

Joint Hearing Senate P E & R and Assembly P E, R & SS Committees

January 30, 2013

John E. Bartel

Member California Actuarial Advisory Panel

January 30, 2013

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Joint Committee Hearing

Agenda

- Brief History of CAAP 3
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- Role of Amortization Period 10

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Joint Committee Hearing

CAAP

- Panel was established with enactment of SB 1123.
- Pursuant to Government Code section 7507.2(a):
 - ...the panel shall provide impartial and independent information on pensions, other postemployment benefits, and best practices to public agencies...
- Legislation to create Panel was recommended by Public Employee Post-Employment Benefits Commission in January 2008 report to Governor Schwarzenegger.
- Housed in the State Controller's Office.
- First meeting June 2010.

CAAP Accomplishments

- Responded to GASB Preliminary Views regarding pension accounting and financial disclosure for employers;
- Adopted and published *Model Disclosure Elements for Actuarial Valuation Reports on Public Retirement Systems in California*;
- Offered assistance to Governor and Legislature concerning pension and OPEB issues related to:
 - budget and
 - pension/OPEB reform
- Pending release of *Actuarial Funding Policies and Practices for Public Pension and OPEB Plans and Level Cost Allocation Model*
- Responded to inquiries from public entities;

Government Code §20229

- Requires CalPERS Board provide annual report which includes certain information for State employees
 - Requirement met with publication of State & Schools June 30, 2011 Actuarial Valuation Report
 - <http://www.calpers.ca.gov/eip-docs/about/pubs/employer/2011-st-body.pdf>
- Requires CAAP Chair (or designee) present information to this joint legislative hearing:
 - Explain the role played by the investment return assumption and amortization period in the calculation of contribution rates.
 - Describe the consequences to future State budgets if the investment return assumptions are not realized.
 - Report whether the Board's amortization period exceeds the estimated average remaining service periods of employees covered by the contributions.

Main Valuation Results

- State sponsors six different retirement plans:
 - State Miscellaneous
 - Tier 1
 - Tier 2
 - State Industrial
 - State Safety
 - State Peace Officers and Firefighters
 - California Highway patrol
- CalPERS also administers :
 - Non certificated school employees plan and
 - Public agency plans

Main Valuation Results

- CalSTRS: certificated school employees
- UCRS: UC employees
- State OPEB not prefunded
 - Separate report prepared for the State Controller's Office

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Total State Valuation Results (Millions)

■ Actuarial Accrued Liability	\$129,648
■ Unfunded Actuarial Accrued Liability (Market Value Basis)	38,489
● Funded Ratio	70%
■ Total Normal Cost	18.370%
● Member Normal Cost	7.536%
● Employer Normal Cost	10.834%
■ 2012/13 Required Employer Contribution Rate	22.538%

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Role Played By Investment Return

- Liability reflects only portion of benefits paid by contributions (cash)
 - Does not reflect benefits paid by investment return
 - The higher investment return the less cash is needed
 - The lower investment return the more cash is needed
- Actual returns are unknown so must use an assumption
 - If actual returns are lower than assumed future contributions must be higher
 - If actual returns are higher than assumed future contributions must be lower
- Valuation Report Appendix C

Role Played By Amortization Periods

- Goal is to get to assets - AAL
 - 100% funding
 - No Unfunded Liability
 - Target not a certainty
- Time to get to goal is amortization period
- Shorter period
 - higher contribution rates
 - Current tax payers pay for current unfunded liability
- Longer period
 - Lower contribution rates
 - Future tax payers pay for current unfunded liability

Role Played By Amortization Periods

	Average Amortization Period	Estimated Average Remaining Service Period
■ State Miscellaneous	20	10
■ State Industrial	19	11
■ State Safety	22	10
■ State Peace Officers & Firefighters	24	12
■ CHP	24	14



State & Schools Actuarial Valuation

As of June 30, 2011

Exhibit C Only

*Establishing Required Contributions
for the Fiscal Year
July 1, 2012 through June 30, 2013*

APPENDIX C:

RISK ANALYSIS

INTRODUCTION	C-1
VOLATILITY RATIOS	C-1
ANALYSIS OF FUTURE INVESTMENT RETURN SCENARIOS	C-2
ANALYSIS OF DISCOUNT RATE SENSITIVITY & GOVERNMENT CODE SECTION 20229	C-4

Introduction

The results presented in the main body of the report are based on a deterministic projection of an uncertain future. As such, they may not adequately communicate the risk or uncertainty inherent in the plans. In this appendix are some additional disclosures intended to provide the reader with additional information about this uncertainty.

The Volatility Ratios section is intended to provide information about the relative short term and long term contribution rate volatility due to investment return volatility.

The Analysis of Investment Return Scenarios section is intended to provide information about potential short term contribution rate changes due to investment returns. This information can be used to estimate the impact of actual investment returns on the required contribution rates.

The Analysis of Discount Rate Sensitivity is intended to give the reader an understanding of the impact that would result from changing the discount rate. This also provides an indication of the impact on contributions due to a change in the way the assets are invested if the change impacts the expected long term return on assets.

Volatility Ratios

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

Asset Volatility Ratio

The asset volatility ratio shown in the table below is a measure of the plan's current rate volatility. It should be noted that this ratio is a measure of the current situation. Plans that have higher asset to payroll ratios produce more volatile employer rates due to volatility of investment return. For example, a plan with an asset to payroll ratio of 8 may experience twice the contribution volatility due to investment return volatility than a plan with an asset to payroll ratio of 4.

Liability Volatility Ratio

The liability volatility ratio is also included in the table below. It should be noted that this ratio indicates a long-term potential for contribution volatility. The asset volatility ratio, described above, should tend to move closer to this ratio as the actuarial funding method targets the assets toward 100% of liabilities over time.

Plans that have higher liability to payroll ratios produce more volatile employer rates due to investment return and changes in liability. For example, a plan with a liability to payroll ratio of 8 is expected to have twice the contribution volatility of a plan with a liability to payroll ratio of 4.

