



August 25, 2016

JoAnne Lewis  
Administrative Assistant  
Ross Valley Fire Department  
777 San Anselmo Ave  
San Anselmo, CA 94960

Re: July 1, 2015 Actuarial Report on GASB 45 Retiree Benefit Valuation

Dear Ms. Lewis:

We are pleased to enclose our report providing the results of the July 1, 2015 actuarial valuation of other post-employment benefit (OPEB) liabilities for the Ross Valley Fire Department (the Department). The report's text describes our analysis and assumptions in detail.

The primary purposes of the report are to develop the value of future OPEB expected to be provided by the Department, and the current OPEB liability and the annual OPEB expense to be reported in the Department's financial statements for the fiscal years ending June 30, 2017 and June 30, 2018. The report is required to be submitted to the California Employers' Retiree Benefit Trust (CERBT) to satisfy filing requirements for the trust.

This valuation was prepared with the understanding that the Department will continue to:

- Contribute 100% of the ARC each year.
- Invest in CERBT asset allocation Strategy 1. Liabilities were calculated in this valuation based on a 7.25% discount rate.

Retiree medical benefits are defined based on the most recent PEMHCA resolution (executed in 2013) and Memoranda of Understanding. Please review the summary of benefits we provide in Table 3A to be certain that we have described the benefits correctly, since we base the valuation upon these benefits.

This report introduces an "implicit subsidy" liability, not previously required to be valued by the Department under GASB 45. This report also includes an estimated liability for the excise tax relating to retiree coverage in high cost plans as provided under the Affordable Care Act, currently scheduled to take effect in 2020. Discussion of these changes is included in the report.

We appreciate the opportunity to work on this analysis and acknowledge the efforts of Department employees who provided valuable information and assistance to enable us to perform this valuation. Please let us know if we can be of further assistance.

Sincerely,

A handwritten signature in black ink that reads "Catherine L. MacLeod".

Catherine L. MacLeod, FSA, FCA, EA, MAAA  
Director, Health and Benefit Actuarial Services



Ross Valley Fire Department

Actuarial Valuation of the Other  
Post-Employment Benefit Programs  
As of July 1, 2015

Submitted August 2016

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## A. Executive Summary

This report presents the results of the July 1, 2015 actuarial valuation of the Ross Valley Fire Department (the Department) other post-employment benefit (OPEB) programs. The purposes of this valuation are to assess the OPEB liabilities and provide disclosure information as required by Statement No. 45 of the Governmental Accounting Standards Board (GASB 45) and to provide information to be reported to the California Employers' Retiree Benefit Trust (CERBT).

This report reflects the valuation of two distinct types of OPEB liability.

- An "explicit subsidy" exists when the employer contributes directly toward retiree healthcare premiums. In this program, benefits include a monthly subsidy toward medical premiums for eligible retirees. Future excise taxes expected to be paid by the Department for retiree coverage in "high cost" plans are also explicit costs and are included with explicit liabilities.
- An "implicit subsidy" exists when the premiums charged for retiree coverage are lower than the expected retiree claims for that coverage. Pre-Medicare retirees able to continue medical coverage at the same premium rates as are charged for active employees creates an implicit benefit subsidy under GASB 45. *This is the first valuation required to include the implicit subsidy liability.*

How much the Department contributes each year affects the calculation of liabilities. The Department has been prefunding its OPEB obligations by consistently making contributions greater than or equal to the Annual Required Contribution (ARC) each year. Trust assets are currently invested in the CERBT with Asset Allocation Strategy 1. With the Department's approval, this valuation was prepared using a 7.25% discount rate, slightly lower than the 7.5% rate used in the prior valuation and reflecting a change in the projected long term rate of return on trust assets. Please recognize that use of this rate is an assumption and is not a guarantee of future investment performance.

Exhibits presented in this report reflect our understanding that the results of this July 1, 2015 valuation will be applied in determining the annual OPEB expense for the fiscal years ending June 30, 2017 and 2018. Appendix 1 provides an updated development of the results for the fiscal year ending June 30, 2016, based on the July 1, 2013 valuation and on OPEB contributions expected to be made prior to that date.

The Actuarial Accrued Liability and Assets as of July 1, 2015 are shown below:

Subsidy	Explicit	Implicit	Total
Discount Rate	7.25%	7.25%	7.25%
Actuarial Accrued Liability	\$ 6,427,886	\$ 1,705,717	\$ 8,133,603
Actuarial Value of Assets	1,361,065	-	1,361,065
Unfunded Actuarial Accrued Liability	5,066,821	1,705,717	6,772,538
Funded Ratio	21.2%	0.0%	16.7%

The liabilities shown in the report reflect assumptions regarding continued future employment, rates of retirement and survival, and elections by future retirees to retain coverage for themselves and their dependents. Please note that this valuation has been prepared on a closed group basis; no provision is generally made for new employees until the valuation date following their employment.

**Executive Summary  
(Concluded)**

Results for the fiscal year ending June 30, 2017 are summarized below:

Subsidy	Explicit	Implicit	Total
Annual Required Contribution (ARC) for FYE 2017	\$ 497,834	\$ 178,246	\$ 676,080
Expected employer paid benefits for retirees	336,117	-	336,117
Current year's implicit subsidy credit	-	90,411	90,411
Expected contribution to OPEB trust	161,717	87,835	249,552
Expected net OPEB obligation at June 30, 2017	(12,801)	-	(12,801)

Detailed results are shown in tables beginning on page 13. Additional information to facilitate OPEB reporting in the Department's financial statements is provided in the Appendices.

An exhibit comparing current valuation results to those from the prior valuation is provided on page 6, followed by a description of changes. An actuarial valuation is, by its nature, a projection and to the extent that actual experience is not what we assumed, future results will be different. Some possible sources of future differences may include:

- A significant change in the number of covered or eligible plan members;
- A significant increase or decrease in the future medical premium rates or in the subsidy provided by the Department toward retiree medical premiums;
- Longer life expectancies of retirees;
- Significant changes in expected retiree healthcare claims by age, relative to healthcare claims for active employees and their dependents;
- Higher or lower returns on plan assets or contribution levels other than were assumed; and
- Implementation of GASB 75, the new OPEB accounting standard, which should be not later than the Department's fiscal year ending June 30, 2018. One important change moves reporting of the unfunded OPEB liability from a footnote to the balance sheet.

Details of our valuation process and disclosures required by GASB 45 are provided on the succeeding pages. The next valuation is scheduled to be prepared as of July 1, 2017 as required for continued participation in CERBT. If there are any significant changes in the employee data, benefits provided or the funding policy, please contact us to discuss whether an earlier valuation is appropriate.

**Important Notices**

This report is intended to be used only to present the actuarial information relating to other postemployment benefits for the Department's financial statements and to provide the annual contribution information with respect to the Department's current OPEB funding policy. The results of this report may not be appropriate for other purposes, where other assumptions, methodology and/or actuarial standards of practice may be required or more suitable. We note that various issues in this report may involve legal analysis of applicable law or regulations. The Department should consult counsel on these matters; Bickmore does not practice law and does not intend anything in this report to constitute legal advice. In addition, we recommend the Department consult with their internal accounting staff or external auditor or accounting firm about the accounting treatment of OPEB liabilities.

## B. Requirements of GASB 45

The Governmental Accounting Standards Board (GASB) issued GASB Statement No. 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions*. This Statement establishes standards for the measurement, recognition, and display of OPEB expense/expenditures and related liabilities (assets), note disclosures, and, if applicable, required supplementary information (RSI) in the financial reports of state and local governmental employers. The underlying intent of GASB 45 is to systematically recognize the projected cost of OPEB during the years employees are working, rather than over the years when the benefits would be paid.

We understand that the Department implemented GASB 45 for the fiscal year ended June 30, 2010. For agencies with fewer than 200 members covered by or eligible for plan benefits, GASB 45 requires that a valuation be prepared no less frequently than every three years. However, participation in CERBT requires that valuations be performed every two years. GASB 45 disclosures include the determination of an annual OPEB cost. For the first year, the annual OPEB cost is equal to the annual required contribution (ARC) as determined by the actuary.

- If the Department's OPEB contributions equal the ARC each year, the net OPEB obligation will equal \$0.
- If the Department's actual contribution is less than (greater than) the ARC in any year, then a net OPEB obligation (asset) amount is established. In subsequent years, the annual OPEB expense will reflect adjustments made to the net OPEB obligation, in addition to the ARC (see Tables 1B and 1D).

GASB 45 provides for recognition of payments as contributions if they are made (a) directly to retirees or beneficiaries, (b) to an insurer, e.g., for the payment of premiums, or (c) to an OPEB fund set aside toward the cost of future benefits. Funds set aside for future benefits should be considered contributions to an OPEB plan only if the vehicle established is one that is capable of building assets that are separate from and independent of the control of the employer and legally protected from its creditors. Furthermore, the sole purpose of the assets should be to provide benefits under the plan. These conditions generally require the establishment of a legal trust, such as the Department's OPEB trust account with CERBT. Earmarked assets or reserves may be an important step in financing future benefits, but they may not be recognized as an asset for purposes of reporting under GASB 45.

We reiterate that GASB 45 applies only to the expense to be charged to an agency's income statements and to providing other related liability disclosures. While the Annual Required Contribution typically comprises the majority of the annual OPEB expense, it is a theoretical, not a required contribution amount. The decision whether or not to prefund, and at what level, is at the discretion of the Department, as are the manner and term for paying down the unfunded actuarial accrued liability. Once a funding policy has been established, however, the Department's auditor may have an opinion as to the timing and manner of any change to such policy in future years. The level of prefunding also affects the selection of the discount rate used for valuing the liabilities.

*New GASB Statement 75, issued in June 2015, will impact the liabilities and/or expenses developed in future valuations and require changes beginning with the Department's fiscal year end 2018 reporting. Those calculations are outside the scope of this report.*

### C. Sources of OPEB Liabilities

#### General Types of OPEB

Post-employment benefits other than pensions (OPEB) comprise a part of compensation that employers offer for services received. The most common OPEB are medical, prescription drug, dental, vision, and/or life insurance coverage. Other OPEB may include outside group legal, long-term care, or disability benefits outside of a pension plan. OPEB does not generally include COBRA, vacation, sick leave<sup>1</sup> or other direct retiree payments which fall under other GASB accounting statements.

A direct employer payment toward the cost of OPEB benefits is referred to as an “explicit subsidy”. In addition, if claims experience of employees and retirees are pooled when determining premiums, the retirees pay a premium based on a pool of members that, on average, are younger and healthier. For certain types of coverage, such as medical insurance, this results in an “implicit subsidy” of retiree premiums by active employee premiums since the retiree premiums are lower than they would have been if retirees were insured separately. Paragraph 13.a. of GASB 45 generally requires an implicit subsidy of retiree premium rates be valued as an OPEB liability.

