



# Advisory Committee Meeting

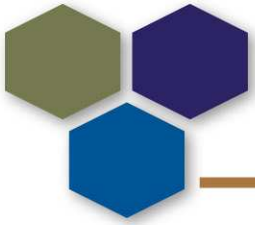
Mark Randall & Joe Newton

June 21, 2012

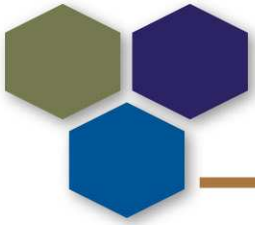
**GRS**

Gabriel Roeder Smith & Company  
Consultants & Actuaries  
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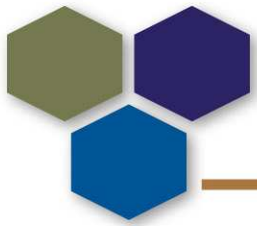
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# Welcome and Introductions



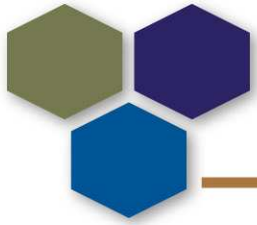
# Age / Years Retired Restrictions for COLAs



# COLA Options

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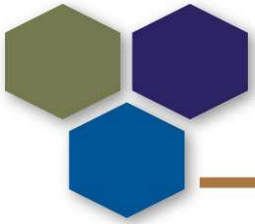
- ◆ Delay the start of COLAs for a given number of years, until the retiree reaches a certain age, or the earlier of the two
- ◆ The COLAs would not be retroactive
- ◆ Cost savings are shown assuming it would only impact current active employees



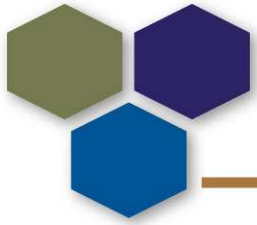
# Cost Impact of Different Designs

	<b>Decrease in Normal Cost rate</b>	<b>Relative Decrease in Active AAL</b>	<b>Decrease in the contribution rate</b>
Delay COLA for 10 years after retirement	1.85%	11.23%	3.27%
COLA is delayed until age 62	0.91%	5.57%	1.61%
COLA is delayed to the earlier of age 62 or 10 years after retirement	0.79%	4.86%	1.40%

- Example city is 7%, 2-to-1 with a 100% repeating USC and 70% of CPI repeating COLA
- Current contribution rate is about 14% of payroll



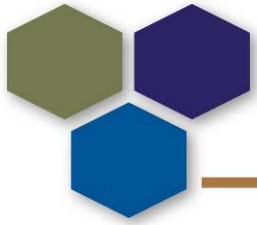
# Flat Rate Ad-hoc & Repeating COLA Options



# Example Ad Hoc Provisions

	Baseline * (No COLA)	70% CPI Ad hoc with Catch-up (15.00%)	70% CPI Ad hoc without Catch-up (2.07%)	Flat 3% Ad hoc
UAAL	\$22,722,703	\$40,870,366	\$28,078,114	\$30,484,169
Funded Ratio	96.7%	94.2%	95.9%	95.6%
ER Current Service %	10.43%	10.43%	10.43%	10.43%
Prior Service %	<u>1.09%</u>	<u>2.19%</u>	<u>1.42%</u>	<u>1.56%</u>
Full Rate	11.52%	12.62%	11.85%	11.99%
Estimated Contribution	\$15,246,601	\$16,702,440	\$15,683,353	\$15,868,641
Increased Cost to Provide COLA		\$1,455,839	\$436,752	\$622,040

\* City last adopted a COLA on January 1, 2008

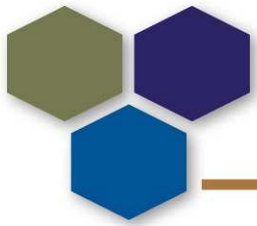


# Example Repeating Provisions

	<b>Baseline * (No COLA)</b>	<b>70% CPI Repeating with Catch-up (15.00%)</b>	<b>70% CPI Repeating without Catch-up (2.07% first year)</b>
UAAL	\$22,722,703	\$171,672,476	\$156,534,926
Funded Ratio	96.7%	79.4%	80.9%
ER Current Service %	10.43%	13.76%	13.76%
Prior Service %	<u>1.09%</u>	<u>7.72%</u>	<u>7.05%</u>
Full Rate	11.52%	21.48%	20.81%
Estimated Contribution	\$15,246,601	\$28,428,559	\$27,541,821
Increased Annual Cost to Provide COLA		\$13,181,958	\$12,295,220

\* City last adopted a COLA on January 1, 2008





# Pros and Cons of Flat Rate COLA

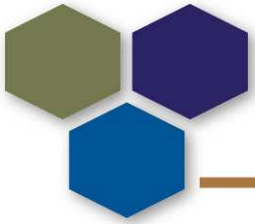
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## ◆ Pros:

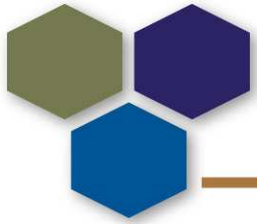
- ▶ Employer may be able to better control the cost of COLAs given the flat rate design
- ▶ A lower flat rate can be utilized to dampen growth of plan liabilities when returns are low
- ▶ Can be repeating or ad hoc

## ◆ Cons:

- ▶ May not keep pace with inflation if not tied to CPI
- ▶ If there has been a period of no COLAs, a flat rate COLA does not restore lost purchasing power evenly across retirees



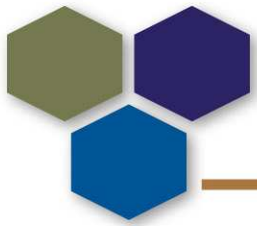
# Variable, Non-retroactive Repeating COLA Option



# The “variable” COLA Option

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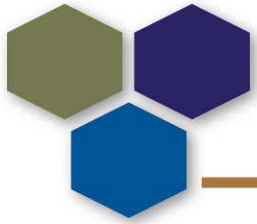
- ◆ This new option would not be retroactive
- ◆ Could only be adopted on a repeating basis
- ◆ As an example, a City could target a 50% of CPI level for the default COLA and for ongoing funding purposes, but then grant a 70% level COLA in a given year
  - ▶ Question: Could the City elect 100% or 0%?
  - ▶ Question: How is the funding threshold determined and by whom?



## The “variable” COLA Option (cont)

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- ◆ Consider a City that funds to a 50% of CPI COLA, which will be the default COLA
- ◆ In a given year, the city can optionally elect to grant a COLA that is either 70% or 30% of CPI
- ◆ Granting a 70% of CPI COLA will increase the actuarial accrued liability (AAL). This base will be amortized similarly to the current ad hoc policy (15 years, level dollar).
- ◆ Granting a 30% of CPI COLA will decrease the AAL, and the base will be netted out of any prior positive ad hoc bases with the remainder, if any, being subtracted from the “big base”



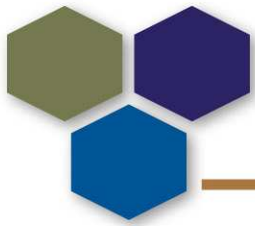
## The “variable” COLA Option (cont)

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The impact of a City that funds to 50% of CPI and then grants “variable” COLAs is shown below.

Year	COLA Granted	Change in AAL	% Change in AAL	Change in ARC
3	70% of CPI	\$180,000	0.21%	0.09%
6	30% of CPI	(\$280,000)	-0.30%	-0.12%

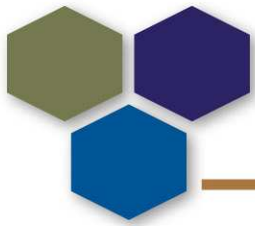
The current ARC is about 14.0%. Baseline AAL is roughly \$80,000,000.



## The “variable” COLA Option (cont)

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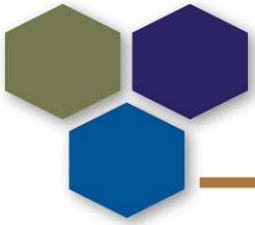
- ◆ Window Options for employers – why or why not?
  - ▶ windows are not really actuarial issues, but rather administrative
- ◆ Potential Window Options to allow for the “variable” COLA:
  - ▶ Limited window to opt in - If a two to five year timeframe established for getting into this non retro repeating COLA, many cities would not be able to grant COLA due to bad economic times



## The “variable” COLA Option (cont)

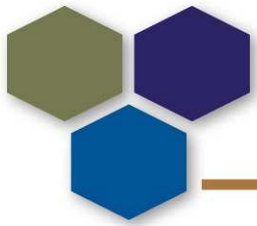
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- ◆ More potential Window Options to allow for the “variable” COLA:
  - ▶ One-time open-ended opportunity – eliminates the time period limits for opting into this COLA but still penalized if ever change COLA provision (retroactive nature reinstated with any future COLA)
  - ▶ No window at all– simply provide non-retroactive repeating COLA as another option without a retroactive feature - with or without baseline option; i.e. current TMRS COLA options without “catch up”



# Gain-sharing Options: Principles and Risks

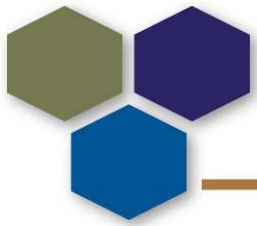




# Gain-sharing

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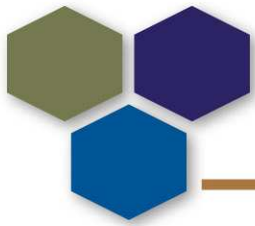
- ◆ Official definition: A system by which employees receive a share of the profits of a business enterprise
- ◆ In pension terms, it would be employees and/or pensioners sharing in investment returns that outpace certain thresholds



## Some points to consider

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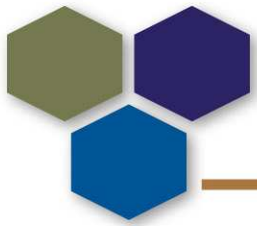
- ◆ Sharing only the gains has a cost to the employer
- ◆ Discipline and prudence need to prevail when discussing gain-sharing provisions
- ◆ When has a gain actually occurred?
- ◆ How will the gain be distributed?
- ◆ Is the process system wide or at the City level?
- ◆ Can the gains be taken back if experience moves against you?



