



*addressing public pension issues of today*

*...AND TOMORROW*

# District Pension Plan

## Understanding and Managing PERS Required Contributions

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# Goals of Today's Meeting

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- n Understand how contributions are determined
- n Estimate what contributions will be in:
  - n 5 years
  - n 10 years
  - n Long-term
- n Determine how contributions can be managed
- n Determine to what degree contributions can be stabilized

# Agenda

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- n How are contributions determined?
- n Future Contributions
- n Managing Contributions: What are the Options?
- n Controlling Costs Through Rate Stabilization
- n Conclusions

# Background

## n District Valuations

n As of June 30, 2003 & June 30, 2004

(\$ millions)	<u>6/30/03</u>	<u>6/30/04</u>
Accrued Liability	11.9	13.6
Actuarial Value of Assets	7.4	8.1
Unfunded Liability	4.5	5.5
Required Contribution (\$)	0.75	0.8
Contribution (% Payroll)	23.8% (FY06)	25.3% (FY07)



# How are Contributions Determined?

# Contribution Components

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- n PERS Risk Pools

- n Normal Cost

- n Determined for entire pool of about 60 plans
    - n Difference in cost for Pool versus Plan is phased out over a five-year period
    - n The District is charged an annual benefit based surcharge on this cost

- n Amortization Costs

- n Side Fund represents the Plan's *past* Unfunded Accrued Liability as of June 30, 2003 - Amortized over a fixed 15-year period for the District.
    - n Future gains and losses (beginning 6/30/03) to be amortized over a rolling 30-year period.

# Characteristics of the Risk Pool Required Contribution

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- n Normal Cost
  - n Based on the entire pool, so the District's own demographics has little effect on this component.
- n Amortization of Side Fund
  - n Each plan in the Risk Pool has their own side fund
  - n Acts as a fixed debt, which does not change with future experience
- n Amortization of Risk Pool Unfunded Accrued Liability
  - n Based on the entire pool, so the District's own experience has little effect on this component
  - n In the long run, this will be the primary source of contribution volatility

# Calculation of Required Contribution for Fiscal Year 2007

- n Total FY 2007 Cost (% of Pay) - based on valuation results as of June 30, 2004 - for the District is made up of the following components:

## Normal Cost

Pool Normal Cost =	10.3%
- 80% of difference between pool & plan* =	1.4%
+ surcharge =	0.7%
<hr/> Total Normal Cost =	9.6%

## PLUS

### Amortization Cost

Side Fund (12 years remaining of 15 year amortization)=	14.9%
UAL (30 year amortization)=	0.8%
<hr/> Total Amortization Cost =	15.7%

## EQUALS

Total Cost =	25.3%
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\* The applicable percentage decreases by 20% per year until completely phased out.

# Future Contributions

# What will Future Contributions be?

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## n Deterministic Forecast Assumptions

- n Level active population throughout the forecast period
- n No other demographic gains or losses
- n No asset gains or losses
- n No assumption or plan changes
- n Risk Pool UAL amortization will remain a level percentage of pay (about 0.8%)

# Baseline Forecast

- n Under current provisions and funding arrangements, the expected costs in future fiscal years are as follows:

<u>Fiscal Year</u>	<u>Total Cost (% Pay)</u>	<u>Cost (\$)</u>
2007 (from 6/30/04 valuation)	25.3%	795,000
2008	25.7%	836,000
2009	26.1%	873,000
2010	26.4%	911,000
2011	26.7%	950,000
2012	26.6%	979,000
...		
2018	26.6%	1,221,000
2019	<b>10.6%</b>	492,000

# Contribution Dynamics

- n Factors affecting required contributions
  - n Normal costs
  - n Past gains and losses (Side fund amortization)
  - n Future gains and losses (UAL amortization), caused by
    - n Demographic changes
    - n Plan or assumption changes
- n **Of these, only the side fund amortization can be easily manipulated.**
- n Current makeup of annual cost (Fiscal Year 2007):
  - n Normal Cost – 38%
  - n **Side Fund Amortization – 59%**
  - n UAL Amortization – 3%
- n UAL amortization currently represents a small portion of the total, but it is the most volatile component.

# Managing Contributions: What Are the Options?

# Funding Alternatives

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## n Side Fund Options\*

- 1) Pay an additional amount per year on the side fund
- 2) Accelerate amortization by decreasing the remaining number of years
- 3) Pay off side fund in entirety
  - n Through a large one-time contribution
  - n Proceeds from a pension obligation bond (POB) – the current bond market may make this a less attractive option

## n Other Alternatives

- n Rate Stabilization Fund outside of PERS
- n Combination of side-fund contributions and rate stabilization

\* For any of these options, communication with PERS will be necessary to ensure proper crediting of the side fund.

# Side Fund Option 1: Implications

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- n Additional Side Fund Payments
  - n Reduces side fund balance
  - n Increases assets
  - n Decreases number of years to pay off side fund
  - n Can set up a schedule to contribute an additional amount or percentage each year – one such example on following page
  - n Can use budget surpluses to contribute to side fund (need not be a pre-determined schedule)
  - n Irrevocable – cannot be treated as an advance contribution

# Side Fund Option 1: Forecast

Projected Costs with additional \$100,000 per year:

Fiscal Year	Baseline Cost (% of pay)	Alternate Cost (% of pay)	Change in Cost vs. Baseline
2007	25.3%	28.4%	3.1%
2008	25.7%	28.8%	3.1%
2009	26.1%	29.1%	3.0%
2010	26.4%	29.3%	2.9%
2011	26.7%	29.5%	2.8%
2012	26.6%	29.3%	2.7%
2013	26.5%	29.1%	2.6%
2014	26.4%	29.0%	2.6%
2015	26.4%	28.8%	2.4%
2016	26.4%	28.5%	2.1%
2017	26.6%	10.2%	(16.4%)

# Side Fund Option 2: Implications

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- n Accelerated Side Fund Amortization schedule
  - n The remaining number of years over which the side fund is being amortized can be reduced
  - n Generally has the same effects as additional payments
  - n Additional payments will increase from year to year
  - n Can accelerate by 1,2,3, etc. years – one such example is shown on the next page
  - n This option is less flexible than option 1 since it does operate on a pre-determined schedule.

