California Public Employees' Retirement System
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**October 2014**

**MISCELLANEOUS PLAN OF THE COUNTY OF RIVERSIDE (CalPERS ID: 5982690295)**
**Annual Valuation Report as of June 30, 2013**

Dear Employer,

As an attachment to this letter, you will find a copy of the June 30, 2013 actuarial valuation report of your pension plan. Your 2013 actuarial valuation report contains important actuarial information about your pension plan at CalPERS. Your CalPERS staff actuary, whose signature appears in the Actuarial Certification Section on page 1, is available to discuss the report with you after October 31, 2014.

## Future Contribution Rates

The exhibit below displays the Minimum Employer Contribution Rate for fiscal year 2015-16 and a projected contribution rate for 2016-17, before any cost sharing. The projected rate for 2016-17 is based on the most recent information available, including an estimate of the investment return for fiscal year 2013-14, namely 18 percent, and the impact of the actuarial assumptions adopted by the CalPERS Board in February 2014 that will impact employer rates for the first time in fiscal year 2016-17. For a projection of employer rates beyond 2016-17, please refer to the "Projected Rates" in the "Risk Analysis" section, which includes rate projections through 2020-21 under a variety of investment return scenarios. Please disregard any projections that we may have provided you in the past.

| Fiscal Year | Employer Contribution Rate |
|---|---|
| 2015-16 | 15.429% |
| 2016-17 | 17.0% (projected) |

Member contributions other than cost sharing (whether paid by the employer or the employee) are in addition to the above rates. **The employer contribution rates in this report do not reflect any cost sharing arrangement you may have with your employees.**

The estimate for 2016-17 also assumes that there are no future contract amendments and no liability gains or losses (such as larger than expected pay increases, more retirements than expected, etc.). This is a very important assumption because these gains and losses do occur and can have a significant impact on your contribution rate. Even for the largest plans, such gains and losses often cause a change in the employer's contribution rate of one or two percent of payroll and may be even larger in some less common instances. These gains and losses cannot be predicted in advance so the projected employer contribution rates are just estimates. Your actual rate for 2016-17 will be provided in next year's report.

## Changes since the Prior Year's Valuation

On January 1, 2013, the Public Employees' Pension Reform Act of 2013 (PEPRA) took effect. The impact of the PEPRA changes are included in the rates and the benefit provision listings of the June 30, 2013 valuation for the 2015-16 rates. For more information on PEPRA, please refer to the CalPERS website.

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, 2013 valuations that set the 2015-16 rates, CalPERS will no longer use an actuarial value of assets and will employ an amortization and smoothing policy that will pay for all gains and losses over a fixed 30-year period with the increases or decreases in the rate spread directly over a 5-year period.

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

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

Further descriptions of general changes are included in the "Highlights and Executive Summary" section and in Appendix A, "Actuarial Methods and Assumptions." The effect of the changes on your rate is included in the "Reconciliation of Required Employer Contributions."

We understand that you might have a number of questions about these results. While we are very interested in discussing these results with your agency, in the interest of allowing us to give every public agency their results, we ask that you wait until after October 31 to contact us with actuarial questions. If you have other questions, you may call the Customer Contact Center at (888)-CalPERS or (**888-225-7377**).

Sincerely,

ALAN MILLIGAN
Chief Actuary

# ACTUARIAL VALUATION

**as of June 30, 2013**

# for the
# MISCELLANEOUS PLAN
# of the
# COUNTY OF RIVERSIDE

**(CalPERS ID: 5982690295)**

## REQUIRED CONTRIBUTIONS
## FOR FISCAL YEAR
## July 1, 2015 – June 30, 2016

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# ACTUARIAL CERTIFICATION

To the best of our knowledge, this report is complete and accurate and contains sufficient information to disclose, fully and fairly, the funded condition of the MISCELLANEOUS PLAN OF THE COUNTY OF RIVERSIDE. This valuation is based on the member and financial data as of June 30, 2013 provided by the various CalPERS databases and the benefits under this plan with CalPERS as of the date this report was produced. It is our opinion that the valuation has been performed in accordance with generally accepted actuarial principles, in accordance with standards of practice prescribed by the Actuarial Standards Board, and that 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 is an actuary for CalPERS, who is a member of the American Academy of Actuaries and the Society of Actuaries and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

TODD TAUZER, ASA, CERA, MAAA
Associate Pension Actuary, CalPERS

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# HIGHLIGHTS AND EXECUTIVE SUMMARY

- **INTRODUCTION**
- **PURPOSE OF THE REPORT**
- **REQUIRED EMPLOYER CONTRIBUTION**
- **PLAN'S FUNDED STATUS**
- **COST**
- **CHANGES SINCE THE PRIOR YEAR'S VALUATION**
- **SUBSEQUENT EVENTS**

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# Introduction

This report presents the results of the June 30, 2013 actuarial valuation of the MISCELLANEOUS PLAN OF THE COUNTY OF RIVERSIDE of the California Public Employees' Retirement System (CalPERS). This actuarial valuation sets the fiscal year 2015-16 required employer contribution rates.

On January 1, 2013, the Public Employees' Pension Reform Act of 2013 (PEPRA) took effect. The impact of most of the PEPRA changes are included in the rates and the benefit provision listings of the June 30, 2013 valuation, which sets the 2015-16 contribution rates. For more information on PEPRA, please refer to the CalPERS website.

On April 17, 2013, the CalPERS Board of Administration approved a recommendation to change the CalPERS amortization and smoothing policies. Prior to this change, CalPERS employed an amortization and smoothing policy, which spread investment returns over a 15-year period while experience gains and losses were amortized over a rolling 30-year period. Effective with the June 30, 2013 valuations, CalPERS will no longer use an actuarial value of assets and will employ an amortization and smoothing policy that will spread rate increases or decreases over a 5-year period, and will amortize all experience gains and losses over a fixed 30-year period. The new amortization and smoothing policy is used in this valuation.

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

# Purpose of the Report

The actuarial valuation was prepared by the CalPERS Actuarial Office using data as of June 30, 2013. The purpose of the report is to:

- Set forth the assets and accrued liabilities of this plan as of June 30, 2013;
- Determine the required employer contribution rate for the fiscal year July 1, 2015 through June 30, 2016;
- Provide actuarial information as of June 30, 2013 to the CalPERS Board of Administration and other interested parties; and to
- Provide pension information as of June 30, 2013 to be used in financial reports subject to Governmental Accounting Standards Board (GASB) Statement Number 27 for a Single Employer Defined Benefit Pension Plan.

**California Actuarial Advisory Panel Recommendations**

This report includes all the basic disclosure elements as described in the *Model Disclosure Elements for Actuarial Valuation Reports* recommended in 2011 by the California Actuarial Advisory Panel (CAAP), with the exception of including the original base amounts of the various components of the unfunded liability in the Schedule of Amortization Bases shown on page 19.

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

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

The use of this report for any other purposes may be inappropriate. In particular, this report does not contain information applicable to alternative benefit costs. The employer should contact their actuary before disseminating any portion of this report for any reason that is not explicitly described above.

# Required Employer Contribution

| | | Fiscal Year 2014-15 | | Fiscal Year 2015-16 |
|---|---|---|---|---|
| **Actuarially Determined Employer Contributions** | | | | |
| 1. Contribution in Projected Dollars | | | | |
| a) Total Normal Cost | $ | 165,493,790 | $ | 169,204,807 |
| b) Employee Contribution[1] | | 70,979,443 | | 72,083,101 |
| c) Employer Normal Cost [(1a) – (1b)] | | 94,514,347 | | 97,121,706 |
| d) Unfunded Liability Contribution | | 38,256,546 | | 47,296,668 |
| e) Required Employer Contribution [(1c) + (1d)] | $ | 132,770,893 | $ | 144,418,374 |
| Projected Annual Payroll for Contribution Year | $ | 913,976,858 | $ | 936,022,607 |
| 2. Contribution as a Percentage of Payroll | | | | |
| a) Total Normal Cost | | 18.107% | | 18.077% |
| b) Employee Contribution[1] | | 7.766% | | 7.701% |
| c) Employer Normal Cost [(2a) – (2b)] | | 10.341% | | 10.376% |
| d) Unfunded Liability Rate | | 4.186% | | 5.053% |
| e) Required Employer Rate [(2c) + (2d)] | | 14.527% | | 15.429% |
| **Minimum Employer Contribution Rate[2]** | | **14.527%** | | **15.429%** |
| Annual Lump Sum Prepayment Option[3] | $ | 128,055,620 | $ | 139,289,449 |

[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 normal cost. A development of PEPRA member contribution rates can be found in Appendix D. Employee cost sharing is not shown in this report.

[2]The Minimum Employer Contribution Rate under PEPRA is the greater of the required employer rate or the employer normal cost.

[3]Payment must be received by CalPERS before the first payroll reported to CalPERS of the new fiscal year and after June 30. If there is contractual cost sharing or other change, this amount will change.

# Plan's Funded Status

| | | June 30, 2012 | | June 30, 2013 |
|---|---|---|---|---|
| 1. Present Value of Projected Benefits | $ | 5,914,245,070 | $ | 6,229,128,605 |
| 2. Entry Age Normal Accrued Liability | | 4,708,881,750 | | 5,008,806,968 |
| 3. Market Value of Assets (MVA) | $ | 3,520,189,846 | $ | 3,974,442,195 |
| 4. Unfunded Liability [(2) – (3)] | $ | 1,188,691,904 | $ | 1,034,364,773 |
| 5. Funded Ratio [(3) / (2)] | | 74.8% | | 79.3% |
| Superfunded Status | | No | | No |

# Cost

**Actuarial Cost Estimates in General**

What will this pension plan cost? Unfortunately, there is no simple answer. There are two major reasons for the complexity of the answer. First, actuarial calculations, including the ones in this report, are based on a number of assumptions about the future. These assumptions can be divided into two categories.

- Demographic assumptions include the percentage of employees that will terminate, die, become disabled, and retire in each future year.
- Economic assumptions include future salary increases for each active employee, and the assumption with the greatest impact, future asset returns at CalPERS for each year into the future until the last dollar is paid to current members of your plan.

While CalPERS has set these assumptions to reflect our best estimate of the real future of your plan, it must be understood that these assumptions are very long-term predictors and will surely not be realized in any one year. For example, while the asset earnings at CalPERS have averaged more than the assumed return of 7.5 percent for the past twenty year period ending June 30, 2013, returns for each fiscal year ranged from negative -24 percent to +21.7 percent.

Second, the very nature of actuarial funding produces the answer to the question of plan cost as the sum of two separate pieces.

- The Normal Cost (i.e., the annual cost associated with one year of service accrual) expressed as a percentage of total active payroll.
- The Past Service Cost or Accrued Liability (i.e., the current value of the benefit for all credited past service of current members) which is expressed as a lump sum dollar amount.

The cost is the sum of a percent of future pay and a lump sum dollar amount (the sum of an apple and an orange if you will). To communicate the total cost, either the Normal Cost (i.e., future percent of payroll) must be converted to a lump sum dollar amount (in which case the total cost is the present value of benefits), or the Past Service Cost (i.e., the lump sum) must be converted to a percent of payroll (in which case the total cost is expressed as the employer's rate, part of which is permanent and part temporary). Converting the Past Service Cost lump sum to a percent of payroll requires a specific amortization period, and the employer rate will vary depending on the amortization period chosen.

# Changes since the Prior Year's Valuation

**Benefits**

The standard actuarial practice at CalPERS is to recognize mandated legislative benefit changes in the first annual valuation following the effective date of the legislation. Voluntary benefit changes by plan amendment are generally included in the first valuation that is prepared after the amendment becomes effective even if the valuation date is prior to the effective date of the amendment.

This valuation generally reflects plan changes by amendments effective before the date of the report. Please refer to the "Plan's Major Benefit Options" and Appendix B for a summary of the plan provisions used in this valuation. The effect of any mandated benefit changes or plan amendments on the unfunded liability is shown in the "(Gain)/Loss Analysis" and the effect on your employer contribution rate is shown in the "Reconciliation of Required Employer Contributions." It should be noted that no change in liability or rate is shown for any plan changes, which were already included in the prior year's valuation.

**Actuarial Methods and Assumptions**

On April 17, 2013, the CalPERS Board of Administration approved a recommendation to change the CalPERS amortization and smoothing policies. Beginning with the June 30, 2013 valuations that set the 2015-16 rates, CalPERS will no longer use an actuarial value of assets and will employ an amortization and rate smoothing policy that will pay for all gains and losses over a fixed 30-year period with the increases or decreases in the rate phased in over a 5-year period.

A change in the calculation of termination with vested benefits liability for active members was made this year to better reflect the retirement experience. After termination with vested benefits, a miscellaneous member is assumed to retire at age 59 and a safety member at age 54 rather than at earliest retirement age. The higher benefit factors at these ages results in a slightly higher liability and a modest increase in normal cost.

**Public Employees' Pension Reform Act of 2013 (PEPRA)**

On January 1, 2013, the Public Employees' Pension Reform Act of 2013 (PEPRA) took effect, requiring that a public employer's contribution to a defined benefit plan, in combination with employee contributions to that defined benefit plan, shall not be less than the normal cost rate. Beginning July 1, 2013, this means that some plans with surplus will be paying more than they otherwise would. For more information on PEPRA, please refer to the CalPERS website.

# Subsequent Events

**Actuarial Methods and Assumptions**

In 2014 CalPERS completed a 2-year asset liability management study incorporating actuarial assumptions and strategic asset allocation. On February 19, 2014 the CalPERS Board of Administration adopted relatively modest changes to the current asset allocation that will reduce the expected volatility of returns (see Risk Analysis section of report). The adopted asset allocation is expected to have a long- term blended return that continues to support a discount rate assumption of 7.5 percent.

The Board also approved several changes to the demographic assumptions that more closely align with actual experience. The most significant of these is mortality improvement to acknowledge the greater life expectancies we are seeing in our membership and expected continued improvements. The new actuarial assumptions will be used to set the FY 2016-17 contribution rates for public agency employers. The increase in liability due to new actuarial assumptions will be calculated in the 2014 actuarial valuation and will be amortized over a 20-year period with a 5-year ramp-up/ramp-down in accordance with Board policy. The impact of assumption changes are included in the "Expected Rate Increases" subsection of the "Risk Analysis" section.

# ASSETS

- **RECONCILIATION OF THE MARKET VALUE OF ASSETS**
- **ASSET ALLOCATION**
- **CALPERS HISTORY OF INVESTMENT RETURNS**

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# Reconciliation of the Market Value of Assets

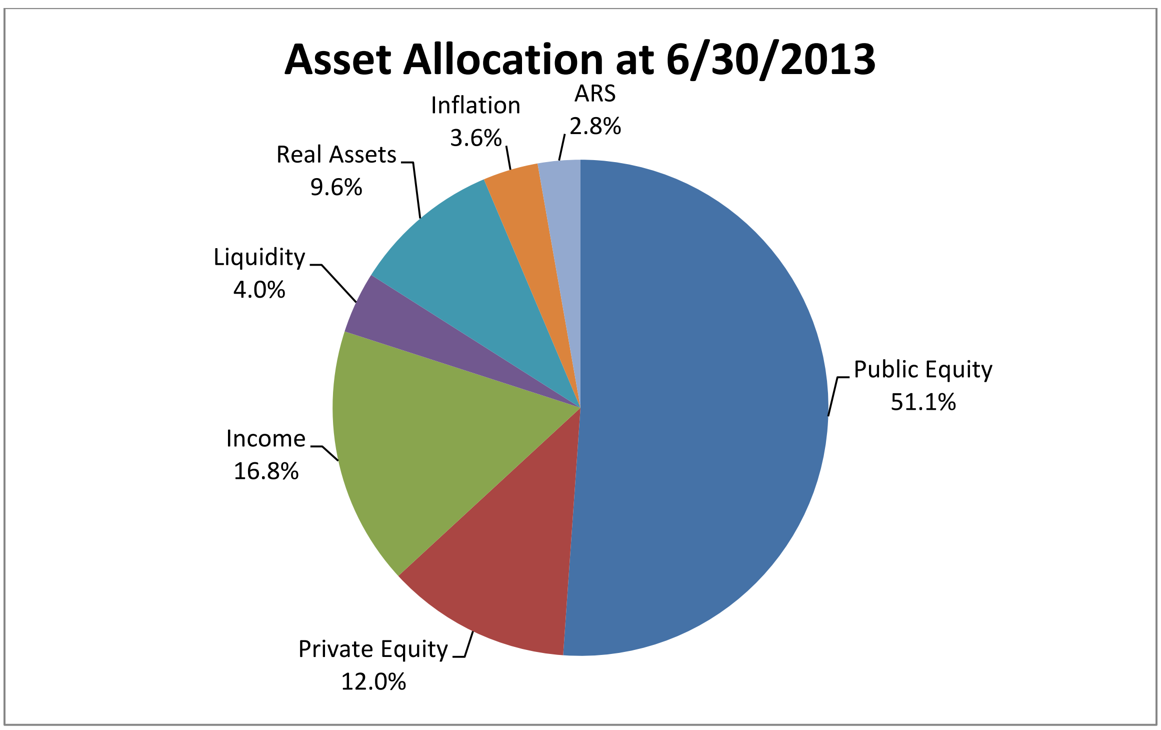
| | | | |
|---|---|---|---|
| 1. | Market Value of Assets as of 6/30/12 Including Receivables | $ | 3,520,189,846 |
| 2. | Receivables for Service Buybacks as of 6/30/12 | | 14,770,270 |
| 3. | Market Value of Assets as of 6/30/12 | | 3,505,419,576 |
| 4. | Employer Contributions | | 116,521,265 |
| 5. | Employee Contributions | | 75,721,101 |
| 6. | Benefit Payments to Retirees and Beneficiaries | | (182,690,350) |
| 7. | Refunds | | (9,173,753) |
| 8. | Lump Sum Payments | | 0 |
| 9. | Transfers and Miscellaneous Adjustments | | 48,254 |
| 10. | Investment Return | | 451,825,137 |
| 11. | Market Value of Assets as of 6/30/13 | $ | 3,957,671,230 |
| 12. | Receivables for Service Buybacks as of 6/30/13 | | 16,770,965 |
| 13. | Market Value of Assets as of 6/30/13 Including Receivables | $ | 3,974,442,195 |

# 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 recognizes that over 90 percent of the variation in investment returns of a well-diversified pool of assets can typically be attributed to asset allocation decisions. 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 percentage of total assets. The asset allocation is has an expected long term blended rate of return of 7.5 percent.