*This chart shows the sources of funds needed to cover expected claims for pre-Medicare retirees*

Expected retiree claims		
Premium charged for retiree coverage		<i>Covered by higher active premiums</i>
Retiree portion of premium	Agency portion of premium Explicit subsidy	Implicit subsidy

For actuarial valuations dated prior to March 31, 2015, an exception allowed plan employers with a very small membership in a large “community-rated” healthcare program to avoid reporting of implicit subsidy liability. After a change in Actuarial Standards of Practice, GASB no longer offers this exception. *This change had a significant impact on the valuation of the Department’s OPEB liability.*

#### OPEB Obligations of the Department

The Department provides continuation of medical to its retiring employees, creating these liabilities:

- **Explicit subsidy liabilities:** The Department contributes directly toward retiree medical premiums, as described in Table 3A. Liabilities relating to these benefits are included in this valuation.
- **Implicit subsidy liabilities:** Employees are covered by the CalPERS medical program. The same monthly premiums are charged for active employees and for pre-Medicare retirees; CalPERS has confirmed that the claims experience of these members is considered together in setting these premium rates. We determine the implicit rate subsidy for pre-Medicare retirees as the projected difference between (a) retiree medical claim costs by age and (b) premiums charged for retiree coverage. See Table 4 and Addendum 1: Bickmore Healthcare Claims Age Rating Methodology.

Different monthly premiums are charged for Medicare-eligible members and CalPERS has confirmed that only the claims experience of these Medicare eligible members is considered in setting these premium rates. We have assumed that this premium structure is adequate to cover the expected claims of these retirees and believe that there is no implicit subsidy of premiums for these members by active employees.

<sup>1</sup> Unless unused sick leave credits are converted to provide or enhance a defined benefit OPEB.

## D. Valuation Process

The valuation has been based on employee census data and benefits initially submitted to us by the Department in April 2016 and clarified in various related communications. A summary of the employee data is provided in Table 2 and a summary of the benefits provided under the Plan is provided in Table 3A. While individual employee records have been reviewed to verify that they are reasonable in various respects, the data has not been audited and we have otherwise relied on the Department as to its accuracy. The valuation described below has been performed in accordance with the actuarial methods and assumptions described in Table 4.

In projecting benefit values and liabilities, we first determine an expected premium or benefit stream over the employee’s future retirement. Benefits may include both direct employer payments (explicit subsidies) and/or an implicit subsidy, arising when retiree premiums are expected to be subsidized by active employee premiums. The projected benefit streams reflect assumed trends in the cost of those benefits and assumptions as to the expected date(s) when benefits will end. We then apply assumptions regarding:

- The probability that each individual employee will or will not continue in service with the Department to receive benefits.
- To the extent assumed to retire from the Department, the probability of various possible retirement dates for each retiree, based on current age, service and employee type; and
- The likelihood that future retirees will or will not elect retiree coverage (and benefits) for themselves and/or their dependents.

We then calculate a present value of these benefits by discounting the value of each future expected benefit payment, multiplied by the assumed expectation that it will be paid, back to the valuation date using the discount rate. These benefit projections and liabilities have a very long time horizon. The final payments for currently active employees may not be made for 70 years or more.

The resulting present value for each employee is allocated as a level percent of payroll each year over the employee’s career using the entry age normal cost method and the amounts for each individual are then summed to get the results for the entire plan. This creates a cost expected to increase each year as payroll increases. Amounts attributed to prior fiscal years form the “actuarial accrued liability” (AAL). The amount of future OPEB cost allocated for active employees in the current year is referred to as the “normal cost”. The remaining active cost to be assigned to future years is called the “present value of future normal costs”.

In summary:

Actuarial Accrued Liability	Past Years’ Cost Allocations	Actives and Retirees
<i>plus</i> Normal Cost	Current Year’s Cost Allocation	Actives only
<u>plus Present Value of Future Normal Costs</u>	<u>Future Years’ Cost Allocations</u>	<u>Actives only</u>
<i>equals</i> Present Value of Projected Benefits	Total Benefit Costs	Actives and Retirees

Where contributions have been made to an irrevocable OPEB trust, the accumulated value of trust assets is applied to offset the AAL. In this valuation, we set the Actuarial Value of Assets equal to the market value of assets invested in in the Department’s CERBT account. The market value reported as of June 30, 2015 was \$1,361,065. The portion of the AAL not covered by assets is referred to as the unfunded actuarial accrued liability (UAAL).



### E. Basic Valuation Results

The following chart compares the results of the July 1, 2015 valuation of OPEB liabilities to the results of the July 1, 2013 valuation.

Funding Policy	Prefunding Basis			
	Valuation date	7/1/2013	7/1/2015	
Subsidy	Explicit	Explicit	Implicit	Total
Discount rate	7.50%	7.25%	7.25%	7.25%
<b>Number of Covered Employees</b>				
Actives	33	32	32	32
Retirees	31	36	13	36
Total Participants	64	68	45	68
<b>Actuarial Present Value of Projected Benefits</b>				
Actives	\$ 3,883,353	\$ 3,671,171	\$ 1,326,031	\$ 4,997,202
Retirees	3,055,567	4,125,713	889,925	5,015,638
Total APVPB	6,938,920	7,796,884	2,215,956	10,012,840
<b>Actuarial Accrued Liability (AAL)</b>				
Actives	2,808,846	2,302,173	815,792	3,117,965
Retirees	3,055,567	4,125,713	889,925	5,015,638
Total AAL	5,864,413	6,427,886	1,705,717	8,133,603
Actuarial Value of Assets	771,411	1,361,065	-	1,361,065
<b>Unfunded AAL (UAAL)</b>	5,093,002	5,066,821	1,705,717	6,772,538
<b>Normal Cost</b>	114,543	130,461	47,609	178,070
Percent funded	13.2%	21.2%	0.0%	16.7%
Reported covered payroll	3,453,704	3,965,148	3,965,148	3,965,148
UAAL as percent of payroll	147.5%	127.8%	43.0%	170.8%

*Note: The Explicit Subsidy AAL as of July 1, 2015 includes approximately \$62,000 in projected excise taxes expected to be paid by the Department for retirees covered by "high cost" plans under the Affordable Care Act.*

#### Changes Since the Prior Valuation

Even if all of our previous assumptions were met exactly as projected, liabilities generally increase over time as active employees get closer to the date their benefits are expected to begin. Given the uncertainties involved and the long term nature of these projections, our prior assumptions are not likely ever to be exactly realized. The relatively small size of the Department's employee group makes it more likely that differences from what we anticipate will occur. Nonetheless, it is helpful to review why results are different than we anticipated.

Absent the additional liability due to recognition of the implicit subsidy, the unfunded AAL (UAAL) increased by only \$33,000 (from \$5,093,000 to \$5,126,000). However, reflecting the \$1.7 million implicit subsidy liability as now required increased the total UAAL from \$5.1 million to over \$6.8 million. The factors described on the following page account for the combined \$1,680,000 increase in the unfunded AAL over these two years.

## Basic Valuation Results (Concluded)

- A \$1,706,000 *increase* in the AAL to begin recognizing the implicit subsidy of medical coverage for current and future retirees prior to becoming eligible for Medicare; in developing this liability, we added assumptions regarding expected claims cost by age and gender;
- A \$193,000 *increase* in the AAL due to a change in discount rates used to develop the OPEB liability, from 7.5% to 7.25%;
- A \$287,000 *increase* in the AAL due to revised assumptions for future disability and service retirements and other terminations (withdrawals) prior to retirement, based on the 2014 CalPERS retirement plan experience study covering Department employees; we also updated our projection of future improvements in retiree mortality rates;
- A \$200,000 *decrease* in the AAL due to a decrease in the percentage of employees assumed to cover a spouse on a Department medical plan in retirement, from 85% to 68% (if hired prior to April 2013) and to 51% (if hired on or after April 2013);
- A \$70,000 *expected increase* in the UAAL, from the excess of additional costs accrued for active employees and the passage of time over benefits paid to retirees, new contributions and trust earnings between July 2013 and July 2015.
- A \$376,000 *decrease* in the UAAL from plan experience relative to prior assumptions. Plan experience includes factors such as changes in plan membership, retiree elections and changes in medical premiums and limits on benefits other than previously projected as well as the addition of new employees hired since July 1, 2013.

The plan experience gain above includes about \$27,000 in favorable asset values relative to expected contributions and rate of return. Actual plan assets were greater than projected, primarily because contributions to CERBT were larger than we projected during this two year period. The return on trust assets appears to be slightly better than the expected long term rate of return of 7.5% per year, with the actual return closer to 7.7% per year over this period.

## F. Funding Policy

The specific calculation of the ARC and annual OPEB expense for an employer depends on how the employer elects to fund these benefits. The funding levels can generally be categorized as follows:

1. *Prefunding* - contributing an amount greater than or equal to the ARC each year. Prefunding generally allows the employer to have the liability calculated using a higher discount rate, which in turn lowers the liability. In addition, following a prefunding policy does not build up a net OPEB obligation (or gradually reduces it to \$0). Prefunding results in this report were developed using a discount rate of 7.25%.
2. *Pay-As-You-Go funding* – contributing only the amounts needed to pay retiree benefits in the current year; generally requires a lower discount rate.
3. *Partial prefunding* – contributing more than the current year’s retiree payments but less than 100% of the ARC; requires that liabilities be developed using a discount rate that “blends” the relative portions of benefits that are prefunded and those not.

### Determination of the ARC

The Annual Required Contribution (ARC) consists of two basic components, which have been adjusted with interest to the Department’s fiscal year end:

- The amounts attributed to service performed in the current fiscal year (the normal cost) and
- Amortization of the unfunded actuarial accrued liability (UAAL).

ARCs for the fiscal years ending June 30, 2017 and June 30, 2018 are developed in Tables 1A and 1C.

### Decisions Affecting the Amortization Payment

The period and method for amortizing the AAL can significantly affect the ARC. GASB 45:

- Prescribes a maximum amortization period of 30 years and requires no minimum amortization period (except 10 years for certain actuarial gains). Immediate full funding of the liability is also permitted.
- Allows amortization payments to be determined (a) as a level percentage of payroll, designed to increase over time as payroll increases, or (b) as a level dollar amount much like a conventional mortgage, so that this component of the ARC does not increase over time. Where a plan is closed and has no ongoing payroll base, a level percent of payroll basis is not permitted.
- Allows the amortization period to decrease annually by one year (closed basis) or to be maintained at the same number of years (open basis).

### Funding Policy Illustrated in This Report

It is our understanding that the Department’s prefunding policy includes amortization of the unfunded AAL over a closed 30-year period initially effective July 1, 2009; the remaining period applicable in determining the ARC for the fiscal year ending June 30, 2017 is 23 years. Amortization payments are determined on a level percent of pay basis.<sup>2</sup>

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<sup>2</sup> Where the UAAL is amortized on a level percent of pay basis, if all assumptions are met, the UAAL may increase, rather than decrease, in the earlier years of the amortization period.

**Funding Policy  
(Concluded)**

**Funding of the Implicit Subsidy**

The implicit subsidy liability created when expected retiree medical claims exceed the retiree premiums was described earlier in Section C. In practical terms, when the Department pays the premiums for active employees each year, their premiums include an amount expected to be transferred to cover the portion of the retirees' claims not covered by their premiums. This transfer represents the current year's implicit subsidy. Paragraph 13.g. of GASB 45 allows for recognition of payments to an irrevocable trust *or directly to the insurer* as an employer's contribution to the ARC. We have estimated each current year's implicit subsidy and recommend netting this amount against the funding requirement for the implicit subsidy (see Tables 1B and 1D).

The following hypothetical example illustrates this treatment:

Hypothetical Illustration Of Implicit Subsidy Recognition	For Active Employees	For Retired Employees	Total
Annual Agency Contribution Toward Premiums	\$ 784,000	\$ 336,000	\$ 1,120,000
Current Year's Implicit Subsidy Adjustment	\$ (90,000)	\$ 90,000	\$ -
Adjusted contributions reported in Financial Stmts	\$ 694,000	\$ 426,000	\$ 1,120,000

While total Agency contributions paid toward active and retired employee healthcare premiums in this example are the same, by shifting the recognition of the current year's implicit subsidy from actives to retirees, this amount may be recognized as a contribution toward the OPEB ARC.

