



February 14, 2018

Ms. JoAnne Lewis
Administrative Assistant
Ross Valley Fire Department
777 San Anselmo Avenue
San Anselmo, CA 94960

Re: July 1, 2017 Actuarial Report of Retiree Benefit Valuation for Funding Purposes

Dear Ms. Lewis:

We are pleased to enclose our report providing the results of the July 1, 2017 actuarial funding 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 to develop annual amounts to be contributed by the Department for the fiscal years ending June 30, 2019 and June 30, 2020 toward prefunding the OPEB plan liability. This report may be required to be submitted to the California Employers' Retiree Benefit Trust (CERBT) to satisfy filing requirements for the trust.

Items of note in this valuation are:

- The Actuarially Determined Contribution (ADC) is developed on the same basis as the Annual Required Contribution previously developed under GASB 45. It is our understanding that the Department's OPEB Funding Policy is to contribute 100% or more of the ADC each year.
- OPEB trust assets are assumed to remain in CERBT Asset Allocation Strategy 1. The assumed future long term rate of return on trust assets is 7.25%.
- Information presented in this report is not considered suitable for satisfying the Department's financial reporting requirements under GASB 75. That information will be developed and presented in a separate report.

We have based our valuation on employee data and plan information provided by the Department, including the most recent bargaining agreements and PEMHCA resolutions on file with CalPERS. Please review the overview of benefits described in Table 3A to be comfortable that we have summarized these provisions correctly.

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,

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



Ross Valley Fire Department

Actuarial Valuation of the Other
Post-Employment Benefit Programs
As of July 1, 2017

Submitted February 2018

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A. Executive Summary

This report presents the results of the July 1, 2017 actuarial valuation of the Ross Valley Fire Department (the Department) other post-employment benefit (OPEB) programs. The primary purpose of this valuation is to assess the OPEB liabilities of the Department and develop contribution levels for the funding of these benefits. Some of the results of this valuation may be applied to develop the information to be reported in the Department’s financial statements, but such information will require additional calculations and will be provided in a separate report.

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 insurance premiums for eligible retirees. Future excise taxes expected to be paid for “high cost” retiree coverage 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. The Department’s OPEB program includes implicit subsidy liabilities for retiree life insurance coverage and for medical coverage for retirees prior to coverage under Medicare.

Trust assets are currently invested in the CERBT with Asset Allocation Strategy 1 and the Department expects these funds to yield 7.25% per year over the long term. The Department’s current OPEB funding policy is to contribute 100% of the Actuarially Determined Contributions (ADC) each year, with the ADC developed in the same manner as the Annual Required Contribution (ARC) was developed under GASB 45. Accordingly, with the Department’s approval, this valuation was prepared using a 7.25% discount rate, the same rate assumed in the prior valuation. Please note that use of this rate is an assumption and not a guarantee of future investment performance.

Exhibits presented in this report reflect our understanding that the results of this July 1, 2017 valuation will be applied in determining the Actuarially Determined Contributions for its fiscal years ending June 30, 2019 and 2020. Contributions are the sum of the current year’s Normal Cost plus amortization of the current Unfunded Actuarial Accrued Liability over a remaining fixed period, adjusted with interest to fiscal year end.

The Actuarial Accrued Liability and Plan Assets as of July 1, 2017 are shown below:

Subsidy	Explicit	Implicit	Total
Discount Rate	7.25%	7.25%	7.25%
Actuarial Accrued Liability	\$ 7,055,253	\$ 1,987,650	\$ 9,042,903
Actuarial Value of Assets	1,980,280	178,247	2,158,527
Unfunded Actuarial Accrued Liability	5,074,973	1,809,403	6,884,376
Funded Ratio	28.1%	9.0%	23.9%

The liabilities shown in the report reflect assumptions regarding continued future employment, rates of retirement and survival, and elections by future retirees to elect 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)

The Actuarially Determined Contribution for the fiscal year ending June 30, 2019 is shown below. Detailed results are shown in tables beginning on page 13 and additional information is provided in the Appendices.

Subsidy	Explicit	Implicit	Total
Actuarially Determined Contribution FYE 2019	\$ 535,248	\$ 192,497	\$ 727,745
Expected employer paid benefits for retirees	345,210	-	345,210
Current year's implicit subsidy credit	-	124,832	124,832
Expected contribution to OPEB trust	190,038	67,665	257,703
Total District contributions expected FYE 2019	\$ 535,248	\$ 192,497	\$ 727,745

Current valuation results are compared to prior valuation results on page 6, followed by a discussion of changes. An actuarial valuation is a projection and to the extent that actual experience is not what we assumed, future results will be different. Future differences may arise from:

- A significant change in the number of covered or eligible plan members;
- A significant increase or decrease in the future medical premium rates;
- A change 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; and
- Higher or lower returns on plan assets or contribution levels other than were assumed.

Details of our valuation process are provided on the succeeding pages. Information required for financial reporting under GASB 75 will be provided in a separate report once the data needed to develop those results becomes available.

The next actuarial valuation is scheduled to be prepared as of July 1, 2019. 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 the Department's other postemployment benefits 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, including financial reporting purposes under GASB 75, where other assumptions, methodology and/or actuarial standards of practice may be required or more suitable. Some issues in this report may involve 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.

B. 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 (unless converted to defined benefit OPEB), or other direct retiree payments.

A direct employer payment toward the cost of OPEB benefits is referred to as an “explicit subsidy”. Upcoming excise tax exposure under the Affordable Care Act for retirees covered by high cost plans is another potential source of OPEB liability for the Department.

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. Actuarial Standards of Practice generally require an implicit subsidy of retiree premium rates be valued as an OPEB liability. The implicit subsidy liability was first recognized in the July 1, 2015 actuarial valuation. The same methodology was applied to develop the implicit subsidy liability in this July 1, 2017 valuation.