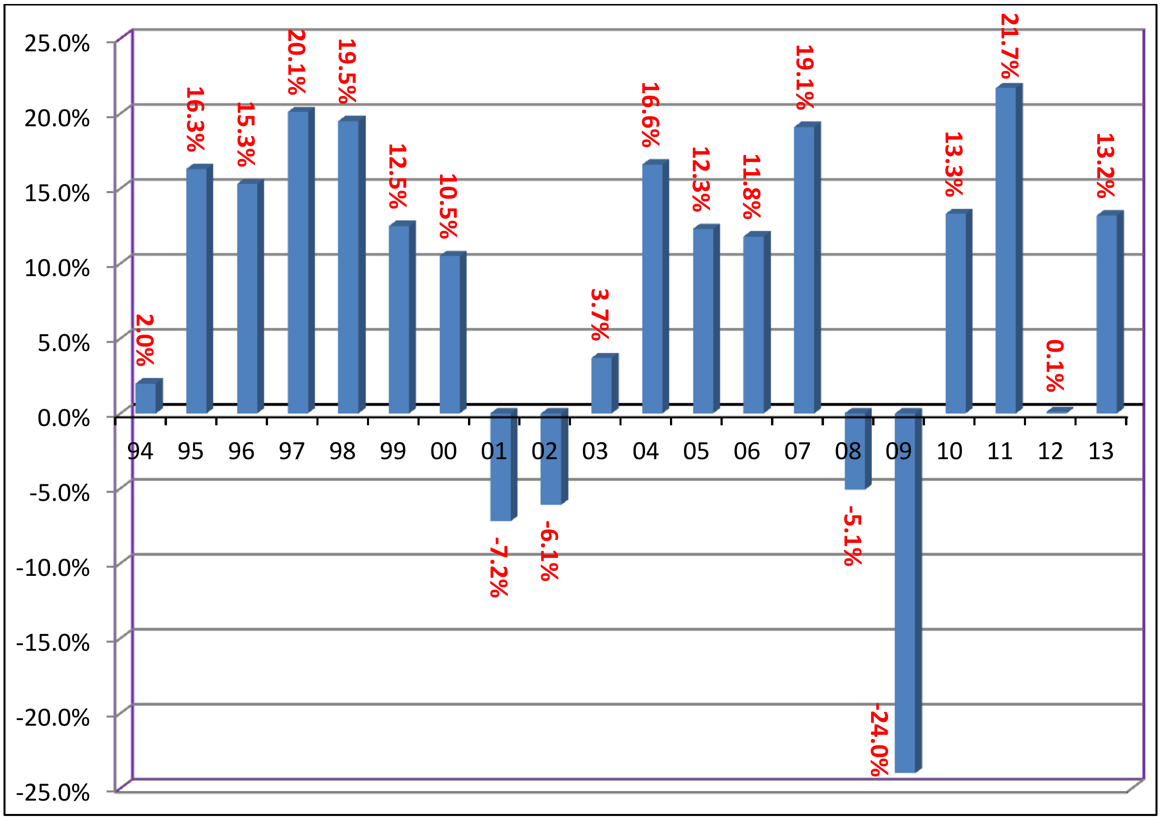
The asset allocation and market value of assets shown below reflect the values of the Public Employees Retirement Fund (PERF) in its entirety as of June 30, 2013. The assets for COUNTY OF RIVERSIDE MISCELLANEOUS PLAN are part of the Public Employees Retirement Fund (PERF) and are invested accordingly.

| (A) Asset Class | (B) Market Value ($ Billion) | (C) Policy Target Allocation |
|---|---|---|
| 1) Global Equity | 133.4 | 47.0% |
| 2) Private Equity | 31.4 | 12.0% |
| 3) Global Fixed Income | 43.9 | 19.0% |
| 4) Liquidity | 10.5 | 2.0% |
| 5) Real Assets | 25.2 | 14.0% |
| 6) Inflation Sensitive Assets | 9.4 | 6.0% |
| 7) Absolute Return Strategy (ARS) | 7.2 | 0.0% |
| **Total Fund** | **$261.0** | **100.0%** |



# CalPERS History of Investment Returns

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




The table below shows historical geometric mean annual returns of the Public Employees Retirement Fund for each fiscal year ending on June 30, 2013, (figures are reported as gross of fees). The geometric mean rate of return is the average rate per period compounded over multiple periods. It should be recognized that in any given year the rate of return is volatile. Although the expected rate of return on the recently adopted new asset allocation is 7.5 percent the portfolio has an expected volatility of 11.76 percent per year. Consequently when looking at investment returns it is more instructive to look at returns over longer time horizons.

**History of CalPERS Geometric Mean Rates of Return and Volatilities**

| | **1 year** | **5 year** | **10 year** | **20 year** | **30 year** |
|---|---|---|---|---|---|
| Geometric Return | 13.2% | 3.5% | 7.0% | 7.6% | 9.4% |
| Volatility | – | 17.9% | 13.9% | 11.8% | 11.6% |

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# LIABILITIES AND RATES

- DEVELOPMENT OF ACCRUED AND UNFUNDED LIABILITIES
- (GAIN) / LOSS ANALYSIS 06/30/12 - 06/30/13
- SCHEDULE OF AMORTIZATION BASES
- ALTERNATE AMORTIZATION SCHEDULES
- RECONCILIATION OF REQUIRED EMPLOYER CONTRIBUTIONS
- EMPLOYER CONTRIBUTION RATE HISTORY
- FUNDING HISTORY

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# Development of Accrued and Unfunded Liabilities

| | | | |
|---|---|---|---|
| 1. | Present Value of Projected Benefits | | |
| | a) Active Members | $ | 3,630,284,201 |
| | b) Transferred Members | | 226,155,790 |
| | c) Terminated Members | | 129,361,497 |
| | d) Members and Beneficiaries Receiving Payments | | 2,243,327,117 |
| | e) Total | $ | 6,229,128,605 |
| 2. | Present Value of Future Employer Normal Costs | $ | 676,184,063 |
| 3. | Present Value of Future Employee Contributions | $ | 544,137,574 |
| 4. | Entry Age Normal Accrued Liability | | |
| | a) Active Members [(1a) - (2) - (3)] | $ | 2,409,962,564 |
| | b) Transferred Members (1b) | | 226,155,790 |
| | c) Terminated Members (1c) | | 129,361,497 |
| | d) Members and Beneficiaries Receiving Payments (1d) | | 2,243,327,117 |
| | e) Total | $ | 5,008,806,968 |
| 5. | Market Value of Assets (MVA) | $ | 3,974,442,195 |
| 6. | Unfunded Liability [(4e) - (5)] | $ | 1,034,364,773 |
| 7. | Funded Ratio [(5) / (4e)] | | 79.3% |

# (Gain) /Loss Analysis 6/30/12 – 6/30/13

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.

| | | | | |
|---|---|---|---|---|
| **A** | **Total (Gain)/Loss for the Year** | | | |
| | 1. | Unfunded Accrued Liability (UAL) as of 6/30/12 | $ | 536,480,531 |
| | 2. | Expected Payment on the UAL during 2012/2013 | | 27,111,746 |
| | 3. | Interest through 6/30/13 [.075 x (A1) - $((1.075)^{½}$ - 1) x (A2)] | | 39,237,729 |
| | 4. | Expected UAL before all other changes [(A1) - (A2) + (A3)] | | 548,606,514 |
| | 5. | Change due to plan changes | | 0 |
| | 6. | Change due to assumption change | | 0 |
| | 7. | Expected UAL after all other changes [(A4) + (A5) + (A6)] | | 548,606,514 |
| | 8. | Actual UAL as of 6/30/13 | | 1,034,364,773 |
| | 9. | Total (Gain)/Loss for 2012/2013 [(A8) - (A7)] | $ | 485,758,259 |
| **B** | **Contribution (Gain)/Loss for the Year** | | | |
| | 1. | Expected Contribution (Employer and Employee) | $ | 183,157,206 |
| | 2. | Interest on Expected Contributions | | 6,744,227 |
| | 3. | Actual Contributions | | 192,242,366 |
| | 4. | Interest on Actual Contributions | | 7,078,761 |
| | 5. | Expected Contributions with Interest [(B1) + (B2)] | | 189,901,433 |
| | 6. | Actual Contributions with Interest [(B3) + (B4)] | | 199,321,127 |
| | 7. | Contribution (Gain)/Loss [(B5) - (B6)] | $ | (9,419,694) |
| **C** | **Asset (Gain)/Loss for the Year** | | | |
| | 1. | Actuarial Value of Assets as of 6/30/12 Including Receivables | $ | 4,172,401,219 |
| | 2. | Receivables as of 6/30/12 | | 14,770,270 |
| | 3. | Actuarial Value of Assets as of 6/30/12 | | 4,157,630,949 |
| | 4. | Contributions Received | | 192,242,366 |
| | 5. | Benefits and Refunds Paid | | (191,864,103) |
| | 6. | Transfers and miscellaneous adjustments | | 48,254 |
| | 7. | Expected Int. [.075 x (C3) + $((1.075)^{½}$ - 1) x ((C4) + (C5) + (C6))] | | 311,838,026 |
| | 8. | Expected Assets as of 6/30/13 [(C3) + (C4) + (C5) + (C6) + (C7)] | | 4,469,895,492 |
| | 9. | Receivables as of 6/30/13 | | 16,770,965 |
| | 10. | Expected Assets Including Receivables | | 4,486,666,457 |
| | 11. | Market Value of Assets as of 6/30/13 | | 3,974,442,195 |
| | 12. | Asset (Gain)/Loss [(C10) - (C11)] | $ | 512,224,262 |
| **D** | **Liability (Gain)/Loss for the Year** | | | |
| | 1. | Total (Gain)/Loss (A9) | $ | 485,758,259 |
| | 2. | Contribution (Gain)/Loss (B7) | | (9,419,694) |
| | 3. | Asset (Gain)/Loss (C12) | | 512,224,262 |
| | 4. | Liability (Gain)/Loss [(D1) - (D2) - (D3)] | $ | (17,046,309) |

# Schedule of Amortization Bases

There is a two-year lag between the Valuation Date and the Contribution Fiscal Year.

- The assets, liabilities and funded status of the plan are measured as of the valuation date; June 30, 2013.
- The employer contribution rate determined by the valuation is for the fiscal year beginning two years after the valuation date; fiscal year 2015-16.

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

The Unfunded Liability is used to determine the employer contribution and therefore must be rolled forward two years from the valuation date to the first day of the fiscal year for which the contribution is being determined. The Unfunded Liability is rolled forward each year by subtracting the expected Payment on the Unfunded Liability for the fiscal year and adjusting for interest. The Expected Payment on the Unfunded Liability 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 Rate for the first fiscal year is determined by the actuarial valuation two years ago and the rate for the second year is from the actuarial valuation one year ago. The Normal Cost Rate for each of the two fiscal years 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.

| | | | | | | | Amounts for Fiscal 2015-16 | | |
|---|---|---|---|---|---|---|---|---|---|
| **Reason for Base** | **Date Established** | **Amorti-zation Period** | **Balance 6/30/13** | **Expected Payment 2013-14** | **Balance 6/30/14** | **Expected Payment 2014-15** | **Balance 6/30/15** | **Scheduled Payment for 2015-16** | **Payment as Percentage of Payroll** |
| FS 30-YEAR AMORTIZATION | 06/30/08 | 25 | $(10,046,584) | $(636,735) | $(10,139,897) | $(655,837) | $(10,220,403) | $(675,512) | (0.072%) |
| GOLDEN HANDSHAKE | 06/30/09 | 16 | $33,497,586 | $2,708,104 | $33,202,082 | $2,789,348 | $32,800,182 | $2,873,028 | 0.307% |
| ASSUMPTION CHANGE | 06/30/09 | 16 | $85,397,151 | $6,903,912 | $84,643,809 | $7,111,030 | $83,619,222 | $7,324,361 | 0.782% |
| SPECIAL (GAIN)/LOSS | 06/30/09 | 26 | $114,028,097 | $7,090,290 | $115,228,835 | $7,302,999 | $116,299,087 | $7,522,089 | 0.804% |
| GOLDEN HANDSHAKE | 06/30/10 | 17 | $1,176,125 | $91,769 | $1,169,186 | $94,523 | $1,158,872 | $97,358 | 0.010% |
| SPECIAL (GAIN)/LOSS | 06/30/10 | 27 | $79,882,801 | $4,878,767 | $80,815,598 | $5,025,130 | $81,666,602 | $5,175,884 | 0.553% |
| GOLDEN HANDSHAKE | 06/30/11 | 18 | $32,658,038 | $2,465,859 | $32,550,734 | $2,539,835 | $32,358,682 | $2,616,030 | 0.279% |
| ASSUMPTION CHANGE | 06/30/11 | 18 | $102,223,303 | $7,718,415 | $101,887,428 | $7,949,967 | $101,286,284 | $8,188,466 | 0.875% |
| SPECIAL (GAIN)/LOSS | 06/30/11 | 28 | $(43,923,495) | $(2,637,629) | $(44,483,005) | $(2,716,758) | $(45,002,436) | $(2,798,261) | (0.299%) |
| PAYMENT (GAIN)/LOSS | 06/30/12 | 29 | $(59,760,461) | $3,378,110 | $(67,744,995) | $(4,068,123) | $(68,607,950) | $(4,190,166) | (0.448%) |
| (GAIN)/LOSS | 06/30/12 | 29 | $213,473,954 | $14,394,624 | $214,559,837 | $12,884,431 | $217,292,962 | $13,270,964 | 1.418% |
| (GAIN)/LOSS | 06/30/13 | 30 | $485,758,258 | $141,254 | $522,043,672 | $56,769 | $561,138,088 | $7,892,427 | 0.843% |
| **TOTAL** | | | **$1,034,364,773** | **$46,496,740** | **$1,063,733,284** | **$38,313,314** | **$1,103,789,192** | **$47,296,668** | **5.053%** |

# Alternate Amortization Schedules

The amortization schedule shown on the previous page shows the minimum contributions required according to CalPERS amortization policy. There has been considerable interest from many agencies in paying off these unfunded accrued liabilities sooner and the passible savings in doing so. Therefore, we have provided alternate amortization schedules to help analyze your current amortization schedule and illustrate the advantages of accelerating payments towards your plan's unfunded liability of $1,103,789,192 as of June 30, 2015, which under the minimum schedule, will require total payments of $2,842,666,085. Shown below are the level rate payments required to amortize your plan's unfunded liability assuming a fresh start over the various periods noted. Note that the payments under each scenario would increase by 3 percent for each year into the future.

**Level Rate of Payroll Amortization**

| Period | 2015-16 Rate | 2015-16 Payment | Total Payments | Total Interest | Difference from Current Schedule |
|---|---|---|---|---|---|
| **25** | 7.794% | $ 72,954,324 | $ 2,659,860,982 | $ 1,556,071,790 | $ 182,805,103 |
| **20** | 8.904% | $ 83,342,075 | $ 2,239,432,771 | $ 1,135,643,579 | $ 603,233,314 |

If you are interested in changing your plan's amortization schedule please contact your plan actuary to discuss further.

# Reconciliation of Required Employer Contributions

| | Percentage of Projected Payroll | Estimated $ Based on Projected Payroll |
|---|---|---|
| 1. Contribution for 7/1/14 – 6/30/15 | 14.527% | $ 132,770,893 |
| 2. Effect of changes since the prior year annual valuation | | |
| a) Effect of unexpected changes in demographics and financial results | 0.902% | 8,444,895 |
| b) Effect of plan changes | 0.000% | 0 |
| c) Effect of changes in Assumptions | 0.000% | 0 |
| d) Effect of change in payroll | - | 3,202,586 |
| e) Effect of elimination of amortization base | 0.000% | 0 |
| f) Effect of changes due to Fresh Start | 0.000% | 0 |
| g) Net effect of the changes above [Sum of (a) through (f)] | 0.902% | 11,647,481 |
| 3. Contribution for 7/1/15 – 6/30/16 [(1)+(2g)] | 15.429% | 144,418,374 |

The contribution actually paid (item 1) may be different if a prepayment of unfunded actuarial liability is made or a plan change became effective after the prior year's actuarial valuation was performed.

# Employer Contribution Rate History

The table below provides a recent history of the employer contribution rates for your plan, as determined by the annual actuarial valuation. It does not account for prepayments or benefit changes made in the middle of the year.

**Required By Valuation**

| Fiscal Year | Employer Normal Cost | Unfunded Rate | Total Employer Contribution Rate |
|---|---|---|---|
| 2010 - 2011 | 11.084% | 1.081% | 12.165% |
| 2011 - 2012 | 10.370% | 2.742% | 13.112% |
| 2012 - 2013 | 10.227% | 3.267% | 13.494% |
| 2013 - 2014 | 11.099% | 3.902% | 15.001% |
| 2014 - 2015 | 10.341% | 4.186% | 14.527% |
| 2015 - 2016 | 10.376% | 5.053% | 15.429% |

# Funding History

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

| Valuation Date | Accrued Liability | Market Value of Assets (MVA) | Funded Ratio | Annual Covered Payroll |
|---|---|---|---|---|
| 06/30/08 | $ 3,350,222,866 | $ 3,222,895,376 | 96.2% | $ 841,612,805 |
| 06/30/09 | 3,790,232,824 | 2,482,332,809 | 65.5% | 841,103,683 |
| 06/30/10 | 4,097,191,707 | 2,882,444,152 | 70.4% | 854,932,117 |
| 06/30/11 | 4,461,553,672 | 3,525,640,733 | 79.0% | 812,362,628 |
| 06/30/12 | 4,708,881,750 | 3,520,189,846 | 74.8% | 836,418,298 |
| 06/30/13 | 5,008,806,968 | 3,974,442,195 | 79.3% | 856,593,282 |

# RISK ANALYSIS

- VOLATILITY RATIOS
- PROJECTED RATES
- ANALYSIS OF FUTURE INVESTMENT RETURN SCENARIOS
- ANALYSIS OF DISCOUNT RATE SENSITIVITY
- HYPOTHETICAL TERMINATION LIABILITY

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# Volatility Ratios

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

**Asset Volatility Ratio (AVR)**

Plans that have higher asset to payroll ratios produce more volatile employer rates due to investment return. For example, a plan with an asset to payroll ratio of 8 may experience twice the contribution volatility due to investment return volatility, than a plan with an asset to payroll ratio of 4. Below we have shown your asset volatility ratio, a measure of the plan's current rate volatility. It should be noted that this ratio is a measure of the current situation. It increases over time but generally tends to stabilize as the plan matures.