# Assumptions vs. Experience

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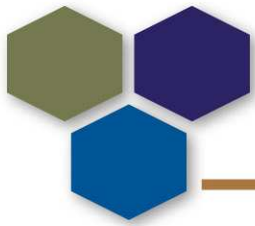
- ◆ In a defined benefit plan, a specific level of benefit provisions are set
- ◆ The level of benefits provided is based on an assumption that the contributions needed to fund those benefits will be at an approximate level
- ◆ Assumptions and a funding policy are used to determine that contribution level
- ◆ The assumptions are based on a “best estimate” of future experience over a long period of time



# Negative Performance

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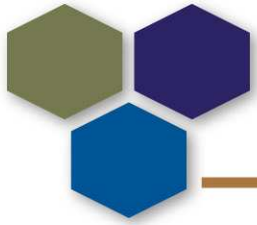
- ◆ Over time, experience will either outpace or underperform the assumptions (not just the investment returns)
- ◆ An important point is that underperformance has more limitations and will typically force certain reactions over time
  - ▶ If the experience underperforms the assumptions, the first reaction is typically increased contributions
  - ▶ Ultimately, if the underperformance is large enough, benefits will typically be reduced as well. However, the changes to benefits are not always equitable across generations
  - ▶ Younger active members will be impacted the most



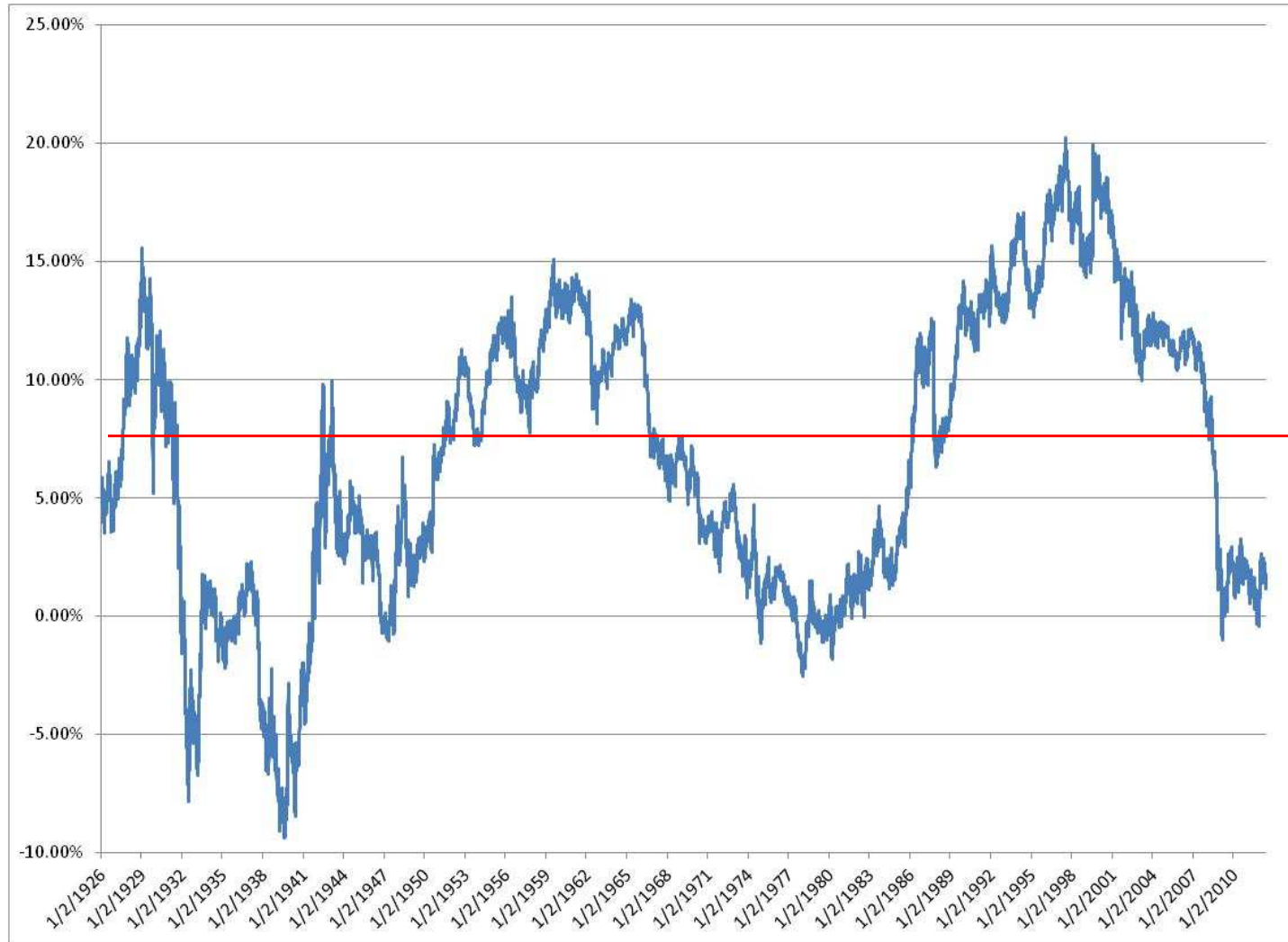
# Positive Performance

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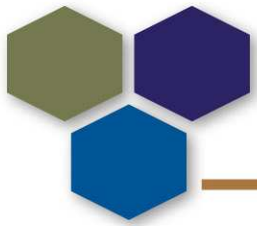
- ◆ If the experience outperforms the assumptions, the first reaction is typically decreased contributions
- ◆ Ultimately if the outperformance is large enough, benefits will typically be altered as well, but the changes to benefits are not always consistent with the type of gain recognized
  - ▶ In the 90's, many plans changed prospective benefits based on retrospective outperformance



# Rolling 10-year average returns of the Dow Jones Industrial Avg.



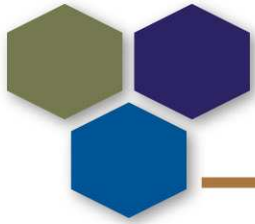
7%



# Timeframe of Reactions

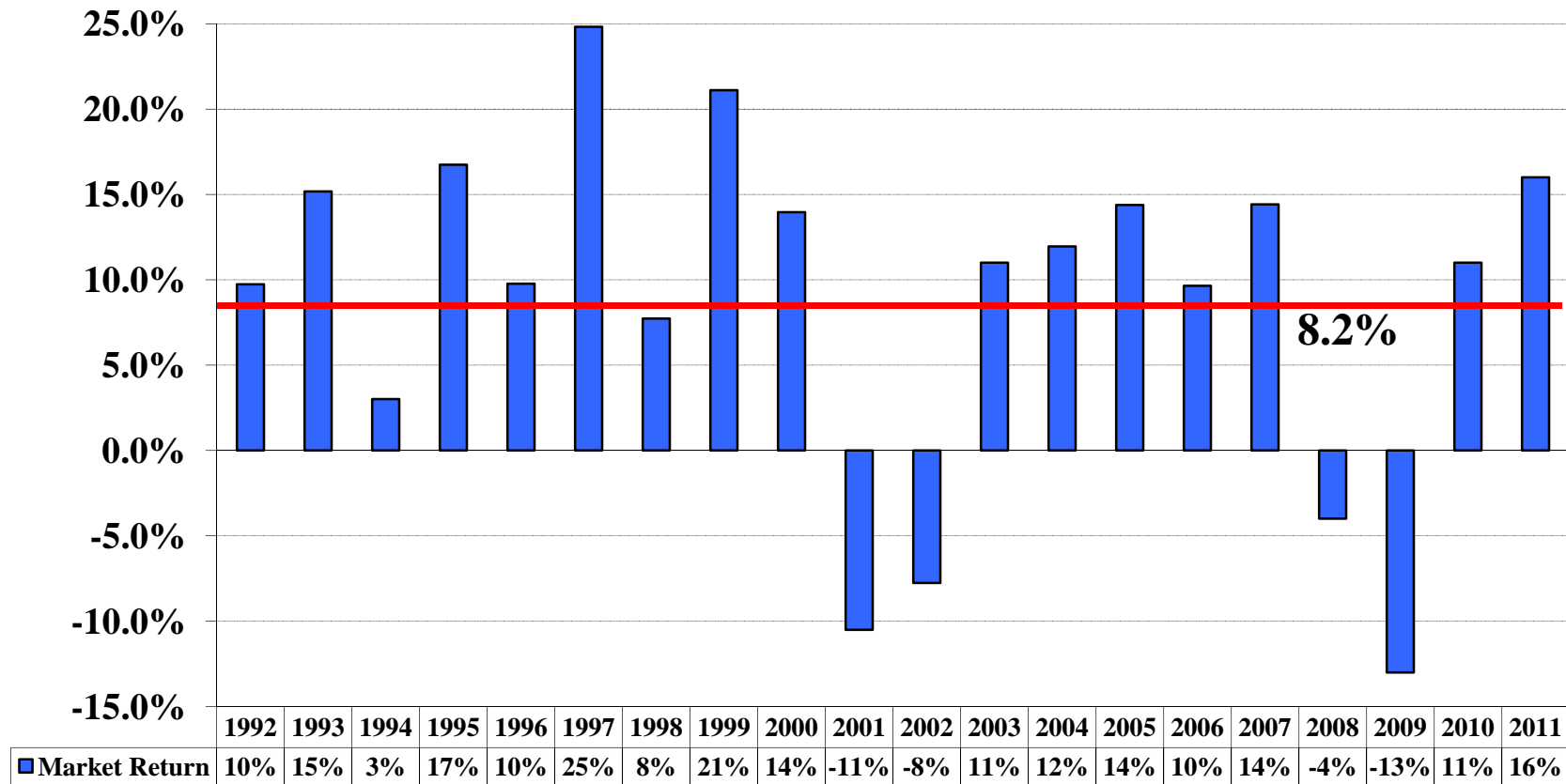
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- ◆ Generally, changes to either the contribution or benefit policy occur too quickly
- ◆ Reactions to 5-10 years of specific experience will cause changes that impact generations to come
- ◆ The financial markets will have large, long term trends. The assumptions are based on longer time frames. The “surplus” returns during the good years are needed during the poor years to keep the balance of benefits/contributions stable.
- ◆ Using the surplus returns will increase the probability of unwanted changes during the poor times
- ◆ This only works one way. The good times have to be saved before they can be used to fill in the bad. If the bad comes first, there is no additional source of funding.



