City of Pasadena

CalPERS Actuarial Issues
6/30/08 Valuation

March 2010

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INTRODUCTION

The City of Pasadena retained Bartel Associates to provide actuarial consulting services. The following Executive Summary provides the City analysis of their CalPERS Safety and Miscellaneous pension plans. This analysis is designed to assist the City in evaluating their current funding situation.

It may be helpful to first review the summary of basic definitions starting on page 12.

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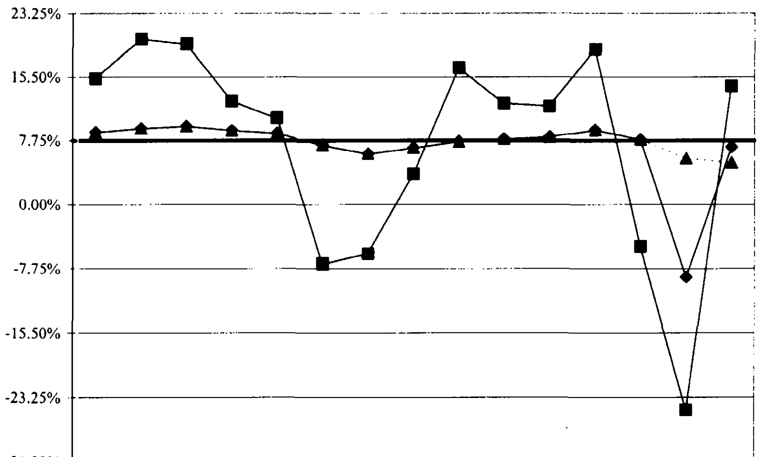
CalPERS Historical Investment Return

The following chart illustrates CalPERS market and actuarial value investment returns over the past several years:



	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
AVA Modified	8.7%	9.2%	9.5%	9.0%	8.6%	7.2%	6.1%	6.8%	7.6%	7.9%	8.2%	9.0%	7.9%	5.6%	5.1%
MVA Rate	15.3%	20.1%	19.5%	12.5%	10.5%	-7.2%	-6.0%	3.7%	16.6%	12.3%	11.9%	18.8%	-5.1%	-24.8%	14.4%
AVA Unmodified	8.7%	9.2%	9.5%	9.0%	8.6%	7.2%	6.1%	6.8%	7.6%	7.9%	8.2%	9.0%	7.9%	-8.8%	6.9%

The 2010 return shown is estimated based on CalPERS December 31, 2009 published rates of 12.6% and a loss of 1.5% through January 31, 2010 and 7.75% to June 30, 2010. CalPERS' 10 year average annual return is 2.6%.

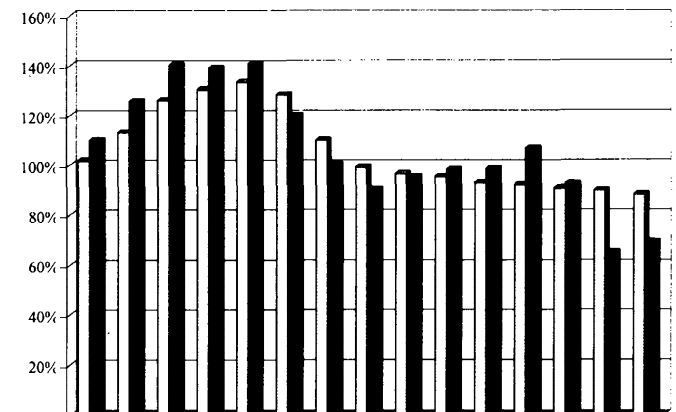
The chart shows three lines, AVA Modified (Actuarial Value of Assets with CalPERS recent smoothing modification), MVA (Market Value of Assets) Rate and AVA Unmodified (Actuarial Value of Assets based on CalPERS smoothing method prior to recent asset smoothing modification). The MVA Rate is the investment return CalPERS' assets actually earned during the respective fiscal year ends, while the AVA shows the investment return as a smoothed rate reflecting asset gains and losses over a period of time, rather than immediately. The actuarial value of asset investment return directly affects City contribution rates.

The chart indicates a -24.8% June 30, 2009 year end investment return. This compares to an expected return of +7.75%, for a net loss of 32.6%. This loss would have a significant impact on the City's 2011/12 Miscellaneous and Safety contribution rates. However, CalPERS smoothes asset gains and losses using a technique that generally recognizes one fifteenth of market asset gains or losses in a given year. In addition, the smoothing method does not allow the smoothed (actuarial) value to be less than 80% or more than 120% of the market value (the 80-120% corridor). To smooth the economic impact of the June 30, 2009 market decline, on June 13, 2009, CalPERS' Board approved a modification to the corridor, increasing it to 140% for the June 30, 2009 valuation and to 130% for June 30, 2010 valuation. The corridor will return to 120% for the June 30, 2011 and subsequent valuations. Complicating matters a bit is that each CalPERS valuation determines agency contribution rates two years later (for example, the June 30, 2009 valuation determines fiscal year 2011/12 contribution rates. The anticipated impact of the smoothing modifications are discussed in the Miscellaneous and Safety sections below.