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

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

retirees. From this illustration, we can see that regardless of how much or little of the premium is paid by the Department, this does not impact the amount of the implicit subsidy.

OPEB Obligations of the Department

The Department provides continuation of medical coverage to its retiring employees, which may create one or more of the following types of OPEB liabilities:

- **Explicit subsidy liabilities:** The Department contributes directly toward the retiree medical premiums, as described in Table 3A. Liabilities for these benefits are included in this valuation.
- **Implicit subsidy liabilities:** Employees are covered by the CalPERS medical program, where the same monthly premiums are charged for active employees and for pre- Medicare retirees. In addition to whatever portion of retiree premiums are paid directly by the Department, we valued the difference between projected retiree claims and the premiums projected to be charged for retiree coverage. To develop this difference with respect to medical (and prescription drug) coverage, we followed the methodology outlined in Table 4 and described further in Addendum 1: Bickmore 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

Sources of OPEB Liability

(Concluded)

- *Implicit subsidy Liabilities – continued*

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.

- **Excise tax liability for retirees in “high cost” plans:** The Patient Protection and Affordable Care Act (ACA) includes a 40% excise tax on high-cost employer-sponsored health coverage. The tax was to be effective in 2018, however, implementation has been delayed by subsequent legislation until 2020. The tax applies to the aggregate cost of an employee’s applicable coverage that exceeds a dollar limit. While there are discussions in Congress of eliminating or again delaying this tax, this report assumes that it will take effect as current law provides.

For those current and future retirees assumed to retain coverage in the Department’s medical program, we determined the excess, if any, of projected annual plan premiums for the retiree and his or her covered dependents over the projected applicable excise tax threshold beginning in 2020. The excise tax burden will ultimately fall on either the Department or a combination of Department and plan participants. If the Department is able to and ultimately does pass the retiree tax burden to retirees, then no part of the excise tax reflected in this report would be retained by the Department. *This report assumes that 100% of any excise tax liability for high cost retiree coverage will be borne by the Department.*

C. Valuation Process

The valuation has been based on employee census data and benefits initially submitted to us by the Department in September 2017 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. Final payments for currently active employees may not be made for 60 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 June 30, 2017 market value of assets was \$2,158,527. The portion of the AAL not covered by assets is referred to as the unfunded actuarial accrued liability (UAAL).

D. Basic Valuation Results

The following chart compares the results of the July 1, 2017 valuation of OPEB liabilities to the results of the July 1, 2015 valuation.

Funding Policy Valuation date	Prefunding Basis					
	7/1/2015			7/1/2017		
	Explicit	Implicit	Total	Explicit	Implicit	Total
Subsidy						
Discount rate	7.25%	7.25%	7.25%	7.25%	7.25%	7.25%
Number of Covered Employees						
Actives	32	32	32	30	30	30
Retirees	36	13	36	33	12	33
Total Participants	68	45	68	63	42	63
Actuarial Present Value of Projected Benefits						
Actives	\$ 3,671,171	\$ 1,326,031	\$ 4,997,202	\$ 4,340,509	\$ 1,596,632	\$ 5,937,141
Retirees	4,125,713	889,925	5,015,638	4,121,910	925,835	5,047,745
Total APVPB	7,796,884	2,215,956	10,012,840	8,462,419	2,522,467	10,984,886
Actuarial Accrued Liability (AAL)						
Actives	2,302,173	815,792	3,117,965	2,933,343	1,061,815	3,995,158
Retirees	4,125,713	889,925	5,015,638	4,121,910	925,835	5,047,745
Total AAL	6,427,886	1,705,717	8,133,603	7,055,253	1,987,650	9,042,903
Actuarial Value of Assets	1,361,065	-	1,361,065	1,980,280	178,247	2,158,527
Unfunded AAL (UAAL)	5,066,821	1,705,717	6,772,538	5,074,973	1,809,403	6,884,376
Normal Cost	130,461	47,609	178,070	142,451	51,896	194,347
Percent funded	21.2%	0.0%	16.7%	28.1%	9.0%	23.9%
Reported covered payroll	3,965,148	3,965,148	3,965,148	3,963,937	3,963,937	3,963,937
UAAL as percent of payroll	127.8%	43.0%	170.8%	128.0%	45.6%	173.7%

Note: The Explicit Subsidy AAL as of July 1, 2017 includes about \$97,000 in projected excise tax liability for retirees expected to be covered by "high cost" plans under the Affordable Care Act. The Actuarial Value of Assets allocated to Implicit is equal to the ARC for Implicit for the fiscal year ending June 30, 2017.

Basic Valuation Results

(Concluded)

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. This is particularly true when the program covers fewer than 100 members. Nonetheless, it is helpful to review why results are different than we anticipated.

In comparing results shown in the exhibit on the preceding page, we can see that the Unfunded Actuarial Accrued Liability (UAAL) decreased substantially between July 1, 2015 and July 1, 2017. The chart below summarizes the primary factors affecting the valuations results:

Source of Change	Increase (decrease) in UAAL
Change in assumed spouse coverage for future retirees	\$ 250,000
Extended the age at which Dependent Coverage is assumed to end	5,000
Update in assumed Healthcare Trend	809,000
Update in projection of future mortality improvement	(76,000)
Retirees' status changed from Service to Disability Retirement	(20,000)
Expected increase in the UAAL for the passage of time	65,000
Favorable plan experience, relative to that previously assumed*	(922,000)
Total change in UAAL from July 2015 to July 2017	\$ 111,000

**The majority of this favorable experience is attributable to (a) considerably lower than expected premium increases for the most popular medical plans before and/or after eligibility for Medicare; (b) two retirees previously receiving fully paid coverage who voluntarily discontinued this coverage through the District; and (c) the higher than expected Department contributions to the trust for the fiscal year ending June 30, 2017.*

E. Funding Policy

Actuarially Determined Contributions and Department Funding Policy

The Actuarially Determined Contribution (ADC) 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).