**Liability Volatility Ratio (LVR)**

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

| **Rate Volatility** | | **As of June 30, 2013** |
|---|---|---|
| 1. Market Value of Assets without Receivables | $ | 3,957,671,230 |
| 2. Payroll | | 856,593,282 |
| 3. Asset Volatility Ratio (AVR = 1. / 2.) | | 4.6 |
| 4. Accrued Liability | $ | 5,008,806,968 |
| 5. Liability Volatility Ratio (LVR = 4. / 2.) | | 5.8 |

# Projected Rates

The estimated rate for 2016-17 is based on a projection of the most recent information we have available, including an estimated 18 percent investment return for fiscal 2013-14, the impact of the new smoothing methods adopted by the CalPERS Board in April 2013 that will impact employer rates for the first time in 2015-16 and an estimate of the impact of the new actuarial assumptions adopted by the CalPERS Board in February 2014. These new demographic assumptions include a 20-year projection of on-going mortality improvement. A complete listing of the new demographic assumptions to be implemented with the June 30, 2014 annual actuarial valuation and incorporated in the projected rates for FY 2016-17 and beyond can be found on the CalPERS website at: http://www.calpers.ca.gov/eip-docs/about/pubs/employer/actuarial-assumptions.xls

The table below shows projected employer contribution rates (before cost sharing) for the next five Fiscal Years, assuming CalPERS earns 18 percent for fiscal year 2013-14 and 7.50 percent every fiscal year thereafter, and assuming that all other actuarial assumptions will be realized and that no further changes to assumptions, contributions, benefits, or funding will occur between now and the beginning of the fiscal year 2016-17.

| | **New Rate** | **Projected Future Employer Contribution Rates** | | | | |
|---|---|---|---|---|---|---|
| | **2015-16** | **2016-17** | **2017-18** | **2018-19** | **2019-20** | **2020-21** |
| **Contribution Rates:** | 15.429% | 17.0% | 17.8% | 18.7% | 19.6% | 19.6% |

# Analysis of Future Investment Return Scenarios

In 2014 CalPERS completed a 2-year asset liability management study incorporating actuarial assumptions and strategic asset allocation. On February 19, 2014 the CalPERS Board of Administration adopted relatively modest changes to the current asset allocation that will reduce the expected volatility of returns. The adopted asset allocation is expected to have a long- term blended return that continues to support a discount rate assumption of 7.5 percent. The newly adopted asset allocation has a lower expected investment volatility which will result in better risk characteristics than an equivalent margin for adverse deviation. The current asset allocation has an expected standard deviation of 12.45 percent while the newly adopted asset allocation has a lower expected standard deviation of 11.76 percent.

The investment return for fiscal year 2013-14 was announced July 14, 2014. The investment return in fiscal year 2013-14 is 18.42 percent before administrative expenses. This year, there will be no adjustment for real estate and private equities. For purposes of projecting future employer rates, we are assuming an 18.0 percent investment return for fiscal year 2013-14.

The investment return realized during a fiscal year first affects the contribution rate for the fiscal year two years later. Specifically, the investment return for 2013-14 will first be reflected in the June 30, 2014 actuarial valuation that will be used to set the 2016-17 employer contribution rates, the 2014-15 investment return will first be reflected in the June 30, 2015 actuarial valuation that will be used to set the 2017-18 employer contribution rates and so forth.

Based on a 18 percent investment return for fiscal year 2013-14, the April 17, 2013 CalPERS Board-approved amortization and rate smoothing method change, the February 18, 2014 new demographic assumptions including 20-year mortality improvement using Scale BB and assuming that all other actuarial assumptions will be realized, and that no further changes to assumptions, contributions, benefits, or funding will occur between now and the beginning of the fiscal year 2016-17, the effect on the 2016-17 Employer Rate is as follows:

| **Estimated 2016-17 Employer Rate** | **Estimated Increase in Employer Rate between 2015-16 and 2016-17** |
|---|---|
| 17.0% | 1.6% |

As part of this report, a sensitivity analysis was performed to determine the effects of various investment returns during fiscal years 2014-15, 2015-16 and 2016-17 on the 2017-18, 2018-19 and 2019-20 employer rates. Once again, the projected rate increases assume that all other actuarial assumptions will be realized and that no further changes to assumptions, contributions, benefits, or funding will occur.

Five different investment return scenarios were selected.

- The first scenario is what one would expect if the markets were to give us a 5$^{th}$ percentile return from July 1, 2014 through June 30, 2017. The 5$^{th}$ percentile return corresponds to a -3.8 percent return for each of the 2014-15, 2015-16 and 2016-17 fiscal years.
- The second scenario is what one would expect if the markets were to give us a 25$^{th}$ percentile return from July 1, 2014 through June 30, 2017. The 25$^{th}$ percentile return corresponds to a 2.8 percent return for each of the 2014-15, 2015-16 and 2016-17 fiscal years.
- The third scenario assumed the return for 2014-15, 2015-16, 2016-17 would be our assumed 7.5 percent investment return which represents about a 49$^{th}$ percentile event.
- The fourth scenario is what one would expect if the markets were to give us a 75$^{th}$ percentile return from July 1, 2014 through June 30, 2017. The 75$^{th}$ percentile return corresponds to a 12.0 percent return for each of the 2014-15, 2015-16 and 2016-17 fiscal years.
- Finally, the last scenario is what one would expect if the markets were to give us a 95$^{th}$ percentile return from July 1, 2014 through June 30, 2017. The 95$^{th}$ percentile return corresponds to a 18.9 percent return for each of the 2014-15, 2015-16 and 2016-17 fiscal years.

The table below shows the estimated projected contribution rates and the estimated increases for your plan under the five different scenarios.

| **2014-17 Investment Return Scenario** | **Estimated Employer Rate** | | | **Estimated Change in Employer Rate between 2016-17 and 2019-20** |
|---|---|---|---|---|
| | **2017-18** | **2018-19** | **2019-20** | |
| -3.8% (5th percentile) | 18.7% | 21.2% | 24.5% | 7.6% |
| 2.8% (25th percentile) | 18.2% | 19.8% | 21.7% | 4.7% |
| 7.5% | 17.8% | 18.7% | 19.6% | 2.6% |
| 12.0%(75th percentile) | 17.5% | 17.6% | 17.4% | 0.4% |
| 18.9%(95th percentile) | 17.0% | 15.9% | 13.8% | -3.2% |

# Analysis of Discount Rate Sensitivity

The following analysis looks at the 2015-16 employer contribution rates under two different discount rate scenarios. Shown below are the employer contribution rates assuming discount rates that are 1 percent lower and 1 percent higher than the current valuation discount rate. This analysis gives an indication of the potential required employer contribution rates if the PERF were to realize investment returns of 6.50 percent or 8.50 percent over the long-term.

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

| **2015-16 Employer Contribution Rate** | | | |
|---|---|---|---|
| **As of June 30, 2013** | **6.50% Discount Rate (-1%)** | **7.50% Discount Rate (assumed rate)** | **8.50% Discount Rate (+1%)** |
| Employer Normal Cost | 14.864% | 10.376% | 6.967% |
| Accrued Liability | $ 5,718,008,127 | $ 5,008,806,968 | $ 4,424,474,379 |
| Unfunded Accrued Liability | $ 1,743,565,932 | $ 1,034,364,773 | $ 450,032,184 |

# Hypothetical Termination Liability

Below is an estimate of the financial position of your plan if you had terminated your contract with CalPERS as of June 30, 2013 using the discount rates shown below. Your plan liability on a termination basis is calculated differently compared to the plan's ongoing funding liability. For this hypothetical termination liability both compensation and service is frozen as of the valuation date and no future pay increases or service accruals are included. In December 2012, the CalPERS Board adopted a more conservative investment policy and asset allocation strategy for the Terminated Agency Pool. Since the Terminated Agency Pool has limited funding sources, expected benefit payments are secured by risk-free assets. With this change, CalPERS increased benefit security for members while limiting its funding risk. This asset allocation has a lower expected rate of return than the PERF. Consequently, the lower discount rate for the Terminated Agency pool results in higher liabilities for terminated plans.

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

| Valuation Date | Hypothetical Termination Liability[1] | Market Value of Assets (MVA) | Unfunded Termination Liability | Termination Funded Ratio | Termination Liability Discount Rate[2] |
|---|---|---|---|---|---|
| 06/30/11 | $ 6,004,192,526 | $ 3,525,640,733 | $ 2,478,551,793 | 58.7% | 4.82% |
| 06/30/12 | 8,224,423,393 | 3,520,189,846 | 4,704,233,547 | 42.8% | 2.98% |
| 06/30/13 | 7,756,697,406 | 3,974,442,195 | 3,782,255,211 | 51.2% | 3.72% |

[1] The hypothetical liabilities calculated above include a 7 percent mortality contingency load in accordance with Board policy. Other actuarial assumptions, such as wage and inflation assumptions, can be found in appendix A.

[2] The discount rate assumption used for termination valuations is a weighted average of the 10 and 30-year US Treasury yields in effect on the valuation date that equal the duration of the pension liabilities. For purposes of this hypothetical termination liability estimate, the discount rate used, is the yield on the 30-year US Treasury Separate Trading of Registered Interest and Principal of Securities (STRIPS). Note that as of June 30, 2014 the 30-year STRIPS rate was 3.55 percent.

# GASB STATEMENT NO. 27

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# MISCELLANEOUS PLAN of the COUNTY OF RIVERSIDE
# Information for Compliance with GASB Statement No. 27

**Disclosure under GASB 27 follows. However, note that effective for financial statements for fiscal years beginning after June 15, 2014, GASB 68 replaces GASB 27. This will be the last year that GASB disclosure information will be included in your annual actuarial report. GASB 68 will require additional reporting that CalPERS is intending to provide upon request for an additional fee. We urge you to start discussions with your auditors on how to implement GASB 68.**

Under GASB 27, an employer reports an annual pension cost (APC) equal to the annual required contribution (ARC) plus an adjustment for the cumulative difference between the APC and the employer's actual plan contributions for the year. The cumulative difference is called the net pension obligation (NPO). Since GASB 68 replaces GASB 27, for fiscal year 2015-16, the APC is replaced by the Actuarially Determined Contribution (ADC). The ADC for July 1, 2015 to June 30, 2016 is 15.429% percent of payroll. In order to calculate the dollar value of the ADC for inclusion in financial statements prepared as of June 30, 2016, this contribution rate, less any employee cost sharing, as modified by any amendments for the year, would be multiplied by the payroll of covered employees that was actually paid during the period July 1, 2015 to June 30, 2016. The employer and the employer's auditor are responsible for determining the NPO, APC or ADC for a given fiscal year.

A summary of principal assumptions and methods used to determine the funded status is shown below.

| | ***Retirement Program*** |
|---|---|
| Valuation Date | June 30, 2013 |
| Actuarial Cost Method | Entry Age Normal Cost Method |
| Amortization Method | Level Percent of Payroll |
| Asset Valuation Method | Market Value |
| Actuarial Assumptions | |
| Discount Rate | 7.50% (net of administrative expenses) |
| Projected Salary Increases | 3.30% to 14.20% depending on Age, Service, and type of employment |
| Inflation | 2.75% |
| Payroll Growth | 3.00% |
| Individual Salary Growth | A merit scale varying by duration of employment coupled with an assumed annual inflation growth of 2.75% and an annual production growth of 0.25%. |

Initial unfunded liabilities are amortized over a closed period that depends on the plan's date of entry into CalPERS. Subsequent plan amendments are amortized as a level percentage of pay over a closed 20-year period. Gains and losses that occur in the operation of the plan are amortized over a 30-year period with Direct Rate Smoothing with a 5-year ramp up/ramp down. If the plan's accrued liability exceeds the actuarial value of plan assets, then the amortization payment on the total unfunded liability may not be lower than the payment calculated over a 30-year amortization period. More detailed information on assumptions and methods is provided in Appendix A of this report. Appendix B contains a description of benefits included in the valuation.

The Schedule of Funding Progress below shows the recent history of the actuarial accrued liability, actuarial value of assets, their relationship and the relationship of the unfunded actuarial accrued liability to payroll.

| Valuation Date | Accrued Liability (a) | Actuarial value of Assets* (b) | Unfunded Liability (UL) (a)-(b) | Funded Ratios (b)/(a) | Annual Covered Payroll (c) | UL As a % of Payroll [(a)-(b)]/(c) |
|---|---|---|---|---|---|---|
| 06/30/09 | $ 3,790,232,824 | $ 3,401,036,977 | $ 389,195,847 | 89.7% | $ 841,103,683 | 46.3% |
| 06/30/10 | 4,097,191,707 | 3,652,860,802 | 444,330,905 | 89.2% | 854,932,117 | 52.0% |
| 06/30/11 | 4,461,553,672 | 3,923,498,630 | 538,055,042 | 87.9% | 812,362,628 | 66.2% |
| 06/30/12 | 4,708,881,750 | 4,172,401,219 | 536,480,531 | 88.6% | 836,418,298 | 64.1% |
| 06/30/13 | 5,008,806,968 | 3,974,442,195 | 1,034,364,773 | 79.3% | 856,593,282 | 120.8% |

* Beginning with the 6/30/2013 valuation Actuarial Value of Assets equals Market Value of Assets per CalPERS Direct Rate Smoothing Policy.

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# PLAN'S MAJOR BENEFIT PROVISIONS

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# Plan's Major Benefit Options

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

| | Contract Package | | | | | | |
|---|---|---|---|---|---|---|---|
| **Benefit Provision** | Receiving | Active Misc | Active Misc | Active Misc | Active Misc | Active Misc | Active Misc |
| Benefit Formula | | 2.0% @ 55 | 2.0% @ 55 | 3.0% @ 60 | 3.0% @ 60 | 2.0% @ 55 | 3.0% @ 60 |
| Social Security Coverage | | Yes | No | Yes | No | Yes | Yes |
| Full/Modified | | Modified | Full | Modified | Full | Modified | Modified |
| Final Average Compensation Period | | 12 mos. | 12 mos. | 12 mos. | 12 mos. | 12 mos. | 12 mos. |
| Sick Leave Credit | | No | No | No | No | No | No |
| Non-Industrial Disability | | Standard | Standard | Standard | Standard | Standard | Standard |
| Industrial Disability | | No | No | No | No | No | No |
| Pre-Retirement Death Benefits | | | | | | | |
| Optional Settlement 2W | | No | No | No | No | No | No |
| 1959 Survivor Benefit Level | | No | Indexed | No | Indexed | No | No |
| Special | | No | No | No | No | No | No |
| Alternate (firefighters) | | No | No | No | No | No | No |
| Post-Retirement Death Benefits | | | | | | | |
| Lump Sum | $500 | $500 | $500 | $500 | $500 | $500 | $500 |
| Survivor Allowance (PRSA) | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| COLA | 2% | 2% | 2% | 2% | 2% | 2% | 2% |

# Plan's Major Benefit Options

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

| | **Contract Package** | | | | | | |
|---|---|---|---|---|---|---|---|
| **Benefit Provision** | Active Misc | Active Misc | Active Misc | Active Misc | | | |
| Benefit Formula | 3.0% @ 60 | 2.0% @ 62 | 2.0% @ 62 | 2.0% @ 60 | | | |
| Social Security Coverage | No | No | Yes | Yes | | | |
| Full/Modified | Full | Full | Full | Modified | | | |
| Final Average Compensation Period | 12 mos. | 36 mos. | 36 mos. | 36 mos. | | | |
| Sick Leave Credit | No | No | No | No | | | |
| Non-Industrial Disability | Standard | Standard | Standard | Standard | | | |
| Industrial Disability | No | No | No | No | | | |
| Pre-Retirement Death Benefits | | | | | | | |
| Optional Settlement 2W | No | No | No | No | | | |
| 1959 Survivor Benefit Level | Indexed | No | No | No | | | |
| Special | No | No | No | No | | | |
| Alternate (firefighters) | No | No | No | No | | | |
| Post-Retirement Death Benefits | | | | | | | |
| Lump Sum | $500 | $500 | $500 | $500 | | | |
| Survivor Allowance (PRSA) | Yes | Yes | Yes | Yes | | | |
| COLA | 2% | 2% | 2% | 2% | | | |

# APPENDICES

- **APPENDIX A – ACTUARIAL METHODS AND ASSUMPTIONS**
- **APPENDIX B – PRINCIPAL PLAN PROVISIONS**
- **APPENDIX C – PARTICIPANT DATA**
- **APPENDIX D – DEVELOPMENT OF PPERA MEMBER CONTRIBUTION RATES**
- **APPENDIX E – GLOSSARY OF ACTUARIAL TERMS**

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# APPENDIX A

# ACTUARIAL METHODS AND ASSUMPTIONS

- **ACTUARIAL DATA**
- **ACTUARIAL METHODS**
- **ACTUARIAL ASSUMPTIONS**
- **MISCELLANEOUS**

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# Actuarial Data

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

**Funding Method**

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

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

The excess of the total actuarial accrued liability over the actuarial value of plan assets is called the unfunded actuarial accrued liability. Funding requirements are determined by adding the normal cost and an amortization of the unfunded liability as a level percentage of assumed future payrolls. Commencing with the June 30, 2013 valuation all new gains or losses are tracked and amortized over a fixed 30-year period with a 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), changes in actuarial assumptions, or changes in actuarial methodology are amortized separately over a 20-year period with a 5 year ramp up at the beginning and a 5 year ramp down at the end of the amortization period. Changes in unfunded accrued liability due to a Golden Handshake will be amortized over a period of 5 years. If a plan's accrued liability exceeds the market value of assets, the annual contribution with respect to the total unfunded liability may not be less than the amount produced by a 30-year amortization of the unfunded liability. An exception has been made for the change in asset value from actuarial to market value in this valuation. The CalPERS Board approved a 30-year amortization with a 5-year ramp-up/ramp-down for only this change in method.

Additional contributions will be required for any plan or pool if their cash flows hamper adequate funding progress by preventing the expected funded status on a market value of assets basis to either:

- Increase by at least 15 percent by June 30, 2043; or
- Reach a level of 75 percent funded by June 30, 2043

The necessary additional contribution will be obtained by changing the amortization period of the gains and losses, except for those occurring in the fiscal years 2008-2009, 2009-2010, and 2010-2011 to a period, which will result in the satisfaction of the above criteria. CalPERS actuaries will reassess the criteria above when performing each future valuation to determine whether or not additional contributions are necessary.

An exception to the funding rules above is used whenever the application of such rules results in inconsistencies. In these cases, a "fresh start" approach is used. This simply means that the current unfunded actuarial liability is projected and amortized over a set number of years. As mentioned above, if the annual contribution on the total unfunded liability was less than the amount produced by a 30-year amortization of the unfunded liability, the plan actuary would implement a 30-year fresh start. However, in the case of a 30-year fresh start, just the unfunded liability not already in the (gain)/loss base (which is already amortized over 30 years), will go into the new fresh start base. In addition, 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, unless a longer fresh start is needed to avoid a negative total rate.