Miscellaneous Plan

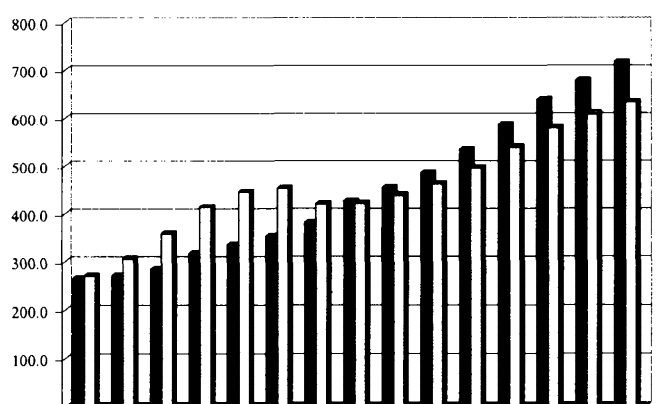
Funded Status

The following two charts show the City's Miscellaneous Plan's funded status. The first chart displays the funded status as a percentage of Actuarial Value of Assets and Market Value of Assets; the second chart compares the Actuarial Accrued Liability to the Actuarial Value of Assets (amount in millions). Note that the 6/30/09 and 6/30/10 asset values are estimated.



	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
□ Funded Ratio - AVA	102%	113%	126%	130%	133%	128%	110%	99%	97%	95%	93%	92%	91%	90%	88%
■ Funded Ratio - MVA	110%	126%	140%	139%	141%	120%	100%	90%	95%	98%	98%	107%	93%	65%	69%

Having assets equal to Actuarial Liability should be viewed as a target. While this is an appropriate measuring stick, it is perfectly expected that assets will move above and sometimes below the actuarial liability. The funding percentage is subject to annual fluctuations based on numerous factors including asset and actuarial (non-asset) gains and losses, and will only become a concern if the plan is consistently under-funded or runs the risk of not being able to pay benefits.



	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
■ Actuarial Liability	265.7	270.6	284.3	316.8	334.2	352.9	381.8	425.2	454.1	485.7	534.5	585.9	638.1	677.1	717.1
□ Actuarial Asset Value	270.3	306.0	358.5	413.3	446.0	453.0	420.2	421.6	438.8	463.0	496.2	539.7	579.1	608.8	632.9

Recent investment downturn will have significant impact on the plan funded status. The following table shows the estimated market value investment losses for the Miscellaneous Plan from June 30, 2008 through June 30, 2010. The Actuarial asset "reserve" is the percent of market assets above actuarial value of assets. The market value of assets experienced a 32.6% loss from what is 'expected'. This loss will be reflected in the funded status for June 30, 2009. Likewise, a projected 6.6% gain in assets for June 30, 2010. Summing these gains and losses together gives an estimated unrecognized loss.

■ Actuarial asset "reserve" at 6/30/08	2.0%
■ 6/30/09 [-24.8% compared to 7.75%]	-32.6%
■ 6/30/10 [14.4%compared to 7.75%]	6.6%
■ Total estimated % loss through 6/30/10	24.0%
■ Total estimated unrecognized loss [-24.0%x $591]	$-141.5 million

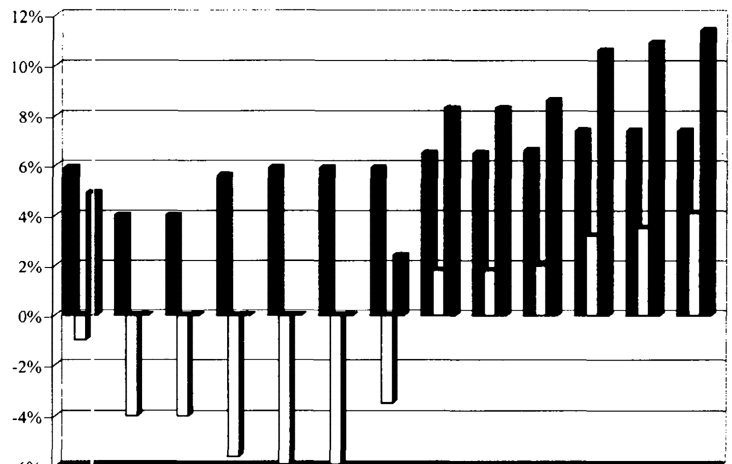
The estimated $141.5 million unrecognized loss will eventually increase the current unfunded actuarial liability (UAL). The following table shows the UAL at 6/30/07 and 6/30/08, projected to 6/30/10 and 6/30/40 (in millions), using CalPERS gains/losses amortization method.

			Projected	
	6/30/07	6/30/08	6/30/10	6/30/40
■ UAL	$ 46.2	$ 59.0	$ 60.0	$ 19.2
■ Investment losses 08/09			180.6	234.8
■ Investment gain 09/10[1]			(39.2)	(51.0)
■ Total			201.4	203.0

[1] Ignores future gains & losses (after 6/30/10) and asset smoothing, and assumes continuance of 30-year rolling amortization method.

Contribution Rates

The following chart shows historical contribution rates for the City's Miscellaneous Plan over the past several years:



	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
■ Normal Cost	5.9%	4.0%	4.0%	5.6%	5.9%	5.9%	5.9%	6.5%	6.5%	6.6%	7.4%	7.4%	7.4%
□ UAL Amort	-1.0%	-4.0%	-4.0%	-5.6%	-5.9%	-5.9%	-3.5%	1.8%	1.8%	2.0%	3.2%	3.5%	4.1%
■ Total	4.9%	0.0%	0.0%	0.0%	0.0%	0.0%	2.4%	8.3%	8.3%	8.6%	10.6%	10.9%	11.4%

The years in the above table reflect CalPERS valuation dates, which determine the City's contribution rates two years later. For example 2008 reflects CalPERS June 30, 2008 valuation which determines the City's 2010/11 contribution rates.