Rate Volatility

	Market Value of Assets without Receivables	Annual Covered Payroll	Asset Volatility Ratio	Accrued Liability	Liability Volatility Ratio
	(1)	(2)	(1)/(2)	(3)	(3)/(2)
State Miscellaneous	56,890,578,267	9,827,621,238	5.8	81,271,085,568	8.3
State Industrial	2,161,939,575	580,778,021	3.7	2,831,498,651	4.9
State Safety	5,377,197,674	1,870,201,361	2.9	7,224,281,258	3.9
POFF	20,758,283,089	3,198,599,288	6.5	30,127,480,709	9.4
CHP	5,324,512,223	735,204,799	7.2	8,193,449,625	11.1
Schools	45,873,486,956	9,935,362,340	4.6	58,358,406,128	5.9

The above analysis shows that the CHP, POFF and Miscellaneous plans are expected to have more volatile contributions than the Schools pool, Industrial and Safety plans. It also shows that the contribution volatility is expected to increase as the plans become better funded. The contribution volatility would be 28% to 54% greater if the plans were 100% funded.

Analysis of Future Investment Return Scenarios

As part of this report, different scenarios were performed to determine the effects of various investment returns during fiscal years 2012-2013, 2013-2014 and 2014-2015 on the 2014-2015, 2015-2016 and 2016-2017 employer rates. The projected rate increases assume that all other actuarial assumptions will be realized and that no further changes to assumptions, contributions, benefits, or funding will occur.

Five different investment return scenarios were selected.

- The first scenario is what one would expect if the markets were to give us a 5th percentile return from July 1, 2012 through June 30, 2015. The 5th percentile return corresponds to a -4.10% return for each of the 2012-2013, 2013-2014 and 2014-2015 fiscal years.
- The second scenario is what one would expect if the markets were to give us a 25th percentile return from July 1, 2012 through June 30, 2015. The 25th percentile return corresponds to a 2.60% return for each of the 2012-2013, 2013-2014 and 2014-2015 fiscal years.
- The third scenario assumed the return for 2012-2013, 2013-2014, and 2014-2015 would be our assumed 7.50% investment return which represents about a 49th percentile event.

- The fourth scenario is what one would expect if the markets were to give us a 75th percentile return from July 1, 2012 through June 30, 2015. The 75th percentile return corresponds to a 11.90% return for each of the 2012-2013, 2013-2014 and 2014-2015 fiscal years.
- Finally, the last scenario is what one would expect if the markets were to give us a 95th percentile return from July 1, 2012 through June 30, 2015. The 95th percentile return corresponds to a 18.50% return for each of the 2012-2013, 2013-2014 and 2014-2015 fiscal years.

The tables below show the projected contribution rates for 2014-2015 through 2016-2017 for the various State Plans under the five different scenarios.

Estimated: 2014-2015 Rates as a % of Payroll

	Investment Scenario				
	1 st Scenario	2 nd Scenario	3 rd Scenario	4 th Scenario	5 th Scenario
	-4.10%	2.60%	7.50%	11.90%	18.50%
State Miscellaneous Tier 1	25.8%	23.2%	21.6%	21.5%	21.4%
State Miscellaneous Tier 2	25.7%	23.1%	21.5%	21.4%	21.3%
State Industrial	19.2%	17.5%	16.8%	16.8%	16.7%
State Safety	19.2%	17.9%	17.8%	17.7%	17.7%
POFF	35.4%	32.5%	31.1%	31.0%	30.8%
CHP	39.9%	36.7%	34.9%	34.7%	34.6%
Schools	16.1%	14.0%	12.8%	12.7%	12.6%

Estimated: 2015-2016 Rates as a % of Payroll

	Investment Scenario				
	1 st Scenario	2 nd Scenario	3 rd Scenario	4 th Scenario	5 th Scenario
	-4.10%	2.60%	7.50%	11.90%	18.50%
State Miscellaneous Tier 1	29.9%	25.2%	22.0%	21.7%	21.3%
State Miscellaneous Tier 2	29.8%	25.1%	21.9%	21.6%	21.2%
State Industrial	22.0%	18.7%	17.1%	16.9%	16.6%
State Safety	21.4%	18.8%	18.0%	17.8%	17.6%
POFF	40.0%	34.5%	31.4%	31.1%	30.6%
CHP	45.1%	39.1%	35.4%	35.0%	34.5%
Schools	19.3%	15.5%	13.1%	12.9%	12.6%

Estimated: 2016-2017 Rates as a % of Payroll

	Investment Scenario				
	1st Scenario	2nd Scenario	3rd Scenario	4th Scenario	5th Scenario
	-4.10%	2.60%	7.50%	11.90%	18.50%
State Miscellaneous Tier 1	33.5%	27.1%	22.4%	21.9%	21.0%
State Miscellaneous Tier 2	33.4%	27.0%	22.3%	21.8%	20.9%
State Industrial	24.4%	19.9%	17.3%	16.9%	16.3%
State Safety	23.4%	19.7%	18.1%	17.8%	17.3%
POFF	44.2%	36.5%	31.8%	31.1%	30.0%
CHP	49.7%	41.4%	35.9%	35.2%	34.0%
Schools	22.2%	17.0%	13.4%	13.0%	12.3%