# Actual Annual Yields

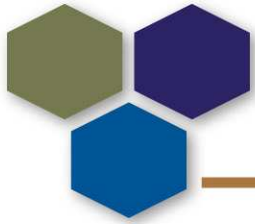
## – sample statewide system



8.2% average compound return over last 20 years (geometric)

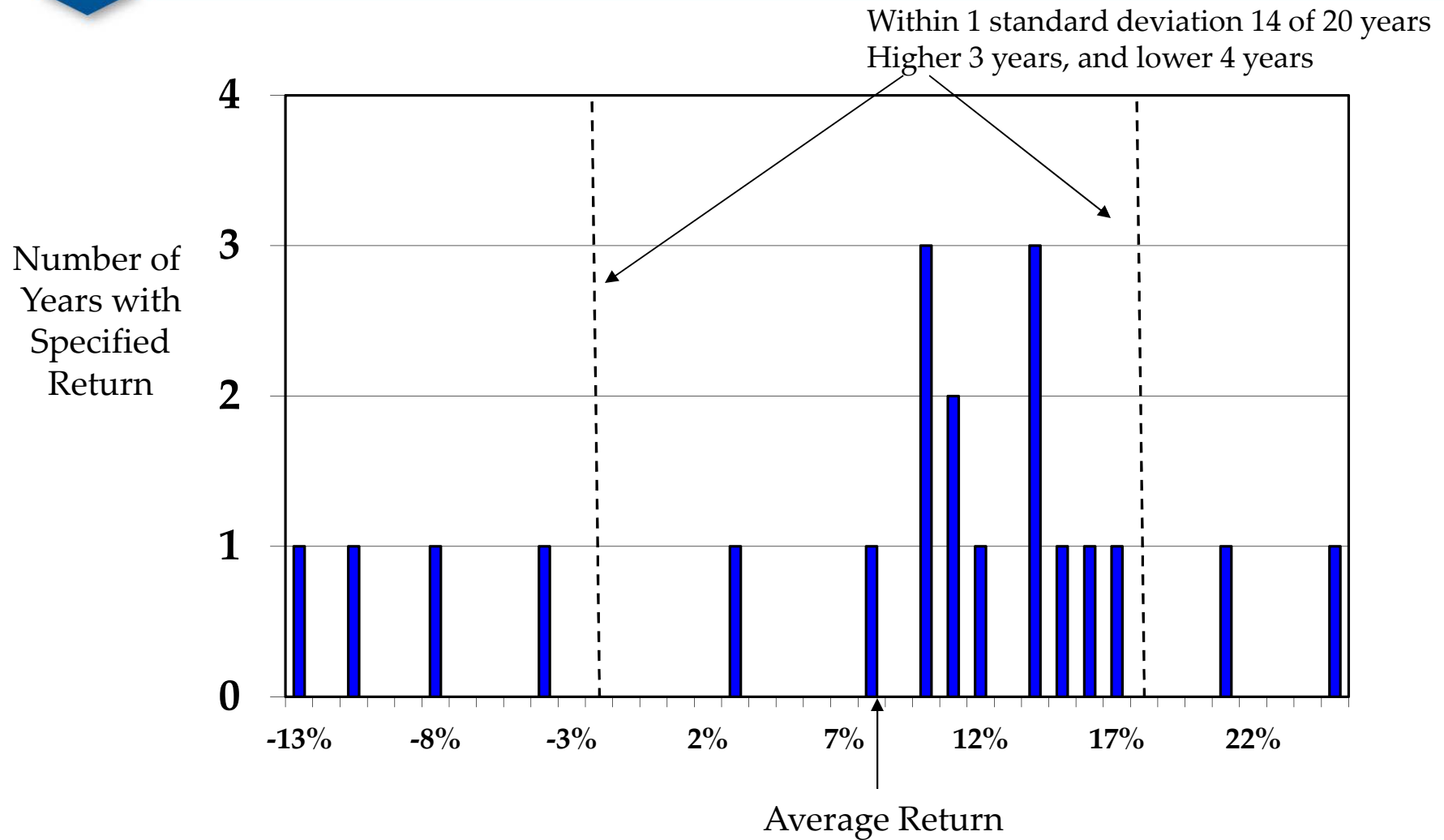
Standard deviation has been 10.3%

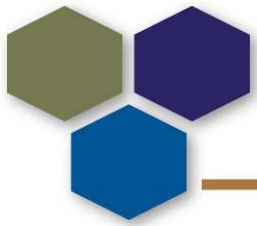




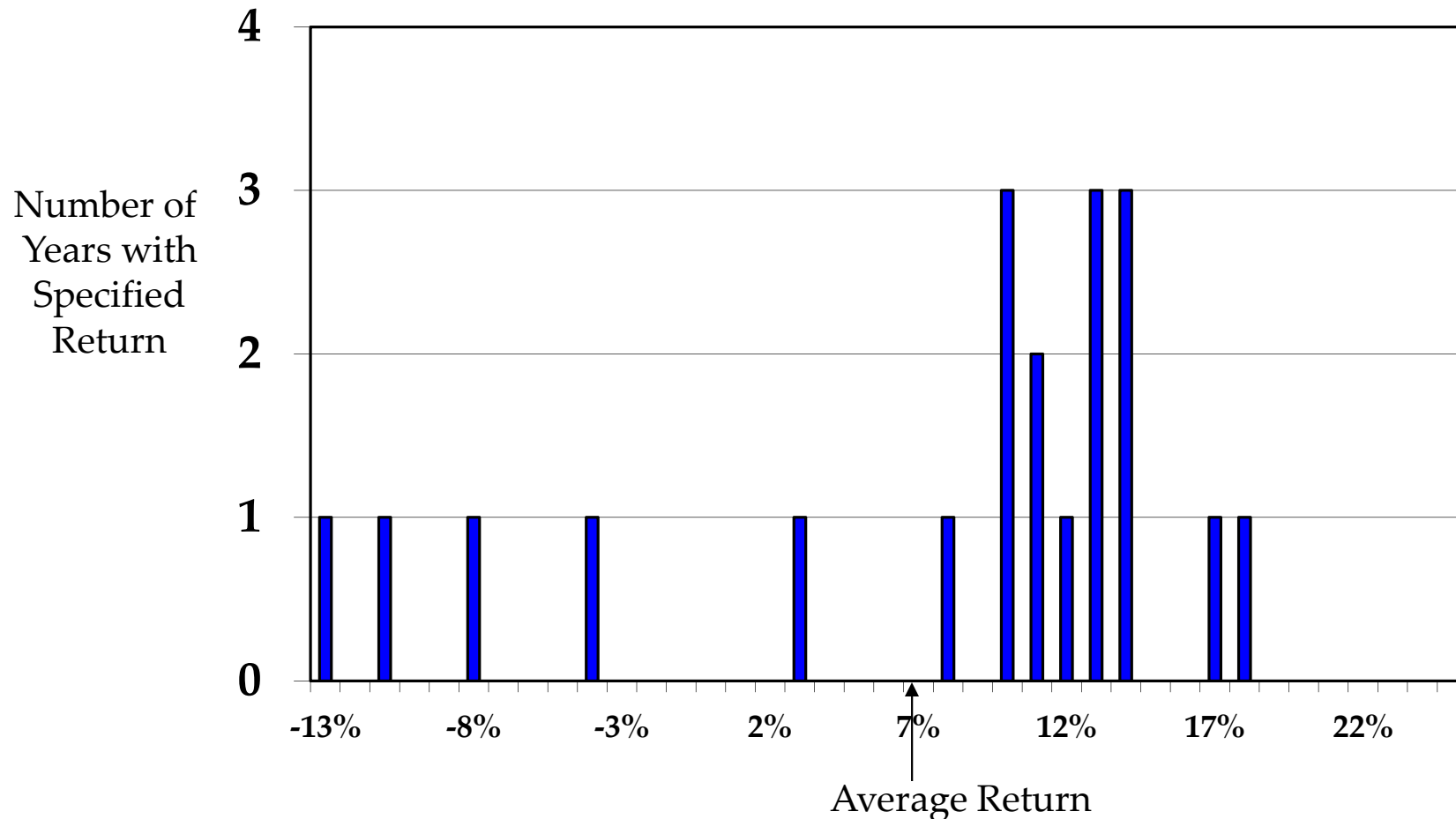
# Actual Annual Yields

## – sample statewide system

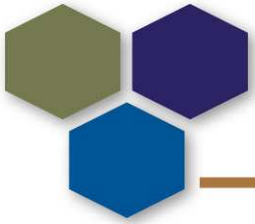




# If half of returns above 12% are “shared” ...



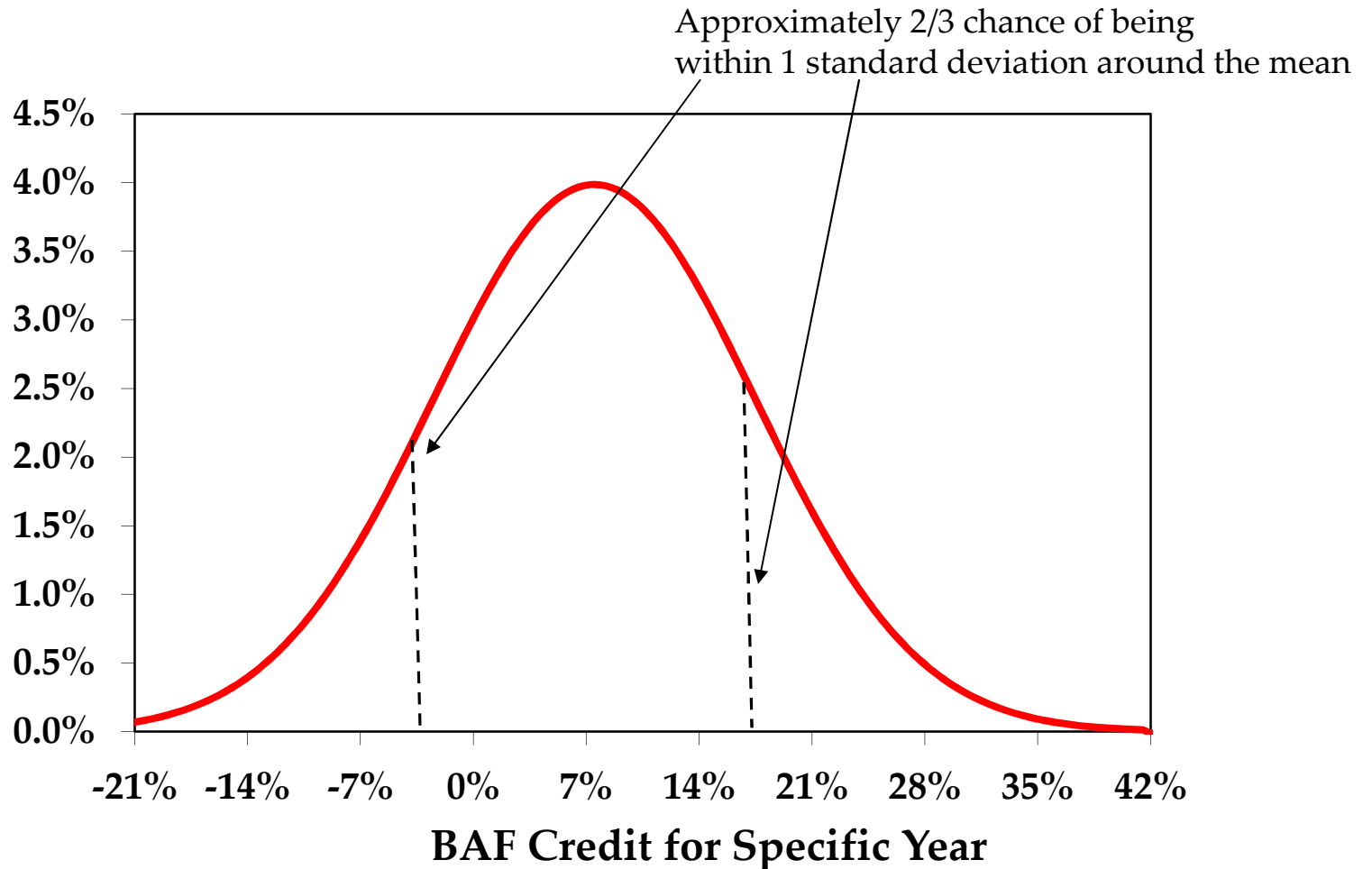
...Average compound return over last 20 years (geometric) drops from 8.2% to 7.3%, which would add 4% to the employer contribution rate over time