The ADC developed in this report includes amortization of the unfunded AAL over a closed 30-year period initially effective July 1, 2009. The remaining period applicable in determining the ADC for the fiscal year ending June 30, 2019 is 21 years. Amortization payments are determined on a level percent of pay basis.¹

The Department's Funding Policy is to contribute 100% or more of the ADC each year. The amounts calculated for the fiscal years ending June 30, 2019 and June 30, 2020 are shown in Tables 1A and 1B.

Decisions Affecting the Amortization Payment

The period and method for amortizing the AAL can significantly affect the ADC. There are the main facets to determining the amortization payment:

- *The amortization period:* The Department can select the number of years over which the unfunded AAL will be amortized. The entire UAAL can be amortized over a single remaining period or different portions of the UAAL can be amortized over different periods. It has been the Department's practice to amortize the entire UAAL over a single remaining period.
- *Open or closed amortization period:* The number of years in the amortization period may be set to decrease annually by one year ("closed" basis) or may be continued at the original number of years (non-declining, or "open" basis).
- *Increasing or level payments:* Once the period has been set and determined to be closed or open, the payment amounts may 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 ADC does not increase over time.

Funding of the Implicit Subsidy

The implicit subsidy liability created when expected retiree medical claims exceed the retiree premiums was described earlier in Section B. 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. We have estimated each current year's implicit subsidy and recommend netting this amount against the funding requirement for the implicit subsidy (see the "Expected Employer OPEB Contributions" section in Tables 1A and 1B).

¹ 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)

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	\$ 737,000	\$ 319,000	\$ 1,056,000
Current Year's Implicit Subsidy Adjustment	(112,000)	112,000	-
Adjusted contributions reported in Financial Stmts	\$ 625,000	\$ 431,000	\$ 1,056,000

While total Department 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 OPEB.

Some agencies prefer to prefund the total OPEB liability; others prefer to prefund only the explicit (direct) subsidy portion of the liability. Some possible options include:

- Prefunding 100% of the ADC 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 ADC 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.

Note that the **total** ADC determined under this approach is identical to that for the approach described above. The only different is in the allocation of assets between explicit and implicit subsidy liabilities.

- Prefunding 100% of the ARC developed for the explicit subsidy liability, but not prefund the implicit subsidy liability.
- Ad hoc contributions *not* specifically determined on an actuarial basis designed to fund the total OPEB liability over a reasonable and finite period of time.

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

F. 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.

Factors Impacting the Selection of Funding Method

While the goal 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.

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 is one of the most commonly used of the funding methods permitted by GASB 45. It is the only funded method permitted under GASB 75.

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/dependent 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 appropriate discount rate(s), GASB states that the rate(s) should be based on the projected long-term yield of investments expected to be deployed to pay the benefits. Based on the expected contribution level, and the assumed returns on OPEB trust assets described earlier, we used a 7.25% discount rate in this valuation.

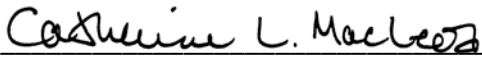
G. Certification

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 determine the plan's funded status as of the valuation date and to develop actuarially determined contribution levels to be used by the Department toward funding plan benefits.

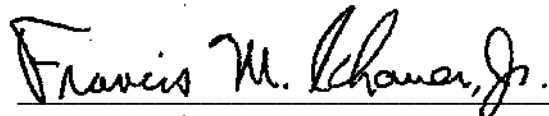
We certify that, to the best of our knowledge, the report is complete and accurate, based upon the data and plan provisions provided to us by the Department. We believe the assumptions and method used are reasonable and appropriate for purposes of this report. The results may not be appropriate for other 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: February 14, 2018



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



Francis M. Schauer Jr., FSA, FCA, EA, MAAA

Table 1

Results for fiscal year ending 2017: The Annual Required Contributions for the Department's fiscal years ending June 30, 2017 and June 30, 2018 were developed from the results of the July 2015 valuation.

Actuarially Determined Contributions for fiscal years 2019 and 2020: The basic results of our July 1, 2017 valuation of OPEB liabilities for the Department were summarized in Section D. Those results are applied to develop the actuarially determined contribution (ADC) for the fiscal years ending June 30, 2019 and June 30, 2020.

As noted earlier in this report, the development of the ADC reflects the assumption that the Department will contribute at least 100% of this amount each year, with contributions comprised of:

- Direct payments to insurers toward retiree premiums,
- Each current year's implicit subsidy, and
- Contributions to the OPEB trust.

GASB 75 Calculations: GASB Statement 75 will impact the liabilities and/or expenses developed for reporting in the Department's financial statements. Those calculations will be provided in separate reports for each fiscal year.

Employees reflected in future years' costs: The counts of active employees and retirees shown in Tables 1A and 1B 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. 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 2015 in this July 2017 valuation.

Note that the number of active and 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
Actuarially Determined Contribution for Fiscal Year End 2019

This table develops the valuation results applicable to the Department's fiscal year ending June 30, 2019, based on the July 1, 2017 valuation results and on the Department's current funding policy.

