



COUNTY OF SOLANO
MISCELLANEOUS AND SAFETY PLANS

CalPERS Actuarial Issues – 6/30/16 Valuation

Doug Pryor, Vice President
Bianca Lin, Assistant Vice President
Matthew Childs, Actuarial Analyst
Bartel Associates, LLC

June 12, 2018

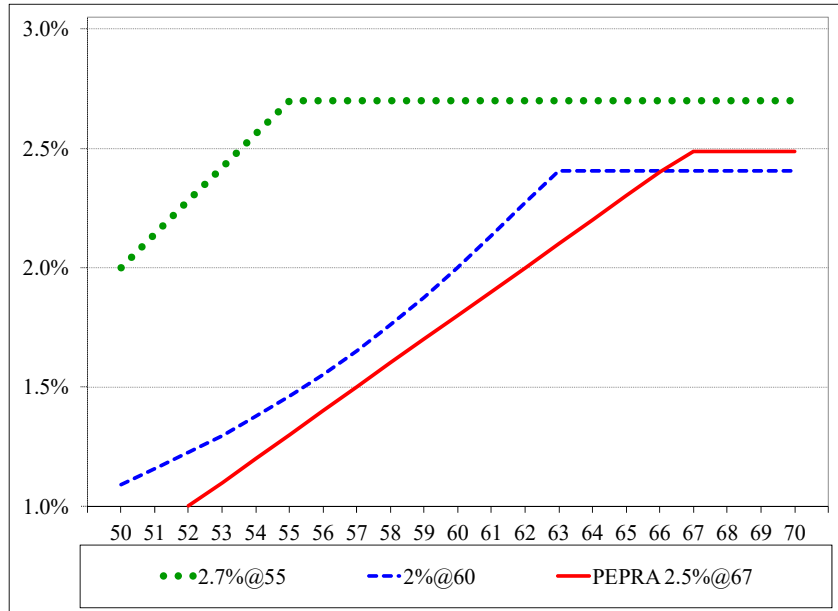
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BENEFIT FORMULAS

Miscellaneous Benefits¹



¹ 2%@60 if hired on or after 5/4/12;
PEPR 2.5%@67 for new members after 12/31/12.



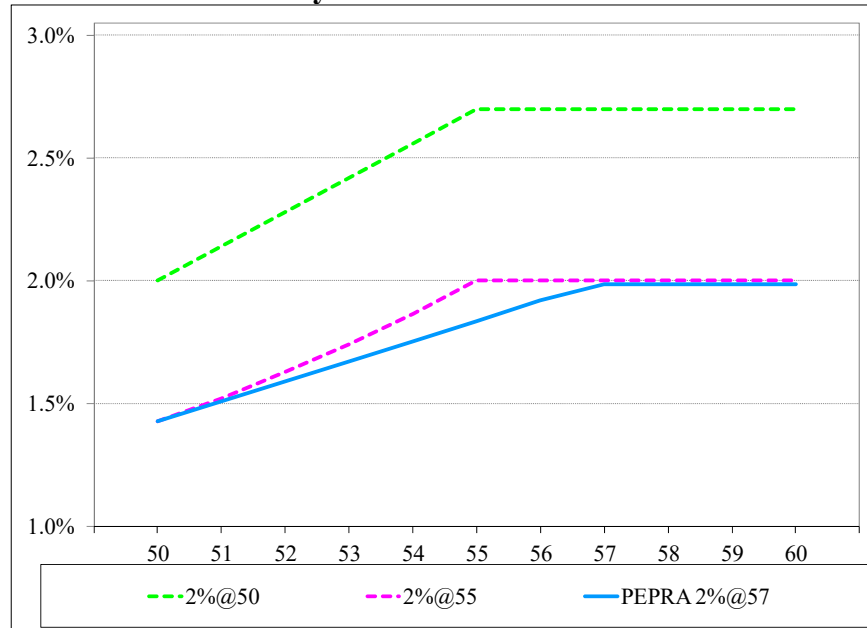
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BENEFIT FORMULAS

County Peace Officer Benefits²



² 2%@55 if hired on or after 5/4/12;
PEPR 2%@57 for new members after 12/31/12.



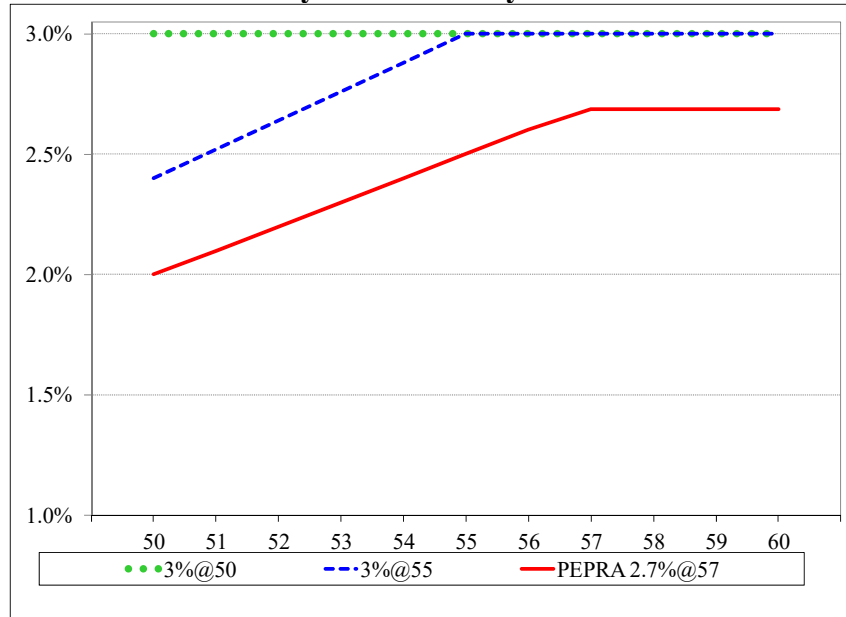
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BENEFIT FORMULAS

County Sheriff Safety Benefits³



³ 3%@55 if hired on or after 1/17/11;
PEPR 2.7%@57 for new members after 12/31/12.



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CALPERS CHANGES

- Contribution policy changes (Apr. '13):
 - No asset smoothing
 - No rolling amortization
 - 5-year ramp up
 - Included in 6/30/13 valuation (first impact 15/16 rates; full impact 19/20)
- Assumption changes (Feb '14):
 - Anticipate future mortality improvement
 - Other, less significant, changes
 - Included in 6/30/14 valuation (first impact 16/17 rates; full impact 20/21)
- Risk Mitigation Strategy (Nov '15)
 - Move to more conservative investments over time
 - Only when investment return is better than expected
 - Lower discount rate in concert
 - Essentially use ≈50% of investment gains to pay for cost increases
 - Likely get to 6.0% over 20+ years



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CALPERS CHANGES

■ Discount rate change (Dec '16):

	<u>Rate</u>	<u>Initial</u>	<u>Full</u>
● 6/30/16 valuation	7.375%	18/19	22/23
● 6/30/17 valuation	7.25%	19/20	23/24
● 6/30/18 valuation	7.00%	20/21	24/25
● Risk mitigation suspended until 6/30/18 valuation			

■ Asset allocation selected similar to current portfolio. No further change to the discount rate (Dec '17).

■ New amortization policy (Feb '18)

- Applies only to newly established amortization bases
 - Fixed dollar amortization rather than % pay
 - Amortize gains/losses over 20 rather than 30 years
 - 5-year ramp up (not down) for investment gains and losses
 - No ramp up/down for other amortization bases
- Minimizes total interest paid over time and pays off UAL faster
- Effective June 30, 2019 valuation for 2021/22 contributions

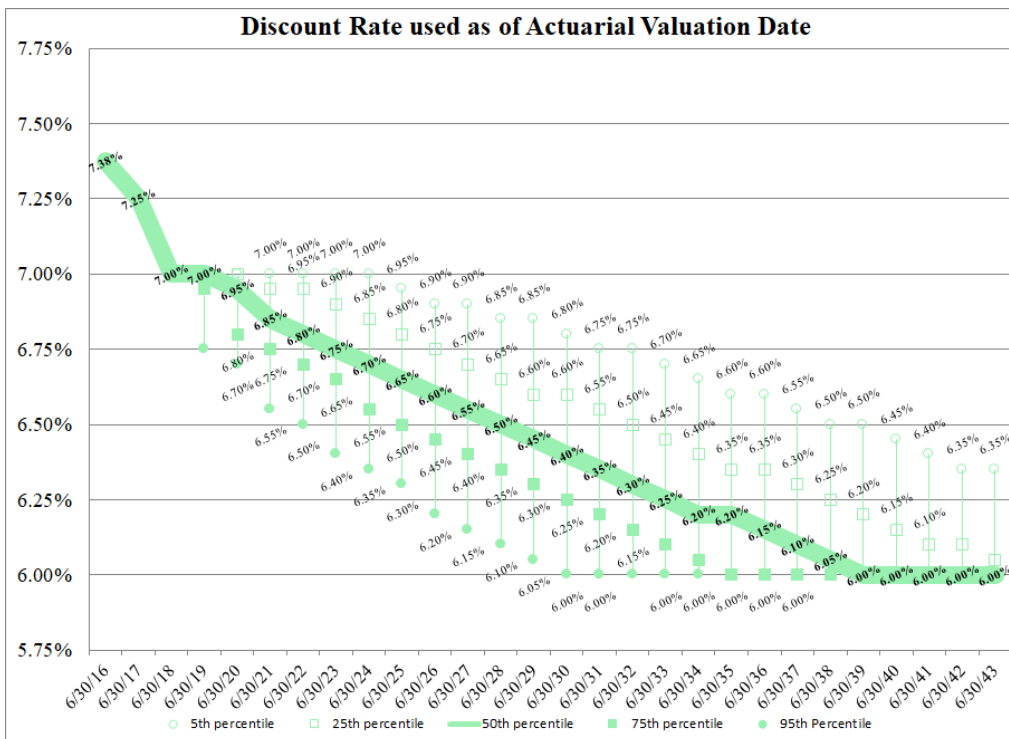


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CALPERS CHANGES



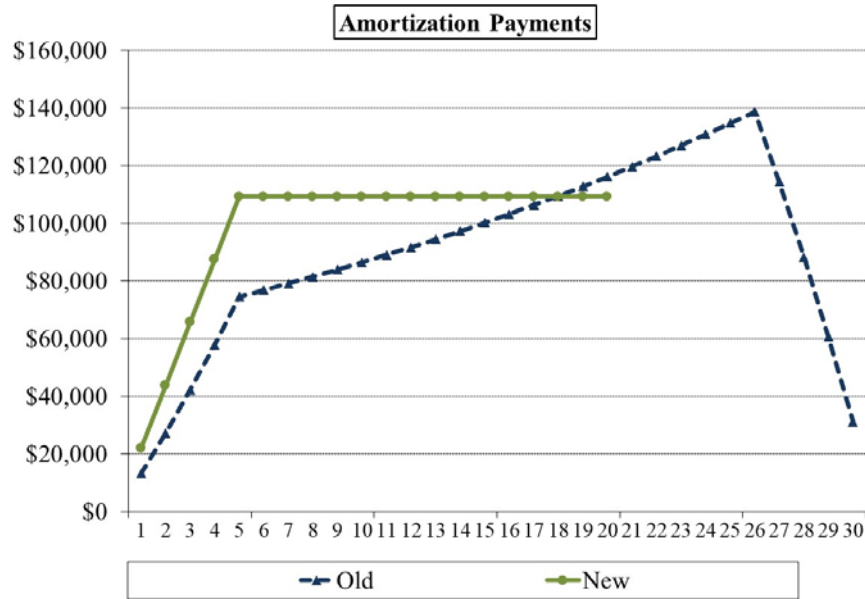
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CALPERS CHANGES

Investment Gain/Loss Schedule \$1 Million Initial Balance, 7% Discount Rate



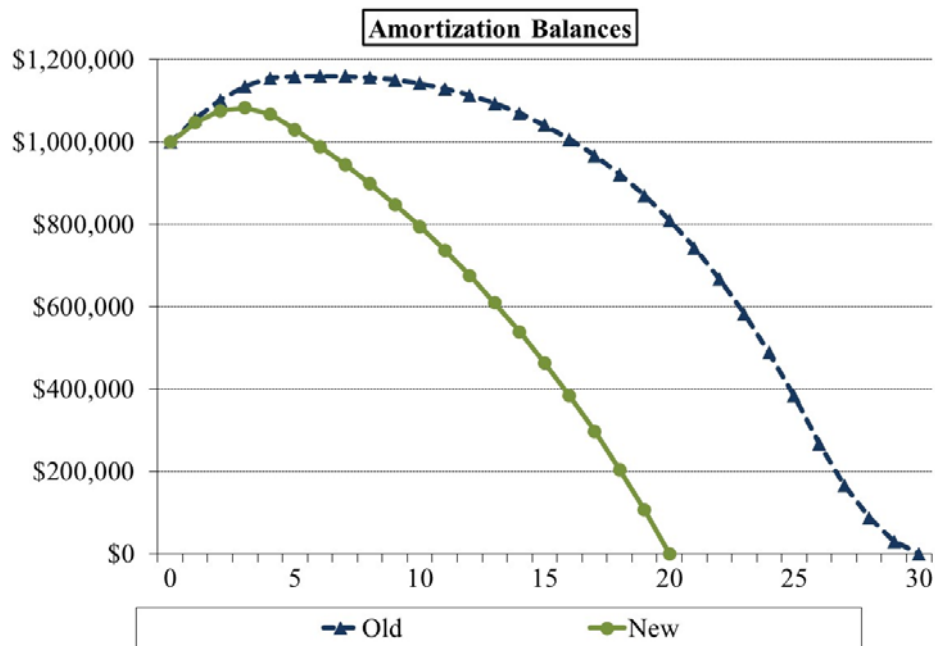
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CALPERS CHANGES

Investment Gain/Loss Schedule \$1 Million Initial Balance, 7% Discount Rate



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SUMMARY OF DEMOGRAPHIC INFORMATION - MISCELLANEOUS

	1996	2006	2015	2016
Actives				
■ Counts	1,972	2,496	2,349	2,438
■ Average				
• Age	44	46	47	47
• County Service	9	9	11	11
• PERSable Wages	\$35,100	\$58,400	\$69,500	\$70,600
■ Total PERSable Wages (millions)	69.1	145.9	163.3	172.2
Receiving Payments				
■ Counts				
• Service		1,441	2,395	2,479
• Disability		157	176	174
• Beneficiaries		147	171	175
• Total	986	1,745	2,742	2,828
■ Average Annual County Provided Benefit ⁴				
• Service		\$16,200	\$24,400	\$24,700
• Disability		8,300	10,200	10,400
• Service Retirements in last 5 years		22,700	26,500	24,000

⁴ Average County provided pensions are based on County service & County benefit formula, and are not representative of benefits for long service employees.