There is a larger question about whether or not the Department will want to prefund the implicit subsidy liability. Some possible options include:

- Prefunding 100% of the ARC relating to both the explicit subsidy and implicit subsidy liabilities. *Exhibits in this report reflect our assumption that the Department will follow this approach.*
- Prefunding 100% of the ARC relating to both the explicit subsidy and implicit subsidy liabilities, but intentionally allocate the entire trust contribution to more quickly pay-off the explicit subsidy liability, rather than allocating any toward the implicit subsidy liability. We believe this would allow the implicit subsidy liability to be developed using the prefunding discount rate of 7.25%.
- Prefunding 100% of the ARC developed for the explicit subsidy liability, but not prefund the implicit subsidy liability. We believe this approach requires determining the implicit subsidy liability using a pay-as-you-go discount rate (e.g., 4.0% rather than the 7.25%).

We are available to review these options further with the Department.

## **G. Choice of Actuarial Funding Method and Assumptions**

The ultimate real cost of an employee benefit plan is the value of all benefits and other expenses of the plan over its lifetime. These expenditures are dependent only on the terms of the plan and the administrative arrangements adopted, and as such are not affected by the actuarial funding method. The actuarial funding method attempts to spread recognition of these expected costs on a level basis over the life of the plan, and as such sets the “incidence of cost”. Methods that produce higher initial annual (prefunding) costs will produce lower annual costs later. Conversely, methods that produce lower initial costs will produce higher annual costs later relative to the other methods. GASB 45 allows the use of any of six actuarial funding methods; a brief description of each is in the glossary.

### **Factors Impacting the Selection of Funding Method**

While the goal of GASB 45 is to match recognition of retiree medical expense with the periods during which the benefit is earned, the funding methods differ because they focus on different financial measures in attempting to level the incidence of cost. Appropriate selection of a funding method contributes to creating intergenerational equity between generations of taxpayers. The impact of potential new employees entering the plan may also affect selection of a funding method, though this is not a factor in this plan.

We believe it is most appropriate for the plan sponsor to adopt a theory of funding and consistently apply the funding method representing that theory. This valuation was prepared using the entry age normal cost method with normal cost determined on a level percent of pay basis. The entry age normal cost method often produces initial contributions between those of the other more common methods and is generally regarded by pension actuaries as the most stable of the funding methods and is one of the most commonly used methods for GASB 45 compliance.

### **Factors Affecting the Selection of Assumptions**

Special considerations apply to the selection of actuarial funding methods and assumptions for the Department. The actuarial assumptions used in this report were chosen, for the most part, to be the same as the actuarial assumptions used for the most recent actuarial valuations of the retirement plans covering Department employees. Other assumptions, such as healthcare trend, age related healthcare claims, retiree participation rates and spouse coverage, were selected based on demonstrated plan experience and/or our best estimate of expected future experience. We will continue to gather information and monitor these assumptions for future valuations, as more experience develops.

In selecting an appropriate discount rate, GASB states that the discount rate should be based on the expected long-term yield of investments used to finance the benefits. CERBT provides participating employers with three possible asset allocation strategies; a maximum discount rate is assigned to each of these strategies, which may be rounded or reduced to include a margin for adverse deviation. As requested by the Department and permitted by CERBT where its asset allocation Strategy #1 is employed, the discount rate used in this valuation is 7.25%.

## H. Certification

This report presents the results of our actuarial valuation of the other post-employment benefits provided by the Ross Valley Fire Department. The purpose of this valuation was to provide the actuarial information required for the Department's reporting under Statement 45 of the Governmental Accounting Standards Board. The calculations were focused on determining the plan's funded status as of the valuation date, developing the Annual Required Contribution and projecting the Net OPEB Obligations for the years to which this report is expected to be applied.

We certify that this report has been prepared in accordance with our understanding of GASB 45. To the best of our knowledge, the report is complete and accurate, based upon the data and plan provisions provided to us by the Department. We believe the assumptions and method used are reasonable and appropriate for purposes of the financial reporting required by GASB 45. The results may not be appropriate for other purposes.

Each of the undersigned individuals is a Fellow in the Society of Actuaries and Member of the American Academy of Actuaries who satisfies the Academy Qualification Standards for rendering this opinion.

Signed: August 25, 2016



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Catherine L. MacLeod, FSA, FCA, EA, MAAA



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J. Kevin Watts, FSA, FCA, MAAA

### Table 1

**Results for fiscal year ending 2016:** The annual required contribution (ARC) and annual OPEB expense (AOE) for the Department's fiscal year ending June 30, 2016 were developed as part of the July 2013 valuation, but the financial statement for that period has not yet been finalized. We have illustrated what we anticipate will be reported for OPEB under GASB 45 as of June 30, 2016 and included this information in Appendix 1. We use the net OPEB asset projected from this Appendix as the starting point for developing the net OPEB asset as of June 30, 2017, shown in Table 1B.

**Results for fiscal years 2017 and 2018:** The basic results of our July 1, 2015 valuation of OPEB liabilities for the Department calculated under GASB 45 were summarized in Section E. Those results are applied to develop the ARC, AOE and the net OPEB obligation (NOO) or net OPEB asset (NOA) to be reported by the Department for its fiscal years ending June 30, 2017 and June 30, 2018.

As noted earlier in this report,

- The development of the ARC reflects the assumption that the Department will contribute at least 100% of the total ARC each year, with contributions comprised of:
  - direct payments to CalPERS toward retiree premiums plus reimbursements to retirees,
  - each current year's implicit subsidy, and
  - contributions to the OPEB trust.

If this understanding is incorrect or if actual Department contributions differ by more than an immaterial amount, some of the results in this report will need to be revised.

- GASB 75 will not necessarily impact the development of results for funding purposes but will change the development of the OPEB liability and expense information to be reported by the Department in its financial statements for the fiscal year ending June 30, 2018. That information will need to be developed at a later date and is outside the scope of this report.

**Employees reflected in future years' costs:** The counts of active employees and retirees shown in Tables 1A and 1C are the same as the counts of active and retired employees on the valuation date. While we do not adjust these counts between valuation dates, the liabilities and costs developed for those years already anticipate the likelihood that some active employees may leave employment forfeiting benefits, some may retire and elect benefits and coverage for some of the retired employees may cease. However, because this valuation has been prepared on a closed group basis, no potential future employees are included. We will incorporate any new employees in the next valuation, in the same way we included new employees hired after July 2013 in this July 2015 valuation.

We also note that the number of retired employees expected to create an implicit subsidy OPEB liability are lower than the number of those which create an explicit subsidy liability. CalPERS medical premiums for retirees over age 65 and covered by Supplemental Medicare plans are not subsidized by active employee medical premiums, so do not create an implicit subsidy liability.

**Table 1A**  
**ARC Calculation for FYE 2017**

The table below develops the ARC for the Department’s fiscal year ending June 30, 2017 determined on a prefunding basis, based on a “roll forward” of the July 1, 2015 valuation results. Calculations are shown separately, and in total, relating to Explicit and Implicit OPEB benefits.

Funding Policy	Prefunding Basis		
Valuation date	7/1/2015		
	Explicit	Implicit	Total
Subsidy			
For fiscal year beginning	7/1/2016	7/1/2016	7/1/2016
For fiscal year ending	6/30/2017	6/30/2017	6/30/2017
Expected long-term return on assets	7.25%	7.25%	7.25%
Discount rate	7.25%	7.25%	7.25%
<b>Number of Covered Employees</b>			
Actives	32	32	32
Retirees	36	13	36
Total Participants	68	45	68
<b>Actuarial Present Value of Projected Benefits</b>			
Actives	\$ 3,931,199	\$ 1,420,926	\$ 5,352,125
Retirees	4,104,882	863,442	4,968,324
Total APVPB	8,036,081	2,284,368	10,320,449
<b>Actuarial Accrued Liability (AAL)</b>			
Actives	2,602,868	924,756	3,527,624
Retirees	4,104,882	863,442	4,968,324
Total AAL	6,707,750	1,788,198	8,495,948
Actuarial Value of Assets	1,673,839	-	1,673,839
<b>Unfunded AAL (UAAL)</b>	5,033,911	1,788,198	6,822,109
Amortization method	Level % of Pay	Level % of Pay	Level % of Pay
Initial amortization period (in years)	30	30	30
Remaining period (in years)	23	23	23
<b>Determination of Amortization Payment</b>			
UAAL	\$ 5,033,911	\$ 1,788,198	\$ 6,822,109
Factor	15.2783	15.2783	15.2783
Payment	329,480	117,041	446,521
<b>Annual Required Contribution (ARC)</b>			
Normal Cost	134,701	49,156	183,857
Amortization of UAAL	329,480	117,041	446,521
Interest to fiscal year end	33,653	12,049	45,702
<b>Total ARC at fiscal year end</b>	497,834	178,246	676,080
Projected covered payroll	\$ 4,094,015	\$ 4,094,015	\$ 4,094,015
Normal Cost as a percent of payroll	3.3%	1.2%	4.5%
ARC as a percent of payroll	12.2%	4.4%	16.5%
ARC per active ee	15,557	5,570	21,128



**Table 1B**  
**Expected OPEB Disclosures for FYE 2017**

The following exhibit develops the annual OPEB expense, estimates the expected OPEB contributions and projects the net OPEB obligation as of June 30, 2017 reflecting the assumed prefunding policy described in this report.

Fiscal Year End	Prefunding Basis		
	6/30/2017	6/30/2017	6/30/2017
Subsidy	Explicit	Implicit	Total
<b>1. Calculation of the Annual OPEB Expense</b>			
a. ARC for current fiscal year	\$ 497,834	\$ 178,246	\$ 676,080
b. Interest on Net OPEB Obligation (Asset)	(926)	-	(926)
c. Adjustment to the ARC	897	-	897
d. <b>Annual OPEB Expense (a. + b. + c.)</b>	497,805	178,246	676,051
<b>2. Calculation of Expected Contribution</b>			
a. Estimated payments on behalf of retirees	336,117	-	336,117
b. Estimated current year's implicit subsidy	-	90,411	90,411
c. Estimated contribution to OPEB trust	161,717	87,835	249,552
d. <b>Total Expected Employer Contribution</b>	497,834	178,246	676,080
<b>3. Change in Net OPEB Obligation (1.d. minus 2.d.)</b>	(29)	-	(29)
Net OPEB Obligation (Asset), beginning of fiscal year	(12,772)	-	(12,772)
<b>Net OPEB Obligation (Asset) at fiscal year end</b>	(12,801)	-	(12,801)

We assume that the Department will contribute 100% of the total ARC of \$676,080.

- We assumed that the Department would take credit for the \$90,411 current year's implicit subsidy as an OPEB contribution by shifting recognition of this amount from an active healthcare expense to a retiree healthcare benefit expense. If so, this would reduce the Department's additional cash outlay to fund the full ARC to \$585,669.
- Funding exactly 100% of the ARC may require adjusting the estimated \$249,552 contribution to the trust if actual retiree benefit payments are higher or lower than projected payments of \$336,117 shown above.

