

NOVATO SANITARY DISTRICT

May 3, 2013

The Finance Committee of Novato Sanitary District will hold a meeting at 3:00 PM, Friday, May 3, 2013, at the District offices, 500 Davidson Street, Novato.

AGENDA

1. **AGENDA APPROVAL:**

2. **PUBLIC COMMENT (PLEASE OBSERVE A THREE-MINUTE TIME LIMIT):**

This item is to allow anyone present to comment on any subject not on the agenda, or to request consideration to place an item on a future agenda. Individuals will be limited to a three-minute presentation. No action will be taken by the Board at this time as a result of any public comments made.

3. **MINUTES**

- a. Consider approval of the minutes of the March 8, 2013 meeting.

4. **FINANCIAL POLICIES:**

- a. Review the Reserve Policy and make recommendations to the Board.

5. **PENSION AND OTHER POST-RETIREMENT BENEFIT LIABILITIES:**

- a. Review current medical after retirement benefit actuarial report.
- b. Review CalPERS pension plan update.

6. **ITEMS FOR NEXT COMMITTEE MEETING:**

7. **ADJOURNMENT:**

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the District at (415) 892-1694 at least 24 hours prior to the meeting. Notification prior to the meeting will enable the District to make reasonable accommodation to help ensure accessibility to this meeting.

Materials that are public records and that relate to an open session agenda item will be made available for public inspection at the District office, 500 Davidson Street, Novato, during normal business hours.

March 8, 2013

The Finance Committee of Novato Sanitary District held a meeting at 10:00 a.m., Friday, March 8, 2013, at the District office, 500 Davidson Street, Novato.

COMMITTEE MEMBERS PRESENT: Members William C. Long and Jean Mariani.

STAFF PRESENT: Manager-Engineer-Secretary Beverly B. James, Finance Officer Laura Creamer and Administrative Secretary Julie Swoboda. Deputy Manager-Engineer Sandeep Karkal was absent.

No members of the public were present.

AGENDA APPROVAL: The agenda was approved as presented.

REVIEW OF MINUTES: The December 6, 2012 meeting minutes were approved as written.

FINANCIAL POLICIES:

- Review the Reserve Policy and consider the proposal from Bartle Wells to update the policy. The Manager stated that the District adopted an Operating Reserve Fund Policy in October, 2001. She stated that the operating reserve fund target was set at a fixed dollar amount equal to approximately half of the annual operating budget. She noted that this target has become increasingly out-of-date as the District's operating costs have increased over the past twelve years. She noted that it would be better to formally set the target as a percent of budget so that it would stay current over time.

The Committee discussed the District's needs and requirements for the reserve fund. The Manager stated that Tom Gaffney of Bartle Wells has submitted a proposal to review the District's reserve policy in light of new CSDA guidelines, changes at the District, and new accounting guidelines and to make recommendations for revising the policy. She noted that Tom Gaffney proposes to do the work on a time and materials basis for an amount not to exceed \$4,500.

The Committee expressed their appreciation for the work that Bartle Wells had done in the past. The Manager stated that the Committee had been provided with a proposal from Mr. Gaffney to provide financial advisory services in connection with recommendations to revise the District's reserve fund policy. The Manager noted that Mr. Gaffney will be at the next committee meeting, scheduled in mid-April, to discuss the policy update.

RATE STRUCTURE:

- Consider initiating review of the connection fee structure. The Manager reviewed the District's connection charge history, dating back to April 1949 when the connection fee

was \$1. She stated that the District's objective is to ensure that the rates are sustainable, defensible, understandable, and fair. The Committee discussed various options which could be used to calculate new construction/new connection charges.

The Manager stated that staff recommends requesting a proposal from Bartle Wells to assist staff in preparing the analyses needed for setting each of the fees and charges.

PENSION AND OTHER POST-RETIREMENT BENEFIT LIABILITIES:

- Review pension and other post-retirement benefit liabilities. The Manager stated that the individual she is requesting information from has been unable to provide what is needed. She stated that at the April Finance Committee meeting, an updated report on after-retirement pension liabilities will be available.

ADJOURNMENT: The meeting was adjourned at 11:05 a.m.

Respectfully submitted,

Beverly B. James
Secretary

Julie Swoboda, Recording



TO: Beverly James, Manager-Engineer

FROM: Thomas Gaffney, Principal
Alison Lechowicz, Financial Analyst

DATE: May 2, 2013

SUBJECT: Reserve Fund Policy Review

DISCUSSION MEMORANDUM

Introduction

In 2001, Bartle Wells Associates (BWA) was engaged by the Novato Sanitary District's (NSD or District) to review the District's operating reserve funds and recommend funding levels. BWA has been asked to update the review of the operating reserves and to also conduct a review of non-operating reserves. Bartle Wells Associates has been asked to evaluate reserve funds for proper allocation to potential use and make recommendations for consolidating reserves.

The District has the following funds:

- Operating Reserve (Working Capital)
- Service Charge Rate Stabilization
- Emergency Repairs
- Vehicle Replacement
- Self-Insurance Reserve
- Southgate Reserve
- Capital Improvements
- Debt Service Reserves

A summary of the reserve balances, current reserve targets, and Board policy supporting each reserve is shown in Table 1.

| Table 1 Reserves | June 30, 2013 Estimated Balance | Target | Cost Justification |
|--|--|--------------------------|---|
| Operating Reserve (Working Capital) | \$6,279,465 | \$5,434,506 | 7 months of operating expense. |
| Service Charge Rate Stabilization [Specified in Series 2011 COP Official Statement] | \$600,000 | \$600,000 | Funds to spread a permanent cost increase over a number of years or to fund one-time expenses to avoid a service charge increase. |
| Emergency Repairs | \$600,000 | \$600,000 | Estimated expense of emergency replacement pump station equipment. |
| Vehicle Replacement Fund | \$238,795 | Annual funding | Level the cost of vehicles over time. |
| Self-Insurance Reserve Fund | \$164,516 | Annual funding | To fund the District's comprehensive insurance deductible of \$25,000 and unemployment insurance claims. |
| Southgate Reserve Fund | \$679,989 | Per annexation agreement | To fund improvements to the Southgate sewers. |
| Capital Improvements | \$4,061,265 | Annual funding | To fund capital improvement projects. |
| Debt Service Reserve | \$1,500,000 | \$1,500,000 | Required by Series 2011 COP legal covenants. |
| Total | \$14,124,029 | | |

Preliminary Recommendations

BWA discussed the District's policies, budgets, and audits and the District's reserve categories and jointly concluded that the current funds overlap somewhat. BWA recommends that the District consolidate its reserves into three reserve funds, namely: operating, capital, and emergency funds.

Operating Fund

This fund is the source of ongoing cash flow for the District and all operating costs are paid from this fund. Normal practice is also to pay vehicle replacements and liability claims from the fund and then receive transfers back from the other funds during the year. The main source of revenue to the fund is service charges collected on the property tax roll on December 10 and April 10. BWA recommends that the District continue its existing policy to fund an operating reserve of seven months, the period between the collection of property tax revenues (June 30 to late December plus 1 month financial safeguard). The District staff has noted that the current average monthly operating expenditure is \$776,358 so BWA recommends an operating reserve/working capital of \$5,435,000.

Table 2 shows the current and recommended level of the operating/working capital reserve. The Operating Reserve would vary annually based on the amount budgeted for operating expenses. For FY2013, the District is estimated to have a surplus of \$844,959 over the recommended reserve funding level.

Table 2

| Operating Reserve (Working Capital) | Current | Recommended |
|--|--------------------------------|--------------------------------|
| Policy | 7 months of operating expense. | 7 months of operating expense. |
| June 30, 2013 Estimated Fund Balance | \$6,279,465 | \$6,279,465 |
| Funding Target | \$5,434,506 | \$5,434,506 |
| Surplus (Deficit) in Funding Level | \$844,959 | \$844,959 |

Capital Fund

BWA recommends that the Vehicle Replacement Reserve, the Southgate Reserve, and the Capital Improvement Fund be consolidated into one capital fund.

Vehicle Replacement – The District maintains a Vehicle Replacement Fund to absorb the cost of replacing vehicles over time and to level expenses from year to year. Revenues and expenses to the fund are generated from the sale of older vehicles and the purchase of newer vehicles respectively. BWA recommends that the District include a vehicle replacement line item of \$100,000 in the capital budget.

Table 3

**Capital Reserve
Vehicle Replacement Fund**

| | Current | Recommended |
|--------------------------------------|---------------------------------------|--|
| Policy | Level the cost of vehicles over time. | Include in capital fund as \$100,000 annual set aside. |
| June 30, 2013 Estimated Fund Balance | \$238,795 | \$238,795 |
| Funding Target | Annual funding | \$100,000 to be included as annual capital improvements. |
| Surplus (Deficit) in Funding Level | None | None |

Capital Improvements – The District has a capital improvement budget in place that includes major projects for the current year, debt funded projects, and smaller, pay-as-you-go capital projects. Except for major projects, the District expects to fund annual capital expenses on a pay-as-you-go basis. Table 4 shows the CIP for the current year and the next three years. The Table includes \$100,000 annually for vehicle replacement.

| Capital expenses | Prelim. Budget | Projected | | |
|-------------------------------------|-----------------------|---------------------|--------------------|--------------------|
| | 2012/13 | 2013/14 | 2014/15 | 2015/16 |
| Treatment plant | \$4,225,000 | \$460,000 | \$230,000 | \$190,000 |
| Collection system | 2,265,000 | 2,270,000 | 2,233,000 | 1,731,000 |
| Pump stations | 1,550,000 | 0 | 0 | 0 |
| Reclamation system | 310,000 | 205,000 | 205,000 | 205,000 |
| Lateral program | | 30,000 | 60,000 | 90,000 |
| Other projects | 1,005,000 | 200,000 | 100,000 | 60,000 |
| Proposed vehicle replacement | | 100,000 | 100,000 | 100,000 |
| Subtotal capital projects | 9,355,000 | 3,265,000 | 2,928,000 | 2,376,000 |
| SRF Loan pmts | 5,379,000 | 5,379,000 | 5,379,000 | 5,379,000 |
| COP debt service | 1,686,000 | 1,692,000 | 1,692,000 | 1,696,000 |
| Total annual capital expense | \$16,420,000 | \$10,336,000 | \$9,999,000 | \$9,451,000 |

BWA recommends that the District set the capital improvement reserve at the three year average of pay-as-you-go capital projects. For FY2014 to FY2016, the District projects the three-year average of pay-as-you-go capital projects (no debt funded projects) at about \$2.9 including annual vehicle replacement.

Table 5
Capital Reserve
Capital Improvements

| Policy | Current | Recommended |
|--------------------------------------|---------------------------------------|--|
| | To fund capital improvement projects. | Maintain reserve of three year average of pay-go capital projects. |
| June 30, 2013 Estimated Fund Balance | | |
| Vehicle Replacement Fund | \$238,795 | \$100,000 |
| Capital Improvements | <u>\$4,061,265</u> | <u>\$4,061,265</u> |
| Total | \$4,300,060 | \$4,161,265 |
| Funding Target | Annual funding | \$2,900,000 |
| Surplus (Deficit) in Funding Level | None | \$1,261,265 |

Southgate Reserve – In March 2003, as part of the Settlement Agreement for acceptance of the Southgate Subdivision sewers, Southgate Partners deposited the sum of \$890,989 with the District for improvement and continued maintenance and operation of the sewer improvements. The Southgate Settlement Agreement occurred over ten years ago and the Southgate neighborhood has since been integrated into the District’s service territory. BWA recommends that the District eliminate the Southgate Reserve and fund Southgate improvements through the consolidated capital fund.

