

MERCER


Human Resource Consulting



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Oregon PERS Financial Modeling Results

Bill Hallmark and Greg Smith
Portland, Oregon

 Marsh & McLennan Companies



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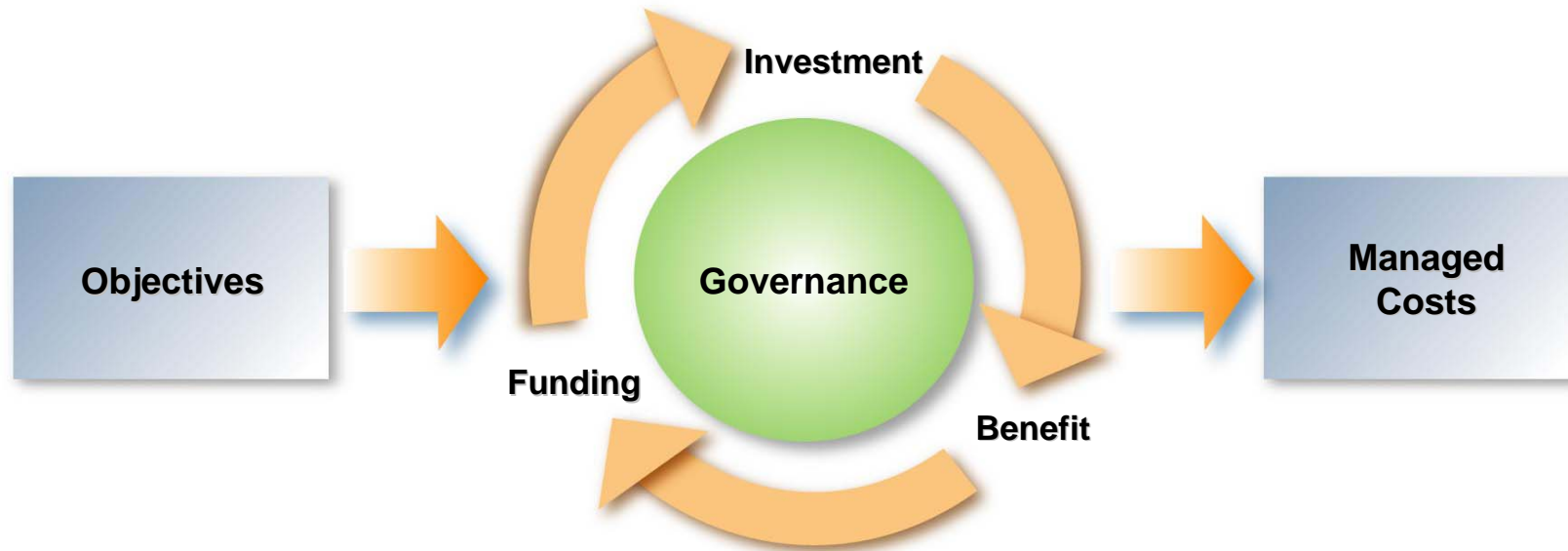


Background Goals and Objectives

- **Objectives of Financial Modeling Project**
 - To better understand potential outcomes under current policies (baseline projection)
 - To analyze the impact of potential policy decisions today in managing the costs of the System over the next 10 years
 - Reserving policy
 - Actuarial cost method
 - Contribution rate smoothing method
- **Goals**
 - Transparency
 - Stable rates
 - Equity across generations
 - Protect funded status



Background Retirement Plan Financial Management Framework





Background Policy Alternatives Analyzed

<ul style="list-style-type: none">■ Baseline Projection<ul style="list-style-type: none">– Entry Age Normal– 4-Year Asset Smoothing– Maximize Reserves	<ul style="list-style-type: none">■ Alternative Policy #1<ul style="list-style-type: none">– Entry Age Normal– 4-Year Asset Smoothing– Minimize Reserves
<ul style="list-style-type: none">■ Alternative Policy #2<ul style="list-style-type: none">– Projected Unit Credit– Amortize change in UAL separately– 4-Year Asset Smoothing– Maximize Reserves	<ul style="list-style-type: none">■ Alternative Policy #3<ul style="list-style-type: none">– Projected Unit Credit– Amortize change in UAL separately– Collar contribution rates– Maximize reserves



Background

- The analysis shown in this presentation is based on the December 31, 2003 actuarial valuation of PERS. It does not include any adjustments for:
 - Side Funds
 - Bond Payments
 - Immediate use of contingency and capital preservation reserves
 - IAP contributions
 - OPSRP contributions
- All projections are illustrative and only to be used to compare baseline and alternative policy trends.



Key Findings

- **Baseline Projection**
 - Contribution rates and funded status are fairly volatile due to the volatility of investment returns.
- **Reserving Policy**
 - Reserves can play an important role managing surprises, but the interactions are complex and more analysis is needed to develop an appropriate reserve policy.
- **Actuarial Cost Method**
 - Projected Unit Credit provides important transparency benefits. The overall level of costs can be managed through the amortization method.
- **Contribution Rate Smoothing**
 - Collaring contribution rates provides important transparency benefits while also controlling the volatility of contribution rates.



Baseline Projections



Baseline Projections Highlights of Results

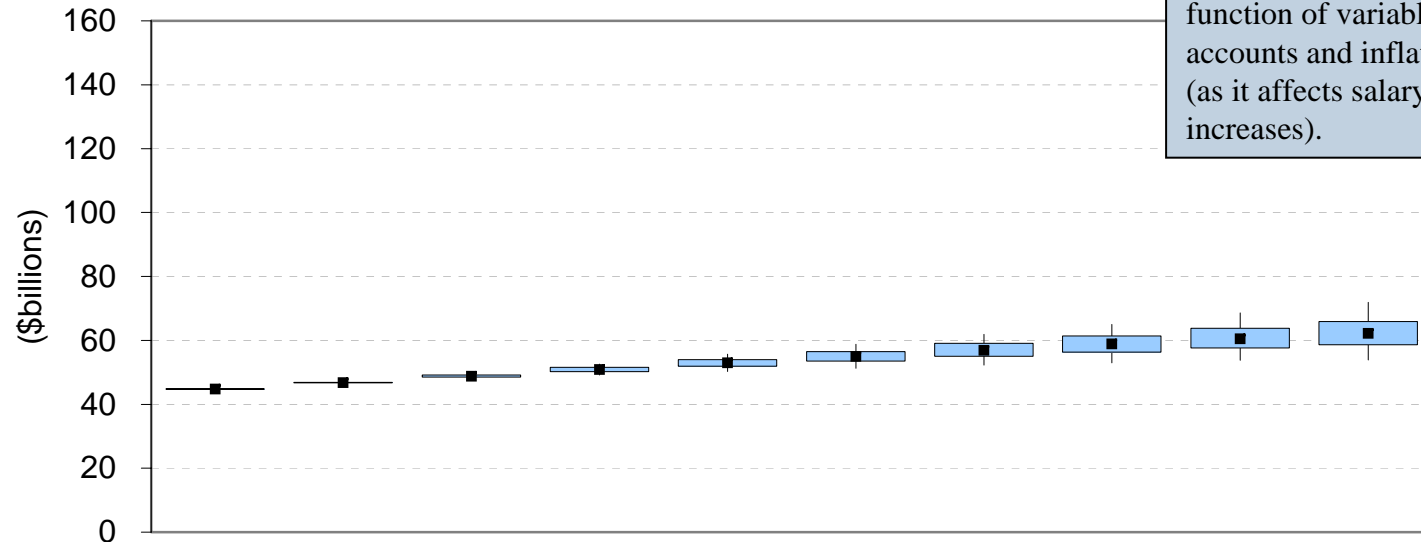
- **Liabilities are stable**
 - The growth in liabilities is very stable since the effect of investment returns on liabilities has largely been eliminated by the 2003 reforms.
- **Investment returns vary significantly**
 - Median investment return is expected to be near 8.0%, but the range of potential returns varies significantly around the median.
- **Contribution rates vary significantly**
 - Contribution rates are expected to be near 20% as of July 1, 2007, but in very bad scenarios, contribution rates could exceed 30% of pay. In very good scenarios, contribution rates could fall to 0% of pay.
 - Year-to-year changes in contribution rates are expected to remain within +/- 3%, but can vary as high as +/-10%.
- **Funded status varies significantly**
 - Funded status is expected to improve slightly, but could improve or deteriorate significantly depending on investment performance.