Analysis of Discount Rate Sensitivity & Government Code Section 20229

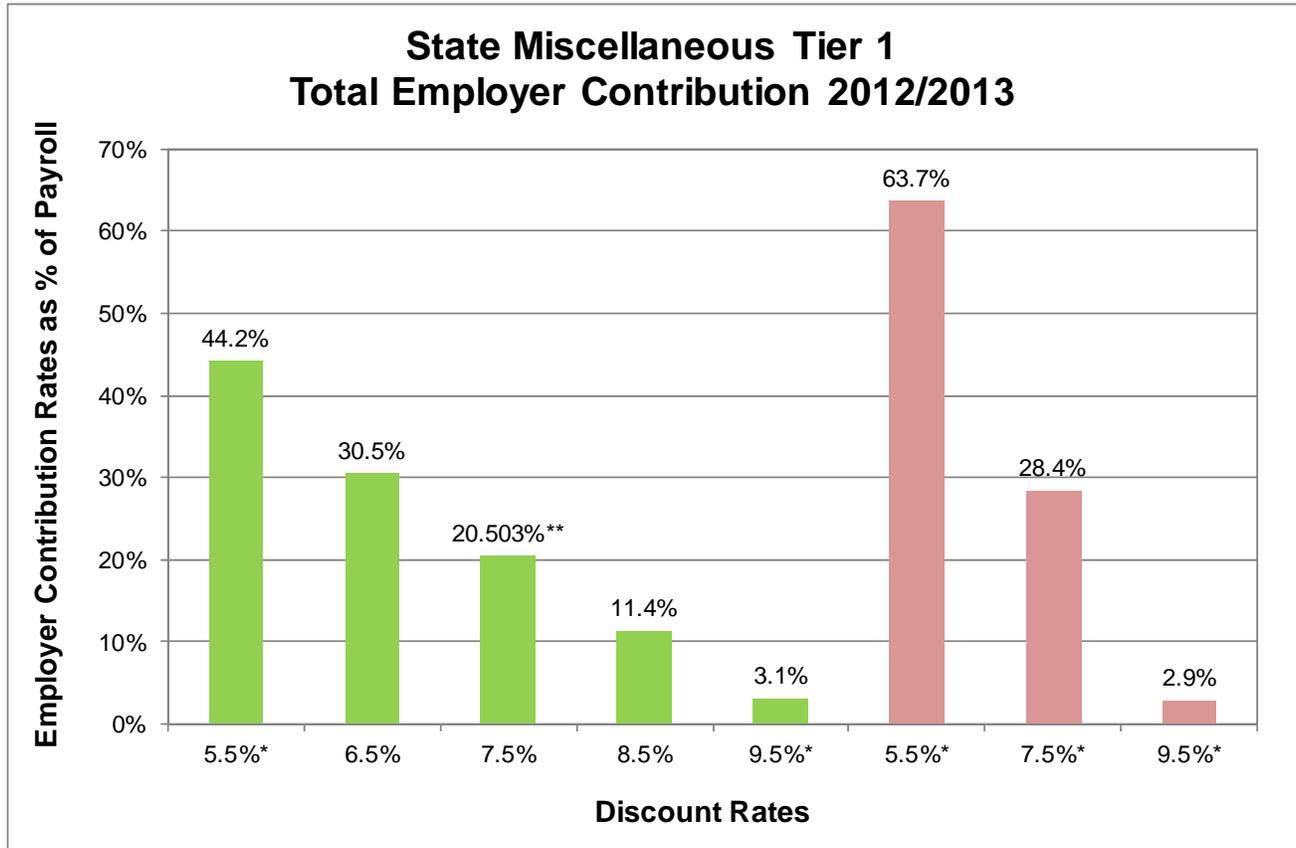
The discount rate reflects expectations of what the markets will deliver in the future and it is calculated based on two components: expected price inflation and real rate of return. A change in either of those components over the long term would necessitate further evaluation of the discount rate.

This section includes an analysis of discount rate sensitivity on employer contribution rates under two different discount rate scenarios. This type of analysis gives the reader a sense of the long-term risk to the employer contribution rates and changes to the funded status on a Market Value of Assets basis.

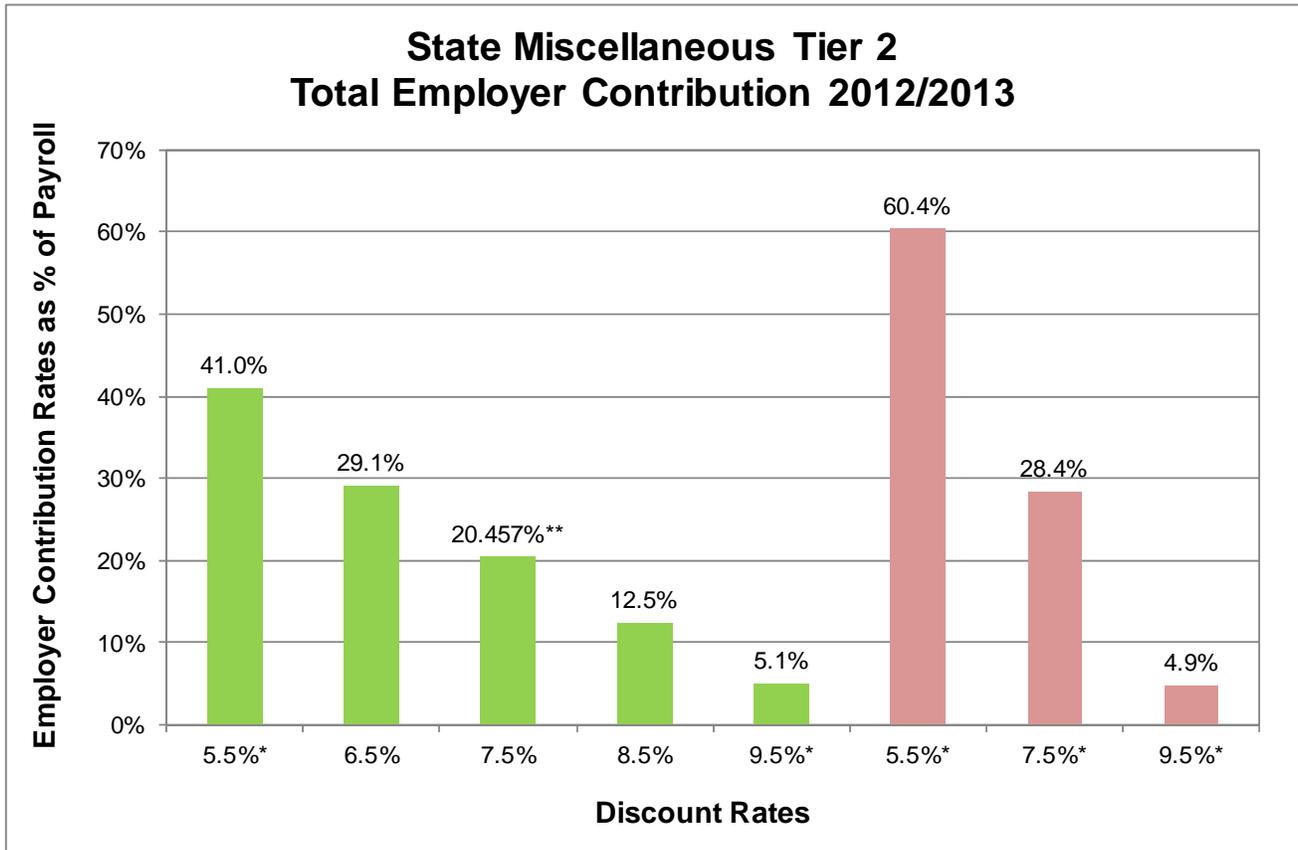
The first section shows the impact on employer contribution rates assuming discount rates that are 1 percentage point above and 1 percentage point below the current valuation discount rate and under current unfunded liability amortization methods. This analysis gives an indication of the potential required employer contribution rates if the discount rate was changed to 6.50% or 8.50% over the long-term.