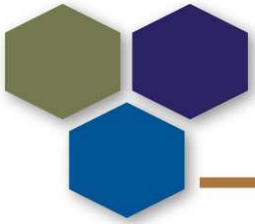


# Distribution Of Annual Returns

Mean = 7.0%, Standard Deviation = 10.0%

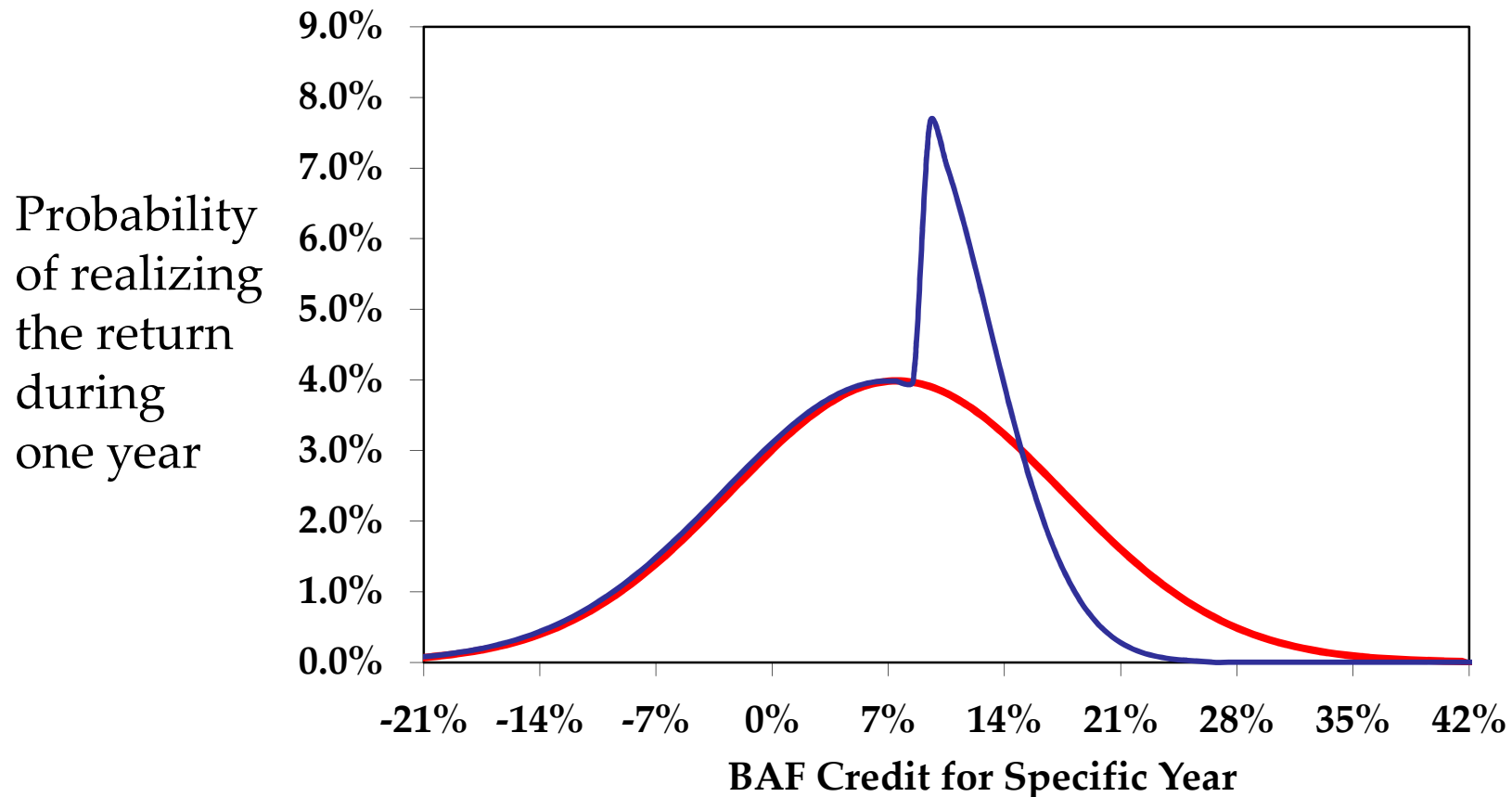
Probability  
of realizing  
the return  
during  
one year





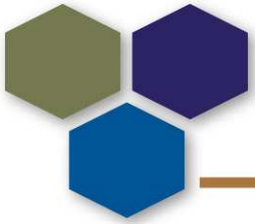
# Distribution Of Annual Returns

Mean = 7.0%, Standard Deviation = 10.0%,  
Returns above 9% are shared 50%/50%



Average effective expected BAF Credit of 5.5%

Will increase the contribution rate for most employers by 70-90%

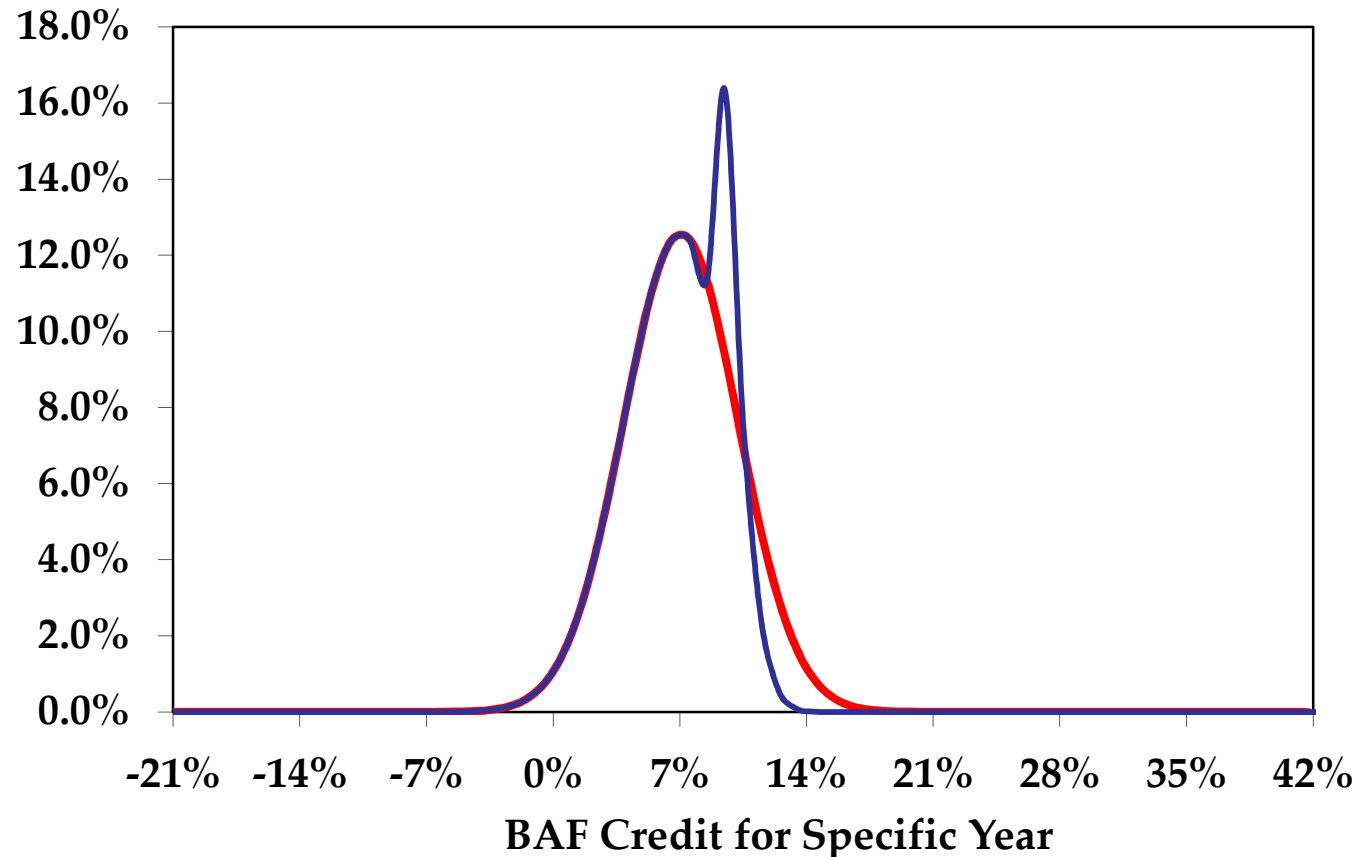


# Distribution Of Annual Returns

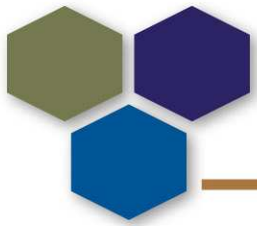
Mean = 7.0%, Standard Deviation = 10.0%,

Average 10 Year Returns above 9% are shared 50%/50%

Probability  
of realizing  
the return  
during  
one year



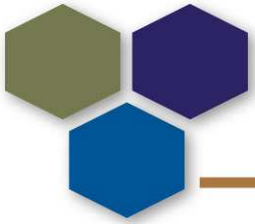
Using longer time periods can dampen impact  
Average effective expected BAF Credit of 6.8%