Baseline Projections Projected Growth in Accrued Liability

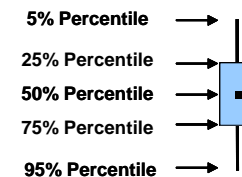
Actuarial Accrued Liability at Valuation Date 12/31

With no new contributions to member accounts and limiting Tier 1 members to 8% interest credits, the liability doesn't depend on investment returns.

The potential range of liability is primarily a function of variable accounts and inflation (as it affects salary increases).



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
5th V. Bad	44.77	47.03	49.74	52.59	55.66	58.73	61.84	65.01	68.59	71.87
25th Bad	44.77	46.86	49.17	51.57	54.00	56.50	59.05	61.40	63.79	65.92
50th Median	44.77	46.76	48.80	50.87	52.96	54.98	56.92	58.86	60.51	62.17
75th Good	44.77	46.65	48.45	50.17	51.83	53.46	54.92	56.29	57.57	58.53
95th V. Good	44.77	46.48	47.94	49.20	50.27	51.31	52.27	53.01	53.81	53.85

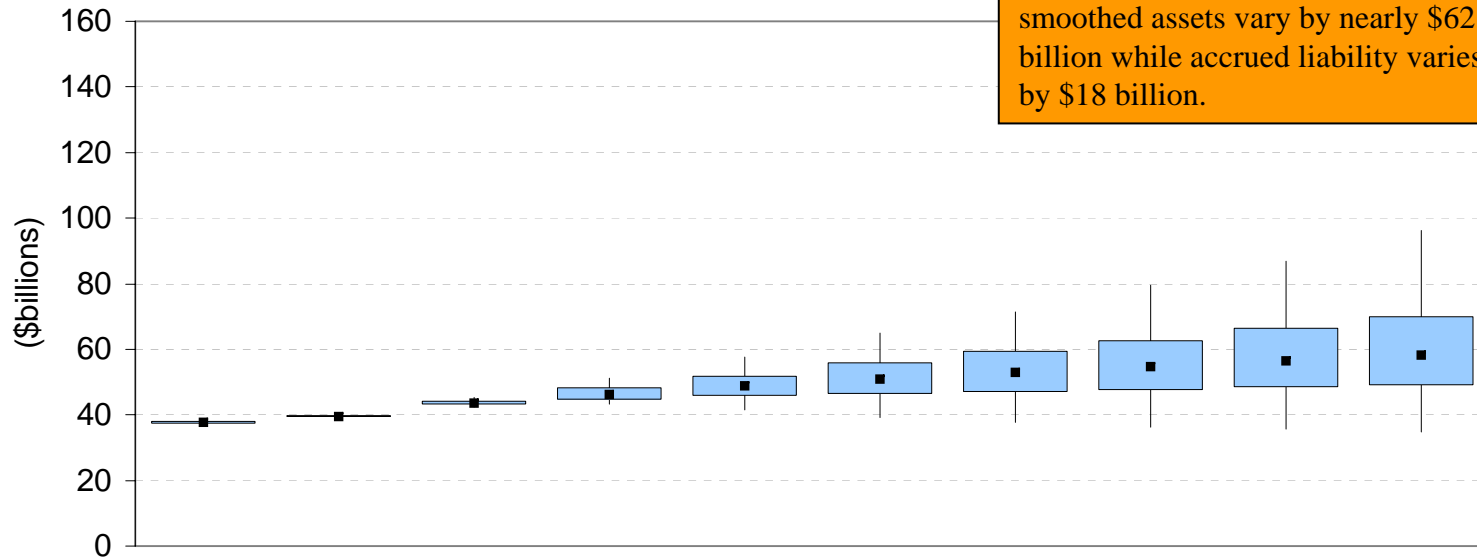


Baseline Projections



AVA at valuation date 12/31

Even with short-term asset smoothing, there is significant variability in long-term asset levels.

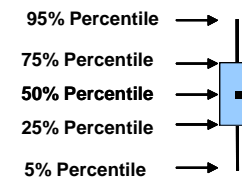


In 2013, smoothed assets vary by \$20 billion between the 25th and 75th percentiles. Accrued liability only varies by \$7 billion.

Between the 5th and 95th percentiles, smoothed assets vary by nearly \$62 billion while accrued liability varies by \$18 billion.

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
95th V. Good	37.6	39.8	45.5	51.3	57.6	64.9	71.5	79.4	86.9	96.3
75th Good	37.6	39.7	44.2	48.2	51.9	56.0	59.5	62.7	66.3	69.8
50th Median	37.6	39.6	43.6	46.3	48.9	50.9	52.9	54.7	56.3	58.1
25th Bad	37.6	39.5	43.2	44.8	45.9	46.6	47.1	47.6	48.5	49.1
5th V. Bad	37.6	39.4	42.5	43.2	41.5	39.1	37.8	36.4	35.6	34.8

AVA = Actuarial Value of Assets



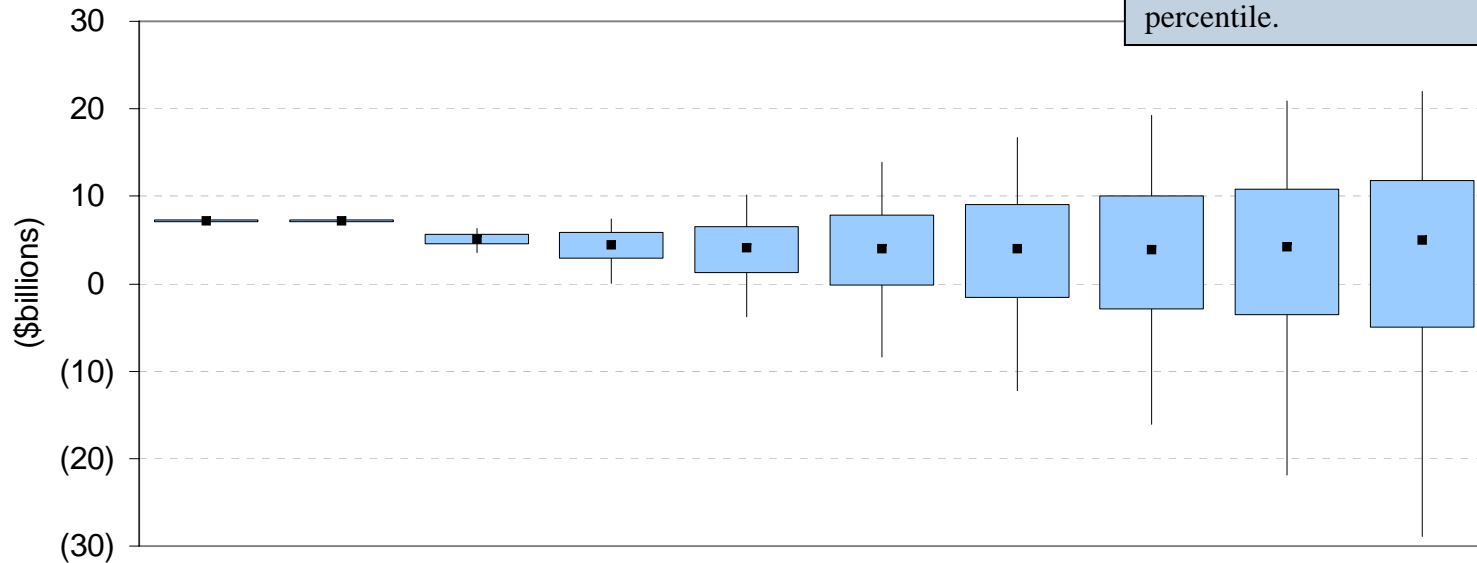
Baseline Projections



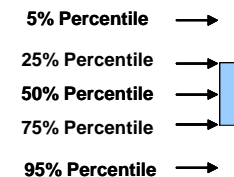
Unfunded Actuarial Liability at Valuation Date 12/31

On a market value basis, the funded status of the system starts around 90%, but by 2013 varies from 58% to 158% between the 5th and 95th percentile.

The volatility in assets results in volatility in the unfunded actuarial liability (UAL). The UAL is amortized as a level percentage of payroll and becomes part of the contribution rate.