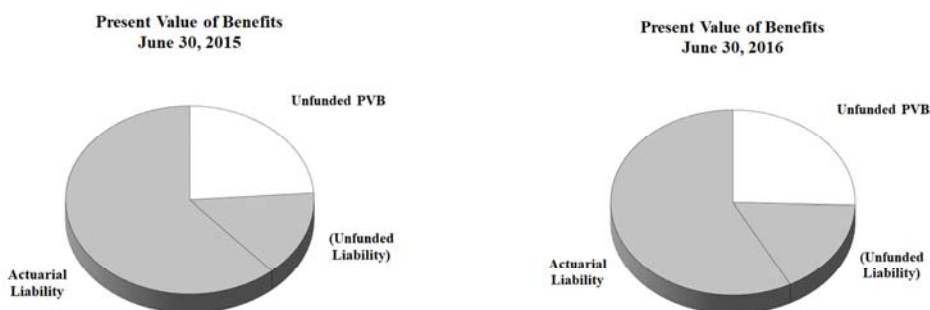


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FUNDED RATIO - MISCELLANEOUS



<u>June 30, 2015</u>		<u>June 30, 2016</u>
\$ 517,000,000	Active AAL	\$ 547,200,000
767,700,000	Retiree AAL	802,300,000
74,200,000	Inactive AAL	79,800,000
1,358,900,000	Total AAL	1,429,300,000
1,034,600,000	Market Asset Value	1,014,800,000
(324,300,000)	(Unfunded Liability)	(414,500,000)



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FUNDED RATIO - MISCELLANEOUS

- What happened between 6/30/15 and 6/30/16?
 - Unfunded Liability (Increase)/Decrease ≈ \$(90.2) million
- Gains (losses)
 - Asset gain/(loss) ≈ \$(75.5) million
 - Assumption Change ≈ \$(20.7) million
 - Actuarial gain/(loss) ≈ \$14.0 million
 - Average Salary \$69,500 → \$70,600
 - Number of Actives 2,349 → 2,438
 - Number of Inactives 1,543 → 1,600
 - Number of Retirees 2,742 → 2,828
 - Other gain/(loss) ≈ \$(11.0) million
 - Contributions
 - Other (expected)



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INVESTMENT RETURN - MISCELLANEOUS



Above assumes contributions, payments, etc. received evenly throughout year.

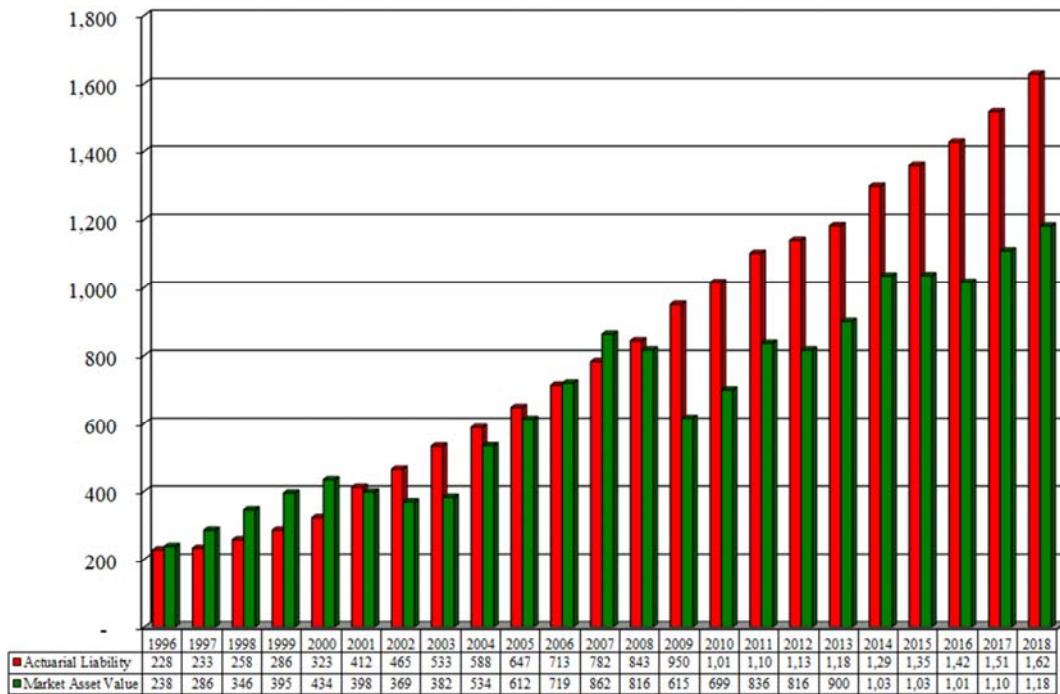


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FUNDED STATUS (MILLIONS) - MISCELLANEOUS



6/30/17 & 6/30/18 funded status estimated.

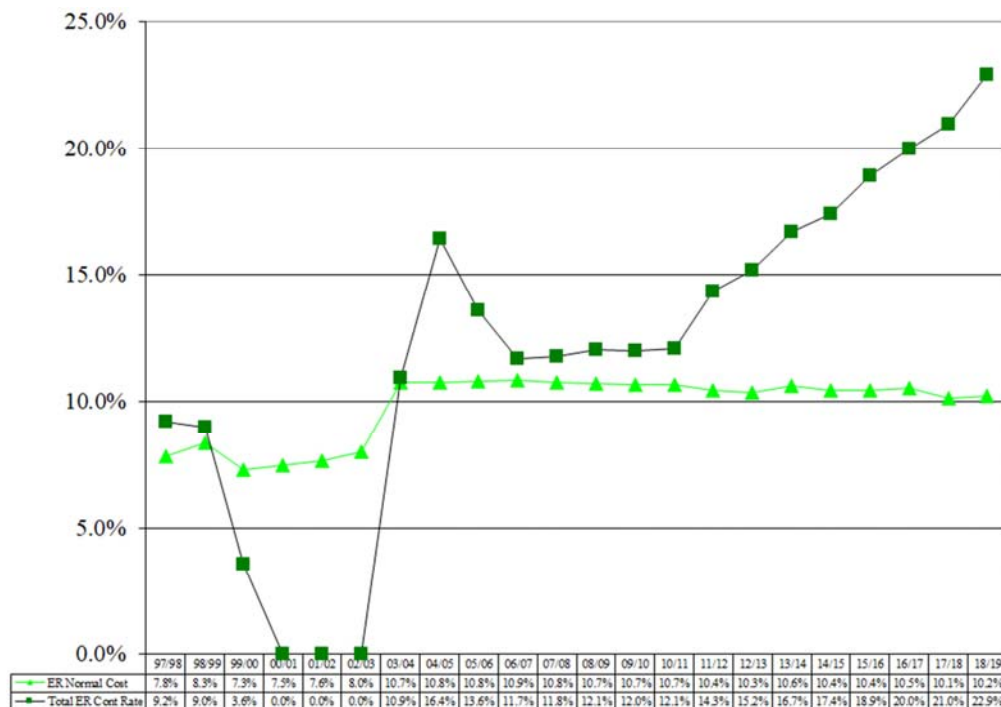


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CONTRIBUTION RATES - MISCELLANEOUS



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CONTRIBUTION RATES - MISCELLANEOUS

	6/30/15 <u>2017/2018</u>	6/30/16 <u>2018/2019</u>
■ Total Normal Cost	17.6%	17.7%
■ Employee Normal Cost	<u>7.5%</u>	<u>7.4%</u>
■ Employer Normal Cost	10.1%	10.2%
■ Amortization Bases	<u>10.8%</u>	<u>12.7%</u>
■ Total Employer Contribution Rate	21.0%	22.9%
■ Amortization Period	Multiple	Multiple
■ What Happened from 6/30/15 to 6/30/16:		
● 2017/18 Rate		21.0%
● Payroll > Expected		(0.3%)
● Asset Method Change (4 th Year)		1.1%
● 6/30/14 Assumption Change (3 rd Year)		0.8%
● 6/30/14 (Gains)/Losses (3 rd Year)		(0.9%)
● 6/30/15 (Gains)/Losses (2 nd Year)		0.5%
● 6/30/16 Discount Rate change (1 st Year)		0.7%
● 6/30/16 (Gains)/Losses (1 st Year)		<u>0.0%</u>
● 2018/19 Rate		22.9%



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CONTRIBUTION RATES - MISCELLANEOUS

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CONTRIBUTION PROJECTIONS - MISCELLANEOUS

■ Market Value Investment Return:

- June 30, 2017 11.2%⁵
 - June 30, 2018 9.6%⁶
 - Future returns based on stochastic analysis using 1,000 trials
- | <u>Single Year Returns at⁷</u> | <u>25th Percentile</u> | <u>50th Percentile</u> | <u>75th Percentile</u> |
|---|-----------------------------------|-----------------------------------|-----------------------------------|
| ● 7.0% Investment Mix | 0.1% | 7.0% | 14.8% |
| ● 6.0% Investment Mix | 0.8% | 6.0% | 11.4% |
- Assumes investment returns will, generally be 6.5% (as compared to 7.0%) over the next 10 years and higher beyond that.

■ No Other: Gains/Losses, Method/Assumption Changes, Benefit Improvements

■ Excludes Employer Paid Member Contributions (EPMC)

⁵ Based on CalPERS 6/30/17 CAFR.

⁶ Based on actual CalPERS return of 7.9% through 3/31/18 and assumed return for 3 months.

⁷ Nth percentile means N percentage of our trials result in returns lower than the indicated rates.



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CONTRIBUTION PROJECTIONS - MISCELLANEOUS

■ Tier 2 Members (2.0%@60) effective 2/4/12

■ New hire assumptions:

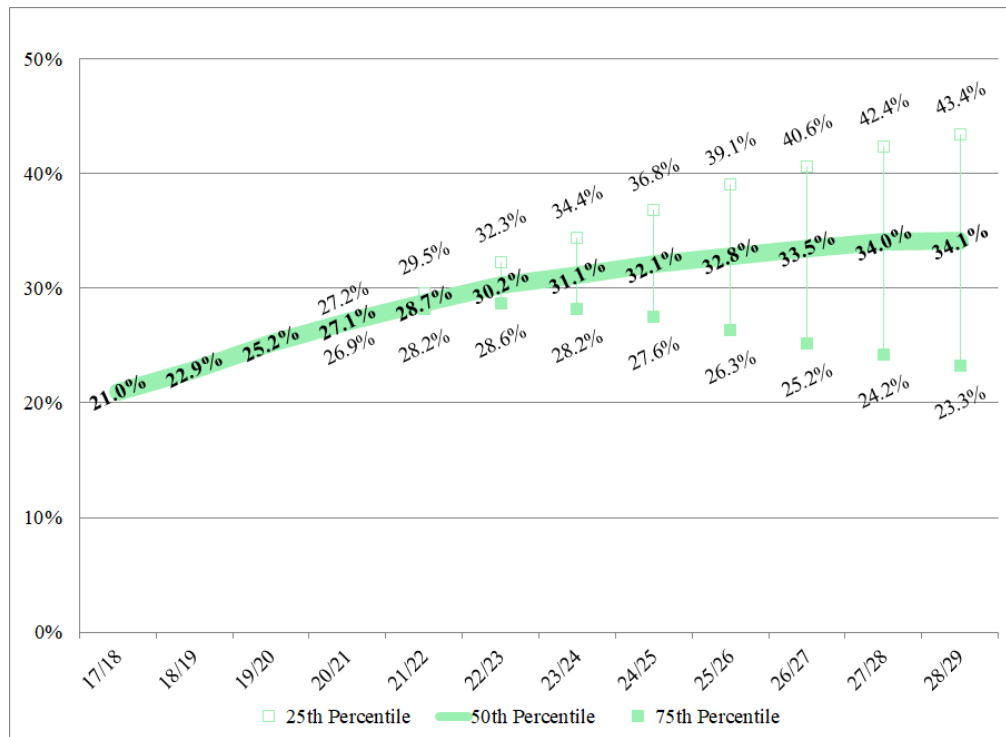
- Assumes 25% of 2013 new hires will be Classic Tier 2 Members and 75% will be New Members with PEPRAs benefits
- Assumes Classic Members will decrease from 25% to 0% of new hires over 20 years