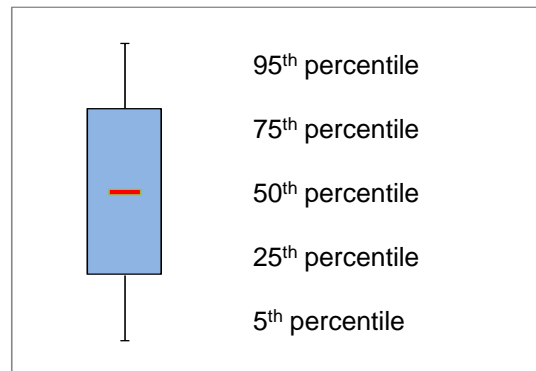
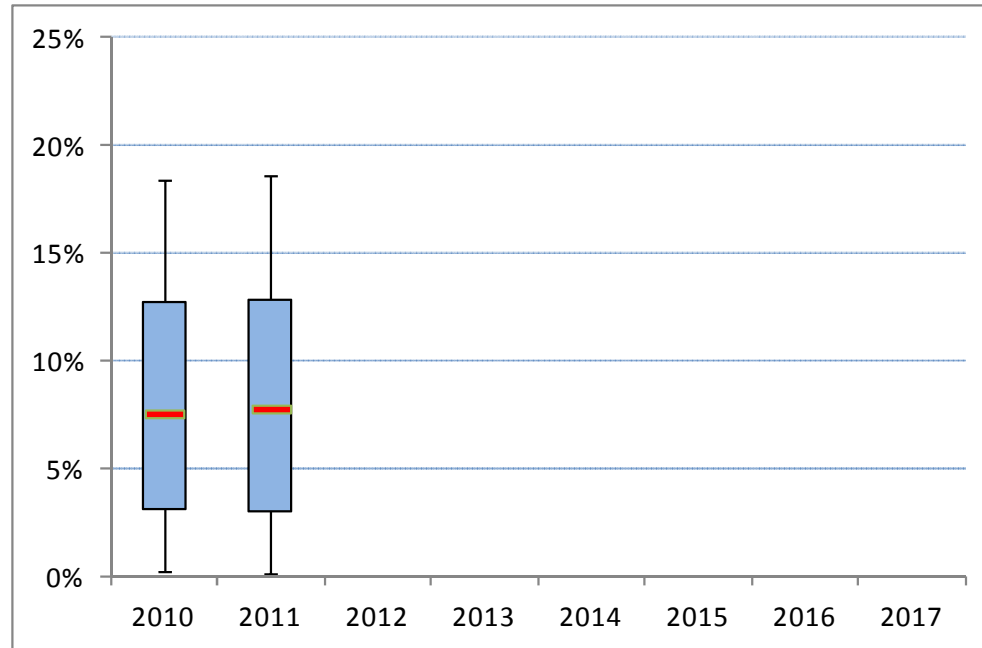
## System level vs. Employer level

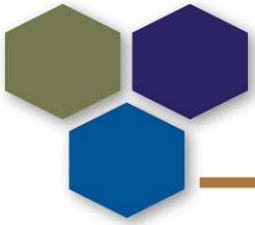
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- ◆ TMRS has a menu of benefit provisions for employers to choose from
  - ▶ Over 1,400 combinations
- ◆ Also, TMRS employers have different demographics, which cause differences in funding levels and contribution rates

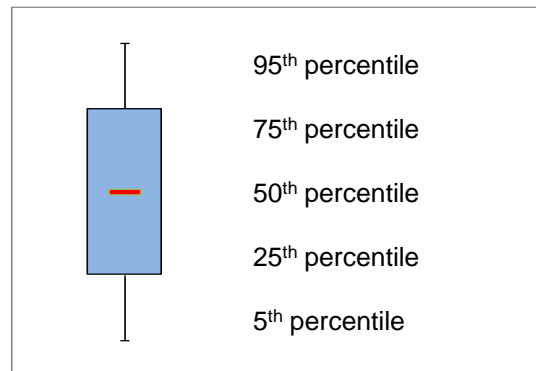
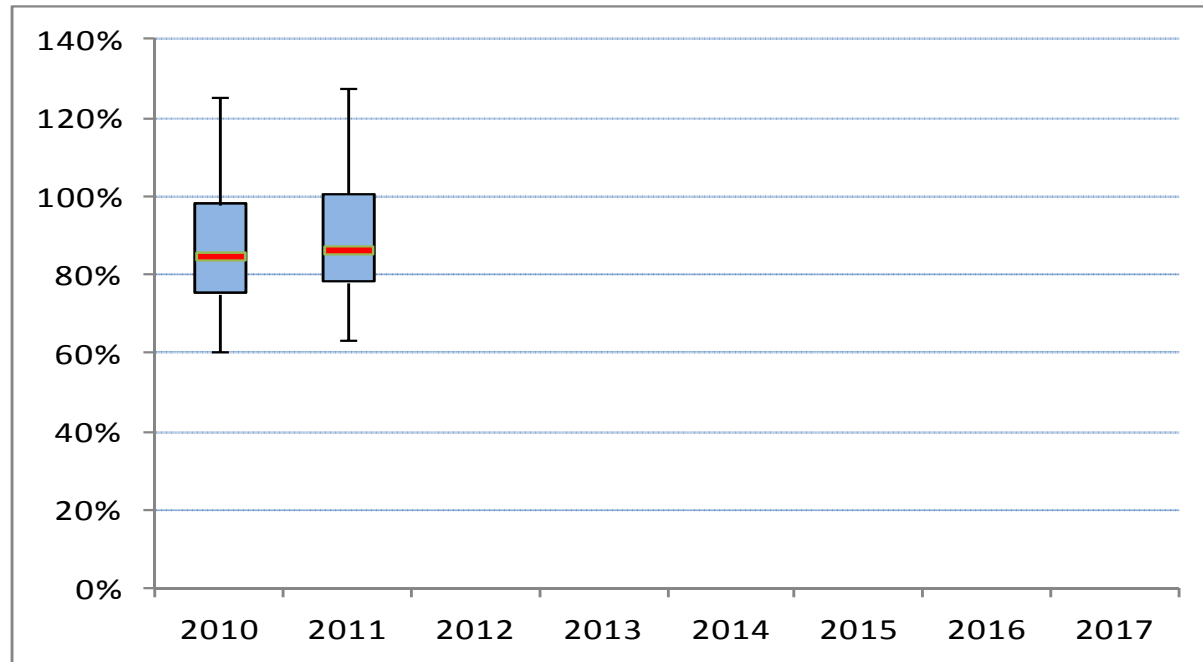


# Distribution of Full Retirement Rate as a Percentage of Payroll

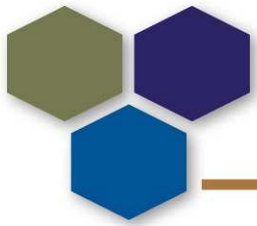




# Distribution of Funded Ratio Percentages



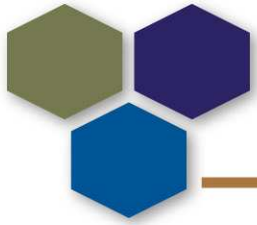




## System level vs. Employer level

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- ◆ If “gains” are allocated at the system level, it may force some employers to lower their benefits if the current levels of contributions are borderline affordable
- ◆ It may also make it more difficult for an employer who would rather build up a reserve for future adverse experience or to share gains in other ways, such as salary increases

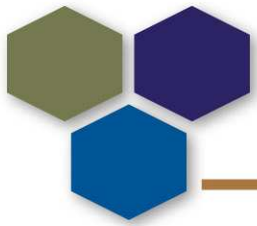


# Employer Contribution Rates

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- ◆ GRS Opinion:

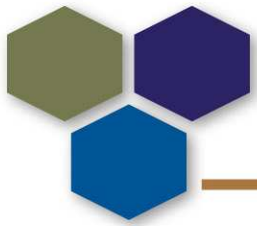
- ▶ Allowing employer contribution rates to decrease from year to year due to positive experience is a form of gain-sharing



# Employer Contribution Rates

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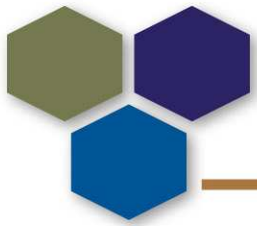
- ◆ Maintaining the employer rate at a higher level, even if experience over a period of time has caused the calculated contribution rate to decrease, will help manage the next difficult financial period
- ◆ Allows for consistent budgeting and builds a surplus (reserve) to offset future losses



## Surplus returns vs. “Gains”

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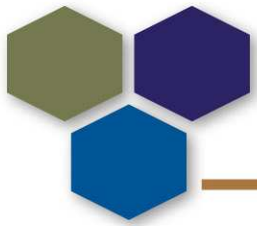
- ◆ As defined above, a gain is when experience has outpaced the assumptions over time
  - ▶ Unanticipated
- ◆ When a plan is in a surplus position (110% funded, for example), the 7% return is only needed on the first 100% to keep pace with the liabilities. The 7% on the surplus 10% can be used to build even larger reserves or to provide appropriately targeted benefit enhancements
  - ▶ Similar to dividends, these are anticipated excess earnings



# Surplus returns vs. “Gains”

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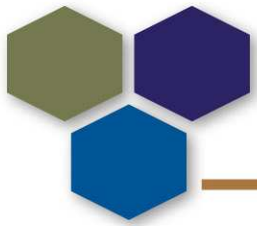
- ◆ What is an appropriately targeted benefit enhancement? Maybe:
  - ▶ Supplemental payment to retirees
  - ▶ Additional credits to member account funds at appropriate ratios
    - See following example
  
- ◆ What is not an appropriately targeted benefit enhancement?
  - ▶ Prospective changes to the benefit provisions, especially for members not hired yet
    - Retirement age
    - Future accrual rates



# Follow the credits

- ◆ The following example shows how closely related the assets and the liabilities can become in a cash balance plan
- ◆ Using a plan that has only one member with a 2/1 match
- ◆ There is a \$12,000 gain on the assets during the year
- ◆ Below is what would happen without gain-sharing (5% member account interest credit)

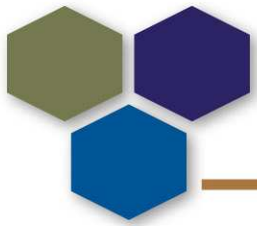
	Total BAF Balance	Member Accounts Balance	Total Liability	UAAL
	(1)	(2)	(3) 3 * (2)	(3) – (1)
Beginning Balance	\$300,000	\$100,000	\$300,000	\$0
Gain	\$12,000			-\$12,000
Ending Values	\$312,000	\$100,000	\$300,000	-\$12,000



# Gain-sharing?

- ◆ In a cash balance plan, the employer is providing a match not only on the contributions, but on the interest credits as well
- ◆ If the \$12,000 gain is shared proportionately, meaning \$4,000 to the member and \$8,000 to the employer asset values, eventually the member receives the entire gain because the liability has increased by 3 times the \$4,000 credit

	Total BAF Balance	Member Accounts Balance	Total Liability	UAAL
	(1)	(2)	(3) 3 * (2)	(3) – (1)
Beginning Balance	\$300,000	\$100,000	\$300,000	\$0
Gain	\$12,000	\$4,000	\$12,000	\$0
Ending Values	\$312,000	\$104,000	\$312,000	\$0



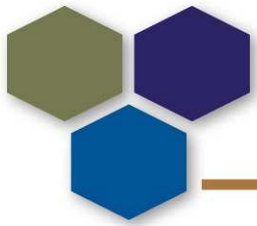
# Gains?