It should be noted that the actuary may choose to use a fresh start under other circumstances. In all cases, the fresh start period is set by the actuary at what is deemed appropriate; however, the period will not be less than five years, nor 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 unfunded accrued liabilities or surpluses in a manner that maintains benefit security for the members of the System while minimizing substantial variations in 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, 2013 valuations that set the 2015-16 rates, CalPERS will employ an amortization and smoothing policy that will pay for all gains and losses over a fixed 30-year period with the increases or decreases in the rate spread directly over a 5-year period. CalPERS will no longer use an actuarial value of assets and will use the market value of assets. This direct rate smoothing method is equivalent 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. The change in asset value will also be amortized over 30 years with a 5-year ramp-up/ramp-down.

# Actuarial Assumptions

In 2014 CalPERS completed a 2-year asset liability management study incorporating actuarial assumptions and strategic asset allocation. On February 19, 2014 the CalPERS Board of Administration adopted relatively modest changes to the current asset allocation that will reduce the expected volatility of returns. The adopted asset allocation is expected to have a long-term blended return that continues to support a discount rate assumption of 7.5 percent. The Board also approved several changes to the demographic assumptions that more closely align with actual experience. The most significant of these is mortality improvement to acknowledge the greater life expectancies we are seeing in our membership and expected continued improvements. The new actuarial assumptions will be used to set the FY 2016-17 contribution rates for public agency employers. The increase in liability due to new actuarial assumptions will be calculated in the 2014 actuarial valuation and will be amortized over a 20-year period with a 5-year ramp-up/ramp-down in accordance with Board policy. For more details, please refer to the experience study report that can be found at the following link: http://www.calpers.ca.gov/eip-docs/about/pubs/employer/2014-experience-study.pdf

## ***Economic Assumptions***

**Discount Rate**

7.5 percent compounded annually (net of expenses). This assumption is used for all plans.

**Termination Liability Discount Rate**

The discount rate used for termination valuation is a weighted average of the 10 and 30-year US Treasury yields in effect on the valuation date that equal the duration of the pension liabilities. For purposes of this hypothetical termination liability estimate, the discount rate used, 3.72 percent, is the yield on the 30-year US Treasury Separate Trading of Registered Interest and Principal of Securities (STRIPS) as of June 30, 2013. Please note, as of June 30, 2014 the 30-year STRIPS yield was 3.55 percent.

**Salary Growth**

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

**Public Agency Miscellaneous**

| Duration of Service | (Entry Age 20) | (Entry Age 30) | (Entry Age 40) |
|---|---|---|---|
| 0 | 0.1420 | 0.1240 | 0.0980 |
| 1 | 0.1190 | 0.1050 | 0.0850 |
| 2 | 0.1010 | 0.0910 | 0.0750 |
| 3 | 0.0880 | 0.0800 | 0.0670 |
| 4 | 0.0780 | 0.0710 | 0.0610 |
| 5 | 0.0700 | 0.0650 | 0.0560 |
| 10 | 0.0480 | 0.0460 | 0.0410 |
| 15 | 0.0430 | 0.0410 | 0.0360 |
| 20 | 0.0390 | 0.0370 | 0.0330 |
| 25 | 0.0360 | 0.0360 | 0.0330 |
| 30 | 0.0360 | 0.0360 | 0.0330 |

**Salary Growth** (continued)

**Public Agency Fire**

| Duration of Service | (Entry Age 20) | (Entry Age 30) | (Entry Age 40) |
|---|---|---|---|
| 0 | 0.1050 | 0.1050 | 0.1020 |
| 1 | 0.0950 | 0.0940 | 0.0850 |
| 2 | 0.0870 | 0.0830 | 0.0700 |
| 3 | 0.0800 | 0.0750 | 0.0600 |
| 4 | 0.0740 | 0.0680 | 0.0510 |
| 5 | 0.0690 | 0.0620 | 0.0450 |
| 10 | 0.0510 | 0.0460 | 0.0350 |
| 15 | 0.0410 | 0.0390 | 0.0340 |
| 20 | 0.0370 | 0.0360 | 0.0330 |
| 25 | 0.0350 | 0.0350 | 0.0330 |
| 30 | 0.0350 | 0.0350 | 0.0330 |

**Public Agency Police**

| Duration of Service | (Entry Age 20) | (Entry Age 30) | (Entry Age 40) |
|---|---|---|---|
| 0 | 0.1090 | 0.1090 | 0.1090 |
| 1 | 0.0930 | 0.0930 | 0.0930 |
| 2 | 0.0810 | 0.0810 | 0.0780 |
| 3 | 0.0720 | 0.0700 | 0.0640 |
| 4 | 0.0650 | 0.0610 | 0.0550 |
| 5 | 0.0590 | 0.0550 | 0.0480 |
| 10 | 0.0450 | 0.0420 | 0.0340 |
| 15 | 0.0410 | 0.0390 | 0.0330 |
| 20 | 0.0370 | 0.0360 | 0.0330 |
| 25 | 0.0350 | 0.0340 | 0.0330 |
| 30 | 0.0350 | 0.0340 | 0.0330 |

**Public Agency County Peace Officers**

| Duration of Service | (Entry Age 20) | (Entry Age 30) | (Entry Age 40) |
|---|---|---|---|
| 0 | 0.1290 | 0.1290 | 0.1290 |
| 1 | 0.1090 | 0.1060 | 0.1030 |
| 2 | 0.0940 | 0.0890 | 0.0840 |
| 3 | 0.0820 | 0.0770 | 0.0710 |
| 4 | 0.0730 | 0.0670 | 0.0610 |
| 5 | 0.0660 | 0.0600 | 0.0530 |
| 10 | 0.0460 | 0.0420 | 0.0380 |
| 15 | 0.0410 | 0.0380 | 0.0360 |
| 20 | 0.0370 | 0.0360 | 0.0340 |
| 25 | 0.0350 | 0.0340 | 0.0330 |
| 30 | 0.0350 | 0.0340 | 0.0330 |

**Schools**

| Duration of Service | (Entry Age 20) | (Entry Age 30) | (Entry Age 40) |
|---|---|---|---|
| 0 | 0.1080 | 0.0960 | 0.0820 |
| 1 | 0.0940 | 0.0850 | 0.0740 |
| 2 | 0.0840 | 0.0770 | 0.0670 |
| 3 | 0.0750 | 0.0700 | 0.0620 |
| 4 | 0.0690 | 0.0640 | 0.0570 |
| 5 | 0.0630 | 0.0600 | 0.0530 |
| 10 | 0.0450 | 0.0440 | 0.0410 |
| 15 | 0.0390 | 0.0380 | 0.0350 |
| 20 | 0.0360 | 0.0350 | 0.0320 |
| 25 | 0.0340 | 0.0340 | 0.0320 |
| 30 | 0.0340 | 0.0340 | 0.0320 |

- The Miscellaneous salary scale is used for Local Prosecutors.
- The Police salary scale is used for Other Safety, Local Sheriff, and School Police.

**Overall Payroll Growth**

3.00 percent compounded annually (used in projecting the payroll over which the unfunded liability is amortized). This assumption is used for all plans.

**Inflation**

2.75 percent compounded annually. This assumption is used for all plans.

**Non-valued Potential Additional Liabilities**

The potential liability loss for a cost-of-living increase exceeding the 2.75 percent inflation assumption, and any potential liability loss from future member service purchases are not reflected in the valuation.

***Miscellaneous Loading Factors***

**Credit for Unused Sick Leave**

Total years of service is increased by 1 percent for those plans that have accepted the provision providing Credit for Unused Sick Leave.

**Conversion of Employer Paid Member Contributions (EPMC)**

Total years of service is increased by the Employee Contribution Rate for those plans with the provision providing for the Conversion of Employer Paid Member Contributions (EPMC) during the final compensation period.

**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.

**Termination Liability**

The termination liabilities include a 7 percent contingency load. This load is for unforeseen improvements in mortality.

***Demographic Assumptions***

**Pre-Retirement Mortality**

Non-Industrial Death Rates vary by age and gender. Industrial Death rates vary by age. See sample rates in table below. The non-industrial death rates are used for all plans. The industrial death rates are used for Safety Plans (except for Local Prosecutor safety members where the corresponding Miscellaneous Plan does not have the Industrial Death Benefit).

| | **Non-Industrial Death (Not Job-Related)** | | **Industrial Death (Job-Related)** |
|---|---|---|---|
| Age | Male | Female | Male and Female |
| 20 | 0.00047 | 0.00016 | 0.00003 |
| 25 | 0.00050 | 0.00026 | 0.00007 |
| 30 | 0.00053 | 0.00036 | 0.00010 |
| 35 | 0.00067 | 0.00046 | 0.00012 |
| 40 | 0.00087 | 0.00065 | 0.00013 |
| 45 | 0.00120 | 0.00093 | 0.00014 |
| 50 | 0.00176 | 0.00126 | 0.00015 |
| 55 | 0.00260 | 0.00176 | 0.00016 |
| 60 | 0.00395 | 0.00266 | 0.00017 |
| 65 | 0.00608 | 0.00419 | 0.00018 |
| 70 | 0.00914 | 0.00649 | 0.00019 |
| 75 | 0.01220 | 0.00878 | 0.00020 |
| 80 | 0.01527 | 0.01108 | 0.00021 |

Miscellaneous Plans usually have Industrial Death rates set to zero unless the agency has specifically contracted for Industrial Death benefits. If so, each Non-Industrial Death rate shown above will be split into two components; 99 percent will become the Non-Industrial Death rate and 1 percent will become the Industrial Death rate.

**Post-Retirement Mortality**

Rates vary by age, type of retirement and gender. See sample rates in table below. These rates are used for all plans.

| | **Healthy Recipients** | | **Non-Industrially Disabled (Not Job-Related)** | | **Industrially Disabled (Job-Related)** | |
|---|---|---|---|---|---|---|
| Age | Male | Female | Male | Female | Male | Female |
| 50 | 0.00239 | 0.00125 | 0.01632 | 0.01245 | 0.00443 | 0.00356 |
| 55 | 0.00474 | 0.00243 | 0.01936 | 0.01580 | 0.00563 | 0.00546 |
| 60 | 0.00720 | 0.00431 | 0.02293 | 0.01628 | 0.00777 | 0.00798 |
| 65 | 0.01069 | 0.00775 | 0.03174 | 0.01969 | 0.01388 | 0.01184 |
| 70 | 0.01675 | 0.01244 | 0.03870 | 0.03019 | 0.02236 | 0.01716 |
| 75 | 0.03080 | 0.02071 | 0.06001 | 0.03915 | 0.03585 | 0.02665 |
| 80 | 0.05270 | 0.03749 | 0.08388 | 0.05555 | 0.06926 | 0.04528 |
| 85 | 0.09775 | 0.07005 | 0.14035 | 0.09577 | 0.11799 | 0.08017 |
| 90 | 0.16747 | 0.12404 | 0.21554 | 0.14949 | 0.16575 | 0.13775 |
| 95 | 0.25659 | 0.21556 | 0.31025 | 0.23055 | 0.26108 | 0.23331 |
| 100 | 0.34551 | 0.31876 | 0.45905 | 0.37662 | 0.40918 | 0.35165 |
| 105 | 0.58527 | 0.56093 | 0.67923 | 0.61523 | 0.64127 | 0.60135 |
| 110 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 |

The mortality assumptions are based on mortality rates resulting from the most recent CalPERS Experience Study adopted by the CalPERS Board, first used in the June 30, 2009 valuation. For purposes of the post-retirement mortality rates, those revised rates include 5 years of projected on-going mortality improvement using Scale AA published by the Society of Actuaries until June 30, 2010. There is no margin for future mortality improvement beyond the valuation date.

On February 19, 2014 the CalPERS Board adopted new recommended demographic assumption based on the most recent CalPERS Experience Study. These new actuarial assumptions will be implemented for the first time in the June 30, 2014 valuation. For purposes of the post-retirement mortality rates, the revised rates include 20 years of projected on-going mortality improvement using Scale BB published by the Society of Actuaries.

**Marital Status**

For active members, a percentage who are married upon retirement is assumed according to member category as shown in the following table.

| Member Category | Percent Married |
|---|---|
| Miscellaneous Member | 85% |
| Local Police | 90% |
| Local Fire | 90% |
| Other Local Safety | 90% |
| School Police | 90% |

**Age of Spouse**

It is assumed that female spouses are 3 years younger than male spouses. This assumption is used for all plans.

**Terminated Members**

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

| Age | Load Factor |
|---|---|
| 50 | 450% |
| 51 | 250% |
| 52 through 56 | 200% |
| 57 through 60 | 150% |
| 61 through 64 | 125% |
| 65 and above | 100% (no change) |

**Termination with Refund**

Rates vary by entry age and service for Miscellaneous Plans. Rates vary by service for Safety Plans. See sample rates in tables below.

**Public Agency Miscellaneous**

| Duration of Service | Entry Age 20 | Entry Age 25 | Entry Age 30 | Entry Age 35 | Entry Age 40 | Entry Age 45 |
|---|---|---|---|---|---|---|
| 0 | 0.1742 | 0.1674 | 0.1606 | 0.1537 | 0.1468 | 0.1400 |
| 1 | 0.1545 | 0.1477 | 0.1409 | 0.1339 | 0.1271 | 0.1203 |
| 2 | 0.1348 | 0.1280 | 0.1212 | 0.1142 | 0.1074 | 0.1006 |
| 3 | 0.1151 | 0.1083 | 0.1015 | 0.0945 | 0.0877 | 0.0809 |
| 4 | 0.0954 | 0.0886 | 0.0818 | 0.0748 | 0.0680 | 0.0612 |
| 5 | 0.0212 | 0.0193 | 0.0174 | 0.0155 | 0.0136 | 0.0116 |
| 10 | 0.0138 | 0.0121 | 0.0104 | 0.0088 | 0.0071 | 0.0055 |
| 15 | 0.0060 | 0.0051 | 0.0042 | 0.0032 | 0.0023 | 0.0014 |
| 20 | 0.0037 | 0.0029 | 0.0021 | 0.0013 | 0.0005 | 0.0001 |
| 25 | 0.0017 | 0.0011 | 0.0005 | 0.0001 | 0.0001 | 0.0001 |
| 30 | 0.0005 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 35 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |

**Public Agency Safety**

| Duration of Service | Fire | Police | County Peace Officer |
|---|---|---|---|
| 0 | 0.0710 | 0.1013 | 0.0997 |
| 1 | 0.0554 | 0.0636 | 0.0782 |
| 2 | 0.0398 | 0.0271 | 0.0566 |
| 3 | 0.0242 | 0.0258 | 0.0437 |
| 4 | 0.0218 | 0.0245 | 0.0414 |
| 5 | 0.0029 | 0.0086 | 0.0145 |
| 10 | 0.0009 | 0.0053 | 0.0089 |
| 15 | 0.0006 | 0.0027 | 0.0045 |
| 20 | 0.0005 | 0.0017 | 0.0020 |
| 25 | 0.0003 | 0.0012 | 0.0009 |
| 30 | 0.0003 | 0.0009 | 0.0006 |
| 35 | 0.0003 | 0.0009 | 0.0006 |

The Police Termination and Refund rates are also used for Public Agency Local Prosecutors, Other Safety, Local Sheriff and School Police.

**Schools**

| Duration of Service | Entry Age 20 | Entry Age 25 | Entry Age 30 | Entry Age 35 | Entry Age 40 | Entry Age 45 |
|---|---|---|---|---|---|---|
| 0 | 0.1730 | 0.1627 | 0.1525 | 0.1422 | 0.1319 | 0.1217 |
| 1 | 0.1585 | 0.1482 | 0.1379 | 0.1277 | 0.1174 | 0.1071 |
| 2 | 0.1440 | 0.1336 | 0.1234 | 0.1131 | 0.1028 | 0.0926 |
| 3 | 0.1295 | 0.1192 | 0.1089 | 0.0987 | 0.0884 | 0.0781 |
| 4 | 0.1149 | 0.1046 | 0.0944 | 0.0841 | 0.0738 | 0.0636 |
| 5 | 0.0278 | 0.0249 | 0.0221 | 0.0192 | 0.0164 | 0.0135 |
| 10 | 0.0172 | 0.0147 | 0.0122 | 0.0098 | 0.0074 | 0.0049 |
| 15 | 0.0115 | 0.0094 | 0.0074 | 0.0053 | 0.0032 | 0.0011 |
| 20 | 0.0073 | 0.0055 | 0.0038 | 0.0020 | 0.0002 | 0.0002 |
| 25 | 0.0037 | 0.0023 | 0.0010 | 0.0002 | 0.0002 | 0.0002 |
| 30 | 0.0015 | 0.0003 | 0.0002 | 0.0002 | 0.0002 | 0.0002 |
| 35 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 |

**Termination with Vested Benefits**

Rates vary by entry age and service for Miscellaneous Plans. Rates vary by service for Safety Plans. See sample rates in tables below.

**Public Agency Miscellaneous**

| Duration of Service | Entry Age 20 | Entry Age 25 | Entry Age 30 | Entry Age 35 | Entry Age 40 |
|---|---|---|---|---|---|
| 5 | 0.0656 | 0.0597 | 0.0537 | 0.0477 | 0.0418 |
| 10 | 0.0530 | 0.0466 | 0.0403 | 0.0339 | 0.0000 |
| 15 | 0.0443 | 0.0373 | 0.0305 | 0.0000 | 0.0000 |
| 20 | 0.0333 | 0.0261 | 0.0000 | 0.0000 | 0.0000 |
| 25 | 0.0212 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 30 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 35 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

**Public Agency Safety**

| Duration of Service | Fire | Police | County Peace Officer |
|---|---|---|---|
| 5 | 0.0162 | 0.0163 | 0.0265 |
| 10 | 0.0061 | 0.0126 | 0.0204 |
| 15 | 0.0058 | 0.0082 | 0.0130 |
| 20 | 0.0053 | 0.0065 | 0.0074 |
| 25 | 0.0047 | 0.0058 | 0.0043 |
| 30 | 0.0045 | 0.0056 | 0.0030 |
| 35 | 0.0000 | 0.0000 | 0.0000 |

- 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 age 54.
- The Police Termination with vested benefits rates are also used for Public Agency Local Prosecutors, Other Safety, Local Sheriff and School Police.