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CONTRIBUTION PROJECTIONS - MISCELLANEOUS

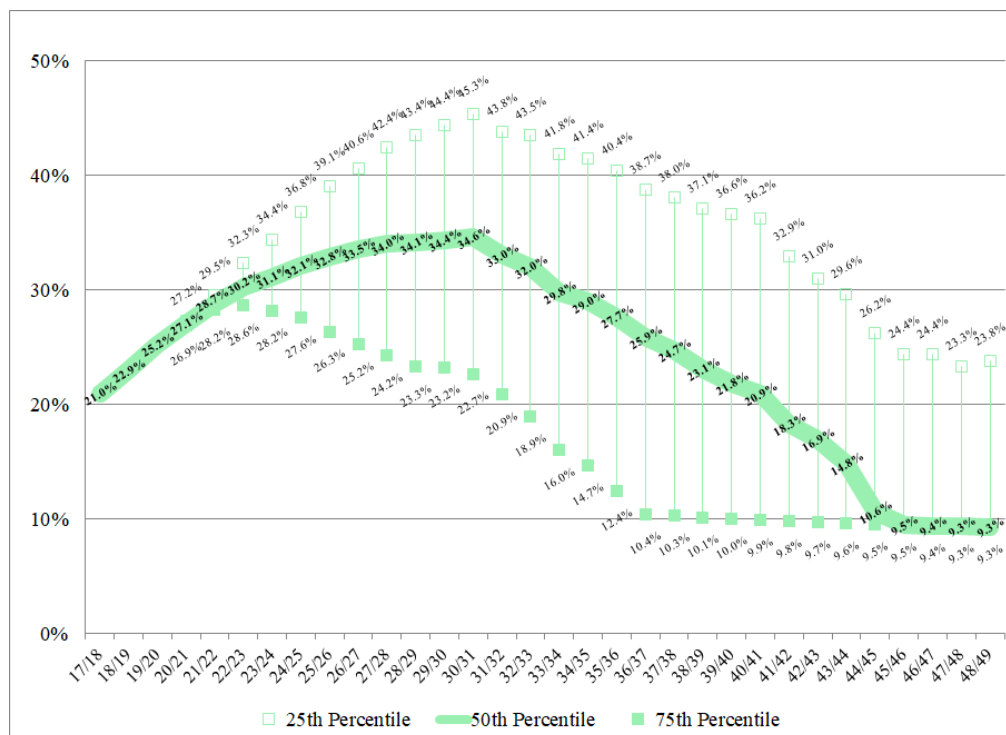


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CONTRIBUTION PROJECTIONS - MISCELLANEOUS

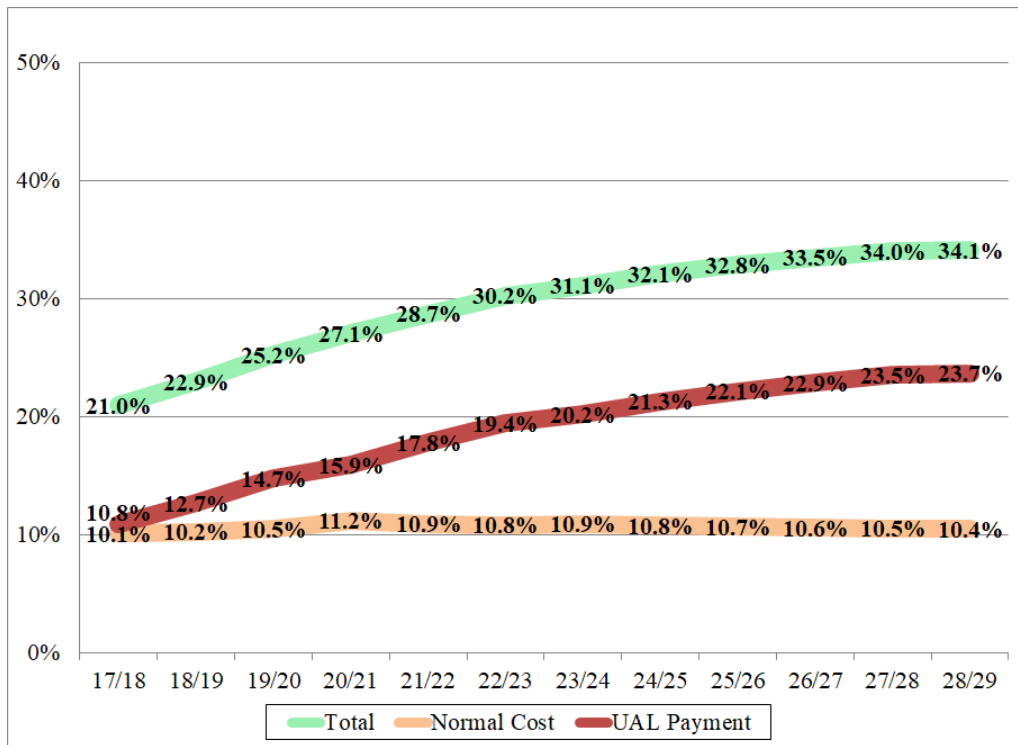


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CONTRIBUTION PROJECTIONS - MISCELLANEOUS

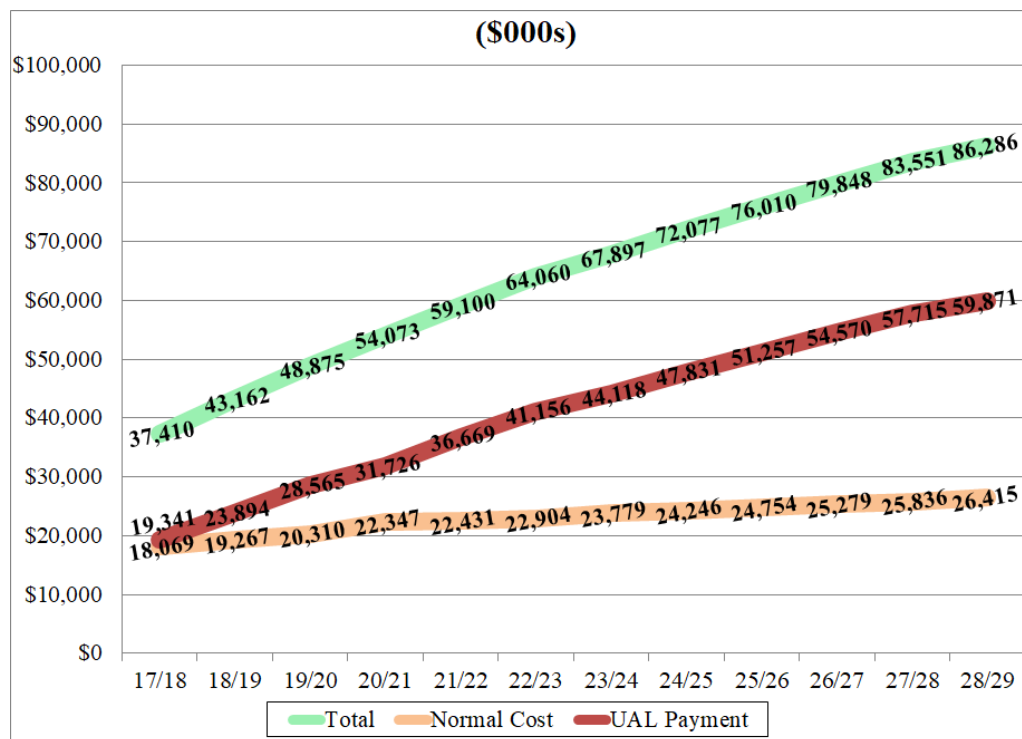


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CONTRIBUTION PROJECTIONS - MISCELLANEOUS

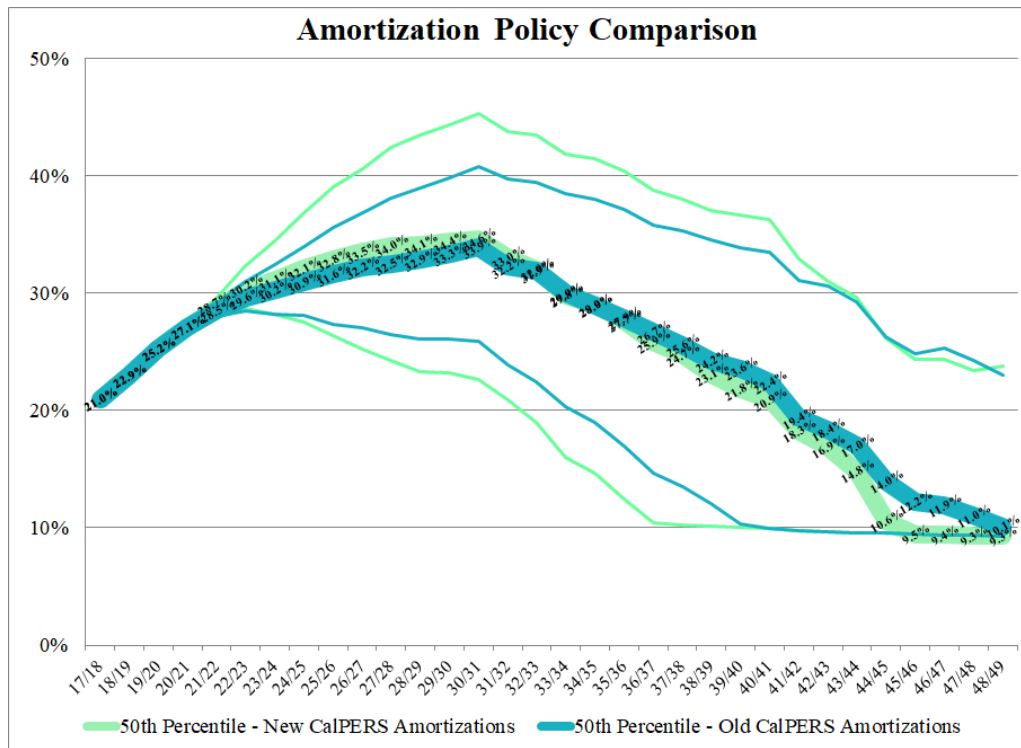


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CONTRIBUTION PROJECTIONS - MISCELLANEOUS

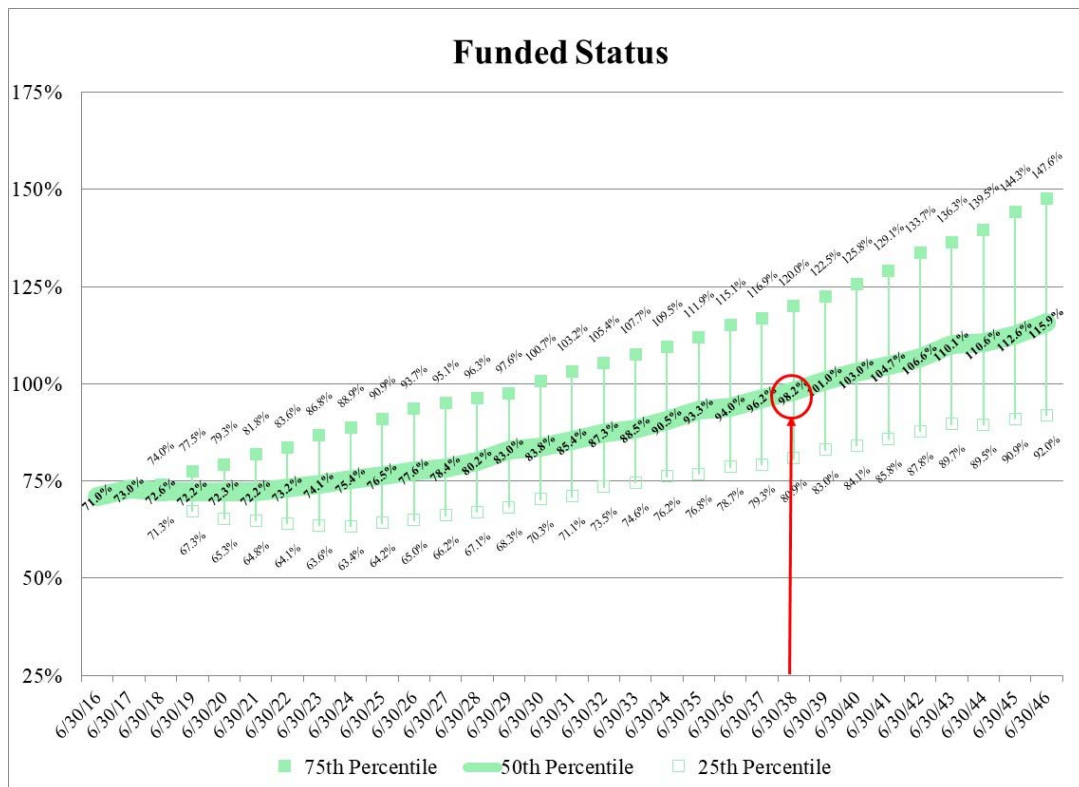


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FUNDED STATUS - MISCELLANEOUS



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SUMMARY OF DEMOGRAPHIC INFORMATION - SAFETY

	1996	2006	2015	2016
Actives				
■ Counts	455	521	563	584
■ Average				
• Age	41	41	42	41
• County Service	9	10	15	11
• PERSable Wages	\$41,600	\$66,300	\$79,100	\$80,500
■ Total PERSable Wages (millions)	18.9	34.6	44.5	47.0
Receiving Payments				
■ Counts				
• Service		192	321	341
• Disability		124	162	161
• Beneficiaries		34	48	54
• Total	135	350	531	556
■ Average Annual County Provided Benefit ⁸				
• Service		\$28,400	\$37,000	\$38,000
• Disability		19,100	28,600	29,000
• Service Retirements in last 5 years		33,900	37,100	36,600

⁸ Average County provided pensions are based on County service & County benefit formula, and are not representative of benefits for long service employees.



