

# Actuarial Implications of FY 2009 Investment Results

## Part II



City of San Diego



September 18, 2009



# Part II

- 1) Analysis of Alternative Funding Methodologies
- 2) Discussion
- 3) Appendix of Supplemental Information
  - Stochastic Probabilities
  - Net Cash Flows



# Analysis of Alternative Funding Methodologies



# Options Presented

At July 17, 2009 SDCERS Board Meeting

Proj	avoid negative amortiztn	asset smoothing %	amortiztn period	MVA/AVA upper corridor	Proj	avoid negative amortiztn	asset smoothing %	amortiztn period	MVA/AVA upper corridor
1	yes	25%	15	120%	13	No	25%	15	120%
2	yes	25%	15	130%	14	No	25%	15	130%
3	yes	25%	15	none	15	No	25%	15	none
4	yes	25%	30	120%	16	No	25%	30	120%
5	yes	25%	30	130%	17	No	25%	30	130%
6	yes	25%	30	none	18	No	25%	30	none
7	yes	10%	15	120%	19	No	10%	15	120%
8	yes	10%	15	130%	20	No	10%	15	130%
9	yes	10%	15	none	21	No	10%	15	none
10	yes	10%	30	120%	22	No	10%	30	120%
11	yes	10%	30	130%	23	No	10%	30	130%
12	yes	10%	30	none	24	No	10%	30	none



# Filter Analysis

- 1) Increasing the 120% AVA/MVA corridor **and** lowering the 25% smoothing percentage
- 2) 30-year amortization of 2009 investment loss
- 3) Eliminating the corridor altogether
- 4) Lowering the smoothing percentage from 25% (no change to corridor)
- 5) Removing no negative amortization requirement



# ASOP 44

## Implications to Alternative Funding Methodologies

- The method should produce actuarial values of assets that bear a reasonable relationship to the market values.
- The method is likely to produce actuarial values of assets that, in the actuary's judgment, satisfy the following:
  - 1) The asset values fall within a reasonable range around the corresponding market values, **AND**
  - 2) Any differences between the actuarial value of assets and the market value are recognized within a reasonable period of time.

In lieu of satisfying both (1) and (2), the method could be acceptable if, in the actuary's judgment (i) it produces values within a sufficiently narrow range around market value **OR** (ii) recognizes differences from market value in a sufficiently short period.



# Filter #1 Analysis

Increasing the 120% AVA/MVA corridor and lowering the 25% smoothing percentage

- Corridor above 120% may not be “within a sufficiently narrow range around market value”
- 10% asset smoothing does not “recognize differences from market value in a sufficiently short period”
- Therefore, Cheiron would not recommend any option that includes both 10% smoothing and increased corridor



# Eliminates 8 Options for the City

Proj	avoid negative amortiztn	asset smoothing %	amortiztn period	MVA/AVA upper corridor	Proj	avoid negative amortiztn	asset smoothing %	amortiztn period	MVA/AVA upper corridor
1	yes	25%	15	120%	13	No	25%	15	120%
2	yes	25%	15	130%	14	No	25%	15	130%
3	yes	25%	15	none	15	No	25%	15	none
4	yes	25%	30	120%	16	No	25%	30	120%
5	yes	25%	30	130%	17	No	25%	30	130%
6	yes	25%	30	none	18	No	25%	30	none
7	yes	10%	15	120%	19	No	10%	15	120%
10	yes	10%	30	120%	22	No	10%	30	120%





# Filter #2 Analysis

30-year amortization of 2009 investment loss

- Isolating FY2009 investment loss and amortizing over 30 years is a viable option
- However:
  - Must allow negative amortization for 30-year funding to have appreciable impact in the short-term
  - 30-year amortization goes against the City's Charter; may require legal analysis for the City to utilize
  - For these reasons, Cheiron would recommend eliminating 30-year amortization as an option for the City