# Side Fund Option 2: Forecast

Projected Costs with a five-year acceleration:

Fiscal Year	Baseline Cost (% of pay)	Alternate Cost (% of pay)	Change in Cost vs. Baseline
2007	25.3%	34.2%	8.9%
2008	25.7%	34.3%	8.6%
2009	26.1%	34.8%	8.7%
2010	26.4%	35.3%	8.9%
2011	26.7%	35.7%	9.0%
2012	26.6%	35.9%	9.3%
2013	26.5%	36.5%	10.0%
2014	26.4%	11.4%	(15.0%)
2015	26.4%	10.4%	(16.0%)
2016	26.4%	10.3%	(16.1%)
2017	26.6%	10.2%	(16.4%)



# Side Fund Option 3: Implications

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## n Paying off Side Fund

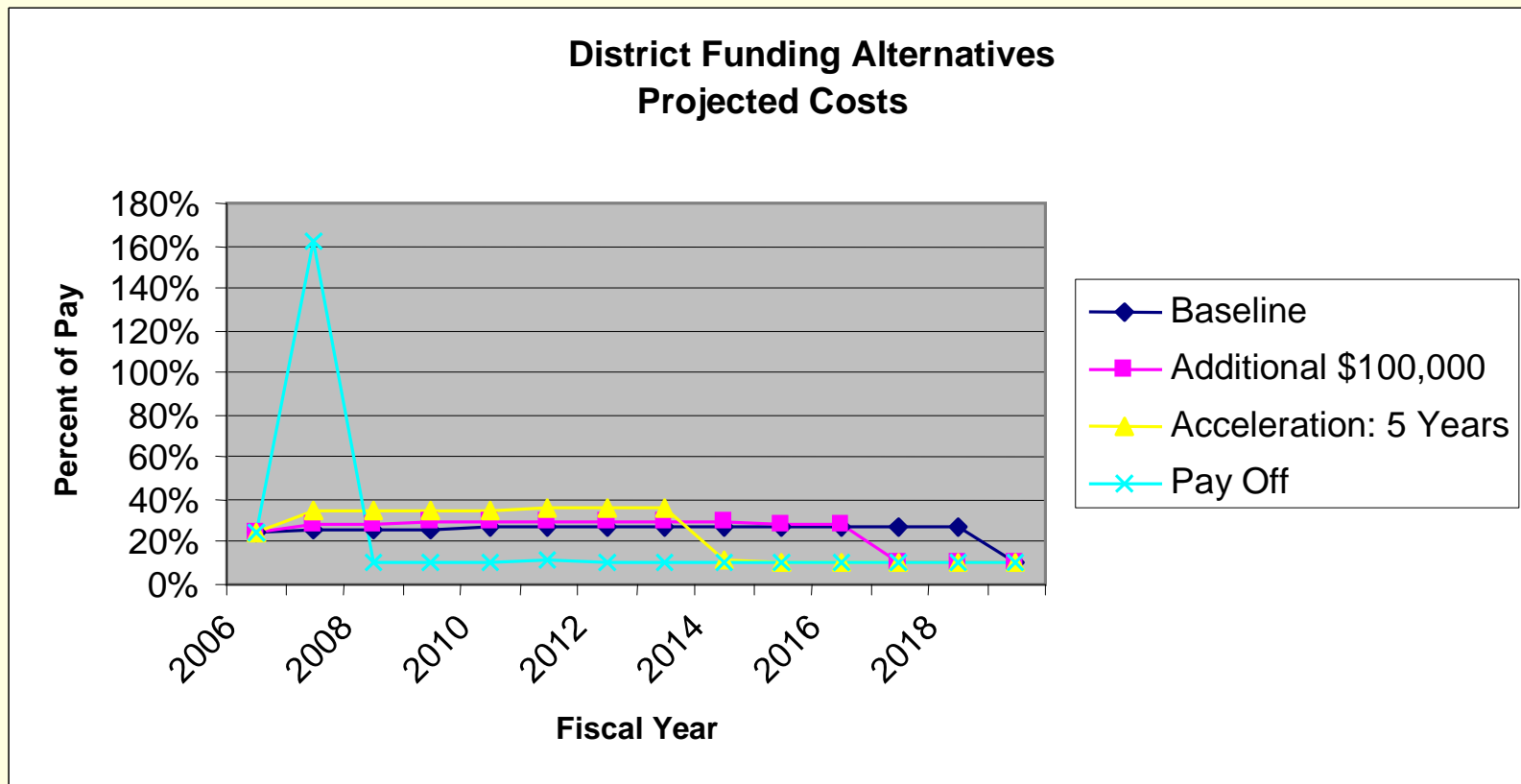
- n Large infusion of cash at one point in time (current balance is about \$4.6 million)
- n Sudden increase in assets
- n Decreases ongoing costs immediately and “permanently”
- n If this is accomplished through the issuance of a pension obligation bond, there are additional risks (low asset returns during bond repayment)

# Side Fund Option 3: Forecast

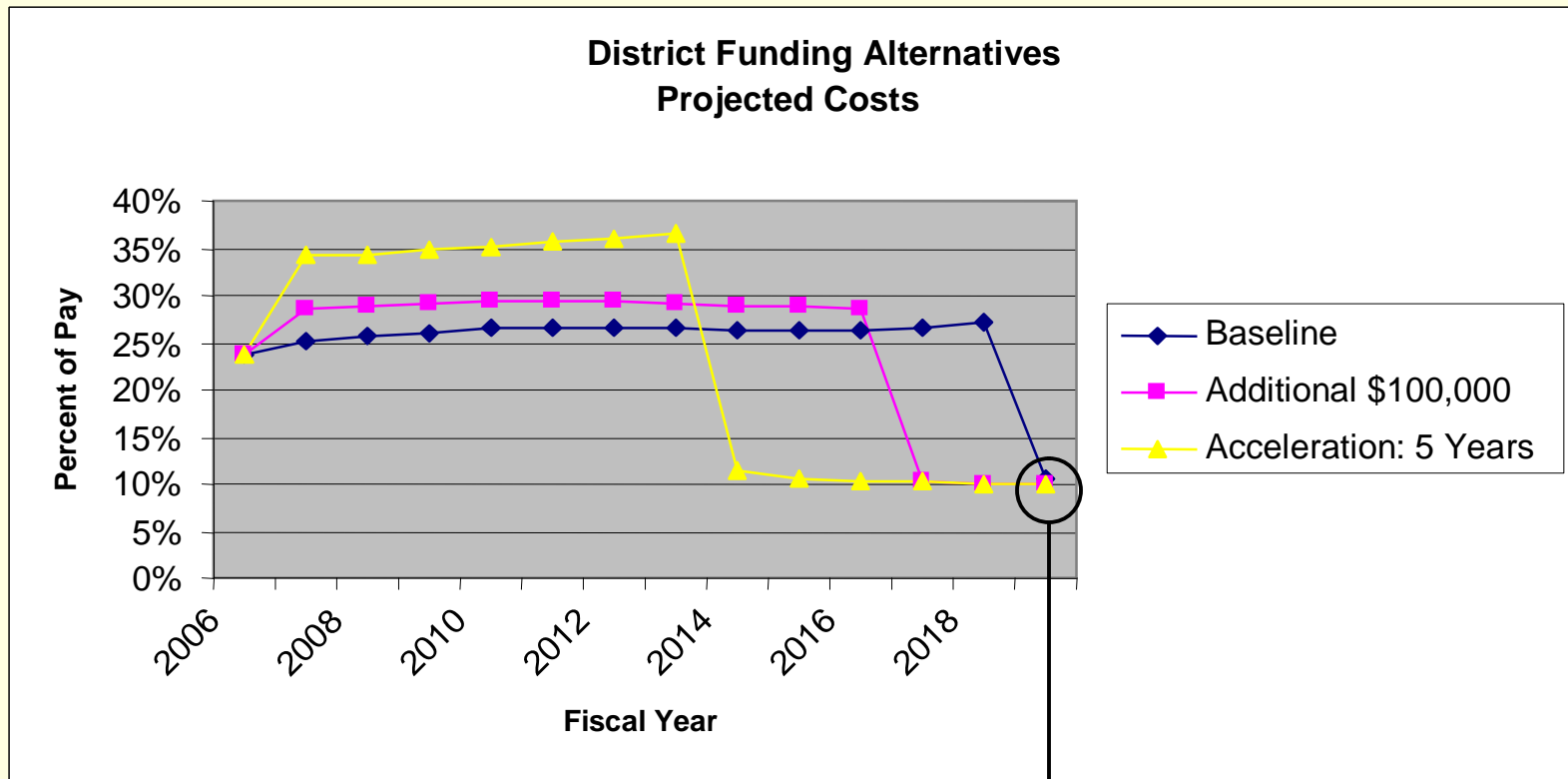
Projected Costs with 100% side-fund payoff:

Fiscal Year	Baseline Cost (% of pay)	Alternate Cost (% of pay)	Change in Cost vs. Baseline
2007	25.3%	162.5%	137.2%
2008	25.7%	10.3%	(15.4%)
2009	26.1%	10.5%	(15.6%)
2010	26.4%	10.8%	(15.6%)
2011	26.7%	11.0%	(15.7%)
2012	26.6%	10.8%	(15.8%)
2013	26.5%	10.7%	(15.8%)
2014	26.4%	10.5%	(15.9%)
2015	26.4%	10.4%	(16.0%)
2016	26.4%	10.3%	(16.1%)
2017	26.6%	10.2%	(16.4%)

# Comparison of Side Fund Options



# Comparison of Side Fund Options (excluding 100% payoff)



**All options are equivalent after the side fund is completely paid off.**



# Understanding Contribution Volatility: Stochastic Forecasts

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- n All of the previous scenarios and alternatives have been analyzed through a deterministic projection
  - n Assets were assumed to earn annually their expected return of 7.75%
  - n In reality, this is an impossibility
  - n Modeling asset fluctuations is an essential part of understanding the contributions
- n To model asset fluctuations, a stochastic model was created which takes into account varying returns for each year of the forecast
  - n Future returns are simulated using random but realistic return assumptions

# Dynamics of Contribution Volatility

- n Due to the PERS Risk Pool funding arrangement, most components of actuarial cost will not be affected as future returns vary:
  - n Normal Cost and associated phase-out and surcharges as well as Side Fund Payments will be unaffected by asset experience
  - n Amortization of the Unfunded Accrued Liability can and will vary with each valuation depending upon asset gains and losses
  - n The year-to-year fluctuations will be limited due to PERS' 15-year asset smoothing method, whereby only 1/15 of each year's asset-based gain or loss is recognized in the following year's asset value. (limited to no less than 80% or no greater than 120% of the market value)

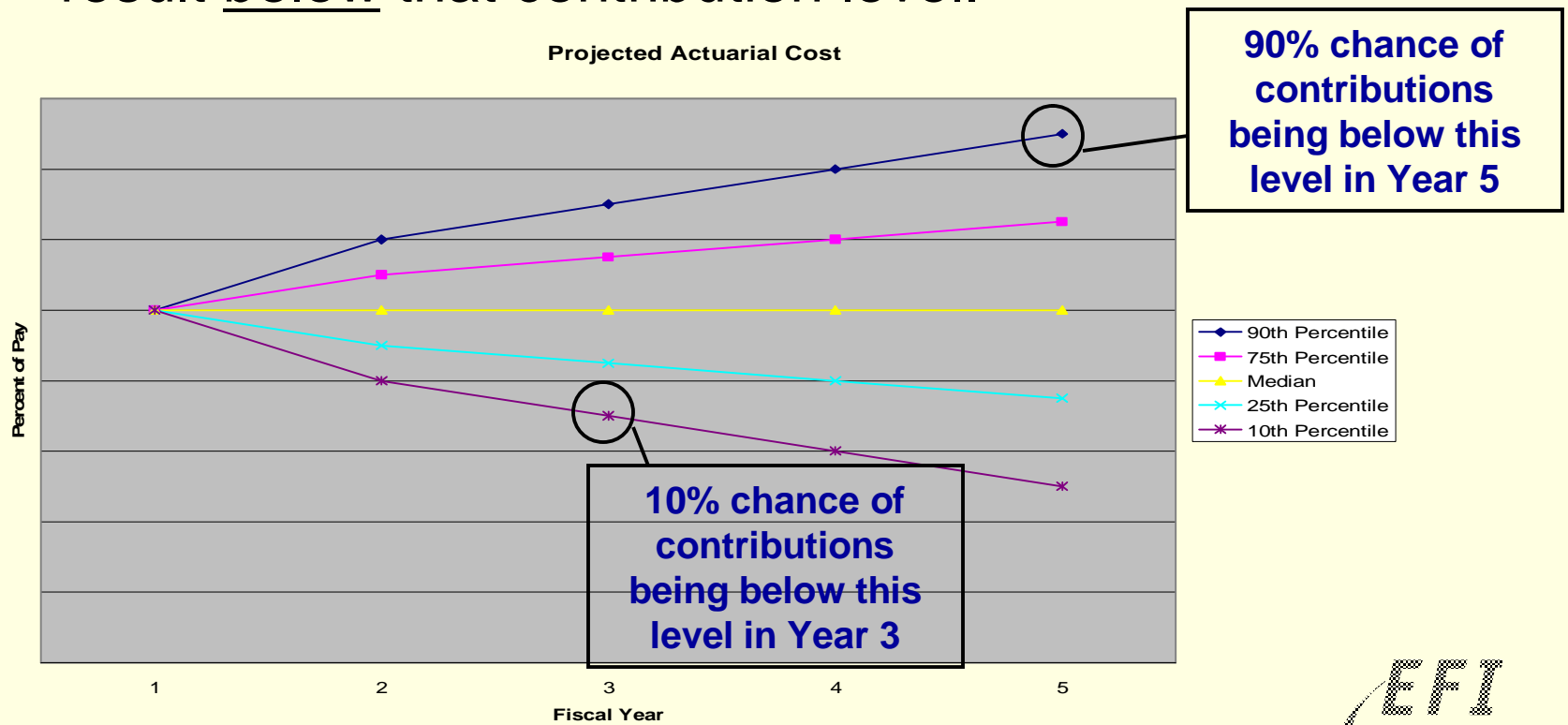
# Stochastic Forecasts: Interpreting the Charts

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- n Each of the following charts (graphs) is based on stochastic analysis and shows year-by-year projected ranges of contributions through Fiscal Year 2017
- n The ranges of contributions are based on varying the asset returns throughout the forecast
- n For each year, 200 trials are produced and probabilities can be developed based on the results of the trials