Additional notes on the calculations above:

- Interest on the net OPEB obligation (or asset), shown above in item 1.b. is equal to the applicable discount rate (7.25%) multiplied by the net OPEB obligation (or asset) at the beginning of the year.
- The Adjustment to the ARC, shown above in item 1.c., is always the opposite sign of the net OPEB obligation or asset and exists to avoid double-counting of the amounts previously expensed but imbedded in the current ARC. This adjustment is calculated as *the opposite* of the net OPEB obligation (or asset) at the beginning of the year, plus interest on that amount (item 1.b.) with the sum then divided by the same amortization factor used to determine the ARC for this year (see the prior page for these factors).

**Table 1C**  
**ARC Calculation for FYE 2018**

In the following exhibit, the July 1, 2015 valuation results have been adjusted (rolled forward) two years based on the underlying actuarial assumptions. These results are used to develop the annual required contribution (ARC) for the fiscal year ending June 30, 2018.

Funding Policy	Prefunding Basis		
Valuation date	7/1/2015		
Subsidy	Explicit	Implicit	Total
For fiscal year beginning	7/1/2017	7/1/2017	7/1/2017
For fiscal year ending	6/30/2018	6/30/2018	6/30/2018
Expected long-term return on assets	7.25%	7.25%	7.25%
Discount rate	7.25%	7.25%	7.25%
<b>Number of Covered Employees</b>			
Actives	32	32	32
Retirees	36	13	36
Total Participants	68	45	68
<b>Actuarial Present Value of Projected Benefits</b>			
Actives	\$ 4,202,605	\$ 1,520,819	\$ 5,723,424
Retirees	4,079,975	838,755	4,918,730
Total APVPB	8,282,580	2,359,574	10,642,154
<b>Actuarial Accrued Liability (AAL)</b>			
Actives	2,922,437	1,041,397	3,963,834
Retirees	4,079,975	838,755	4,918,730
Total AAL	7,002,412	1,880,152	8,882,564
Actuarial Value of Assets	1,956,909	87,835	2,044,744
<b>Unfunded AAL (UAAL)</b>	<b>5,045,503</b>	<b>1,792,317</b>	<b>6,837,820</b>
Amortization method	Level % of Pay	Level % of Pay	Level % of Pay
Initial amortization period (in years)	30	30	30
Remaining period (in years)	22	22	22
<b>Determination of Amortization Payment</b>			
UAAL	\$ 5,045,503	\$ 1,792,317	\$ 6,837,820
Factor	14.8675	14.8675	14.8675
Payment	339,365	120,553	459,918
<b>Annual Required Contribution (ARC)</b>			
Normal Cost	139,079	50,754	189,833
Amortization of UAAL	339,365	120,553	459,918
Interest to fiscal year end	34,687	12,420	47,107
<b>Total ARC at fiscal year end</b>	<b>513,131</b>	<b>183,727</b>	<b>696,858</b>
Projected covered payroll	\$ 4,227,071	\$ 4,227,071	\$ 4,227,071
Normal Cost as a percent of payroll	3.3%	1.2%	4.5%
ARC as a percent of payroll	12.1%	4.3%	16.5%
ARC per active ee	16,035	5,741	21,777

**Table 1D**  
**Expected OPEB Disclosures for FYE 2018**

The following exhibit develops the annual OPEB expense, estimates the expected OPEB contributions and projects the net OPEB obligation as of June 30, 2018 reflecting the assumed prefunding policy described earlier in this report.

Fiscal Year End	Prefunding Basis		
	6/30/2018	6/30/2018	6/30/2018
Subsidy	Explicit	Implicit	Total
<b>1. Calculation of the Annual OPEB Expense</b>			
a. ARC for current fiscal year	\$ 513,131	\$ 183,727	\$ 696,858
b. Interest on Net OPEB Obligation (Asset)	(928)	-	(928)
c. Adjustment to the ARC	923	-	923
d. <b>Annual OPEB Expense (a. + b. + c.)</b>	513,126	183,727	696,853
<b>2. Calculation of Expected Contribution</b>			
a. Estimated payments on behalf of retirees	351,229	-	351,229
b. Estimated current year's implicit subsidy	-	111,746	111,746
c. Estimated contribution to OPEB trust	161,902	71,981	233,883
d. <b>Total Expected Employer Contribution</b>	513,131	183,727	696,858
<b>3. Change in Net OPEB Obligation (1.d. minus 2.d.)</b>	(5)	-	(5)
Net OPEB Obligation (Asset), beginning of fiscal year	(12,801)	-	(12,801)
<b>Net OPEB Obligation (Asset) at fiscal year end</b>	(12,806)	-	(12,806)

We assumed that the Department will contribute 100% of the total ARC of \$696,858.

- We assumed that the Department would take credit for the \$111,746 current year's implicit subsidy as an OPEB contribution by shifting recognition of this amount from an active healthcare expense to a retiree healthcare benefit expense. If so, this would reduce the Department's additional cash outlay to fund the full ARC to \$585,112.
- Funding exactly 100% of the ARC may require adjusting the estimated \$233,883 contribution to the trust if actual retiree benefit payments are higher or lower than projected payments of \$351,229 shown above

Notes on calculations above:

- Interest on the net OPEB obligation (or asset), shown above in item 1.b. is equal to the applicable discount rate (7.25%) multiplied by the net OPEB obligation (or asset) at the beginning of the year.
- The Adjustment to the ARC, shown above in item 1.c., is always the opposite sign of the net OPEB obligation or asset and exists to avoid double-counting of the amounts previously expensed but imbedded in the current ARC. This adjustment is calculated as *the opposite* of the net OPEB obligation (or asset) at the beginning of the year, plus interest on that amount (item 1.b.) with the sum then divided by the same amortization factor used to determine the ARC for this year (see the prior page for these factors).

**Table 2**  
**Summary of Employee Data**

The Department reported 32 active employees; all are currently participating in the medical program as of the valuation date. Age and service information for the reported individuals is provided below.

Distribution of Benefits-Eligible Active Employees								
Current Age	Years of Service						Total	Percent
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 & Up		
Under 25							0	0%
25 to 29		3	1				4	13%
30 to 34			3	1			4	13%
35 to 39		2	2	2	1		7	22%
40 to 44			3	3	2		8	25%
45 to 49		1		2		3	6	19%
50 to 54					1	1	2	6%
55 to 59						1	1	3%
60 to 64							0	0%
65 to 69							0	0%
70 & Up							0	0%
<b>Total</b>	0	6	9	8	4	5	<b>32</b>	<b>100%</b>
<b>Percent</b>	0%	19%	28%	25%	13%	16%	<b>100%</b>	

<u>Valuation</u>	<u>July 2013</u>	<u>July 2015</u>
Annual Covered Payroll	\$3,453,704	\$3,965,148
Average Attained Age for Actives	41.5	40.4
Average Years of Service	14.2	11.9

There are also 28 retirees and 8 surviving spouses currently receiving benefits under this program. Their ages are summarized in the chart below.

Retirees by Age		
Current Age	Number	Percent
Below 50	2	6%
50 to 54	2	6%
55 to 59	5	14%
60 to 64	4	11%
65 to 69	7	19%
70 to 74	3	8%
75 to 79	5	14%
80 & up	8	22%
<b>Total</b>	<b>36</b>	<b>100%</b>
Average Attained Age for Retirees:		70.0

**Table 2- Summary of Employee Data  
(Concluded)**

The chart below reconciles the number of actives and retirees included in the July 1, 2013 valuation of the Department plan with those included in the July 1, 2015 valuation:

<b>Reconciliation of Department Plan Members Between Valuation Dates</b>					
<b>Status</b>	Covered Actives	Covered Retirees	Covered Disabled Retirees	Covered Surviving Spouses	Total
Number reported as of July 1, 2013	33	13	10	8	64
New employees	4	-	-	-	4
New retiree, elected coverage	(5)	5	-	-	0
<b>Number reported as of July 1, 2015</b>	<b>32</b>	<b>18</b>	<b>10</b>	<b>8</b>	<b>68</b>

From this reconciliation, we can see that while there were some retirements and new hires, the net number of active employees decreased by 1 (about 3%). There were 5 retirements since July 2013. All qualified for the higher benefit level and, as expected, all 5 elected to remain covered through the Department and receive this benefit.

The OPEB liability varies, in part, by the plan selection, level of coverage and whether or not the retiree is currently covered by Medicare. This chart shows current medical plan elections:

<b>Medical Plan Elections as of July 2015</b>				
Medical Plan	Actives	Retirees Under 65	Retirees Over 65	Total
Blue Shield Access Bay Area	3	3	2	8
Kaiser Bay Area	22	10	10	42
PERSCare Bay Area	1		4	5
PERSCare Northern Cal			2	2
PERSCchoice Northern Cal			2	2
PERSCchoice Bay area	6		2	8
PERSCchoice Out of State			1	1
<b>Total</b>	<b>32</b>	<b>13</b>	<b>23</b>	<b>68</b>

Similarly, this chart shows the counts of active, pre-Medicare and Medicare retirees who are covered by the higher Tier 1 "Unequal Contribution Benefits" and those in Tier 2 who will receive the PEMHCA minimum employer contribution (MEC) in retirement.

<b>Participants By Status and Benefit Level</b>				
Benefit Level	Actives	Retirees Under 65	Retirees Over 65	Total
Tier 1 (Unequal Benefits)	26	13	23	62
Tier 2 (PEMHCA MEC)	6	0	0	6
<b>Total</b>	<b>32</b>	<b>13</b>	<b>23</b>	<b>68</b>

**Table 3A**  
**Summary of Retiree Benefit Provisions**

**OPEB provided:** The Department reported the following OPEB: retiree medical coverage.

**Access to coverage:** Medical coverage is currently provided through CalPERS as permitted under the Public Employees’ Medical and Hospital Care Act (PEMHCA). This coverage requires the employee to satisfy the requirements for retirement under CalPERS: either (a) attainment of age 50 (or age 52, if a new miscellaneous employee on or after January 1, 2013) with 5 years of State or public agency service or (b) an approved disability retirement.

If an eligible employee is not already enrolled in the medical plan, he or she may enroll within 60 days of retirement or during any future open enrollment period. Coverage may be continued at the retiree’s option for his or her lifetime. A surviving spouse and other eligible dependents may also continue coverage. The employee must begin his or her retirement benefit (“warrant”) within 120 days of terminating employment with the Department to be eligible to continue medical coverage through the Department and be entitled to the employer subsidy described below.

**Benefits provided:** As a condition of participation in the CalPERS medical program, the Department is obligated to contribute toward the cost of retiree medical coverage for the retiree’s lifetime or until coverage is discontinued, as well as to a surviving spouse, if the spouse is entitled to survivor pension benefits.

- Under the terms of the Department’s current PEMHCA resolution, executed in 2013, all employees who satisfy the requirements under “Access to Coverage” above and continue their medical coverage through the Department in retirement will receive the PEMHCA minimum employer contribution (MEC)<sup>3</sup>. The MEC was \$122 per month in 2015 and increased to \$125 per month in 2016.
- Instead of the minimum contribution described above, employees first covered by the Ross Valley Firefighters Association or the Ross Valley Fire Chief Officers Association prior to April 1, 2013 and Miscellaneous employees hired prior to April 1, 2013 will be reimbursed an amount equal to the Department’s share of CalPERS medical premiums as of January 1, 2013, increased annually by a maximum of \$100 per month, until such time as the Department’s share is the same as the Department’s share for active employees.

