400,176,329 | 76.2% |

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. This analysis does not take into consideration the impact of changing the discount rate on the PEPRA member employee contribution rate. Numbers may not add, due to rounding.

Risk Analysis

VOLATILITY RATIOS

The actuarial calculations supplied in this communication are based on a number of assumptions about long-term demographic and economic behavior. Unless these assumptions (terminations, deaths, disabilities, retirements, salary growth, and investment return) are exactly realized each year, there will be differences on a year-to-year basis. The year-to-year differences between actual experience and the assumptions are called actuarial gains and losses and serve to lower or raise 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 (AVR)

Plans that have higher asset-to-payroll ratios experience 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. Shown below is the asset volatility ratio, a measure of the plan's current volatility. It should be noted that this ratio is a measure of the current situation. It increases over time but generally tends to stabilize as the plan matures.

Liability Volatility Ratio (LVR)

Plans that have higher liability-to-payroll ratios experience more volatile employer 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. The asset volatility ratio, described above, will tend to move closer to the liability volatility ratio as the plan matures. Since the liability volatility ratio is a long-term measure, it is shown below at the current discount rate (7.5 percent) as well as the discount rate the Board has adopted to determine the contribution requirement in the June 30, 2019 actuarial valuation (7.00 percent).

Contribution Volatility

| | As of June 30, 2016 |
|---|---------------------|
| 1) Market Value of Assets without Receivables | \$55,689,048,343 |
| 2) Payroll | \$12,274,172,160 |
| 3) Asset Volatility Ratio (AVR) [(1) / (2)] | 4.5 |
| 4) Accrued Liability (7.5% discount rate) | \$77,543,827,270 |
| 5) Liability Volatility Ratio (LVR) [(4) / (2)] | 6.3 |
| 6) Accrued Liability (7.00% discount rate) | \$82,324,166,458 |
| 7) Projected Liability Volatility Ratio [(6) / (2)] | 6.7 |

Appendix A

Statement of Actuarial Methods and Assumptions

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 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. Normal costs are applicable for active members.

Amortization of The Unfunded Actuarial Accrued Liability

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

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.

ACTUARIAL METHODS (CONTINUED)

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.

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.

PEPRA Normal Cost Rate Methodology

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

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

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

The total PEPRA normal cost is based on the active PEPRA population in the Schools Pool.

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

ACTUARIAL METHODS (CONTINUED)

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. Each year, the impact of any changes in the benefit limitation since the prior valuation is included and amortized as part of the actuarial gain or loss base.

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.

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 asset allocation that reduced the expected volatility of returns. The adopted asset allocation was expected to have a long-term blended return that continued to support a discount rate assumption of 7.5 percent at that time. The Board also approved several changes to the demographic assumptions that more closely aligned 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. These new actuarial assumptions were first used in the June 30, 2015 valuation to set the Fiscal Year 2016-17 contribution for the Schools Pool employers.

On December 21, 2016, the CalPERS Board of Administration lowered the discount rate from 7.50 percent to 7.00 percent using a three year phase-in beginning with the June 30, 2017 actuarial valuations for the Schools Pool. The minimum employer contributions for Fiscal Year 2018-19 determined in the June 30, 2017 valuation will be calculated using a discount rate of 7.375 percent. The projected employer contributions are calculated assuming that the discount rate will be lowered to 7.25 percent for June 30, 2018 and 7.00 percent the following year as adopted by the Board. The decision to reduce the discount rate was primarily based on reduced capital market assumptions provided by external investment consultants and CalPERS investment staff. The specific decision adopted by the Board reflected recommendations from CalPERS staff and additional input from employer and employee stakeholder groups. Based on the investment allocation adopted by the Board and capital market assumptions, the reduced discount rate schedule provides a more realistic assumption for the long term investment return of the fund.

Notwithstanding the Board's decision to phase into a 7.0 percent discount rate, subsequent analysis of the expected investment return of CalPERS assets or changes to the investment allocation may result in a change to this three year discount rate schedule. A comprehensive analysis of all actuarial assumptions and methods including the discount rate will be conducted in 2017.

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

Economic Assumptions

Discount Rate

7.5% compounded annually (net of administrative expenses).

The prescribed discount rate will reduce to 7.375 percent compounded annually (net of expenses) as of June 30, 2017, 7.25 percent compounded annually (net of expenses) as of June 30, 2018, and 7.0 percent compounded annually (net of expenses) as of June 30, 2019.