Table 6
Capital Reserve
Southgate Reserve

| | Current | Recommended |
|--------------------------------------|---|------------------------------|
| Policy | To fund improvements to the Southgate sewers. | Included in capital reserve. |
| June 30, 2013 Estimated Fund Balance | \$679,989 | Part of capital reserve |
| Funding Target | Per annexation agreement | None |
| Surplus (Deficit) in Funding Level | None | None |

A summary of the proposed consolidated capital reserve is provided below. For FY2013, the District is estimated to have a surplus of \$2,080,049 over the recommended consolidated capital reserve funding level.

Table 7
Consolidated Capital Reserve

| | Current | Recommended |
|--------------------------------------|---|--|
| Policy | Level the cost of vehicles, fund capital improvements, and fund Southgate sewers. | Maintain reserve of three year average of pay-go capital projects (\$2.8M) plus \$100,000 vehicle set aside. Eliminate Southgate reserve |
| June 30, 2013 Estimated Fund Balance | | |
| Vehicle Replacement Fund | \$238,795 | \$included in capital reserve |
| Capital Improvements | \$4,061,265 | \$2,900,000 |
| Southgate Reserve | <u>\$679,989</u> | <u>\$included in capital reserve</u> |
| Total | \$4,980,049 | \$2,900,000 |
| Funding Target | | |
| Vehicle Replacement Fund | Annual funding | \$included in capital reserve |
| Capital Improvements | Annual funding | \$2,900,000 |
| Southgate Reserve | <u>Per annexation agreement</u> | <u>\$included in capital reserve</u> |
| Total | NA | \$2,900,000 |
| Surplus (Deficit) in Funding Level | None | \$2,080,049 |

Rate Stabilization Fund

BWA recommends that the District consolidate the Rate Stabilization Fund, Emergency Repair Fund, and Self-Insurance Fund and into the Rate Stabilization Fund.

Rate Stabilization – The Rate Stabilization Reserve was recommended by Bartle Wells Associates and created by Board policy in September 2001. It was also incorporated into the security pledge for the 2011 COP issue. The account is used to spread a permanent cost increase over a number of years or to fund one-time expenses without the need for a service charge adjustment. The Final Budget for FY2012-14 shows that the Reserve is funded at \$600,000 and the account is predicted to have no revenues and no expenses.

After a draw down, the fund should be replenished over a few years so that the reserve is available in the future. The District is be able to spread rate increases over three to four years rather that a single sharp increase in the second year. Under this scenario, the fund balance

could decrease for a year or two. Thereafter, the fund balance must increase back to the pledged level.

In October 2001, the District Board adopted a Rate Stabilization Reserve in the amount of \$600,000.

Emergency Repair – A Sanitary District is by its very nature capital intensive. Such an agency requires a series of expensive public works facilities including pipelines, manholes, pump stations, and treatment structures and equipment. These facilities cost many millions of dollars and are subject to constant use under potentially hazardous conditions. In the event of a breakdown or equipment failure, the District is legally obligated to instigate repairs under emergency conditions if necessary. There is no time for extended financial planning. The repairs must be implemented and then a permanent capital plan developed.

The Rate Stabilization reserve would serve as a source of emergency funding if required. Usually capital funds are available, but in the case of NSD, these funds are mostly from accumulated connection charge revenues and are intended for capacity expansions rather than repairs. The Rate Stabilization Reserve is an efficient method of funding emergency repairs.

An emergency repair reserve to fund a major general catastrophe such as one caused by an earthquake is not practical. Damage caused by this type of disaster could be widespread and would likely result in state and federal emergency assistance.

The amount of an emergency repair requirement may be determined in several ways. One method is to use the replacement cost of an expensive facility subject to a possible emergency breakdown and crucial to operations. A pump station is an example of a facility subject to flooding and one that must keep operating to avoid extensive sewage spills. Pump station equipment may cost upwards of \$500,000 to \$700,000.

A general philosophy for an emergency repair is to assume that the District prepares for one equipment emergency at a time. The District could use the fund to make the needed repairs and gain time to seek grants, disaster relief, or permanent funding.

The Final Budget for FY2012-14 shows that the Rate Stabilization Reserve is funded at \$600,000 and the account is predicted to have no revenues and no expenses.

Self-Insurance Reserve – The Self-Insurance Reserve Fund is maintained to cover the District's deductible on its comprehensive liability policy of \$25,000 per occurrence, insurance contingencies, and unemployment insurance claims which the District self-insures. The only

revenue to the fund is interest earnings. The District anticipates a balance of \$164,516 at the end of the FY2013.

Recommendations

Based on our review of the requirements of the District, we recommend the following actions:

- 1) Continue to maintain at least seven months of operating reserves. The actual reserve amount would vary with budgeted operating expenses.
- 2) Consolidate the Vehicle Replacement Reserve, the Southgate Reserve, and the Capital Improvement Fund into one Capital Reserve Fund.
- 3) Maintain the June 30 Capital Fund Reserves at the three year average of pay-as-you-go capital improvements plus \$100,000 for a vehicle replacement set aside.
- 4) Consolidate the Rate Stabilization, Emergency Repair, and Self-Insurance Reserves into one Rate Stabilization Reserve Fund.

MEMORANDUM

April 30, 2013

TO: Finance Committee
FROM: Laura Creamer, Finance Officer
RE: 2012 GASB 45 Actuarial Reports

Recently, Nick Franceschine of North Bay Pensions prepared an actuarial report on our behalf for the valuation of our retiree medical benefits as of July 1, 2012 based on the census information District staff provided to him.

The District maintains a program, which pays part or all of the medical insurance premiums on behalf of retired former employees as long as the employee has met certain criteria. This program is funded on a pay as you go basis.

In June of 2004, the Governmental Accounting Standards Board (GASB) released Statement No. 45, "Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions." This statement also known as GASB 45, requires governmental entities to first record an annual expense for their OPEB and secondly disclose certain information in their year-end financial statements.

For details and disclosures please see full report in your packet.

NORTH BAY PENSIONS

April 19, 2013

Ms. Laura Creamer
Finance Officer
Novato Sanitary District
500 Davidson Street
Novato, CA 94945

Nick Franceschine, F.S.A.
550 Dufranc Avenue
Sebastopol, California 95472-3341
(800) 594-4590
(707) 824-9600
FAX (707) 823-6189
nick@northbaypensions.com

Re: 2012 GASB 45 Actuarial Reports Enclosed

Laura:

I have completed an actuarial valuation of your retiree medical and life insurance plan as of July 1, 2012. I am enclosing six copies of the report of this valuation, as requested, five bound and one unbound for you to make copies.

I am available to answer questions about the report and its contents. You can reach me at 1-800-594-4590.

Thank you again for the opportunity to work with you. I appreciate your business and look forward to working with you again.

Sincerely,



Nick Franceschine, F.S.A.
Consulting Actuary

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NOVATO SANITARY DISTRICT

VALUATION OF RETIREE HEALTH BENEFITS

**REPORT OF GASB 45 VALUATION
AS OF JULY 1, 2012**

**Prepared by: North Bay Pensions
April 19, 2013**

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Actuarial Certification

This report presents the determination of benefit obligations under **Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)** as of July 1, 2012 for the retiree health and welfare benefits provided by the Novato Sanitary District. I was retained by the District to perform these calculations.

GASB Statement 45, "Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions", was issued to provide standards for governmental employers to record expense for **Other Postemployment Benefits (OPEB)**. OPEB includes postretirement health and welfare benefits, hence GASB 45 is the appropriate Standard to follow when recording the District's OPEB obligations.

The information contained in this report was based on participant census information provided to me by the District. The actuarial assumptions and methods used in this valuation were selected by the District after consultation with me. I believe the assumptions and methods are reasonable and appropriate for purposes of actuarial computations under GASB 45.

Actuarial computations under GASB 45 are for purposes of fulfilling employer accounting requirements. The calculations reported herein have been made on a basis consistent with my understanding of GASB 45. Determinations for purposes other than meeting employer financial accounting requirements may be significantly different from the results reported herein.

To the best of my knowledge, this report is complete and accurate. This valuation has been conducted in accordance with generally accepted actuarial principles and practices. The undersigned is a Fellow of the Society of Actuaries, a Fellow of the Conference of Consulting Actuaries, and a Member of the American Academy of Actuaries, and meets their continuing education requirements and qualification standards for public statements of actuarial opinion relating to retirement plans. In my opinion, I am qualified to perform this valuation.



4-19-13

Nick Franceschine, F.S.A.

North Bay Pensions

550 Du Franc Avenue

Sebastopol, CA 95472

1-800-594-4590

FAX 707-823-6189

nick@northbaypensions.com

Summary of Results

Background

The District maintains a program which pays part or all of monthly medical insurance premiums on behalf of retired former employees, provided that the employee has satisfied certain requirements. This program is being funded on a pay-as-you-go basis. As of July 1, 2012, the District has funded \$0 in a secure trust toward the cost of future benefits.

In June 2004, the Governmental Accounting Standards Board (GASB) released Statement No. 45, "Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions". This statement, often referred to as GASB 45, requires governmental entities to (1) record annual expense for their OPEB and (2) disclose certain information in their year-end financial statements.

The District has requested this actuarial valuation to determine what its OPEB obligations under the program are, and what the fiscal impact of GASB 45 will be for the 2012-2013 and 2013-2014 fiscal years.

Present Value of Future Benefits

The **Actuarial Present Value of Total Projected Benefits (APVTPB)** as of July 1, 2012, is **\$5,908,205**. This is the amount the District would theoretically need to set aside at this time to fully fund all future benefits for all current and former employees and their beneficiaries.

This figure of \$5,908,205 can be compared to the corresponding figure of \$6,112,283 as of July 1, 2010. The main reason for the decrease is that more employees have left employment than anticipated.

The total value of \$5,908,205 is the sum of these amounts:

| | |
|--|------------------|
| Future benefits of current employees | \$ 2,044,705 |
| Future benefits of current retirees | <u>3,863,500</u> |
| Total present value of all future benefits | \$ 5,908,205 |

These figures are computed by (1) estimating the OPEB benefits that will be paid to each current and former employee and their beneficiaries, upon the employee's retirement from the District, (2) estimating the likelihood that each payment will be made, taking into consideration the likelihood of remaining employed until retirement age and the likelihood of survival after retirement, and (3) discounting each expected future payment back to the present date at an assumed rate of investment return.

“Annual OPEB Cost” Under GASB 45

GASB 45 requires that the cost of the program be recognized in a systematic manner over the working careers of employees. There are six different budgeting methods, called “actuarial funding methods”, that can be used to determine what the annual operating expense (called the **Annual OPEB Cost**) will be. The District has elected to use the Entry Age Normal actuarial funding method with a closed 30-year level dollar amortization of the unfunded actuarial accrued liability.