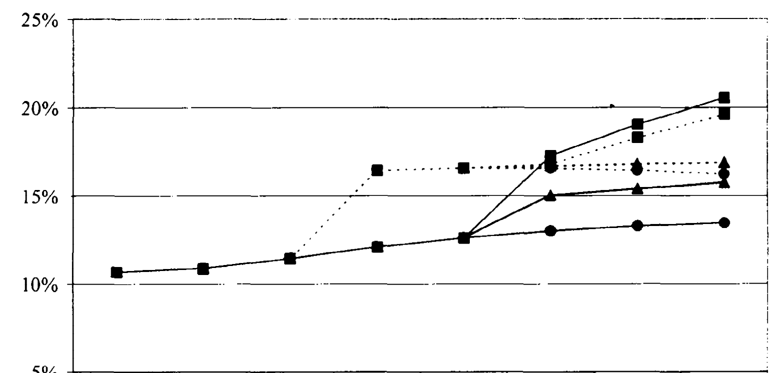
In October 2009, CalPERS completed its June 30, 2008 valuation cycle. The following table shows the contribution rates for the 2009/10 and 2010/11 fiscal years.

■ Valuation	**6/30/07**	**6/30/08**
■ Contribution Year	**2009/2010**	**2010/2011**
■ Normal cost	7.4%	7.4%
■ Amortization bases:		
• Method Change	-0.2%	-0.2%
• (Gain)/Losses	-0.1%	0.6%
• Benefit Changes	1.8%	1.7%
• Fresh Start	2.0%	1.9%
• Sub-total	3.5%	4.1%
■ Total	10.9%	11.4%

Projected Contribution Rates

CalPERS' actual investment return will significantly impact future City contribution rates. The following chart shows the City's projected contribution rates assuming future (6/30/10 and beyond) investment returns will average 0.4% - 4.3%, 7.75% and 11.8% - 15.3% (the 75th, 50th and 25th confidence limits[2]) respectively. The projections use an estimated 14.4%[3] return for June 30, 2010. This assumes no future benefit increases or Tier 2 implementation to the City's retirement plans.

Investment Return Varies



	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16
Unmodified AVA - 75th	10.6%	10.9%	11.4%	16.4%	16.6%	16.8%	18.3%	19.6%
Unmodified AVA - 50th	10.6%	10.9%	11.4%	16.4%	16.6%	16.7%	16.8%	16.9%
Unmodified AVA - 25th	10.6%	10.9%	11.4%	16.4%	16.6%	16.6%	16.4%	16.2%
Modified AVA - 75th	10.6%	10.9%	11.4%	12.1%	12.6%	17.3%	19.1%	20.6%
Modified AVA - 50th	10.6%	10.9%	11.4%	12.1%	12.6%	15.0%	15.4%	15.7%
Modified AVA - 25th	10.6%	10.9%	11.4%	12.1%	12.6%	13.0%	13.3%	13.4%

The graph above projects future contribution rates under both CalPERS' modified and unmodified asset smoothing methods. As mentioned in Page 2 of this report, last year CalPERS' Board approved a modification to increase the corridor used in the actuarial value assets to 140% for the June 30, 2009 valuation and to 130% for the June 30, 2010 valuation. As illustrated above, the asset loss of fiscal year 2008/09 is deferred for several years under the modified asset smoothing method. This will give the economy time to recover while allowing the City proper time to plan for the increases contribution rates.

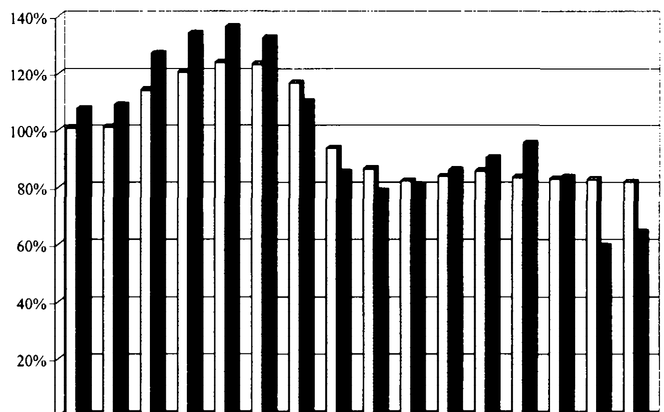
2 Investment Return will exceed the confidence limit by the given probability

3 Based on CalPERS 12/31/09 published rate of return of 12.6%, a loss of 1.5% through 1/31/10 and 7.75% to 6/30/10.

Safety Plan

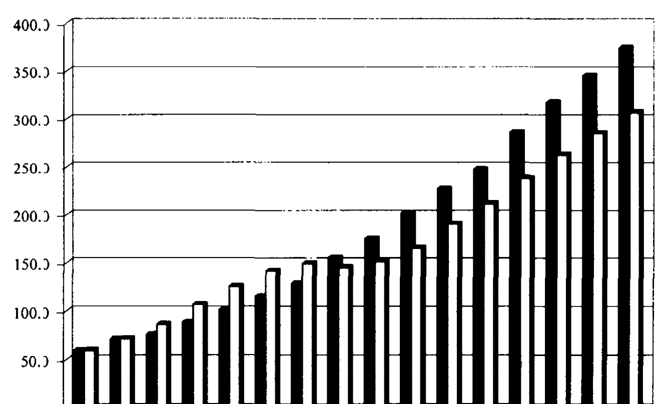
Funded Status

The following two charts show the City's Safety Plan's funded status. The first chart displays the funded status as a percentage of Actuarial Value of Assets and Market Value of Assets; the second chart compares the Actuarial Accrued Liability to the Actuarial Value of Assets (amount in millions). Note that the 6/30/09 and 6/30/10 asset values are estimated.