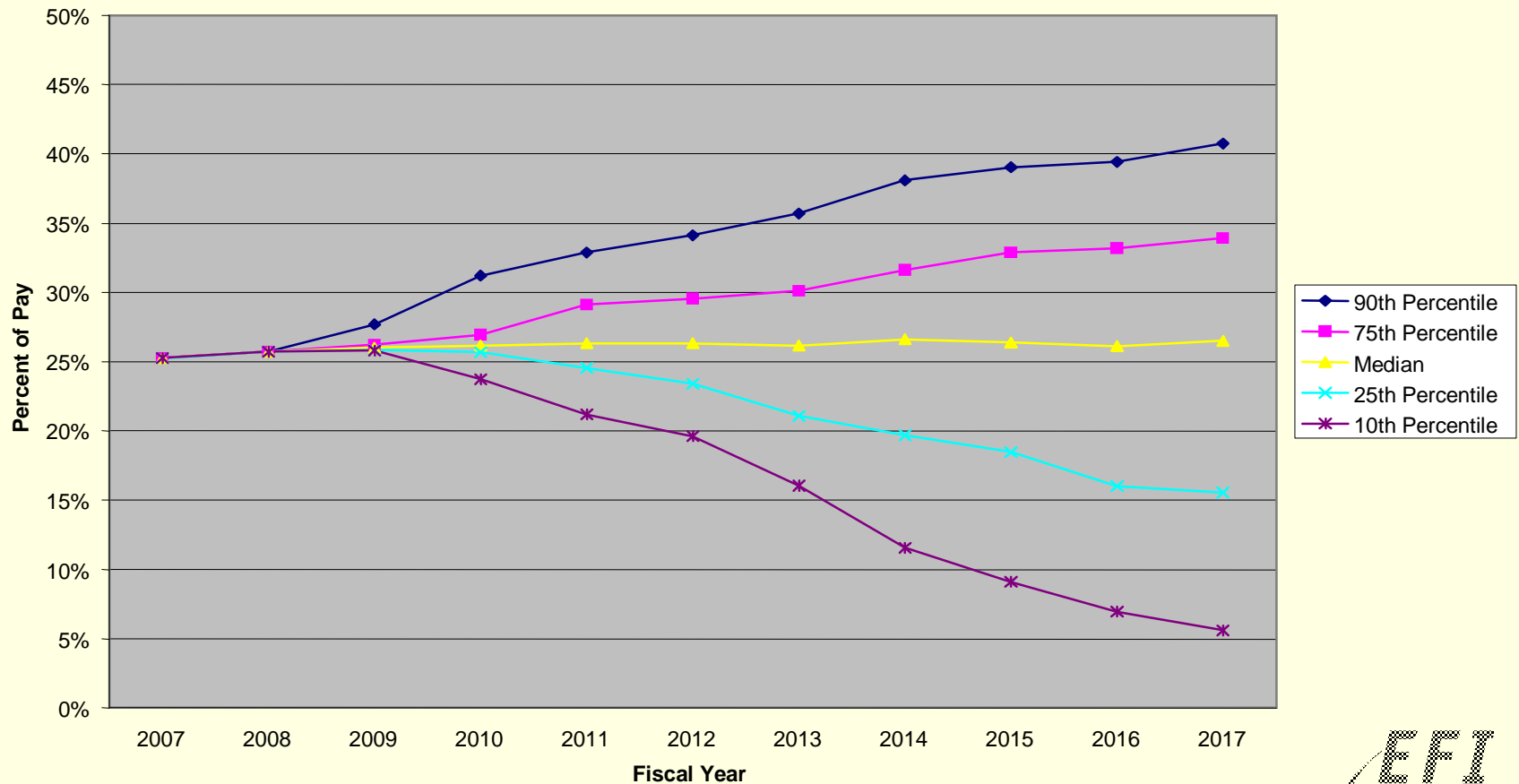
# Stochastic Forecast: Chart Example

- n Each point of the graph represents a percentile, meaning that x percent of the 200 trials yielded a result below that contribution level.