The actuarial funding method is used to compute the **Annual Required Contribution (ARC)**. The ARC is equal to the sum of (1) the value of benefits earned by employees in the current year, plus (2) an amortization of the value of benefits earned by employees in prior years. Annual OPEB Cost is equal to the sum of (a) the ARC, and (b) interest on any unfunded OPEB operating expense from prior years, less (c) an adjustment to reflect the amortization of unfunded OPEB which is already included in the ARC.

For the fiscal year beginning July 1, 2012, the District’s Annual OPEB Cost is **\$386,320**. For the 2013-2014 fiscal year, Annual OPEB Cost will be \$393,026.

Over the next 3 years, the total benefits that the District is expected to pay to retired employees and their beneficiaries, and the GASB 45 operating expense, are as follows:

| | <u>Expected Benefits</u> | <u>Operating Expense</u> |
|-----------------------|--------------------------|--------------------------|
| 2012-2013 Fiscal Year | \$ 212,088 | \$ 386,320 |
| 2013-2014 Fiscal Year | 228,301 | 393,026 |
| 2014-2015 Fiscal Year | 226,568 | 399,327 |

Exhibit 3 shows a 5-year projection of expected benefits and GASB 45 operating expense.

Actuarial Assumptions

The calculations of the program’s obligations involve various estimates of future events. These estimates are called “actuarial assumptions”. The assumptions are described in detail in Exhibit 5 of this report. The calculated results are highly dependent on the assumptions selected.

Exhibit 1 - Actuarial Values as of July 1, 2012

The Actuarial Present Value of Total Projected Benefits as of July 1, 2012 of all future benefits from the program, for all current and former employees, is as follows:

| | <u>Actuarial Present Values</u> | <u>Number of Persons</u> |
|--------------------------|-------------------------------------|------------------------------|
| Current employees | \$ 2,044,705 | 19 |
| Retired former employees | <u>3,863,500</u> | <u>23</u> |
| Totals | \$ 5,908,205 | 42 |

Data Averages as of July 1, 2012

Active Employees

| | |
|-----------------|--------------|
| Number | 19 employees |
| Average Age | 45.4 |
| Average Service | 8.8 |

Retired Former Employees and Surviving Spouses

| | |
|-------------|------------|
| Number | 23 persons |
| Average Age | 66.6 |

Source of Information

A census of all eligible District employees and retirees as of July 1, 2012 was provided to me by the District.

Exhibit 2 - Annual OPEB Cost

In the Entry Age Normal method, the cost of each individual's OPEB benefits is amortized on a straight-line basis over his/her working career. For each employee, a "normal cost" is computed, the amount which, if accumulated during each year of employment, will at retirement be sufficient to fund the expected benefits for that individual. The sum of all the individual normal costs for all employees is called the Normal Cost. The accumulated value of all normal costs attributed to prior years, including the full value of benefits for all currently retired employees, is called the Actuarial Accrued Liability. The Unfunded Actuarial Accrued Liability is amortized over a period of future years. The ARC is the sum of the Normal Cost and the amortization of the Unfunded Actuarial Accrued Liability.

The Annual OPEB Cost for the 2012-2013 year is computed in this way:

| | | |
|-----|---|-------------------|
| 1. | Normal Cost for the 2012-13 fiscal year | \$ 74,686 |
| 2. | Actuarial Accrued Liability at July 1, 2012 | 5,347,276 |
| 3. | Value of Plan Assets | 0 |
| 4. | Unfunded Actuarial Accrued Liability: 2. minus 3. | 5,347,276 |
| 5. | Level-dollar Amortization of 4. over 27 years | 327,459 |
| 6. | Annual Required Contribution (ARC): 1. plus 5. | \$ 402,145 |
| 7. | Net OPEB Obligation at beginning of year | 745,079 |
| 8. | One year's interest on 7. | 29,803 |
| 9. | ARC Adjustment: amortization of 7. over 29 years | (45,628) |
| 10. | Annual OPEB Cost: 6. plus 8. plus 9. | \$ 386,320 |

Exhibit 3 - Five-Year Projection of Costs

Shown below are estimates of the way in which Annual OPEB Cost might be expected to increase over the next five years. In this illustration, it is assumed that the Normal Cost will increase 0% per year, that all actuarial assumptions will remain unchanged, and that the District will continue to fund the plan on a pay-as-you-go basis.

| Fiscal Year: | <u>2012-13</u> | <u>2013-14</u> | <u>2014-15</u> | <u>2015-16</u> | <u>2016-17</u> |
|---|-------------------|---------------------|---------------------|---------------------|---------------------|
| ARC | | | | | |
| Normal cost | \$ 74,686 | \$ 74,686 | \$ 74,686 | \$ 74,686 | \$ 74,686 |
| Amortization | <u>327,459</u> | <u>339,087</u> | <u>350,671</u> | <u>363,414</u> | <u>377,542</u> |
| Total ARC | \$ 402,145 | \$ 413,773 | \$ 425,357 | \$ 438,100 | \$ 452,228 |
| Plus interest | 29,803 | 36,772 | 43,361 | 50,272 | 57,558 |
| Less ARC adjustment | <u>(45,628)</u> | <u>(57,519)</u> | <u>(69,391)</u> | <u>(82,429)</u> | <u>(96,854)</u> |
| Annual OPEB Cost | \$ 386,320 | \$ 393,026 | \$ 399,327 | \$ 405,943 | \$ 412,932 |
| Funding by the District | | | | | |
| Benefits paid to retirees | \$ 212,088 | \$ 228,301 | \$ 226,568 | \$ 223,791 | \$ 232,413 |
| Additional funding | <u>0</u> | <u>0</u> | <u>0</u> | <u>0</u> | <u>0</u> |
| Total Funding | \$ 212,088 | \$ 228,301 | \$ 226,568 | \$ 223,791 | \$ 232,413 |
| Increase in net OPEB Obligation | 174,232 | 164,725 | 172,759 | 182,152 | 180,519 |
| Net OPEB Obligation at beginning of year | \$ 745,079 | \$ 919,311 | \$ 1,084,036 | \$ 1,256,795 | \$ 1,438,947 |
| Net OPEB Obligation at end of year | \$ 919,311 | \$ 1,084,036 | \$ 1,256,795 | \$ 1,438,947 | \$ 1,619,466 |

How to read this chart:

- Annual OPEB Cost: Each year's operating expense.
- Total Funding: Amount the District will contribute each year, equal to the amount paid to retired employees.
- Net OPEB Obligation at end of year: The amount on the District's balance sheet at the end of each year, as an unpaid liability.

Exhibit 5 - Summary of Actuarial Assumptions

Actuarial Assumptions: The following assumptions as of July 1, 2012 were selected by the District in accordance with the requirements of GASB 45. In my opinion, these assumptions are reasonable and appropriate for purposes of determining OPEB costs under GASB 45.

Discount rate: 4.0% per year.

Medical Cost Increases (Trend): Medical premiums for plans offered by CalPERS are assumed to increase as follows:

| | |
|----------------|-------|
| 2014 | 7.0 % |
| 2015 | 6.0 % |
| 2016 and later | 5.0 % |

The CalPERS minimum contribution is assumed to increase 5.0% per year after 2013.

Mortality: Mortality rates used in the most recent CalPERS valuation for "Public Agency Miscellaneous", projected on a generational basis using Scale BB to approximate future increases in life expectancy.

Coverage Elections: All eligible employees are assumed to elect coverage under a CalPERS medical plan upon retirement, and to remain covered for life.

Retirement: Retirement rates used in the most recent CalPERS valuation for miscellaneous public employees with 2.0% at 55 retirement. Sample rates are:

| Years of Service: | 10 Years | 20 Years | 30 Years |
|--------------------------|-----------------|-----------------|-----------------|
| Age 50 | 2.00 % | 2.90 % | 3.90 % |
| Age 55 | 6.40 % | 9.40 % | 12.70 % |
| Age 60 | 9.20 % | 13.40 % | 18.20 % |
| Age 62 | 16.20 % | 23.70 % | 32.20 % |
| Age 65 | 22.10 % | 32.30 % | 43.90 % |
| Age 70 | 17.60 % | 25.70 % | 34.90 % |

Turnover (withdrawal): Likelihood of termination within the next year is taken from the most recent CalPERS valuations for miscellaneous public employees. Sample rates are:

| | <u>5 Years Service</u> | <u>10 Years Service</u> | <u>15 Years Service</u> |
|--------|------------------------|-------------------------|-------------------------|
| Age 30 | 7.90 % | 6.68 % | 5.81 % |
| Age 35 | 7.11 % | 5.87 % | 5.03 % |
| Age 40 | 6.32 % | 5.07 % | 4.24 % |
| Age 45 | 5.54 % | 4.27 % | 3.47 % |
| Age 50 | 1.16 % | 0.71 % | 0.32 % |

Baseline Medical Costs: The CalPERS medical plans are considered to be “community rated”, so there are no subsidized premiums to be valued.

Family Status: All employees are assumed to have the same family status (married, single) after retirement that they have now, and to be married to the same spouse at retirement.

CalPERS Administrative Charge: The administrative charge that CalPERS levies on all premium payments is assumed to remain 0.25%.

April 30, 2013

NOVATO SANITARY DISTRICT

MEMORANDUM

Date: May 3, 2013
To: Board of Directors
From: Finance Committee: Jean Mariani, William Long
Subject: CalPERS Pension Plan Update

CalPERS Annual Review of Funding Levels and Risks

CalPERS has undertaken some changes in its review of funding levels and risks that clarify both the unfunded liability and the potential increases in employer contribution levels required to sustainably fund the pensions. The attached report was prepared for the CalPERS Board of Administration and focuses on the funding levels and risks.

Of particular interest to Novato Sanitary District are the graphs on Pages 6 and 14, which show the funded status and the estimated employer rate.

Funded Status

Most of the District's employees and retirees are in Pool 2, Miscellaneous 2% @ 55. There is one employee in Pool 1, Miscellaneous 2% @ 60, and 2 employees in the new 2% @ 62 plan. As shown in the graph on Page 6, the funded status of Pool 2 is 79% and the funded status of Pool 1 is 85% as of June 2011. While the value for June 2012 is not yet available they estimate, based on the investment returns, that the funded status will be about 3% lower as of June 2012. The fact that the District avoided adopting the plans with larger retirement benefits or earlier retirement ages our plan is less susceptible to asset swings.

Estimated Employer Rate

How much the District might have to pay in the future under different investment return scenarios has been a recurring question and until now, impossible to get. Page 14 shows the estimated rate for Pool 2 for three different scenarios: 2.6%, 7.5%, and 11.9%. It shows the rate going from about 11% in 2014-15 to about 15% in 2017-18 for an investment return of 2.6%. The accompanying graph for Pool 9 which is for the much more generous safety plan shows a much steeper increase with a higher base. Again, the District's more conservative plan looks manageable, even with a very conservative investment return assumption.

CalPERS Actuarial Department Changes

Alan W. Milligan, F.S.A., F.C.I.A., M.A.A.A., F.C.A. was hired as Chief Actuary to advise the Board and to direct the activities of the System's professional actuarial staff. Prior to joining CalPERS, Mr. Milligan served as a consulting actuary for the Canadian firm of Leong & Associates Actuaries and Consultants, Inc. He is a Fellow of the Society of Actuaries, a Fellow of the Canadian Institute of Actuaries, a member of the American Academy of Actuaries, and a Fellow of the Conference of Consulting Actuaries. In addition, the CalPERS Board of Administration has retained the services of an outside consulting actuarial firm to review the work of the System's actuarial staff.