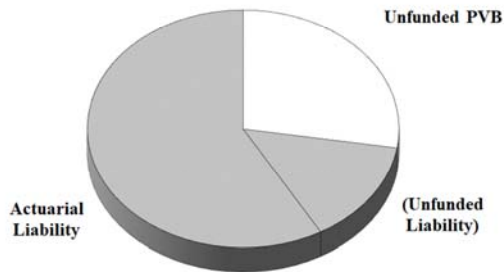
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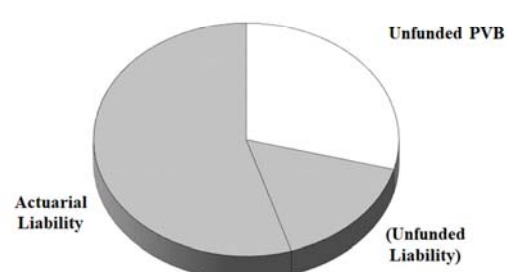


FUNDED RATIO - SAFETY

Present Value of Benefits
June 30, 2015



Present Value of Benefits
June 30, 2016



<u>June 30, 2015</u>		<u>June 30, 2016</u>
\$ 175,400,000	Active AAL	\$ 179,800,000
229,900,000	Retiree AAL	248,600,000
<u>12,700,000</u>	Inactive AAL	<u>15,400,000</u>
418,000,000	Total AAL	443,800,000
<u>316,300,000</u>	Market Asset Value	<u>313,000,000</u>
(101,700,000)	(Unfunded Liability)	(130,800,000)



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FUNDED RATIO - SAFETY

- What happened between 6/30/15 and 6/30/16?
 - Unfunded Liability (Increase)/Decrease ≈ \$(29.1) million
- Gains (losses)
 - Asset gain/(loss) ≈ \$(22.3) million
 - Assumption Change ≈ \$(6.8) million
 - Actuarial gain/(loss) ≈ \$4.8 million
 - Average Salary \$79,100 → \$80,500
 - Number of Actives 563 → 584
 - Number of Inactives 252 → 258
 - Number of Retirees 531 → 556
 - Other gain/(loss) ≈ \$(4.8) million
 - Contributions
 - Other (expected)

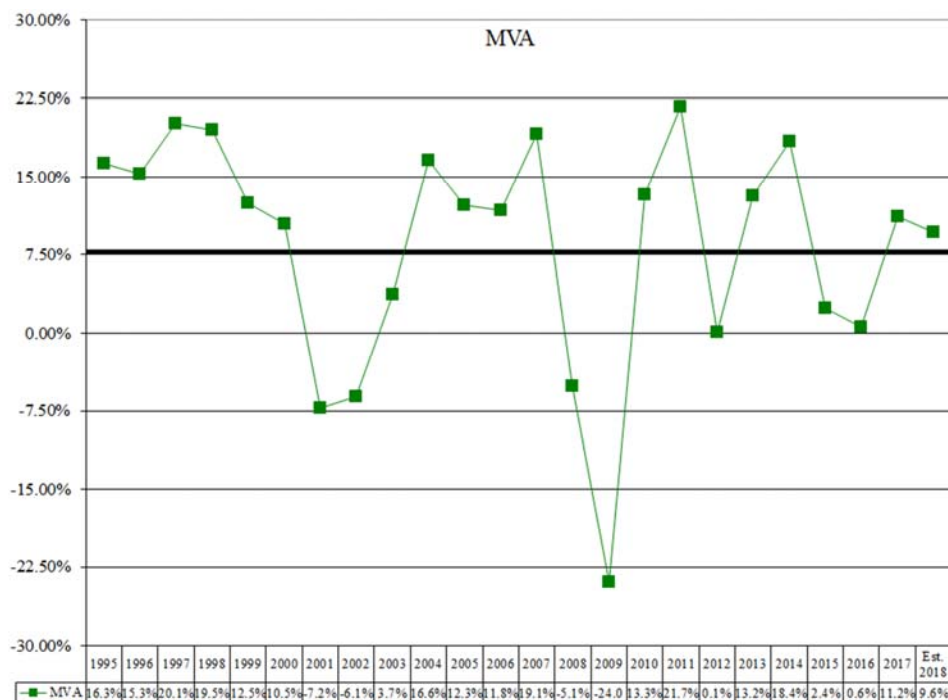


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INVESTMENT RETURN - SAFETY

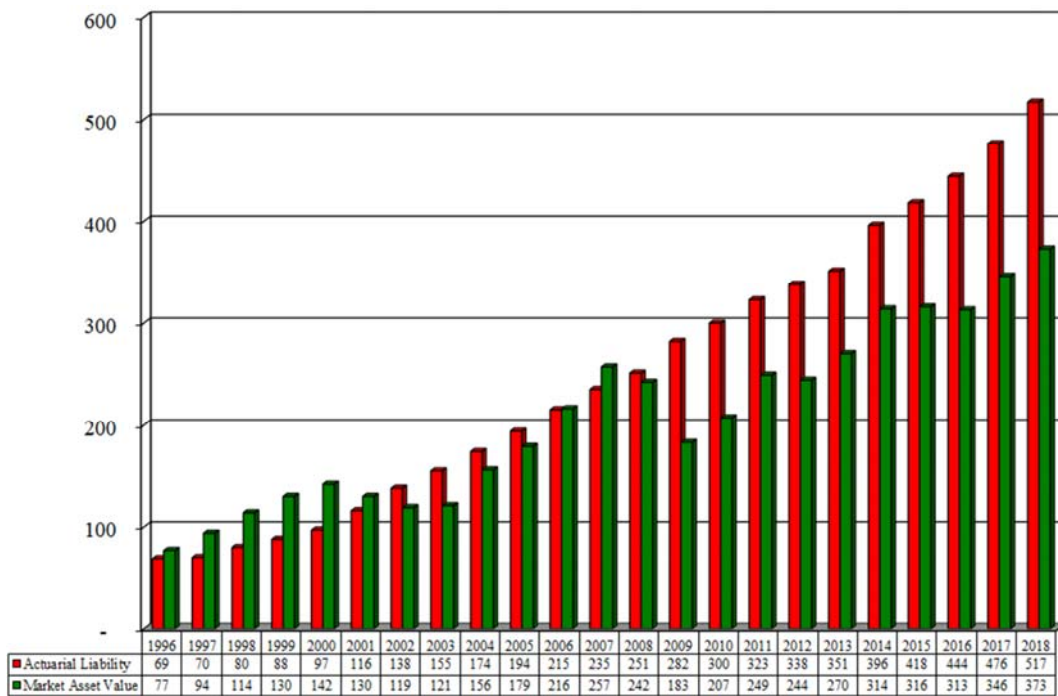


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FUNDED STATUS (MILLIONS) - SAFETY



6/30/17 & 6/30/18 funded status estimated.

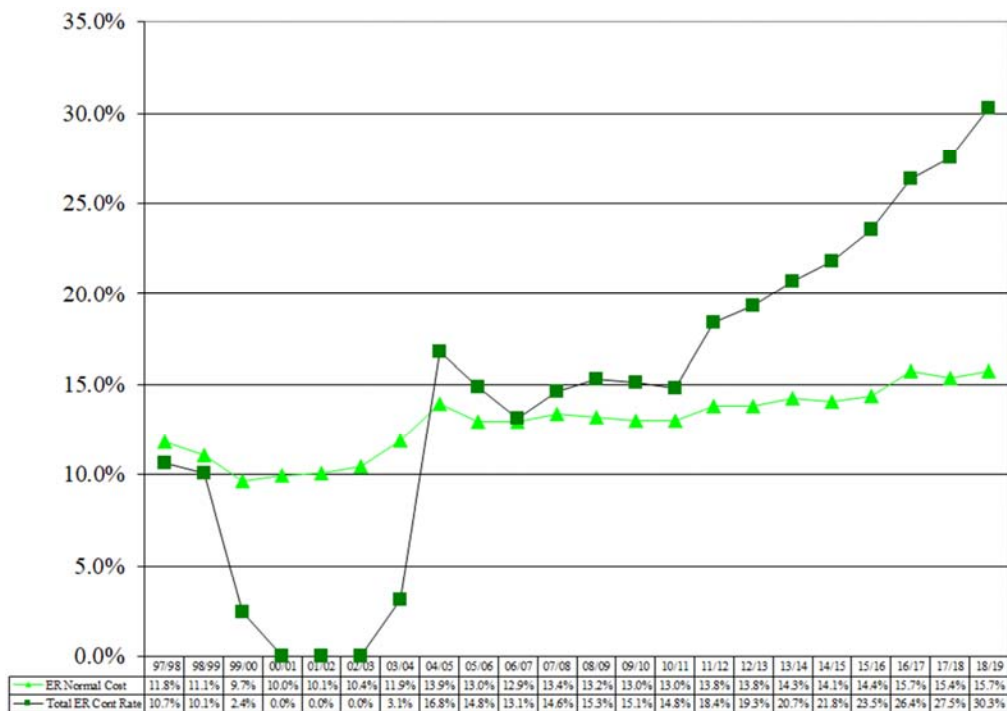


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CONTRIBUTION RATES - SAFETY



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CONTRIBUTION RATES - SAFETY

	6/30/15 2017/2018	6/30/16 2018/2019
■ Total Normal Cost	24.4%	24.7%
■ Employee Normal Cost	9.0%	9.0%
■ Employer Normal Cost	15.4%	15.7%
■ Amortization Bases	<u>12.1%</u>	<u>14.5%</u>
■ Total Employer Contribution Rate	27.5%	30.3%
■ Amortization Period	Multiple	Multiple
■ What Happened from 6/30/15 to 6/30/16:		
● 2017/18 Rate		27.5%
● Payroll > Expected		(0.3%)
● Asset Method Change (4 th Year)		1.2%
● 6/30/14 Assumption Change (3 rd Year)		1.3%
● 6/30/14 (Gains)/Losses (3 rd Year)		(1.0%)
● 6/30/15 (Gains)/Losses (2 nd Year)		0.5%
● 6/30/16 Discount Rate change (1 st Year)		0.9%
● 6/30/16 (Gains)/Losses (1 st Year)		<u>0.2%</u>
● 2018/19 Rate		30.3%



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CONTRIBUTION RATES - SAFETY

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CONTRIBUTION PROJECTIONS - SAFETY

■ Market Value Investment Return:

- June 30, 2017 11.2%⁹
 - June 30, 2018 9.6%¹⁰
 - Future returns based on stochastic analysis using 1,000 trials
- | <u>Single Year Returns at</u> ¹¹ | <u>25th Percentile</u> | <u>50th Percentile</u> | <u>75th Percentile</u> |
|---|-----------------------------------|-----------------------------------|-----------------------------------|
| ● 7.0% Investment Mix | 0.1% | 7.0% | 14.8% |
| ● 6.0% Investment Mix | 0.8% | 6.0% | 11.4% |
- Assumes investment returns will, generally be 6.5% (as compared to 7.0%) over the next 10 years and higher beyond that.

■ No Other: Gains/Losses, Method/Assumption Changes, Benefit Improvements

■ Excludes Employer Paid Member Contributions (EPMC)

⁹ Based on CalPERS 6/30/17 CAFR.

¹⁰ June 30, 2018 return based on actual CalPERS return of 10.9% through 1/31/18 and assumed returns for 5 months.

¹¹ Nth percentile means N percentage of our trials result in returns lower than the indicated rates.