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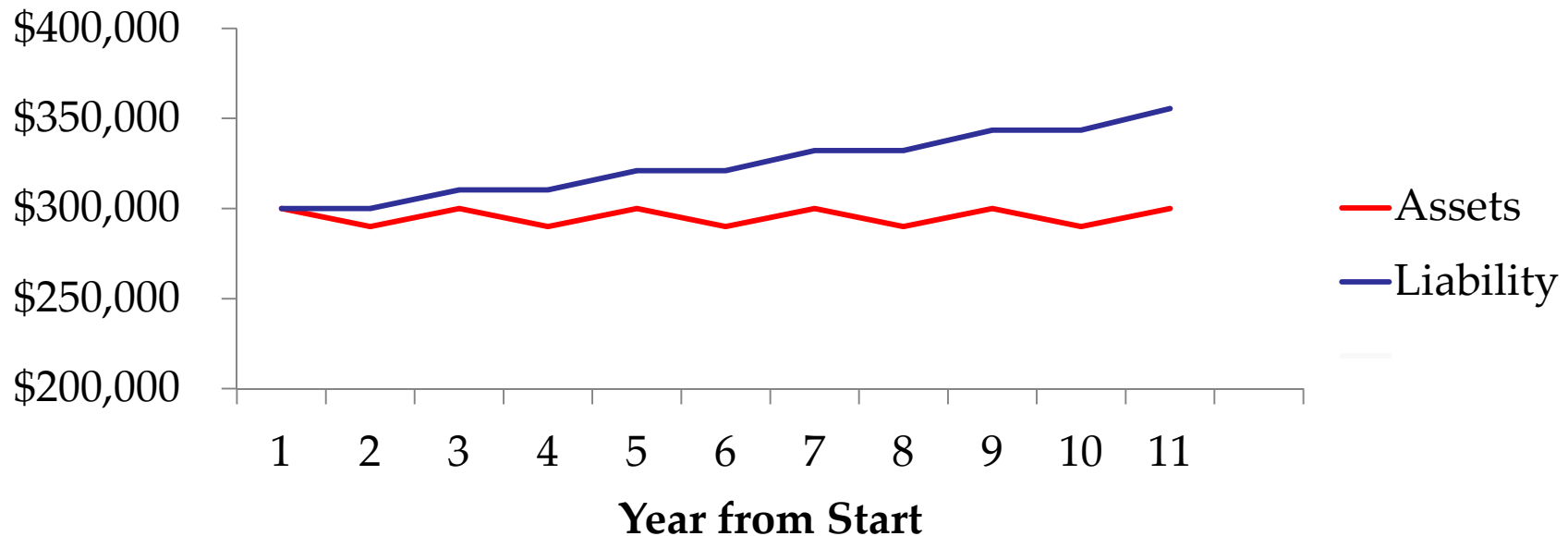
- ◆ The prior examples were based on an employer that was 100% funded. If the plan is underfunded, it can actually increase the UAAL because the liability will increase by more than the original gain
- ◆ This also occurs in a cash balance plan when the member and the employer receive the same interest credit on their accounts

	Total BAF Balance	Member Accounts Balance	Total Liability	UAAL
	(1)	(2)	(3) 3 * (2)	(3) – (1)
Beginning Balance	\$250,000	\$100,000	\$300,000	\$50,000
Gain	\$10,000	\$4,000	\$12,000	\$2,000
Ending Values	\$260,000	\$104,000	\$312,000	\$52,000

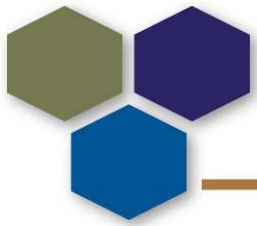




# Accumulation over time if only gains are shared and not losses



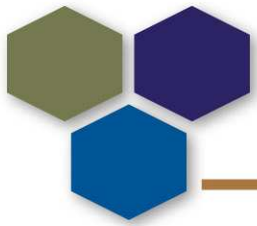
The above example assumes alternating \$10,000 gains and losses each year. Gains are shared proportionately with the member account balances and losses are absorbed by the employers. This is also what would happen if the member account funds and the employer funds were given equal interest credits, or if gains above a threshold are shared proportionately.



# Reasonable Gain-sharing Policy

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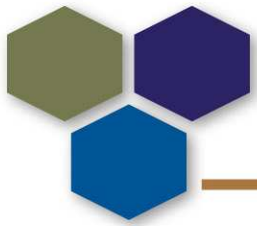
- ◆ The following is an example of a gain-sharing policy that:
  - ▶ Attempts to deal with the issues illustrated in the previous slides
  - ▶ Protects the baseline benefit (current and future accruals) as well as future contribution requirements



# Reasonable Gain-sharing Policy

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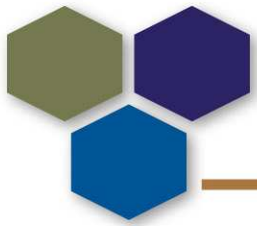
- ◆ The process would be controlled at the local municipality level
- ◆ The Board would set limitations on when gain-sharing would be allowed and how much
  - ▶ Then the individual municipality can decide whether or not to actually implement the options
- ◆ The policy addresses retrospective and prospective benefits, as well as funding policy
- ◆ Segmented based on funding ratio and contribution patterns



# Reasonable Gain-sharing Policy

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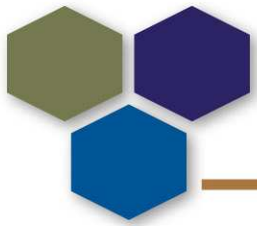
- ◆ Optional benefits: supplemental payments to retirees (13<sup>th</sup> checks) and additional member account interest credits
  - ▶ Both would be paid for utilizing a funding policy similar to current ad hoc COLA funding policy
  - ▶ However, when managed at appropriate funding levels, the cost is paid out of gains on surplus assets



# Reasonable Funding Policy

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- ◆ Prospective benefit changes would be amortized over periods not to exceed 20 years
- ◆ Any decreases/credits to employer contribution rates would be patiently delayed to accelerate funding for poorly funded plans and stabilize contribution rates for all plans
  - ▶ Idea is to get very well funded and let investment earnings on surplus assets pay for supplemental benefits

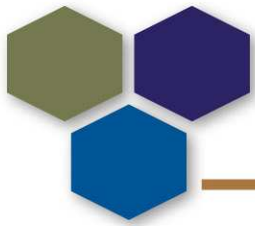


# Details

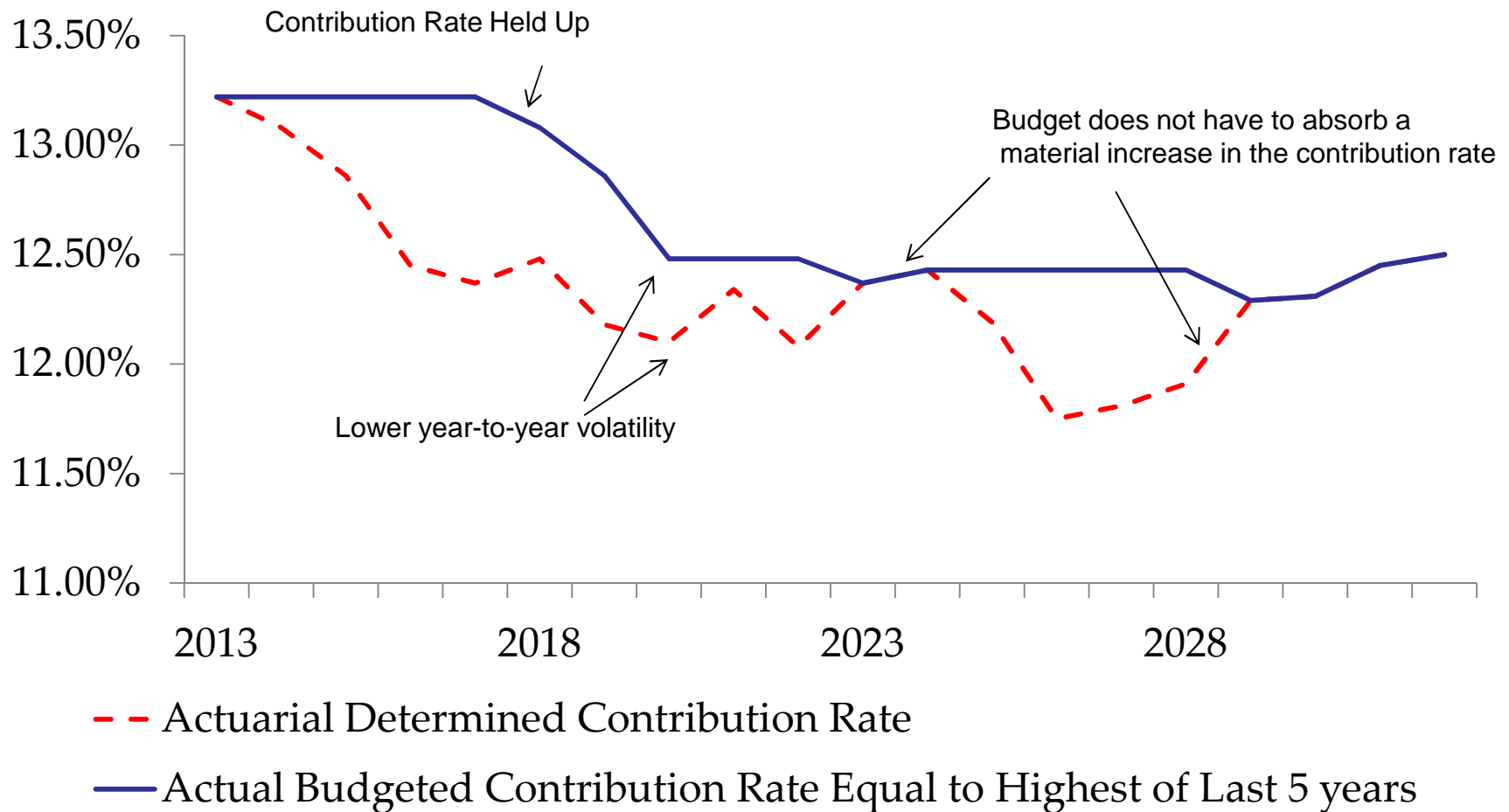
Funding Ratio	Funding Policy	Available Member Account Credits	Supplemental Payments
<80%	Employer rate cannot decrease until reaching 80% funding target	None	None
80-90%	Employer rate is equal to the highest of the last 5 calculated annual rates	None	None
90-100%		Half of the equivalent ratio of 10 year return above 9.0%	Up to the lesser of: - 1 month annuity, or - average benefit of group, or - \$1,000
100-110%	Employer rate equal to the highest of the last 5 calculated annual normal cost rates	Half of the equivalent ratio of 10 year return above 8.0%	Up to the lesser of: - 1 month annuity, or - average benefit of group, or - \$1,000
>110%	Employer rate equal to the highest of the last 5 calculated rates with amortization credits back to 110% based on 25 year rolling schedule	The equivalent ratio of 10 year return above 8.0%  Example: If 10 year return is 12%, can credit an additional 2% to the member accounts, or 5% + 2% = 7%	Up to 1 month annuity

The equivalent ratio is the inverse of the matching ratio.