Estimated 2016 "Unequal" Contributions for Tier 1 Retirees			
	Employee	Employee and 1 Dependent*	Employee and 2+ Dependents*
Kaiser	100% of premium	\$ 1,346.99	\$ 1,459.77
BS Access	100% of premium	\$ 1,377.15	\$ 1,482.44
PERS Choice	100% of premium	\$ 1,387.76	\$ 1,472.54
PERSCare	100% of premium	\$ 1,473.70	\$ 1,482.44

\* The Department confirms it will increase these amounts by \$100 per month each year.

<sup>3</sup> The Department confirmed that it maintains a pre-tax flexible benefit (a.k.a. “Cafeteria plan for active employees providing medical and other healthcare benefits in excess of the PEMHCA minimum. It is our understanding that these additional payments are not required to be provided to retired employees to meet PEMHCA requirements.

**Table 3A – Summary of Retiree Benefit Provisions  
(Concluded)**

**Current premium rates:** The 2016 CalPERS monthly medical plan rates in the Bay Area rate group are shown in the table below. If different rates apply where the member resides outside of this area, those rates are reflected in the valuation, but not listed here. The additional CalPERS administration fee is assumed to be separately expensed each year and has not been projected as an OPEB liability in this valuation.

Bay Area 2016 Health Plan Rates						
Plan	Actives and Pre-Med Retirees			Medicare Eligible Retirees		
	Ee Only	Ee & 1	Ee & 2+	Ee Only	Ee & 1	Ee & 2+
Blue Shield Access+ HMO	\$ 1,016.18	\$ 2,032.36	\$ 2,642.07	<i>Not Available</i>		
Kaiser HMO	746.47	1,492.94	1,940.82	\$ 297.23	\$ 594.46	\$1,042.34
UnitedHealthcare HMO	955.44	1,910.88	2,484.14	320.98	641.96	1,215.22
PERS Choice PPO	798.36	1,596.72	2,075.74	366.38	732.76	1,211.78
PERSCare PPO	889.27	1,778.54	2,312.10	408.04	816.08	1,349.64

**Table 3B**  
**General CalPERS Annuitant Eligibility Provisions**

The content of this section has been drawn from Section C, Summary of Plan Provisions, of the State of California OPEB Valuation as of June 30, 2015, issued January 2016 to the State Controller from Gabriel Roeder & Smith. It is provided here as a brief summary of general annuitant and survivor coverage.

Health Care Coverage

*Retired Employees*

A member is eligible to enroll in a CalPERS health plan if he or she retires within 120 days of separation from employment and receives a monthly retirement allowance. If the member meets this requirement, he or she may continue his or her enrollment at retirement, enroll within 60 days of retirement, or enroll during any Open Enrollment period. If a member is currently enrolled in a CalPERS health plan and wants to continue enrollment into retirement, the employee will notify CalPERS and the member's coverage will continue into retirement.

Eligibility Exceptions: Certain family members are not eligible for CalPERS health benefits:

- Children age 26 or older
- Children's spouses
- Former spouses
- Disabled children over age 26 who were never enrolled or were deleted from coverage
- Grandparents
- Parents
- Children of former spouses
- Other relatives

*Coordination with Medicare*

CalPERS retired members who qualify for premium-free Part A, either on their own or through a spouse (current, former, or deceased), must sign up for Part B as soon as they qualify for Part A. A member must then enroll in a CalPERS sponsored Medicare plan. The CalPERS-sponsored Medicare plan will pay for costs not paid by Medicare, by coordinating benefits.

*Survivors of an Annuitant*

If a CalPERS annuitant satisfied the requirement to retire within 120 days of separation, the survivor may be eligible to enroll within 60 days of the annuitant's death or during any future Open Enrollment period. Note: A survivor cannot add any new dependents; only dependents that were enrolled or eligible to enroll at the time of the member's death qualify for benefits.

Surviving registered domestic partners who are receiving a monthly annuity as a surviving beneficiary of a deceased employee or annuitant on or after January 1, 2002, are eligible to continue coverage if currently enrolled, enroll within 60 days of the domestic partner's death, or enroll during any future Open Enrollment period.

Surviving enrolled family members who do not qualify to continue their current coverage are eligible for continuation coverage under COBRA.



**Table 4**  
**Actuarial Methods and Assumptions**

Valuation Date	July 1, 2015
Funding Method	Entry Age Normal Cost, level percent of pay <sup>4</sup>
Asset Valuation Method	Market value of assets
Long Term Return on Assets	7.25% (7.28% less .03% margin for adverse deviation)
Discount Rate	7.25%
Participants Valued	Only current active employees and retired participants and covered dependents are valued. No future entrants are considered in this valuation.
Salary Increase	3.25% per year, used only to allocate the cost of benefits between service years
Assumed Wage Inflation	3.0% per year; used to determine amortization payments if developed on a level percent of pay basis
General Inflation Rate	2.75% per year

*Demographic actuarial assumptions used in this valuation are based on the 2014 experience study of the California Public Employees Retirement System using data from 1997 to 2011, except for a different basis used to project future mortality improvements. Rates for selected age and service are shown below and on the following pages. The representative mortality rates were those published by CalPERS adjusted to back out 20 years of Scale BB to central year 2008 and then projected forward 6 years using Bickmore Scale 2014 to year 2014.*

**Mortality Before Retirement**

Mortality rates in these tables are from the CalPERS experience study, adjusted as described above.

These rates were adjusted further on a generational basis by Bickmore Scale 2014 to anticipate future mortality improvement each year until the expected payments in any future year occur.

CalPERS Public Agency Miscellaneous Non- Industrial Deaths			CalPERS Public Agency Police & Fire Combined Industrial & Non-Industrial		
Age	Male	Female	Age	Male	Female
15	0.00020	0.00015	15	0.00020	0.00015
20	0.00028	0.00018	20	0.00031	0.00021
30	0.00051	0.00027	30	0.00061	0.00037
40	0.00070	0.00047	40	0.00083	0.00060
50	0.00147	0.00103	50	0.00162	0.00118
60	0.00340	0.00201	60	0.00357	0.00218
70	0.00619	0.00408	70	0.00637	0.00427
80	0.01157	0.00918	80	0.01178	0.00938

<sup>4</sup> The level percent of pay aspect of the funding method refers to how the normal cost is determined. Use of level percent of pay cost allocations in the funding method is separate from and has no effect on a decision regarding use of a level percent of pay or level dollar basis for determining amortization payments.

**Table 4 - Actuarial Methods and Assumptions – Continued**

Mortality After Retirement Representative mortality rates for 2014 are shown in the charts below. The rates were then adjusted on a generational basis by Bickmore Scale 2014 to anticipate future mortality improvement.

Healthy Lives			Disabled Miscellaneous			Disabled Fire		
CalPERS Public Agency Miscellaneous, Police & Fire Post Retirement Mortality			CalPERS Public Agency Disabled Miscellaneous Post-Retirement Mortality From Jan 2014 Experience Study Report			CalPERS Public Agency Disabled Fire Post- Retirement Mortality From Jan 2014 Experience Study Report		
Age	Male	Female	Age	Male	Female	Age	Male	Female
40	0.00103	0.00085	20	0.00548	0.00339	20	0.00440	0.00277
50	0.00475	0.00480	30	0.00717	0.00469	30	0.00348	0.00247
60	0.00785	0.00481	40	0.00887	0.00565	40	0.00291	0.00222
70	0.01541	0.01105	50	0.01594	0.01192	50	0.00545	0.00524
80	0.04556	0.03271	60	0.02530	0.01363	60	0.00884	0.00596
90	0.14423	0.10912	70	0.03394	0.02460	70	0.01964	0.01573
100	0.32349	0.29541	80	0.07108	0.05326	80	0.05747	0.04422
110	0.97827	0.97516	90	0.16458	0.14227	90	0.14455	0.10964
115	1.00000	1.00000						

Termination Rates

Miscellaneous Employees: Sum of Vested Terminated & Refund Rates From CalPERS Experience Study Report Issued January 2014						
Attained Age	Years of Service					
	0	3	5	10	15	20
15	0.1812	0.0000	0.0000	0.0000	0.0000	0.0000
20	0.1742	0.1193	0.0946	0.0000	0.0000	0.0000
25	0.1674	0.1125	0.0868	0.0749	0.0000	0.0000
30	0.1606	0.1055	0.0790	0.0668	0.0581	0.0000
35	0.1537	0.0987	0.0711	0.0587	0.0503	0.0450
40	0.1468	0.0919	0.0632	0.0507	0.0424	0.0370
45	0.1400	0.0849	0.0554	0.0427	0.0347	0.0290

Fire Safety Employees: Sum of Vested Terminated & Refund Rates From CalPERS Experience Study Report Issued January 2014						
Attained Age	Years of Service					
	0	3	5	10	15	20
15	0.0710	0.0000	0.0000	0.0000	0.0000	0.0000
20	0.0710	0.0242	0.0191	0.0000	0.0000	0.0000
25	0.0710	0.0242	0.0191	0.0070	0.0000	0.0000
30	0.0710	0.0242	0.0191	0.0070	0.0064	0.0000
35	0.0710	0.0242	0.0191	0.0070	0.0064	0.0058
40	0.0710	0.0242	0.0191	0.0070	0.0064	0.0058
45	0.0710	0.0242	0.0191	0.0070	0.0064	0.0058

**Table 4 - Actuarial Methods and Assumptions – Continued**

Service Retirement Rates

The following miscellaneous retirement formulas apply:

- If hired on or after 1/1/2013, Classic: 2.7% @ 55
- If hired on or after 1/1/2013, PEPRAs: 2.0% @ 62

The following fire safety retirement formulas apply:

- If hired on or after 1/1/2013, Classic: 3.0% @ 55
- If hired on or after 1/1/2013, PEPRAs: 2.7% @ 57

Sample rates of assumed future retirements applicable to each of these retirement benefit formulas are shown in tables below and on the following page.