**Schools**

| Duration of Service | Entry Age 20 | Entry Age 25 | Entry Age 30 | Entry Age 35 | Entry Age 40 |
|---|---|---|---|---|---|
| 5 | 0.0816 | 0.0733 | 0.0649 | 0.0566 | 0.0482 |
| 10 | 0.0629 | 0.0540 | 0.0450 | 0.0359 | 0.0000 |
| 15 | 0.0537 | 0.0440 | 0.0344 | 0.0000 | 0.0000 |
| 20 | 0.0420 | 0.0317 | 0.0000 | 0.0000 | 0.0000 |
| 25 | 0.0291 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 30 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 35 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

**Non-Industrial (Not Job-Related) Disability**

Rates vary by age and gender for Miscellaneous Plans. Rates vary by age and category for Safety Plans.

| | Miscellaneous | | Fire | Police | County Peace Officer | Schools | |
|---|---|---|---|---|---|---|---|
| Age | Male | Female | Male and Female | Male and Female | Male and Female | Male | Female |
| 20 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 25 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 30 | 0.0002 | 0.0002 | 0.0001 | 0.0002 | 0.0001 | 0.0002 | 0.0001 |
| 35 | 0.0006 | 0.0009 | 0.0001 | 0.0003 | 0.0004 | 0.0006 | 0.0004 |
| 40 | 0.0015 | 0.0016 | 0.0001 | 0.0004 | 0.0007 | 0.0014 | 0.0009 |
| 45 | 0.0025 | 0.0024 | 0.0002 | 0.0005 | 0.0013 | 0.0028 | 0.0017 |
| 50 | 0.0033 | 0.0031 | 0.0005 | 0.0008 | 0.0018 | 0.0044 | 0.0030 |
| 55 | 0.0037 | 0.0031 | 0.0010 | 0.0013 | 0.0010 | 0.0049 | 0.0034 |
| 60 | 0.0038 | 0.0025 | 0.0015 | 0.0020 | 0.0006 | 0.0043 | 0.0024 |

- The Miscellaneous Non-Industrial Disability rates are used for Local Prosecutors.
- The Police Non-Industrial Disability rates are also used for Other Safety, Local Sheriff and School Police.

**Industrial (Job-Related) Disability**

Rates vary by age and category.

| Age | Fire | Police | County Peace Officer |
|---|---|---|---|
| 20 | 0.0002 | 0.0007 | 0.0003 |
| 25 | 0.0012 | 0.0032 | 0.0015 |
| 30 | 0.0025 | 0.0064 | 0.0031 |
| 35 | 0.0037 | 0.0097 | 0.0046 |
| 40 | 0.0049 | 0.0129 | 0.0063 |
| 45 | 0.0061 | 0.0161 | 0.0078 |
| 50 | 0.0074 | 0.0192 | 0.0101 |
| 55 | 0.0721 | 0.0668 | 0.0173 |
| 60 | 0.0721 | 0.0668 | 0.0173 |

- The Police Industrial Disability rates are also used for Local Sheriff and Other Safety.
- Fifty Percent of the Police Industrial Disability rates are used for School Police.
- One Percent of the Police Industrial Disability rates are used for Local Prosecutors.
- Normally, rates are zero for Miscellaneous Plans unless the agency has specifically contracted for Industrial Disability benefits. If so, each miscellaneous non-industrial disability rate will be split into two components: 50 percent will become the Non-Industrial Disability rate and 50 percent will become the Industrial Disability rate.

**Service Retirement**

Retirement rates vary by age, service, and formula, except for the safety ½ @ 55 and 2% @ 55 formulas, where retirement rates vary by age only.

**Service Retirement**

**Public Agency Miscellaneous 1.5% @ 65**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.008 | 0.011 | 0.013 | 0.015 | 0.017 | 0.019 |
| 51 | 0.007 | 0.010 | 0.012 | 0.013 | 0.015 | 0.017 |
| 52 | 0.010 | 0.014 | 0.017 | 0.019 | 0.021 | 0.024 |
| 53 | 0.008 | 0.012 | 0.015 | 0.017 | 0.019 | 0.022 |
| 54 | 0.012 | 0.016 | 0.019 | 0.022 | 0.025 | 0.028 |
| 55 | 0.018 | 0.025 | 0.031 | 0.035 | 0.038 | 0.043 |
| 56 | 0.015 | 0.021 | 0.025 | 0.029 | 0.032 | 0.036 |
| 57 | 0.020 | 0.028 | 0.033 | 0.038 | 0.043 | 0.048 |
| 58 | 0.024 | 0.033 | 0.040 | 0.046 | 0.052 | 0.058 |
| 59 | 0.028 | 0.039 | 0.048 | 0.054 | 0.060 | 0.067 |
| 60 | 0.049 | 0.069 | 0.083 | 0.094 | 0.105 | 0.118 |
| 61 | 0.062 | 0.087 | 0.106 | 0.120 | 0.133 | 0.150 |
| 62 | 0.104 | 0.146 | 0.177 | 0.200 | 0.223 | 0.251 |
| 63 | 0.099 | 0.139 | 0.169 | 0.191 | 0.213 | 0.239 |
| 64 | 0.097 | 0.136 | 0.165 | 0.186 | 0.209 | 0.233 |
| 65 | 0.140 | 0.197 | 0.240 | 0.271 | 0.302 | 0.339 |
| 66 | 0.092 | 0.130 | 0.157 | 0.177 | 0.198 | 0.222 |
| 67 | 0.129 | 0.181 | 0.220 | 0.249 | 0.277 | 0.311 |
| 68 | 0.092 | 0.129 | 0.156 | 0.177 | 0.197 | 0.221 |
| 69 | 0.092 | 0.130 | 0.158 | 0.178 | 0.199 | 0.224 |
| 70 | 0.103 | 0.144 | 0.175 | 0.198 | 0.221 | 0.248 |

**Public Agency Miscellaneous 2% @ 60**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.011 | 0.015 | 0.018 | 0.021 | 0.023 | 0.026 |
| 51 | 0.009 | 0.013 | 0.016 | 0.018 | 0.020 | 0.023 |
| 52 | 0.013 | 0.018 | 0.022 | 0.025 | 0.028 | 0.031 |
| 53 | 0.011 | 0.016 | 0.019 | 0.022 | 0.025 | 0.028 |
| 54 | 0.015 | 0.021 | 0.025 | 0.028 | 0.032 | 0.036 |
| 55 | 0.023 | 0.032 | 0.039 | 0.044 | 0.049 | 0.055 |
| 56 | 0.019 | 0.027 | 0.032 | 0.037 | 0.041 | 0.046 |
| 57 | 0.025 | 0.035 | 0.042 | 0.048 | 0.054 | 0.060 |
| 58 | 0.030 | 0.042 | 0.051 | 0.058 | 0.065 | 0.073 |
| 59 | 0.035 | 0.049 | 0.060 | 0.068 | 0.076 | 0.085 |
| 60 | 0.062 | 0.087 | 0.105 | 0.119 | 0.133 | 0.149 |
| 61 | 0.079 | 0.110 | 0.134 | 0.152 | 0.169 | 0.190 |
| 62 | 0.132 | 0.186 | 0.225 | 0.255 | 0.284 | 0.319 |
| 63 | 0.126 | 0.178 | 0.216 | 0.244 | 0.272 | 0.305 |
| 64 | 0.122 | 0.171 | 0.207 | 0.234 | 0.262 | 0.293 |
| 65 | 0.173 | 0.243 | 0.296 | 0.334 | 0.373 | 0.418 |
| 66 | 0.114 | 0.160 | 0.194 | 0.219 | 0.245 | 0.274 |
| 67 | 0.159 | 0.223 | 0.271 | 0.307 | 0.342 | 0.384 |
| 68 | 0.113 | 0.159 | 0.193 | 0.218 | 0.243 | 0.273 |
| 69 | 0.114 | 0.161 | 0.195 | 0.220 | 0.246 | 0.276 |
| 70 | 0.127 | 0.178 | 0.216 | 0.244 | 0.273 | 0.306 |

**Service Retirement**

**Public Agency Miscellaneous 2% @ 55**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.015 | 0.020 | 0.024 | 0.029 | 0.033 | 0.039 |
| 51 | 0.013 | 0.016 | 0.020 | 0.024 | 0.027 | 0.033 |
| 52 | 0.014 | 0.018 | 0.022 | 0.027 | 0.030 | 0.036 |
| 53 | 0.017 | 0.022 | 0.027 | 0.032 | 0.037 | 0.043 |
| 54 | 0.027 | 0.034 | 0.041 | 0.049 | 0.056 | 0.067 |
| 55 | 0.050 | 0.064 | 0.078 | 0.094 | 0.107 | 0.127 |
| 56 | 0.045 | 0.057 | 0.069 | 0.083 | 0.095 | 0.113 |
| 57 | 0.048 | 0.061 | 0.074 | 0.090 | 0.102 | 0.122 |
| 58 | 0.052 | 0.066 | 0.080 | 0.097 | 0.110 | 0.131 |
| 59 | 0.060 | 0.076 | 0.092 | 0.111 | 0.127 | 0.151 |
| 60 | 0.072 | 0.092 | 0.112 | 0.134 | 0.153 | 0.182 |
| 61 | 0.089 | 0.113 | 0.137 | 0.165 | 0.188 | 0.224 |
| 62 | 0.128 | 0.162 | 0.197 | 0.237 | 0.270 | 0.322 |
| 63 | 0.129 | 0.164 | 0.199 | 0.239 | 0.273 | 0.325 |
| 64 | 0.116 | 0.148 | 0.180 | 0.216 | 0.247 | 0.294 |
| 65 | 0.174 | 0.221 | 0.269 | 0.323 | 0.369 | 0.439 |
| 66 | 0.135 | 0.171 | 0.208 | 0.250 | 0.285 | 0.340 |
| 67 | 0.133 | 0.169 | 0.206 | 0.247 | 0.282 | 0.336 |
| 68 | 0.118 | 0.150 | 0.182 | 0.219 | 0.250 | 0.297 |
| 69 | 0.116 | 0.147 | 0.179 | 0.215 | 0.246 | 0.293 |
| 70 | 0.138 | 0.176 | 0.214 | 0.257 | 0.293 | 0.349 |

**Public Agency Miscellaneous 2.5% @ 55**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.026 | 0.033 | 0.040 | 0.048 | 0.055 | 0.062 |
| 51 | 0.021 | 0.026 | 0.032 | 0.038 | 0.043 | 0.049 |
| 52 | 0.021 | 0.026 | 0.032 | 0.038 | 0.043 | 0.049 |
| 53 | 0.026 | 0.033 | 0.040 | 0.048 | 0.055 | 0.062 |
| 54 | 0.043 | 0.054 | 0.066 | 0.078 | 0.089 | 0.101 |
| 55 | 0.088 | 0.112 | 0.136 | 0.160 | 0.184 | 0.208 |
| 56 | 0.055 | 0.070 | 0.085 | 0.100 | 0.115 | 0.130 |
| 57 | 0.061 | 0.077 | 0.094 | 0.110 | 0.127 | 0.143 |
| 58 | 0.072 | 0.091 | 0.111 | 0.130 | 0.150 | 0.169 |
| 59 | 0.083 | 0.105 | 0.128 | 0.150 | 0.173 | 0.195 |
| 60 | 0.088 | 0.112 | 0.136 | 0.160 | 0.184 | 0.208 |
| 61 | 0.083 | 0.105 | 0.128 | 0.150 | 0.173 | 0.195 |
| 62 | 0.121 | 0.154 | 0.187 | 0.220 | 0.253 | 0.286 |
| 63 | 0.105 | 0.133 | 0.162 | 0.190 | 0.219 | 0.247 |
| 64 | 0.105 | 0.133 | 0.162 | 0.190 | 0.219 | 0.247 |
| 65 | 0.143 | 0.182 | 0.221 | 0.260 | 0.299 | 0.338 |
| 66 | 0.105 | 0.133 | 0.162 | 0.190 | 0.219 | 0.247 |
| 67 | 0.105 | 0.133 | 0.162 | 0.190 | 0.219 | 0.247 |
| 68 | 0.105 | 0.133 | 0.162 | 0.190 | 0.219 | 0.247 |
| 69 | 0.105 | 0.133 | 0.162 | 0.190 | 0.219 | 0.247 |
| 70 | 0.125 | 0.160 | 0.194 | 0.228 | 0.262 | 0.296 |

**Service Retirement**

**Public Agency Miscellaneous 2.7% @ 55**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.028 | 0.035 | 0.043 | 0.050 | 0.058 | 0.065 |
| 51 | 0.022 | 0.028 | 0.034 | 0.040 | 0.046 | 0.052 |
| 52 | 0.022 | 0.028 | 0.034 | 0.040 | 0.046 | 0.052 |
| 53 | 0.028 | 0.035 | 0.043 | 0.050 | 0.058 | 0.065 |
| 54 | 0.044 | 0.056 | 0.068 | 0.080 | 0.092 | 0.104 |
| 55 | 0.091 | 0.116 | 0.140 | 0.165 | 0.190 | 0.215 |
| 56 | 0.061 | 0.077 | 0.094 | 0.110 | 0.127 | 0.143 |
| 57 | 0.063 | 0.081 | 0.098 | 0.115 | 0.132 | 0.150 |
| 58 | 0.074 | 0.095 | 0.115 | 0.135 | 0.155 | 0.176 |
| 59 | 0.083 | 0.105 | 0.128 | 0.150 | 0.173 | 0.195 |
| 60 | 0.088 | 0.112 | 0.136 | 0.160 | 0.184 | 0.208 |
| 61 | 0.085 | 0.109 | 0.132 | 0.155 | 0.178 | 0.202 |
| 62 | 0.124 | 0.158 | 0.191 | 0.225 | 0.259 | 0.293 |
| 63 | 0.107 | 0.137 | 0.166 | 0.195 | 0.224 | 0.254 |
| 64 | 0.107 | 0.137 | 0.166 | 0.195 | 0.224 | 0.254 |
| 65 | 0.146 | 0.186 | 0.225 | 0.265 | 0.305 | 0.345 |
| 66 | 0.107 | 0.137 | 0.166 | 0.195 | 0.224 | 0.254 |
| 67 | 0.107 | 0.137 | 0.166 | 0.195 | 0.224 | 0.254 |
| 68 | 0.107 | 0.137 | 0.166 | 0.195 | 0.224 | 0.254 |
| 69 | 0.107 | 0.137 | 0.166 | 0.195 | 0.224 | 0.254 |
| 70 | 0.129 | 0.164 | 0.199 | 0.234 | 0.269 | 0.304 |

**Public Agency Miscellaneous 3% @ 60**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.026 | 0.033 | 0.040 | 0.048 | 0.055 | 0.062 |
| 51 | 0.021 | 0.026 | 0.032 | 0.038 | 0.043 | 0.049 |
| 52 | 0.019 | 0.025 | 0.030 | 0.035 | 0.040 | 0.046 |
| 53 | 0.025 | 0.032 | 0.038 | 0.045 | 0.052 | 0.059 |
| 54 | 0.039 | 0.049 | 0.060 | 0.070 | 0.081 | 0.091 |
| 55 | 0.083 | 0.105 | 0.128 | 0.150 | 0.173 | 0.195 |
| 56 | 0.055 | 0.070 | 0.085 | 0.100 | 0.115 | 0.130 |
| 57 | 0.061 | 0.077 | 0.094 | 0.110 | 0.127 | 0.143 |
| 58 | 0.072 | 0.091 | 0.111 | 0.130 | 0.150 | 0.169 |
| 59 | 0.080 | 0.102 | 0.123 | 0.145 | 0.167 | 0.189 |
| 60 | 0.094 | 0.119 | 0.145 | 0.170 | 0.196 | 0.221 |
| 61 | 0.088 | 0.112 | 0.136 | 0.160 | 0.184 | 0.208 |
| 62 | 0.127 | 0.161 | 0.196 | 0.230 | 0.265 | 0.299 |
| 63 | 0.110 | 0.140 | 0.170 | 0.200 | 0.230 | 0.260 |
| 64 | 0.110 | 0.140 | 0.170 | 0.200 | 0.230 | 0.260 |
| 65 | 0.149 | 0.189 | 0.230 | 0.270 | 0.311 | 0.351 |
| 66 | 0.110 | 0.140 | 0.170 | 0.200 | 0.230 | 0.260 |
| 67 | 0.110 | 0.140 | 0.170 | 0.200 | 0.230 | 0.260 |
| 68 | 0.110 | 0.140 | 0.170 | 0.200 | 0.230 | 0.260 |
| 69 | 0.110 | 0.140 | 0.170 | 0.200 | 0.230 | 0.260 |
| 70 | 0.132 | 0.168 | 0.204 | 0.240 | 0.276 | 0.312 |

**Service Retirement**

**Public Agency Miscellaneous 2% @ 62**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 51 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 52 | 0.0103 | 0.0132 | 0.0160 | 0.0188 | 0.0216 | 0.0244 |
| 53 | 0.0131 | 0.0167 | 0.0202 | 0.0238 | 0.0273 | 0.0309 |
| 54 | 0.0213 | 0.0272 | 0.0330 | 0.0388 | 0.0446 | 0.0504 |
| 55 | 0.0440 | 0.0560 | 0.0680 | 0.0800 | 0.0920 | 0.1040 |
| 56 | 0.0303 | 0.0385 | 0.0468 | 0.0550 | 0.0633 | 0.0715 |
| 57 | 0.0363 | 0.0462 | 0.0561 | 0.0660 | 0.0759 | 0.0858 |
| 58 | 0.00465 | 0.0592 | 0.0718 | 0.0845 | 0.0972 | 0.1099 |
| 59 | 0.0578 | 0.0735 | 0.0893 | 0.1050 | 0.1208 | 0.1365 |
| 60 | 0.0616 | 0.0784 | 0.0952 | 0.1120 | 0.1288 | 0.1456 |
| 61 | 0.0888 | 0.0788 | 0.0956 | 0.1125 | 0.1294 | 0.1463 |
| 62 | 0.0941 | 0.1232 | 0.1496 | 0.1760 | 0.2024 | 0.2288 |
| 63 | 0.1287 | 0.1131 | 0.1373 | 0.1615 | 0.1857 | 0.2100 |
| 64 | 0.1045 | 0.1197 | 0.1454 | 0.1710 | 0.1967 | 0.2223 |
| 65 | 0.1045 | 0.1638 | 0.1989 | 0.2340 | 0.2691 | 0.3042 |
| 66 | 0.1045 | 0.1330 | 0.1615 | 0.1900 | 0.2185 | 0.2470 |
| 67 | 0.1045 | 0.1330 | 0.1615 | 0.1900 | 0.2185 | 0.2470 |
| 68 | 0.1045 | 0.1330 | 0.1615 | 0.1900 | 0.2185 | 0.2470 |
| 69 | 0.1045 | 0.1330 | 0.1615 | 0.1900 | 0.2185 | 0.2470 |
| 70 | 0.1254 | 0.1596 | 0.1938 | 0.2280 | 0.2622 | 0.9640 |

**Service Retirement**

**Public Agency Fire ½ @ 55 and 2% @ 55**

| Age | Rate | Age | Rate |
|---|---|---|---|
| 50 | 0.01588 | 56 | 0.11079 |
| 51 | 0.00000 | 57 | 0.00000 |
| 52 | 0.03442 | 58 | 0.09499 |
| 53 | 0.01990 | 59 | 0.04409 |
| 54 | 0.04132 | 60 | 1.00000 |
| 55 | 0.07513 | | |

**Public Agency Police ½ @ 55 and 2% @ 55**

| Age | Rate | Age | Rate |
|---|---|---|---|
| 50 | 0.02552 | 56 | 0.06921 |
| 51 | 0.00000 | 57 | 0.05113 |
| 52 | 0.01637 | 58 | 0.07241 |
| 53 | 0.02717 | 59 | 0.07043 |
| 54 | 0.00949 | 60 | 1.00000 |
| 55 | 0.16674 | | |

**Service Retirement**

**Public Agency Police 2% @ 50**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.014 | 0.014 | 0.014 | 0.014 | 0.025 | 0.045 |
| 51 | 0.012 | 0.012 | 0.012 | 0.012 | 0.023 | 0.040 |
| 52 | 0.026 | 0.026 | 0.026 | 0.026 | 0.048 | 0.086 |
| 53 | 0.052 | 0.052 | 0.052 | 0.052 | 0.096 | 0.171 |
| 54 | 0.070 | 0.070 | 0.070 | 0.070 | 0.128 | 0.227 |
| 55 | 0.090 | 0.090 | 0.090 | 0.090 | 0.165 | 0.293 |
| 56 | 0.064 | 0.064 | 0.064 | 0.064 | 0.117 | 0.208 |
| 57 | 0.071 | 0.071 | 0.071 | 0.071 | 0.130 | 0.232 |
| 58 | 0.063 | 0.063 | 0.063 | 0.063 | 0.115 | 0.205 |
| 59 | 0.140 | 0.140 | 0.140 | 0.140 | 0.174 | 0.254 |
| 60 | 0.140 | 0.140 | 0.140 | 0.140 | 0.172 | 0.251 |
| 61 | 0.140 | 0.140 | 0.140 | 0.140 | 0.172 | 0.251 |
| 62 | 0.140 | 0.140 | 0.140 | 0.140 | 0.172 | 0.251 |
| 63 | 0.140 | 0.140 | 0.140 | 0.140 | 0.172 | 0.251 |
| 64 | 0.140 | 0.140 | 0.140 | 0.140 | 0.172 | 0.251 |
| 65 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

- These rates also apply to Local Prosecutors, Local Sheriff, School Police and Other Safety.