Novato Sanitary District Pension Modifications

The District has undertaken the following measures in the last several years to reduce its pension funding burden:

1. In November 2011, paid off the CalPERS Side Fund of \$1,215,597 thereby reducing the District's Employer Contribution Rate by 3.9%.
2. In May 2012, modified the CalPERS contract to change the retirement formula for new hires from 2% @ 55 (one-year highest compensation formula) to 2% @ 60 (3-year highest compensation formula). This reduced the District's Employer Contribution Rate by 2.39% for new hires in the 2% @ 60 retirement plan. In addition, employees in this category pay their own PERS employee contribution (normal contribution) of 7% of base salary, previously paid by the District.
3. Effective January 2012 normal contributions paid on behalf of employees was reduced from 7% of base salary to 6% of base salary, reported as special compensation.
4. Effective January 2013 normal contributions paid on behalf of employees was again reduced from 6% of base salary to 4.5% of base salary, reported as special compensation. Effective January 1, 2013, any new hires are subject to the new Public
5. Employees Pension Reform Act (PEPRA), which is the 2% @ 62 benefit formula, with retirement benefits based on 3-year highest compensation. New hires pay up to the full 7% of base salary for employee normal contributions. The District has 2 employees in this pool.
6. Contracting for treatment plant operations.

As shown in Table 1, these changes have resulted in both a lower percentage of salary going to CalPERS, as well as a lower dollar amount.

**Table 1 Novato Sanitary District
Pension Costs**

| | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | Projected 2012/13 | Projected 2013/14 | Projected 2014/15 |
|-----------------------------------|--------------|--------------|--------------|--------------|--------------|----------------------|----------------------|----------------------|
| Salaries by year | 2,643,502.50 | 2,658,044.59 | 2,473,652.80 | 2,051,136.50 | 1,949,334.94 | 1,909,938.00 | 2,221,952.00 | 2,289,743.00 |
| CalPERS Cost to District | 513,238.64 | 516,484.66 | 462,865.24 | 387,783.94 | 344,718.37 | 273,017.77 | 267,157.00 | 269,967.00 |
| CalPERS Cost % of Salaries | 19.42% | 19.43% | 18.71% | 18.91% | 17.68% | 14.29% | 12.02% | 11.79% |
| CalPERS Cost to Employee | 0.00 | 0.00 | 0.00 | 0.00 | 11,553.00 | 42,139.49 | 60,190.38 | 77,989.03 |



Annual Review of Funding Levels and Risks

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Executive Summary

This report is intended to assist the CalPERS Board of Administration in assessing the funded status of the Public Employees Retirement System and its overall soundness and sustainability. It focuses on the funding levels and risks associated with the funding of the system.

The report shows that the current funding levels are generally between 65 and 80 percent funded, significantly below the ideal level of 100%.

The report notes that payments toward the unfunded liability (UAL) are generally less than the interest on the unfunded liability. This shows that employer contribution rates will need to increase in the future.

Overall, the report highlights that employers are exposed to a considerable amount of contribution rate volatility and a risk of further changes in funded status. Contribution rates are expected to remain high for an extended period unless there is a period of exceptional returns in the markets.

This analysis of funding levels and risks points out that CalPERS current actuarial policies, actuarial assumptions and investment policies have considerable embedded risk. Changes to our assumptions and policies would be needed if the risk to our members and our participating employers is to change significantly.

The Board is currently engaged in a process of reviewing the risk levels in the system. It should continue examining its comfort level with the inherent risks in the system and determine whether it wishes to take additional steps to de-risk the funding of the system. In order to reduce the level of funding risk, it would be necessary to adopt changes to actuarial and/or investment policies. Such changes would result in increased employer contribution levels (at least in the short term). Given the impact on employers and the financial strain they are under due to the current economic environment, it may be appropriate to make any changes to our actuarial and investment policies gradually.

Introduction

This is the second annual report on funding levels and risk measures. It is intended to assist the CalPERS Board of Administration in assessing the funded status of the Public Employees Retirement System and its overall soundness and sustainability.

This report has benefited greatly from the work that has been done in the last year on developing the Asset Liability Decision Making Framework that was presented at both the July 2012 and January 2013 Board offsite meetings. That model has been designed to bring the risks of funding the retirement system into sharp focus. It is

intended as a decision making tool and specifically to permit the Board to see the impact of its decisions with respect to actuarial and investment policy on the risks of funding the system. It is also an excellent tool to supplement the risk information that was presented in the first annual report on funding levels and risks.

In this report, we focus on the three key risk considerations that are used in the Asset Liability Decision Making Framework as well as five other measures: current funded status, volatility indexes, where we are in the asset smoothing corridor & investment return sensitivity, amortization payment toward the unfunded liability and hypothetical termination liability. In addition, we introduced external risk factors that have emerged in the pension environment over the past year.

Any attempt to present an overview of funding levels and risks for a system such as CalPERS has an inherent difficulty; the system is composed of many plans, and several risk sharing pools that are funded separately. As a result, it is not sufficient to look at the funded status or various risk measures for the system as a whole. Instead, we need to look at the breakdown of the various measures for each of the non-pooled public agency plans, the nine public agency risk pools and the state and schools plans. Given the number of non-pooled public agency plans, we will focus on presenting the distribution of results with additional analysis of the outliers.

Changes in the Pension Environment

Since the last report on funding levels and risks, there have been three changes in the pension environment that should be considered when assessing funding risks. They are the bankruptcy filings of three public agencies, the passage of pension reform legislation and the issuance of new pension accounting standards.

Employer Bankruptcies

In the last year, three CalPERS participating employers have declared bankruptcy. They are the cities of Stockton and San Bernardino and the town of Mammoth Lakes. These bankruptcies represent an added area of risk.

The California Public Employees' Retirement Law (PERL) imposes statutory and other legal obligations on participating employers. CalPERS in turn has obligations to provide retirement benefits to the employers' employees and retirees in accordance with the provisions of the PERL. Under the PERL, employees have earned pension benefits attributable to services performed and will continue to earn additional benefits as service is performed for the employer. . Each day an employee works, that employee earns additional service credit, which increases the value of the benefit that CalPERS must ultimately pay to that employee.

The participating employers' contributory obligations to CalPERS are determined on an actuarial basis taking into account investment returns, employee life expectancy, projected retirement date and projected compensation. The benefits under CalPERS

are pre-funded. Instead of allocating money at or near the time that benefits become due, a pre-funded plan relies upon an orderly schedule of contributions well in advance of benefit requirements. These contributions are then invested and the investment returns are used to fund the cost of pension benefits. If a participating employer does not timely make its required payments, the actuarial soundness of the fund will be negatively impacted. The actuarial calculations are premised on the fact that contributions will be made when required and invested when made.

When contributions are delayed beyond the required date, the plan falls out of actuarial balance and actuarial soundness is put in jeopardy. By not making timely contributions, the asset base is not being increased as projected while at the same time, the liabilities are continuing to increase as employees continue to earn service credit.

The bankruptcy of the town of Mammoth Lakes was triggered by a judgment in a lawsuit against the town. The town has successfully negotiated with its primary creditor, the plaintiff in the lawsuit, and has exited bankruptcy protection. This case no longer represents a special risk but is worth considering as it demonstrates that employers are subject to external pressures that can affect their ability to pay the required contributions to the system. These external factors thus have implications for the funding of the system.

The bankruptcy proceedings for the cities of Stockton and San Bernardino are significantly different. Those cities have yet to emerge from bankruptcy and the cases are being litigated at the present time.

During the decade of 2000, the price of homes climbed at an unsupportable rate. This created a temporary boom for the City of Stockton as revenues and expenses dramatically increased during this boom. With the downturn in the market, median house prices fell by more than 60 percent over a five-year period and city revenues plummeted. The combination of high unemployment, widespread home foreclosures and a collapsing tax base resulted in general fund deficits for several years depleting the city's reserves. When the reserves dried up, the city entered bankruptcy. Nevertheless, the city has continued to make timely employer contributions to CalPERS.

The economic downturn has also severely impacted the City of San Bernardino. San Bernardino filed for bankruptcy protection in August of 2012 citing a \$46 million deficit and limited capacity to make its payroll and day-to-day operating expenses. The city unilaterally suspended employer bi-monthly contributions of \$1.2 million to CalPERS while it prepares a re-structuring plan.

Municipal bankruptcies pose a substantial risk to the system. Unsecured creditors of the cities of Stockton and San Bernardino have argued that the cities' state law obligations to CalPERS and to the members are pre-empted by federal bankruptcy law. Under this reading of the law, the bankruptcy court could treat these obligations like other unsecured obligations of the debtor and impair them irrespective of the requirements of state law. CalPERS is taking appropriate steps to protect the integrity of

the system and the retirement security of its members; however, significant legal risk remains. Should the bankruptcy court rule that a city's pension plan need not be funded consistent with state law, other struggling CalPERS public agencies could be tempted to alter their actuarially required contributions through bankruptcy proceedings.

Pension Reform

On September 12, 2012 the Governor signed pension reform AB 340 into law and the Public Employees' Pension Reform Act (PEPRA) became effective January 1, 2013. PEPRA created a new defined benefit formula of 2 percent at age 62 for all new miscellaneous members with an early retirement age of 52 and a maximum benefit factor of 2.5% at age 67. It also created three new defined benefit formulas for new safety members with an early retirement age at 50 and a maximum benefit factor at age 57. These lower benefit formulas will ultimately reduce employer costs and in turn have lower contribution rate volatility risk since asset to payroll ratios will decrease over time.

Accounting Standards

The Governmental Accounting Standards Board approved new statements for pension accounting (Statement No. 67 and Statement No.68). These new standards will not affect current pension funding but will impact employers required accounting disclosures for its pension liabilities. It is unclear whether the new disclosures will influence the ratings agencies assessment of public agency credit worthiness. There is a potential risk that the new GASB requirements may affect the ability of public agencies to borrow money in the credit markets. This is an emerging area of risk and it is unclear whether public agencies will be less willing to take risk in providing retirement benefits.

Funding Levels

The discussion below looks at funding levels in two different contexts. First, we examine the funding levels on an on-going plan basis. That is, we look at the funded status using our regular funding assumptions assuming that the plan is on-going with service being accrued by members, salary increases occurring normally and so on. The second context is that of a hypothetical termination basis where we look at what the funded status would have been had the employer sponsoring the plan elected to terminate their contract with CalPERS.