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CONTRIBUTION PROJECTIONS - SAFETY

■ Tier 2 Sheriff 3%@55 and County Peace Officer 2%@55 effective 1/17/11

■ New hire assumptions:

- Assumes 25% of 2013 new hires will be Classic Tier 2 Members (3%@55 & 2%@55) and 75% will be New Members with PEPRAs benefits
- Assumes Classic Members will decrease from 25% to 0% of new hires over 10 years

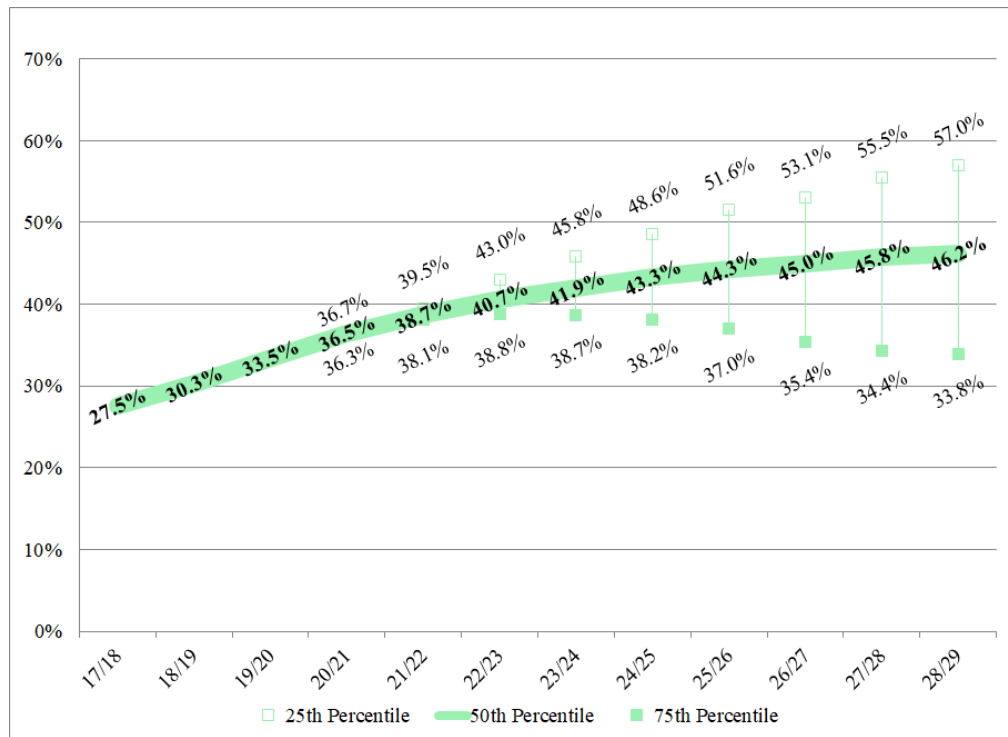


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CONTRIBUTION PROJECTIONS - SAFETY

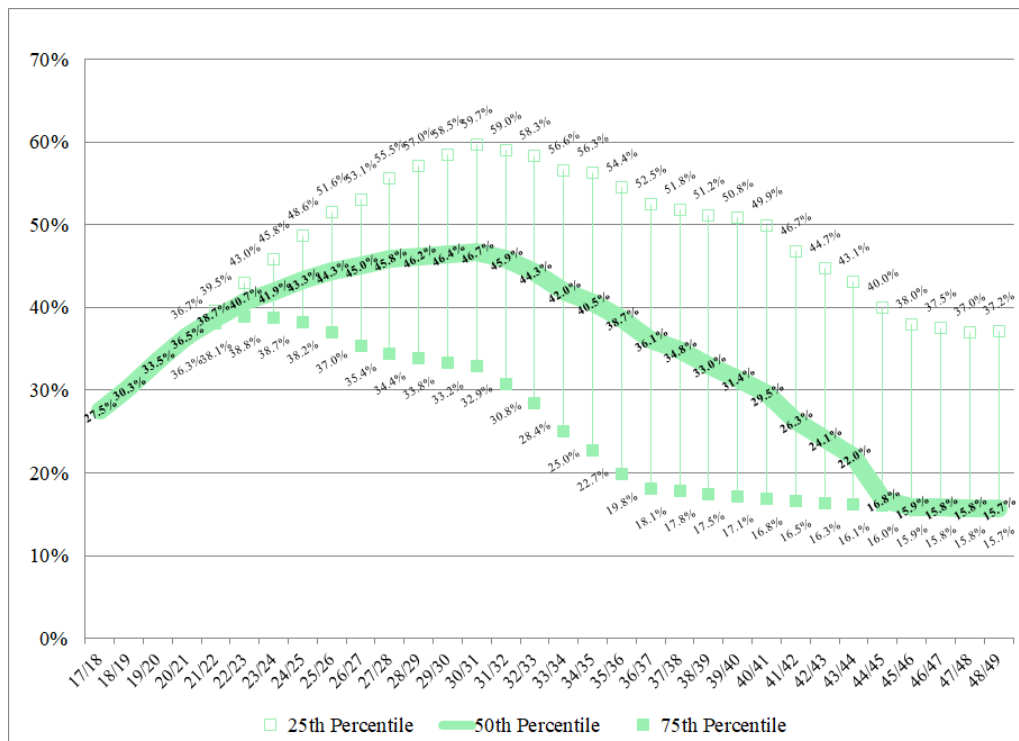


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CONTRIBUTION PROJECTIONS - SAFETY

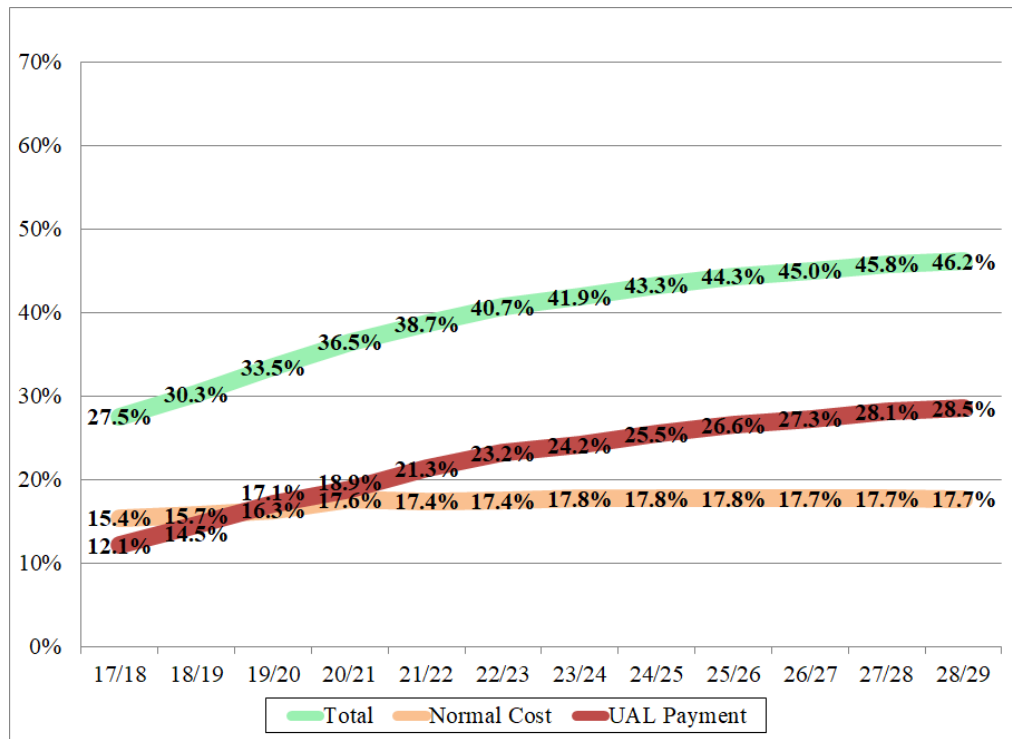


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CONTRIBUTION PROJECTIONS - SAFETY

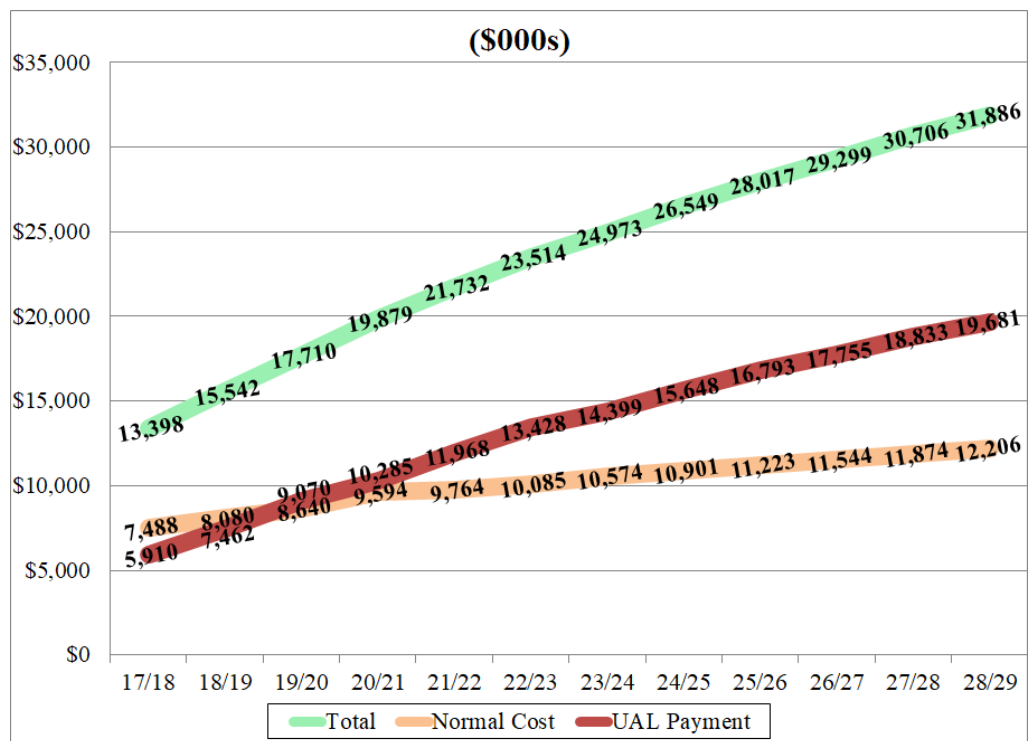


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CONTRIBUTION PROJECTIONS - SAFETY

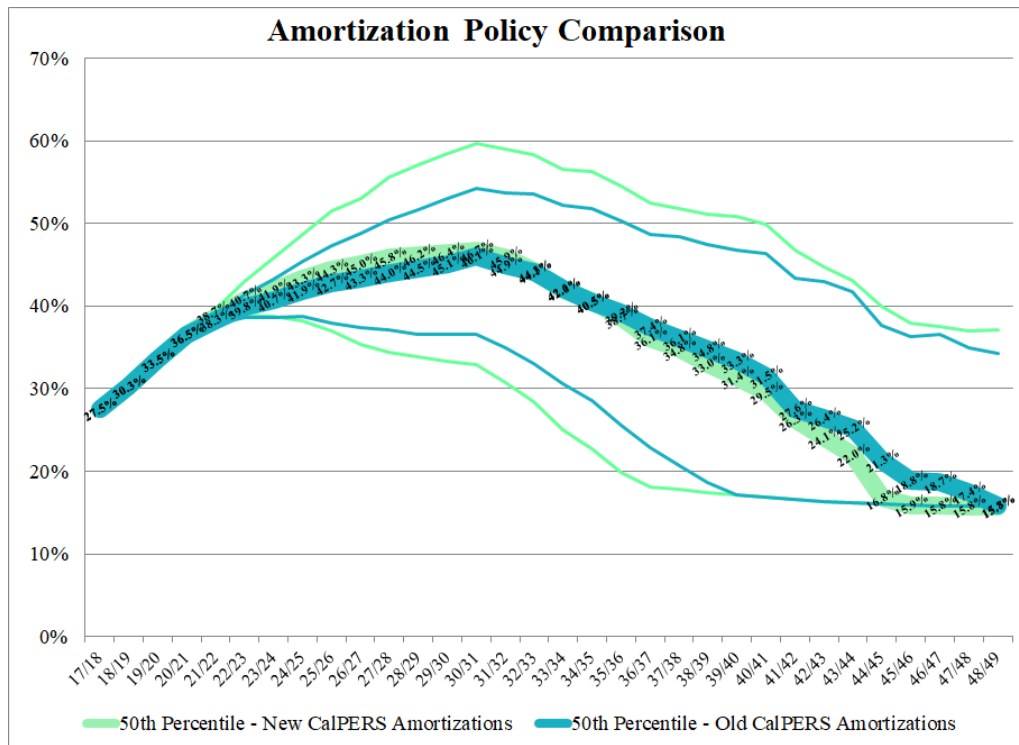


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CONTRIBUTION PROJECTIONS - SAFETY