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
□ Funded Ratio - AVA	101%	101%	114%	120%	124%	123%	117%	94%	86%	82%	84%	86%	83%	83%	83%	82%
■ Funded Ratio - MVA	107%	109%	127%	134%	136%	132%	110%	85%	79%	81%	86%	90%	95%	84%	59%	64%

Having assets equal to Actuarial Liability should be viewed as a target. While this is an appropriate measuring stick, it is expected that assets will move sometimes above and sometimes below the actuarial liability. The funding percentage is subject to annual fluctuations based on numerous factors including asset and actuarial (non-asset) gains and losses, and will only become a concern if the plan is consistently under-funded or runs the risk of not being able to pay benefits.



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
■ Actuarial Liability	59.7	71.0	75.7	88.6	101.0	115.0	128.0	154.8	175.2	201.5	227.2	247.2	285.8	317.1	345.1	374.9
□ Actuarial Asset Value	60.2	71.8	86.4	106.8	125.0	141.5	149.2	145.0	151.5	165.6	190.4	211.8	238.0	262.8	285.1	306.6

Recent investment downturn will have significant impact on the plan funded status. The following table shows the estimated market value investment losses for the Safety Plan from June 30, 2008 through June 30, 2010. The Actuarial asset "reserve" is the percent of market assets above actuarial value of assets. The market value of assets experienced a 32.6% loss from what is 'expected'. This loss will be reflected in the funded status for June 30, 2009. Likewise, a projected 6.6% gain in assets for June 30, 2010. Summing these gains and losses together gives an estimated unrecognized loss.

■ Actuarial asset "reserve" at 6/30/08	0.8%
■ 6/30/09 [-24.8% compared to 7.75%]	-32.6%
■ 6/30/10 [14.4% compared to 7.75%]	6.6%
■ Total estimated % loss through 6/30/09	-25.1%
■ Total estimated unrecognized loss [-25.1% x $265]	$-66.6 million

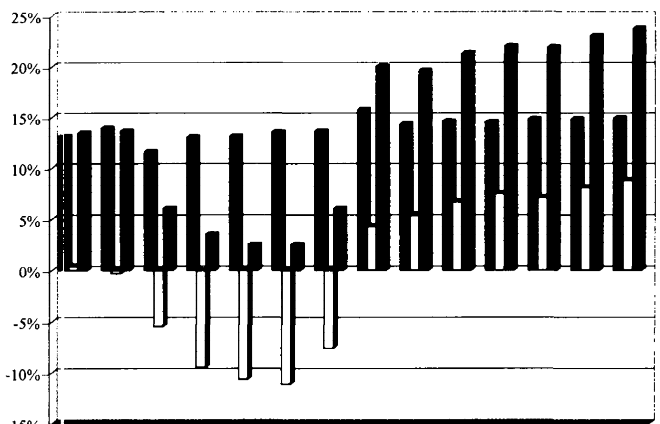
The estimated $66.6 million unrecognized market value loss will eventually increase the current unfunded actuarial liability (UAL). The following table shows the UAL at 6/30/07 and 6/30/08, projected to 6/30/10 and 6/30/40 (in millions), using CalPERS gains/losses amortization method.

			Projected	
	6/30/07	6/30/08	6/30/10	6/30/40
■ UAL	$ 47.8	$ 54.3	$ 55.8	$ 53.5
■ Investment losses 08/09			84.2	109.5
■ Investment gain 09/10[4]			(17.6)	(22.9)
■ Total			122.4	140.1

[4] Ignores future gains & losses (after 6/30/10) and asset smoothing, and assumes continuance of 30-year rolling amortization method.

Contribution Rates

The following chart shows historical contribution rates for the City's Safety Plan over the past several years:



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
■ Normal Cost	13.1%	13.9%	11.6%	13.0%	13.1%	13.5%	13.6%	15.7%	14.3%	14.6%	14.5%	14.8%	14.8%	14.9%
□ UAL Amort	0.4%	-0.3%	-5.5%	-9.5%	-10.6%	-11.1%	-7.6%	4.3%	5.4%	6.7%	7.5%	7.1%	8.1%	8.8%
■ Total	13.4%	13.6%	6.0%	3.5%	2.5%	2.5%	6.0%	20.0%	19.6%	21.3%	22.0%	21.9%	23.0%	23.7%

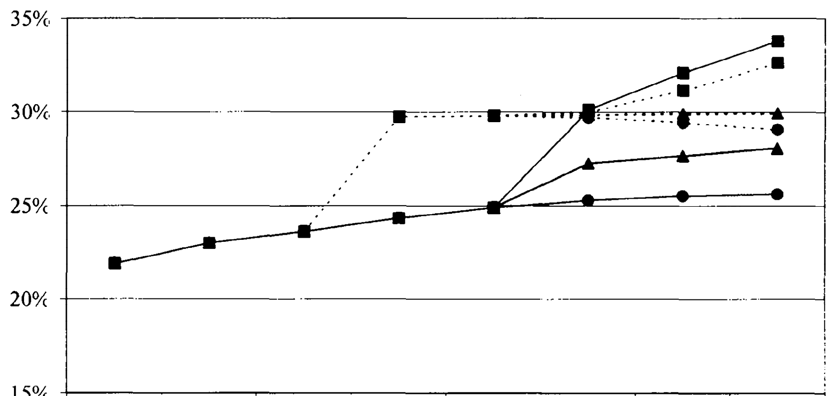
The years in the above table reflect CalPERS valuation dates, which determine the City's contribution rates two years later. For example 2008 reflects CalPERS June 30, 2008 valuation which determines the City's 2010/11 contribution rates.