Going Concern Basis

It is not required, nor necessarily desirable, to have accumulated assets sufficient to cover the total present value of benefits until every member has left employment. Instead, the actuarial funding process calculates a regular contribution schedule of employee contributions and employer contributions (called normal costs) that are designed to accumulate with interest to equal the total present value of benefits by the

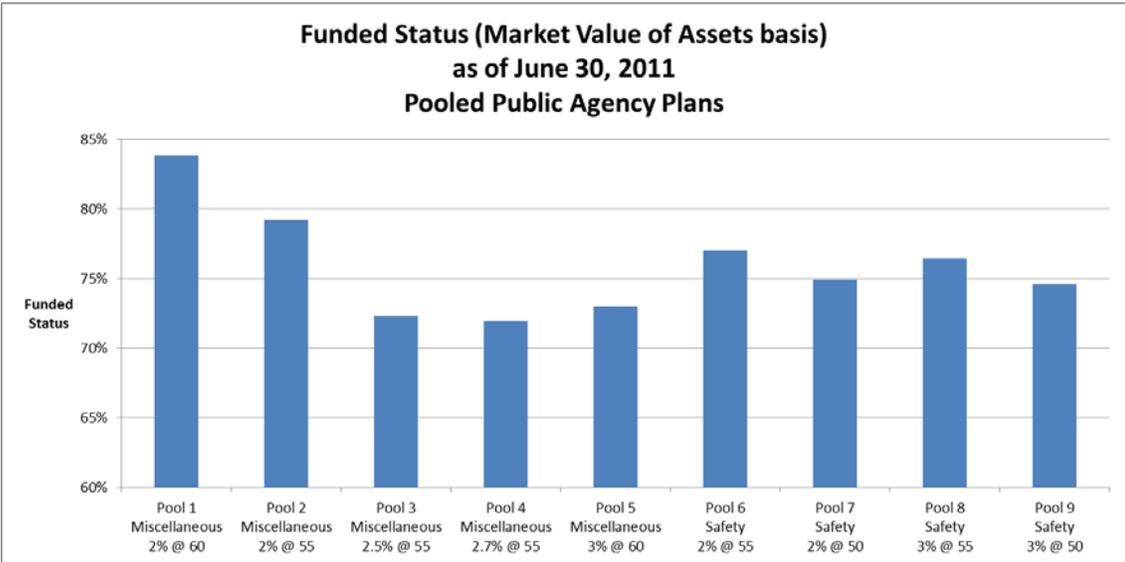
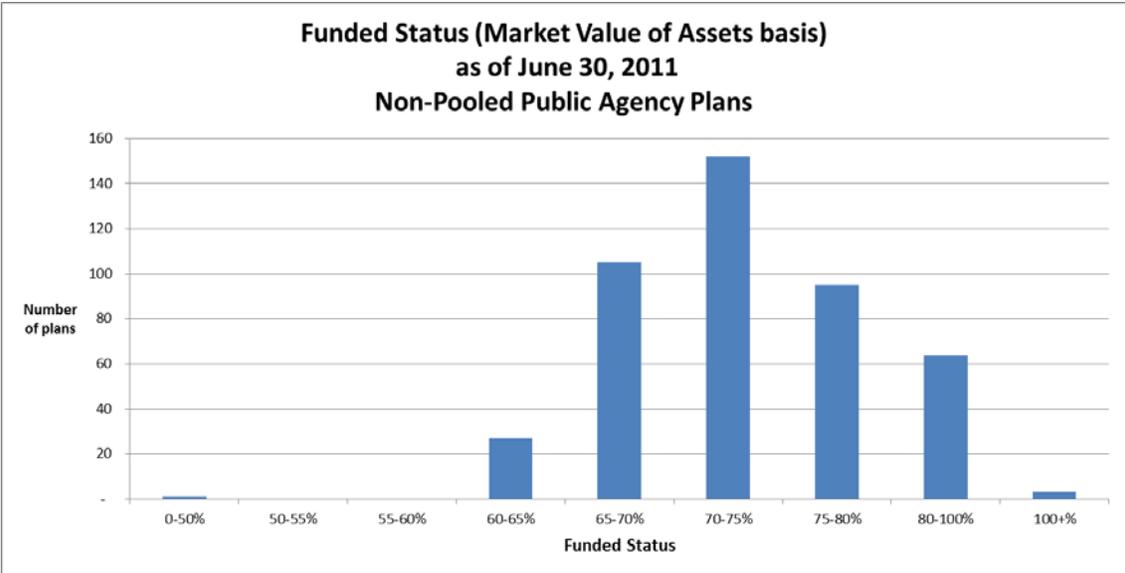
time every member has left employment. As of each June 30, the actuary calculates the “desirable” level of plan assets as of that point in time by subtracting the present value of scheduled future employee contributions and future employer normal costs from the total present value of benefits. The resulting “desirable” level of assets is called the accrued liability.

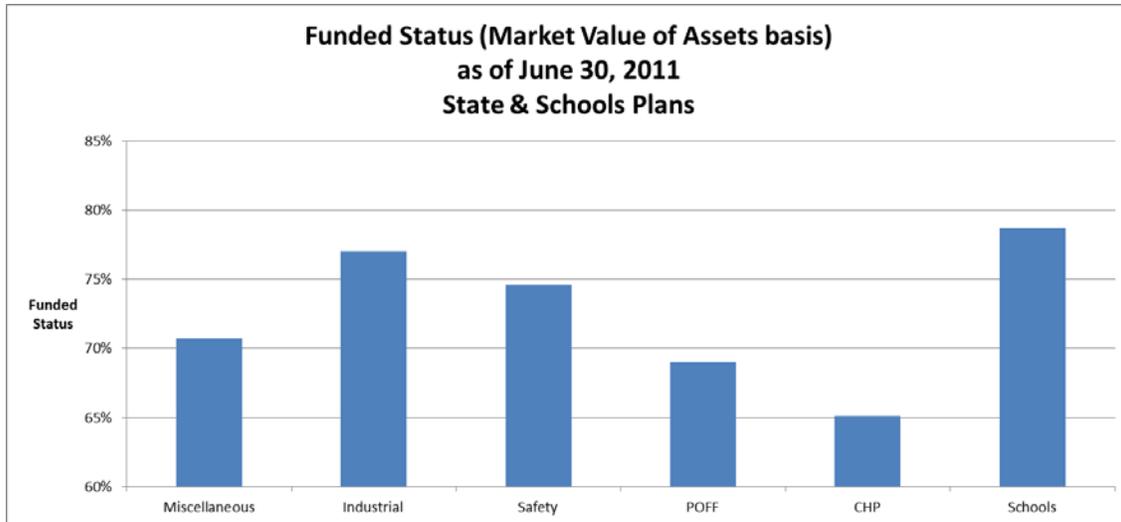
A plan with assets exactly equal to the plan’s accrued liability is simply “on schedule” in funding that plan, and only future employee contributions and future employer normal costs are needed. A plan with assets below the accrued liability is “behind schedule”, or is said to have an unfunded liability, and must temporarily increase contributions to get back on schedule. A plan with assets in excess of the plan’s accrued liability is “ahead of schedule”, or is said to have excess assets, and can temporarily reduce future contributions. Of course, events such as plan amendments and investment or demographic gains or losses can change a plan’s condition from year to year.

The funded status of a pension plan is defined as the ratio of assets to a plan’s accrued liabilities. This measure when below a certain level along with other risk measures like net cash flow and period of amortization of unfunded liabilities indicates whether a plan is at risk of not meeting future benefit obligations.

The funded status shown in the following summary and charts is based on the market value of assets. As of June 30, 2011, the PERF was 73.6 percent funded on a market value basis. This number is an average of all plans that participate with CalPERS. June 30, 2011 is the most recent figure available since the June 30, 2012 actuarial valuations for all plans will not be completed until fall 2013. As a result of the 0.1 percent investment return in 2011-12, we estimate the funded status on a market value basis for the PERF to be about 70.2 percent as of June 30, 2012¹. When looking at the funding risk, one needs to look at all plans individually and not only the PERF as a whole. Below are charts of the funded status of the PERF system, as of June 30, 2011 broken down by various groups.

¹ The estimated funded status as of June 30, 2012 is prior to any changes to actuarial assumptions or gains and losses other than the known investment gain in 2011-2012.





The vast majority of plans (including all but one of the risk pools and all of the State and Schools plans) were between 65 and 80 percent funded as of June 30, 2011. Only a tiny fraction of plans were more than 100 percent funded on this date. Being less than 100 percent funded means that employer contributions need to be higher than the employer normal cost.

There is one non-pooled plan that has a funded status below 50 percent. The plan has just recently contracted with CalPERS with 100 percent past service so a low funded status is to be expected.

There are three non-pooled plans that have funded statuses over 100 percent, these plans also have recently joined CalPERS and have contributed more than their liabilities (0 percent past service) since inception. There are 64 non-pooled plans that are between 80 percent and 100 percent funded, these plans have had either good experience or have been making contributions above those that are required but none indicated that Pension Obligation Bonds were the source of the extra contributions.

The funded status risk measure does not appear to indicate an immediate risk, but will continue to be monitored closely. As stated earlier, being less than 100 percent funded means that employer contributions need to be higher than the employer normal cost – although not necessarily higher than the current contribution level².

Another aspect to keep in mind is the actuarial assumptions used in determining the funded status. The funded status information reported in this report is based on the actuarial assumptions that were in place for the June 30, 2011 actuarial valuations and incorporate the board adopted reduction of the discount rate from 7.75 percent to 7.5 percent.

² However, see the discussion on the Smoothing Corridor/Investment Return Sensitivity which does imply that contributions need to be higher than the current level.

It should also be noted that if the assets of a plan have dropped to a level that is significantly below a 100 percent funding level on a market value basis due to poor investment performance and that plan has negative cash flows (i.e. benefits being paid out of the fund versus employer and member contributions coming in are negative) the funded status of such plans could be very slow to progress toward 100 percent unless contributions are increased. In February 2010, the CalPERS Board adopted a policy that requires more aggressive funding for plans where the negative cash flows were preventing adequate progress towards being 100 percent funded. The policy in place requires that if in 30 years, 1) a plan's funded status is not projected to improve by 15 percent or 2) a funded status of 75 percent is not projected, the amortization period for gains and losses will be shortened to ensure the satisfaction of both criteria.