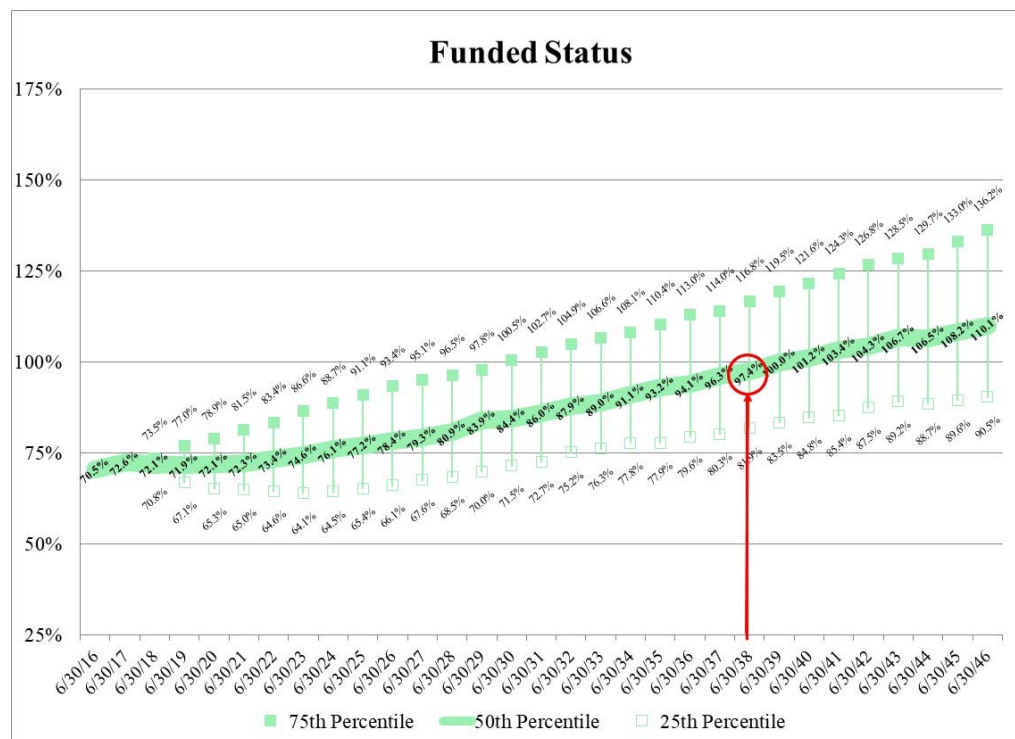


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FUNDED STATUS – SAFETY



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ALTERNATIVE CONTRIBUTION SCENARIOS

- Scenario #1:
 - Miscellaneous: Pay off 2005 Benefit Change, 2010 Golden Handshake and 2011 Special Gain/Loss bases
 - Safety: Pay off 2010 Golden Handshake base
- Scenario #2:
 - Re-Amortize 2015 gain/loss base over 20 years (level dollar)
- Scenario #3:
 - Level dollar County contributions for 90% Funded Ratio in 20 years
- Scenario #4:
 - \$15 million CalPERS contribution to Safety plan effective 6/30/18
 - All Safety bases paid down proportionately to their balance on 6/30/18
 - First impact 2018/19 contributions



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ALTERNATIVE CONTRIBUTION SCENARIOS

Additional CalPERS Contribution **June 30, 2018**

	Miscellaneous	Safety	Total
Scenario #1	\$3,883,000	\$1,590,000	\$5,473,000
Scenario #2	-	-	-
Scenario #3	-	-	-
Scenario #4	-	15,000,000	15,000,000



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ALTERNATIVE CONTRIBUTION SCENARIOS

Scenario #1

Payoff 2005 Benefit Change, 2010 Golden Handshake, and 2011 Special Gain/Loss Bases

	Miscellaneous	Safety
Projected Balance at 6/30/18	\$3,883,000	\$1,590,000
Total \$ Savings	1,704,000	637,000
Present Value Savings @ 3%	762,000	295,000
Annual Contribution Reduction		
Percent of payroll	0.20%	0.37%
Dollar amount (18/19)	\$ 371,000	\$ 189,000



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ALTERNATIVE CONTRIBUTION SCENARIOS

Scenario #2

Re-Amortize 2015 Loss Base over 20 Years

	Miscellaneous	Safety
Total \$ Savings	\$ 35,968,000	\$ 10,412,000
Present Value Savings @ 3%	11,973,000	3,412,000



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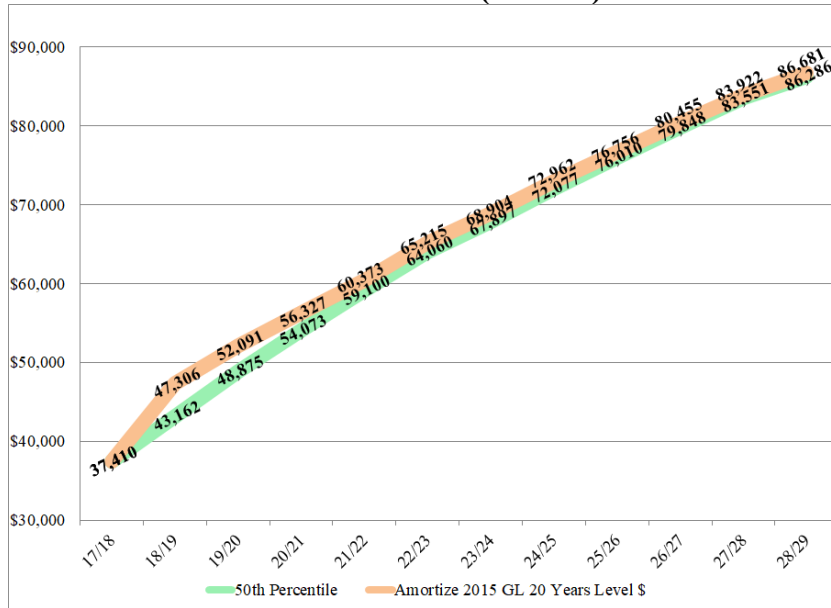
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ALTERNATIVE CONTRIBUTION SCENARIOS

Scenario #2

Re-Amortize 2015 Loss Base over 20 Years Miscellaneous (\$000's)



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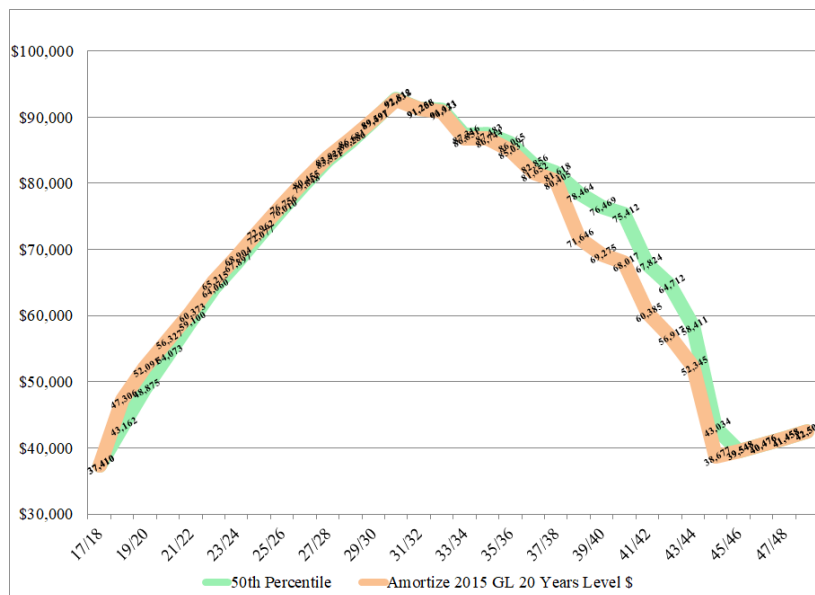
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ALTERNATIVE CONTRIBUTION SCENARIOS

Scenario #2

Re-Amortize 2015 Loss Base over 20 Years Miscellaneous (\$000's)



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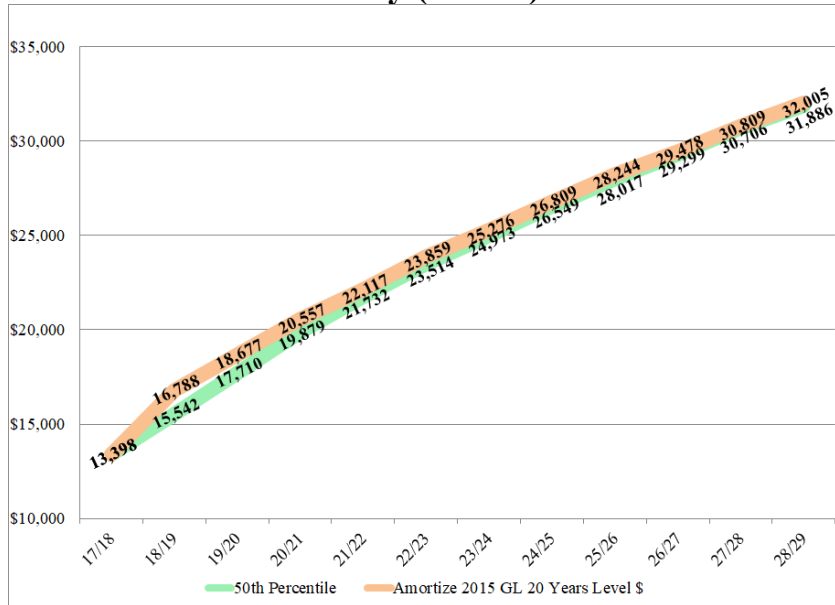
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ALTERNATIVE CONTRIBUTION SCENARIOS

Scenario #2

Re-Amortize 2015 Loss Base over 20 Years Safety (\$000's)



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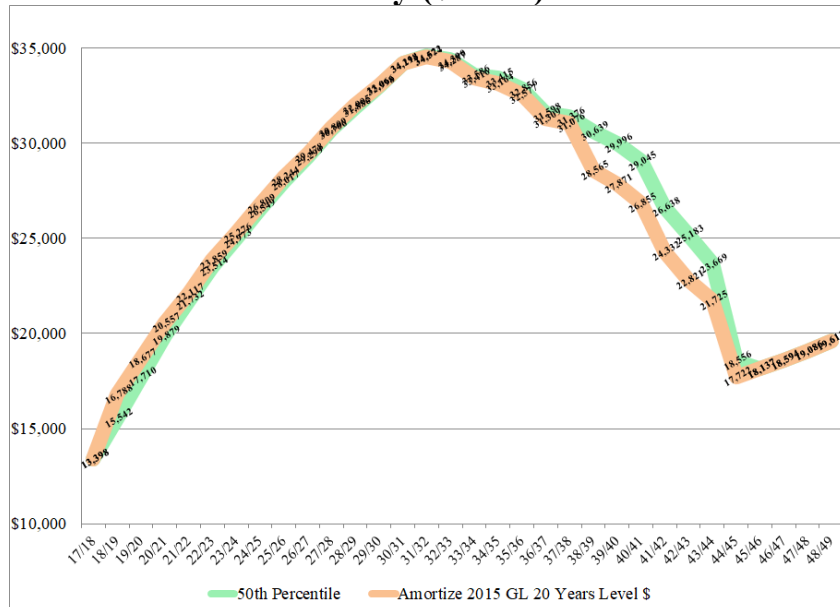
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ALTERNATIVE CONTRIBUTION SCENARIOS

Scenario #2

Re-Amortize 2015 Loss Base over 20 Years Safety (\$000's)



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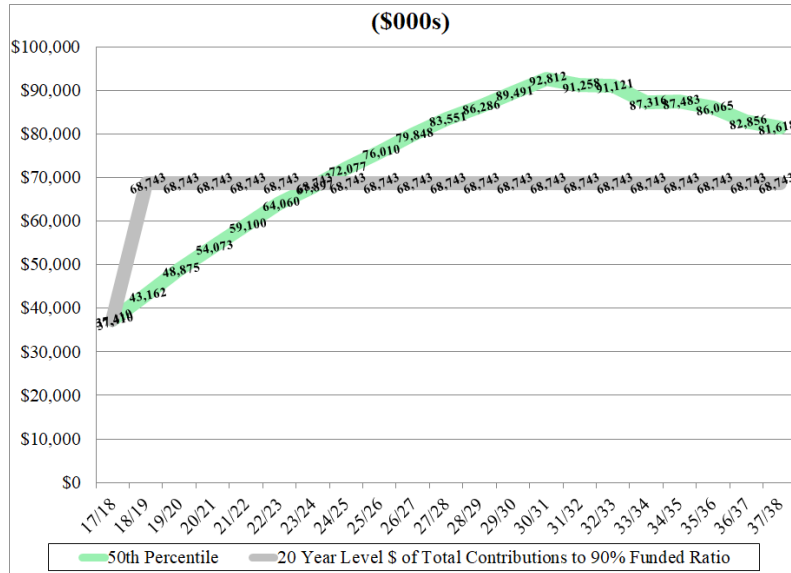
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ALTERNATIVE CONTRIBUTION SCENARIOS

Scenario #3

90% Funded Ratio in 20 Years Miscellaneous



* 50th percentile gets to 98% funded while 20 year level \$ gets to 90% on 6/30/38.