In October 2009, CalPERS completed its June 30, 2008 valuation cycle. The following table shows the contribution rates for the 2009/10 and 2010/11 fiscal years.

	6/30/07	6/30/08
■ Valuation	**6/30/07**	**6/30/08**
■ Contribution Year	**2009/2010**	**2010/2011**
■ Normal cost	14.8%	14.9%
■ Amortization bases:		
● Initial UAL	-0.3%	-0.2%
● (Gains)/Losses	3.9%	4.5%
● Benefit Changes	7.2%	7.0%
● Assumption Changes	-2.4%	-2.3%
● Method Changes	-0.2%	-0.2%
● Sub-total	8.1%	8.8%
■ Total	23.0%	23.7%

Projected Contribution Rates
CalPERS' actual investment return will significantly impact future City contribution rates. The following chart shows the City's projected contribution rates assuming future (6/30/10 and beyond) investment returns will average 0.4% - 4.3%, 7.75% and 11.8% - 15.3% (the 75th, 50th and 25th confidence limits[5]) respectively. The projections use an estimated 15.7% [6] return for June 30, 2010. This assumes no future benefit increases or Tier 2 implementation to the City's retirement plans.

Investment Return Varies



	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16
Unmodified AVA - 75th	21.9%	23.0%	23.6%	29.7%	29.8%	30.0%	31.1%	32.6%
Unmodified AVA - 50th	21.9%	23.0%	23.6%	29.7%	29.8%	29.8%	29.9%	29.9%
Unmodified AVA - 25th	21.9%	23.0%	23.6%	29.7%	29.8%	29.7%	29.4%	29.0%
Modified AVA - 75th	21.9%	23.0%	23.6%	24.3%	24.9%	30.1%	32.1%	33.8%
Modified AVA - 50th	21.9%	23.0%	23.6%	24.3%	24.9%	27.3%	27.7%	28.1%
Modified AVA - 25th	21.9%	23.0%	23.6%	24.3%	24.9%	25.3%	25.5%	25.6%

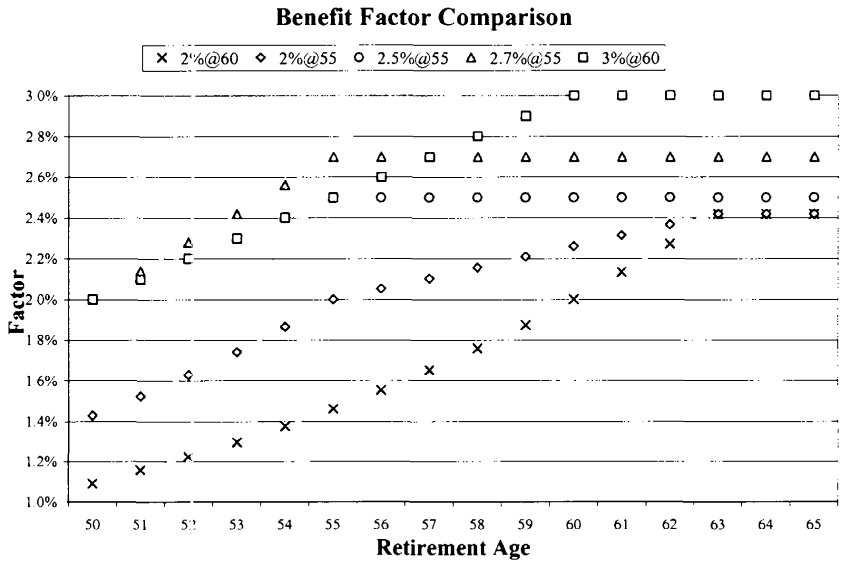
The graph above projects future contribution rates under both CalPERS' modified and unmodified asset smoothing methods. As mentioned in Page 2 of this report, last year CalPERS' Board approved a modification to increase the corridor used in the actuarial value assets to 140% for the June 30, 2009 valuation and to 130% for the June 30, 2010 valuation. As illustrated above, the asset loss of fiscal year 2008/09 is deferred for several years under the modified asset smoothing method. This will give the economy time to recover while allowing the City proper time to plan for the increases contribution rates.

[5] Investment Return will exceed the confidence limit by the given probability

[6] Based on CalPERS 12/31/09 published rate of return of 12.6%, a loss of 1.5% through 1/31/10 and 7.75% to 6/30/10.