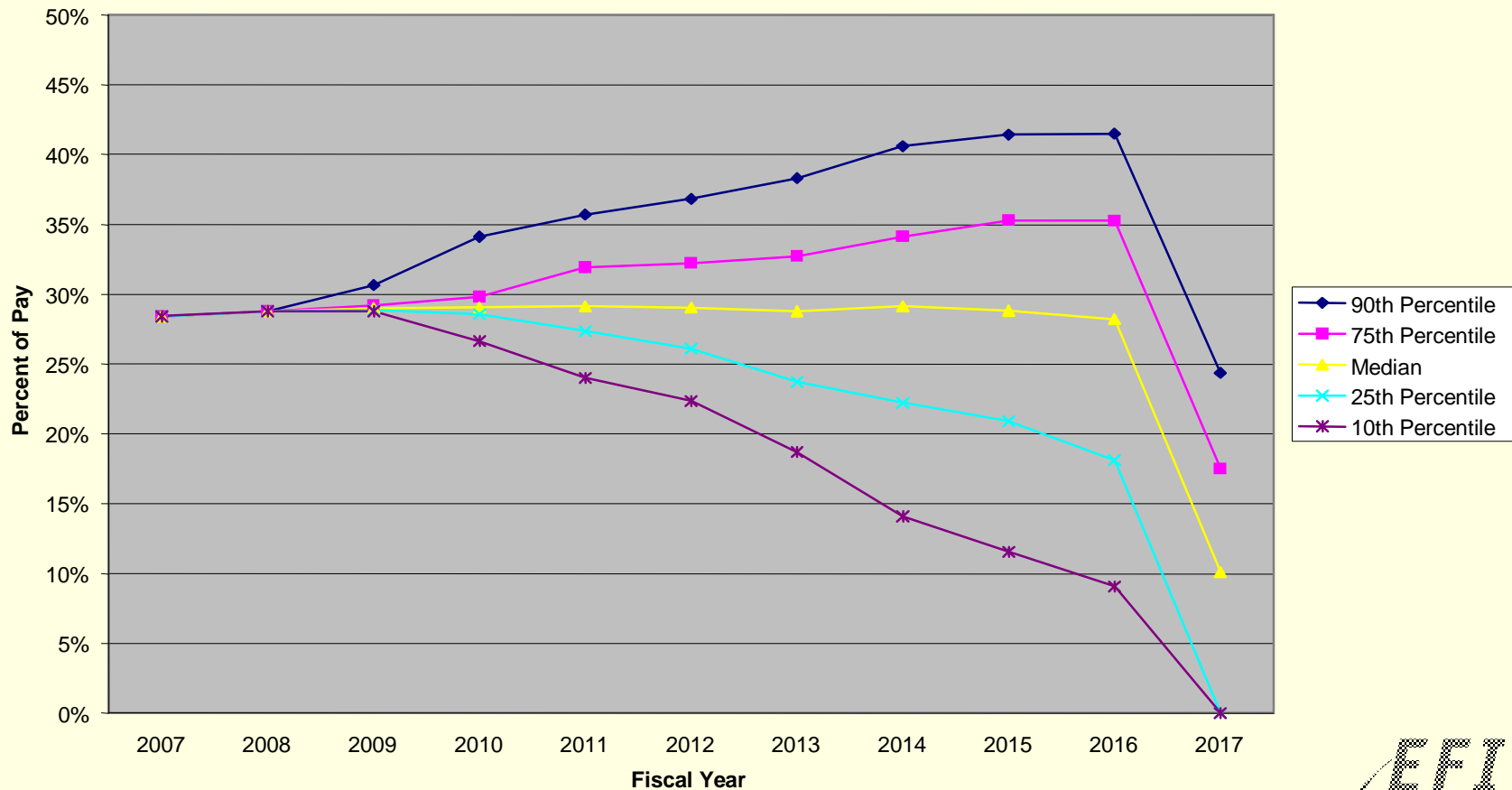
# Stochastic Forecast Results: Baseline

Projected Actuarial Cost



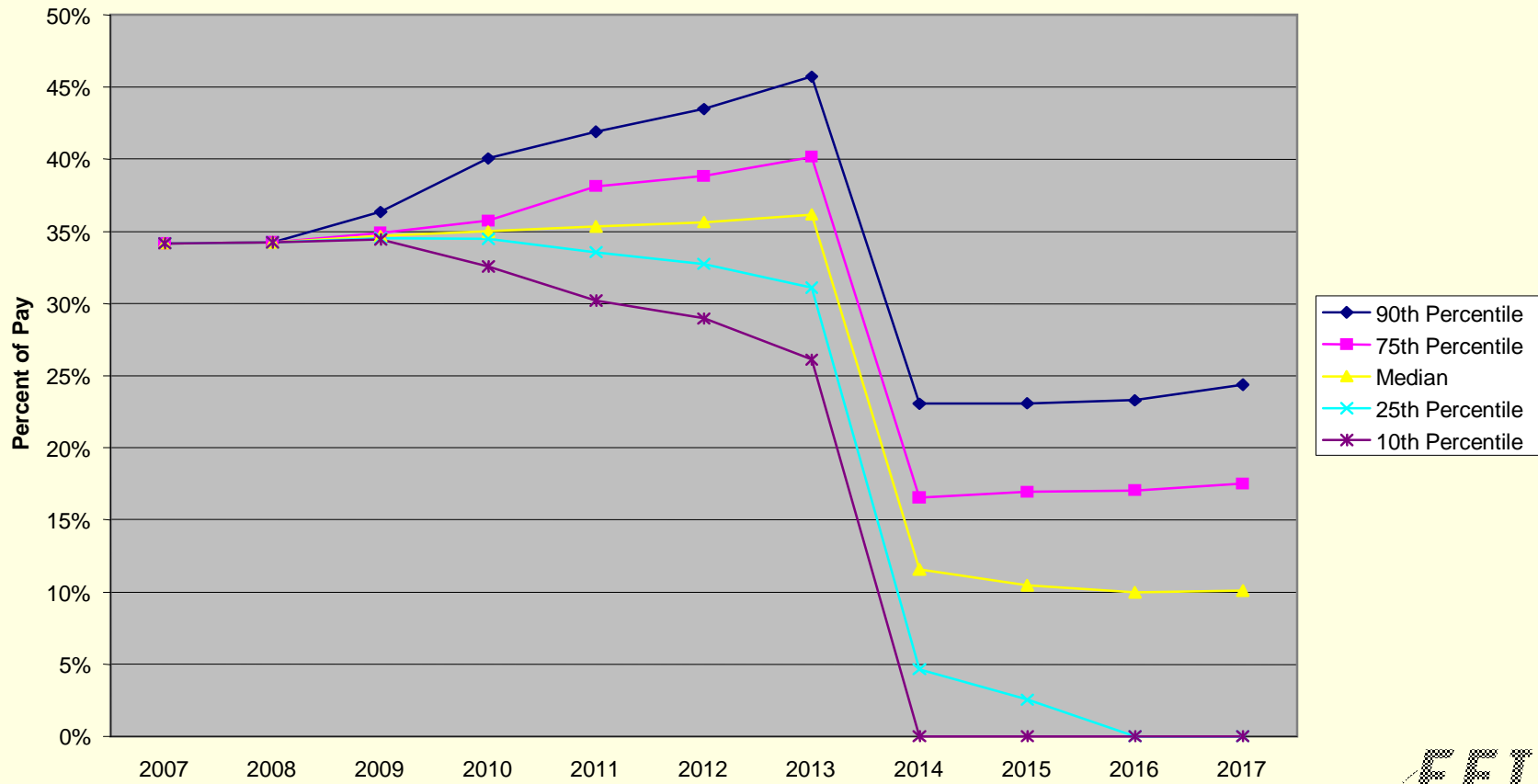
# Stochastic Forecast Results: Additional \$100,000/year to Side Fund

Projected Actuarial Cost



# Stochastic Forecast Results: Five year acceleration of Side Fund

Projected Actuarial Cost

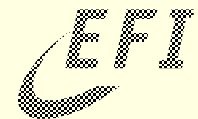
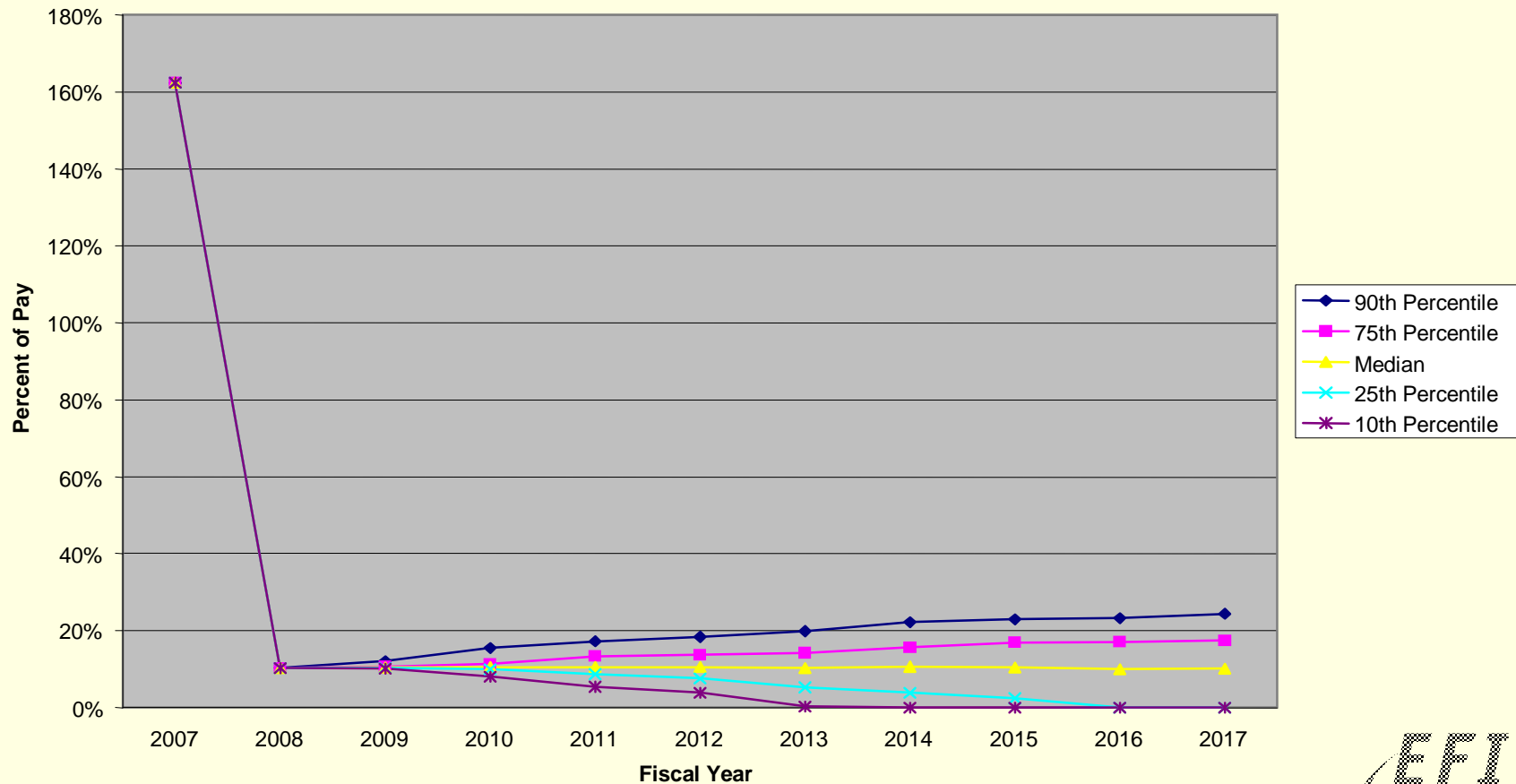