**Service Retirement**

**Public Agency Fire 2% @ 50**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.007 | 0.007 | 0.007 | 0.007 | 0.010 | 0.015 |
| 51 | 0.008 | 0.008 | 0.008 | 0.008 | 0.013 | 0.019 |
| 52 | 0.017 | 0.017 | 0.017 | 0.017 | 0.027 | 0.040 |
| 53 | 0.047 | 0.047 | 0.047 | 0.047 | 0.072 | 0.107 |
| 54 | 0.064 | 0.064 | 0.064 | 0.064 | 0.098 | 0.147 |
| 55 | 0.087 | 0.087 | 0.087 | 0.087 | 0.134 | 0.200 |
| 56 | 0.078 | 0.078 | 0.078 | 0.078 | 0.120 | 0.180 |
| 57 | 0.090 | 0.090 | 0.090 | 0.090 | 0.139 | 0.208 |
| 58 | 0.079 | 0.079 | 0.079 | 0.079 | 0.122 | 0.182 |
| 59 | 0.073 | 0.073 | 0.073 | 0.073 | 0.112 | 0.168 |
| 60 | 0.114 | 0.114 | 0.114 | 0.114 | 0.175 | 0.262 |
| 61 | 0.114 | 0.114 | 0.114 | 0.114 | 0.175 | 0.262 |
| 62 | 0.114 | 0.114 | 0.114 | 0.114 | 0.175 | 0.262 |
| 63 | 0.114 | 0.114 | 0.114 | 0.114 | 0.175 | 0.262 |
| 64 | 0.114 | 0.114 | 0.114 | 0.114 | 0.175 | 0.262 |
| 65 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

**Service Retirement**

**Public Agency Police 3% @ 55**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.019 | 0.019 | 0.019 | 0.019 | 0.040 | 0.060 |
| 51 | 0.024 | 0.024 | 0.024 | 0.024 | 0.049 | 0.074 |
| 52 | 0.024 | 0.024 | 0.024 | 0.024 | 0.051 | 0.077 |
| 53 | 0.059 | 0.059 | 0.059 | 0.059 | 0.121 | 0.183 |
| 54 | 0.069 | 0.069 | 0.069 | 0.069 | 0.142 | 0.215 |
| 55 | 0.116 | 0.116 | 0.116 | 0.116 | 0.240 | 0.363 |
| 56 | 0.076 | 0.076 | 0.076 | 0.076 | 0.156 | 0.236 |
| 57 | 0.058 | 0.058 | 0.058 | 0.058 | 0.120 | 0.181 |
| 58 | 0.076 | 0.076 | 0.076 | 0.076 | 0.157 | 0.237 |
| 59 | 0.094 | 0.094 | 0.094 | 0.094 | 0.193 | 0.292 |
| 60 | 0.141 | 0.141 | 0.141 | 0.141 | 0.290 | 0.438 |
| 61 | 0.094 | 0.094 | 0.094 | 0.094 | 0.193 | 0.292 |
| 62 | 0.118 | 0.118 | 0.118 | 0.118 | 0.241 | 0.365 |
| 63 | 0.094 | 0.094 | 0.094 | 0.094 | 0.193 | 0.292 |
| 64 | 0.094 | 0.094 | 0.094 | 0.094 | 0.193 | 0.292 |
| 65 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

- These rates also apply to Local Prosecutors, Local Sheriff, School Police and Other Safety.

**Service Retirement**

**Public Agency Fire 3% @ 55**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.012 | 0.012 | 0.012 | 0.018 | 0.028 | 0.033 |
| 51 | 0.008 | 0.008 | 0.008 | 0.012 | 0.019 | 0.022 |
| 52 | 0.018 | 0.018 | 0.018 | 0.027 | 0.042 | 0.050 |
| 53 | 0.043 | 0.043 | 0.043 | 0.062 | 0.098 | 0.114 |
| 54 | 0.057 | 0.057 | 0.057 | 0.083 | 0.131 | 0.152 |
| 55 | 0.092 | 0.092 | 0.092 | 0.134 | 0.211 | 0.246 |
| 56 | 0.081 | 0.081 | 0.081 | 0.118 | 0.187 | 0.218 |
| 57 | 0.100 | 0.100 | 0.100 | 0.146 | 0.230 | 0.268 |
| 58 | 0.081 | 0.081 | 0.081 | 0.119 | 0.187 | 0.219 |
| 59 | 0.078 | 0.078 | 0.078 | 0.113 | 0.178 | 0.208 |
| 60 | 0.117 | 0.117 | 0.117 | 0.170 | 0.267 | 0.312 |
| 61 | 0.078 | 0.078 | 0.078 | 0.113 | 0.178 | 0.208 |
| 62 | 0.098 | 0.098 | 0.098 | 0.141 | 0.223 | 0.260 |
| 63 | 0.078 | 0.078 | 0.078 | 0.113 | 0.178 | 0.208 |
| 64 | 0.078 | 0.078 | 0.078 | 0.113 | 0.178 | 0.208 |
| 65 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

**Service Retirement**

**Public Agency Police 2% @ 57**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.0110 | 0.0110 | 0.0110 | 0.0110 | 0.0202 | 0.0361 |
| 51 | 0.0086 | 0.0086 | 0.0086 | 0.0086 | 0.0158 | 0.0281 |
| 52 | 0.0183 | 0.0183 | 0.0183 | 0.0183 | 0.0336 | 0.0599 |
| 53 | 0.0366 | 0.0366 | 0.0366 | 0.0366 | 0.0670 | 0.1194 |
| 54 | 0.0488 | 0.0488 | 0.0488 | 0.0488 | 0.0893 | 0.1592 |
| 55 | 0.0629 | 0.0629 | 0.0629 | 0.0629 | 0.1152 | 0.2052 |
| 56 | 0.0447 | 0.0447 | 0.0447 | 0.0447 | 0.0816 | 0.1455 |
| 57 | 0.0640 | 0.0640 | 0.0640 | 0.0640 | 0.1170 | 0.2086 |
| 58 | 0.0471 | 0.0471 | 0.0471 | 0.0471 | 0.0862 | 0.1537 |
| 59 | 0.1047 | 0.1047 | 0.1047 | 0.1047 | 0.1301 | 0.1908 |
| 60 | 0.1047 | 0.1047 | 0.1047 | 0.1047 | 0.1289 | 0.1880 |
| 61 | 0.1047 | 0.1047 | 0.1047 | 0.1047 | 0.1289 | 0.1880 |
| 62 | 0.1047 | 0.1047 | 0.1047 | 0.1047 | 0.1289 | 0.1880 |
| 63 | 0.1047 | 0.1047 | 0.1047 | 0.1047 | 0.1289 | 0.1880 |
| 64 | 0.1047 | 0.1047 | 0.1047 | 0.1047 | 0.1289 | 0.1880 |
| 65 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.000 |

- These rates also apply to Local Prosecutors, Local Sheriff, School Police and Other Safety.

**Service Retirement**

**Public Agency Fire 2% @ 57**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.0052 | 0.0052 | 0.0052 | 0.0052 | 0.0081 | 0.0121 |
| 51 | 0.0057 | 0.0057 | 0.0057 | 0.0057 | 0.0088 | 0.0131 |
| 52 | 0.0121 | 0.0121 | 0.0121 | 0.0121 | 0.0187 | 0.0280 |
| 53 | 0.0326 | 0.0326 | 0.0326 | 0.0326 | 0.0501 | 0.0750 |
| 54 | 0.0447 | 0.0447 | 0.0447 | 0.0447 | 0.0688 | 0.1030 |
| 55 | 0.0608 | 0.0608 | 0.0608 | 0.0608 | 0.0935 | 01400 |
| 56 | 0.0545 | 0.0545 | 0.0545 | 0.0545 | 0.0840 | 0.1257 |
| 57 | 0.0811 | 0.0811 | 0.0811 | 0.0811 | 0.01248 | 0.1869 |
| 58 | 0.0593 | 0.0593 | 0.0593 | 0.0593 | 0.0913 | 0.1366 |
| 59 | 0.0547 | 0.0547 | 0.0547 | 0.0547 | 0.0842 | 0.1261 |
| 60 | 0.0851 | 0.0851 | 0.0851 | 0.0851 | 0.1310 | 0.1961 |
| 61 | 0.0852 | 0.0852 | 0.0852 | 0.0852 | 0.1312 | 0.1964 |
| 62 | 0.0852 | 0.0852 | 0.0852 | 0.0852 | 0.1312 | 0.1964 |
| 63 | 0.0852 | 0.0852 | 0.0852 | 0.0852 | 0.1312 | 0.1964 |
| 64 | 0.0852 | 0.0852 | 0.0852 | 0.0852 | 0.1312 | 0.1964 |
| 65 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |

**Service Retirement**

**Public Agency Police 2.5% @ 57**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.0138 | 0.0138 | 0.0138 | 0.0138 | 0.0253 | 0.0451 |
| 51 | 0.0117 | 0.0117 | 0.0117 | 0.0117 | 0.0215 | 0.0382 |
| 52 | 0.0249 | 0.0249 | 0.0249 | 0.0249 | 0.0456 | 0.0812 |
| 53 | 0.0471 | 0.0471 | 0.0471 | 0.0471 | 0.0861 | 0.1535 |
| 54 | 0.0627 | 0.0627 | 0.0627 | 0.0627 | 0.1148 | 0.2047 |
| 55 | 0.0764 | 0.0764 | 0.0764 | 0.0764 | 0.1398 | 0.2492 |
| 56 | 0.0542 | 0.0542 | 0.0542 | 0.0542 | 0.0991 | 0.1767 |
| 57 | 0.0711 | 0.0711 | 0.0711 | 0.0711 | 0.1300 | 0.2318 |
| 58 | 0.0565 | 0.0565 | 0.0565 | 0.0565 | 0.1034 | 0.1844 |
| 59 | 0.1256 | 0.1256 | 0.1256 | 0.1256 | 0.1562 | 0.2290 |
| 60 | 0.1256 | 0.1256 | 0.1256 | 0.1256 | 0.1547 | 0.2255 |
| 61 | 0.1256 | 0.1256 | 0.1256 | 0.1256 | 0.1547 | 0.2255 |
| 62 | 0.1256 | 0.1256 | 0.1256 | 0.1256 | 0.1547 | 0.2255 |
| 63 | 0.1256 | 0.1256 | 0.1256 | 0.1256 | 0.1547 | 0.2255 |
| 64 | 0.1256 | 0.1256 | 0.1256 | 0.1256 | 0.1547 | 0.2255 |
| 65 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.000 |

- These rates also apply to Local Prosecutors, Local Sheriff, School Police and Other Safety.

**Service Retirement**

**Public Agency Fire 2.5% @ 57**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.0065 | 0.0065 | 0.0065 | 0.0065 | 0.0101 | 0.0151 |
| 51 | 0.0077 | 0.0077 | 0.0077 | 0.0077 | 0.0119 | 0.0178 |
| 52 | 0.0164 | 0.0164 | 0.0164 | 0.0164 | 0.0254 | 0.0380 |
| 53 | 0.0419 | 0.0419 | 0.0419 | 0.0419 | 0.0644 | 0.0965 |
| 54 | 0.0574 | 0.0574 | 0.0574 | 0.0574 | 0.0885 | 0.1324 |
| 55 | 0.0738 | 0.0738 | 0.0738 | 0.0738 | 0.1136 | 01700 |
| 56 | 0.0662 | 0.0662 | 0.0662 | 0.0662 | 0.1020 | 0.2077 |
| 57 | 0.0901 | 0.0901 | 0.0901 | 0.0901 | 0.1387 | 0.1639 |
| 58 | 0.0711 | 0.0711 | 0.0711 | 0.0711 | 0.1095 | 0.1513 |
| 59 | 0.0656 | 0.0656 | 0.0656 | 0.0656 | 0.1011 | 0.2354 |
| 60 | 0.1022 | 0.1022 | 0.1022 | 0.1022 | 0.1572 | 0.2356 |
| 61 | 0.1022 | 0.1022 | 0.1022 | 0.1022 | 0.1574 | 0.2356 |
| 62 | 0.1022 | 0.1022 | 0.1022 | 0.1022 | 0.1574 | 0.2356 |
| 63 | 0.1022 | 0.1022 | 0.1022 | 0.1022 | 0.1574 | 0.2356 |
| 64 | 0.1022 | 0.1022 | 0.1022 | 0.1022 | 0.1574 | 0.2356 |
| 65 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |

**Service Retirement**

**Public Agency Police 2.7% @ 57**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.0138 | 0.0138 | 0.0138 | 0.0138 | 0.0253 | 0.0451 |
| 51 | 0.0123 | 0.0123 | 0.0123 | 0.0123 | 0.0226 | 0.0402 |
| 52 | 0.0249 | 0.0249 | 0.0249 | 0.0249 | 0.0456 | 0.0812 |
| 53 | 0.0497 | 0.0497 | 0.0497 | 0.0497 | 0.0909 | 0.1621 |
| 54 | 0.0662 | 0.0662 | 0.0662 | 0.0662 | 0.1211 | 0.2160 |
| 55 | 0.0854 | 0.0854 | 0.0854 | 0.0854 | 0.1563 | 0.2785 |
| 56 | 0.0606 | 0.0606 | 0.0606 | 0.0606 | 0.1108 | 0.1975 |
| 57 | 0.0711 | 0.0711 | 0.0711 | 0.0711 | 0.1300 | 0.2318 |
| 58 | 0.0628 | 0.0628 | 0.0628 | 0.0628 | 0.1149 | 0.2049 |
| 59 | 0.1396 | 0.1396 | 0.1396 | 0.1396 | 0.1735 | 0.2544 |
| 60 | 0.1396 | 0.1396 | 0.1396 | 0.1396 | 0.1719 | 0.2506 |
| 61 | 0.1396 | 0.1396 | 0.1396 | 0.1396 | 0.1719 | 0.2506 |
| 62 | 0.1396 | 0.1396 | 0.1396 | 0.1396 | 0.1719 | 0.2506 |
| 63 | 0.1396 | 0.1396 | 0.1396 | 0.1396 | 0.1719 | 0.2506 |
| 64 | 0.1396 | 0.1396 | 0.1396 | 0.1396 | 0.1719 | 0.2506 |
| 65 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |

- These rates also apply to Local Prosecutors, Local Sheriff, School Police and Other Safety.