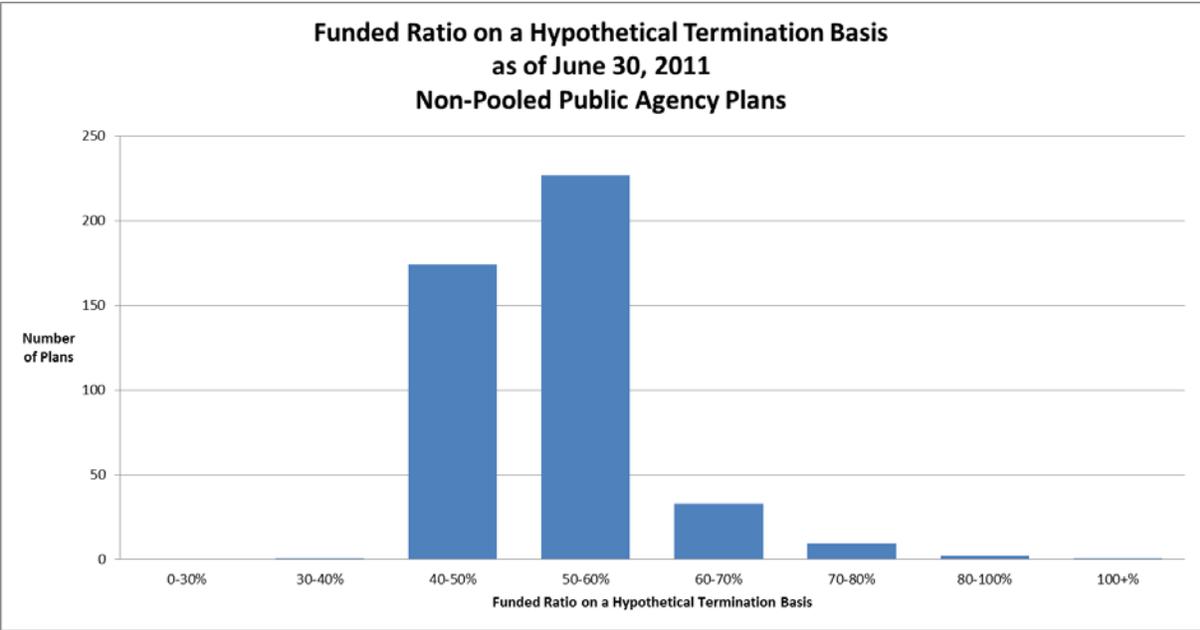
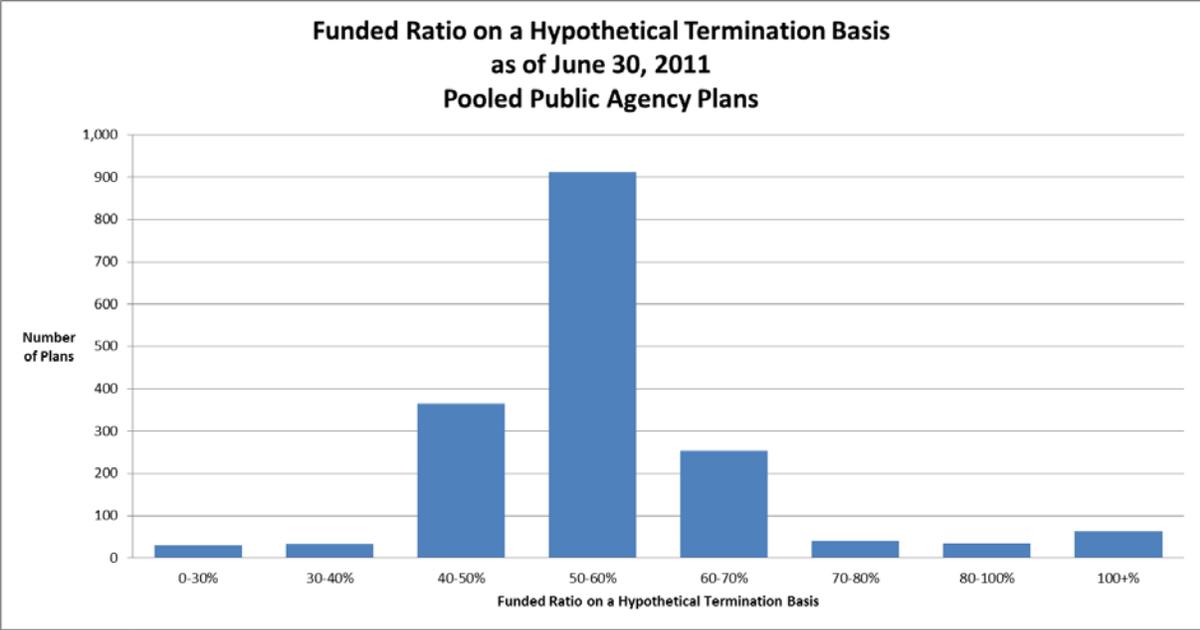
Hypothetical Termination Basis

In August 2011, the CalPERS Board adopted an investment policy and asset allocation strategy for the Terminated Agency Pool that more closely reflects expected benefit payments from that pool. With this change, CalPERS increased benefit security for members while limiting its funding risk.

The assumptions used, including the discount rate, take into account the yields available in the US Treasury market on the valuation date and the mortality load for contingencies. The discount rate is duration weighted and is not necessarily the rate that would be used for a given plan if it were to terminate. The discount rate for each plan's termination liability would depend on the duration of the liabilities of the plan. For purposes of this estimate, the discount rate used, 4.82 percent, is the June 30, 2011 30-year US Treasury Stripped Coupon Rate. Please note, as of June 30, 2012 the 30-year US Treasury Stripped Coupon Rate was 2.87 percent. On this basis the hypothetical termination funded status for most plans is in the 40 percent to 60 percent range.

Below are charts of the hypothetical termination funded status of the public agency plans³:

³ Legislation does not permit State & Schools Plan to be terminated.



Risk Measures

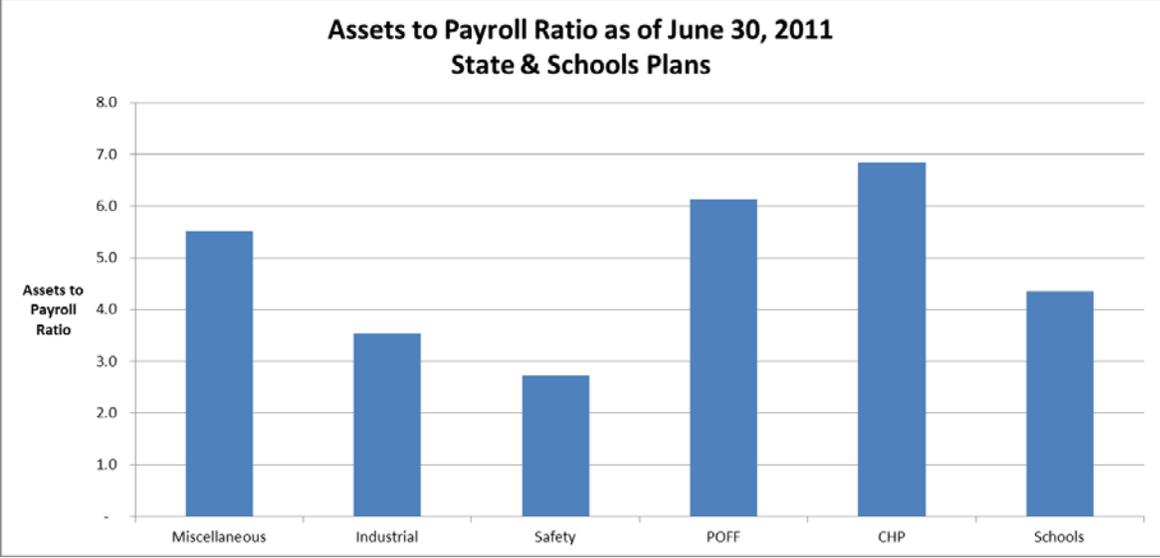
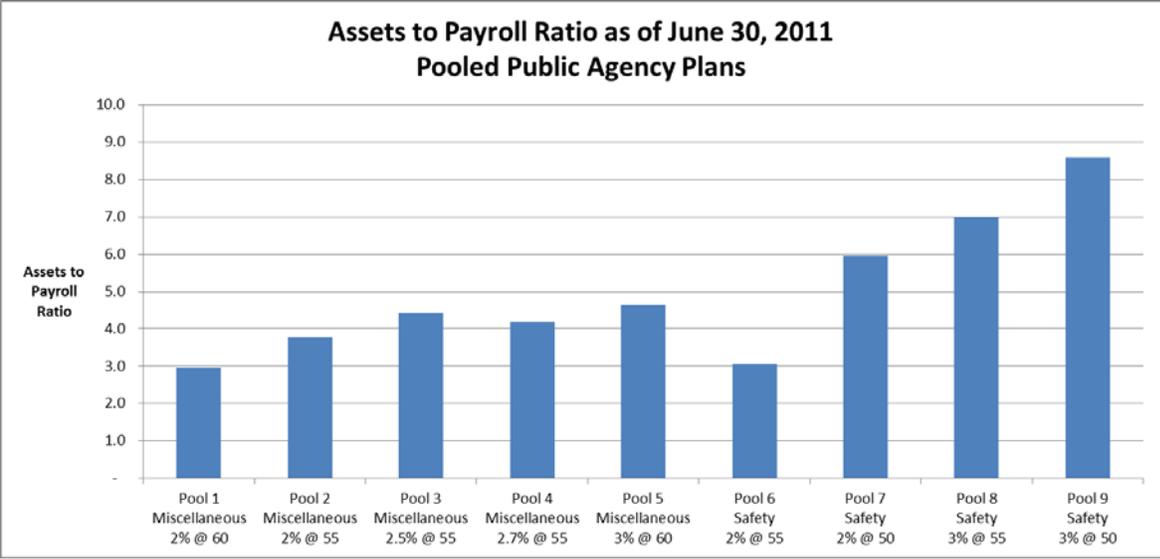
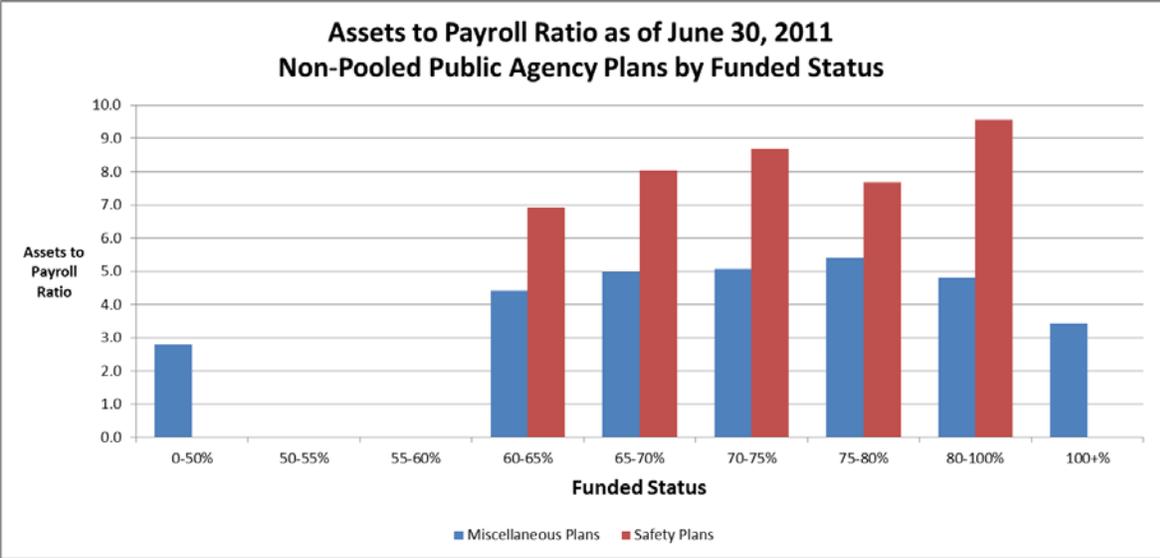
Volatility

The volatility in annual employer rates may be affected by the accumulation of assets. Higher benefits and earlier retirement ages require the accumulation of more assets per member earlier in their career. Rate volatility is heavily influenced by the ratio of plan assets to active member payroll. Higher asset to payroll ratios produce more volatile employer rates. To see this, consider two plans, one with assets that are 4 times active member payroll, and the other with assets that are 8 times active member payroll. In a given year, let's see what happens when assets rise or fall 10 percent above or below the actuarial assumption. For the plan with a ratio of 4, this 10 percent gain or loss in assets is the same in dollars as 40 percent of payroll. For the plan with a ratio of 8, this is equivalent to 80 percent of payroll. If this gain or loss is spread over 20 years (and we oversimplify by ignoring interest on the gain or loss), then the first plan's rate changes by 2 percent of payroll while the second plan's rate changes by 4 percent of payroll.