Salary Growth

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

| Duration of Service | 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-Industrial Disability (Not Job-Related) | | Industrial Disability (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 50 | Age 51 | Age 52 | Age 53 and above |
|-------------|--------|--------|--------|------------------|
| Load Factor | 190% | 110% | 110% | 100% |

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

Demographic Assumptions (CONTINUED)

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 |
| 5 | 0.1730 | 0.1627 | 0.1525 | 0.1422 | 0.1319 |
| 6 | 0.1585 | 0.1482 | 0.1379 | 0.1277 | 0.1174 |
| 7 | 0.1440 | 0.1336 | 0.1234 | 0.1131 | 0.1028 |
| 8 | 0.1295 | 0.1192 | 0.1089 | 0.0987 | 0.0884 |
| 9 | 0.1149 | 0.1046 | 0.0944 | 0.0841 | 0.0738 |
| 10 | 0.0278 | 0.0249 | 0.0221 | 0.0192 | 0.0164 |
| 14 | 0.0172 | 0.0147 | 0.0122 | 0.0098 | 0.0074 |
| 15 | 0.0115 | 0.0094 | 0.0074 | 0.0053 | 0.0032 |
| 19 | 0.0073 | 0.0055 | 0.0038 | 0.0020 | 0.0002 |
| 20 | 0.0037 | 0.0023 | 0.0010 | 0.0002 | 0.0002 |
| 24 | 0.0015 | 0.0003 | 0.0002 | 0.0002 | 0.0002 |
| 25 | 0.1730 | 0.1627 | 0.1525 | 0.1422 | 0.1319 |
| 29 | 0.1585 | 0.1482 | 0.1379 | 0.1277 | 0.1174 |
| 30 | 0.1440 | 0.1336 | 0.1234 | 0.1131 | 0.1028 |

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.

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

Demographic Assumptions (CONTINUED)

Non-Industrial Death and Disability (Not Job-Related)

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

| Attained Age | Non-Industrial Death (Not Job-Related) | | Non-Industrial Disability (Not Job-Related) | |
|--------------|---|---------|--|---------|
| | Male | Female | Male | Female |
| 20 | 0.00031 | 0.00020 | 0.00028 | 0.00026 |
| 25 | 0.00040 | 0.00023 | 0.00010 | 0.00012 |
| 30 | 0.00049 | 0.00025 | 0.00011 | 0.00016 |
| 35 | 0.00057 | 0.00035 | 0.00053 | 0.00043 |
| 40 | 0.00075 | 0.00050 | 0.00149 | 0.00101 |
| 45 | 0.00106 | 0.00071 | 0.00295 | 0.00188 |
| 50 | 0.00155 | 0.00100 | 0.00388 | 0.00244 |
| 55 | 0.00228 | 0.00138 | 0.00358 | 0.00205 |
| 60 | 0.00308 | 0.00182 | 0.00306 | 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 | 0.0050 | 0.0090 | 0.0130 | 0.0150 | 0.0160 | 0.0180 | 0.0220 |
| 52 | 0.0060 | 0.0120 | 0.0170 | 0.0200 | 0.0220 | 0.0250 | 0.0290 |
| 54 | 0.0120 | 0.0240 | 0.0330 | 0.0390 | 0.0440 | 0.0490 | 0.0570 |
| 56 | 0.0200 | 0.0390 | 0.0550 | 0.0650 | 0.0720 | 0.0810 | 0.0950 |
| 58 | 0.0250 | 0.0500 | 0.0700 | 0.0830 | 0.0920 | 0.1030 | 0.1210 |
| 60 | 0.0370 | 0.0730 | 0.1020 | 0.1210 | 0.1340 | 0.1500 | 0.1760 |
| 62 | 0.0760 | 0.1510 | 0.2120 | 0.2500 | 0.2780 | 0.3110 | 0.3660 |
| 65 | 0.0910 | 0.1800 | 0.2510 | 0.2970 | 0.3310 | 0.3700 | 0.4350 |
| 70 | 0.0660 | 0.1310 | 0.1830 | 0.2160 | 0.2410 | 0.2700 | 0.3160 |
| 75 | 0.0550 | 0.1080 | 0.1510 | 0.1790 | 0.1990 | 0.2230 | 0.2620 |