Fiscal Year



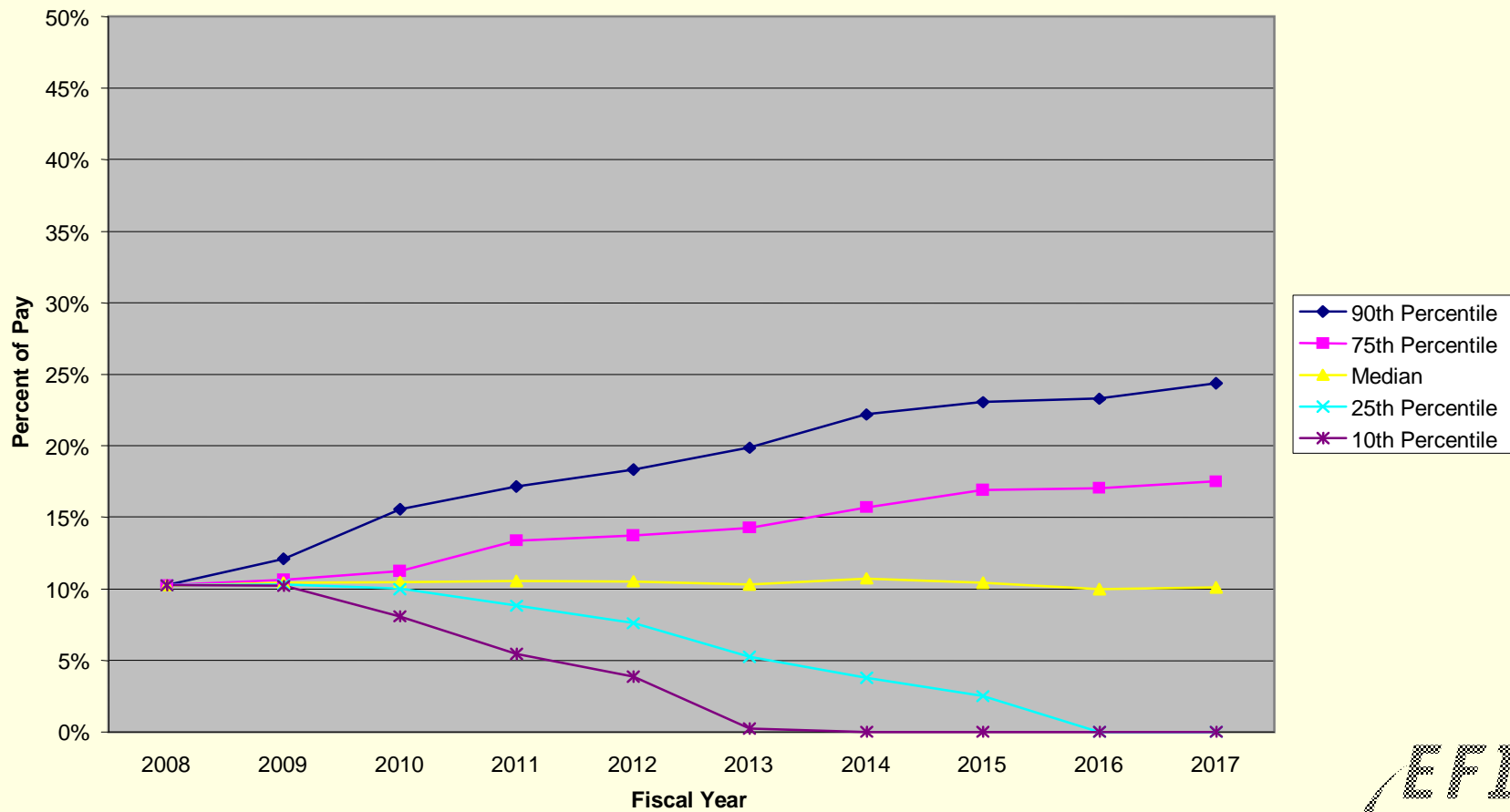
# Stochastic Forecast Results: 100% Side Fund Payoff