**Service Retirement**

**Public Agency Fire 2.7% @ 57**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.0065 | 0.0065 | 0.0065 | 0.0065 | 0.0101 | 0.0151 |
| 51 | 0.0081 | 0.0081 | 0.0081 | 0.0081 | 0.0125 | 0.0187 |
| 52 | 0.0164 | 0.0164 | 0.0164 | 0.0164 | 0.0254 | 0.0380 |
| 53 | 0.0442 | 0.0442 | 0.0442 | 0.0442 | 0.0680 | 0.1018 |
| 54 | 0.0606 | 0.0606 | 0.0606 | 0.0606 | 0.0934 | 0.1397 |
| 55 | 0.0825 | 0.0825 | 0.0825 | 0.0825 | 0.1269 | 01900 |
| 56 | 0.0740 | 0.0740 | 0.0740 | 0.0740 | 0.1140 | 0.1706 |
| 57 | 0.0901 | 0.0901 | 0.0901 | 0.0901 | 0.1387 | 0.2077 |
| 58 | 0.0790 | 0.0790 | 0.0790 | 0.0790 | 0.1217 | 0.1821 |
| 59 | 0.0729 | 0.0729 | 0.0729 | 0.0729 | 0.1123 | 0.1681 |
| 60 | 0.1135 | 0.1135 | 0.1135 | 0.1135 | 0.1747 | 0.2615 |
| 61 | 0.1136 | 0.1136 | 0.1136 | 0.1136 | 0.1749 | 0.2618 |
| 62 | 0.1136 | 0.1136 | 0.1136 | 0.1136 | 0.1749 | 0.2618 |
| 63 | 0.1136 | 0.1136 | 0.1136 | 0.1136 | 0.1749 | 0.2618 |
| 64 | 0.1136 | 0.1136 | 0.1136 | 0.1136 | 0.1749 | 0.2618 |
| 65 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |

**Service Retirement**

**Schools 2% @ 55**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.005 | 0.009 | 0.013 | 0.015 | 0.016 | 0.018 |
| 51 | 0.005 | 0.010 | 0.014 | 0.017 | 0.019 | 0.021 |
| 52 | 0.006 | 0.012 | 0.017 | 0.020 | 0.022 | 0.025 |
| 53 | 0.007 | 0.014 | 0.019 | 0.023 | 0.026 | 0.029 |
| 54 | 0.012 | 0.024 | 0.033 | 0.039 | 0.044 | 0.049 |
| 55 | 0.024 | 0.048 | 0.067 | 0.079 | 0.088 | 0.099 |
| 56 | 0.020 | 0.039 | 0.055 | 0.065 | 0.072 | 0.081 |
| 57 | 0.021 | 0.042 | 0.059 | 0.070 | 0.078 | 0.087 |
| 58 | 0.025 | 0.050 | 0.070 | 0.083 | 0.092 | 0.103 |
| 59 | 0.029 | 0.057 | 0.080 | 0.095 | 0.105 | 0.118 |
| 60 | 0.037 | 0.073 | 0.102 | 0.121 | 0.134 | 0.150 |
| 61 | 0.046 | 0.090 | 0.126 | 0.149 | 0.166 | 0.186 |
| 62 | 0.076 | 0.151 | 0.212 | 0.250 | 0.278 | 0.311 |
| 63 | 0.069 | 0.136 | 0.191 | 0.225 | 0.251 | 0.281 |
| 64 | 0.067 | 0.133 | 0.185 | 0.219 | 0.244 | 0.273 |
| 65 | 0.091 | 0.180 | 0.251 | 0.297 | 0.331 | 0.370 |
| 66 | 0.072 | 0.143 | 0.200 | 0.237 | 0.264 | 0.295 |
| 67 | 0.067 | 0.132 | 0.185 | 0.218 | 0.243 | 0.272 |
| 68 | 0.060 | 0.118 | 0.165 | 0.195 | 0.217 | 0.243 |
| 69 | 0.067 | 0.133 | 0.187 | 0.220 | 0.246 | 0.275 |
| 70 | 0.066 | 0.131 | 0.183 | 0.216 | 0.241 | 0.270 |

# Miscellaneous

**Superfunded Status**

Prior to enactment of the Public Employees' Pension Reform Act (PEPRA) that became effective January 1, 2013, a plan in superfunded status (actuarial value of assets exceeding present value of benefits) would normally pay a zero employer contribution rate while also being permitted to use its superfunded assets to pay its employees' normal member contributions.

However, Section 7522.52(a) of PEPRA states, "In any fiscal year a public employer's contribution to a defined benefit plan, in combination with employee contributions to that defined benefit plan, shall not be less than the total normal cost rate…" This means that not only must employers pay their employer normal cost regardless of plan surplus, but also, employers may no longer use superfunded assets to pay employee normal member contributions.

**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 this limitation since the prior valuation is included and amortized as part of the actuarial gain or loss base. This results in lower contributions for those employers contributing to the Replacement Benefit Fund and protects CalPERS from prefunding expected benefits in excess of limits imposed by federal tax law.

**Internal Revenue Code Section 401(a)(17)**

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

**PEPRA Assumptions**

The Public Employees' Pension Reform Act of 2013 (PEPRA) mandated new benefit formulas and new member contributions for new members (as defined by PEPRA) hired after January 1, 2013. For non-pooled plans, these new members will first be reflected in the June 30, 2013 non-pooled plan valuations. New members in pooled plans will first be reflected in the new Miscellaneous and Safety risk pools created by the CalPERS Board in November 2012 in response to the passage of PEPRA, also beginning with the June 30, 2013 valuation. Different assumptions for these new PEPRA members are disclosed above.

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# APPENDIX B

# PRINCIPAL PLAN PROVISIONS

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The following is a description of the principal plan provisions used in calculating costs and liabilities. We have indicated whether a plan provision is standard or optional. Standard benefits are applicable to all members while optional benefits vary among employers. Optional benefits that apply to a single period of time, such as Golden Handshakes, have not been included. Many of the statements in this summary are general in nature, and are intended to provide an easily understood summary of the complex Public Employees' Retirement Law. The law itself governs in all situations.

# PEPRA Benefit Changes

The Public Employees' Pension Reform Act of 2013 (PEPRA) requires new benefits and member contributions for new members as defined by PEPRA, that are hired after January 1, 2013. These PEPRA members are reflected in your June 30, 2013 actuarial valuation. Members in pooled plans are reflected in the new Miscellaneous and Safety risk pools created by the CalPERS Board in November 2012 in response to the passage of PEPRA, beginning with the June 30, 2013 valuation.

# Service Retirement

**Eligibility**
A classic CalPERS member or PEPRA Safety 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). For employees hired into a plan with the 1.5% at 65 formula, eligibility for service retirement is age 55 with at least 5 years of service. PEPRA miscellaneous 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 the *benefit factor*, *years of service*, and *final compensation.*

- The *benefit factor* depends on the benefit formula specified in your agency's contract. The table below shows the factors for each of the available formulas. Factors vary by the member's age at retirement. Listed are the factors for retirement at whole year ages:

**Miscellaneous Plan Formulas**

| Retirement Age | 1.5% at 65 | 2% at 60 | 2% at 55 | 2.5% at 55 | 2.7% at 55 | 3% at 60 | PEPRA 2% at 62 |
|---|---|---|---|---|---|---|---|
| 50 | 0.5000% | 1.092% | 1.426% | 2.000% | 2.000% | 2.000% | N/A |
| 51 | 0.5667% | 1.156% | 1.522% | 2.100% | 2.140% | 2.100% | N/A |
| 52 | 0.6334% | 1.224% | 1.628% | 2.200% | 2.280% | 2.200% | 1.000% |
| 53 | 0.7000% | 1.296% | 1.742% | 2.300% | 2.420% | 2.300% | 1.100% |
| 54 | 0.7667% | 1.376% | 1.866% | 2.400% | 2.560% | 2.400% | 1.200% |
| 55 | 0.8334% | 1.460% | 2.000% | 2.500% | 2.700% | 2.500% | 1.300% |
| 56 | 0.9000% | 1.552% | 2.052% | 2.500% | 2.700% | 2.600% | 1.400% |
| 57 | 0.9667% | 1.650% | 2.104% | 2.500% | 2.700% | 2.700% | 1.500% |
| 58 | 1.0334% | 1.758% | 2.156% | 2.500% | 2.700% | 2.800% | 1.600% |
| 59 | 1.1000% | 1.874% | 2.210% | 2.500% | 2.700% | 2.900% | 1.700% |
| 60 | 1.1667% | 2.000% | 2.262% | 2.500% | 2.700% | 3.000% | 1.800% |
| 61 | 1.2334% | 2.134% | 2.314% | 2.500% | 2.700% | 3.000% | 1.900% |
| 62 | 1.3000% | 2.272% | 2.366% | 2.500% | 2.700% | 3.000% | 2.000% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 63 | 1.3667% | 2.418% | 2.418% | 2.500% | 2.700% | 3.000% | 2.100% |
| 64 | 1.4334% | 2.418% | 2.418% | 2.500% | 2.700% | 3.000% | 2.200% |
| 65 | 1.5000% | 2.418% | 2.418% | 2.500% | 2.700% | 3.000% | 2.300% |
| 66 | 1.5000% | 2.418% | 2.418% | 2.500% | 2.700% | 3.000% | 2.400% |
| 67 & up | 1.5000% | 2.418% | 2.418% | 2.500% | 2.700% | 3.000% | 2.500% |

**Safety Plan Formulas**

| Retirement Age | ½ at 55 * | 2% at 55 | 2% at 50 | 3% at 55 | 3% at 50 |
|---|---|---|---|---|---|
| 50 | 1.783% | 1.426% | 2.000% | 2.400% | 3.000% |
| 51 | 1.903% | 1.522% | 2.140% | 2.520% | 3.000% |
| 52 | 2.035% | 1.628% | 2.280% | 2.640% | 3.000% |
| 53 | 2.178% | 1.742% | 2.420% | 2.760% | 3.000% |
| 54 | 2.333% | 1.866% | 2.560% | 2.880% | 3.000% |
| 55 & Up | 2.500% | 2.000% | 2.700% | 3.000% | 3.000% |

* For this formula, the benefit factor also varies by entry age. The factors shown are for members with an entry age of 35 or greater. If entry age is less than 35, then the age 55 benefit factor is 50 percent divided by the difference between age 55 and entry age. The benefit factor for ages prior to age 55 is the same proportion of the age 55 benefit factor as in the above table.

**PEPRA Safety Plan Formulas**

| Retirement Age | 2% at 57 | 2.5% at 57 | 2.7% at 57 |
|---|---|---|---|
| 50 | 1.426% | 2.000% | 2.000% |
| 51 | 1.508% | 2.071% | 2.100% |
| 52 | 1.590% | 2.143% | 2.200% |
| 53 | 1.672% | 2.214% | 2.300% |
| 54 | 1.754% | 2.286% | 2.400% |
| 55 | 1.836% | 2.357% | 2.500% |
| 56 | 1.918% | 2.429% | 2.600% |
| 57 & Up | 2.000% | 2.500% | 2.700% |

- 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. An agency may contract for an optional benefit where any unused sick leave accumulated at the time of retirement will be converted to credited service at a 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 36 or 12 consecutive months' full-time equivalent monthly pay (no matter which CalPERS employer paid this compensation). The standard benefit is 36 months. Employers have the option of providing a final compensation equal to the highest 12 consecutive months. Final compensation must be defined by the highest 36 consecutive months' pay under the 1.5% at 65 formula. PEPRA members have a cap on the annual salary that can be used to calculate final compensation for all new members based on the Social Security Contribution and Benefit Base. For employees that participate in

Social Security this cap is $113,700 for 2013 and for those employees that do not participate in social security the cap for 2013 is $136,440, the equivalent of 120 percent of the 2013 Contribution and Benefit Base. Adjustments to the caps are permitted annually based on changes to the CPI for All Urban Consumers.

- Employees must be covered by Social Security with the 1.5% at 65 formula. Social Security is optional for all other benefit formulas. For employees covered by Social Security, the Modified formula is the standard benefit. Under this type of formula, the final compensation is offset by $133.33 (or by one third if the final compensation is less than $400). Employers may contract for the Full benefit with Social Security that will eliminate the offset applicable to the final compensation. For employees not covered by Social Security, the Full benefit is paid with no offsets. Auxiliary organizations of the CSUC system may elect reduced contribution rates, in which case the offset is $317 if members are not covered by Social Security or $513 if members are covered by Social Security.

- The Miscellaneous Service Retirement benefit is not capped. The Safety Service Retirement benefit is capped at 90 percent of final compensation.

# 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 members and Safety PEPRA members become eligible to receive the deferred retirement benefit upon satisfying the eligibility requirements for Deferred Status and upon attainment of age 50 (55 for employees hired into a 1.5% @ 65 plan). PEPRA Miscellaneous 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 CalPERS employers, and with certain other Retirement Systems with which CalPERS 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 employed by any CalPERS employer at the time of disability in order to be eligible for this benefit.

**Standard Benefit**
The standard 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.

**Improved Benefit**
Employers have the option of providing the improved Non-Industrial Disability Retirement benefit. This benefit provides a monthly allowance equal to 30 percent of final compensation for the first 5 years of service, plus 1 percent for each additional year of service to a maximum of 50 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.

# Industrial (Job Related) Disability Retirement

All safety members have this benefit. For miscellaneous members, employers have the option of providing this benefit. An employer may choose to provide the Increased benefit option or the Improved benefit option.

**Eligibility**
An employee is eligible for Industrial Disability Retirement if he or she becomes disabled while working, where disabled means the member is unable to perform the duties of the job because of a work-related illness or injury, which is, expected to be permanent or to last indefinitely. A CalPERS member who has left active employment within this group is not eligible for this benefit, except to the extent described below.

**Standard Benefit**
The standard Industrial Disability Retirement benefit is a monthly allowance equal to 50 percent of final compensation.

**Increased Benefit (75 percent of Final Compensation)**
The increased Industrial Disability Retirement benefit is a monthly allowance equal to 75 percent final compensation for total disability.

**Improved Benefit (50 percent to 90 percent of Final Compensation)**
The improved Industrial Disability Retirement benefit is a monthly allowance equal to the Workman's Compensation Appeals Board permanent disability rate percentage (if 50 percent or greater, with a maximum of 90 percent) times the final compensation.

For a CalPERS member not actively employed in this group who became disabled while employed by some other CalPERS employer, the benefit is a return of accumulated member contributions with respect to employment in this group. With the standard or increased benefit, a member may also choose to receive the annuitization of the accumulated member contributions.

If a member is eligible for Service Retirement and if the Service Retirement benefit is more than the Industrial Disability Retirement benefit, the member may choose to receive the larger benefit.

# Post-Retirement Death Benefit

**Standard Lump Sum Payment**
Upon the death of a retiree, a one-time lump sum payment of $500 will be made to the retiree's designated survivor(s), or to the retiree's estate.

**Improved Lump Sum Payment**
Employers have the option of providing an improved lump sum death benefit of $600, $2,000, $3,000, $4,000 or $5,000.

# Form of Payment for Retirement Allowance

**Standard Form of Payment**
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.

**Improved Form of Payment (Post Retirement Survivor Allowance)**
Employers have the option to contract for the post retirement survivor allowance.

For retirement allowances with respect to service subject to the modified formula, 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. For retirement allowances with respect to service subject to the full or supplemental formula, 50 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. This additional benefit is often referred to as post retirement survivor allowance (PRSA) or simply as survivor continuance.

In other words, 25 percent or 50 percent of the allowance, 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 or 50 percent of the retirement allowance, 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

This is a standard benefit.

**Eligibility**
An employee's beneficiary (or estate) may receive the Basic Death benefit if the member dies while actively employed. A CalPERS member must be actively employed with the CalPERS employer providing this benefit to be eligible for this benefit. A member's survivor who is eligible for any other pre-retirement death benefit 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, plus a lump sum in the amount of one month's salary for each completed year of current service, up to a maximum of six months' salary. 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

This is a standard 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 and Safety PEPRA members and age 52 for Miscellaneous PEPRA members, and has at least 5 years of credited service (total service across all CalPERS employers and with certain other Retirement Systems with which CalPERS has reciprocity agreements). A CalPERS member must be actively employed with the CalPERS employer providing this benefit to be 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 who is eligible for any other pre-retirement death benefit may choose to receive that death benefit instead of this 1957 Survivor 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. The total amount paid will be at least equal to the Basic Death benefit.

# Optional Settlement 2W Death Benefit

This is an optional benefit.

**Eligibility**
An employee's *eligible survivor* may receive the Optional Settlement 2W Death benefit if the member dies while actively employed, has attained at least age 50 for Classic and Safety PEPRA members and age 52 for Miscellaneous PEPRA members, and has at least 5 years of credited service (total service across all CalPERS employers and with certain other Retirement Systems with which CalPERS has reciprocity agreements). A CalPERS member who is no longer actively employed with **any** CalPERS employer is not eligible for this benefit. An *eligible survivor* means the surviving spouse to whom the member was married at least one year before death. A member's survivor who is eligible for any other pre-retirement death benefit may choose to receive that death benefit instead of this Optional Settlement 2W Death benefit.

**Benefit**
The Optional Settlement 2W Death benefit is a monthly allowance equal to the Service Retirement benefit that the member would have received had the member retired on the date of his or her death and elected Optional Settlement 2W. (A retiree who elects Optional Settlement 2W receives an allowance that has been reduced so that it will continue to be paid after his or her death to a surviving beneficiary.) The allowance is payable as long as the surviving spouse lives, at which time it is continued to any unmarried children under age 18, if applicable. The total amount paid will be at least equal to the Basic Death Benefit.

# Special Death Benefit

This is a standard benefit for safety members. An employer may elect to provide this benefit for miscellaneous members.

**Eligibility**
An employee's *eligible survivor(s)* may receive the Special Death benefit if the member dies while actively employed and the death is job-related. 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 prior to the onset of the injury or illness that resulted in death. If there is no eligible spouse, an eligible survivor means the member's unmarried children under age 22. An eligible survivor who chooses to receive this benefit will not receive any other death benefit.

**Benefit**
The Special Death benefit is a monthly allowance equal to 50 percent of final compensation, and will be increased whenever the compensation paid to active employees is increased but ceasing to increase when the member would

have attained age 50. The allowance is payable to the surviving spouse until death at which time the allowance is continued to any unmarried children under age 22. There is a guarantee that the total amount paid will at least equal the Basic Death Benefit.

If the member's death is the result of an accident or injury caused by external violence or physical force incurred in the performance of the member's duty, and there are *eligible* surviving children (*eligible* means unmarried children under age 22) in addition to an eligible spouse, then an **additional monthly allowance** is paid equal to the following:

- if 1 eligible child: 12.5 percent of final compensation
- if 2 eligible children: 20.0 percent of final compensation
- if 3 or more eligible children: 25.0 percent of final compensation

# Alternate Death Benefit for Local Fire Members

This is an optional benefit available only to local fire members.

**Eligibility**
An employee's *eligible survivor(s)* may receive the Alternate Death benefit in lieu of the Basic Death Benefit or the 1957 Survivor Benefit if the member dies while actively employed and has at least 20 years of total CalPERS service. 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 prior to the onset of the injury or illness that resulted in death. If there is no eligible spouse, an eligible survivor means the member's unmarried children under age 18.

**Benefit**
The Alternate Death benefit is a monthly allowance equal to the Service Retirement benefit that the member would have received had the member retired on the date of his or her death and elected Optional Settlement 2W. (A retiree who elects Optional Settlement 2W receives an allowance that has been reduced so that it will continue to be paid after his or her death to a surviving beneficiary.) If the member has not yet attained age 50, the benefit is equal to that which would be payable if the member had retired at age 50, based on service credited at the time of death. The allowance is payable as long as the surviving spouse lives, at which time it is continued to any unmarried children under age 18, if applicable. The total amount paid will be at least equal to the Basic Death Benefit.

# Cost-of-Living Adjustments (COLA)

**Standard Benefit**
Beginning the second calendar year after the year of retirement, retirement and survivor allowances will be annually adjusted on a compound basis by 2 percent.

**Improved Benefit**
Employers have the option of providing any of these improved cost-of-living adjustments by contracting for any one of these Class 1 optional benefits. An improved COLA is not available in conjunction with the 1.5% at 65 formula.

Beginning the second calendar year after the year of retirement, retirement and survivor allowances will be annually adjusted on a compound basis by either 3 percent, 4 percent or 5 percent. However, the cumulative adjustment may not be greater than the cumulative change in the Consumer Price Index since the date of retirement.