# Eliminates 8 More Options for the City

Proj	avoid negative amortiztn	asset smoothing %	amortiztn period	MVA/AVA upper corridor
1	yes	25%	15	120%
2	yes	25%	15	130%
3	yes	25%	15	none
[Redacted]				
7	yes	10%	15	120%
[Redacted]				
12	yes	10%	15	none

Proj	avoid negative amortiztn	asset smoothing %	amortiztn period	MVA/AVA upper corridor
13	No	25%	15	120%
14	No	25%	15	130%
15	No	25%	15	none
[Redacted]				
19	No	10%	15	120%
[Redacted]				
21	No	10%	15	none



# Filter #3 Analysis

## Eliminating the corridor altogether

- If Board is to increase the corridor, Cheiron recommends it be a fixed level, not completely removed
- Without a corridor, the AVA as a % of the MVA at June 30, 2009 would be 131%
- Since the option to increase the corridor to 130% is essentially the same as having no corridor, Cheiron recommends eliminating all options without a corridor



# Filter #3 Analysis

## City of San Diego

- Options **2** and **14** are virtually the same as options **3** and **15** (therefore, eliminate **3** and **15**)

	<b>1</b>	<b>2</b>	<b>3</b>	<b>14</b>	<b>15</b>
<b>smoothing</b>	25%	25%	25%	25%	25%
<b>corridor</b>	120%	130%	none	130%	none
<b>amortization</b>	15	15	15	15	15
<b>avoid neg amort</b>	Yes	Yes	Yes	No	No
	<b><u>ARC</u></b>	<b><u>ARC</u></b>	<b><u>ARC</u></b>	<b><u>ARC</u></b>	<b><u>ARC</u></b>
<b>FY10</b>	\$ 154.2	\$ 154.2	\$ 154.2	\$ 154.2	\$ 154.2
<b>FY11</b>	\$ 224.8	\$ 193.2	\$ 191.0	\$ 192.8	\$ 190.3
<b>FY12</b>	\$ 250.9	\$ 226.3	\$ 224.4	\$ 226.3	\$ 224.4
<b>FY13</b>	\$ 274.9	\$ 256.2	\$ 254.7	\$ 256.2	\$ 254.7
<b>FY14</b>	\$ 297.1	\$ 283.3	\$ 282.2	\$ 283.3	\$ 282.2
<b>FY15</b>	\$ 318.1	\$ 308.3	\$ 307.5	\$ 308.3	\$ 307.5



# Eliminates 2 More Options for the City

	avoid negative amortiztn	asset smoothing %	amortiztn period	MVA/AVA upper corridor		avoid negative amortiztn	asset smoothing %	amortiztn period	MVA/AVA upper corridor
Proj					Proj				
1	yes	25%	15	120%	13	No	25%	15	120%
2	yes	25%	15	130%	14	No	25%	15	130%
[Redacted]					[Redacted]				
7	yes	10%	15	120%	19	No	10%	15	120%
[Redacted]					[Redacted]				
12	yes	10%	15	none	21	No	10%	15	none



# Filter #4 Analysis

Lowering the smoothing percentage from 25%

- Changing to 10% smoothing with no change to the corridor results in very little relief
- Therefore, Cheiron recommends eliminating those options



# Filter #4 Analysis

## City of San Diego

- Options 7 and 19 offer no relief in FY2011 and relatively small relief thereafter