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 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 52 | 0.0040 | 0.0080 | 0.0120 | 0.0140 | 0.0150 | 0.0180 | 0.0200 |
| 54 | 0.0080 | 0.0170 | 0.0230 | 0.0270 | 0.0310 | 0.0340 | 0.0400 |
| 56 | 0.0140 | 0.0270 | 0.0390 | 0.0460 | 0.0500 | 0.0570 | 0.0670 |
| 58 | 0.0190 | 0.0380 | 0.0530 | 0.0620 | 0.0690 | 0.0770 | 0.0910 |
| 60 | 0.0300 | 0.0580 | 0.0820 | 0.0970 | 0.1070 | 0.1200 | 0.2930 |
| 62 | 0.0610 | 0.1210 | 0.1700 | 0.2000 | 0.2220 | 0.2490 | 0.2930 |
| 65 | 0.0820 | 0.1620 | 0.2260 | 0.2670 | 0.2980 | 0.3330 | 0.3920 |
| 70 | 0.0660 | 0.1310 | 0.1830 | 0.2160 | 0.2410 | 0.2700 | 0.3160 |
| 75 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |

Miscellaneous Loading Factors

Credit for Unused Sick Leave

Total years of service is 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

The following is a description of the principal 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.

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

- The *benefit factor* for classic members 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 Age | 2% at 55 Factor | 2% at 62 Factor |
|----------------|-----------------|-----------------|
| 50 | 1.100% | N/A |
| 51 | 1.280% | N/A |
| 52 | 1.460% | 1.000% |
| 53 | 1.640% | 1.100% |
| 54 | 1.820% | 1.200% |
| 55 | 2.000% | 1.300% |
| 56 | 2.064% | 1.400% |
| 57 | 2.126% | 1.500% |
| 58 | 2.188% | 1.600% |
| 59 | 2.250% | 1.700% |
| 60 | 2.314% | 1.800% |
| 61 | 2.376% | 1.900% |
| 62 | 2.438% | 2.000% |
| 63 | 2.500% | 2.100% |
| 64 | 2.500% | 2.200% |
| 65 | 2.500% | 2.300% |
| 66 | 2.500% | 2.400% |
| 67 & Up | 2.500% | 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. PEPRAs 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 2016 and for those employees that do not participate in social security the cap for 2016 is \$140,424, the equivalent of 120 percent of the 2016 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 PEPRAs 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. PEPRAs 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. This benefit will not be discontinued in the event the spouse remarries.

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 PEPRA school members, and has at least five 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 6.5 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

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 TEST 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 plans,
- 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

| | Active | Transfer | Terminated | Receiving | Total |
|--------------------------------------|----------------|---------------|----------------|----------------|----------------|
| As of June 30, 2015 | 297,951 | 18,700 | 180,266 | 212,940 | 709,857 |
| Retirements | (8,590) | (961) | (1,306) | 10,812 | (45) |
| Industrial Disabilities | (2) | (38) | (1) | 45 | 4 |
| Ordinary Disabilities | (175) | (18) | (64) | 298 | 41 |
| Deaths ¹ | (375) | (22) | (301) | (7,346) | (8,044) |
| New Survivors | n/a | n/a | n/a | 1,397 | 1,397 |
| Non-vested Terminations ² | (10,073) | (223) | 10,296 | — | — |
| Vested Terminations | (3,674) | (236) | 3,912 | (2) | — |
| Refunds of Contributions | (1,739) | (131) | (4,290) | — | (6,160) |
| Transfers | (1,225) | 2,190 | (938) | (27) | — |
| Redeposits/Rehires | 3,784 | (267) | (3,469) | (48) | — |
| First Year in Status | 33,917 | 98 | 2,027 | 882 | 36,924 |
| Data Corrections ³ | (2,445) | 221 | 1,485 | (127) | (866) |
| As of June 30, 2016 | 307,354 | 19,313 | 187,617 | 218,824 | 733,108 |

(1) Includes both deaths without survivors and deaths with survivors receiving a benefit

(2) Includes non-vested terminated participants with employee contributions left in the plan.