Funding Policy	Prefunding Basis		
Valuation date	7/1/2017		
Subsidy	Explicit	Implicit	Total
For fiscal year ending	6/30/2019	6/30/2019	6/30/2019
Expected long-term return on assets	7.25%	7.25%	7.25%
Discount rate	7.25%	7.25%	7.25%
Number of Covered Employees			
Actives	30	30	30
Retirees	33	12	33
Total Participants	63	42	63
Actuarial Present Value of Projected Benefits			
Actives	\$ 4,648,298	\$ 1,711,495	\$ 6,359,793
Retirees	4,108,389	887,555	4,995,944
Total APVPB	8,756,687	2,599,050	11,355,737
Actuarial Accrued Liability (AAL)			
Actives	3,291,891	1,193,562	4,485,453
Retirees	4,108,389	887,555	4,995,944
Total AAL	7,400,280	2,081,117	9,481,397
Actuarial Value of Assets	2,317,724	263,151	2,580,875
Unfunded AAL (UAAL)	5,082,556	1,817,966	6,900,522
UAAL Amortization method	Level % of Pay	Level % of Pay	Level % of Pay
Remaining amortization period (years)	21	21	21
Amortization Factor	14.4397	14.4397	14.4397
Actuarially Determined Contribution (ADC)			
Normal Cost	147,081	53,583	200,664
Amortization of UAAL	351,985	125,901	477,886
Interest to fiscal year end	36,182	13,013	49,195
Total ADC	535,248	192,497	727,745
Projected covered payroll	\$ 4,092,765	\$ 4,092,765	\$ 4,092,765
Normal Cost as a percent of payroll	3.6%	1.3%	4.9%
ADC as a percent of payroll	13.1%	4.7%	17.8%
Expected Employer OPEB Contributions			
Estimated payments on behalf of retirees	\$ 345,210	\$ -	\$ 345,210
Estimated current year's implicit subsidy	-	124,832	124,832
Estimated contribution to OPEB trust	190,038	67,665	257,703
Total Expected Employer Contribution	535,248	192,497	727,745

Table 1B
Actuarially Determined Contribution for Fiscal Year End 2020

This table develops the valuation results applicable to the Department's fiscal year ending June 30, 2020, based on the July 1, 2017 valuation results and on the Department's current funding policy.

Funding Policy	Prefunding Basis		
Valuation date	7/1/2017		
Subsidy	Explicit	Implicit	Total
For fiscal year ending	6/30/2020	6/30/2020	6/30/2020
Expected long-term return on assets	7.25%	7.25%	7.25%
Discount rate	7.25%	7.25%	7.25%
Number of Covered Employees			
Actives	30	30	30
Retirees	33	12	33
Total Participants	63	42	63
Actuarial Present Value of Projected Benefits			
Actives	\$ 4,967,668	\$ 1,832,756	\$ 6,800,424
Retirees	4,078,669	829,893	4,908,562
Total APVPB	9,046,337	2,662,649	11,708,986
Actuarial Accrued Liability (AAL)			
Actives	3,670,665	1,334,741	5,005,406
Retirees	4,078,669	829,893	4,908,562
Total AAL	7,749,334	2,164,634	9,913,968
Actuarial Value of Assets	2,675,797	349,894	3,025,691
Unfunded AAL (UAAL)	5,073,537	1,814,740	6,888,277
UAAL Amortization method	Level % of Pay	Level % of Pay	Level % of Pay
Remaining amortization period (years)	20	20	20
Amortization Factor	13.9942	13.9942	13.9942
Actuarially Determined Contribution (ADC)			
Normal Cost	151,861	55,324	207,185
Amortization of UAAL	362,545	129,678	492,223
Interest to fiscal year end	37,294	13,413	50,707
Total ADC	551,700	198,415	750,115
Projected covered payroll	\$ 4,225,780	\$ 4,225,780	\$ 4,225,780
Normal Cost as a percent of payroll	3.6%	1.3%	4.9%
ADC as a percent of payroll	13.1%	4.7%	17.8%
Expected Employer OPEB Contributions			
Estimated payments on behalf of retirees	\$ 378,372	\$ -	\$ 378,372
Estimated current year's implicit subsidy	-	151,069	151,069
Estimated contribution to OPEB trust	173,328	47,346	220,674
Total Expected Employer Contribution	551,700	198,415	750,115

Table 2
Summary of Employee Data

The Department reported 30 active employees in the data provided to us for the July 2017 valuation. Of these, 29 are currently participating in the medical program and 1 is waiving coverage at this time.

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		2					2	7%
30 to 34			3	2			5	17%
35 to 39		1	1		1		3	10%
40 to 44			3	4	2	1	10	33%
45 to 49		1	1	1	2	3	8	27%
50 to 54					1	1	2	7%
55 to 59							0	0%
60 to 64							0	0%
65 to 69							0	0%
70 & Up							0	0%
Total	0	4	8	7	6	5	30	100%
Percent	0%	13%	27%	23%	20%	17%	100%	

Valuation		<u>July 2015</u>		<u>July 2017</u>
Annual Covered Payroll	\$	3,965,148	\$	3,963,937
Average Attained Age for Actives		40.4		41.7
Average Years of Service		11.9		14.4

There are also 26 retirees and 6 surviving spouses receiving benefits under this program. There is one additional retiree, who recently discontinued coverage, but is assumed to re-enroll in the Department's coverage at age 65. The following chart summarizes the ages of current retirees and beneficiaries included in this valuation.

Retirees by Age		
Current Age	Total	Percent
Below 50	1	3%
50 to 54	2	6%
55 to 59	8	24%
60 to 64	2	6%
65 to 69	6	18%
70 to 74	4	12%
75 to 79	4	12%
80 & up	6	18%
Total	33	100%
Average Age:	68.7	

Table 2- Summary of Employee Data
(Concluded)

The chart below reconciles the number of actives and retirees included in the July 1, 2015 valuation of the Department plan with those included in the July 1, 2017 valuation:

Reconciliation of District Plan Members Between Valuation Dates						
Status	Covered Actives	Waiving Actives	Covered Retirees*	Covered Disabled Retirees	Covered Surviving Spouses	Total
Number reported as of June 30, 2015	32	0	18	10	8	68
New retiree, elected coverage	(2)		1	1		0
New retiree, waiving coverage						0
Deceased	(1)		(2)		(2)	(5)
Dropped Coverage			*	(1)		
Data corrections		1	(5)	5		1
Number reported as of June 30, 2017	29	1	12	15	6	63

*One previous retiree is currently waiving coverage but is assumed to re-enroll in District coverage again at age 65, so has been included in the valuation.