	<b>1</b>	<b>7</b>	<b>19</b>
<b>smoothing</b>	<b>25%</b>	<b>10%</b>	<b>10%</b>
<b>corridor</b>	<b>120%</b>	<b>120%</b>	<b>120%</b>
<b>amortization</b>	<b>15</b>	<b>15</b>	<b>15</b>
<b>avoid neg amort</b>	<b>Yes</b>	<b>Yes</b>	<b>No</b>
	<b><u>ARC</u></b>	<b><u>ARC</u></b>	<b><u>ARC</u></b>
<b>FY10</b>	<b>\$ 154.2</b>	<b>\$ 154.2</b>	<b>\$ 154.2</b>
<b>FY11</b>	<b>\$ 224.8</b>	<b>\$ 224.8</b>	<b>\$ 224.8</b>
<b>FY12</b>	<b>\$ 250.9</b>	<b>\$ 240.6</b>	<b>\$ 240.6</b>
<b>FY13</b>	<b>\$ 274.9</b>	<b>\$ 256.9</b>	<b>\$ 256.9</b>
<b>FY14</b>	<b>\$ 297.1</b>	<b>\$ 273.7</b>	<b>\$ 273.7</b>
<b>FY15</b>	<b>\$ 318.1</b>	<b>\$ 290.9</b>	<b>\$ 290.9</b>



# Eliminates 2 More Options for the City

	avoid negative amortiztn	asset smoothing %	amortiztn period	MVA/AVA upper corridor		avoid negative amortiztn	asset smoothing %	amortiztn period	MVA/AVA upper corridor
<b>Proj</b>	<b><u>amortiztn</u></b>	<b><u>%</u></b>	<b><u>period</u></b>	<b><u>corridor</u></b>	<b>Proj</b>	<b><u>amortiztn</u></b>	<b><u>%</u></b>	<b><u>period</u></b>	<b><u>corridor</u></b>
1	yes	25%	15	120%	13	No	25%	15	120%
2	yes	25%	15	130%	14	No	25%	15	130%
[Redacted]					[Redacted]				





# Filter #5 Analysis

Removing no negative amortization requirement

- Allowing negative amortization offers very little additional relief relative to remaining options
- Therefore, Cheiron recommends eliminating options 13 and 14



# Filter #5 Analysis

## City of San Diego

- Options **13** and **14** are virtually the same as options **1** and **2**, respectively

	<b>1</b>	<b>13</b>	<b>2</b>	<b>14</b>
smoothing	25%	25%	25%	25%
corridor	120%	120%	130%	130%
amortization	15	15	15	15
avoid neg amort	Yes	No	Yes	No
	<u>ARC</u>	<u>ARC</u>	<u>ARC</u>	<u>ARC</u>
FY10	\$ 154.2	\$ 154.2	\$ 154.2	\$ 154.2
FY11	\$ 224.8	\$ 224.8	\$ 193.2	\$ 192.8
FY12	\$ 250.9	\$ 250.9	\$ 226.3	\$ 226.3
FY13	\$ 274.9	\$ 274.9	\$ 256.2	\$ 256.2
FY14	\$ 297.1	\$ 297.1	\$ 283.3	\$ 283.3
FY15	\$ 318.1	\$ 318.1	\$ 308.3	\$ 308.3





# Remaining Options

City of San Diego

	<b>1</b>	<b>2</b>
<b>smoothing</b>	<b>25%</b>	<b>25%</b>
<b>corridor</b>	<b>120%</b>	<b>130%</b>
<b>amortization</b>	<b>15</b>	<b>15</b>
<b>avoid neg amort</b>	<b>Yes</b>	<b>Yes</b>
	<b><u>ARC</u></b>	<b><u>ARC</u></b>
<b>FY10</b>	<b>\$ 154.2</b>	<b>\$ 154.2</b>
<b>FY11</b>	<b>\$ 224.8</b>	<b>\$ 193.2</b>
<b>FY12</b>	<b>\$ 250.9</b>	<b>\$ 226.3</b>
<b>FY13</b>	<b>\$ 274.9</b>	<b>\$ 256.2</b>
<b>FY14</b>	<b>\$ 297.1</b>	<b>\$ 283.3</b>
<b>FY15</b>	<b>\$ 318.1</b>	<b>\$ 308.3</b>



# Analysis for the City

Cheiron is comfortable with either:

- No Changes
- 130% Corridor



# Analysis for the City No Changes

- With no changes plan's financial condition is better
- No changes clearly meets actuarial standards



# Analysis for the City 130% Corridor

- 130% corridor offers substantial short-term relief yet has an insignificant impact on the plan's financial condition (benefit security and sufficient assets)
  - long-term projected contribution levels and funding status are substantially the same (see slides 27-29)
- 130% corridor meets applicable actuarial standards
  - Meets ASOP 44 standard because the 25% smoothing still remains in place, resulting in differences between market value and actuarial value being recognized in a sufficiently short period
  - GASB does not require market value corridors



# Cheiron Recommends any Funding Change be Temporary

- Temporary change recognizes the unique events that caused the issues and puts the City quickly back to its previously established funding policy
- Temporary can mean different things:
  - The change applies only to the FY2011 ARC
  - The change applies to all investment losses attributable to the FYE June 30, 2009 investment results
- Cheiron recommends interpreting “temporary” as all investment losses attributable to the FYE June 30, 2009 investment results





# SDCERS Stochastic Probabilities



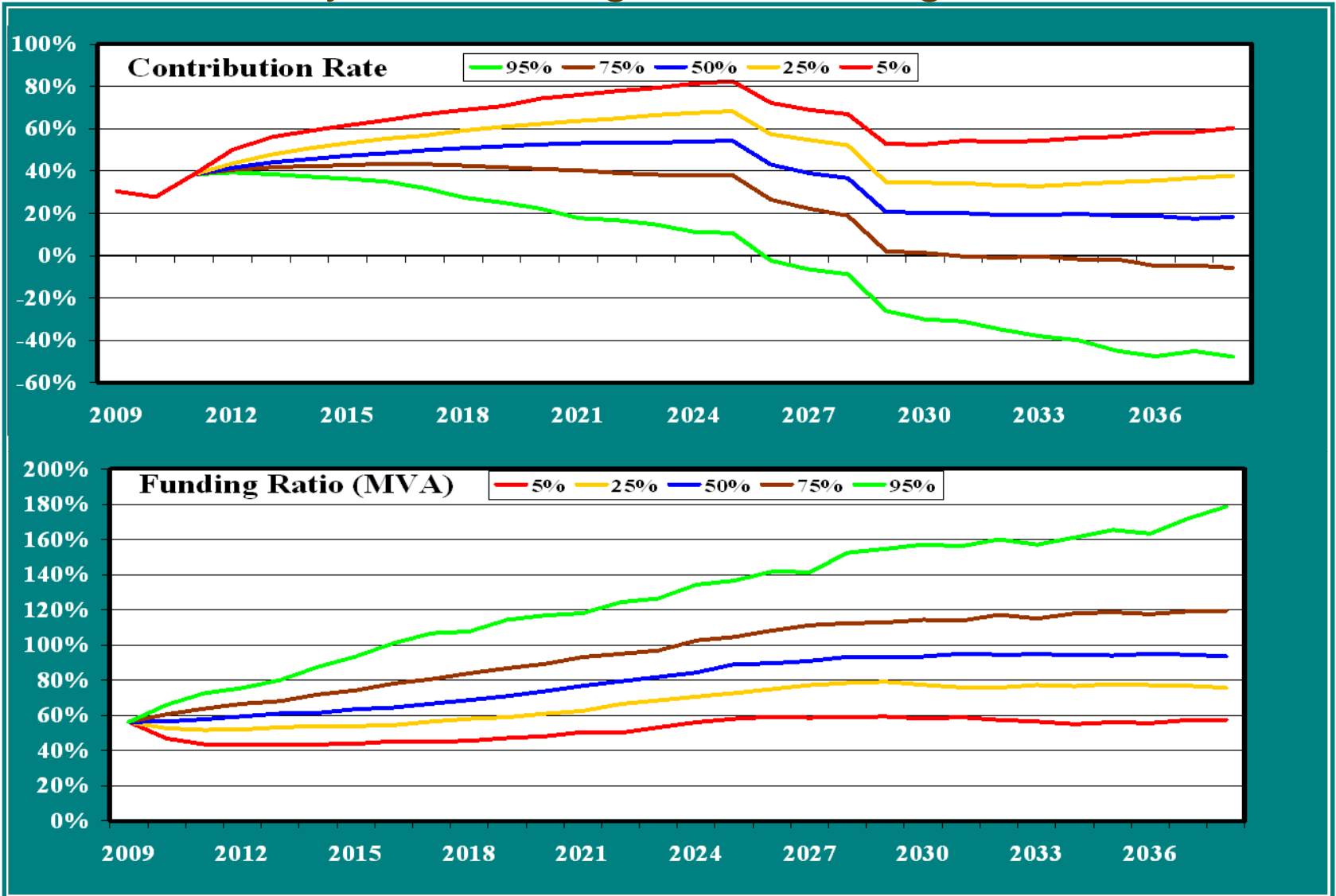
# Stochastic Probabilities

- Stochastic projections generate ranges of probabilities based on the expected return and risk of plan assets
- Slide 26 shows the 5<sup>th</sup>, 25<sup>th</sup>, 50<sup>th</sup>, 75<sup>th</sup> and 95<sup>th</sup> probability percentiles for the contribution rate and funding ratio over the next 30 years, assuming no changes
- Each chart from slides 27-29 compares the contribution rates and funding ratios for four different options over the next 30 years at a different percentile (50<sup>th</sup>, 5<sup>th</sup> and 95<sup>th</sup>)