The second section is in response to Government Code section 20229 which requires the CalPERS Board to provide an annual report which includes a calculation of the contribution rates and liabilities utilizing investment return and discount rate assumptions which are 2 percentage points above and 2 percentage points below the current investment return and discount rate assumptions utilized by the board, and a calculation of the rates based on an amortization period equal to the estimated average remaining service periods (EARSP) of the employees covered by the contributions. The results are presented for three different investment return assumptions (5.50%, 7.50% and 9.50%) for all the State plans. For comparison, contribution rates for the current fiscal year have been calculated using both the current amortization method and amortization over the estimated average remaining service periods of the employees covered by the contributions.

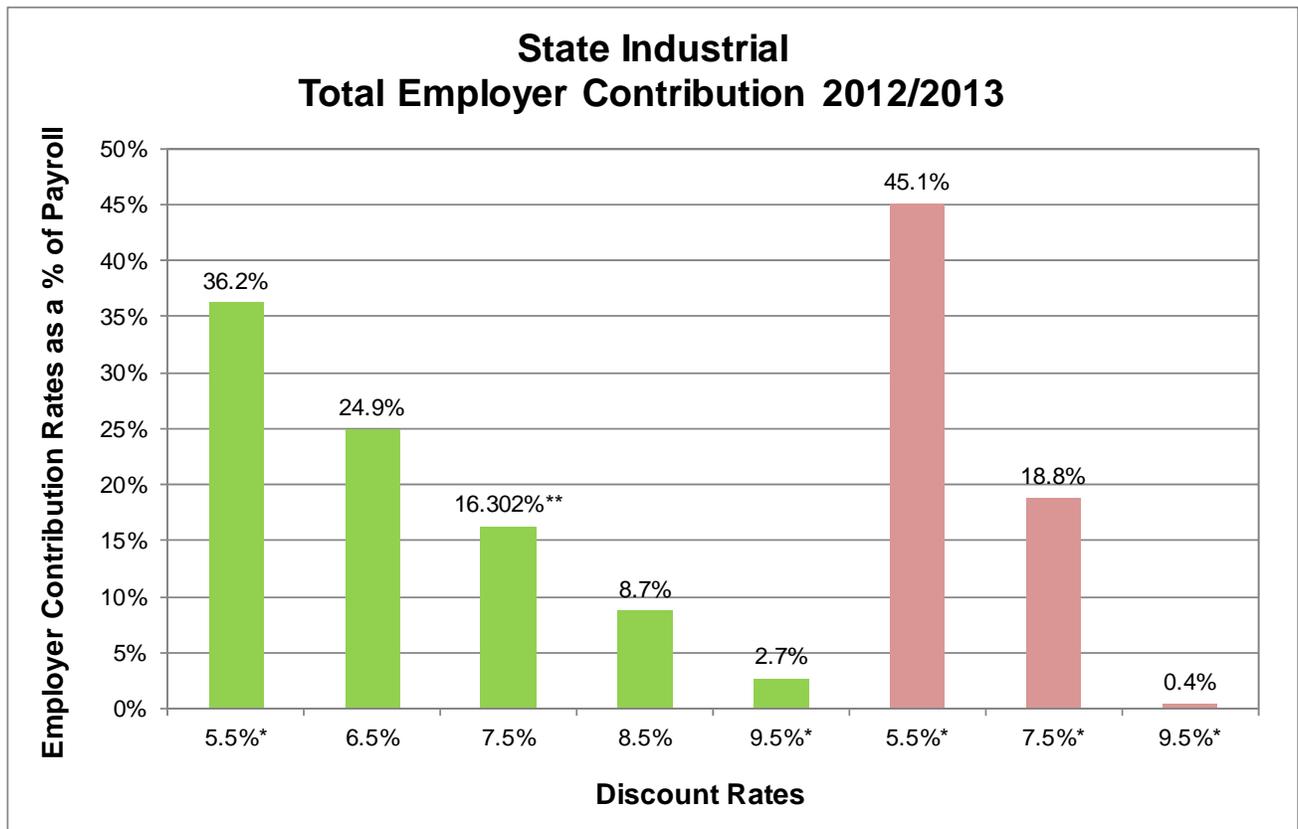
The results of the analysis are presented in three sections. The first section is a graphical representation of the impact on employer rates for both +/- 1% change in discount rate, and +/- 2% change in discount rate due to G.C. 20229. The second and third sections are the numeric representations. The reader may use the data points presented in the graph to estimate data points of interest using interpolation.