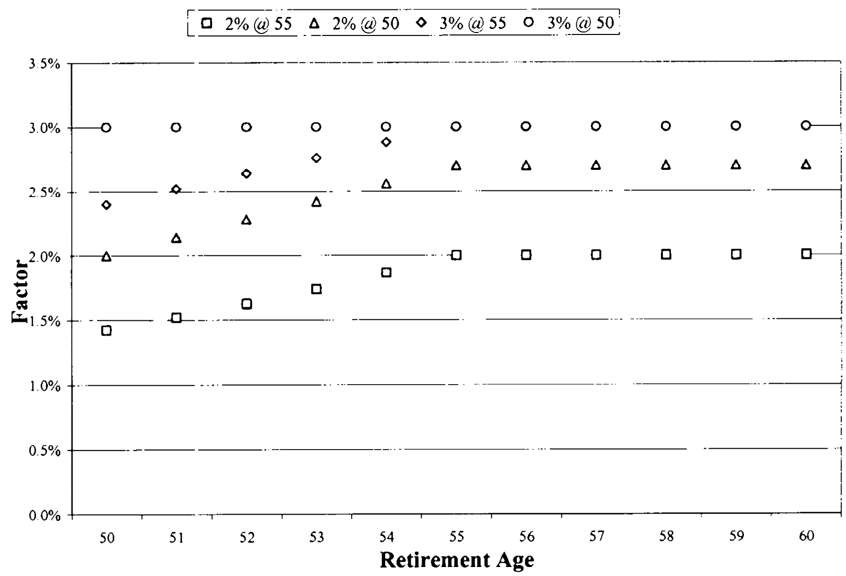
Implication of a Second Benefit Tier

For purposes of this report we have assumed employees hired on and after July 1, 2010 would be placed into a second tier (Tier 2) providing lower pension benefits. For current employees (Tier 1), benefits would remain the same. Contribution calculations would be then calculated on benefits depending on which tier they belong. However, it is important to note that moving new employees into a different benefit level has no impact on existing unfunded liabilities; it only impacts the level of benefit future employees would earn. This means that the amortization of any unfunded liability component of the contribution rate would remain the same for Tier 2 as it is for Tier 1, but the Normal Cost component of the contribution rate would be lower. As Tier 2 grows, and Tier 1 is closed, the cost for Tier 1 will decrease (as a dollar amount) and the replacement cost of the new Tier 2 participants would be less than if they had been in the current Tier 1 plan. This results in deceasing City contribution as a percent of payroll.



	2%@60	2%@55	2.5%@55	2.7%@55	3.0%@60
50	1.092%	1.426%	2.000%	2.000%	2.000%
51	1.156%	1.522%	2.100%	2.140%	2.100%
52	1.224%	1.628%	2.200%	2.280%	2.200%
53	1.296%	1.742%	2.300%	2.420%	2.300%
54	1.376%	1.866%	2.400%	2.560%	2.400%
55	1.460%	2.000%	2.500%	2.700%	2.500%
56	1.552%	2.052%	2.500%	2.700%	2.600%
57	1.650%	2.104%	2.500%	2.700%	2.700%
58	1.758%	2.156%	2.500%	2.700%	2.800%
59	1.874%	2.210%	2.500%	2.700%	2.900%
60	2.000%	2.262%	2.500%	2.700%	3.000%
61	2.134%	2.314%	2.500%	2.700%	3.000%
62	2.272%	2.366%	2.500%	2.700%	3.000%
63	2.418%	2.418%	2.500%	2.700%	3.000%
64	2.418%	2.418%	2.500%	2.700%	3.000%
65	2.418%	2.418%	2.500%	2.700%	3.000%

Benefit Factor Comparison



	2%@55	2%@50	3%@55	3%@50
50	1.426%	2.000%	2.400%	3.000%
51	1.522%	2.140%	2.520%	3.000%
52	1.628%	2.280%	2.640%	3.000%
53	1.742%	2.420%	2.760%	3.000%
54	1.866%	2.560%	2.880%	3.000%
55	2.000%	2.700%	3.000%	3.000%
56	2.000%	2.700%	3.000%	3.000%
57	2.000%	2.700%	3.000%	3.000%
58	2.000%	2.700%	3.000%	3.000%
59	2.000%	2.700%	3.000%	3.000%
60	2.000%	2.700%	3.000%	3.000%

The City's 2009/10 contribution rates are:

	Miscellaneous	Safety
• Benefit Formula	2.5% @ 55	3% @ 55
• Final Average Earnings	Three Years (FAE3)	One Year (FAE1)
• Post Retirement Survivor Annuity	Yes	Yes
• COLA	2%	2%
• EPMC	8%, by Resolution	9%, by Resolution
• 10/11 ER Contribution		
➢ Normal Cost	7.4%	14.9%
➢ Amortizations	4.0	8.7
➢ Subtotal	11.4	23.6
• EPMC	8.0	9.0
• Rates on EPMC (PERS on PERS)		
➢ Normal Cost	0.6	1.3
➢ Amortization	0.3	0.8
➢ Subtotal	0.9	2.1
• Total	20.3	34.7

Miscellaneous Alternative Formulas
Miscellaneous alternative Tier 2 benefits are 2%@55 and 2%@60, both with 3 years final average earnings (FAE3). Each of these produces a cost savings for the City. Because the City currently pays 8% employee contribution (EPMC) for Miscellaneous employees, the savings are also calculated if the Tier 2 employees pays the full employee contributions. The table below shows the Employer Normal Cost and net savings for the reduced Tier 2 benefits.

Miscellaneous Alternative Formulas	Tier 1 & Tier 2 with EPMC		Tier 1 with EPMC, Tier 2 without EPMC	
	2%@55 FAE3	2%@60 FAE3	2%@55 FAE3	2%@60 FAE3
• Normal Cost	6.0%	5.1%	6.0%	4.8%
• Surcharge for Class 1 Benefits	0.7	0.6	0.7	1.4
• Subtotal	6.7	5.7	6.7	6.2
• EPMC	7.0	7.0	0.0	0.0
• PERS on PERS	0.5	0.4	0.0	0.0
• Total	14.1	13.1	6.7	6.2
• Saving from current formula	1.8%	2.8%	9.2%	10.2%

The following two tables below show estimated cost savings (000s omitted) for the Miscellaneous Plan in dollar amounts. It is split between the four alternative benefit levels (2%@55 and 2%@60, with and without EPMC) for Tier 2 participants. The estimated cost savings are broken down into employer contribution savings and employee contribution savings (savings on EPMC).