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
5th V. Bad	7.18	7.44	6.36	7.44	10.13	13.86	16.67	19.24	20.87	22.01
25th Bad	7.18	7.26	5.65	5.83	6.50	7.87	9.00	9.99	10.86	11.79
50th Median	7.18	7.15	5.12	4.47	4.16	4.03	4.02	3.92	4.18	4.99
75th Good	7.18	7.03	4.53	2.91	1.21	(0.20)	(1.57)	(2.90)	(3.58)	(5.03)
95th V. Good	7.18	6.86	3.58	0.10	(3.83)	(8.40)	(12.25)	(16.09)	(21.93)	(28.87)



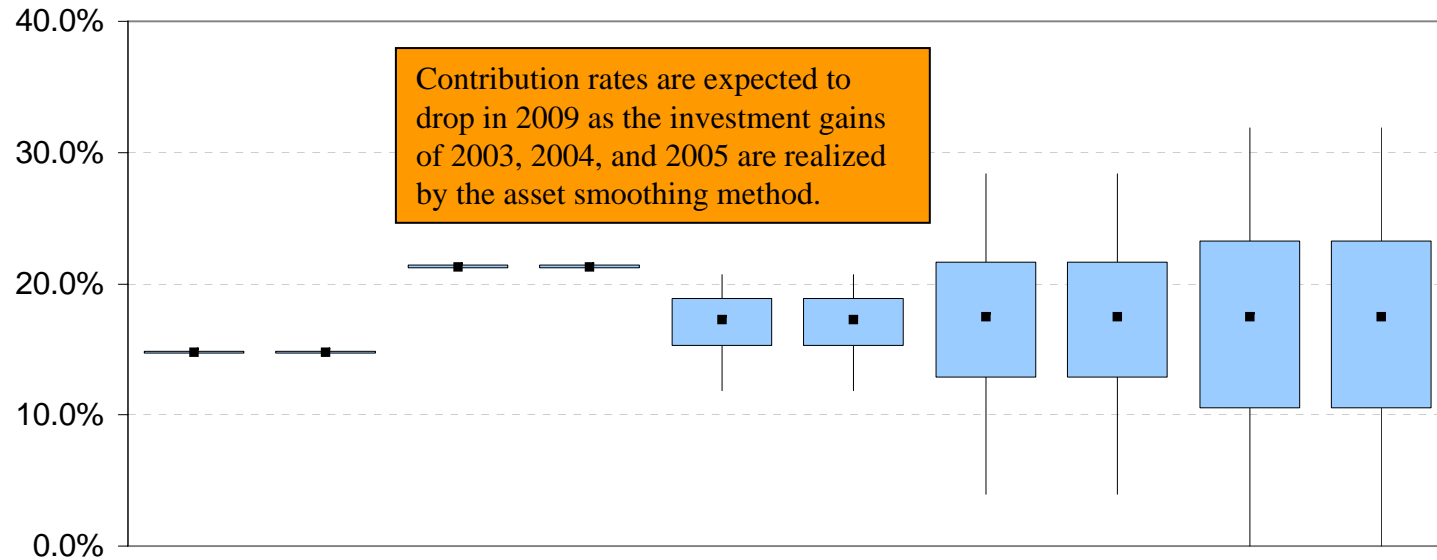
Baseline Projections



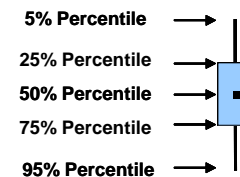
Contribution Rate effective from 7/1

Volatility in investment returns results in a wide range of potential contribution rates.

Given recent investment experience and the phasing in of prior investment losses, contribution rates are expected to increase significantly to 21% of payroll effective 7/1/2007.



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
5th V. Bad	14.8%	14.8%	21.6%	21.6%	20.7%	20.7%	28.4%	28.4%	31.9%	31.9%
25th Bad	14.8%	14.8%	21.4%	21.4%	18.9%	18.9%	21.7%	21.7%	23.3%	23.3%
50th Median	14.8%	14.8%	21.3%	21.3%	17.2%	17.2%	17.5%	17.5%	17.5%	17.5%
75th Good	14.8%	14.8%	21.2%	21.2%	15.3%	15.3%	12.9%	12.9%	10.5%	10.5%
95th V. Good	14.8%	14.8%	21.1%	21.1%	11.9%	11.9%	4.0%	4.0%	0.0%	0.0%



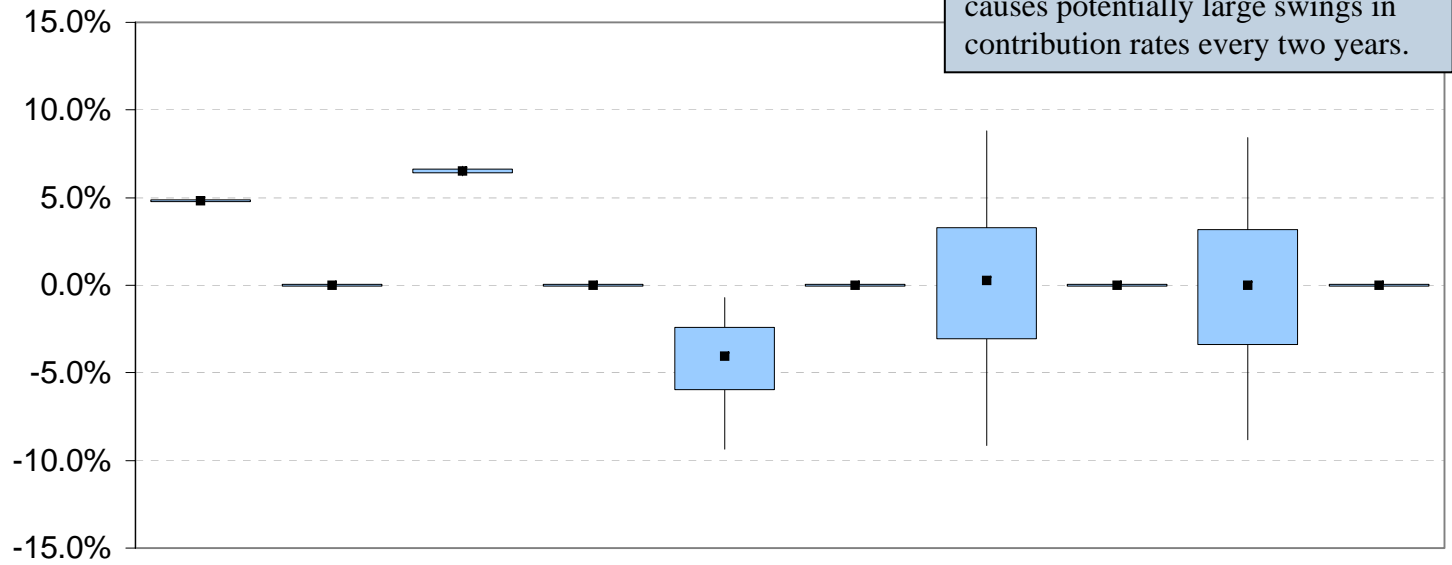
Baseline Projections



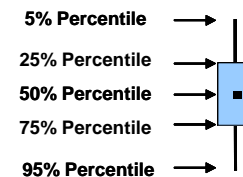
Change in Contribution Rate at 7/1

As a result of the asset smoothing, contribution rates effective 7/1/2009 are expected to go down, perhaps significantly.

Volatility in investment returns causes potentially large swings in contribution rates every two years.



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
5th V. Bad	4.8%	0.0%	6.8%	0.0%	-0.7%	0.0%	8.8%	0.0%	8.5%	0.0%
25th Bad	4.8%	0.0%	6.6%	0.0%	-2.4%	0.0%	3.3%	0.0%	3.2%	0.0%
50th Median	4.8%	0.0%	6.5%	0.0%	-4.1%	0.0%	0.3%	0.0%	0.0%	0.0%
75th Good	4.8%	0.0%	6.4%	0.0%	-6.0%	0.0%	-3.1%	0.0%	-3.4%	0.0%
95th V. Good	4.8%	0.0%	6.3%	0.0%	-9.4%	0.0%	-9.1%	0.0%	-8.8%	0.0%





Baseline Projections Observations

- Investment returns and the volatility of those investment returns will drive contribution levels, volatility of contribution levels, and the funded status of the System.
- The potential outcomes vary significantly depending on the actual investment return achieved.
- Board policies and actuarial smoothing techniques can mitigate some of the volatility, but with assets equal to approximately 7 times payroll, volatile investment returns will have a significant impact on contribution rates in spite of efforts to smooth the impact.