<b>Miscellaneous Employees: 2.7% at 55 formula</b>						
From CalPERS Experience Study Report Issued January 2014						
Current Age	Years of Service					
Age	5	10	15	20	25	30
50	0.0040	0.0090	0.0140	0.0350	0.0550	0.0950
55	0.0760	0.1010	0.1250	0.1650	0.2050	0.2650
60	0.0690	0.0930	0.1160	0.1540	0.1920	0.2500
65	0.1340	0.1740	0.2150	0.2700	0.3260	0.4010
70	0.1410	0.1830	0.2260	0.2830	0.3410	0.4180
75 & over	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

<b>Miscellaneous "PEPRA" Employees: 2% at 62 formula</b>						
From CalPERS Experience Study Report Issued January 2014						
Current Age	Years of Service					
Age	5	10	15	20	25	30
52	0.0103	0.0132	0.0160	0.0188	0.0216	0.0244
55	0.0440	0.0560	0.0680	0.0800	0.0920	0.1040
60	0.0616	0.0784	0.0952	0.1120	0.1288	0.1456
65	0.1287	0.1638	0.1989	0.2340	0.2691	0.3042
70	0.1254	0.1596	0.1938	0.2280	0.2622	0.2964
75 & over	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

<b>Fire Safety Employees: 3.0% at 55 formula</b>						
From CalPERS Experience Study Report Issued January 2014						
Current Age	Years of Service					
Age	5	10	15	20	25	30
50	0.0010	0.0010	0.0010	0.0060	0.0160	0.0690
53	0.0320	0.0320	0.0320	0.0490	0.0850	0.1490
56	0.0640	0.0640	0.0640	0.0970	0.1610	0.2380
59	0.0880	0.0880	0.0880	0.1310	0.2130	0.2990
62	0.0870	0.0870	0.0870	0.1280	0.2100	0.2950
65 & over	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

**Table 4 - Actuarial Methods and Assumptions  
(Continued)**

Service Retirement Rates – Concluded

<b>Fire Safety Employees: 2.7% at 57 formula</b>						
From CalPERS Experience Study Report Issued January 2014						
Current Age	Years of Service					
	5	10	15	20	25	30
50	0.0065	0.0065	0.0065	0.0065	0.0101	0.0151
53	0.0065	0.0065	0.0065	0.0065	0.0101	0.0151
56	0.0442	0.0442	0.0442	0.0442	0.0680	0.1018
59	0.0740	0.0740	0.0740	0.0740	0.1140	0.1706
62	0.0729	0.0729	0.0729	0.0729	0.1123	0.1681
65	0.1136	0.1136	0.1136	0.1136	0.1749	0.2618
68 & over	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Disability Retirement Rates

CalPERS Public Agency Miscellaneous Disability From Jan 2014 Experience Study Report		
Age	Male	Female
20	0.00017	0.00010
25	0.00017	0.00010
30	0.00019	0.00024
35	0.00049	0.00081
40	0.00122	0.00155
45	0.00191	0.00218
50	0.00213	0.00229
55	0.00221	0.00179
60	0.00222	0.00135

CalPERS Public Agency Fire Combined Disability From Jan 2014 Experience Study Report	
Age	Unisex
20	0.00017
25	0.00035
30	0.00084
35	0.00168
40	0.00310
45	0.00550
50	0.02821
55	0.04184
60	0.05974

Healthcare Trend

Medical plan premiums and claims costs by age are assumed to increase once each year. The increases over the prior year's levels are assumed to be effective on the dates shown below:

Effective January 1	Premium Increase	Effective January 1	Premium Increase
2016	Actual	2020	6.00%
2017	7.50%	2021	5.50%
2018	7.00%	2022	5.00%
2019	6.50%	2023 & later	4.50%

The PEMHCA minimum required contribution (MEC) is assumed to increase annually by 4.5%.

**Table 4 - Actuarial Methods and Assumptions  
(Continued)**

Participation Rate	<p><i>Active employees:</i> 100% of those hired prior to April 1, 2013 and 80% of those hired on or after that date are assumed to continue their current medical plan election in retirement.</p> <p><i>Retired participants:</i> Existing medical plan elections are assumed to be continued until the retiree’s death.</p>
Spouse Coverage	<p><i>Active employees:</i> 68% of those hired prior to April 1, 2013 and 51% of those hired after that date are assumed to be married and to elect coverage for their spouse in retirement. Surviving spouses are assumed to retain coverage until their death. Husbands are assumed to be 3 years older than their wives.</p> <p><i>Retired participants:</i> Existing elections for spouse coverage are assumed to be maintained through retirement until the spouse’s death. Actual spouse ages are used, where known; if not, husbands are assumed to be 3 years older than their wives.</p>
Dependent Coverage	<p><i>Active employees:</i> 30% are assumed to cover dependents other than a spouse under age 26 at retirement; eligibility for coverage for the youngest dependent is assumed to end at the retiree’s age 63.</p> <p><i>Retired participants</i> covering dependent children are assumed to end such coverage when the youngest currently covered dependent reaches age 26.</p>
Medicare Eligibility	Absent contrary data, all individuals are assumed to be eligible for Medicare Parts A and B at age 65.
Excise tax on high-cost plans	Projected excise taxes expected to be paid by the Department for high cost plan coverage for retirees beginning in 2020 are included in this valuation. Annual threshold amounts for 2018 under the Affordable Care Act (ACA) were assumed to increase at the General Inflation Rate. A 40% excise tax rate was applied to the portion of premiums projected to exceed the threshold.

2018 Thresholds	Ages 55-64	All Other Ages
Single	11,850	10,200
Other than Single	30,950	27,500

*Note: Thresholds for disability retirements are assumed to be set at a level high enough to prevent taxation on disabled retiree benefits.*

**Table 4 - Actuarial Methods and Assumptions  
(Continued)**

Development of Age-related  
Medical Premiums

Actual premium rates for retirees and their spouses were adjusted to an age-related basis by applying medical claim cost factors developed from the data presented in the report, "Health Care Costs – From Birth to Death", sponsored by the Society of Actuaries. A description of the use of claims cost curves can be found in Bickmore's Age Rating Methodology provided in Addendum 1 to this report.

Representative claims costs derived from the dataset provided by CalPERS for retirees not currently covered or not expected to be eligible for Medicare appear below:

Expected Monthly Claims by Medical Plan for Selected Ages					
Medical Plan	Male				
	50	53	56	59	62
Blue Shield Access+ Bay Area	\$ 947	\$1,116	\$1,296	\$1,486	\$1,689
Kaiser Bay Area	732	863	1,002	1,149	1,306
PERS Choice Bay Area	716	844	981	1,124	1,278
PERS Choice Other Northern California	752	887	1,031	1,181	1,343
PERSCare Bay Area	644	759	882	1,011	1,149
PERSCare Other Northern California	576	680	789	905	1,029
Medical Plan	Female				
Blue Shield Access+ Bay Area	\$1,173	\$1,288	\$1,386	\$1,498	\$1,651
Kaiser Bay Area	907	996	1,072	1,158	1,277
PERS Choice Bay Area	887	974	1,049	1,133	1,249
PERS Choice Other Northern California	932	1,024	1,102	1,191	1,313
PERSCare Bay Area	798	876	943	1,019	1,123
PERSCare Other Northern California	714	785	844	912	1,006

All current and future Medicare-eligible retirees are assumed to be covered by plans that are rated based solely on the experience of Medicare retirees. Therefore, no implicit subsidy is calculated for Medicare-eligible retirees.

**Changes Since the Prior Valuation:**

Discount rates	Decreased from 7.5% to 7.25%
Assumed Wage Inflation	Decreased from 3.25% to 3.0%
General Inflation Rate	Decreased from 3.0% to 2.75%
Participation Rate	The percentage of active employees hired April 1, 2013 and later who are assumed to elect coverage in retirement was reduced from 100% to 80%, based on the lower level of benefits provided to these plan members.

**Table 4 - Actuarial Methods and Assumptions  
(Concluded)**

Spouse Coverage	The percentage of active employees who are assumed to elect coverage for their spouse in retirement was decreased from 85% to 68% for those hired prior to April 1, 2013 and to 51% for those hired on or after that date, based on a review of recent plan experience.
Demographic assumptions	Assumed mortality, termination, disability and retirement rates were updated from those provided in the CalPERS 2010 experience study report to those provided in the CalPERS 2014 experience study report. Rates of mortality were updated to the rates in the midpoint year of the CalPERS 2014 experience study (2008), then projected on a generational basis by Bickmore Scale 2014.
Healthcare trend	Medical plan premium rates are assumed to increase at a slightly lower rate in 2025 and later years than was assumed in the prior valuation, the result of a change in our methodology for estimating the potential impact of the excise tax for high cost plans under the Affordable Care Act.
Age-Related Medical Premiums	We introduced methodology for developing age-related medical premiums based on updated research and data sponsored by the Society of Actuaries. We added an implicit subsidy analysis for pre-Medicare retirees covered by the CalPERS medical program.
Excise Tax Impact	We directly reflected the potential impact of the excise tax attributable to retirees for high cost healthcare plans for retirees, as provided by the Affordable Care Act.

**Table 5**  
**Projected Benefit Payments**

The following is an estimate of other post-employment benefits to be paid on behalf of current retirees and current employees expected to retire from the Department. Expected annual benefits have been projected on the basis of the actuarial assumptions outlined in Table 4.

These projections do not include any benefits expected to be paid on behalf of current active employees *prior to* retirement, nor do they include any benefits for potential *future employees* (i.e., those who might be hired in future years).

Projected Annual Benefit Payments							
Fiscal Year Ending June 30	Explicit Subsidy			Implicit Subsidy			Total
	Current Retirees	Future Retirees	Total	Current Retirees	Future Retirees	Total	
2016	\$ 270,978	\$ -	\$ 270,978	Not required to be recognized			\$ 270,978
2017	322,511	13,606	336,117	87,287	3,124	90,411	426,528
2018	328,293	22,936	351,229	105,570	6,176	111,746	462,975
2019	336,286	35,843	372,129	115,616	10,446	126,062	498,191
2020	354,713	50,032	404,745	136,438	15,892	152,330	557,075
2021	369,490	65,191	434,681	136,211	22,542	158,753	593,434
2022	371,710	83,618	455,328	143,916	31,266	175,182	630,510
2023	346,345	106,195	452,540	103,551	43,094	146,645	599,185
2024	354,273	126,375	480,648	80,928	46,329	127,257	607,905
2025	347,851	153,452	501,303	92,750	62,634	155,384	656,687
2026	331,564	183,817	515,381	48,113	82,185	130,298	645,679
2027	310,540	215,230	525,770	55,091	96,664	151,755	677,525
2028	296,518	248,242	544,760	47,837	112,156	159,993	704,753
2029	298,462	281,590	580,052	36,580	128,051	164,631	744,683
2030	286,205	326,861	613,066	41,609	163,891	205,500	818,566

The amounts shown in the Explicit Subsidy section reflect the expected payment by the Department toward retiree medical premiums in each of the years shown. The amounts are shown separately, and in total, for those retired on the valuation date (“current retirees”) and those expected to retire after the valuation date (“future retirees”).

The amounts shown in the Implicit Subsidy section reflect the expected excess of retiree medical (and prescription drug) claims over the premiums expected to be charged during the year for retirees’ coverage. These amounts are also shown separately and in total for those currently retired on the valuation date and for those expected to retire in the future.



**Appendix 1**  
**Expected Disclosures for Fiscal Year End June 30, 2016**

The annual OPEB expense and net OPEB obligation for the fiscal year ending June 30, 2015 and June 30, 2016 were projected in the July 1, 2013 valuation and reflected Bickmore's understanding of OPEB contributions prior to that date. Since that valuation was prepared, the Department has adjusted and updated its payments (actual and/or expected) toward retiree premiums and contributions to CERBT through June 30, 2016.

The following exhibit updates the development of the annual OPEB expense and net OPEB obligation, providing the information assumed to be reported in the Department's financial statement for the fiscal year ending June 30, 2016.

Fiscal Year End	6/30/2016
<b>1. Calculation of the Annual OPEB Expense</b>	
a. ARC for current fiscal year	\$ 485,075
b. Interest on Net OPEB Obligation (Asset) at beginning of year	(952)
c. Adjustment to the ARC	870
d. <b>Annual OPEB Expense (a. + b. + c.)</b>	484,993
<b>2. Calculation of Expected Contribution</b>	
a. Estimated payments on behalf of retirees	270,978
b. Estimated current year's implicit subsidy	n/a
c. Estimated contribution to OPEB trust	214,097
d. <b>Total Expected Employer Contribution</b>	485,075
<b>3. Change in Net OPEB Obligation (1.d. minus 2.d.)</b>	(82)
Net OPEB Obligation (Asset), beginning of fiscal year	(12,690)
<b>Net OPEB Obligation (Asset) at fiscal year end</b>	(12,772)

### Appendix 2: Breakout of Department Results by Group

The table below breaks out the results for each group, reflecting the same funding policy illustrated in Tables 1A, 1B and 1C.