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

ACTIVE MEMBERS

Distribution of Active Members By Age and Service

| Attained Age | Years of Service at Valuation Date | | | | | | Total | Payroll |
|--------------|------------------------------------|---------------|---------------|---------------|---------------|---------------|----------------|-------------------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20 - 24 | 25+ | | |
| 15 - 24 | 11,093 | 14 | — | — | — | — | 11,107 | \$283,696,372 |
| 25 - 29 | 22,000 | 2,205 | 59 | — | — | — | 24,264 | 736,214,872 |
| 30 - 34 | 18,279 | 7,150 | 2,019 | 81 | — | — | 27,529 | 1,007,359,467 |
| 35 - 39 | 15,732 | 7,593 | 5,298 | 1,755 | 50 | — | 30,428 | 1,223,511,433 |
| 40 - 44 | 15,217 | 7,358 | 6,031 | 4,074 | 849 | 28 | 33,557 | 1,382,059,774 |
| 45 - 49 | 16,071 | 9,044 | 6,910 | 5,177 | 2,240 | 930 | 40,372 | 1,668,786,721 |
| 50 - 54 | 14,774 | 10,343 | 8,972 | 6,728 | 3,288 | 3,506 | 47,611 | 2,032,103,870 |
| 55 - 59 | 11,722 | 9,337 | 9,416 | 7,801 | 3,927 | 4,989 | 47,192 | 2,050,802,001 |
| 60 - 64 | 6,453 | 5,813 | 6,397 | 5,806 | 3,214 | 3,715 | 31,398 | 1,346,852,306 |
| 65 and Over | 3,088 | 2,858 | 2,734 | 2,302 | 1,348 | 1,566 | 13,896 | 542,785,345 |
| Total | 134,429 | 61,715 | 47,836 | 33,724 | 14,916 | 14,734 | 307,354 | \$12,274,172,160 |

Distribution of Average Annual Salaries By Age and Service

| Attained Age | Years of Service at Valuation Date | | | | | | Average Salary |
|----------------|------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20 - 24 | 25+ | |
| 15 - 24 | \$24,894 | \$39,802 | \$0 | \$0 | \$0 | \$0 | \$25,542 |
| 25 - 29 | 28,754 | 37,817 | 47,168 | — | — | — | 30,342 |
| 30 - 34 | 32,508 | 40,350 | 49,682 | 59,897 | — | — | 36,593 |
| 35 - 39 | 32,593 | 41,533 | 50,141 | 59,843 | 78,881 | — | 40,210 |
| 40 - 44 | 31,231 | 40,106 | 48,902 | 60,464 | 72,827 | 63,254 | 41,185 |
| 45 - 49 | 30,084 | 37,845 | 46,076 | 61,600 | 74,055 | 70,021 | 41,335 |
| 50 - 54 | 29,331 | 35,593 | 44,145 | 61,856 | 73,261 | 75,936 | 42,681 |
| 55 - 59 | 28,792 | 34,232 | 42,324 | 60,719 | 74,398 | 70,157 | 43,457 |
| 60 - 64 | 27,571 | 32,577 | 40,508 | 59,172 | 65,453 | 68,999 | 42,896 |
| 65 and Over | 22,680 | 29,564 | 38,591 | 57,958 | 65,594 | 67,365 | 39,061 |
| Average | \$29,734 | \$36,943 | \$44,422 | \$60,541 | \$71,581 | \$70,620 | \$39,935 |

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.

TERMINATED AND TRANSFERRED PARTICIPANTS

Distribution by By Age and Service - Transfers to Other CalPERS Plans

| Attained Age | Years of Service at Valuation Date | | | | | | Total | Average Salary |
|--------------|------------------------------------|--------------|------------|------------|-----------|-----------|---------------|-----------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20 - 24 | 25+ | | |
| 15 - 24 | 107 | 0 | 0 | 0 | 0 | 0 | 107 | \$36,219 |
| 25 - 29 | 859 | 23 | 1 | — | — | — | 883 | 44,261 |
| 30 - 34 | 1,561 | 169 | 9 | — | — | — | 1,739 | 55,527 |
| 35 - 39 | 2,117 | 296 | 63 | 3 | 1 | — | 2,480 | 63,002 |
| 40 - 44 | 2,009 | 348 | 100 | 16 | 1 | — | 2,474 | 67,079 |
| 45 - 49 | 2,098 | 461 | 134 | 44 | 7 | 2 | 2,746 | 68,496 |
| 50 - 54 | 2,218 | 541 | 189 | 83 | 28 | 6 | 3,065 | 67,882 |
| 55 - 59 | 2,096 | 516 | 205 | 66 | 20 | 9 | 2,912 | 63,102 |
| 60 - 64 | 1,469 | 373 | 109 | 50 | 12 | 7 | 2,020 | 60,066 |
| 65 and Over | 682 | 142 | 49 | 9 | 5 | — | 887 | 56,194 |
| Total | 15,216 | 2,869 | 859 | 271 | 74 | 24 | 19,313 | \$62,797 |