Plans with relatively larger benefits and earlier retirement ages need to accumulate assets at a faster rate than their counterparts. Such plans tend to have a higher ratio and are more susceptible to larger asset gains or losses. These asset gains or losses are, by current Board policy, amortized over a rolling 30 years (with the exception of the 3-year phase-in of the 2009 losses) as a level percentage of payroll. Thus larger ratios combined with large asset gains or losses translate into larger contribution changes relative to payroll.

It should also be noted that these ratios tend to stabilize as the plan matures. That is, all plans with no past service start their lives with zero assets and zero accrued liability – and so asset to payroll ratio and liability to payroll ratio equal zero. However, as time goes by these ratios begin to rise and then tend to stabilize at some constant amount as the plan matures. Higher benefit levels and earlier expected retirements produce higher constant future ratios. For example, our miscellaneous plan pools have ratios that range from 2.9 for the “2 percent at 60” pool to a ratio of 4.6 for the “3 percent at 60” pool. For safety pools, the ratios range from 3.1 for the “2 percent at 55” pool to a ratio of 8.6 for the “3 percent at 50” pool. These ratios are also known as the Volatility Index.

The following charts of the asset to payroll ratios of the PERF system broken down by various groups:



This risk measure is descriptive in nature. That is, there is nothing to “fix” if the Volatility Index is high. A high Volatility Index simply indicates that there is a lot of money invested for the plan--a good thing in the overall scheme of a pension plan. It should, however, serve as a reminder that the more money invested, the more impact investment gains and losses have. It should also be noted that this Volatility Index only considers volatility related to investment returns and, to a lesser extent, payroll. Other gains and losses affect the liability and are therefore not taken into account in the determination of the index.

As shown in the charts above, the average asset to payroll ratio is between 4 and 5 but there are a significant number of plans with ratios above this level. Given the expected level of investment volatility, plans with an asset to payroll ratio of 4 are expected to experience a gain or loss in excess of 50 percent of the sponsoring employer’s payroll in about one third of future years. Plans with higher asset to payroll ratios are expected to experience even greater levels of investment volatility.

Smoothing Corridor / Investment Return Sensitivity

In 2005, the CalPERS Board adopted rate smoothing policies that included a new set of parameters for the establishment of the actuarial value of assets. In order to minimize contribution rate changes from year to year, actuaries often use an actuarial value of assets instead of the market value of assets to set required contribution rates in a pension plan.

In 2005, CalPERS adopted a revision to its asset smoothing method that included the following:

- Investment gains and losses are spread over a 15 year period
- Actuarial value of assets is subject to a 80 percent -120 percent “corridor”

The corridor adopted by the Board means that in any given year the actuarial value of assets cannot be less than 80 percent of the market value of assets or greater than 120 percent of the market value of assets. This corridor was deemed necessary at the time because investment gains and losses are spread over a 15 year period. A wider or even no corridor would be acceptable only if the period over which investment gains and losses are spread is shortened.

The use of a corridor can lead to the inability to smooth the impact of investment experience when the actuarial value of assets is near the corridor. For example, if the actuarial value of assets is equal to the market value of assets i.e. 100 percent then the smoothing method can absorb and smooth out a gain or a loss of about 20 percent above or below the expected return. In this example, the smoothing methods in place today would be able to smooth out over 15 years the impact of returns ranging between -12 percent and +28 percent if the actuarial value of assets is 100 percent of the market value of assets.

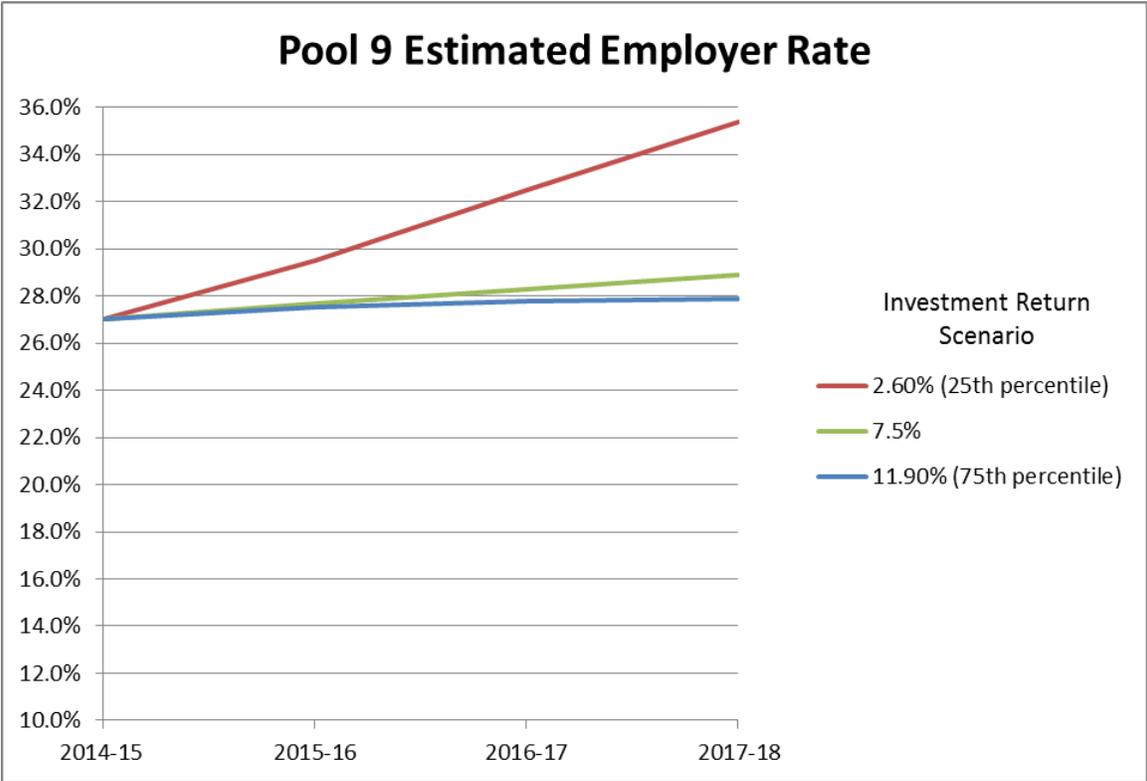
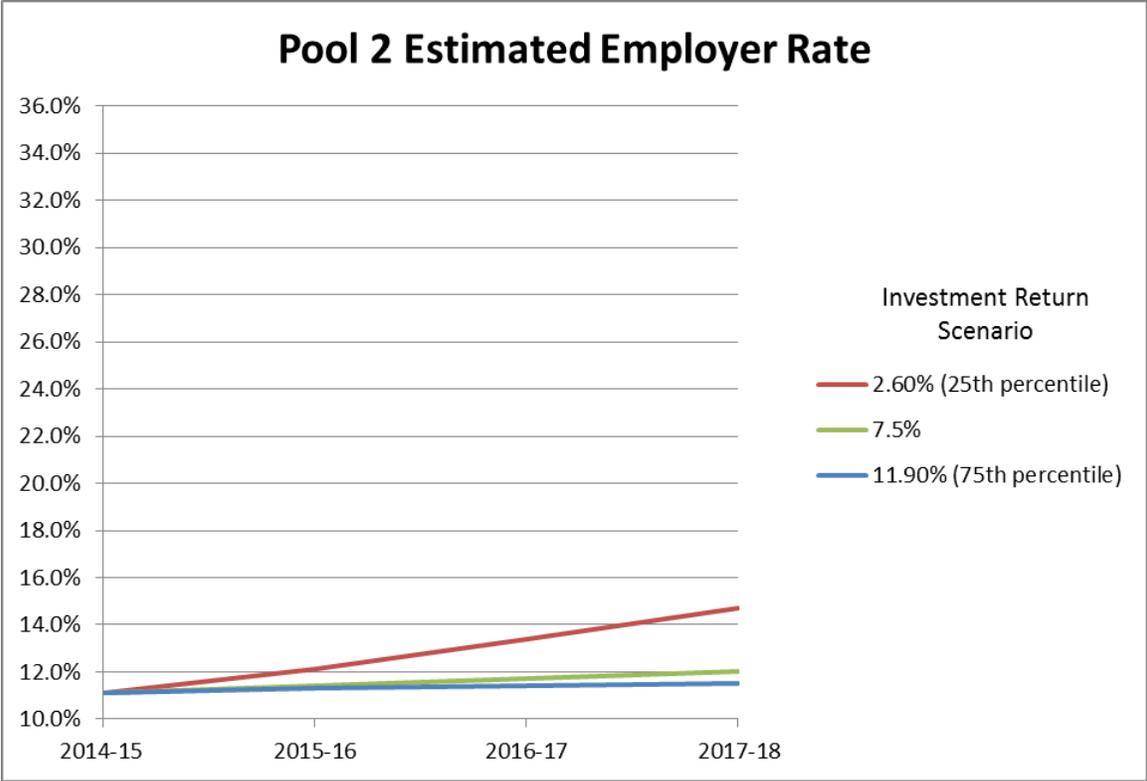
Below is a chart comparing the actuarial value of assets to the market value of assets for the PERF since the implementation of the new smoothing methods in 2005. The methods applied for the first time in the June 30, 2004 actuarial valuations.

| Valuation Date | Ratio of Actuarial Value to Market Value of Assets |
|----------------|--|
| June 30, 2004 | 102% |
| June 30, 2005 | 97% |
| June 30, 2006 | 94% |
| June 30, 2007 | 86% |
| June 30, 2008 | 98% |
| June 30, 2009 | 137% |
| June 30, 2010 | 127% |
| June 30, 2011 | 112% |

In 2009, in order to further dampen the impact of the -24 percent investment return in 2008-09, the CalPERS Board adopted a three year phase-in of this investment loss. The phase-in was achieved by widening the corridor over a 3 year period. For the 2009 valuation, the corridor was widened to 60 percent - 140 percent. For the 2010 valuations it was reduced to 70 percent - 130 percent. For the 2011 valuations and later, the corridor is back to its original 80 percent - 120 percent. This widening of the corridor can be seen in the above table.

For the 2012 valuation, the actuarial value of assets is anticipated to be between 118 and 120 percent. This means that there will be little space left for smoothing a potential investment loss in 2012-13 fiscal year.

As a result, plans at CalPERS are currently more at risk if investment markets do not perform well. A return 10 percent below the funding assumption will see contributions rise significantly. In contrast, a return 10 percent above the funding assumption would result in rates remaining stable. The Actuarial Office began in the June 30, 2010 actuarial valuation reports to disclose this potential risk in the form of an investment return sensitivity analysis. This sensitivity analysis includes the impact on rates over the next 5 years under various investment return scenarios. These projections show that rates are more likely to increase in the event of a poor investment performance. Below we show how contribution rates would be affected under different investment return scenarios. Pool 2 is representative of Miscellaneous Plans and Pool 9 is representative of Safety Plans. Copies of all valuation reports can be found on the CalPERS website.



Amortization Payment toward the Unfunded Liability

As mentioned earlier, plans do not necessarily have to be fully funded at all times. When a plan is “behind schedule”, the unfunded accrued liability (UAL) is amortized over time. The CalPERS Board has adopted Board policy ACT-96-05E regarding amortization of unfunded liabilities.