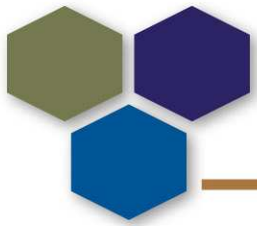
A 2/1 employer's equivalent ratio is 33% and a 1/1 employer would be 50%.



# Stabilization in Contribution Rates



The above scenario is not a projection of expected results.  
The year-to-year returns were randomly generated to illustrate the strategy.

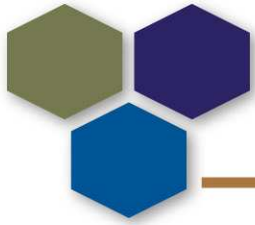


# Gain-sharing vs. Risk sharing

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- ◆ The upside potential for employees/retirees can be increased substantially if the risk is also shared
- ◆ As discussed before, if only gains are shared, there is a cost
  - ▶ And the cost will likely not be equitably shared
- ◆ If the benefit provisions were changed to absorb losses which are similar to or symmetric to the gains, then there is not a cost

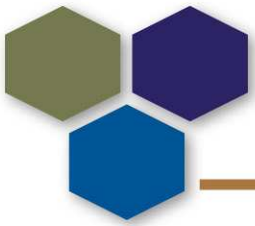




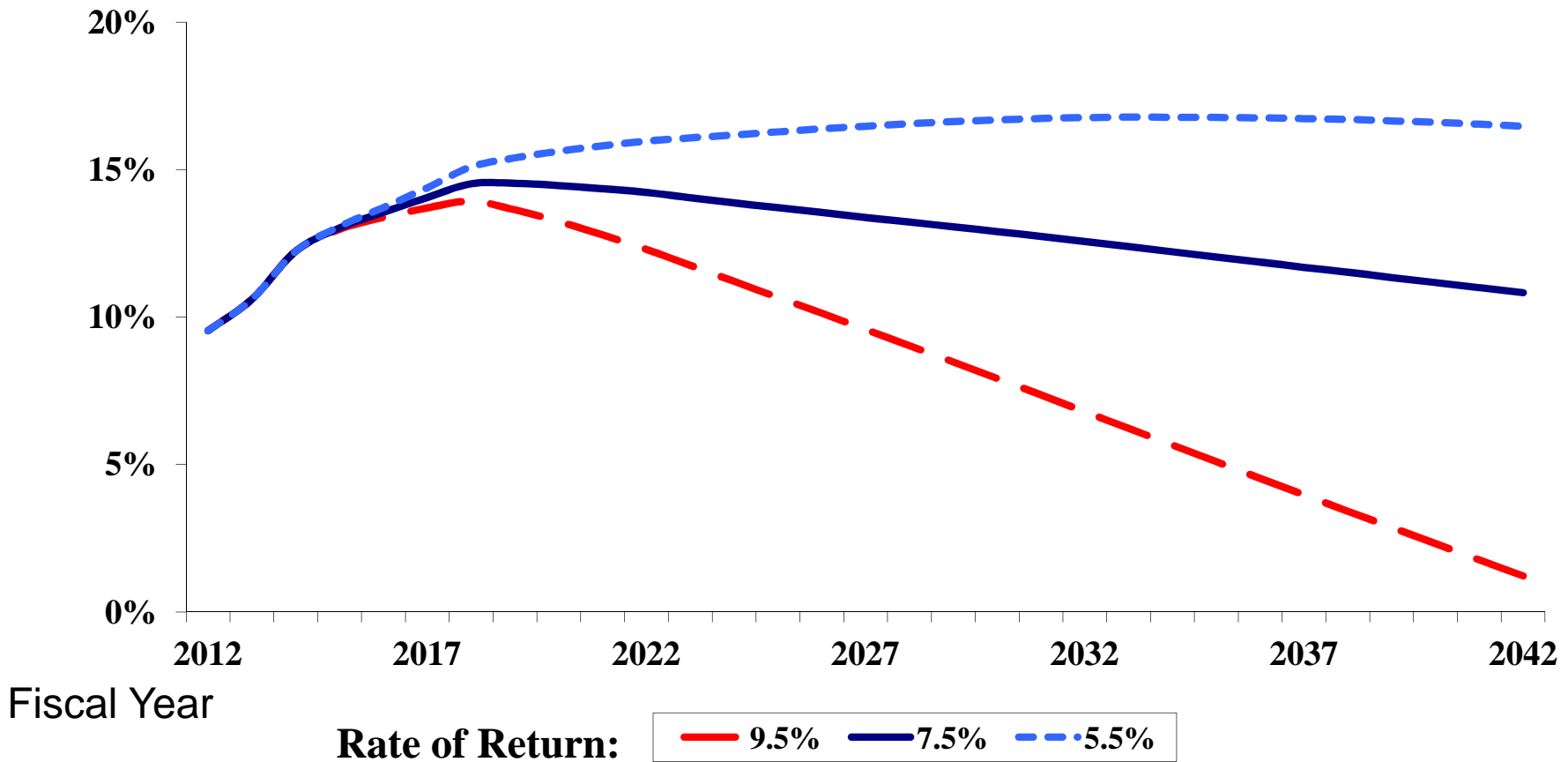
# Risk Sharing Options

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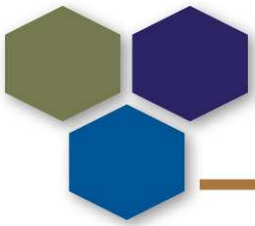
- ◆ COLA dependent on investment performance
  - ▶ Can be dividend model or direct calculation model
- ◆ Member account credits tied to actual investment performance
  - ▶ Does not mean the actual member account credit is equal to the fund return each year
  - ▶ Can be a formula, with partial sharing and floors/caps based on a number of years of return
- ◆ For other plan structures, the member contribution rate can be tied to the employer rate, but as previously discussed, that can be difficult in a cash balance plan



# Sample from another client: Sensitivity to Investment Return - Projected Employer Contribution Rate

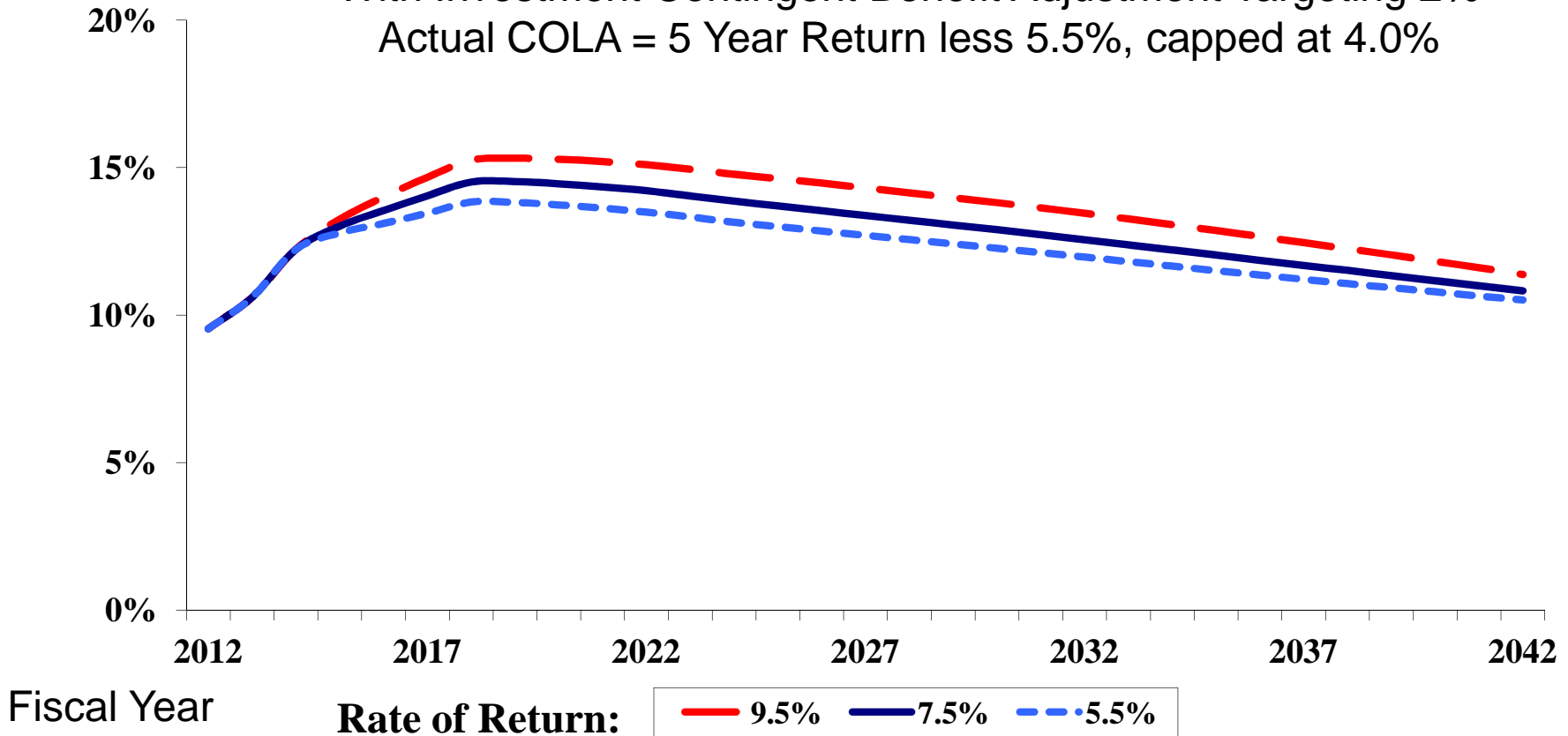


- Expected ARC for each fiscal year based on stated return during each year
- Assumes continuation of Current Member contribution rate
- Assumes rolling 30 year amortization