Analysis of Reserving Policy Minimum vs. Maximum Reserves



Analysis of Reserving Policy Reserve Policy Definitions

<ul style="list-style-type: none">■ Baseline Projection<ul style="list-style-type: none">– Entry Age Normal– 4-Year Asset Smoothing– Maximize Reserves	<ul style="list-style-type: none">■ Alternative Policy #1<ul style="list-style-type: none">– Entry Age Normal– 4-Year Asset Smoothing– Minimize Reserves
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Reserving Policy:

- Provides for manual smoothing of employer contribution rates to help manage large year-to-year changes in employer contribution rates and promote system stability.
- The alternatives considered illustrate the impact of maximizing reserves versus minimizing contingency and capital preservation reserves.



Analysis of Reserving Policy

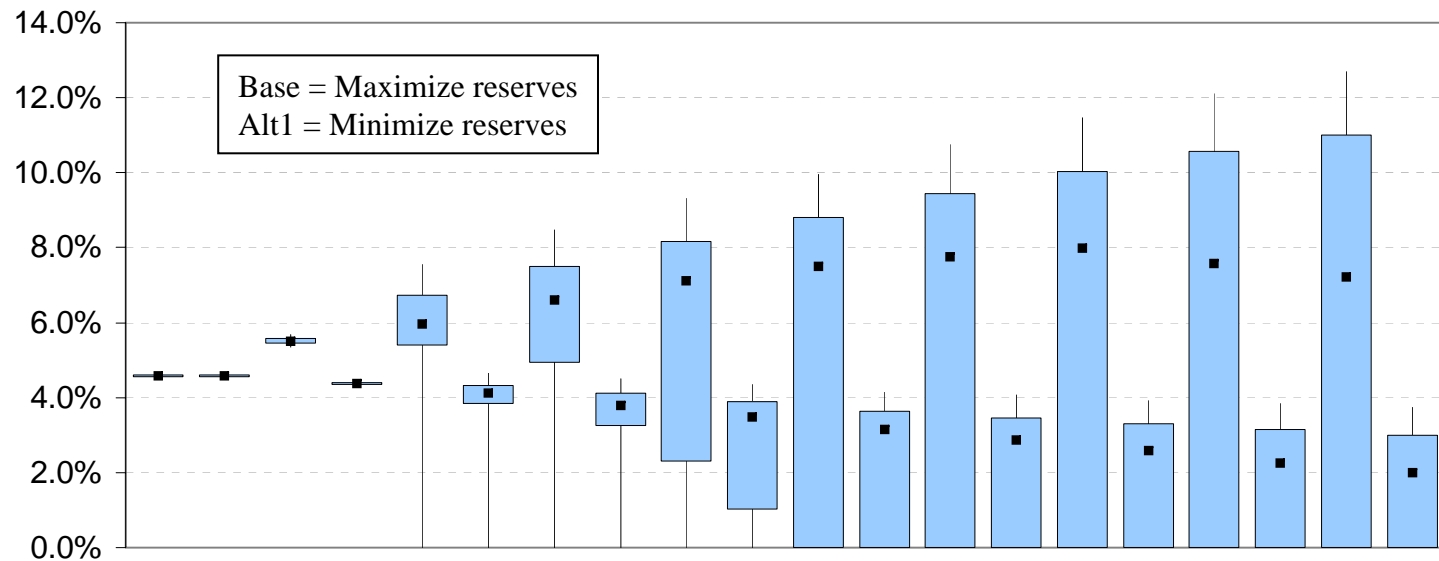
Highlights of Results

- **To be effective, reserves have to be built**
 - Using reserves to support an 80% funded ratio requires a reserve to be built up before the system drops below 80%. In these projections, scenarios that built significant reserves were unlikely to then fall below the 80% threshold.
- **Reserves act as a manual smoothing method**
 - The Contingency and Capital Preservation Reserves can act as a manual smoothing method to support system and rate stability.
- **Interactions are complex**
 - Exposing the reserves to the same investment risk as the rest of the fund creates some complex dynamics.
 - Determining appropriate time to use reserves is a critical decision.
- **More analysis needed**

Analysis of Reserving Policy Maximum vs. Minimum Reserves

(Contin. Reserve plus Capital Pres. Reserve) as a % of (MVA + CR + CPR) (Base vs. Alt#1)

In median and better scenarios, a sizeable reserve develops under the maximum reserve policy. In poor scenarios, however, the reserve is used up quickly under either reserving policy.



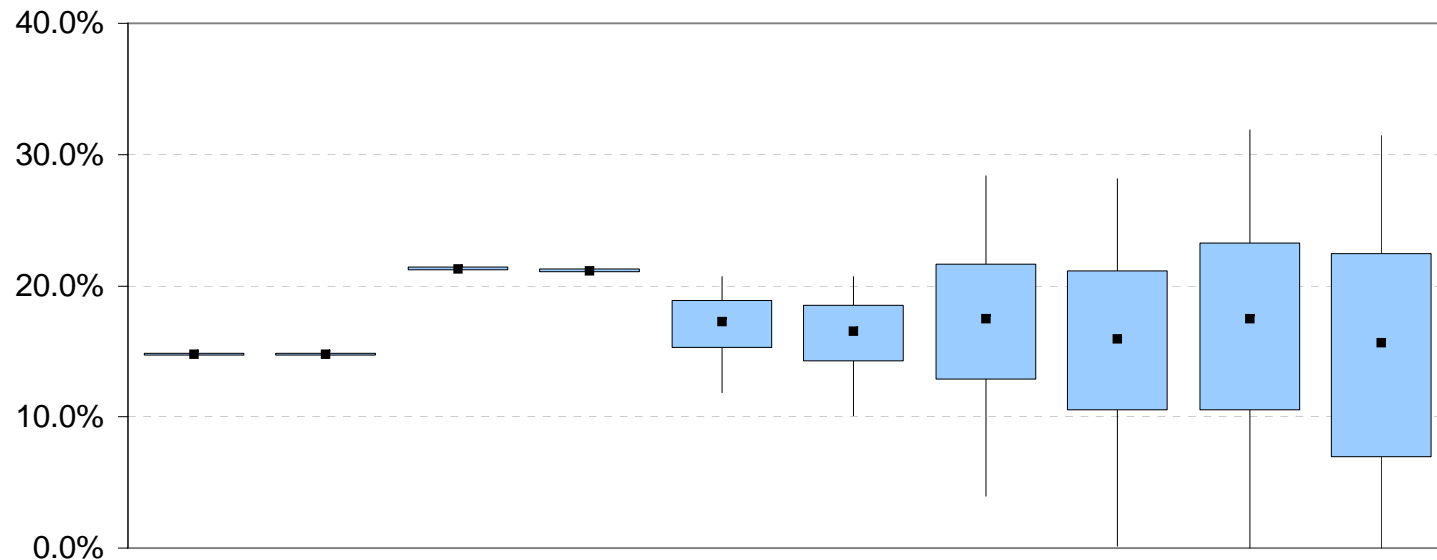
Base	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
95th V. Good	4.6%	5.7%	7.6%	8.5%	9.3%	10.0%	10.8%	11.5%	12.1%	12.7%
75th Good	4.6%	5.6%	6.7%	7.5%	8.2%	8.8%	9.5%	10.0%	10.6%	11.0%
50th Median	4.6%	5.5%	6.0%	6.6%	7.1%	7.5%	7.8%	8.0%	7.6%	7.2%
25th Bad	4.6%	5.4%	5.4%	4.9%	2.3%	0.0%	0.0%	0.0%	0.0%	0.0%
5th V. Bad	4.6%	5.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Alt #1	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
95th V. Good	4.6%	4.4%	4.7%	4.5%	4.4%	4.2%	4.1%	3.9%	3.8%	3.7%
75th Good	4.6%	4.4%	4.3%	4.1%	3.9%	3.6%	3.5%	3.3%	3.2%	3.0%
50th Median	4.6%	4.4%	4.1%	3.8%	3.5%	3.2%	2.9%	2.6%	2.3%	2.0%
25th Bad	4.6%	4.4%	3.8%	3.2%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5th V. Bad	4.6%	4.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Analysis of Reserving Policy Maximum vs. Minimum Reserves

Contribution Rate effective from 7/1 (Base vs. Alt#1)

Maximizing reserves results in a slight increase in contribution rates in most scenarios.