There were no new employees hired between July 2015 and July 2017 and the number of active employees decreased by 3 (about 9%). This included 2 retirements and 1 death while in active service. One of the new retirees qualified for the higher (Tier 1) benefit level and the other qualified for the lower (Tier 2) benefit. Both elected to remain covered and are receiving retiree medical benefits. We revised the retirement type, from service to disability, for 5 retirees based on new information.

The Department's OPEB liability varies, based on the medical plan selected, the level of coverage (i.e., single, two-party or family) and whether or not the retiree is currently covered by Medicare. This chart shows current medical plan elections.

Current Medical Plan Selections				
Benefit Level	Actives	Retirees Under 65	Retirees Over 65	Total
Blue Shield Access Bay Area	2		3	5
Kaiser Bay Area	21	9	9	39
Kaiser Sacramento		1		1
PERSCare Bay Area	1	3		4
PERSCare Northern Cal		1		1
PERS Care Out of State		1		1
PERSChoice Bay Area	5	3	1	9
PERSChoice Out of State		2		2
Waived	1			1
Total	30	20	13	63

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 only the PEMHCA minimum employer contribution (MEC) in retirement.

Participant By Benefit Level				
Benefit Level	Actives	Under 65*	Retirees Over 65	Total
Tier 1 (Unequal Benefits)	24	20	12	56
Tier 2 (PEMHCA MEC)	6	0	1	7
Total	30	20	13	63

* Includes one retiree not currently participating but assumed to re-enroll at age 65

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 (age 52, if a miscellaneous employee new to PERS on or after January 1, 2013) with 5 years of State or public agency service or (b) an approved disability retirement.

The employee must begin his or her retirement 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. 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.

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)². The MEC is \$128 per month in 2017 and increases to \$133 per month in 2018.
- 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 2017 "Unequal" Contributions for Tier 1 Retirees			
	Employee	Employee and 1 Dependent*	Employee and 2+ Dependents*
Kaiser	100% of premium	\$ 1,446.99	\$ 1,559.77
BS Access	100% of premium	\$ 1,477.15	\$ 1,582.44
PERS Choice	100% of premium	\$ 1,487.76	\$ 1,572.54
PERSCare	100% of premium	\$ 1,573.70	\$ 1,582.44

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

² 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 2017 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 2017 Health Plan Rates						
	Actives and Pre-Med Retirees			Medicare Eligible Retirees		
Plan	Ee Only	Ee & 1	Ee & 2+	Ee Only	Ee & 1	Ee & 2+
Blue Shield Access+ HMO	\$1,024.85	\$2,049.70	\$2,664.61	<i>Not Available</i>		
Kaiser HMO	733.39	1,466.78	1,906.81	\$ 300.48	\$ 600.96	\$1,040.99
UnitedHealthcare HMO	1,062.26	2,124.52	2,761.88	324.21	648.42	1,285.78
PERS Choice PPO	830.30	1,660.60	2,158.78	353.63	707.26	1,205.44
PERSCare PPO	932.39	1,864.78	2,424.21	389.76	779.52	1,338.95

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, 2017
Funding Method	Entry Age Normal Cost, level percent of pay ³
Asset Valuation Method	Market value of assets
Long Term Return on Assets	7.25%
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 those used in the June 30, 2016 valuations of the retirement plans covering Department employees, as 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 in their 2014 study, adjusted to back out 20 years of Scale BB to central year 2008.

Mortality Improvement Bickmore Scale 2017 applied generationally.

Mortality Before Retirement
(before improvement applied)

CalPERS Public Agency Miscellaneous Non-Industrial			CalPERS Public Agency Police & Fire Combined Industrial & Non-Industrial		
Age	Male	Female	Age	Male	Female
20	0.00033	0.00021	20	0.00036	0.00025
30	0.00052	0.00027	30	0.00062	0.00036
40	0.00080	0.00053	40	0.00094	0.00068
50	0.00165	0.00106	50	0.00181	0.00122
60	0.00354	0.00223	60	0.00372	0.00241
70	0.00709	0.00467	70	0.00731	0.00489
80	0.01339	0.01036	80	0.01363	0.01060

³ 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
(before improvement applied)

CalPERS Public Agency Healthy Miscellaneous, Police & Fire			CalPERS Public Agency Disabled Fire			CalPERS Public Agency Disabled Miscellaneous		
Age	Male	Female	Age	Male	Female	Age	Male	Female
40	0.00117	0.00097	20	0.00515	0.00323	20	0.00641	0.00395
50	0.00532	0.00495	30	0.00357	0.00239	30	0.00736	0.00455
60	0.00817	0.00533	40	0.00330	0.00252	40	0.01008	0.00642
70	0.01766	0.01264	50	0.00610	0.00541	50	0.01784	0.01230
80	0.05275	0.03695	60	0.00921	0.00660	60	0.02634	0.01510
90	0.16186	0.12335	70	0.02250	0.01800	70	0.03890	0.02815
100	0.34551	0.31876	80	0.06654	0.04995	80	0.08230	0.06015
110	1.00000	1.00000	90	0.16222	0.12394	90	0.18469	0.16082

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.