# SDCERS Stochastic Probabilities

## City of San Diego – No Changes



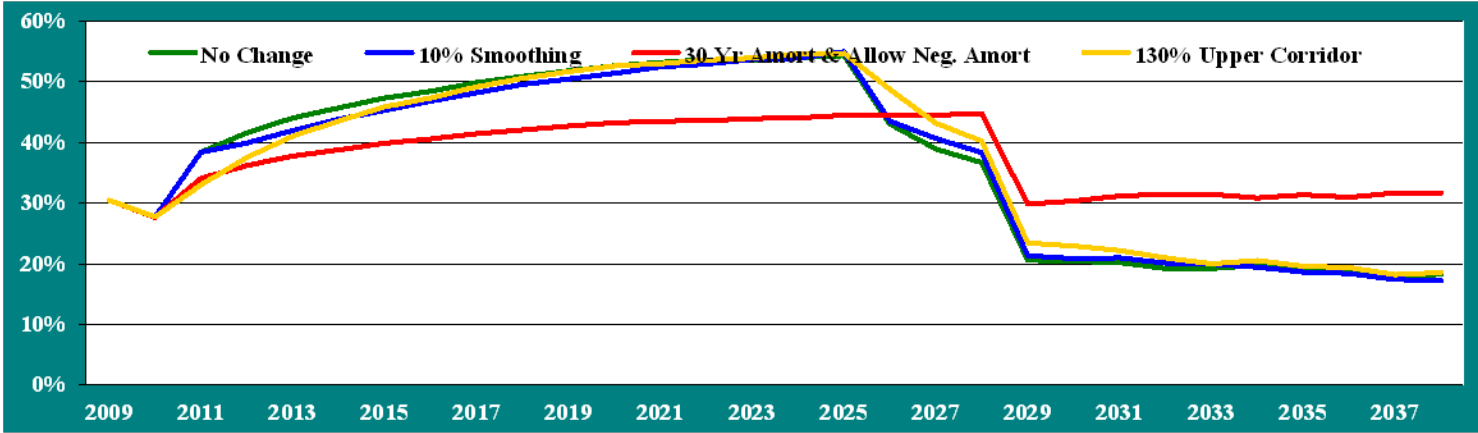


# SDCERS Stochastic Probabilities

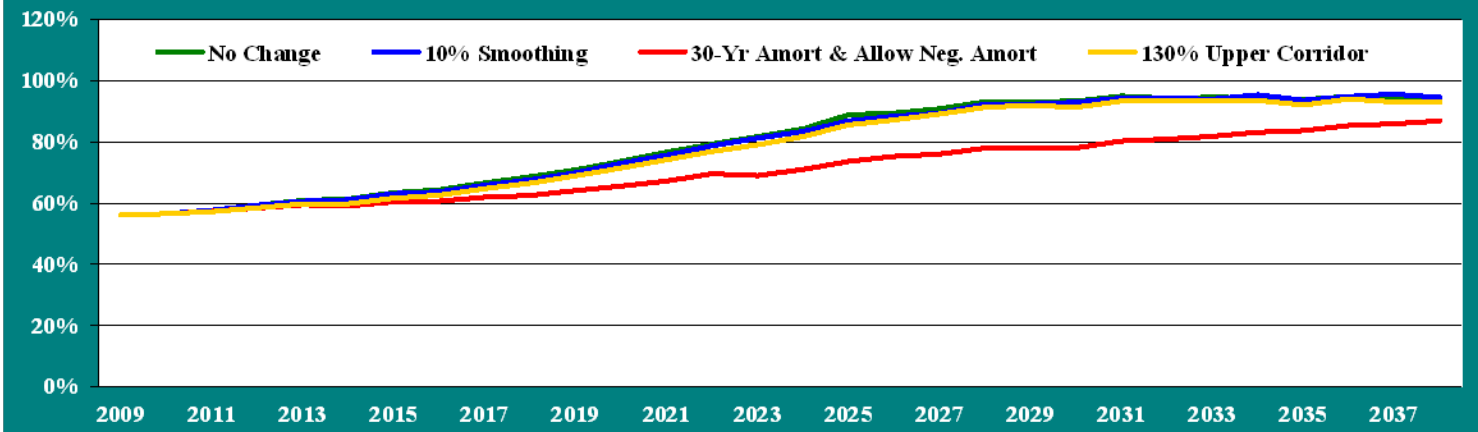
## Comparison of Options – 50<sup>th</sup> Percentile

### City of San Diego

Contribution Rate



Funding Ratio (MVA)