Distribution by By Age and Service - Terminated Participants With Funds on Deposit

| Attained Age | Years of Service at Valuation Date | | | | | | Total | Average Salary |
|--------------|------------------------------------|---------------|--------------|------------|-----------|-----------|----------------|-----------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20 - 24 | 25+ | | |
| 15 - 24 | 2,704 | 0 | 0 | 0 | 0 | 0 | 2,704 | \$27,117 |
| 25 - 29 | 13,178 | 195 | — | — | — | — | 13,373 | 29,295 |
| 30 - 34 | 20,667 | 1,321 | 76 | — | — | — | 22,064 | 30,950 |
| 35 - 39 | 23,978 | 1,860 | 347 | 10 | 1 | — | 26,196 | 31,307 |
| 40 - 44 | 21,708 | 1,967 | 475 | 30 | 1 | 1 | 24,182 | 31,747 |
| 45 - 49 | 20,083 | 2,476 | 741 | 44 | 2 | — | 23,346 | 32,586 |
| 50 - 54 | 20,013 | 3,006 | 1,056 | 123 | 7 | 5 | 24,210 | 32,261 |
| 55 - 59 | 19,718 | 2,759 | 795 | 171 | 22 | 1 | 23,466 | 31,479 |
| 60 - 64 | 15,566 | 1,889 | 509 | 133 | 27 | 3 | 18,127 | 30,711 |
| 65 and Over | 8,815 | 867 | 207 | 46 | 10 | 4 | 9,949 | 29,606 |
| Total | 166,430 | 16,340 | 4,206 | 557 | 70 | 14 | 187,617 | \$31,274 |

RETIRED MEMBERS AND BENEFICIARIES

Number of Retirees and Beneficiaries - By Age and Retirement Type

| Attained Age | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|--------------|--------------------|---------------------------|-----------------------|----------------------|------------------|------------------------|----------------|
| Under 30 | — | — | — | 2 | 1 | 201 | 204 |
| 30 - 34 | — | 5 | 4 | — | — | 132 | 141 |
| 35 - 39 | — | 50 | 9 | — | — | 170 | 229 |
| 40 - 44 | — | 113 | 39 | 3 | — | 200 | 355 |
| 45 - 49 | — | 315 | 62 | 14 | — | 333 | 724 |
| 50 - 54 | 1,280 | 869 | 88 | 36 | 2 | 579 | 2,854 |
| 55 - 59 | 9,869 | 1,736 | 136 | 107 | 2 | 899 | 12,749 |
| 60 - 64 | 28,335 | 2,114 | 180 | 152 | 2 | 1,538 | 32,321 |
| 65 - 69 | 45,069 | 2,092 | 192 | 201 | 1 | 2,455 | 50,010 |
| 70 - 74 | 34,808 | 1,756 | 104 | 116 | 2 | 2,852 | 39,638 |
| 75 - 79 | 24,537 | 1,402 | 55 | 93 | 4 | 3,390 | 29,481 |
| 80 - 84 | 17,948 | 779 | 22 | 56 | 3 | 3,881 | 22,689 |
| 85 and Over | 19,704 | 713 | 10 | 45 | — | 6,957 | 27,429 |
| Total | 181,550 | 11,944 | 901 | 825 | 17 | 23,587 | 218,824 |

Annual Allowance Amounts for Retirees and Beneficiaries - By Age and Retirement Type