Miscellaneous Employees: 2.7% at 55 formula						
From CalPERS Experience Study Report Issued January 2014						
Current Age	Years of Service					
	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

Miscellaneous "PEPRA" Employees: 2% at 62 formula						
From CalPERS Experience Study Report Issued January 2014						
Current Age	Years of Service					
	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

Fire Safety Employees: 3.0% at 55 formula						
From CalPERS Experience Study Report Issued January 2014						
Current Age	Years of Service					
	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

Fire Safety Employees: 2.7% at 57 formula						
From CalPERS Experience Study Report Issued January 2014						
Current Age	Years of Service					
Age	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			CalPERS Public Agency Fire Combined Disability From Jan 2014 Experience Study Report	
Age	Male	Female	Age	Unisex
20	0.00017	0.00010	20	0.00017
25	0.00017	0.00010	25	0.00035
30	0.00019	0.00024	30	0.00084
35	0.00049	0.00081	35	0.00168
40	0.00122	0.00155	40	0.00310
45	0.00191	0.00218	45	0.00550
50	0.00213	0.00229	50	0.02821
55	0.00221	0.00179	55	0.04184
60	0.00222	0.00135	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
2018	8.00%	2022	6.00%
2019	7.50%	2023	5.50%
2020	7.00%	2024	5.00%
2021	6.50%	& later	5.00%

The required PEMHCA minimum employer 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> 80% of those hired prior to April 1, 2013 and 60% 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 continued 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 65.</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	The expected value of excise taxes for high cost plan coverage for retirees, now expected to be effective in the year 2020, was included in this valuation. Annual threshold amounts for 2018 under the Affordable Care Act (ACA) are shown below. 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.

The actual 2018 limits may be higher, depending on cost increases prior to the effective date. The actual thresholds are scheduled to increase by CPI plus 1% in 2019 and by CPI annually thereafter.

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

Expected Monthly Claims by Medical Plan for Selected Ages					
	Male				
Medical Plan	50	53	56	59	62
Blue Shield Access+: Bay Area	\$ 985	\$1,161	\$1,349	\$1,546	\$1,757
Kaiser: Bay Area	719	848	985	1,129	1,283
Kaiser: Sacramento	685	808	939	1,076	1,223
PERS Choice: Bay Area	745	878	1,020	1,169	1,329
PERS Choice: Other Northern California	776	915	1,063	1,218	1,385
PERSCare: Bay Area	675	796	925	1,060	1,205
PERSCare: Other Northern California	599	707	821	941	1,069
PERSCare: Out of State	431	509	591	677	770
Medical Plan	Female				
Blue Shield Access+: Bay Area	\$1,220	\$1,340	\$1,442	\$1,558	\$1,718
Kaiser: Bay Area	891	979	1,053	1,138	1,254
Kaiser: Sacramento	849	933	1,004	1,085	1,196
PERS Choice: Bay Area	923	1,013	1,091	1,178	1,299
PERS Choice: Other Northern California	962	1,056	1,136	1,228	1,354
PERSCare: Bay Area	837	919	989	1,068	1,178
PERSCare: Other Northern California	743	816	878	948	1,045
PERSCare: Out of State	535	587	632	683	753

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:

Mortality improvement

Future rates of mortality were projected to improve on a generational basis using Bickmore Scale 2017, rather than modified Scale MP-2014; this new scale generally results in lower improvement (i.e. shorter life expectancy).

Table 4 - Actuarial Methods and Assumptions

(Concluded)

Healthcare trend	Medical plan premiums are assumed to increase at somewhat higher rates than assumed in the prior valuation, with the ultimate trend of 5.0% per year, rather than 4.5% per year assumed in the prior valuation.
Spouse Coverage	Based on a review of current retiree elections, we increased the percentage of future retirees assumed to be married and to elect coverage for their spouse in retirement, from 68% to 80% for future Tier 1 retirees and from 51% to 60% for future Tier 2 retirees.
Dependent Coverage	Based on a review of current retiree data, we increased the age at which dependent coverage for future Tier 1 retirees is assumed to end, from 63 up to age 65.

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	
2018	\$ 312,359	\$ 6,898	\$ 319,257	\$ 110,853	\$ 893	\$ 111,746	\$ 431,003
2019	327,578	17,632	345,210	122,010	2,822	124,832	470,042
2020	347,983	30,389	378,372	145,077	5,992	151,069	529,441
2021	365,627	45,450	411,077	145,671	10,733	156,404	567,481
2022	368,070	64,047	432,117	155,774	17,738	173,512	605,629
2023	343,228	87,348	430,576	119,437	28,086	147,523	578,099
2024	346,454	115,890	462,344	88,708	42,343	131,051	593,395
2025	341,019	144,979	485,998	102,541	59,050	161,591	647,589
2026	333,221	177,606	510,827	46,839	79,231	126,070	636,897
2027	299,504	215,790	515,294	54,585	103,766	158,351	673,645
2028	286,860	250,189	537,049	48,461	121,391	169,852	706,901
2029	289,945	285,332	575,277	36,401	140,311	176,712	751,989
2030	278,939	332,003	610,942	42,153	179,760	221,913	832,855
2031	288,560	387,480	676,040	48,436	196,536	244,972	921,012
2032	289,257	430,239	719,496	21,072	231,190	252,262	971,758

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: Breakout of Valuation Results by Group