Funding Approach	Prefunding Basis					
	Retired before 7/1/2012	Active or Retired on/after 7/1/2012	Total	Retired before 7/1/2012	Active or Retired on/after 7/1/2012	Total
	Fiscal Year Ending 6/30/2017			Fiscal Year Ending 6/30/2018		
	Discount Rate					
	7.25%	7.25%	7.25%	7.25%	7.25%	7.25%
<b>Number of Covered Employees</b>						
Actives	-	32	32	-	32	32
Retirees	29	7	36	29	7	36
Total Participants	29	39	68	29	39	68
<b>Actuarial Present Value of Projected Benefits</b>						
Actives	\$ -	\$ 5,352,125	\$ 5,352,125	\$ -	\$ 5,723,424	\$ 5,723,424
Retirees	2,980,366	1,987,958	4,968,324	2,941,630	1,977,100	4,918,730
Total APVPB	2,980,366	7,340,083	10,320,449	2,941,630	7,700,524	10,642,154
<b>Actuarial Accrued Liability</b>						
Actives	-	3,527,624	3,527,624	-	3,963,834	3,963,834
Retirees	2,980,366	1,987,958	4,968,324	2,941,630	1,977,100	4,918,730
Total AAL	2,980,366	5,515,582	8,495,948	2,941,630	5,940,934	8,882,564
<b>Actuarial Value of Assets</b>	241,795	1,432,044	1,673,839	196,752	1,847,992	2,044,744
<b>Unfunded Actuarial Accrued Liability</b>	2,738,571	4,083,538	6,822,109	2,744,878	4,092,942	6,837,820
Amortization Factor	15.2783	15.2783	15.2783	14.8675	14.8675	15.2783
<b>Annual Required Contribution (ARC)</b>						
Normal Cost	-	183,857	183,857	-	189,833	189,833
Amortization of UAAL	179,245	267,276	446,521	184,623	275,295	459,918
Interest to 6/30	12,995	32,707	45,702	13,384	33,723	47,107
<b>ARC at Fiscal Year End</b>	192,240	483,840	676,080	198,007	498,850	696,858
<b>Expected Net Employer Contribution</b>						
Estimated payments on behalf of retirees	208,593	127,524	336,117	216,645	134,584	351,229
Estimated current year's implicit subsidy	46,220	44,191	90,411	55,025	56,721	111,746
Expected trust contribution (disbursement)	(62,573)	312,125	249,552	(73,662)	307,545	233,883
<b>Total Net Expected Employer Contribution</b>	192,240	483,840	676,080	198,008	498,850	696,858

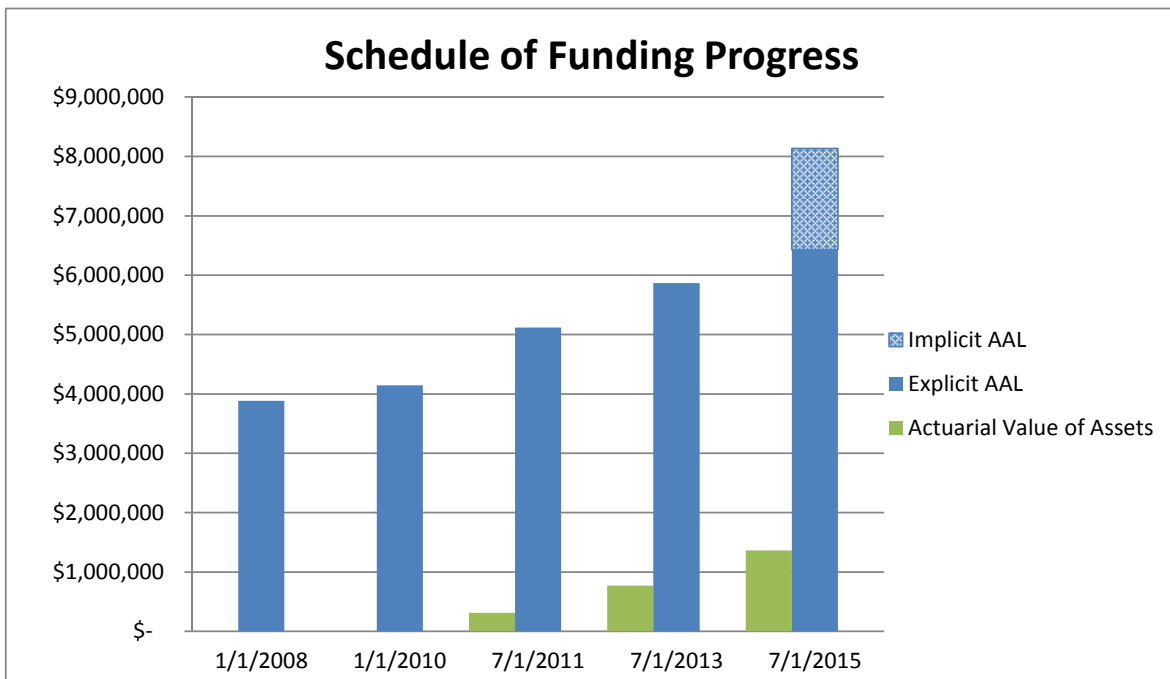
In order to allocate trust assets between groups, the July 1, 2015 assets were projected to July 1, 2016 based on the expected rate of return and contributions expected to be credited to the trust account prior to that date. This projected July 1, 2015 asset value was allocated between groups in proportion to the assets allocated by group on July 1, 2014 plus actual contributions reported to Bickmore since that date.

### Appendix 3 General OPEB Disclosure and Required Supplementary Information

The Information necessary to complete the OPEB footnote in the Department’s financial reports is summarized below, or we note the location of the information contained elsewhere in this report:

- Summary of Plan Provisions: See Table 3A
- OPEB Funding Policy: See Section F; details are also provided in Tables 1A and 1C
- Annual OPEB Cost and Net OPEB Obligation: See Table 1B and 1D
- Actuarial Methods and Assumptions: See Table 4
- Funding Status and Funding Progress: See Section E – Basic Valuation Results

Schedule of Funding Progress						
Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (b)	Actuarial Accrued Liability (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	Percentage of Covered Payroll ((b-a)/c)
1/1/2008	\$ -	\$ 3,880,724	\$ 3,880,724	0.0%	\$ 2,334,351	166.2%
1/1/2010	\$ -	\$ 4,144,877	\$ 4,144,877	0.0%	\$ 2,638,186	157.1%
7/1/2011	\$ 312,209	\$ 5,117,093	\$ 4,804,884	6.1%	\$ 3,161,662	152.0%
7/1/2013	\$ 771,411	\$ 5,864,413	\$ 5,093,002	13.2%	\$ 3,453,704	147.5%
7/1/2015	\$ 1,361,065	\$ 8,133,603	\$ 6,772,538	16.7%	\$ 3,965,148	170.8%

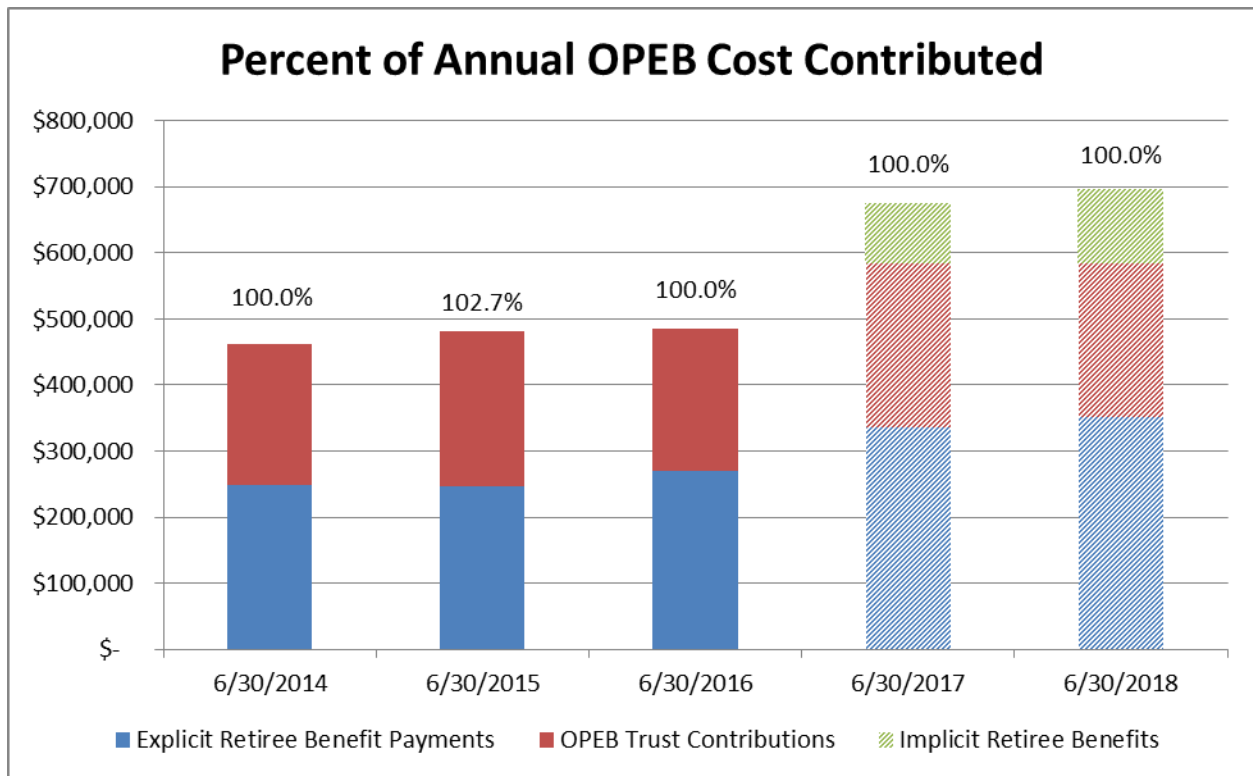


**Appendix 3 – General OPEB Disclosures and Required Supplementary Information  
(Concluded)**

Required Supplementary Information: Three Year History of Amounts Funded  
See chart below:

<b>OPEB Cost Contributed</b>				
Fiscal Year Ended	Annual OPEB Cost	Employer OPEB Contributions	Percentage of Annual OPEB Cost Contributed	Net OPEB Obligation (Asset)
6/30/2014	\$ 463,378	\$ 463,378	100.0%	\$ -
6/30/2015	\$ 469,806	\$ 482,496	102.7%	\$ (12,690)
6/30/2016	\$ 484,993	\$ 485,075	100.0%	\$ (12,772)
6/30/2017	\$ 676,051	\$ 676,080	100.0%	\$ (12,801)
6/30/2018	\$ 696,853	\$ 696,858	100.0%	\$ (12,806)

*Italicized values above are estimates which may change if contributions are other than projected.*



To see these values separately for explicit and implicit subsidy liabilities, please refer to Section E of the report or to Tables 1B and 1D.

## **Addendum 1: Bickmore Age Rating Methodology**

Both accounting standards (e.g. GASB 45) and actuarial standards (e.g. ASOP 6) require that expected retiree claims, not just premiums paid, be reflected in most situations where an actuary is calculating retiree healthcare liabilities. Unfortunately the actuary is often required to perform these calculations without any underlying claims information. In most situations, the information is not available, but even when available, the information may not be credible due to the size of the group being considered.

Actuaries have developed methodologies to approximate healthcare claims from the premiums being paid by the plan sponsor. Any methodology requires adopting certain assumptions and using general studies of healthcare costs as substitutes when there is a lack of credible claims information for the specific plan being reviewed.