Projected Actuarial Cost



# Stochastic Forecast Results: 100% Side Fund Payoff (after FY07)

Projected Actuarial Cost

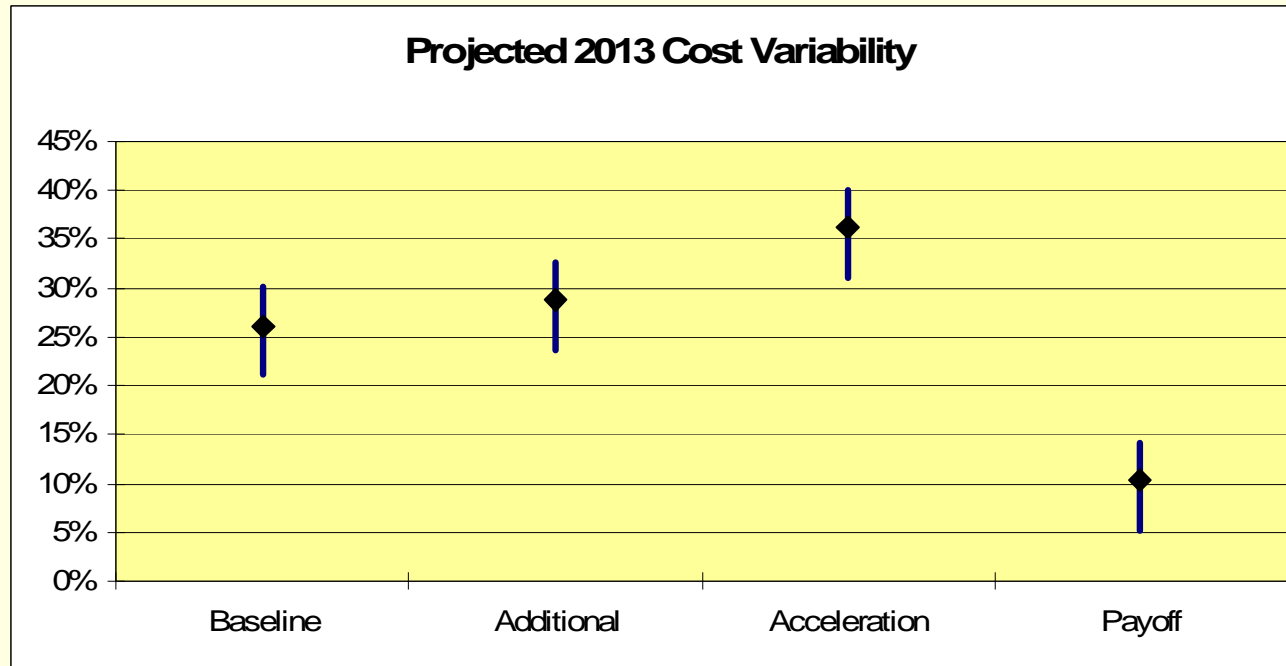


# Stochastic Forecast Results: Observations

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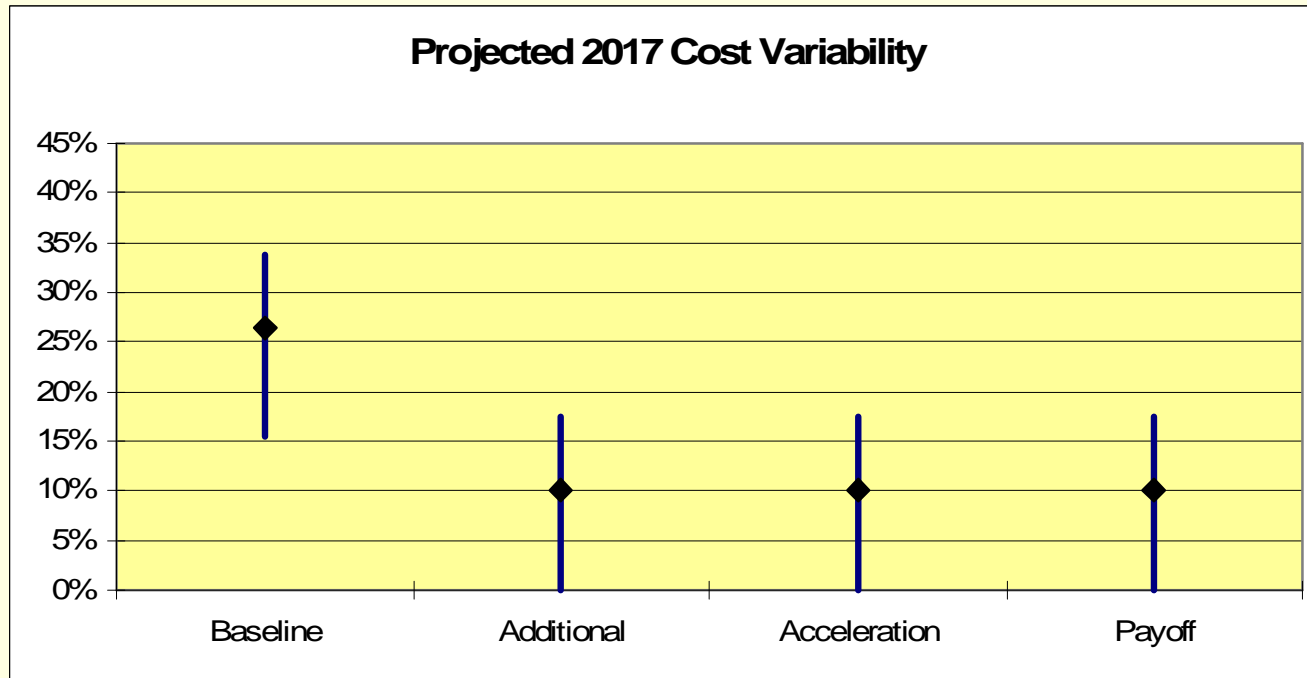
- n All of the alternatives affect the side fund only
- n Since the side fund is unaffected by asset fluctuations, the expected changes in cost for each option under a stochastic model are the same as previously stated
- n Normally, when the asset value of a fund is increased relative to the payroll, this causes a greater degree of cost volatility, however in this case the District's portion of Risk Pool assets is relatively small. Therefore, there is not as much risk of contribution volatility under the scenarios presented herein.
- n As the side fund is paid off and its amortization becomes a smaller portion of the total cost, volatility will increase.

# Stochastic Forecast Results: Comparison of Side Fund Options



- Each line depicts a reasonable range of expected costs in the given year
- Little variability is expected in first few years due to 15 year asset smoothing; more variability later due to possible successive asset gains or losses
- Absolute variability is about the same for each alternative, however, the relative variability is much greater under the “Payoff” scenario.

# Stochastic Forecast Results: Comparison of Side Fund Options



- A much greater degree of variability is possible here
- The top of the range for the last 3 alternatives is many TIMES greater than the bottom
- ALL alternatives, including the baseline will look the same after the side fund is paid off

# Side Fund Options: Conclusions

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- n Long-term costs will be unaffected by changes in side fund payments
  - n Under the current funding scheme (and all alternatives), the side fund will be paid off by 2018
  - n Excluding future gains and losses, the eventual cost of the plan boils down to the long-term normal cost, currently projected to be 9% - 10% of pay
  - n Future fluctuations in this cost will mostly be due to volatility in asset returns

# Managing Contribution Levels: The “Long and Short” of it

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- n District needs to determine short-term and long-term objectives for funding the Plan
- n Short-term volatility is dampened by the side fund mechanism (paid at a fixed interest rate)
- n Long-term (after 2018) volatility cannot be avoided, but can possibly be managed with a Rate Stabilization Fund

# Controlling Costs Through Rate Stabilization

# Rate Stabilization Fund Analysis

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- n In order to better manage/control contributions, monies can be set aside in a fund outside of PERS
- n Used to fund required contributions in excess of a specified percent of pay in a given year
- n For example, contribution rates could be stabilized at 26.0% (approximate expected baseline cost)
  - n Funds from stabilization fund would be withdrawn in future years when the required contribution is over 26.0%

# Rate Stabilization Fund Example: Poor Returns

- n Assume 5 years of unfavorable asset returns
  - n Without Rate Stabilization Fund, required contributions may be as follows:

Fiscal Year	Contribution (% of Pay)
2009	26.4%
2010	30.0%
2011	34.5%
2012	38.2%
2013	41.3%

# Rate Stabilization Fund Example: Implications of Poor Returns

- n With Rate Stabilization Fund, the rate could be kept at 26.0% per year, by using money from the fund to make up the “excess” contributions

Fiscal Year	Excess Contribution (% of Pay)	Excess Contribution
2009	0.4%	\$ 13,000
2010	4.0%	134,000
2011	8.5%	295,000
2012	12.2%	439,000
2013	15.3%	569,000

# Rate Stabilization Fund Example: Implications of Poor Returns

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- n In this scenario, the total of the contributions from the Rate Stabilization Fund over the five year period would be over \$1.45 million
- n Assuming a return of 3.25% on the fund, about \$1.24 million (about 41% of pay) would need to be deposited into the fund during Fiscal 2007.
- n The fund would be depleted at the end of the five year period.