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 6/30/2019			Fiscal Year Ending 6/30/2020		
	Discount Rate					
	7.25%	7.25%	7.25%	7.25%	7.25%	7.25%
Number of Covered Employees						
Actives	-	30	30	-	30	30
Retirees	23	10	33	23	10	33
Total Participants	23	40	63	23	40	63
Actuarial Present Value of Projected Benefits						
Actives	\$ -	\$ 6,359,793	\$ 6,359,793	\$ -	\$ 6,800,424	\$ 6,800,424
Retirees	2,548,379	2,447,565	4,995,944	2,490,962	2,417,600	4,908,562
Total APVPB	2,548,379	8,807,358	11,355,737	2,490,962	9,218,024	11,708,986
Actuarial Accrued Liability						
Actives	-	4,485,453	4,485,453	-	5,005,406	5,005,406
Retirees	2,548,379	2,447,565	4,995,944	2,490,962	2,417,600	4,908,562
Total AAL	2,548,379	6,933,018	9,481,397	2,490,962	7,423,006	9,913,968
Actuarial Value of Assets	234,814	2,346,061	2,580,875	181,503	2,844,188	3,025,691
Unfunded Actuarial Accrued Liability	2,313,565	4,586,957	6,900,522	2,309,459	4,578,818	6,888,277
Amortization Factor	14.4397	14.4397	14.4397	13.9942	13.9942	13.9942
Actuarially Determined Contribution (ADC)						
Normal Cost	-	200,664	200,664	-	207,185	207,185
Amortization of UAAL	160,223	317,663	477,886	165,029	327,194	492,223
Interest to 6/30	11,616	37,579	49,195	11,965	38,742	50,707
ADC at Fiscal Year End	171,839	555,906	727,745	176,994	573,121	750,115
Calculation of Expected Contribution						
Estimated payments on behalf of retirees	190,092	155,118	345,210	202,622	175,750	378,372
Estimated current year's implicit subsidy	52,082	72,750	124,832	60,630	90,439	151,069
Estimated contribution to OPEB trust	(70,335)	328,038	257,703	(86,258)	306,932	220,674
Total Expected Employer Contribution	171,839	555,906	727,745	176,994	573,121	750,115

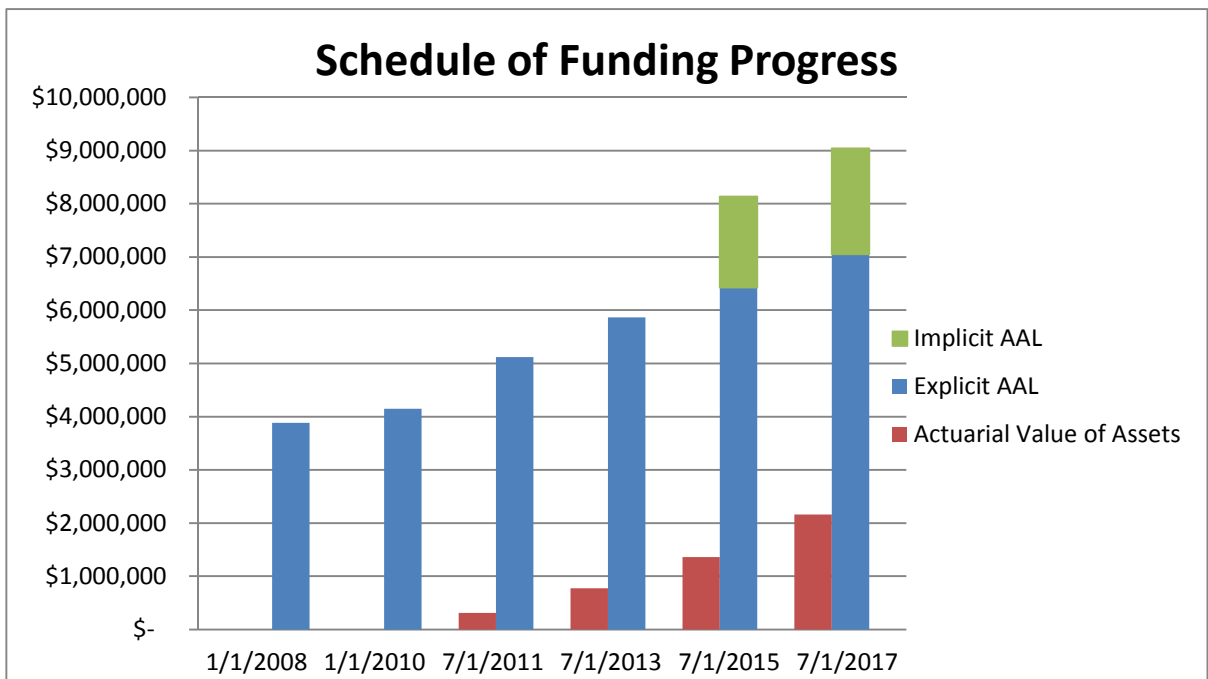
The July 1, 2017 asset value was allocated between groups in proportion to actual contributions by group reported to Bickmore by the Department since July 2012, plus allocated earnings through June 30, 2017. Actual July 1, 2017 assets were then projected by group to July 1, 2018 and July 1, 2019, based on the expected rate of return and contributions expected to be credited to the trust account prior to each such date.

Appendix 2 Historical Information

In this section, we provide a review of valuation results from 2008 through 2017.

Schedule of Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (b)	Unfunded Actuarial Accrued Liability (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a 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%
7/1/2017	\$ 2,158,527	\$ 9,042,903	\$ 6,884,376	23.9%	\$ 3,963,937	173.7%