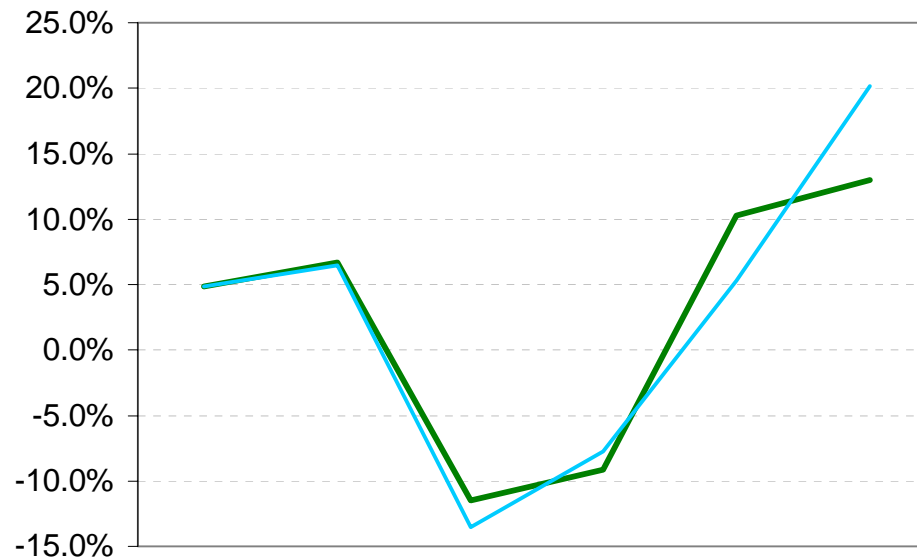
	Base	Alt1	Base	Alt1	Base	Alt1	Base	Alt1	Base	Alt1
	2005	2005	2007	2007	2009	2009	2011	2011	2013	2013
5th V. Bad	14.8%	14.8%	21.6%	21.5%	20.7%	20.7%	28.4%	28.2%	31.9%	31.4%
25th Bad	14.8%	14.8%	21.4%	21.3%	18.9%	18.5%	21.7%	21.1%	23.3%	22.4%
50th Median	14.8%	14.8%	21.3%	21.2%	17.2%	16.6%	17.5%	15.9%	17.5%	15.7%
75th Good	14.8%	14.8%	21.2%	21.1%	15.3%	14.3%	12.9%	10.5%	10.5%	7.0%
95th V. Good	14.8%	14.8%	21.1%	20.9%	11.9%	10.1%	4.0%	0.1%	0.0%	0.0%

Base = Maximize reserves
Alt1 = Minimize reserves

Analysis of Reserving Policy Maximum vs. Minimum Reserves

Contribution Rate change at 7/1 (Base vs. Alt#1)

This graph shows one trial from our stochastic projections. In this trial, there are good investment returns for 5 years followed by poor investment returns. In the last year of the projection, the reserves are finally deployed, reducing the change in contribution rate from 20% to 13%.



	2005	2007	2009	2011	2013	2015
Base	4.8%	6.7%	-11.5%	-9.1%	10.3%	13.0%
Alt#1	4.8%	6.5%	-13.5%	-7.7%	5.3%	20.2%



Analysis of Reserving Policy Observations

- Reserves can play an important role in managing large changes in contribution rates.
- With the current interest crediting regimen, the higher the reserves, the more valuation assets are leveraged, particularly for negative investment experience.
- The value of the reserves may not be seen until there is a significant reserve established. It may take more than 10 years to establish a significant reserve.
- It appears that reserving decisions may be an important part of managing the long-term costs of the System. Additional analysis is warranted both in terms of the amount to put into reserves and when to use reserves.



Actuarial Cost Method Entry Age Normal vs. Projected Unit Credit



Actuarial Cost Method Entry Age Normal vs. Projected Unit Credit

<ul style="list-style-type: none">■ Baseline Projection<ul style="list-style-type: none">– Entry Age Normal– 4-Year Asset Smoothing– Maximize Reserves	<ul style="list-style-type: none">■ Alternative Policy #2<ul style="list-style-type: none">– Projected Unit Credit– Amortize change in UAL separately– 4-Year Asset Smoothing– Maximize Reserves
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Projected Unit Credit Cost Method:

- The cost of benefits earned is funded each year and the liability represents the value of benefits earned to date. Projected unit credit provides stakeholders and users of the actuarial valuation report a real measure of the cost and liability of the system that is easily understood.



Actuarial Cost Method Highlights of Results

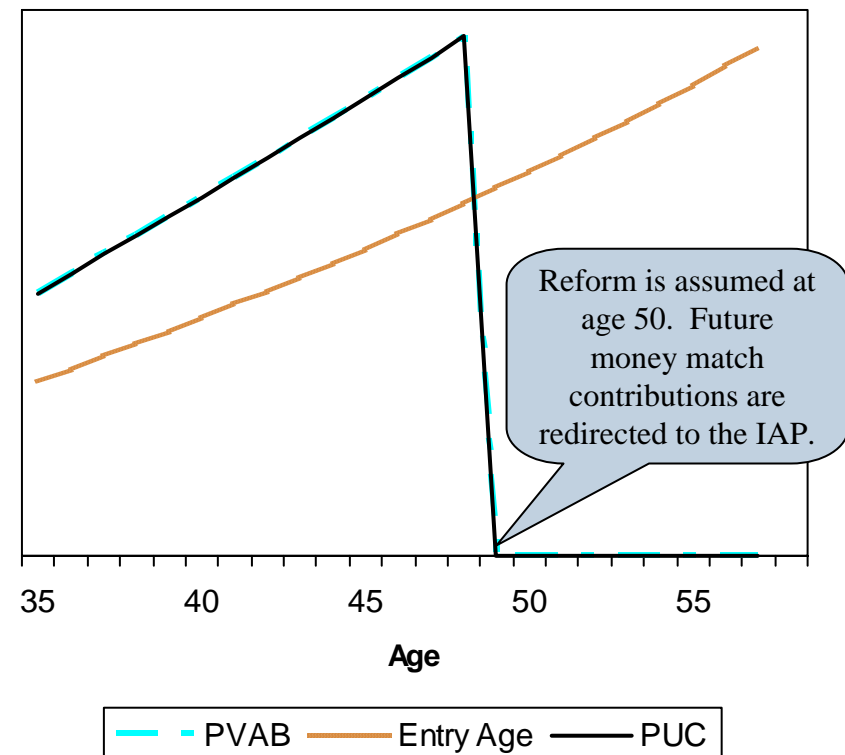
- **Improved transparency**
 - The projected unit credit cost method more accurately reflects the reality of how benefits are earned.
- **Contribution rates appear to remain as stable as under entry age normal**
 - There does not appear to be any change to the stability of contribution rates in the stochastic projections.
 - However, there are concerns beyond 10 years that the projected unit credit cost method would continue to experience increases in the normal cost rate.
- **Contribution rates are lower**
 - Projected unit credit results in lower contribution rates



Actuarial Cost Method Money Match Benefit Normal Cost

- After reform, member benefits under the Money Match formula will not increase for additional service.
- Entry age normal continues to assign a normal cost for these benefits even though they do not increase.
- Projected unit credit, on the other hand, follows the pattern of benefit accruals exactly.
- Therefore, the normal cost portion of the contribution rate directly reflects the cost of benefits earned.