Estimated Savings - Miscellaneous Tier 1 & Tier 2 with EPMC

	2%@55			2%@60		
Year	**Employer Contribution Savings**	**Employee Contribution Savings**	**Total Savings**	**Employer Contribution Savings**	**Employee Contribution Savings**	**Total Savings**
2010/11	$ 46	$ 66	$ 112	$ 118	$ 66	$ 184
2011/12	99	140	239	250	140	390
2012/13	146	208	354	371	208	579
2013/14	196	279	475	497	279	776
2014/15	250	356	606	635	356	991
2015/16	303	431	734	769	431	1,200
2016/17	363	516	879	921	516	1,437
2017/18	424	602	1,026	1,075	602	1,677
2018/19	485	690	1,175	1,231	690	1,921
2019/20	553	787	1,340	1,404	787	2,191
2020/21	619	880	1,499	1,571	880	2,451

Estimated Savings - Miscellaneous Tier 1 with EPMC, Tier2 without EPMC

	2%@55			2%@60		
Year	**Employer Contribution Savings**	**Employee Contribution Savings**	**Total Savings**	**Employer Contribution Savings**	**Employee Contribution Savings**	**Total Savings**
2010/11	$ 82	$ 527	$ 609	$ 148	$ 527	$ 675
2011/12	174	1,123	1,297	315	1,123	1,438
2012/13	258	1,664	1,922	467	1,664	2,131
2013/14	346	2,229	2,575	625	2,229	2,854
2014/15	442	2,847	3,289	798	2,847	3,645
2015/16	535	3,445	3,980	966	3,445	4,411
2016/17	640	4,126	4,766	1,157	4,126	5,283
2017/18	747	4,817	5,564	1,350	4,817	6,167
2018/19	856	5,518	6,374	1,547	5,518	7,065
2019/20	976	6,292	7,268	1,764	6,292	8,056
2020/21	1,093	7,041	8,134	1,974	7,041	9,015

The above savings are based on the following Miscellaneous payroll projections shown separately for current (Tier 1) participants and future (Tier 2) participants (000s omitted):

Payroll Projections - Miscellaneous

	Tier 1 & Tier 2 with EPMC			**Tier 1 w EPMC, Tier 2 w/o EPMC**		
Year	**Tier 1**	**Tier 2**	**Total**	**Tier 1**	**Tier 2**	**Total**
2010/11	$ 115,270	$ 7,113	$ 122,382	$ 115,270	$ 6,586	$ 121,855
2011/12	111,206	15,154	126,360	111,206	14,032	125,237
2012/13	107,998	22,468	130,466	107,998	20,804	128,802
2013/14	104,616	30,091	134,707	104,616	27,862	132,478
2014/15	100,654	38,431	139,085	100,654	35,584	136,238
2015/16	97,092	46,513	143,605	97,092	43,067	140,159
2016/17	92,576	55,696	148,272	92,576	51,570	144,146
2017/18	88,067	65,023	153,091	88,067	60,207	148,274
2018/19	83,577	74,490	158,066	83,577	68,972	152,549
2019/20	78,256	84,947	163,203	78,256	78,655	156,911
2020/21	73,448	95,059	168,508	73,448	88,018	161,466

Total payroll is expected to grow annually at 3.25% each year. A slower payroll growth results in lower cost savings while a more rapid payroll growth results in greater cost savings.

Safety Alternative Formulas

Safety alternative Tier 2 benefits could be 2%@50 and 2% @55. Each of these produces a cost savings for the City. Because the City currently pays 9% employee contribution (EPMC) for Safety employees, the savings are also calculated if the Tier 2 employees pays the full employee contributions. The table below shows the Employer Normal Cost and net savings for the reduced Tier 2 benefits.

Safety Alternative Formulas	**Tier 1 & Tier 2 with EPMC**		**Tier 1 with EPMC, Tier 2 without EPMC**	
	2%@50 FAE3	**2%@55 FAE3**	**2%@50 FAE3**	**2%@55 FAE3**
• Normal Cost	10.7%	10.3%	10.7%	10.3%
• Surcharge for Class 1 Benefits	1.3	1.1	1.3	1.0
• Subtotal	12.0	11.4	12.0	11.3
• EPMC	9.0	8.0	0.0	0.0
• PERS on PERS	1.1	0.9	0.0	0.0
• Total	22.1	20.2	12.0	11.3
• Saving from current formula	3.1%	5.0%	13.2%	13.9%

The following two tables below show estimated cost savings (000s omitted) for the Safety Plan in dollar amounts. It is split between the four alternative benefit levels (2%@50 and 2%@55, with and without EPMC) for Tier 2 participants. The estimated cost savings are broken down into employer contribution savings and employee contribution savings (savings on EPMC).

Estimated Savings - Safety Tier 1 & Tier 2 with EPMC

	2%@50			2%@55		
Year	Employer Contribution Savings	Employee Contribution Savings	Total Savings	Employer Contribution Savings	Employee Contribution Savings	Total Savings
2010/11	$ 54	$ -	$ 54	$ 66	$ 17	$ 83
2011/12	111	-	111	137	35	172
2012/13	179	-	179	221	57	278
2013/14	257	-	257	318	82	400
2014/15	351	-	351	435	112	547
2015/16	437	-	437	541	139	680
2016/17	533	-	533	659	170	829
2017/18	633	-	633	783	201	984
2018/19	747	-	747	924	238	1,162
2019/20	863	-	863	1,068	275	1,343
2020/21	978	-	978	1,211	312	1,523

Estimated Savings - Safety Tier 1 with EPMC, Tier2 without EPMC

	2%@50			2%@55		
Year	Employer Contribution Savings	Employee Contribution Savings	Total Savings	Employer Contribution Savings	Employee Contribution Savings	Total Savings
2010/11	$ 54	$ -	$ 54	$ 66	$ 17	$ 83
2011/12	111	-	111	137	35	172
2012/13	179	-	179	221	57	278
2013/14	257	-	257	318	82	400
2014/15	351	-	351	435	112	547
2015/16	437	-	437	541	139	680
2016/17	533	-	533	659	170	829
2017/18	633	-	633	783	201	984
2018/19	747	-	747	924	238	1,162
2019/20	863	-	863	1,068	275	1,343
2020/21	978	-	978	1,211	312	1,523