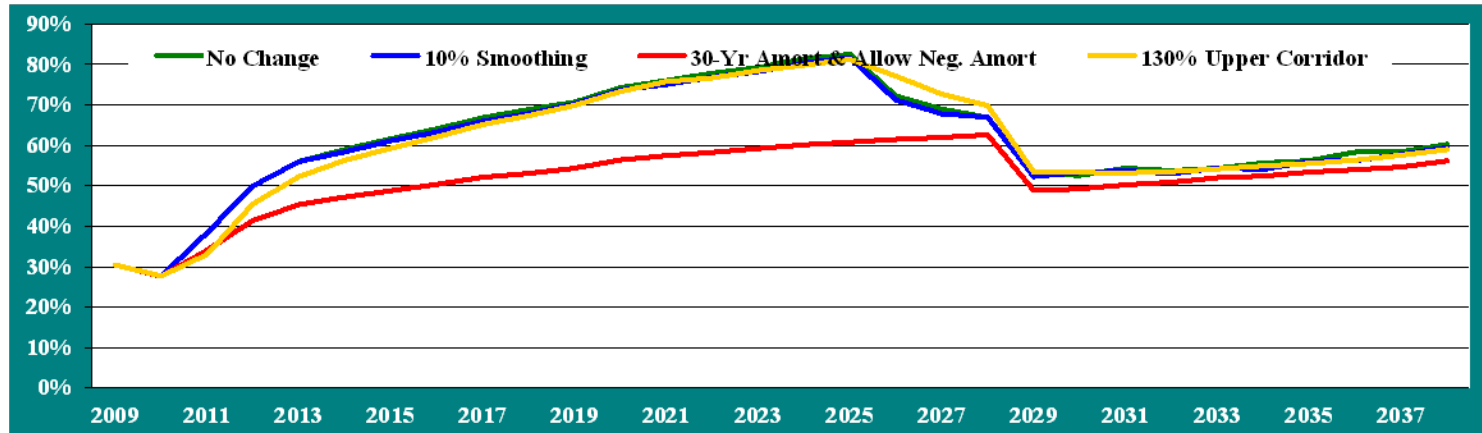


# SDCERS Stochastic Probabilities

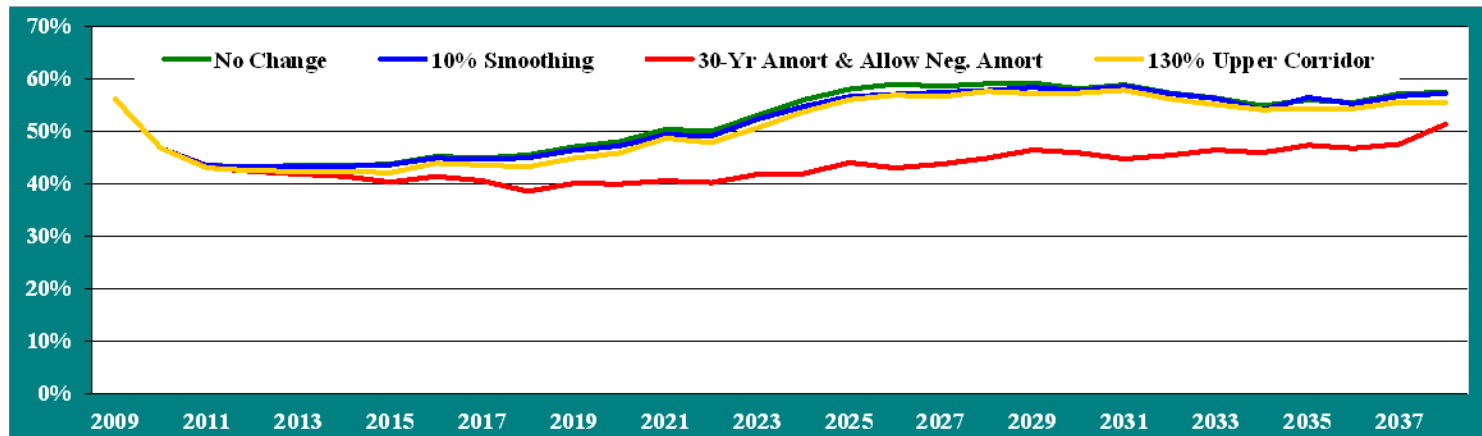
## Comparison of Options – 5<sup>th</sup> Percentile

### City of San Diego

Contribution Rate



Funding Ratio (MVA)