Annual Amounts Including PPPA Payments

| Attained Age | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|--------------|------------------------|---------------------------|-----------------------|----------------------|------------------|------------------------|------------------------|
| Under 30 | \$0 | \$0 | \$0 | \$16,183 | \$4 | \$975,281 | \$991,468 |
| 30 - 34 | — | 34,566 | 337 | — | — | 824,709 | 859,612 |
| 35 - 39 | — | 486,494 | 2,872 | — | — | 1,219,926 | 1,709,292 |
| 40 - 44 | — | 1,100,707 | 19,905 | 31,078 | — | 1,762,698 | 2,914,388 |
| 45 - 49 | — | 3,303,419 | 66,396 | 139,704 | — | 2,653,403 | 6,162,922 |
| 50 - 54 | 10,921,635 | 10,167,926 | 135,720 | 313,219 | 1,090 | 4,902,063 | 26,441,653 |
| 55 - 59 | 163,125,339 | 21,009,232 | 276,931 | 1,057,969 | 1,021 | 9,097,971 | 194,568,463 |
| 60 - 64 | 546,309,901 | 25,831,505 | 379,206 | 1,304,084 | 3,262 | 17,555,531 | 591,383,489 |
| 65 - 69 | 877,085,040 | 24,567,039 | 542,573 | 1,665,798 | 1,219 | 27,745,568 | 931,607,237 |
| 70 - 74 | 644,439,165 | 19,865,430 | 383,909 | 935,004 | 3,476 | 32,912,394 | 698,539,378 |
| 75 - 79 | 407,300,357 | 14,922,366 | 100,265 | 651,957 | 2,445 | 37,350,908 | 460,328,298 |
| 80 - 84 | 255,731,407 | 7,319,443 | 142,776 | 405,096 | 2,590 | 39,978,068 | 303,579,380 |
| 85 and Over | 231,772,392 | 5,939,984 | 8,165 | 324,856 | — | 60,032,156 | 298,077,553 |
| Total | \$3,136,685,236 | \$134,548,111 | \$2,059,055 | \$6,844,948 | \$15,107 | \$237,010,676 | \$3,517,163,133 |

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.

Appendix C - Participant Data (continued)

RETIRED MEMBERS AND BENEFICIARIES (CONTINUED)

Number of Retirees and Beneficiaries - By Years Retired and Retirement Type

| Years Retired | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|---------------|--------------------|---------------------------|-----------------------|----------------------|------------------|------------------------|----------------|
| Under 5 Years | 49,094 | 1,662 | 184 | 239 | 1 | 8,294 | 59,474 |
| 5 - 9 | 43,857 | 1,665 | 146 | 233 | 1 | 5,993 | 51,895 |
| 10 - 14 | 35,491 | 2,259 | 210 | 184 | 2 | 4,117 | 42,263 |
| 15 - 19 | 21,595 | 2,488 | 127 | 75 | 1 | 2,504 | 26,790 |
| 20 - 24 | 15,470 | 1,937 | 103 | 39 | 1 | 1,488 | 19,038 |
| 25 - 29 | 9,052 | 1,019 | 53 | 35 | 6 | 779 | 10,944 |
| 30 and Over | 6,993 | 914 | 78 | 20 | 5 | 410 | 8,420 |
| Total | 181,552 | 11,944 | 901 | 825 | 17 | 23,587 | 218,824 |

Annual Allowance Amounts for Retirees and Beneficiaries - By Years Retired and Retirement Type

Annual Amounts Including PPPA Payments

| Years Retired | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|---------------|------------------------|---------------------------|-----------------------|----------------------|------------------|------------------------|------------------------|
| Under 5 Years | \$951,061,835 | \$20,508,950 | \$563,323 | \$2,255,010 | \$4 | \$91,549,899 | \$1,065,939,021 |
| 5 - 9 | 867,657,399 | 20,882,468 | 444,654 | 2,001,097 | 827 | 61,788,777 | 952,775,222 |
| 10 - 14 | 652,997,546 | 28,730,398 | 604,649 | 1,413,876 | 840 | 40,954,252 | 724,701,561 |
| 15 - 19 | 319,579,172 | 27,625,951 | 176,456 | 505,669 | 3,471 | 21,982,336 | 369,873,055 |
| 20 - 24 | 198,309,803 | 20,515,014 | 178,184 | 247,306 | 2,459 | 12,114,676 | 231,367,442 |
| 25 - 29 | 96,882,618 | 9,834,663 | 66,619 | 277,736 | 5,418 | 5,935,586 | 113,002,640 |
| 30 and Over | 50,196,863 | 6,450,667 | 25,170 | 144,254 | 2,088 | 2,685,150 | 59,504,192 |
| Total | \$3,136,685,236 | \$134,548,111 | \$2,059,055 | \$6,844,948 | \$15,107 | \$237,010,676 | \$3,517,163,133 |

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.