The above savings are based on the following Safety payroll projections shown separately for current (Tier 1) participants and future (Tier 2) participants (000s omitted):

Payroll Projections - Safety

	Tier 1 & Tier 2 with EPMC			Tier 1 w EPMC, Tier 2 w/o EPMC		
Year	**Tier 1**	**Tier 2**	**Total**	**Tier 1**	**Tier 2**	**Total**
2010/11	$ 45,463	$ 1,864	$ 47,326	$ 45,463	$ 1,710	$ 47,172
2011/12	45,009	3,855	48,864	45,009	3,537	48,546
2012/13	44,249	6,203	50,452	44,249	5,691	49,940
2013/14	43,182	8,910	52,092	43,182	8,174	51,356
2014/15	41,592	12,193	53,785	41,592	11,186	52,778
2015/16	40,350	15,183	55,533	40,350	13,929	54,280
2016/17	38,849	18,489	57,338	38,849	16,962	55,811
2017/18	37,243	21,958	59,201	37,243	20,145	57,388
2018/19	35,200	25,925	61,126	35,200	23,784	58,985
2019/20	33,149	29,963	63,112	33,149	27,489	60,638
2020/21	31,200	33,963	65,163	31,200	31,159	62,359

Total payroll is expected to grow annually at 3.25% each year. A slower payroll growth results in lower cost savings while a more rapid payroll growth results in greater cost savings.

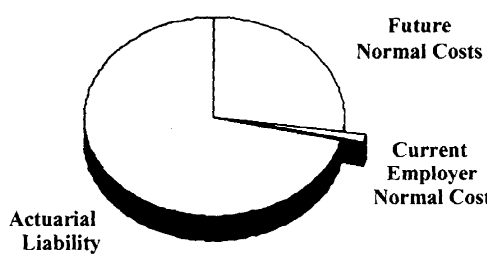
Understanding these terms makes it easier to understand the City's CalPERS actuarial information.

Present Value of Benefits: When CalPERS (or any actuary) prepares a pension valuation, they first gather participant data (including active employees, former employees not in payment status, participants and beneficiaries in payment status) at the valuation date (for example June 30, 2008). Using this data and some actuarial assumptions, they project future benefit payments. (The assumptions predict, among other things, when people will retire, terminate, die or become disabled, as well as what salary increases, inflation and investment return might be.) Those future benefit payments are discounted, using expected future investment return, back to the valuation date. This discounted present value is the plan's present value of benefits. It represents the amount the plan needs as of the valuation date to pay all future benefits – if all assumptions are met and no future contributions (employee or employer) are made.

Actuarial Liability: This represents the portion of the present value of benefits that participants have earned (on an actuarial, not actual, basis) through the valuation date.

Current Employer Normal Cost: The total normal cost represents the portion of the present value of benefits expected to be earned (on an actuarial, not actual, basis) in the coming year. The current employer normal cost represents the employer's portion of the total normal cost – that is, the total normal cost offset by employee contributions.

Present Value of Benefits



The above chart shows the Present Value of Benefits as the sum of Actuarial Liability, Current Normal Cost, and Future Normal Costs. Once these amounts are calculated, the actuary compares actuarial assets to the Actuarial Liability. When assets equal liabilities, a plan is considered on track for funding. When assets are greater than liabilities, the plan has excess assets; when assets are less than liabilities, the plan has an unfunded liability.

Contribution Rate: CalPERS does not require an agency to make up any shortfall (unfunded liability) immediately, nor do they allow an immediate credit for any excess assets. Instead, the difference is amortized over time. An agency's contribution rate is nothing more complicated than the current employer normal cost, plus the amortized unfunded liability or less the amortized excess assets. Simply put, this contribution is the value of employer benefits earned during the year plus something to move the plan toward being on track for funding. There is a two-year delay from the valuation date to the contribution effective date. For example, the June 30, 2008 valuation generates an agency's 2010/11 fiscal year contribution. CalPERS instituted this delay a few years ago to ensure public agencies would have contribution rates as they begin their budgeting process for each fiscal year.

Fresh Start: When CalPERS prepares a valuation and determines an agency's contribution rate, it's usually in layers, such as gains/losses or plan changes, with each layer (base) adding up to the contribution rate. But if that calculation results in a zero contribution rate, CalPERS combines it into one base and tells the agency it will have a zero contribution for a fixed period. That combination is called a "fresh start." An agency with a fresh start will know it; the actuarial report will show a single base (labeled *fresh start*).

Super-Funded: A plan is super-funded when actuarial assets are greater than the present value of benefits. Referring to the above circle chart a plan has excess assets when assets exceed the Actuarial Liability and a super-surplus when asset exceed the Present Value of Benefit. When a plan is Super-Funded, the super-surplus (actuarial assets over present value of benefits) may be used to pay employee contributions. However, any super-surplus use must occur in the fiscal year for which the valuation report's contribution rate was calculated. For example, a plan super-funded in the June 30, 2008 valuation can use super-surplus to pay 2010/11 fiscal year employee contributions.

Employer Paid Member Contribution (EPMC): Each employee contributes towards his or her retirement based on the retirement formula. If employer chooses to pick up a portion or entire contribution for employees, the portion of member contribution that paid by employer is called Employer Paid Member Contribution.