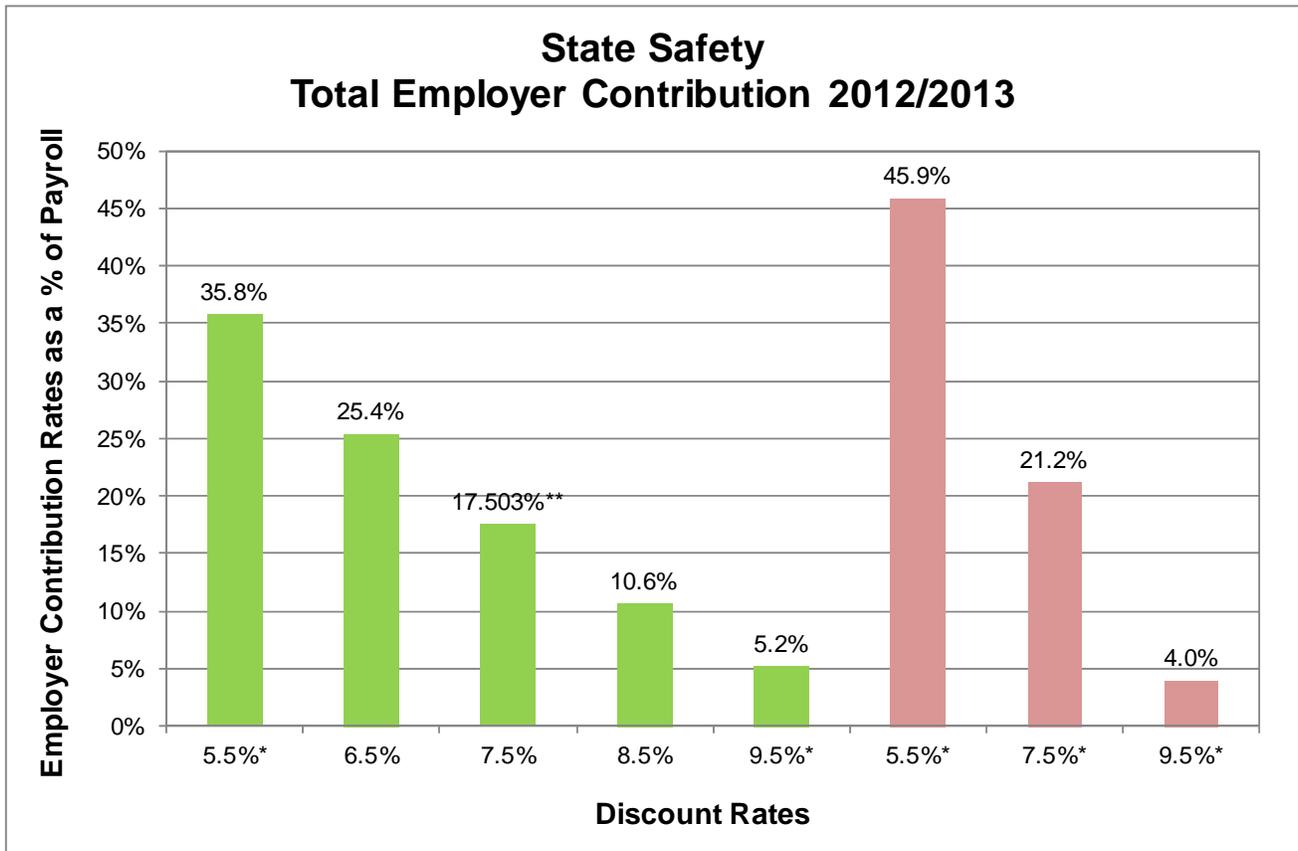
- Analysis of discount rate sensitivity based on current amortization method (varies from 20 to 30 years)
- Analysis of discount rate sensitivity based on amortization of UL over EARSP (10 years)
- * Required by Government Code Section 20229
- ** Adopted by the legislature



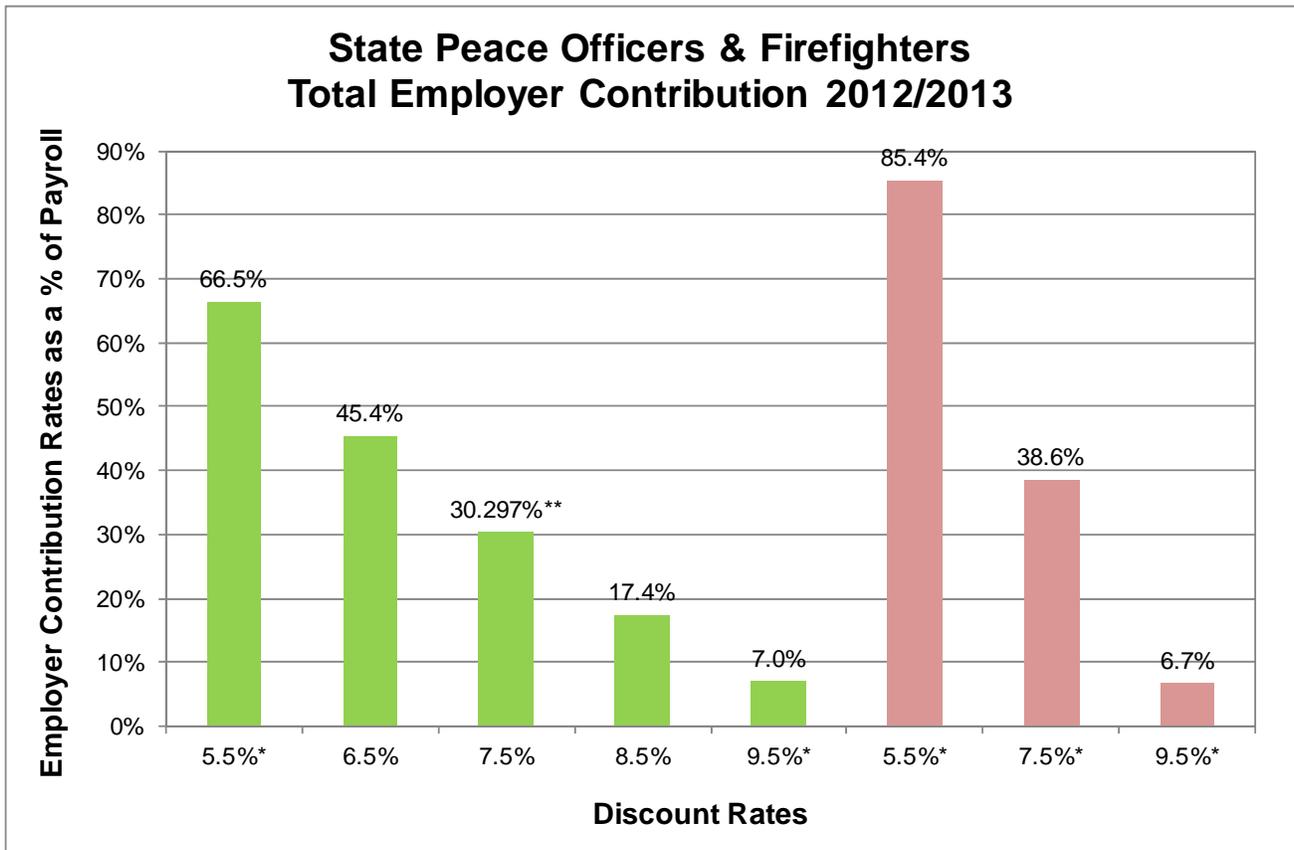
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- ** Adopted by the legislature