Appendix C - Participant Data (continued)

RETIRED MEMBERS AND BENEFICIARIES (CONTINUED)

Number Counts and Benefits - By Year of Retirement

| Year Retired | Total Retirement | Total Benefits | Average Benefits |
|-----------------|------------------|------------------------|------------------|
| 2016 | 4,875 | \$87,613,812 | \$17,972 |
| 2015 | 11,531 | 230,812,800 | 20,017 |
| 2014 | 10,799 | 206,191,177 | 19,094 |
| 2013 | 10,341 | 188,965,282 | 18,273 |
| 2012 | 10,596 | 195,472,888 | 18,448 |
| 2011 | 10,324 | 192,523,857 | 18,648 |
| 2010 | 11,148 | 217,999,016 | 19,555 |
| 2009 | 10,256 | 203,639,294 | 19,856 |
| 2008 | 8,419 | 160,466,767 | 19,060 |
| 2007 | 8,086 | 148,727,835 | 18,393 |
| 2006 | 8,380 | 143,925,290 | 17,175 |
| 2005 | 8,568 | 145,348,025 | 16,964 |
| 2004 | 8,820 | 150,720,213 | 17,088 |
| 2003 | 9,216 | 168,775,846 | 18,313 |
| 2002 | 7,138 | 127,658,895 | 17,884 |
| 2001 | 6,315 | 110,249,333 | 17,458 |
| 2000 | 7,921 | 131,398,369 | 16,589 |
| 1999 | 4,467 | 54,130,501 | 12,118 |
| 1998 | 5,337 | 66,621,207 | 12,483 |
| 1997 | 4,963 | 58,676,048 | 11,823 |
| 1996 | 4,714 | 56,040,366 | 11,888 |
| 1995 | 4,822 | 57,307,765 | 11,885 |
| 1994 | 4,337 | 51,901,985 | 11,967 |
| 1993 | 4,267 | 53,407,024 | 12,516 |
| 1992 | 4,047 | 49,542,986 | 12,242 |
| 1991 | 3,698 | 44,083,439 | 11,921 |
| 1990 | 3,119 | 33,591,635 | 10,770 |
| 1989 | 2,896 | 30,362,598 | 10,484 |
| 1988 | 2,642 | 26,691,690 | 10,103 |
| 1987 | 2,323 | 21,610,553 | 9,303 |
| 1986 | 2,079 | 18,158,738 | 8,734 |
| 1985 or earlier | 12,380 | 84,547,899 | 6,829 |
| Total | 218,824 | \$3,517,163,133 | \$16,073 |

(1) The number for 2016 are for the first 6 months of the calendar year only.

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.

Appendix D

Normal Cost Information

NORMAL COST CHART

The normal cost is determined using the Entry Age 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 | 12.9% | 6.0% | — | 6.0% | 6.9% |
| Schools 2% @ 55 - 1 Year FAC | 15.4% | 7.0% | — | 7.0% | 8.4% |

(1) Employee contribution rates are based on rates in effect at the valuation date.

DEVELOPMENT OF PEPRA MEMBER CONTRIBUTION RATES

The table below shows the determination of the Member contribution rate based on 50 percent of the Total Normal Cost on June 30, 2016.

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

| Plan | Basis for Current Rate | | Effective July 1, 2017 | | | |
|---------|--------------------------------|-------------|--------------------------------|--------|---------------|-------------|
| | Total Normal Cost ¹ | Member Rate | Total Normal Cost ² | Change | Change Needed | Member Rate |
| Schools | 11.85% | 6.00% | 12.91% | 1.06% | Yes | 6.50% |

(1) As of June 30, 2012 valuation date

(2) As of June 30, 2016 valuation date

Appendix E

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.

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 or risk pool. In most cases, this is the same as the date of hire.

(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 is at 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.)

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.

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

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

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

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

PEPPRA: The California Public Employees' Pension Reform Act of 2013

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 PEPPRA, 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.

Actuarial Office
P.O. Box 942709
Sacramento, CA 94229-2709
TTY - (877) 249-7442
(888) 225-7377
FAX (916) 795-2744

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