Actuarial Policy ACT-96-05E specifies that all changes in liability due to plan amendments, changes in actuarial assumptions, or changes in actuarial methodology are amortized separately over a 20-year period. In addition, all gains or losses are tracked and the net unamortized gain or loss is amortized as a rolling 30-year amortization with the exception of gains and losses in fiscal years 2008-09, 2009-10 and 2010-11 in which each year's gains or losses will be isolated and amortized over fixed and declining 30 year periods (as opposed to the current rolling 30 year amortization). Also, if a plan's accrued liability exceeds the actuarial value of assets, the annual contribution with respect to the total unfunded liability may not be less than the amount produced by a 30-year amortization of the unfunded liability.

There are two primary sources of potential risk when it comes to the amortization payment schedule. The first is the 30 year rolling amortization of gains and losses. This rolling 30 year amortization is done as a level percentage of expected payroll and results in a payment that represents 5.8 percent of accumulated net gains and losses (which equals the outstanding UAL, excluding the portions due to changes in benefits, assumptions or methods). The UAL in the meantime increases at 7.5 percent each year. This means that any gain or loss that occurs in a particular year may never actually be paid off unless these gains and losses offset each other over time.

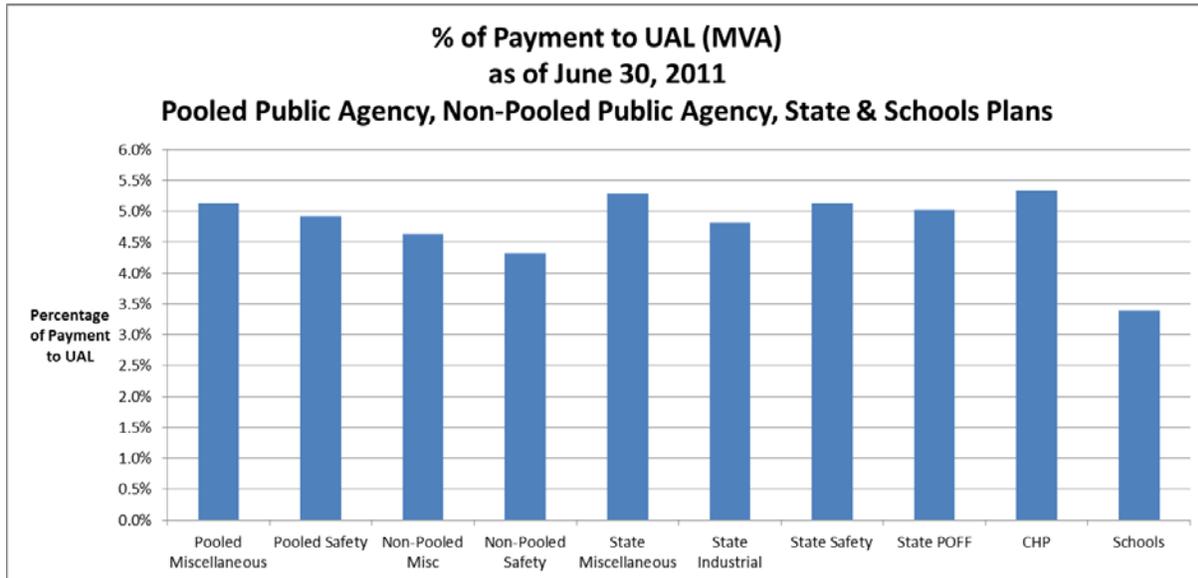
Note that for plans that are growing, the proportion of the UAL to the overall plan's accrued liability will decrease (or funded status will increase) over time and the potential risks due to the rolling amortization are probably not significant. However for those plans that have no growth and a declining membership this is not the case and the UAL could become a larger proportion of the plans' accrued liability in the absence of offsetting experience.

The second source of risk is the asset smoothing we use to determine the actuarial value of assets. The actuarial value of assets is the asset value we use to set contribution rates. In order to keep contribution rates stable, the required payment toward the UAL is based on the plan's actuarial value of assets rather than the plan's market value of assets. In times when plans have a UAL and the actuarial value of assets exceeds the market value of assets (as is currently the case), employers are making payments based on a UAL that is smaller than the one calculated using the market value of assets.

As pointed out in previous sections, if our long-term estimate of investment returns is accurate, then it is expected that there will be other times when the payments will be higher using the actuarial value of assets than under a market value (as was the case in the first few years of the policy).

Accordingly, plans that are currently paying off their UAL on a market value of assets basis will sooner be better able to handle future market downturns and be better able to meet their future obligations.

Below are listings of the amortization payment percentages of the total unfunded liabilities on a market value of asset basis for the PERF system:



As you can see from the above tables, only a very small portion of the UAL on a market value of assets basis is being paid in the current year. Most plans are paying between 4 percent and 5.5 percent toward their unfunded liability each year. Given that the discount rate assumption is currently 7.5 percent, this measure shows that employers are generally paying less than the interest on the unfunded liability and that contributions are likely to increase in the future. This is a result of the smoothing policies that we have in place currently combined with the experience of the last few years. It is an indication that contributions amounts will generally have to increase in the future.

Asset Liability Management

Over the last year, actuarial and investment staff have developed the Asset Liability Decision Making Framework (ALM Framework) to help bring the issue of funding risk into the evaluation of actuarial and investment decisions. This tool has proved very useful in bringing risk issues into the foreground.

The ALM Framework focusses on three measures of risk over an extended period of time. The measures are:

1. The probability of low funded status which is an indication of risk to the members in the event that the employer does not continue funding.

2. The probability of high levels of employer contribution rates which is an indication of financial strain on the employers and could lead to employers being unable to continue funding the benefits.
3. The probability of a large increase in employer rates in a single year, which is another indication of financial strain on the employers.

At the present time, the ALM framework is only able to provide information on a limited set of plans. Currently these plans are:

- State Miscellaneous Plan
- State Peace Officer/Firefighter Plan (State POFF)
- California Highway Patrol Plan
- The Schools Pool
- A sample (very large) public agency miscellaneous plan
- A sample (very large) public agency safety plan

The probabilities of the funded status of these plans falling below various levels at any point in the next 30 years are shown below.

| Plan Name | Probability of Falling Below Given Funding Level (at any point in next 30 years) | | |
|-------------|---|-----|-----|
| | 30% | 40% | 50% |
| State Misc. | 14% | 34% | 59% |
| Schools | 11% | 27% | 51% |
| PA Misc. | 10% | 26% | 50% |
| CHP | 7% | 27% | 59% |
| State POFF | 9% | 26% | 54% |
| PA Safety | 9% | 27% | 54% |

Because of the demands of safety jobs, safety plans are designed to accommodate earlier retirement. As such, they generally have higher required contribution levels. For this reason, we show the high contribution levels and large single year increases for safety and miscellaneous plans at different levels. The table below shows the probability of plans exceeding a specified contribution level at some point in the next 30 years.

| Plan Name | Probability of Employer Contribution Rates Exceeding Given Level (at any point in next 30 years) | | |
|-------------|--|----------------|----------------|
| | 30% of Payroll | 35% of Payroll | 40% of Payroll |
| State Misc. | 57% | 33% | 13% |
| Schools | 11% | 1% | 0% |
| PA Misc. | 24% | 6% | 1% |
| | 50% of Payroll | 55% of Payroll | 60% of Payroll |
| CHP | 47% | 31% | 17% |
| State POFF | 18% | 8% | 2% |
| PA Safety | 30% | 16% | 7% |

Finally, the table below shows the probability of an increase in the employer contribution level above a specified level at some point in the next 30 years.

| Plan Name | Probability of Employer Contribution Rates Increasing by More Than a Given Level (at any point in next 30 years) | | |
|-------------|--|---------------|---------------|
| | 3% of Payroll | 5% of Payroll | 7% of Payroll |
| State Misc. | 82% | 59% | 29% |
| Schools | 78% | 43% | 15% |
| PA Misc. | 78% | 47% | 19% |
| | 5% of Payroll | 7% of Payroll | 9% of Payroll |
| CHP | 80% | 62% | 41% |
| State POFF | 73% | 52% | 31% |
| PA Safety | 79% | 62% | 41% |

The tables above show that there is considerable risk in the funding of the system. Unless changes are made, it is likely that there will be a point over the next 30 years where the funded status of many plans will fall below 50%. There is a not insignificant probability that we will see funded statuses below 40%. It is likely that we will see employer contribution rates for the State Miscellaneous plan in excess of 30% of pay at some point in the next 30 years. There is almost a 50% chance of the employer contribution to the CHP plan will exceed 50% of pay over the same time period. Finally, the probability of large single year increases in employer contribution rates at some point ranges from 15% to 82% depending on the plan and the size of the increase.

If these risk levels are not acceptable, some change would be needed in the actuarial assumptions, actuarial methods or the investment policies. Any changes will impact contribution levels and other risk parameters as well.

Conclusion

The various risk measures that were analyzed all give a different perspective on the risk associated with the funding of the system. When looked at together, these risk measures show that there is considerable risk in the funding of the system.

In the short term there will be upward pressure on contribution rate levels as is indicated by the discussion about asset smoothing corridor and investment return sensitivity and the review of amortization payments relative to interest on the unfunded liability. The rates may remain high for an extended period as is shown by the current funding levels on a going concern basis. Employers are currently under significant financial stress as is shown by the unprecedented occurrence of three bankruptcies in the same year. The impact of higher contribution levels and their continuance for an extended period will be difficult for employers to bear.

As is outlined in the discussion of the volatility index, the level of assets relative to employers payroll, when combined with an investment return volatility at the levels implied by our current asset allocation, means that employers are exposed to significant gains and losses that will result in significant contribution volatility.

Pension reform will afford employers some relief in the longer term both as to level and volatility of contributions but this will be minimal in the short term.

Changes to accounting standards may affect employers' willingness to accept the current level of risks associated with the sponsoring of a defined benefit pension plan. This may result in pressure to change their risk profile by making changes to actuarial or investment policies and/or benefit levels.

The work on Asset Liability Management has shown that there remains considerable risk in the funding of the system. There is a substantial risk that, at some point over the foreseeable future, there will be periods of low funded status and high employer contribution rates. Should this coincide with a period of financial weakness for

employers or if such a period occurs before we recover from the current funding shortfall, the consequences could be very difficult to bear.

Combined, the measures discussed above indicate that employers will be under continuing financial stress for many years unless there is a period of exceptional returns in the markets.

Should this stress result in employers electing to terminate their contracts with CalPERS, there could be significant or even devastating consequences to our members as is shown by the funded status on a hypothetical termination basis. Most plans are in the 40 percent to 60 percent range on this basis.

Currently, CalPERS actuaries are reviewing and monitoring these measures on a plan by plan basis and taking appropriate action, where needed, by adjusting the funding schedule. However, changes may be needed to our actuarial policies, actuarial assumptions and/or investment policies if the risk to our members and our participating employers is to change significantly.

The Board is currently engaged in a process of reviewing the risk levels in the system. It should continue examining its comfort level with the inherent risks in the system and determine whether it wishes to take additional steps to de-risk the funding of the system. In order to reduce the level of funding risk, it would be necessary to adopt changes to actuarial and/or investment policies. Such changes would result in increased employer contribution levels (at least in the short term). Given the impact on employers and the financial strain they are under due to the current economic environment, it may be appropriate to make any changes to our actuarial and investment policies gradually.