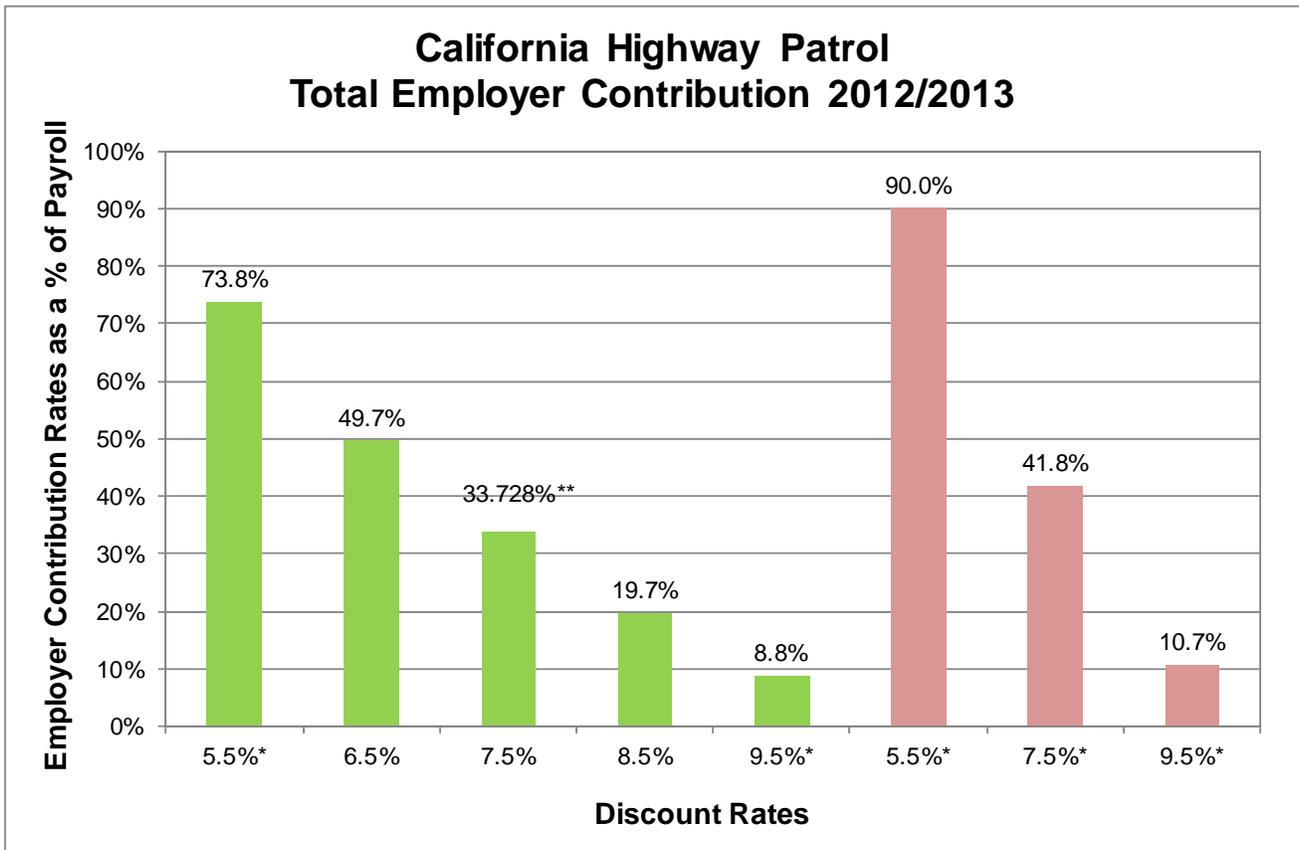
- Analysis of discount rate sensitivity based on current amortization method (varies from 14 to 30 years)
- Analysis of discount rate sensitivity based on amortization of UL over EARSP (11 years)
- * Required by Government Code Section 20229
- ** Adopted by the legislature