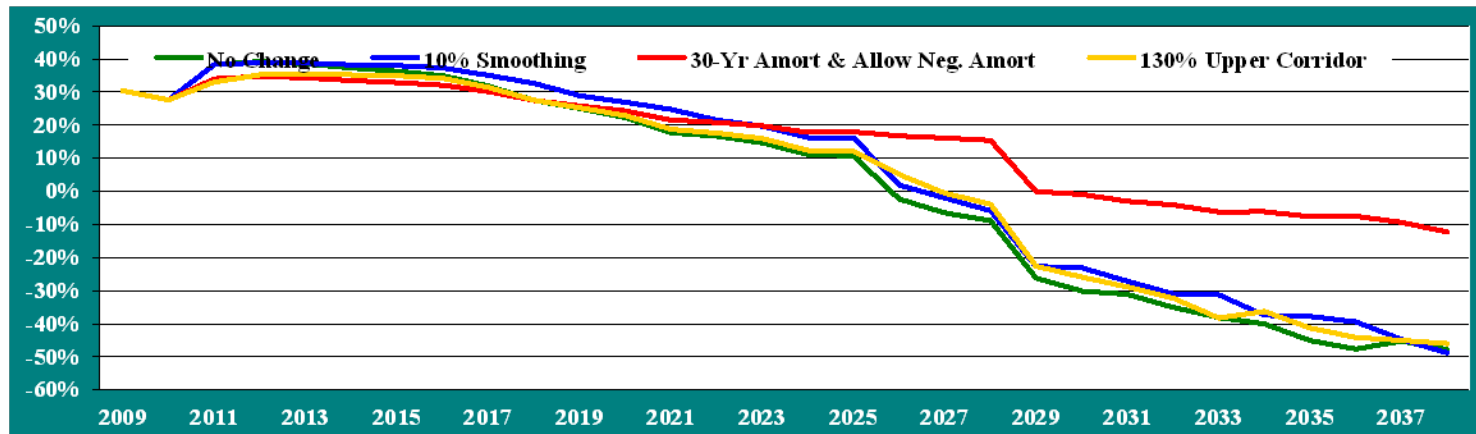


# SDCERS Stochastic Probabilities

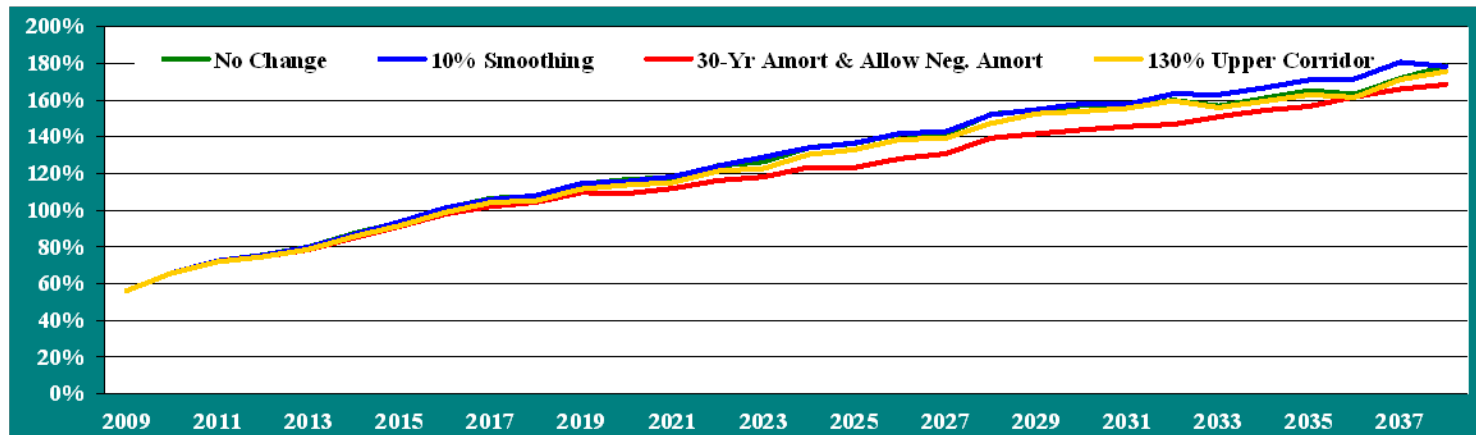
## Comparison of Options – 95<sup>th</sup> Percentile

### City of San Diego

Contribution Rate



Funding Ratio (MVA)





# SDCERS Net Cash Flows



# Net Cash Flows

- This slide shows net cash flow projections over the next 30 years, with and without investment earnings
- Does not reflect the new City plan
- Cash flows with investment earnings indicate the expected increase or decrease in assets
- Cash flows without investment earnings indicate the sufficiency of contributions to cover plan benefits; as this becomes negative, the plan is more exposed to investment risk





# SDCERS Net Cash Flows

## City of San Diego