Comparison of Normal Cost
Money Match Formula

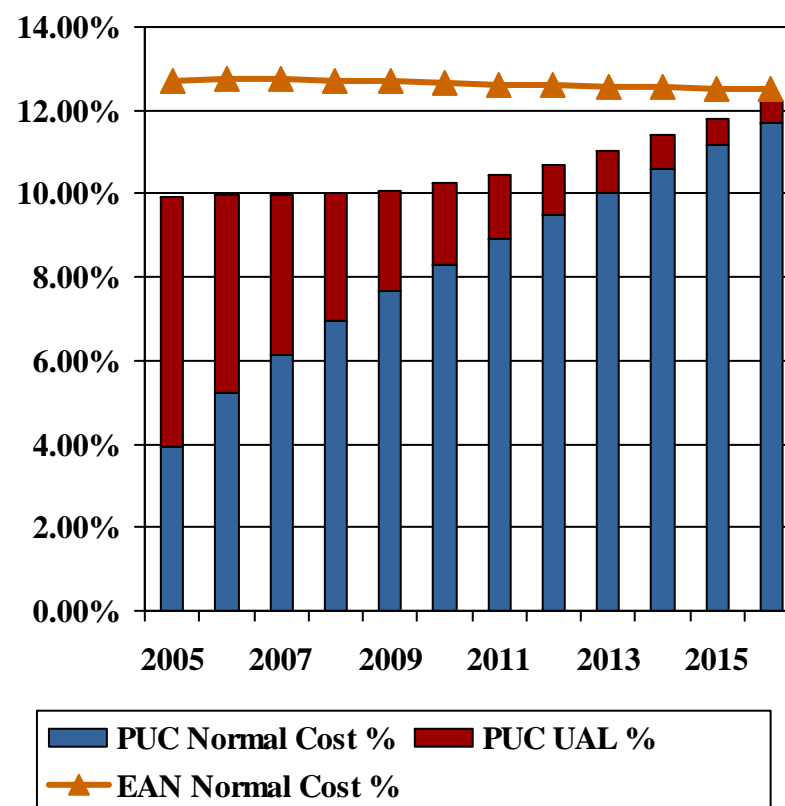




Actuarial Cost Method Normal Cost and UAL Change Rates

- The PUC Normal Cost Rate starts around 4%, but increases over the next 10 years to almost 12%.
- Using the 5-year rolling level dollar amortization for the change in UAL, the initial payment is about 6% decreasing to 0.5% over 10 years.
- The UAL payment is made over total combined payroll while the normal cost payment is made on the declining Tier 1/2 payroll.
- At some point in the future, the Board will want to fix the rolling amortization, to pay it off, but the rolling method helps match the expected change in normal cost as Money Match members retire.

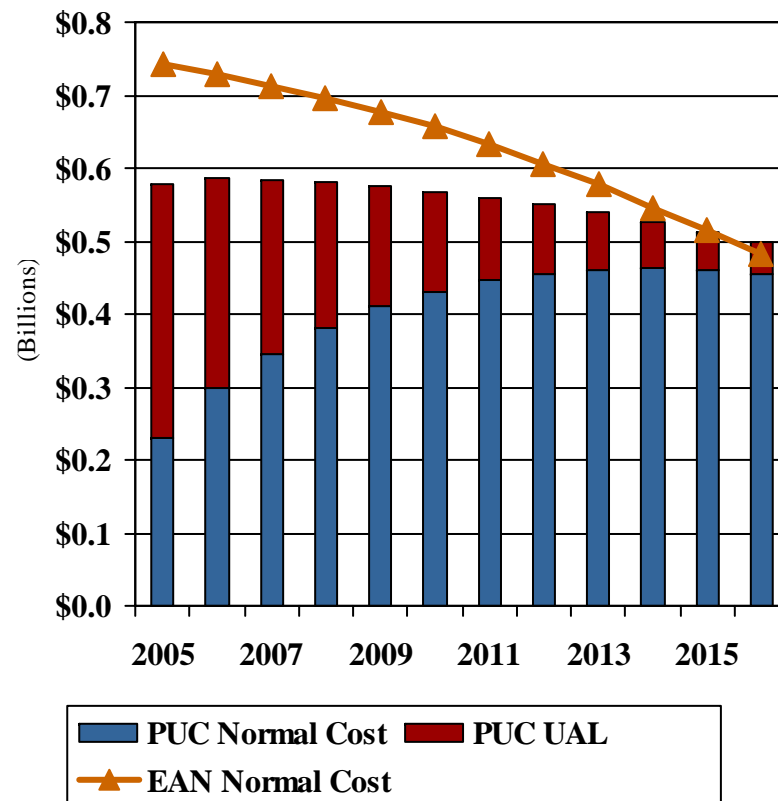
Comparison of NC/UAL Rates





Actuarial Cost Method Normal Cost and UAL Change Payments

Comparison of Payments

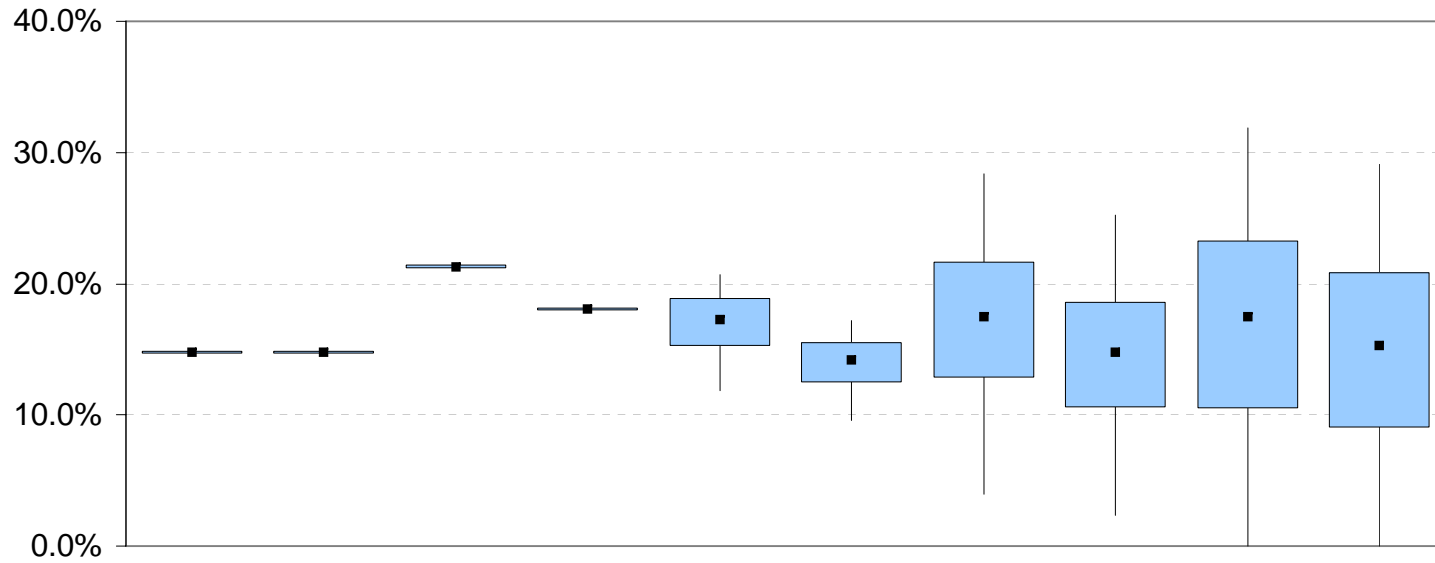


- Under Entry Age Normal, the normal cost payments decline as Tier 1/2 members retire more than they increase as pay increases.
- Under PUC, the normal cost payments increase as the Full Formula population ages more than they decrease as Tier 1/2 members retire. Near the end of the projection period, this trend reverses.
- The rolling 5-year level dollar amortization method for the change in UAL levels out the contribution amounts so they are non-increasing.

Actuarial Cost Method Entry Age Normal vs. Projected Unit Credit

Contribution Rate effective from 7/1 (Base vs. Alt#2)

PUC contribution rates are approximately 200 basis points less than the EAN contribution rates.



	Base	Alt2	Base	Alt2	Base	Alt2	Base	Alt2	Base	Alt2
	2005	2005	2007	2007	2009	2009	2011	2011	2013	2013
5th V. Bad	14.8%	14.8%	21.6%	18.3%	20.7%	17.2%	28.4%	25.2%	31.9%	29.1%
25th Bad	14.8%	14.8%	21.4%	18.2%	18.9%	15.5%	21.7%	18.6%	23.3%	20.8%
50th Median	14.8%	14.8%	21.3%	18.1%	17.2%	14.2%	17.5%	14.8%	17.5%	15.3%
75th Good	14.8%	14.8%	21.2%	18.0%	15.3%	12.5%	12.9%	10.6%	10.5%	9.1%
95th V. Good	14.8%	14.8%	21.1%	17.9%	11.9%	9.6%	4.0%	2.3%	0.0%	0.0%

Base = Entry Age Normal
Alt2 = Projected Unit Credit



Actuarial Cost Method Observations

- The primary advantage of the PUC method is the increased transparency provided by a more realistic allocation of costs between the past (accrued liability) and the future (normal cost).
- There are two other effects of switching to PUC:
 - The average normal cost rate will tend to rise as Money Match members retire and they represent a smaller proportion of the population.
 - The average normal cost rate will tend to rise as the closed Tier 1/2 population ages.
- Both of these effects are somewhat mitigated by the declining payroll to which they apply.
- The PUC method also produces lower contribution rates. The amount of reduction is less than it appears as the UAL is amortized over combined payroll while the normal cost rate is only charged to the closed Tier 1/2 payroll.