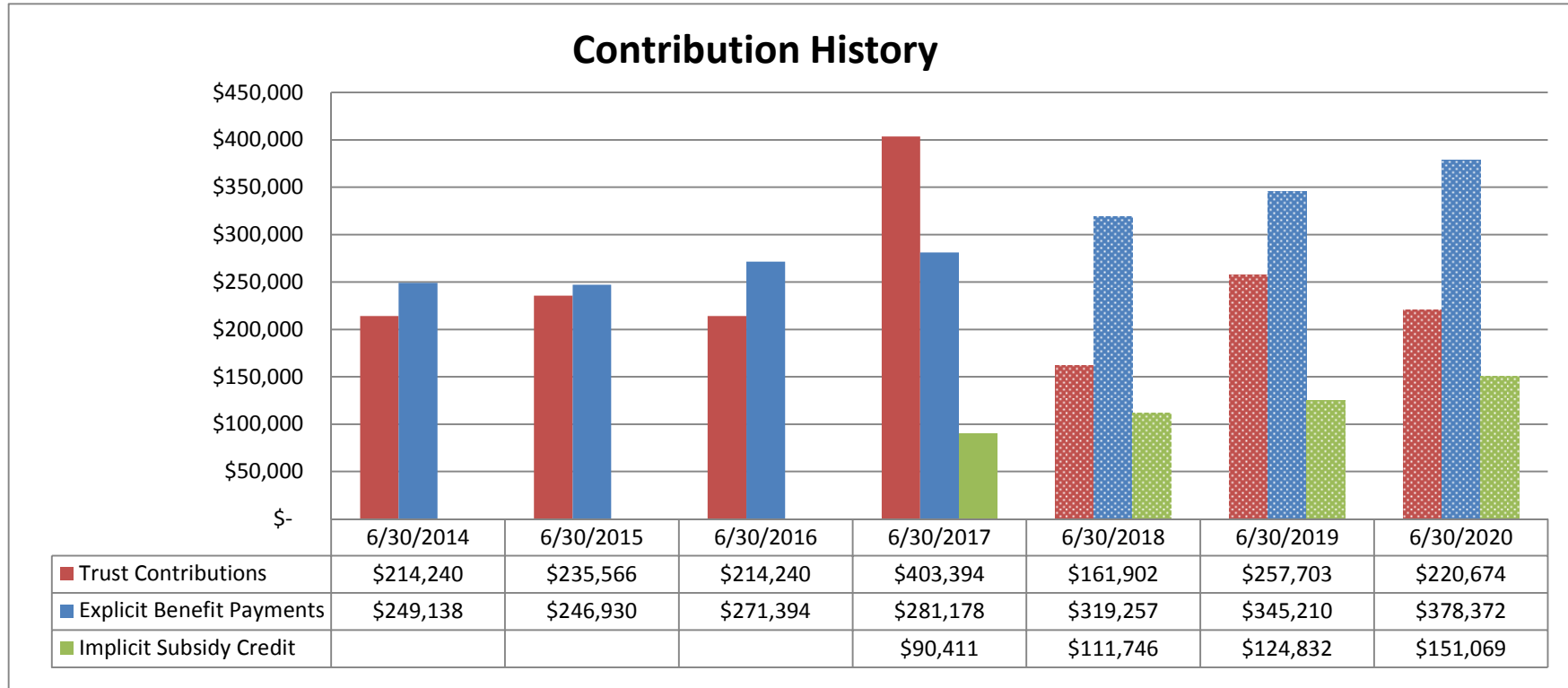


Significant changes during this period include:

- July 1, 2013: Addition of new JPA members
- July 1, 2015: First time recognition of the implicit subsidy liability relating to medical coverage; decrease in assumed discount rate
- July 1, 2017: Increase in assumed long term healthcare trend; increase in assumed spouse coverage for future retirees

Appendix 2 - Historical Information
(Continued)

This history of the Department’s OPEB contributions was compiled from a combination of prior audited financial statements, the July 2013 and July 2015 actuarial valuation reports and from OPEB contribution information provided directly to us by the District. If any of these contributions do not appear to be accurate, please let us know. *Amounts shown for the fiscal years ending June 30, 2018 June 30, 2019 and June 30 2020 are estimates.*



Addendum 1: Bickmore Age Rating Methodology

Both accounting standards (e.g., GASB 75) 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 2017** was developed from a blending of data and methodologies found in two published sources: (1) the Society of Actuaries Mortality Improvement Scale MP-2016 Report, published in October 2016 and (2) the demographic assumptions used in the 2016 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, published June 2016.

Bickmore Scale 2017 is a two-dimensional mortality improvement scale reflecting both age and year of mortality improvement. The underlying base scale is Scale MP-2016 which has two segments – (1) historical improvement rates for the period 1951-2012 and (2) an estimate of future mortality improvement for years 2013-2015 using the Scale MP-2016 methodology but utilizing the assumptions obtained from Scale MP-2015. The Bickmore scale then transitions from the 2015 improvement rate to the Social Security Administration (SSA) Intermediate Scale linearly over the 10 year period 2016-2025. After this transition period, the Bickmore Scale uses the constant mortality improvement rate from the SSA Intermediate Scale from 2025-2039. The SSA's Intermediate Scale has a final step down in 2040 which is reflected in the Bickmore scale for years 2040 and thereafter. Over the ages 100 to 115, the SSA improvement rate is graded to zero.

Scale MP-2016 can be found at the SOA website and the projection scales used in the 2016 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.

Actuarially Determined Contribution (ADC) – A contribution level determined by an actuary that is sufficient, assuming all assumptions are realized, to (1) fully fund new employee’s expected benefits by their expected retirement date(s), (2) pay off over a sufficiently short period any unfunded liabilities current as of the date funding commences, and (3) adequately fund the trust so that the trust can meet benefit payment obligations.

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.

Discount Rate – The rate of return that could be earned on an investment in the financial markets; typically, the discount rate is 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 in 2020.

Glossary **(Continued)**

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.

Funding Policy Contribution (FPC)– The contributions determined in accordance with the entity’s adopted funding policy. The FPC may range from “pay-go” (i.e. only paying benefits as they come due), to prefunding all projected liabilities expected for current and former employees. An entity’s FPC may be: (1) less than the Actuarially Determined Contribution (ADC) indicating that the entity has chosen not to prefund part of the liabilities reflected in the ADC; (2) more than the ADC indicating that the entity wants to prefund benefits faster than a typical ADC; or (3) based on contributions equal to 100% of an ADC, indicating that the entity desires to prefund over the period indicated by the ADC.

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.

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.

Glossary
(Concluded)

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, (a) the assets should be segregated and restricted in a trust or similar arrangement, (b) employer contributions to the trust should be irrevocable, (c) the assets should be dedicated to providing benefits to retirees and their beneficiaries, and (d) that the assets should be legally protected from creditors of the employer and/or plan administrator. See also “Actuarial Value of Assets”.

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.

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