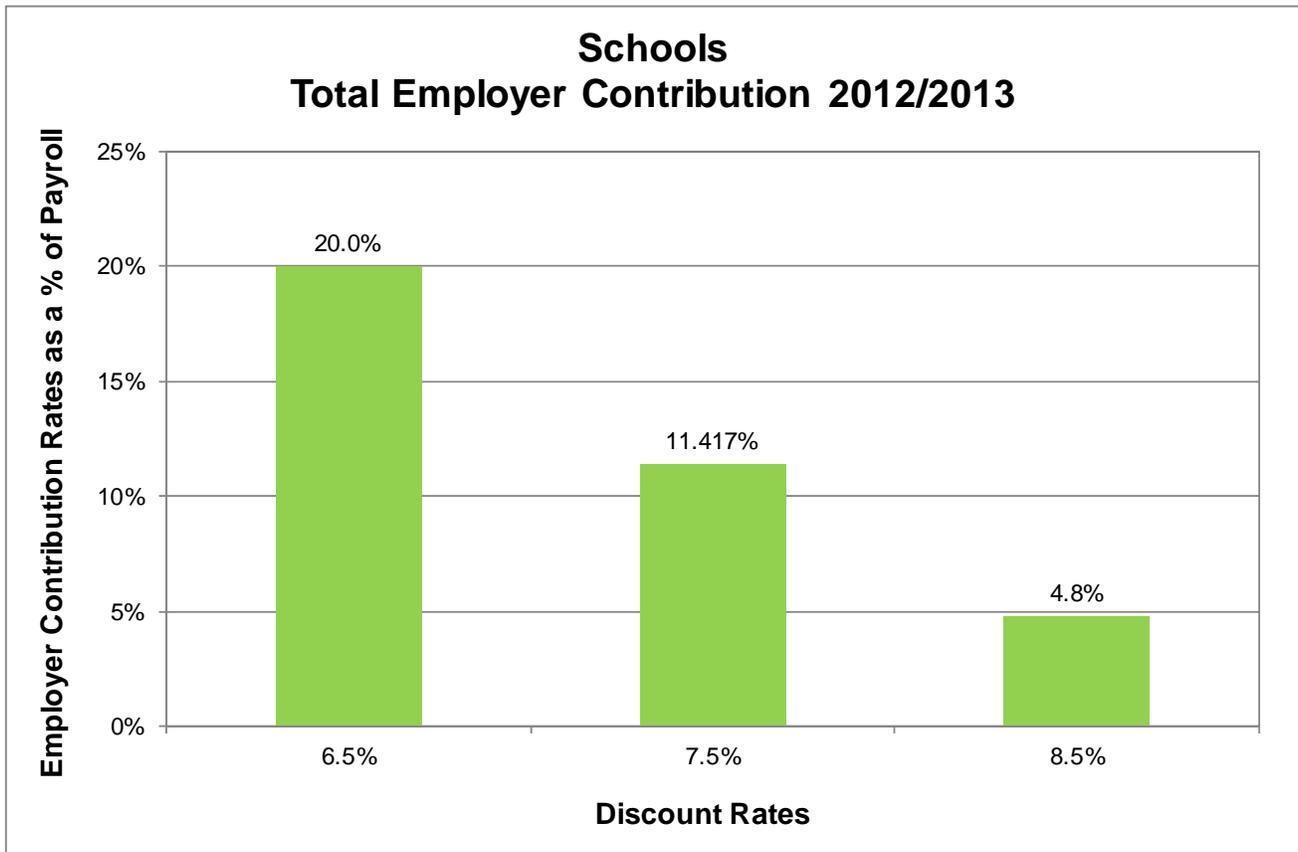
- Analysis of discount rate sensitivity based on current amortization method (varies from 21 to 30 years)
- Analysis of discount rate sensitivity based on amortization of UL over EARSP (10 years)
- * Required by Government Code Section 20229
- ** Adopted by the legislature



- Analysis of discount rate sensitivity based on current amortization method (varies from 21 to 30 years)
- Analysis of discount rate sensitivity based on amortization of UL over EARSP (12 years)
- * Required by Government Code Section 20229
- ** Adopted by the legislature



- Analysis of discount rate sensitivity based on current amortization method (varies from 21 to 30 years)
- Analysis of discount rate sensitivity based on amortization of UL over EARSP (14 years)
- * Required by Government Code Section 20229
- ** Adopted by the legislature



■ Analysis of discount rate sensitivity based on current amortization method (varies from 23 to 30 years)

Analysis of Discount Rate Sensitivity (+/- 1% change in discount rate)

Discount Rate		6.50%	7.50%	8.50%
State Miscellaneous Tier 1	Normal Cost	12.2%	8.370%	5.5%
	UAL Payment	18.3%	12.057%	5.9%
	GTLI	<u>0.1%</u>	<u>0.076%</u>	<u>0.1%</u>
	Total	30.5%	20.503%	11.4%
	Funded Status	63.0%	70.7%	78.7%
State Miscellaneous Tier 2	Normal Cost	10.7%	8.324%	6.5%
	UAL Payment	18.3%	12.057%	5.9%
	GTLI	<u>0.1%</u>	<u>0.076%</u>	<u>0.1%</u>
	Total	29.1%	20.457%	12.5%
	Funded Status	63.0%	70.7%	78.7%
State Industrial	Normal Cost	15.3%	11.220%	8.0%
	UAL Payment	9.5%	5.082%	0.7%
	GTLI	<u>0.0%</u>	<u>0.000%</u>	<u>0.0%</u>
	Total	24.9%	16.302%	8.7%
	Funded Status	67.8%	77.0%	86.7%
State Safety	Normal Cost	17.1%	12.740%	9.3%
	UAL Payment	8.2%	4.738%	1.3%
	GTLI	<u>0.0%</u>	<u>0.025%</u>	<u>0.0%</u>
	Total	25.4%	17.503%	10.6%
	Funded Status	65.7%	74.6%	84.1%
POFF	Normal Cost	23.1%	16.458%	11.4%
	UAL Payment	22.2%	13.813%	6.0%
	GTLI	<u>0.0%</u>	<u>0.026%</u>	<u>0.0%</u>
	Total	45.4%	30.297%	17.4%
	Funded Status	60.5%	69.0%	78.2%
CHP	Normal Cost	20.8%	14.162%	9.2%
	UAL Payment	28.9%	19.540%	10.6%
	GTLI	<u>0.0%</u>	<u>0.026%</u>	<u>0.0%</u>
	Total	49.7%	33.728%	19.7%
	Funded Status	57.2%	65.1%	73.5%
Schools	Normal Cost	10.8%	7.415%	4.8%
	UAL Payment	9.2%	4.002%	-0.1%
	GTLI	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
	Total	20.0%	11.417%	4.8%
	Funded Status	69.6%	78.7%	88.2%

*Rates assume phase-in of impact of economic assumption change for June 30, 2011 valuation for Schools only

** Rates were also calculated with a 30-year Fresh Start to the amortization bases in the case of an average amortization period greater than 30 or a surplus with an average amortization period less than 30 years.