Contribution Rate Smoothing Asset Smoothing vs. Contribution Rate Collaring



Contribution Rate Smoothing Asset Smoothing vs. Contribution Rate Collaring

■ Alternative Policy #2

- Projected Unit Credit
- Amortize change in UAL separately
- **4-Year Asset Smoothing**
- Maximize Reserves

■ Alternative Policy #3

- Projected Unit Credit
- Amortize change in UAL separately
- **Collar contribution rates**
- Maximize reserves

Contribution rate collaring:

- Smooths contribution rates instead of assets. The true market value of assets is reflected in the measurement of the funded status of the system and the determination of contribution rates. Stakeholders and users of the actuarial valuation report will better understand the financial position of the system in order to make timely management, benefit, investment and funding decisions.
- The collar provides limits to changes in contribution rates that are useful for budgeting purposes.



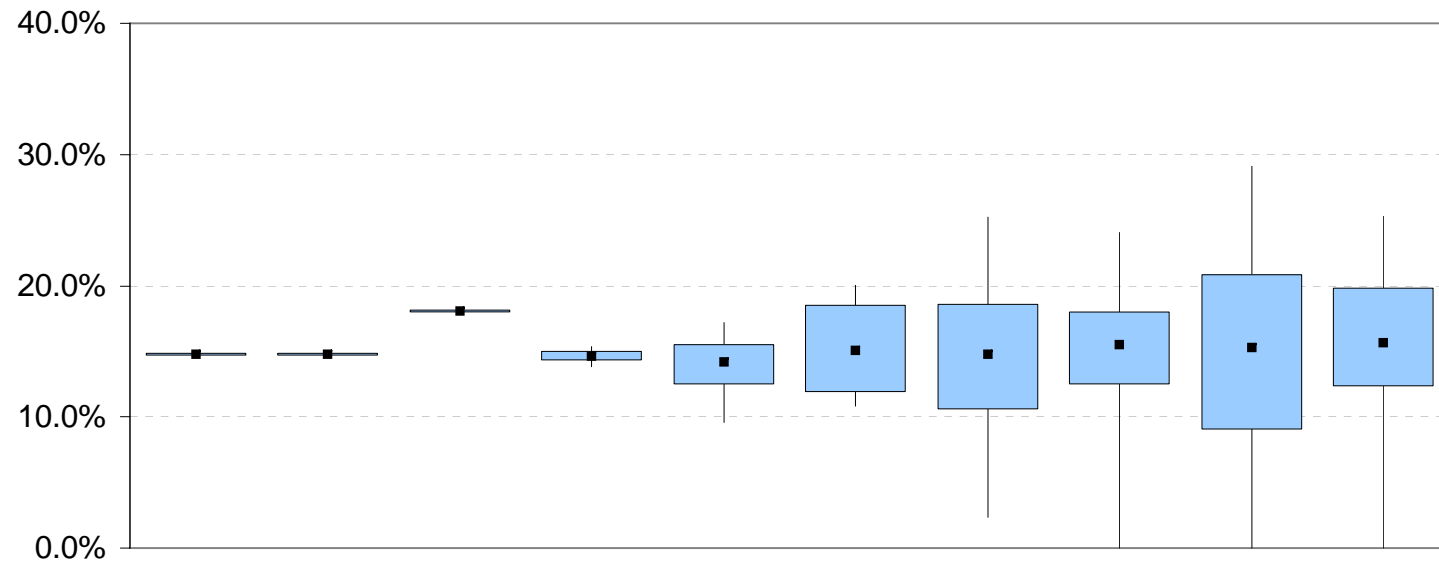
Contribution Rate Smoothing Highlights of Results

- **Contribution rates are more stable**
 - Extreme changes in contribution rates are significantly reduced by the collar approach.
 - Range of contribution rate levels is narrowed by the collar approach.
- **Funded status appears similar**
 - The collar approach still results in a wide range of funded status, but the range of outcomes appears virtually identical to the asset smoothing approach.
- **Transparency slightly improved**
 - Calculations on a market value basis more accurately illustrate the current status of the system.
- **Lower contribution rates in 2007**
 - The collar approach switches to market value of assets, allowing for the immediate recognition of the investment gains from 2003, 2004 and 2005.

Contribution Rate Smoothing Asset Smoothing vs. Contribution Rate Collaring

Contribution Rate effective from 7/1 (Alt#2 vs. Alt#3)

The rate collar reduces contribution rates as of 7/1/2007 because it immediately recognizes the asset gains of 2003, 2004, and 2005. The range of future contribution rates has also narrowed considerably, particularly between the 25th and 75th percentiles.



	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3
	2005	2005	2007	2007	2009	2009	2011	2011	2013	2013
5th V. Bad	14.8%	14.8%	18.3%	15.4%	17.2%	20.0%	25.2%	24.1%	29.1%	25.3%
25th Bad	14.8%	14.8%	18.2%	15.0%	15.5%	18.5%	18.6%	18.0%	20.8%	19.8%
50th Median	14.8%	14.8%	18.1%	14.7%	14.2%	15.0%	14.8%	15.5%	15.3%	15.7%
75th Good	14.8%	14.8%	18.0%	14.3%	12.5%	11.9%	10.6%	12.5%	9.1%	12.4%
95th V. Good	14.8%	14.8%	17.9%	13.8%	9.6%	10.9%	2.3%	0.0%	0.0%	0.0%

Alt2 = Asset Smoothing
Alt3 = Rate Collaring

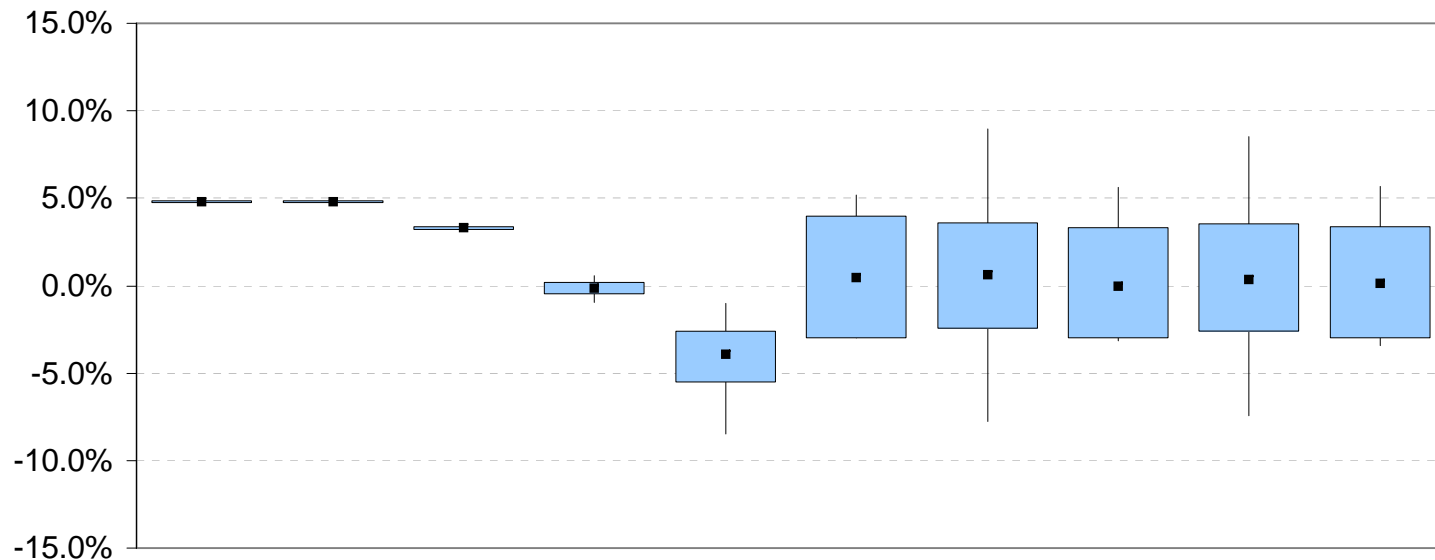
Contribution Rate Smoothing

Asset Smoothing vs. Contribution Rate Collaring



Change in contribution rate effective from 7/1 (Alt#2 vs. Alt#3)

The rate collar reduces the volatility of contribution rates by eliminating most changes outside of the standard collar. Inside the collar, however, rate changes may be more volatile as the rate is based on the market value of assets.