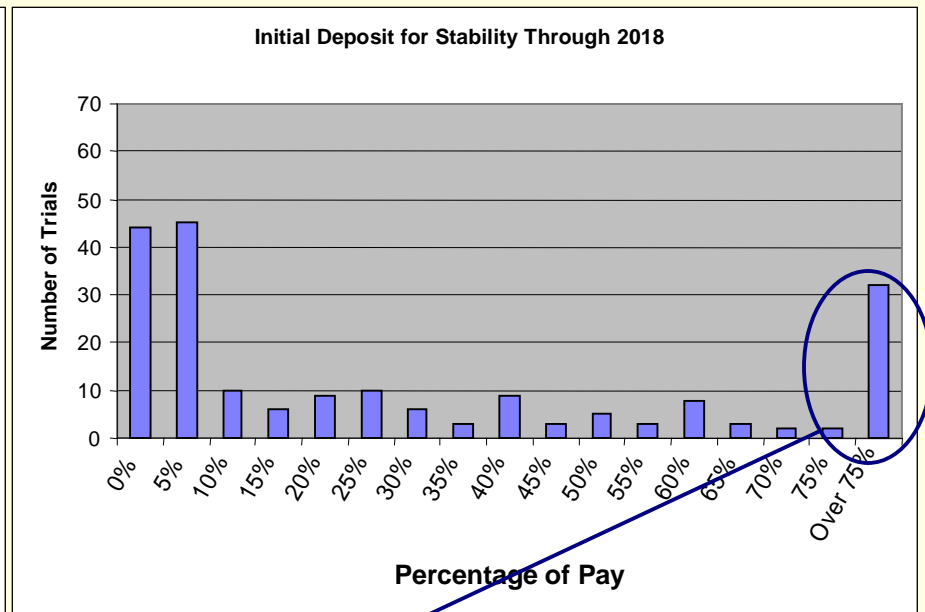
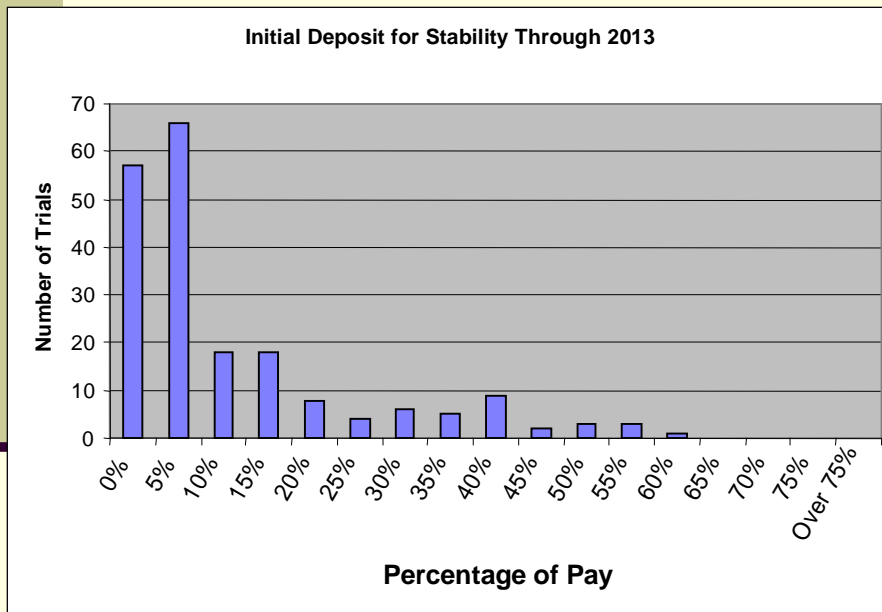
# Rate Stabilization Fund: Stochastic Analysis

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- n The previous pessimistic scenario was only one of an almost infinite number of possible outcomes
- n To better understand contribution volatility, the stochastic asset return model used for the side-fund analysis was used
- n A distribution of possible Rate Stabilization Fund initial (Fiscal 2007) deposits was constructed (based on 26.0% contribution stability)

# Rate Stabilization Fund: Stochastic Analysis – Distribution of Initial Deposits

- n As the number of years is increased, the likelihood of a higher initial deposit becomes greater.



**Longer term stability is much more expensive.**

# Controlling Contributions with a Rate Stabilization Fund

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- n To determine how much to set aside in such a fund, several factors need to be determined:
  - n When will the initial deposit be made?
  - n How long is the horizon for stability?
  - n What stable contribution rate is desired?
  - n What level of confidence (probability of stability) is desired?
  
- n When the side fund amortization is no longer a cost component (2019 and later), contributions can be stabilized at a much lower level (currently projected to be 9% - 10% of pay)

# How Much Will it Cost?

- n Assuming initial deposit is made during Fiscal 2007, the following table represents necessary amount to limit contributions at 26.0% with given probability

Probability of <u>Sufficient Funds</u>	Initial deposit to provide contribution stability through given Fiscal Year	
	through <u>2013</u>	through <u>2018</u>
70%	\$ 290,000	\$ 1,195,000
80%	474,000	1,765,000
90%	947,000	2,876,000

# How Much Will it Cost?

- n Assuming initial deposit is made during Fiscal 2007 and a **4.5% annual return**, the following table represents necessary amount to limit contributions at 26.0% with given probability

<u>Probability of Sufficient Funds</u>	Initial deposit to provide contribution stability through given Fiscal Year	
	through <u>2013</u>	through <u>2018</u>
70%	\$ 275,000	\$ 1,097,000
80%	449,000	1,596,000
90%	896,000	2,606,000

# How Much Will it Cost? (Alternate Stabilization Rate)

- n For comparison, if the contribution target maximum is increased to **26.5%**, the following initial deposits would be necessary:

<u>Probability of Sufficient Funds</u>	Initial deposit to provide contribution stability through given Fiscal Year	
	through <u>2013</u>	through <u>2018</u>
70%	\$ 228,000	\$ 1,058,000
80%	410,000	1,623,000
90%	872,000	2,732,000

# Rate Stabilization Fund Alternatives

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- n Aside from making one initial deposit into the Rate Stabilization Fund, there are several other possibilities, including:
  - n Making multiple, periodic deposits/installments
  - n Depositing additional monies when actuarial gains cause the contribution rate to fall below the established target
    - n This could also involve establishing a range of acceptable contribution percentages
  - n Utilizing one of the side fund alternatives in conjunction with a Rate Stabilization Fund

# Conclusions

# What Can be Done to Control/Manage Costs?

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- n In order to stabilize or reduce future contributions to the pension plan, there are two basic strategies:
  1. Put money into fund with PERS, in which case it would be applied to the side fund
  2. Set aside additional money outside of fund in a Rate Stabilization Fund

# Comparing Cost Management Strategies

	Risk Stabilization Fund	PERS (Side Fund)
Pros	<ul style="list-style-type: none"> <li>n Stability of short-term contributions</li> <li>n Favorable (PERS) returns could extend stabilization period</li> <li>n District has more control</li> </ul>	<ul style="list-style-type: none"> <li>n Earlier cost reduction (side fund paid off sooner)</li> <li>n Higher returns possible</li> <li>n Side-Fund “earns” a fixed return</li> <li>n Improved funding ratio</li> </ul>
Cons	<ul style="list-style-type: none"> <li>n Side fund amortization (and thus higher contributions) will continue longer</li> </ul>	<ul style="list-style-type: none"> <li>n No stabilization of costs</li> <li>n Contributions irrevocable</li> <li>n Increases (relative) volatility</li> </ul>

A combination of the two basic strategies may also be worth consideration