Premiums paid by sponsors are often uniform for all employee and retiree ages and genders, with a drop in premiums for those participants who are Medicare-eligible. While the total premiums are expected to pay for the total claims for the insured group, on average, the premiums charged would not be sufficient to pay for the claims of older insureds, and would be expected to exceed the expected claims of younger insureds. An age-rating methodology takes the typically uniform premiums paid by plan sponsors and spreads the total premium dollars to each age and gender intended to better approximate what the insurer might be expecting in actual claims costs at each age and gender.

The process of translating premiums into expected claims by age and gender generally follows the steps below.

1. *Obtain or Develop Relative Medical Claims Costs by Age, Gender, or other categories that are deemed significant.* For example, a claims cost curve might show that, if a 50 year old male has \$1 in claims, then on average a 50 year old female has claims of \$1.25, a 30 year male has claims of \$0.40, and an 8 year old female has claims of \$0.20. The claims cost curve provides such relative costs for each age, gender, or any other significant factor the curve might have been developed to reflect. Table 4 provides the source of information used to develop such a curve and shows sample relative claims costs developed for the plan under consideration.
2. *Obtain a census of participants, their chosen medical coverage, and the premium charged for their coverage.* An attempt is made to find the group of participants that the insurer considered in setting the premiums they charge for coverage. That group includes the participant and any covered spouses and children. When information about dependents is unavailable, assumptions must be made about spouse age and the number and age of children represented in the population. These assumptions are provided in Table 4.
3. *Spread the total premium paid by the group to each covered participant or dependent based on expected claims.* The medical claims cost curve is used to spread the total premium dollars paid by the group to each participant reflecting their age, gender, or other relevant category. After this step, the actuary has a schedule of expected claims costs for each age and gender for the current premium year. It is these claims costs that are projected into the future by medical cost inflation assumptions when valuing expected future retiree claims.

The methodology described above is dependent on the data and methodologies used in whatever study might be used to develop claims cost curves for any given plan sponsor. These methodologies and assumptions can be found in the referenced paper cited as a source in the valuation report.

## **Addendum 2: Bickmore Mortality Projection Methodology**

Actuarial standards of practice (e.g., ASOP 35, Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations, and ASOP 6, Measuring Retiree Group Benefits Obligations) indicate that the actuary should reflect the effect of mortality improvement (i.e., longer life expectancies in the future), both before and after the measurement date. The development of credible mortality improvement rates requires the analysis of large quantities of data over long periods of time. Because it would be extremely difficult for an individual actuary or firm to acquire and process such extensive amounts of data, actuaries typically rely on large studies published periodically by organizations such as the Society of Actuaries or Social Security Administration.

As noted in a recent actuarial study on mortality improvement, key principals in developing a credible mortality improvement model would include the following:

- (1) Short-term mortality improvement rates should be based on recent experience.
- (2) Long-term mortality improvement rates should be based on expert opinion.
- (3) Short-term mortality improvement rates should blend smoothly into the assumed long-term rates over an appropriate transition period.

The **Bickmore Scale 2014** was developed from a blending of data and methodologies found in two published sources: (1) the Society of Actuaries Mortality Improvement Scale MP-2014 Report, published in October 2014 and (2) the demographic assumptions used in the 2015 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, published July 2015.

Bickmore Scale 2014 is a two-dimensional mortality improvement scale reflecting both age and year of mortality improvement. The underlying base scale is Scale MP-2014 which has two segments – (1) historical improvement rates for the period 1951-2007 and (2) Scale MP-2014’s best estimate of future mortality improvement for years 2008 and thereafter. The Bickmore scale uses the same improvement rates as the MP-2014 scale during the historical period 1951-2007. In addition, the Bickmore scale uses Scale MP-2014’s best estimate of future mortality improvement for years 2008-2010. The Bickmore scale then transitions from the last used MP-2014 improvement rate in 2010 to the Social Security Administration (SSA) Intermediate Scale. This transition to the SSA Intermediate Scale occurs linearly over the 10 year period 2011-2020. After this transition period, the Bickmore Scale uses the constant mortality improvement rate from the SSA Intermediate Scale from 2020-2038. The SSA’s Intermediate Scale has a final step down in 2039 which is reflected in the Bickmore scale for years 2039 and thereafter. Over the ages 100 to 115, the SSA improvement rate is graded to zero.

Scale MP-2014 can be found at the SOA website and the projection scales used in the 2015 Social Security Administrations Trustees Report at the Social Security Administration website.

## Glossary

Actuarial Accrued Liability (AAL) – Total dollars required to fund all plan benefits attributable to service rendered as of the valuation date for current plan members and vested prior plan members; see “Actuarial Present Value”

Actuarial Funding Method – A procedure which calculates the actuarial present value of plan benefits and expenses, and allocates these expenses to time periods, typically as a normal cost and an actuarial accrued liability

Actuarial Present Value Projected Benefits (APVPB) – The amount presently required to fund all projected plan benefits in the future, it is determined by discounting the future payments by an appropriate interest rate and the probability of nonpayment.

Actuarial Value of Assets – The actuarial value of assets is the value used by the actuary to offset the AAL for valuation purposes. The actuarial value of assets may be the market value of assets or may be based on a methodology designed to smooth out short-term fluctuations in market values.

Aggregate – An actuarial funding method under which the excess of the actuarial present value of projected benefits over the actuarial accrued liability is levelly spread over the earnings or service of the group forward from the valuation date to the assumed exit date, based not on individual characteristics but rather on the characteristics of the group as a whole

Annual Required Contribution (ARC) – The amount the employer would contribute to a defined benefit OPEB plan for a given year, it is the sum of the normal cost and some amortization (typically 30 years) of the unfunded actuarial accrued liability

Annual OPEB Expense – The OPEB expense reported in the Agency’s financial statement, which is comprised of three elements: the ARC, interest on the net OPEB obligation at the beginning of the year and an ARC adjustment.

Attained Age Normal Cost (AANC) – An actuarial funding method where, for each plan member, the excess of the actuarial present value of benefits over the actuarial accrued liability (determined under the unit credit method) is levelly spread over the individual’s projected earnings or service forward from the valuation date to the assumed exit date

CalPERS – Many state governments maintain a public employee retirement system; CalPERS is the California program, covering all eligible state government employees as well as other employees of other governments within California who have elected to join the system

Defined Benefit (DB) – A pension or OPEB plan which defines the monthly income or other benefit which the plan member receives at or after separation from employment

Defined Contribution (DC) – A pension or OPEB plan which establishes an individual account for each member and specifies how contributions to each active member’s account are determined and the terms of distribution of the account after separation from employment

## Glossary (Continued)

Discount Rate – The rate of return that could be earned on an investment in the financial markets; for GASB 45 purposes, the discount rate should be based on the expected long-term yield of investments used to finance the benefits. The discount rate is used to adjust the dollar value of future projected benefits into a present value equivalent as of the valuation date.

Entry Age Normal Cost (EANC) – An actuarial funding method where, for each individual, the actuarial present value of benefits is levelly spread over the individual’s projected earnings or service from entry age to the last age at which benefits can be paid

Excise Tax – The Affordable Care Act created a 40% excise tax on the value of “employer sponsored coverage” that exceeds certain thresholds. The tax is first effective is 2020.

Explicit Subsidy – The projected dollar value of future retiree healthcare costs expected to be paid directly by the Employer, e.g., the Employer’s payment of all or a portion of the monthly retiree premium billed by the insurer for the retiree’s coverage

Frozen Attained Age Normal Cost (FAANC) – An actuarial funding method under which the excess of the actuarial present value of projected benefits over the actuarial accrued liability (determined under the unit credit method) is levelly spread over the earnings or service of the group forward from the valuation date to the assumed exit date, based not on individual characteristics but rather on the characteristics of the group as a whole

Frozen Entry Age Normal Cost (FEANC) – An actuarial funding method under which the excess of the actuarial present value of projected benefits over the actuarial accrued liability (determined under the entry age normal cost method) is levelly spread over the earnings or service of the group forward from the valuation date to the assumed exit date, based not on individual characteristics but rather on the characteristics of the group as a whole

Financial Accounting Standards Board (FASB) – A private, not-for-profit organization designated by the Securities and Exchange Commission (SEC) to develop generally accepted accounting principles (GAAP) for U.S. public corporations

Government Accounting Standards Board (GASB) – A private, not-for-profit organization which develops generally accepted accounting principles (GAAP) for U.S. state and local governments; like FASB, it is part of the Financial Accounting Foundation (FAF), which funds each organization and selects the members of each board

Health Care Trend – The assumed rate(s) of increase in future dollar values of premiums or healthcare claims, attributable to increases in the cost of healthcare; contributing factors include medical inflation, frequency or extent of utilization of services and technological developments.

Implicit Subsidy – The projected difference between future retiree claims and the premiums to be charged for retiree coverage; this difference results when the claims experience of active and retired employees are pooled together and a ‘blended’ group premium rate is charged for both actives and retirees; a portion of the active employee premiums subsidizes the retiree premiums.



## **Glossary (Concluded)**

Net OPEB Obligation (Asset) - The net OPEB obligation (NOO) represents the accumulated shortfall of OPEB funding since GASB 45 was implemented. If cumulative contributions have exceeded the sum of the prior years' annual OPEB expenses, then a net OPEB asset results.

Non-Industrial Disability (NID) – Unless specifically contracted by the individual Agency, PAM employees are assumed to be subject to only non-industrial disabilities.

Normal Cost – Total dollar value of benefits expected to be earned by plan members in the current year, as assigned by the chosen funding method; also called current service cost

Other Post-Employment Benefits (OPEB) – Post-employment benefits other than pension benefits, most commonly healthcare benefits but also including life insurance if provided separately from a pension plan

Pay-As-You-Go (PAYGO) – Contributions to the plan are made at about the same time and in about the same amount as benefit payments and expenses coming due

PEMHCA – The Public Employees' Medical and Hospital Care Act, established by the California legislature in 1961, provides community-rated medical benefits to participating public employers. Among its extensive regulations are the requirements that a contracting Agency contribute toward medical insurance premiums for retired annuitants and that a contracting Agency file a resolution, adopted by its governing body, with the CalPERS Board establishing any new contribution.

Plan Assets – The value of cash and investments considered as 'belonging' to the plan and permitted to be used to offset the AAL for valuation purposes. To be considered a plan asset, GASB 45 requires (a) the assets to be segregated and restricted in a trust or similar arrangement, (b) employer contributions to the trust to be irrevocable, (c) the assets be dedicated to providing benefits to retirees and their beneficiaries, and (d) that the assets be legally protected from creditors of the employer and/or plan administrator. See also "Actuarial Value of Assets"

Projected Unit Credit (PUC) – An actuarial funding method where, for each individual, the projected plan benefit is allocated by a consistent formula from entry date to assumed exit date

Public Agency Miscellaneous (PAM) – Non-safety public employees.

Select and Ultimate – Actuarial assumptions which contemplate rates which differ by year initially (the select period) and then stabilize at a constant long-term rate (the ultimate rate)

Unfunded Actuarial Accrued Liability (UAAL) – The excess of the actuarial accrued liability over the actuarial value of plan assets

Unit Credit (UC) -- An actuarial funding method where, for each individual, the unprojected plan benefit is allocated by a consistent formula from entry date to assumed exit date

Vesting – As defined by the plan, requirements which when met make a plan benefit nonforfeitable on separation of service before retirement eligibility