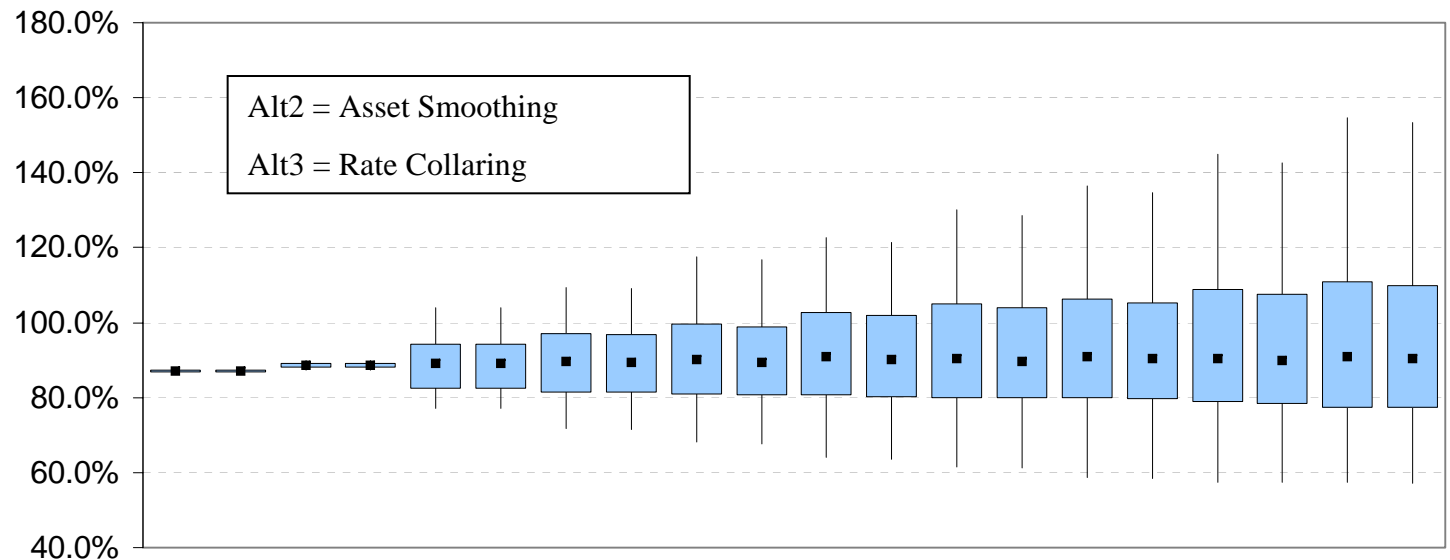
	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3
	2005	2005	2007	2007	2009	2009	2011	2011	2013	2013
5th V. Bad	4.8%	4.8%	3.5%	0.6%	-1.0%	5.2%	9.0%	5.6%	8.5%	5.7%
25th Bad	4.8%	4.8%	3.4%	0.2%	-2.6%	4.0%	3.6%	3.3%	3.6%	3.4%
50th Median	4.8%	4.8%	3.3%	-0.1%	-3.9%	0.4%	0.6%	0.0%	0.4%	0.1%
75th Good	4.8%	4.8%	3.2%	-0.5%	-5.5%	-3.0%	-2.5%	-3.0%	-2.6%	-3.0%
95th V. Good	4.8%	4.8%	3.1%	-1.0%	-8.5%	-3.0%	-7.8%	-3.1%	-7.5%	-3.4%

Alt2 = Asset Smoothing
Alt3 = Rate Collaring

Contribution Rate Smoothing Asset Smoothing vs. Contribution Rate Collaring

Funded Status (using MVA) at valuation date 12/31 (Alt#2 vs. Alt#3)

The concern that the rate collar may increase the probability of severe under funding or over funding does not appear to be warranted.



Alt #2	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
95th V. Good	87.0%	90.0%	104.0%	109.4%	117.5%	122.6%	130.2%	136.5%	144.9%	154.6%
75th Good	87.0%	89.1%	94.3%	97.1%	99.7%	102.8%	104.9%	106.4%	108.8%	111.0%
50th Median	87.0%	88.5%	89.0%	89.7%	90.1%	90.8%	90.3%	91.0%	90.5%	91.0%
25th Bad	87.0%	88.0%	82.6%	81.5%	81.0%	80.6%	80.0%	80.0%	78.9%	77.3%
5th V. Bad	87.0%	87.3%	77.2%	71.7%	68.2%	64.1%	61.5%	58.7%	57.4%	57.4%

Alt #3	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
95th V. Good	87.0%	90.0%	104.0%	109.2%	116.8%	121.4%	128.5%	134.6%	142.7%	153.4%
75th Good	87.0%	89.1%	94.3%	96.9%	99.0%	101.8%	104.1%	105.2%	107.6%	109.9%
50th Median	87.0%	88.5%	89.0%	89.5%	89.5%	90.1%	89.8%	90.3%	89.9%	90.5%
25th Bad	87.0%	88.0%	82.6%	81.4%	80.6%	80.1%	80.0%	79.8%	78.5%	77.4%
5th V. Bad	87.0%	87.3%	77.2%	71.5%	67.6%	63.6%	61.4%	58.3%	57.4%	57.1%



Contribution Rate Smoothing Observations

- The proposed collar method appears to provide very desirable results
 - Reduced contribution rate volatility
 - Reduced contribution rates
 - No impairment of funded status
- Investment return volatility still produces a wide range of potential outcomes.



Recommendations



Recommendations Reserve Policy

- In the 10-year period of the projection, additional reserves appeared to help in a minor way with the most extreme situations.
- More study is needed to develop an appropriate reserving policy
 - How large does the reserve need to be to be useful or are reserves not useful for managing surprises?
 - Should reserves be released when contribution rates increase above a threshold instead of or in addition to when funded status dips below a threshold?
 - Should reserves be invested differently and retain their own earnings?



Recommendations Actuarial Cost Method

- Projected Unit Credit provides greater transparency of benefit accrual patterns, but these accrual patterns will likely increase for the closed group of actives who retire under full formula.
- The projection should be extended beyond 10 years on a deterministic basis to assess the increasing rate for a declining population both as a percentage of the declining payroll and as a dollar amount.



Recommendations Contribution Rate Smoothing

- The collar method appears to stabilize contribution rates (at least within the range of the collar) without any negative impact on funded status.
- Calculations using market value of assets improve the transparency of the funded status of the system and improve the intuitiveness of results. That is, good investment returns will lead to a reduction in the calculated rate (before the collar is applied).
- PERS may want to pursue a change to this collar method on time for the 12/31/2005 actuarial valuation.
- If a collaring method is adopted, additional GASB disclosures will be required if the contribution rate is limited by the collar.



Appendix



Appendix Reserve Policy Definitions

■ Maximizing Reserves

- Contingency and Capital Preservation Reserve – 7.5% of earnings in excess of 8.0%. These reserves are used to the extent necessary to maintain an 80% funded ratio, and statutory restrictions on when the Capital Preservation Reserve can be used have been ignored for this analysis.
- Rate Guarantee Reserve – All Tier One member regular account earnings in excess of 8.0%. This reserve is used to the extent necessary to credit 8.0% earnings to Tier One member accounts.

■ Minimizing Reserves

- Contingency Reserve – 0.75% of earnings in excess of 8.0%. This reserve is used to the extent necessary to maintain an 80% funded ratio.
- Capital Preservation Reserve – not used
- Rate Guarantee Reserve – All Tier One member regular account earnings in excess of 8.0%. This reserve is used to the extent necessary to credit 8.0% earnings to Tier One member accounts.



Appendix Definition of Collar Method

- Contribution rates will be confined to a collar based on the current contribution rate.
- The next contribution rate will not increase or decrease from the prior contribution rate by more than the greater of 3 percentage points or 20 percent of the current rate.
 - If current rate is 15%, the new rate cannot be more than 18% nor less than 12%.
 - If current rate is 20%, the new rate cannot be more than 24% nor less than 16%.
- If funded percentage drops below 80% or increases above 120%, the size of the collar doubles.
 - If current rate is 15% and funded status is below 80%, the new rate can be as high as 21%.
 - If current rate is 20% and funded percentage is below 80%, the new rate can be as high as 28%.
- All calculations will use the market value of assets