***Numbers may not add due to rounding.

Government Code Section 20229 (+/-2% change in discount rate based on current amortization method and amortization over EARSP)

State Miscellaneous Tier 1 & Tier 2			
Discount Rate	5.50%	7.50%	9.50%
Accrued Liability	103,016,602,885	81,271,085,568	65,971,634,057
Market Value of Assets (MVA)	57,451,959,716	57,451,959,716	57,451,959,716
Funded Status MVA basis	55.8%	70.7%	87.1%
Unfunded Liability MVA basis	45,564,643,169	23,819,125,852	8,519,674,341
<u>State Miscellaneous Tier 1</u>			
<i>Current Amortization Method</i>			
Payment on Normal Cost	17.1%	8.370%	3.2%
Payment on UL	27.1%	12.057%	-0.2%
<u>Group Term Life Insurance</u>	<u>0.1%</u>	<u>0.076%</u>	<u>0.1%</u>
Total ER Contribution 2012/13	44.2%	20.503%	3.1%
<u>State Miscellaneous Tier 1</u>			
<i>Amortization of UL over EARSP</i>			
Payment on Normal Cost	17.1%	8.4%	3.2%
Payment on UL (over EARSP=10 yrs)	46.5%	20.0%	-0.4%
<u>Group Term Life Insurance</u>	<u>0.1%</u>	<u>0.1%</u>	<u>0.1%</u>
Total ER Contribution 2012/13	63.7%	28.4%	2.9%
<u>State Miscellaneous Tier 2</u>			
<i>Current Amortization Method</i>			
Payment on Normal Cost	13.9%	8.324%	5.2%
Payment on UL	27.1%	12.057%	-0.2%
<u>Group Term Life Insurance</u>	<u>0.1%</u>	<u>0.076%</u>	<u>0.1%</u>
Total ER Contribution 2012/13	41.0%	20.457%	5.1%
<u>State Miscellaneous Tier 2</u>			
<i>Amortization of UL over EARSP</i>			
Payment on Normal Cost	13.9%	8.3%	5.2%
Payment on UL (over EARSP=10 yrs)	46.5%	20.0%	-0.4%
<u>Group Term Life Insurance</u>	<u>0.1%</u>	<u>0.1%</u>	<u>0.1%</u>
Total ER Contribution 2012/13	60.4%	28.4%	4.9%

State Industrial			
Discount Rate	5.50%	7.50%	9.50%
Accrued Liability	3,685,697,766	2,831,498,651	2,251,071,663
Market Value of Assets (MVA)	2,179,954,931	2,179,954,931	2,179,954,931
Funded Status MVA basis	59.1%	77.0%	96.8%
Unfunded Liability MVA basis	1,505,742,835	651,543,720	71,116,732
<i>Current Amortization Method</i>			
Payment on Normal Cost	20.6%	11.220%	5.5%
Payment on UL	15.6%	5.082%	-2.8%
<u>Group Term Life Insurance</u>	<u>0.0%</u>	<u>0.000%</u>	<u>0.0%</u>
Total ER Contribution 2012/13	36.2%	16.302%	2.7%
<i>Amortization of UL over EARSP</i>			
Payment on Normal Cost	20.6%	11.2%	5.5%
Payment on UL (over EARSP=11 yrs)	24.5%	7.6%	-5.1%
<u>Group Term Life Insurance</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>
Total ER Contribution 2012/13	45.1%	18.8%	0.4%

State Safety			
Discount Rate	5.50%	7.50%	9.50%
Accrued Liability	9,404,906,802	7,224,281,258	5,735,707,305
Market Value of Assets (MVA)	5,389,522,934	5,389,522,934	5,389,522,934
Funded Status MVA basis	57.3%	74.6%	94.0%
Unfunded Liability MVA basis	4,015,383,868	1,834,758,324	346,184,371
<i>Current Amortization Method</i>			
Payment on Normal Cost	22.7%	12.740%	6.5%
Payment on UL	13.1%	4.738%	-1.3%
<u>Group Term Life Insurance</u>	<u>0.0%</u>	<u>0.025%</u>	<u>0.0%</u>
Total ER Contribution 2012/13	35.8%	17.503%	5.2%
<i>Amortization of UL over EARSP</i>			
Payment on Normal Cost	22.7%	12.7%	6.5%
Payment on UL (over EARSP=10 yrs)	23.1%	8.4%	-2.6%
<u>Group Term Life Insurance</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>
Total ER Contribution 2012/13	45.9%	21.2%	4.0%

State Peace Officers and Firefighters			
Discount Rate	5.50%	7.50%	9.50%
Accrued Liability	39,732,775,110	30,127,480,709	23,727,901,123
Market Value of Assets (MVA)	20,801,283,158	20,801,283,158	20,801,283,158
Funded Status MVA basis	52.4%	69.0%	87.7%
Unfunded Liability MVA basis	18,931,491,952	9,326,197,551	2,926,617,965
<i>Current Amortization Method</i>			
Payment on Normal Cost	32.0%	16.458%	7.4%
Payment on UL	34.5%	13.813%	-0.5%
<u>Group Term Life Insurance</u>	<u>0.0%</u>	<u>0.026%</u>	<u>0.0%</u>
Total ER Contribution 2012/13	66.5%	30.297%	7.0%
<i>Amortization of UL over EARSP</i>			
Payment on Normal Cost	32.0%	16.5%	7.4%
Payment on UL (over EARSP=12 yrs)	53.4%	22.1%	-0.8%
<u>Group Term Life Insurance</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>
Total ER Contribution 2012/13	85.4%	38.6%	6.7%

California Highway Patrol			
Discount Rate	5.50%	7.50%	9.50%
Accrued Liability	10,866,817,206	8,193,449,625	6,548,697,930
Market Value of Assets (MVA)	5,335,993,093	5,335,993,093	5,335,993,093
Funded Status MVA basis	49.1%	65.1%	81.5%
Unfunded Liability MVA basis	5,530,824,113	2,857,456,532	1,212,704,837
<i>Current Amortization Method</i>			
Payment on Normal Cost	29.7%	14.162%	5.4%
Payment on UL	44.1%	19.540%	3.4%
<u>Group Term Life Insurance</u>	<u>0.0%</u>	<u>0.026%</u>	<u>0.0%</u>
Total ER Contribution 2012/13	73.8%	33.728%	8.8%
<i>Amortization of UL over EARSP</i>			
Payment on Normal Cost	29.7%	14.2%	5.4%
Payment on UL (over EARSP=14 yrs)	60.3%	27.6%	5.2%
<u>Group Term Life Insurance</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>
Total ER Contribution 2012/13	90.0%	41.8%	10.7%

* Rates calculated using current amortization methods were calculated with a 30-year Fresh Start to the amortization bases in the case of an average amortization period greater than 30 or a surplus with an average amortization period less than 30 years.

**Numbers may not add due to rounding.