# 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 80 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.

# Employee Contributions

Each employee contributes toward his or her retirement based upon the retirement formula. The standard employee contribution is as described below.

The percent contributed below the monthly compensation breakpoint is 0 percent.
The monthly compensation breakpoint is $0 for full and supplemental formula members and $133.33 for employees covered by the modified formula.
The percent contributed above the monthly compensation breakpoint depends upon the benefit formula, as shown in the table below.

| **Benefit Formula** | **Percent Contributed above the Breakpoint** |
|---|---|
| Miscellaneous, 1.5% at 65 | 2% |
| Miscellaneous, 2% at 60 | 7% |
| Miscellaneous, 2% at 55 | 7% |
| Miscellaneous, 2.5% at 55 | 8% |
| Miscellaneous, 2.7% at 55 | 8% |
| Miscellaneous, 3% at 60 | 8% |
| Miscellaneous, 2% at 62 | 50% of the Total Normal Cost |
| Safety, 1/2 at 55 | Varies by entry age |
| Safety, 2% at 55 | 7% |
| Safety, 2% at 50 | 9% |
| Safety, 3% at 55 | 9% |
| Safety, 3% at 50 | 9% |
| Safety, 2% at 57 | 50% of the Total Normal Cost |
| Safety, 2.5% at 57 | 50% of the Total Normal Cost |
| Safety, 2.7% at 57 | 50% of the Total Normal Cost |

The employer may choose to “pick-up” these contributions for the employees (Employer Paid Member Contributions or EPMC). EPMC is prohibited for new PEPRA members.

An employer may also include Employee Cost Sharing in the contract, where employees agree to share the cost of the employer contribution with or without a change in benefit. These contributions are paid in addition to the member contribution.

Auxiliary organizations of the CSUC system may elect reduced contribution rates, in which case the offset is $317 and the contribution rate is 6 percent if members are not covered by Social Security. If members are covered by Social Security, the offset is $513 and the contribution rate is 5 percent.

# 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 Benefit

This is a pre-retirement death benefit available only to members not covered by Social Security. Any agency joining CalPERS subsequent to 1993 was required to provide this benefit if the members were not covered by Social Security. The benefit is optional for agencies joining CalPERS prior to 1994. Levels 1, 2 and 3 are now closed. Any new agency or any agency wishing to add this benefit or increase the current level must choose the $4^{th}$ or Indexed Level.

This benefit is not included in the results presented in this valuation. More information on this benefit is available on the CalPERS website at www.calpers.ca.gov.

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# APPENDIX C

# PARTICIPANT DATA

- **SUMMARY OF VALUATION DATA**
- **ACTIVE MEMBERS**
- **TRANSFERRED AND TERMINATED MEMBERS**
- **RETIRED MEMBERS AND BENEFICIARIES**

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# Summary of Valuation Data

| | June 30, 2012 | June 30, 2013 |
|---|---|---|
| 1. **Active Members** | | |
| a) Counts | 15,298 | 15,530 |
| b) Average Attained Age | 43.80 | 43.98 |
| c) Average Entry Age to Rate Plan | 34.52 | 34.37 |
| d) Average Years of Service | 9.28 | 9.61 |
| e) Average Annual Covered Pay | $ 54,675 | $ 55,157 |
| f) Annual Covered Payroll | 836,418,298 | 856,593,282 |
| g) Projected Annual Payroll for Contribution Year | 913,976,858 | 936,022,607 |
| h) Present Value of Future Payroll | 6,930,846,129 | 7,038,876,851 |
| 2. **Transferred Members** | | |
| a) Counts | 3,630 | 3,635 |
| b) Average Attained Age | 43.84 | 43.98 |
| c) Average Years of Service | 3.65 | 3.54 |
| d) Average Annual Covered Pay | $ 72,161 | $ 73,276 |
| 3. **Terminated Members** | | |
| a) Counts | 7,162 | 7,414 |
| b) Average Attained Age | 42.92 | 43.35 |
| c) Average Years of Service | 2.23 | 2.22 |
| d) Average Annual Covered Pay | $ 41,600 | $ 41,990 |
| 4. **Retired Members and Beneficiaries** | | |
| a) Counts | 8,504 | 8,880 |
| b) Average Attained Age | 67.89 | 68.03 |
| c) Average Annual Benefits | $ 20,742 | $ 21,235 |
| 5. **Active to Retired Ratio** [(1a) / (4a)] | 1.80 | 1.75 |

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.

Average Annual Benefits represents benefit amounts payable by this plan only. Some members may have service with another agency and would therefore have a larger total benefit than would be included as part of the average shown here.

# Active Members

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

**Distribution of Active Members by Age and Service**

| | Years of Service at Valuation Date | | | | | | |
|---|---|---|---|---|---|---|---|
| **Attained Age** | **0-4** | **5-9** | **10-14** | **15-19** | **20-25** | **25+** | **Total** |
| 15-24 | 364 | 23 | 0 | 0 | 0 | 0 | 387 |
| 25-29 | 961 | 512 | 6 | 0 | 0 | 0 | 1,479 |
| 30-34 | 864 | 1043 | 239 | 1 | 0 | 0 | 2,147 |
| 35-39 | 588 | 832 | 467 | 121 | 4 | 0 | 2,012 |
| 40-44 | 520 | 826 | 527 | 282 | 78 | 4 | 2,237 |
| 45-49 | 403 | 663 | 466 | 286 | 189 | 79 | 2,086 |
| 50-54 | 327 | 644 | 501 | 280 | 240 | 234 | 2,226 |
| 55-59 | 230 | 484 | 417 | 249 | 184 | 232 | 1,796 |
| 60-64 | 110 | 264 | 227 | 145 | 96 | 85 | 927 |
| 65 and over | 37 | 74 | 66 | 29 | 17 | 10 | 233 |
| **All Ages** | 4404 | 5365 | 2916 | 1393 | 808 | 644 | 15,530 |

**Distribution of Average Annual Salaries by Age and Service**

| | Years of Service at Valuation Date | | | | | | |
|---|---|---|---|---|---|---|---|
| **Attained Age** | **0-4** | **5-9** | **10-14** | **15-19** | **20-25** | **25+** | **Average** |
| 15-24 | $31,292 | $34,100 | $0 | $0 | $0 | $0 | $31,459 |
| 25-29 | 38,427 | 39,350 | 39,888 | 0 | 0 | 0 | 38,752 |
| 30-34 | 43,723 | 51,710 | 50,381 | 72,530 | 0 | 0 | 48,358 |
| 35-39 | 48,595 | 56,626 | 58,317 | 56,473 | 65,215 | 0 | 54,679 |
| 40-44 | 50,393 | 57,173 | 61,497 | 64,924 | 63,349 | 59,660 | 57,813 |
| 45-49 | 50,488 | 56,272 | 61,798 | 65,161 | 66,834 | 64,173 | 58,864 |
| 50-54 | 50,010 | 56,856 | 58,873 | 66,237 | 68,069 | 74,930 | 60,593 |
| 55-59 | 61,860 | 60,620 | 61,195 | 64,988 | 65,369 | 70,397 | 63,267 |
| 60-64 | 62,465 | 57,688 | 62,305 | 59,837 | 65,207 | 68,870 | 61,526 |
| 65 and over | 71,184 | 63,212 | 61,616 | 75,043 | 69,225 | 87,463 | 66,978 |
| **All Ages** | $45,710 | $54,496 | $59,652 | $64,201 | $66,380 | $71,277 | $55,157 |

# Transferred and Terminated Members

**Distribution of Transfers to Other CalPERS Plans by Age and Service**

| | Years of Service at Valuation Date | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Attained Age** | **0-4** | **5-9** | **10-14** | **15-19** | **20-25** | **25+** | **Total** | **Average Salary** |
| 15-24 | 27 | 0 | 0 | 0 | 0 | 0 | 27 | $51,872 |
| 25-29 | 246 | 7 | 0 | 0 | 0 | 0 | 253 | 61,549 |
| 30-34 | 519 | 28 | 2 | 0 | 0 | 0 | 549 | 68,874 |
| 35-39 | 556 | 50 | 6 | 0 | 0 | 0 | 612 | 73,775 |
| 40-44 | 448 | 50 | 14 | 16 | 0 | 0 | 528 | 79,922 |
| 45-49 | 398 | 84 | 40 | 43 | 13 | 1 | 579 | 73,914 |
| 50-54 | 286 | 81 | 36 | 56 | 27 | 11 | 497 | 73,421 |
| 55-59 | 204 | 71 | 27 | 27 | 16 | 8 | 353 | 75,227 |
| 60-64 | 108 | 27 | 15 | 13 | 4 | 4 | 171 | 80,117 |
| 65 and over | 45 | 13 | 7 | 1 | 0 | 0 | 66 | 70,942 |
| **All Ages** | 2837 | 411 | 147 | 156 | 60 | 24 | 3,635 | 73,276 |

**Distribution of Terminated Participants with Funds on Deposit by Age and Service**

| | Years of Service at Valuation Date | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Attained Age** | **0-4** | **5-9** | **10-14** | **15-19** | **20-25** | **25+** | **Total** | **Average Salary** |
| 15-24 | 107 | 0 | 0 | 0 | 0 | 0 | 107 | $27,333 |
| 25-29 | 693 | 27 | 0 | 0 | 0 | 0 | 720 | 32,525 |
| 30-34 | 1092 | 100 | 2 | 0 | 0 | 0 | 1,194 | 38,858 |
| 35-39 | 962 | 124 | 26 | 3 | 0 | 0 | 1,115 | 42,855 |
| 40-44 | 933 | 156 | 30 | 8 | 2 | 0 | 1,129 | 46,959 |
| 45-49 | 756 | 149 | 66 | 22 | 10 | 3 | 1,006 | 46,927 |
| 50-54 | 715 | 125 | 43 | 19 | 3 | 0 | 905 | 42,224 |
| 55-59 | 555 | 62 | 35 | 7 | 3 | 2 | 664 | 44,662 |
| 60-64 | 343 | 39 | 12 | 5 | 0 | 0 | 399 | 39,458 |
| 65 and over | 163 | 8 | 3 | 0 | 1 | 0 | 175 | 39,743 |
| **All Ages** | 6319 | 790 | 217 | 64 | 19 | 5 | 7,414 | 41,990 |

# Retired Members and Beneficiaries

**Distribution 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 | 0 | 0 | 1 | 0 | 0 | 15 | 16 |
| 30-34 | 0 | 1 | 3 | 0 | 1 | 7 | 12 |
| 35-39 | 0 | 2 | 6 | 0 | 0 | 7 | 15 |
| 40-44 | 0 | 10 | 11 | 0 | 1 | 10 | 32 |
| 45-49 | 0 | 35 | 12 | 0 | 1 | 16 | 64 |
| 50-54 | 359 | 51 | 19 | 2 | 0 | 20 | 451 |
| 55-59 | 1000 | 55 | 19 | 8 | 0 | 45 | 1,127 |
| 60-64 | 1745 | 83 | 31 | 8 | 0 | 72 | 1,939 |
| 65-69 | 1763 | 71 | 21 | 7 | 0 | 93 | 1,955 |
| 70-74 | 1128 | 51 | 11 | 3 | 0 | 106 | 1,299 |
| 75-79 | 667 | 37 | 7 | 4 | 0 | 94 | 809 |
| 80-84 | 427 | 22 | 3 | 3 | 0 | 109 | 564 |
| 85 and Over | 391 | 16 | 0 | 3 | 0 | 187 | 597 |
| **All Ages** | 7480 | 434 | 144 | 38 | 3 | 781 | 8,880 |

**Distribution of Average Annual Amounts for 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 | Average |
|---|---|---|---|---|---|---|---|
| Under 30 | $0 | $0 | $159 | $0 | $0 | $2,184 | $2,058 |
| 30-34 | 0 | 12,986 | 170 | 0 | 150 | 3,524 | 3,193 |
| 35-39 | 0 | 3,262 | 273 | 0 | 0 | 10,422 | 5,407 |
| 40-44 | 0 | 10,530 | 3,781 | 0 | 119 | 12,034 | 8,354 |
| 45-49 | 0 | 11,318 | 866 | 0 | 825 | 6,962 | 8,105 |
| 50-54 | 18,941 | 11,620 | 1,025 | 25,689 | 0 | 8,555 | 16,928 |
| 55-59 | 25,046 | 10,440 | 1,378 | 5,667 | 0 | 13,210 | 23,324 |
| 60-64 | 28,298 | 11,755 | 2,003 | 14,225 | 0 | 13,209 | 26,551 |
| 65-69 | 25,385 | 12,318 | 945 | 10,293 | 0 | 18,461 | 24,265 |
| 70-74 | 22,369 | 11,700 | 857 | 14,221 | 0 | 14,562 | 21,112 |
| 75-79 | 16,599 | 11,152 | 903 | 4,380 | 0 | 11,092 | 15,514 |
| 80-84 | 14,546 | 9,013 | 448 | 4,378 | 0 | 11,350 | 13,583 |
| 85 and Over | 13,332 | 11,627 | 0 | 10,455 | 0 | 9,210 | 11,980 |
| **All Ages** | $23,223 | $11,363 | $1,382 | $10,191 | $365 | $11,961 | $21,235 |

# Retired Members and Beneficiaries (continued)

**Distribution 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 Yrs | 3005 | 62 | 27 | 11 | 1 | 310 | 3,416 |
| 5-9 | 1987 | 68 | 25 | 7 | 1 | 196 | 2,284 |
| 10-14 | 1128 | 116 | 32 | 8 | 1 | 130 | 1,415 |
| 15-19 | 655 | 93 | 22 | 3 | 0 | 83 | 856 |
| 20-24 | 371 | 42 | 15 | 3 | 0 | 35 | 466 |
| 25-29 | 194 | 23 | 11 | 3 | 0 | 19 | 250 |
| 30 and Over | 140 | 30 | 12 | 3 | 0 | 8 | 193 |
| **All Years** | 7480 | 434 | 144 | 38 | 3 | 781 | 8,880 |

**Distribution of Average Annual Amounts for 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 | Average |
|---|---|---|---|---|---|---|---|
| Under 5 Yrs | $27,552 | $12,873 | $1,756 | $14,212 | $825 | $12,905 | $25,702 |
| 5-9 | 25,221 | 13,155 | 2,515 | 7,013 | 150 | 12,358 | 23,443 |
| 10-14 | 20,568 | 12,939 | 1,642 | 9,868 | 119 | 12,606 | 18,708 |
| 15-19 | 14,847 | 8,725 | 809 | 15,292 | 0 | 9,058 | 13,261 |
| 20-24 | 13,104 | 9,397 | 770 | 3,554 | 0 | 9,330 | 12,028 |
| 25-29 | 10,020 | 10,350 | 213 | 5,951 | 0 | 6,269 | 9,285 |
| 30 and Over | 7,637 | 9,798 | 369 | 9,497 | 0 | 10,265 | 7,659 |
| **All Years** | $23,223 | $11,363 | $1,382 | $10,191 | $365 | $11,961 | $21,235 |

* Counts of members do not include alternate payees receiving benefits while the member is still working. Therefore, the total counts may not match information on page 25 of the report. Multiple records may exist for those who have service in more than one coverage group. This does not result in double counting of liabilities.

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# APPENDIX D

# DEVELOPMENT OF PEPRA MEMBER CONTRIBUTION RATE

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# DEVELOPMENT OF PEPRA MEMBER CONTRIBUTION RATE

The table below shows the determination of the Member contribution rates based on 50 percent of the Total Normal Cost for each respective plan on June 30, 2013.

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. Since the actual demographics of new members was not known during the implementation of PEPRA in December 2012, the normal cost rate was determined based on the average demographics of the members in the current 2 percent at age 55 miscellaneous risk pool and the 3 percent at age 50 safety risk pool.

In analyzing the first set of PEPRA data, CalPERS staff has become concerned that, for most employers, there is insufficient data to produce stable normal costs and member contribution rates. Further, this situation is likely to persist for a number of years as employers gradually bring on more PEPRA members. The larger employers may have sufficient PEPRA members in the first few years but other employers may not have stable rates for a number of years. Staff has concluded that the best approach is to repeat the process – using the normal costs based on the demographics of the risk pools – for the current valuation and work with stakeholders over the next year to determine the best long-term approach to the issue of calculating PEPRA normal costs and member contribution rates. For more information on this topic please refer to the CalPERS Board of Administration agenda item 9a of the May 20th, 2014 meeting which is available on the CalPERS website.

| | | Basis for Current Rate | | Rates Effective July 1, 2015 | | | |
|---|---|---|---|---|---|---|---|
| **Rate Plan Identifier** | **Plan** | **Total Normal Cost** | **Member Rate** | **Total Normal Cost** | **Change** | **Change Needed** | **Member Rate** |
| 26035 | Miscellaneous PEPRA | 12.90% | 6.500% | 12.90% | 0.00% | No | 6.500% |

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# APPENDIX E

# GLOSSARY OF ACTUARIAL TERMS

# Glossary of Actuarial Terms

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

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

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

**Actuarial Valuation**
The determination, as of a valuation date, of the Normal Cost, Accrued liability, Actuarial Value of Assets 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.

**Actuarial Value of Assets**
The Actuarial Value of Assets used for funding purposes is obtained through an asset smoothing technique where investment gains and losses are partially recognized in the year they are incurred, with the remainder recognized in subsequent years.

This method helps to dampen large fluctuations in the employer contribution rate.

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

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

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

**Annual Required Contributions (ARC)**
The employer's periodic required annual contributions to a defined benefit pension plan as set forth in GASB Statement No. 27, calculated in accordance with the plan assumptions. The ARC is determined by multiplying the employer contribution rate by the payroll reported to CalPERS for the applicable fiscal year. However, if this contribution is fully prepaid in a lump sum, then the dollar value of the ARC is equal to the Lump Sum Prepayment.

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

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

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

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

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

**Funded Status**
A measure of how well funded, or how "on track" a plan or risk pool is with respect to assets verses accrued liabilities. A ratio greater than 100% means the plan or risk pool has more assets than liabilities and a ratio less than 100% means liabilities are greater than assets. A funded ratio based on the Actuarial Value of Assets indicates the progress toward fully funding the plan using the actuarial cost methods and assumptions. A funded ratio based on the Market Value of Assets indicates the short-term solvency of the plan.

**GASB 27**
Statement No. 27 of the Governmental Accounting Standards Board. The accounting standard governing a state or local governmental employer's accounting for pensions.

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

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

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

**PEPRA**
The California Public Employees' Pension Reform Act of 2013

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

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

**Rolling Amortization Period**
An amortization period that remains the same each year, rather than declining.

**Superfunded**

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

**Unfunded Liability**

When a plan or pool's Actuarial 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.