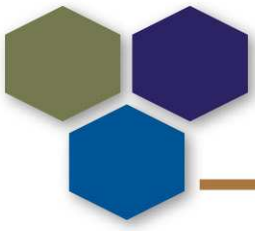


# Sample from another client: Sensitivity to Investment Return - Projected Employer Contribution Rate

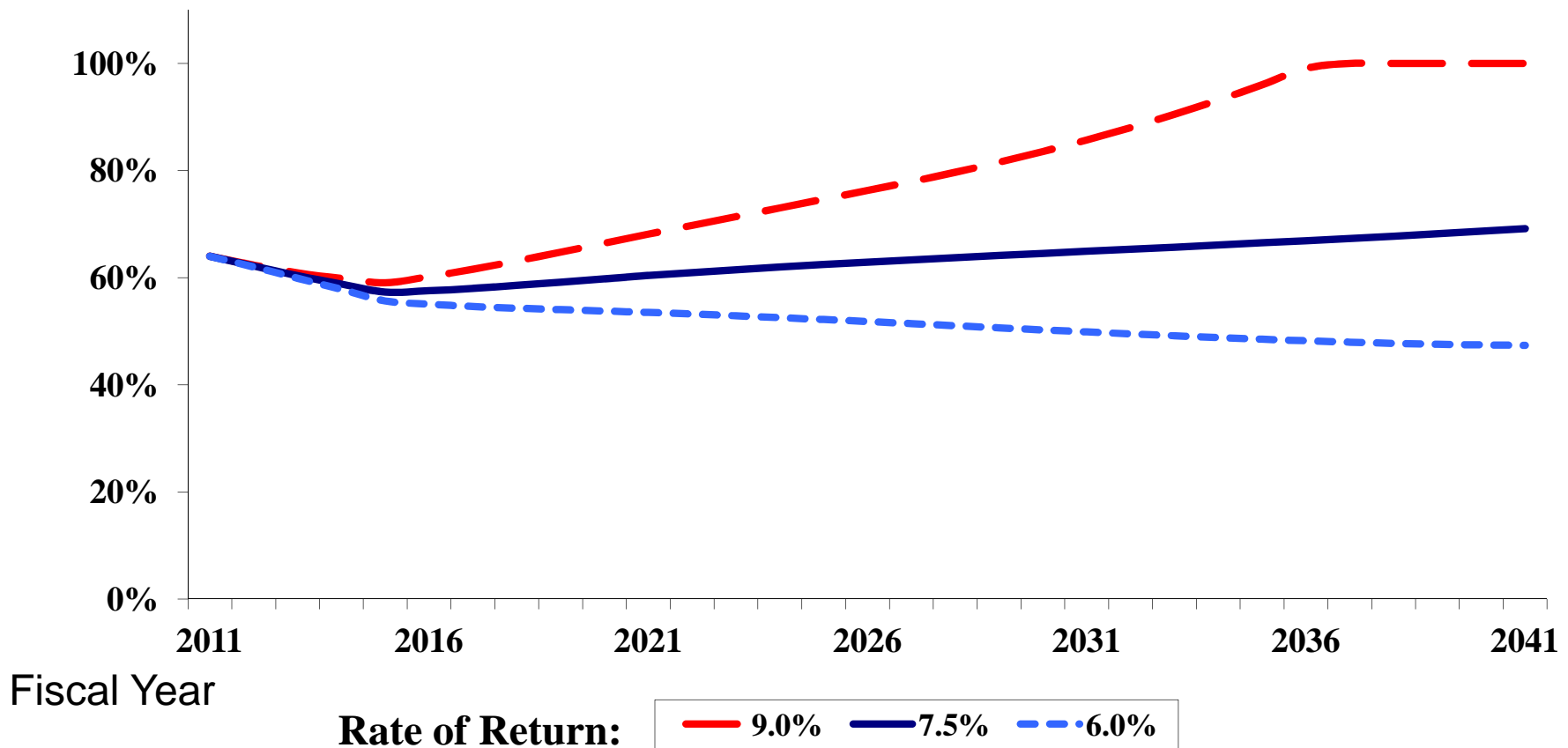
With Investment Contingent Benefit Adjustment Targeting 2%  
Actual COLA = 5 Year Return less 5.5%, capped at 4.0%



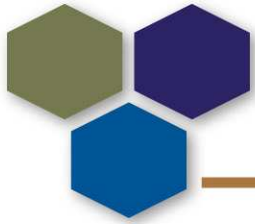
- Expected ARC for each fiscal year based on stated return during each year
- Assumes continuation of Current Member contribution rate
- Assumes rolling 30 year amortization



# Sample from another client: Sensitivity to Investment Return - Projected Funded Ratio

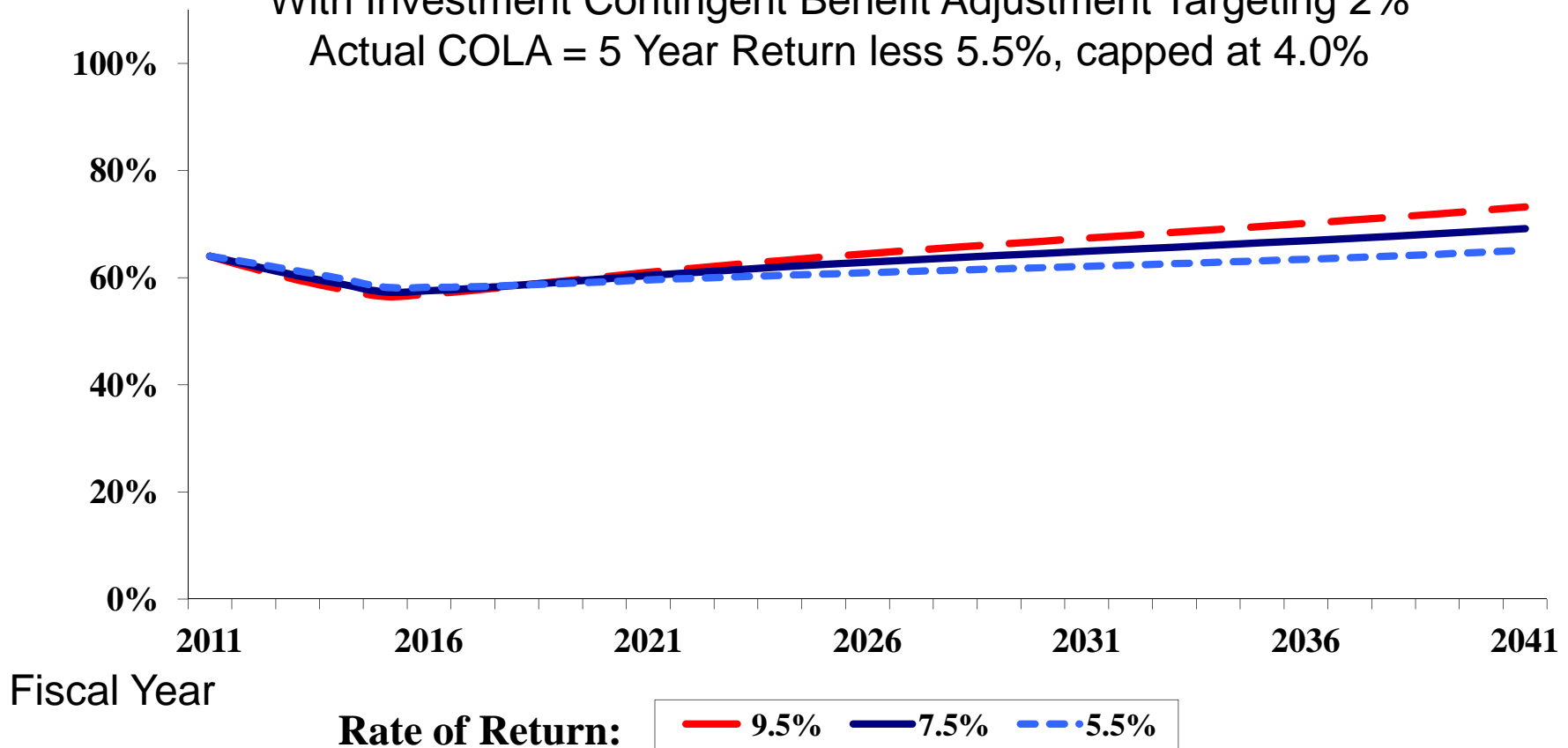


- Expected Funded Ratio for each fiscal year based on stated return during each year
- Assumes continuation of Current Member contribution rate
- Assumes rolling 30 year amortization

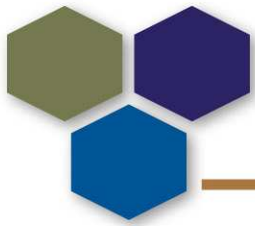


# Sample from another client: Sensitivity to Investment Return - Projected Funded Ratio

With Investment Contingent Benefit Adjustment Targeting 2%  
Actual COLA = 5 Year Return less 5.5%, capped at 4.0%



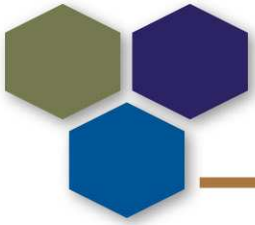
- Expected Funded Ratio for each fiscal year based on stated return during each year
- Assumes continuation of Current Member contribution rate
- Assumes rolling 30 year amortization



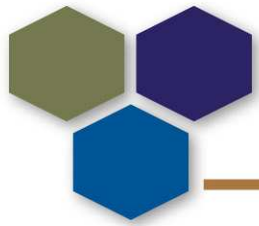
# Summary

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- ◆ Gain-sharing at the System level may not be supportable for some cities
- ◆ With strict guidelines and safeguards, a mechanism can be devised to enable gain sharing by individual cities
- ◆ Discipline and prudence needs to prevail when discussing gain-sharing provisions
  - ▶ When has a gain actually occurred?
  - ▶ How will the gain be distributed?
  - ▶ Can the gain be taken back if experience moves against you?



# Further Questions and Comments?



# Disclosures

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