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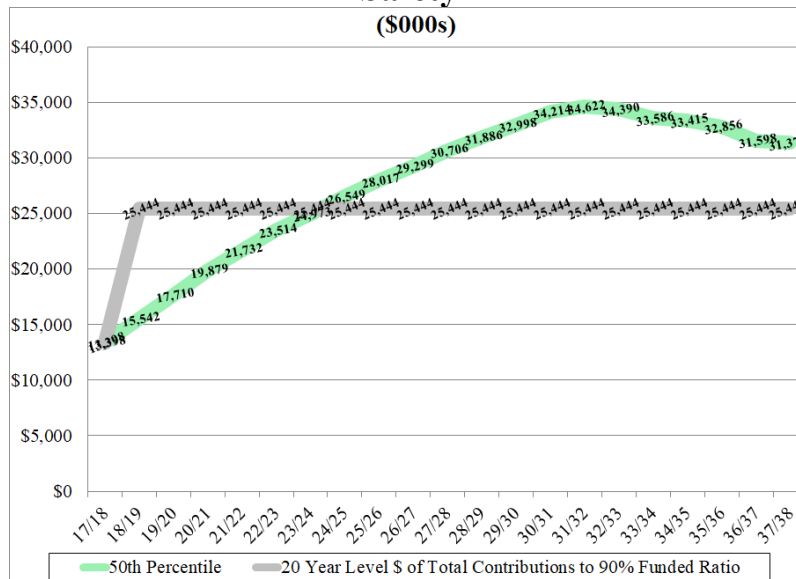
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ALTERNATIVE CONTRIBUTION SCENARIOS

Scenario #3

90% Funded Ratio in 20 Years Safety



* 50th percentile gets to 97% funded while 20 year level \$ gets to 90% on 6/30/38.



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ALTERNATIVE CONTRIBUTION SCENARIOS

Scenario #4

\$15 Million Contribution to Safety

	Miscellaneous	Safety
Total \$ Savings	N/A	\$ 13,880,000
Present Value Savings @ 3%	N/A	5,617,000



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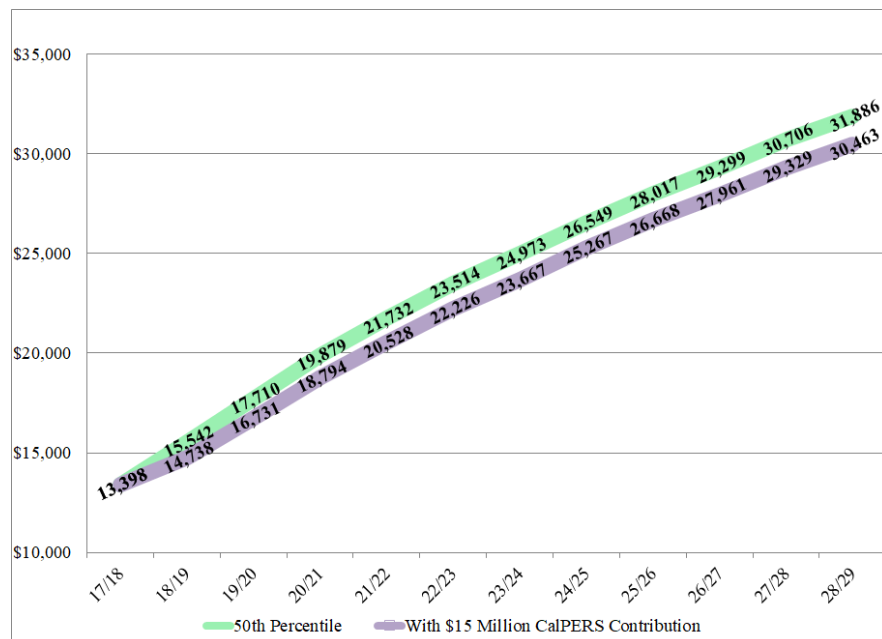
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ALTERNATIVE CONTRIBUTION SCENARIOS

Scenario #4

\$15 Million Contribution to Safety (\$000's)



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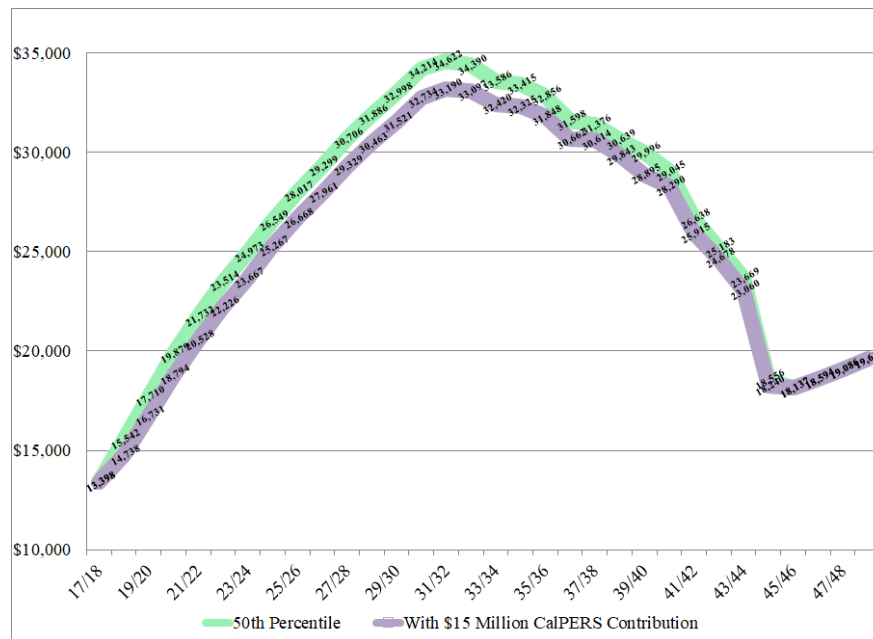
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ALTERNATIVE CONTRIBUTION SCENARIOS

Scenario #4

\$15 Million Contribution to Safety (\$000's)



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ALTERNATIVE CONTRIBUTION SCENARIOS

Scenario #4

\$15 Million Contribution to 115 Trust

- Rate Stabilization Fund (115 Trust):
 - Assumed to earn 4% annually
 - Return will vary and depend on future investment allocation
- Safety scenario to compare with \$15 million CalPERS contribution:
 - \$15 million additional contribution to 115 Trust on 6/30/18
 - Target 42.0% payroll contribution effective 23/24 through 33/34
 - Does not include current 115 Trust balance (approximately \$20.3 million).



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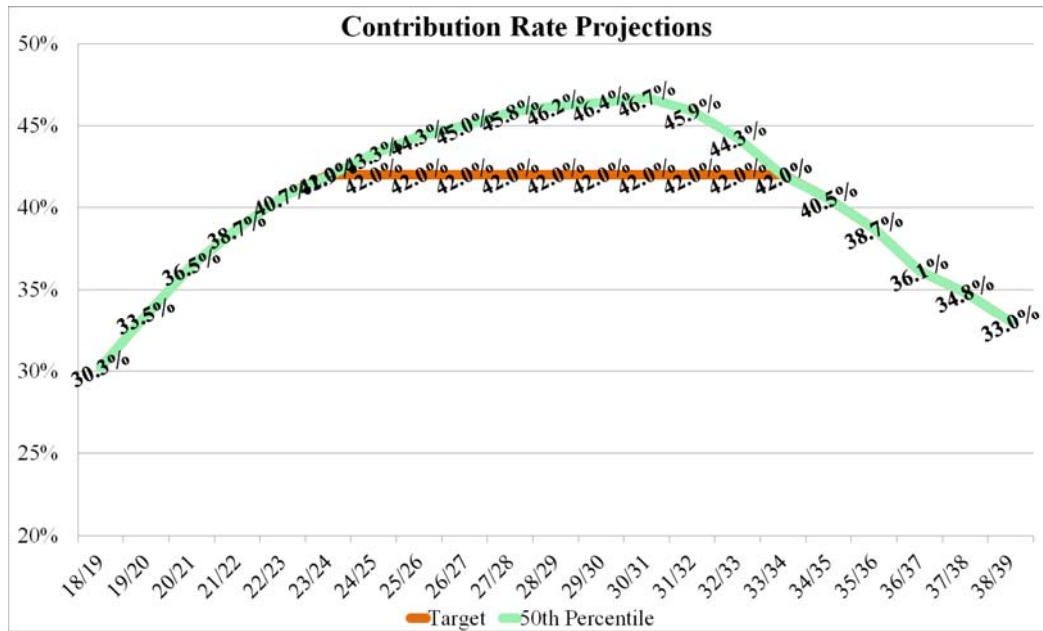
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ALTERNATIVE CONTRIBUTION SCENARIOS

Scenario #4

\$15 Million Contribution to 115 Trust



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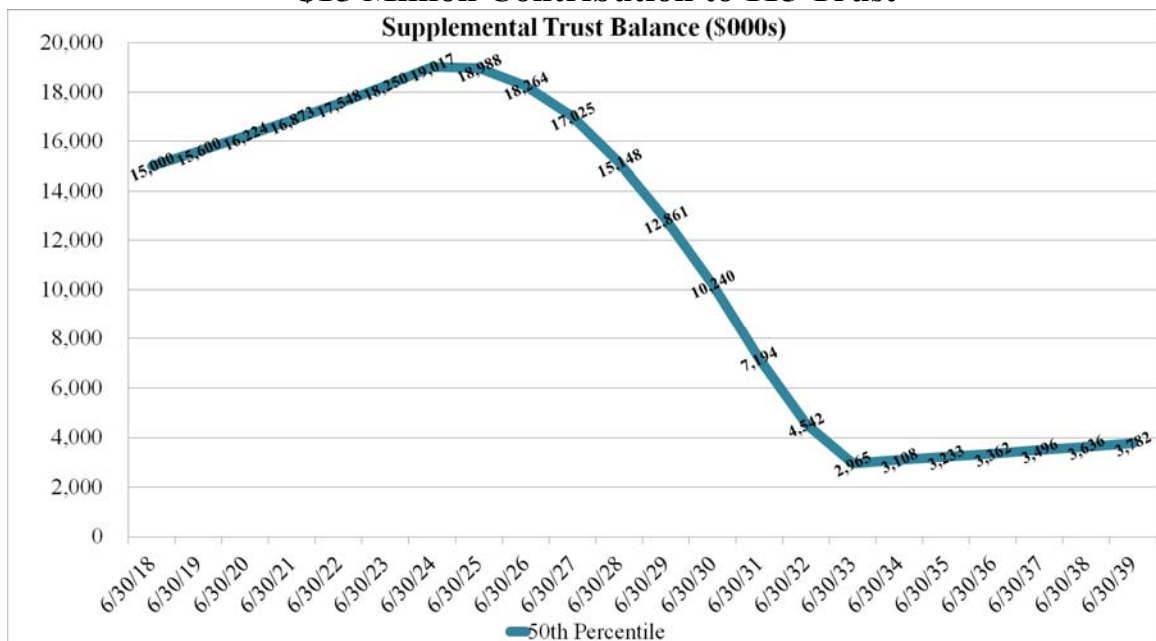
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ALTERNATIVE CONTRIBUTION SCENARIOS

Scenario #4

\$15 Million Contribution to 115 Trust



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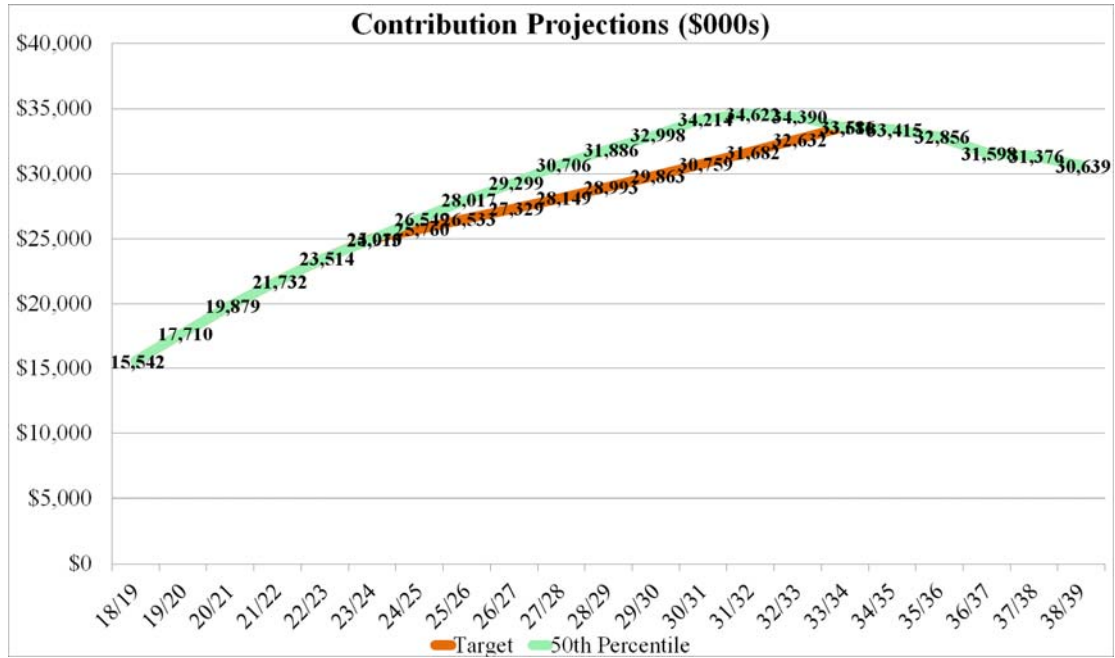
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ALTERNATIVE CONTRIBUTION SCENARIOS

Scenario #4

\$15 Million Contribution to 115 Trust



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ALTERNATIVE CONTRIBUTION SCENARIOS

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POB ANALYSIS ASSUMPTIONS

■ Capital Market Assumptions:

<u>Asset Class</u>	<u>PERF Policy Target</u>	<u>Geometric Real Average Return</u>	<u>Standard Deviation</u>	<u>Geometric Nominal Average Return</u>
● Global Equity	47%	4.82%	17.84%	7.44%
● Private Equity	12	5.96	25.14	8.61
● Fixed Income	19	1.47	4.24	4.00
● Liquidity	2	0.06	0.97	2.57
● Inflation Assets	6	1.18	8.69	3.71
● Real Estate	11	3.04	11.22	5.62
● Forestland/Infrastructure	<u>3</u>	3.65	8.40	6.24
	100%			

- Based on study of investment consultant and investment bank 2017 short and long-term capital market assumptions adjusted in some cases for long-term trends in investment returns

■ Inflation

2.5%

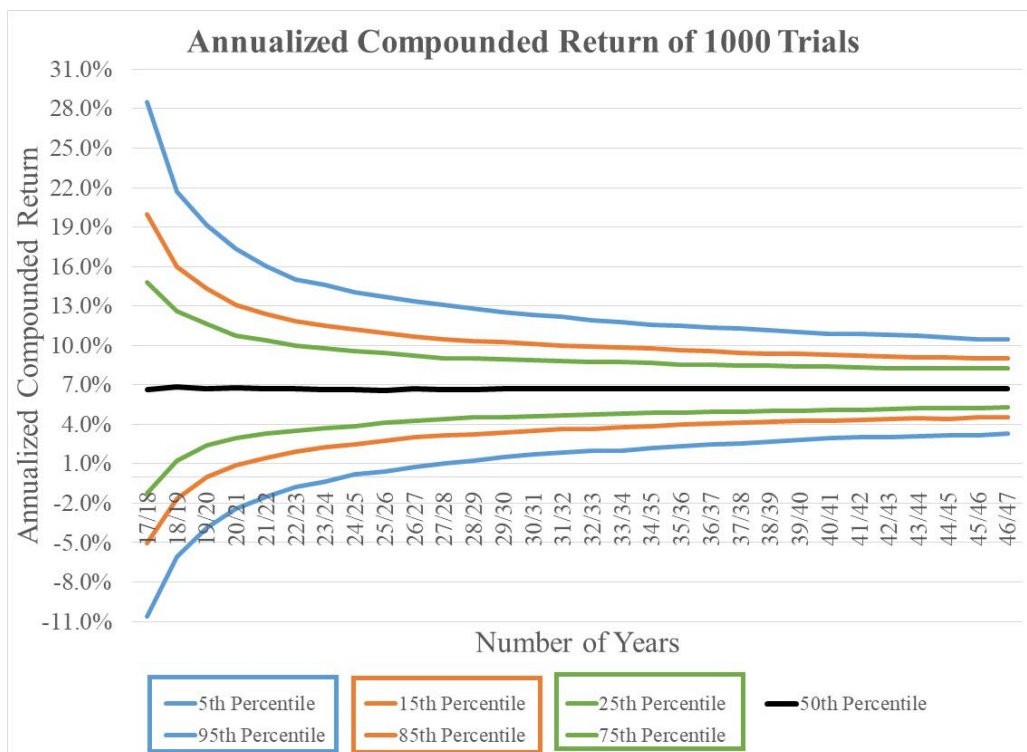


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POB ANALYSIS ASSUMPTIONS



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POB ANALYSIS ASSUMPTIONS

- 20 Year Compounded Annualized returns¹³:
 - 50th Percentile¹⁴ 6.71%
 - 33th Percentile 5.48
 - 30th Percentile 5.30
 - 25th Percentile 5.00
 - 20th Percentile 4.62
 - 15th Percentile 4.06

¹³ Based on capital market assumptions shown previously net of 0.15% adjustment for administrative expenses.

¹⁴ Nth percentile means N percentage of our trials result in returns lower than the indicated rates.



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POB ANALYSIS ASSUMPTIONS

- Discount rate for cash flow differences 3.0%
- Discount rate for Asset difference at 30 years 7.0%
- PEPPRA requires employer contributions not be less than Normal Cost
 - Analysis prepared with and without this requirement
- What was **not** included:
 - Lower (than expected) returns for next 10 years followed by higher (than expected) returns
 - Risk Mitigation Strategy



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HYPOTHETICAL 2018 POB

■ Hypothetical POB

- Amount: \$20 million
- Duration: 20 years
- Interest Rate: 4.5%
- Debt service: level dollar amortization
- All Safety bases paid down proportionately to 6/30/18 balance



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HYPOTHETICAL 2018 POB

Hypothetical 2018 POB Debt Service Safety

Safety	2018/19	2019/20	2020/21	2021/22	2022/23
Debt Service	\$1,504,000	\$1,504,000	\$1,504,000	\$1,504,000	\$1,504,000

Safety	2023/24	2024/25	2025/26	2026/27	2027/28
Debt Service	\$1,504,000	\$1,504,000	\$1,504,000	\$1,504,000	\$1,504,000

Safety	2028/29	2029/30	2030/31	2031/32	2032/33
Debt Service	\$1,504,000	\$1,504,000	\$1,504,000	\$1,504,000	\$1,504,000

Safety	2033/34	2034/35	2035/36	2036/37	2037/38
Debt Service	\$1,504,000	\$1,504,000	\$1,504,000	\$1,504,000	\$1,504,000

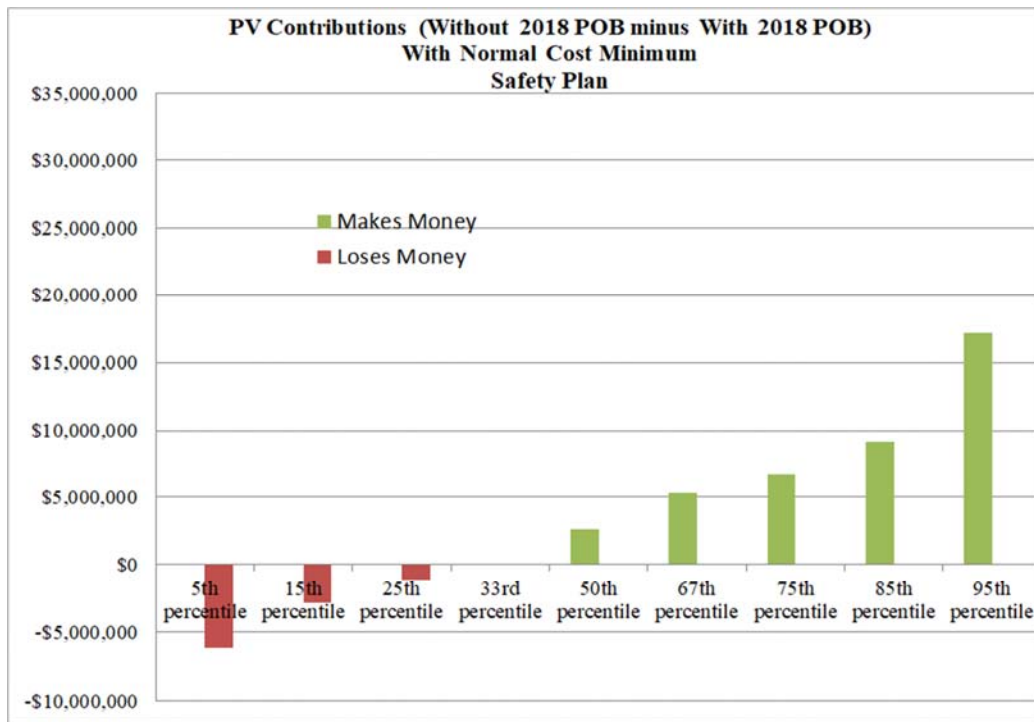


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HYPOTHETICAL 2018 POB

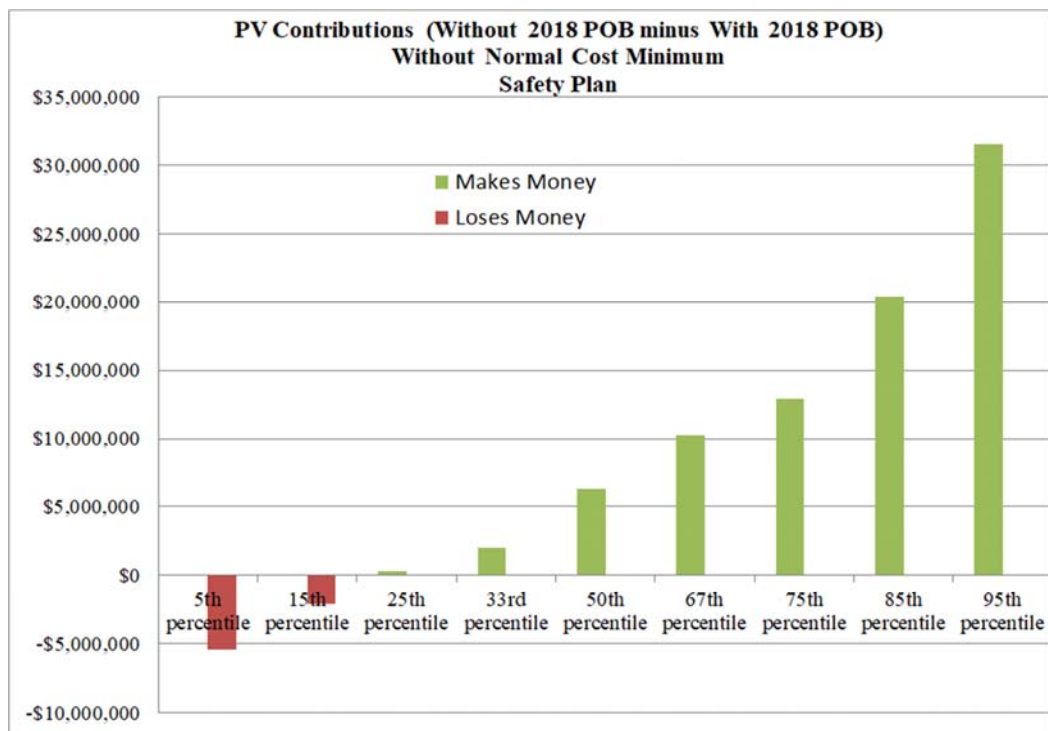


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HYPOTHETICAL 2018 POB



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IRREVOCABLE SUPPLEMENTAL (§115) PENSION TRUST

	Estimated 6/30/18 (in \$ millions)
■ Actuarial Accrued Liability	
● Miscellaneous	\$ 1,628.0
● Safety	<u>517.4</u>
● Total	2,145.4
■ Market Value of Assets	
● Miscellaneous	1,181.2
● Safety	<u>373.1</u>
● Total	1,554.3
■ Unfunded Actuarial Accrued Liability	
● Miscellaneous	\$ 446.8
● Safety	<u>144.3</u>
● Total	591.1
■ Unfunded CalPERS Trust	591.1
● PARS Pension Rate Stabilization Fund (115 Trust)	<u>20.3</u>
● Net Unfunded	570.8

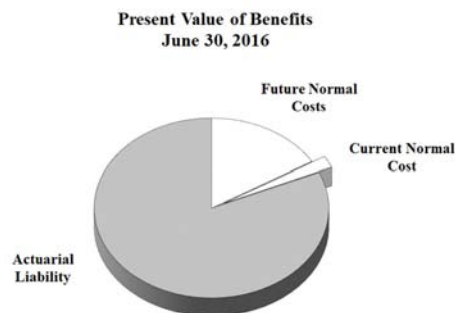


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DEFINITIONS



- **PVB - Present Value of all Projected Benefits:**
 - Discounted value (at valuation date - 6/30/16), of all future expected benefit payments based on various (actuarial) assumptions
- **Actuarial Liability:**
 - Discounted value (at valuation date) of benefits earned through valuation date [value of past service benefit]
 - Portion of PVB “earned” at measurement
- **Current Normal Cost:**
 - Portion of PVB allocated to (or “earned” during) current year
 - Value of employee and employer current service benefit

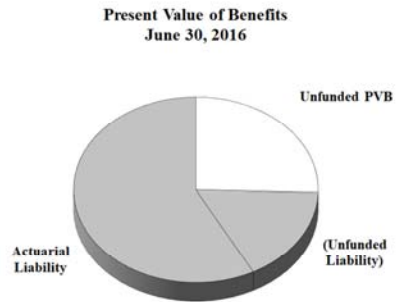
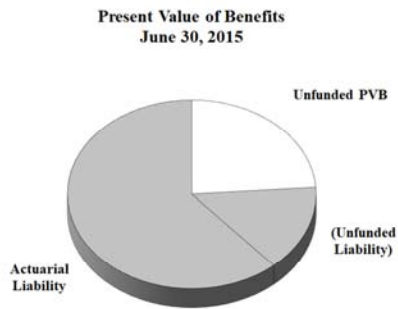


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DEFINITIONS



- **Target-** Have money in the bank to cover Actuarial Liability (past service)
- **Unfunded Liability** - Money short of target at valuation date
- **Excess Assets / Surplus:**
 - Money over and above target at that point in time
 - Doesn't mean you're done contributing



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